

Cisco Air Force Solutions: Transforming Communications in a Secure, Mobile Environment



Challenge

For more than 10 years, the U.S. Air Force and the Department of Defense (DoD) have been articulating the benefits of network-centric operations: unprecedented information sharing, agility, flexibility, and resiliency. To that end, the DoD has been building the infrastructure that can derive the benefits from such “network-enhanced” operations. This represents a major shift from the older, isolated systems and communications to a more open, interoperable, and collaborative infrastructure. The role of the network has evolved beyond merely infrastructure to a secure platform for delivering customized capabilities. The mission of the U.S. Air Force—to “fly, fight, and win... in air, space, and cyberspace”—recognizes the vital role that network infrastructure plays in determining operational success. The effort lies, however, in the military’s ability to transition effectively to a network-centric environment and the inherent challenges of executing on that move.

Enduring Collaboration

Cisco has worked with the U.S. Air Force for more than 20 years to transform its point-to-point infrastructure into one that is fully connected. The U.S. Air Force used Cisco® routers to build out its first enterprise-wide network, interconnecting all bases and establishing what has become today’s Air Force Intranet. Throughout recent operations—including Desert Storm, Noble Eagle, Enduring Freedom, and Iraqi Freedom—Cisco has provided Air Operations Centers with secure, reliable infrastructure for command and control and voice communications. As the Air Force integrates its airborne assets into the Global Information Grid, Cisco is providing the solutions and services necessary for seamless, air-to-ground IP communications. From Air Force One, to command and control aircraft and unmanned aerial vehicles (UAVs), Cisco collaborates with the Air Force and its industry partners, in the air, on the ground, and in space.



Improving Mission Effectiveness

As the leader in defense networking, Cisco provides end-to-end solutions that support secure, high-availability communications wherever and whenever they are needed. Cisco Unified Communications integrate data, voice, video, and mobility applications to help users communicate effectively no matter where they are or what devices they use. The result is faster, richer communications that lower the demand on IT technicians to manage and maintain disparate networks.

Better information and faster communications strengthen mission effectiveness. Network-enabled assets in the field and command centers can exchange valuable information and real-time data, increasing situational awareness and facilitating timely decision-making. Dispersed personnel can respond to each situation accurately and in a coordinated fashion.

Extending the Value of the Network

The strategy of the U.S. Air Force for information management and technology calls for a service-oriented architecture that improves access to necessary tools and data, regardless of location or operating platform. Cisco answers this need with the Cisco Intelligent Information Network, a unique framework that virtualizes network services—such as mobility, voice, security, collaboration, and storage—to dispersed network locations. This intelligent information network also integrates applications, transforming the network into a strategic advantage.

By integrating the advanced network services that Cisco supports, the U.S. Air Force can simplify its network, lower costs, enhance system resiliency and flexibility, and raise the value of networked assets. This next-generation architecture helps align IT resources with operations, resulting in greater mission success.

Fostering Collaboration

Interoperability enabled by IP networks enhances collaboration among military personnel, joint forces, coalition partners, and other federal and civilian agencies. Cisco Intelligent Information Network and Unified Communications solutions pave the way for new communications advances, such as replacing legacy telephones with IP-based data, voice, and video systems, or enabling interoperability between radios, wireless mobile devices, and telephones. These converged networks improve communications effectiveness while lowering the total cost of ownership.

Cisco leads the unified communications industry with solutions such as Cisco TelePresence, which delivers a unique, “in-person” experience over the network. Cisco TelePresence combines high-definition video, spatial audio, and interactive elements to allow users to collaborate across a city or across the globe. Cisco TelePresence is based on industry standards to support interoperability with traditional and emerging video technologies.

Safeguarding Vital Assets

The U.S. Air Force’s strategy also calls for protecting and defending critical infrastructures, networks, and proprietary information to maximize mission assurance. Cisco offers a powerful suite of integrated, end-to-end security solutions that rapidly repel external and internal network threats; control and monitor network access; and meet regulations for availability, confidentiality, and integrity. This comprehensive safeguarding of network assets helps military organizations to maximize network uptime and productivity while minimizing threat impact.

Cisco integrates many risk-reducing security features in every component of the network. The industry-leading Cisco Network Admission Control, for example, controls access from wireless, LAN, or remote locations while enabling IT administrators to automatically quarantine and remediate noncompliant endpoints. Cisco security solutions integrated into network components also mitigate viruses, circumvent denial-of-service attacks, comply with network policies, and include encryption technology that is certified for use in government and military applications.

To help ensure data security and integrity, Cisco storage-area switches present an array of defenses, such as Fibre Channel zoning, which eliminates the risk of a host gaining unauthorized access to a disk used by another host. A multilayered approach protects assets from external and internal threats, both known and unknown.

Integrating Airborne Capabilities

As the U.S. Air Force extends its IP infrastructure, it can also extend enterprise data, voice, and video capabilities seamlessly into the airborne environment. These mobile platforms must communicate over wireless radio networks, where bandwidth is at a premium, and radio-link quality can vary suddenly and dramatically due to noise, fading, interference, and power fluctuations.

Recognizing that there was an overwhelming need to establish an open-standards-based solution for integrating IP routers and mobile radios in ad hoc networks, Cisco authored a new IETF request for comment, RFC 4938, which defines a mechanism to establish radio-aware routing capabilities. This standardized approach allows a radio to exchange path metrics with the router, enabling faster convergence, more efficient route selection, and better performance for delay-sensitive traffic—a necessity in the airborne environment.

Enabling Ad Hoc Operations

Ad hoc networks are emerging as a means to deliver IP-based data, voice, and video to users who are operating beyond the reach of traditional fixed-network infrastructure. While ad hoc networking offers a compelling advantage, it also poses some challenges, such as merging IP routing and mobile radio technologies efficiently.

In 2007, Cisco delivered the industry's first radio-aware routing implementation, based on RFC 4938. The Cisco Radio Aware Routing solution enables network-based applications and mission-critical, delay-sensitive information to be quickly and reliably transported over directional radio links. Cisco has also partnered with major radio vendors to facilitate their radio-side implementations of this industry standard.

Providing Interoperable Solutions and Recommended Practices

Cisco augments its solutions with an experienced consulting organization and a wide array of partners that help governments choose, implement, maintain, and maximize their use of technology. Cisco also provides a comprehensive set of leading practices—including deployment blueprints, advanced technical capabilities, case studies, and workshops—that help align the network with operations and maintain those operations through any disruption.

Cisco is a founding member of the Network-Centric Operations Industry Consortium (NCOIC). The consortium's mission is to increase interoperability within and between all levels of the U.S. government and allies involved in joint, interagency, and multinational operations.





Why Cisco?

Cisco provides integrated solutions that securely and smoothly connect the entire chain of command to mission-critical information. Cisco solutions have been a part of the U.S. Air Force infrastructure—both on the ground and in the air—for more than 20 years. Cisco delivers the solutions, expertise, and partnerships to help support the dynamic operational environment of the Air Force, both today and in the years to come.

The Cisco Global Government Solutions Group supports defense agencies around the world by delivering innovative, integrated mission capabilities through thought leadership, advanced technologies, and services. The group comprises a team of top experts from all levels of government around the world. They not only understand unique military challenges; they bring years of experience and unique insights necessary to solve them.

For More Information

Learn more about Cisco solutions for the U.S. Air Force and other global government solutions and services for defense at www.cisco.com/go/defense.



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