

IP encryption solution from Rohde & Schwarz SIT and Cisco for unthrottled network traffic

Cisco is the world's largest network equipment provider. To use the company's state-of-the-art routing technology in German government networks, an innovative national encryption solution that meets government IT security standards will be required. Rohde & Schwarz SIT develops such a solution: R&S®SITLine IP.

High network efficiency and secure encryption in a single device

Failsafe performance and availability were central issues for data networks for a long time. Today, efficiency, quality of service and data protection play an important role.

IPSec is a common, well-known data stream encryption technology. It is used for designing virtual private networks (VPN) and, for example, when mobile user equipment dials in to a corporate network via the Internet. To do this, IPSec defines a securely encrypted point-to-point connection (VPN tunnel) through the network.

IPSec-based solutions, however, can be an obstacle for advanced wide area network architectures. Their encrypted tunnels hide information required for intelligent routing, putting major constraints on network traffic optimization. The

result is a rigid overlay network of VPN tunnels, requiring considerable administrative effort if there is an increasing number of locations.

Advanced networks are only efficient if their traffic is optimized. Optimization allows intelligent routing methods, for instance, to deliver high availability and quality of service in large, heavily meshed networks with numerous terminals and hubs. When connections fail, the mechanisms integrated into the network routers search for alternative paths to target terminals. The quality of service can also be set. For example, IP-based phone conversations (e.g. VoIP) can be prioritized higher than email data packets. This optimization is required for technical reasons and complies with the concept of net neutrality. However, it is severely hampered when encrypted tunnels cause critical information to become unavailable.

R&S®SITLine IP: intelligent routing based on encryption

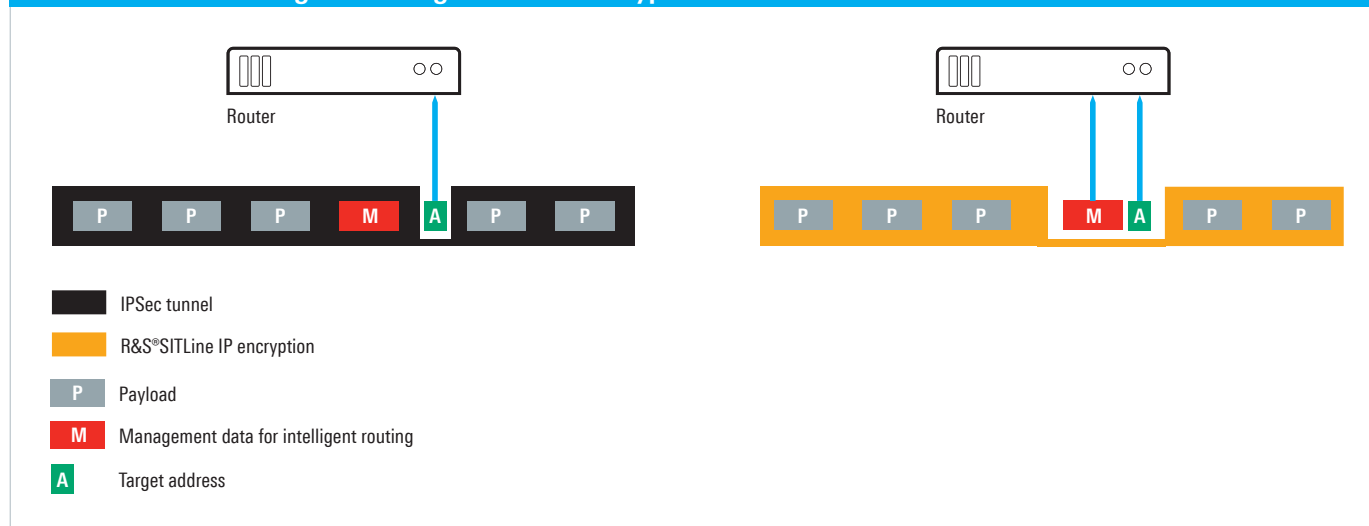


Fig. 1: Unlike conventional IPSec tunnels (left), the R&S®SITLine IP solution encrypts payload only; service and routing information remains available for network traffic optimization.

Group-oriented IP security solutions offer a way out by encrypting only the sensitive payload and leaving service and routing information available (Fig. 1). The group key concept greatly simplifies customer network administration (Fig. 2) and considerably increases overall resilience.

IP security solution for government networks

Cisco International and Rohde&Schwarz SIT are implementing these advanced types of solutions for high-security German government networks using encryption technology made in Germany. As part of this exclusive cooperation, Rohde&Schwarz SIT is developing encryption devices that can be seamlessly integrated into Cisco networks.

The new R&S®SITLine IP devices encrypt data traffic in real time for all transmission paths in a manner that is transparent for network components, which makes them ideal for government networks. They also feature independent, made-in-Germany hardware to ensure additional security without degrading the performance of advanced meshed networks. The R&S®SITLine IP encryptors operate together with Cisco's latest integrated services routers, but there is strict separation between the security and network components. That means proven high security and total interoperability thanks to the cooperative effort with Cisco.

Cisco International

Headquartered in San Jose, California, Cisco is the world's leading supplier for Internet-based network solutions. Its approximate 74,000 employees delivered around USD 47 billion in global revenue in fiscal year 2014. The company focuses on six fields: core networking, Cisco video and collaboration, access (wired and mobile), security, unified data centers and services. Cisco's security field brought in approximately USD 1.5 billion in 2014.

The development of R&S®SITLine IP is based on the innovative platform architecture already in use in the R&S®SITLine ETH Ethernet encryptors (Fig. on page 50) and approved by the German Federal Office for Information Security (BSI). The company plans several R&S®SITLine IP models with throughput rates between 100 Mbit/s and 10 Gbit/s and intends to obtain BSI approval for these encryptors up to the German restricted (VS-NfD) classification level.

A trustworthy value added chain for the applied solutions is especially important for government networks. Rohde&Schwarz SIT develops and manufactures its products at its own secure locations in Germany. This also ensures the long-term availability of the platform components as well as the products based on them.

The partners complement each other perfectly – German security technology for the highest standards from Rohde&Schwarz SIT and state-of-the-art network technology from Cisco. Together they can equip the world's leading IT infrastructure with German crypto equipment and meet the additional needs of government IT networks in Germany. It is a model that can set an international precedent when high performance and national security are required.

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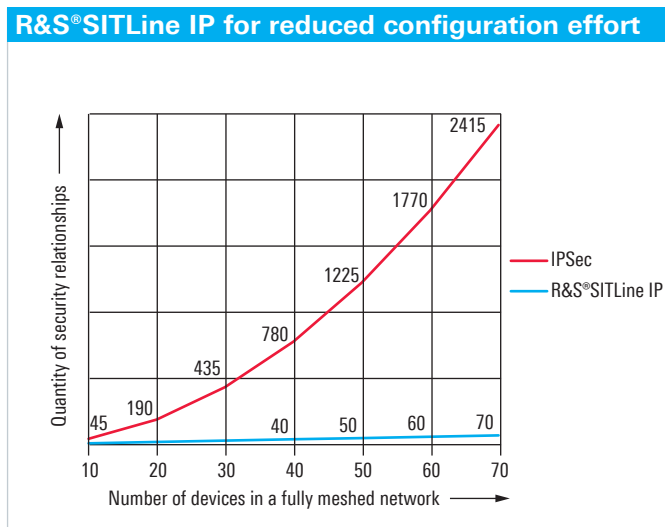


Fig. 2: Configuring a fully meshed network is significantly less complex with R&S®SITLine IP group encryption than with comparable IPSec-based protection.