

••• Voice and Data ••• Communications



February 2007

A Publication of ILTA



VoIP Quality

Can you make the right call?

Telephones are critical to law firms—so it is no surprise many firms are moving to VoIP technology. But, this change brings about new challenges in the effort to ensure performance of phone communications.

Around-the-clock VoIP call quality requires seeing networks and interacting applications in full view. Compuware offers the industry's only complete end-to-end service management approach that brings the VoIP user perspective into focus. With service expectations so high, isn't it time to look into a new way to keep clients and attorneys connected?

See how Detroit law firm Dickinson Wright ensures its VoIP system stays free and clear of performance trouble. Download our case study and check out our other service management resources today at:

www.compuware.com/VoIPLegal

COMPUWARE®

:: Inside This Issue



EDITOR'S NOTE

Just as we've seen DM and RM begin to share the same space, we're seeing a similar convergence of voice and data communications. VoIP, digital dictation, and monitoring and acceleration tools are rapidly moving into the pipeline once reserved for data alone.

Our authors share their insights and suggestions on these issues and more, helping you keep this abundance of information moving.

In addition, we're very excited to offer the results of our first-ever survey regarding telecommunications, and we extend our thanks to all who participated.

Ken Hansen, Editor

ABOUT ILTA

Providing technology solutions to law firms and legal departments gets more complex every day. Connecting with your peers to exchange ideas with those who have "been there done that" has never been more valuable.

For nearly three decades, the International Legal Technology Association has led the way in sharing knowledge and experience for those faced with challenges in their firms and legal departments. ILTA members come from firms of all sizes and all areas of practice, all sharing a common need to have access to the latest information about products and support services that impact the legal profession.

4 Keeping It Current — A Case Study in Building Voice and Data Communications Infrastructure

by Dean Leung of Davis & Company LLP

With the evolution of technology, it is prudent to include the core requirements of IP phones in the design and upgrade path of existing local area and wide area network infrastructure.

10 Voice Over IP — Can You Make the Right Call?

by Dan Mennell and Mike Hicks of Compuware

Many firms are currently deploying or evaluating the feasibility of voice over Internet protocol (VoIP). Knowing the questions to ask, pitfalls to avoid and tools to use to monitor activity can help you move to and maintain a VoIP system.

12 The Path to Productivity — Harnessing IP Innovation for a More Productive Workforce

by Christian Stegh of Avaya

The rapidly changing landscape of today's communications now offers more choices than ever before, providing myriad ways to be connected. When considering devices for your workforce, simplifying and improving the user experience are the keys to success.

13 Making the Case for WAN Acceleration

by Craig Stouffer of Silver Peak Systems

WAN acceleration breaks down the barriers that hamper application performance in a distributed legal environment, enabling better access to vital information while facilitating other strategic initiatives.

16 Leveling the Playing Field: Big Firm Technology — Small Firm Reality

by Aaron Franko of Bakke Norman, SC.

Law firms of every size embrace technology in order to provide the best client service possible, and following the guidelines offered by our author, any small firm can effectively implement technology once reserved for large firms.

18 The Innovative Power of Data Collaboration

by John Hall of Integration Appliance (IntApp)

Explore the methods and practices of transmitting voice over IP and transporting data across a network, and examine all the related complexities and challenges associated with environmental monitoring and management.

22 Voice Productivity — 10 Reasons Behind the Workflow Revolution

by Steve Butterworth of BigHand, Inc.

Our author offers 10 reasons to consider implementing a digital dictation workflow solution, and no matter how many are applicable, it could revolutionize your document production environment.

24 Telecommunications Survey Results

by Robert DuBois of Devine, Millimet & Branch, P.A.

The results of ILTA's first-ever telecommunications survey are in! This inaugural survey from the Voice and Data Communications Peer Group sets a benchmark from which we will be able to spot future trends.

Statement of Purpose: ILTA is the premier peer networking organization, providing information to members to maximize the value of technology in the support of the legal profession.



by Dean Leung of Davis & Company LLP

:: Keeping It Current

A Case Study in Building Voice and Data Communications Infrastructure

As law firm IT professionals struggle with the need to keep the IT infrastructure current and cost effective, it becomes increasingly difficult to justify to firm management the necessity of updating technologies before a critical incident forces the decision.

At Davis & Company LLP, our rolling three-year technology plan is based on an organic model. Each project provides the desired infrastructure update from an IT perspective while simultaneously enhancing some tangible element in the attorney's practice. Completed initiatives then form the foundation for future projects, thereby reducing the overall cost. The completion of the plan ties each individual project together.

Taking a milestone approach to IT planning has allowed us to proceed as budget becomes available each year and reduces "sticker shock" associated with a major system overhaul. Over time, a fault-tolerant centralized IT infrastructure is being implemented and will become the foundation for IP telephone and business continuity through replication of virtualized servers to the disaster recovery site.

Background

Prior to starting the current technology plan, the firm was in a phase of aggressive expansion, growing from a single office to eight offices, seven in Canada and one in Tokyo. Currently, the main office in Vancouver has over 300 users while three others have between 50 and 100, and another three offices have up to a dozen users each. All of the offices were linked with VPN connections over the Internet which varied from 10 MBps down to ADSL connections. Each office, regardless of size, had its own servers for e-mail (GroupWise), DMS (GroupWise) and file storage (Netware). Each office also had its own phone system which varied from an office PBX, leased lines from the building PBX or fully outsourced Centrex systems. IT support was ostensibly based out of the main office in Vancouver.

With the growth of the offices complete, there was a need to implement the infrastructure necessary to operate an international law firm. The mandate of executive management was to ensure users have interoffice operability so they would have the same tools regardless of geographical location. Users should be able to move both themselves and their work product among offices without any change to workflow procedure or loss of performance. IT support should be consistent regardless of the physical location of IT staff.

With offices in major cities, remote locations and overseas, a single, homogeneous infrastructure would be a challenge to design and implement. Even more difficult would be selling the overall plan and costs, as well as ensuring management buy-in for the three years it would take to complete.

The Plan

In order to ensure interoffice operability of core IT services as seen by the users, key technologies requiring harmonization were identified, including:

Desktop environment

Phones and fax

Cost recovery of phone calls, faxes, and photocopies

Remote access

Since these technologies were in different stages of their respective life cycles, it was not possible to procure funding for a wholesale uplift of the infrastructure prior to its obsolescence. The decision was made to develop a framework for how the firm's IT infrastructure would look once we updated the systems. In addition, it was important to ensure that all upcoming projects met the core requirements of the IT plan. From an IT perspective, the needs identified included:

Standardization of infrastructure

Upgrade of antiquated servers

Implementation of a private wide area network (WAN) to replace Internet-based VPN

Centralization of servers to reduce need for IT expertise in remote offices

Implementation of a disaster recovery site to ensure core IT services are redundant

Most of the IT staff and half of the users were located in a single office, and the decision was made to move from a distributed to a centralized server model. With many servers in different offices due for replacement, it would have been more expensive to replace them than to implement a centralized system. To accomplish the central server model, we had to ensure our interoffice communication system was more robust and fault tolerant than what was available via the existing Internet links. The firm needed to move to a private WAN.

While most people understand what an Internet connection is, they can easily glaze over and lose interest if you try to pitch them the merits of a fully-meshed MultiProtocol Label Switching (MPLS) WAN among major offices and integration into an Internet-based VPN for remote offices. And then there's the addition of Quality of Service (QoS) tagging which allows for the prioritization of time sensitive traffic such as voice, video and SQL (for Elite and DMS) traffic. That's quite a lot of complicated verbiage for the average person to comprehend.

More simply stated, we needed a better transportation system for voice and data communications to improve quality and performance of the network. This is something akin to the construction of a new freeway among cities, with the addition of a carpool lane dedicated to voice and video that would ensure those signals arrive on time.

This infrastructure allowed for and was partially funded by three initiatives: (1) redundancy of the WAN and servers for business continuity and risk management; (2) centralized servers for improved support and performance; and (3) IP phones for improved productivity. Implementation of the latter two yielded significant overall cost savings over the *status quo*.

Selling anything to the firm is always a challenge without sufficient buy-in from the partners as a whole. While it's easy to get the technophile lawyer to sign on, it's equally important to get the rank-and-file partners to support these initiatives. Outlining the features and functionality of the overall plan can be enticing, but it was both the initial financial savings and the delivery of a tangible savings or feature that increased productivity after each milestone that ultimately sold the three initiatives.

Financial:

Lower operating and maintenance costs

Savings over existing Centrex phone systems and server forklift requirements

Elimination of long distance among cities with offices

Cost-effective disaster recovery

Economies of scale with a firmwide system

Reduction in total number and complexity of servers (RightFax, e-mail, DMS and file storage)

Productivity:

Competitive advantage

New features and functionality

Firmwide standardization and consolidation

Simplified training

Leveraging of new infrastructure for multiple initiatives

Foundation for future projects such as virtualization and DR

Implementing IP Phones

A number of years ago, the main office in Vancouver needed to upgrade its PBX. With IP telephony in its infancy, it was difficult to make the jump away from proven technology. Fortunately, Cisco was able to make the numbers work, and we moved to Cisco's CallManager and Unity voice mail systems. It should be noted, however, that there are other vendors, as well as the Open Source Asterisk solution.

In spite of all the issues associated with early adopters of IP telephony, the firm was satisfied at the time to use the system within a single office solely to replace existing PBX functionality. As the technology matured, it became possible to extend the reach of the Cisco system to other offices. To determine whether or not the system was ready to be expanded, we sent out single phones to each of the other seven offices for placement in guest offices. Each phone was set up to connect to the Vancouver office.

With the use of extension mobility, users who traveled were able to log in on the remote phone and have access to voice mail, incoming calls to their local office and 4-digit dialing without any toll charges to the Vancouver office. Call quality wasn't perfect, but a call from Tokyo to Montreal on this system was better than using a cell phone in one's home city, even without the use of a QoS WAN.

The technology was an immediate hit, and we had buy-in from the rainmakers who traveled and used these phones. We now had to come up with the costs and work out the ROI to show the financial benefit of making the move to IP phones along with the new features that would improve productivity through workflow efficiencies.

Financial:

Significant recurring cost savings over leased and Centrex systems

Elimination of long distance toll charges between cities

Ease of moves, adds and changes, saving time and technician call-in

Standardized phones, dialing procedures and training

Reduced cabling requirements for office renovations

Productivity:

Extension mobility

4-digit dialing between offices

Multiple area code numbers per phone set

Standardized phones, dialing procedures and training

IP Phones — Centralized Versus Decentralized

It was important during the design phase to determine if the firm was going to implement a centralized or distributed call processing and voice mail system. A distributed system with a limited feature set versus a central system provided each office with a fully independent phone system without any dependency on centralization. This would be a good option for firms not yet ready to implement a voice quality WAN, as the equipment used to implement IP phones in a remote office in a centralized or distributed model is quite similar. It also allows for the future implementation of a centralized system while conserving initial capital expenditures.

While there are pros and cons to either design methodology, we went with the centralized system, including Cisco's full CallManager and Unity voice mail for the following reasons:

Capital Preservation. The existing Vancouver-based CallManager and Unity hardware was capable of supporting all users.

Business Continuity (BC). It was more cost effective to implement a BC strategy in a centralized environment.

Integration. Extension mobility and voice mail forwarding among offices were available options.

Core Phone System Design

The core system, equivalent to the traditional PBX and voice mail system, was composed of two Cisco CallManagers and a single Unity voice mail server running on Cisco branded HP DL360s.

While users have some tolerance for a computer with no or slow network connection, there is zero tolerance for a phone with a choppy call or no dial tone.

Business continuity at the core is handled by another CallManager and a virtualized Unity server set up at the DR site. The CallManager at the DR site is active with some of the firm's phones homed to this server. The configuration of the Unity server is not supported by Cisco, but testing has shown this to be a viable solution in a DR situation.

These servers connect to the network via an independent VLAN to segregate voice and data traffic. The specifications for IP phones require switches with QoS capabilities to ensure time-sensitive voice traffic is delivered faster than less time-sensitive data. If you have a highly utilized network, this would be paramount. It's worth noting, however, that due to an integrator error, we ran for a period of time in production without QoS enabled on our LAN with no user-reported issues.

On the user side, each phone plugs into the network, and an individual's computer connects to the phone. Port-based VLANs allow the phones to be on the 10.10.x.y subnet while the computers remain on the 192.168.x.y subnet.

Powering the IP Phones

Power for the phones can be supplied in two ways. One is to purchase switches with power over ethernet (PoE) built in, providing power to the phone over the two unused pairs of conductors in a CAT 5e network run. The other is to purchase power bricks for each phone.

Power for the phones in the major offices was provided by PoE switches, requiring an upgrade of existing switches. These new switches had both QoS and VLAN capabilities that allowed for the respective prioritization of voice traffic and the segregation of the phone network to the 10.10.0.0 subnet.

Given the cost of the PoE switches, only the required number of parts were purchased to match the number of phones and a few spares. Existing switches were pushed to the edge for devices that did not require power or QoS. These included printers, copiers and computers with no phone requirements. The UPS for the switches was updated at the same time to match the switch runtime to that of the CallManagers to ensure the phones would run as long as possible in the event of a power failure.

For the smaller offices, we purchased power bricks for each phone and switches with QoS services only. In low numbers, this approach is more cost effective than purchasing a switch with PoE. It also allows for the reuse of existing infrastructure. The downside is that a UPS will be required for some phones to ensure continued operation in the event of a power failure.

Remote Office Phone System Design

Each remote office utilized the CallManager and voice mail servers located in the main office so the phone set, switch and UPS requirements were identical to the Vancouver office. However, each office still required local phone and fax DIDs. It was also necessary to ensure that phone service was not interrupted if there were a loss of connectivity to the main office. In reality, with the resiliency of private networks and the backup Internet VPN in place, the real concern was reduced to a backhoe mishap in the "last mile" where all network providers run their cables.

A Cisco router was used in each remote office. The required hardware ranged from a 2800 series router for the smaller offices up to the 3800 series for the large ones. The number of phones in each location ultimately dictated the model. This is an example of how pitching the idea of multiple use and capital preservation helped gain the necessary funding.

Each router serves the following functions:

Survivable Remote Site Telephony (SRST) — phone and voice mail failover

VPN tunnel among offices

Private WAN to Internet VPN failover and fallback

QoS tagging for voice priority

PRI voice and fax termination

Analog modem gateway

The first four items above are software-based in the router while the last two are add-on cards. Of note is SRST where, in the event of a loss of connectivity to the central CallManagers, the router would be able to act as a rudimentary phone switch to maintain phone services until connectivity is restored. While in SRST mode, the features available to users are the same as if CallManager Express (CME) was implemented in a decentralized phone system discussed earlier. SRST and CME are the same products, and the option is chosen during configuration as to how the router will behave. Features that would **not** be available include:

Conferencing

Extension mobility

Call forwarding

Call parking

Call accounting

One touch voice mail access

WAN Design

Cost and availability of WAN service to each office helped to limit the scope of the design. We were able to engineer an MPLS fully-meshed WAN among the five major offices, but connectivity of Yellowknife, Whitehorse and Tokyo would have to remain via Internet VPN to the closest major office where it would then travel over the private network.

It was not cost effective to route Web traffic over the private WAN, therefore, each office has its own Internet connection. We utilized this additional connection and created a fully meshed VPN connection among offices. Time-sensitive traffic such as voice, video, SQL and Citrix traffic was routed over the MPLS network while less-sensitive traffic such as e-mail, intranet and printing was routed over the VPN network.

This allowed us to reduce the bandwidth requirements of the MPLS network and provided an automatic backup link in the event either the MPLS or Internet links went down. In awarding the contracts, we ensured as much as possible that the MPLS and Internet providers did not use the same physical infrastructure to reduce the potential for any single point of failure to disable both services. This was possible in offices in the downtown cores of a major city, but smaller offices required both providers to share the “last mile” of cable.

Quality of Service (QoS)

While users have some tolerance for a computer with no or slow network connection, there is zero tolerance for a phone with a choppy call or no dial tone. The switched 100 MBps infrastructure in each office could be sufficient without QoS, but the slower WAN links would be the bottleneck. To ensure that would not happen, we added QoS to the private WAN in each of the major offices. The cost to add QoS to the existing WAN design was only 10 percent more than the WAN itself. We were unable to add QoS to the Internet VPN links, but we have not found any significant voice issues during failover testing.

QoS Design and Overflow to PSTN

In round numbers with overhead, a full uncompressed voice stream running on G.711 (64kbs) takes 100kbps of bandwidth. Our initial design has 1 MBps of QoS to each of the four offices for voice and 2 MBps in the main office with the CallManagers. Without detailed call statistics, we were unable to determine the total amount of interoffice calling and voice mail usage.

Not wanting to overengineer the system (*i.e.*, minimizing monthly recurring costs), we decided to monitor the usage as we added offices and designed a twofold backup plan. To alleviate any immediate impact of an oversaturated WAN, the system was configured to monitor the number of interoffice connections. Once 10 calls were reached (1 MBps bandwidth usage), the eleventh call would be routed seamlessly over the PSTN network. This would allow us to track the traffic and increase the QoS bandwidth as required. We also planned on testing the quality of compression (G.729a compression (20kbps)) and other tuning tricks, such as configuring the system not to send packets when there's silence on a call. After implementation, this turned out to be unnecessary as our initial design was adequate.

Voice Mail Access During a WAN Outage

Using a similar configuration that allows for the overflow of calls to the PSTN line, seamless PSTN routing of voice mail was set up to connect the offices and enable people to listen to voice mail messages in the event the primary and backup WAN links failed. Once it was running in survivability (SRST) mode, the router would detect the failure of the primary WAN and backup VPN link. It would then establish a connection to the central voice mail server via the PSTN phone lines without requiring user interaction.

A toll-free number was set up in the main office to allow traveling users to check their voice mail without incurring local toll charges at typically expensive hotel rack rates.

WAN Implementation

The implementation of the WAN was largely uneventful and invisible to the end user. We learned that provisioning times for an MPLS network should be considered best guesses rather than tangible dates. We moved to static routes for the network to prevent potential loops. As the WAN became available in each office, we updated the routing tables of the routers and tested. If there was any major issue we could roll back with ease.

Once the MPLS network was operational, we established the VPN links to our Whitehorse, Yellowknife and Tokyo offices. Each of these three offices has a preferred connection office and an automatic failover to the secondary location in the event there is loss of Internet connectivity at the preferred site. Because this happens on the VPN link at the router level, no routing updates are required, and any failover is seamless.

We then circled back and created the meshed VPN links between MPLS enabled offices, set up the appropriate failover and fail-back configurations, routed the appropriate traffic to the respective links and finally retired the original Internet VPN servers (BorderManager).

Phone System Implementation

In the original deployment of the Cisco system in our main office, the firm engaged consultants who managed every aspect of the deployment. We were able to leverage the expertise of our integrators, and while the implementation was successful, we were not able to take ownership of the new system. It was a black box to the IT department. While this was typically the case in traditional PBX-based systems, the new Cisco switches were running IOS, and the CallManager and Unity servers were running Windows 2000 Server and Microsoft Exchange 2000 for voice mail. The maintenance agreements based on the PBX agreements at the time had a no-touch clause in place which prevented the IT team from working on the equipment. On a number of occasions, this led to longer diagnostic and repair times as we had to call in the integrators to address any issues and apply patches.

For this deployment, we opted for a hip-to-hip deployment where the integrators worked closely with Cisco certified in-house IT staff to design and implement the first remote office. Once implemented, optimized and documented, our IT team took ownership of the project and deployed the balance of the offices with the integrators monitoring the process. With the model of the router and the number of phones in each office being the only variables, this process was largely a cut and paste operation. At a high level, the steps were:

- Install new switches in each office

- Deploy phones to each user

- Configure Cisco router:

 - SRST functionality

 - Fax routing

 - Voice routing

 - Long distance routing

 - Analog lines

- Test failover and failback of WAN

- Train users and provide hands-on testing

- Port lines over or move PRI to new system once users are comfortable

- Retire old system and collect phones

Key to the success and quick adoption of the new technology was the involvement of the users in “playing” with the new phones as soon as they were operational. Since we were moving from Centrex and analog PBX-based systems, we installed new PRIs in the Cisco system. This provided the users with a fully-functional system with the exception of inbound calling from outside the firm until the day of cutover when the firm’s existing phone numbers were ported to the new PRI.

User Training

Users were trained through boardroom demos, prerecorded WebEx sessions and quick reference cards. In general, we found the lawyers preferred their secretaries receive training and pass on the information as needed. Because the phones were already deployed on their desks

several weeks before the migration, users were able to use the phones for inter and intraoffice calling, as well as to set up their voice mail long before the cutover. This greatly reduced postcutover support.

Inbound DID Faxing

With the centralization of the phone system, we were able to consolidate all the RightFax servers back to the main office concurrently. This allowed us to retire three regional fax servers that were due for a refresh. Given the decrease in fax recoveries, it makes little sense to invest significant capital dollars in faxing technology. All fax PRIs are connected to the routers in each office. Inbound DID faxes are then routed back to the Vancouver router via the QoS WAN where the central RightFax server is connected. Faxes are then sent to Outlook for delivery to the appropriate user’s inbox. This change to a centralized server was transparent to the end user. The only caveat to this setup is that we do not offer outbound faxing via RightFax. If you do, note that any outbound fax would have the timestamp with the time zone of the physical location of the server.

Cost Recovery

Another area of savings that assisted in the cost justification of the project was the elimination of decentralized third-party fax and phone recovery software. The Cisco system can be configured to require a client and matter number for long distance calls for the appropriate chargeback. This also allowed us to standardize procedures as previously we had different methods of cost recovery depending on whether an office was on a PBX, IP or Centrex system.

Video Conferencing

With a voice-quality WAN in place, we are now able to further utilize the infrastructure with only incremental cost increases. This includes utilization of the WAN to carry video conferencing (VC) between offices. Because video conferencing codec can better adjust to lack of bandwidth, QoS tagging is set below that of voice but above all other data transmitted over the WAN.

Additionally, we will be integrating our Tandberg video conference systems with the latest version of CallManager. This will allow four-digit dialing among VC systems, and it will add the ability to include a high-end webcam and VC functionality to any computer connected to a Cisco phone. This will reduce the load on the boardrooms with Tandberg units when there is only a single participant.

Next Steps

With the WAN and IP phone system in place, this new foundation provided us with the infrastructure required to consolidate our servers and replicate the data to the DR site for business continuity.

The centralization of core servers was undertaken once the WAN was in place and the phone system implementation was complete. We timed the centralization with the migration from GroupWise to Exchange/ Outlook 2003 and GroupWise DMS to Interwoven Worksite 8.2 with full matter-centricity. The majority of the data was premigrated. On the weekend of conversion, we needed only to migrate the data that had changed. In order to ensure sufficient performance and add an extra layer of redundancy in the event the already fault-tolerant WAN failed, we implemented DMS caching servers in each office and Outlook in cache mode on the desktops.

In the core, each of the SQL 2005, Exchange 2003, and Interwoven DMS servers was set up with clustering. This allows for a failure in or maintenance of the system with little or no effect to the user. It also enables IT to perform maintenance on a node of the cluster without shutting down the entire system. This is especially important given these servers now host the data of the whole firm rather than an individual office. With eight offices in four time zones, there are only four hours in a day when a Davis office isn't open.

Virtualization and Business Continuity

During the process of designing the centralized infrastructure, a number of questions arose:

Where do we find the additional space for the new servers?

How do we manage the growing number of workstations hosting critical applications?

How do we ensure cost-effective business continuity now that we are putting all our eggs in one basket?

How do we minimize downtime associated with hardware maintenance?

How do we improve performance for certain server applications as required?

How do we recover from hardware failures in offices with no IT staff?

How do we manage DR heterogeneous servers and storage platforms without requiring identical equipment on both ends?

With the cost of SANs and SAN-level replication, how can we achieve the same goal without the associated costs?

All of these issues were resolved in a cost-effective manner via virtualization using VMWare ESX running on servers connected to a NetApp SAN running fiber channel for core servers and iSCSI for secondary servers with essential systems virtualized and replicated to the DR site via ESX replicator.

Suggestions for Implementing a New System

There are several considerations to bear in mind when implementing voice and data communications:

Find an implementer who has extensive experience with your chosen vendor and thorough knowledge of both voice **and** data systems

Ensure you have provisions with the implementer allowing your team to work with the equipment, and send your techs for training to avoid "black box" systems in your environment

Buy support directly from the vendor, not the implementer

Stick with the local incumbent telephone company to reduce delays and complexity for phone services

Track WAN uptime and ensure service level agreements are met

Obtain physical data paths from your WAN provider, and perform periodic audits to ensure the most direct traffic routing among offices

Set up one office and wait until everything matures before expanding

Only patch Cisco products if there is an identified fix, as features and functionality can be removed between patches

Future Telephony Possibilities

There are many third-party features that can be added to the phone system. If you can't find what you're looking for, Cisco phones are based on an XML browser, so the possibilities are endless. We're now looking at functionality that includes the ability to file voice mail into the DMS as well as the use of Cisco's IP Softphone, which allows any remote PC with a VPN connection to act as an in-office phone, providing hands-free Outlook contact dialing. In addition, it will support firmwide or targeted broadcast messages on phone displays (*e.g.*, outages, weather, bulletins, stock quotes), a paging system and use of Cisco's WiFi phones for meeting and conference areas.

Final Thoughts

With the evolution of technology, the decision is no longer *if* IP telephony should be implemented, but rather, *when*. It's only a matter of time before traditional PBXs are no longer manufactured and join the ranks of obsolete telex machines and analog cell phones. It is, therefore, prudent to include the core requirements of IP phones in the design and upgrade path of existing local area and wide area network infrastructure. This will ensure that a good foundation is in place as the life cycle of existing equipment dictates the need to upgrade. Firms can find financial justification for upgrading older technology by moving away from costly Centrex solutions as well as PBX maintenance contracts which tend to increase with the age of the equipment.

In addition, with the convergence of video, voice and data, it is possible to split the cost of the core infrastructure among several projects to reduce the overall expenditure for new systems. Cost-effective upgrades and ensuring each project delivers a tool that materially improves the efficiency of an attorney's practice have been key to procuring the ongoing funding needed to keep users productive and the IT infrastructure current.



International Legal
Technology Association



by Dan Mennell and Mike Hicks of Compuware

:: Voice Over IP

Can You Make the Right Call?

Driven by promises of reduced costs and increased productivity through converged applications, many firms are currently deploying or evaluating the feasibility of voice over Internet protocol (VoIP).

Why Converge?

Like any other major technology investment, VoIP brings with it a strong business imperative. VoIP's rapid adoption over the past five years has been due to the promise of streamlined management. Converting to a single IP-based network brings with it several benefits:

Reduced infrastructure costs compared to dual network infrastructures, as well as lowered complexity for adding capacity, whether through organic growth or acquisition

Reduced staffing costs with fewer specialists needed to manage aging or antiquated phone systems

Reduced facilities costs from better use of existing facilities and a more flexible networking foundation (offices, mobile users, business continuity)

Productivity enhancements such as integrated mailboxes, real-time video and call routing that increase productivity and profitability for the firm

Common Pitfalls of VoIP Implementation

While there have been many successful VoIP deployments, there also have been a number of high-profile disasters when organizations (large and small) began sweeping deployments only to back out or change direction due to quality and acceptance issues. In cases like these, the cost of failed deployments can be millions of dollars. Although each case is unique, treating VoIP as "just another application" on the network is a common mistake of many early adopters. Other common mistakes include:

Failure to adequately baseline infrastructure usage and performance. (According to Jeffery Snyder, chief analyst of IP telephony at Gartner Group, 85 percent of existing networks are not ready for IP telephony and will require some form of upgrade.)

Failure to prioritize application traffic according to the unique network needs of all deployed applications

Failure to understand the end-user experience being delivered or other factors that lead to performance degradation

The user community has been enjoying highly reliable phone connections for decades. Any level of service below what they have come to expect will be seen as a step backward. Therefore, firms need to make VoIP service management part of their IT plans and processes.

Preparing for VoIP

Visibility and network awareness are essential elements to network management. You can't control what you can't see. Network awareness can be described best as a visualization of the living network from an interaction perspective (*i.e.*, all components of the network affect each other). Network awareness should reflect users, servers, applications, conversations, transactions, traffic and any movement on the network on all layers. Considerations include:

What is the overall usage of network connections, and what applications are consuming or abusing network resources?

What does this traffic pattern look like over different business cycles?

Is there sufficient bandwidth to support critical applications now and into the future?

What applications require priority (quality of service) and where are they located?

With this in mind, identifying and classifying which applications traverse the networks is the first step in gaining direct control over network performance. Classifying traffic is an opportunity for the firm to determine what's really out there, from critical applications such as e-mail, document management, litigation support and time and billing systems to nonessential traffic such as streaming media, recreational Internet usage and peer-to-peer file sharing.

Classification enables network managers to conduct accurate analyses of application usage and performance. The aim is not to police users

(attorneys, paralegals and assistants), but to have confidence that your networked applications optimally use your infrastructure and are delivered to end users with a perceived response time that promotes business and client satisfaction. With that in mind, you need to prioritize your applications not only as to their importance to the firm, but also relative to each application's specific requirements.

Application service management tools can be used in establishing a baseline. These tools recognize over 2,000 common (and not-so-common) applications. When run over a couple of months, they provide loading and frequency data, giving a more representative picture of usage patterns. After identifying critical applications and their usage, focusing on individual applications enables you to better understand and profile their unique characteristics, such as their behavior on the network.

Activities of Interest

It is imperative that you have an understanding not only of individual applications over a business cycle (week, month, quarter, etc.), but also how these applications compete for critical resources. For example:

Based on user load, Citrix-published applications have consistent and predictable throughput requirements

Broadcast e-mail messages with large attachments can bring even the most heavily provisioned networks to their knees

Document management systems affect networks differently at different times because their bandwidth requirements vary with document size and access frequency

Time and billing systems generally have a much different usage pattern at the end of a billing cycle than in the middle

Bandwidth usage for litigation support applications varies with caseload volume and complexity

Delivering on promises of network efficiencies requires a detailed understanding of current network traffic and then taking that information into account to determine network traffic policies. With demand for applications that enable user benefits such as video conferencing, mobility and messaging, a network-readiness assessment is invaluable during the planning process before deploying a VoIP network. This provides a way for the business to evaluate its existing network infrastructure, services and planned changes and verify that the proposed IP telephony solution aligns with business and technical requirements.

Ongoing Monitoring

Once the network infrastructure and converged communications system are deployed, the next challenge is monitoring. You need to ensure network and communication services work as planned and nothing compromises the service you deliver to users.

The network and the applications that traverse it should be considered something of a living entity. Networks and applications are not static. The volume of applications in a given class may, at times, exceed contracted traffic levels, either gradually through growth or abruptly through acquisition.

Although typical systems may be running smoothly, the situation can change quickly. A remote office's traffic in the real-time class, for example, unexpectedly goes above the service provider's level of contracted bandwidth. In this situation, the service provider is within its rights to drop the excessive packets or downgrade higher-class packets to lower classes. The provider's network is working as contracted, but the service received is not what is expected because the remote office requirements are driving additional traffic. As a result, VoIP users may find they cannot easily hold a conversation because service quality has degraded.

Although problems like this are more likely to happen in firms that did not properly baseline network performance before negotiating the contract, the same problems can occur occasionally, even with a baseline in place. The dynamic nature of the environment mandates some form of ongoing monitoring be put in place to assist in resolving — and to a certain extent, planning for — these occurrences.

In addition to “traffic management,” it is also vital to measure and optimize the service that users actually receive (an activity sometimes called “application service management”). Truly understanding application service requires some sophistication. In the case of VoIP, organizations may evaluate end user experience via a mean opinion score (MOS), a five-point measurement of service quality.

Although worthwhile for determining end user performance, measuring MOS only gives you part of the picture. In addition to identifying who is making the calls and their experience level, application service management tools provide insight into what is causing VoIP performance degradation: delay, jitter (a variance in latency), lost packets, etc. They can also show which applications are competing for bandwidth.

You cannot only assess end users' experiences, but also understand why they are receiving that level of service and whether any corrective action is needed. In other words, you get complete insight into what is happening on your network and why, from both an end user view and a network delivery perspective.

A VoIP Success Story

Dickinson Wright PLLC is a law firm with more than 200 lawyers. It planned to upgrade its phone system to VoIP with the hope of taking advantage of the latest technologies. During the phone upgrade, however, the firm encountered major problems: frequent outages, unavailable long-distance connections and spotty voice mail service. This cut critical communication lines between the firm's lawyers and their clients. Two months into the migration, the firm's IT department was getting 30 complaints a day.

After implementing application service management tools, the IT organization was able to reset the phone services automatically after a service interruption, thus minimizing downtime. As a result, Dickinson Wright estimates it has saved more than \$200,000 by solving the uptime problems and enabling lawyers to do their jobs without interruption.

Clearly, the right tools, along with the appropriate management processes, can help your firm make the right call when implementing a VoIP system.

The Path to Productivity

Harnessing IP Innovation for a More Productive Workforce

by Christian Stegh of Avaya

Since the introduction of the telephone, communications technologies have fueled increasing levels of productivity for businesses. The rapidly-changing landscape of today's business communications now encompasses everything from the office phone to IM, e-mail and cellular devices, providing more ways to be connected than ever before.

For users, this proliferation of communications technologies has generated greater complexity as well as greater expectations. Connectivity and mobility are critical. Many employees use multiple technologies with different devices in a day's work. Yet, the multiple tools intended to increase productivity actually may hinder it when the right communication is not used at the right time or with the right device. A voice mail left on a cell phone may be overlooked, or an urgent e-mail message could be received too late if someone checks messages only once a day.

The path to productivity is a communications strategy that simplifies and unifies access for an employee. Ideally, telecommunications tools and devices should bridge every facet of business communications with easy-to-use interfaces geared for the way people work.

A foundation of IP telephony enables greater flexibility and consistency for users regardless of location, plus a rich user experience. For example, IP telephony can allow desktop phones, mobile phones and PC-based soft phones to become different extensions linked to one number supported by a single voice mail box or message store. Voice messages can be played, saved and forwarded using a computer. A mobile worker can speak commands to a virtual "personal assistant" that fully accesses and manages all voice, e-mail and fax messages, Microsoft Outlook or IBM Lotus Sametime tools and tasks, and schedules appointments, launches conference calls and more. While the entire workforce of a company may not require all of these tools, it's good to know that a single platform can provide the diversity to support different worker profiles.

The most familiar of devices, the telephone, remains the communications tool that workers turn to for convenient, fast, reliable access. Whether it's office-, PC- or cell-based, the interface should be a simple mirror of business needs and provide audio quality that makes it effortless to hear important conversations. This enables ubiquitous, seamless access for a modern workforce to thrive in increasingly distributed businesses, whether working from home, in the office or on the road.

Key tactics to consider when adopting new communications technologies that will help make the most of the latest wave of innovations include:

Look for consistency across devices. Many employees now manage several communication devices at once — desk phones, mobile phones, PDAs — with each one supporting a different set of capabilities. For example, voice mail on a cell phone may be different from a business desktop phone that allows message forwarding to other parties. Optimally, users have a consistent set of capabilities across all of their communications devices.

Choose simplicity and specificity in design. Functionality and sturdiness in a device have always been in high regard, but now, streamlined aesthetics can be a key decision-making factor. Business phones, for instance, should provide a streamlined interface that exposes all of the capabilities of IP, yet hides the complexity. Fewer buttons can make users more comfortable, and the phone model's design should fit a specific user profile. Those users requiring lots of mobile capabilities, for example, will require an interface different from those requiring basic functionality.

Select tools that combine the new with the familiar. In the end, devices serve people, so businesses should ensure advanced devices and functions have a familiar look and feel that caters to the human factor. Devices that bridge the advanced with the familiar create a happy medium that enhances the user experience.

Prioritize sound quality. Wherever you conduct business, communicating with clarity and quality is a prerequisite. With more businesses and employees facing information overload, the clarity of voice communications can make a big difference in getting things done. Users will have little patience with a device if they cannot hear colleagues and customers properly.

Ensure communications can be customized. IP telephony brings applications to the table that can be tailored for businesses and evolve with future needs. Modern IP telephony devices are capable of supporting functions that are tied to enterprise applications and databases. A solid communications strategy anticipates the evolution that will occur through customizable next-generation applications and makes it easy to ride the next wave.

One communication strategy within an organization will not necessarily fit all; an employee's function within an organization will influence his or her device options. Yet when considering the entire workforce, all of these tactics are powered by a key factor: simplifying and improving the user experience. In turn, your business can realize the full potential of IP telephony and its ability to generate improved productivity and returns on your investment.

by Craig Stouffer of Silver Peak Systems



:: Making the Case for WAN Acceleration

Whether researching knowledge repositories or searching internal data stores, legal professionals require timely access to enormous volumes of data. As firms grow in size and increasing numbers of employees work in geographically diverse locations, it becomes difficult to share information effectively.

Though not all-inclusive, some common realities experienced by large firms with multiple offices include: Day-to-day operations involve interacting with a multitude of IT systems, including document management systems (DMS), records management systems (RMS), precedent libraries, time and billing systems, customer relationship management (CRM) systems and e-mail; information is often stored centrally to minimize IT costs and address security and compliance issues; employees might access information via a wide area network (WAN), which is subject to a variety of bandwidth, latency and loss issues that may adversely impact performance. When a law firm's best resources — its people — are distributed among different physical locations, it becomes difficult to collaborate in real-time.

WAN acceleration has emerged as a critical tool to address the challenges outlined above. By overcoming the performance obstacles that often hinder communications across geographic distances, WAN acceleration delivers the following business benefits:

Improved collaboration among locations. WAN acceleration facilitates the sharing of key knowledge management resources such as forms, precedents and expert lists. In addition, it accelerates the performance of key productivity tools such as e-mail, collaboration and document management (e.g., SharePoint, GroupWise, Lotus Notes/Domino, Interwoven WorkSite), as well as e-learning applications.

Accelerated data transfer and retrieval. WAN acceleration can speed up file transfers (Microsoft CIFS, FTP, NFS, AFP) and improve the performance of database transactions (e.g., time, billing, accounting and other SQL applications). This improves end user productivity and maximizes the time available for billable work.

Maximized WAN bandwidth utilization. With WAN acceleration, enterprises can avoid or delay costly WAN upgrades. In addition, IT can better prepare the network to handle occasional spikes in usage such as during trials.

Centralized storage and server infrastructure. Larger firms can consolidate IT resources within regional offices to reduce capital expenditures, facilitate IT management and ensure the protection of sensitive client data.

Protected data. With WAN acceleration, data can easily be backed up remotely across the WAN. In addition, server replication between data centers can be improved for faster and more reliable document retention and disaster recovery.

Common WAN Acceleration Techniques

There are many WAN acceleration techniques that can improve application performance across distributed offices. Some focus on maximizing bandwidth utilization while others address latency and loss issues that are inherent to many WAN environments. When used together, these techniques can significantly improve the efficiency of day-to-day operations within most firms.

Data Reduction

The most efficient way to accelerate the transfer of information across the WAN is not to send it in the first place. This is the major principle employed by "data reduction," the newest WAN acceleration technology

that provides significant benefits in the form of increased WAN bandwidth efficiency and reduced application response time.

In a data reduction scenario, acceleration appliances examine all data in real time prior to being sent across the WAN. This information is kept in local data stores on each appliance. Whenever duplicate information is detected, references are sent to the appropriate appliance instructing the device to deliver the information locally instead of resending it across the WAN. If information is changed, only modifications are sent. Such modifications are merged at the far end with the original, unmodified data before being sent to the destination.

While mileage may vary, data reduction can eliminate over 90 percent of WAN traffic under the right circumstances. It provides various levels of improvement based on the application environment and the repetitiveness of the traffic. For example, 10x for interactive Web traffic, 100x for Web downloads, 50x for file transfers, 200x for data replication and software distribution. Performance increases naturally in environments with lots of duplicate information once data reduction appliances have had an opportunity to “memorize” the network.

Compression

Compression is used to reduce the bandwidth consumed by traffic traversing the WAN. “Payload” compression uses algorithms to identify relatively short byte sequences that are repeated frequently over time. These sequences are then replaced with shorter segments of code to reduce the size of transmitted data. Simple algorithms can find repeated bytes within a single packet; more sophisticated algorithms can find duplication across packets and even across flows. “Header” compression can provide additional bandwidth gains by reducing packet header information using specialized compression algorithms.

The gains realized by compression techniques vary depending on the mix of traffic traversing the WAN, but they are fairly consistent across different vendors’ solutions. Text and spreadsheets, for example, may yield 2-5x compression ratios. On the other hand, precompressed content, like zip files, cannot be compressed much further. Therefore, additional compression does not help these file types. Firms deploying compression technology typically will double their effective WAN bandwidth under good circumstances. Some additional benefits may be garnered from solutions that apply compression across various flows of traffic (called “crossflow compression”) and can employ compression techniques on UDP traffic. VoIP, for example, can significantly benefit from UDP header compression when used in conjunction with other techniques such as packet coalescing.

By providing compression within the acceleration appliance, this functionality can be offloaded from application servers, ensuring better scalability and performance. In addition, compression can provide significant performance improvement even when nonrepetitive information is sent across the WAN.

Latency Mitigation

The time it takes for information to go from a sender to receiver and back is called the latency of the network. Since the speed of light is constant, minimum latency is directly proportional to the distance traveled between the two endpoints of communication. In other words, the longer the distance, the longer the minimum delay.

In real life, the latency is also impacted by queuing and processing delay in routers and other network elements along the path. Many file, e-mail and document management systems leverage the Transport Control Protocol (TCP) for transport. TCP has a variety of congestion control functions that can introduce quite a bit of latency. To overcome this, WAN acceleration devices often leverage a variety of TCP acceleration techniques, including selective acknowledgements, high speed TCP and increased TCP window sizes.

In an effort to maximize WAN utilization, most enterprises will oversubscribe their WAN links.

In addition, some applications such as Microsoft’s CIFS are chatty by nature, requiring hundreds or even thousands of round trips to transfer a single file successfully. Typically this is not an issue when file servers are deployed on the same LAN as clients. However, when CIFS is used across a WAN, as is the case when branch offices are accessing file servers located within a centralized data center, both latency and bandwidth constraints across the WAN can impact file-sharing performance adversely. To overcome this, different approaches have been adopted, including read-aheads and write-behinds, whereby requests are pipelined on behalf of the client to eliminate round-trip delay.

Loss Mitigation

Even when the physical layer of a WAN is error-free, some technologies and provisioning practices still lead to packet-loss at the network layer. In fact, it’s not unusual to see network packet loss rates as high as eight percent in some networks, particularly when the Internet is used as a network medium (*e.g.*, IP-VPN). When this type of loss is coupled with high latency and the retransmission and congestion-avoidance behavior inherent to TCP, it is not surprising that application performance suffers across a WAN.

Forward Error Correction (FEC) is a technology that is well-known for its ability to correct bit errors at the physical layer. This technology is often adapted to operate on packets at the network layer to improve application performance across WANs that have high loss characteristics. FEC works by adding an additional error recovery packet for every “N” packet that is sent across the WAN. This FEC packet contains information that can be used to reconstruct any single packet within the group of N packets.

If one of these N packets happens to be lost during transfer across the WAN, the FEC packet is used on the far end of the WAN link to reconstitute the lost packet. This eliminates the need to retransmit the lost packet across the WAN, which dramatically reduces application response time and improves WAN efficiency. An advanced implementation dynamically will adjust FEC overhead in response to changing link conditions for maximum effectiveness in environments with high packet loss.

Quality of Service

In an effort to maximize WAN utilization, most enterprises will oversubscribe their WAN links. When demand exceeds the capacity of a WAN link and traffic is contending for the same limited resource, less important traffic (such as Web browsing) may take bandwidth away from business-critical applications. To prevent this, some WAN

acceleration solutions implement Quality of Service (QoS) techniques to classify and prioritize traffic based on applications, users and other criteria.

QoS involves two functions: (1) classification of packets into traffic classes based on characteristics such as source, destination addresses and/or applications; and (2) queuing and service mechanisms that are used to apply service policies based on these classifications including bandwidth allocation.

With application-level QoS, IT staff can ensure that business critical applications receive higher priority than other traffic and that the appropriate bandwidth is always available for key tasks.

Putting WAN Acceleration to the Task

Goodwin-Proctor, a law firm with over 700 lawyers with offices in Boston, Los Angeles, New York, San Francisco, and Washington D.C., used WAN acceleration to improve application performance across numerous WAN links ranging in speed from 50 Mbps to 155 Mbps. The firm averages 5GB of data per day across each WAN link, leveraging a variety of applications, including MS Exchange e-mail, Microsoft file services, FTP, Web, Interwoven Worksite for document management, LexisNexis InterAction for contact management and CRM functions and ADERANT's CMS.Net for time and billing management.

Goodwin-Proctor began a strategic initiative in 2006 to centralize all critical applications within two dedicated colocation facilities, located in the suburbs of Boston and San Jose. The goal of this project was to reduce infrastructure costs, ensure data privacy and facilitate day-to-day IT operations. In addition, by performing data replication between these sites, the firm can ensure that client information is always available and protected against unexpected disaster.

Goodwin-Proctor chose to evaluate several WAN acceleration products to address the above initiatives. They performed numerous tests to evaluate application performance across a 45 Mbps WAN link between San Francisco and Boston. They were immediately impressed by the performance gains delivered by data reduction. By delivering noticeable performance improvements across a wide variety of applications and demonstrating a clear story for protecting client data using disk encryption, WAN acceleration became an essential component of the law firm's IT infrastructure.

WAN Acceleration Proves Its Point

The verdict is in. When it comes to sharing information among distributed legal offices, there is a compelling case for WAN acceleration. WAN acceleration breaks down the barriers that hamper application performance in a legal environment. It enables better access to vital information while facilitating other strategic initiatives such as server and storage centralization and disaster recovery. This saves time and money while protecting what matters most, client information.





by Aaron Franko of Bakke Norman, SC.

:: Leveling the Playing Field

Big Firm Technology — Small Firm Reality

Large firms are making increasingly substantial investments in the area of data and voice communication. This is true not only for the technology being implemented, but also for investment in additional support staff. Meanwhile, small firms must spend a larger portion of their budget for lower-end technology and often have end user to support staff ratios nearly double that of the large firms.

Faced with these conditions, how can significant technology be implemented and supported to help a small firm covering a large, mostly rural population? Can a small firm stay competitive within a marketplace in which large firms with comparatively unlimited resources are becoming more common? The answer lies in the firm's ability to implement not only enterprise level hardware and software systems, but also the necessary support and management structure more typical of large firms.

The good news for small firms is that enterprise hardware and software systems are becoming less expensive and more accessible. Acquisition is relatively simple compared to the ensuing support and management structure that must be developed and implemented to ensure ongoing success. Large firms don't necessarily have a competitive edge in terms of acquiring technology, but they do have a substantial advantage in terms of supporting and developing it. Understanding this is critical in order to create a competitive business system rather than simply having a "successful install."

With the preceding thoughts in mind, effective technology implementations, such as voice and data communication systems, can be a reality. The following guidelines demonstrate ways to implement technology in a small firm to rival that of a large firm.

Be a Business Person

Most IT staff at small firms are hired because of their technical knowledge, while large firms often have a business person in an IT director role. Whatever the IT staff person's or manager's background, the same business decisions need to be made regardless of firm size. Negotiating support contracts, purchasing, budgeting and project management are just a few of the activities in which a small firm IT person must be competent.

Require a Business Purpose

New gadgets have great "wow-power," but often create more problems than they solve. With limited resources, it's critical to create the understanding that software and hardware shouldn't be considered if they don't have an agreed-upon business purpose. Create guidelines regarding what differentiates hardware/software from "nice to have" to "research and implement." If hardware or software must be supported that fall outside this area, find third-party support and provide information to the end user up-front regarding the cost for this service in the likely case that you are unable to help.

Plan Beyond Installation

Create a plan to include every aspect of your project. Include time to acquire the knowledge each step will demand. At a small firm, everything from design, implementation, training and support will become the IT staff person's responsibility and should be considered from the beginning. Unlike large firms, additional staff usually will not be hired by a small firm simply because new technology is being implemented. The small firm IT person becomes the "telecom manager" once the firm decides to implement an IP telephony system and takes on the responsibility and support calls that previously were directed to the telephone company.

Use Established Vendors and Products

A mistake that small firms often make is to bypass established vendors in favor of small, boutique companies whose products are much cheaper. Such similar products may do “almost” the same thing, but often falls short when it comes to service and support. One of the most important commodities a vendor supplies is product support, even if it comes with a cost. Nevertheless, vendor support costs are much easier to budget for initially as opposed to having to pay for more expensive emergency support at a later date. Additionally, the number of experienced users available is going to be higher with an established vendor’s product. Even if you’re not willing to pay for support, your options will be much better when people are familiar with a product. Plus, with the ever-changing face of legal technology, it’s much safer to invest in a product from an established vendor rather than a company whose likelihood of acquisition or dissolution is high.

Network, Network, Network

Organizations like ILTA provide IT staff from small firms the opportunity to interact with large firm “specialists” who are among the best resources available. If you are about to wear the hat of a telecom manager, get to know one who actually has seen your future. Not only will you have the opportunity to avoid pitfalls and gain insight, you will have a resource who can help provide additional connections for future projects. In addition to networking with people in legal IT, consider attending events with other legal professionals such as paralegals or attorneys. Talking to the people for whom we provide IT services often offers more insight and creates more goodwill than any number of surveys or formal meetings could ever accomplish.

Learn From Your Consultants

If consultants must be used for a project, learn everything you can from them. If you hire a consultant who refuses to work side-by-side with you, find a new consultant. If you bring in a technician to install a system and they resist your active participation in the project, you’re missing a valuable opportunity, and you may require additional support the next time.

The more effectively you have managed user expectations, the easier it will be to prioritize and focus accordingly.

That said, you should know your limitations and let the consultants do their job. Establish the working relationship up-front, and use each opportunity to learn something new. If a consultant is visiting for several hours, take him or her to lunch and have plenty of questions ready. You’ll rarely be charged for the time, and it will build your relationship with the consultant and increase your knowledge.

Create Staff Experts

As possibly the only person supporting IT in a small firm, it’s nearly impossible to support everyone’s needs along with the demands of your entire infrastructure. Work with a few staff members who are willing and have the aptitude to become experts in a given area of technology. In addition to creating more productive end users, you will give others a resource who understands their daily needs and work habits. Beyond being effective, this also elevates the status of the staff experts among their peers and fosters good will. Finally, unless you came from a legal background, there are many aspects of daily work that will be overlooked or at least underappreciated unless your “IT group” includes people who are actively creating work product. This can be invaluable when trying to determine priorities and future projects.

Obtain Management/Partner Support

The first paragraph in nearly all “how to” business guides is to get management buy-in. Partner support or lack thereof will ultimately make or break the success of a project or at least the will of the IT staff member. Initially, this will come from the desire to remain competitive, but ongoing support will be dependent on successfully implementing a complete IT infrastructure as discussed above. Maximizing the effectiveness of your team — even if it is made up of you, a few staff members, various consultants, vendors and colleagues — is a significant step in securing and maintaining the support needed from the partners.

Manage Expectations

It’s rare to find a signed service level agreement (SLA) in a small firm, so it’s necessary to be as clear as possible about what is expected of you and by you from others. The more resources you make available to yourself, the easier it will be to be all things to all people. It’s equally important to understand your limitations and help those around you understand them, whether they be time, resources or expertise. Nobody likes to say “no,” and it is especially difficult when you may be the only resource for a user. Maintaining quality requires your ability to prioritize. The more effectively you have managed user expectations, the easier it will be to prioritize and focus accordingly.

Ultimately, law firms of every size embrace technology in order to provide the best client service possible. Products such as IP telephony, video conferencing and remote access are available to any firm. Therefore, determining what technology is available to maximize productivity and client service is elementary. After deciding what to implement, a much more critical decision is how to support and effectively use technology. Despite a similar rationale for product selection, the strategy used by a small firm after this point will require considerable creativity and resourcefulness. Using these guidelines, any small firm can effectively implement technology once reserved for large firms.



by John Hall of Integration Appliance (IntApp)

:: The Innovative Power of Data Collaboration

When you hear the topic “voice and data communications,” it’s natural to assume that what will follow is an exploration of the methods and practices of transmitting voice over IP or transporting raw data across a network and an examination of all of the related complexities and challenges associated with environmental monitoring and management.

Taking a step back from infrastructure and examining what’s being communicated and why, voice and data communication can be explored from a different perspective. Specifically, there are several innovative ways law firms are communicating and connecting data throughout their organizations. By tying together information across systems and communicating relationships intelligently, firms are able to address some compelling problems and generate new opportunities, both for IT and the attorneys and staff they serve.

Communicating Information Effectively

Steve Blackwell, COO of Holme Roberts Owen LLP recently stated: “All law firms are different, but every law firm is similar in some fundamental, basic ways . . . At the end of the day, we’re all trying to get to much the same place, so there are only variations on the theme.”

This sentiment holds true on many levels, including IT goals and practices. While firms differ in culture, technology portfolios and strategies, all organizations face the need to address a common set of data communication challenges. While some may be more technologically sophisticated than others, every firm has evolved a set of practices they rely upon to address the movement of information as part of important firm processes such as new business intake and new user resource provisioning.

In the case of legal IT, necessity always has been the mother of invention, and there are many areas where forward-thinking firms have implemented new ways of managing data communications connecting people, process and information. Looking to their peers, organizations can find rich opportunities to learn from one another. Here are some noteworthy projects and possibilities.

Matter Management

Improved attorney productivity and satisfaction are just a few of the benefits available through creative data communication that accurately and quickly provides timekeepers with the information they need. Innovative examples of more sophisticated data practices include:

Synchronizing Recent Matter Lists. Several legal applications provide timekeepers with fast access to recent work by maintaining a record of frequent matters. Like the “documents” menu in Microsoft Windows, this functionality reduces the time users must spend tracking down information. Unfortunately for the end users, these lists operate strictly on a per-application basis. By allowing all productivity applications to share recent matter data, firms can synchronize these lists so that when an attorney moves from one application to another, the matter he is working on is immediately and conveniently accessible. A good example of where frequent matter lists are important is in intellectual property practices where attorneys wrestle with an ever-growing explosion of matter numbers.

Enhancing Matter-Centricity. According to ILTA’s *2006 Technology Survey*, more than half of all law firms are either working in a matter-centric environment or working to implement one. Matter-centricity is easier said than done, and firms face several

barriers to successfully implementing and using matter-centric approaches. One such barrier is streamlining the DM setup as part of new matter intake. By communicating the right information across systems, firms can ensure that workspaces are created automatically and configured in document management libraries immediately upon matter intake and assignment within the financial system.

Automating Matter Transfer. Whether due to clerical error, a legitimate need to reclassify a matter, or corporate restructuring on the part of either the client or the firm, from time to time the need arises for firms to change the numbering of existing matters. While some applications provide native matter transfer functionality, others do not. When manual intervention is required, firms face delays and users face potential confusion. By tying together applications and communicating matter updates immediately, firms can make the process transparent to end users. In such an environment, software communicates applicable matter transfer data across relevant systems and immediately reconfigures them as necessary.

Revenue Generation

By connecting the right data streams and automating analysis, IT organizations can help deliver fresher information to the firm that has the potential to stimulate new business development and revenue opportunities directly.

Court Filing Notification. Many firms subscribe to commercial services that provide court filing data. This information is valuable because a firm can provide its client (or a client it hopes to win) with early notice and pitch its own litigation services for that particular matter. But barriers to the effective utilization of this information often necessitate significant manual staff intervention.

External brokers supply data in multiple formats. Furthermore, these vendors may or may not provide the means to configure when and how different updates should be communicated. For example, one vendor provides firms with the ability to specify particular client names to monitor; another simply provides a log of all filings from subscribed jurisdictions. In the latter case, information overload becomes an issue. Unable to filter the deluge of data, the firm turns to a pragmatic solution — eyeballing the list in search of firm clients — the anti-automation solution.

Similarly, vendors provide varying levels of flexibility with regard to notification capabilities. Without intelligent notification, firms must manually review filings to intelligently route the right data to the appropriate stakeholders. Otherwise, they have to send everything to everyone and hope the right people are paying attention to the flood of information and spotting relevant records.

To maximize the value of raw data provided by these information brokers, some firms have implemented systems that crossreference incoming data against other firm repositories such as financial and CRM systems. This approach allows organizations to centralize incoming data, evaluate filings and automatically alert the appropriate internal stakeholders.

Automatic Time Journaling. While they have every incentive to be punctual, the truth is that attorneys often dawdle when it comes to entering their time. Parker Houser Consulting recently conducted a time management survey of the Toledo Group, a national network of independent law firms. The results validated common experience, timekeepers typically wait until the firm's time entry deadline, whether it's weekly or monthly, to record time. Specifically, fewer than half of polled attorneys enter their time within one day of the corresponding activity, and nearly one-third wait at least one business week to record time. Such delays not only create a perennial headache for CFOs and firm management, they also increase the likelihood of missed or underbilled time.

But there is hope beyond the penalties or incentives that many firms employ. Increasingly, firms are also taking steps to streamline the time tracking process for attorneys with software that can monitor, extract and crossreference the wealth of existing data within the organization. By collecting information from the applications attorneys use regularly including DM, phone, e-mail and calendar systems, firms can create automatic journals of core timekeeper activity.

Configured by and e-mailed to attorneys, these reports deliver multiple benefits. First, they streamline attorney time entry by removing barriers to efficient record keeping. Increased attorney satisfaction is often the best and only necessary reward, but time journaling also increases the accuracy of time records, protecting and potentially enhancing revenue by capturing unbilled or underbilled time increments.

Finally, integrating an automatic time journal with the firm's existing time entry system provides additional benefits and further streamlines the process by enabling "click to convert" functionality. This allows attorneys to view and edit journal data while retaining the time entry applications to which they are accustomed.

Edge Case Matter Data Propagation. As discussed previously, most firms have some mechanism in place to propagate new client matter data to core business applications. Those methods may include vendor-supplied or custom batch scripts, sophisticated integration software or simple manual entry by support staff.

While every firm tries to communicate new client and matter data to the most critical systems, they may not make the effort to populate this information across every matter-based application within the organization. For example, firms may use systems to order catering or car services. These are not "core" to the business and are not heavily used when compared with document management, time entry or cost recovery applications. Therefore, the perceived returns of extending matter propagation are diminished.

A firm that manually enters new matter numbers or writes custom batch scripts that run nightly may not have the resources to address these "edge applications." Thus, instead of selecting from a dropdown list or using a search interface to identify the correct matter number, users are required to enter the correct matter number manually. This approach creates the opportunity for user error, prevents validation

against a master list of active matters and encourages the use of temporary or overhead codes. Errors or temporary codes result in hard costs in the form of additional staff reconciliation overhead or unrecovered expenses. By unifying matter data communications across all applications using centralized approaches, firms increasingly are able to address these edge cases.

Finance

By improving data communication between applications, firms can accelerate financial processes and provide more valuable and timely information to attorneys while reducing finance department burdens and overhead.

Pre-Cost, Time and Other Data Imports. To generate client bills, firms typically import a variety of data, including cost and time information, into their accounting application. These financial systems usually provide one or more mechanisms to take in such information, but the process can be needlessly difficult. Complexities include limited native integration capabilities and varying export processes and data formats provided by source systems. In response, firms often write custom batch scripts or even depend on human intervention for seemingly simple tasks like capturing research service expenses in time to incorporate into client billing. By automating data communications from source systems, firms can reduce errors, speed up the entire process and free staff resources.

By extending the ways in which they manage communication, firms are increasing timekeeper and staff productivity and improving internal and external collaboration.

“Full Circle Time.” During the prebill review that occurs as attorney-reported time data is processed, firms may adjust and write off attorney time. In some organizations, these adjustments are not always communicated back to the billing timekeeper. The net result is the potential for an unhappy revelation by associates at the end of the fiscal year as they work to reach billable hour requirements. One way to solve this problem is to “close the time loop” and communicate updates back to attorneys either by updating records in the time entry system or by providing alternative reporting mechanisms. By propagating adjusted time, firms can reduce the element of surprise and improve the attorneys’ visibility into and satisfaction with the billing process.

Communication Enhancements

By extending the ways in which they manage communication, firms are increasing timekeeper and staff productivity and improving internal and external collaboration.

Distribution List Management. Mailing lists are excellent collaboration tools; however, managing, updating and reporting on list membership quickly can become a burdensome task that consumes

substantial resources. Large firms can maintain upwards of 1,000 mailing lists, often including nested and subnested lists. In these scenarios, simply determining which users receive communications from which lists can be a complex undertaking. Through improved data management, firms can automate not only reporting but also membership management by tying list configuration to external systems such as human resources or practice management applications. In these cases, as attorneys and staff join or move within the organization, lists are updated automatically.

Document Routing. Inbound and outbound communication management is another area ripe for tighter integration. For example, firms can automate data communications among print, scan, fax, e-mail and document management systems. In such scenarios, firms that routinely scan inbound documents or use server-based fax solutions can connect these applications so that inbound and outbound documents are transported automatically and stored in appropriate repositories based on sender, matter designation or other criteria. Such optimization can cut the time spent moving documents throughout the organization, improve accessibility and increase records management efficiency.

Contact Cleansing. Maintaining accurate contact information throughout a firm can be an elusive goal. Keeping this data fresh and accurate is often an inefficient, painful process. Several factors complicate matters. For one, contact information is typically distributed among stakeholders and is constantly changing. In addition, attorneys may store records in multiple private disconnected repositories such as PDAs and local Outlook folders. Some firms even create one-off contact repositories such as alumni extranets.

Centralized CRM systems are perfectly sensible approaches to address contact problems but often face adoption and usage problems. The bottom line is that while firms have an interest in synchronizing this information and keeping it up-to-date, attorneys have more pressing requirements than entering contact updates into multiple systems. By creating systems and interfaces to consolidate, crosscheck, resolve and synchronize contact data across applications, firms can improve contact accuracy dramatically.

Risk Management

Data communication enhancements can also protect the firm against errors, oversight or more significant problems through proactive environmental monitoring and intelligent alerts.

Suspicious Activity Alarms. As technology permeates law firms, it delivers significant productivity benefits. However, the proliferation of information management tools often obscures staff activity as well. With a growing number of repositories storing sensitive information, it can be difficult to keep an eye out for warning signs indicating potential staff problems.

Through suitable monitoring of key law firm applications and intelligent data communication and analysis, firms can better protect their business interests. For example, unusual activity in document management, CRM or cost recovery systems can indicate that an attorney is preparing to leave the firm. If a timekeeper starts

harvesting CRM information or billing an unusually large volume of copies to an office overhead code, trouble may be brewing. Similarly, unusual staff metrics may indicate that some individuals are simply not adhering to firm processes, are overburdened or simply require additional help.

Deadline Management. It's not uncommon for firms to employ multiple tools and methods for tracking and enforcing deadlines. Docketing applications help ensure that firms do not miss important deadlines and as a result, incur financial penalties or disqualification. Groupware calendars and project management systems provide general purpose scheduling and collaboration capabilities.

With so many alerts being sent, some firms have actually deactivated general e-mail notifications in their software so as not to overload attorneys. Deadlines often are recorded in multiple places. By communicating among and crossreferencing systems, firms can improve staff visibility and reduce the risk of missing due dates.

Some organizations are using more sophisticated data management approaches to provide the appropriate highlight to notifications of unrecoverable events (where a missed deadline would result in forfeiture instead of just a fine). Similarly, firms also are extending native docketing notification mechanisms across other applications, including sending text and audible notifications to VoIP and cell phones.



Implementing and Managing Data Communication

Firms can take several approaches to connect their infrastructure and implement these data communication solutions. As with most IT projects, the options boil down to borrow, build or buy.

Borrow (Staff) — Some of these communications could be performed manually on a small scale, but it would be difficult to use this approach broadly. Notably, several of these projects could require complex crossreferencing and synchronization across applications. With success defined as accurate, timely and efficient data communications, firms would have to make a significant investment in personnel. Realistically, staff resources probably could be better utilized.

Build (Scripts) — IT is in the business of building technology solutions. Many firms have the technical skills necessary to develop custom data communication tools in-house to tackle several of these challenges. In practice, however, few organizations have the resources to build a complex, generalized data management solution, much less the time. Instead, they resort to using batch scripts, homegrown applications and, in some cases, coding wrappers for legacy applications. Often, they must turn to costly consultants because of resource and deadline constraints. On a per-project basis these approaches can work, but in practice, the resource requirements to design, build and maintain such tools on an ongoing basis often create new IT challenges for the organization including adding complexity and risk to the environment.

Buy (Point Solutions) — Various third-party tools exist that may address individual projects. For example, several vendors provide tools for the creation of matter-centric workspaces in the DMS. These tools may excel at their individual purposes. However, a firm using multiple tools to address multiple projects will quickly find its application portfolio expanding and along with it, additional configuration, training, maintenance and other IT challenges.

Buy (Platform) — Today, firms increasingly are moving to centralize application data communication. A 2006 legal IT integration survey conducted by Thomson Elite and Askew Network Solutions noted that: "Organizations are moving away from using *ad hoc* approaches [to application integration and data communication] to adopt more centralized approaches." Unified approaches provide organizations with a single means to implement, manage and monitor key data communication projects. Platforms also enable organizations to make more effective use of staff resources and better reduce their overall risk profile.

Continuing the Discussion

This list of innovative projects is by no means exhaustive. Firms are adding ideas and experience all the time. With the collaborative forum of ILTA and the communal spirit of the legal IT community, all firms have the opportunity to benefit from this creativity and bring new data communication capabilities and innovation to their own organizations.



by Steve Butterworth of BigHand, Inc.

:: Voice Productivity

10 Reasons Behind the Workflow Revolution

The rapid evolution from letter communication to e-mail is in striking contrast to the continued use of manual tapes or .wav recording for dictation, but it's not set to last for much longer. Similar to the wholesale consumer transition from cassette/CD to sophisticated MP3 players, digital dictation workflow tools designed for the legal technology sector have come of age in the last 12 months. Over 800 law firms worldwide have already ditched their tapes or .wav standalone devices and moved over to workflow software. Furthermore, in an increasingly competitive legal market, law firms are now making the recommendation that attorneys who can type should no longer waste time creating their own documents.

Even without considering the improvements in speech recognition, moving to legal digital dictation workflow can dramatically improve the "voice productivity" rating at your firm. Here are 10 areas outlining the inefficiencies and risks experienced with legacy systems such as tapes or standalone digital dictation systems:

No. 1 — Billable Time

Many attorneys do not dictate at all. Old tape-based systems are antiquated and very inefficient in terms of back-up transcription support. In addition, some attorneys, especially younger associates with advanced PC skills, get into the habit of doing the work themselves. In recent years, this has been encouraged. However, it is inefficient for attorneys to type all of this documentation or get involved in administration. They are paid to think, apply the law and communicate with clients, not get caught up in document production.

To date, in the absence of an alternative, this "type-it-yourself" practice has crept in across the board. However, digital dictation workflow systems redress this balance. Materials produced in this way are out the door much more quickly than attorney-produced documents, leaving

them more time to acquire more work, add more legal value and increase billable time. It pays to stop typing.

No. 2 — Security

Privacy, confidentiality and security are paramount to the nature of a law firm's work. Essentially, if someone external — by accident or with malice — obtained a cassette tape or .wav file while it was in the process of being delivered, sent or stored almost certainly breaches client confidentiality. Your firm could be open to litigation. After all, how can you guarantee that a lost tape or .wav has not been listened to externally?

Legally-focused digital dictation workflow systems compress and encrypt dictation to ensure that a law firm's need for total confidentiality and security is addressed. These highly secure formats offer each law firm complete protection from security issues while the audio file is "in-transit" across the network and while stored on the server. Advanced systems also make use of three-tier architecture, standard SQL practices and Active Directory, thus increasing your dictation security levels and disaster recovery provisions further.

No. 3 — Working Remotely

Typically, there are three common scenarios in working and dictating remotely: (1) an attorney goes from office A to office B and has to wait until returning to office A to pass the tapes back to a secretary; (2) an attorney is traveling to a meeting or commuting and either waits until returning to the office to pass the tape to a secretary or dictates to the secretary's voice mail; or (3) attorneys or secretaries work from home and have to courier tapes or use voice mail systems not necessarily designed for accurate dictation.

With tape or .wav standalone systems, each of these scenarios can be plagued with delays and risks. Such issues often can be resolved by legal digital dictation workflow systems which will utilize a combination

of laptop, VPN/RAS, Citrix or Terminal Services, Web, professional dictation devices or telephony (via PDA or cell phone) to enable dictation to be sent back to office support staff immediately. These devices also can sync automatically with an attorney's inbox, eliminating the need to browse in order to move or save files. Saving even small amounts of time across the document creation process adds up.

No. 4 — Assistant Teamwork

If a secretary is overloaded, it's often culturally and practically difficult to ask for help from other secretaries. Digital dictation workflow systems can create "virtual" teams, where secretaries in a department band together to turn work around quickly because they can see all the outstanding work tracked on screen. This visibility and flexible workflow helps transform the legal support culture organically.

No. 5 — Confidentiality

Cassette tapes, as with standalone .wav files, can be picked up or opened by anyone internally and played at their leisure. Piles of tapes are left on desks openly visible to others in a team; .wav recordings of confidential client matters may be openly available in network folders. This makes it impossible to guarantee confidentiality or an ethical wall provision for your clients. Legal digital dictation workflow software allows for confidential "workflows" including password protection if desired. A user is assigned group rights that enable him or her to either submit or retrieve dictations from a "Confidential" folder. Password protection allows an attorney to assign the dictation a file level password, which can be opened only by the relevant secretary.

No. 6 — Inter/Intrastate Cooperation

If you have more than one office within a state or across several states, potentially, it could be easier to apportion work among available document support resources. However, with tape cassettes, if a secretary in New York is overloaded, there's not much a secretary in Chicago with spare time can do to assist. With a digital dictation workflow system, the Chicago secretary can be assigned the project without compromising security or confidentiality.

In addition, an attorney can move among offices in your network and have dictation immediately processed into documents by his or her assigned secretary. The system automatically routes dictation to the correct secretary in seconds. The attorneys can have legal documents processed without returning to the office or worrying about how it's going to get done. Large firms also can utilize time zone savings by moving the dictation workload to another time zone when the working day in the originating time zone ends.

No. 7 — Management Reporting

Unlike tapes or standalone systems, when data is digital, workflow software allows total visibility and tracking of management information across users, departments and sites. Reports such as the number of dictations completed daily, number outstanding at the end of the work day, average number of dictations in "Work in Progress" folders, secretarial performance over time, top performers, etc., are available to management.

No. 8 — Legal Systems Integration

Legal document management systems have led to an increasingly matter-centric environment where attorneys or secretaries access other applications using the DMS. Having to change among systems to produce documents can waste time. Most digital dictation workflow systems designed for legal can be integrated with the DMS or come complete with APIs that serve to link the systems, so users can dictate from inside the DMS and yet again, save precious time in the document creation process.

No. 9 — Overhead Costs

When a secretary is out ill or on holiday, a pile of outstanding cassette tapes may sit on the end of the desk (or .wav files build in the inbox) awaiting completion. To cover such contingencies, a firm may have to carry a team of floater secretaries, pay secretarial overtime or bring in a temporary contract employee to get it done. With a workflow system, the outstanding workload can be divided up among other secretaries so as to minimally impact any one person's volume of tasks. One thing to do if you're thinking of changing over from tapes or a standalone system is to identify how much overtime or temporary agency fees are incurred in one year. It may pay for your new system.

No. 10 — Client Service

A digital dictation workflow system significantly enhances service to clients. Secretaries make fewer mistakes as the sound quality is clearer, documents are turned around more quickly, and attorneys spend more time on relationship management as they are not producing their own documents.

Your firm may not need 10 reasons to consider implementing a digital dictation workflow solution. No matter how many are applicable, this is the path of the future, and it could revolutionize your document production environment.



by Robert DuBois of Devine, Millimet & Branch, P.A.

:: Telecommunications Survey Results

We're pleased to present the results of ILTA's first-ever survey on telecommunications. On behalf of ILTA and the Voice and Data Communications Peer Group, we thank all of the participants. We're hopeful you will find this information valuable and, more importantly, provide feedback so that we can make future surveys even better.

Participants to the survey represented almost 100 member entities, not a bad response rate for our first survey. The goal of our peer group is to provide you with information that will assist you in making the most informed decisions for your organization, and we're hopeful these survey results do just that.

All Around the World

The average number of offices per organization was 6.4, broken down as follows:

Number of Offices	Total
1	23
2-5	40
6-10	21
11-15	2
>15	9

Aging Gracefully

As a result of 40 percent of respondents having converted to an IP telephone solution, the average age of phone systems was 4.7 years. The age breakdown is as follows:

Number of Years	Responses
1-3	50
4-7	17
8-10	17
>10	7

The Choice Is Yours

The survey results show that 78 percent of the installed base of systems are made up of Cisco, Nortel and Avaya, with the remaining spread over roughly 8 vendors and 2 hosted-type solutions. These

numbers will surely change as the market matures and applications become available.

Can You Hear Me Now?

Headset use was certainly not as high as I would have thought coming in at about 15 percent of the users.

Leave a Message

The trend in voice mail is toward unified messaging/integrated messaging where 63 percent of respondents utilize this technology. We had 13 responses that limited the size of the inbox. The size of inboxes ranged from no limit to as little as 350 MB. The storage and treatment of voice messages surely needs to be part of your organization's retention policy.

Join In!

Conferencing features included responses for both *ad hoc* (from your phone) to internal/external conferencing solutions. For *ad-hoc* conferencing, 40 percent responded their systems supported 6 lines. With internal/external conferencing, more than 50 percent reported up to 32 lines.

The Lines Are Open

The number of phone lines assigned to secretaries averaged 4, while lines per attorney averaged 2.8. The breakdown is as follows:

Secretarial Lines	Responses
1-3	48
4-6	36
7-10	6
>10	2

Attorney Lines	Responses
1-3	70
4-8	23

I Need Validation

Twenty-five percent of respondents use Equitrac for client/matter validation. A number of other solutions were also used, including Control Systems, Elite and internally developed scripts.

Phone Specs

Phone System Type	
IP	40%
Traditional	49%
Hybrid	25%
Hosted	2%

Phone System Vendor(s)	
Cisco	29%
Siemens	10%
Avaya (Lucent/AT&T)	21%
Nortel	27%
ComDial	1%
Mitel	7%
ShoreTel	3%
Toshiba	1%
NEC	5%
Panasonic	1%
ASP/Hosted	1%
Other	16%

Type of System	
Key	15%
PBX	94%
Centrex	4%

Number of Handsets	
<50	1%
51-200	31%
201-500	31%
501-1000	17%
>1000	21%

Type of Attorney Handsets	
Color	14%
Wireless	5%
Monochrome Display	86%
No Display	2%
Soft Phone	7%

Type of Secretary Handsets	
Color	11%
Wireless	0%
Monochrome Display	85%
No Display	7%
Side Car	15%
Soft Phone	2%

Headset Types	
Traditional	85%
Wireless	70%
Bluetooth	9%

Extension Dialing Between Remote	
Yes	67%
No	33%

Dialing Between Offices	
IP Trunking	58%
Traditional TDM	40%
Copper TIE lines	11%

Softphone Capabilities	
Yes	56%
No	44%

Voice Mail

Voice Mail Type	
Traditional	48%
Unified Messaging (displayed in e-mail client, stored in e-mail system)	41%
Integrated (displayed in e-mail client, stored in e-mail system)	22%

If voice mail type is unified messaging, restrict mailbox sizes?	
Yes	28%
No	72%

Do you provide a way to archive voice	
Yes	49%
No	51%

How do you archive voice mail?	
DMS	62%
E-mail archive solution (EAS, KVS, C2C), etc.	35%
Other	8%

Does your firm have any policies forwarding of messages outside the	
Yes	27%
No	73%

Call Routing

Calls routed to:	
Central number	11%
DID	89%

Are DID calls screened by secretary or	
Secretary	62%
Operator	14%
Answered by attorney	83%

Which scenario best describes your to attorney DIDs?	
Attorney, attorney voice mail	31%
Attorney, secretary, attorney voice mail	58%
Attorney, switchboard/receptionist, voice mail	2%
Attorney, switchboard/receptionist, secretary, voice mail	0%
Attorney, secretary, switchboard/receptionist, voice mail	2%
Attorney, switchboard, manual	0%
Other	6%

Cost Recovery

Do you require client/matter number at	
Yes	68%
No	32%

Is client/matter entry optional?	
Yes	33%
No	67%

Are client/matter codes validated at	
Yes	26%
No	74%

If yes, do you use a third-party tool?	
Yes	76%
No	24%

Features

Overhead paging?	
Yes	50%
No	50%

Handset-handset paging?	
Yes	33%
No	67%

Call park/retrieve?	
Yes	78%
No	22%

Music on hold?	
Yes	29%
No	71%

Custom on-hold messages?	
Yes	10%
No	90%

Emergency text broadcast to all	
Yes	14%
No	86%

Voice mail broadcast?	
Yes	75%
No	25%

Extension mobility?	
Yes	41%
No	59%

Find me/follow me personal routing	
Yes	24%
No	76%

Dial from Outlook/Groupwise?	
Yes	34%
No	66%

Video phones?	
Yes	7%
No	93%

Are fax machines connected via this	
Yes	59%
No	41%

If so, how?	
Analog	80%
Adapter	7%
Router component	14%
Other	14%

Does an outbound call show:	
Actual callers Caller ID	37%
Generic firm number	63%

Charge for long distance calls?	
Yes	71%
No	29%

Conferencing

Conference Bridging	
Internal	48%
External	78%

Do you use:	
Special conference room phones (Polycom or others)	91%
Just speaker phone	45%

Network Topography

What type of circuits do you use for voice?	
PRI (no Caller ID)	4%
PRI (Caller ID)	84%
T-1	35%
Copper	23%
Frame relay	4%
MPLS	16%

Connectivity Between Sites	
Point-to-point	51%
MPLS	33%
Frame relay	8%
Copper TIE lines	4%
QSIG	4%
None	18%
Other	6%

Do you use least cost routing?	
Yes	43%
No	57%

Business Continuity

Can you route receptionist console to another office?	
Yes	57%
No	43%

Is your switch/server redundant?	
Yes	52%
No	48%

If you use IP, are your data lines redundant?	
Yes	46%
No	54%

Is your voice mail system redundant?	
Yes	26%
No	74%

Do you supply UPS backup power to your phone system/switch?	
Yes	95%
No	5%

Do you supply UPS backup power to your voice mail system/switch?	
Yes	96%
No	4%

Is backup power provided at the handset/desk or is it provided by the switch via POE?	
Yes	49%
No	51%

Miscellaneous

Purchased from:	
Manufacturer	18%
Local reseller	82%

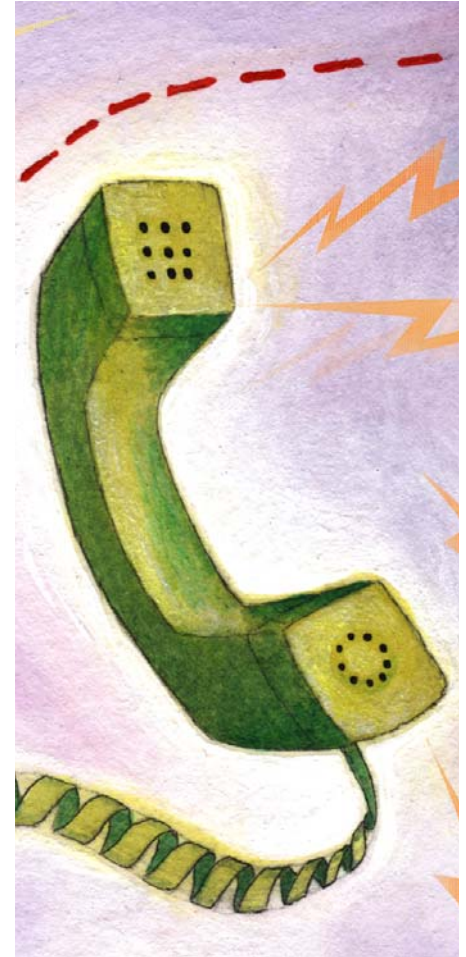
How purchased:	
Lease	37%
Buy	66%
Rent	2%

If leased, for how many years?	
One	0%
Two	0%
Three	29%
Four	6%
Five	66%

Maintenance Contract	
Manufacturer	37%
Local reseller	46%
Third-party service provider	16%
None	1%

Conversion Timeframe to IPT	
Already IP	38%
Currently converting	7%
3 months	3%
6 months	3%
1 year	7%
> 1 year	19%
No plans/Not looking at IPT	22%

Reasons to Convert to IPT	
Old system	57%
Need additional functionality	48%
Moving	28%
Reduction in maintenance costs	36%
Other	9%



Q.

**Who Does the AmLaw 100
Turn to for Improved
Profitability?**

A.

Soundpath Legal Conferencing.
*Created by Lawyers for Lawyers.*TM

More than 35% of the AmLaw
100 already uses Soundpath.
You can too.

*"Soundpath's service is extremely reliable and easy to use. They are always willing to accomplish quickly what we need for our users and back office. **Soundpath's fulfillment process is also outstanding**, with custom packets, cards, and training provided as part of the service. With our high volume of conference calls, **Soundpath's electronic billing interface and online management and reporting tools contribute greatly** to our cost recovery and administrative processes."*

– GREGG JONES, GREENBERG TRAUIG, LLP



800-606-3494 / www.soundpathlegal.com / info@soundpath.net

About the Authors

Steve Butterworth is VP Sales – North America of BigHand, Inc., where he has overseen over 400 law firms move from cassette tape or standalone systems to digital dictation workflow software. Steve is based out of Chicago and is responsible for the North American Sales and VAR network after previously managing sales across Europe and Australasia. With BigHand since 1999, he has a wealth of experience in the technology and HR implications of voice productivity software. Steve can be reached at steve.butterworth@bighand.com.

Aaron Franko is the IT Manager at Bakke Norman, S.C., supporting seven locations in Western Wisconsin that are serviced by its 17 attorneys. Aaron has successfully implemented an IP telephony and remote computing environment that allow attorneys and staff to work from anywhere at any time. Aaron can be reached at afranko@bakke-norman.com.

John Hall is the President of IntApp. He has presented at several industry events on topics including business process optimization, ethical walls enforcement, information security management and new business intake. Prior to joining IntApp, John co-founded VA Linux Systems (now VA Software) and helped lead the company to a record-breaking IPO in the late 1990's. At VA, John served as Senior Vice President of Marketing, overseeing worldwide marketing strategy, in addition to a number of other leadership roles including managing professional services and overseeing corporate strategy. He can be reached at john.hall@intapp.com.

Mike Hicks is currently the principal consultant for Advanced Networking at Compuware. With a long career providing support to complex corporate networks throughout Europe, North America, Asia and Australia, he works closely with many infrastructure vendors in the area of application profiling and management. Mike is the author of "Managing Distributed Applications: Troubleshooting in a Heterogeneous Environment" and "Optimizing Applications on Cisco Networks," as well as several white papers on the subject of application delivery and optimization. He can be reached at Mike.Hicks@compuware.com.

Dean Leung is the Director of Information Technology at Davis & Company LLP, which has eight offices in Canada and Japan. He holds several certifications including Novell's CNE, Citrix's CCA, and Microsoft's MCSE. Dean has been working in the IT arena for 13 years. He served as the Northwest Regional Vice President for ILTA and was a member of a number of bodies at the University of British Columbia, including the University Senate, UBC Advisory Committee on Information Technology and UBC Computing and Communications Rates Committee. He can be reached at dleung@davis.ca.

Dan Mennell is currently the Senior Technical Consultant for the legal market with Compuware. Dan has extensive experience supporting enterprise organizations throughout North America in deployment and management of distributed Web- and Citrix-based applications. His expertise includes performance profiling and troubleshooting complex applications. Dan can be reached at Dan.Mennell@compuware.com.

Christian Stegh is the Avaya IP Telephony Practice Leader for North America. In this role, he consults with Avaya customers and subsequently prioritizes and relays their requirements to Avaya product development teams. He has previously served as a Managing Consultant and a Senior Systems Engineer for the enterprise IT organization. He is a regular speaker at industry events and a published author on topics including best practices for VoIP, multimedia network performance, VoIP security and SIP, and a major contributor to Avaya's "SIP Communications for Dummies" publication. He can be reached at cstegh@avaya.com.

Craig Stouffer is Vice President Worldwide Marketing at Silver Peak Systems, Inc. Craig is responsible for outbound marketing, product management and technical partnerships. Most recently he was the VP of Marketing for Redline Networks, which was acquired by Juniper Networks in May 2005. Craig brings 17 years of industry experience in marketing, product management and business development. Craig can be reached at CStouffer@silver-peak.com.

DISCLAIMER This report is designed for use as a general guide and is not intended to serve as a recommendation or to replace the advice of experienced professionals. If expert assistance is desired, the services of a competent professional should be sought. Neither ILTA nor any author or contributor shall have liability for any person's reliance on the content of or any errors or omissions in this publication.

COPYRIGHT NOTICE Copyright © ILTA 2007. All rights reserved. Printed in the United States of America. No part of this report may be reproduced in any manner or medium whatsoever without the prior written permission of ILTA. Published by ILTA. c/o Editor, 2450 Louisiana, Suite 400-616, Houston, Texas 77006

 **International Legal
Technology Association**

2450 Louisiana, Suite 400-616
Houston, TX 77006

Address Service Requested

PRESORTED
FIRST CLASS MAIL
U.S. POSTAGE
PAID
AUSTIN, TEXAS
PERMIT NO. 1557

Visit the ILTA website at www.iltanet.org