SyncServer® S100
GPS Network Time Server

Key Features
- High-bandwidth NTP Time Server
- Stratum 1 operation via GPS satellites
- 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
- Single satellite timing
- Dual USB ports
- Two-year warranty
- Rubidium oscillator upgrade

Key Benefits
- Synchronize thousands of client, server and workstation clocks
- Very reliable 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
- Intuitive web interface for easy control and maintenance
- IPv6 compliance futureproofs your network

The SyncServer® S100 GPS Network Time Server synchronizes clocks on servers for small and medium sized 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 S100 is an easy to configure and maintain network time server. Configuration of the server is via the intuitive web interface. This very popular and 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 S100 provides reliable network synchronization technology by combining high capacity NTP responsiveness 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 Stratum 1 level S100 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 S100 can automatically revert to a Stratum 2 mode and retrieve time from other user designated time servers. Another option is that the S100 can be upgraded to an internal Rubidium atomic oscillator that keeps the S100 accurate to 25 microseconds per day.
SyncServer® S100

S100 NETWORKING EXCELLENCE

NTP Performance
The S100 10/100Base-T Ethernet port is connected to a high-speed microprocessor and a 50 nanosecond accurate clock to assure high bandwidth NTP performance. This more than meets the need of servicing 3200 NTP requests per second while maintaining microsecond caliber timestamp accuracy.

Extensive Protocol Support for Easy Network Integration and Management
All of the expected network management and monitoring protocols are standard in the S100. Secure access protocols such as SSH, SSL, HTTPS, along with legacy protocols such as DHCP and Telnet are included to provide you a choice in server management. SNMP v3 with a custom MIB allows you to automatically monitor the S100 and be advised of any important status changes. Any of these protocols can be quickly and easily disabled via the web based management interface.

Futureproof Your Network
The S100 supports both IPv4 and IPv6. This means your S100 can scale with your network operations and provide value for many years to come.

Automatic Software Upgrade Availability Notification
The S100 can periodically check the Symmetricom® web site for newer versions of firmware. If a newer version is available, an informational SNMP trap is sent along with a status message in the web interface.

Built-in Help System
The complete S100 manual is built into the web interface. The manual opens in a separate browser window. It is organized to match the control buttons and tabs so that information is quickly and easily found. On most pages there is link directly to the manual page for that panel. In addition there are context sensitive rollover descriptors of various features and tabs on any given panel.

Point & Click Software Upgrades
Upgrading the firmware in the S100 is easy. Just browse to identify the firmware file and click the upload button. It is just as simple to backup and restore the server configuration files. This intuitive approach simplifies server management.

Time Server Log Files
A running log of activity and server configuration changes is maintained for later reference.

S100 FULL-FEATURED WEB INTERFACE

Intuitive, Easy-to-Use and Secure
The S100 is designed to have the web interface be the primary status and control console. It is organized in to logical groupings such as Status, Network, Timing, etc. The tabbed panels offer easy exploration of features and easy configuration of the server. Typical web interface conventions are followed so that operation is quickly mastered. Server access is password protected, with optional SSL encryption for added security.

Best Practices
- Two time servers provide redundant time source protection for time clients.
- Peering between time servers assures time continuity to time clients if GPS is not available.
- Always configure time clients to reference at least two time servers.
Best Practices

- Remember that accurate synchronization is directly related to how often the time clients update their time from the time server.
- Peering with other time servers is easy and provides a redundant source of time as a fallback.
- The optional Rubidium oscillator keeps the S100 extremely accurate while serving NTP in the event GPS service is interrupted.
SyncServer® S100

Specifications

**NETWORK PROTOCOLS**
- NTP (v2 - RFC1319, v3 - RFC1305, v4 - RFC5905)
- 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]
- IPv4
- IPv6

Key management protocols can be individually disabled.

**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. NTP request handling capacity remains the same regardless of stratum level.
- **Holdover Accuracy**
  - TCXO (standard): 21 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, 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.
- GPS antenna down/up converter for cable runs to 1500' (457 m)
- GPS antenna in-line amplifier for cable runs to 300' (90 m)
- Window mounted antenna
- Rubidium oscillator upgrade for extended holdover

**OPTIONS**
- Lightning arrestor
- GPS antenna in-line amplifier for cable runs to 300' (90 m)
- GPS antenna down/up converter for cable runs to 1500' (457 m)
- Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network is also available.
- IEEE 1588 / PTP see SyncServer S300 or S350

**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
- **Storage temperature:** -10°C to +70°C
- **Humidity:** 95%, noncondensing
- **Certifications:** FCC, CE (RoHS), UL, PSE, China RoHS
- **Server weight alone:** 6.7 lbs (3.0 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 S100. Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network is available.

**PRODUCT INCLUDES**
- S100 Network Time Server, 1 ft. antenna mounting mast (30 cm) with two clamps, category 5 patch cable, DB9-M to DB9-F RS-232 extension cable, manual, Enterprise MIB software, power cord, and rack mount ear kit. Two-year warranty.

**PRODUCT INCLUDES**
- Lightning arrestor
- Comprehensive time client, server & management software for easy distribution, management and monitoring of time across the network is also available.
- IEEE 1588 / PTP see SyncServer S300 or S350

---

Symmetricom, Inc. All specifications subject to change without notice.