



Huawei USG6000V Virtual Service Gateway

The wide use of cloud computing technology speeds up the convergence of IT and CT technologies. Demands increase sharply on public and private cloud deployment, rapid service provisioning, on-demand service migration, and customized attack defense. Conventional hardware-based service gateways are gradually hard to meet the deployment requirements in the cloud network architecture.

Huawei USG6000V is a virtual (software-based) service gateway based on the network functions virtualization (NFV). It features high virtual resource usage because the virtualization technology allows a large number of tenants to concurrently use the resources. In addition, the USG6000V provides abundant virtualized gateway services, such as routing, VPN, firewall, load balancing, intrusion prevention, and antivirus services. It can be flexibly deployed to meet service requirements.

Huawei USG6000V series virtual service gateways apply to cloud data centers and provides one-stop gateway services for tenants. The high efficiency and multi-tenant feature of the product simplifies gateway deployment for a large number of tenants and reduces deployment costs. Additionally, the USG6000V is compatible with multiple mainstream virtualization platforms and provides abundant APIs, meeting the requirements of cloud data centers for rapid service provisioning and on-demand use of services.

Highlights

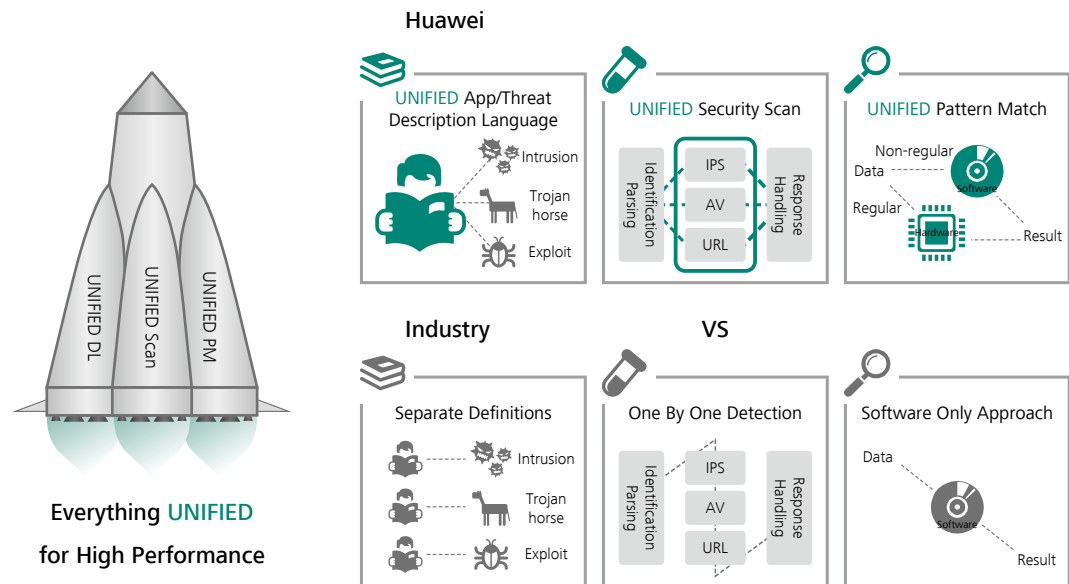
Abundant Gateway Features

Services of cloud data center tenants become diversified, which poses higher requirements for virtual gateways of the tenants. The USG6000V provides the following features:

- **Function integration:** Integrates the traditional firewall, VPN, intrusion prevention, and antivirus functions, simplifying deployment and improving management efficiency.
- **Intrusion prevention system (IPS):** Detects and prevents exploits of over 5000 vulnerabilities. It defends against web application attacks, such as XSS and SQL injection attacks.
- **Antivirus:** Prevents over 5 million viruses and Trojan horses using the high-performance antivirus engine and the daily-updated virus signature database.
- **Anti-DDoS:** Identifies and defends against over 5 million viruses and 10 types of DDoS attacks, such as SYN flood and UDP flood attacks.
- **Secure interconnection:** Provides abundant VPN features to ensure reliable and secure interconnection between enterprise headquarters and branches. The USG6000V supports IPSec VPN, L2TP VPN, MPLS VPN, and GRE.
- **QoS management:** Flexibly manages the upper and lower traffic thresholds and supports application-specific policy-based routing and QoS marking to preferentially forward traffic of specified URL categories, such as financial websites.
- **Load balancing:** Supports server load balancing. In a multi-ISP scenario, the USG6000V can implement load balancing for applications according to link quality, bandwidth, and weights.

- **Virtualization:** Supports virtualization of multiple types of security services, including firewall, intrusion prevention, antivirus, and VPN services. Users can enjoy isolated and tailor-made management on one physical device.

Efficient Computing Resource Use



The USG6000V uses the intelligent awareness engine (IAE) with a new architecture to parse and process services concurrently for users' high-performance experience when multiple defense methods are used. The IAE has the following core technologies:

- **Integrated description language:** A unified description language is used for describing application identification, intrusion prevention, and antivirus services. These services are processed at a time, freeing the administrator from repeated operations.
- **Integrated processing architecture:** Unlike the UTM that processes services one after another, the USG6000V performs various security service checks simultaneously, minimizing the adverse impact on the overall performance.
- **Algorithm optimization based on cooperation in the industry:** Through technical cooperation, the algorithms for using virtualized resources are optimized, improving application-layer defense efficiency and ensuring optimal performance with multi-defense.

Service Load Balancing

The USG6000V series uses multiple efficient algorithms and allows customers to select services to be load balanced as required, improving resource usage.

- **Abundant load balancing algorithms:** Supports abundant load balancing algorithms. The algorithms vary with application scenarios. The USG6000V supports the following algorithms: round robin, weighted round robin, least connections, weighted least connections, random, source address hash, destination address hash, and source address and port hash. These algorithms apply to Layer-4 to Layer-7 server load balancing.
- **Efficient health check algorithms:** Supports various health check algorithms for all-around detection and check on the operating status of servers and applications from the network layer to application layer. Health check algorithms apply to load balancing of Layer-4 to Layer-7 servers.

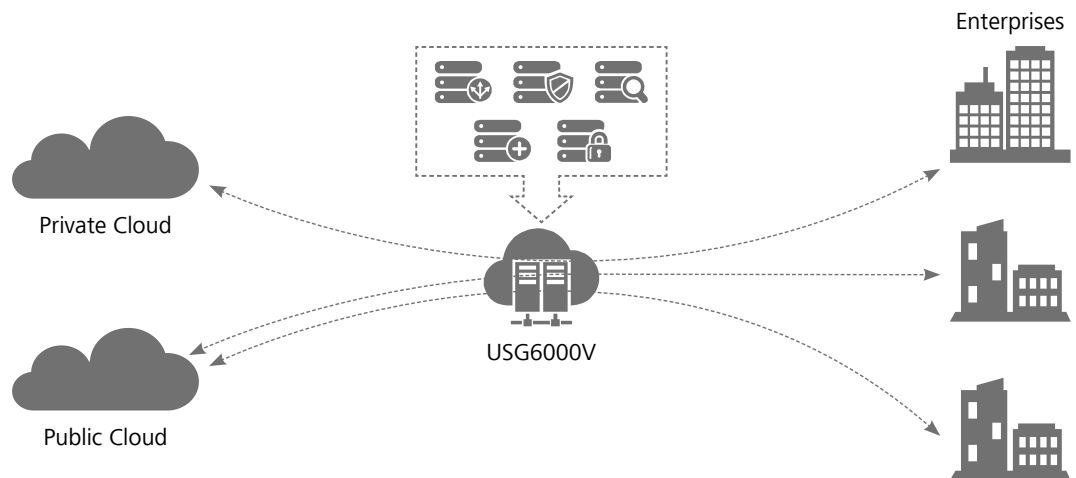


Excellent Openness Capabilities and Compatibility

The USG6000V uses standard APIs and provides ultra-lightweight deployment experience. Its deployment in data centers is free of shipment or cabling and accelerates service deployment. The USG6000V supports migration among virtualization platforms and all-around NBI protocols, so that the product can widely interconnect with various standard controllers for automatic service orchestration.

- **Various virtualization platforms:** Supports mainstream virtualization platforms, such as the VMware, KVM, XEN, and UVP. The USG6000V fully exerts virtualization advantages to implement rapid deployment, batch deployment, mirroring backup, rapid recover, and flexible migration.
- **Multiple file formats:** Supports software packages in multiple formats (including .vmdk, .iso, .qcow2, and .ovf) for deployment in various environments.
- **API friendliness:** Supports the management using NETCONF and RESTful NBIs and the OpenStack platform for NFV interconnection.
- **Flexible deployment platform:** Supports deployment through the virtual machine management platform or network management platform, or local deployment.

Typical Application Scenario



- A USG6000V is deployed on the virtual network egress of cloud data center tenants. Virtualized features of service and system resources are deployed on the USG6000V, so that the USG6000V provides independent gateway services for each tenant.
- The high-performance product provides abundant features for a great number of tenants simultaneously. Each tenant can experience customized services.
- Load balancing algorithms provided in the load balancing feature help improve the computing resource usage of tenants.

Product Specifications

Model	USG6000V1	USG6000V2	USG6000V4	USG6000V8
VCPU	1	2	4	8
Forwarding capability (Gbps)	10	20	40	80
Maximum number of concurrent connections	500,000	2,000,000	4,000,000	8,000,000
New session rate	15,000	30,000	100,000	280,000
Maximum number of virtual systems	20	50	200	500
Resource requirement-core/CPU	1	2	4	8
Resource requirement-memory (GB)	2	4	8	12
Resource requirement-storage (minimum/maximum)	30 GB/2 TB	30 GB/2 TB	30 GB/2 TB	30 GB/2 TB
Maximum number of vNICs	2-10			
Resource requirement-physical port (recommended)	2 service ports, 1 management port, and 1 heartbeat port	2 service ports, 1 management port, and 1 heartbeat port	2 service ports, 1 management port, and 1 heartbeat port	2 service ports, 1 management port, and 1 heartbeat port
Condition for the preceding performance test	RH2288, V3, X86 series-3200MHz-1.8V-64bit-135000mW-Haswell EP Xeon E5-2667 v3-8Core-with heatsink			

Functions

Integrated protection	Integrates traditional firewall, VPN, intrusion prevention, antivirus, bandwidth management, and anti-DDoS functions.
Application identification and control	Identifies more than 6000 applications with the access control granularity to application functions, for example, distinguishing between WeChat text and voice. The USG6000V combines application identification with intrusion detection, antivirus, and data filtering, improving detection performance and accuracy.

Model	USG6000V1	USG6000V2	USG6000V4	USG6000V8
Intrusion prevention and web attack defense	Accurately detects and defends against vulnerability-specific attacks based on up-to-date threat information. The USG6000V can defend against web-specific attacks, including SQL injection and XSS attacks.			
Antivirus	Updates the antivirus signature database every day. The USG6000V can rapidly detect more than 5,000,000 types of viruses based on the signature database.			
Bandwidth management and QoS optimization	Provides per-user or per-IP bandwidth management based on application identification, ensuring network quality for key services and users. The management and control can be implemented by maximum bandwidth, guaranteed bandwidth, application-specific PBR, and changing the forwarding priority of application traffic.			
Load balancing	Supports Layer-7 service and link load balancing and fully uses computing resources based on abundant load balancing algorithms.			
Intelligent uplink selection	Supports service-specific PBR and intelligently selects the optimal link based on multiple types of load balancing algorithms (such as the bandwidth ratio and link health status) in multi-ISP scenarios.			
VPN encryption	Provides various reliable VPN features, such as IPSec VPN, L2TP VPN, MPLS VPN, and GRE.			
Anti-DDoS	Implements anti-DDoS to defense against over 10 types of DDoS attacks, such as SYN flood and UDP flood.			
User authentication	Supports multiple authentication methods, including local, RADIUS, HWTACACS, SecureID, AD, CA, LDAP, and Endpoint Security authentication.			
Security virtualization	Supports virtualization of multiple types of security services, including firewall, intrusion prevention, antivirus, and VPN services. Users can enjoy isolated and tailor-made management on one physical device.			
Intelligent management	<p>Uses predefined templates for common attack defense scenarios to rapidly deploy security policies, reducing learning costs.</p> <p>The USG6000V can automatically evaluate risks in security policies and intelligently provides optimization suggestions.</p> <p>The USG6000V can detect policy conflicts and redundancy to identify redundant policies and policies that have not been used for a long time. This implementation effectively controls the policy quantity.</p>			
Diversified reports	Provides visualized and multi-dimensional report display by user, application, content, time, traffic, threat, or URL.			

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Routing	Supports multiple types of routing protocols and features, such as RIP, OSPF, BGP, IS-IS, IPv6RD, and ACL6, in IPv4 and IPv6 environments.			
HA	Supports the active/active and active/standby working modes.			
Platform compatibility	Supports mainstream virtualization platforms, including VMware ESXi, Linux KVM, and Huawei FusionSphere.			
Software package format	Supports software packages in .vmdk, .iso, .qcow2, and .ovf formats for simple deployment.			

