

## Cisco Defense Solutions: Improve Collaboration, Mobility, and Security



From the command center to the field, defense agencies worldwide deploy mission-critical Cisco solutions

### Introduction

Defense agencies around the globe are migrating from traditional computing and collaboration infrastructures to more flexible, standards-based, secure solutions built upon IP-based applications, commercial-off-the-shelf (COTS) products, and networking technologies. Driving this migration is the need to deploy powerful new unified communications capabilities more quickly and cost-effectively, capabilities that can dramatically improve collaboration and situational awareness. Standards-based IP technology and applications are also proving to be more flexible as missions increasingly involve dynamic coalition and allied engagements with non-traditional partners. Agencies are using IP-based platforms to deliver these lighter, less power-consumptive, and smaller form-factor solutions that can deploy more quickly, at lower cost, and require fewer personnel to maintain.

Many government defense agencies are choosing to deploy Cisco® end-to-end voice, video, data, and mobility solutions from fixed bases out to mobile troops—enabling faster, more agile deployments and greatly increased situational awareness through new levels of unified communications collaboration. Many are also using Cisco IP-based platforms to improve interoperability for faster application deployment and to enable compatibility among once non-interoperable systems, such as radio communications.



## Unified Communications Brings Coordination to a New Level

Coordination continues to be the hallmark of effective military operations. Unified communications capabilities enable faster collaboration and instant sharing of information, which help to reduce the ambiguity and confusion of combat by clearly identifying the positions of friendly forces and those of the enemy. In addition to improving situational awareness, unified communications improve:

- **Mobility:** Commanders can access their voice services, calendars, data, and e-mail from a wide variety of locations and endpoints. Features such as extension mobility and the inherent ability of packet-based technologies allow users to roam and be unconstrained by circuit-switched technology solutions with fixed endpoints and user devices.
- **Collaboration:** Operational command centers can become collaboration centers in which all types of rich media, imagery, video, voice, chat and Web conferencing can significantly enhance an operation's outcome.
- **Security:** Integrated security applications and services throughout your network, from infrastructure through call-control devices and communications applications, help protect classified information, while establishing communities of interest for staff and the deployed force.
- **Interoperability:** Open standards facilitate integration with traditional systems and applications from other coalition partners.

For example, the Joint Network Node-Network (JNN-N) enables soldiers to communicate by satellite throughout the world with secure IP-based voice, video, and data capabilities. The JNN-N was built to support contemporary military defense operations by enhancing mobile subscriber equipment (MSE) that was built when voice was the user's key requirement. Today, the circuit-switch technology used in MSE is being replaced by packet-based technology. One of the many benefits of this data-centric solution is the level of collaboration that significantly impacts how armed forces engage the enemy.

This type of unified communications, along with other network-centric advancements, has helped agencies to reduce the "kill chain of find, fix, track, target, engage, and assess (F2T2EA)," according to the August 1, 2007 issue of C4ISR Journal. "An F2T2EA cycle that took 76 minutes during Operation Desert Storm in 1991 took 24 minutes during Operation Allied Force in 1999, and now takes 8 minutes during Operation Iraqi Freedom."

Based on commercially available technologies, the JNN-N was developed and deployed in a much faster timeframe than any other network-based system to date. As commercial updates are released, the JNN-N can be rapidly enhanced.

## Platform Integration Reduces System Size and Lowers Costs

Whether in strategic fixed bases or in tactical locations on the battlefield, defense agencies are demanding greater simplicity in the network systems they deploy to lower support and power costs, and to speed deployment.

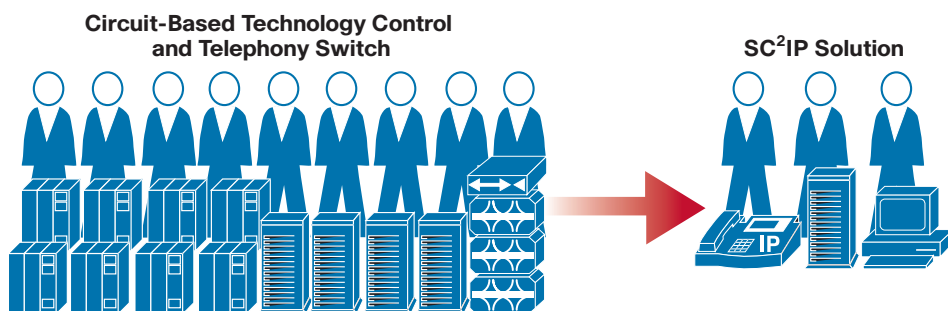
Cisco's ongoing strategy is to move capabilities from hardware to software, reducing the size and complexity of network platforms. Installations that previously required separate boxes for firewalls, switches, routers, and call managers are now being packaged into smaller platforms. This has enormous benefits both in strategic fixed sites and in the field. In fixed environments, it reduces rack space and power consumption, and saves on cooling costs. Less equipment also means lower maintenance costs.

Moving Cisco equipment and operating procedures based on the Cisco Intelligent Information Network onto the battlefield provides additional advantages: speed of use and reduced support costs. This unified networking solution requires fewer resources because agencies no longer must deploy separate support specialists for the Private Automatic Branch Exchange (PABX) system, cabling, the IT network, and more. Instead, a few IP specialists can handle all of these tasks.



The Joint Communications Support Element (JCSE) provides joint combat communications solutions and is at the leading edge of IP and COTS deployments. In 2005, the JCSE deployed its Small Command and Control over Internet Protocol (SC<sup>2</sup>IP) package (pronounced “Skip”), which includes “everything over IP” (EoIP) technology. According to Signal Magazine, SC<sup>2</sup>IP replaces bulky traditional circuit switches and serial cabling, offering drastic reductions in cost, personnel, and size.

Figure 1. Comparing Circuit-Based to SC<sup>2</sup>IP Systems



	Traditional Circuit-Based System	SC <sup>2</sup> IP System
Size	250 cubic feet	12 cubic feet
Weight	1.1 tons	290 lbs
Cost	US\$1.9 million	\$270,000

Military personnel can transport the SC<sup>2</sup>IP in the back of a standard-size sport utility vehicle (SUV) and can set it up in minutes. Because the system converges multiple services, including data, voice, and video, it is easier to set up, requires fewer personnel, and can be moved into field operations with tremendous speed. In 2006, the U.S. Department of Defense assisted the noncombatant operation in Cyprus to evacuate Americans from Lebanon. A JCSE SC<sup>2</sup>IP team arrived in the country ahead of the headquarters personnel they were tasked to support and were able to provide seamless communications within 18 hours of initial notification.

The JNN-N solution also includes a high level of security integration. It incorporates Cisco defense-ready security hardware and software solutions such as highly integrated Cisco ASA 5500 Series Adaptive Security Appliances, which combine into one platform

the features and functions that previously required multiple platforms—a world-class firewall, unified communications (voice and video) security software, SSL and IPsec VPN software, intrusion prevention software, and content security services. The JNN-N also incorporates Cisco trust and identity services.

### IP-Based Platforms Bring Greater Interoperability

A critical capability of newer IP-based platforms is their level of interoperability. Because these platforms are based on IP standards, agencies can run a wide variety of custom and off-the-shelf applications over a unified network infrastructure, rather than having to build special-purpose applications for special-purpose networks.

One example of interoperability is the recent development of the Combined Air Operations Center (CAOC), a new concept developed by the Royal Australian Air Force in response to the way the application of air power has changed in recent decades. The CAOC controls the operational management of an air campaign. It focuses on operations 72 hours in advance, as well as revising plans during an operation in response to any adjustments necessary to reach time-critical targets. The CAOC is also used for post-mission, battle-damage assessment.

The CAOC includes three large plasma screens that provide a linear representation of the Theatre Battlespace Management Control System, which is a graphical representation of the Air Commander's requirements and vision of the air campaign operational area. It receives continual input from a range of resources, including real-time feeds from aircraft wing assets. This provides the CAOC command with the ability to communicate directly with any aircraft involved in the mission—providing even greater flexibility to a changing and evolving mission. In the future, real-time information from Airborne Early Warning and Control (AEW&C) aircraft and unmanned aerial vehicles (UAVs) will also be available to the CAOC.

The success of the CAOC lies in its interoperability, as it must accept data from multiple sources. According to the Australian Air Force, interoperability and support for proven doctrines are major components of the evolving networked defense force. It views the CAOC as the "spear point" of current thinking and processes, capable of delivering the Air Commander's directives to meet any threat the Air Force or a coalition partner may confront. The Land Mobile Radio feature in Cisco IOS Software-based routers allows VHF, HF, and UHF radios to be connected into the WAN; radio traffic is then converted into VoIP and streamed across the WAN using multicast. During the Australian Air Force's Operation Pitch Black, this meant that staff in the CAOC at Glenbrook could talk from a PC client or Cisco IP phone to aircraft thousands of miles away.

### Committed for the Long Term

As defense agencies look to deploy new platforms that are likely to be in operations 15 years from now, they need to consider vendor leadership, stability, and long-term vision. They must ask whether a vendor has the R&D resources to continually innovate in product development. Can the vendor ensure interoperability? Do they have an ecosystem of partners and systems integrators?

### Why Cisco?

The Cisco Global Government Solutions Group (GGSG) comprises top space, military, homeland security, and public safety experts from all levels of governments around the world. Cisco GGSG supports government and defense agencies by delivering innovative, integrated mission capabilities through thought leadership, advanced technologies, and services.

Cisco is fully committed to the defense segment, and has the assets, stability, and credibility to support defense agencies for the long term. From a global footprint that offers unmatched logistics (4-hour parts replacement) to a US\$4+ billion R&D budget to a unique end-to-end solution that extends voice, video, and data from fixed environments out to the troops in the battlefield, Cisco will remain at the forefront of defense networking for many years to come.

### Learn More

For more information on Cisco defense solutions, visit [www.cisco.com/go/defense](http://www.cisco.com/go/defense).



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