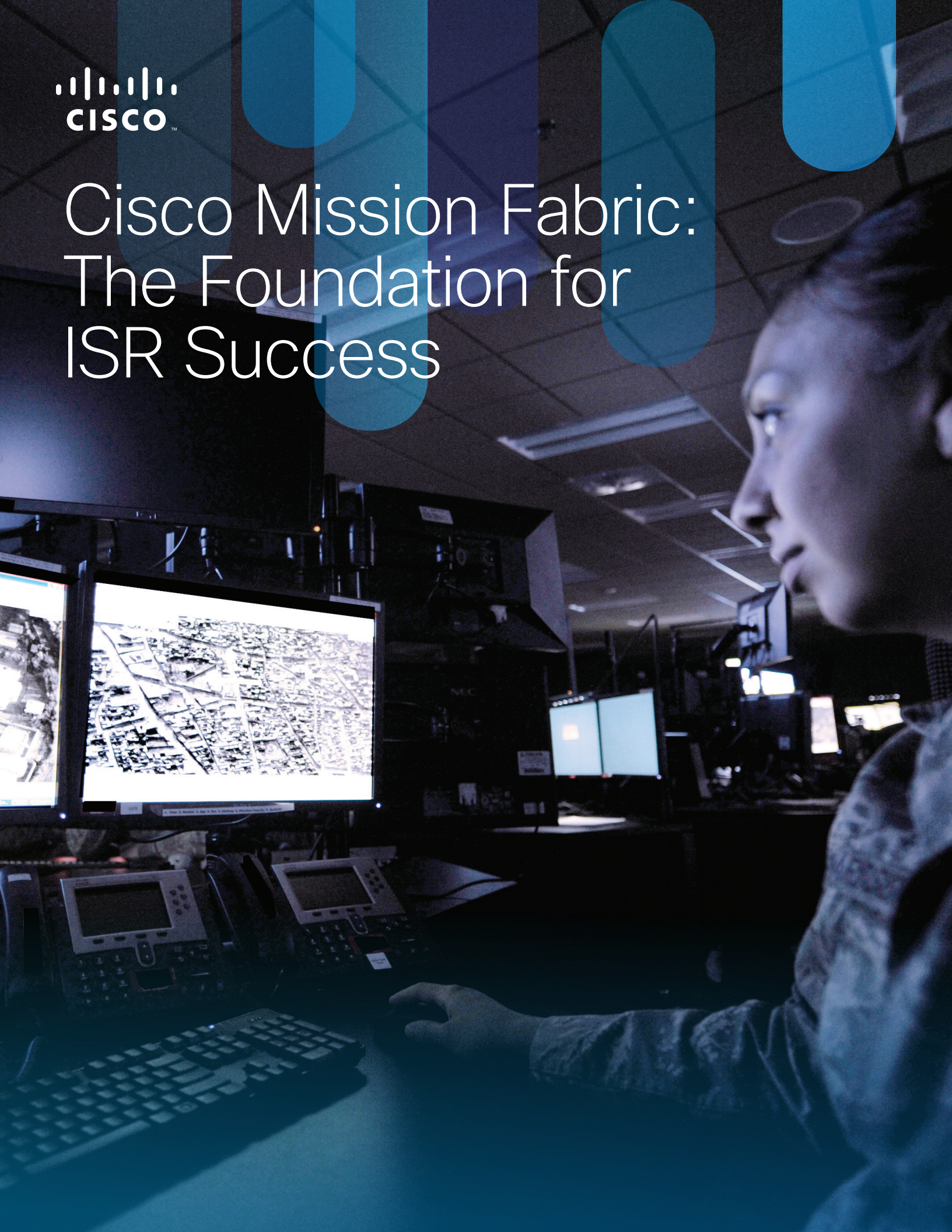




Cisco Mission Fabric: The Foundation for ISR Success



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White Paper



(U.S. Air Force photo/Tech. Sgt. Erik Gudmundson)

The rise of the global information network has dramatically altered the way nations gather intelligence and respond to conflict, disasters, and humanitarian tragedies. This ubiquity also enables everyone, everywhere to easily contribute to “the Web” with no more than a smart phone or digital camera.

Facebook, WikiLeaks, Google, and YouTube, among many others, are the new-age purveyors of information, conveying data at near real-time speed. The pervasive nature of information in this new era is made possible by the rise of Information Technology (IT) and its foundation, “the mission network.” Cisco is both the foundation for and at the forefront of this information-dissemination revolution.

Information vs. Intelligence

Despite the ubiquitous nature of information on the Web, two characteristics differentiate information from intelligence – validation and context. The challenge facing Intelligence, Surveillance, and Reconnaissance (ISR) operations is how to validate and apply context to nearly limitless amounts of information while remaining inside our adversaries’ decision loop or responding to disasters in a timely and efficient manner.

While the process of transforming information into intelligence is a complex calculus of study, intuition, and analysis, one constant underpins the endeavor. Intelligence, Surveillance and Reconnaissance organizations must have a reliable, efficient, and effective network to allow analytical collaboration and reliable transport and dissemination of intelligence. Cisco is the industry leader in providing reliable solutions and innovation to advance the Mission Network to ever more impressive capabilities.

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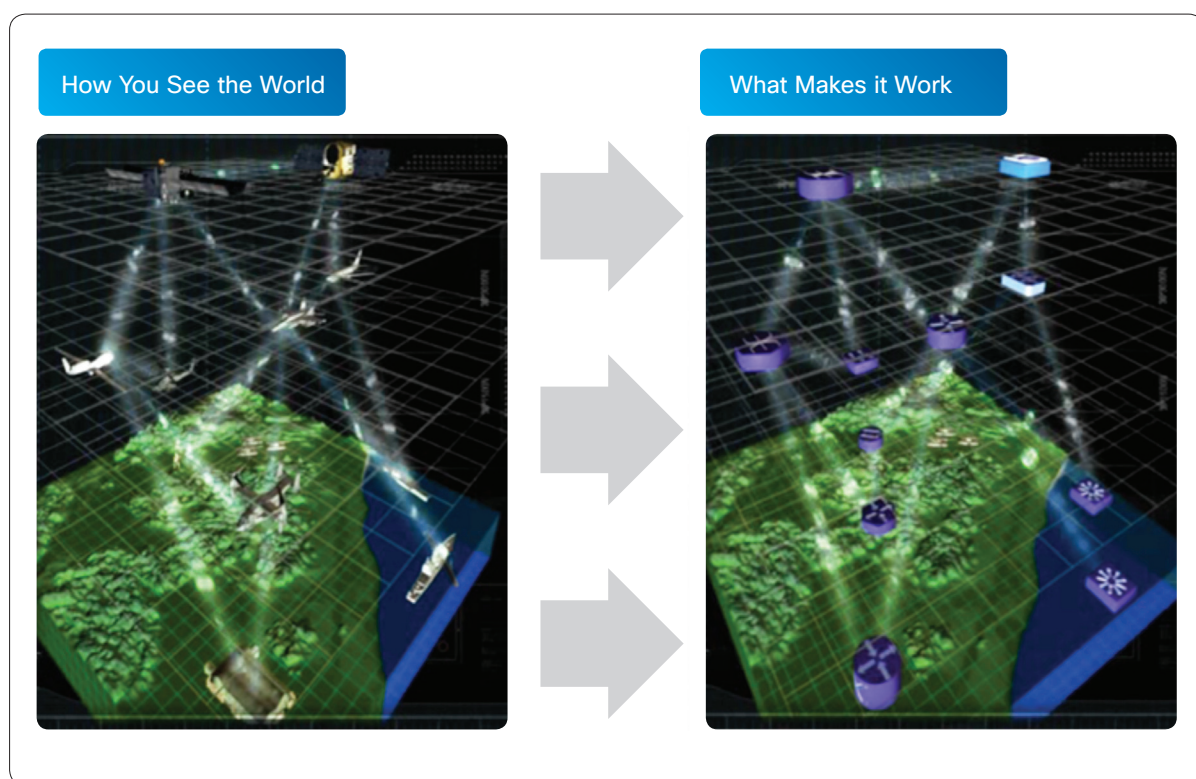
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Keeping Pace in the Intelligence Race

Today's ISR architecture is increasingly defined by three mechanical elements – unmanned vehicles, the sensors they carry, and the network that ties together the ISR and analysis systems. Linked to the machinery is the human element – intelligence analysts, systems operators, warfighters, and decision makers– who are often geographically distributed throughout the strategic, operational, and tactical environment.

To ensure this structure can process and capitalize on the speed and volume of intelligence available, the mission fabric must be able to support a broad spectrum of requirements. This can include balancing the demands of constrained bandwidth and storage environments with the demands of operators which range from text to high-definition, full-motion video and high-fidelity sensors, as well as the ability to seamlessly integrate radio frequency communications from hardened headquarters to austere environments.

In other words, the mission fabric must be able to reliably enable the demands of the Processing, Exploitation, and Dissemination (PED) process. Cisco is uniquely positioned to provide this end-to-end mission fabric, from operations and ground control centers to the sensors and payloads on board manned and unmanned assets.



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Weaving a Strategic Advantage

The organization with the most reliable, survivable, and agile network (or mission fabric) will triumph against the challenges of the 21st century. Every element of today's ISR network – from unmanned vehicles and autonomous sensors, to the soldier on the battlefield with a personal handheld decision aid – relies on the network.

Intelligence, communications, and operational execution can no longer be separated into stovepipes, as today's information requires instant analysis, updates and as required, action. Today's capabilities are resulting in a growing reliance on the network and network-based applications and capabilities. With a Cisco Mission Fabric approach supporting the ISR mission, agencies and organizations realized benefits include:

- **Ubiquity.** It is the only non-siloed, pervasive element that touches every aspect of IT operations, no matter how remote or distributed.
- **Transparency.** Network-based services (i.e., Voice) can be applied neutrally and non-invasively to any part of the Data Center landscape without introducing a proprietary agenda or costly integration overhead.
- **Standardization.** Promoting and absorbing uniformity at multiple levels allows it to provide wide interoperability, lower unit costs, and lower barrier to adoption.
- **Scalability.** The network is inherently federated by design, allowing it to scale seamlessly from one to millions of nodes with minimal overhead or management impact.
- **Flexibility.** By adding infrastructure services to the existing network, they immediately become available across the entire ISR enterprise, avoiding the 'silo effect' and constraint of point solutions.
- **Security.** The Cisco Mission Fabric allows for a consistent standard on which to build and maintain security verifications, and the ability to rapidly isolate sources of intrusion.



Intelligence, Surveillance and Reconnaissance Solutions

Platform Command and Control Network

Proven architectures to meet the resiliency and low latency requirements necessary to fly, sail, or drive the platform

Sensor data Dissemination

Reliable, resilient and secure network enabling distributed operations by connecting the crews and platforms and enabling the distribution of critical intelligence from the garrison to tactical levels

Ground Control Stations and Operations Centers

Secure IP Voice Communications, Unified Computing System and other advanced data center technologies, as well as the foundational network backbone are currently deployed around the world in GCS and Operations Center

Onboard Systems

Onboard routing provided today via a range of Cisco COTS products.

Radio Aware Routing technologies to improve the integration of RF systems into the IP backbone.

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Preparing for the Future Today

Of major U.S. IT companies, Cisco is among the leaders in Independent Research and Development (IRAD), spending over \$5B annually to modernize existing products and introduce new capabilities into this rapidly evolving industry. To achieve the objective of providing leading-edge solutions, our management and engineering personnel work with customers to identify and respond to customer needs, as well as with other innovators of internetworking products, including universities, laboratories, and corporations.

Investments in recent years have focused on small form factor routers to address the size, weight, and power (SWAP) demands of mobile environments, factors particularly important in ships, aircraft, unmanned vehicles, and on soldiers. Additionally, Cisco has introduced several Requests for Comments (RFCs) into the Internet Engineering Task Force (IETF) standards body, defining interoperability standards for use in variable bandwidth and limited-buffering environments, such as mobile radio links. Along the same lines, Cisco has introduced additional standards that enable radios and routers to form ad hoc networks with minimal configuration or changes.



(U.S. Air Force photo/Capt. Carrie Kessler)

Why Cisco

Cisco provides integrated solutions that securely and smoothly connect the entire chain of command to mission-critical intelligence. Cisco supports defense agencies around the world by delivering innovative, integrated mission capabilities through thought leadership, advanced technologies, and services. And our defense team, comprised of top experts from all levels of government around the world, not only understands unique military challenges, but also brings years of experience and the unique insight necessary to solve them.

Cisco solutions have been a part of the U.S. Defense infrastructure – ground, air, and sea – for over 20 years, helping to evolve from a point-to-point world to one that is fully connected. Cisco delivers the solutions, expertise, and partnerships to help support the dynamic operational environment today's ISR operations face and will remain a dedicated partner in the years to come.

Learn More

Visit www.cisco.com/go/federal to discover how Cisco ISR solutions for the U.S. Department of Defense and other global organizations can help you achieve your mission objectives.

