

The Benefits of Migrating Fax Communications to Converged IP Networks

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executive summary

Enterprise networks are evolving to support voice, video, and data applications on a single network infrastructure at an increasing pace. According to research firm Gartner, 91% of all enterprise telephone sales are expected to be IP-capable by 2009.

One technology that is often overlooked when companies transition to VoIP networks is fax. By migrating their fax communications to converged IP architectures, companies enjoy many advantages over legacy analog or Time Division Multiplexed (TDM) fax. The centralized and fault-tolerant nature of IP fax servers can help companies:

- reduce their phone bill by driving long distance fax traffic over IP
- eliminate the cost of maintaining analog Private Branch eXchange (PBX) ports
- dramatically reduce network administrative costs
- more easily provide fax services to all employees regardless of location
- lower the cost of disaster preparedness associated with fax technology
- consolidate remote fax servers in a central location
- eliminate analog fax machines

This paper describes in detail the specific cost and productivity benefits of implementing an IP fax server. In addition, it also reviews how fax servers can assist companies in their efforts around business process automation, document management and meeting regulatory and compliance standards.

long distance cost savings with IP fax

One of the major advantages of IP communications is that it enables companies to make phone and fax calls essentially free of Public Switched Telephone Network (PSTN) charges. For example, the cost of sending a long distance six-page fax at 5 cents per minute is approximately 30 cents. Routing that same fax over an IP network virtually eliminates the long distance fee. Multiply that by the thousands of faxes sent monthly and the savings add up quickly. As the market adoption of IP fax grows, savings will increase even more because a greater percentage of faxes will travel from start to finish via IP, bypassing the PSTN altogether.

lower PBX maintenance fees

By switching to an IP-based fax solution, companies can dramatically reduce the maintenance costs of PBX station ports, which are much higher than the maintenance costs of routers. As shown by comparing Diagram 1 with Diagram 2, the fax server no longer requires connectivity to the PBX and is instead connected to a gateway. This can save companies significant costs, as PBX maintenance contracts range from \$200 to \$300 per port, while router maintenance contracts are typically less than \$100 per port.

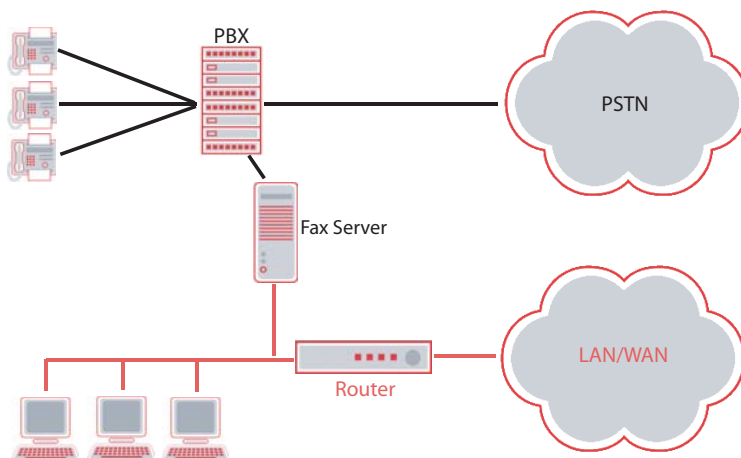


Diagram 1: Traditional Fax Server PBX Integration

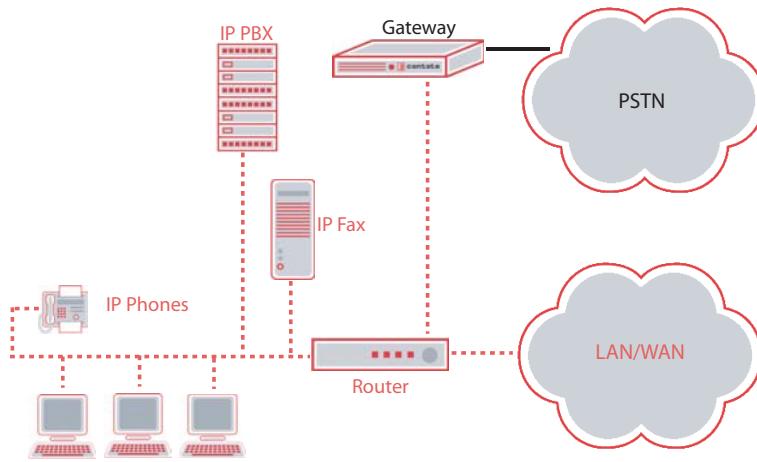


Diagram 2: IP Fax Server - IP PBX Integration

less complexity - lower operating costs

Multiple network topologies and disparate network technologies increase the level of management complexity. As data networks have expanded throughout the enterprise, companies have been forced to manage a data network and a telephone network, each using radically different technologies and requiring different technical skill sets and knowledge. With IP communications technologies, companies can now eliminate the legacy telephone network and combine all communications modes, including fax, in a single network topology. This convergence of networks enables companies to reduce staff and transition phone and fax services to the data networking group.

centralized fax resources provide easier deployment and maintenance

As we can see in Diagram 2 the location of the IP fax server is independent of the PSTN network access point. In a VoIP environment, gateways provide the connection to the PSTN. The fax processing resources simply need access to a data network, Local Area Network (LAN) or Wide Area Network (WAN), where the gateway resides. The various application servers on the enterprise WAN can now deliver services to all locations from one central data center, using the gateways in remote offices to gain access to the public telephone network. This arrangement reduces the number of parts that are remotely managed, consolidating maintenance and lowering costs. This also simplifies deployment to remote locations, enables greater consolidation of fax services, lowers disaster preparedness costs, and enables least cost routing via the WAN.

Traditionally, provisioning fax services to employees in remote locations required installing an on-site fax server in those remote locations, which usually required a large user base to cost-justify. However, with an IP fax server, employees can access the fax image and signal processing capability that resides in a remote data center (see Diagram 3.) The gateway that resides in the field offices provides the ramp onto the PSTN. Thus, with IP fax services configured as shown in Diagram 3, adding remote employees to an IP fax server is now done entirely through software, e.g., purchasing a seat license for the fax server, and no additional equipment is needed in remote locations. With IP Fax, a remote employee in Brussels can use the company's fax server in New York just as easily as if it were located in their local office.

enhanced disaster preparedness

VoIP network architecture enables the location of the server to be independent of the user, allowing companies to consolidate fax servers down to one or two strategically located data centers. This greatly simplifies disaster planning and preparedness by reducing the number of sites that need rapid response capability, and enables companies to locate the fax server in the most secure and stable environments.

IP communications architecture, by its nature, is more fault tolerant to network outages than the traditional circuit switched architecture. IP inherently has the ability to route traffic via fully-functional

network nodes even if part of the network is down. In the circuit switched world, if the network connection between the fax server and the central office is down, then the fax server is not able to send or receive faxes. With IP, a single fax server or multiple load balanced redundant fax servers can be installed on multiple different network nodes effectively eliminating the likelihood that the fax server will ever be without access to a network.

This is particularly important for services that utilize fax to communicate with law enforcement and other government agencies in the event of a crisis, such as a tsunami warning or severe weather alert.

least cost routing

As companies implement gateways at remote locations and centralize voice and fax services, they're able to leverage their network infrastructure to route calls between office locations in the least costly fashion. In this way, for example, they can send faxes from New York to Tokyo and never pay long distance tolls, because their gateway in Tokyo can bridge their WAN to the public calling area (see Diagram 3). To calculate the cost savings of implementing an IP-based fax server, you can use Cantata Technology's FoIP ROI Calculator at <http://www.cantata.com/products/roi/sr140/index.cfm>.

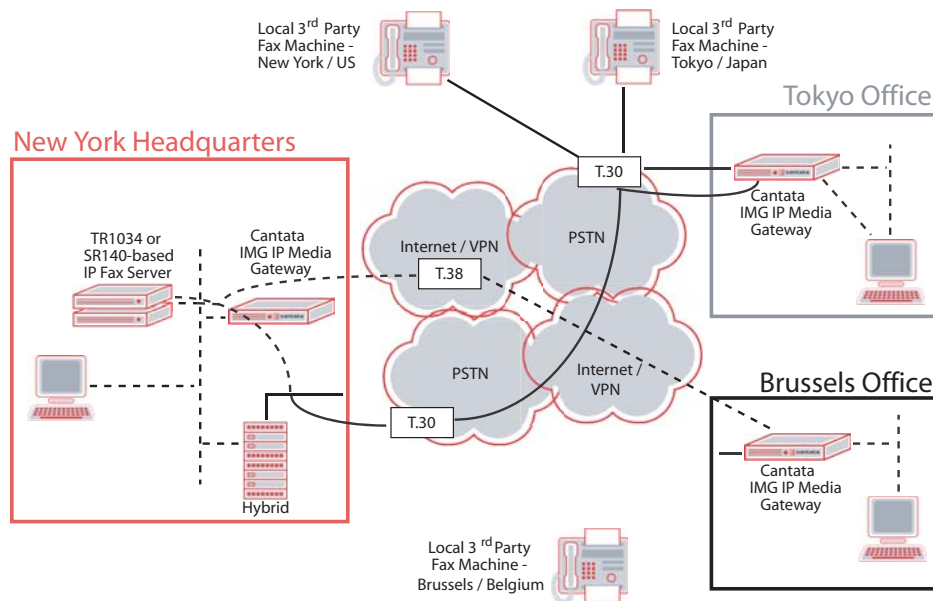


Diagram 3: Least Cost Routing

Additional Business Productivity Benefits of Implementing an IP Fax Server

The migration to IP communications is taking place at the same time that companies are focusing their efforts and investment on IT infrastructure to resolve thorny operational and compliance issues. As companies look to make the switch to IP communications, they will also consider how these purchases can assist their efforts in compliance, business process automation, and document management.

Fax server technology sits squarely at the intersection of communications, document management, business process automation, and compliance. The shift to IP communications, combined with the increased focus on business process automation and document management, makes the IP fax server an excellent solution as companies accelerate their IP communications plans.

production fax for automation and compliance

By implementing production fax systems on their IP networks, companies not only benefit from the savings achieved by automating fax document processing, but also by ensuring the integrity of internal control procedures and transactions that are sensitive to regulatory compliance, for example Sarbanes Oxley and Basel II.

With the new VoIP network architecture, companies will be able to bring remote office workers onto the fax server system as easily as adding an email account. Increased usage will increase ROI by capturing the automation and risk management benefits across the entire company.

multi-function peripherals

Multi-function peripherals (MFPs) that integrate copying, printing, faxing, and scanning are quickly gaining popularity. As companies purchase these devices, they have two choices when deciding on how to implement IP fax. The first choice is to purchase an analog fax module for the MFP. MFP devices do not provide IP fax support, offering only analog, BRI, or PRI fax modules. Trying to integrating these devices with an IP network can be a difficult process. For a more in-depth discussion about integrating analog / TDM fax devices in an IP network, read Cantata's whitepaper "Understanding IP Fax "

Alternatively, companies can further leverage the IP fax server to enable users to send and receive faxes from the MFP, just as they would from a fax machine but with the fax server performing the actual fax processing once the image has been captured by the MFP. This process ensures that all fax communications are routed through a fax server that centralizes the capture, storage, and archival of the document as shown in Diagram 4.

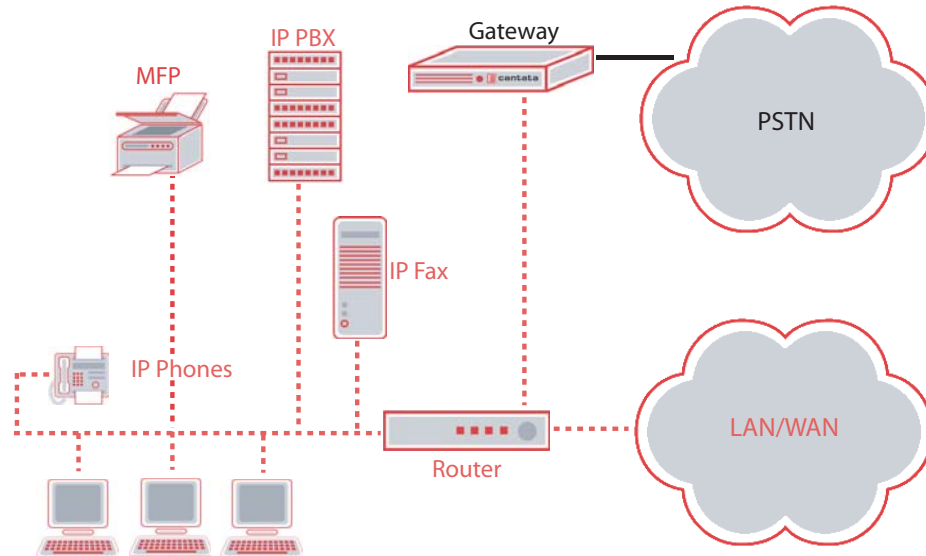


Diagram 4: Integrating MFP with IP Fax Server

cantata's IP fax leadership

For 20 years Cantata's Brooktrout intelligent fax technology has led the market. While the Brooktrout brand is well known as the leader in intelligent fax, it is less well known that Brooktrout's experience with IP fax goes as far back as the early 1990s, before the Internet and IP became household technologies, with early development work to enable faxing over X.25 networks. Much of what Cantata learned through developing fax for X.25 networks went into the design of T.38, the protocol for real-time IP fax. Cantata is a primary contributor to the T.38 ITU-T specification, which has become the industry standard for real-time fax over IP networks.

While Cantata leads the market in the development of IP fax technology, its strength and field experience in T.30 fax is what differentiates its SR140 and TR1034 IP fax products. The T.30 protocol for faxing over TDM or analog telephone networks remains at the heart of all fax connections, including connections between two T.38 IP fax devices. Cantata's T.38 IP fax products use the same T.30 code that has propelled the Brooktrout fax technology to lead the market. To this day we continue to develop our core fax technology in-house, which enables us to deliver unsurpassed support to the end customer, as opposed to vendors that license T.30 and T.38 protocol stacks from third parties, which inevitably limits their ability to deliver support.

Cantata has also been issued several patents for its fax innovations, including inbound DID fax routing, a feature that 80% of all fax servers purchased today offer.

cantata enables the future of IP fax

The culmination of the many years of development work in IP fax technology are Cantata's Brooktrout SR140™ and the Brooktrout TR1034™ IP fax platforms.

brooktrout SR140

Cantata's Brooktrout SR140 offers businesses of all sizes real-time Fax over IP capability with the same high performance that companies have come to expect from the Brooktrout intelligent fax boards, available in a software-only platform. The SR140 is a host-based intelligent fax platform that takes advantage of the latest advances in computational processing power.

Host-based processing allows media processing and call control functions-traditionally performed by specialized digital signal processors (DSP) on boards-to be performed on general-purpose host CPUs that run on industry-standard servers. The SR140 is available in a variety of densities from two to 60 channels and is suitable for a variety of computer-based fax applications such as fax server, unified messaging, fax document management, and compliance systems. To add more channels as your needs grow, simply purchase and install a new software license key to instantly upgrade your system. The SR140 supports both SIP and H.323 call control and have been tested and certified with market leading T.38 gateways.

To learn more about the Brooktrout SR140 software only IP fax platform visit <http://www.cantata.com/products/sr140/>.

brooktrout TR1034

Cantata's Brooktrout TR1034 is a high performance intelligent fax board offering support for PSTN and Fax over IP connectivity. The TR1034 is suitable for a variety of computer-based fax applications such as fax server, unified messaging, fax document management, and compliance systems.

To learn more about the Brooktrout TR1034 visit <http://www.cantata.com/products/tr1034/>.



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