Converged Communications System Update and Upgrade

Needs Analysis and Plan

Gateway Group

Garrett Myers

April 10, 2006

Gateway Group

www.gg-mi.com

313-882-2249

Project Mission

To select a phone system and installation vendor that will support The Clinic's mission and vision for growth and quality while producing an attractive Return On Investment

Process

1. **Ascertain The Clinic's corporate and Cultural traits** that impact technology decisions including corporate vision, mission, strategic plans, ROI expectations, appetite for technology adoption, etc.
2. **Analyze Current Situation**
   - Phone system, IT network, interconnections to phone company, costs, human support resources, strengths and weaknesses of phone system, facilities, uses and users, interplay with NextGen and other systems.
3. **Look Ahead**
   - **The Clinic's planned growth, changes, systems implementations**
   - **Phone system technologies**
   - **Best in class clinic voice / data technology implementations**
   - **Phone system related technology**
4. **Define Requirements**
5. **Identify capable potential equipment manufacturers and interconnect vendors**
6. **Send RFP to pre-selected vendors**
7. **Select vendor(s), negotiate contract**
8. **Install new phone system**

Return on Investment

1. **<u>Immediate</u> – Reduce total monthly phone costs.**

2. **<u>Incremental</u> – Cost reductions through labor savings.**

3. **<u>Indirect</u> – Improved communications satisfaction – patients, employees, partners, vendors, family.**

Analyzed

- All related contracts
- All related monthly bills
- Current phone hardware
- Monthly phone activity
- NextGen telephony interface applications
- Call Center operations
- WAN and inter-facility interconnects
- WAN loading and available capacity
- Relationships with key vendors
- Mission, value, philosophy
- Appetite for technology adoption
- Organizational structure
- Phone extension assignments
- Call center performance reports

Analysis – Cultural

- The Clinic's is judiciously progressive with technology applications.
- Focus is on taking care of patients.
- Revenue source is primarily billable MD visits.
- Still recovering from NextGen implementation.
- Quality of work / life experience of employees is important.
- Corporate – composed of many units with distinctive personalities and processes.
- Forward Looking – competitive, anticipating changes in health care industry.

Analysis – Phone System

- Mix of equipment – mostly obsolete key systems, ACD's, voice messaging, phones.
- Many situations at maximum capacity, difficult to expand.
- Relies heavily on Centrex switching.
- 560 phones, 170 lines for fax, credit cards, time clock, Smart Talk, Centigram, etc.
- Generally provides adequate functionality.
- Reporting and analysis is weak.

Analysis – Interconnect

- Primarily Centrex through three COs
- 764 Centrex lines with SBC
- Local phone service with SBC
- Long Distance with MCI
- Approximately $25K per month total

- WAN, Internet Connection, SBC T1s DS-3 and ISDNs
- Approximately $6K per month.

Analysis – WAN (IP) network

- WAN network interconnecting nine facilities
- WAN currently has adequate capacity for VoIP telephone traffic between facilities
- Some equipment upgrades required for consistent VoIP quality
- WAN can be partitioned to give priority to VoIP traffic
- We're recommending adding capacity to most facilities to leave plenty of WAN capacity for EMR and other future traffic.

Associated Observations

- Significant time reductions possible in call center operations by improving screen displays, automating sequences and screen pops.
- Instant Messaging may solve one of the most pervasive problems, finding people and informing of a call waiting while on a call.
- Portable WiFi phones have significant time saving potential, especially between doctor / nurse teams.

Summary

- Reasonable expectations
  - Total monthly telecom cost reduction may be possible even with new equipment.
  - Implementation will be much easier than NextGen.
  - Adequate capacity for all anticipated growth.
  - Improved phone system performance.
  - Can accommodate new technology and processes.
  - Will empower Practice Managers to better manage and improve phone operations.
  - Improved doctor / nurse team efficiency.
  - Significant incremental cost reduction potential.
  - Improved phone satisfaction all around.

New Phone System

Technology Facilitated Change

Not

Technology Forced Change!

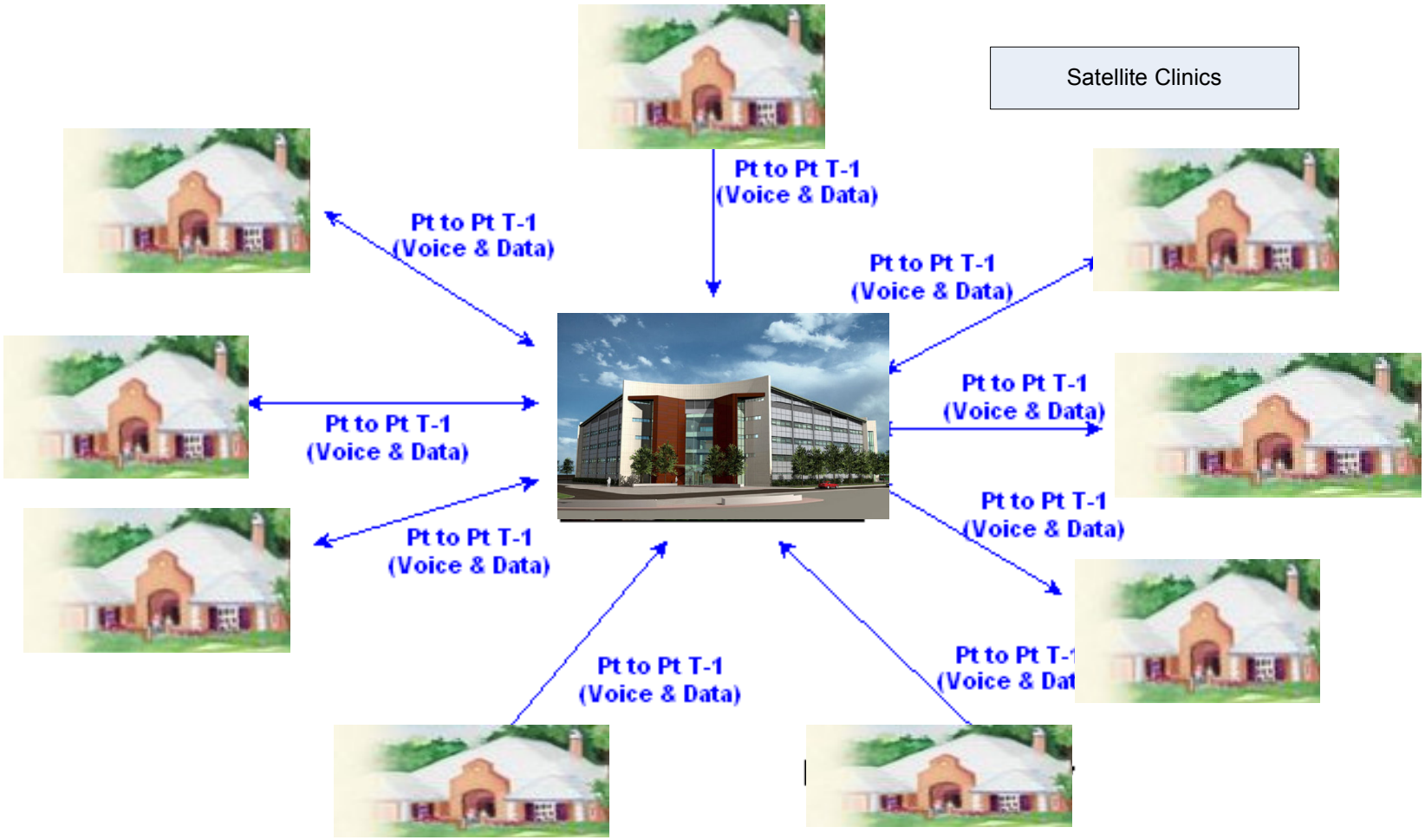
Recommendations – System Level

- Strengthen The Clinic's WAN to accommodate VoIP traffic between larger facilities.
- Upgrade WAN to handle VoIP traffic and assure Quality Of Service for phone traffic.
- Install a centralized / decentralized Call Management System.
  - Decentralized Call Management Systems with Centralized reporting and oversight
  - Internal calls stay internal
- Replace most Centrex lines with PRI trunk lines directly to satellite facility Call Management Systems.

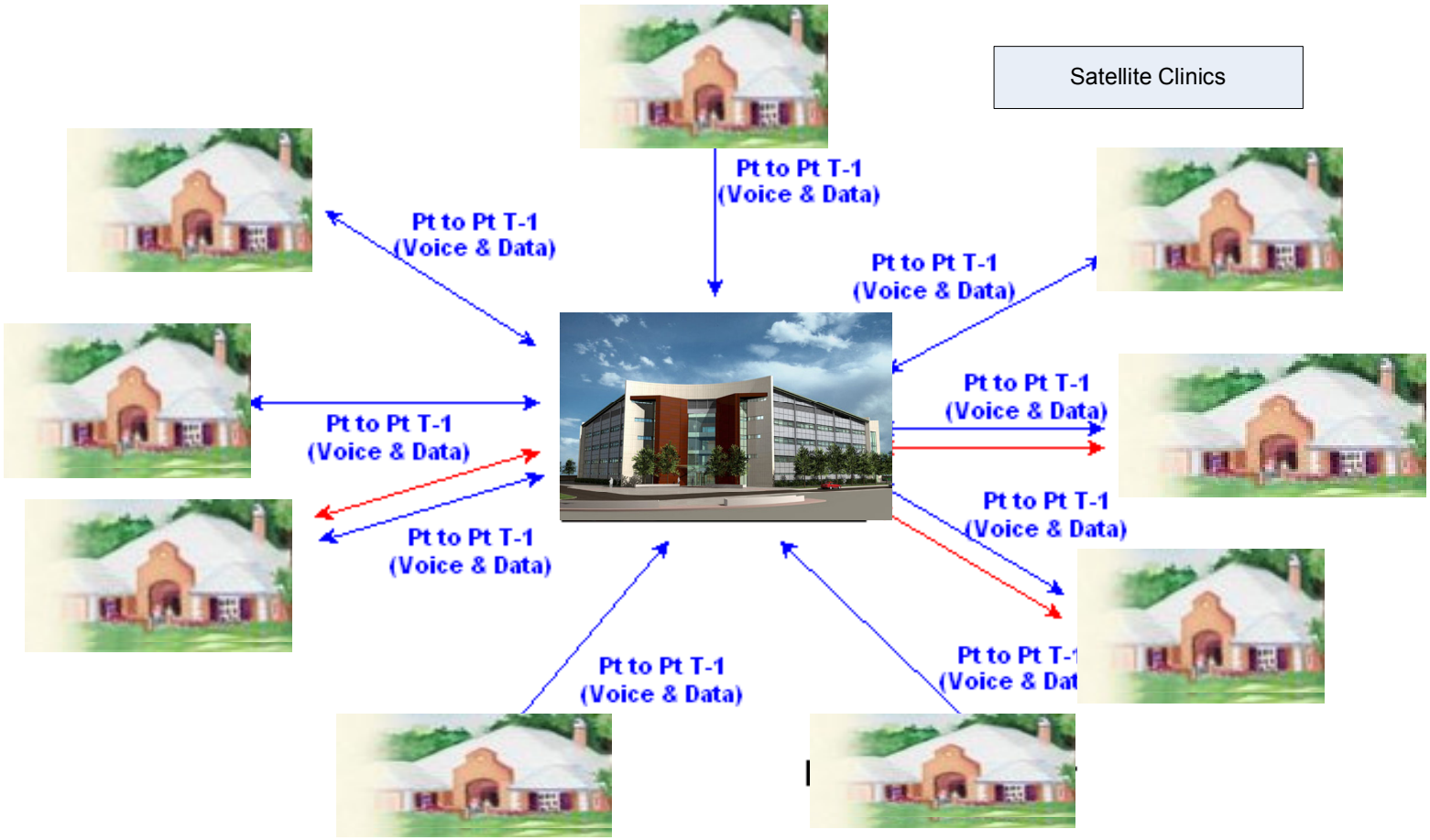
Recommendations – Equipment Level

- 100% VoIP system.
- Install VoIP Call Management Systems at HQ and larger satellite facilities.
- Select 4-6 different level phones as The Clinic's standard choices.
- Begin WiFi implementation at one significant facility or group.

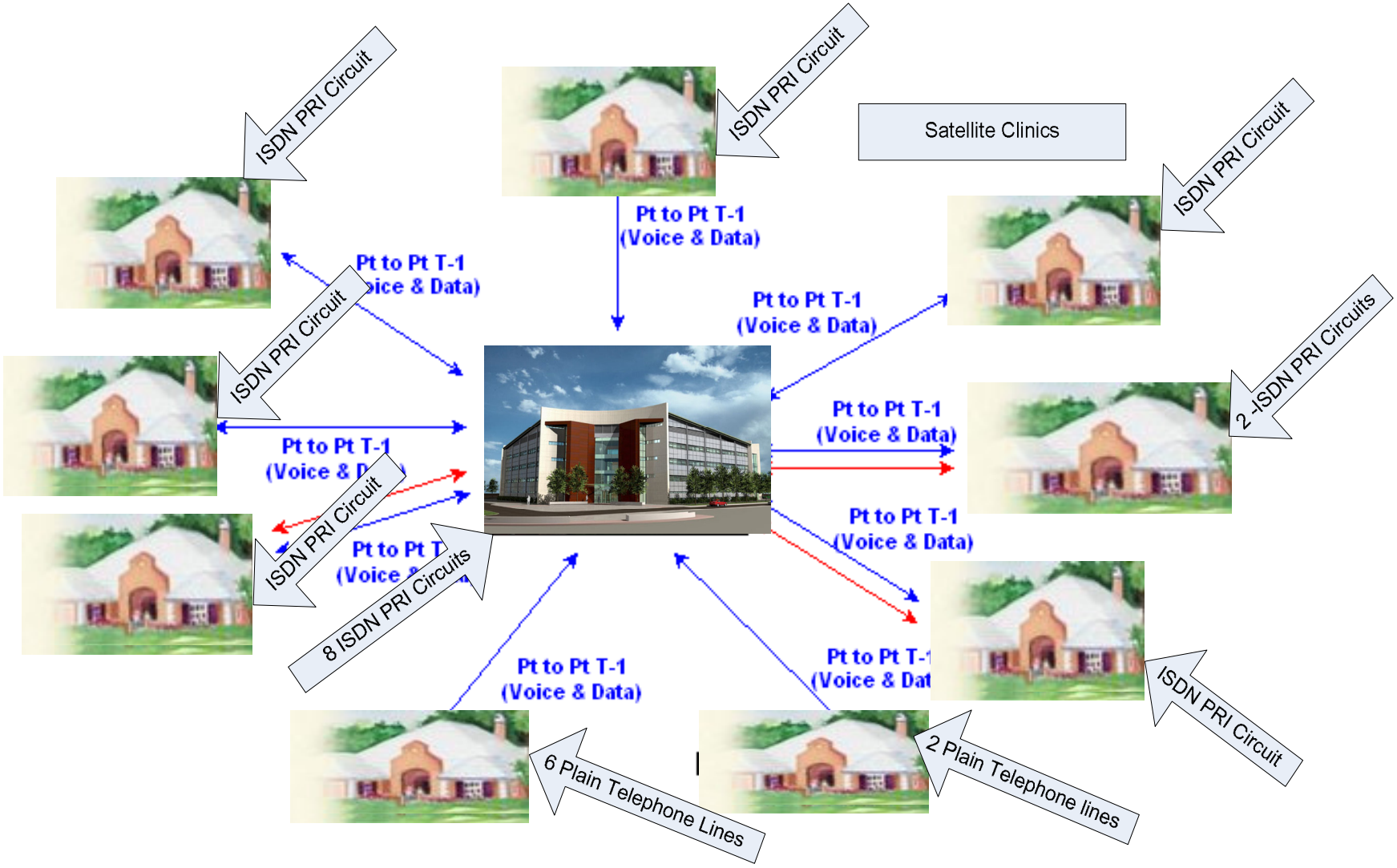
The Clinic's Current Data Network



A few capacity additions will need to be made to the Data Network



Then telephone lines are added



Configuration Summary

- All locations should be survivable
  - Be able to take patient calls even if the network is down
- Locations that could be "stand-alone" due to volume
  - Satellite clinic A
  - Satellite clinic B
- Current Centrex service should be replaced with ISDN PRI Circuits
  - Direct dial numbers
  - Caller ID
  - Lower Cost

Configuration Summary

- **All locations should be able to dial another location by dialing the extension**
  - 4 or 5 digital dialing
- **All locations should be on the same voice mail system**
  - Distibution lists
  - 100% communication
- **All locations should be able to "help" each other if needed**
  - Due to high volume
  - Due to short staffing
  - Due to emergency or disaster

Recommendations – Key capabilities

- Easily added trunk and station lines.
- Full common feature set (park, transfer, hold, conference, etc.).
- Enterprise Voice Mail capability.
- Variable and programmable announcement (off hours, busy, hold, etc.).
- Call monitoring and recording capability for Call Centers.
- SQL database call reporting to allow comprehensive reporting and analysis with standard software (e.g. Crystal Reports).
- Real-time monitoring of system performance, problems.

Recommendations – Operational Level

- Maintain consistent equipment and version upgrades for all center for consistent training and support
- Train and support Practice Managers or their designee to be competent in programming and monitoring their Call Management Systems
- Train one or two people at HQ to be fluent in Call Management System programming, reporting and maintenance
- Require satellite Call Management Systems to report data to central database to enable global monitoring, reporting and analysis.
- Contract with Enterprise Network Group to monitor carrier costs and contracts quarterly.

VoIP – What & Why?

- Voice over Internet Protocol.
- Open architecture – lower cost, easy interface.
- Extremely efficient way to transmit phone traffic
  - Uses capacity only when a call is in place, cuts out silences
  - Shares one line for ten or tens of thousands of simultaneous calls
- Equal sound quality with analog phone lines
- Shares WAN connectivity – reduces costs
- Interfaces easily with computers and software programs like telephone recording
- Rapidly becoming the world standard for voice communications

VoIP Phones

Telephones from Cisco, Inc.

VoIP- Who

- Since 2003, the predominate enterprise telephony technology.
- All the large telecom equipment manufacturers have focused their development and resources on VoIP.
  - Avaya (ex Lucent)
  - Cisco
  - Mitel
  - Nortel
- Most major corporations are rapidly switching to VoIP interconnect between facilities
  - Bank of America – 175,000 telephones
  - Boeing Corp. – 55,000 telephones
  - Kraft – 400 locations in North America
- Most international phone traffic is now being carried as VoIP
- Extensively deployed in hospitals, clinics and high security organizations.

VoIP – Why?

- Significant cost reductions.
  - Reduced telco bills
    - Cost savings in sharing lines for voice & data
  - Reduced wiring.
    - Telephone & computer over one cable
  - Faster, cheaper changes and additions.
    - Simply unplug telephones and plug them in elsewhere
- Improved Connections with Remote Workers.
- One Line for Voice and Data.
- Unified messaging, voice/data integration

VoIP - When

- Every major telephony manufacturer has refocused its R&D and product development on VoIP products.
- Cisco's entry in telephony market has added a high-pressure competitor to the mix.
- IP telephony services will grow from $4.2 billion in 2002 to $21.1 billion by 2006 according to the Gartner Group.

WiFi

- Adds internal mobility to The Clinic's WAN.
  - Always-on, high bandwidth connection to The Clinic's network and Internet.
- Can be fully secured.
- Enables:
  - WiFi phones, badge phones.
  - Notebook computers.
  - WiFi enabled PDA’s and tablet computers.
  - Moveable monitoring and security cameras.
  - Asset location monitoring system (where’s the

Budgetary estimates

- Current phone company and interconnect bills can be reduced $5k to $10K per month.
- Network upgrades and phone system wiring infrastructure $100K to $150K.
- Phone equipment will range from $500 to $800 per port. Average $650 x 600 phones = $390K.
- VM, UM, ACD and reporting system will add approximately $100K
- WiFi infrastructure in all facilities and 100 Wifi phones will add approximately $175K
- Annual service and upgrade contracts range from 4% to 10% of purchase price.

Ancillary technology and capabilities

- Capabilities and technology that are NOT part of upcoming phone system purchase, but the system must be ready for;
  - Computer Telephony Interface (CTI)
  - IVR (Interactive Voice Response)
  - Video conferencing
  - Unified Messaging
  - Asset locator (uses WiFi network)
  - Instant Messaging.
  - Speech Recognition, Text to Speech

Typical commercial quality WiFi Phone

SpectraLink NetLink e340 Wireless Telephone

Designed specifically for busy office environment. This compact handset offers features and accessories that address the needs of a variety of businesses at an attractive price.

Weighing 4.2 ounces, it is unobtrusive and easy to for any mobile worker to carry, and it can be operated with only one hand.

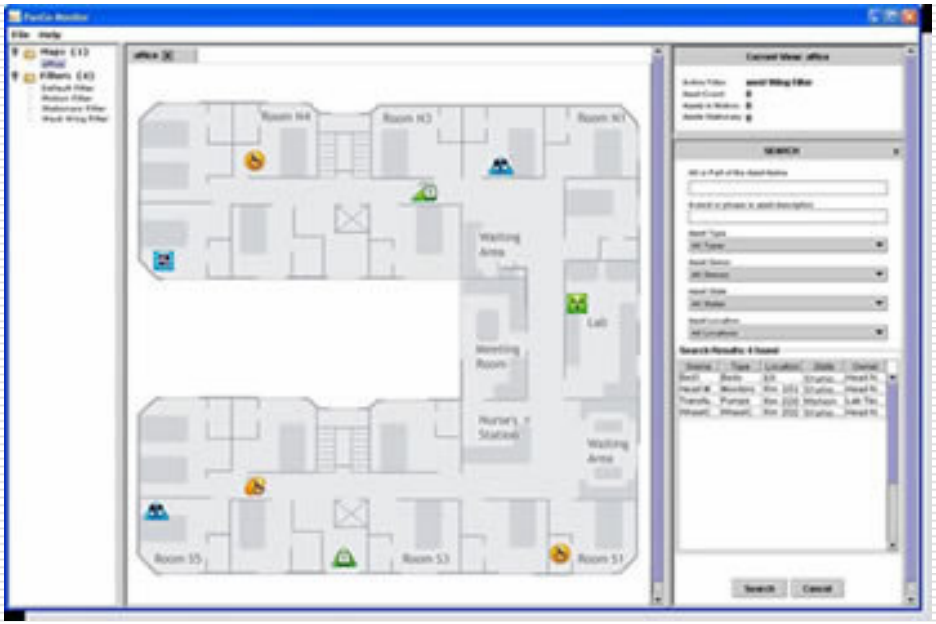
It supports calling party, name display, message waiting indication, multiple line appearances, and other advanced features.

Badge Phones

- WiFi connected
- Full capability telephone
- Voice Recognition interaction
- Intercom
- Intelligent routing

Asset Locator System

- Uses WiFi network
- Software shows location of assets in real time.
- LANtag attaches to asset.



Interactive Voice Response System

- Automated information exchange.
- Connects to NextGen (through filters) et al.
- 7/24 access.
- Speech recognition is possible.
- Verify, cancel, change appointment.
- Provider access to billing records.
- Health information.
- Test results.
- Request forms (by mail, e-mail or fax).

Health Care Communications Technology Best Practices - Marshfield Clinic

- Marshfield, Wisconsin
  - 39 locations throughout North central Wisconsin.
  - 730 Physician Specialists.
  - 5800Support personnel.
  - 200 software developers.
  - Multiple call centers with overflow.
  - Health Plan.
- Technical innovations & applications
  - Digital Imaging.
  - EMR.
  - Portable Tablets – Chartless by 2006.
  - IVR – Patient and insurance providers time saver.
  - Web Chat (Reduced phone calls from 15k to 1.4 K / mo).
  - Patient voice repository – reduce doctor time per patient up to 4 minutes.
  - Provide health and drug library on-line
  - Unified Messaging
  - Digital Echocardiography Network

Major Voice / Data trends in Healthcare

- Real time access to information.
- Move the data to the people, not vice versa.
- Multiple communications choices (voice, web, IVR, e-mail, web chat).
- Use "Technology Intellect" (rules and guide for cost management, prescription conflicts, etc.).

Similar phone system switchover – Aspen Valley Hospital

- 500 phones, 350 at hospital, 150 at 8 clinics.
- $20K/ month for voice and data lines.
- Old system lacked functionality, capacity.
- Couldn't forward calls, do conference calls easily, etc.
- Installed a Cisco IP
- Immediate and tangible ROI, 70% annual reduction projected. Line charges 50%.
- Two days to transfer from old to new system.
- Increased mobility
- System is much easier to administer
- Proven disaster recovery and redundancy capabilities are critical.

Vendor selection Process

1. Identify viable telecom equipment makers.
2. Request for information sent to their qualified interconnect VARs within 200 miles of Clinic HQ.
3. Request For Proposal sent to 5-10 of the strongest candidates.
4. Group bidders meeting at Clinic HQ.
5. Questions allowed for a few days.
6. 10 days to submit proposal.
7. Proposals scored on a range of weighted criteria
8. 3-4 vendors invited to present their solution and capabilities.
9. Select one within a couple of weeks.
10. Negotiate contract, terms, schedule.

Typical Interconnect Vendor Candidate

- "General Contractor";
  - Network upgrade and preparation.
  - Equipment spec, procure, prepare.
  - System installation.
  - Training.
  - Operational and technical support.
  - Interconnect with phone companies.
  - Continuing support and service.
- Qualifications;
  - Track record with similar and larger installations using VoIP technology.
  - Technicians fully certified on all key equipment and software.
  - Most capabilities on staff.
  - Financially sound.

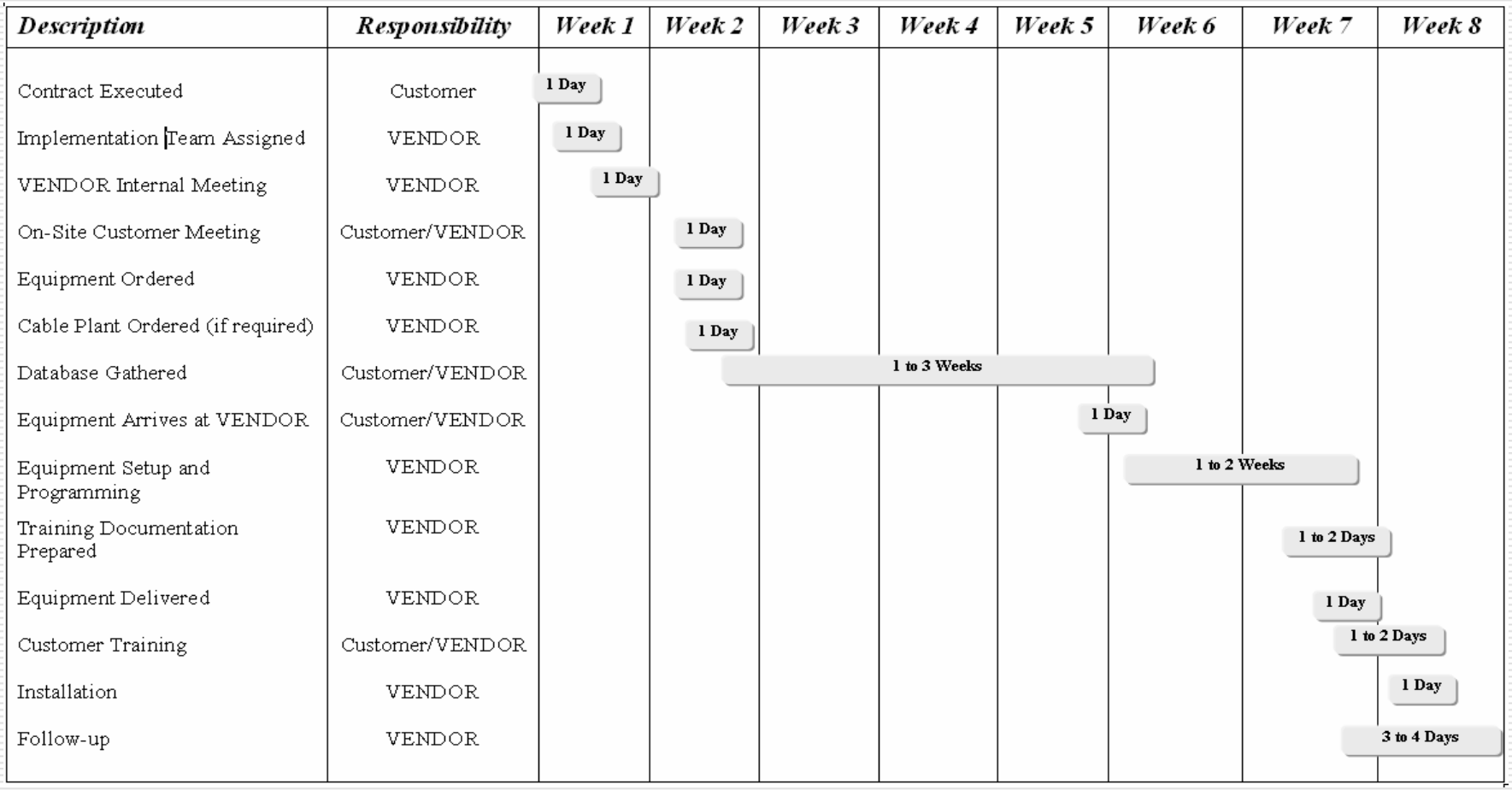
Implementation

1. Infrastructure for new system will be installed without interrupting current phone system.
2. New phones can be installed beside existing phones.
3. Switchover will be staged by facility and/or group.
4. Old phone equipment will be removed after new is operational
5. Advanced features can be engaged after adjusting to essential features.

TimeLine

- Prepare RFP, Identify bidders – Dec ’05.
- Launch RFP, review and selection – Jan ’06.
- Contract for new phone system, interconnect – Early Feb ’06.
- New System switchover start early – mid Apr ’06.

Typical VoIP Telecom Installation Schedule



Description	Responsibility	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Contract Executed	Customer	1 Day							
Implementation Team Assigned	VENDOR	1 Day							
VENDOR Internal Meeting	VENDOR	1 Day							
On-Site Customer Meeting	Customer/VENDOR		1 Day						
Equipment Ordered	VENDOR		1 Day						
Cable Plant Ordered (if required)	VENDOR		1 Day						
Database Gathered	Customer/VENDOR			1 to 3 Weeks					
Equipment Arrives at VENDOR	Customer/VENDOR					1 Day			
Equipment Setup and Programming	VENDOR						1 to 2 Weeks		
Training Documentation Prepared	VENDOR							1 to 2 Days	
Equipment Delivered	VENDOR							1 Day	
Customer Training	Customer/VENDOR							1 to 2 Days	
Installation	VENDOR								1 Day
Follow-up	VENDOR								3 to 4 Days

Terminology

- ACD – Automated Call Distribution
- Interconnect – Connect between corporate phone systems and public phone system
- PBX – Private Business Exchange (switchboard or automated switchboard)
- DID – Direct Inbound Dialing
- IP – Internet Protocol
- VoIP – Voice Over Internet Protocol which really means Voice over SBC'c LAN?WAN Infrastructure
- WAN – Wide Area Network
- SIP – Session Initiation Protocol (an open standard for VoIP phone interoperability)
- Screen Pop – Caller ID or other event forces automatic computer screen appearance.
- IVR – Interactive Voice Response system – interconnects to computer databases and programs
- WiFi – Wireless Fidelity a wireless LAN or WAN
- LAN – Local Area Network
- PSTN – Public Switched Phone Network
- PRI – Primary Rate ISDN (equivalent to a T1) a "trunk line to the telephone company consisting of 23 simultaneous calls.
- Centrex – phone lines with a PBX at the phone company CO. (current system utilized)
- CO – Central Office – where all the phone lines come together and get switched.
- DS3 – Telephone company circuit consisting of 28 T-1 Circuits

Converged Communications System Update and Upgrade

Needs Analysis and Plan

END

Gateway Group

Garrett Myers

April 10, 2006

Gateway Group
www.gg-mi.com
313-882-2249