



Best Practices for IP Deployment in a Multi-vendor Environment

6 ways to maximize your success

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The shift to IP telephony is on and gaining momentum. The results are obvious: substantially lower costs, higher productivity, greater enterprise efficiency and agility, and enhanced customer satisfaction and retention. But fully realizing the many benefits of IP telephony—particularly in multi-vendor environments—takes careful planning, collaboration, and oversight every step of the way.

Gain from lessons learned by an IP telephony leader: Avaya.

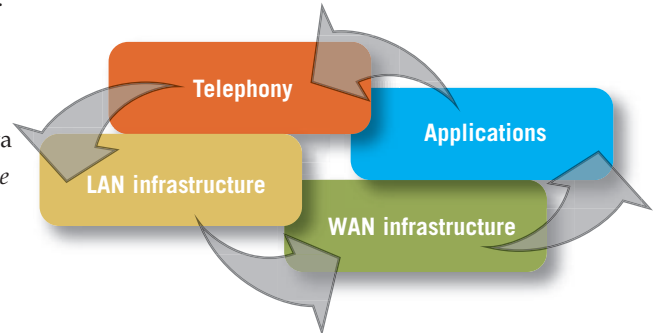
As a global market leader in secure and reliable IP telephony¹, Avaya has helped companies the world over plan, design, implement, and manage multi-vendor IP telephony systems that offer up to 99.999% reliability and low total cost of ownership.

Along the way, Avaya has gathered insights from the most successful IP telephony implementations, and from extensive interoperability testing at Avaya Labs. Take advantage of these lessons learned *before* you embark on your deployment.

¹Magic Quadrant for North American Enterprise Telephony, Gartner, 2003; InfoTrack for Enterprise Communications, First Quarter 2003, InfoTech, June, 2003; Enterprise VoIP Worldwide Market Shares, Synergy Research, May, 2003.

Tip #1: Collaborate.

Your IP telephony deployment will deliver on your goals faster and more efficiently when your primary technology stakeholders collaborate with one another—anticipating and resolving key issues throughout the deployment cycle. In most enterprises, these stakeholders have responsibility for the following technology areas:



Collaboration among technology stakeholders is a key to IP telephony success.



- **Address top IP telephony deployment issues.**
Touching all of these technology areas are vital IP telephony issues that directly impact the overall success of a multi-vendor deployment and include:
 - Performance and optimization
 - Security
 - Reliability and availability
 - Management

Members of each IT team should actively address how these issues affect their particular needs, concerns, and objectives.

Tip #2: Assess.

Assessments provide the information you need to determine where you are today, and what it will take to make IP telephony a reality for your business. They can cover such performance issues as packet loss, delay, jitter, availability, network infrastructure, Quality of Service, and Service Level Agreements.

- **Ask the right questions.** When it comes to planning your IP telephony network, assessments can help you ask the right questions:
 - How much do you plan to grow?
 - What multi-vendor communications applications will you need to accommodate, now and in the future?
 - How much bandwidth will you need to implement Voice over IP?
 - What about throughput for your wireless users?
 - How can you know for sure that your network is ready for convergence?

- Should you start small and add IP telephony capabilities incrementally?
- Should you consider Session Initiation Protocol (SIP)? How might its advantages for instant messaging, presence notification, and video applications help you?
- Will you require voice encryption?
- How will you manage your IP telephony platform?

Tip #3: Agree.

When it comes to IP telephony, Quality of Service (QoS) can mean different things to different users. For best results, it's critical for your technology stakeholders to reach agreement early on the precise performance and optimization assumptions that suit your business.

- **Define a QoS policy up front, not after deployment.** A defined QoS policy allows you to build up to fixed targets and greatly reduce potential conflicts down the road.
- **Define Service Level Agreements (SLAs) before—not after—a failure.** To maximize the effectiveness of your network, SLAs should be the foundation for all optimization goals, and this requires you to:
 - Understand all existing SLAs.
 - Incorporate a spectrum of failure scenarios into your agreement process.
 - Define appropriate SLAs for IP telephony that address those scenarios, as well as the needs of your key technology stakeholders.

Tip #4: Anticipate.

A common trait of secure IP telephony platforms is that security stems from design, not implementation. Converged voice and data networks can introduce new security challenges, such as:

- Eavesdropping of unencrypted voice conversations
- Unauthorized or unprotected modem attacks
- Denial of service attacks
- Computer viruses
- Hacking/data theft
- Toll fraud
- Firewall, Network Address Translation (NAT), and VPN issues
- **Pave the way for security.** Here are some additional considerations to help you respond to these and other security issues:
 - **Begin with assessments.** Cover such areas as external *and* internal threats, access and security policy issues, and LAN and wireless LAN weak points.
 - **Include all technology stakeholders.** Include all IT teams and encompass corporate standards requirements.
 - **Remember the security trinity.** Incorporate prevention, detection, and response in your network design.
 - **Establish ownership early.** Designate personnel with security responsibility at the start, so they can provide oversight throughout the deployment cycle.

Tip #5: Duplicate.

Because a problem that would merely slow e-mail can cripple voice applications in an IP telephony network, you need to build in reliability and availability from the outset.

- **Think in duplicates.** You can minimize the impact of network disruptions and unforeseen events through duplication and redundancy.
 - Duplicate network paths—multiple service providers, WAN access points and closet switches.
 - Duplicate application servers that can accommodate common protocols such as Dynamic Host Configuration Protocol (DHCP), Trivial File Transfer Protocol (TFTP), and Domain Name System (DNS).
 - Duplicate IP interfaces so that, in the event of a connection failure, an IP endpoint can be automatically redirected to another available interface.
- **Agree on availability goals for critical network components.** Every link should be scrutinized, every server analyzed, every firewall and access point understood.
- **Make redundancy assumptions *before* you deploy.** IT teams should reach agreement on redundancy assumptions prior to deployment.



Tip #6: Take Control.

Management is a key and often overlooked ingredient to ongoing success; make it integral to your deployment cycle.

- **Assign responsibility for *integrated system management*.** The integrated nature of voice and data networks requires an integrated approach to management. Potential problems are more effectively resolved when management responsibility is clearly designated up front.
- **Use an integrated tool set.** Tools should incorporate software specifically designed for IP telephony management in multi-vendor environments, encompass corporate network management, and integrate with your people, processes, and technology.
- **Prepare for integrated operations.** After much hard work and planning, your IP telephony system is up and running. Now what? Your strategy for handling network issues *after* you flip the switch will define your success—or mediocrity.

Putting It All Together: A Real-World Scenario

Situation: A publishing company with as many as 1,500 users

Goals:

- Roll out IP telephony in six months.
- Replace Nortel digital telephone sets with Avaya IP Telephones.
- Integrate endpoints with Microsoft® Outlook® dialing application.
- Provide mobility and push emergency information to end users.

Challenges:

- Organizational miscommunication
- Security team misgivings about IP telephony security
- Configuration errors that cause downtime
- Confusing tools that inhibit management

Solution:

Telecommunications manager halts deployments and starts anew with:

- Agreements on security—one person owns it end to end, negotiates agreements with LAN/WAN and data teams, and develops and executes the response plan.
- Comprehensive Service Level Agreements—IT teams collaboratively examine network topology and existing SLAs, develop availability assumptions (acceptable, below expectations but amendable, below expectations, and not amendable), and agree on strategies that address each scenario.
- Event correlation—resolves inefficient system management through a hired expert who seamlessly links Avaya network management gear with an SNMP-based network management system and the help desk.

Results: A deployment back on track, with cost and efficiency benefits restored

Leadership in interoperability testing

At its interoperability test labs around the world, Avaya invests millions of dollars a year to determine how its equipment works with vendor equipment.

- The Avaya **Solution and Interoperability Test Lab** performs hundreds of tests annually to ensure the effectiveness of Avaya equipment in customer environments.
- Tested **vendors** include Cisco, Nortel Networks, Extreme Networks, Foundry Networks, Enterasys Networks, 3Com, Lucent Technologies, HP, and many more.
- The **Avaya Developer Connection Program** includes 177 vendors developing applications for Avaya products and jointly testing over 300 solutions.
- **Interoperability information you can use**—application notes with detailed instructions on how to configure Avaya and other vendors' products to work together. For more information, please see: www1.avaya.com/enterprise/resourcelibrary/applicationnotes

Maximize your benefits from IP telephony.

IP telephony offers tremendous potential for your business. Make the most of it. The guidelines presented here are just the beginning. Ask your Avaya Client Executive or Authorized Avaya BusinessPartner for details on how Avaya interoperability products and services can help you fashion the ideal IP telephony solution for your needs.

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About Avaya

Avaya enables businesses to achieve superior results by designing, building and managing their communications networks. Over one million businesses worldwide, including more than 90 percent of the FORTUNE 500®, rely on Avaya solutions and services to enhance value, improve productivity and gain competitive advantage.

Focused on enterprises large to small, Avaya is a world leader in secure and reliable IP telephony systems, communications software applications and full life-cycle services. Driving the convergence of voice and data communications with business applications – and distinguished by comprehensive worldwide services – Avaya helps customers leverage existing and new networks to unlock value and enhance business performance.

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