

Configuring NTP in Windows

Manually configure the Windows Time service to use internal hardware clock

To configure the PDC master without using an external time source, change the announce flag on the PDC master. The PDC master is the server that holds the forest root PDC master role for the domain. This configuration forces the PDC master to announce itself as a reliable time source and uses the built-in complementary metal oxide semiconductor (CMOS) clock. To configure the PDC master by using an internal hardware clock, follow these steps:

1. Open **regedit**
2. Locate and then select the following registry subkey:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\Config\AnnounceFlags
3. In the right-pane, right-click **AnnounceFlags**, and then select Modify.
4. In Edit DWORD Value, type **A** in the Value data box, and then select OK.
5. Close Registry Editor.
6. Restart the Windows Time service: **net stop w32time && net start w32time**

Manually configure the Windows Time service to use an external time source

To configure an internal time server to synchronize with an external time source, follow these steps:

1. Change the server type to NTP. To do this, follow these steps:
 1. Open **regedit**
 2. Locate and then click the following registry subkey:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\Parameters\Type
 3. In the pane on the right, right-click Type, and then select Modify.
 4. In Edit Value, type NTP in the Value data box, and then select OK.
2. Set AnnounceFlags to 5. To do this, follow these steps:
 1. Locate and then click the following registry subkey:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\Config\AnnounceFlags
 2. In the pane on the right, right-click AnnounceFlags, and then select Modify.
 3. In Edit DWORD Value, type 5 in the Value data box, and then select OK.
 1. If an authoritative time server that is configured to use an AnnounceFlag value of 0x5 does not synchronize with an upstream time server, a client server may not correctly synchronize with the authoritative time server when the time synchronization between the authoritative time server and the upstream time server resumes. Therefore, if you have a poor network connection or other concerns that may cause time synchronization failure of the authoritative server to an upstream server, set the AnnounceFlag value to 0xA instead of to 0x5.
 2. If an authoritative time server that is configured to use an AnnounceFlag value of

0x5 and to synchronize with an upstream time server at a fixed interval that is specified in SpecialPollInterval, a client server may not correctly synchronize with the authoritative time server after the authoritative time server restarts. Therefore, if you configure your authoritative time server to synchronize with an upstream NTP server at a fixed interval that is specified in SpecialPollInterval, set the AnnounceFlag value to 0xA instead of 0x5.

3. Enable NtpServer. To do this, follow these steps:

1. Locate and then click the following registry subkey:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\TimeProviders\NtpServer

2. In the pane on the right, right-click Enabled, and then select Modify.
3. In Edit DWORD Value, type 1 in the Value data box, and then select OK.

4. Specify the time sources. To do this, follow these steps:

1. Locate and then click the following registry subkey:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\Parameters

2. In the pane on the right, right-click NtpServer, and then select Modify.
3. In Edit Value, type Peers in the Value data box, and then select OK.

1. Peers is a placeholder for a space-delimited list of peers from which your computer obtains time stamps. Each DNS name that is listed must be unique. You must append ,0x1 to the end of each DNS name. If you do not append ,0x1 to the end of each DNS name, the changes that you make in step 5 will not take effect.

5. Select the poll interval. To do this, follow these steps:

1. Locate and then click the following registry subkey:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\TimeProviders\NtpClient\SpecialPollInterval

2. In the pane on the right, right-click SpecialPollInterval, and then select Modify.
3. In Edit DWORD Value, type TimeInSeconds in the Value data box, and then select OK.

1. TimeInSeconds is a placeholder for the number of seconds that you want between each poll. A recommended value is 900 (decimal). This value configures the Time Server to poll every 15 minutes.

6. Configure the time correction settings. To do this, follow these steps:

1. Locate and then click the following registry subkey:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\Config\MaxPosPhaseCorrection

2. In the pane on the right, right-click MaxPosPhaseCorrection, and then select Modify.
3. In Edit DWORD Value, click to select Decimal in the Base box.
4. In Edit DWORD Value, type TimeInSeconds in the Value data box, and then select OK.

1. TimeInSeconds is a placeholder for a reasonable value, such as 1 hour (3600) or 30 minutes (1800). The value that you select will depend on the poll interval, network condition, and external time source.

2. The default value of MaxPosPhaseCorrection is 48 hours in Windows Server 2008 R2 or later.

5. Locate and then click the following registry subkey:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\Config\MaxNegPhaseCorrection

6. In the pane on the right, right-click MaxNegPhaseCorrection, and then select Modify.
7. In Edit DWORD Value, click to select Decimal in the Base box.

8. In Edit DWORD Value, type TimeInSeconds in the Value data box, and then select OK.

1. TimeInSeconds is a placeholder for a reasonable value, such as 1 hour (3600) or 30 minutes (1800). The value that you select will depend on the poll interval, network

condition, and external time source.

2. The default value of MaxNegPhaseCorrection is 48 hours in Windows Server 2008 R2 or later.

7. Close Registry Editor.

8. Restart the Windows Time service: **net stop w32time && net start w32time**

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