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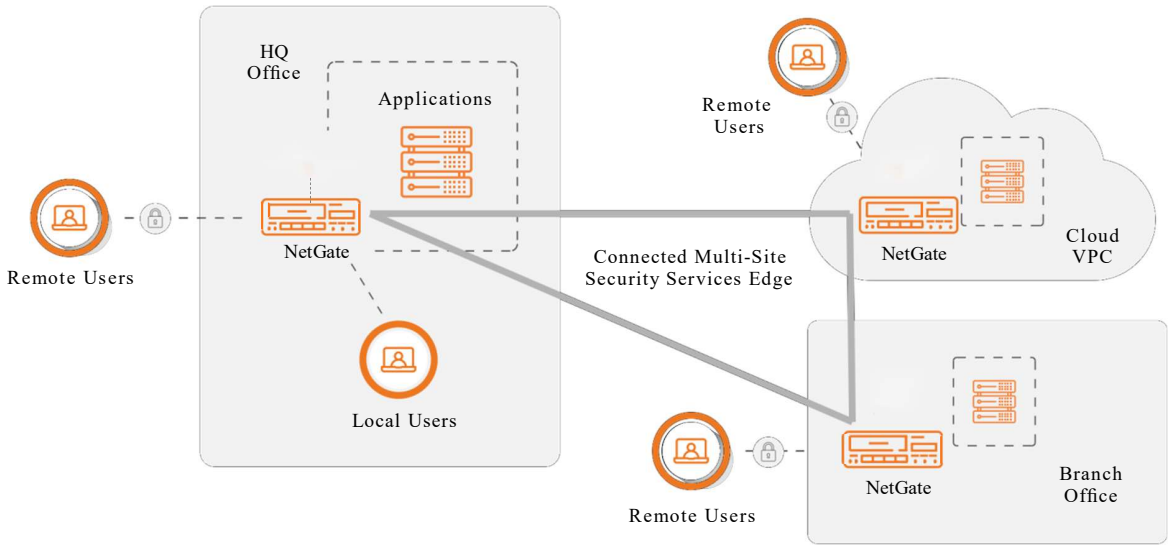
NetGate Zero Trust Access Gateway

DATASHEET

Secure Access Built on Zero Trust Principles

Infosec's NetGate Zero Trust Access Gateway allows businesses to create a hybrid cloud security services edge (SSE) that gives users access to productivity-enhancing applications while adhering to zero trust principles. Next-gen zero trust features go beyond tradition- al VPNs to provide identity-based, per-application access, multi-factor authentication,continuous device posture assessment, contextual and adaptive access policies, and the ability to make internet-facing applications and networks invisible to unauthorized users. Available on-prem and in the cloud, Infosec NetGate is ideal for creating connected, multi-site architectures that combine connectivity with advanced cybersecurity to pro- vide defense-in-depth for employee and partner access.



Single Packet Authorization (SPA)

Single packet authorization makes Infosec's zero trust access gateway invisible to unauthorized users. SPA eliminates the "connect first, then authorize" approach used by VPNs. Ports do not need to be exposed to listen for connection requests, and as a result are less vulnerable to network scans, brute force hacking and DDoS attacks. Only managed devices, loaded with Infosec's NetGate client, are aware of the gateway and have the means to generate the single packet required to establish a connection.

User Identity & Device Validation

Infosec's NetGate supports a broad range of user authentication methods, including popular AAA solutions, cloud-native IdP, multi-factor authentication (MFA), dynamic passwords, collaborative signatures, biometric recogni- tion, QR code login, SMS authentication,digital certificates, and device hardware ID.

In addition, NetGate performs continuous assessment of end-user devices to apply step-up authentication as needed based on changes in the end-point environment, network threat detection and user behavior analysis.

Continuous Adaptive Access Control

NetGate's built-in policy engine continuously recalculates user access rights based on changing risk factors such as device health, user behavior, geolocation, and time of access. If a device fails a compliance check mid-session or a suspicious behavior is detected, NetGate can automatically down-grade permissions, trigger re-authentication, or terminate access. Continuous adaptive access control ensures that resources are only accessible under compliant and trusted conditions, aligning with zero trust principles.

Advanced Client Security

In addition to providing encrypted connectivi-ty, the NetGate client strengthens security for managed end-user devices. It enforces strict device posture assessment, restricts clipboard access, blocks screen sharing, and disables file uploads and downloads in sensitive sessions. These controls prevent data leakage and unauthorized actions on end point devices, even during legitimate sessions. The NetGate client also supports tamper-proof configurations and session self-cleaning, such as cache wipe and forced logout, to protect enterprise data across all user environments.

Granular Authentication Parameters

The NetGate client may be configured to require OS, patch levels, antivirus status, port usage, and other parameters such as location, IP reputation, and connection type as prerequi- sites for authentication. Additional authentica- tion controls include the ability to set account expiration dates, lock-out idle timers,password requirements (strength, reset and reuse), and failed login limits, as well as approval chains and device binding for sensitive apps and resources.

Least Privilege Application Publishing

Supports publishing enterprise services using Layer-7, Layer-4, and Layer-3 technologies based on the specific business needs of different users – shrinking the attack surface by providing access to authorized users and groups on a per application basis.

- Layer-7 proxy supports all browser-based applications, enabling connectivity and application access without the need to bring users onto the private network. Ideal for modern web apps, unmanaged personal devices, and extranet partner access.

- Layer-4 connectivity supports high-performance remote desktop, published apps, and client-server applications; proxy technology enables access without exposing the private network.

- Layer-3 network-level access ensures secure access to all applications based on the TCP, UDP, and ICMP protocols. Ensures that separate VPN solutions are not needed to support full range of enterprise applications. Restrict user and group access to specific applications using access control policies.

End-to-End Encryption

NetGate supports end-to-end encryption for endpoint-to-gateway and gateway-to-gate-way connections. NetGate uses the TLS 1.3 protocol and ECC and RSA ciphers for endpoint-to-gateway connections that ensure the confidentiality and integrity of data during transmission. Where performance is at a premium, WireGuard may be used to acceler-ate performance – for example on internal gigabit wired environments. Gateway-to-gate-

way encryption uses IPSec and industry-standard AES/SHA encryption and authentication.

Simple Single Sign-On (SSO)

Infosec's zero trust access gateway supports streamlined authentication, allowing users to log in once and seamlessly access all authorized systems and applications without needing to reauthenticate. SSO helps enterprises eliminate identity silos across business systems and improves login efficiency. NetGate also supports lifecycle management for all
user accounts to significantly reduce management costs while improving security and the overall user experience.

Reporting & Monitoring

NetGate records all user authentication and application access activities, and allows logs to be queried by date, user, application, IP address, and other parameters. In addition, NetGate supports exporting of logs in standard formats to logging servers, where audit
monitoring platforms can use the data to model user behavior patterns and perform monitoring and retrospective analysis of user access activities. At the system level, NetGate provides a real-time graphical interface that monitors CPU utilization, memory resources, and traffic across network interfaces to ensure the platform is running in its power-band.

Performance, Scale & Reliability

NetGate leverages Infosec's patented SpeedCorem single-pass architecture to achieve industry-leading throughput and concurrent user performance metrics. More users can use more apps more often without incurring productivity-disrupting latency. For high availability, two or more NetGate systems may be set up to continuously synchronize their state and configuration information. In the event of a system failure, available systems will automatically take over application services from the failed node, eliminating single points of failure and ensuring an always-on user experience.

Key Use Cases

Secure Remote Access

Employees working remote cannot directly access internal resources. For these workers, NetGate can proxy and publish internal services. NetGate helps enterprises deploy simple and secure remote access at scale that allows workers to confidently access the applications they need to do their jobs.

Zero Trust Secure Access

True zero trust means holding all users to the same standards, whether local or remote. Front-ending business-critical apps with Infosec's NetGate, enterprises can enforce strong user authentication, device validation, granular access control, and app-level connectivity for all users anytime, anywhere.

Security Services Edge

For enterprises with multiple sites or a hybrid cloud architecture, secure connections between sites are essential to seamless access. NetGate can be deployed on-prem and in the cloud to establish a security services edge on which additional security services can be layered to protect sensitive data.

Features & Specifications

-o User Identity & Device Validation

User Authentication (AAA)	LDAP and RADIUS can be used for authentication and authorization. Supports all LDAP servers that use the LDAPv3 protocol, including OpenLDAP and Active Directory (AD). If multiple authentication servers are used, host polling load balancing further improves authentication performance and ensures user sign-in security.
On-Premises AAA	Supports three LocalDB authentication modes: • Static password: Users only need to enter a static password when signing in • Dynamic password: Users only need to enter a dynamic password when signing in • Dual mode: Users are required to enter static and dynamic passwords when signing in
Multi-Factor Authentication (MFA)	Multi-factor authentication is supported by combining user authentication with an additional form of authentication in the form of either SMS verification code, SAML IdP push notification, dynamic one-time password, digital certificate, or hardware ID hash fingerprint.
Identity Provider (IdP)	Integrate with identity providers, such as Azure AD, Duo, Ping Identity, Okta and other SAML-based MFA services.
SMS Authentication	Short message service (SMS) authentication can be used in conjunction with conventional authentication servers (such as LocalDB, LDAP, and RADIUS) to provide simple and secure multi-factor authentication.
OAuth Authentication	Supports the use of third-party OAuth servers for user authentication, such as Google, Microsoft and other IdPs and quick sign-in providers.
Passwordless Biometrics	Passwordless biometrics, such as fingerprints and faces, are supported on mobile devices. When it is detected that the client is a trusted device and/or is in a trusted environment, passwordless biometrics can be used to quickly sign in a method that is convenient, avoids password security risks, and is difficult to forge or counterfeit.
QR Code Authentication	By displaying a QR code on a PC, mobile devices can quickly scan the QR code to sign in, without having to memorize passwords – reducing security risks and improving the user experience.
Digital Certificates	Supports verification of certificates issued by a trusted Certificate Authority (CA). Three types of client certificate authentication are supported: • Anonymous authentication: only the client certificate is required • Non-challenge authentication: Client certificate and user account are required on the authentication server • Challenge authentication: Requires a client certificate, a user account, and a password for the user account
Hardware ID Fingerprint	Supports hardware ID authentication and full-platform device certificate authentication (connected to the Infosec MAuth mobile security authentica- tion system) to provide secure trusted device identity authentication services. It supports two modes: user self-registration certificate and administrator registration certificate.

Dynamic Identity Verification	The NetGate Client can be used to test the client environment, evaluate the security level, and dynamically assign identity authentication methods and step-up authentication for evolving circumstances and risk profiles.

-o Lightweight Single Sign-On (SSO)

SAML Authentication	Implemented based on the SAML 2.0 standard. Deploy SAML IDP and SP under the SAML framework. Access multiple different services with a single sign-on, improving both security and the user experience.
OAuth Authentication	Supports OAuth 2.0 protocol for single sign-on to access backend systems and resources.
Basic/NTLM Authentication	Post login, users activate single sign-on using basic authentication or NTML authentication.
Central Authentication Service (CAS)	Supports the CAS protocol for single sign-on and access to backend systems and resources.
Kubernetes Authentication	Allows users to sign in and activate single sign-on through the Kubernetes identity authentication protocol.
Single Point Fill-In	The following single point fill-ins are supported: • Automatically fill user information for PC, web and app resources • Recognize sign-in page images and automatically fill in sign-in information
Single Sign-On POST	• Supports SSO POST, form-based single sign-on autofill, and static parameter autofill such as username and password. • Supports virtual portal SSO, ajax POST submission of sign-in information, and dynamic parameter autofill such as cookie information. • Supports password encryption, allowing encrypted transmission of original user passwords to real servers using encryption algorithms including SM3, MD5, SHA1, and SHA256.

-o Authorization & Access Control

Role-based Authorization	Authenticated users are assigned roles based on parameters including sign-in time, username, group name, source IP address, and AAA authentication method, to provide them with the specific resources needed for their job function.
Granular Access Control	Specify the resources that a user, user group, or role has access to, and provide access control at different granularities for different types of resources: • For web applications, URL-level access control is supported • For non-web applications, network-level access control is supported for IP, TCP, UDP, and ICMP
Dynamic Access Control	Authorized resources and access rights can be dynamically adjusted based on the client security status for the duration of a user session.
Zero Trust Policy Engine	When users, devices, or environments trigger preset conditions, corresponding handling policies are instantly applied. The following handling policies are supported: • Elevate authentication level, supporting multi-factor authentication • Dynamic permissions, flexible handling • Deny access, block risks

-O Application Publishing

Layer-7 Proxy	Layer-7 proxy technology accurately analyzes and rewrites web application source code (HTML and JS) using a next-generation syntax parser to ensure internal applications are not exposed directly to users, and to allow application access without exposing internal networks.
Layer-4 Proxy	Layer-4 proxy technology enables proxy access for all web-enabled applications without installing and enabling virtual NICs, improving the adaptability and ease of use of the solution. Ideal for supporting secure remote desktop and published apps without exposing internal networks.
Layer-3 Connectivity	Layer-3 connectivity supports granular access for specific client-server applications. • Supports the publishing of service system resources based on TCP/UDP, browser-server and client-server structures • Supports the publishing of Layer-3 domain name resources, which solves the problem of web servers with floating IP addresses • Supports the publishing of application protocols that use dynamic ports, such as FTP, TFTP, Oracle, and SQL Server

-O End-to-End Encryption

SSL Security Protocols	TLS 1.1, TLS 1.2, TLS 1.3, RSA, ECC
IPSec Security Protocols	IKE, AH, ESP, PFS • Authentication Header (AH): Authenticates and verifies the integrity of IP packets to ensure transmission data source is trusted and data is not tampered with; does not encrypt. AH protocol adds a header after the IP header of each packet, and the integrity verification scope of the AH protocol is the entire IP packet. • Encapsulation Payload Protocol (ESP): In addition to data source authentication and integrity verification of IP packets, it can also encrypt. ESP protocol adds a header to the IP header of each packet and adds an ESP trailer to the end of the packet to encrypt data between the ESP header and the ESP trailer. Data integrity check of the ESP protocol in transmission mode does not contain IP headers.
IP Sec Parameter Negotiation	To communicate between peers using IPSec, a security association (SA) must be established. Parameters of the SA must be negotiated between peers until the parameters at both ends are the same. Two parameter negotiation modes are supported: • Manual generation • IKE negotiation generation (IKEv1, IKEv1.1, IKEv2)
IKE Negotiation Mode	There are two negotiation modes for establishing an IKE SA: • Main Mode: Exchanges 6 messages during IKE negotiation. It uses more exchange resources and time, but encrypts the identity exchange information, making it more secure than Aggressive Mode. Suitable for scenarios where both endpoints have static public IP addresses. • Aggressive Mode: Exchanges only 3 messages. Uses fewer resources and negotiates faster, making it suitable for scenarios with dynamic public IP addresses or where NAT devices are present. Transmits identity exchange information in plaintext.
IKE Authentication Method	Supports pre-shared key (PSK) authentication and RSA digital certificate authentication.

IPSec Encapsulation Mode	Supports two encapsulation modes: • Transport Mode: IPSec protocol encrypts and authenticates the payload of an IP packet, while the header portion of the packet remains unchanged. • Tunnel Mode: All IP packets are encapsulated in a new IP packet, and the new packet is encrypted and authenticated for additional security.
IPSec Encryption Mode	Supports AES, DES, 3DES, and other standard encryption algorithms.
IPSec Authentication Mode	Supports verification algorithms such as MD5, SHA1, SHA256, and SHA384.

-o WireGuard VPN

Centralized Authentication & Authorization	Control and data planes are separate. NetGate functions as the control center responsible for user authentication and authorization. NetGate Client establishes WireGuard UDP tunnels with WireGuard gateway to forward user traffic. • NetGate manages the WireGuard gateway and helps exchange the necessary information between NetGate Client and the WireGuard gateway for establishing WireGuard tunnels.
Performance Optimization	WireGuard protocol is used to create a UDP encrypted tunnel, which can effectively improve the access speed of a single user and reduce the latency. • In the intranet gigabit wired network environment, upload and download speeds are improved by more than 60% compared with traditional connection methods • In a mobile 4G hotspot network, upload speed is improved by more than 120%, and the download speed is improved by more than 70%
Flexible Deployment	• Available as software, deployment is flexible and convenient for scalable expansion • After the NetGate Client establishes a WireGuard connection, it can select another WireGuard gateway from the connectable list to establish the tunnel

-o Reporting & Monitoring

Log Servers	Stores all historical system logs in case administrators need to trouble-shoot the system; supports sending and storing Syslog messages at a specified level on a remote log server, and can support 6 different log servers at the same time.
Standardized Log Formats	Log format complies with Syslog standards and supports multiple log types. Each type of log entry conforms to WELF standards.
Detailed Logs	All access and operational actions can be monitored and audited: • User Access Logs: Records authentication and sessions, Web access, TCP applications, portal sign-in and sign-out, as well as HTTP requests and responses • Management Logs: Records operational information for NetGate configuration via CLI or WebUI

SNMP	Supports SNMP v1, v2, and v3, and its own SNMP MIB is maintained and provided for administrators to monitor and manage devices.
Email Alerts	Configure email alerts to send alarm information to an email address by setting trigger conditions.

-o Additional Feature Functions

Single Packet Authorization (SPA)	Connections established only for clients carrying gateway information and valid single packet key. Hides networks and applications from the internet and prevents brute force authentication attempts and DDoS attacks.
Portal Customization	• Customize sign-in page, sign-out page, portal resource page, challenge page, password change page and error pages • Full-page customization, including changing page style, images and text, to meet the needs of different users and groups
Internal & External Network Detection	Automatically detects end-user network location and provides different policies based on location.
Intranet Traffic Bypass	When a user is authenticated in an intranet location, access traffic can be directly connect to resources without going through the gateway proxy, reducing network load on the NetGate platform.
Password Management	To meet both ease-of-use and security requirements, NetGate supports self-service password change functions: • If a user forgets their password when signing in, he or she can change the password through a custom authentication method • After signing in, the user can change the password independently • After the user signs in, he or she can be forced to change the sign-in password • Lock when free

Features & Specifications

• Standard o Optional	NetGate 500	NetGate 1150	NetGate 1200	NetGate 1600
CPU	Intel	Intel	Intel	Intel
Max. Concurrent Users	3K	12K	25K	128K
Max. Virtual Portals	10	128	256	
Encryption Throughput (RSA)	2.5 Gbps	5.0 Gbps	10 Gbps	40 Gbps
2048-bit SSL Processing	Yes			
Compression	Yes			
Interfaces				
1GbE Copper	4	4	4	4
Combo Port	4	○	○	○
1GbE Fiber	○	○	○	○
10GbE Fiber	○	○	2	4
Clustering	Active/Active-Active/Standby			
Form Factor	1U Dual Power			
Typical Power Consumption	50W	450W		
Input Voltage	Single/Dual Power: AC 100-240V, 50/60Hz,1.0A max	Dual Power: AC 100-240V, 50/60Hz, 6.5A max		
Weight	Single Power: 6.2kg Dual Power: 7.0kg	Dual Power: 10. 5kg		
Support & Warranty				
Support	Gold, Silver and Bronze Level Support Plans			
Warranty	1-Year Hardware, 90-Days Software			
Regulatory Compliance	GB 42250, CIES-003, EN 55024, CISPR 22, AS/NZS 3548, FCC, 47FR part 15 Class A, VCCI-A.			
Safety	CCC, CSA, C/US, CE, IEC 60950-1, UL/CSA 60950-1, EN 60950-1			