AMP NETCONNECT
SECURE CABLING SYSTEM FOR GOVERNMENT NETWORKS

The Advantages of SECURE Connectivity Solutions

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INTRODUCTION

Government IT and network managers are faced with numerous concerns when designing and installing their networks. The reliability and flexibility of the cabling infrastructure are two of these concerns easily addressed using products with standards-based network topologies and cabling performance requirements. Network access and security is a concern commonly addressed through software or through physical barriers such as locked or controlled-access data rooms. However, many government and military installations are complicated by the need for multiple networks based on classification (top-secret, secret, classified, unclassified, NOFORN, etc.) or some other aspect (redundancy, compliance, service, etc.)

Segregating these different networks by location, by function or by client is often difficult without inconveniencing the network users. Yet, the consequences of an improperly placed patch cord or NIC can be severe from a security or compliance perspective. Fortunately, the AMP NETCONNECT SECURE Cabling Systems enable segregated optical fiber and segregated twisted-pair copper networks that can be easily installed and simply implemented without sacrificing performance or requiring expensive electronics or software.

THE SECURE CABLING SYSTEMS

Tyco Electronics has a strong reputation for developing high-quality, high-performance and innovative products for optical fiber and twisted-pair copper cabling systems. The AMP NETCONNECT SECURE Cabling Systems provide a simple and elegant solution to the difficult problem of segregating networks with a physical barrier to connection. So, the high performance expectations of the cabling performance remain intact, even when a SECURE cabling option is chosen. Further, as the fit of the connectivity components are not altered, the same faceplates, enclosures and panels can be used with the SECURE products. The installation procedures are the same, using the same tools, for the SECURE products as for the

non-SECURE products. This all means that the selection of a SECURE cabling option does not need to compromise performance, convenience, training or tool kits.

The technologies incorporated in the AMP NETCONNECT SL Series twisted-pair jacks, the no-epoxy/no-polish AMP NETCONNECT MT-RJ jacks, the no-epoxy/no-polish LIGHTCRIMP PLUS LC connectors, the MPO high-density optical fiber products and the MPO PARAOPTIX high-density optical fiber products all had proven track records with over a million successful installations, so it was important to maintain the internal technologies without modification or compromising the compatibility with the physical contact specifications of the connectors. Accordingly, the SECURE products focused on other aspects of the connector designs.

THE SECURE SYSTEM ADVANTAGE

Working in conjunction with government customers who desired some means to segregate their network cabling, Tyco Electronics developed a truly innovative and unique solution - the AMP NETCONNECT SECURE Cabling Systems. These systems provide all the advantages of AMP NETCONNECT connectivity while preventing inadvertent or unauthorized connection to network components. The end results are effective and elegant solutions.

THE SECURE TECHNOLOGY


MT-RJ SECURE Plugs Showing Different Slot Locations

The SECURE technology is built into the SECURE connector plugs, adapters and jacks. Through a combination of offset slots, offset keys, non-symmetrical cross sections and stops, the SECURE products are all modified to prevent mating with non-SECURE products, or with unmatched (different color) SECURE products. For example, the MT-RJ SECURE plugs

have slight modifications in the location of one or two of the slots on each side of the plug housing – just enough modification to prevent mating with a non-SECURE MT-RJ jack. The modifications in the location of the slots and keys also prevent mating an MT-RJ SECURE plug to an unmatched jack. Color coding is used to identify the matching slot and key combination. If the color doesn't match, it won't latch! However, a matched MT-RJ SECURE plug and jack will mate and retain the stability benefits of the slots and keys. It's just that simple! Similar mechanisms are used for the RJ45 SECURE, the LC SECURE and MPO SECURE products.

By color-coding each variation of a SECURE product line, it becomes intuitively obvious which jack or adapter will accept each plug. For example, the blue MT-RJ SECURE plugs will only mate with the blue MT-RJ SECURE jacks. Even in low-light, colored light or no-light situations, the SECURE plug will mate only with the matching color SECURE jack or adapter. Timely connection errors can be prevented up front, and prevented over time.

While the offset slots and keys still provide the same performance and function as non-SECURE connector products, it is important to note that the AMP NETCONNECT SECURE products are not compliant to industry intermateability standards, as they will not mate with the non-SECURE versions. This is the consequence and advantage of the non-standard housing slot and plug key locations, which provide the intent and benefits of the SECURE designs.

IMPLEMENTING THE SECURE CABLING SYSTEMS

Installing a SECURE system segregated network is as simple as installing any network. Each work area outlet can contain any number or mix of the SECURE jacks, SECURE adapters, non-SECURE adapters and non-SECURE jacks – they can be mixed and matched to meet the needs of the end user. Each user is then provided with the appropriate color (or colors) of SECURE patch cord(s) for the network(s) they are authorized to access. They will then be allowed only to connect to their authorized network port(s), as the slots and keys of the

SECURE plugs prevent them from accidentally (or purposefully) connecting into another network terminated in the other SECURE products. They will also be prevented from accessing a network terminated in non-SECURE jacks or adapters, unless provided with a non-SECURE patch cord.

Behind the wall, each SECURE jack or adapter at the work station is terminated to a SECURE jack or adapter of the same color in the closet. Here, the slots and keys of the SECURE products reduce the chances of an improper connection between segregated networks. The "green" network, constructed of green SECURE jacks will not be able to be cross-connected to the "blue" network because the SECURE patch cords are constructed with one SECURE plug and one non-SECURE plug. The non-SECURE plug is for connection to the electronics or end equipment that use non-SECURE transceivers (SECURE transceivers are not manufactured). So, electronics with non-SECURE interfaces can be used with the SECURE Cabling System and still enjoy the benefits of the SECURE features at the patch panels and faceplates.

Once a SECURE network is installed, work areas become flexible and can support different users with different network access requirements from the same location – without re-cabling or reconfiguring. Further, the users are not required to move to a new location or outlet in order to access a different network.

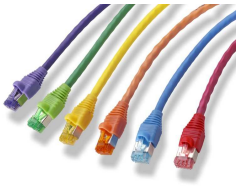
CASE STUDY #1

Originally, MT-RJ SECURE products were designed and developed for use in military and government installations, where the necessity for segregating unclassified networks from the classified networks was a security requirement. To prevent inadvertent (or advertent) connection by a user without the proper security classification, locations often had to establish "secure rooms" where only one of the networks could be accessed. Additionally, the concern about cross-connecting a classified network with an unclassified network due to an improperly

connected patch cord had to be addressed. The MT-RJ SECURE products enabled a reduction in facility size ("extra" secure rooms could be eliminated), and allowed users to access their authorized networks throughout the facility. The slots and keys also solved the concern about inadvertent connections between servers of different classifications. Color-matching cables were also deployed, so that the cables of each network were readily identifiable in the pathways. The popularity of the SECURE products justified the expansion of the MT-RJ SECURE connectors from the original four variants to ten variants, and expanding the SECURE concept into other product lines, including LC SECURE, MPO SECURE and RJ45 SECURE.

LC SECURE

MPO SECURE



RJ45 SECURE

CASE STUDY #2

An emergency management agency client needed to develop a rapid-deployment data center capability. Preparing a containerized, building block data center was relatively easy. Managing the data connections in periods of catastrophic weather events with untrained personnel and unpredictable lighting conditions was a problem until the client adopted the MPO SECURE trunk cables. By color-coding the trunk cable lengths, the correct cables could only be connected to the correct receptacles and ensuring the data center was placed on line quickly without disruption to remake cable connections.

PRODUCTS

There are four product lines in the AMP NETCONNECT SECURE Cabling System portfolio: MT-RJ SECURE, LC SECURE, MPO SECURE and RJ45 SECURE. Each system is comprised of a full line of products.

The MT-RJ SECURE Optical Fiber Cabling System offers ten variations (colors) and a universal plug for easy system testing and certification. Additionally, AMP NETCONNECT offers optical fiber cables in the same ten colors as the MT-RJ SECURE variants for simplicity in cable management. MT-RJ SECURE outlet jacks and patch panel jacks offer quick, no-epoxy/no-polish terminations. MT-RJ SECURE cable assemblies are available in all ten (color) variants and are offered with terminations to non-SECURE MT-RJ, non-SECURE LC, SC duplex and ST-style plugs. Cable assemblies are available in standard and custom lengths. All fiber types are available in MT-RJ SECURE connectivity.

The LC SECURE Optical Fiber Cabling System offers ten variations (colors) and a universal plug for easy system testing and certification. Additionally, AMP NETCONNECT offers optical fiber cables in the same ten colors as the LC SECURE variants for simplicity in cable management. LIGHTCRIMP PLUS LC SECURE connectors offer quick, no-epoxy/no-polish terminations, and epoxy/polish LC SECURE connectors are also available. LC SECURE cable assemblies are available in all ten (color) variants and are offered with terminations to non-SECURE MT-RJ, non-SECURE LC, SC duplex and ST-style plugs. Cable assemblies are available in standard and custom lengths. All fiber types are available in LC SECURE connectivity.

The MPO SECURE Optical Fiber Cabling System offers ten variations (colors). MPO SECURE trunk cables are available in standard and custom lengths and are terminated in MPO SECURE plugs. MPO SECURE cassettes fan out the 24 fibers of two MPO SECURE plugs to 24 fibers in the same color MT-RJ SECURE or LC SECURE adapters. The cassettes can be color-coded, and MPO SECURE connectivity is available for all fiber types. Even MPO PARAOPTIX SECURE provides a solution with the highest density of optical fiber connectivity.

The RJ45 SECURE Copper Cabling System offers six variations (colors). RJ45 SECURE modular jacks are available in shielded and unshielded versions and RJ45 SECURE cable assemblies are available in all six (color) variants and are offered with terminations to non-SECURE RJ45 plugs. Cable assemblies are available in standard and custom lengths. The RJ45 SECURE connectivity supports category 5e and category 6 performance.

SUMMARY

While the advantages of network segregation are sufficiently worthwhile, the AMP NETCONNECT MT-RJ SECURE Cabling System also provides a proven product with proven technology and performance without the need for special tools, training or expensive electronics. No network is impervious to a dedicated effort to breech security measures, but inadvertent and inappropriate access can be significantly reduced through the careful design and installation of an MT-RJ SECURE network.