# genuscreen

## Firewall & VPN Appliance

genuscreen is available in various hardware variants and as virtualized version.

## Facts and Features

### Definition

The Firewall & VPN Appliance genuscreen features a stateful packet filter and a VPN gateway to defend your network against threats from the Internet. In addition, sensitive systems in large company networks need extra protection. The genuscreen firewall was developed for exactly these requirements. Furthermore, this solution allows the easy and efficient implementation of secure and high-performance VPN tunnels.

Easy integration: genuscreen completely preserves the existing network structure. The bridging mode permits insertion of the solution in the network where areas need extra protection without changing a single IP address.

### Typical Use

- Safeguarding the internal LAN against unauthorized access from outside (e.g. Internet)
- Structuring an intranet in such a way as to establish domains with different protection schemes
- Universal RAS dial-in platform with support for various VPN clients such as genusecure Suite, genuconnect, ECOS SecureBootSticks as well as native clients on the operating systems macOS, iOS (incl. Apple indigo), MS Windows 10/11, and Android
- Safe data transfer through high-performance VPN tunnels

### Throughput Volume

Up to 19,699 Mbit/s firewall throughput with a single genuscreen system, clusters enable higher performance

### Reasons to Choose genuscreen

- Certification to CC EAL 4+
- The VPN component including quantum-resistant key exchange for IPsec/IKEv2 as well as the firewall component are approved for classification levels German VS-NfD, NATO RESTRICTED, and RESTREINT UE/EU RESTRICTED
- Easy integration via the bridging function
- Powerful firewall with stateful packet filter
- Setup of high-performance VPN tunnels with reliable encryption
- Fully IPv6 capable
- Bandwidth management for reliable performance of preferred services
- High availability and user-defined throughput volume using clusters
- Product variant genuscreen Virtual for flexibility, scalability, and integration into existing virtualization and cloud environments
- User-friendly GUI-based administration
- Central management of installations with more than 1,000 systems

### Customer Service

- Customer service directly from the manufacturer
- Security system management
- Hotline service / update service
- Free hardware support for three years from date of purchase
- Comprehensive training courses

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| Firewall | |
|---|---|
| Stateful packet filter | State of the art firewall for manageable rulesets |
| Bridging firewall | Invisible firewall on the data link layer (layer 2) |
| Network Address Translation (NAT) | Masquerade networks behind one address |
| Quality of Service (QoS) | Guarantee service priorities |
| Queuing (traffic shaping) | Bandwidth management to control traffic volume |
| Traffic redirection | Forward public services to internal services |
| Filter criteria | Filtering decision can be based on IP address, network protocol, port, interface, flags and state |
| Filter action | Choice of packet handling: pass, block, drop |
| DDoS protection | Proxy for the TCP handshake protects services against TCP SYN floods often used by DDoS attacks |
| Spoofing protection | Block forged packets |
| Packet normalisation | Reassemble fragmented packets, generate random IP identification, enforce IP header settings such as TTL and MSS |
| Enhanced protection | Privileged separation, sandboxing |

| Virtual Private Network (VPN) | |
|---|---|
| SSHId | VPN on the protocol layer (layer 4, TCP) |
| IPsec | VPN on the network layer (layer 3) |
| Bridging IPsec | IPsec-encrypted link layer |

| IPsec VPN | |
|---|---|
| **General** | |
| NAT-Traversal (NAT-T) | Supports connections between NATed devices |
| NAT for VPN | Connect locations with overlapping network ranges |
| High performance replay protection | Increased replay windows |
| **Operation Modes** | |
| Tunnel mode | Entire IP packet is encrypted and encapsulated |
| Transport mode | Only the payload is encrypted |
| Network mode | Supports routing protocols such as OSPF over VPN connections |
| Layer 2 bridging | Use IPsec to connect two locations on layer 2 |
| Transparent IPsec router | Encrypt your WAN traffic without changing your topology |
| IKEv2 | Connect mobile or third party devices |
| L2TP | Support for Android, Windows, iOS, Mac OS X (layer 2) |
| High availability | Synchronise security associations between multiple appliances to minimize failover outage |
| **Authentication** | |
| RSA | De facto public-key standard |
| Elliptic curves | Fast key exchange |
| Pre-shared keys | Manually exchange secret pair of keys |
| PKI (X.509) | Use a certificate authority (CA) to verify keys |
| **Algorithms** | |
| Encryption | AES-128, AES-192, AES-256, AES-GCM |

## SSHId VPN

| General | |
|---|---|
| Single TCP connection | Outgoing only, no problems with firewalls or NAT |
| Comes with NAT | Connect locations with overlapping network ranges |
| No interlinking | Easily prevent unwanted traffic |
| Compression | Increase net throughput |
| **Operation Modes** | |
| Bidirectional | Like any other VPN |
| One-direction | Offer centralised services to hundreds of branch offices (e.g. SAP) |
| Semi-bidirectional | E.g. allow printing at the branch office from central SAP server |

## Networking

| General | |
|---|---|
| Redundant network access | Multiple uplinks |
| DNS | Enabling local DNS caching |
| NTP client | Obtain time from NTP servers |
| NTP server | Provide syncronized time to local clients |
| DHCP server | Automatically assign IP address to clients |
| DHCP relay | Forward DHCP queries to central DHCP server |
| VLAN | Supports virtual LANs to separate networks |
| Trunking | Aggregate multiple network interfaces on one virtual interface |
| **IPv6** | |
| Native IPv6 | Fully IPv6 ready |
| Tunnelling | Use tunnelling to cross legacy IPv4 networks |
| NAT64 | NAT between IPv4 and IPv6 |
| **Routing** | |
| Policy based routing | Based on IP addresses/networks |
| Static routes | For small and easy setups |
| OSPFv2, v3 | Popular routing protocol among large corporate networks |
| Virtual routing domains | Separate routing domains on one appliance |

## High Availability

| | |
|---|---|
| Active-active with load balancing | Distribute load on several appliances depending on the source/destination IP address |
| Link aggregation | LACP: easy integration in a redundant/ high performance switch setup |
| Hot standby | Reserve appliance for automatic failover |

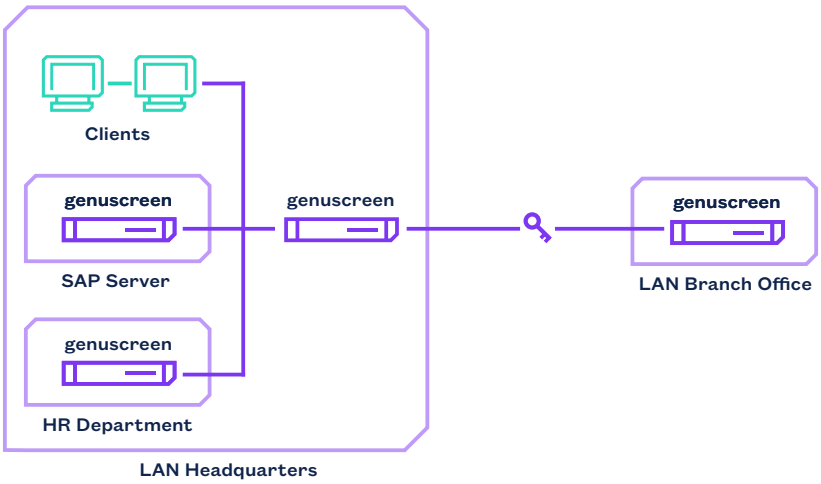
## Monitoring

| | |
|---|---|
| System | System status (memory, load) |
| VPN | Supervise VPN connection status |
| NetFlow export | Monitor network traffic with the NetFlow protocol |
| SNMP, SNMPv3 | Retrieve information via SNMP GET requests, or send SNMP TRAPs |

| Administration | |
|---|---|
| **General** | |
| Web GUI | Powerful web-based user interface secured with TLS/SSL (HTTPS) |
| Online help | Instant help via user interface |
| Shell access | Local using console or serial interface, remotely using SSH |
| Cronjobs | Schedule jobs at specific times |
| Flexible configuration | Easily modify/add files to the system |
| USB update | Fix inaccessible systems with an USB stick |
| **Patch Management** | |
| GUI | Get and install patches via GUI |
| Automatic updates | Automate the process of fetching updates for the appliance |
| Patch rollback | Return to previous patch level |
| **Logging** | |
| Syslog | Use a third party syslog server to store logs |
| Hard drive | Use appliance hard drive for storage, if available |
| Memory | Logs are recorded in memory |
| Central | Use genucenter to concentrate the logs on one system |
| **Debugging** | |
| Network | Powerful command-line-tools: tcpdump, traceroute, ping, etc. |
| Firewall | Monitor firewall states, rules and logs |
| VPN | VPN connection status overview and problem analysis |
| Root shell | The shell offers full root access |
| **Central Management** | |
| Central Management | Easy administration of several (hundred) systems with Management Station genucenter |

**More product information**

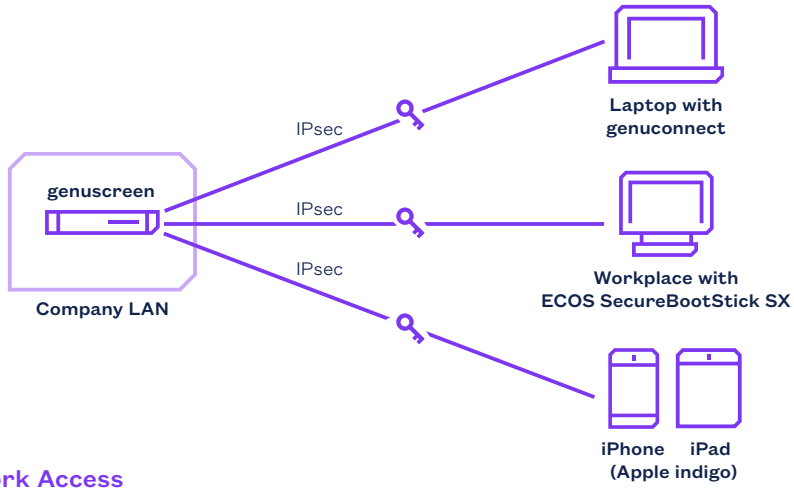
## Use Cases




### Setting up Security Zones

Users of company networks frequently have excessive authorizations and permissions. To enhance the internal security, the LAN should be separated into individual zones. genuscreen firewall provides all necessary features for network protection.

In the illustration above, an SAP server, HR department data and a branch office are separated from the internal LAN using genuscreen firewalls. Clients from the internal LAN no longer have access to data of other departments. The branch office network also is physically separated, and its users have only access to LAN areas of the headquarters that are explicitly allowed.




### Secure Mobile Network Access

The Firewall & VPN Appliance genuscreen establishes encrypted and authenticated connections across public networks by using the IPsec VPN technology.

This allows organizations to securely connect remote workstations and mobile employees to their network to enable flexible working without risking the loss of confidential information.

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## Further Information:

www.genua.eu/genuscreen

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