



Clock Management Commands

To use these commands in System Admin VM, you must be in a user group associated with appropriate command rules and data rules. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

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clock timezone

To set the time zone for display, use the **clock timezone** command in System Admin Config mode or XR Config mode. To remove the time zone setting, use the **no** form of this command.

clock timezone *zone region*
no clock timezone

Syntax Description	<i>zone</i>	Name of the time zone to be displayed when standard time is in effect.
	<i>region</i>	Sets the offset according to the region specified.
Command Default	UTC	
Command Modes	System Admin Config mode XR Config mode	
Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines This table lists common time zone acronyms used for the *zone* argument.

Table 1: Common Time Zone Acronyms

Acronym	Time Zone Name and UTC Offset
Europe	
GMT	Greenwich Mean Time, as UTC.
BST	British Summer Time, as UTC plus 1 hour.
IST	Irish Summer Time, as UTC plus 1 hour.
WET	Western Europe Time, as UTC.
WEST	Western Europe Summer Time, as UTC plus 1 hour.
CET	Central Europe Time, as UTC plus 1 hour.
CEST	Central Europe Summer Time, as UTC plus 2 hours.
EET	Eastern Europe Time, as UTC plus 2 hours.
EEST	Eastern Europe Summer Time, as UTC plus 3 hours.

Acronym	Time Zone Name and UTC Offset
MSK	Moscow Time, as UTC plus 3 hours.
MSD	Moscow Summer Time, as UTC plus 4 hours.
United States and Canada	
AST	Atlantic Standard Time, as UTC minus 4 hours.
ADT	Atlantic Daylight Time, as UTC minus 3 hours.
ET	Eastern Time, either as EST or EDT, depending on place and time of year.
EST	Eastern Standard Time, as UTC minus 5 hours.
EDT	Eastern Daylight Saving Time, as UTC minus 4 hours.
CT	Central Time, either as CST or CDT, depending on place and time of year.
CST	Central Standard Time, as UTC minus 6 hours.
CDT	Central Daylight Saving Time, as UTC minus 5 hours.
MT	Mountain Time, either as MST or MDT, depending on place and time of year.
MST	Mountain Standard Time, as UTC minus 7 hours.
MDT	Mountain Daylight Saving Time, as UTC minus 6 hours.
PT	Pacific Time, either as PST or PDT, depending on place and time of year.
PST	Pacific Standard Time, as UTC minus 8 hours.
PDT	Pacific Daylight Saving Time, as UTC minus 7 hours.
AKST	Alaska Standard Time, as UTC minus 9 hours.
AKDT	Alaska Standard Daylight Saving Time, as UTC minus 8 hours.
HST	Hawaiian Standard Time, as UTC minus 10 hours.
Australia	
WST	Western Standard Time, as UTC plus 8 hours.
CST	Central Standard Time, as UTC plus 9.5 hours.
EST	Eastern Standard/Summer Time, as UTC plus 10 hours (plus 11 hours during summer time).

This table lists an alternative method for referring to time zones, in which single letters are used to refer to the time zone difference from UTC. Using this method, the letter Z is used to indicate the zero meridian,

equivalent to UTC, and the letter J (Juliet) is used to refer to the local time zone. Using this method, the International Date Line is between time zones M and Y.

Table 2: Single-Letter Time Zone Designators

Letter Designator	Word Designator	Difference from UTC
Y	Yankee	UTC minus 12 hours.
X	Xray	UTC minus 11 hours.
W	Whiskey	UTC minus 10 hours.
V	Victor	UTC minus 9 hours.
U	Uniform	UTC minus 8 hours.
T	Tango	UTC minus 7 hours.
S	Sierra	UTC minus 6 hours.
R	Romeo	UTC minus 5 hours.
Q	Quebec	UTC minus 4 hours.
P	Papa	UTC minus 3 hours.
O	Oscar	UTC minus 2 hours.
N	November	UTC minus 1 hour.
Z	Zulu	Same as UTC.
A	Alpha	UTC plus 1 hour.
B	Bravo	UTC plus 2 hours.
C	Charlie	UTC plus 3 hours.
D	Delta	UTC plus 4 hours.
E	Echo	UTC plus 5 hours.
F	Foxtrot	UTC plus 6 hours.
G	Golf	UTC plus 7 hours.
H	Hotel	UTC plus 8 hours.
I	India	UTC plus 9 hours.
K	Kilo	UTC plus 10 hours.
L	Lima	UTC plus 11 hours.
M	Mike	UTC plus 12 hours.

This example shows how to set the time zone to IST Asia/Calcutta:

```
sysadmin-vm:0_RP0# config  
sysadmin-vm:0_RP0 (config)# clock timezone IST Asia/Calcutta
```

clock read-calendar

To manually copy the hardware clock (calendar) settings into the software clock, use the **clock read-calendar** command in XR EXEC mode/System Admin EXEC mode.

clock read-calendar

Syntax Description This command has no keywords or arguments.

Command Default Read calendar is disabled.

Command Modes XR EXEC mode
System Admin EXEC mode

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines The *calendar clock* is a hardware system clock that runs continuously, even if the router is powered off or rebooted. The hardware system clock is separate from the software clock settings, which are erased when the router is power cycled or rebooted.

Use the **clock read-calendar** command to manually copy the hardware clock setting into the software clock.

In the following example, the hardware clock settings are copied to the software clock with the **clock read-calendar** command. The **show clock** command is then entered to display the new software clock settings.

```
sysadmin-vm:0_RP0# clock read-calendar
sysadmin-vm:0_RP0# show clock
Thu Jul 18 14:56:51.888 UTC
Thu Jul 18 14:56:52 UTC 2013
```

ntp authenticate

To enable Network Time Protocol (NTP) authentication, use the **ntp authenticate** command in the System Admin Config or XR Config mode. To restore the system to its default condition, use the **no** form of this command.

ntp authenticate
no ntp authenticate

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes System Admin Config
XR Config

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Use the authenticate command to enable NTP authentication. When NTP authentication is enabled, the system does not synchronize to a time source unless it carries one of the authentication keys specified by the trusted-key command. NTP synchronization will not take place until valid authentication credentials are available with the source.

The following example shows how to enable ntp authentication:

```
sysadmin-vm:0_RP0#config  
sysadmin-vm:0_RP0(config)#ntp authenticate
```

ntp authentication-key

To define an authentication key for a trusted Network Time Protocol (NTP) time source, use the **ntp authentication-key** command in the System Admin Config and XR Config modes. To restore the system to its default condition, use the **no** form of this command.

```
ntp authentication-key key-number md5 {clear | encrypted} key-name
no ntp authentication-key key-number md5 {clear | encrypted} key-name
```

Syntax Description		
	<i>key-number</i>	Authentication key. A number in the range from 1 to 65535.
	md5	Provides message authentication support using the Message Digest 5 (MD5) algorithm.
	clear	Specifies that the key value entered after this keyword is unencrypted.
	encrypted	Specifies that the key value entered after this keyword is encrypted.
	<i>key-number</i>	Key value. The maximum length is 32 characters.

Command Default No authentication key is defined for NTP.

Command Modes System Admin Config
XR Config

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Use the authentication-key command to define authentication keys for use with trusted NTP time sources. Use the **authentication-key** command only after enabling authentication.

This example shows how to configure the system to synchronize only to systems providing authentication key 42 in their NTP packets:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0(config)#ntp authentication-key 42 md5 clear key1
```


ntp peer

To configure the system clock to synchronize a peer or to be synchronized by a peer, use the **ntp peer** command in the System Admin Config mode. To remove the peer command from the configuration file and restore the system to its default condition with respect to the command, use the **no** form of this command.

```
ntp peer peer-name [{key-id id} | [prefer] | [version number}]
no ntp peer peer-name [{key-id id} | [prefer] | [version number}]
```

Syntax Description		
<i>peer-name</i>		Name of the NTP peer.
key-id <i>key-id</i>		Defines the authentication key, where the <i>key-id</i> argument is the authentication key to use when packets are sent to this peer. The authentication key is also used for packets received from the peer. By default, no authentication key is used.
prefer		Makes this peer the preferred peer that provides synchronization.
version <i>number</i>		Defines the Network Time Protocol (NTP) version number, where the <i>number</i> argument is a value from 1 to 4. The default is 4.

Command Default No peers are configured by default.

Command Modes System Admin Config

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Use the **ntp peer** command to allow this machine to synchronize with the peer, or conversely.



Caution Although using the **prefer** keyword can help reduce the switching among peers, you should avoid using the keyword because it interferes with the source selection mechanism of NTP and can result in a degradation of performance.



Note To change the configuration of a specific IP address from peer to server or from server to peer, use the **no** form of the peer or server command to remove the current configuration before you perform the new configuration. If you do not remove the old configuration before performing the new configuration, the new configuration does not overwrite the old configuration.

The **key-id** *key-id* argument is effective only if authentication is enabled.

To verify if the configuration is applied, users can execute the **show running-config ntp** command. To verify the state of the ntp association, users can execute the **show ntp associations** command.

The following example shows how to configure ntp peer:

```
sysadmin-vm:0_RP0#config  
sysadmin-vm:0_RP0(config)#ntp peer test key-id 2
```

ntp server

To allow the system clock to be synchronized by a time server, use the **ntp server** command in the System Admin Config mode. To remove the **ntp server** command from the configuration file and restore the system to its default condition with respect to this command, use the **no** form of this command.

```
ntp server server-name [{key-id id] | [prefer] | [version number]}]
no ntp server server-name [{key-id id] | [prefer] | [version number]}]
```

Syntax Description		
<i>server-name</i>		Name or the IP address of the NTP server.
key-id <i>key-id</i>		Defines the authentication key, where the <i>key-id</i> argument is the authentication key to use when packets are sent to this server. By default, no authentication key is used.
prefer		Makes this server the preferred server that provides synchronization.
version <i>number</i>		Defines the Network Time Protocol (NTP) version number, where the <i>number</i> argument is a value from 1 to 4. The default is 4.

Command Default No servers are configured by default.

Command Modes System Admin Config

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines Using the **prefer** keyword reduces switching back and forth among servers.



Note To change the configuration of a specific IP address from peer to server or from server to peer, use the **no** form of the **peer** or **server** command to remove the current configuration before you perform the new configuration. If you do not remove the old configuration before performing the new configuration, the new configuration does not overwrite the old configuration.

The **key-id** *key-id* argument is effective only if authentication is enabled.

To verify if the configuration is applied, users can execute the **show running-config ntp** command. To verify the state of the ntp association, users can execute the **show ntp associations** command.

The following example shows how to configure ntp server:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0 (config) #ntp server test key-id 2
```

ntp trusted-key

To designate a Network Time Protocol (NTP) trusted key, use the **ntp trusted-key** command in the System Admin Config and XR Config modes. To remove the trusted-key command from the configuration file and restore the system to its default condition with respect to this command, use the **no** form of this command.

ntp trusted-key *key-number*
no ntp trusted-key *key-number*

Syntax Description	<i>key-number</i>	Authentication key number to be trusted. Range is from 1 to 65535.
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Command Default	No NTP trusted key is designated.
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Command Modes	System Admin Config XR Config
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Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines	<p>The ntp trusted-key command is effective only if authentication is enabled.</p> <p>If authentication is enabled, use the trusted-key command to define one or more key numbers (corresponding to the keys defined with the authentication-key [NTP] command) that a NTP system must provide in its NTP packets for this system to synchronize to it. Because the other system must know the correct authentication key, this precaution provides protection against accidentally synchronizing the system to a system that is not trusted.</p>
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The following example shows how to designate an ntp trusted key:

```
sysadmin-vm:0_RP0#config
sysadmin-vm:0_RP0(config)#ntp authentication-key 1 md5 060506324F41 7
sysadmin-vm:0_RP0(config)#ntp trusted-key 1
sysadmin-vm:0_RP0(config)#ntp clock-period 17179865
sysadmin-vm:0_RP0(config)#ntp server 12.0.0.1 key 1
```

show calendar

To display the system time and date, use the **show calendar** command in the System Admin EXEC and XR EXEC mode.

show calendar

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes System Admin EXEC
XR EXEC

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines The time format of the **show calendar** output depends on the time format set using the **clock timezone** command.

The following example shows sample output from the **show calendar** command:

```
sysadmin-vm:0_RP0# show calendar
Thu Jul 18 17:32:28.640 UTC
```

show clock

To display the system clock, use the **show clock** command in the System Admin EXEC mode.

```
show clock [trace {timezone_config | timezone_notify} {all trace-name} location node-id
[trace-attribute]]
```

Syntax Description		
	<i>trace-name</i>	Trace buffer name.
	timezone_config	Displays timezone configuration traces.
	timezone_notify	Displays timezone notify traces.
	location <i>node-id</i>	Specifies the target location. The <i>node-id</i> argument is expressed in the <i>rack/slot</i> notation.
	<i>trace-attribute</i>	Trace attribute.
	all	Displays all the details.

Command Default None

Command Modes System Admin EXEC

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines The time format of the **show clock** output depends on the time format set using the **clock timezone** command

This example shows how to view the output of the **show clock** command:

```
sysadmin-vm:0_RP0#show clock

Thu Aug 22 07:29:17.225 UTC
Thu Aug 22 07:29:17 UTC 2013
```

show ntp associations

To display the status of Network Time Protocol (NTP) associations and to view the nodes participating in the NTP synchronization, use the **show ntp associations** command in System Admin EXEC mode.

show ntp associations

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes System Admin EXEC

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

This example shows the sample output of the **show ntp associations** command:

```

sysadmin-vm:0_RP0#show ntp associations
Mon Aug 19 20:23:22.775 UTC
      remote          refid          st t when poll reach  delay  offset  jitter
=====
external:
  12.28.59.200      10.81.254.131      2 u  15  64   1   0.186  0.138  0.000
internal:
  192.0.4.1         127.0.0.1          12 u   4  64   1   0.171  17.240  0.000

```

show ntp associations