

A photograph of several large satellite dishes in a field, with mountains in the background under a clear sky. The text "ULTRA OPTICAL SOLUTIONS FOR GOVERNMENT AND DEFENSE" is overlaid in white, bold, uppercase letters.

ULTRA OPTICAL SOLUTIONS FOR GOVERNMENT AND DEFENSE

Polatis Ultra Optical switches designed for the Government include technology features that enable the systems to deliver the secure, scalable, reliable, manageable, and cost effective systems that government agencies require for analog and digital communications.

- *Protocol and bit rate independence*
- *40G and 100G support*
- *Ultra-low insertion loss (0.4dB typical)*
- *High repeatability and signal stability*
- *Low polarization dependent loss (< -05dB [C+L Bands])*
- *Strictly non-blocking architecture*
- *High power handling*
- *Very low power utilization*

INTRODUCTION

Government agencies need communications to complete their missions—and optical technology delivers the speed and scale to meet agencies' communications needs. However, government agencies need more than speed and size to be successful. They also require communications that are secure, reliable, manageable, and cost effective. And, optical communications switches for the government must also deliver investment protection—offering a low total cost of ownership today and the ability to upgrade to tomorrow's faster speeds and newer protocols without system replacement.

Coupled with our focus on manageability and reliability, a Polatis government communications solution can help cut operational costs and protect capital investments while improving the overall security, reliability, and performance of the optical network.

Following are just four examples of how Polatis optical switches can help government agencies fulfill their missions using the speed, simplicity, security, and manageability of our optical communications systems.

REMOTE, CENTRALIZED CONTROL OF FIBER ASSETS

Existing fiber optic distribution systems rely on manual intervention to provision connections. Manual connection provisioning is not only inherently time consuming and prone to human error, it is also a potential weak link in the information security structure. Figure 1 illustrates a traditional fiber distribution implementation.

Using Polatis' fiber distribution switches, government agencies can reduce service provisioning and upgrade time frames and manual service intervention requirements by up to 90 percent. Polatis' DirectLight® beam-steering technology in concert with our web-based management system (or any SNMP based management system) allows agencies to commission, change, or upgrade optical resources with just a few mouse clicks. Automated provisioning not only reduces the potential for human error, it also eliminates the handling of fibers and connectors, significantly increasing the life of the fiber plant and improving system ROI (Return on Investment).

Additionally, Polatis' software-based system reduces the potential for security breaches and human error through password protection of the provisioning process. The system logs actions taken and alarms produced with a time stamp (time, date) and user identification. The system also provides an accurate, in depth record of additions and changes to the network topology. Figure 2 illustrates the Polatis automated, secure fiber distribution solution.

AUTOMATIC BACKUP AND RESTORAL USING DARK FIBER

Unique to Polatis' optical solution is its ability to incorporate dark fiber into pools of fibers available for backup or APS (Automatic Protection Switch) implementations. Incorporation of dark fiber optimizes bandwidth and optical resource utilization while improving network reliability and redundancy. The overall result of Polatis' unique ability to support and switch dark fiber is that agencies can reduce their operational costs and improve the performance of their communications infrastructure quickly and securely.

REMOTE, CENTRALIZED, TEST ACCESS

Unlike many traditional optical solutions, a Polatis switch provides seamless, centralized test equipment integration. Using Polatis enables agencies to leverage expensive test gear cost effectively across their optical infrastructure as well as:

- Improve network reliability and availability through more rapid fault isolation and remediation
- Coordinate fault location with an up-to-date database to ensure that the right network resources are rapidly repaired
- Perform maintenance and service restoration on a fiber-by-fiber basis, without impact to other fibers or services

Furthermore, the Polatis switch's very low insertion loss (0.4dB typical) and return loss (>55dB) ensure that test data is accurate and reliable.

Polatis' ability to incorporate real-time tests into the fabric of the optical solution improves not only the reliability of the communications infrastructure; it also drives down operational costs through "one-stop" system testing. And, by improving fault isolation and remediation, on-site maintenance requirements (and their costs) are drastically reduced.

SMART, SECURE VIDEO DISTRIBUTION

Video is fast becoming the single most important form of communications. However, poor quality video, or video that is open to attack from outside can reduce or eliminate the communications benefits that video applications offer government agencies.

Polatis optical switches are designed to deliver the performance, flexibility, and security that government video applications require. Our very low signal loss (0.4dB), fast switching time (<17ms), and ability to handle up to 100Gbps speeds ensures the quality and performance of the most bandwidth hungry video applications. And, our ability to integrate test equipment for network and security monitoring as well as our software-based management system (with password-based access and account logs) enables agencies to implement video applications that are safe and secure. In addition, the ultra-low optical crosstalk of the Polatis switch meets the most stringent government requirements for certification in multi-level security applications. Polatis video distribution systems can also be managed using industry standard Crestron or AMX video controllers.

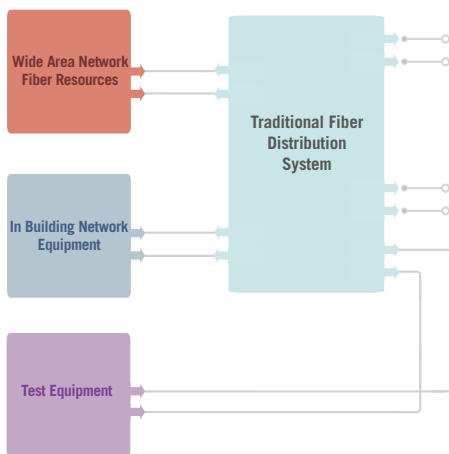


FIGURE 1: Traditional Fiber Based Distribution System

RF OVER FIBER DISTRIBUTION

Polatis' switches enable government agencies to use optical fiber to eliminate copper coaxial cabling, copper based patch panels, and large footprint RF switches to distribute RF signals within a building, a mobile command shelter, a ship, plane, or test range (refer to the Polatis RF over Fiber Application Note at http://www.polatis.com/datasheets/RF_Over_Fiber_App_Note.pdf). Using fiber optics allows agencies to support secure communications that can easily penetrate Secure Compartmented Information Facilities (SCIF) boundaries.

Polatis leverages its flexible fiber distribution solution to provide agencies more than just a fast optical backbone for their RF networks. The Polatis RF over fiber distribution solution also delivers greater security, reliability, manageability, and scale than existing copper based solutions. And, the Polatis solution provides these benefits while simultaneously reducing the size, weight, and power requirements of the system.

FLEXIBLE, SCALABLE, SECURE, AND MORE

Faster, more secure and accurate service provisioning, test equipment integration and backup and restoral are just a few of the benefits a Polatis solution delivers. Polatis' government solutions also are flexible, easy to implement, and preserve investments in fiber infrastructure.

Polatis optical switches are compatible with any networking protocol at almost any speed. Protocol flexibility allows government agencies to use Polatis switches in any optical networking environment—including those that require the most stringent security and encryption implementations (including support for NSA Class 1 encryption devices). And, because Polatis optical systems are crafted to make implementation fast and safe, system configuration is often accomplished in 30 minutes or less.

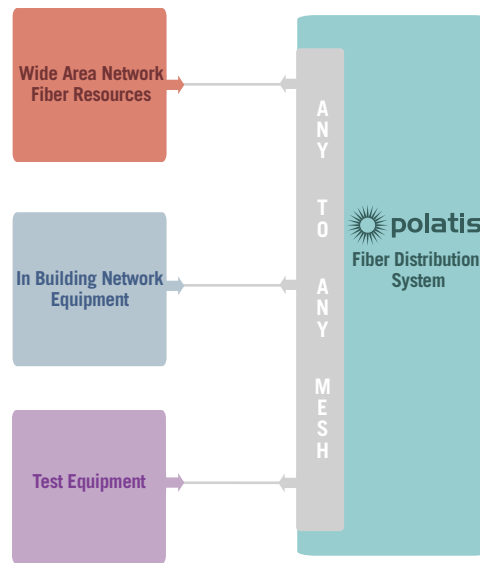


FIGURE 2: Polatis Automated, Secure Fiber Distribution Solution

Polatis switches can also support emerging 40G and 100G standards today—and other transmission standards as they arise. Polatis systems can therefore ease agencies' transition from existing optical and data communications technologies (such as SONET and CDMA) to newer, high speed Ethernet/IP-based systems smoothly and without disruption. And, Polatis systems can be configured to support government applications on land, air, sea, or in mobile tactical deployments.

TABLE 1: Summary Table

Fiber Distribution Solution	Manual	Polatis
Provisioning/Upgrade Time	Days/Weeks	Minutes
Automated Grooming	No	Yes
Automated Load Balancing	No	Yes
Dark Fiber Integration	No	Yes
Test Equipment Integration	No	Yes
APS Integration	No	Yes
Fault Isolation Time	Hours	Minutes
Span-by-Span Maintenance and Restoration	No	Yes
Risk from Human Error	High	Low

CONCLUSION

Government agencies need to find a better way to secure, manage, provision, and maintain their communications networks. Using Polatis optical switches, agencies can simplify and speed up their optical fiber and RF distribution implementations, improve network resilience and redundancy, lower operational costs, and improve the security of communications systems. And, they can reap these benefits using systems that are easy to operate, simple to implement, and can support the most demanding video applications. Polatis delivers not only the best in class optical switch, but a communications management solution that delivers unmatched performance, integration with stringent government security standards, and flexibility.

Polatis' Ultra-Optical solution allows agencies to leverage their enhanced optical infrastructures to complete their missions faster, more reliably, securely—today and tomorrow.

Call us to schedule a consultative technical session.



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