Clock Commands on Cisco IOS XR Software

This module describes the commands used to set and display the internal clock settings in Cisco IOS XR software.

For more information about manually setting the router clock, see *Cisco IOS XR Getting Started Guide for the Cisco XR 12000 Series Router*.

For more information about configuring the router to synchronize to Network Time Protocol (NTP), see the *Implementing NTP on Cisco IOS XR Software* module in *Cisco IOS XR System Management Configuration Guide for the Cisco XR 12000 Series Router*.

clock read-calendar

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

clock read-calendar

Command Default Read calendar is disabled.

Command Modes EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

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.

Task ID

Task ID	Operations
host-services	execute

Examples   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.

```
RP/0/0/CPU0:router# clock read-calendar
RP/0/0/CPU0:router# show clock

14:31:57.089 PST Tue Feb 10 2008
```

Related Commands

Command	Description
clock set, page 4	Sets the software clock settings.
clock update-calendar, page 15	Sets the calendar from the software clock.
show clock, page 21	Displays the clock settings.
update-calendar	Periodically updates the calendar from NTP.

clock set

To change the software clock settings, use the **clock set** command in EXEC mode.

clock set *hh***:***mm***:***ss* {*day month*| *month day*} *year*

Syntax Description

hh:*mm*:*ss*	Current time in hours (24-hour format), minutes, and seconds. Colons are required between values.
day	Current day (by date) in the month.
month	Current month (by name).
year	Current year (no abbreviation). Enter a valid four-digit year.

Command Default   Clock is not set.

Command Modes   EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

Usage Guidelines   To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Generally, if the system is synchronized by a valid outside timing mechanism, such as a Network Time Protocol (NTP) clock source, or if you have a networking device with calendar capability, you need not set the software

clock. Use the **clock set** command if no other time sources are available. The time specified in this command is relative to the configured time zone.

Task ID		
	Task ID	**Operations**
	host-services	execute

Examples

Setting the Software Clock

This example shows how to set the software clock using the **clock set** command with the *day month* arguments first.

```
RP/0/0/CPU0:router# clock set 14:12:00 10 feb 2005

14:12:00.114 JST Fri Feb 10 2009
```

This example shows how to set the software clock using the **clock set** command with the *month day* arguments first.

```
RP/0/0/CPU0:router# clock set 14:38:00 feb 10 2005

14:38:00.069 PST Tue Feb 10 2009
```

Examples

This example shows how to display the settings of the software clock:

```
RP/0/0/CPU0:router# show clock

14:38:11.292 PST Tue Feb 10 2009
```

Examples

This example shows how to display the available months using the online help (**?**) function:

```
RP/0/0/CPU0:router# clock set 06:10:00 12 ?

    january    Month of the Year
    february
    march
    april
    may
    june
    july
    august
    september
    october
    november
    december
```

Related Commands

Command	Description
clock summer-time, page 7	Configures the system to switch automatically to daylight saving time.
clock timezone, page 10	Sets the time zone for display.
show clock, page 21	Displays the clock settings.

clock summer-time

To configure the system to switch automatically to summer time (daylight saving time), use the **clock summer-time** command in global configuration mode. To remove the daylight saving time setting, use the **no** form of this command.

clock summer-time *zone* {**date** {*date month year hh*:*mm date month year hh*:*mm*| *month date year hh*:*mm month date year hh*:*mm*}| **recurring** *week day month hh*:*mm week day month hh*:*mm*} [*offset*]

no clock summer-time

Syntax Description

zone	Name of the time zone (for example, PDT) to be displayed when summer time is in effect. Table 1: Common Time Zone Acronyms, page 11 lists common time zone acronyms used for the *zone* argument.
date	Indicates that summer time should start on the first specific date listed in the command and end on the second specific date in the command.
date	Date of the month.
month	Month.
year	Year (no abbreviation).
hh:*mm*	Time (24-hour format) in hours and minutes.
recurring	Indicates that summer time should start and end on the corresponding specified days every year.
week	Week of the month (values are 1 to 5, first or last).
day	Day of the week.
offset	(Optional) Number of minutes to add during summer time.

Command Default

Summer time is not configured.

offset: 60

Command Modes

Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.

Release	Modification
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **clock summer-time** command if you want the system to switch automatically to summer time (for display only):

- Use the **recurring** keyword to apply the rules on the configured day each year. If **clock summer-time** *zone* **recurring** is specified without parameters, the summer time rules default to United States standards. The default for the *offset* argument is 60 minutes.

- Use the **date** keyword to specify a start and end date for summer time if you cannot use the first form.

In both forms of the command, the first part of the command specifies when summer time begins and the second part specifies when it ends. All times are relative to the local time zone. The start time is relative to standard time. The end time is relative to summer time. If the starting month is after the ending month, the system assumes that you are in the Southern Hemisphere.

Task ID

Task ID	Operations
host-services	read, write

Examples

The following example specifies that summer time starts on the first Sunday in April at 02:00 and ends on the last Sunday in October at 02:00. The **recurring** keyword indicates that the rules apply every year.

```
RP/0/0/CPU0:router(config)# clock summer-time PDT recurring 1 Sunday April 2:00 last Sunday
October 2:00
```

If you live where summer time does not follow the pattern in the first example, you could set it to start on October 12, 2008 at 02:00 and end on April 26, 2009 at 02:00, with the following example. The **date** keyword indicates that the rules apply for the current year only.

```
RP/0/0/CPU0:router(config)# clock summer-time PDT date 12 October 2008 2:00 26 April 2009
2:00
```

Related Commands

Command	Description
clock set, page 4	Sets the software clock settings.
clock timezone, page 10	Sets the time zone for display.

clock timezone

To set the time zone for display, use the **clock timezone** command in global configuration mode. To remove the time zone setting, use the **no** form of this command.

clock timezone *zone hours-offset* [*minutes-offset*]

no clock timezone

Syntax Description

zone	Name of the time zone to be displayed when standard time is in effect.
hours-offset	Hours offset from Coordinated Universal Time (UTC). Range is from –23 to +23.
minutes-offset	(Optional) Minutes offset from UTC.

Command Default   UTC

Command Modes   Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

Usage Guidelines   To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Use the **clock timezone** command to display the time zone only when setting the time manually. The system keeps time internally in UTC.

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.
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.

Acronym	Time Zone Name and UTC Offset
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.

Letter Designator	Word Designator	Difference from UTC
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.

Task ID

Task ID	Operations
host-services	read, write

Examples

The following example shows how to set the time zone to PST and offset 8 hours behind UTC:

```
RP/0/0/CPU0:router(config)# clock timezone PST -8
```

The following example shows how to set the time zone to Atlantic Time (AT) for Newfoundland, Canada, which is 3.5 hours behind UTC:

```
RP/0/0/CPU0:router(config)# clock timezone AT -3 30
```

Related Commands

Command	Description
clock set, page 4	Sets the software clock settings.
clock summer-time, page 7	Configures the system to switch automatically to summer time (daylight saving time).
show clock, page 21	Displays the clock settings.

clock update-calendar

To copy the software clock settings to the hardware clock (calendar), use the **clock update-calendar** command in EXEC mode.

clock update-calendar

Syntax Description   This command has no arguments or keywords.

Command Default   No default behavior or values

Command Modes   EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

Usage Guidelines   To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The hardware clock (calendar) runs continuously, even if the router is powered off or rebooted. If the software clock and calendar are not synchronized and the software clock is more accurate, use this command to update the hardware calendar clock to the correct date and time.

Task ID

Task ID	Operations
host-services	execute

Examples   The following example shows how to copy the current time from the software clock to the hardware clock:

```
RP/0/RP0/CPU0:router# clock update-calendar
```

Related Commands

Command	Description
clock read-calendar, page 2	Copies the hardware (calendar) clock settings into the software clock.

locale country

To set the default country of use, use the **locale country** command in global configuration mode. To remove the country setting, use the **no** form of this command.

locale country *country*

no locale country

Syntax Description

country	Country, where *country* is a two-character country code. Case is not important.

Command Default   No default behavior or values

Command Modes   Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

Usage Guidelines   To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Note   This command is not fully supported at this time.

To display a complete listing of the available country codes, use the online help (**?**) function:

```
RP/0/0/CPU0:router(config)# locale country ?

    AD    Andorra
```

```
         AE    United Arab Emirates
         AF    Afghanistan
         AG    Antigua and Barbuda
         AI    Anguilla
         AL    Albania
         AM    Armenia
         AN    Netherlands Antilles
         AO    Angola
         AQ    Antarctica
         AR    Argentina
         AS    American Samoa
         AT    Austria
         AU    Australia
         AW    Aruba
         AZ    Azerbaijan
         BA    Bosnia and Herzegovina
         BB    Barbados
         BD    Bangladesh
         BE    Belgium
       --More--
```

Task ID

Task ID	Operations
host-services	read, write

Examples

The following example shows how to set the country of use to Australia:

```
RP/0/0/CPU0:router(config)# locale country au
```

Related Commands

Command	Description
locale language, page 19	Sets the default language of use.

locale language

To set the default language of use, use the **locale language** command in global configuration mode. To remove the language setting, use the **no** form of this command.

locale language *language*

no locale language

Syntax Description

language	Two-character code that specifies the language. Case is not important.

Command Default   No default behavior or values

Command Modes   Global configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

Usage Guidelines   To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Note   This command is not fully supported at this time.

To display a complete listing of the available language codes, use the online help (?) function:

```
RP/0/0/CPU0:router(config)# locale language ?
aa    Afar
```

```
ab    Abkhazian
af    Afrikaans
am    Amharic
ar    Arabic
as    Assamese
ay    Aymara
  --More--
```

Task ID

Task ID	Operations
host-services	read, write

Examples

The following example shows how to set the language of use to English:

```
RP/0/0/CPU0:router(config)# locale language en
```

Related Commands

Command	Description
locale country, page 17	Sets the default country of use.

show clock

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

show clock [detail]

Syntax Description

detail	(Optional) Indicates the time zone, time source, and current summer time setting (if any).

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

The system clock keeps an "authoritative" flag that indicates whether the time is authoritative (believed to be accurate). If the system clock has been set by a timing source, such as system calendar or Network Time Protocol (NTP), the flag is set. If the time is not authoritative, it is used only for display. Until the clock is authoritative and the "authoritative" flag is set, the flag prevents peers from synchronizing to the clock when the peers have invalid times.

The leading symbols that precede the **show clock** command display are shown in this table

Table 3: show clock Display Leading Symbol Descriptions

Symbol	Description
*	Time is not authoritative.
(blank)	Time is authoritative.
.	Time is authoritative, but NTP is not synchronized.

Task ID

Task ID	Operations
basic-services	read

Examples

The following sample output shows the current clock settings:

```
RP/0/0/CPU0:router# show clock

16:18:28.927 PST Tue Feb 10 2009
```

The following sample output shows the current clock detail, including the time zone and time source:

```
RP/0/0/CPU0:router# show clock detail

16:18:07.164 PST Tue Feb 10 2009
Timezone: PST8PST Timesource: User configured
```

Related Commands

Command	Description
clock set, page 4	Sets the software clock settings.

show clock sync

To show the time difference between the clocks on route processors (RPs) and other line cards (LCs), use the **show clock sync** command in EXEC command mode.

show clock sync

Command Default Displays the clock time for each RP or LC in a secure domain router (SDR), relative to the clock time on the RP where the command is entered.

Command Modes EXEC

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	No modification.
Release 3.4.0	No modification.
Release 3.5.0	No modification.
Release 3.6.0	No modification.
Release 3.7.0	No modification.
Release 3.8.0	No modification.
Release 3.9.0	No modification.

Usage Guidelines To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

In a router running Cisco IOS XR software the time clock in the primary RP is synchronized with the other RPs, DRPs, and LCs in the system. This synchronization ensures that the standby RP has an accurate time setting if it assumes the primary role and that the events in logs between different RPs and LCs can be easily correlated during debugging.

The **show clock sync** command verifies that the cards in the router are synchronized with the primary RP. When this command is run, the primary RP queries the clocks on each card in the system and displays the time difference between each card and the primary RP. If the time setting on the card is different from the time on the primary RP, the display shows if the clock on the card is being adjusted to synchronize with the primary RP.

Note   The **show clock sync** command shows the relative time difference between the RP where it is run and the cards in that SDR. If the command is run on the primary RP for the owner SDR, then the results show the relative time settings for the cards assigned to the owner SDR. If the command is run on the DSDRSC for a non-owner SDR, then the results are for the cards in that SDR. The **show clock sync** command can also be run on the standby RP, but the times displayed are relative to that RP.

Task ID

Task ID	Operations
ip-services	read
basic-services	read

Examples   The following example illustrates sample output from the **show clock sync** command:

```
RP/0/0/CPU0:router# show clock sync

                RoundTrip   Time
Slot    Card     Delay     Offset   Local Time
----------------------------------------------------------------
  0  RP   Card      0 ms   0.000 s   16:00:05.798 UTC Sun Apr 09 2006
  1  RP   Card      1 ms   0.001+s  +16:00:05.798 UTC Sun Apr 09 2006
  2  Line Card      2 ms   0.000 s  -16:00:05.798 UTC Sun Apr 09 2006
  3  Line Card     15 ms   0.004+s  -16:00:05.802 UTC Sun Apr 09 2006
  4  Line Card      1 ms   0.001+s  -16:00:05.798 UTC Sun Apr 09 2006
  5  Line Card      2 ms   0.002+s  +16:00:05.799 UTC Sun Apr 09 2006
```

Table 4: show clock sync Field Descriptions

Field	Description
Slot	Physical slot number of the card.
Card	Type of card on the specified slot.
RoundTrip Delay	Time (in milliseconds) required for the test message to travel between the RP and LC and back.
Time Offset	Time difference (in seconds) between cards shown in the display.
Local Time	Displays the system clock setting. This is the same as the output displayed with the **show clock** command. The positive (+) or negative (-) sign is added if the card is being adjusted to run faster or slower.

Related Commands

Command	Description
clock set, page 4	Sets the software clock settings.
show clock, page 21	Displays the clock settings.