# SANGFOR WAN OPTIMIZATION

SANGFOR WANO (Wan Optimization) provides your company with a competitive edge by expanding your business potential. WANO lets you have a seamless connectivity among offices, research facilities and manufacturing plants in different locations, locally or globally.

Connecting your employees directly over the same network environment with the same performance, enhances both your productivity and business continuity.

Enjoy a LAN Speed on your WAN

- Enhanced Application Acceleration
- Smoother Business via WAN Bandwidth Management
- Secure High-Speed VPN
- WAN Investment Reduced by 70%

WANO

Global Connectivity

Remote Access

Cloud Computing

SANGFOR
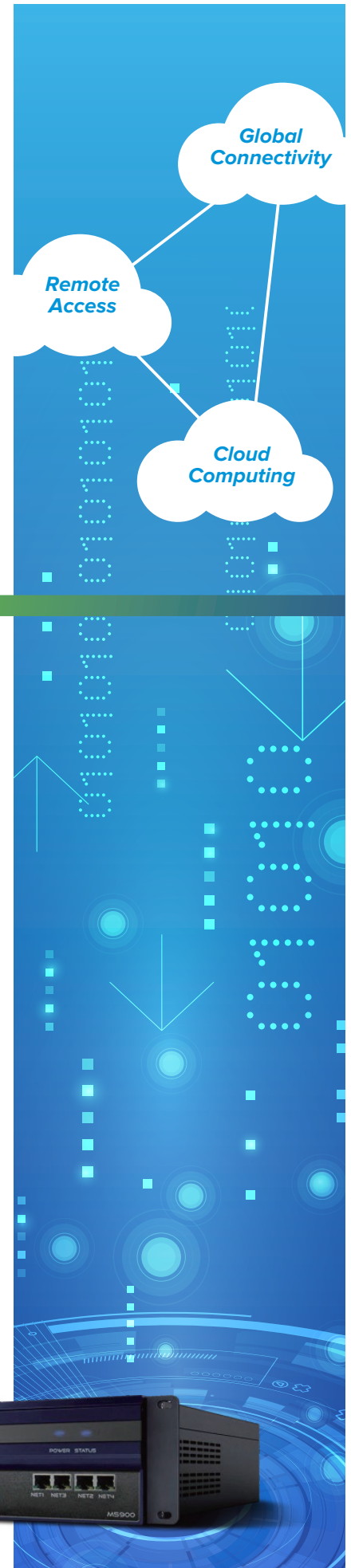
Most business applications perform well on LAN, yet they don't operate or transmit efficiently enough on WAN due to bandwidth constraints, protocol limitations and latency. Too often have organizations resorted to upgrading their bandwidth to solve this problem, but it usually turns out not effective.

With the deployment of SANGFOR WAN Optimization solution, headquarters, office branches and partners in different locations can experience an accelerated network performance where business-critical applications won't be hindered and data exchange will be fast. A LAN-like experience over the enterprise WAN.
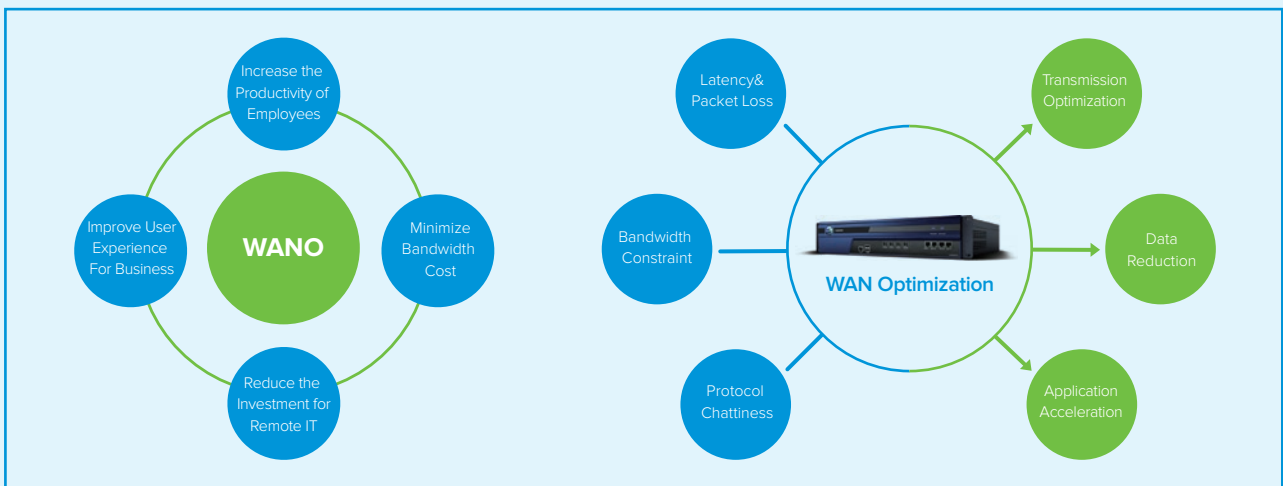
Data Reduction

Reduce redundant data that occupies bandwidth up to 95%

SANGFOR WANO is using a leading Byte Cache Technology that allows deduplication of data across WAN on subsequent transmissions. Once data is transmitted from one end to another, it is cached at byte level.

As we all know, different compression algorithms have different compression efficiency for different data. A single compression algorithm is unable to achieve maximum compression ratio. Equipped with 3 built-in compression algorithms and dynamic compression technology, SANGFOR WANO can substantially minimize the amount of data transmission.

WANO also eliminates redundant data transmission that occupies up to 95% of WAN traffic, delivering cached data at LAN speed !

Application Acceleration

Improve user experience of business applications

SANGFOR Acceleration Technology is not related to the application itself, but based on TCP/UDP acceleration technology which can virtually accelerate any application.

SANGFOR Application Acceleration is especially designed to accelerate the most common and popular business applications. It performs proxy to protocols of MAPI, HTTP/HTTPS, CIFS, Oracle EBS, Citrix, RDP and SMTP, boosting performance of a wide range of applications such as Exchange, SharePoint, ERP, CRM, Lotus Notes, Backup, SAP, Disaster Recovery, FTP and so on.

Transmission Optimization

Elevate WAN link quality

HTP (High-Speed Transmission Protocol) technology is an optimization technology based on the transmission layer. It can improve link quality and transmission performance of applications and therefore help users gain better experience.

SANGFOR WANO optimizes the TCP and UDP protocols to reduce the impact of latency and packet loss over long distance transmission.

HTP-TCP enhances WAN transmission by selective/fast re-transmission of lost packets, improving the efficiency of congestion control mechanism in traditional TCP protocol which significantly boosts WAN link performance. HTP-UDP can also reduce the packets loss of UDP and and in sufficient bandwidth scenario. In order to reduce packet loss under different latency environments, HTP-UDP has 2 built-in algorithms: UDP proxy and FEC technologies, which effectively improve the transmission performance of UDP based applications such as Video Conference.

Local Image

Remote Image

Remote Image with WANO

Secure High-Speed VPN

Eaiser to build a Faster and Secure Intranet

Sangfor WANO does not only support built-in IPSEC VPN with other gateway devices, but also has its own patented Sangfor VPN. Sangfor VPN supports multiple links auto-path select, QoS in VPN tunnel as well as allowing branches to surf on internet via HQ, combined with application acceleration & transmission optimization. IT managers only need a few steps to create new branches access to HQ.

Priority

Assign priority to applications

With the built-in signature database of over 3100+ applications, SANGFOR WANO can prevent bandwidth congestion and do precise flow control through priority and policy settings over non-critical applications and recreational traffic.

In bandwidth shortage scenarios, WANO can focus on core applications and avoid busy-line packet loss with the help of busy-line protection and dynamic bandwidth limitation technology.
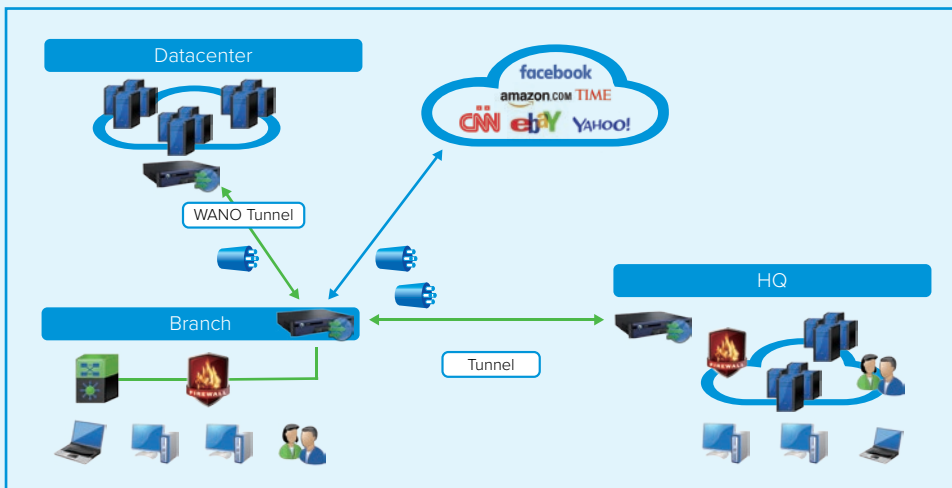
Real-time Network Management

Monitor bandwidth utilization for better tuning

SANGFOR WANO enables IT managers to identify the changing situation of bandwidth utilization for better tuning of their internal policies. Its report provides specific details on functions and logs stored internally.

WANO also displays live information on current traffic movement by application proxy and segmented time intervals. Accurate statistic information on usage allows system administrators to take the right steps with bandwidth management. Moreover, the inherent Health Status Display can show IT managers whether WANO device or network is in good status.

Extras

Value-added features

CMC: Multiple WANO can be centrally managed by the CMC (Central Management Console).

Portable Accelerator: Extend WAN optimization benefits to mobile users on Windows platforms.
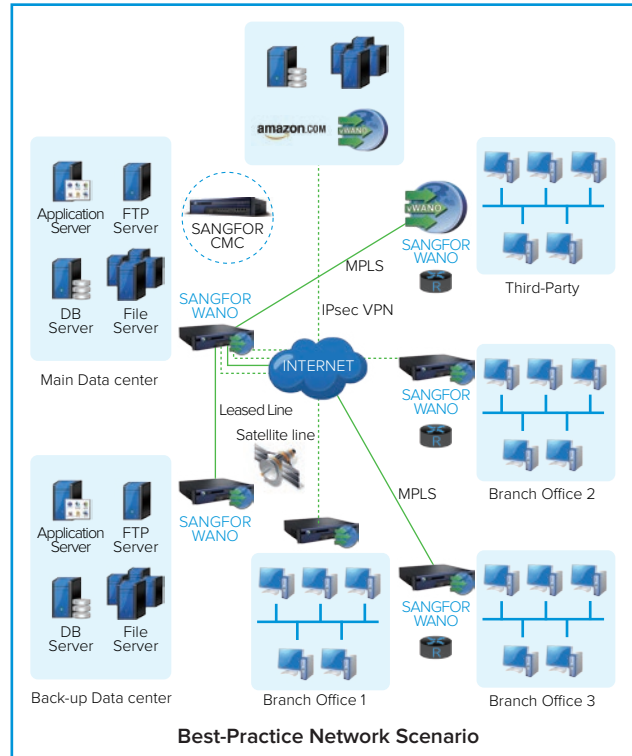
Policy-Based Routing: It is possible for WANO to detect link status and failover between IPsec VPN/Leased line/MPLS VPN. It is also possible for different traffic to run in different links and at the same time based on application or IP address.

vWANO: Virtual version of WAN Optimization with full suite of WANO features.

Built-in Firewall: Effective protection with stable and deep-packet inspection.

Sangfor VPN: Easy & Secure VPN from one Sangfor device to another Sangfor device, or Windows client to HQ.

IPsec VPN: Standard IPsec VPN compatible with other IPsec VPN device.

Best-Practice Network Scenario

Laboratory Test Results

	Minimum	Stable	Peak
CIFS	10	35	150
SMTP	4	13	40
POP3	4	13	45
FTP	10	30	90
Exchange	3	15	30
ERP	0	6	15
Backup	10	25	50
MS-SQL	3	10	15
Qracle	3	8	15
SAP Netweaver	10	25	40
SharePoint	10	20	40
HTTPS	3	6	20
RDP	4	9	15
Citrix	2	4	10
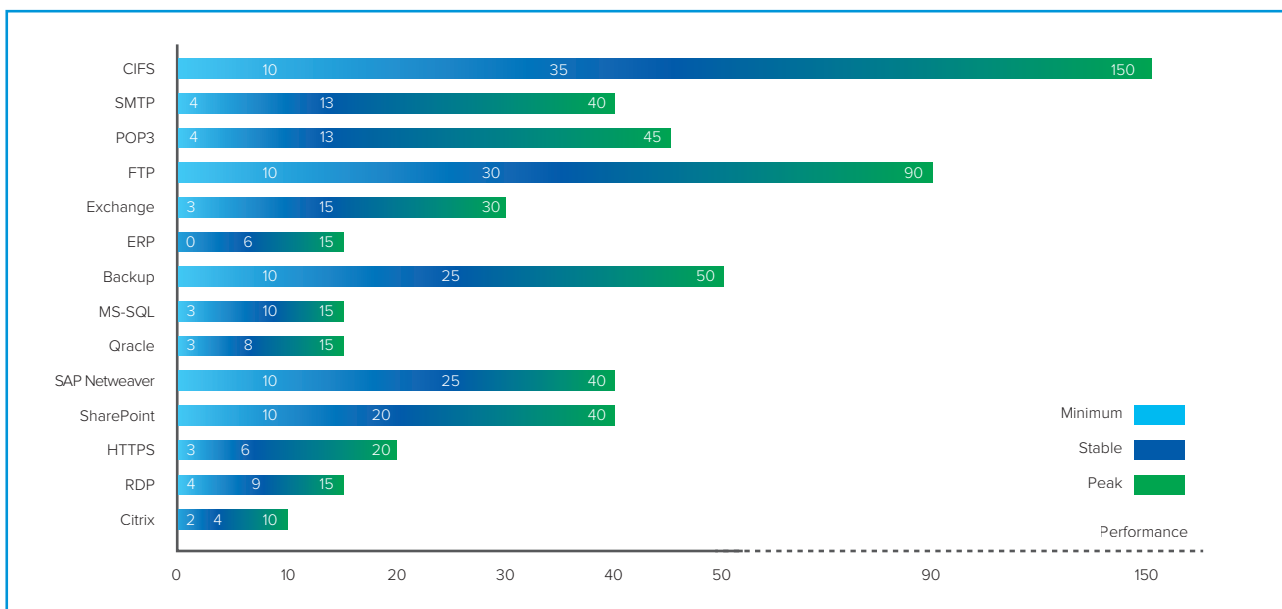
Performance

Professional Reviews

" The appliance clearly delivers an impressive WAN acceleration performance for a wide range of applications and is remarkably easy to deploy."

"They come with an extensive range of optimization technologies as standard, are extremely easy to deploy and capable of delivering impressive boosts to WAN performance across a wide range of applications."
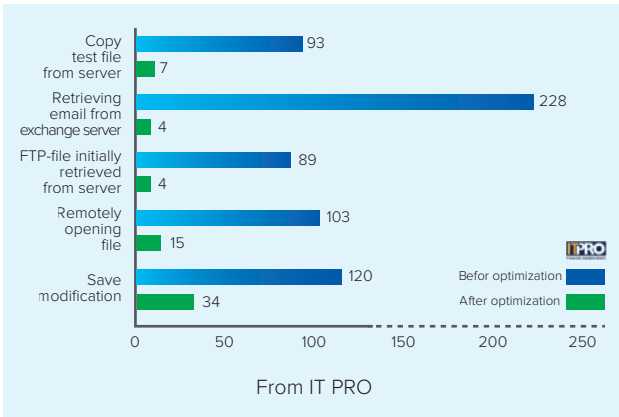
	Before optimization	After optimization
Copy test file from server	93	7
Retrieving email from exchange server	228	4
FTP-file initially retrieved from server	89	4
Remotely opening file	103	15
Save modification	120	34

From IT PRO

Operation	Performance Increase
File copy	✅ 8-31x
Email	✅ 57-64x
FTP	✅ 22-64x

Operation	Performance Increase
Remote file open	✅ 8-31x
Remote file save	✅ 57-64x
Remote Desktop	✅ 22-64x

From BINARY TESTING

SANGFOR
WAN Optimization (WANO)

Main	Model	S4000-QE-I	S5000-QE-I	M5000-QE-I	M5100-QE-I	M5400-QE-I	M5500-QE-I	M5600-QE-I
Hardware Parameters	Type	Small Branch	Small Branch	Medium Branch	Medium Branch	Medium Branch	Medium Branch	Medium Branch
	Profile	1U	1U	1U	1U	1U	2U	2U
	RAM	2	2	2	2	2*2	2*2	2*2
	HD Capacity	32G SSD	64G SSD	64G SSD	128G SSD	128G SSD	2*120G SSD	240 SSD
	Total Port as Default	3*1GbE BASE-T	4*1GbE BASE-T	4*1GbE BASE-T	4*1GbE BASE-T	6*1GbE BASE-T	6*1GbE BASE-T + 2*1GbE SFP	6*1GbE BASE-T + 2*1GbE SFP
Network Interfaces	10/100/1000 Base-T (WAN)	1	2	2	2	3	3	3
	10/100/1000 Base-T (LAN)	1	1	1	1	2	2	2
	10/100/1000 Base-T (DMZ)	1	1	1	1	1	1	1

Main	Model	S4000-QE-I	S5000-QE-I	M5000-QE-I	M5100-QE-I	M5400-QE-I	M5500-QE-I	M5600-QE-I
Network Interfaces	SFP	N/A	N/A	N/A	N/A	N/A	2	2
	Serial Port	RJ45×1	RJ45×1	RJ45×1	RJ45×1	RJ45×2	RJ45×1	RJ45×1
	USB	2	2	2	2	2	2	2
	Bypass (Cooper)	N/A	1 Pair	1 Pair	1 Pair	3 Pairs	3 Pairs	3 Pairs
Physical Specifications	Support Dual Power Supplies	N/A	N/A	N/A	N/A	N/A	N/A	√
	Power [Watt] (Typical)	25W	25W	25W	25W	176W	176W	212W
	Working Temperature	0℃~40℃	0℃~40℃	0℃~40℃	0℃~40℃	0℃~40℃	0℃~40℃	0℃~40℃
	Relative Humidity	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing
	System Dimensions (W×L×H)	275x175x44.5mm	275x175x44.5mm	430x300x44.5mm	430x300x44.5mm	430x390x44.5mm	440x500x89mm	430x500x89mm
	System Weight	1.5Kg	1.5Kg	4.2Kg	4.2Kg	6.5Kg	12.5 Kg	12.5Kg
Compliance	Certificates	CE, FCC	CE, FCC	CE, FCC	CE, FCC	CE, FCC	CE, FCC	CE, FCC
Optimized Bandwidth		3 Mbps	6 Mbps	15 Mbps	30 Mbps	60 Mbps	100 Mbps	200 Mbps
Total Traffic Bandwidth		10 Mbps	20 Mbps	45 Mbps	60 Mbps	100 Mbps	200 Mbps	400 Mbps
Optimized TCP Connection		500	1000	2000	2500	4000	7000	8000
Max. Acceleration Branches & PACC		10	20	32	32	100	300	320

Main	Model	M5200-WANO	M5400-WANO	M5500-WANO	M5600-WANO	M5800-WANO	M5900-WANO	M5900-WANO-S
Hardware Parameters	Type	HQ/DC	HQ/DC	HQ/DC	HQ/DC	HQ/DC	HQ/DC	HQ/DC
	Profile	1U	1U	2U	2U	2U	2U	2U
	RAM	4	2*8	2*8	3*8	3*8	4*8	6*8
	HD Capacity	240G SSD	480G SSD	480G SSD	2*480G SSD	2*480G SSD	2*800 SSD	2*800G SSD
Network Interfaces	Total Port as Default	4*1GbE BASE-T	6*1GbE BASE-T	6*1GbE BASE-T + 2*1GbE SFP	4*1GbE BASE-T + 4*1GbE SFP	4*1GbE BASE-T + 4*1GbE SFP	4*1GbE BASE-T + 4*1GbE SFP	5*1GbE BASE-T + 4*10GbE SFP
	10/100/1000 Base-T (WAN)	2	3	3	2	2	2	4
	10/100/1000 Base-T (LAN)	1	2	2	1	1	1	4
	10/100/1000 Base-T (DMZ)	1	1	1	1	1	1	1
	SFP	N/A	N/A	2	4	4	4	4
	Serial Port	RJ45×1	RJ45×2	RJ45×1	RJ45×1	RJ45×1	RJ45×1	RJ45×1
	USB	2	2	2	2	2	2	2
	Bypass (Cooper)	1 Pair	3 Pairs	3 Pairs	2 Pairs	2 Pairs	2 Pairs	2 Pairs
Physical Specifications	Support Dual Power Supplies	N/A	N/A	N/A	√	√	√	√
	Power [Watt] (Typical)	26W	180W	176W	212W	212W	212W	212W
	Working Temperature	0℃~40℃	0℃~40℃	0℃~40℃	0℃~40℃	0℃~40℃	0℃~40℃	0℃~40℃
	Relative Humidity	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing	5%~95% non-condensing
	System Dimensions (W×L×H)	430x300x44.5mm	430x390x44.5mm	440x500x89mm	440x600x90mm	440x600x90mm	440x600x90mm	440x600x90mm
	System Weight	4.2Kg	6.65Kg	12.5 Kg	18.5Kg	18.5Kg	20Kg	20Kg
Compliance	Certificates	CE, FCC	CE, FCC	CE, FCC	CE, FCC	CE, FCC	CE, FCC	CE, FCC
Optimized Bandwidth		30 Mbps	60 Mbps	100 Mbps	200 Mbps	400 Mbps	650 Mbps	1.5 Gbps
Total Traffic Bandwidth		60 Mbps	100 Mbps	200 Mbps	400 Mbps	800 Mbps	1.5 Gbps	5 Gbps
Optimized TCP Connection		3000	6000	9000	16000	30000	80000	100000
Max. Acceleration Branches & PACC		32	100	300	450	600	1000	20000

vWANO®
SANGFOR Virtual WANO Appliance

Models	vWOC-5000	vWOC-5400	vWOC-5600	vWOC-5800
Speed on Optimized WAN Port	10Mbps	50Mbps	100Mbps	200Mbps
No.of TCP Cons.Accelerated	1500	4000	8000	20000
No.of Sites and PACCs Supported	10	100	300	500
VM Config Requirements — CPU — Recommended	>=4	>=4	>=8	>=8
VM Config Requirements — CPU — Range	4-64	4-64	8-64	8-64
VM Config Requirements — Memory (GB) — Recommended	4	7	14	14
VM Config Requirements — Memory (GB) — Range	4-256	7-256	14-256	14-256
VM Config Requirements — Cache Disk Size (GB)	100-2000	100-2000	250-2000	250-2000
VM Config Requirements — Performance (IOPS)	>=100	>=200	>=500	>=1000
VM Config Requirements — I/O Throughput (MB/s)	>=25	>=50	>=125	>=250
VM Config Requirements — NIC	3	3	3	3
Supported Platforms	VMware vSphere, Microsoft Hyper-V, SANGFOR HCI & aBOS			

System Requirements for Mobile Client (Portable Accelerator)

WANO Mobile System Requirements	
Operating System	Windows XP, Windows 7 & 8 (32/64 bit), Windows 8 (32/64 bit), Windows 10 - No support for tablets & smartphones.
CPU	Celeron1.5GHz
Memory	256MB
Disk Space	2GB
VPN Compatibility	Cisco , Juniper , Nortel , Microsoft , Standard IPSec VPN

SANGFOR
WAN Optimization (WANO)

Product Features

Data Reduction

Byte Cache	- Data cache at byte level to ensure the WAN data traffic is deduplicated and previously viewed data are served directly from the local cache to LAN. - Support shared cache among multiple WANOs.
Dynamic Compression	Built-in with 3 kind of compression algorithms with dynamic mechanism to choose the most proper compression (LZO, GZIP, Quick LZ).
HTTP and FTP file pre-fetching	Pre-fetch the static data from remote HTTP/FTP server to local WANO per configurable timetable.

Application Optimization

Application Identification	Automatically identify the application with the built-in Application Signature Database.
Application Proxy	Boost numbers of application performance such as Exchange, SharePoint, ERP, CRM, Lotus Notes, Backup, SAP, Disaster Recovery and FTP with application protocols proxy techonology supporting Exchange, HTTP/HTTPS, CIFS, Oracle EBS, Citrix, RDP and SMTP.
TCP Proxy	Dynamically optimizes transmission control protocol with TCP proxy by intelligently emulating the cumulative acknowledgments.
HTTPS Optimization	Support certificate import method, identify and accelerate HTTPS protocol based applications.

Transmission Optimization

High-Speed Transmission Protocol (HTP)	Designed to streamline data packets under high packetloss and latency network environment such as satellite,wireless and cross-border
HTP-TCP	HTP-TCP improves TCP transmission efficiency by expanding the transmission window, improving the congestion control algorithm and performing selective quick retransmission.
HTP-UDP	HTP-UDP supports FEC and UDP Proxy technologies and guarantee the stability of UDP based applications such as video conference by reducing packet loss and ensure it runs with the highest priority.

Priority & Bandwidth Management

Bandwidth Management	Monitor and control bandwidth to prevent bottlenecks so that network resources get correctly prioritized and levelly received.
BM Policy	- Traffic guarantee/limit policy for uplink and downlink based on the bandwidth usage percentage of each pipe, max. bandwidth per user & application priority. - Exclusion policy based on applications, websites, file, users, schedules, destination IPs, etc. - Block designated URLs or applications. - Identity and control applications running in IPsec tunnel

Visibility

Real-Time Monitor	System status, application connections, flow and network optimization status.
Reporting	- Comprehensive reports include flow and optimization monitoring, allowing effective monitoring of the ever changing network environment. - Provides visibility of a wide range of network information, including logs for alarms, errors and debugging. - Report of real-time and historical traffic, analysis of accelerated, non-accelerated traffic and sessions. - Generates/export reports in PDF format, support email subscription. - Traffic visibility based on users, IPs, applications, etc.
Traffic Visibility	- Visibility of URLs with built-in dataset and customizable resources. - Intelligent identification of traffics from P2P, IM, SSL, Proxy, etc. for full network visibility and control. - Support basic direction traffic, port and custom application.

Scalability

vWANO	Virtual software machine with full suite of Sangfor WANO features.
AWS	vWANO is available in AWS.
Portable Accelerator(PACC)	Install software client on PC to improve access speed and increase productivity of remote workers.
Built-in IPsec VPN	- Built-in IPsec VPN for secure, fast and cost-effective deployment of remove office network. - Support connection with third-party VPN gatewaysthat use standards VPN connectivity. - IPSec Protocol: AH,ESP - D-H Group: MODP768 Group(1),MODP1024 Group(2),MODP1536 Group(5) - IPSec Authentication Algorithm: MD5,SHA-1 - IPSec Encrytion Algorithm: DES,3DES,AES-128
Built-in Firewall	Packet Inspection Firewall to provide protection from DOS, ARP, etc. which improves gateway security and stability.
Central Management Console	Unified management for multiple WANO devices via SANGFOR CMC (Central Management Console).

Network and Deployment

Deployment	Gateway, Bridge, Single Arm, Double Bride, Double Arm.
Stability	- Hardware bypass, Active/Passive. - Support CDP+PBR, WCCP and NQA.
Web Management Console	Intuitive management console makes management easier and more effective.
Hierarchical Administration	Functionality of different modules can be assigned to different administrators as needed via a hierarchical management paradigm.
Auto-Di scovery of Applications	Configuration free for targeted optimizing applications.
Auto-Path Discovery	Configuration free for connection between WANO gateways.
Configuration Backup	Support restore and backup of WANO configurations.
Network Diagnosis	- Real-time health status detection by monitoring networkports compatibility, disk information, routing settings, Windows domain, IP conflict, etc. - Able to perform WAN diagnosis such as ping, route, show ARP, tracert, gwinfo, netstat via WebUI and offload maintenance.
Integrity	Support SNMP, Syslog.

Please contact us by email if you need more information about our WANO features.

Sangfor Technologies

Sangfor Technologies is the leading global vendor for IT infrastructure solutions. They specialize in Cloud Computing & Network Security with a wide range of products including: Hyper-Converged Infrastructure, Virtual Desktop Infrastructure, Next Generation Application Firewall, Internet Access Management, WAN Optimization, SSL & IPSec VPN and many others.

Through constant innovation, Sangfor always strives to create value for our customers by helping them achieve sustainable growth. We take customers' business needs and user experience very seriously, placing them at the heart of our corporate strategy.

Established in 2000, Sangfor currently has 3,500+ employees with more than 60 branch offices in the world in exciting locations like Hong Kong, Malaysia, Thailand, Indonesia, Singapore, Philippines, Vietnam, Myanmar, Pakistan, UAE and the USA.

Awards & Achievements

- "Technology Fast 500 Asia Pacific Region" Award for 8 consecutive years from 2005 to 2012 by Deloitte.
- Reviewed by NSS Labs with a "Recommended" rating in 2014 for SANGFOR NGAF (WAF test).
- Sangfor SSL VPN no. 1 in Network Security market in China, Hong Kong & Taiwan according to F&S.
- No. 1 for Secure Content Management Hardware and VPN Hardware segment in China according to IDC.
- Sangfor IAM listed for 6 consecutive years in the Gartner MQ for Secure Web Gateways (2011-2017).
- Sangfor WANO listed for 3 consecutive years in the Gartner MQ for WAN Optimization (2013-2016).
- Sangfor NGAF listed in the Enterprise Network Firewalls MQ by Gartner (2015-2017).
- Sangfor HCI listed in the x86 Server Virtualization Infrastructure MQ by Gartner (2016).
- ICSA Labs certification for SANGFOR Next Generation Firewall (2016).
- "Most Promising Network Security Solution" in June 2016 by Singapore NetworkWorld Asia.
- "Readers Choice Awards for Enterprise Security" in October 2016 by Computerworld Malaysia.

Our Notable Clients

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AVAILABLE SOLUTIONS

IAM	Simplify User & Network Management
NGAF	Smarter Security Powered By AI
SD-WAN	Boost Your Branch Business With Sangfor
WANO	Enjoy a LAN Speed on your WAN
HCI	Driving Hyperconvergence to Fully Converged
aCLOUD	Enterprise Cloud Built on HCI
VDI	Ultimate User Experience that Beats PC
aBOS	The World First NFV Converged Gateway
BBC	Centralized Management Platform

SANGFOR

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https://www.linkedin.com/company/sangfor-technologies

https://www.facebook.com/Sangfor

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http://www.youtube.com/user/SangforTechnologies