

How Cisco IT Deployed a New IP Fax Solution

Cisco Fax Server reduces cost and enhances fax communications for employees

Cisco IT Case Study/Unified Communications/Fax over IP: This case study describes Cisco IT's internal deployment of the Cisco fax server, in combination with a vendor-supplied multifunction printer solution consisting of specialized printers and servers, within the Cisco network, a leading-edge enterprise environment that is one of the largest and most complex in the world. Cisco customers can draw on Cisco IT's real-world experience in this area to help support similar enterprise needs.

BACKGROUND

Despite the rise of email and the Internet, fax continues to be an important means for business communications.

“The Cisco Fax Server solution has given Cisco the ability to standardize device and fax service offerings at each U.S. Cisco site to meet the needs of the increasingly mobile Cisco client while satisfying business cost reduction targets by allowing Cisco IT to consolidate devices and remove costly standalone devices.”

Tim Reilly, Cisco IT Manager

Every day, Cisco employees ‘fax’ mission-critical business information, such as contracts, legal documents, sales quotes, purchase orders, order confirmations and much more. With their ubiquity, familiar paper form-factor, and simplicity, faxes remain a popular medium for information exchange.

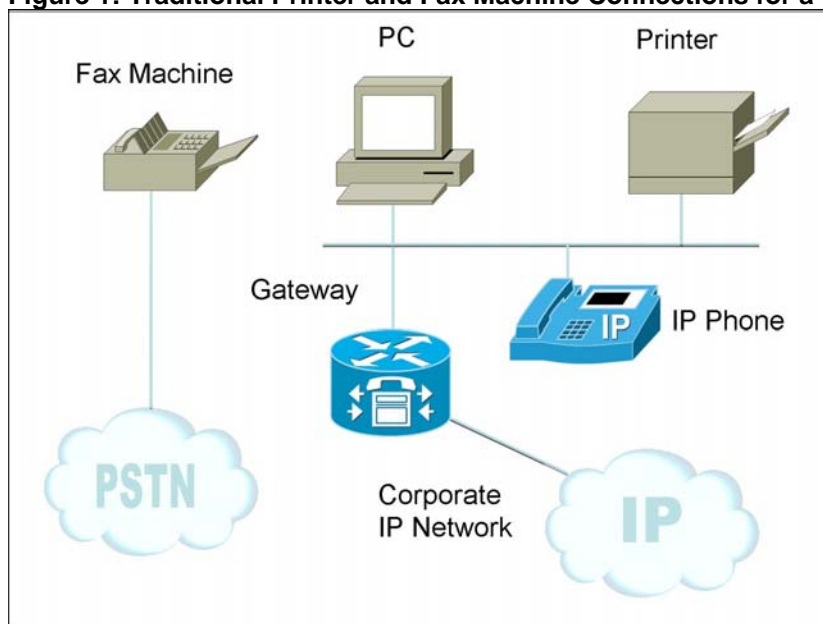
Cisco IT strives to manage infrastructure costs while providing technology solutions that enable employees to work, communicate, and collaborate more efficiently. When Cisco decided to move from a traditional fax solution to an IP-based one, careful planning was required for a smooth migration. Like many large companies, the Cisco network of more than 2500 printers and standalone fax machines was spread among many offices, each covered under various lease and purchase agreements. A group of employees shared a local printer which was usually paired with a standalone fax

machine that had a direct connection to the Public Switched Telephone Network (PSTN) (Figure 1).

CHALLENGE

The challenge for Cisco IT was to reduce the expense of these printers and standalone fax devices while maintaining or improving services for Cisco employees.

Figure 1: Traditional Printer and Fax Machine Connections for a Cisco Office



EXECUTIVE SUMMARY	
BACKGROUND	<ul style="list-style-type: none"> Cisco IT moved from a traditional fax environment (supported in an IP voice network) to a full Fax over IP solution.
CHALLENGE	<ul style="list-style-type: none"> Reduce costs of standalone printers and standalone faxes by combining the two functions. Reduce overhead associated with special analog fax cards and special fax number blocks.
SOLUTION	<ul style="list-style-type: none"> Deployed the Cisco Fax Server hardware and software solution. Deployed a full vendor Multifunction Printer (MFP) solution, with MFPs, MFP servers and software.
RESULTS	<ul style="list-style-type: none"> Cisco replaced 1200 dedicated fax machines and 1300 dedicated printers with 750 MFPs, saving about US\$75,000 per month.
LESSONS LEARNED	<ul style="list-style-type: none"> Users need to be trained when their tools change, but training was simple. Deploying a new technology always has a learning curve; deploying it in small steps at first reduces difficulties.
NEXT STEPS	<ul style="list-style-type: none"> The US deployment will be expanded to the rest of the global Cisco environment.

SOLUTION

Cisco IT's decision to combine Cisco's printing and fax requirements into a single, IP-based device coincided with Cisco's global migration to new multifunction printer (MFP) devices. Cisco IT combined the printing and fax functionality into a single solution using the MFPs for printing tasks as well as for sending and receiving faxes. Although network printing was already established at Cisco, using the MFPs for a fax-over-IP (FoIP) solution was a new challenge.

Partnering with a leading developer of imaging and document management business solutions, Cisco IT successfully built an FoIP solution with the MFPs. The solution incorporates specialized MFP connection servers (supplied by the MFP vendor) that use a software application to interconnect clusters of MFPs with the rest of the FoIP network components. The new solution also incorporates the Cisco fax server, which handles fax messaging and integration with the existing Cisco unified communications infrastructure.

"Currently, two Cisco fax servers that run on MCS 7845 hardware are set up at the Cisco U.S. headquarters location," says David Hanes, senior engineer in Customer Advanced Engineering at Cisco. "In addition, Cisco IT has deployed five MFP connection servers that run the MFP document distribution software."

The existing MFPs in each office were enabled for faxing and communication with the nearest MFP connection server. Today this architecture provides fax support for the entire Cisco enterprise in the United States and Canada, where more than 750 MFP devices generate more than 100,000 inbound and outbound faxes per month. The architecture is scalable, and Cisco IT plans to expand this solution with nine additional fax servers that will provide global support: an additional two in the United States for higher availability, two more to support Cisco locations in Europe, and five more to support Cisco

locations in Asia.

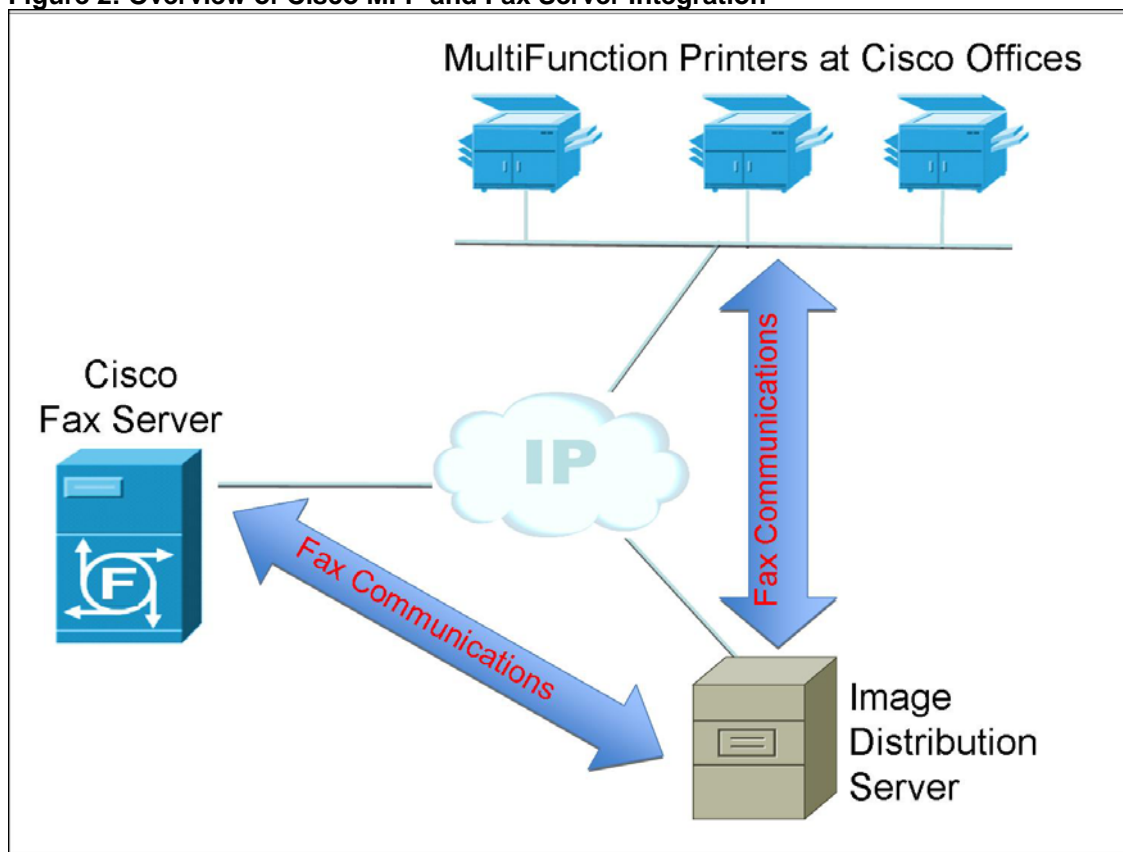
Cisco Fax Solution Components

The three critical components of Cisco's fax solution are the MFP, the MFP connection server with specialized MFP software, and the Cisco fax server. The MFP provides a user interface for tasks such as printing, scanning, copying, and faxing. The Cisco fax server sends and receives fax messages. The MFP connection server acts as a bridge between the Cisco fax server and the MFP.

The Cisco Fax Server is based on the Captaris RightFax solution. Captaris RightFax, which incorporates a hardware or software-based fax engine from Dialogic, is a scalable, feature-rich product with a proven track record of integrating with MFPs. In addition to integrating with the more than 750 MFPs throughout Cisco's U.S. offices, the Cisco Fax Server interoperates with Cisco's existing unified communications infrastructure, the Cisco Unified Communications Manager. The Cisco Unified Communications Manager handles call routing for inbound and outbound calls and sends all fax transmissions to either the Cisco Fax Server or the appropriate voice gateway.

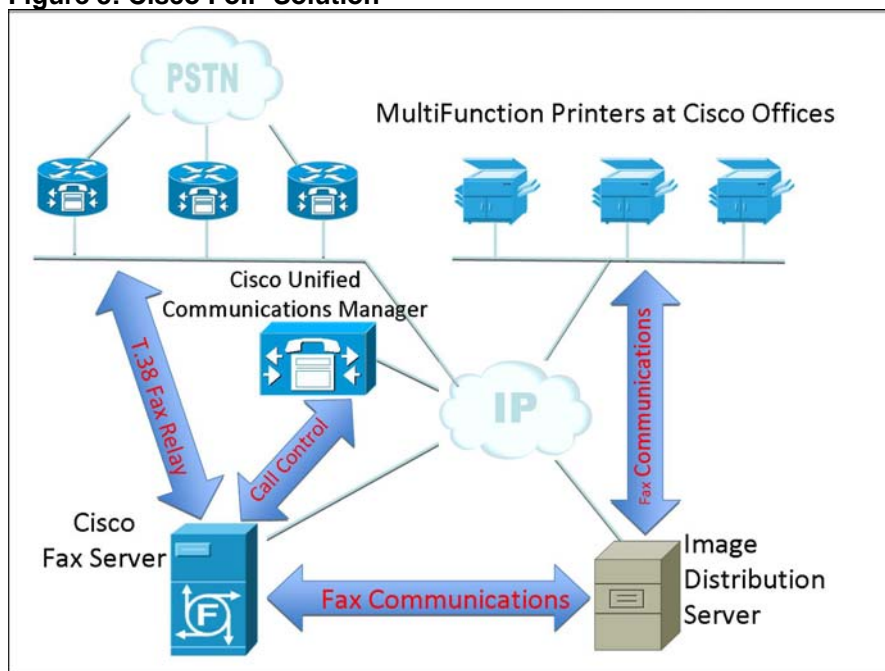
The MFP Connection Server software, which works with the MFP devices, functions as a bridge between the Cisco Fax Server and the MFP device, ensuring that fax information is presented in a compatible format. Numerous MFPs can be integrated with the Cisco Fax Server through a single MFP Connection Server, which further reduces the cost of the overall deployment (Figure 2).

Figure 2: Overview of Cisco MFP and Fax Server Integration



How the Cisco Fax Solution Works

Combining the Cisco Fax Server and an MFP with the Cisco unified communications infrastructure was straightforward. The Cisco Fax Server is an H.323 device that attaches to the Cisco Unified Communications Manager. This H.323 call control link between the Cisco Fax Server and the Cisco Unified Communications Manager merges the fax solution (Cisco Fax Server, MFP Connection Servers, and MFP) with the Cisco unified communications infrastructure (Figure 3).

Figure 3: Cisco FoIP Solution

To Cisco employees the FoIP integration is transparent. Employees use the MFP to send and receive fax transmissions in the same way they would a standard fax machine. Behind the scenes, the Cisco Unified Communications Manager routes all incoming fax calls to the Cisco Fax Server, and the Cisco Fax Server sends all external, outbound fax calls to the Cisco Unified Communications Manager so that the call is directed to a voice gateway and the PSTN.

Multiple Cisco fax servers in geographically different locations are used for redundancy and failover purposes. If connectivity is lost to one Cisco Fax Server, other Cisco fax servers can easily handle the additional fax traffic while the Cisco voice gateways and Cisco Unified Communications Manager reroute the fax traffic over the network.

RESULTS

So far, the current limited FoIP solution has allowed Cisco to replace 1200 dedicated fax machines and 1300 dedicated printers with 750 MFPs. This has provided Cisco with a significant cost savings of approximately US\$75,000 per month. "Our original goal was to reduce the added costs of running standalone fax devices," says Shaun Sweeney, IT project manager. "We achieved the significant reduction of these costs with the Cisco Fax Server solution."

In addition to cost savings, transitioning to a FoIP solution resulted in fewer devices for Cisco IT to manage while providing many new features and benefits for Cisco employees. With a Cisco Fax Server in place, employees will eventually be able to send and receive faxes from their email inboxes and automatically archive and manage fax messages. According to Sweeney, "With the initial MFP deployment we have only just scratched the surface of the capabilities of the Cisco Fax Server infrastructure. Already we have been able to show the added value of reprinting faxes to our sales and finance teams." The FoIP solution, which uses a MFP interface and a Cisco Fax Server, met Cisco IT's objectives of reducing infrastructure costs and providing an effective fax solution for employees.

The Cisco Fax Server solution provides both cost reduction to Cisco IT and cutting-edge fax features for Cisco employees. Tim Reilly, Cisco IT manager, says the deployment has been a resounding success. "The Cisco Fax Server solution has given Cisco the ability to standardize device and fax service offerings at each U.S. Cisco site to meet the needs of the increasingly mobile Cisco client while satisfying business cost reduction targets by allowing Cisco IT to consolidate devices and remove costly standalone devices."

The deployment of the Cisco Fax Server has propelled Cisco into the forefront of FoIP solutions. "The Cisco Fax Server allowed us to take a 19th century technology into 21st century communications," Says Sweeney

LESSONS LEARNED

During the deployment of the FoIP solution, Cisco IT developed best practices for effectively communicating the employee experience and managing a phased deployment model. For example, when sending a fax using an MFP, an employee does not hear the typical sounds and tones of traditional fax devices. Initially, this lack caused confusion for some users. Cisco IT realized that it needed to proactively communicate the changes and set expectations with employees. Cisco IT used email, web-based frequently asked questions, and a training video to communicate the changes to employees. Many employees printed out the basic email instructions and posted them near their closest MFP.

“Communication of the changes in the client experience is paramount,” says Sweeney. “At first the lack of fax tone at the device was confusing to users, but IT used effective communication of the changes and benefits to overcome confusion,” he says.

PRODUCT LIST
<p>Routing and Switching</p> <ul style="list-style-type: none"> • Cisco Fax Server • Cisco Fax Server Enterprise Suite • Multifunctional printer (MFP) device modules <p>Other vendor products</p> <ul style="list-style-type: none"> • Multi-Function Printers (MFP) • MFP Connection Servers

As with most large-scale IT projects, a phased deployment model was critical for the effective rollout of the FoIP solution across hundreds of Cisco offices in the United States. During the first phase of the project, Cisco IT deployed the first two Cisco Fax Servers with installed Dialogic fax boards and direct PSTN connections. Fortunately, these fax boards also have FoIP capability, so they provide dual functionality. While a pure IP software solution is also available, the fax boards allowed for a smoother migration to the new FoIP solution from the older, traditional fax solution.

By deploying the FoIP solution in a few offices at a time, Cisco IT was able to isolate problems and allow time for each user community to adjust to the new solution before IT moved on to the next group. While this phased deployment model took extra time, fewer IT resources were needed to perform each cutover because of the smaller scale. The lessons of effectively communicating the user experience and using a phased deployment model will become Cisco IT best practices as the FoIP solution continues to be globally deployed.

NEXT STEPS

This FoIP solution has been deployed throughout all U.S. Cisco offices and proposals are being evaluated to replicate this type of solution in Cisco offices worldwide. The planned global architecture includes two more Cisco Fax Servers in the United States (in North Carolina) to support Latin America and to provide failover support for the two main servers in San Jose, California. Two more servers will be deployed in Amsterdam to support all Cisco sites in Europe. Lastly, six new servers will be deployed in the Asia Pacific region. Because the network in Asia Pacific is to some degree a hub and spoke network, two of the Cisco Fax Servers will be at the Hong Kong hub and the remaining four will be in four major Cisco sites.

When the global deployment is in place, Cisco IT plans to use its unified communications platform to integrate fax messaging into its overall platform.

“Today, Cisco employees in the United States send and receive faxes just as they did with the previous traditional telephony fax solution except that an MFP is used as the interface instead of a traditional fax machine,” says Mark Gervase, solutions marketing manager for Cisco Unified Communications.

When the full set of Cisco Fax Server features have been deployed, employees will be able to use advanced fax server features such as email integration and desktop faxing. “They will be able to get email or web notification of an incoming fax, save documents on their laptop and then send over the network as a fax, or receive a fax directly into their email inboxes,” says Gervase.

In the future, this combination of advanced faxing features and a global deployment will give Cisco a cutting-edge IP fax solution that provides significant cost savings and increased productivity for employees.

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