

### Product Overview:

**VCL-Mega, NTP Server** is a high-availability, high-performance GPS / GNSS (Global Navigation Satellite System) NTP server that can be used to provide time at a national, state or an institutional level. The VCL-Mega, NTP Server can be configured to provide up to 16 x 1G/10G NTP outputs which are locked to 1+1 Redundant GPS GPS/GNSS Receivers. Alternately, the same may also be configured to use a 1 PPS source from a private (local) Cesium source.



The VCL-Mega NTP Server is equipped with a high bandwidth, 16 Core NTP Server engine which is designed to serve up to **One Million NTP requests per second**. A total of 16 x 1G or 10G ports are available in any combination in increments of 4 x 1G or 10G ports per slot (i.e., a total of 4 x slots = 16 x ports). Each 1G port is capable of handling up to 12,000 NTP requests per second and each 10G port is capable of handling up to 120,000 NTP requests per second.

VCL-Mega NTP Server incorporates dual (1+1 redundant) GPS receivers and dual, 800 Watt (1+1 redundant) AC power supplies for added reliability to provide time synchronization to national as well as private networks such as Railways and Metro (ticketing and platform) networks, Airports Power Distribution and Transmission companies, Oil and Gas Utilities, ISPs and Cable TV networks as well as to Campus networks that are required to provide an accurate time-of-day reference in their networks. It may also be used by 2G, 3G and LTE service providers which provide a time-of-day reference to their customers over their wireless networks.

### Features:

- Integrated, Dual (1+1) GPS / GNSS Receivers with automatic failover function
- Functions as a Primary NTP Server
- Automatic failover function to a Secondary NTP Server, in the absence of internal GPS Signal
- High bandwidth NTP performance
- Supports up to 16 NTP Ports – each with separate IP address
- Up to 12,000 NTP requests per second per 1G port
- Up to 120,000 NTP requests per second per 10G port
- The system can be installed with multiple NTP Ports - 16 x Independent 1G or 10G ports - in any combination
- May be used to support 10 Million NTP / SNTP Slaves from a single VCL-Mega NTP Server unit
- May be configured so that all 16 NTP Ports serve a common URL using NAT protocol
- Supports Unicast, Multicast, Broadcast
- Leap Second correction support
- MD5 authentication for NTP clients
- Alert notifications via SNMP Traps, SNMPv2, SNMPv3, SMTP (Email)
- Concurrent IPv6 and IPv4 operation
- Supported network protocols: IPv4, IPv6, SSH, TELNET, FTP, SYSLOG, SCP, SFTP
- DHCP Support
- Secure network management: enable or disable options
- Double Oven Quartz Oscillators (OCXO) hold-over
- 1+1 Redundant AC Power Supply option

### Performance:

#### NTP Time Server INPUT options:

- GPS/GNSS (SMA Connector)
- NTP Time Source
- 1PPS (SMA Connector)

#### Time and Frequency OUTPUT options and other highlights:

- Up to 16 x NTP Ports – 1G electrical / optical, or 10G optical ports
- Automatic failover function to a secondary NTP Server, in the absence of internal GPS Signal
- ITU-T G.812 compliant holdover [OCXO (Double Oven-Controlled Crystal Oscillator)]

**Standard and Compliance:**

- IEC - EMC – Certified to EN 55022: CISPR 32, EN 55024:2005, IEC 61000-4-2, IEC 60255 / IEC 61000-4-6, IEC 61000-4-8, 61000-4-9, IEC 60255-22-6, IEC 60255-5:2000, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-18, IEC 61000-4-17, IEC 60950, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-14, IEC 60068-2-30, IEC 61850-3, IEC 60068-2-40, IEC 60068-2-6, IEC 60068-2-27
- RoHS, CE – 2001/95/EC, 2006/95/EC, EN60950-1, EN61000-6-2, EN61000-6-4
- FCC – FCC Part 15 B Class A: Conducted Emission test on Power Line
- FCC Part 15 B Class A: Radiated Emission >1 GHz FCC, 6 GHz, on Power Line

**Network Time Protocol:**

- NTP v2, (RFC 1119), NTP v3 (RFC 1305), NTP v4, (RFC 5905), SNTP v3 (RFC 1769), SNTP v4 (RFC 2030), MD5 Authentication
- Up to 12,000 NTP requests per second / per 1G port
- Up to 120,000 NTP requests per second / per 10G port
- Internet Protocol: IPv4/IPv6
- NTP version 4.2.8p7
- Time Protocol: TIME (RFC 868)
- Daytime Protocol: DAYTIME (RFC 867)
- Supports Unicast, Multicast and Broadcast
- NTP Peering

**GPS/GNSS Receiver Specifications:**

- 50 Channel GPS Receiver
- 72 Channel GNSS Receiver
- GPS L1 frequency, C/A Code Receiver
- Tracks up to 12 satellites simultaneously.
- Synchronizing Time:
  - Acquisition time - Hot Start: Less than 1 sec.
  - Acquisition time - Warm Start: Less than 28 sec.
  - Acquisition time - Cold Start: Less than 28 sec.
- GPS / GNSS Signal:
  - Tracking and Navigation: -162 dBm
  - Reacquisition -160 dBm
  - Cold Start -148 dBm
- Antenna Connector: SMA
- Accuracy Of Time-Pulse Signal referenced to GPS: ± 30ns (raw)
- Accuracy Of Time-Pulse Signal referenced to GNSS: ± 20ns (raw)
- Accuracy Of Time-Pulse Signal referenced to GPS/GNSS: ± 15ns (compensated)  
(Note: with all satellites in view at -130db).

**MTBF:**

- Per MIL-HDBK-217F: ≥ 37 years @ 24C
- Per Telcordia SSR 332, Issue 1: ≥ 42 years @ 24C

**NTP Peering:**

Supports NTP Peering. In peering mode, in addition to its GPS reference, VCL-Mega NTP Server can be configured to receive and monitor time from an additional Stratum 1 NTP Server available on the network. This allows the unit to fall back to its peer source in the event its primary reference becomes unavailable.

**Monitoring and Management:**

- LED Indications:
  - Antenna Detect
  - GPS Lock
  - PLL Lock
- The system configuration can be managed by GUI. A text based and menu driven setup utility is also available via Telnet or SSH. An optional NMS allows multiple systems installed on a network to be monitored and configured from a single or multiple locations.

**Power Supply:**

- Dual Redundant
- 1+1 AC power (100 to 240V AC, 50/60 Hz, IEC C14 Inlet Connector)

**Antenna Specifications:**

- Antenna Type: Active, Rooftop Mounting
- Polarization: Right hand circular
- Frequency Band: 1575.42 MHz + 10 MHz
- Amplifier Gain: 40dB
- VSWR: <2.0 Max, 1.0 Typical
- Operating temperature: -40C to +85C
- Out of Band Rejection: ≥ -60dB @ +50MHz off center (1575.42 MHz) frequency
- Lightening Protection: According to EN61000-4-5 Level 3
- LMR400 (or equivalent) Cable Length - 30, 50, 60 and 90 meters.

**Security, Monitoring and Access Control:**

- Password Strength Monitor
- Device Management and Alarm Monitoring
- Command Line Interface - Telnet, SSH with clear text disable option SNMPv2 and SNMPv3
- Alarms
- Alarm condition detection/reporting (traps/SNMP alarm table)
- Alarm Relay for connecting External Audio / Visual Alarms
- Syslog, Audit Log
- Secure Boot
- Encrypted Firmware updates
- Password Protection with password strength monitor
- RADIUS Authentication
- SSH (Secure Access Control) with encrypted Password Protection

**Security and Protection:**

- Password Protection with password strength monitor
- SSH.

**Firewall Features:**

- Resilient to DoS attacks.
- Integrated Firewall features.
- White List (may be used to allow only select IP address and IP domains that shall be allowed to access and update time from the VCL-Mega NTP Server).
- Black List (may be used to exclude select IP address and IP domains that shall be excluded and prohibited from accessing VCL-Mega NTP Server. This feature is especially useful in excluding the foreign IP domains so that DoS attacks cannot be generated from sources that are beyond the institutional perimeter, or outside the national boundaries.
- MD5 Authentication. Useful in providing additional protection to NTP / SNTP clients or slaves and protect against malicious NTP server spoofing.

**Environmental (Operational):**

Operating Temperature	-4F~131°F (-20C~55C)
Storage Temperature	-22F~167F (-30°C~75C)
Operating Humidity	10%~95% relative humidity, non-condensing
Storage Humidity	10%~95% @40°C; non-condensing

**Electromagnetic Standards Compliance:**

- EN 50081-2
- EN 50082-2
- IEC 61000-6-2 (Immunity)
- IEC 61000-6-4 (Emission)
- Complies to IEEE and IEC standards

**CE Compliance:**

- Low Voltage Directive 2014/35/EU
- Electromagnetic Compatibility 2014/30/EU

**Other Regulatory Compliances:**

- RoHS
- CE Marking
- Complies with FCC Part 68 and EMC FCC Part 15

**Power Consumption:**

- < 800 W at ambient (steady state 24C)

© Copyright : Valiant Communications

Technical specifications are subject to changes without notice.

Revision – 2.2, August 01, 2023

**Physical Dimension:**

- 19-inch, 4U High Rack Mount
- D x W x H: 639mm x 484mm x 176mm
- Net Weight: 17 Kgs
- Gross Weight: 21 Kgs

**Ordering Information:****Part No.****VCL-Mega NTP****Description:**

VCL-Mega NTP SERVER

19-inch, 4U high, Rack Mount version

Inputs:

- 2 x GPS Receivers using 2 separate GPS Antennas

Supports:

- Up to 16 x NTP (Ethernet) Network Interfaces / Ports (Add from below options)

- 1 x High Stability OCXO Holdover Clock

- Management: SNMP (Monitor), Telnet / SSH (RJ45 (F) Port), Serial Port, EMS, Graphical User Interface (GUI)

- Installation Kit: System Core Cables, Mounting Hardware, Documentation, User Manual

**\* Add Power Supply Option from below:**

**\*Network Interface / Port Options:**

VCL-5004	(4x1G Electrical Ports) (4 Cards (Max) per Chassis)
VCL-5005	(4x1G Optical Ports) (SFP Based) (4 Cards (Max) per Chassis)
VCL-5007	(4x10G Optical Ports) (SFP Based) (4 Cards (Max) per Chassis)

**\*Add SFP Options:**

SFP-1G	SFP, 1000BASE-LX, 10Km (Single-Mode, 1310 nm)
SFP-10G	SFP+, 10GE-LR, 10Km (Single-Mode, 1310 nm)

**\*Add Power Supply Options:**

AC220R	2 x 220VAC, 50Hz, 800-Watt Power Supply Inputs [1+1 Redundant, Hot Swappable Power Supply]
AC110R	2 x 110VAC, 60Hz. 800-Watt Power Supply Inputs [1+1 Redundant, Hot Swappable Power Supply]

**U.S.A.**

Valcomm Technologies Inc.  
4000 Ponce de Leon Blvd.,  
Suite 470, Coral Gables,  
FL 33146, U.S.A.

**E-mail:** us@valiantcom.com

**U.K.**

Valiant Communications (UK) Ltd  
Central House Rear Office,  
124 High Street, Hampton Hill,  
Middlesex TW12 1NS, U.K

**E-mail:** gb@valiantcom.com

**INDIA**

Valiant Communications Limited  
71/1, Shivaji Marg,  
New Delhi - 110015,  
India

**E-mail:** mail@valiantcom.com