

# SonicOS Platform

The SonicOS architecture is at the core of every SonicWall physical and virtual firewall including the TZ, NSa, NSv and SuperMassive Series. SonicOS leverages our patented\*, single-pass, low-latency, Reassembly-Free Deep Packet Inspection® (RFDPI) and patent-pending Real-Time Deep

Memory Inspection™ (RTDMI) technologies to deliver industry-validated high security effectiveness, SD-WAN, real-time visualization, high-speed virtual private networking (VPN) and other robust security features.

## Firewall features

### REASSEMBLY-FREE DEEP PACKET INSPECTION (RFDPI) ENGINE

Feature	Description
Reassembly-Free Deep Packet Inspection (RFDPI)	This high-performance, proprietary and patented inspection engine performs stream-based, bi-directional traffic analysis, without proxying or buffering, to uncover intrusion attempts and malware and to identify application traffic regardless of port.
Bi-directional inspection	Scans for threats in both inbound and outbound traffic simultaneously to ensure that the network is not used to distribute malware and does not become a launch platform for attacks in case an infected machine is brought inside.
Stream-based inspection	Proxy-less and non-buffering inspection technology provides ultra-low latency performance for DPI of millions of simultaneous network streams without introducing file and stream size limitations, and can be applied on common protocols as well as raw TCP streams.
Highly parallel and scalable	The unique design of the RFDPI engine works with the multi-core architecture to provide high DPI throughput and extremely high new session establishment rates to deal with traffic spikes in demanding networks.
Single-pass inspection	A single-pass DPI architecture simultaneously scans for malware, intrusions and application identification, drastically reducing DPI latency and ensuring that all threat information is correlated in a single architecture.

### FIREWALL AND NETWORKING

Feature	Description
Secure SD-WAN	An alternative to more expensive technologies such as MPLS, Secure SD-WAN enables distributed enterprise organizations to build, operate and manage secure, high-performance networks across remote sites for the purpose of sharing data, applications and services using readily-available, low-cost public internet services.
REST API	Allows the firewall to receive and leverage any and all proprietary, original equipment manufacturer and third-party intelligence feeds to combat advanced threats such as zero-day, malicious insider, compromised credentials, ransomware and advanced persistent threats.
Stateful packet inspection	All network traffic is inspected, analyzed and brought into compliance with firewall access policies.
High availability/clustering	Supports Active/Passive (A/P) with state synchronization, Active/Active (A/A) DPI2 and Active/Active clustering high availability modes.2 Active/Active DPI offloads the deep packet inspection load to passive appliance to boost throughput.
DDoS/DoS attack protection	SYN flood protection provides a defense against DOS attacks using both Layer 3 SYN proxy and Layer 2 SYN blacklisting technologies. Additionally, it protects against DOS/DDoS through UDP/ICMP flood protection and connection rate limiting.
Flexible deployment options	The firewall can be deployed in wire, network tap NAT or Layer 2 bridge2 modes.

## FIREWALL AND NETWORKING (CONTINUED)

Feature	Description
WAN load balancing	Load-balances multiple WAN interfaces using Round Robin, Spillover or Percentage methods. Policy-based routing Creates routes based on protocol to direct traffic to a preferred WAN connection with the ability to fail back to a secondary WAN in the event of an outage.
Advanced quality of service (QoS)	Guarantees critical communications with 802.1p, DSCP tagging and remapping of VoIP traffic on the network.
H.323 gatekeeper and SIP proxy support	Blocks spam calls by requiring that all incoming calls are authorized and authenticated by H.323 gatekeeper or SIP proxy.
Single and cascaded Dell N-Series and X-Series switch management2	Manage security settings of additional ports, including Portshield, HA, PoE and PoE+, under a single pane of glass using the firewall management dashboard for Dell's N-Series and X-Series network switches.
Biometric authentication	Supports mobile device authentication such as fingerprint recognition that cannot be easily duplicated or shared to securely authenticate the user identity for network access.
Open authentication and social login	Enable guest users to use their credential from social networking service such as Facebook, Twitter, or Google+ to sign in and access the Internet and other guest services through a host's wireless, LAN or DMZ zones using pass-through authentication.
Multi-domain authentication	Provides a simple and fast way to administer security policies across all network domains. Manage individual policy to a single domain or group of domains.

## MANAGEMENT AND REPORTING

Feature	Description
Cloud-based and on-premises management	Configuration and management of SonicWall appliances is available via the cloud through the SonicWall Capture Security Center and on-premises using SonicWall Global Management System (GMS).
Powerful single device management	An intuitive web-based interface allows quick and convenient configuration, in addition to a comprehensive command-line interface and support for SNMPv2/3.
IPFIX/NetFlow application flow reporting	Exports application traffic analytics and usage data through IPFIX or NetFlow protocols for real-time and historical monitoring and reporting with tools such as SonicWall Analytics or other tools that support IPFIX and NetFlow with extensions.

## VIRTUAL PRIVATE NETWORKING (VPN)

Feature	Description
Auto-provision VPN	Simplifies and reduces complex distributed firewall deployment down to a trivial effort by automating the initial site-to-site VPN gateway provisioning between SonicWall firewalls while security and connectivity occurs instantly and automatically.
IPSec VPN for site-to-site connectivity	High-performance IPSec VPN allows the firewall to act as a VPN concentrator for thousands of other large sites, branch offices or home offices.
SSL VPN or IPSec client remote access	Utilizes clientless SSL VPN technology or an easy-to-manage IPSec client for easy access to email, files, computers, intranet sites and applications from a variety of platforms.
Redundant VPN gateway	When using multiple WANs, a primary and secondary VPN can be configured to allow seamless, automatic failover and failback of
Route-based VPN	The ability to perform dynamic routing over VPN links ensures continuous uptime in the event of a temporary VPN tunnel failure, by seamlessly re-routing traffic between endpoints through alternate routes.

## CONTENT/CONTEXT AWARENESS

Feature	Description
User activity tracking	User identification and activity are made available through seamless AD/LDAP/Citrix/Terminal Services SSO integration combined with extensive information obtained through DPI.
GeoIP country traffic identification	Identifies and controls network traffic going to or coming from specific countries to either protect against attacks from known or suspected origins of threat activity, or to investigate suspicious traffic originating from the network. Ability to create custom country and Botnet lists to override an incorrect country or Botnet tag associated with an IP address. Eliminates unwanted filtering of IP addresses due to misclassification.
Regular expression matching and filtering	Prevents data leakage by identifying and controlling content crossing the network through regular expression matching.

## Breach prevention subscription services

CAPTURE ADVANCED THREAT PROTECTION <sup>1</sup>	
Feature	Description
Multi-engine sandboxing	The multi-engine sandbox platform, which includes virtualized sandboxing, full system emulation and hypervisor level analysis technology, executes suspicious code and analyzes behavior, providing comprehensive visibility to malicious activity.
Block until verdict	To prevent potentially malicious files from entering the network, files sent to the cloud for analysis can be held at the gateway until a verdict is determined.
Broad file type analysis	Supports analysis of a broad range of file types, including executable programs (PE), DLL, PDFs, MS Office documents, archives, JAR and APK plus multiple operating systems including Windows, Android, Mac OS and multi-browser environments.
Rapid deployment of signatures	When a file is identified as malicious, a signature is immediately deployed to firewalls with SonicWALL Capture subscriptions and Gateway Anti-Virus and IPS signature databases and the URL, IP and domain reputation databases within 48 hours.
Capture Client	Capture Client uses a static artificial intelligence (AI) engine to determine threats before they can execute and rollback to a previous uninfected state.

ENCRYPTED THREAT PREVENTION	
Feature	Description
TLS/SSL decryption and inspection	Decrypts and inspects TLS/SSL encrypted traffic on the fly, without proxying, for malware, intrusions and data leakage, and applies application, URL and content control policies in order to protect against threats hidden inside of encrypted traffic. Included with security subscriptions for all models except SOHO. Sold as a separate license on SOHO.
SSH inspection	Deep packet inspection of SSH (DPI-SSH) decrypts and inspects data traversing over SSH tunnels to prevent attacks that leverage SSH.

INTRUSION PREVENTION <sup>1</sup>	
Feature	Description
Countermeasure-based protection	Tightly integrated intrusion prevention system (IPS) leverages signatures and other countermeasures to scan packet payloads for vulnerabilities and exploits, covering a broad spectrum of attacks and vulnerabilities.
Automatic signature updates	The SonicWall Threat Research Team continuously researches and deploys updates to an extensive list of IPS countermeasures that covers more than 50 attack categories. The new updates take immediate effect without any reboot or service interruption required.
Intra-zone IPS protection	Bolsters internal security by segmenting the network into multiple security zones with intrusion prevention, preventing threats from propagating across the zone boundaries.
Botnet command and control (CnC) detection and blocking	Identifies and blocks command and control traffic originating from bots on the local network to IPs and domains that are identified as propagating malware or are known CnC points.
Protocol abuse/anomaly	Identifies and blocks attacks that abuse protocols as they attempt to sneak past the IPS.
Zero-day protection	Protects the network against zero-day attacks with constant updates against the latest exploit methods and techniques that cover thousands of individual exploits.
Anti-evasion technology	Extensive stream normalization, decoding and other techniques ensure that threats do not enter the network undetected by utilizing evasion techniques in Layers 2-7.

THREAT PREVENTION <sup>1</sup>	
Feature	Description
Gateway anti-malware	The RFDPI engine scans all inbound, outbound and intra-zone traffic for viruses, Trojans, key loggers and other malware in files of unlimited length and size across all ports and TCP streams.
Capture Cloud malware protection	A continuously updated database of tens of millions of threat signatures resides in the SonicWall cloud servers and is referenced to augment the capabilities of the onboard signature database, providing RFDPI with extensive coverage of threats.
Around-the-clock security updates	New threat updates are automatically pushed to firewalls in the field with active security services, and take effect immediately without reboots or interruptions.
Bi-directional raw TCP inspection	The RFDPI engine scans raw TCP streams on any port and bi-directionally to detect and prevent both inbound and outbound threats.
Extensive protocol support	Identifies common protocols such as HTTP/S, FTP, SMTP, SMBv1/v2 and others, which do not send data in raw TCP. Decodes payloads for malware inspection, even if they do not run on standard, well-known ports.

## APPLICATION INTELLIGENCE AND CONTROL<sup>1</sup>

Feature	Description
Application control	Controls applications, or individual application features that are identified by the RFDPI engine against a continuously expanding database of over thousands of application signatures. This increases network security and enhances network productivity.
Custom application identification	Controls custom applications by creating signatures based on specific parameters or patterns unique to an application in its network communications. This helps gain further control over the network.
Application bandwidth management	Application bandwidth management granularly allocates and regulates available bandwidth for critical applications (or application categories), while inhibiting nonessential application traffic.
Granular control	Controls applications (or specific components of an application) based on schedules, user groups, exclusion lists and a range of actions with full SSO user identification through LDAP/AD/Terminal Services/Citrix integration.

## CONTENT FILTERING<sup>1</sup>

Feature	Description
Inside/outside content filtering	Enforce acceptable use policies and block access to HTTP/HTTPS websites containing information or images that are objectionable or unproductive with Content Filtering Service and Content Filtering Client.
Enforced content filtering client	Extends policy enforcement to block internet content for Windows, Mac OS, Android and Chrome devices located outside the firewall perimeter.
Granular controls	Blocks content using any combination of categories. Filtering can be scheduled by time of day, such as during school or business hours, and applied to individual users or groups.
Web caching	URL ratings are cached locally on the SonicWall firewall so that the response time for subsequent access to frequently visited sites is only a fraction of a second.
Local CFS Responder	Local CFS Responder can be deployed as a virtual appliance in private clouds based on VMWare or Microsoft Hyper-V. This provides deployment flexibility option (Light weight VM) of CFS ratings database in various customer network use cases that require a dedicated on premise solution that speeds up CFS ratings request and response times, supports large number of allowed/blocked URL list (+100K), and adds up to 1000 SonicWall firewalls for CFS rating lookups.

## ENFORCED ANTI-VIRUS AND ANTI-SPYWARE<sup>1</sup>

Feature	Description
Multi-layered protection	Utilizes the firewall capabilities as the first layer of defense at the perimeter, coupled with endpoint protection to block viruses entering the network through laptops, thumb drives and other unprotected systems.
Automated enforcement option	Ensure every computer accessing the network has the appropriate antivirus software and/or DPI-SSL certificate installed and active, eliminating the costs commonly associated with desktop antivirus management.
Automated deployment and installation option	Machine-by-machine deployment and installation of anti-virus and anti-spyware clients is automatic across the network, minimizing administrative overhead.
Next-generation antivirus	Capture Client uses a static artificial intelligence (AI) engine to determine threats before they can execute and roll back to a previous uninfected state.
Spyware protection	Powerful spyware protection scans and blocks the installation of a comprehensive array of spyware programs on desktops and laptops before they transmit confidential data, providing greater desktop security and performance.

<sup>1</sup> Requires added subscription

<sup>2</sup> Not supported NSv firewall series

## SonicOS feature summary

### Firewall

- Stateful packet inspection
- Reassembly-Free Deep Packet Inspection
- DDoS attack protection (UDP/ICMP/SYN flood)
- IPv4/IPv6 support
- Biometric authentication for remote access
- DNS proxy
- REST APIs

### TLS/SSL/SSH decryption and inspection<sup>2</sup>

- Deep packet inspection for TLS/SSL/SSH
- Inclusion/exclusion of objects, groups or hostnames
- SSL control
- Granular DPI SSL controls per zone or rule

### Capture advanced threat protection<sup>2</sup>

- Real-Time Deep Memory Inspection
- Cloud-based multi-engine analysis
- Virtualized sandboxing
- Hypervisor level analysis
- Full system emulation
- Broad file type examination
- Automated & manual submission
- Real-time threat intelligence updates
- Block until verdict
- Capture Client

### Intrusion prevention<sup>2</sup>

- Signature-based scanning
- Automatic signature updates
- Bi-directional inspection engine
- Granular IPS rule capability
- GeoIP enforcement
- Botnet filtering with dynamic list
- Regular expression matching

### Anti-malware<sup>2</sup>

- Stream-based malware scanning
- Gateway anti-virus
- Gateway anti-spyware
- Bi-directional inspection
- No file size limitation
- Cloud malware database

### Application identification<sup>2</sup>

- Application control
- Application bandwidth management
- Custom application signature creation
- Data leakage prevention
- Application reporting over NetFlow/IPFIX
- Comprehensive application signature database

### Traffic visualization and analytics

- User activity
- Application/bandwidth/threat usage
- Cloud-based analytics

### HTTP/HTTPS Web content filtering<sup>2</sup>

- URL filtering
- Proxy avoidance
- Keyword blocking
- Policy-based filtering (exclusion/inclusion)
- HTTP header insertion
- Bandwidth manage CFS rating categories
- Unified policy model with app control
- Content Filtering Client

### VPN

- Secure SD-WAN
- Auto-provision VPN
- IPSec VPN for site-to-site connectivity
- SSL VPN and IPSec client remote access
- Redundant VPN gateway

- Mobile Connect for iOS, Mac OS X, Windows, Chrome, Android and Kindle Fire
- Route-based VPN (RIP/OSPF/BGP)

### Networking

- PortShield
  - Jumbo frames
  - Path MTU discovery
  - Enhanced logging
  - VLAN trunking
  - Port mirroring (NSa 2650 and above)
  - Layer-2 QoS
  - Port security
  - Dynamic routing (RIP/OSPF/BGP)
  - SonicWall wireless controller1
  - Policy-based routing (ToS/metric and ECMP)
  - NAT
  - DHCP server
  - Bandwidth management
  - Link aggregation<sup>1</sup> (static and dynamic)
  - Port redundancy<sup>1</sup>
  - A/P high availability with state sync
  - A/A clustering1
  - Inbound/outbound load balancing
  - L2 bridge,1 wire/virtual wire mode, tap mode, NAT mode
  - 3G/4G WAN failover<sup>1</sup>
  - Asymmetric routing
  - Common Access Card (CAC) support
- ### VoIP
- Granular QoS control
  - Bandwidth management
  - DPI for VoIP traffic
  - H.323 gatekeeper and SIP proxy support

<sup>1</sup> Not supported on NSv Series firewalls

<sup>2</sup> Requires added subscription.

## SonicOS feature summary (continued)

### Management and monitoring

- Web GUI
- Command-line interface (CLI)
- SNMPv2/v3
- Centralized management and reporting with SonicWall Global Management System (GMS)<sup>2</sup>
- Logging
- Netflow/IPFix exporting
- Cloud-based configuration backup
- BlueCoat security analytics platform
- Application and bandwidth visualizer
- IPv4 and IPv6 Management
- Off-box reporting (Scrutinizer)
- LCD management screen<sup>1</sup>
- Dell N-Series and X-Series switch management including cascaded switches<sup>1</sup>

### Wireless<sup>1</sup>

- SonicWave AP cloud management
- WIDS/WIPS
- Rogue AP prevention
- Fast roaming (802.11k/r/v)
- 802.11s mesh networking

- Auto-channel selection
- RF spectrum analysis
- Floor plan view
- Topology view
- Band steering
- Beamforming
- AirTime fairness
- Bluetooth Low Energy
- MiFi extender
- Guest cyclic quota
- LHM guest portal

### Integrated Wireless (TZ Series only)

- Dual-band (2.4 GHz and 5.0 GHz)
- 802.11 a/b/g/n/ac wireless standards
- Wireless intrusion detection and prevention
- Wireless guest services
- Lightweight hotspot messaging
- Virtual access point segmentation
- Captive portal
- Cloud ACL

### Partner Enabled Services

Need help to plan, deploy or optimize your SonicWall solution? SonicWall Advanced Services Partners are trained to provide you with world class professional services. Learn more at [www.sonicwall.com/PES](http://www.sonicwall.com/PES).

## About SonicWall

SonicWall has been fighting the cybercriminal industry for over 27 years defending small and medium businesses, enterprises and government agencies worldwide. Backed by research from SonicWall Capture Labs, our award-winning, real-time breach detection and prevention solutions secure more than a million networks, and their emails, applications and data, in over 215 countries and territories. These organizations run more effectively and fear less about security. For more information, visit [www.sonicwall.com](http://www.sonicwall.com) or follow us on [Twitter](#), [LinkedIn](#), [Facebook](#) and [Instagram](#).