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SCIF Trunk

This architecture is used to provide one or more SCIFs with secure network connectivity via a high-fiber count cable. Once inside of the SCIF, one or more workstations could be serviced using a simple PDS, such as a Panduit surface-mount, plastic raceway; exposed cabling, among others.

This architecture can also be used to link two or more SCIFs or CAAs together. With the growth of datacenters and storage area networking, this architecture provides a very scalable, high-speed solution for 10-gigabit and beyond, without requiring inline network encryptors that could limit bandwidth.

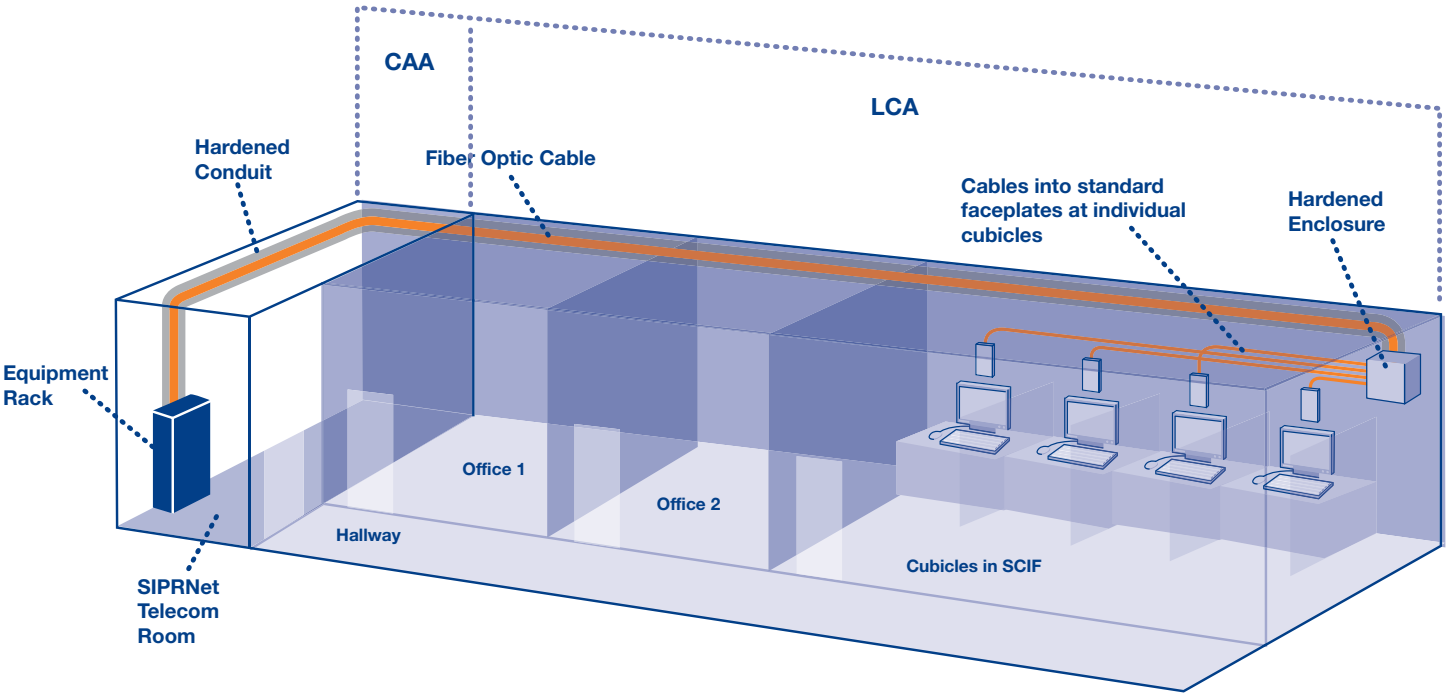

Figure 21: SCIF trunk architecture

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Primary Applications

For many facilities, the SIPRNet/JWICS network equipment is not located in the same SCIF or CAA as the offices or workstations requiring access. In other facilities, multiple, disparate SCIFs or CAAs have been accredited over the last few years, each requiring its own SIPRNet/JWICS connectivity. In both of these scenarios, the SCIF Trunk architecture provides a very flexible and scalable solution for SCIF connectivity.

Many new military construction or BRAC projects are leveraging this architecture due to both the requirement for multiple SCIFs in each building and also the extensive use of raised flooring in the facilities, which distributes the network cables in wire baskets underneath the floor.

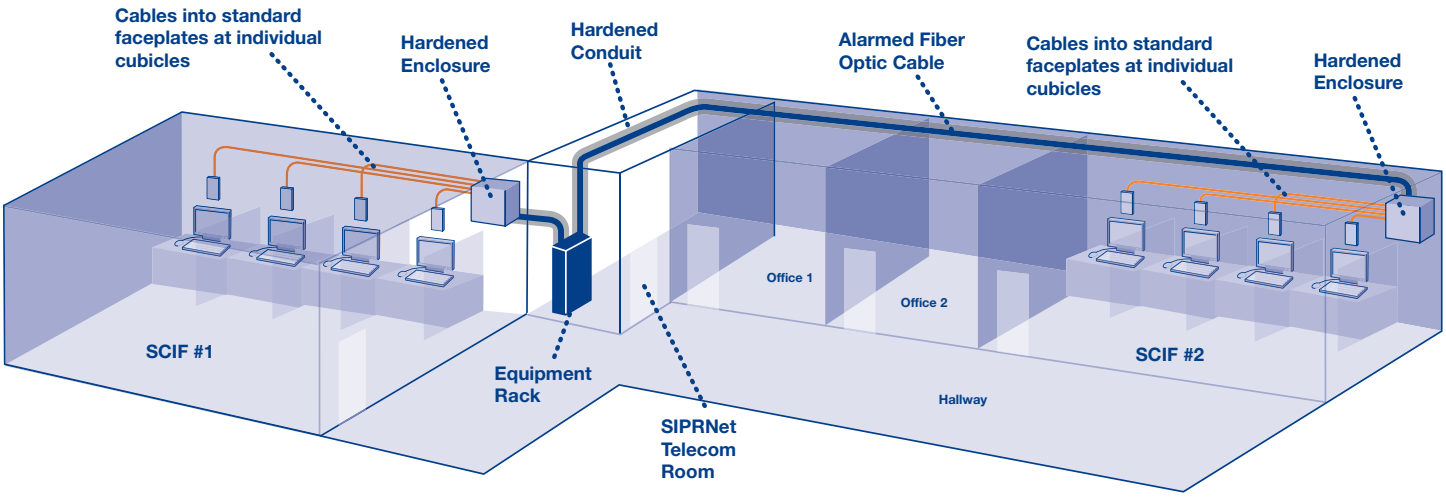

Figure 22: Multiple SCIF trunk architecture

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Design Considerations

When designing a network using this architecture, there are only two primary design considerations: (1) ensuring that the SIPRNet/JWICS network equipment is protected, and (2) determining the fiber count of the SCIF trunk cables. The alarmed SCIF trunk cables will terminate inside of the SCIFs or CAAs.

Consideration 1: Ensuring the SIPRNET/JWICS Network Equipment is Protected

For facilities with one or more SCIFs or CAAs, the SIPRNet/JWICS network equipment is often located in either one one of the primary SCIFs or inside an independent red/black equipment room that is not attached to any SCIF. In both of these circumstances, the SIPRNet/JWICS network equipment can be installed without any additional protec tion. However, in some other facilities where SCIFs are only now being accredited, the SIPRNet/JWICS equipment may be installed inside of an IPS container near or inside of the LAN equipmentr or telecommunications closet.

Consideration 2: Determining the Fiber Count of the SCIF Trunk Cables

In addition to the number of fibers required for SIPRNet/JWICS workstation connectivity and future growth, two dark fibers in each SCIF trunk cable should be allocated and dedicated to INTERCEPTOR Alarmed PDS monitoring. This can be accomplished by adding two additional fibers to the total number of fibers required for initial workstation connectivity as well as future growth. This can usually be between two and twelve fibers per workstation depending on the number of networks and ports required for each workstation or office. By dedicating two fibers, you can make use of a basic INTERCEPTOR unit and loop the fibers inside of the SCIF zone box or enclosure.

By leveraging the CTTA approval to use the interlocking armored cable, the SCIF trunk cables can be run above the ceiling or below a raised floor out to each SCIF or CAA. The armored cables can be deployed using j-hooks or wire baskets for cable management and support underneath the floor.

WARNING: If the potential exists in the future to activate the dark fibers originally dedicated to the INTERCEPTOR for monitoring, then it is recommended that an INTERCEPTOR+Plus unit be installed. RTUs can be added at the time the dark fibers are activiated.

Fiber Count Calculation Example

A facility recently had two new SCIFs (SCIF B and SCIF C, e.g.) accredited and wants to provide SECRET connectivity to both of these from the SIPRNET switch located in the facility's original SCIF (e.g., SCIF A). Each of the two new SCIFs have different workstation connectivity requirements, and the facility intends on having fifty percent growth over the current requirement.

	SCIF B Trunk Cable	SCIF C Trunk Cable
SIPRNET Ports Required per Workstation	6 ports (total: 12F)	2 ports (total: 4F)
Number of SCIF Workstations Requiring SIPRNET Access	x10 (total: 120F)	x15 (total: 60F)
50% Fiber Spares for Future Workstations Plus Growth	x60F (total: 180F)	x30F (total: 90F)
Dedicated Fibers for INTERCEPTOR	xMinimum 2F (Total: 182F)	xMinimum 2F (Total: 92F)
Round-up SCIF Trunk Cable Fiber Count to Standard Cable Size	***182F to 216F Cable needed***	***92F to 96F Cable needed***
Total Number of Fiber Terminations Required	432 Connectors	192 Connectors

Table 6:Fiber Count Calculations

Pre-terminated cables are an optimal choice for this SCIF Trunk Cable architecture. These cables are cut to length and pre-terminated in the factory with a variety of connector types (e.g., SC, ST, LC, MTP, Keyed LC, among others). Rather than trunk cables taking two or three days to terminate, pre-terminated cables can be easily installed and plugged into panels or modules in less than a day. For buildings with accredited SCIFs, the use of pre-terminated cables minimizes the disruption to on-going operations, and it eliminates the need to dedicate personnel to escorting the installers. Often, pre-terminated cables can be pulled in by contractors, but plugged into panels or modules by government personnel.

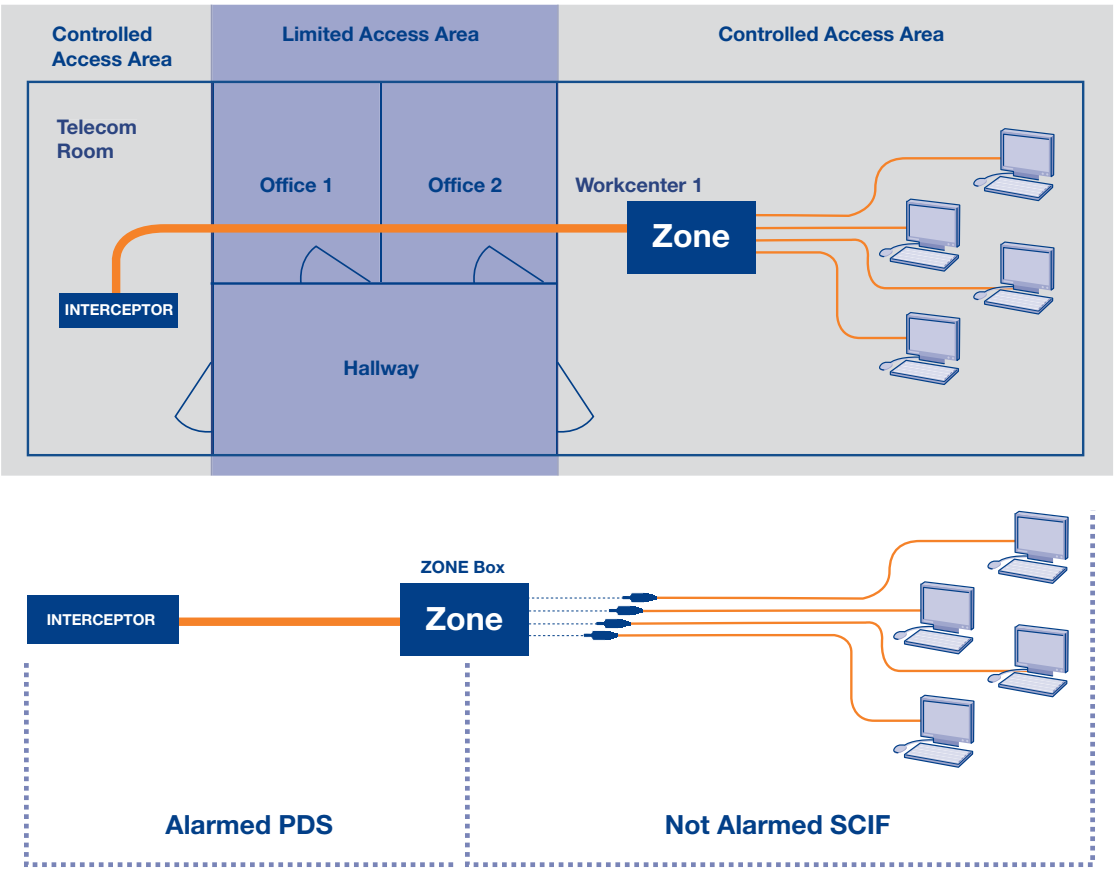

Figure 23: SCIF trunk network design example

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INTERCEPTOR Alarmed Carrier PDS Components/Options

If you are positive that two fibers will always be dedicated to INTERCEPTOR monitoring, you are able to deploy basic INTERCEPTOR units, simply loop back the dedicated fibers in the zone box installed in the SCIF (see top diagram in Figure 26). However, if there is uncertainty or concern that those fibers may be needed in the future, then making an initial investment in an INTERCEPTOR+Plus unit "future-proofs" your network and negates the need to buy a new INTERCEPTOR+Plus unit to replace your basic unit. Thus, if one or two SCIF trunk cables exhaust all of their fibers, you only need to buy an RTU at that point in time rather than having to swap out the entire INTERCEPTOR unit (see figure 26 for example).

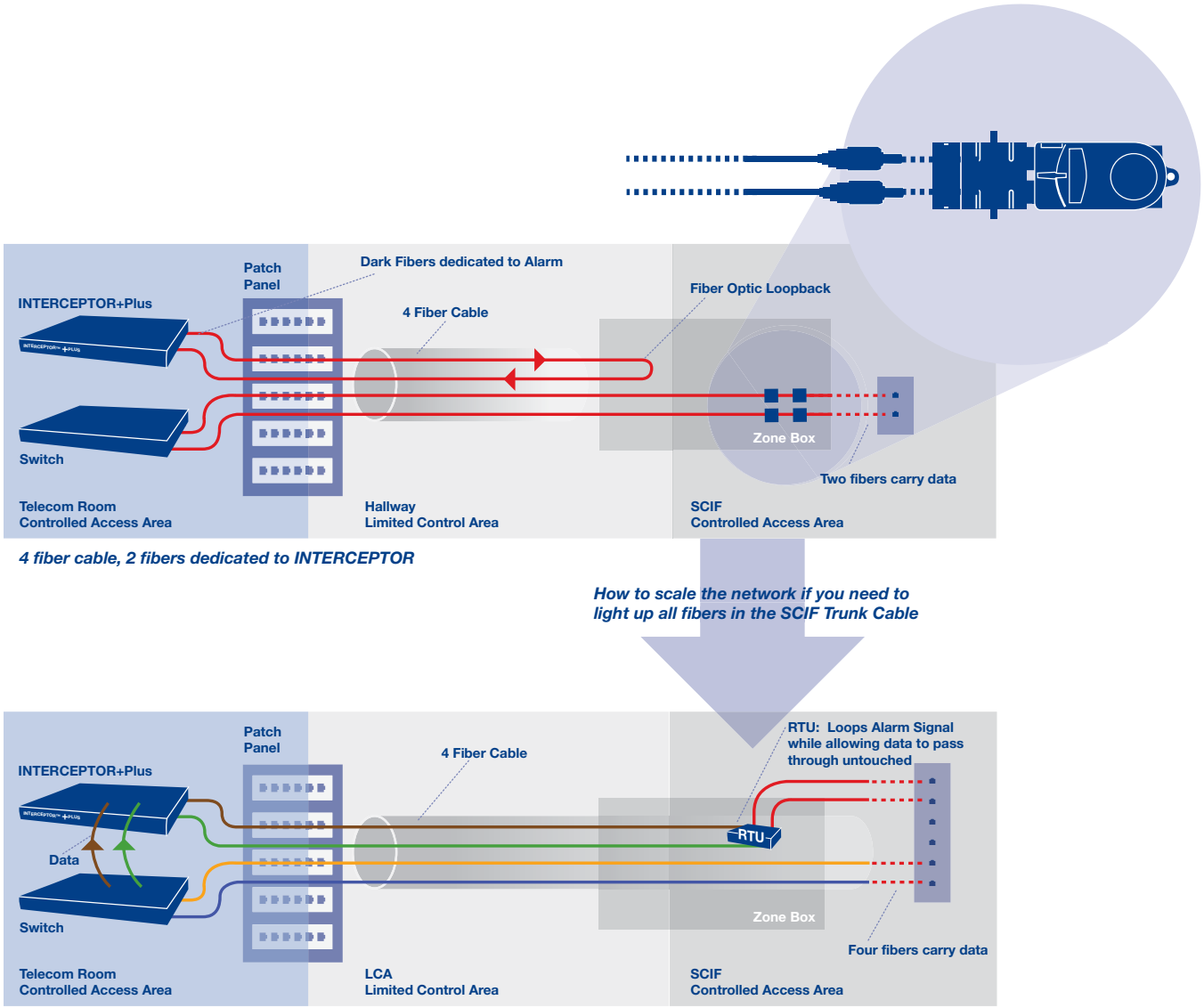

Figure 24: Dark fiber vs. active fiber deployment

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As long as there are dark fibers in the workstation drop cable, you can install a fiber loopack behind the bulkhead in the SCIF zone box or enclosure. This way, the SIPRNet/JWICS fibers terminate into the bulkhead, but the alarmed fibers are looped beind it, thus preventing any potential alarms caused by end users moving their patch cables around.

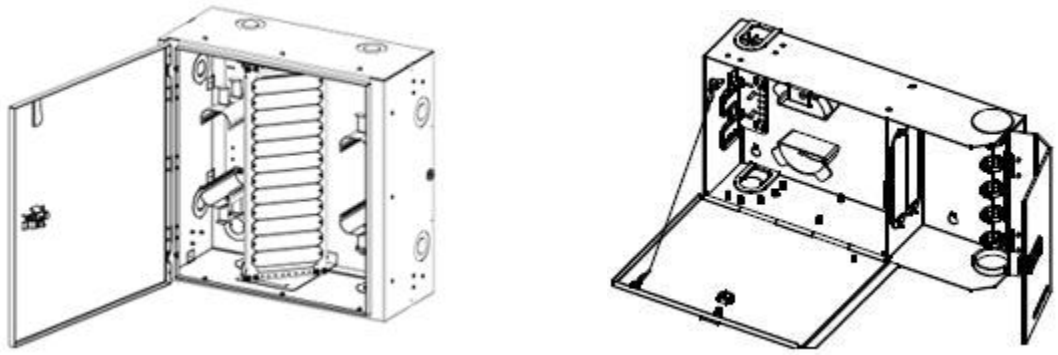

Figure 25: Examples of typical zone boxes and enclosures

WARNING: Depending on the existing physical security and/or compensating measures, the DAA may require a hardened enclosure to be installed and may alter the use of a commercial zone box instead.

Scalability of INTERCEPTOR Equipment

In this architecture, one INTERCEPTOR port is used to protect all of the fibers in the SCIF trunk cable. Therefore, new INTERCEPTOR ports will only be required if new cables need to be installed to existing SCIFs, such as when adding CO-ALITION or other network, or if new SCIFs are constructed.

If INTERCEPTOR+Plus units were initially deployed, and currently there is a need to light up all of the fibers in the SCIF trunk cables, you can purchase RTUs on a case-by-case basis if your SCIF trunk cables exhaust all of their dark fibers (as shown in Figure 26).