

IBM i
7.3

Networking
Simple Network Time Protocol



Note

Before using this information and the product it supports, read the information in [“Notices” on page 15.](#)

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Simple Network Time Protocol

Simple Network Time Protocol (SNTP) application is a time-maintenance application that you can use to synchronize hardware in a network.

You can use the IBM® i operating system as an SNTP server, an SNTP client, an NTP client, or running an SNTP server and one kind of client at the same time. You can specify the amount of time that client can vary from, the time is provided by a time server and allowed by client for adjustments to keep the client clock synchronized. This function is particularly important in the use of network authentication service.

SNTP application is a tool that you can use as part of your time management strategy.

Related concepts

[Network authentication service](#)

[Time management](#)

What's new for IBM i 7.3

Read about new or significantly changed information for the Simple Network Time Protocol application: NTP client is supported in IBM i 7.3.

Network Time Protocol (NTP) is designed to synchronize the clocks of computers over a network to a common time-base (usually UTC). The NTP can achieve a higher accuracy and reliability comparing to Simple Network Time Protocol (SNTP). IBM i V7R3M0 supports Network Time Protocol (NTP) client. It engages error checking and mitigation algorithms to utilize multiple redundant time servers, to synchronize the time of the client to a more convincing server. The time server could be SNTP servers running on IBM i, SNTP or NTP servers running on the other operation systems, or public time servers.



The concepts was explained in section [“NTP client” on page 4](#) and an example of how to use IBM Navigator for i to configure a NTP client to communicate with external time servers was added to section [“Configuring System A as an SNTP or NTP client and an SNTP server” on page 6](#).

IBM i V7R3M0 NTP client does not implement the full client functions of NTP Version 4 (NTPv4) described in [RFC5905], the supported features include:

- Client/server mode is supported, other modes were not, such as symmetric active/passive modes, broadcast/multicast and many cast modes.
- Symmetric key cryptography is supported to prevent accidental or malicious protocol attacks, not support public key and automatic server discovery using IP multicast means.

How to see what's new or changed

To help you see where technical changes have been made, the information center uses:

- The  image to mark where new or changed information begins.
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In PDF files, you might see revision bars (|) in the left margin of new and changed information.

To find other information about what's new or changed this release, see the [Memo to users](#).

PDF file for Simple Network Time Protocol

You can view and print a PDF file of this information.

To view or download the PDF version of this document, select [SNTP](#) (about 231 KB).


You can view or download this related topic PDF: [Time management](#)  (about 716 KB). This topic contains concepts and configuration information for managing time on your system.

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SNTP and NTP concepts

Simple Network Time Protocol (SNTP) and Network Time Protocol (NTP) are used to keep device clocks synchronized. By using timestamps that are kept synchronized, SNTP and NTP can track processes and interactions between systems.

IBM i SNTP is based on Request for Comments (RFC) 2030. IBM i NTP client supports the client mode and the symmetric key cryptography which are based on Request for Comments (RFC) 5905. You can view RFC documents by searching for the number using the RFC index search engine located on the RFC editor Web site.

Before working with SNTP and NTP, you need to be familiar with the concepts of SNTP server, SNTP client and NTP client.

Related concepts

[Time](#)

[Daylight saving time](#)

[Date and time system value: Time zone](#)

[Time adjustment](#)

[Date and time system value: Time adjustment](#)

Related reference

[RFC index search engine](#)

[RFC editor Web site](#)

SNTP client

When Simple Network Time Protocol (SNTP) is configured as a client, the IBM i operating system retrieves a time value from an external time source.

You can specify from which sources (up to three) to retrieve the time value. This external time value is compared to the system time. If the system time value does not match the external time source, a time adjustment begins. The system time is adjusted until the required time value is reached.

You can configure the IBM i operating system as the SNTP client to poll a Network Time Protocol (NTP) or an SNTP server to find the time. The SNTP client updates the system clock. Most applications use the system clock as their time source. By updating the system clock, applications reflect the synchronized time obtained from the time server.

From the time server list, the first server that can provide valid time service is selected. When the selected time server fails, a new time server is selected. The time server should be selected based on the minimum network response time delay at the location where the system is installed.

A list of public time servers is maintained on the Internet. To locate a time server, you can use a search engine with a query of NTP servers.

You can run the SNTP client and the SNTP server concurrently on your system. Then, you can obtain time from an outside source and serve that time to the clients in your network.

Related concepts

[Scenario: Synchronizing clocks with IBM i](#)

This scenario demonstrates how to use the IBM i operating system as both an SNTP server and one kind of client (SNTP or NTP) to synchronize clocks in your network.

Related tasks

[Configuring SNTP application](#)

You can work with SNTP server, SNTP client and NTP client settings from System i Navigator or work with SNTP client and SNTP server settings by using the Change SNTP Attributes (CHGNTPA) command on the character-based interface.

Related information

[NTP: The Network Time Protocol](#)

[Public NTP Time Servers](#)

SNTP server

When you configure the IBM i operating system as an SNTP server, your system acts as a time server for other devices.

Other SNTP clients check time by polling your SNTP server. If a client's time values do not match the SNTP server time, a time adjustment begins. The client's system time is adjusted until the required time value is reached. This is useful for maintaining time within a network.

In the following figure, System A is configured as the SNTP server. In this situation, the Coordinated Universal Time (UTC) is retrieved from System A rather than being synchronized with an external time source. This internal time value is sent to all SNTP client systems (System B and Client A) that are connected to System A.

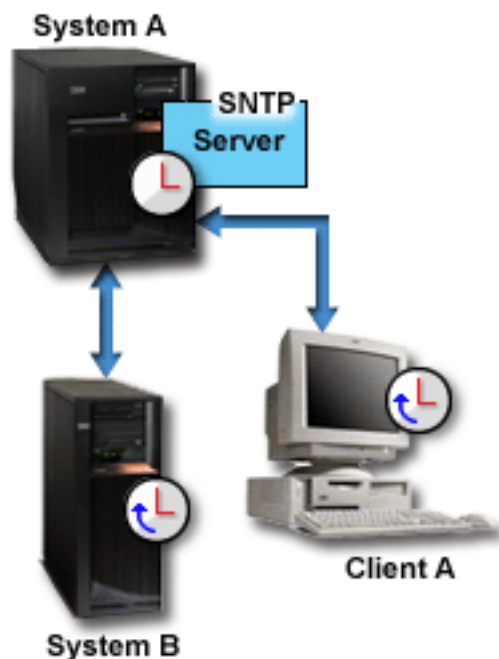


Figure 1. SNTP as a server

In addition to using the SNTP server to synchronize clocks in the network, you can concurrently run your system as an SNTP client to obtain time from an outside time source. For an example, see [“Scenario: Synchronizing clocks with IBM i”](#) on page 4.

Related tasks

[Configuring SNTP application](#)

You can work with SNTP server, SNTP client and NTP client settings from System i Navigator or work with SNTP client and SNTP server settings by using the Change SNTP Attributes (CHGNTPA) command on the character-based interface.

NTP client

When Network Time Protocol (NTP) is configured as a client, the IBM i operating system retrieves a time value from an external time source.

You can specify from which sources (up to 10) to retrieve the time value. From the time server list, the one or more configured servers that can provide valid time service can be selected as candidate in NTP client to accumulate and groom the time and set the clock, in order to achieve higher accuracy and reliability than SNTP client. The calculated time is compared to the system time. If the system time value does not match the external time source, a time adjustment begins. The system time is adjusted until the required time value is reached.

Just as SNTP client, NTP client can work with public time servers which are maintained on the Internet. To locate a time server, you can use a search engine with a query of NTP servers.

You can run the NTP client and the SNTP server concurrently on your system. Then, you can obtain time from an outside source and serve that time to the clients in your network.

Related concepts

[Scenario: Synchronizing clocks with IBM i](#)

This scenario demonstrates how to use the IBM i operating system as both an SNTP server and one kind of client (SNTP or NTP) to synchronize clocks in your network.

Related tasks

[Configuring SNTP application](#)

You can work with SNTP server, SNTP client and NTP client settings from System i Navigator or work with SNTP client and SNTP server settings by using the Change SNTP Attributes (CHGNTPA) command on the character-based interface.

Related information

[NTP: The Network Time Protocol](#)

[Public NTP Time Servers](#)

Scenario: Synchronizing clocks with IBM i

This scenario demonstrates how to use the IBM i operating system as both an SNTP server and one kind of client (SNTP or NTP) to synchronize clocks in your network.

Situation

As an administrator of your company's network, you must maintain both your system and network clients. Timestamps are critical to your transactions. You need to maintain synchronization in the network.

Objectives

In this scenario, YourCo, Inc. wants to use the SNTP or NTP client on the IBM i operating system to receive time from an outside Network Time Protocol (NTP) server. To maintain the time within your network, you need to use your system as an SNTP server. In addition to configuring the client and server on your system, you need to configure your firewall to allow the SNTP or NTP client to obtain the time from an external NTP server.

The objectives of this scenario are as follows:

- To synchronize your system with an outside NTP server.
- To make your system function as an SNTP server for clients within your network.

Details

The following figure shows the solution environment for this scenario.

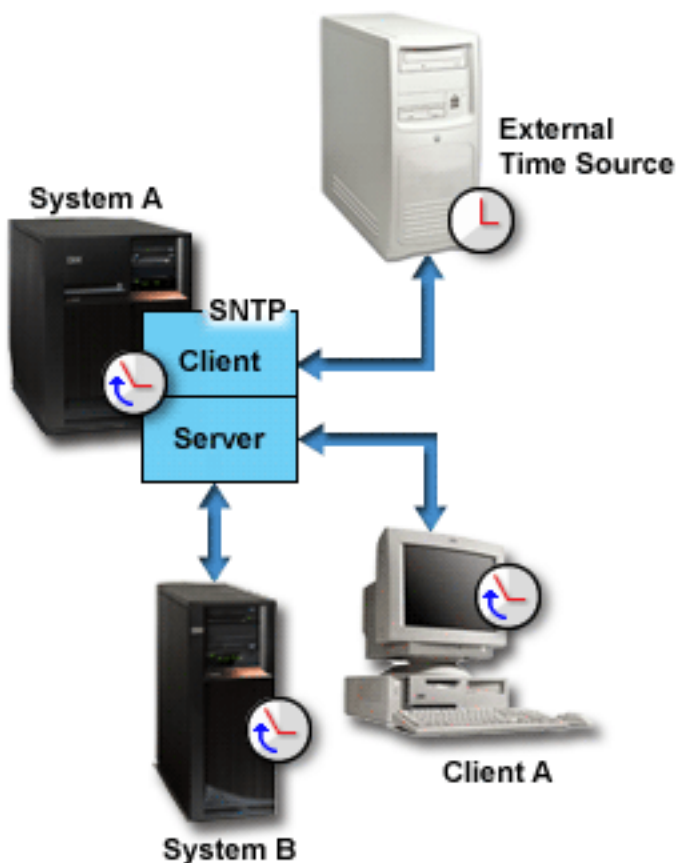


Figure 2. SNTP as a client and a server

In this figure, System A functions as an SNTP or NTP client, and also an SNTP server. As an SNTP or NTP client, System A retrieves a time value from an external time source that you specify. The SNTP application synchronizes System A's Coordinated Universal Time (UTC) with the time value from the external time source. As an SNTP server, System A sends the time value to all SNTP client systems (System B and Client A) that are connected to System A.

Prerequisites and assumptions

This scenario depends on the following prerequisites and assumptions:

- System A (systemA.yourco.com) is running IBM i V5R3 or later when using SNTP client, or running IBM i V7R3 or later when using NTP client.
- System B (systemB.yourco.com) is running IBM i V5R3, or later.
- System B (systemB.yourco.com) and Client A are running SNTP clients.
- You have a time management strategy.
- You have already set the time zone system value.
- You want to use SNTP application as the time-maintenance application on your system.

Configuration steps

To configure the YourCo, Inc. network to use SNTP, complete the following tasks.

Related concepts

SNTP client

When Simple Network Time Protocol (SNTP) is configured as a client, the IBM i operating system retrieves a time value from an external time source.

NTP client

When Network Time Protocol (NTP) is configured as a client, the IBM i operating system retrieves a time value from an external time source.

Related tasks

Setting the time zone (QTIMZON) system value

Configuring System A as an SNTP or NTP client and an SNTP server

To configure the YourCo, Inc. network to use time protocol service, you need to configure System A as an SNTP or NTP client, and an SNTP server.

To configure System A as an SNTP or NTP client, and an SNTP server, follow these steps:

1. From System i Navigator, expand **System A > Network > Servers > TCP/IP**.
2. Right-click **SNTP** and select **Properties**.
3. Click the following tabs to set the parameters:
 - a) On the **General** tab, select **Client** and **Server** to start SNTP application when TCP/IP starts.
 - b) On the **Client** tab, specify the following values:

- Activity logging: Only when adjusting the system clock
- Client type: choose SNTP or NTP

Specify the following values when client type is SNTP:

- Time servers: `timesrvr1.external.com`
- Poll interval: 60 minutes
- Minimum adjustment: 20 milliseconds
- Maximum adjustment: 20 minutes
- Adjustment threshold: Maximum adjustment

Specify the following values when client type is NTP:

- Time servers: `timesrvr1.external.com`
- The minimum poll interval: This option specify the minimum poll intervals, defaults to 6 (64 s), but can be de-creased to a lower limit of 4 (16 s).
- The maximum poll interval: This option specify the maximum poll intervals, defaults to 10 (1,024 s), but can be in-creased to an upper limit of 17 (36.4 h).
- Key ID : When key identifier has a value, all the packets sent to and received from this server will have a authentication field encrypted using the specified key identifier with values from 1 to 65534, inclusive. The default is to keep this item empty and won't include encryption field. This is an optional function.
- Mark the server as preferred: All other things being equal, this time server will be chosen for synchronization among a set of correctly operating time servers. This is an optional function.
- When the server is reachable, send a burst of eight packets: When the server is reachable, send a burst of eight packets, instead of the usual one, the packet spacing is normally 2 s. This is designed to improve timekeeping quality with the server. This is an optional function.
- When the server is unreachable, send a burst of eight packets: When the server is unreachable, send a burst of eight packets, instead of the usual one. The packet spacing is normally 2 s. This is designed to speed the initial synchronization acquisition with the server. This is an optional function.

- Maximum adjustment threshold: After client selects one or more configured time servers as candidates to accumulate the time, it will set the clock when the time offset is less than the maximum adjustment threshold, otherwise it won't set clock and will make an exit. The maximum adjustment threshold is 1000 s by default, but can be in-creased to an upper limit of 120 minutes.
 - Step adjustment threshold: The step adjustment threshold is 0.128 s by default. It can be set to any positive number in seconds, client will slowly adjust system time by many steps when time offset is less than this value, and otherwise, client will correct system time in one step when time offset is greater than this value. If it is set to zero, client will always slowly adjust system time.
 - Step adjustment interval: The step adjustment interval is 900 s by default. It can be set to any positive number in seconds, to control the client not to change system time too often. If it is set to zero, this control is disabled.
 - Symmetric keys : User can save up to 60 symmetric keys before enable Symmetric Key Cryptography, the servers and clients involved must agree on the MD5 key (the max length is 32 byte) and key identifier(1-65534) to authenticate NTP packets. The keys must be distributed and stored in the servers and clients and individual keys must be activated with the 'Trusted' flag in the menu before use. This is an optional function.
- c) On the **Server** tab, select the following choices:
- For Server activity logging, select **Only when an error status is returned by the server**.
 - Select **Server must be synchronized before valid time is served** to specify that you want your system to act as a client to obtain time from another source before serving time to other clients.

Configuring your firewall to allow SNTP and NTP traffic

In this scenario, you are running a firewall on System A. To allow SNTP and NTP traffic, you must configure the firewall to allow the passing of UDP packets on port 123.

See your firewall documentation for steps to complete this task.

Configuring the SNTP client on other systems in the network

After your SNTP server runs, you must configure other systems in the network to use System A as the SNTP server. In this scenario, you need to configure the SNTP client on System B.

You might need to refer to other system documentation to configure clients in your network.

To configure the SNTP client on System B, follow these steps:

1. From System i Navigator, expand **System B > Network > Servers > TCP/IP**.
2. Right-click **SNTP** and select **Properties**.
3. Click the following tabs to set the parameters:
 - a) On the **General** tab, click **Client** to start the SNTP client when TCP/IP starts.
 - b) On the **Client** tab, specify the following values:
 - Activity logging: Only when adjusting the system clock
 - Client type: SNTP
 - Time servers: `systemA.yourco.com`
 - Poll interval: 60 minutes
 - Minimum adjustment: 20 milliseconds
 - Maximum adjustment: 20 minutes
 - Adjustment threshold: Maximum adjustment

Specifying SNTP as your time maintenance application

After you have configured the SNTP client or NTP client, you need to verify the time adjustment (QTIMADJ) system value to ensure that client can operate as the time maintenance application on your system.

If another application is listed, you must take action to ensure that multiple time applications do not conflict when setting the time.

The time adjustment system value serves only as an identifier. The system does not enforce the software specified; it only identifies the software to be used. This time adjustment system value should be maintained by the time adjustment software and is intended to prevent having multiple time adjustment applications conflict with each other. The system does not verify this value; nor does it verify whether this software is performing time adjustments.

To check the time adjustment (QTIMADJ) system value to use SNTP for time management, follow these steps:

1. From System i Navigator, expand **System A > Configuration and Service > System Values**.
2. In the right pane, right-click **Date and Time** and click **Properties**.
3. On the Date and Time System Values page, click the **Time** tab.
4. In the **Time maintenance application** field, verify that the value is *NONE.

Note: If the system value is set to *NONE, SNTP application will automatically change the value to QIBM_OS400_Sntp when the SNTP client is started, or change the value to QIBM_OS400_NTP when the NTP client is started. If another application is listed, you must take action to ensure that multiple time applications do not conflict when setting the time.

5. Click **OK** to save your changes.
6. Repeat these steps for System B.

Starting SNTP application manually

To enable the Simple Network Time Protocol (SNTP) application that you have configured, you need to start SNTP application manually. After you change SNTP and NTP configuration, you also need to start SNTP application manually.

Note: If you make changes to an existing SNTP server configuration, you must first stop the SNTP server before you can restart it. For information about how to stop SNTP, see [Method 1: Stopping the current SNTP session](#).

Because System A is both an SNTP server and an SNTP or NTP client, the starting process for System A is different from the process for the other systems in the network.

To start SNTP application, follow these steps:

1. Start SNTP application on System A, which has already been configured as an SNTP or NTP client and an SNTP server.
 - a) From System i Navigator, expand **System A > Network > Servers > TCP/IP**.
 - b) Right-click **SNTP** and click **Start > All**.
2. Start SNTP application on clients on other systems in the network.
 - a) From System i Navigator, expand **System B > Network > Servers > TCP/IP**.
 - b) Right-click **SNTP** and click **Start > Client**.

Configuring SNTP application

You can work with SNTP server, SNTP client and NTP client settings from System i Navigator or work with SNTP client and SNTP server settings by using the Change SNTP Attributes (CHGNTPA) command on the character-based interface.

You can use an SNTP or NTP client to adjust system time. Because most applications use the system time, those applications obtain accurate time from the system clock.

The options that you see in System i Navigator depend on the version of the IBM i operating system that runs on your system and the version of IBM i Access for Windows that is used. From System i Navigator, click **Help** or press F1 for help that describes the procedures for your version.

To work with SNTP application, follow these steps:

1. From System i Navigator, expand **your system** > **Network** > **Servers** > **TCP/IP**.
2. Right-click **SNTP** and select **Properties**.

Click the following tabs to set the parameters.

Select this tab	Then do this
General	Specify whether to start SNTP when TCP/IP starts. You can set this preference for the server and the client separately.
Client	Specify the logging preference and client type. For SNTP client, specify up to three time servers that the client can poll, also specify the poll interval and adjustment preferences. For NTP client, specify up to ten time servers that the client can poll, also specify the poll intervals and adjustment preferences.
Server	Specify your logging preference. By default, the SNTP server will serve the system time when you start it. You might want to select Server must be synchronized before valid time is served to specify that you want your system to act as a client to obtain time from another source before serving time to other clients.

Note: If you use the SNTP application through a firewall, you might need to update the firewall configuration to allow the passing of UDP packets on port 123.

Related concepts

SNTP client

When Simple Network Time Protocol (SNTP) is configured as a client, the IBM i operating system retrieves a time value from an external time source.

SNTP server

When you configure the IBM i operating system as an SNTP server, your system acts as a time server for other devices.

NTP client

When Network Time Protocol (NTP) is configured as a client, the IBM i operating system retrieves a time value from an external time source.

Troubleshooting SNTP application

You have various options to solve problems that are related to Simple Network Time Protocol (SNTP) application. Here are some common problems that your system might encounter when you adjust time using SNTP application.

The following list identifies problems you might encounter and provides a way to recover:

- **Contact an SNTP server through a firewall**

If you use the SNTP or NTP client through a firewall, you might need to configure the firewall to allow the User Datagram Protocol (UDP) packets to pass on port 123 or 17010.

- **Server does not serve time to clients**

If you have selected **Server must be synchronized before valid time is served** on the Server page of SNTP properties, you must configure the system as an SNTP client or NTP client that is connected to an active time server before the server can respond to client polls.

- **Stop SNTP application**

If SNTP client or NTP client does not make correct time adjustments or if you want to start a new time adjustment, you must ensure that SNTP application is stopped properly.

Some logs can help you identify problems with the server or client.

Related concepts

[Troubleshooting time management](#)

[Troubleshooting](#)

[Service and support](#)

Related tasks

[I want to stop Simple Network Time Protocol](#)

Logging activity

You can use the logging function to track activity and identify problems with the Simple Network Time Protocol (SNTP) server or client, and also Network Time Protocol (NTP) client.

Logging creates records of the actions of SNTP server, SNTP client or NTP client. Use logging to help problem analysis, not during normal running situations.

One log file is created each day with the name in the form QTOT YYYYMMDD, where YYYY represents the year, MM represents the month, and DD represents the day.

The coded character set identifier (CCSID) of the file is the default system CCSID. If the system default CCSID is changed when the activity log is in use, the original CCSID of the file is still used. Because the resulting file might become unreadable, you need to stop the SNTP application, rename the activity log, and restart the SNTP application so that a new log is created with the new CCSID.

Logging client activity

To log SNTP or NTP client activity, follow these steps:

1. From System i Navigator, expand **your system** > **Network** > **Servers** > **TCP/IP**.
2. Right-click **SNTP**, and click **Properties** to open the SNTP Properties pages.
3. Go to the Client page. Select when you want to log client activity.
4. Click **OK** to save your selection.

The client activity logs are created in the integrated file system directory /QIBM/UserData/OS400/TCPIP/NTP.

Here is an example of a SNTP client log:

```
SNTP Client Activity Log QT0TNT/NT/097229 08/21/03 12:00:48.502 AM
TCP9136 SNTP Client started.
TCP9146 Using time server TIME.
TCP9162 08/21/03 12:00:48.548 AM Time remaining for adjustment is 0.000 seconds.
TCP9116 08/21/03 12:00:48.548 AM NTP server UTC time is 08/21/03 5:00:48.196.
TCP9117 08/21/03 12:00:48.548 AM Client clock UTC time is 08/21/03 5:00:48.197.
TCP9120 08/21/03 12:00:48.548 AM Client clock adjusted = 1 (0 = not adjusted, 1 = adjusted)
TCP9146 Using time server TIME.
TCP9162 08/21/03 12:01:48.590 AM Time remaining for adjustment is 0.000 seconds.
TCP9116 08/21/03 12:01:48.590 AM NTP server UTC time is 08/21/03 5:01:48.589.
TCP9117 08/21/03 12:01:48.590 AM Client clock UTC time is 08/21/03 5:01:48.589.
TCP9120 08/21/03 12:01:48.590 AM Client clock adjusted = 1 (0 = not adjusted, 1 = adjusted)
```

Here is an example of a NTP client log:

```
TCP9183 NTP Client started.
TCP9184 Using Client address 192.168.25.181 to connect server 192.168.25.153 mode 3 version 4
minpoll 5 maxpoll 7 keyid 00000000
TCP9198 Wed Oct 21 03:17:59 2015 Transmit request to server 192.168.25.153 mode 3 keyid
00000000
TCP9186 Wed Oct 21 03:17:59 2015 Receive packet from server 192.168.25.153 mode 4 code 1 auth
none offset -0.019704 s
TCP9198 Wed Oct 21 03:18:37 2015 Transmit request to server 192.168.25.153 mode 3 keyid
00000000
TCP9186 Wed Oct 21 03:18:37 2015 Receive packet from server 192.168.25.153 mode 4 code 1 auth
none offset -0.019503 s
TCP9198 Wed Oct 21 03:19:11 2015 Transmit request to server 192.168.25.153 mode 3 keyid
00000000
TCP9186 Wed Oct 21 03:19:11 2015 Receive packet from server 192.168.25.153 mode 4 code 1 auth
none offset -0.019294 s
TCP9198 Wed Oct 21 03:20:23 2015 Transmit request to server 192.168.25.153 mode 3 keyid
00000000
TCP9146 Using time server 192.168.25.153.
TCP9185 Wed Oct 21 03:20:23 2015 Synchronized Client to server 192.168.25.153 stratum 1.
TCP9197 Wed Oct 21 03:20:23 2015 Client clock was slewed for offset -0.019 s.
TCP9186 Wed Oct 21 03:20:23 2015 Receive packet from server 192.168.25.153 mode 4 code 1 auth
none offset -0.002928 s
TCP9198 Wed Oct 21 03:21:35 2015 Transmit request to server 192.168.25.153 mode 3 keyid
00000000
TCP9146 Using time server 192.168.25.53.
TCP9197 Wed Oct 21 03:21:35 2015 Client clock was slewed for offset -0.003 s.
```

Notes:

Explanation of some parameters and messages:

- Mode: '3' means client mode, '4' means server mode.
- Auth: This authentication has 4 kinds of flag to show the state of using symmetric key cryptography.
 - 'none'- The packet has no MAC, so the server is not using symmetric key cryptography.
 - 'ok' - The packet has a MAC and authentication succeeds, so the client and the server are using the same key correctly.
 - 'crypto'- The MAC has four octets only, so the server may not have the key to use like the client.
 - 'error' - The packet has a MAC but authentication fails.
- TCP9197 : 'Client clock was slewed 'means the system time will be slowly adjusted by many steps.
- TCP9196 : 'Client clock was stepped ' means the system time is changed in one step.

Logging server activity

To log SNTP server activity, follow these steps:

1. From System i Navigator, expand **your system** > **Network** > **Servers** > **TCP/IP**.
2. Right-click **SNTP**, and click **Properties** to open the SNTP Properties pages.
3. Go to the Server page. Select when you want to log SNTP server activity.
4. Click **OK** to save your selection.

The server activity logs are created in the integrated file system directory /QIBM/UserData/OS400/TCPIP/NTP/SERVER. Here is an example of a server log:

```
SNTP Server Activity Log QT0TNT/NT/097326 08/21/03 2:46:04.329 PM
TCP9159 SNTP Server started.
TCP9161 08/21/03 2:46:20.828 PM Client 9.5.150.56 Unsynchronized status returned.
TCP9163 08/21/03 2:46:20.854 PM SNTP system client unable to contact server.
TCP9161 08/21/03 2:47:21.181 PM Client 9.5.150.57 Unsynchronized status returned.
TCP9162 08/21/03 2:47:21.195 PM Time remaining for adjustment is .534 seconds.
TCP9160 08/21/03 2:48:21.242 PM Client 9.5.56.158, UTC time returned is 08/21/03 19:48:21.241.
TCP9160 08/21/03 2:48:21.532 PM Client 9.130.69.21.159, UTC time returned is 08/21/03
19:48:21.531.
```

Related concepts

[Connection status for NTP client](#)

You can use **Connection Status** tag from System i Navigator to check the current NTP client status of communicating with every time server.

Related tasks

[I want to stop Simple Network Time Protocol](#)

Connection status for NTP client

You can use **Connection Status** tag from System i Navigator to check the current NTP client status of communicating with every time server.

When the NTP client is active, to check its connection status, follow these steps:

1. From System i Navigator, expand **System A > Network > Servers > TCP/IP**.
2. Right-click **SNTP**, and select **Connection Status**.
3. On **NTP server connection status** tab, check the time server list.

Here is an example of Connection Status table:

Time Server	Refid	St	T	When(s)	Poll(s)	Reach	Delay(ms)	Offset(ms)	Jitter(ms)
192.168.25.153	LOCAL(0)	15	u	10	64	1	211.230	-2.928	0.001

Figure 3. Connection Status table

The detailed explanation of every column:

1. **Time Server** : This column shows host names or addresses, correspond to the server entries listed in the time server configuration menu. The character in the left margin in the time server billboard is the state flag of time server in the client clock selection process, following is a list of these characters:
 - space : The time server is unreachable, synchronized to this server (synch loop) or outrageous synchronization distance.
 - x : The time server is discarded by the client intersection algorithm as a false time provider.
 - - :The time server is discarded by the client clustering algorithm as an outlier.
 - + :The time server is a candidate for the client combining algorithm.
 - # : The time server is not among the first six time server candidates sorted by synchronization distance.
 - * : The time server is the best candidate for the client combining algorithm.
2. **Refid** : This column shows the current source of synchronization (the driver reference identifier).
3. **St** : This column is the stratum of NTP time server.
4. **T** : This means the connection type (u = unicast, m = multicast, l = local, - = don't know).

5. **Poll** : This is the poll interval in seconds.
6. **When** : This column shows the time since the server was last heard in seconds.
7. **Reach** : This column shows the status of the reachability register (see RFC-1305) in octal.
8. The remaining columns show the latest delay, time offset and jitter in milliseconds.

Related concepts

Logging activity

You can use the logging function to track activity and identify problems with the Simple Network Time Protocol (SNTP) server or client, and also Network Time Protocol (NTP) client.

Related tasks

I want to stop Simple Network Time Protocol

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