All IT networks are dynamic in their pursuit of higher performance and increased security. Only with time that is accurate, secure, reliable and synchronized can an IT enterprise hope to achieve its present and future goals.

Symmetricom's next generation of GPS network time synchronization products provide high-performance, flexible and automated time distribution solutions to precisely, securely and consistently manage time on enterprise servers and desktops—critical for network security, server log file accuracy, billing systems, electronic transactions, database integrity, software development, VoIP and many more essential applications.

Our network time synchronization products include dedicated GPS network time servers and easy to manage synchronization, management and monitoring software that synchronizes the time on IT devices such as workstations, servers and routers—all designed to improve and secure your IT system's performance and lower your risk of IT system failures.

Your Network. Optimized.

Time Server Product Matrix

Time Server Product Comparison



		ENTERPRISE CLASS			ADVANCED TIMING		MILITARY	
	Feature	**NTS-150**	**S200**	**S300**	**S250**	**S350**	**S300 SAASM**	**S350 SAASM**
Time Protocols	NTP Server (v2, v3, v4)	■	■	■	■	■	■	■
	SNTP, Time, Daytime	■	■	■	■	■	■	■
	NTP Peering/Client		■	■	■	■	■	■
	NTP Multicast Server/Client		■	■	■	■	■	■
	NTP Broadcast Server/Client		■	■	■	■	■	■
	NTP performance, requests/second	**200**	**3200**	**7000**	**3200**	**7000**	**7000**	**7000**
Time References (inputs)	GPS (12 channel)	■	■	■	■ **(1)**	■	**L1/L2**	**L1/L2**
	NTP Peering		■	■	■	■	■	■
	Dial-up internal modem (ACTS, JJY, ITU-R TF583.4)			■		■		
	Low Frequency Radio (WWVB, JJY, DCF77) (optional)			■		■		
	10MHz input				■	■		■
	1PPS input				■	■		■
	IRIG B AM Input				■	■		■
	IRIG A/B/E/G/NASA36/XR3/2137 inputs (AM & DCLS)					■		■
	T1/E1 input (optional)					■		
	Reference priority, user configurable					■		■
Network Security Protocols	HTTP/HTTPS/SSL		■	■	■	■	■	■
	Telnet (w/disable fcn.)	■	■	■	■	■	■	■
	SNMP V1, V2c, V3 with Custom MIB II	**v1**	■	■	■	■	■	■
	DHCP (w/disable fcn.)	■	■	■	■	■	■	■
	SSH/SCP (w/disable fcn.)		■	■	■	■	■	■
	IPv6 and IPv4/IPv6		■	■	■	■	■	■
	MD5 for NTP	■	■	■	■	■	■	■
	NTP v4 Autokey (Server and Client)			■		■	■	■
	RADIUS Authenticated login			■		■	■	■
	1000Base-T equipped port (Gigabit)			■		■	■	■
	Total number of Ethernet ports	**1**	**3**	**4**	**3**	**4**	**4**	**4**
User Interface	Web Interface		■	■	■	■	■	■
	Vacuum florescent display/multi-line	**Opt. LED**	■	■	■	■	■	■
	Numeric keypad		■	■	■	■	■	■
	LED's: Sync, Network, Alarm, NTP	**(4)**	■	■	■	■	■	■
	USB		■	■	■	■	■	■
	RS-232	■	■	■	■	■	■	■
	Alarm relays			■		■	■	■
	Keypad lockout			■		■	■	■
Osc.	OCXO upgrade		■	■	■	■	■	■
	Rubidium upgrade		■	■	■	■	■	■
Timing Outputs	Timing accuracy	**3**	**2**	**2**	**2**	**2**	**2**	**2**
	Sysplex output (dedicated port)		■	■	■	■	■	■
	1PPS output				■	■		■
	10MHz output				■	■		■
	IRIG B AM output				■	■		■
	IRIG A/B/E/G/NASA36/XR3/2137 outputs (AM & DCLS)					■		■
	T1/E1 output (optional)					■		
Misc.	General server status logs (Syslog, 1-8 Servers)		■	■	■	■	■	■
	Autocheck for firmware upgrades		■	■	■	■	■	■
	Email alerts		■	■	■	■	■	■
	Serve NTP in UTC or GPS Timescale		■	■	■	■	■	■

(1) Also available without GPS (2) ± 50 Nanoseconds (3) ± 1 Microseconds (4) Sync and Network LEDS only

TSMatrixSAASM/PDF/0809

SyncServer® S200

Enterprise Class GPS Network Time Server

KEY FEATURES

- High-Bandwidth NTP Time Server
- Stratum 1 Operation Via GPS Satellites
- 3 Independent 10/100Base-T Ports
- High-Resolution Vacuum Fluorescent Display
- Full Numeric Keypad
- IPv6 and IPv4 Compliant
- Secure Web-Based Management
- SSH, SSL, SCP, SNMP v3, Custom MIB, HTTPS, Telnet, and More
- Stratum 2 Operation via NTP Servers
- Nanosecond Time Accuracy to UTC
- Dedicated Sysplex Timer Output
- Email Alerts for Alarms or Errors
- Single Satellite Timing
- Dual USB Ports
- Two-Year Warranty
- Rubidium & OCXO Oscillator Upgrades

KEY BENEFITS

- Synchronize Thousands of Client, Server & Workstation Clocks
- Very Reliable and Secure Source of Time for Your Network
- Extremely Accurate Time Source for Network Synchronization
- Improve Network Log File Accuracy to Speed Network Fault Diagnosis and Forensics
- Very Easy to Install and Maintain
- Multiple NTP Ports for Easy Network Configuration and Adaptation
- Intuitive Web Interface for Easy Control & Maintenance
- IPv6 Compliance Futureproofs Your Network

The SyncServer® S200 GPS Network Time Server synchronizes clocks on servers for large or expanding IT enterprises and for the ever-demanding high-bandwidth Next Generation Network. Accurately synchronized clocks are critical for network log file accuracy, security, billing systems, electronic transactions, database integrity, VoIP, and many other essential applications.

The S200 is the easiest to set up and maintain network time server in the world. The front panel is designed to quickly bring the time server online with a few front panel keystrokes or DHCP. To fully configure the unit, use the very intuitive web interface. The S200 is also the first network time server to offer step-by-step wizards for the most common operations. The state-of-the-art user interface offers the network administrator ease-of-use and remote access, with intuitive web pages and full control of the server via a standard browser interface.

Once online, the S200 provides reliable and secure network synchronization technology by combining multi-port, high-speed/ high-capacity network interfaces and versatile GPS timing receiver technology. It supports a wide range of network protocols including IPv4 and IPv6, for easy management and seamless integration into your existing and future network.

The high availability and throughput of the three 10/100Base-T ports translates into the support of hundreds of thousands of network clients while maintaining microsecond caliber NTP timestamp accuracy. They also provide the flexibility needed to easily adapt to different and changing network topologies and security requirements.

The Stratum 1 level S200 derives its time directly from the atomic clocks aboard the GPS satellite system. By using the integrated, 12-channel GPS receiver, every visible satellite can be tracked and used to maintain extremely accurate and reliable time.

If the GPS reference signal is ever lost, the S200 can automatically revert to a Stratum 2 mode and retrieve time from other user-designated time servers. Another option is that the S200 can be upgraded to an internal Rubidium atomic oscillator that keeps the S200 accurate to 25 microseconds per day.

The SyncServer S200 is your answer to bringing perfect timing to your network.

SyncServer S200 SPECIFICATIONS

NETWORK PROTOCOLS

NTP (v2 - RFC1119, v3 - RFC1305, v4 - No RFC)
NTP Unicast, Multicast, Broadcast
SNTP Simple Network Time Protocol (RFC4330)
TIME (RFC868)
DAYTIME (RFC867)
HTTP/SSL/HTTPS (RFC2616)
SSH/SCP (Internet Draft)
SNMPv3 (RFC3584)
Custom MIB
DHCP (RFC2131)
Telnet (RFC854)
MD5 Authentication (RFC1321)
SMTP Forwarding
Syslog 1 to 8 servers
IPv4
IPv6 and IPv4/IPv6 Hybrid

Key management protocols can be individually disabled.
LAN 1: Management & Time protocols: LAN 2 & LAN 3: Time protocols only.

SERVER PERFORMANCE

- Stratum 1: 3200 NTP requests per second while maintaining an overall time stamp accuracy of 14 microseconds to UTC with a variation of less than 33 microseconds typical. This accuracy is inclusive of all NTP packet delays in and out of the SyncServer as measured at the network interface. Client synchronization accuracy to server on a LAN is 0.5 - 2 milliseconds (typical). The SyncServer easily supports many hundreds of thousands of NTP clients.
- Stratum 2: Peering can be used as the primary mode of operation or as a back up mode in case the GPS reference signal is lost. Time stamp accuracy depends on NTP peer server(s). NTP request handling capacity remains the same regardless of stratum level.
- Holdover Accuracy

TCXO (standard):	21 milliseconds/day
OCXO (optional):	1 milliseconds/day
Rubidium (optional):	25 microseconds/day

GPS RECEIVER/ANTENNA

- 12 channel parallel receiver
- Minimum number of satellites for time: 1 intermittently
- GPS time traceable to UTC (USNO)
- Accuracy: <50 ns RMS, 150 ns peak to peak to UTC, ≥4 satellites tracked. Network factors can reduce client synchronization accuracy to 0.5-2 ms (typical).
- Maximum Belden 9104 cable length: 150' (45 m). For longer cable runs see Options.

MECHANICAL/ENVIRONMENTAL

- Size: 1.75" x 17" x 11.25" (4.5 cm x 43.2 cm x 28.6 cm) 1U rack mount
- Power: 100-240 VAC, 50-60 Hz, 25 watts (45 watts with Rb osc.), IEC 60320 C14 connector, power switch.
- Operating temperature: 0°C to +50°C; 0°C to +45°C with Rubidium option
- Storage temperature: -10°C to +70°C
- Humidity: To 95%, noncondensing
- Certifications: FCC, CE (RoHS), UL, PSE, China RoHS
- Server weight alone: 8 lbs (3.6 kgs)
- Shipping package weight: 15 lbs (6.8 kgs)

Front Panel

Display:	Sharp, high-resolution 32x256 dot-matrix vacuum-fluorescent. 1, 2 or 4 line.	
Keypad:	0-9 numeric, up, down, left, right, ENTER, CLR, TIME, STATUS, MENU.	
LEDs (tri-color green/red/orange)		
Sync:	Time reference status	
Network:	Network connection status	
NTP:	NTP activity	
Alarm:	Fault condition	
Serial:	DB9-F	9600, N, 8, 1
USB:	(2x) ports for back up, restore, and upgrade operations via the front panel.	

Rear Panel

Network (3x):	RJ-45	10Base-T/100Base-TX Ethernet
Sysplex:	DB9-M	RS-232
GPS:	BNC	L1, 1575 MHz

CLIENT SOFTWARE

An NTP client is required for client-side synchronization with any network time server, including the S200. Included with the S200 is Symmetricom's SymmTime NTP client for Windows. Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network is also available.

PRODUCT INCLUDES

S200 Network Time Server, L1 GPS antenna, 50' (15 m) Belden 9104 coaxial cable, 1 ft. antenna mounting mast (30 cm) with two clamps, category 5 patch cable, DB9-M to DB9-F RS-232 extension cable, manual, SymmTime NTP client for Windows, Enterprise MIB software, power cord, and rack mount ear kit. Two-year warranty.

OPTIONS

[To see Options datasheet please click here]

- Rubidium or OCXO oscillator upgrade for extended holdover
- ±40-60 Vdc power supply
- Window mounted antenna
- GPS antenna in-line amplifier for cable runs to 300' (90 m)
- GPS antenna down/up converter for cable runs to 1500' (457 m)
- Lightning arrestor
- Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network is also available.
- NTP Network Time Displays, 2" or 4" (5 cm or 10 cm), 6 digit, red LEDs

Rear View

Front View

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SyncServer® S250

GPS Network Time Server with Timing Enhancements

KEY FEATURES

- High-Bandwidth NTP Time Server
- Stratum 1 Operation Via GPS Satellites
- 50 Nanosecond Time Accuracy to UTC
- 3 Independent 10/100Base-T Ports
- High-Resolution Vacuum Fluorescent Display
- Full Numeric Keypad
- IPv6 and IPv4 Compliant
- Secure Web-Based Management
- SSH, SSL, SCP, SNMP v3, Custom MIB, HTTPS, Telnet, and More
- Dual USB Ports
- Independent Time References: GPS, IRIG B, 1PPS, 10 MHz
- Versatile Timing Outputs: IRIG B, 1PPS, 10 MHz, Sysplex
- Two-Year Warranty
- Rubidium & OCXO Oscillator Upgrades
- S250i Model With No GPS

KEY BENEFITS

- Synchronize Thousands of Client Clocks
- Extremely Accurate Reference for Network Time Synchronization and Time & Frequency Applications
- Automatic, Prioritized Reference Selection Between GPS, IRIG B, 1PPS & 10 MHZ
- Very Easy to Configure a Cesium Standard as Backup for GPS
- Multiple NTP Ports for Easy Network Configuration and Adaptation
- Intuitive Web Interface for Easy Control & Maintenance
- IPv6 Compliance Futureproofs Your Network

The SyncServer® S250 Precision GPS Network Time Server synchronizes clocks on servers for large or expanding networks and for the ever-demanding high-bandwidth Next Generation Network. Accurately synchronized clocks are critical for network log file accuracy, security, billing systems, electronic transactions, database integrity, VoIP, and many other essential applications.

The S250 is the easiest to set up and maintain network time server in the world. The front panel is designed to quickly bring the time server online with a few front panel keystrokes or DHCP. To fully configure the unit, use the very intuitive web interface. The S250 is also the first network time server to offer step-by-step wizards for the most common operations. The state-of-the-art user interface offers the network administrator ease-of-use and remote access, with intuitive web pages and full control of the server via a standard browser interface.

Once online, the S250 provides reliable and secure network synchronization technology by combining multi-port, high-speed/ high capacity network interfaces and versatile GPS timing receiver technology. It supports a wide range of network protocols including IPv4 and IPv6, for easy management and seamless integration into your existing and future network.

The high availability and throughput of the three 10/100Base-T ports translates into the support of hundreds of thousands of network clients while maintaining microsecond caliber NTP timestamp accuracy. They also provide the flexibility needed to easily adapt to different and changing network topologies and security requirements.

The Stratum 1 S250 will automatically synchronize to GPS, IRIG B AM, 1PPS, and 10 MHz in that priority. It smoothly transitions from one reference to the next available if the higher priority signal is lost or regained. This is perfect for operating with different backup time or frequency sources. The S250 can also revert to a Stratum 2 mode and retrieve time from other user-designated time servers. Similarly the S250 generates IRIG B, 1PPS and 10 MHz outputs and can be upgraded to an internal Rubidium atomic oscillator. While tracking GPS the S250 is accurate to 50 nanoseconds to UTC.

The SyncServer S250 is your answer to bringing perfect timing to your network.

SyncServer S250 SPECIFICATIONS

NETWORK PROTOCOLS

NTP (v2 - RFC1119, v3 - RFC1305, v4 - No RFC)
NTP Unicast, Multicast, Broadcast
SNTP Simple Network Time Protocol (RFC4330)
TIME (RFC868)
DAYTIME (RFC867)
HTTP/SSL/HTTPS (RFC2616)
SSH/SCP (Internet Draft)
SNMPv3 (RFC3584)
Custom MIB
DHCP (RFC2131)
Telnet (RFC854)
MD5 Authentication (RFC1321)
SMTP Forwarding
Syslog 1 to 8 servers
IPv4
IPv6 and IPv4/IPv6 Hybrid

Key management protocols can be individually disabled.
LAN 1: Management & Time protocols: LAN 2 & LAN 3: Time protocols only.

SERVER PERFORMANCE

- Stratum 1: 3200 NTP requests per second while maintaining an overall time stamp accuracy of 14 microseconds to UTC with a variation of less than 33 microseconds typical. This accuracy is inclusive of all NTP packet delays in and out of the SyncServer as measured at the network interface. Client synchronization accuracy to server on a LAN is 0.5 - 2 milliseconds (typical). The SyncServer easily supports many hundreds of thousands of NTP clients.
- Stratum 2: Peering can be used as the primary mode of operation or as a back up mode in case the GPS reference signal is lost. Time stamp accuracy depends on NTP peer server(s). NTP request handling capacity remains the same regardless of stratum level.
- Holdover Accuracy/Oscillator Aging

TCXO (standard):	21 milliseconds/day	<1E-06/month
OCXO (optional):	1 milliseconds/day	<1E-07/month
Rubidium (optional):	6 microseconds/day	<5E-11/month

GPS RECEIVER/ANTENNA

- 12 channel parallel receiver
- Minimum number of satellites for time: 1 intermittently
- GPS time traceable to UTC (USNO)
- Accuracy: <50 ns RMS, 150 ns peak to peak to UTC, ≥4 satellites tracked. Network factors can reduce client synchronization accuracy to 0.5-2 ms (typical).
- Maximum Belden 9104 cable length: 150' (45 m). For longer cable runs see Options.

MECHANICAL/ENVIRONMENTAL

- Size: 1.75" x 17" x 11.25" (4.5 cm x 43.2 cm x 28.6 cm) 1U rack mount
- Power: 100-240 VAC, 50-60 Hz, 25 watts (45 watts with Rb osc.), IEC 60320 C14 connector, power switch.
- Operating temperature: 0°C to +50°C; 0°C to +45°C with Rubidium option
- Storage temperature: -10°C to +70°C
- Humidity: To 95%, noncondensing
- Certifications: FCC, CE (RoHS), UL, PSE, China RoHS
- Server weight alone: 8 lbs (3.6 kgs)
- Shipping package weight: 15 lbs (6.8 kgs)

CLIENT SOFTWARE

An NTP client is required for client-side synchronization with any network time server, including the S250. Included with the S250 is Symmetricom's SymmTime NTP client for Windows. Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network is also available.

Front Panel

Display:		Sharp, high-resolution 32x256 dot-matrix vacuum-fluorescent. 1, 2 or 4 line.
Keypad:		0-9 numeric, up, down, left, right, ENTER, CLR, TIME, STATUS, MENU.
LEDs (tri-color green/red/orange)		
Sync:		Time reference status
Network:		Network connection status
NTP:		NTP activity
Alarm:		Fault condition
Serial:	DB9-F	9600, N, 8, 1
USB:		(2x) ports for back up, restore, and upgrade operations via the front panel.

Rear Panel

Network (3x):	RJ-45	10Base-T/100Base-TX Ethernet
Sysplex:	DB9-M	RS-232
GPS:	BNC	L1, 1575 MHz
IRIG B AM in:	BNC	IRIG B 120/121/122/123, IEEE-1344, 1V to 8V p-p, >5KΩ
IRIG B AM out:	BNC	IRIG B 123, IEEE-1344 Modulated 3:1, 3.5Vpp, 50Ω Accurate to 10 µS to input
1PPS-in:	BNC	TTL, Active rising edge 270Ω
1PPS-out:	BNC	TTL, Rising edge on-time, 50Ω
10 MHz-in:	BNC	Sine wave or square wave, 1Vpp to 5Vpp, >50KΩ
10 MHz-out:	BNC	Sine wave >3Vpp & <7Vpp into 50Ω

S250 PRODUCT INCLUDES

S250 Network Time Server, L1 GPS antenna, 50' (15 m) Belden 9104 coaxial cable, 1 ft. antenna mounting mast (30 cm) with two clamps, category 5 patch cable, DB9-M to DB9-F RS-232 extension cable, manual, SymmTime NTP client for Windows, Enterprise MIB software, power cord, and rack mount ear kit. Two-year warranty.

S250i PRODUCT INCLUDES (no GPS version)

S250i Network Time Server, category 5 patch cable, DB9-M to DB9-F RS-232 extension cable, manual, SymmTime NTP client for Windows, Enterprise MIB software, power cord, and rack mount ear kit. Two-year warranty.

OPTIONS

[To see Options datasheet please click here]

- Rubidium or OCXO oscillator upgrade for extended holdover
- ±40-60 Vdc power supply
- Window mounted antenna
- GPS antenna in-line amplifier for cable runs to 300' (90 m)
- GPS antenna down/up converter for cable runs to 1500' (457 m)
- Lightning arrestor
- Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network is also available.
- NTP Network Time Displays, 2" or 4" (5 cm or 10 cm), 6 digit, red LEDs

Rear View

Front View

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SyncServer® S300

High Performance, Enhanced Security GPS Network Time Server

KEY FEATURES

- Ultra High-Bandwidth NTP Time Server
- Stratum 1 Operation via GPS Satellites
- Gigabit Ethernet Port plus 3 Additional Independent 10/100Base-T Ports
- Internal Dial-up Modem for Time Reference Redundancy
- Stratum 2 Operation via NTP Servers
- RADIUS, NTPv4 Autokey, MD5 Authentication
- Secure Web-Based Management
- SSH, SSL, SCP, SNMP, Custom MIB, HTTPS, Telnet, and More
- High-Resolution Vacuum Fluorescent Display
- Full Numeric Keypad
- IPv6 and IPv4 Compatible
- Nanosecond Time Accuracy to UTC
- Dedicated Sysplex Timer Output
- Alarm Relays
- Single Satellite Timing
- Rubidium & OCXO Oscillator Upgrades
- Upgrade to Radio Broadcast Time Sync

KEY BENEFITS

- Synchronize Thousands of Client, Server & Workstation Clocks
- Very Reliable and Secure Source of Time for Your Network
- Multiple NTP Ports for Easy Network Configuration and Adaptation
- Extremely Accurate Time Source for Network Synchronization
- Enhanced Network & Security Features
- Improve Network Log File Accuracy to Speed Network Fault Diagnosis and Forensics
- Access Multiple Time Sources for Reliable and Secure Time
- Very Easy to Install and Maintain
- Intuitive Web Interface for Easy Control & Maintenance

Setting new standards for security, reliability, redundancy and versatility in network time servers, the SyncServer® S300 GPS Network Time Server is the solution for synchronizing the time on servers and workstations for large or expanding IT enterprises. Accurately synchronized clocks are critical for network log file accuracy, security, billing systems, electronic transactions, database integrity, VoIP, and many other essential applications.

The high performance S300 continues the SyncServer legacy of being the easiest to set up and maintain network time servers in the world. The front panel is designed to quickly bring the server online with a few front panel keystrokes or DHCP. To fully configure the unit, use the very intuitive web interface or the step-by-step web based wizards for the most common operations.

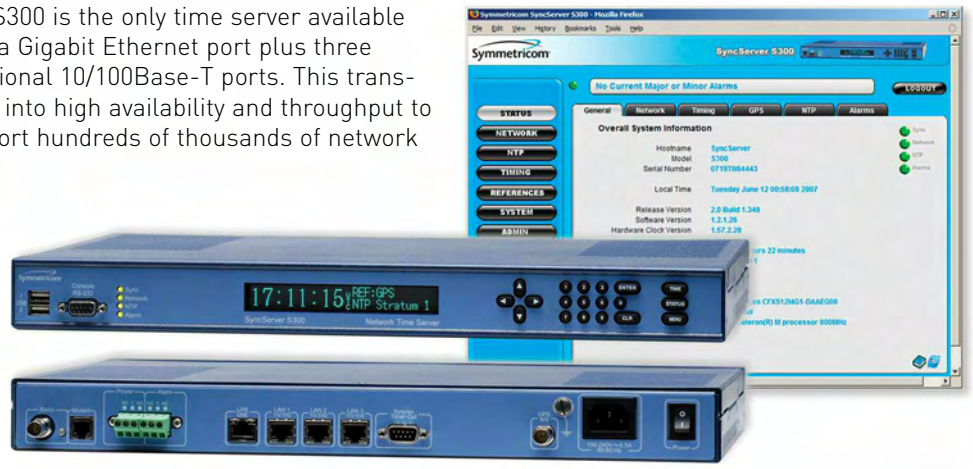
Once online, the S300 provides very reliable and secure network synchronization technology by combining multi-port network interfaces with multiple time reference technology and enhanced security protocols. Support of the essential security and network protocols provide for easy management and seamless integration into your existing and future network.

The S300 is the only time server available with a Gigabit Ethernet port plus three additional 10/100Base-T ports. This translates into high availability and throughput to support hundreds of thousands of network clients while maintaining microsecond caliber NTP timestamp accuracy. These four completely independent ports provide the flexibility needed to easily adapt to different and changing network topologies and security requirements.

The Stratum 1 level S300 derives its extremely accurate time directly from the atomic clocks aboard the GPS satellite system. For redundancy and time assurance, the S300 also includes an internal modem to connect directly to legal time provided by national time authorities. Reliability is further enhanced via Stratum 2 operation by retrieving time from other user-designated time servers. An optional AM radio will synchronize to national time broadcasts, which can be an alternative to GPS when GPS is not viable option.

To further protect against the loss of accurate time, the S300 can be upgraded to an internal Rubidium atomic oscillator that keeps the S300 accurate to microseconds per day.

The SyncServer S300 is your answer to bringing perfect timing to your network — securely, reliably and easily — and for many years to come.



SyncServer S300 SPECIFICATIONS

NETWORK PROTOCOLS

NTP (v2 - RFC1119, v3 - RFC1305, v4 - No RFC)
NTP Unicast, Broadcast, Multicast, Autokey
SNTP Simple Network Time Protocol (RFC4330)
TIME (RFC868)
DAYTIME (RFC867)
HTTP/SSL/HTTPS (RFC2616)
SSH/SCP (Internet Draft)
Syslog 1 to 8 servers

SNMP v1, v2c, v3 (RFC3584)
Custom MIB
DHCP (RFC2131)
Telnet (RFC854)
MD5 Authentication (RFC1321)
RADIUS (RFC2865)
SMTP Forwarding
IPv4, IPv6 and IPv4/IPv6 Hybrid

Key management protocols can be individually disabled.

LAN 1: Management & Time protocols; LAN 2, 3 & GbE: Time protocols only.

SERVER PERFORMANCE

- 7000 NTP requests per second while maintaining accuracy associated with reference time source. The accuracy is inclusive of all NTP packet delays in and out of the SyncServer as measured at the network interface. Client synchronization accuracy to server on a LAN is 0.5 - 2 milliseconds (typical). The SyncServer easily supports many hundreds of thousands of NTP clients. NTP request handling capacity remains the same regardless of Stratum level.
- Stratum 1 via GPS: Overall time stamp accuracy of 7 microseconds to UTC with a variation of less than 42 microseconds typical
- Stratum 1 via Dial-up modem: <50 milliseconds to UTC (<20 ms typical).
- Stratum 2: Peering can be used as the primary mode of operation or as a back up mode in case the primary reference signals are lost. Time stamp accuracy depends on NTP peer server(s).
- Holdover Accuracy

TCXO (standard):	18 milliseconds/day
OCXO (optional):	1 milliseconds/day
Rubidium (optional):	6 microseconds/day

GPS RECEIVER/ANTENNA

- 12 channel parallel receiver
- Minimum number of satellites for time: 1 intermittently
- GPS time traceable to UTC (USNO)
- Accuracy: <50 ns RMS, 150 ns peak to peak to UTC, ≥4 satellites tracked.
- Maximum Belden 9104 cable length: 150' (45 m). For longer cable runs see Options.

INTERNAL ANALOG MODEM

- Telecom approved in more than 50 countries
- Time Encoding: ACTS, JJY, and ITU-R TF583.4

MECHANICAL/ENVIRONMENTAL

- Size: 1.75" x 17" x 11.25" (4.5 cm x 43.2 cm x 28.6 cm) 1U rack mount
- Power: 100-240 VAC, 50-60 Hz, 25 watts (45 watts with Rb osc.),
- Operating temperature: 0°C to +50°C
- Storage temperature: -10°C to +70°C
- Humidity: To 95%, noncondensing
- Certifications: FCC, CE (RoHS), UL, PSE, China RoHS
- Server weight: 9 lbs (4.1 kgs), Shipping package: 16 lbs (7.3 kgs)

Front Panel

Display:	Sharp, high-resolution 32x256 dot-matrix vacuum-fluorescent. 1, 2 or 4 line.
Keypad:	0-9 numeric, up, down, left, right, ENTER, CLR, TIME, STATUS, MENU. Keypad lockout.
LEDs (tri-color green/red/orange)	
Sync:	Time reference status
Network:	Network connection status
NTP:	NTP activity
Alarm:	Fault condition
Serial:	DB9-F 9600, N, 8, 1
USB:	(2x) ports for back up, restore, and upgrade operations via the front panel.

Rear Panel

Network (4x):	1x RJ-45 10Base-T/100Base-TX/1000Base-T Gigabit Ethernet 3x RJ-45 10Base-T/100Base-TX Ethernet Speed/Duplex: Auto, 10/full/half, 100/full/half
Sysplex:	DB9-M RS-232
GPS:	BNC L1, 1575 MHz
Modem:	RJ-11 analog phone jack
Radio:	BNC, Optional antenna required for operation.
Power:	IEC 60320 C14 connector & power switch.
Relays:	2x, SPDT (Form C).

CLIENT SOFTWARE

Included with the S300 is Symmetricom's SymmTime NTP client for Windows. See Options for comprehensive software solutions.

PRODUCT INCLUDES

S300 Network Time Server, L1 GPS antenna, 50' (15 m) Belden 9104 coaxial cable, 1 ft. antenna mounting mast (30 cm) with two clamps, category 5 patch cable, DB9-M to DB9-F RS-232 extension cable, manual, SymmTime NTP client for Windows, Enterprise MIB software, power cord, and rack mount ear kit. Two-year warranty.

OPTIONS

[To see Options datasheet please click here]

- Rubidium or OCXO oscillator upgrade for extended holdover
- AM Radio/Antenna (40, 60 or 77.5 kHz) for WWVB (USA), JJY (Japan) or DCF77 (Europe)
- ±40-60 Vdc power supply
- Window mounted GPS antenna
- GPS antenna in-line amplifier for cable runs to 300' (90 m)
- GPS antenna down/up converter for cable runs to 1500' (457 m)
- Lightning arrestor
- Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network.
- NTP Network Time Displays, 2" or 4" (5 cm or 10 cm), 6 digit, red LEDs

Front View

Rear View

SYMMETRICOM, INC., TTM DIVISION • 3750 Westwind Boulevard • Santa Rosa, California 95403 • tel: +1.707.528.1230 • fax: +1.707.527.6640
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SYMMETRICOM GLOBAL SERVICES • Toll free in the USA: 1-888-367-7966 • Worldwide: +1.408.428.7907 • Global e-mail: support@symmetricom.com

SyncServer® S350

Ultra Precise & Versatile GPS Network Time Server

KEY FEATURES

- Ultra High-Bandwidth NTP Time Server
- Stratum 1 Operation via GPS Satellites
- Gigabit Ethernet port plus 3 additional Independent 10/100Base-T Ports
- Internal Dial-up Modem for Time Reference Redundancy
- Independent Time References: GPS, Timecodes, 1PPS, 10 MHz
- Versatile Timing Outputs: IRIG A/B/E/G/NASA36/XR3/2137 AM or DCLS, 1PPS, 10 MHz, Sysplex
- Stratum 2 Operation via NTP Servers
- RADIUS, NTPv4 Autokey, MD5 Authentication
- Secure Web-Based Management
- SSH, SSL, SCP, SNMP, Custom MIB, HTTPS, Telnet, and More
- IPv6 and IPv4 Compatible
- Nanosecond Time Accuracy to UTC
- Alarm Relays
- Rubidium & OCXO Oscillator Upgrades
- Upgrade to Radio Broadcast Time Sync
- Optional T1/E1 Input/Output

KEY BENEFITS

- Synchronize Thousands of Client, Server & Workstation Clocks
- Very Reliable and Secure Source of Time for Your Network
- Multiple NTP Ports for Easy Network Configuration and Adaptation
- Extremely Accurate Time Source for Network Synchronization
- Enhanced Network & Security Features
- User Prioritized Reference Selection between, GPS, Timecode, 1PPS and 10 MHz
- Access Multiple Time Sources for Reliable and Secure Time
- Intuitive Web Interface for Easy Control & Maintenance

Setting new standards for security, reliability, redundancy and versatility in network time servers, the SyncServer® S350 GPS Network Time Server is the solution for synchronizing the time on servers and workstations for large or expanding IT enterprises. Accurately synchronized clocks are critical for network log file accuracy, security, billing systems, electronic transactions, database integrity, VoIP, and many other essential applications.

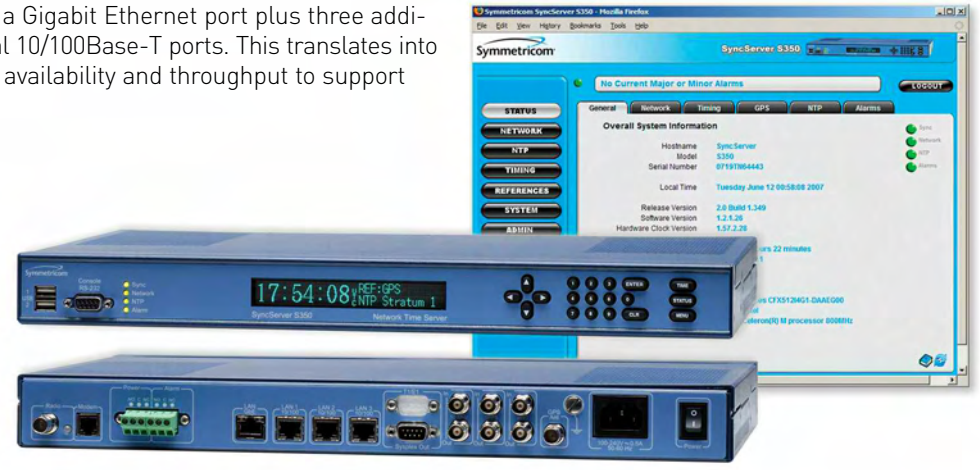
The S350 continues the SyncServer legacy of being the easiest to set up and maintain network time servers in the world. The front panel is designed to quickly bring the server online with a few front panel keystrokes or DHCP. To fully configure the unit, use the very intuitive web interface or the step-by-step web-based wizards for the most common operations.

Once online, the S350 provides very reliable and secure network synchronization technology by combining multi-port network interfaces with multiple time reference technology and enhanced security protocols. Support of essential security and network protocols provide for easy management and seamless integration into your existing and future network.

The S350 is the only time server available with a Gigabit Ethernet port plus three additional 10/100Base-T ports. This translates into high availability and throughput to support hundreds of thousands of network clients while maintaining microsecond caliber NTP timestamp accuracy. These four completely independent ports provide the flexibility needed to easily adapt to different and changing network topologies and security requirements.

The Stratum 1 S350 will automatically synchronize to GPS, IRIG, 1PPS, and 10 MHz sources. Users can set the priority and the S350 will smoothly transition from one reference to the next if the higher priority signal is lost or regained. An internal modem will synchronize to dial-up time sources if local references are not available.The S350 can also revert to a Stratum 2 mode and retrieve time from other user-designated time servers. Similarly the S350 generates many timecodes, 1PPS and 10 MHz outputs and can be upgraded to an internal Rubidium atomic oscillator that keeps the S350 accurate to microseconds per day. Optionally, T1/E1 inputs/outputs are available as is an AM radio to synchronize to national time broadcasts.

The SyncServer S350 is your answer to bringing perfect timing to your network – securely, reliably and easily – and for many years to come.



SyncServer S350 SPECIFICATIONS

NETWORK PROTOCOLS

NTP (v2 - RFC1119, v3 - RFC1305, v4 - No RFC)
NTP Unicast, Broadcast, Multicast, Autokey
SNTP Simple Network Time Protocol (RFC4330)
TIME (RFC868)
DAYTIME (RFC867)
HTTP/SSL/HTTPS (RFC2616)
SSH/SCP (Internet Draft)
Syslog 1 to 8 servers

SNMP v1, v2c, v3 (RFC3584)
Custom MIB
DHCP (RFC2131)
Telnet (RFC854)
MD5 Authentication (RFC1321)
RADIUS (RFC2865)
SMTP Forwarding
IPv4, IPv6 and IPv4/IPv6 Hybrid

Key management protocols can be individually disabled.

LAN 1: Management & Time protocols; LAN 2, 3 & GbE: Time protocols only.

SERVER PERFORMANCE

- 7000 NTP requests per second while maintaining accuracy associated with reference time source. The accuracy is inclusive of all NTP packet delays in and out of the SyncServer as measured at the network interface. Client synchronization accuracy to server on a LAN is 0.5 - 2 milliseconds (typical). The SyncServer easily supports many hundreds of thousands of NTP clients. NTP request handling capacity remains the same regardless of Stratum level.
- Stratum 1 via GPS: Overall time stamp accuracy of 7 microseconds to UTC with a variation of less than 42 microseconds typical
- Stratum 1 via Dial-up modem: <50 milliseconds to UTC (<20 ms typical).
- Stratum 2: Peering can be used as the primary mode of operation or as a back up mode in case the primary reference signals are lost. Time stamp accuracy depends on NTP peer server(s).
- Holdover Accuracy/Oscillator Aging

TCXO (standard):	18 milliseconds/day	<1E-06/month
OCXO (optional):	1 milliseconds/day	<1E-07/month
Rubidium (optional):	3 microseconds/day	<5E-11/month

GPS RECEIVER/ANTENNA

- 12 channel parallel receiver
- Minimum number of satellites for time: 1 intermittently
- GPS time traceable to UTC (USNO)
- Accuracy: <50 ns RMS, 150 ns peak to peak to UTC, ≥4 satellites tracked.
- Maximum Belden 9104 cable length: 150' (45 m). For longer cable runs see Options.

INTERNAL ANALOG MODEM

- Telecom approved in more than 50 countries
- Time Encoding: ACTS, JJY, and ITU-R TF583.4

MECHANICAL/ENVIRONMENTAL

- Size: 1.75" x 17" x 11.25" (4.5 cm x 43.2 cm x 28.6 cm) 1U rack mount
- Power: 100-240 VAC, 50-60 Hz, 25 watts (45 watts with Rb osc.),
- Operating temperature: 0°C to +50°C
- Storage temperature: -10°C to +70°C
- Humidity: To 95%, noncondensing
- Certifications: FCC, CE (RoHS), UL, PSE, China RoHS
- Server weight: 9 lbs (4.1 kgs), Shipping package: 16 lbs (7.3 kgs)

Front Panel

Display:	Sharp, high-resolution 32x256 dot-matrix vacuum-fluorescent. 1, 2 or 4 line.
Keypad:	0-9 numeric, up, down, left, right, ENTER, CLR, TIME, STATUS, MENU. Keypad lockout.
LEDs (tri-color green/red/orange)	
Sync:	Time reference status
Network:	Network connection status
NTP:	NTP activity
Alarm:	Fault condition
Serial:	DB9-F 9600, N, 8, 1
USB:	For back up, restore, and upgrade operations.

Rear Panel

Network (4x):		1x RJ-45 10Base-T/100Base-TX/1000Base-T Gigabit Ethernet 3x RJ-45 10Base-T/100Base-TX Ethernet Speed/Duplex: Auto, 10/full/half, 100/full/half
Sysplex:		DB9-M RS-232
GPS:		BNC L1, 1575 MHz
IRIG in:	BNC	IRIG A/B/E/G/NASA36/XR3/2137/IEEE-1344 AM: Ratio 2:1 to 3.5:1, Amp: 1V to 8V p-p, Zin >5KΩ DCLS: <1.5 V for logic 0, >2.0 V for logic 1
IRIG out:	BNC	IRIG A/B/E/G/NASA36/XR3/2137/IEEE-1344 AM: Ratio 10:3, Amp: 3.5 ± 0.5 Vpp, Zout 50Ω DCLS: <0.8 V for logic 0, >2.4 V for logic 1, Zout 50Ω IRIG G AM: Ratio 10:3, Amp: 3.0±0.5 Vpp, Zout 50Ω DCLS: <0.8 V for logic 0, >2.4 V for logic 1, Zout 50Ω
1PPS-in:	BNC	Rising edge active, TTL into 270Ω
1PPS-out:	BNC	Rising edge on-time, TTL into 50Ω
10 MHz-in:	BNC	Sine wave or square wave, 1Vpp to 8Vpp, Zin >50KΩ
10 MHz-out:	BNC	Sine wave >2Vpp & <6Vpp into 50Ω Sine wave >4Vpp & <12Vpp no load
Modem:		RJ-11 analog phone jack
Radio:		BNC, Optional antenna required for operation.
Power:		IEC 60320 C14 connector & power switch.
Relays:		2x, SPDT (Form C).

CLIENT SOFTWARE

Included with the S350 is Symmetricom's SymmTime NTP client for Windows. See Options for comprehensive software solution.

PRODUCT INCLUDES

S350 Network Time Server, L1 GPS antenna, 50' (15 m) Belden 9104 coaxial cable, 1 ft. antenna mounting mast (30 cm) with two clamps, category 5 patch cable, DB9-M to DB9-F RS-232 extension cable, manual, SymmTime NTP client for Windows, Enterprise MIB software, power cord, and rack mount ear kit. Two-year warranty.

OPTIONS

[To see Options datasheet at please click here]

- Rubidium or OCXO oscillator upgrade for extended holdover
- AM Radio/Antenna (40, 60 or 77.5 kHz) for WWVB (USA), JJY (Japan) or DCF77 (Europe)
- T1/E1 Input/Output (OCXO or Rubidium oscillator required to meet G.811 specification)
- ±40-60 Vdc power supply
- Window mounted GPS antenna
- GPS antenna in-line amplifier for cable runs to 300' (90 m)
- GPS antenna down/up converter for cable runs to 1500' (457 m)
- Lightning arrestor
- Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network.
- NTP Network Time Displays, 2" or 4" (5 cm or 10 cm), 6 digit, red LEDs

Rear View

Front View

SyncServer® S300 SAASM

High Performance, Enhanced Security GB-GRAM SAASM Network Time Server

KEY FEATURES

- SAASM GB-GRAM PPS Receiver with RAIM
- Military Signal P(Y) Code SAASM GPS Receiver and Civil Signal C/A-Code GPS Receiver
- Ultra High-Bandwidth NTP Time Server
- Stratum 1 Operation via GPS Satellites
- Gigabit Ethernet port plus 3 additional Independent 10/100Base-T Ports
- Stratum 2 Operation via NTP Servers
- RADIUS, NTPv4 Autokey, MD5 Authentication
- Secure Web-Based Management
- SSH, SSL, SCP, SNMP, Custom MIB, HTTPS, Telnet, and More
- IPv6 and IPv4 Compatible
- Nanosecond Time Accuracy to UTC
- Hot Start Ready via DAGR/PLGR
- Alarm Relays
- Single Satellite Timing
- High-Resolution Vacuum Fluorescent Display
- Full Numeric Keypad
- Rubidium & OCXO Oscillator Upgrades

KEY BENEFITS

- Synchronize Thousands of Client, Server & Workstation Clocks
- Very Reliable and Secure Source of Time for Your Network
- Multiple NTP Ports for Easy Network Configuration and Adaptation
- Extremely Accurate Time Source for Network Synchronization
- Enhanced Network & Security Features
- Improve Network Log File Accuracy to Speed Network Fault Diagnosis and Forensics
- Intuitive Web Interface for Easy Control & Maintenance
- Compliant with DoD mandate to use GPS SAASM PPS receivers

Setting new standards for security, reliability, redundancy and versatility in network time servers, the SyncServer® S300 SAASM Network Time Server is the solution for synchronizing the time on servers, workstations and network elements for DoD networks. Accurately synchronized clocks are critical for network log file accuracy, security, electronic transactions, database integrity, communications, and many other essential DoD applications.

The S300 continues the SyncServer legacy of being the easiest to set up and maintain network time servers in the world. The front panel is designed to quickly bring the server online with a few front panel keystrokes or DHCP. To fully configure the unit, use the very intuitive web interface or the step-by-step web-based wizards for the most common operations.

Once online, the S300 provides very reliable and secure network synchronization technology by combining multi-port network interfaces with multiple time reference technology and enhanced security protocols. Support of essential security and network protocols provide for easy management and seamless integration into existing and future networks. The S300 is the only time server available with a Gigabit Ethernet port plus three additional 10/100Base-T ports.

This translates into high availability and throughput to support hundreds of thousands of network clients while maintaining microsecond caliber NTP timestamp accuracy. These four completely independent ports provide the flexibility needed to easily adapt to different and changing network topologies and security requirements.

The Stratum 1 S300 SAASM with a secure, Selective Availability Anti-Spoofing Module (SAASM) based GB-GRAM compliant GPS receiver, derives its time directly from the atomic clocks aboard the GPS satellite system. By using the integrated, 12-channel GPS receiver, every visible satellite can be tracked and used to maintain extremely accurate and reliable time. If the GPS signal is ever lost, the S300 can automatically revert to a Stratum 2 mode and retrieve time from other user designated time servers. Another option is that the S300 can be upgraded to an internal Rubidium atomic oscillator that keeps the S300 accurate to 6 microseconds per day.

The SyncServer S300 SAASM is the answer to bringing the ultimate in NTP timing to your network – securely, reliably and easily – and for many years to come.

SyncServer S300 SAASM SPECIFICATIONS

NETWORK PROTOCOLS

NTP (v2 - RFC1119, v3 - RFC1305, v4 - No RFC)
NTP Unicast, Broadcast, Multicast, Autokey
SNTP Simple Network Time Protocol (RFC4330)
TIME (RFC868)
DAYTIME (RFC867)
HTTP/SSL/HTTPS (RFC2616)
SSH/SCP (Internet Draft)
Syslog 1 to 8 servers

SNMP v1, v2c, v3 (RFC3584)
Custom MIB
DHCP (RFC2131)
Telnet (RFC854)
MD5 Authentication (RFC1321)
RADIUS (RFC2865)
SMTP Forwarding
IPv4, IPv6 and IPv4/IPv6 Hybrid

Key management protocols can be individually disabled.

LAN 1: Management & Time protocols; LAN 2, 3 & GbE: Time protocols only.

SERVER PERFORMANCE

- 7000 NTP requests per second while maintaining accuracy associated with reference time source. The accuracy is inclusive of all NTP packet delays in and out of the SyncServer as measured at the network interface. Client synchronization accuracy to server on a LAN is 0.5 - 2 milliseconds (typical). The SyncServer easily supports many hundreds of thousands of NTP clients. NTP request handling capacity remains the same regardless of Stratum level.
- Stratum 1 via GPS: Overall time stamp accuracy of 7 microseconds to UTC with a variation of less than 42 microseconds typical
- Stratum 2: Peering can be used as the primary mode of operation or as a back up mode in case the primary reference signals are lost. Time stamp accuracy depends on NTP peer server(s).
- Holdover Accuracy/Oscillator Aging

TCXO (standard):	18 milliseconds/day	<1E-06/month
OCXO (optional):	1 milliseconds/day	<1E-07/month
Rubidium (optional):	6 microseconds/day	<5E-11/month

GPS SAASM GB-GRAM RECEIVER

- Receiver input: L1/L2, P(Y) code (PPS), SAASM GB-GRAM
- Tracking: 12 parallel, dual-frequency channels with RAIM (Receiver Autonomous Integrity Monitoring)
- Crypto Key input: DS-102. Compatible with AN/PYQ-10, AN/CYZ-10, KYK-13
- Security: SAASM GB-GRAM GPS PPS receiver
- Antenna/preamplifier: L1 1574.42 MHz and L2 1227.60 MHz, 40 dB gain
- GPS time traceable to UTC (USNO)
- Accuracy: <50 ns RMS, 150 ns peak to peak to UTC, ≥4 satellites tracked.
- Maximum Belden 9104 cable length: 150' (45 m). For longer cable runs see Options.

MECHANICAL/ENVIRONMENTAL

- Size: 1.75" x 17" x 11.25" (4.5 cm x 43.2 cm x 28.6 cm) 1U rack mount
- Power: 100-240 VAC, 50-60 Hz, 25 watts (45 watts with Rb osc.),
- Operating temperature: 0°C to +50°C
- Storage temperature: -10°C to +70°C
- Humidity: To 95%, noncondensing
- Certifications: FCC, UL
- Server weight: 9 lbs (4.1 kgs), Shipping package: 16 lbs (7.3 kgs)

Front Panel

Display:	Sharp, high-resolution 32x256 dot-matrix vacuum-fluorescent. 1, 2 or 4 line.
Keypad:	0-9 numeric, up, down, left, right, ENTER, CLR, TIME, STATUS, MENU. Keypad lockout.
LEDs (tri-color green/red/orange)	
Sync:	Time reference status
Network:	Network connection status
NTP:	NTP activity
Alarm:	Fault condition
CV:	Crypto Variable Status
Serial:	DB9-F 9600, N, 8, 1
USB:	For back up, restore, and upgrade operations.
PLGR/DAGR:	DB15-M, Hot Start Port
Key Fill:	Crypto Key input. DS-102. Compatible with AN/PYQ-10, AN/CYZ-10, KYK-13. Black/red key support.
Button:	Zeroize crypto keys

Rear Panel

Network (4x):	1x RJ-45 10Base-T/100Base-TX/1000Base-T Gigabit Ethernet 3x RJ-45 10Base-T/100Base-TX Ethernet Speed/Duplex: Auto, 10/full/half, 100/full/half
Sysplex:	DB9-M RS-232
GPS:	BNC
Power:	IEC 60320 C14 connector & power switch.
Relays:	2x, SPDT (Form C).

CLIENT SOFTWARE

Included with the S300 SAASM is Symmetricom's SymmTime NTP client for Windows. See Options for comprehensive software solution.

PRODUCT INCLUDES

S300 SAASM Network Time Server, L1/L2 GPS antenna (ordered separately at no extra charge), 50' (15 m) Belden 9104 coaxial cable, 1 ft. antenna mounting mast (30 cm) with two clamps, category 5 patch cable, DB9-M to DB9-F RS-232 extension cable, manual, SymmTime NTP client for Windows, Enterprise MIB software, power cord, and rack mount ear kit. Two-year warranty.

OPTIONS

- Rubidium or OCXO oscillator upgrade for extended holdover
- ±40-60 Vdc power supply
- GPS antenna in-line amplifier for cable runs to 300' (90 m)
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Front View

SyncServer® S350 SAASM

Ultra Precise & Versatile GB-GRAM SAASM Network Time Server

KEY FEATURES

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- Military Signal P(Y) Code SAASM GPS Receiver and Civil Signal C/A-Code GPS Receiver
- Ultra High-Bandwidth NTP Time Server
- Stratum 1 Operation via GPS Satellites
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- Independent Time References: GPS, Timecodes, 1PPS, 10 MHz
- Versatile Timing Outputs: IRIG A/B/E/G/NASA36/XR3/2137 AM or DCLS, 1PPS, 10 MHz, Sysplex
- Stratum 2 Operation via NTP Servers
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- Intuitive Web Interface for Easy Control & Maintenance
- Compliant with DoD mandate to use GPS SAASM PPS receivers

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The SyncServer S350 SAASM is the answer to bringing the ultimate in NTP timing to your network – securely, reliably and easily – and for many years to come.

SyncServer S350 SAASM SPECIFICATIONS

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NTP Unicast, Broadcast, Multicast, Autokey
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TIME (RFC868)
DAYTIME (RFC867)
HTTP/SSL/HTTPS (RFC2616)
SSH/SCP (Internet Draft)
Syslog 1 to 8 servers

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Telnet (RFC854)
MD5 Authentication (RFC1321)
RADIUS (RFC2865)
SMTP Forwarding
IPv4, IPv6 and IPv4/IPv6 Hybrid

Key management protocols can be individually disabled.
LAN 1: Management & Time protocols; LAN 2, 3 & GbE: Time protocols only.

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Rubidium (optional):	3 microseconds/day	<5E-11/month

GPS SAASM GB-GRAM RECEIVER

- Receiver input: L1/L2, P(Y) code (PPS), SAASM GB-GRAM
- Tracking: 12 parallel, dual-frequency channels with RAIM (Receiver Autonomous Integrity Monitoring)
- Crypto Key input: DS-102. Compatible with AN/PYQ-10, AN/CYZ-10, KYK-13
- Security: SAASM GB-GRAM GPS PPS receiver
- Antenna/preamplifier: L1 1574.42 MHz and L2 1227.60 MHz, 40 dB gain
- GPS time traceable to UTC (USNO)
- Accuracy: <50 ns RMS, 150 ns peak to peak to UTC, ≥4 satellites tracked.
- Maximum Belden 9104 cable length: 150' (45 m). For longer cable runs see Options.

MECHANICAL/ENVIRONMENTAL

- Size: 1.75" x 17" x 11.25" (4.5 cm x 43.2 cm x 28.6 cm) 1U rack mount
- Power: 100-240 VAC, 50-60 Hz, 25 watts (45 watts with Rb osc.),
- Operating temperature: 0°C to +50°C
- Storage temperature: -10°C to +70°C
- Humidity: To 95%, noncondensing
- Certifications: FCC, UL
- Server weight: 9 lbs (4.1 kgs), Shipping package: 16 lbs (7.3 kgs)

Front Panel

Display:	Sharp, high-resolution 32x256 dot-matrix vacuum-fluorescent. 1, 2 or 4 line.
Keypad:	0-9 numeric, up, down, left, right, ENTER, CLR, TIME, STATUS, MENU. Keypad lockout.
LEDs (tri-color green/red/orange)	
Sync:	Time reference status
Network:	Network connection status
NTP:	NTP activity
Alarm:	Fault condition
CV:	Crypto Variable Status
Serial:	DB9-F 9600, N, 8, 1
USB:	For back up, restore, and upgrade operations.
PLGR/DAGR:	DB15-M, Hot Start Port
Key Fill:	Crypto Key input. DS-102. Compatible with AN/PYQ-10, AN/CYZ-10, KYK-13. Black/red key support.
Button:	Zeroize crypto keys

Rear Panel

Network (4x):		1x RJ-45 10Base-T/100Base-TX/1000Base-T Gigabit Ethernet 3x RJ-45 10Base-T/100Base-TX Ethernet Speed/Duplex: Auto, 10/full/half, 100/full/half
Sysplex:		DB9-M RS-232
GPS:		BNC
IRIG in:	BNC	IRIG A/B/E/G/NASA36/XR3/2137/IEEE-1344 AM: Ratio 2:1 to 3.5:1, Amp: 1V to 8V p-p, Zin >5KΩ DCLS: <1.5 V for logic 0, >2.0 V for logic 1
IRIG out:	BNC	IRIG A/B/E/G/NASA36/XR3/2137/IEEE-1344 AM: Ratio 10:3, Amp: 3.5 ± 0.5 Vpp, Zout 50Ω DCLS: <0.8 V for logic 0, >2.4 V for logic 1, Zout 50Ω IRIG G AM: Ratio 10:3, Amp: 3.0±0.5 Vpp, Zout 50Ω DCLS: <0.8 V for logic 0, >2.4 V for logic 1, Zout 50Ω
1PPS-in:	BNC	Rising edge active, TTL into 270Ω
1PPS-out:	BNC	Rising edge on-time, TTL into 50Ω
10 MHz-in:	BNC	Sine wave or square wave, 1Vpp to 8Vpp, Zin >50KΩ
10 MHz-out:	BNC	Sine wave >2Vpp & <6Vpp into 50Ω Sine wave >4Vpp & <12Vpp no load
Power:		IEC 60320 C14 connector & power switch.
Relays:		2x, SPDT (Form C).

CLIENT SOFTWARE

Included with the S350 SAASM is Symmetricom's SymmTime NTP client for Windows. See Options for comprehensive software solution.

PRODUCT INCLUDES

S350 SAASM Network Time Server, L1/L2 GPS antenna (ordered separately at no extra charge), 50' (15 m) Belden 9104 coaxial cable, 1 ft. antenna mounting mast (30 cm) with two clamps, category 5 patch cable, DB9-M to DB9-F RS-232 extension cable, manual, SymmTime NTP client for Windows, Enterprise MIB software, power cord, and rack mount ear kit. Two-year warranty.

OPTIONS

- Rubidium or OCXO oscillator upgrade for extended holdover
- ±40-60 Vdc power supply
- GPS antenna in-line amplifier for cable runs to 300' (90 m)
- Lightning arrestor
- Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network.
- NTP Network Time Displays, 2" or 4" (5 cm or 10 cm), 6 digit, red LEDs

Rear View

Front View

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SYMMETRICOM GLOBAL SERVICES • Toll free in the USA: 1-888-367-7966 • Worldwide: +1.408.428.7907 • Global e-mail: support@symmetricom.com

SyncServer Options

For customizing the:
SyncServer S200
SyncServer S250
SyncServer S250i
SyncServer S300
SyncServer S350
SyncServer S300 SAASM
SyncServer S350 SAASM

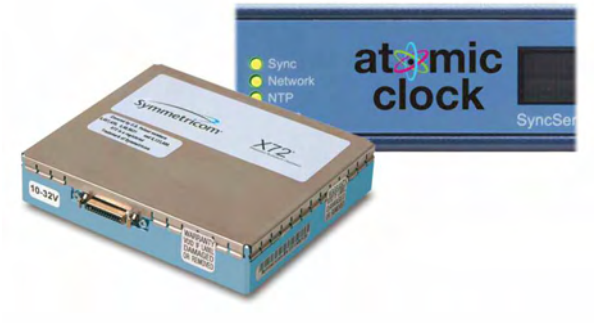
OPTIONS

- Rubidium Atomic Oscillator
- Oven Controlled Crystal Oscillator (OCXO)
- Low Frequency Radio
- Window Mounted GPS Antenna
- 48 Vdc Power Supply
- Network Time Displays
- Synchronization Software
- Inline GPS Signal Amplifier
- Lightning Arrestor
- GPS Antenna Cable Splitter
- GPS Down/Up Converter for Long Cable Runs
- T1/E1 Input/Output

Symmetricom makes it easy to configure the SyncServer S200/S250/S300/S350 to meet your specific application needs with a variety of hardware and software options. Whether your application requires specific NTP stratum behaviors controllable using oscillator upgrades, different GPS antenna solutions, or a variety of other useful options, we have a good solution for you.

Not sure how to achieve what you want? Simply call Symmetricom's network timing experts. For more than 30 years Symmetricom has defined premium time and synchronization solutions. Put our expertise to work for you.

Rubidium Atomic Oscillator



Rubidium atomic clock oscillator upgrades improve holdover accuracy and saves you valuable time. The standard SyncServer is equipped with a temperature compensated crystal oscillator (TCXO) that keeps the server accurate to nanoseconds when tracking GPS. However, if the GPS signal is lost, thereby placing the server in holdover, the TCXO will soon drift away from perfect. Upgrading the oscillator improves the holdover accuracy significantly.

Rubidium holdover accuracy is 3 to 25 microseconds per day. The value of the upgraded oscillator is that if the GPS signal is lost the SyncServer can continue to serve very accurate NTP time. This provides IT staff plenty of time to correct the problem with no degradation or disruption in network time synchronization accuracy.

Oven Controlled Crystal Oscillator (OCXO)

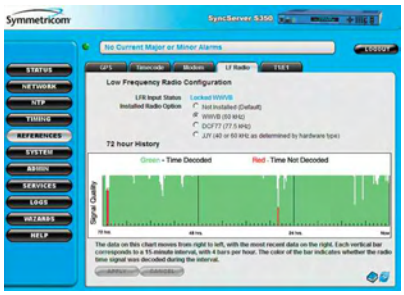
The Ovenized Crystal Oscillator (OCXO) upgrade improves holdover accuracy. By keeping the crystal oscillator at a fixed temperature, if the GPS signal is lost, thereby placing the server in holdover, the OCXO reduces clock the drift.

OCXO holdover accuracy is about 1 millisecond per day. The value of the upgraded oscillator is that if the GPS signal is lost the SyncServer can continue to serve accurate NTP time for several days. This provides some time to correct the problem with minimal degradation or disruption in network time synchronization accuracy.

National Low Frequency Radio Time Broadcast Receiver

National time authorities in the United States, Japan and Europe broadcast accurate time via AM radio signals that are traceable to the national time standard. All SyncServer S300/S350 time servers are equipped to synchronize to these broadcasts via optional radio antennas.

The Symmetricom Low Frequency Radio Option (LFR) is a useful back-up time reference to GPS and also provides a legally traceable path to a national time standard. The LFR can also be used as an alternative to GPS if GPS is not a viable option.



The LF Radio web page in the S300/S350 provides AM signal availability and decoding information for a rolling 72 hour period.

The AM signals travel via ground waves and sky waves and signal strength varies with distance from the transmitter and time of day. Generally the signals are available 24 hours a day. However, inside some structures and great distances from the transmitter the signal may be available only at night or not at all.

Accuracy: <50 milliseconds to UTC (<20 ms typical).

Option includes antenna, 50' (15 m) cable & mount. Maximum cable length is 500' (150 m).

Click links for approximate signal strength for your location:
US: WWVB Europe: DCF77 Japan: JJY

48 Vdc Power Supply

The 48 Vdc equipped SyncServers are supplied with primary and secondary 48 Vdc inputs to accommodate inputs from alternate DC power sources. Using diode switching, the polarity of the inputs can be different such as plus-plus, plus-minus, minus-plus, or minus-minus. Specifications are 40-60 Vdc, 50 watts maximum, 1.5 amps. Isolation: Ground input is fully floating. Either input polarity may be strapped to Chassis ground at the input terminal block.

SyncServers are sold as AC or DC models. Specify at the time of order the power supply configuration of choice. All SyncServer options are compatible with either AC or DC models.

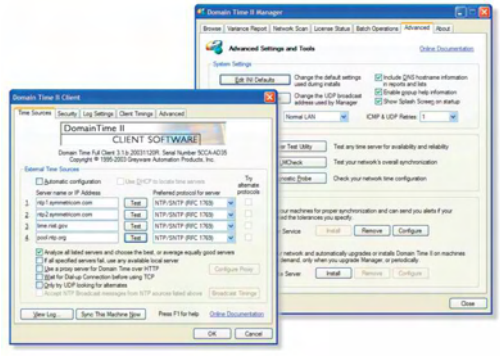
T1/E1 Input/Output

A T1/E1 frequency reference can be a useful, seamless back-up if GPS or other reference is lost. The S350 automatically detects and tracks an attached T1 or E1 signal (MHz or Mbps) and is ready to smoothly synchronize to it if a higher priority signal is lost.

The T1 output (1.544 Mbps) has ESF framing and B8ZS line coding enabled at 100 ohms. The E1 output (2.048 Mbps) has FAS framing and CRC-4 multiframe with HDB3 line coding enabled. AIS may be manually selected for either output. Signals cannot be mixed, T1 in and E1 out for example. T1/E1 output is provided only while tracking GPS.

Signal input/output is via the D9 connector with wire wrap or BNC adapters optionally available. The SyncServer S350 T1/E1 option requires the OCXO or Rubidium oscillator to meet the G.811 MTIE specification.

Synchronization Software



Network time synchronization software is an essential part of distributing time to synchronize the network. Symmetricom's Domain Time II is a comprehensive software solution that simplifies network time synchronization. Versatile time clients and software servers keep the network hierarchy synchronized to a master clock such as the SyncServers. Easy to use management tools simplify and automate many tasks related to keeping these clients up-to-date. Monitoring functions track the synchronization across the network and notify you of any problems. The result is a reliable time synchronization system that requires little management overhead and offers tremendous value to the integrity of network operations and applications.

Please click here for full details and the datasheet sheet.

Network Time Displays

Symmetricom's Network Time Displays are maintenance free clocks that keep accurate time by synchronizing their time—over the network—to a network time server. These clocks use existing Ethernet network infrastructure and the standard network time protocol (NTP) to keep the time correct. Display formats include 12 or 24 hour format as well as daylight savings time transitions so that the display should never need the time adjusted. All displays are available with either Standard AC power and Ethernet connections or a combined Power-over-Ethernet connection (PoE).

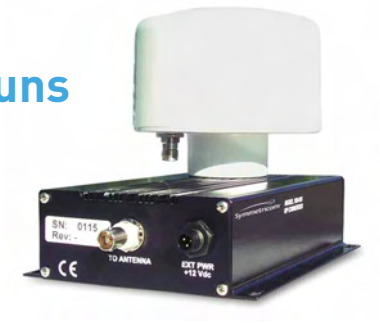
Automatic network address configuration via DHCP coupled with display discovery and remote management software makes for easy and complete configuration and control of the displays over the network from a single PC.

Please click here for full details and the datasheet sheet.

GPS Antenna Cable Accessories

Antenna cable accessories enable versatile solutions that are simple to achieve. Inline GPS amplifiers are an easy way to extend cable runs from 150 feet (45 meters) to 300 feet (90 meters). Lightning arrestors provide valuable electrical shock protection to the SyncServer. Antenna cable splitters leverage a single antenna and cable between two GPS equipped time servers.

GPS Down/Up Converter for Long Cable Runs



GPS signal down/up conversion is required when signal losses in the antenna cable limit the distance between the receiver and the antenna assembly. Signal strengths and noise immunity as well as the cost benefits over the use of low loss cable and amplifiers are the main advantages of using the Antenna Down/Up Converter assembly.

The down converter antenna and up converter unit replace the standard L1 GPS antenna. The signal output from the converter is L1 C/A code that can be decoded by any L1 GPS receiver. Cable lengths of up to 1500 feet (457 meters) are supported.

Please click here for full details.

Window Antenna Option

SyncServers can track GPS satellites through a window and still maintain accurate time. Depending on user entered position accuracy; time accurate to 5 microseconds to UTC is possible from tracking a single intermittent GPS satellite. A position accurate to 1 km provides accuracy to 100 microseconds.

This option includes a Window Antenna with suction cup, a 6 foot (2 meter) cable, and a BNC-to-TNC adapter to connect to the standard antenna/cable that ships with SyncServers.

No special GPS receiver software upgrade is required. Compatible with all SyncServer standard antenna accessories. Use in place of standard GPS roof antenna that ships with all GPS equipped models.

Note: some window glazing blocks the GPS signals preventing the SyncServer from tracking GPS.

Option Availability Matrix

	S200	S250i	S250	S300	S350
Rubidium Upgrade	•	•	•	•	•
OCXO Upgrade	•	•	•	•	•
40-60 Vdc Power Supply	•	•	•	•	•
Time Displays	•	•	•	•	•
Synchronization Software	•	•	•	•	•
Window Antenna*	•		•	•	•
GPS Down Up Converter*	•		•	•	•
GPS Antenna Cable Accessories	•		•	•	•
Low Frequency Radio*				•	•
T1/E1 Input/Output*					•

*Not available on SAASM models

NTS-150

GPS Network Time Server

KEY FEATURES

- Stratum 1 Network Time Server
- 10/100Base-T Autosensing Ethernet Interface
- Synchronize Thousands of Clients
- 12 Channel GPS Receiver
- Single Satellite Timing Mode
- NTP Broadcast Mode
- SymmTime NTP Client Software
- SNMP Enterprise MIB
- MD5 Security Protocol
- Upgradable Flash Memory
- Robust Chassis Design
- Telnet Remote Control
- Optional Time Display
- Two-Year Warranty

KEY BENEFITS

- Improve Network Log File Accuracy to Speed Network Fault Diagnosis and Forensics
- Accurately Synchronize Mission Critical Network Operations and Applications
- Cost-Effective Solution to Synchronize The Workstations, Servers, Routers, etc. on a Network
- Reliable and Secure Time is Acquired From Atomic Clocks Aboard the Global Positioning System (GPS) Satellites
- Window or Roof Mounted GPS Antenna Choices for Easy Installation
- Thousands of Client Computer Clocks Can Be Synchronized Typically to Within 1 to 2 Milliseconds (typical)
- Easy to Install Server Appliance

Symmetricom's Stratum 1 level NTS-150™ derives accurate time directly from the atomic clocks aboard the GPS satellite system. By using an integrated, 12-channel GPS receiver, every visible satellite can be tracked and used to maintain accurate and reliable time. Even in urban canyon environments where satellite visibility can be limited, the automatic, single satellite tracking mode provides accurate time from as few as one intermittent satellite and can also track satellites using a window mounted antenna. A GPS antenna and cable is included.

The near plug-and-play operation of the quality rack mount unit with an autosensing, high bandwidth 10/100Base-T interface makes installation quick and ongoing maintenance and support costs virtually nonexistent. The high reliability of the NTS-150 is backed by Symmetricom's long-standing experience building dedicated network time servers.

The NTS-150 Network Time Server supports a wide variety of time and network protocols to seamlessly integrate into your network. SNMP with MIB II support offers a standard interface for network management systems. MD5 security protocol is included to authenticate NTP client-server communication. FTP is supported for easy firmware upgrades.

A comprehensive RS-232/telnet command set provides versatile control of the NTS-150. An intuitive, Windows®-based start-up program is provided to quickly configure the NTS-150 for immediate use on your network. Telnet is supported for remote status and control over the network. The optional UTC time display shows full date information to the second for visual reference.

Symmetricom also offers the full featured SyncServer® S200 and S300 network time servers. These industry leading time servers include multiple NTP ports, an easy to use web interface, front panel keypad, high resolution front panel displays, and many more features. Upgrades to OCXO or Rubidium oscillators for extended holdover are also available. If advanced timing functions are required, the SyncServer S250 and S350 provide multiple input and output timing signals.

NTS-150 GPS Network Time Server with and without time display

NTS-150 SPECIFICATIONS

NETWORK PROTOCOLS

NTP v2, v3 & v4
NTP broadcast mode
SNTP Simple Network Time Protocol
TIME (RFC 868)
DAYTIME (RFC 867)
MD5 Authentication (RFC 1321)
Telnet (RFC 859)
FTP (RFC 959)
SNMP (RFC 1157)
MIB II (RFC 1213)
DHCP (RFC 2132)

INPUT/OUTPUT CONNECTIONS

- Network: 10/100Base-T Ethernet autosensing; RJ-45
- Serial: Bi-directional RS-232, 9600, N, 8, 1; 9-pin D

SERVER PERFORMANCE

- 40 NTP requests per second while maintaining accuracy associated with the GPS reference time source. The accuracy is inclusive of all NTP packet delays in and out of the time server as measured at the network interface. Client synchronization accuracy to server on a LAN is 1 - 2 milliseconds (typical). The NTS-150 can support an estimated 16,000 NTP clients. Stratum 1 via GPS: Overall time stamp accuracy of 72 microseconds to UTC with a variation of less than 600 microseconds typical.

MANAGEMENT/USER INTERFACE

- RS-232: Local terminal access for status and control
- Telnet: Full status and control, password protected
- Simple Network Management Protocol (SNMP): Provides the network administrator with the NTP time server protocol status; network status, statistics and Management Information Base (MIB) II.
- FTP: System software upgrades are possible via FTP to flash memory
- Status LED: Tri-color LED indicates normal operation and major and minor alarms
- Activity LED: Bi-color LED indicates 100Base-T, 10Base-T, or no connection
- Optional UTC time display: 2 line, 32 character backlit LCD

GPS RECEIVER/ANTENNA

- 12 channel parallel receiver
- Minimum satellites for time: 1 intermittently
- GPS time traceable to UTC (USNO)
- Accuracy <1 microsecond to UTC. Network factors can reduce client synchronization accuracy 1-2 ms (typical).
- Includes 12 V L1 GPS antenna (window or roof mount) with 50' (15 m) of Belden 9104 coaxial cable
- Maximum Belden 9104 cable length: 150' (45 m). For longer cable runs see Options.

MECHANICAL/ENVIRONMENTAL

- Size: 1.73" x 17" x 10.63" (4.4 cm x 43.2 cm x 27 cm) 1U rack mount
- Power: 100-240 Vac, 47 to 440 Hz, <20 watts
- Operating temperature: 0°C to +50°C
- Storage temperature: -50°C to +85°C
- Humidity: to 95%, noncondensing
- Certifications: FCC, CE, UL, PSE

CLIENT SOFTWARE

- An NTP client/daemon is required for client-side synchronization with any network time server, including the NTS-150. Included with the NTS-150 is Symmetricom's SymmTime™ NTP client for Windows® 95/98/NT/2000/XP. Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network is also available.

PRODUCT INCLUDES

- NTS-150 Network Time Server, two-year warranty, L1 GPS antenna (window or roof mount – specify at time of order), 50' (15 m) Belden 9104 coaxial cable, category 5 patch cable, manual, SymmTime NTP client for Windows 95/98/NT/2000/XP, Enterprise MIB software, Windows-based start-up program, power cord, and rack mount ear kit. (Roof mount antenna includes a 1' (30 cm) mounting mast and two clamps.)

OPTIONS

- Optional UTC time display
- -48Vdc Power supply
- Extended cable lengths
- GPS antenna in-line amplifier for cable runs to 300' (90 m)
- GPS antenna down/up converter for cable runs to 1500' (457 m)
- Lightning arrestor
- GPS Antenna splitter kit
- Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network is also available.
- NTP Network Time Displays, 2" or 4" (5 cm or 10 cm), 6 digit, red LEDs

Domain Time II

Time Synchronization Software Suite

Precise Time Synchronization for the Entire Enterprise

KEY FEATURES

- Comprehensive Time Client, Server & Management Software for Precise Time Synchronization Across the Network
- Install, Update, Configure, Monitor, and Troubleshoot All Time Clients From a Single Workstation.
- Adaptable Time Hierarchy Automatically Adjusts to Changes in the Network Assuring Clients Access to the Correct Time
- Detailed Event Logging for Time Auditing Purposes
- 64-bit and VISTA Support

KEY BENEFITS

- Precisely Time Synchronize Mission Critical Network Operations and Applications
- Monitor Network Synchronization and Be Alerted When Synchronization is Outside Your Specifications
- Hold Network Time Accuracy Within Specified Limits
- Ensure Accurate Time on All Network Clients
- Reduce or Eliminate Costs Involved in Installing and Managing Time Synchronization Across a Network
- Manage Time Synchronization on Both Large and Small Networks Just as Easily
- Improve Network Log File Accuracy to Speed Network Diagnosis and Forensics

Accurate network time synchronization is critical for network log file accuracy, billing systems, electronic transactions, database integrity, software development, and many more essential applications in today's corporate enterprise. Symmetricom's Domain Time™ II software in combination with a GPS referenced network time server delivers the only comprehensive network time synchronization solution available today.

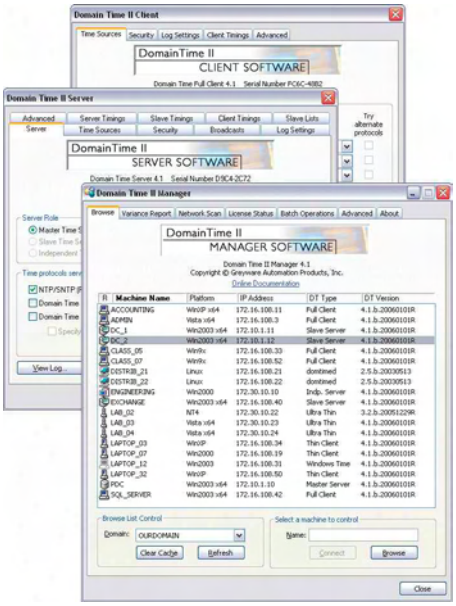
Domain Time II is a comprehensive software solution that simplifies time synchronization across the network. Versatile time clients and software servers keep the network hierarchy synchronized to a GPS referenced network time server. Easy to use management tools simplify and automate many tasks related to keeping these clients up-to-date. Monitoring functions track the synchronization across the network and notify you of any problems. The result is a reliable time synchronization system that requires little management overhead and offers tremendous value to the integrity of network operations and applications.

Domain Time II's management tools enable complete control of your entire network time hierarchy from a single workstation. You can install, update, configure, monitor time synchronization and troubleshoot, and track Domain Time II components enterprise-wide. This eliminates the costs involved in manually installing and maintaining time software on large numbers of machines distributed across the network.

Precise delivery of time is made possible through high-precision time protocols, time-source averaging, clock training, slewing, target seeking, and an efficient time cascade update hierarchy. On large networks the software servers automatically take over for each other when one becomes unavailable, and clients automatically find alternate servers if there's a failure. Time components can also be set manually for multiple levels of fallback time sources.

Domain Time II tracks multiple types of data that verify exactly who synchronized from whom, when, and what the actual adjustments were.

There is also built-in protection against malicious or inadvertent tampering with the time on your network – with a combination of active and passive defenses.



Domain Time II Software Suite for Network Timing

DOMAIN TIME II SPECIFICATIONS

DOMAIN TIME II CLIENTS

- Full Client: The Full Client lets you specify time sources, proxies, protocols, and clock accuracy settings. It runs as a background service which eliminates the need to set the time using a batch command or requiring the logged-in user to have time change rights on NT/2000 machines. Any desired custom parameter can be set manually using its Control Panel applet, or the client can be set for fully automatic operation.
- Thin Client: The Thin Client is a completely automatic time client. It is approximately half the size of the Full Client and has no configuration options. It is optimized for a small footprint and extremely low system overhead.
- Ultra Thin Client: The Ultra Thin Client is a broadcast-listener time client. It runs as a background service and has no configuration options. It is designed to be an extremely low overhead, high-accuracy service that synchronizes directly with any NTP broadcast server.
- DTSET command-line client: DTSET is a multi-protocol time client that can be run manually, from an icon, or in a batch file. Choose this client when you only want to synchronize time manually or in scripts.

DOMAIN TIME II SERVER

- The Domain Time II Server is a background service that obtains the correct time from a trusted time source, such as a GPS referenced network time server, and then immediately maintains the correct time on all machines on the network. Domain Time II Server supports multiple time protocols for the highest compatibility with all time sources and clients.

DOMAIN TIME II MANAGEMENT TOOLS

- Domain Time II Manager remotely installs or updates Domain Time components from a central workstation. It also provides software license information, time variance reports, and remote configuration of Domain Time II components. The monitor function tracks the status of your clocks system-wide and sends alerts if any monitored system is out of sync. The many automated/background features save a great deal of time in managing the installation and monitoring of the time clients.

DOCUMENTATION

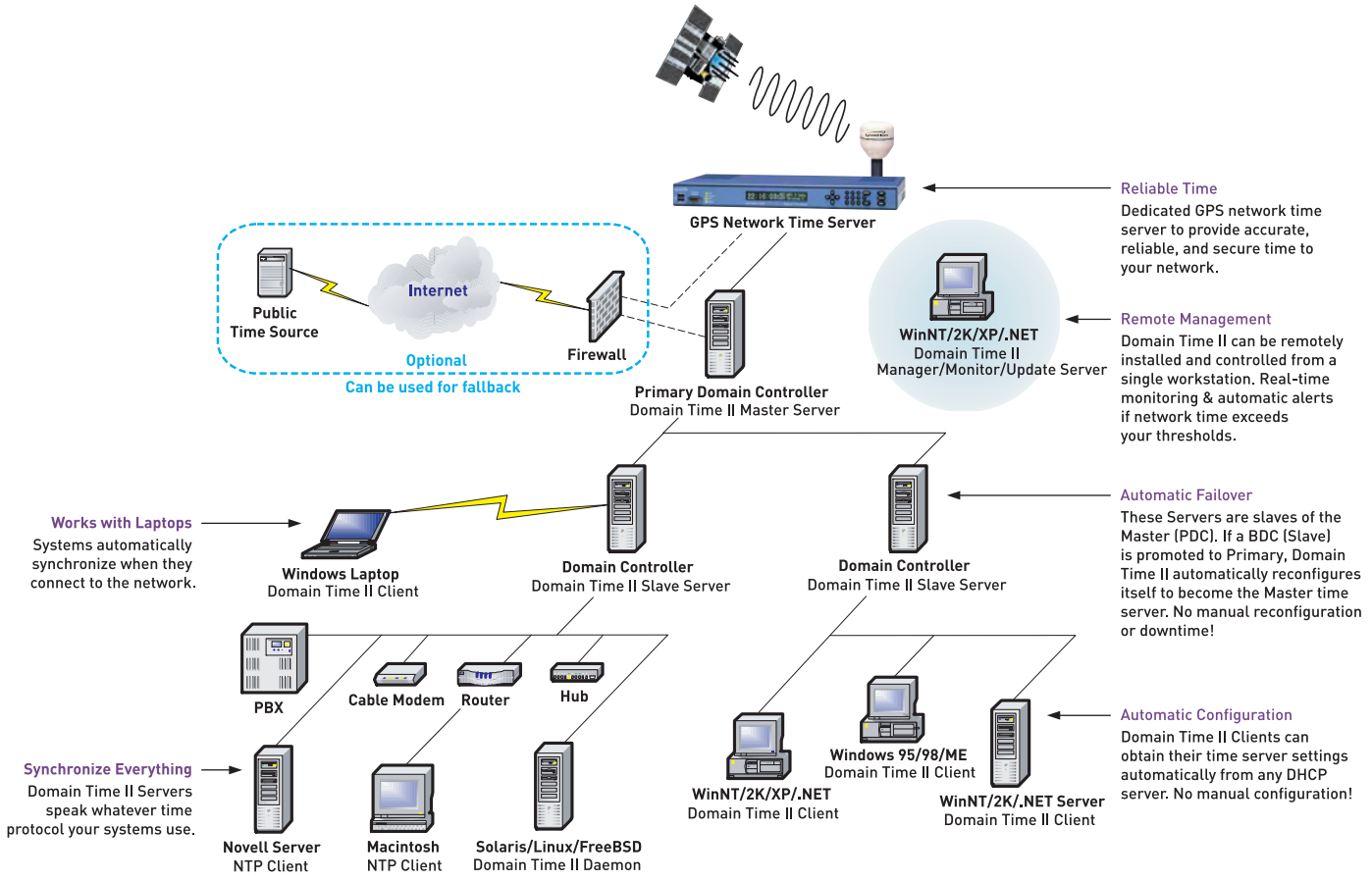
- All documentation is online at http://dtdocs.ntp-systems.com

SYSTEM REQUIREMENTS

• Clients:	(Full, Thin, and DTSET Command-line) 32-bit Windows 95/98/ME/NT[1]/2K/XP/2K3/Vista
	64-bit Windows XP/2K3/Vista[2]
	v.2.5 Clients also available for Solaris 7/8 (Sparc or x86, 32-bit), Linux RedHat, Mandrake, SuSE, TurboLinux, Debian/Stormix (x86, 32-bit), FreeBSD (x86, 32-bit)
• Server:	32-bit Windows NT[1]/2K/XP/2K3/Vista
	64-bit Windows XP/2K3/Vista[2]
• Management tools:	32-bit Windows NT[1]/2K/XP/2K3/Vista
	64-bit Windows XP/2K3/Vista[2]

[1] Current version supported for NT on Intel only. v.3.2 available for NT on Alpha.

[2] Native 64-bit support for x64 (AMD64 or Intel EM64T processors)



Audit Server for Domain Time II

Verifiable Audit Trail of the Time Synchronization of Your Network

KEY FEATURES

- Automatically Audit the Time on Your Network
- Clear, Indisputable Records
- Generate Alerts if Time or Audit Period Exceeds Specified Tolerances
- Integrates Perfectly with DomainTime II Time Synchronization Software Suite
- Integrates with Existing Network Management Programs
- 64-bit and VISTA Support

KEY BENEFITS

- Complete Records of Time Synchronization Accuracy of the Computers on Your Network
- Know When a Machine was Last Synchronized, with What Time Source, as Well as its Variance from the Reference Time Source
- Peace of Mind From an Automatic Software System Routinely Auditing Time on Your Network
- Know That You Will be Notified if Time or Audit Period is Out of Tolerance
- Cross Check Network Time with Independent Time Sources for Historical Validation

Audit Server is a software system designed to work in conjunction with Domain Time II time synchronization software components to provide a secure, verifiable audit trail of the time synchronization of your network. It automatically provides the clear, indisputable records you need to easily resolve any contested timestamp issue that may arise.

Federal regulatory agencies as well as major securities organizations like NASDAQ with their OATS (Order Audit Trail System) already require this type of audit collection to prevent fraud and to establish the validity of transactions. Audit Server meets or exceeds such requirements and makes it painless to comply with the regulations.

The records collected by Audit Server include complete information to allow auditors to determine precisely when a machine was last synchronized, with what time source, as well as its variance from the reference time source.

Audited Time is being able to prove conclusively (on demand) whether the time on any monitored system was correctly synchronized at a particular time and date with a specified time source.

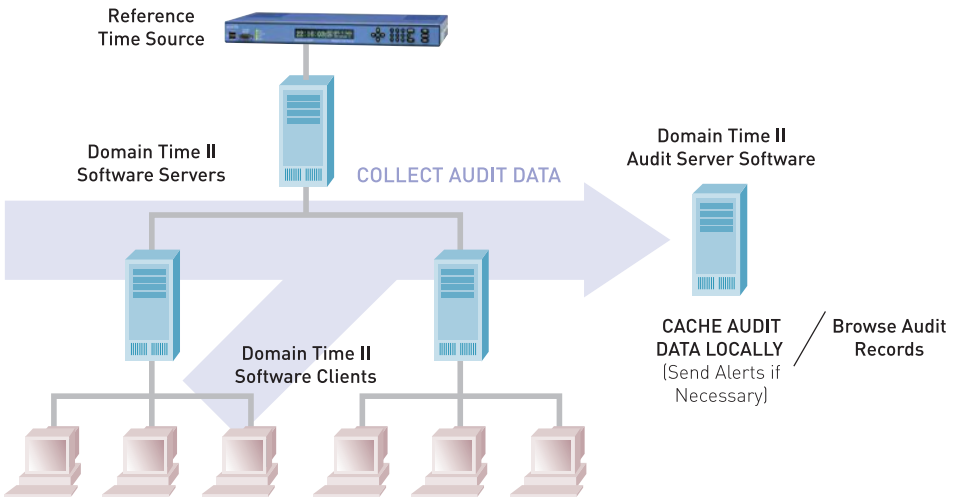


FIG. 1 Audit Server gathers data from Domain Time II clients and servers, generates alerts if necessary, and makes audit records available for browsing and archiving.

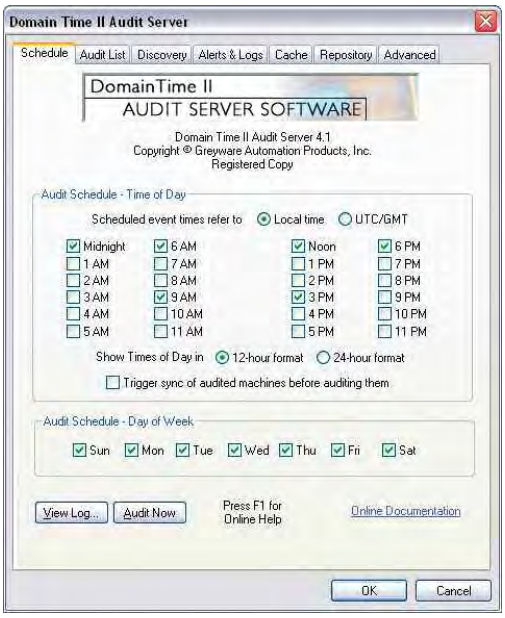


FIG. 2 Specify the schedule when you want Audit Server to audit your network time synchronization.

Audit Server uses the built-in time synchronization and data collection capabilities of the Domain Time II time synchronization products (Domain Time II Server and Clients) to construct and maintain a verifiable and secure audit trail indicating when the clock on a machine was last synchronized. Domain Time II components all work together to easily and automatically provide Audited Time on your network with minimal intervention on your part.

TO SUCCESSFULLY PROVIDE AUDITED TIME...

- *Monitored machines must be able to be reliably and individually identified*
- *Time on individual machines must be synchronized regularly and accurately with a known time source*
- *Vital information such as when the local clock was last adjusted and with what time source must be easily retrievable*
- *Sync information must be collected regularly and compiled into concise and complete audit records*

IDENTIFYING MONITORED MACHINES

All Domain Time II Server and Client services are individually identified using a unique serial number that is assigned when the Domain Time software is installed. Even if the IP address or name of the machine changes, the audit records will clearly identify the machine running that particular instance of Domain Time II.

ACCURATE AND RELIABLE NETWORK SYNCHRONIZATION

A Domain Time II Server connects securely to a trusted network time source such as a Symmetricom dedicated GPS referenced network time server, and then distributes that time accurately and verifiably to every time-aware machine on the network using the Domain Time II time distribution system.

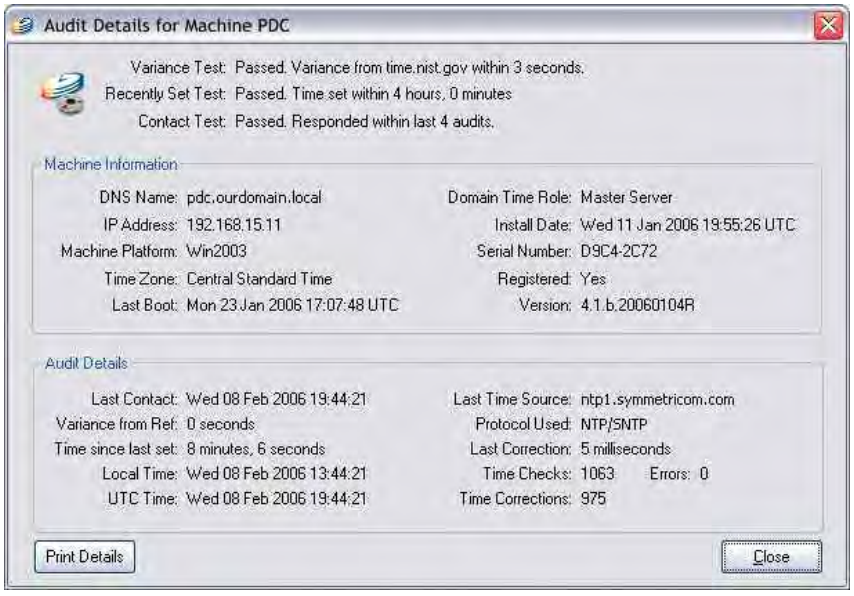


FIG. 3 Sample of the information contained in an individual audit record.

In addition, Domain Time II components have a function called Clock Change Monitor that prevents users from manually changing the time on machines to falsify records. Domain Time II also has sophisticated security features to ensure that the entire system time is correct, including protection from rogue time servers, Denial-of-Service attacks, and more.

RETRIEVAL OF VITAL TIME SYNC INFORMATION

Domain Time Servers and Client services keep detailed internal statistics on their operation which is regularly queried by Audit Server. The statistics include such information as the name/IP address and time of the last time source used for synchronization, the amount of correction to the local clock that was made, the protocol used to set the time, etc. Statistics are regularly retrieved from clients and servers using the Domain Time II protocol, which allows for efficient transfer of the information to the Audit Server, with a very small amount of traffic. This means that the audit process is very low-overhead and has minimal impact on the network.

Audit Server can also obtain the current time from an NTP time source at the time an audit occurs. This allows the audit record to include at least basic information from any NTP machines (such as a GPS based network time server or router) that may also be involved in providing time to the network. This also can serve as a time cross check and historical validation if you also monitor an official public time source.

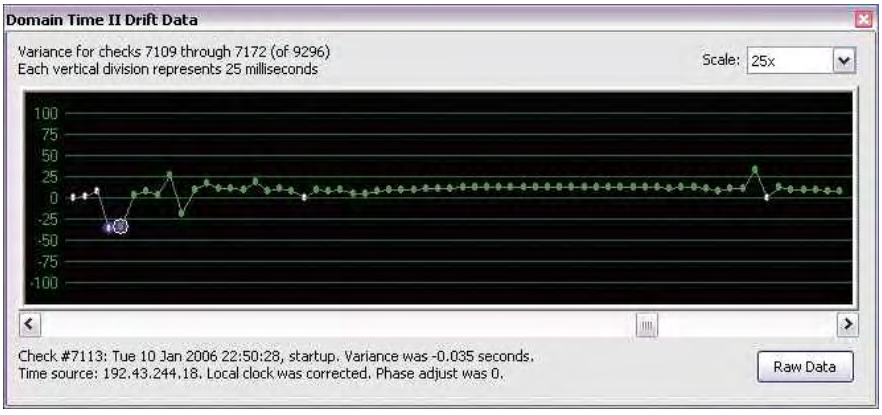


FIG. 4 Numeric log data can also be viewed graphically as well as in text form to analyze time drift data.

REGULAR COLLECTION OF AUDIT RECORDS

The Audit Server automatically contacts Domain Time II Servers and Clients (and any specified NTP servers) to collect their audit data on a schedule you specify. This information is compiled into compact record files that include all relevant information about each monitored system. Each record is optimized to minimize the amount of disk space used to retain the records. The Audit Record Viewer allows you to view the data in an easy-to-read format, and to extract the data to text files in a summary or full-detail form.

AUTOMATIC ERROR NOTIFICATION

Audit Server verifies that machines you have selected to be audited are actually having their time set and that they are responding to the audits. If any machine fails to be synchronized within your desired tolerance, or if a machine misses more audits than your specified maximum error limit, an email alert is automatically generated so that the problem can be addressed immediately.

INTEGRATION WITH EXISTING NETWORK MANAGEMENT SYSTEMS

Audit Server can create a special summary log of audit records each day if you are using your own log file collection and analysis program and need the audit record information to appear in a particular format to be imported correctly. This allows Audit Server to do its work yet you can continue to use your preferred network management system to monitor the network.

DOCUMENTATION

- All documentation is online at http://dtdocs.ntp-systems.com

SYSTEM REQUIREMENTS

- Requires Domain Time II Server and Clients (version 4.1 or later) to be installed.
- Windows NT/2K/XP/2003Vista*

* Native 64-bit support for XP/2003/Vista on AMD64 or Intel EM64T (x64) processors. (no Intel Itanium support)

Time Server Express Loaner Service

Minimize Time Synchronization Interruptions to Your IT Enterprise in the Event of Failure

KEY FEATURES

- Network Time Server Sent Overnight as Loaner for a Failed Unit
- Free Shipping for all Repair Related Shipments
- A Single Phone Call Initiates the Express Loaner Service
- Symmetricom-supplied Packaging and Preprinted Shipping Labels and Paperwork Save Time in Returning Units
- One Year Free Extended Warranty Coverage if a 3-year Express Loaner Service Contract is Purchased With the New Server (a Great Complement to the 2-year Standard Warranty)

KEY BENEFITS

- Minimize Time Synchronization Interruptions on Your Network
- Assure Maximum IT Enterprise Network Uptime in the Event of Network Time Server Failure
- Peace of Mind That a Single Phone Call Initiates the Express Loaner Service
- Easy Shipping of Servers That Saves Both Time and Money
- Hassle-free Time Server Management

Symmetricom's network time servers are the most reliable in the world. However, electronic components have been known to fail — and when this occurs with a network time server, the time synchronization continuity of an IT network enterprise is at risk.

Symmetricom's Express Loaner Service is our answer to supporting maximum uptime for your enterprise. Simply put, the Express Loaner Service will ship a loaner network time server overnight to your location in the event your time server fails.

HOW IT WORKS

Here is how simple it is to get back on synchronized time once you sign up with a 1 to 3 year Express Loaner contract.

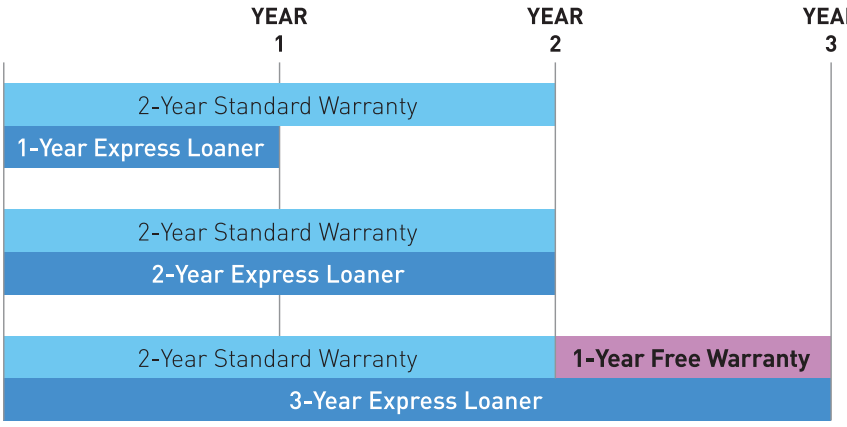
Place a call to Symmetricom Global Services. Tell them the model of your Symmetricom time server. Symmetricom Global Services will ship that model overnight to your specified location. Once delivered, you install it. We'll will be on hand by phone if you need help with the installation.

Included with the Express Loaner are completed shipping documents that will let you ship back the failed unit to Symmetricom's repair facility. Just place your failed unit in the shipping box, attach the label, and send it off. We pay all the freight charges.

Once your unit is repaired (usually in less than 30 days) we will ship it back to you. Included with this shipment is a return shipping label to make it easy for you to return the Express Loaner. Just place the Express Loaner in the shipping box, attach the label and send it off. Naturally, we pay the freight charge. It couldn't be easier.

DELIVERY TIME

Our goal is to have your loaner arrive within 24 hours of your request. However, in order to meet this goal, requests for the Express Loaners must be received by noon Pacific Time on a business day. RMAs issued by noon for Express Loaners will receive our best effort to be shipped to arrive the next business day at your location.



The Express Loaner Service is an excellent complement to the 2-year Standard Warranty. The 3-year Express Loaner contract includes one year of Extended Warranty coverage at no extra charge when purchased with a new time server.