

SINA SOLID – The award-winning, patented solution for secure dynamic VPN networking

The unique SINA SOLID technology (Secure Over-Lay for IPsec Discovery) is a new feature of the SINA L3 Box and represents successful culmination of years of research. SINA SOLID can automatically configure very large, flexible IPsec networks, thereby significantly increasing performance at the highest security level.

This feature makes it possible to create a dynamic VPN network that automatically configures the connection between individual network nodes – all without affecting the security features of IPsec or SINA. SINA SOLID also greatly reduces the administrative burden in large, complex networks, as the system automatically responds to changes in the network, eliminating the need for manual intervention.

IPsec-based VPNs (virtual private networks) offer extensive protection against attacks on the confidentiality and integrity of transmitted data. However, due to their complex and often static configuration, the integration of new IPsec gateways within a network or the adaptation of VPN paths is often extremely time-consuming and costly. Generally speaking, the IPsec infrastructures which are typically used for this purpose must be configured manually. Even in large networks,

this involves setting up paired security associations between the respective IPsec gateways. This process, for which the effort increases exponentially with the number of IPsec gateways, can quickly become very expensive and error-prone. Network availability and operating costs for central nodes are make-or-break criteria for the establishment of a VPN. To date, no other product for full, dynamic and automated VPN meshing has received the approval of the German Federal Office for Information Security (BSI).

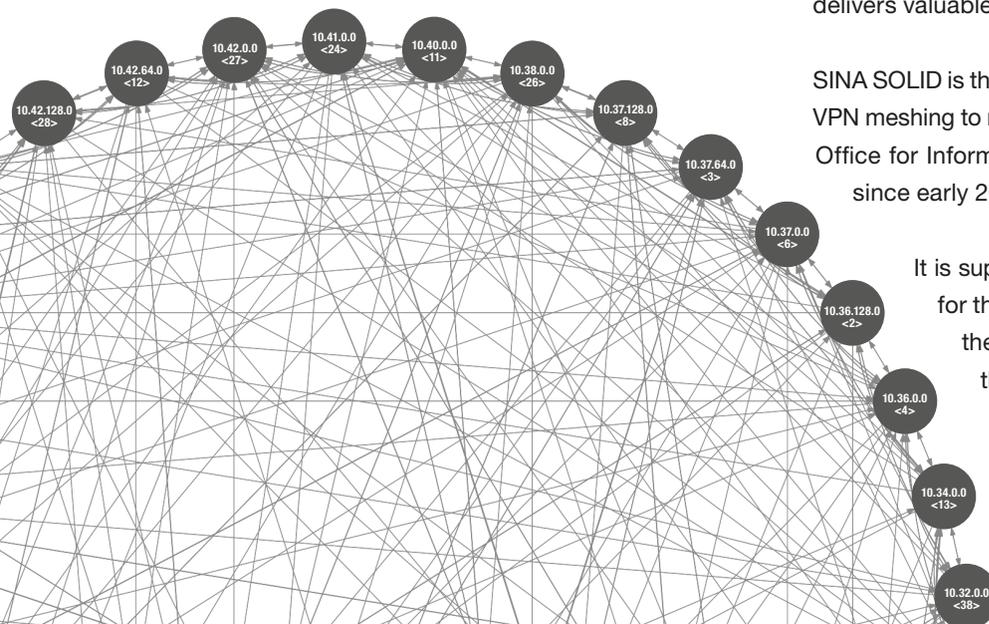
SINA SOLID facilitates dynamic VPN meshing by automatic configuration in large to very large network infrastructures. It responds to topology changes and path redundancy at runtime. This helps to minimise the administrative burden, particularly in complex, potentially heavily meshed VPN topologies. Thus it also guarantees faster communication setup, increases sabotage resistance against denial-of-service (DoS) attacks and allows for a dynamic response to system failure via self-optimised path selection between SOLID nodes.

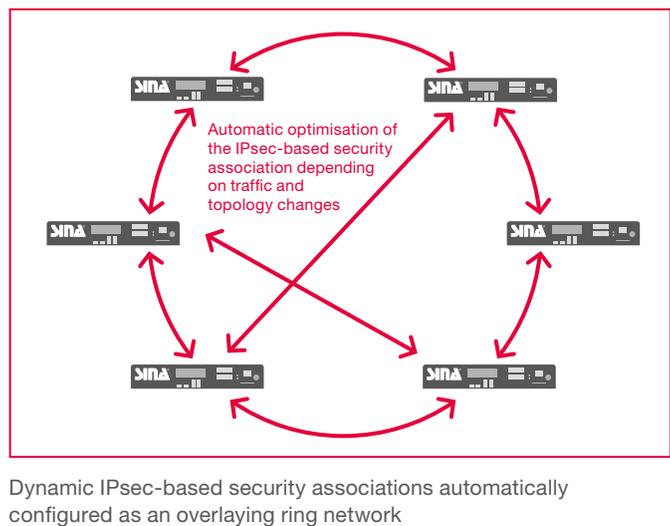
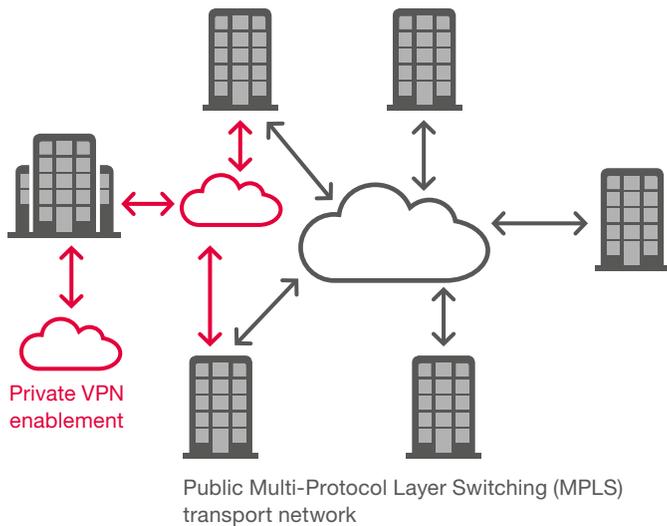
The transparent and secure overlay network coordinates VPN meshing independently. It manages the dynamic arrangement of all VPN participants in a logical ring and allows all nodes to conduct search queries in order to build security associations. Consequently, all routing information is stored in the VPN node itself and subject to regular optimisation. The overlay network delivers valuable data for monitoring SINA SOLID in real time.

SINA SOLID is the first product for full, dynamic and automated VPN meshing to receive accreditation from the German Federal Office for Information Security (BSI), and has been available since early 2017.

It is supplied as a new feature in software version 3.9 for the SINA L3 Box S, making SINA SOLID one of the key IT infrastructural core components in the SINA product portfolio.

The SINA SOLID network structure





The benefits of SOLID

■ Autoconfiguration

- >> Lower configuration and administration costs
- >> Automatically configured security associations
- >> Routing information stored in the network itself
- >> Dynamic topological changes performed at runtime
- >> Dynamic meshing in response to traffic demand
- >> SOLID separates its nodes according to organisational specifications

■ High Availability

- >> SOLID cluster formation in front of central infrastructure nodes
- >> Redundant path selection at runtime within the SOLID cluster
- >> High sabotage resistance due to elimination of central concentrators
- >> Dynamic network response to node failure
- >> Tolerates net partitioning, partial connectivity problems and high packet loss rates of the underlying network

■ Performance

- >> Load balancing within the SOLID cluster
- >> High efficient path discovery for scalability in big VPNs (>1000 nodes)
- >> Fast connection setup for VoIP scenarios

■ Security

- >> End-to-end IT security concept for the SINA L3 Box S
- >> Hardened and evaluated SINA OS system platform
- >> Smart card technology
- >> BSI-approval-compliant software and features
- >> High resistance against internal attackers due to involved SOLID protocol stack

■ Monitoring

- >> Global monitoring status for all boxes created by the dynamic SOLID overlay
- >> Automatic ticket generation, including semantic aggregation and visualization
- >> Transparent pairing to existing monitoring umbrella systems

The Development of SINA SOLID Components

SINA SOLID is the brainchild of an award-winning research partnership with the Ilmenau University of Technology. Initial success was achieved back in 2010. After several years of further development, SINA SOLID has reached product maturity. The solution was also approved by the BSI for VS-NfD (restricted) at the start of 2017.

SINA SOLID improves the previous VPN approach by automatically configuring security associations. This frees up administrative resources for use elsewhere without increasing the system's error rate. The SOLID cluster also guarantees reliability and a high throughput. Large infrastructures in particular can utilise SINA SOLID to simplify complex rules, whilst preserving IT security according to the BSI approval for German classified networks.

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