

SINA SOLID

Award-winning and patented solution for secure dynamic VPN networking

The unique technology SINA SOLID (Secure OverLayer for IPsec Discovery) is an innovative feature for the SINA L3 Box and the successful result of a research process lasting several years. SINA SOLID can automatically configure very large and flexible IPsec networks and significantly increases performance at the highest possible level of security.

The feature enables dynamic VPN networking, which automatically configures the connection between the individual network nodes. All security features of IPsec and SINA are fully retained in the process. SINA SOLID significantly reduces the management effort for large and complex networks, as the system reacts automatically to changes in the network, eliminating the need for manual intervention.

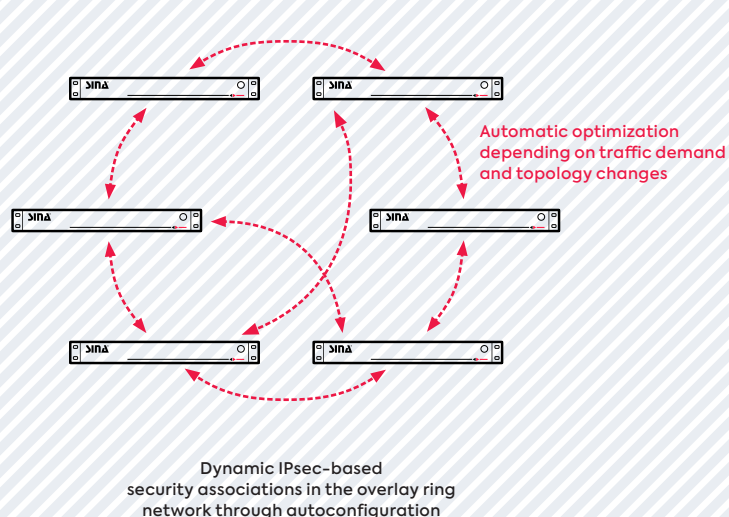
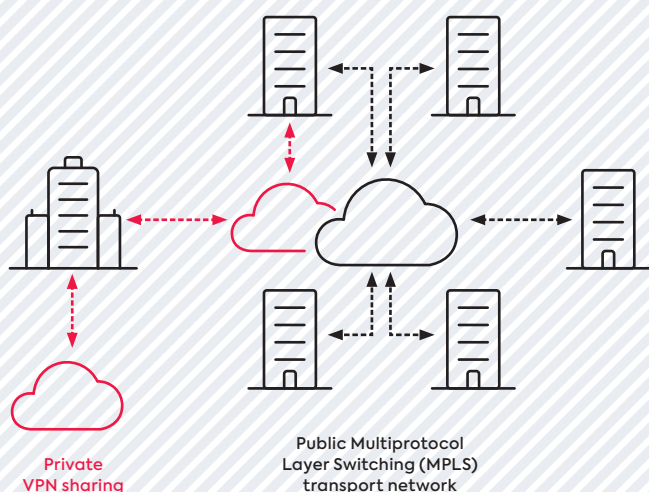
VPNs (virtual private networks) based on IPsec provide extensive protection against attempts to compromise the confidentiality and integrity of transmitted data. However, because of their complex and often static configuration, integrating new IPsec gateways into a network or adapting routes in the VPN often involves greater effort. Usually, the IPsec infrastructures frequently used for this purpose are manually configured. Even for large networks, paired security associations are established between the participating IPsec gateways.

This method, where the complexity increases exponentially with the number of IPsec gateways, can be costly and potentially prone to errors. **This is where our solution steps in.**

SINA SOLID automatically configures large network infrastructures and thus enables dynamic VPN meshing. It responds to topology changes and path redundancy at runtime. Especially with complex, potentially highly meshed VPN topologies, it helps keeping the administrative workload low. This ensures that communication is established quickly. In addition, the sabotage resistance against denial-of-service attacks (DoS attacks) is increased and allows dynamic response to failures through self-optimizing routing between SOLID nodes.

Furthermore, SINA SOLID Cluster enables a hot-standby-like network in that all SINA L3 Box S are active. With the SINA SOLID Cluster, permanent load distribution is possible and additional network components for load sharing can be saved.

Moreover, with SOLID Multi VPN, it is possible to create multiple instances while maintaining all the functional features of SINA SOLID. This makes it possible for organizationally separate clients to be mapped separately within a SOLID VPN.



The transparent and secure overlay network itself coordinates the VPN meshing. It controls the dynamic arrangement of all VPN nodes in a logical ring and enables all nodes to perform requests for establishing security associations. All routing information is thus held by the VPN nodes themselves and subject to regular optimization. The overlay network also provides valuable data for monitoring SINA SOLID in real time, which can be optimally processed and analyzed using SINA Monitoring.

SINA SOLID is the very first product for dynamic and automated VPN full meshing to receive approval from the German Federal Office for Information Security (BSI) and will be available to all SINA L3 Box S customers in 2023, starting with software version 3.9.5. SINA SOLID is thus one of the core components of the SINA product environment in terms of IT infrastructure.

The advantages of SOLID

Autoconfiguration

- Reduced configuration and administration effort
- Automatic configuration of security associations
- Routing information is kept in the network itself
- Topology changes are performed dynamically at runtime
- Dynamic meshing according to traffic demand
- SOLID separates the nodes within the network according to organizational specifications

High availability

- Creates clusters in front of central infrastructure nodes
- Redundant routing at runtime in the SOLID network
- Resistant to sabotage through omission of central concentrators
- Network reacts dynamically to node failures
- Tolerates network partitioning, connectivity problems and high packet loss rates from the underlying network

Performance

- Load balancing within the SOLID cluster
- Highly efficient routing for scalability in large VPNs (>1,000 nodes)
- Fast connection setup for VoIP scenarios

Security

- Holistic IT security concept of SINA L3 Box S
- Tempered and evaluated SINA OS system platform
- Software and BSI functionalities configured in compliance with approval requirements
- High sabotage resistance against attacks through the innovative SOLID protocol stack

Monitoring

- The dynamic SOLID overlay creates a global monitoring status for all boxes
- Automatic ticket generation including semantic aggregation and visualization
- Transparent connection to existing Umbrella monitoring systems

The development of the SINA SOLID component

SINA SOLID is the result of an award-winning research cooperation with the Technical University in Ilmenau. Following initial successes in 2010 and several years of development, SINA SOLID received approval for German national RESTRICTED (VS-NfD) from the German Federal Office for Information Security (BSI) in 2017.

SINA SOLID improves the previous VPN approach through the automated configuration of security associations. Freed-up administration resources can now be used elsewhere without increasing the systems' susceptibility to errors. The SOLID Cluster additionally promises fail-safety and high throughput. SINA SOLID enables large infrastructures in particular to simplify complex sets of rules while maintaining IT security in accordance with the BSI approval for German national RESTRICTED (VS-NfD).