



Planning for IP-PBX Implementations, Process and the Converged Organization Lessons from the Trenches

Session 1 of 2

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Introductions and Firm Background

Seventh
VoiceCon!

PlanNet Consulting

- Independent communications technology consulting
 - Voice, Data, Video, Cabling, A/V, Security
- Project consulting and services for a wide range of enterprises
- Frequent presenter at industry conferences
- Numerous articles published in BCR

Ken Agress

- 17 years communications experience
- Extensive network, performance experience

Craig Burness

- 20 years in the communications industry
- Numerous voice and contact center engagements



Session Goals

- **Share real world experiences from multiple implementations**
- **Offer "pearls and nuggets" that may save you time**
- **Provide insight on planning processes to help avoid surprises and common pitfalls**
- **Address defining requirements, the design process, and "going to market"**
- **Discuss the challenges of converging your support organizations**

Before You Start Planning





Getting Your Approach Right

- **Most organizations view IP Telephony implementations in a similar way**
 - Generally viewed as a hardware/software upgrade or platform replacement
 - Plans are designed to get the system up and running as quickly as is possible
 - Often approached as a "box replacement"
- **To make your plans more successful, take a broader approach**
 - IPT implementations should be a carefully choreographed interaction of people, processes, tools, and services
 - Successful implementations focus more on the services the new system will provide than on system replacement
 - With IP Telephony your "world" is changing; don't overlook the organizational, support, and process issues



Your Master Plan Says...

- **If your organization doesn't have a master plan for telecommunications then consider preparing one**
 - Central repository for current needs, future expectations, and guidelines
 - Security requirements and general postures
 - Expected service levels and delivery requirements, infrastructure requirements, and standards
 - Develop guidelines for evaluating new/changing technologies
- **If you have a master plan, does it need updating?**
 - Does it include IP Telephony?
 - Does it address Unified Messaging?
 - Has it considered Unified Communications?
 - Are cabling and wireless requirements up to date?



That's Only Cat 3?

- **Gather information on your environment early**
 - Physical topology
 - Services and applications
 - Device inventory
 - User locations
 - Cable plant and routing
 - Expansion capabilities
- **Know your usage patterns**
 - Network utilization and cycles
 - Device loading and utilization
 - Accounting, billing, business cycles
 - Call reporting and accounting
 - Communicate with departments to enlist support and gain access to users



Continuous Design

- **Organizations often set their design once and don't adapt over the life of the project**
 - Likely to force compromises
 - Can create dissatisfaction with the system
- **Be prepared for design to shift to...**
 - Accommodate required features properly
 - Support integration with specific applications
 - Address reliability requirements
 - Encompass regulatory requirements
- **Set your design with appropriate flexibility**
 - Rough cut (costs are -25% to +75% accurate)
 - Initial Design (-10% to +25% accurate)
 - Implemented Design (-5% to +10% accurate)
 - Don't compromise core functionality to stick with a design



Why Not Let The Integrator Set The Design?

- **Integrators are becoming more and more capable and their designs are getting better**
- **However, keep in mind...**
 - You know your network better than the integrator
 - You know your users better than the integrator
 - Integrators can sometimes suffer from "Boilerplate-itis"
- **The integrator will be a key part of your design team but you need to retain control**
- **Beyond the integrator, look to involve the manufacturer in the design review and approval**
- **Delegate where appropriate but verify and retain control**
- **Remember, you get to live with the system!**



I Found This Template...

- **Organizations often look for templates or plans online, from integrators, or colleagues**
- **Use templates and plans as guidelines or tools**
- **These are great tools to start with if you remember...**
 - Your implementation is unlikely to be an exact duplicate of the project you're looking at
 - Your constraints may be wildly different than the project you've found
 - Your resource availability and talent may not match the project you've found
- **Plan on the 80/20 rule: Remember that 20% of what you need to do is likely to take 80% of the time**

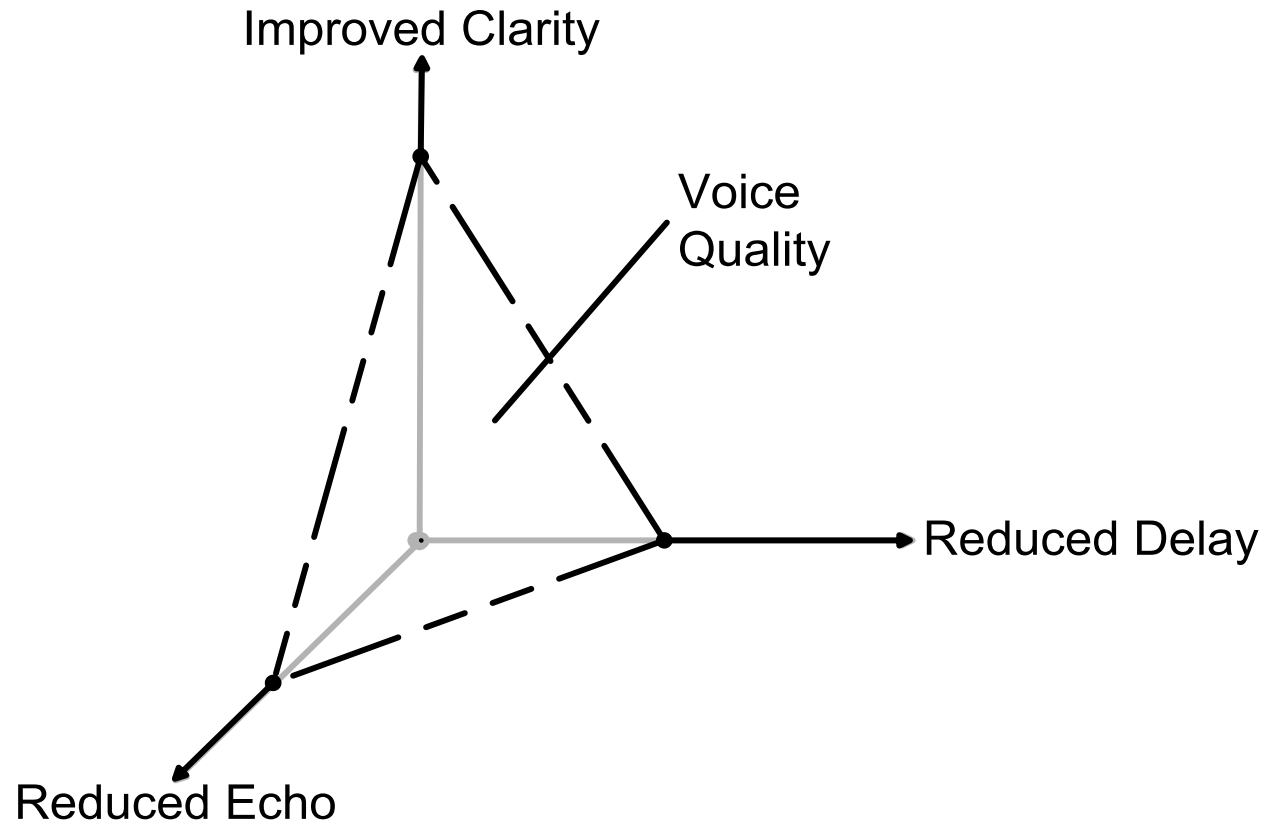


Focus On Quality Everywhere

- **Fact: Converged networks are simple**
- **Fact: Supporting converged networks may not be**
- **Set a goal of delivering a quality voice and data experience as a key part of your project plan**
 - Your staff needs to understand how you'll measure this
 - Your staff needs education on how to implement this
 - Your organization needs tools to monitor, report, and assist in troubleshooting this
 - Your carriers and business partners may have a significant impact on implementing this
 - If Quality of Service can't be supported end-to-end, you're going to miss targets at some point
 - Quality services are dependant on an intersection of parameters you need to prepare for



Delivering Quality





Gauge Your Talent

- **It's likely that this is the first time you've taken on an IP Telephony project**
- **You need to understand what you can expect from your resources**
 - Are they comfortable mapping call flows and any impacts?
 - Do they understand sources of echo and how to resolve it?
 - Are they familiar with "the other side" of the IP Telephony?
- **Either assess your existing skill set or have someone else assist you**
- **Review past plans to set appropriate expectations for how you'll load resources**



Don't Buy The "Fluff"

- **Things we've heard integrators say**
 - "It works out of the box"
 - "All of the features you need are there"
 - "This is easier to install than a traditional PBX"
 - "Voice is just another application"
- **All of the above are both true and false**
 - Understand what you need first
 - Then verify that you're getting what you need
 - Then confirm it with the users
- **Too often, organizations don't ask sufficient questions or challenge answers from the manufacturer/integrator**



Decide On A Pilot Early

- **"Do I have to do a pilot?" is one of the most common questions...**
- **Generally speaking, "Yes"**
 - Pilots can create "enthusiastic ambassadors"
 - Pilots can give you the chance to really verify that you're getting the right system
 - Pilots can give you the chance to test new processes and procedures
 - Pilots can help to minimize risks
- **You can succeed without a pilot but you may have more problems at cutover and beyond**



Who Should Be On The Team?

The Obvious

- Voice Support Groups
- Data Support Groups
- Contact Center
- Executive Sponsor
- Key Users

The Not-So-Obvious

- Human Resources
(Communication)
- Procurement Dept.
(Contracts, PO's, etc.)
- Training Department
- Facilities / Real Estate
- Security Group
- Compliance Group

Building Your Plan





Questions To Set The Stage

- **Is this a Greenfield deployment or system replacement?**
- **Do you need to integrate with a "legacy" PBX and/or other systems?**
- **Do you have a reason to go "hybrid," or will this be "pure" IP Telephony?**
- **Will your organization benefit from centralized or distributed call control?**
- **Are you addressing one site or many?**
- **How many implementation phases make sense?**
- **Are there critical external drivers that you need to incorporate into your plan?**
- **Are there key milestones you can identify and share?**



When Writing Your Plan

- **Describe how success will be defined and measured**
- **Document known expectations that should be accommodated**
- **Describe expectations that may need to be modified**
- **Discuss the importance of "top-to-bottom training" to get early buy-in**
- **Build a communications plan...**
 - When will communities of interest be involved?
 - When will you provide project updates to review direction and get feedback?
 - Who has the final vote?



Handle With Care

- **PBX decisions can be surprisingly emotional or heated**
- **Lack of interest and enthusiasm (early on) can turn into real issues later**
- **Different people/groups will approach the project in different ways**
- **Deal with any baggage...**
 - Involve users early and often (particularly those who could have a negative impact)
 - Emphasize that this is not a voice or a data project; it's both
 - Get key stakeholders to understand that early input is the only way to ensure required features
 - Document expectations and requirements and verify accuracy



Clearly Set The Stage

- **Plan for more than a 1:1 switch replacement**
 - You want a system that works long-term
 - Consolidate or distribute where it makes sense
 - Ask people to think of new or enhanced services
- **Ensure that your plan is more than a Gantt chart with resource assignments**
 - Review how each technology discipline conducts their planning
 - Work with team leads to develop a common planning approach
 - Don't have team members focus solely on "their" specialty
 - Prepare everyone for continuous planning and design



Pre-Define Your Requirements

- **Describe why you're launching the project**
- **Describe the business needs you know about**
- **Define (and confirm) the best way to determine the requirements you don't know about**
 - Will a survey work?
 - Are interviews or facilitated sessions more appropriate?
 - Do you need to have observers watch key users at work?
- **State known growth expectations**



Take History Into Account

- **Review what you know about the features and functions currently in use**
 - Can you refer back to an old RFP?
 - Do you have help desk records that you can review?
 - Were there smaller projects to address "one off" requirements?
- **Evaluate "what's missing"**
 - Where can you expect 802.11 networks to be used?
 - What type of cellular integration should you expect?
 - How could your organization benefit from Unified Communications?
 - Do you have to address telecommuting?
 - Where has your current environment (voice or data) been problematic?
- **Try to understand what users don't like or want...**



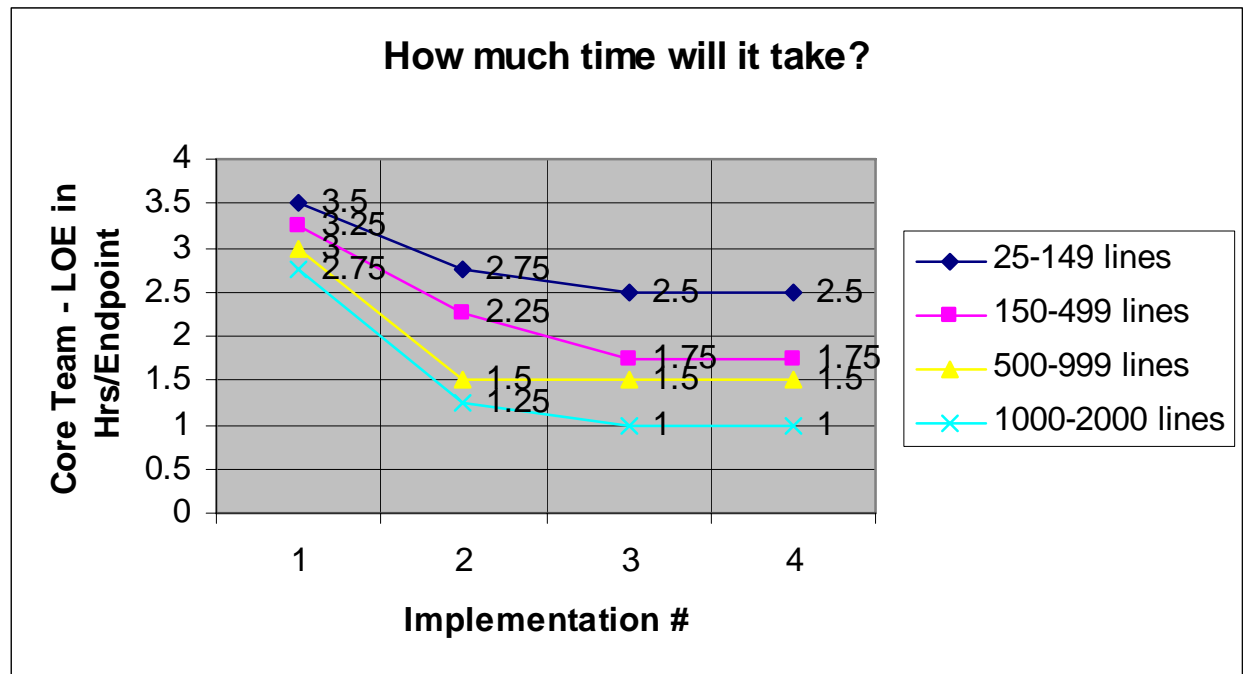
Assess Your Environment

- **Conduct a data network assessment**
 - Look at hardware capabilities
 - Evaluate software versions and features
 - Examine support issues and ability
 - Closely examine utilization and traffic types
 - Understand WAN technology and QoS support
- **Conduct a voice network assessment**
 - Inventory existing hardware, software, lines, trunks...
 - Know your internal calling patterns
 - Understand your external calling patterns
 - Try to account for transfers and conferences
 - Combine assessment results to evaluate overall environment
- **Act on what you find!**

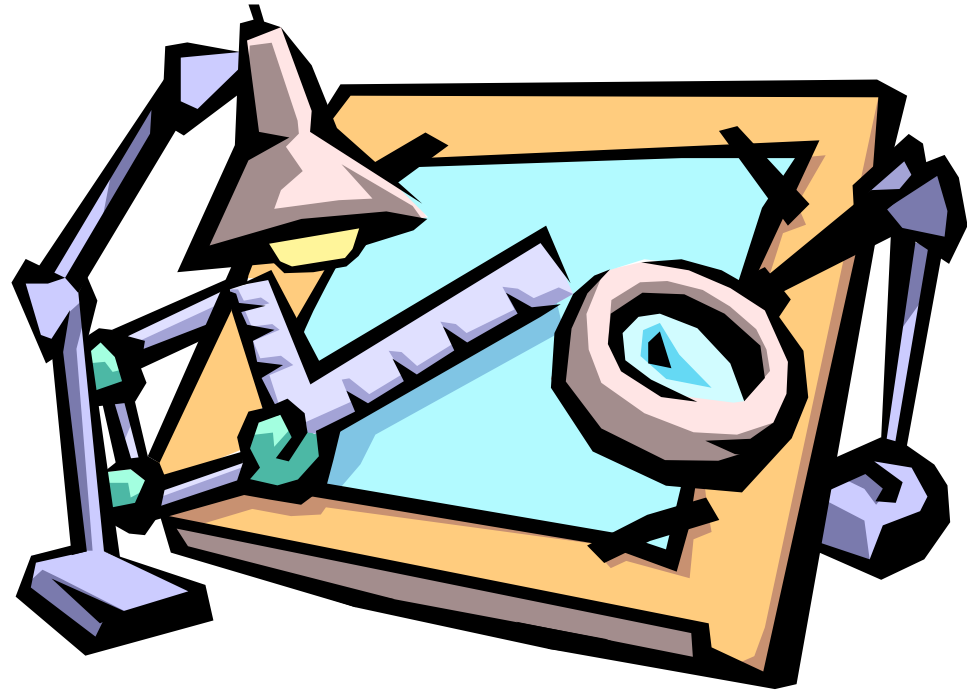


Be Realistic About Time

- **The Hype:** You can install an IP-PBX rapidly
- **The Fact:** You can install an IP-PBX rapidly
- **The Reality:** Unless you've done it before, don't install an IP-PBX rapidly...



Define Your Design





What Not To Do

- **Common mistakes we've seen clients make:**
 - Focused on trunk ports
 - Fixated on station counts
 - Failed to understand call flows
 - Designed with one site in mind
 - Did not include management tools
 - Underestimated training requirements
- **Remember, with IP Telephony you can question almost anything (and sometimes you should)**
- **Even if this isn't "Greenfield," you probably should address some design areas as though they were**



Defining Requirements

Challenges:

- **Users tend to define required features in terms of buttons**
- **Typically, first cuts at feature definitions include current “vendor speak”**
- **Many users are better at describing what they don’t want...**
- **Including the right people can be challenging**
- **People providing input either don't stretch at all, or stretch way too far**



Define Requirements By Function

- **Instead of "I need a button..." or "I want twinning"**
 - "I need my cell phone to ring when my desk phone rings"
 - "I need to have calls roll to my cell phone before going to voice mail"
 - "I want to complete a transfer in no more than three key presses"
 - "I need to be able to tell my boss he has a call without the other party hearing me"
- **Instead of "How many parties can I conference?"**
 - "Can I conference seven different calls?"
 - "Can I drop the third person I added to the call?"
 - "I need keys that change based on what I'm doing"
- **Define features as Must Have, Nice to Have, and Don't Care**



Identify Integration Needs

- **Work hard to understand what you'll need to tie together**
 - Legacy peripherals or systems
 - Connections requiring QSIG
 - Integration with corporate CRM/ERP packages
 - Special trunking requirements with carriers
 - Networking for voice mail platforms (VPIM)
- **Integration needs and protocols are often left out of the RFP and "discovered" as the integrator analyzes the environment**
- **Integration issues can make or break some deployments**
- **Verify that your inventory of equipment and connections reflects your integration needs (and weight them accordingly)**



Do You Require SIP?

- **SIP = Session Initiation Protocol**
 - IETF standard for call signaling
 - Standards expanded to provide presence capabilities
- **What SIP buys you:**
 - Ability to use any SIP phone with your system (in theory)
 - Ability to accept SIP connections from carriers or partners
 - De-coupling of hardware at server and desktop enables new applications
- **What SIP may not buy you:**
 - SIP standards define primitives; not calling features
 - Manufacturers use primitives to build calling features
 - Interoperability of phones and servers guaranteed at a minimum level; is this enough?
 - Standards approach may create "standard" vulnerabilities
- **SIP is useful and will grow more useful over time but don't assume that it's everything you hear...**



Address "Phone Envy"

- **Many TDM environments employ a range of handsets**
- **When you transition to IP Telephony...**
 - Will some users lose features?
 - Will there be one standard phone? Three?
 - Are the phones available appropriate for your work spaces?
- **Get agreement on handset types, features, and standards now**
 - Provides for more realistic RFP specifications
 - Helps communicate standards to users up front
 - Ensures that standards will meet user requirements
 - Reduces cost variability, prevents "day two" upgrades
- **Handsets are typically 25-35% of the total cost!**



Set Realistic Reliability Goals

- **First define what these terms mean to you**
 - Reliability: Measure of how dependable a system is once you actually use it (Newton's Telecom Dictionary)
 - Availability: The amount of time a computer/telephone system is available for processing transactions or telephone calls (Newton's Telecom Dictionary)
- **Is your system reliable if...**
 - Inbound calls succeed but outbound calls fail?
 - Inbound and outbound calls succeed but voice mail is not working?
 - Users can leave voice messages but they can't be retrieved using the Unified Messaging system?
- **Understand that you can't meet a target you can't measure**
 - Budget for network management tools
 - Verify that you understand the service levels you're expected to meet
- **Remember that higher degrees of reliability can add significant cost**



Do I Really
Need...

Availability Target	Total Downtime Per Year
99.9999%	32 Seconds
99.999%	5 Minutes 15 Seconds
99.99%	52 Minutes 36 Seconds
99.95%	4 Hours 23 Minutes
99.9%	8 Hours 46 Minutes
99.5%	1 Day 19 Hours 48 Minutes
99.0%	3 Days 15 Hours 40 Minutes



When You Consider Reliability

- **Don't forget about power!**
 - PoE for phones requires planning power to switches
 - Set realistic emergency power requirements
 - Establish a "Power Outage Plan" and communicate it to users
 - Don't forget that power = heat!
- **You may need to monitor server processes**
 - Be ready to ask how this will be accomplished
 - Be prepared to customize your management system
 - Don't forget that multipurpose servers can introduce unexpected issues
- **Understand what you'll lose...**
 - Failures often isolate individual locations or services
 - Ask questions about what will still run and under what circumstances
 - Be prepared to adjust the design or user expectations



Will Reliability Be End-to-end?

- **You can build a reliable data network and voice system and still have issues**
 - Carefully scrutinize service level agreements with carriers
 - Do you have the right Quality of Service support?
 - Do you need to add higher-quality connections?
 - Are your SLA's common across all locations?
- **Be very careful about the Internet!**
 - Internet-based IP Telephony can work (for certain applications)
 - Your deployment will face different challenges
 - Understand your Internet usage
 - Understand firewall QoS capabilities and limitations
 - Understand VPN capabilities and limitations
- **For partner networks, treat them like the Internet**
 - Lack of control
 - Limited visibility



Real Weight Of Voice

Codec Characteristics				
Standard	Total Payload	Payload/ Packet (Bytes)	Bandwidth Used (Ethernet)	Maximum MOS
G.711	64Kbps	160	87.2 Kbps	4.4
G.726	32 or 24 Kbps	80 or 60	55.2 Kbps or 47.2 Kbps	4.2
G.728	16Kbps	60	31.5 Kbps	4.2
G.729a	8Kbps	20	31.2 Kbps	4.2
G.723.1	6.3 and 5.3Kbps	24 or 20	21.9 Kbps or 20.8 Kbps	4.0 or 3.5



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If a Tree Falls...

- **Now that you've defined your reliability and availability requirements, make sure you can measure them!**
- **Many network management systems...**
 - Gather five minute averages with a single one second peak
 - May have limited visibility without additional devices or configuration
 - Are converted voice/data applications that may not address convergence completely
- **Budget for management systems up front!**
 - Minimal Requirements: \$25-50,000
 - Medium Requirements: \$50-125,000
 - Heavy Requirements: \$125,000+



Management System Considerations

- **Define the audience for the systems first**
 - Technical users?
 - Line managers?
 - Executives?
 - Customers?
- **Define what you want to measure and report on first**
 - Are network utilization and performance parameters enough?
 - Do you need (near real-time) per-call or per-flow data?
 - Do you want information on application distribution?
 - What segments or subnets need to be monitored?
- **Define what the system is for**
 - Element management?
 - Alert/alarm handling?
 - Usage reporting and trend analysis?
 - Server monitoring?



Confirm Your Requirements

- **Remember to involve your “communities of interest” in the feature definition**
 - Be sure to cover "power users" as thoroughly as possible
 - Be prepared to weight requirements based upon the group
 - Don't stop after collecting requirements; verify what you've captured is accurate
- **Talk to key executives about "vision" requirements**
 - Understand business directions to ensure ability to expand
 - Try to translate these requirements into integration needs and required features
- **Verify integration with other applications**
 - Voice messaging
 - Network/Service management applications
 - Specialized reporting
 - Database or other applications



Build Your Matrix

Ability to do hands free dialing	Must Have	Nice to Have	Don't Care
Ability to use phone in hands free mode (speakerphones)	Must Have	Nice to Have	Don't Care
Ability to have more than one line per phone	Must Have	Nice to Have	Don't Care
Ability to dial 4 or 5 digits to reach all employees	Must Have	Nice to Have	Don't Care
Ability to forward calls to other phones	Must Have	Nice to Have	Don't Care
Ability to use PC as phone	Must Have	Nice to Have	Don't Care
Ability to retrieve voice mails while in e-mail	Must Have	Nice to Have	Don't Care
Ability to address a message using spell by name	Must Have	Nice to Have	Don't Care
Ability to reply to a message	Must Have	Nice to Have	Don't Care
Ability to manage Voice Mail distribution lists	Must Have	Nice to Have	Don't Care
Ability to speed up message playback	Must Have	Nice to Have	Don't Care
Ability to have multiple greetings (On the Phone, Busy)	Must Have	Nice to Have	Don't Care



Add In Regulatory Requirements

- **Begin preparing for 911 calls**
 - What groups need to be involved?
 - Are you directing 911 calls to multiple destinations?
 - Do you have E911 requirements to address?
 - Do you have special training to prepare?
- **Are you affected by HIPPA?**
- **Are there other privacy or monitoring requirements?**
- **What compliance regulations (SOX, GLBA) affect your organization?**
- **Do you need to record some or all calls?**
 - What are the privacy laws you must address?
 - Do you have a retention policy and system?



Plan Your Evaluation

- **Don't issue your RFP until you've set objective evaluation criteria**
- **Work with communities of interest to establish scoring and weighting that works**
 - Ensures key features aren't missing
 - Builds consensus before you go to market
 - Avoids issues after the grades are in
- **Clearly define who plays what role in the evaluation process**
- **Build a work plan that gets the evaluation done in a timely and effective manner**



Keep The Design Process Effective

- **We recommend preparing for “continuous design”**
- **This does not mean an "open ended" design phase**
- **To keep the ground from shifting too much...**
 - Establish key milestones to set the design for the next phase
 - Create a "Final Design Review" milestone to set the design for implementation in stone
 - Establish a change review board to approve modifications that occur after deadlines
 - Require active sign-off on designs by key stakeholders and user communities
- **Don't accept “on the fly” changes without scrutiny!**

Dealing With The RFP





This Isn't A "Needs Document"

- **Many organizations use the RFP as their requirements or needs document**
 - Mixed purpose can reduce its value
 - This type of focus can limit the information gathered
 - Focus on getting what you need versus giving what they want
- **Don't "hand out" your evaluation criteria unless you're required to...**
 - Manufacturers and integrators may not pay sufficient attention to anything other than the "must have" items
 - Future expansion and integration may depend more upon the "nice to haves"
- **For key features don't rely on matrices; present real-world scenarios**



If You Leave It Out, They'll Add It In...

- **You may not be able to include a detailed design with your RFP**
 - Vendor dependencies to factor in
 - Desire to include integrator or manufacturer in design process
- **Include what you can about your design based on known requirements**
 - Factor in user locations, call control, and survivability
 - Clearly define which parts of your design are required and which are optional
- **If you can't provide detailed product information**
 - Provide groups that define different types of users
 - Provide location specific factors to consider
 - Define minimum and maximum functionality
 - Describe how and where you want to standardize
- **Be prepared for interesting assumptions...**



If You Want Brevity...

- **Typically, one inch of written RFP equals four inches of vendor responses**
 - Be prepared for the time to read and evaluate responses
 - Consider "division of labor" approaches for large projects
- **Expect respondents to get it wrong**
 - In our experience, one out of four responses misses the mark in some way
 - Determine what your approach to these responses will be
 - If you expect to allow corrections, build additional time into the published schedules
- **Limit the participants to reasonable players if you can**
- **If you can limit RFP respondents using a shorter RFI, the RFP process can be streamlined**



Get The Manufacturer's Skin In The Game

- **Ask manufacturers to recommend integrators**
 - Reduces likelihood of "good product, bad implementation"
 - Provides leverage in the event that things aren't going well
 - May result in positioning a more appropriate integrator for your size organization
- **When you're through with the RFP process...**
 - Compare designs to manufacturer's published best practices
 - Require the manufacturer to sign-off on the design
 - Verify feature sets and product life span with manufacturer
 - Confirm hardware and software versions for implementation



Understand What's To Come

- **Perhaps the largest change with IP Telephony is the emphasis on software over specialized hardware**
 - Features can be introduced or modified with patches and new releases
 - Bugs and vulnerabilities not seen in “hard systems” become possible
 - Version control can become critical to ensuring interoperability
- **Get the manufacturer to provide...**
 - Release schedules for major updates
 - Notification procedures when critical flaws are discovered
 - Resources to monitor/track bugs that might impact your deployment
 - Regression testing procedures and policies for patches, hot fixes, and major releases
 - Impact of patches to Operating Systems and how this interacts with your services
- **Research "unofficial" sources you can leverage in addition to formal channels**



Know Who You're Getting

- **The integrator's team will be a key resource in your implementation, make sure you know them**
- **Require interviews or working sessions with the proposed Project Manager and key technical resources**
- **Insist on a time commitment that works for you**
 - Will the Project Manager be engaged through system acceptance?
 - When will key technical resources be available and involved?
 - Is the team you're meeting with actually conducting the work?
 - Who gets to approve disengagement or changes in personnel?
- **Integrators often have "stars" that handle pre-sales and project initiation then move on to the next opportunity**



The RFP Is Not The End

- **If appropriate, in your RFP document require...**
 - Commitment from respondents to demonstrate key features
 - Site visits to current users with identical or very similar environments
 - Working sessions with the integrator and manufacturer to clarify designs and resolve any issues
- **Involve key user communities in the evaluation, discussions with respondents, and final selection**
- **Don't let one person score all the responses!**

After The RFP





Trust, But Verify

- **Before finalizing a selection, hold working sessions with respondents**
 - Confirm and clarify responses
 - Validate licensing terms and conditions
 - Meet the proposed project team and get them involved early
- **Confirm that the hardware and software proposed will meet your stated needs**
 - Check the references provided
 - Look for case studies, user groups, and message boards
 - Get manufacturer sign-off
- **Get a sample implementation plan for your project**
 - Don't accept a "typical" deployment schedule
 - Verify that the dependencies and time frames make sense to you
 - Be prepared to ask questions about resource loading and demands on your organization's time



Confirm With The Manufacturer

- **Manufacturers and integrators are usually on the same page**
- **However, we've seen...**
 - Integrator checklists that differed from manufacturer recommendations
 - Differences in design or deployment methodology
 - Variances in test plans and testing criteria
 - Different understandings of the same "best practice"
 - Alternative views of assessment results and remediation activities
- **Ask your manufacturer's representative to review key documentation provided to confirm that they're in synch**
- **Note that a difference here isn't always bad but you need to understand why they exist**



Confirm The Design

- **Conduct your final design sessions and get approval**
 - Confirm features to be implemented
 - Verify QoS settings and requirements (including codec specifics)
 - Set security policies, procedures, and benchmarks
 - Document final deployment
- **Scrutinize any proposed changes (and their costs)**
 - Often, the final design can become an "up sell" opportunity
 - Be sure that you believe the changes are necessary
 - Don't accept that you've made it this far but can't implement a key feature stated in the RFP
- **Be flexible where it's appropriate**
 - Dial plan may need on-going tweaking
 - Call flows should be well understood but may not be set in stone
 - Features offered to specific groups may change slightly



Start Transition Planning Early

- **Work with the Integrator to set transition plans for your environment ahead of time**
- **Don't leave these unanswered until the end...**
 - When will they release key technical resources?
 - When will the PM be re-assigned?
 - Who's going to be on point for initial problem calls?
 - How much support is the integrator expected to provide during and after cutovers?
 - Who decides when roles begin to change and how?
- **Waiting to handle these issues can result in lower-than expected staffing and responsiveness problems**

Prepare Your Organization





Was That An Earthquake?

- **For many organizations, convergence involves significant organizational change**
 - Merged or collapsed support groups
 - New training and education requirements
 - Enhanced tools and features
 - Stronger reporting and monitoring
- **Ignoring the organizational impacts can be just as bad as getting the design wrong; sometimes worse**
- **Be prepared to work through the kinks as you go through planning and implementation**



What Does A Data Person Need To Learn?

- **Basic elements of circuit switching and line types**
- **Elements of traditional PBX architectures that will remain**
 - Dial plans, Call Routing
 - Trunking types and requirements
 - Signaling
 - ANI, Caller-ID
- **Differences between control and bearer traffic and where they should be seen**
- **Performance requirements for both control and bearer traffic**
- **IP-PBX elements and their placement**
 - Call server, Gateways, SIP proxy, Application servers
- **Basic voice troubleshooting and problem isolation**
- **Proper implementation and support of QoS**



What Does A Voice Person Need To Learn?

- **The basics of data networking**
 - IP addresses and subnet masking
 - Your organization's IP topology
 - Private vs. Public addressing
- **Elements of a data network**
 - Routers vs. switches vs. firewalls...
 - Quality of Service standards and protocols
 - Basics of routing protocols
- **"Standard" data network communications methods and protocols (TCP, UDP, IP)**
- **Troubleshooting and problem isolation tools and usage**
- **Your network and QoS configurations and their expected impact on voice**



What Do Your Users Need To Learn?

- **Infrequently overlooked but frequently under-trained**
- **Hands-on training will be most effective but timing is crucial**
 - Training too far in advance will likely be forgotten
 - Training too close to implementation is likely to create "nerves"
- **Users need to feel comfortable that they...**
 - Can access the features they currently use most
 - Have guidance for learning new features that could benefit them
 - Are being given time to get comfortable with the system
- **To address training consider...**
 - Holding formal training approximately two weeks before implementation
 - Having users practice with their new phone and configure their voice mail during hands-on training
 - Having "IP Telephony Day" to show off the system and generate buzz
 - Keeping a training room open during set hours to allow for additional practice and questions



Adopt A New Service Model

- **Organizations often experience a lag between deploying a technology and being able to support it well**
 - Learning curves
 - Book Learnin' vs. Real world
 - Identifying bugs
 - Finding configuration errors
- **Voice services usually don't provide this "luxury"**
 - Typically higher visibility than traditional applications
 - Usually reaches a wider audience
 - Comparisons to the PSTN and the "old system" are almost inevitable
- **Evaluate your approach to providing support and services and be prepared to change**



What Are You Managing?

Service Management

- **Comprehensive visibility**
- **Anticipating return**
- **Highly Secure**
- **Highly flexible**



System Management

- **Focus on high quality, high performance voice services**
- **Aligned with end user needs**
- **Blend of proactive and reactive**
- **Coordination with voice and data groups**
- **Active Implementation of SLA's**



Element Management

- **Focus on technology**
- **Reactive in nature**
- **Best available effort**



How Should The Org Chart Look?

- **Whether or not to combine support organizations is complicated**
 - Depends on managers capabilities and openness
 - Requires evaluating relationships between managers and staff in different groups
 - Change may be viewed as more of a threat than an opportunity
- **Evaluate the structure that works best for your organization**
 - "Flat" organization: One manager for all voice and data specialists
 - Matrix organization: Multiple managers with mixed teams; the team members report to PM's for specific projects
 - Specialized organization: Maintain voice and data groups with common upper management
 - Hybrid organization: Some combination of the above



Don't "Ignore" Your Help Desk

- **Help Desk involvement in system design and deployment is often limited**
 - Often not seen as a key stakeholder
 - Skill set not necessarily viewed as critical to project
 - Feature definition role often limited to how system will be used
- **Identify how your Help Desk will be involved in support**
 - Are they opening tickets and forwarding along?
 - Are they addressing common issues from knowledge trees?
 - Will they be performing "Level 1" troubleshooting in some detail?
- **The role the Help Desk plays should guide how you involve them in the project**



Benefits Of Involving The Help Desk

- **Increased involvement will...**
 - Improve the Help Desk's overall understanding of how people want to use the system
 - Allow Help Desk management to better structure targeted training for their employees
 - Assist in building better support processes prior to implementation
- **With all the team players “on board” you can...**
 - Review your support procedures "from cradle to grave"
 - Be more effective in addressing escalation policies and flows
 - Better direct issues to the appropriate staff with the right expertise
 - Provide more effective training and education to the right individuals
- **As organizations converge, proactively address process and procedural challenges to avoid responsiveness issues**



Do I Have to Converge My Organization?

- **No, but this is becoming less and less common**
- **Real world benefits have been demonstrated**
 - Wellcome Trust saved 30% in ongoing support costs
–PublicTechnology.net
 - On-going support savings of up to 35% for organizations
–Yankee Group
 - Major county in IL reduced telephony support costs by 58%
–Network World
 - Average organization reduced staff requirement by .74 FTE
–Network World
- **Base your decision on your environment and your people; not third-party studies**
- **Present convergence as a career growth and development opportunity to reduce resistance**
- **Remember, your processes are dependant on the people!**



Final Thoughts

- **IP Telephony represents a major shift with impacts on numerous areas**
 - Service delivery methods
 - Integration and expansion opportunities
 - Network capabilities and requirements
 - Features available and offered
 - Training and development
- **Many IP Telephony projects that fail or underachieve reflect problems in the planning and design process**
- **Prepare your staff and management to address the numerous areas and concerns that you'll need to accommodate**
- **Actively enlist participation in the process to ensure that you deliver the services people need**