



Bye Avaya, Hello Asterisk

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rocksteady[™]



rocksteady

What was it like before?

- Rocksteady Networking, Inc. (Austin, Texas startup) bought its telephone system on **ebay**
- Outsourced service on the system for even small items like moves, adds and changes
- Multiple wires (Category 3 for phones, Category 5e for network)



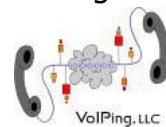
That was then...

- Lucent/Avaya Partner System
 - Analog POTS circuits (FXO)
 - Phones (FXS)
 - Partner Mail
- It slowly grew with them (adding cards, circuits and handsets) until ...



Success meant growth

- September 2003: I was hired as their engineering expert in VoIP and research lead
 - Still own and operate VoIPing, LLC (IT/VoIP consulting partnership)
www.voiping.com
- Projected to outgrow their current telephone system
 - no more room for add'l handsets (need to buy new ones)
 - frequently exceeding number of FXO channels in use
 - costly to upgrade (new cabinets)
- Rocksteady's first round of VC funding \$4M in October 2003
 - CTO remains frugal with corporate technology purchases





This is now...

- Dell PowerEdge 300SC
 - Dual P-III 1Ghz CPUs
 - 1GB RAM
 - Digium™ T100P
 - Hot Swap Cage; SATA 160GB, 3ware RAID-1 (mirroring)
 - Redhat 9
- Cisco PoE switches
 - Catalyst 3524PWR (24 ports)
- SIP Devices
 - Cisco 7960/7940/7905
 - Grandstream Budgetone 101
 - Polycom Soundpoint IP500
 - Sipura 2000



Cisco 7940 and 7960s



Polycom IP500



Cisco Catalyst 3524PWR



Budgetone 101




Sipura 2000



Dell PowerEdge 300SC



ROI

- There was still a market for the old TDM system; we could resell on 
- Aftermarket sales of VoIP phones were readily available; keeping initial costs down
- Needed more outside lines, PRI costs cheaper than multiple sum of analog loop-start trunks
- Product development roadmap and company growth required a serious look at the network infrastructure and appropriate need for improvements
- The system that keeps growing with us with minimal future investment



Deployment: Phase I

- Start mid-October 2003
- Procure hardware system and enough VoIP handsets for Engineering team
- Sales/Marketing to approve "Allison recordings" and MOH
- Improve network infrastructure
 - Cisco Catalyst 3524 PWR (PoE) switches, single Cat-5e to desk
 - Cisco Catalyst 2948G-L3 (Layer 3) VLANs
 - Multiple APS SmartNet 3Kva UPSes (for systems, switches)
- VoIP (SIP)
 - Cisco 7960 and 7940 handsets
 - Sipura 2000 (900Mhz cordless Support phone and Polycom Conference Room speaker phone)
 - PulverInnovations WiFi 802.11b SIP phone




Deployment: Phase I

- Southwestern Bell (SBC) PRI (dial 9 for SBC outside line)
 - 16B+D channels (room for growth)
 - Promo pricing
 - 100 DIDs (-13XX), Caller Name/Number, LD carrier
 - Toll Free#
- NuFone Toll-free# (dial 8 for NuFone outside line)
- Engineering cutover completed: mid-November 2003 (before Thanksgiving)
- Two phones on everyone's desk, but quickly VoIP handset became the "phone of choice"





Deployment: Phase II

- January 2004: completed procurement of additional VoIP handsets
- February 2004: migrated remainder of the company over; port old telephone numbers from Allegiance to SBC, mapping old numbers to new DID dialplan
- Disconnect old circuits and remove old phones from desks
- Sold the old system and handsets on 
- "One PBX to rule them all"
- Asterisk* has proven itself completely stable and full-featured



Lessons learned

- Document how to use system!! Especially the differences.
 - We use our internal wiki for all system "how to's"
 - Hands on training for receptionists (they use the phone the most!)
 - Make it easy; *Flash Operator Panel* (www.astericon.org)
- Two and half month period with Engineers prior to entire company rollout proved system stability, usability and acceptance to move forward on the entire system company wide
- Grandstream BudgeTone (you get what you pay for...) we switched to Cisco 7905G, Sipura and Polycom for lower cost alternatives for remote field personnel
- Ring tones add personality and culture



The screenshot displays the Asterisk and Rocksteady interface. On the left, the Asterisk logo is visible. The main area is a grid of agent status and queue information. The top row includes 'Main (Gabby)', '28 Keith', 'Main Queue', '90 Lenny @ Home', 'Parking Lot', and 'PRI Trunk 1'. The grid continues with various agents and queues, including 'Support Queue', 'Spare Cube', 'Conf Rm Polycorn', 'Conf Rm 7960', 'Suppt Cordless', and several 'PRI Trunk' entries. The bottom right corner shows 'FWD Trunk' and 'Nufone Trunk' entries.

Asterisk improves Rocksteady

- Every employee gets a DID number (reduced load on our receptionists transferring); Dial "by name" Directory
- Time sensitive IVR system (company holiday aware!)
- Remote employees with our Rocksteady product have nailed IPSEC VPN tunnels with VoIP capability
 - almost 100% of our sales employees work remotely
 - all 24x7 level 1 and level 2 support staff
- ACD queue for 24x7 Support to allow remote "agents" to login/logout when available (work at home, flexible hours)
- Voicemail
 - Listen/Retrieve and Respond to remotely (dedicated DID)
 - email and text pager notification (improved responsiveness)

ASTRICON
A conference about Asterisk, the Open Source PBX for Linux and *BSD systems
MULTIMEDIA CONFERENCE 2006-2007



Asterisk improves Rocksteady

- Call forwarding (no need to pay for CLASS service from MaBell)
 - No answer ... On Busy ... Find me, Follow Me ...
 - Remote call forwarding and deactivation
 - Automatic Level 2 rotation (find the person on call...) "Dial H-E-L-P"
- ACD based Receptionist or IVR for main number
 - No need to run around to have others listen for ringing phone when receptionists are out, anyone can login, then answer main #
- Ring multiple extensions (at home, in multiple offices)
- No outside "Conference Bridge Service" (saves \$\$\$)
 - Dynamic MeetMe Rooms
 - Sales, Executive Staff and Engineering conference rooms
- Music on Hold (we licensed royalty free MP3s)



Asterisk PBXes everywhere...

- We have several PBXes in operation ...
 - Primary (pbx.rocksteady.com) **Redhat 9**
 - ~60 VoIP devices registered, ~10-12 remote (IPSEC tunnels)
 - Stand-by (standby-pbx.rocksteady.com) **Fedora Core 2**
 - Also used for Rocksteady product development and all CVS -HEAD builds before promoting to primary; identical hardware (including T100P)
 - **rsync** and home-grown scripts to handle failover (MAC address spoofing, swap development/production trees for config/voicemail)
 - Test (test-pbx.rocksteady.com) **Fedora Core 1**
 - Used for our developers to functional/system/load test and quality assure our Rocksteady product (SIP Proxy functionality)
 - Demo (demo-pbx.rocksteady.com) **Fedora Core 2**
 - Used for field personnel/sales to facilitate demos using VoIP ("triple-play story"); IAX2 connection to pbx.rocksteady.com when online





Thanks are in order...

- Mark Spencer, Digium, Inc.
 - For his vision, support and dedication for all things Asterisk™
 - GPL'ing Asterisk
- Olle E. Johansson & Steven M. Sokol
 - For their dedication put towards Astricon 2004!
- John Todd, VoIP, Inc.
 - Getting me started on some advanced extensions.conf configuration
 - Getting Allison to speak many things...
- Allison Smith, **theivrvoice.com**
 - For her voice
- Everyone on the IRC #asterisk and `asterisk-*@lists.digium.com`
 - For the hours of support, development and insight



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