



Using SEL Satellite-Synchronized Clocks With the SEL-3332 or SEL-3354 to Output NTP

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INTRODUCTION

Network Time Protocol (NTP) is a common protocol used to synchronize Ethernet devices over a network. NTP is used in Ethernet time synchronization for applications requiring up to 300-millisecond time accuracy, such as information technology, SCADA (supervisory control and data acquisition), and public safety networks. This application note provides implementation details and requirements for using the SEL-2401, SEL-2404, or SEL-2407[®] Satellite-Synchronized Clock with the SEL-3332 Intelligent Server or SEL-3354 Embedded Automation Computing Platform with Windows[®] 7 to provide NTP.

NTP is an economical way to distribute time over Ethernet for applications that are not time-critical. Traditionally, an SEL clock connects to an SEL computing product or information processor that converts high-accuracy IRIG-B to NTP to provide robust time with reliable computing.

PROBLEM

Connecting devices to an SEL clock in a traditional network requires multiple IRIG-B cables and all other communications cables. NTP reduces cabling by transmitting over Ethernet and synchronizing time in networks where IRIG-B is not available.

SEL SOLUTION

The following equipment is required:

- SEL-3332 or SEL-3354
- SEL-2401, SEL-2404, or SEL-2407 connected to a GPS (Global Positioning System) satellite
- IRIG-B cable (SEL-C953 BNC connector)
- NTP clients with Ethernet or fiber cabling

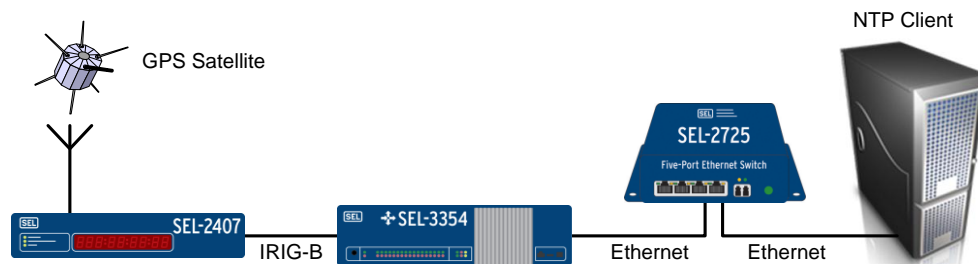


Figure 1 Basic Network Configuration

SEL Tough Computer Configuration

The NTP settings for the SEL-3354 are accessed by clicking on the SEL icon in the Windows taskbar at the bottom right-hand corner of the screen.



Figure 2 SEL-3354 Desktop Interface to Select IRIG, Status, and Alarm Control Panel

The NTP settings for the SEL-3332 are accessed by clicking on **System** from the program toolbar and selecting **IRIG, Status, and Alarms**.

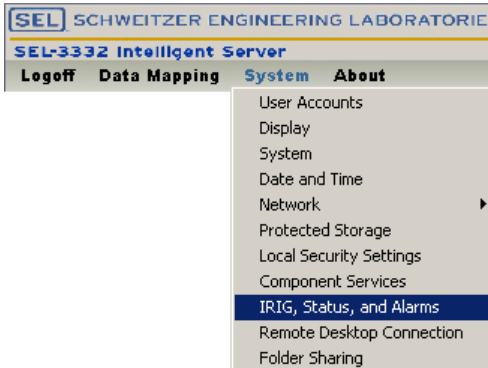


Figure 3 SEL-3332 Desktop Interface to Select IRIG, Status, and Alarms Control Panel

Configure the NTP server using the following steps:

- Open the **IRIG, Status, and Alarms Control Panel**.
 - Select the **Demodulated** radio button for **Modulation Settings**.
 - Verify the **NTP Client** checkbox is not selected.
 - Select the **Enabled** checkbox for **NTP Server**.
- For the **Date and Time Properties**, select **Disable** for **Internet Time for Automatic Synchronization with an Internet Time Server**.
- Configure the Internet Protocol (TCP/IP) of the preferred DNS (Domain Name System) server to the SEL computer IP address.

For more information on SEL computer configuration and setup details, consult the SEL-3332 and SEL-3354 instruction manuals, available at www.selinc.com.

NTP Client Configuration

When setting the **Network Configuration**, configure the DNS server as the IP address of the SEL computer. In **Date and Time Properties**, enable NTP, and set the NTP server as the IP address of the SEL computer. Depending on what type of NTP client is being used, set the correct time zone and Daylight-Saving Time for the end device.