

# How To Configure Time Synchronization for Cisco CallManager and Cisco Unity

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## **Introduction**

### **Prerequisites**

Prerequisites

Components Used

Conventions

### **Configure Automatic Time Synchronization with a Time Server Using NTP**

If the NetworkTimeProtocol Service does not run on the Cisco CallManager

### **Synchronize Time Manually with the Time Server Using NTP**

### **Synchronize the Cisco Unity Express/Cisco CallManager Express Server with an External Time Server**

### **Enable Client Computers to Synchronize with Domain Time Source Servers**

Option 1

Solution 1

Option 2

Solution 2

### **Verify**

### **Troubleshoot**

### **NetPro Discussion Forums – Featured Conversations**

### **Related Information**

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## **Introduction**

This document discusses the various methods that you can use in order to synchronize the clocks on Cisco IP Telephony servers either with an external Network Time Server that uses X Network Time Protocol (XNTP) or between Cisco CallManagers that use various Windows utilities. This document addresses the need to synchronize Cisco CallManagers, Cisco Unity, Cisco Unity Express/Cisco CallManager Express and other IP Telephony platforms such as Cisco Conference Connection (CCC), Cisco Customer Response Solution (CRS), Cisco Personal Assistant (PA), and Cisco Phone Productivity Services (PPS), either with an external Time Server or via Windows.

**Note:** XNTP is provided as an alternative time synchronization service to Windows native W32Time service. The XNTP client allows time synchronization with any reachable NTP Time Server. Cisco recommends running this service to ensure that the date and time kept by each server in a CallManager cluster are kept in synchronization. The XNTP client is a preferred method of time keeping when CallManager servers are not members of a Windows NT/2000 domain structure.

## **Prerequisites**

### **Prerequisites**

You must be logged in with an account that is a member of the local Administrators group in Windows 2000. You should also know the IP address of one or more Network Time Servers.

## Components Used

The information in this document is based on these software and hardware versions.

- Cisco CallManager 3.x and 4.x
- Cisco Conference Connection
- Cisco Customer Response Solution
- Cisco Unity 4.x
- Cisco Unity Express/Cisco CallManager Express
- Cisco Personal Assistant
- Cisco Phone Productivity Services

Only Cisco CallManager has the XTNP component for other IP Telephony servers. See the Enable Client Computers to Synchronize with Domain Time Source Servers section of this document if you want to configure NTP on Cisco Unity.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

## Configure Automatic Time Synchronization with a Time Server Using NTP

**Note:** This procedure only applies to Cisco CallManager.

**Note:** The SQL database does not have any dependency on NTP. Therefore, you do not need to change anything about the SQL database before you perform the NTP time synchronization.

In Cisco Unified CallManager systems and gateways, time is synchronized by using one of these two primary methods:

- **Network Time Protocol (NTP)**
- **Windows Time Service (W32Time)**

You can use either one of them at a time, but not both at the same time.

Complete these steps in order to configure the Cisco CallManager server to automatically synchronize, and stay synchronized, with a Time Server.

**Note:** You cannot use NTP to synchronize between two Cisco CallManagers. The NTP that is installed in Cisco CallManager is a client NTP service and only synchronizes to an NTP server.

1. Complete these steps in order to verify that the **NetworkTimeProtocol** service is configured to launch automatically upon start-up:
  - a. Right-click on **My Computer** and choose **Manage**.
  - b. Expand the **Services and Applications** section.
  - c. Choose **Services**.

- d. Double-click on the **Network Time Protocol** service.
  - e. Ensure that Start-up Type is set to **Automatic**.
2. Configure the **C:\WINNT\system32\drivers\etc\ntp.conf** file.

This file contains the list of Time Servers that Cisco CallManager becomes synchronized with. You can configure Cisco CallManager to point to specific Time Servers, or you can configure it to receive NTP broadcasts on the local LAN segment from the router (as long as the router is configured to do so).

- ◆ Sample ntp.conf file that uses static Time Servers:

```
◇ server 10.0.0.10
◇ server 10.1.0.10
◇ driftfile %windir%\ntp.drift
```

- ◆ Sample ntp.conf file that uses an NTP broadcast router:

```
◇ broadcastclient
◇ driftfile %windir%\ntp.drift
```

3. Go to the **Services Control Panel** and stop/start the **NetworkTimeProtocol** service. Allow several minutes for the update to take place.

## If the NetworkTimeProtocol Service does not run on the Cisco CallManager

**Note:** This procedure only applies to Cisco CallManager.

Complete these steps in order to install the NTP service:

1. Open a command prompt and change to this directory:

```
C:\>cd C:\Program Files\Cisco\Xntp
```

2. Run **install.bat**:

```
C:\Program Files\Cisco\Xntp>install.bat
```

```
Installing Configuration Files
```

```
1 file(s) copied.
```

```
Installing Executables
```

```
1 file(s) copied.
```

```
1 file(s) copied.
```

```
1 file(s) copied.
```

```
1 file(s) copied.
```

```
1 file(s) copied.
```

```
The NTP service is already installed
```

```
Remove it first if you need to re-install a new version
```

```
.
```

The NTP Service is now installed.

Please modify the NTP.CONF file in C:\WINNT appropriately.

.  
.

See readme.txt for more information.

.

After modifying the configuration file, use the services control panel to make NTP autostart and either reboot or manually start it.

When the system restarts, the NTP service will be running.

For more information on NTP Operations please see the NTPOG.Wri (NTP Operations Guide) in the C:\WINNT\..\xntp directory...

.

C:\Program Files\Cisco\Xntp>

## Synchronize Time Manually with the Time Server Using NTP

**Note:** This procedure only applies to Cisco CallManager.

Complete these steps in order to synchronize time manually with the Time Server using NTP.

1. Stop the **NetworkTimeProtocol** service in the Services control panel.
2. Synchronize the clock by using one of these commands from a command prompt:

- a. In order to synchronize with a remote Time Server:

```
ntpdate x.x.x.x
```

Where *x.x.x.x* is the IP address of the Time Server.

- b. In order to synchronize with a Broadcast router:

```
ntpdate x.x.x.x
```

Where *x.x.x.x* is the IP address of the Ethernet port of the router.

3. Restart the **NetworkTimeProtocol** service in the Services control panel.

## Synchronize the Cisco Unity Express/Cisco CallManager Express Server with an External Time Server

You can synchronize your Cisco CallManager Express/Cisco Unity Express router to a single clock on the network, which is known as the clock master using NTP. For information on how to configure NTP on Cisco CallManager Express/Cisco Unity Express, refer to Enabling Network Time Protocol.

# Enable Client Computers to Synchronize with Domain Time Source Servers

## Option 1

By default there is no timing protocol enabled on Cisco CallManager servers. Therefore, in order to synchronize the time between servers within a cluster, Cisco recommends you configure one of these solutions to ensure that the date and time kept by each server in a Cisco CallManager cluster are kept in sync. This helps you troubleshoot as well as ensure that all phones in the cluster display the same time. This solution describes how to achieve synchronization between Cisco CallManager servers using the **Net Time** command in Windows. This procedure is recommended if there is no Time Server available in the domain.

## Solution 1

Complete these steps in order to create a scheduled job to run the **Net** command with the time option:

1. Choose **Start > Settings > Control Panel > Scheduled Tasks > Add Scheduled Task** and click **Next**.
2. When requested to choose a program, choose **browse** and browse to **c:\winnt\system32\net.exe**.
3. Type in a name for the task (for example, Time Sync).
4. Choose **perform the task daily** and click **Next**.
5. Choose a time that you want this to run and click **Next**.
6. Enter the username of a user that belongs to the local admin group, enter the appropriate password, and click **Next**.
7. Check **Open advanced properties for this task** and click **Finish**.
8. When the Properties dialog box opens, add in the line **C:\WINNT\system32\net.exe time \\CCM /set /y** in the run field.

Replace CCM with the server name or IP address of the server with which you want this server to synchronize.

9. Click **OK** in order to save and close the Scheduled Task.

**Note:** This procedure also works on Cisco Unity servers when you enable a timing protocol and synchronize to another server within a cluster.

Refer to Microsoft Knowledge Base Article 131715 (How to Set Up And Synchronize with Domain Time Source Servers) for further configuration information.

## Option 2

Windows 2000 uses a time synchronization service called W32Time to synchronize the date and time on computers in a Windows 2000-based network. This helps you troubleshoot as well as ensure that all phones in the cluster display the same time. This solution describes how to enable W32Time on Cisco Unity servers and have them synchronize with a Windows 2000 primary domain controller (PDC). For Cisco CallManager servers, use the procedure in Solution 1.

If the Cisco Unity server is part of the Windows 2000 domain, it automatically synchronizes to the PDC. However, if a Cisco Unity server happens to be the only Domain Controller (DC), then it needs to configure time synchronization with the **Network Time Protocol (NTP)** using the procedure in the Solution 2 section.

**Note:** This solution is based on the assumption that the Windows 2000 PDC is already configured as a Time server. Refer to Microsoft Knowledge Base Article 216734 (How to Configure an Authoritative Time

Server in Windows 2000) for further information about how to set up your Domain Controller as an Authoritative Time server.

## Solution 2

Complete these steps in order to enable W32Time on Cisco Unity servers and have them synchronize with a Windows 2000 PDC.

1. Choose **Start > Settings > Control Panel > Administrative Tools > Services** to start the **Windows Time Service**.

**Note:** Cisco recommends you set the Windows Time Service to **automatic** so that it is restarted in the event of a system reboot.

2. On each Cisco CallManager server, type this line at a command prompt:

```
net time /setsntp:domain controller
```

*domain controller* is the Windows 2000 PDC that acts as a time server.

3. Stop and restart the **Windows Time** service.

**Note:** This approach configures time synchronization for Cisco Unity servers. However, for Cisco Unity server the *domain controller* is an external NTP source.

Refer to Microsoft Knowledge Base Article 216734 (How to Configure an Authoritative Time Server in Windows 2000) for further information.

## Verify

There is currently no verification procedure available for this configuration.

## Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

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Voice & Video: General

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## Related Information

- **Time Synchronization Server**
  - **Voice Technology Support**
  - **Voice and Unified Communications Product Support**
  - **Recommended Reading: Troubleshooting Cisco IP Telephony**
  - **Technical Support & Documentation – Cisco Systems**
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