

THE BUSINESS CASE FOR GOVERNMENTS TO MIGRATE TO IP COMMUNICATIONS

EXECUTIVE SUMMARY

Worldwide Government agencies are attaining their goals for reducing costs, enabling continuity of government services, and increasing effectiveness by transitioning from Centrex and legacy private branch exchange (PBX) systems to Cisco® IP Communications. IP Communications refers to integrating data, voice, and video on a single, IP-based network. By converging their voice and data networks, government agencies can lower their total cost of ownership (TCO), which includes equipment and maintenance, network administration, and network carrier charges. Continuity of government services is enabled through technologies such as wireless and extension mobility, which provide an alternate means of communication during disasters while enabling agencies to easily and cost-effectively scale in times of growth or contraction. Finally, IP Communications improves effectiveness by facilitating employee mobility and providing a solid foundation for the deployment of advanced, feature-rich services and solutions.

This white paper makes the business case for U.S. local, state, and federal government agencies to transition from their existing telephony solutions to Cisco IP Communications. It begins with the market drivers motivating the transition and a review of the government Transforming Communications Study chartered by the U.S. Senior Department of Defense and Intelligence Community officials in cooperation with NASA. Next, it describes the Cisco Transforming Communications Solution for Government and explains how it solves governments' needs for cost reduction, continuity of services, and increased effectiveness. Examples of governments that have successfully made the transition to Cisco IP Communications are included in the white paper to illustrate real-life benefits.

GOVERNMENT INFLUENCES FOR A TRANSITION TO IP COMMUNICATIONS

In response to rising citizen expectations for service, a government mandate is for multiple agencies and departments to work together as one, eliminating departmental isolation. Consider a city government that has separate telephony systems for its tax, police, health, and safety departments—a common situation for organizations that rely on Centrex or PBXs. A citizen who wants to open a new business or report suspected child abuse might need to make multiple calls because an employee in one department cannot forward calls to another department. The goal is for multiple departments and agencies to be able to work together as one to provide a single, citizen-centric view of government.

“We’re going to knock down the information ‘stovepipes’ throughout government and turn them into pipelines. That’s one reason why we created the Homeland Security Advisory System. One lesson of 9/11 is that when information doesn’t get to the right people in time, it can be just as dangerous as when it falls into the wrong hands.”—Tom Ridge, Director of Homeland Security, Associated Press Annual Luncheon, April 29, 2003

A government’s communications solution is an essential tool not only for citizen services, but also for other top government initiatives, including:

- Network-related defense
- National competitiveness
- Trust and participation with citizens
- Physical and cyber security

The prevalent government telephony solutions, Centrex and PBX, come up short in supporting these initiatives. Government organizations initially adopted Centrex for two reasons—their telecommunications staffs or budgets were too small to justify an onsite PBX, and Centrex cost-effectively connects multiple, geographically distributed office buildings. While Centrex remains less expensive than a PBX, its costs are rising due to high operational expenses and increasing tariffs. In addition, Centrex is limited in its ability to meet new government priorities for enabling continuity and improving effectiveness. Specific limitations include:

- *High operational costs*—Centrex moves, adds, and changes generally cost US\$75 to US\$150 each. Adding new features such as voice mail, conferencing, and six-way calling increases monthly charges, and costs continue to rise in step with a steady increase in tariffs.
- *Inconsistency*—Because Centrex is not available in all regions, agencies must deal with issues such as dissimilar, unlinked voice-mail systems and lack of coordinated dial plans.
- *Long lead times for changes*—Moves, adds, and changes typically take a week or more to implement, eroding employees’ effectiveness during the holdup. New features generally are not available until the service provider upgrades its software—which happens infrequently because central office switches often support tens of thousands of customers. The result—Centrex customers do not benefit from telephony innovations for some time after they are introduced, if ever.
- *A single point of failure*—Each Centrex customer is dependent on a single central office; if the equipment in the central office goes down or the network fails, then the voice system fails.

Many Centrex limitations also apply to government agencies’ legacy PBX or key systems:

- *High operational costs*—Maintenance agreements on aging PBX or key systems are costly.
- *Inconsistency*—Agencies often have multiple PBX systems from different vendors at different offices. Communications features, dial plans, and voice-mail capabilities can vary widely, creating difficulties with interagency, intra-agency, and citizen communications.
- *Limited opportunity for improving effectiveness*—PBX systems rely on a proprietary, mainframe-based architecture that is difficult to integrate with other systems. This lack of flexibility inhibits governments from integrating their voice systems with other systems for effective government and citizen communications.

CISCO TRANSFORMING COMMUNICATIONS—SATISFYING GOVERNMENT NEEDS

To investigate ways to meet government goals for cost savings, continuity, and effectiveness, U.S. Senior Department of Defense and Intelligence Community officials chartered the Transformation Communications Study in cooperation with NASA, reporting the results in June 2002 to the Deputy Secretary of Defense and the Joint Requirements Oversight Council. Now, recommendations from that study are being refined and implemented by the new Transformational Communications Office. The main tenets of this office are:

- Sharing information as quickly as possible
- Eliminating the effect of time and distance on information access and decision-making
- Continuing communications between government and citizens in an environment of rapid policy and organizational changes

To address these requirements, Cisco Systems developed the Cisco Transforming Communications Solution for Government, a set of Cisco IOS® Software-based IP Communications products and services that help governments and their systems integrators reduce the cost of government, enable government services continuity, and increase government effectiveness.

Reducing Costs

Government deficits are triggering a search for savings. Savings in voice services, for example, can pay for numerous high-profile, high-return projects, including surveillance, emergency notification, business continuity, and mobility. Governments can reduce TCO for their voice networks by consolidating disparate voice and data networks to a single, converged network for all traffic types. IP Communications reduces costs because an agency need manage only one network for voice, data, and video. For example, the City of Dallas, Texas, was able to converge incompatible data networks—five in all—and one voice network into a single, converged network that will generate US\$21 million in savings over a 10-year period.

The Cisco Transforming Communications Solution for Government reduces costs by:

- Simplifying management with easy-to-use management and configuration tools such as CiscoWorks.
- Enabling end users to configure service features themselves, using Cisco CallManager options and Cisco Personal Assistant.
- Reducing the time and cost for moves, adds, and changes through the use of profiles and templates in Cisco CallManager. When Cisco CallManager software is integrated with directories, such as Active Directory or Lightweight Directory Access Protocol (LDAP), changes can be made with a click of a button. Cisco IP phones and Cisco IP softphones, which run on PCs, reset themselves automatically when connected to a new extension.
- Reducing communications costs by enabling toll bypass or tail hop-off, which means hopping off from the IP network to the public switched telephone network (PSTN) at the last possible opportunity.
- Allowing centralized call processing. Centralized call processing with IP telephony enables government organizations with multiple sites to centralize their voice and data networks on a headquarter or regional basis, thereby eliminating the need for smaller Key systems and reducing the equipment needed for individual offices.

Initial return on investment (ROI) analyses conducted by third-party consultants demonstrate that IP Communications deployments deliver a positive financial result approximately 70 percent of the time, with an average payback of 16 to 18 months. Consider the government of Southfield, Michigan, which serves a residential population of 78,000 and a daytime population of 175,000. Population growth had overburdened the voice

infrastructure. Customer premises equipment (CPE) management costs were high, agencies could not communicate effectively, and sensitive data was not secured. By replacing its Centrex system with the Cisco Transforming Solution for Government, Southfield is saving US\$100,000 a year. In-house control of moves, adds, and changes has reduced execution time from days to minutes. An Extensible Markup Language (XML)-based phone directory increases employee effectiveness by saving time, and a standardized voice-mail and phone system enhances communications among agencies, enabling them to more quickly and effectively provide services to citizens.

Government Continuity Through Disruption, Growth, and Contraction

The business of government must continue 24x7, regardless of power or telecommunications service outages, expansion, or contraction. In fact, when other organizations' networks are affected by unplanned events it's often most important for government phone systems to remain available. Cisco AVVID (Architecture for Voice, Video and Integrated Data) provides uninterrupted service and reduces overall downtime during disaster recovery periods. If the PSTN should become inoperable, the IP network remains available. In fact, it was the availability of its voice IP network after the incidents of September 11 that inspired New York University to further expand its converged infrastructure. Should the WAN fail, the Cisco IOS Software Survivable Remote Site Telephony (SRST) feature provides automatic failover to the PSTN. When the WAN becomes available, the system automatically recovers to the IP data network. If power outages are a primary concern, the Cisco Transforming Solution for Government fully supports commercial uninterruptible power supply (UPS) products. And for additional backup, governments can rapidly deploy Cisco Aironet[®] wireless solutions for supplemental or temporary connectivity during disasters.

Another aspect of continuity is the ability to provide government services during growth and contraction. Cisco IP Communications meets the challenge through flexible site installation and deployment options. For example, using the Extension Mobility feature in Cisco CallManager software, governments do not need to provide a dedicated desk and phone for every employee. With desk sharing, employees who do not come into the office on a regular basis—inspectors, for example—can use any available desk, simply logging into the Cisco IP Phone so that it assumes their extensions, ring characteristics, and so on.

As an example, the U.S. Department of Commerce (DoC) adopted IP Communications with the primary goal of ensuring emergency communications in the event of a disaster. DoC transitioned from 130 separate phone systems to a single voice over IP (VoIP) network serving 4000 employees, all with their own Cisco IP phones. Two Cisco CallManager servers reside in different buildings—either can maintain continuity of the voice system by itself. An uninterruptible power supply (UPS) enables the systems to remain available for two hours for emergencies in the event of a power outage. In another example, the New Zealand Ministry of Social Development (MSD) reduced its downtime incidents from an average of one a week to zero after replacing its 164 networked PBXs with Cisco IP Communications. In addition, the Cisco solution enables the MSD to much more easily create and dismantle call centers to meet peak demand periods.

Improving Effectiveness

Governments increase their effectiveness with Cisco Transforming Communications Solution for Government by improving citizen services, interagency information sharing, and workplace accessibility.

Improving Citizen Services

IP Communications helps governments improve the effectiveness of their communications with constituents, including both private citizens and businesses. With solutions for contact center, customer relationship management (CRM), and voice mail, governments present an integrated view of government to citizen and business, and can improve the effectiveness of programs such as:

- Health services
- Revenue collection
- Vehicle licensing
- E-government portals
- Procurement

The Cisco Transforming Communications Solution for Government improves communications with constituents using the following Cisco products:

- Cisco IP Contact Center (IPCC) delivers intelligent call routing, network-to-desktop computer telephony integration (CTI), and multimedia contact center management. An interactive voice response (IVR) feature allows callers to press numbers on their telephones in response to voice commands, in order to navigate to the correct extension or department, listen to information about a specific government service or program, understand wait times, or leave a message. The related Cisco Intelligent Contact Management (ICM) feature delivers calls to the most appropriate person or department based on factors such as the number called, number called from, caller-entered digits (indicating language preference, for example), agent skills and availability, and queue lengths. With these and other features, Cisco IPCC enables governments to rapidly deploy contact center infrastructures to support citizen services. Cisco IPCC also can be integrated with the Siebel CRM connector—for example, to automatically bring up a citizen's record when he or she contacts the call center.
- Cisco Unity™ unified messaging improves responsiveness and effectiveness by enabling employees to listen to e-mail while checking voice mail, check voice messages while checking e-mail, and forward faxes to any local Fax machine.

Denton County, Texas, used Cisco Unity solution with RightFax from Captaris, a member of the Cisco AVVID Partner Program, to completely change the way it interacts with citizens. Having enjoyed a healthy growth rate for the past three decades, the county knew it needed to offer top-quality government services in order to continue to attract and retain businesses and citizens. Denton County achieved its goal with an IP Communications, Cisco Unity, and RightFax solution. Now Denton County employees can send and receive faxes via e-mail, listen and respond to e-mail over the telephone, and check voice mail using the e-mail system. The result—increased productivity and better communications to better serve constituents.

“The flexibility of Cisco's solution is one of its most compelling benefits. Because Cisco IP phones are XML-based, we have an open canvas to design new network applications. We can accomplish almost anything we think of, using XML to interact with other network systems. The potential is virtually unlimited.”—Gerald Werner, Information Access Strategies Consultant for the City of Southfield, MI.

The New Zealand MSD is also improving citizen services, since replacing its networked PBXs with the Cisco Transforming Communications Solution for Government. Ministry employees now make up to a million calls per week at greater than “five nines” reliability. Efficiency has increased already—staff can access a common phone directory via their Cisco IP phones, and calls to the call center can be routed to operators according to their

specialized knowledge, such as policy expertise or the ability to speak a second language, rather than a physical location. MSD is investigating using the solution to further improve citizen services by recording phone calls between staff and customers and then storing them within the network for ready access at frontline branches, call centers, or central offices. Costs have dropped as well, because the ministry now needs only three staff members to support all IP phones as well as desktops. MSD was able to add 2000 new users—a 33-percent increase—without extra budget or support needs, and transaction volumes are anticipated to double each year without additional funding.

Improving Interagency Information Sharing

A chief motivation for interagency information exchange is protecting homeland security through expedient sharing of urgent audio and text communications. The Cisco IP Communications infrastructure can deliver emergency information in numerous ways—not just voice. This flexibility is critical for reaching people in emergency situations such as disasters and high alert conditions, even if certain employees are not answering their phones or are hearing-impaired, for example. Table 1 shows solutions from Cisco partners for sharing emergency information.

Table 1 Phone Applications for Emergency Broadcasts

Solution	Role in Emergency Broadcasts
Berbee InformaCast	Allows government agencies to push voice and text messages to the Cisco IP Phone 7970, IP Phone 7960, and IP Phone 7940. Government customers use InformaCast to send emergency broadcast messages to workers and to communicate easily and effectively across different government agencies. The U.S. DoC conforms to Section 508 of the Rehabilitation Act by using Berbee InformaCast to broadcast live or canned messages to Cisco IP phones, using both voice and text.
AAC PhoneTop Alerts	Works with the Emergency Alert System to provide Amber, weather, and other U.S. security alerts issued by local, state, or federal governments. Any alerts issued within a zip code range are sent to Cisco IP phones residing in that range, and are both displayed on the monitor and broadcast over the built-in speaker. For example, if a child is reported missing, the city can broadcast a picture of the child and possible suspects to Cisco IP phones in all municipal offices.

Another motivation for interagency information sharing is facilitating collaboration between agencies to improve citizen services. The Cisco Unity solution improves interagency information sharing through advanced voice-mail and unified messaging. With the Cisco Unity solution, employees can forward a voice-mail message to someone in a different department as easily as their own, employees can more easily manage growing volumes of communication by receiving both voice-mail and e-mail messages in a single place—either the voice-mail or e-mail inbox, and four-digit dialing facilitates collaboration. Another way that the Cisco Transforming Communications Solution for Government facilitates sharing is by making it easier to integrate applications such as CRM with the phone system. For example, integrating an LDAP phone directory is extremely difficult with Centrex, yet straightforward with Cisco CallManager.

Illustrating the benefits of interagency information sharing is the Polish Border Guard. With the longest stretch of land boundary in the European Union (EU), the Polish Border Guard needs a reliable telephone system that facilitates communication among 12 regional divisions and 300 border passes, checkpoints, and posts. The Polish Border Guard replaced its aging analog phone system with a Cisco IP Communications system based on Cisco CallManager and 6500 Cisco IP phones—with no capital outlay or increase in operational costs. The solution includes IVR and Cisco PIX[®] firewalls as part of secure VPN. The Cisco routers at the core of the solution provide SRST, helping to ensure that the voice network remains functional, even if a WAN link goes down. The Polish Border Guard

eliminated the cost of hiring telecommunications experts by outsourcing service management to Telekomunikacja Polska SA. With its Cisco IP Communications infrastructure in place, the Polish Border Guard is positioned to add new capabilities, including simultaneous text message broadcasting to all checkpoints when a suspicious activity has been reported.

“Today, there are no reasons to invest in traditional PBX technology. Cisco IP telephony, with additional services such as text message broadcasting, will allow us to save on systems administration and training, allowing more headcount to protect the future EU’s longest stretch of boundary.”—Grzygorz Wojtkun, head of the telecommunications section of the Polish Border Guard’s Telecommunication and IT department

Improving Government Worker Workplace Accessibility

Section 508 of the Rehabilitation Act encourages the U.S. federal government to purchase IT systems that are accessible to deaf, blind, and mobility-impaired employees. Some state and local agencies voluntarily follow Section 508 guidelines, as well. The guidelines apply to phones, voice mail, unified messaging, IVR, and personal assistant software. Cisco conforms or is capable of conforming to the U.S. Access Board’s standards as referenced in Section 508, with the following solutions:

- Cisco IP phones can be equipped with extra-large LCD screens, speakerphones, or optional external speakers for increased volume. Large buttons help mobility-impaired employees to dial.
- Cisco Personal Assistant provides speech-enabled access to corporate directory, personal address book, and Cisco Unity voice mail. To retrieve Cisco Unity voice mail, for instance, a blind or mobility-impaired user can simply state, “Retrieve messages.”
- Cisco Unity software, when combined with a TTY modem tone prompt, allows deaf employees and citizens to leave and retrieve voice mail, and is recommended for agencies that do not receive a high volume of calls from TTY users.
- In conjunction with NXi Telephony Services (NTS) from NXi, a member of the Cisco AVVID Partner Program, Cisco Unity software provides communications accessibility for the deaf and advanced text communications for the network. Employees with the NTS client installed on their PCs can make or receive calls from and to TTY devices. NTS also provides automated attendant and messaging options, including e-mail, fax, alpha paging, and instant messaging services. Callers to the agency are prompted to press a number key; those who do not are presumed deaf and automatically routed to the NTS server.

Table 2 lists solutions from Cisco partners that facilitate accessibility.

Table 2 Phone Applications for Accessibility

Solution	Role in Accessibility
Net6 ScreenTop Suite	Transforms existing applications into the proper format for interaction on the Cisco IP Phone display. Includes ready-to-use applications such as Visual Voicemail, which shows a list of voice-mail messages from which the employee can select, an LDAP-based directory, alerts, and screen-top e-mail.
IP Blue	Offers an advanced Windows-based IP softphone that is verified to interoperate with Cisco CallManager. Accessibility features include: <ul style="list-style-type: none">• Text-to-speech announcements of incoming call information• Hot keys on the PC that control all phone functions, such as hold or terminate• High contrast, big-button skin for low-vision users• Ability to control a nearby Cisco IP Phone 7960 to use its advanced features
NTS	Works with Cisco CallManager to provide full accessibility for deaf callers, transforming the PC into a TTY device for sending and receiving.

CISCO ROI/BUSINESS JUSTIFICATION CONSULTING PROGRAM

Regardless of the telephony service that government agencies are currently using, migration to Cisco IP Communications creates a compelling opportunity for significant cost savings. Governments can cost-justify the migration from their current voice solutions to Cisco IP Communications by taking advantage of the Cisco ROI/Business Justification Consulting Program, which is a component of the Cisco Transforming Communications for Government solution. The analysis is conducted by one of several consulting partners that contribute industry-leading experience with IP telephony and network infrastructure, including BearingPoint, Salire Partners, and The Signature Group. Deliverables include a business case document, executive summary presentation, and a spreadsheet analysis model.

Factors considered in the ROI analysis include:

- Capital equipment
- Maintenance
- Depreciation
- Support
- Telephone charges
- Voice mail
- Moves, adds, and changes
- Line charges
- Optional features
- Data network upgrade

An ROI analysis of a large U.S. county government with nearly 100,000 employees in more than 30 departments showed a reduction of ongoing costs by US\$8 million in the first five years. Factors in the savings included recurring costs for voice mail, line charges, and moves, adds, and changes. Another ROI/Business Case consulting study

demonstrated that a state government agency could achieve a 36-percent ROI in five years, including an estimated US\$1.5 million in savings from moves, adds, and changes alone. Savings from voice services can be reallocated to other government programs, such as public safety, human services, and transportation.

FOR MORE INFORMATION

By transitioning from Centrex to IP Communications, governments are achieving their goals of reducing costs, enabling continuity of government services, and increasing effectiveness. The Cisco Transforming Communications Solution for Government facilitates the transition, helping governments provide better services at lower costs, freeing funds for other projects. And by retaining an objective party to provide the Cisco ROI/Business Justification consulting program, governments can justify the transition before they begin.

For more information on the Cisco Transforming Communications Solution for Government, visit:

http://business.cisco.com/prod/tree.taf%3Fasset_id=48299&public_view=true&kbns=1.html



Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the **Cisco Web site at www.cisco.com/go/offices**

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia
Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland
Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland
Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden
Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

All contents are Copyright © 1992–2003 Cisco Systems, Inc. All rights reserved. Cisco, Cisco Systems, the Cisco Systems logo, Aironet, Cisco IOS, Cisco Unity, and PIX are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0304R) N2/KW/LW5530 01/04