Configuring Switch as a Unicast Simple Network Time Protocol SNTP Client via CLI

Objective

System time configuration is of great importance in a network. Synchronized system clocks establish a consistent frame of reference between all devices on the network. Network time synchronization is critical because every aspect of managing, securing, planning, and debugging a network involves determining precisely when events occur. Without synchronized clocks, accurately correlating log files between devices when tracking security breaches or network usage is impossible.

Synchronized time also reduces confusion in shared file systems, as it is important for the modification times to be consistent, regardless of the machine on which the file systems reside.

The Cisco Small Business Switches support Simple Network Time Protocol (SNTP) and when enabled, the switch dynamically synchronizes the device time with time from an SNTP server. The switch operates only as an SNTP client, and cannot provide time services to other devices.

Unicast is a one to one connection where data is only being sent to a single destination. Multicast is a one to many connection which allows a host to send packets to a subset of all hosts as a group transmission. An Anycast is a connection between a client and a list of addresses.

The reason to configure Unicast server is because older network devices on your network may not support Multicast/Anycast traffic, or there might be a security reason for wanting to keep Mulicast/Anycast traffic off of a network segment.

This document shows you how to configure the switch as a SNTP (Simple Network Time Protocol) Unicast client through the Command Line Interface (CLI).

Note: To learn how to configure SNTP Unicast settings on the Graphical User Interface (GUI), click here.

Applicable Devices

- Sx300 Series

- Sx350 Series

- SG350X Series

- Sx500 Series

- SG550X Series

Software Version

- 2.3.5.63 & up

Configure SNTP Unicast Client

Step 1. Access the CLI of the switch via your preferred method. In this example, we will be using Putty to connect to a SG550X switch. The commands may vary depending on your switch product ID (PID).

Note: Make sure **SSH** is enabled in the *Security* section for the switch. To learn more about accessing the CLI using SSH or Telnet, click [here](#).

```
login as: cisco




User Name:cisco
Password:********

SG550X#
```

Step 2. Switch to Global Configuration mode by entering the following command.

SG550X#**configure terminal**

```
login as: cisco




User Name:cisco
Password:********

SG550X#configure terminal
SG550X(config)#
```

Step 3. To configure the system time (main clock source) to sntp server, type in the command below. This will configure an external time source for the system clock.

SG550X(config)#**clock source sntp**

```
login as: cisco




User Name:cisco
Password:********


SG550X#configure terminal
SG550X(config)#clock source sntp
SG550X(config)#
```

Step 4. Unicast clients use predefined packets when communicating with the SNTP server. To enable Unicast client, type in the following command below.

```
SG550X(config)#sntp unicast client enable
```

Note: To disable the SNTP Unicast clients, use the no form of this command: **no sntp unicast client enable**.

```
login as: cisco




User Name:cisco
Password:********


SG550X#configure terminal
SG550X(config)#clock source sntp
SG550X(config)#sntp unicast client enable
SG550X(config)#
```

Step 5. (Optional) The polling interval is 1024 seconds. To enable polling for the SNTP Unicast client, use the command below.

```
SG550X(config)#sntp unicast client poll
```

Note: To disable the SNTP Unicast client, use the command: **no sntp unicast client poll**.

```
login as: cisco




User Name:cisco
Password:********


SG550X#configure terminal
SG550X(config)#clock source sntp
SG550X(config)#sntp unicast client enable
SG550X(config)#sntp unicast client poll
SG550X(config)#█
```

Step 6. (Optional) To specify the source interface whose IPv4 address will be used as the source IPv4 address for communication with IPv4 SNTP servers, use the command below in Global Configuration mode.

Note: To restore the default configuration, use the **no** form this command. For example, **no sntp source-interface**.

SG550X(config)#**sntp source-interface [Interface-id]**

```
login as: cisco




User Name:cisco
Password:********


SG550X#configure terminal
SG550X(config)#clock source sntp
SG550X(config)#sntp unicast client enable
SG550X(config)#sntp unicast client poll
SG550X(config)#sntp source-interface vlan 1
SG550X(config)#█
```

Step 7. (Optional) To specify the source interface whose IPv6 address will be used as the source IPv6 address for communication with IPv6 SNTP servers use the command below.

Note: Use the command **no sntp source-interface-ipv6** to restore the default configuration for SNTP source interface ipv6.

SG550X(config)#**sntp source-interface-ipv6 [interface-id]**

```
login as: cisco




User Name:cisco
Password:********


SG550X#configure terminal
SG550X(config)#clock source sntp
SG550X(config)#sntp unicast client enable
SG550X(config)#sntp unicast client poll
SG550X(config)#sntp source-interface vlan 1
SG550X(config)#sntp source-interface-ipv6 vlan 1
SG550X(config)#
```

Step 8. Enter the following command below to add a new SNTP server. When working in high risk environments (government, hospitals, etc.), it's a good idea to have multiple servers for redundancy and to protect against malfunctioning servers that provide incorrect time. If you have configured authentication, specify the authentication key to use when sending packets to this peer. The authentication key ranges from 1-4294967295. In this example, we will be adding 216.239.35.4 which is time.google.com and enabling polling for our new SNTP server.

Note: The switch supports up to 8 SNTP servers. This may vary depending on the switch model that you are using. To learn more about configuring Simple Network Time Protocol (SNTP) authentication settings on a switch through the CLI, click here.

SG550X(config)#**sntp server {IP address | hostname} [poll] [key *keyid*]**

```
login as: cisco




User Name:cisco
Password:********


SG550X#configure terminal
SG550X(config)#clock source sntp
SG550X(config)#sntp unicast client enable
SG550X(config)#sntp unicast client poll
SG550X(config)#sntp source-interface vlan 1
SG550X(config)#sntp source-interface-ipv6 vlan 1
SG550X(config)#sntp server 216.239.35.4 poll
SG550X(config)#
```

Step 9. Enter the **end** command to go back to Privileged EXEC mode.

SG550X(config)#**end**

```
login as: cisco




User Name:cisco
Password:********


SG550X#configure terminal
SG550X(config)#clock source sntp
SG550X(config)#sntp unicast client enable
SG550X(config)#sntp unicast client poll
SG550X(config)#sntp source-interface vlan 1
SG550X(config)#sntp source-interface-ipv6 vlan 1
SG550X(config)#sntp server 216.239.35.4 poll
SG550X(config)#end
SG550X#
```

Step 10. (Optional) Enter the following command in Privileged EXEC mode to save the configuration.

```
SG550X#copy running-config startup-config
```

```
login as: cisco




User Name:cisco
Password:********


SG550X#configure terminal
SG550X(config)#clock source sntp
SG550X(config)#sntp unicast client enable
SG550X(config)#sntp unicast client poll
SG550X(config)#sntp source-interface vlan 1
SG550X(config)#sntp source-interface-ipv6 vlan 1
SG550X(config)#sntp server 216.239.35.4 poll
SG550X(config)#end
SG550X#copy running-config startup-config
Overwrite file [startup-config].... (Y/N)[N] ?
```

Step 11. (Optional) Press **Y** to save the settings in the startup configuration of the switch. Otherwise, press **N** to proceed without saving the configuration to the startup configuration of the switch.

```
login as: cisco




User Name:cisco
Password:*******


SG550X#configure terminal
SG550X(config)#clock source sntp
SG550X(config)#sntp unicast client enable
SG550X(config)#sntp unicast client poll
SG550X(config)#sntp source-interface vlan 1
SG550X(config)#sntp source-interface-ipv6 vlan 1
SG550X(config)#sntp server 216.239.35.4 poll
SG550X(config)#end
SG550X#copy running-config startup-config
Overwrite file [startup-config].... (Y/N)[N] ?Y
20-Aug-2017 07:02:53 %COPY-I-FILECPY: Files Copy - source URL running-config des
tination URL flash://system/configuration/startup-config
20-Aug-2017 07:02:55 %COPY-N-TRAP: The copy operation was completed successfully

SG550X#
```

Conclusion

You should now have configured the switch to be a client.

Note: The commands that were executed below were used in Privileged EXEC mode.

Step 1. To display the SNTP status, type in the following command:

```
SG550X#show sntp status
```

```
SG550X#show sntp status

Clock is synchronized, stratum 1, reference is 216.239.35.4, unicast

Unicast servers:

Server          : 216.239.35.4
  Source        : Static
  Stratum       : 1
  Status        : up
  Last Response : 22:06:30.0 UTC Jun 21 2018
  Offset        : 280.2706617 mSec
  Delay         : 0 mSec

Server          : time-a.timefreq.bldrdoc.gov
  Source        : Static
  Stratum       : 1
  Status        : up
  Last Response : 22:06:30.0 UTC Jun 21 2018
  Offset        : 296.1186610 mSec
  Delay         : -1000 mSec

Server          : time-b.timefreq.bldrdoc.gov
  Source        : Static
  Stratum       : 1
  Status        : up
  Last Response : 22:06:31.0 UTC Jun 21 2018
  Offset        : 1110.3312649 mSec
  Delay         : 0 mSec

Server          : time-c.timefreq.bldrdoc.gov
  Source        : Static
  Stratum       : 255
  Status        : down
  Last Response : 00:00:00.0  Jan 1 1900
  Offset        : 0.0000000 mSec
  Delay         : 0 mSec


Anycast server:
```

Step 2. The following example displays the device's current SNTP configuration.

```
SG550X#show sntp configuration
```

```
SG550X#show sntp configuration
SNTP destination port : 123 .
Polling interval: 1024 seconds.
No MD5 authentication keys.
Authentication is not required for synchronization.
No trusted keys.

Unicast Clients: Enabled
Unicast Clients Polling: Enabled

Server          : 216.239.35.4
  Polling       : Enabled
  Encryption Key : Disabled

Server          : time-a.timefreq.bldrdoc.gov
  Polling       : Enabled
  Encryption Key : Disabled

Server          : time-b.timefreq.bldrdoc.gov
  Polling       : Enabled
  Encryption Key : Disabled

Server          : time-c.timefreq.bldrdoc.gov
  Polling       : Enabled
  Encryption Key : Disabled


Broadcast Clients: disabled
Anycast Clients: disabled
No Broadcast Interfaces.
Source IPv4 interface: vlan 1
Source IPv6 interface: vlan 1
```