

Chapter 15

Configuring NTP for C-Series Controllers

This chapter provides information about Network Time Protocol (NTP) support on C-Series Controllers and discusses how to configure NTP for a C-series Controller. Topics include:

- *NTP Support on C-series Controllers* on page 113
- *Configuring NTP on a C-series Controller* on page 114

NTP Support on C-series Controllers

NTP synchronizes and coordinates time among NTP clients and servers. It uses a returnable-time design in which a distributed subnet of time servers operate in a self-organizing, hierarchical, master-slave configuration. NTP synchronizes time for local clocks within a subnet and to another server or other time source such as a high-precision clock or satellite receiver. NTP clients are also servers that distribute a time synchronized to another NTP server.

NTP is defined in RFC 1305—Network Time Protocol (Version 3) Specification Implementation and Analysis (March 1992).



NOTE: We highly recommend that you use NTP to set the system time to ensure that the SRC software operates correctly.

For NTP servers on C-series Controllers, if the time difference between the local NTP server and the servers with which it synchronizes time is more than 1000 seconds, the local NTP server stops running. Configure a boot server for NTP so that the software obtains the initial time from the boot server before the NTP server starts.

When you configure NTP, you can specify which system on the network is the authoritative time source, or time server, and how time is synchronized between systems on the network. You can configure NTP to operate in one or more of the following modes:

- **Client mode**—The local system can be synchronized with the remote system, but the remote system cannot be synchronized with the local system.

- Symmetric active (peer) mode—The local system and the remote system can synchronize with each other. You use this mode in a network in which either the local system or the remote system might be a better source of time.



NOTE: Symmetric active mode can be initiated by either the local or the remote system. Only one system needs to be configured to do so. This means that the local system can synchronize with any system that offers symmetric active mode without any configuration whatsoever. However, we highly recommend that you configure authentication to ensure that the local system synchronizes only with known time servers.

- Broadcast mode—The local system sends periodic broadcast messages to a client population at the specified broadcast or multicast address. Typically, you include this statement only when the local system is operating as a transmitter.
- Server mode—The local system operates as an NTP server.

You can also configure NTP to operate as a broadcast client or a multicast client.

Related Topics

- *Configuring NTP on a C-series Controller* on page 114
- *Configuration Statements for NTP on C-series Controllers* on page 117

Configuring NTP on a C-series Controller

To configure NTP on a C-series Controller:

1. (Recommended) Configure NTP to automatically set the time when it starts.
 - See *Specifying Which NTP Server a C-series Controller Contacts on Startup* on page 118.
 - See *Specifying a Basic NTP Configuration on a C-series Controller with the C-Web Interface* in *SRC-PE C-Web Interface Configuration Guide, Chapter 2, Configuring NTP on C-Series Controllers with the C-Web Interface*.
2. Specify the time source and the manner in which time is synchronized between systems on the network. Configure NTP to operate in one or more of the following modes:
 - Client mode:
 - See *Configuring NTP Client Mode for a C-series Controller with the SRC CLI* on page 119.
 - See *Configuring NTP Client Mode for a C-Series Controller with the C-Web Interface* in *SRC-PE C-Web Interface Configuration Guide, Chapter 15, Configuring NTP for C-Series Controllers*.

- Symmetric active (peer) mode:
 - See *Configuring an NTP Peer on a C-series Controller with the SRC CLI* on page 120.
 - See *Configuring an NTP Peer for a C-series Controller with the C-Web Interface* in *SRC-PE C-Web Interface Configuration Guide, Chapter 2, Configuring NTP on C-Series Controllers with the C-Web Interface*.
 - Broadcast mode:
 - See *Configuring NTP Broadcast Mode on a C-series Controller with the SRC CLI* on page 121.
 - See *Configuring NTP Broadcast Mode on a C-series Controller with the C-Web Interface* in *SRC-PE C-Web Interface Configuration Guide, Chapter 2, Configuring NTP on C-Series Controllers with the C-Web Interface*.
3. (Recommended) Configure NTP authentication.
 - See *Configuring NTP Authentication on a C-series Controller with the SRC CLI* on page 122.
 - See *Specifying an Authentication Key for NTP on C-Series Controllers with the C-Web Interface* in *SRC-PE C-Web Interface Configuration Guide, Chapter 2, Configuring NTP on C-Series Controllers with the C-Web Interface*.
 - See *Configuring NTP Authentication with the C-Web Interface* in *SRC-PE C-Web Interface Configuration Guide, Chapter 2, Configuring NTP on C-Series Controllers with the C-Web Interface*.
 4. (Optional) Configure NTP to listen for broadcast messages.
 - See *Configuring NTP as a Broadcast Client on a C-series Controller with the SRC CLI* on page 124.
 - See *Specifying a Basic NTP Configuration on a C-series Controller with the C-Web Interface* in *SRC-PE C-Web Interface Configuration Guide, Chapter 2, Configuring NTP on C-Series Controllers with the C-Web Interface*.
 5. (Optional) Configure NTP to listen for multicast messages.
 - See *Configuring NTP as a Multicast Client on a C-series Controller with the SRC CLI* on page 125.
 - See *Configuring NTP as a Multicast Client on a C-series Controller with the C-Web Interface* in *SRC-PE C-Web Interface Configuration Guide, Chapter 2, Configuring NTP on C-Series Controllers with the C-Web Interface*.

Related Topics

- *NTP Support on C-series Controllers* on page 113
- *Verifying NTP Configuration on a C-series Controller* on page 126

