

Chapter 20

Check Time on a Router

This chapter describes how to display the current time on the router, determine whether router components failed during a problem, and check that the local clock time on the router is synchronized with the time on the Network Time Protocol (NTP) server. (See Table 43.)

Table 43: Checklist for Checking Time on a Router

Check Time on a Router	Command or Action
Check the Time on a Router on page 240	show system uptime
Check How Long Router Components Have Been Up on page 240	show chassis fpc detail show chassis routing-engine show chassis feb show chassis scb show chassis sfm show chassis ssb
Check the NTP Peers on page 243	show ntp associations
Check the NTP Status on page 244	show ntp status

Check the Time on a Router

Purpose Display the current time on a router and display information about how long the router, router software, and routing protocols have been running.

Action To check time on a router, use the following JUNOS command-line interface (CLI) operational mode command:

```
user@host> show system uptime
```

Sample Output

```
user@host> show system uptime
Current time:      1998-10-13 19:45:47 UTC
System booted:     1998-10-12 20:51:41 UTC (22:54:06 ago)
Protocols started: 1998-10-13 19:33:45 UTC (00:12:02 ago)
Last configured:   1998-10-13 19:33:45 UTC (00:12:02 ago) by abc
12:45PM up 22:54, 2 users, load averages: 0.07, 0.02, 0.01
```

What It Means The sample output shows the current system time in UTC, the date and time when the router was last booted and how long it has been running, when the routing protocols were last started and how long they have been running, when a configuration was last committed, and the name of the user who issued the last commit command. If a different time zone is configured, the output shows that time zone. For information on configuring the time zone, see the *JUNOS System Basics Configuration Guide*.

The sample output shows that the current time is 12:45 PM, the router has been operational for 22:54 hours, and two users are logged in to the router. The output also shows that the load average is 0.07 seconds for the last minute, 0.02 seconds for the last 5 minutes, and 0.01 seconds for the last 15 minutes.

Check How Long Router Components Have Been Up

Purpose When a problem occurs and you check the system to see how long it has been up, you may find that the `show system uptime` command displays the current time and information about how long the router, router software, and routing protocols have been running, but does not tell you if a component failed. Determining whether a component failed when a problem occurred with the router is an important step in the diagnosis of a problem.

Action To check how long router components have been up, issue the `show chassis` command for the components on your router:

```
user@host> show chassis fpc detail
user@host> show chassis routing-engine
user@host> show chassis feb
user@host> show chassis scb
user@host> show chassis sfm
user@host> show chassis ssb
```

Sample Output The following sample output is for an M20 router:

```

user@host> show chassis fpc detail
Slot 0 information:
  State                               Empty
Slot 1 information:
  State                               Online
  Logical slot                        0
  Temperature                         32 degrees C / 89 degrees F
  Total CPU DRAM                      8 MB
  Total SRAM                          1 MB
  Total SDRAM                         128 MB
  Total notification SDRAM            24 MB
  I/O Manager ASIC information        Version 2.0, Foundry IBM, Part number 0
  Start time:                        2003-09-23 17:20:42 UTC
  Uptime:                             1 day, 4 hours, 45 minutes, 14 seconds
Slot 2 information:
  State                               Empty
Slot 3 information:
  State                               Online
  Logical slot                        1
  Temperature                         32 degrees C / 89 degrees F
  Total CPU DRAM                      8 MB
  Total SRAM                          1 MB
  Total SDRAM                         128 MB
  Total notification SDRAM            24 MB
  I/O Manager ASIC information        Version 1.1, Foundry IBM, Part number 0
  Start time:                        2003-09-12 01:28:16 UTC
  Uptime:                             12 days, 20 hours, 37 minutes, 40 seconds

user@host> show chassis routing-engine
Routing Engine status:
Slot 0:
  Current state                       Master
  Election priority                   Master (default)
  Temperature                         30 degrees C / 86 degrees F
  DRAM                               768 MB
  Memory utilization                  17 percent
  CPU utilization:
    User                             0 percent
    Background                       0 percent
    Kernel                           1 percent
    Interrupt                        0 percent
    Idle                             99 percent
  Model                              RE-2.0
  Serial ID                          58000007348d9a01
  Start time                         2003-09-19 07:05:20 PDT
  Uptime                             6 hours, 42 minutes, 26 seconds
  Load averages:                     1 minute   5 minute   15 minute
                                      0.00        0.00        0.00

Routing Engine status:
Slot 1:
  Current state                       Backup
  Election priority                   Backup (default)
  Temperature                         30 degrees C / 86 degrees F
  DRAM                               768 MB
  Memory utilization                  0 percent
  CPU utilization:
    User                             0 percent
    Background                       0 percent
    Kernel                           0 percent
    Interrupt                        0 percent
    Idle                             100 percent

```

```
Model RE-2.0
Serial ID d800000734745701
Start time 2003-06-17 16:37:33 PDT
Uptime 93 days, 20 hours, 58 minutes, 14 seconds

user@host> show chassis ssb
SSB status:
Slot 0 information:
  State Master
  Temperature 33 degrees C / 91 degrees F
  CPU utilization 2 percent
  Interrupt utilization 0 percent
  Heap utilization 17 percent
  Buffer utilization 43 percent
  Total CPU DRAM 64 MB
  Internet Processor II Version 1, Foundry IBM, Part number 9
  Start time: 2003-09-19 07:06:52 PDT
  Uptime: 6 hours, 43 minutes, 52 seconds
Slot 1 information:
  State Backup
```

What It Means The sample output shows the time when the component started running and how long the component has been running. A short uptime can indicate a problem with the component.

Check the NTP Peers

Purpose Ensure that the clock time on the router is synchronized with the time on the NTP server.

Action To check NTP peers, enter the following JUNOS CLI operational mode command:

```
user@host> show ntp associations
```

Sample Output 1

```
user@host> show ntp associations
      remote      refid      st t when poll reach  delay  offset  jitter
=====
*coetanian.junip .GPS.          1 u  22   64  377   6.861  -1.297   0.811
```

Sample Output 2

```
user@jhost> show ntp associations
>      remote      refid      st t when poll reach  delay  offset  jitter
> =====
> ntp1.usno.navy. PSC.          1 -  44   64   77   86.829  -1830.3  915.177
> Tick.UH.EDU     USNO.         1 -  36   64   77   42.560  -1835.3  917.667
```

What It Means Sample output 1 is synchronized with the NTP server because there is an asterisk (*) at the beginning of the output. Also, the router with the asterisk (*) is the master router and the system is synchronizing with this NTP server.

Sample output 2 shows that the time on the server and router is so far apart that NTP will not attempt to synchronize. The **offset** value of **1830** is too large a difference and the **jitter** value of **917.667** is also too large to provide reliability to the **offset** value.

As a general rule, if the time difference between the server and the router is less than 100 seconds, NTP adjusts the router's clock speed so that it drifts towards the server's time. For instance, if the router clock is running fast, NTP slows the clock down so that the time of day only advances 900 milliseconds every time the server's clock advances a full second. The time on the two clocks gradually becomes identical. When the clock time is the same, NTP adjusts the clock on the router to keep in step with the server's time.

For more detailed information on configuring the NTP server, see the *JUNOS System Basics Configuration Guide*.

Check the NTP Status

Purpose View the configuration of the NTP server and the status of the system.

Action To check NTP status, enter the following JUNOS CLI operational mode command:

```
user@host> show ntp status
```

Sample Output

```
user@host> show ntp status
status=0644 leap_none, sync_ntp, 4 events, event_peer/strat_chg,
processor="i386", system="JUNOS5.7-20030919-IMAYzc", leap=00, stratum=2,
precision=-28, rootdelay=6.861, rootdispersion=10.465, peer=11004,
refid=coetanian.company.net,
reftime=c315b20a.a5c768df Fri, Sep 19 2003 9:49:14.647, poll=6,
clock=c315b22a.1b31a08b Fri, Sep 19 2003 9:49:46.106, state=4,
phase=-1.297, frequency=74.659, jitter=0.725, stability=0.005
```

What It Means The sample output shows when the clock was last adjusted (reftime), together with its status and most recent exception event. Table 44 lists and describes the fields in the output of the `show ntp status` command.

Table 44: Sample Output Fields for the `show ntp status` Command

Output Field	Description
status=0644	Internal status flags.
leap_none	The router is not doing a leap second.
sync_ntp	The server and the router are synchronized.
4 events	The accumulated number of events since NTP was started.
event_peer/strat_chg	Last event code.
processor="i386", system="JUNOS5.7-20030919-IMAYzc"	Both fields identify the current system information.
leap=00	An internal value related to leap seconds.
stratum=2	The router stratum, which is always one higher than the stratum of the server to which the router is synchronized. If the router is not synchronized, the value is 16 instead of 2.
precision=-28	Order of magnitude of how small an interval the local system's clock can measure. In this example, -28 means that the system can measure a period of -28 seconds, approximately 1/64 of a microsecond, or 16 nanoseconds.
rootdelay=6.861	One-way delay between the local system and the stratum 0 clock source. Essentially, this is the sum of the delays between this router and its synchronized source, the source and its source, and so on, all the way up to the atomic clock (which is stratum 0).
rootdispersion=10.465	The confidence level of the clock, in microseconds, that encompasses delay, jitter, and so on.
peer=11004	No information is available for this field yet.
refid=coetanian.company.net, reftime=c315b20a.a5c768df Fri, Sep 19 2003 9:49:14.647	These two fields identify the selected and synchronized source, and the last reference time received from it.
poll=6	The delay interval at which the synchronized server polls. In this example, 6 indicates that the server polls every 2^6 seconds, or every 64 seconds.

Output Field	Description
clock=c315b22a.1b31a08b Fri, Sep 19 2003 9:49:46.106	The current time.
state=4	No information is available for this field yet.
phase=-1.297	The calculated offset based on the local time, the server's last reported time, and the sense of the delay between the router and the server. This is measured in milliseconds.
frequency=74.659	The clock frequency, in MHz. Note that this is the same order of magnitude as precision .
jitter=0.725	Variation in the time delay between the router and the server.
stability=0.005	A measure of how often the speed on the router must be changed to keep synchronized with the server. If the local clock is not perfectly stable, it will speed up or slow down, and NTP will have to counteract that tendency.

