show monitor permit-list

To display the permit-list state and interfaces configured, use the **show monitor permit-list** command in user EXEC or privileged EXEC mode.

show monitor permit-list

Syntax Description

This command has no arguments or keywords.

Defaults

This command has no default settings.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 720.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

This example shows how to display the permit-list state and interfaces configured:

```
Router# show monitor permit-list

SPAN Permit-list      :Admin Enabled
 Permit-list ports     :Gi5/1-4,Gi6/1
Router(config)#
```

Related Commands

Command	Description
monitor permit-list	Configures a destination port permit list or adds to an existing destination port permit list.

show monitor session

To display information about the ERSPAN, SPAN and RSPAN sessions, use the **show monitor session** command in user EXEC mode.

show monitor session [**range** *session-range* | **local** | **remote** | **all** | *session*]

show monitor session [**erspan-destination** | **erspan-source** | **egress replication-mode capability**| **detail**]

Syntax Description

range *session-range*	(Optional) Displays a range of sessions; valid values are from 1 to 66.
local	(Optional) Displays only local SPAN sessions.
remote	(Optional) Displays both RSPAN source and destination sessions.
all	(Optional) Displays all sessions.
session	(Optional) Number of the session; valid values are from 1 to 66.
erspan-destination	(Optional) Displays information about the destination ERSPAN sessions only. This keyword is not supported on the Supervisor Engine 2.
erspan-source	(Optional) Displays information about the source ERSPAN sessions only. This keyword is not supported on the Supervisor Engine 2.
egress replication-mode capability	(Optional) Displays the operational mode and configured mode of the session and module session capabilities.
detail	(Optional) Displays detailed session information.

Defaults

This command has no default settings.

Command Modes

User EXEC (>)

Command History

Release	Modification
12.2(14)SX	This command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support was added for the Supervisor Engine 2.
12.2(18)SXE	Support was added for the **erspan-destination** and **erspan-source** keywords on the Supervisor Engine 720 only.
12.2(18)SXF	This command was updated as follows: • Support was added for the Supervisor Engine 32. • ERSPAN is supported in any switch fabric module functionality switching mode.
12.2(33)SXH	The **egress replication-mode capability** keywords were added.

Usage Guidelines

The **erspan-destination** and **erspan-source** keywords are not supported on Catalyst 6500 series switches that are configured with a Supervisor Engine 2.

In releases prior to Release 12.2(18)SXF, ERSPAN is supported on Catalyst 6500 series switches that are operating in compact switch fabric module functionality switching mode only.

Release 12.2(18)SXF and later releases support ERSPAN in any switch fabric module functionality switching mode.

If the switch fabric module functionality switching mode is set to compact, the output of the **show** commands display "dcef mode" for fabric-enabled modules with DFC3 installed and display "fabric mode" for other fabric-enabled modules.

If the switch fabric module functionality switching mode is set to truncated, the output of the **show** commands display "fabric mode" for all fabric-enabled modules.

When entering a range of sessions, use a dash (-) to specify a range and separate multiple entries with a comma (,). Do not enter spaces before or after the comma or the dash.

You can enter multiple ranges by separating the ranges with a comma.

If you enter the **show monitor session** command without specifying a session, the information for all sessions is displayed.

Examples

This example shows how to display the saved version of the monitor configuration for a specific session:

```
Router# show monitor session 2
Session 2
------------
Type : Remote Source Session

Source Ports:
    RX Only:       Fa1/1-3
Dest RSPAN VLAN:   901
Router#
```

This example shows how to display the detailed information from a saved version of the monitor configuration for a specific session:

```
Router# show monitor session 2 detail
Session 2
------------
Type : Remote Source Session

Source Ports:
    RX Only:       Fa1/1-3
    TX Only:       None
    Both:          None
Source VLANs:
    RX Only:       None
    TX Only:       None
    Both:          None
Source RSPAN VLAN: None
Destination Ports: None
Filter VLANs:      None
Dest RSPAN VLAN:   901
Router#
```

This example shows how to display information about the egress replication mode only:

```
Router# show monitor session egress replication-mode capability
 No SPAN configuration is present in the system.
```

```
-------------------------------------------------------
Global Egress SPAN Replication Mode Capability:

Slot          Egress Replication Capability
 No       LSPAN           RSPAN             ERSPAN
-------------------------------------------------------
 3     Distributed      Distributed        Distributed
 5     Distributed      Distributed        Distributed
Router#
```

This example shows how to display information about the destination ERSPAN sessions only:

```
Router# show monitor session erspan-destination
Session 2
---------
Type            : ERSPAN Destination Session
Status         : Admin Disabled
Router#
```

This example shows how to display detailed information about the destination ERSPAN sessions only:

```
Router# show monitor session erspan-destination detail
Session 2
---------
Type                   : ERSPAN Destination Session
Status                 : Admin Disabled
Description            : -
Source Ports           :
    RX Only            : None
    TX Only            : None
    Both               : None
Source VLANs           :
    RX Only            : None
    TX Only            : None
    Both               : None
Source RSPAN VLAN      : None
Destination Ports      : None
Filter VLANs           : None
Destination RSPAN VLAN : None
Source IP Address      : None
Source IP VRF          : None
Source ERSPAN ID       : None
Destination IP Address : None
Destination IP VRF     : None
Destination ERSPAN ID  : None
Origin IP Address      : None
IP QOS PREC            : 0
IP TTL                 : 255
Router#
```

This example shows how to display information about the source ERSPAN sessions only:

```
Router# show monitor session erspan-source
Session 1
---------
Type                   : ERSPAN Source Session
Status                : Admin Disabled
Session 3
---------
Type                   : ERSPAN Source Session
Status                : Admin Disabled
Router#
```

This example shows how to display detailed information about the source ERSPAN sessions only:

```
Router# show monitor session erspan-source detail
Session 1
---------
Type                  : ERSPAN Source Session
Status                : Admin Disabled
Description           : -
Source Ports          :
    RX Only           : None
    TX Only           : None
    Both              : None
Source VLANs          :
    RX Only           : None
    TX Only           : None
    Both              : None
Source RSPAN VLAN     : None
Destination Ports     : None
Filter VLANs          : None
Destination RSPAN VLAN : None
Source IP Address     : None
Source IP VRF         : None
Source ERSPAN ID      : None
Destination IP Address : None
Destination IP VRF    : None
Destination ERSPAN ID  : None
Origin IP Address     : None
IP QOS PREC           : 0
IP TTL                : 255

Session 3
---------
Type                  : ERSPAN Source Session
Status                : Admin Disabled
Description           : -
Source Ports          :
    RX Only           : None
    TX Only           : None
    Both              : None
Source VLANs          :
    RX Only           : None
    TX Only           : None
    Both              : None
Source RSPAN VLAN     : None
Destination Ports     : None
Filter VLANs          : None
Destination RSPAN VLAN : None
Source IP Address     : None
Source IP VRF         : None
Source ERSPAN ID      : None
Destination IP Address : None
Destination IP VRF    : None
Destination ERSPAN ID  : None
Origin IP Address     : None
IP QOS PREC           : 0
IP TTL                : 255
Router#
```

This example shows how to display the operational mode and configured mode of the session and module session capabilities:

```
Router# show monitor session egress replication-mode capability
Session 65 Type Local Session
----------------------------------------------
```

```
Operational mode of egress span replication    : Centralized
Configured mode of egress span replication     : Distributed/Default

 Slot            Egress Replication Capability
-------------------------------------------------
  1                   Centralized
  3                   Centralized
  5                   Centralized
Router#
```

Related Commands

Command	Description
monitor session	Starts a new ERSPAN, SPAN, or RSPAN session, adds or deletes interfaces or VLANs to or from an existing session, filters ERSPAN, SPAN, or RSPAN traffic to specific VLANs, or deletes a session.
monitor session type	Creates an ERSPAN source session number or enters the ERSPAN session configuration mode for the session.
remote-span	Configures a VLAN as an RSPAN VLAN.

show msfc

To display Multilayer Switching Feature Card (MSFC) information, use the **show msfc** command in user EXEC or privileged EXEC mode.

show msfc {**buffers** | **eeprom** | **fault** | **netint** | **tlb**}

Syntax Description

buffers	Displays buffer-allocation information.
eeprom	Displays the internal information.
fault	Displays fault information.
netint	Displays network-interrupt information.
tlb	Displays information about the TLB registers.

Defaults

This command has no default settings.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

These examples display the **show msfc** command output:

```
Router# show msfc buffers

Reg. set    Min    Max
  TX               640
 ABQ         640  16384
   0           0     40
   1        6715   8192
   2           0      0
   3           0      0
   4           0      0
   5           0      0
   6           0      0
   7           0      0
Threshold = 8192

Vlan  Sel  Min  Max  Cnt  Rsvd
1016    1 6715 8192    0     0
Router#

Router# show msfc eeprom
```

```
RSFC CPU IDPROM:
IDPROM image:

  (FRU is 'Cat6k MSFC 2 daughterboard')

IDPROM image block #0:
  hexadecimal contents of block:
  00: AB AB 01 90 13 22 01 00 00 02 60 03 00 EA 43 69    ....."....`...Ci
  10: 73 63 6F 20 53 79 73 74 65 6D 73 00 00 00 00 00    sco Systems.....
  20: 00 00 57 53 2D 46 36 4B 2D 4D 53 46 43 32 00 00    ..WS-F6K-MSFC2..
  30: 00 00 00 00 00 00 53 41 44 30 36 32 31 30 30 36    ......SAD0621006
  40: 37 00 00 00 00 00 00 00 00 00 37 33 2D 37 32 33    7.........73-723
  50: 37 2D 30 33 00 00 00 00 00 00 41 30 00 00 00 00    7-03......A0....
  60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  70: 00 00 00 02 00 03 00 00 00 00 00 09 00 05 00 01    ................
  80: 00 03 00 01 00 01 00 02 00 EA FF DF 00 00 00 00    ................

  block-signature = 0xABAB, block-version = 1,
  block-length = 144, block-checksum = 4898

  *** common-block ***
  IDPROM capacity (bytes) = 256  IDPROM block-count = 2
  FRU type = (0x6003,234)
  OEM String = 'Cisco Systems'
  Product Number = 'WS-F6K-MSFC2'
  Serial Number = 'SAD06210067'
  Manufacturing Assembly Number = '73-7237-03'
  Manufacturing Assembly Revision = 'A0'
  Hardware Revision = 2.3
  Manufacturing bits = 0x0  Engineering bits = 0x0
  SNMP OID = 9.5.1.3.1.1.2.234
  Power Consumption = -33 centiamperes    RMA failure code = 0-0-0-0
  *** end of common block ***

IDPROM image block #1:
  hexadecimal contents of block:
  00: 60 03 01 62 0A C2 00 00 00 00 00 00 00 00 00 00    `..b............
  10: 00 00 00 00 00 00 01 00 23 00 08 7C A4 CE 80 00 40    .......#..|....@
  20: 01 01 00 01 00 00 00 00 00 00 00 00 00 00 00 00    ................
  30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  40: 14 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  50: 10 00 4B 3C 41 32 80 80 80 80 80 80 80 80 80 80    ..K<A2..........
  60: 80 80                                              ..

  block-signature = 0x6003, block-version = 1,
  block-length = 98, block-checksum = 2754

  *** linecard specific block ***
  feature-bits =   00000000 00000000
  hardware-changes-bits =   00000000 00000001
  card index = 35
  mac base = 0008.7CA4.CE80
  mac_len = 64
  num_processors = 1
  epld_num = 1
  epld_versions = 0001 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 00
00 0000 0000
  port numbers:
    pair #0: type=14, count=01
    pair #1: type=00, count=00
    pair #2: type=00, count=00
    pair #3: type=00, count=00
    pair #4: type=00, count=00
    pair #5: type=00, count=00
```

```
    pair #6: type=00, count=00
    pair #7: type=00, count=00
  sram_size = 4096
  sensor_thresholds =
    sensor #0: critical = 75 oC, warning = 60 oC
    sensor #1: critical = 65 oC, warning = 50 oC
    sensor #2: critical = -128 oC (sensor not present), warning = -128 oC (senso
r not present)
    sensor #3: critical = -128 oC (sensor not present), warning = -128 oC (senso
r not present)
    sensor #4: critical = -128 oC (sensor not present), warning = -128 oC (senso
r not present)
    sensor #5: critical = -128 oC (sensor not present), warning = -128 oC (senso
r not present)
    sensor #6: critical = -128 oC (sensor not present), warning = -128 oC (senso
r not present)
    sensor #7: critical = -128 oC (sensor not present), warning = -128 oC (senso
r not present)
  *** end of linecard specific block ***

End of IDPROM image
Router#

Router# show msfc fault

 Reg. set    Min    Max
  TX               640
 ABQ         640  16384
   0           0     40
   1        6715   8192
   2           0      0
   3           0      0
   4           0      0
   5           0      0
   6           0      0
   7           0      0
Threshold = 8192

Vlan  Sel  Min  Max  Cnt  Rsvd
1016    1 6715 8192    0     0
Router#

Router# show msfc netint

Network IO Interrupt Throttling:
 throttle count=0, timer count=0
 active=0, configured=1
 netint usec=3999, netint mask usec=400

Router#

Router# show msfc tlb

Mistral revision 3
TLB entries : 37
Virt Address range      Phy Address range      Attributes
0x10000000:0x1001FFFF   0x010000000:0x01001FFFF   CacheMode=2, RW, Valid
0x10020000:0x1003FFFF   0x010020000:0x01003FFFF   CacheMode=2, RW, Valid
0x10040000:0x1005FFFF   0x010040000:0x01005FFFF   CacheMode=2, RW, Valid
0x10060000:0x1007FFFF   0x010060000:0x01007FFFF   CacheMode=2, RW, Valid
0x10080000:0x10087FFF   0x010080000:0x010087FFF   CacheMode=2, RW, Valid
0x10088000:0x1008FFFF   0x010088000:0x01008FFFF   CacheMode=2, RW, Valid
0x18000000:0x1801FFFF   0x010000000:0x01001FFFF   CacheMode=0, RW, Valid
0x19000000:0x1901FFFF   0x010000000:0x01001FFFF   CacheMode=7, RW, Valid
```

```
0x1E000000:0x1E1FFFFF   0x01E000000:0x01E1FFFFF   CacheMode=2, RW, Valid
0x1E880000:0x1E881FFF   0x01E880000:0x01E881FFF   CacheMode=2, RW, Valid
0x1FC00000:0x1FC7FFFF   0x01FC00000:0x01FC7FFFF   CacheMode=2, RO, Valid
0x30000000:0x3001FFFF   0x070000000:0x07001FFFF   CacheMode=2, RW, Valid
0x40000000:0x407FFFFF   0x000000000:0x0007FFFFF   CacheMode=3, RO, Valid
0x40800000:0x40FFFFFF   0x000800000:0x000FFFFFF   CacheMode=3, RO, Valid
0x41000000:0x417FFFFF   0x001000000:0x0017FFFFF   CacheMode=3, RO, Valid
0x41800000:0x419FFFFF   0x001800000:0x0019FFFFF   CacheMode=3, RO, Valid
0x41A00000:0x41A7FFFF   0x001A00000:0x001A7FFFF   CacheMode=3, RO, Valid
0x41A80000:0x41A9FFFF   0x001A80000:0x001A9FFFF   CacheMode=3, RO, Valid
0x41AA0000:0x41ABFFFF   0x001AA0000:0x001ABFFFF   CacheMode=3, RO, Valid
0x41AC0000:0x41AC7FFF   0x001AC0000:0x001AC7FFF   CacheMode=3, RO, Valid
0x41AC8000:0x41ACFFFF   0x001AC8000:0x001ACFFFF   CacheMode=3, RO, Valid
0x41AD0000:0x41AD7FFF   0x001AD0000:0x001AD7FFF   CacheMode=3, RO, Valid
0x41AD8000:0x41AD9FFF   0x001AD8000:0x001AD9FFF   CacheMode=3, RO, Valid
0x41ADA000:0x41ADBFFF   0x001ADA000:0x001ADBFFF   CacheMode=3, RW, Valid
0x41ADC000:0x41ADDFFF   0x001ADC000:0x001ADDFFF   CacheMode=3, RW, Valid
0x41ADE000:0x41ADFFFF   0x001ADE000:0x001ADFFFF   CacheMode=3, RW, Valid
0x41AE0000:0x41AFFFFF   0x001AE0000:0x001AFFFFF   CacheMode=3, RW, Valid
0x41B00000:0x41B7FFFF   0x001B00000:0x001B7FFFF   CacheMode=3, RW, Valid
0x41B80000:0x41BFFFFF   0x001B80000:0x001BFFFFF   CacheMode=3, RW, Valid
0x41C00000:0x41DFFFFF   0x001C00000:0x001DFFFFF   CacheMode=3, RW, Valid
0x41E00000:0x41FFFFFF   0x001E00000:0x001FFFFFF   CacheMode=3, RW, Valid
0x42000000:0x43FFFFFF   0x002000000:0x003FFFFFF   CacheMode=3, RW, Valid
0x44000000:0x45FFFFFF   0x004000000:0x005FFFFFF   CacheMode=3, RW, Valid
0x46000000:0x47FFFFFF   0x006000000:0x007FFFFFF   CacheMode=3, RW, Valid
0x06E00000:0x06FFFFFF   0x006E00000:0x006FFFFFF   CacheMode=2, RW, Valid
0x07000000:0x077FFFFF   0x007000000:0x0077FFFFF   CacheMode=2, RW, Valid
0x07800000:0x07FFFFFF   0x007800000:0x007FFFFFF   CacheMode=2, RW, Valid

Router#
```

Related Commands

Command	Description
show environment alarm	Displays the information about the environmental alarm.
show fm summary	Displays a summary of FM Information.
show environment status	Displays the information about the operational FRU status.

show pagp

To display port-channel information, use the **show pagp** command in user EXEC or privileged EXEC mode.

show pagp [*group-number*] {**counters** | **internal** | **neighbor** | **pgroup**}

Syntax Description

group-number	(Optional) Channel-group number; valid values are a maximum of 64 values from 1 to 282.
counters	Displays the traffic information.
internal	Displays the internal information.
neighbor	Displays the neighbor information.
pgroup	Displays the active port channels.

Defaults

This command has no default settings.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

You can enter any **show pagp** command to display the active port-channel information. To display the nonactive information, enter the **show pagp** command with a group.

The **port-channel** *number* values from 257 to 282 are supported on the CSM and the FWSM only.

Examples

This example shows how to display information about the PAgP counters:

```
Router# show pagp counters

          Information        Flush
Port      Sent   Recv     Sent   Recv
---------------------------------------
Channel group: 1
  Fa5/4    2660   2452     0      0
  Fa5/5    2676   2453     0      0
Channel group: 2
  Fa5/6    289    261      0      0
  Fa5/7    290    261      0      0
Channel group: 1023
  Fa5/9    0      0        0      0
```

```
Channel group: 1024
  Fa5/8    0      0        0      0
Router#
```

This example shows how to display internal PAgP information:

```
Router# show pagp 1 internal

Flags:  S - Device is sending Slow hello.  C - Device is in Consistent state.
        A - Device is in Auto mode.
Timers: H - Hello timer is running.        Q - Quit timer is running.
        S - Switching timer is running.    I - Interface timer is running.

Channel group 1
                             Hello    Partner  PAgP     Learning
Port      Flags State   Timers  Interval Count   Priority  Method
Fa5/4     SC    U6/S7           30s      1        128       Any
Fa5/5     SC    U6/S7           30s      1        128       Any
Router#
```

This example shows how to display PAgP-neighbor information for all neighbors:

```
Router# show pagp neighbor

Flags:  S - Device is sending Slow hello.  C - Device is in Consistent state.
        A - Device is in Auto mode.        P - Device learns on physical port.

Channel group 1 neighbors
          Partner              Partner          Partner          Partner Group
Port      Name                 Device ID        Port       Age   Flags   Cap.
Fa5/4     JAB031301            0050.0f10.230c   2/45         2s  SAC     2D
Fa5/5     JAB031301            0050.0f10.230c   2/46        27s  SAC     2D

Channel group 2 neighbors
          Partner              Partner          Partner          Partner Group
Port      Name                 Device ID        Port       Age   Flags   Cap.
Fa5/6     JAB031301            0050.0f10.230c   2/47        10s  SAC     2F
Fa5/7     JAB031301            0050.0f10.230c   2/48        11s  SAC     2F

Channel group 1023 neighbors
          Partner              Partner          Partner          Partner Group
Port      Name                 Device ID        Port       Age   Flags   Cap.

Channel group 1024 neighbors
          Partner              Partner          Partner          Partner Group
Port      Name                 Device ID        Port       Age   Flags   Cap.
Router#
```

Related Commands

Command	Description
pagp learn-method	Learns the input interface of the incoming packets.
pagp port-priority	Selects a port in hot standby mode.

show parser dump

Note Effective with Cisco IOS Release 15.0(1)M, the **show parser dump** command is not available in Cisco IOS software.

To display the command-line interface (CLI) syntax options for all command modes or for a specified command mode, use the **show parser dump** command in user EXEC or privileged EXEC mode.

show parser dump {*command-mode* | **all**} [**privilege-level** *level*] [**extend**] [**breakage**]

Syntax Description

command-mode	A keyword indicating the command mode. The output will include the syntax for commands only in the specified command mode. The list of command mode keywords will vary depending on your software image. Use the **show parser dump ?** command to display the list of command mode keyword options. For further assistance in determining the proper command mode, see the "Cisco IOS Command Modes" Release 12.2 document, available on Cisco.com.
all	Indicates that all commands in all modes should be displayed in the output. **Caution** This keyword generates a very large amount of output, which may exceed your system or buffer memory.
privilege-level *level*	(Optional) Lists CLI commands only with the privilege level specified in the *level* argument.
extend	(Optional) Enables the extended display mode. The extended parser display shows the keyword and argument descriptions typically shown with the command-line help (**?** command). **Note** This keyword can produce a large amount of output.
breakage	(Optional) Enables detection of potential parser chain syntax breakage. This keyword is intended for internal use.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2(4)T	This command was introduced.
12.2(13)T	This command was enhanced to resolve certain execution errors.
12.0(23)S	This command was enhanced to resolve certain execution errors.
15.0(1)M	This command was removed.

Usage Guidelines

This command was developed to allow the exploration of the CLI command syntax without requiring the user to actually enter a specific mode and use the **?** command-line help.

Caution Use caution when entering this command with the **all** keyword. A large amount of output can be generated by this command, which may easily exceed buffer or system memory on smaller platforms. Also, some configuration modes have hundreds of valid commands. For large dumps, use of the redirection to a file using the **| redirect** *URL* syntax at the end of the command is highly recommended. (See the documentation for the **show** *command* **redirect** command for more information on using this command extension.)

Output for this command will show the syntax options for all commands available in the specified mode. The number preceding the command shows the privilege level associated with that command. For example, the line

```
15 type dhcp
```

indicates that the **type dhcp** command has a privilege level of 15 assigned to it. For information about privilege levels, see the "Configuring Passwords and Privileges" chapter in the *Cisco IOS Security Configuration Guide*.

Any given command-line string should indicate the full syntax needed to make the command complete and valid. In other words, the command-line string ends where the carriage return (Enter) could be entered, as indicated in command-line help by the <cr> syntax. You will typically see multiple forms of a command, each showing a valid syntax combination. For example, each of the following syntax combinations, as seen in the output of the **show parser dump rtr | include dhcp** command, is a valid command:

```
type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82> circuit-id <string>
type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82> remote-id <string>
type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82> subnet-mask
<ipmask>
type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82>
type dhcp dest-ipaddr <address> source-ipaddr <address>
type dhcp dest-ipaddr <address>
type dhcp
```

Use of the **show** command extensions **| begin**, **| include**, and **| exclude** is recommended for this command because these extensions allow you to filter the output to display only the commands you are interested in. The redirection extensions **| redirect**, **| append**, and **| tee** allow you to redirect the output of this command to local or remote storage as a file.

As with most **show** commands, you can typically exit from the --More-- prompt back to EXEC mode using Ctrl-Z. For some connections, Ctrl-Shift-6 (Ctrl^) or Ctrl-Shift-6-X should be used instead.

Examples

The following example shows a typical list of command mode keywords. The fields are self-explanatory.

```
Router# show parser dump ?

  aaa-attr-list           AAA attribute list config mode
  aaa-user                 AAA user definition
  accept-dialin            VPDN group accept dialin configuration mode
  accept-dialout           VPDN group accept dialout configuration mode
  acct_mlist               AAA accounting methodlist definitions
  address-family           Address Family configuration mode
  aic                      Alarm Interface Card configuration mode
  all                      For all modes
  alps-ascu                ALPS ASCU configuration mode
```

```
alps-circuit              ALPS circuit configuration mode
appfw-application-aim     Appfw for AIM Configuration Mode
appfw-application-msnmsgr Appfw for MSN Messenger Configuration Mode
appfw-application-ymsgr   Appfw for Yahoo! Messenger Configuration Mode
appfw-policy              Application FW Policy Configuration Mode
application-http          Appfw for HTTP Configuration Mode
archive                   Archive the router configuration mode
atalk-test                Appletalk test mode
atm-bm-config             ATM bundle member configuration mode
atm-bundle-config         ATM bundle configuration mode
atm-l2trans-pvc-config    ATM L2transport PVC configuration mode
atm-l2trans-pvp-config    ATM L2transport PVP configuration mode
atm-pvc-range-config      ATM PVC Range configuration mode
atm-range-pvc-config      ATM PVC in Range configuration mode
atm-svc-bm-config         ATM SVC bundle member configuration mode
atm-svc-bundle-config     ATM SVC bundle configuration mode
atm-vc-config             ATM virtual circuit configuration mode
atmsig_e164_table_mode    ATMSIG E164 Table
auto-ip-sla-mpls          Auto IP SLA MPLS LSP Monitor configs
auto-ip-sla-mpls-lpd-params Auto IP SLA MPLS LPD params configs
auto-ip-sla-mpls-params   Auto IP SLA MPLS LSP Monitor Params configs
banner                    Banner Input mode
bba-group                 BBA Group configuration mode
boomerang                 Boomerang configuration mode
bsm-cfg                   BSM config definition
bulkstat-objlist          Bulk-stat Object list configuration mode
bulkstat-schemadef        Bulk-stat schema configuration mode
bulkstat-transfer         Bulk Stat configuration mode
cascustom                 Cas custom configuration mode
call-filter-matchlist    Call Filter matchlist configuration mode
call-home                 call-home config mode
call-home-profile         call-home profile config mode
call-router               AnnexG configuration mode
cascustom                 Cas custom configuration mode
cause-code-list           Voice Cause Code List configuration mode
cfg-path                  IP Host backup configuration mode
cfg-pt-ruleset            Protocol Translation ruleset configuration mode
cip-vadp                  Virtual Adapter configuration mode
cip-vlan                  Virtual Lan configuration mode
clid-group                CLID group configuration mode
cm-ac                     AC-AC connect configuration mode
cm-fallback               cm-fallback configuration mode
cns-connect-intf-config   CNS Connect Intf Info Mode
cns-connect-config        CNS Connect Info Mode
cns-tmpl-connect-config   CNS Template Connect Info Mode
cns_inventory_submode     CNS Inventory SubMode
codec-profile             Codec Profile configuration mode
conf-dia-attr-list        Diameter attribute list config mode
conf-dia-peer             Diameter peer config mode
conf-dia-sg               Diameter peer group config mode
config-ip-sla-http-rr     IP SLAs HTTP raw request Configuration
config-l2tp-class         l2tp-class configuration mode
config-tgrep             TRIP-Lite configuration mode
config-rtr-http-rr        RTR HTTP raw request Configuration
config-x25-huntgroup      X.25 hunt group configuration mode
config_app_global         Configure global settings
config_app_map            Configure application mapping
config_app_monitor        Configure application monitoring
config_app_session        Define script processes
config_voice              Define application services, modules, groups
config_voice_app          Define application parameters
configure                 Global configuration mode
congestion                Frame Relay congestion configuration mode
control-plane             Control Plane configuration mode
```

```
control-plane-cef-exception-mode Control Plane cef-exception configuration mode
control-plane-host-mode  Control Plane host configuration mode
control-plane-transit-mode Control Plane transit configuration mode
controller               Controller configuration mode
cpf-classmap             Class-map configuration mode
cpf-policyclass          Class-in-Policy configuration mode
cpf-policymap            Policy-map configuration mode
cpu                      config-owner-cpu
crypto-ca-cert-chain     Crypto certificate entry mode
crypto-ca-cert-comm      Certificate query  mode
crypto-ca-cert-map       Certificate map entry mode
crypto-ca-profile-enroll Certificate enrollment profile entry mode
crypto-ca-root           Certificate authority trusted root entry mode
crypto-ca-trustpoint     Certificate authority trustpoint entry mode
crypto-cs-server         Certificate Server entry mode
crypto-gdoi-group        Crypto GDOI group policy config mode
crypto-identity          Crypto identity config mode
crypto-ikmp              Crypto ISAKMP config mode
crypto-ikmp-browser-proxy Crypto ISAKMP browser proxy config mode
crypto-ikmp-client-fw    Crypto ISAKMP client firewall policy config mode
crypto-ikmp-group        Crypto ISAKMP group policy config mode
crypto-ikmp-peer         Crypto ISAKMP peer policy configuration mode
crypto-ipsec-profile     IPSec policy profile mode
crypto-keyring           Crypto Keyring command mode
crypto-map               Crypto map config mode
crypto-map-fail-close    Crypto map fail close mode
crypto-pubkey            Crypto subsystem public key entry mode
crypto-transform         Crypto transform config mode
crypto-tti-petitioner    TTI Petitioner entry mode
crypto-tti-registrar     TTI Registrar entry mode
decnet-map               DECnet map configuration mode
dfp-submode              DFP config mode
dhcp                     DHCP pool configuration mode
dhcp-class               DHCP class configuration mode
dhcp-pool-class          Per DHCP pool class configuration mode
dhcp-relay-info          DHCP class relay agent info configuration mode
dhcp-subnet-secondary    Per DHCP secondary subnet configuration mode
dnis-group               DNIS group configuration mode
dns-view                 DNS View configuration mode
dns-view-list            DNS View-list configuration mode
dns-view-list-member     DNS View-list member configuration mode
dspfarm                  DSP farm configuration mode
dspfarmprofile           Profile configuration mode
dynupd-http              Dynamic DNS update HTTP configuration mode
dynupd-method            Dynamic DNS update method configuration mode
emergency-response-location voice emergency response location configuration mode
emergency-response-settings voice emergency response settings configuration mode
emergency-response-zone  voice emergency response zone configuration mode
enum_rule                enum configuration mode
ephone                   ephone configuration mode
ephone-dn                ephone-dn configuration mode
ephone-dn-template       ephone-dn-template configuration mode
ephone-hunt              ephone-hunt configuration mode
ephone-template          ephone-template configuration mode
ephone-type              ephone-type configuration mode
ether_cfm                Ethernet CFM configuration mode
event                    Event MIB event configuration mode
event-action-notification Event MIB event action notification configuration mode
event-action-set         Event MIB event action set configuration mode
event-objlist            Event MIB object list configuration mode
event-trigger            Event MIB event trigger configuration mode
event-trigger-boolean    Event MIB event trigger boolean configuration mode
event-trigger-existence  Event MIB event trigger existence configuration mode
event-trigger-object-id  Event MIB trigger object id configuration mode
```

```
event-trigger-threshold  Event MIB event trigger threshold configuration mode
exec                     Exec mode
expr-expression          Expression configuration mode
expr-object              Expression Object configuration mode
extcomm-list             IP Extended community-list configuration mode
fh_applet                FH Applet Entry Configuration
fh_applet_trigger        FH Applet Trigger Configuration
filter                   Output filter mode
filterserver             AAA filter server definitions
flow-cache               Flow aggregation cache config mode
flow-sampler-map         Flow sampler map config mode
flowexp                  Flow Exporter configuration mode
flowmon                  Flow Monitor configuration mode
flowrec                  Flow Record configuration mode
fr-fr                    FR/FR connection configuration mode
fr-pw                    FR/PW connection configuration mode
fr-vcb-bmode             FR VC Bundle mode
fr-vcb-mmode             FR VC Bundle Member mode
frf5                     FR/ATM Network IWF configuration mode
frf8                     FR/ATM Service IWF configuration mode
funi-vc-config           FUNI virtual circuit configuration mode
gatekeeper               Gatekeeper config mode
gateway                  Gateway configuration mode
gdoi-coop-ks-config      Crypto GDOI server redundancy config mode
gdoi-local-server        Crypto GDOI local server policy config mode
gdoi-sa-ipsec            Crypto GDOI local server IPsec SA policy config mode
gg_fcpa-config           FC tunnel configuration mode
gk_altgk_cluster         GK Commands for Cluster defn
gk_be_annexg             GK Commands for H.323 AnnexG configuration
gk_srv_trigger_arq       GK Server ARQ Trigger config mode
gk_srv_trigger_brq       GK Server BRQ Trigger config mode
gk_srv_trigger_drq       GK Server DRQ Trigger config mode
gk_srv_trigger_irr       GK Server IRR Trigger config mode
gk_srv_trigger_lcf       GK Server LCF Trigger config mode
gk_srv_trigger_lrj       GK Server LRJ Trigger config mode
gk_srv_trigger_lrq       GK Server LRQ Trigger config mode
gk_srv_trigger_rai       GK Server RAI Trigger config mode
gk_srv_trigger_rrq       GK Server RRQ Trigger config mode
gk_srv_trigger_urq       GK Server URQ Trigger config mode
gw                       Webvpn virtual gateway configuration
gw-accounting-aaa        Gateway accounting aaa configuration mode
gw-accounting-file       Gateway accounting file configuration mode
hostlist                 Host list configuration mode
identity-policy-mode     identity policy configuration mode
identity-profile-mode    identity profile configuration mode
interface                Interface configuration mode
interface range          Interface range configuration mode
interface-dlci           Frame Relay dlci configuration mode
ip-explicit-path         IP explicit path configuration mode
ip-sla                   IP SLAs entry configuration
ip-sla-am-grp            IP SLAs auto group config
ip-sla-am-grp-auto       IP SLAs auto group dest-auto config
ip-sla-am-schedule       IP SLAs auto schedule config
ip-sla-dhcp              IP SLAs dhcp configuration
ip-sla-dns               IP SLAs dns configuration
ip-sla-echo              IP SLAs echo configuration
ip-sla-ethernet-echo     IP SLAs Ethernet Echo configuration
ip-sla-ethernet-jitter   IP SLAs Ethernet Jitter configuration
ip-sla-ethernet-monitor  IP SLAs Ethernet configs
ip-sla-ethernet-monitor-params IP SLAs Ethernet Params configs
ip-sla-frameRelay        IP SLAs FrameRelay configuration
ip-sla-ftp               IP SLAs ftp configuration
ip-sla-http              IP SLAs http configuration
ip-sla-icmp-ech-params   IP SLAs icmpEcho Parameters
```

```
ip-sla-icmp-jtr-params   IP SLAs icmpJitter Parameters
ip-sla-icmpjitter        IP SLAs icmpjitter configuration
ip-sla-jitter            IP SLAs jitter configuration
ip-sla-pathEcho          IP SLAs pathEcho configuration
ip-sla-pathJitter        IP SLAs pathJitter configuration
ip-sla-tcp-conn-params   IP SLAs tcpConnect Parameters
ip-sla-tcpConnect        IP SLAs tcpConnect configuration
ip-sla-tplt-dest         IP SLAs auto destination submode
ip-sla-tplt-icmp-ech     IP SLAs auto template icmpEcho
ip-sla-tplt-icmp-jtr     IP SLAs auto template icmpJitter
ip-sla-tplt-tcp-conn     IP SLAs auto template tcpConnect
ip-sla-tplt-udp-ech      IP SLAs auto template udpEcho
ip-sla-tplt-udp-jtr      IP SLAs auto template udpJitter
ip-sla-udp-ech-params    IP SLAs udpEcho Parameters
ip-sla-udp-jtr-params    IP SLAs udpJitter Parameters
ip-sla-udpEcho           IP SLAs udpEcho configuration
ip-sla-voip              IP SLA voip configuration
ip-sla-voip-rtp          IP SLAs rtp configuration
ip-vrf                   Configure IP VRF parameters
ipc-zone-assoc-protocol-sctp ipc protocol sctp mode
ipczone                  IPC Zone config mode
ipczone-assoc            IPC Association config mode
ipenacl                  IP named extended access-list configuration mode
iphc-profile-mode        IPHC Profile configuration mode
ipmobile-test            IP Mobility test mode
ipnat-pool               IP NAT pool configuration mode
ipnat-portmap            IP NAT portmap configuration mode
ipnat-sbc                IP NAT SIP-SBC config mode
ipnat-sbc-vrf            IP NAT SIP-SBC vrf config mode
ipnat-snat               IP SNAT configuration mode
ipnat-snat-backup        IP SNAT Backup configuration mode
ipnat-snat-primary       IP SNAT Primary configuration mode
ipnat-snat-redundancy    IP SNAT Redundancy configuration mode
ips-seap-rules           IPS event action rules configuration mode
ips-sigdef-sig           IPS signature number name configuration mode
ipscataction             IPS Category name configuration mode
ipsnacl                  IP named simple access-list configuration mode
ipssigau                 IPS Auto Update configuration mode
ipssigcat                IPS signature category configuration mode
ipssigdef-action         IPS Signature actions configuration mode
ipssigdef-engine         IPS signature def Engine configuration mode
ipssigdef-status         IPS signature def Status mode
ipv6-mobile-router       MIPv6 router configuration mode
ipv6-router              IPv6 router configuration mode
ipv6acl                  IPv6 access-list configuration mode
ipv6dhcp                 IPv6 DHCP configuration mode
ipv6dhcpvs               IPv6 DHCP Vendor-specific configuration mode
ipx-router               IPX router configuration mode
ipxenacl                 IPX named extended access-list configuration mode
ipxsapnacl               IPX named SAP access-list configuration mode
ipxsnacl                 IPX named standard access-list configuration mode
ipxsumnacl               IPX named Summary access-list configuration mode
isakmp-profile           Crypto ISAKMP profile command mode
iua-cfg                  ISDN user adaptation layer configuration
key-chain                Key-chain configuration mode
key-chain-key            Key-chain key configuration mode
kron-occurrence          Kron Occurrence SubMode
kron-policy              Kron Policy SubMode
l2                       vfi configuration mode
line                     Line configuration mode
lw-vlan-id               VLAN-id configuration mode
lw-vlan-range            VLAN-range configuration mode
local-prof               Local profile configuration mode
log_config               Log configuration changes made via the CLI
```

```
lsp-attribute-list       LSP attribute list configuration mode
map-class                Map class configuration mode
map-list                 Map list configuration mode
memory                  config-owner-memory
mgcpprofile              MGCP Profile configuration mode
mipv6-config-ha          Mobile IPv6 HA mode
mipv6-config-ha-host     Mobile IPv6 Home Agent Host config mode
mobile-map               Mobile Map mode
mobile-networks          Mobile Networks mode
mobile-router            Mobile Router mode
mplsmfistaticifrewrite   MPLS MFI static if rewrite configuration mode
mplsmfistaticrewrite     MPLS MFI static rewrite configuration mode
mripv6-config-ha-host    Mobile IPv6 Home Agent Host config mode
mrm-manager              IP Multicast Routing Monitor config mode
neighbor                 Neighbor configuration mode
network-object-group     ACL Object Group configuration
null-interface           Null interface configuration mode
null-interface           Null interface configuration mode
nxg-service-relationship Service Relationship configuration mode
nxg-usage-indication     Usage Indication configuration mode
oam                      LSP Verification configuration mode
oer_br                   OER border router configuration submode
oer_mc                   OER master controller configuration submode
oer_mc_api_provider      OER MC API Provider configuration submode
oer_mc_br                OER managed border router configuration submode
oer_mc_br_if             OER Border Exit configuration submode
oer_mc_learn             OER Top Talker and Delay learning configuration submode
oer_mc_learn_list        OER learn list configuration submode
oer_mc_map               oer-map config mode
parameter_map_cfg        parameter-map configuration mode
policy-list              IP Policy List configuration mode
preauth                  AAA Preauth definitions
profile                  Subscriber profile configuration mode
pseudowire-class        Pseudowire-class configuration mode
public-key-chain        Crypto public key identification mode
public-key-chain-key    Crypto public key entry mode
public-key-chain-key-ring Crypto public key entry mode
qosclassmap              QoS Class Map configuration mode
qosclasspolice           QoS Class Police configuration mode
qospolicymap             QoS Policy Map configuration mode
qospolicymapclass        QoS Policy Map class configuration mode
radius-attrl             Radius Attribute-List Definition
radius-locsvr            Radius Application configuration
red-group                random-detect group configuration mode
redundancy               redundancy config mode
regex-translation-rule   voip translation-rule configuration mode
request-dialin           VPDN group request dialin configuration mode
request-dialout          VPDN group request dialout configuration mode
rf-mode-interdev-local ipc sctp local config mode
rf-mode-interdev-remote ipc sctp remote config mode
rf-mode-interdevice     redundancy config mode
rlm-group               RLM Group configuration mode
rlm-group-sc            RLM server/client link configuration mode
roles                    Role configuration mode
route-map                Route map config mode
router                   Router configuration mode
rsvp-local-if-policy     RSVP local policy interface configuration mode
rsvp-local-policy        RSVP local policy configuration mode
rsvp-local-subif-policy RSVP local policy sub-interface configuration mode
rtr                      SAA entry configuration
saa-dhcp                 SAA dhcp configuration
saa-dns                  SAA dns configuration
saa-echo                 SAA echo configuration
saa-frameRelay           SAA FrameRelay configuration
```

```
saa-ftp                   SAA ftp configuration
saa-http                  SAA http configuration
saa-jitter                SAA jitter configuration
saa-pathEcho              SAA pathEcho configuration
saa-pathJitter            SAA pathJitter configuration
saa-slm-ctrlr-if          SAA SLM controller/interface configuration
saa-slmFrIf               SAA SLM FrameRelay Interface configuration
saa-slmfr                 SAA SLM Frame Relay configuration
saa-tcpConnect            SAA tcpConnect configuration
saa-udpEcho               SAA udpEcho configuration
sg-radius                 Radius Server-group Definition
sampler                  Sampler configuration mode
sccpccmgroup             SCCP CCM group configuration mode
sccpplar                 SCCP PLAR configuration mode
sctp-export              SCTP export configuration commands
seczonecfg                Security Zone Configuration Mode
seczonepaircfg            Security Zone Pair Configuration Mode
sep-init-config           WSMA Initiator profile Mode
sep-listen-config         WSMA Listener profile Mode
service-object-group      ACL Object Group configuration
serviceflow               Service Flow configuration mode
sg-tacacs+                Tacacs+ Server-group Definition
signaling-class           Signaling class configuration mode
sip-ua                    SIP UA configuration mode
sla-lspPing               IP SLAs lsp ping configuration
sla-lspTrace              IP SLAs lsp trace configuration
slb-mode-dfp              SLB DFP configuration mode
slb-mode-real             SLB real server configuration mode
slb-mode-sfarm            SLB server farm configuration mode
slb-mode-vserver          SLB virtual server configuration mode
source-group              Voice Source Group configuration mode
srst-video                cm-fallback video configuration mode
sss-subscriber            SSS subscriber configuration mode
subinterface              Subinterface configuration mode
subscriber-policy         Subscriber policy configuration mode
tablemap                  Table Map configuration mode
tcl                       Tcl mode
tdm-conn                  TDM connection configuration mode
telephony-service         telephony-service configuration mode
telephony-service-group   Telephony service group configuration mode
telephony-service-video   Telephony service video configuration mode
template                  Template configuration mode
template peer-policy      peer-policy configuration mode
template peer-session     peer-session configuration mode
test_cpu                  config-owner-test_cpu
test_mem                  config-owner-test_mem
tidp-group                TIDP Group configuration mode
tidp-keyset               TIDP key-set configuration mode
tn3270s-dlur              tn3270 server DLUR configuration mode
tn3270s-dlur-pu           tn3270 server DLUR PU configuration mode
tn3270s-dlur-sap          tn3270 server DLUR SAP configuration mode
tn3270s-listen-point      tn3270 server Listen-Point configuration mode
tn3270s-listen-point-pu   tn3270 server Listen-Point PU configuration mode
tn3270s-pu                tn3270 server PU configuration mode
tn3270s-resp-time         tn3270 server response time client group configuration mode
tn3270s-security          tn3270 server Security Configuration mode
tn3270s-security-profile  tn3270 server Security Profile Configuration mode
tn3270s-svr               tn3270 server configuration mode
top-talkers               Netflow top talkers config mode
tracking-config           Tracking configuration mode
trange                    time-range configuration mode
translation-profile       Voice Translation Profile configuration mode
translation-rule          Translation Rule configuration mode
trunk-group               Trunk group configuration mode
```

```
  vc-class                VC class configuration mode
  vc-group                VC group configuration mode
  view                    View configuration mode
  vlan                    VLAN database editing buffer
  vm-integration          voicemail integration configuration mode
  voice-cause-code        Voice Cause Code configuration mode
  voice-gateway           voice gateway configuration mode
  voice-mlpp              voice mlpp configuration mode
  voice-service           Voice service configuration mode
  voice-service-h323      Voice service h323 configuration mode
  voice-service-session   Voice service session configuration mode
  voice-service-sip       Voice service sip configuration mode
  voice-service-stun      Voice service stun configuration mode
  voice-uri-class         Voice URI Class configuration mode
  voicecl-cptone          Voice Class CPTone configuration mode
  voicecl-cptone-dt       CPtone dualtone configuration mode
  voicecl-dt-detect       Voice Class Dualtone Detect configuration mode
  voiceclass              Voice Class configuration mode
  voicednismaps           Dnis Map Configuration
  voiceport               Voice configuration mode
  voipdialpeer            Dial Peer configuration mode
  voipdpcor               Dial Peer Class of Restriction configuration mode
  voipdpcorlist           Dial Peer Class of Restriction List configuration mode
  vpdn-group              VPDN group configuration mode
  vpdn-template           VPDN template configuration mode
  vrf                     Configure VRF parameters
  webvpn                  Webvpn virtual context configuration
  webvpn-acl              Webvpn ACL configuration
  webvpn-cifs-url         Webvpn CIFS URL list configuration
  webvpn-group-policy     Webvpn group policy configuration
  webvpn-nbnslist         Webvpn VW ctxt NBNS list configuration
  webvpn-port-fwd         Webvpn port-forward list configuration
  webvpn-sso-server       SSO Server configuration
  webvpn-time-range       Webvpn time range configuration
  webvpn-url              Webvpn URL list configuration
  webvpn-url-rewrite      Webvpn url-rewrite list configuration
  x25-profile             X.25 profile configuration mode
  xconnect-conn-config    Xconnect connect configuration submode
  xconnect-dlci-config    Xconnect FR DLCI configuration submode
  xconnect-if-config      Xconnect interface configuration submode
  xconnect-pvc-config     Xconnect atm l2transport PVC configuration submode
  xconnect-pvp-config     Xconnect atm l2transport PVP configuration submode
  xconnect-subif-config   Xconnect sub-interface configuration submode
  xml-app                 XML Application configuration mode
  xml-transport           XML Transport configuration mode
```

In the following example, only commands in RTR configuration mode are shown:

```
Router# show parser dump rtr

 Mode Name :rtr
15 type udpEcho dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
source-port <1-65535> control enable
15 type udpEcho dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
source-port <1-65535> control disable
15 type udpEcho dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
source-port <1-65535>
15 type udpEcho dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
15 type udpEcho dest-ipaddr <address> dest-port <1-65535>
15 type tcpConnect dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
source-port <1-65535> control enable
15 type tcpConnect dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
source-port <1-65535> control disable
```

```
15 type tcpConnect dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
source-port <1-65535>
15 type tcpConnect dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
15 type tcpConnect dest-ipaddr <address> dest-port <1-65535>
15 type jitter dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
15 type jitter dest-ipaddr <address> dest-port <1-65535> source-port <1-65535>
15 type jitter dest-ipaddr <address> dest-port <1-65535> control enable
15 type jitter dest-ipaddr <address> dest-port <1-65535> control disable
15 type jitter dest-ipaddr <address> dest-port <1-65535> num-packets <1-60000>
15 type jitter dest-ipaddr <address> dest-port <1-65535> interval <1-60000>
15 type jitter dest-ipaddr <address> dest-port <1-65535>
15 type echo protocol ipIcmpEcho <address> source-ipaddr <address>
15 type echo protocol ipIcmpEcho <address>
15 type ftp operation get url <string> source-ipaddr <address> mode active
15 type ftp operation get url <string> source-ipaddr <address> mode passive
15 type ftp operation get url <string> source-ipaddr <address>
15 type ftp operation get url <string>
15 type http operation get url <string> name-server <address> version <string>
source-ipaddr <address> source-port <1-65535> cache
15 type http operation get url <string> name-server <address> version <string>
source-ipaddr <address> source-port <1-65535> cache
15 type http operation get url <string> name-server <address> version <string>
source-ipaddr <address> source-port <1-65535> cache
15 type http operation get url <string> name-server <address> version <string>
source-ipaddr <address> source-port <1-65535>
15 type http operation get url <string> name-server <address> version <string>
source-ipaddr <address>
15 type http operation get url <string> name-server <address> version <string>
15 type http operation get url <string> name-server <address>
15 type http operation get url <string>
15 type http operation raw
15 type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82> circuit-id
<string>
15 type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82> remote-id
<string>
15 type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82> subnet-mask
<ipmask>
15 type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82>
15 type dhcp dest-ipaddr <address> source-ipaddr <address>
15 type dhcp dest-ipaddr <address>
15 type dhcp
15 type dns target-addr <string> name-server <address> source-ipaddr <address> source-port
<1-65535>
15 type dns target-addr <string> name-server <address> source-ipaddr <address>
15 type dns target-addr <string> name-server <address>
15 type pathEcho protocol ipIcmpEcho <address> source-ipaddr <address>
15 type pathEcho protocol ipIcmpEcho <address>
15 type pathJitter dest-ipaddr <address> source-ipaddr <address>
15 type pathJitter dest-ipaddr <address> num-packets <1-100>
15 type pathJitter dest-ipaddr <address> interval <1-1000>
15 type pathJitter dest-ipaddr <address> targetOnly
15 type pathJitter dest-ipaddr <address>
15 type slm frame-relay pvc
15 type slm controller T1 <controller>
15 type slm controller E1 <controller>
15 type slm controller T3 <controller>
15 type slm controller E3 <controller>
15 exit
```

In the following example, only those commands in RTR configuration mode containing the keyword **dhcp** are shown:

```
Router# show parser dump rtr | include dhcp
```

```
15 type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82> circuit-id
<string>
15 type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82> remote-id
<string>
15 type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82> subnet-mask
<ipmask>
15 type dhcp dest-ipaddr <address> source-ipaddr <address> option <82-82>
15 type dhcp dest-ipaddr <address> source-ipaddr <address>
15 type dhcp dest-ipaddr <address>
15 type dhcp
Router#
```

The following example shows how the **extend** keyword displays the syntax descriptions that match those shown using the ? command-line help:

```
Router# show parser dump rtr extend

 Mode Name :rtr
15 type udpEcho dest-ipaddr <address> dest-port <1-65535> source-ipaddr <address>
source-port <1-65535> control enable
type : Type of entry
udpEcho : UDP Echo Operation
dest-ipaddr : Destination address
<address> : IP address or hostname
dest-port : Destination Port
<1-65535> : Port Number
source-ipaddr : Source address
<address> : IP address or hostname
source-port : Source Port
<1-65535> : Port Number
control : Enable or disable control packets
enable : Enable control packets exchange (default)
 .
 .
 .
! Ctrl-Z used here to interrupt output and return to CLI prompt.

Router# config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# rtr 1
Router(config-rtr)# type udpEcho ?
  dest-ipaddr  Destination address

Router(config-rtr)# type udpEcho dest-ipaddr ?
  Hostname or A.B.C.D  IP address or hostname

Router(config-rtr)# type udpEcho dest-ipaddr HOSTNAME ?
  dest-port  Destination Port

Router(config-rtr)# type udpEcho dest-ipaddr HOSTNAME dest-port ?
  <1-65535>  Port Number

Router(config-rtr)# type udpEcho dest-ipaddr HOSTNAME dest-port 1 ?
  control        Enable or disable control packets
  source-ipaddr  Source address
  source-port    Source Port
  <cr>

Router(config-rtr)# type udpEcho dest-ipaddr HOSTNAME dest-port 1 control ?
  disable  Disable control packets exchange
  enable   Enable control packets exchange (default)
```

In the following example, show parser dump output is redirected to a file on a remote TFTP server:

```
show parser dump exec extend | redirect
tftp://209.165.200.225/userdirectory/123-exec-commands.txt
```

In the following example, the **show parser dump** command is not available in Cisco IOS software because this command was removed in Cisco IOS 15.0(1)M:

```
Router# show parser dump all
Command accepted, but obsolete, parser dumper has been deprecated
```

Related Commands

Command	Description
show append	Redirects and adds the output of any **show** command to an existing file.
show begin	Filters the output of any **show** command to display the output from the first instance of a specified string.
show exclude	Filters **show** command output so that it excludes lines that contain a particular regular expression.
show include	Filters **show** command output so that only lines that containing the specified string are displayed.
show redirect	Redirects the output of any **show** command to a file.
show tee	Copies the output of any **show** command to a file while displaying it on the terminal.

show parser macro

To display the smart port macros, use the **show parser macro** command in privileged EXEC mode.

show parser macro [**name** *macro-name* | **brief** | **description** [**interface** *interface*]]

Syntax Description

name *macro-name*	(Optional) Displays a specific macro.
brief	(Optional) Displays the configured macro names.
description	(Optional) Displays the macro description for all interfaces.
interface *interface*	(Optional) Displays the macro description for the specified interface.

Defaults

This command has no default settings.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SXH	This command was introduced.

Examples

The following example shows how to display the macro description:

```
Router# show parser macro description

Interface    Macro Description

---------------------------------------------------------------

Fa1/2      desktop-config

---------------------------------------------------------------
```

The following example shows how to display the contents of the cisco-router smart port macro:

```
Router# show parser macro name cisco-router

Macro name : cisco-router
Macro type : default interface
# macro keywords $NVID
# Do not apply to EtherChannel/Port Group
# Access Uplink to Distribution
 switchport
# Define unique Native VLAN on trunk ports
# Recommended value for native vlan (NVID) should not be 1
 switchport trunk native vlan $NVID
# Update the allowed VLAN range (VRANGE) such that it
# includes data, voice and native VLANs
# switchport trunk allowed vlan VRANGE
# Hardcode trunk and disable negotiation to
# speed up convergence
 switchport trunk encapsulation dot1q
```

```
 switchport mode trunk
 switchport nonegotiate
# Configure qos to trust this interface
 auto qos voip trust
 mls qos trust dscp
# Ensure fast access to the network when enabling the interface.
# Ensure that switch devices cannot become active on the interface.
 spanning-tree portfast
 spanning-tree bpduguard enable
```

The following example shows how to list the Cisco-provided smart port macros:

```
Router# show parser macro brief | include default

    default global   :  cisco-global
    default interface:  cisco-desktop
    default interface:  cisco-phone
    default interface:  cisco-switch
    default interface:  cisco-router
```

Related Commands

Command	Description
macro (global configuration)	Creates a command macro.
macro (interface configuration)	Creates an interface-specific command macro.

show parser statistics

To displays statistics about the last configuration file parsed and the status of the Parser Cache feature, use the **show parser statistics** command in privileged EXEC mode.

show parser statistics

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **show parser statistics** command displays two sets of data:

- The number of commands in the configuration file that was last copied into the running configuration, and the time it took for the system to parse them (a configuration file can be loaded into the running configuration at system startup, or by issuing commands such as the **copy** *source* **running-config** command).
- The status of the Parser Cache feature (enabled or disabled) and the number of command matches (indicated by hits/misses) since the system was started or since the parser cache was cleared.

The Parser Cache feature optimizes the parsing (translation and execution) of Cisco IOS software configuration command lines by remembering how to parse recently encountered command lines, decreasing the time required to process large configuration files.

Examples

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

```
Router# show parser statistics

Last configuration file parsed:Number of Commands:1484, Time:1272 ms

Parser cache:disabled, 0 hits, 2 misses
```

In this example, the Parser Cache feature is disabled, but shows the hit/miss statistics for the two commands issued while the parser cache was last enabled.

Table 126 describes the key output fields.

Table 126 show parser statistics Output Fields

Last configuration file parsed:	Displays statistics on the last configuration file copied into the running configuration (at startup or using the **copy** command).
Number of commands:	The number of command lines in the last configuration file parsed.
Time:	Time (in milliseconds) taken for the system to load the last configuration file.
Parser cache:	Displays whether the Parser Cache feature is enabled or disabled, and the hit/miss statistics related to the feature. Statistics are stored since the initialization of the system, or since the last time the parser cache was cleared.
hits	Number of commands the parser cache was able to parse more efficiently by matching them to similar commands executed previously.
misses	Number of commands the parser cache was unable to match to previously executed commands. The performance enhancement provided by the Parser Cache feature cannot be applied to unmatched commands.

In the following example the **show parser statistics** command is used to compare the parse-time of a large configuration file with the Parser Cache feature disabled and enabled. In this example, a configuration file with 1484 access list commands is loaded into the running configuration.

```
Router# configure terminal
!parser cache is disabled
Router(config)# no parser cache
!configuration file is loaded into the running configuration
Router# copy slot0:acl_list running-config
.
.
.
Router# show parser statistics
Last configuration file parsed:Number of Commands:1484, Time:1272 ms

Parser cache:disabled, 0 hits, 2 misses

!the parser cache is reenabled
Router(config)# parser cache
!configuration file is loaded into the running configuration
Router# copy slot0:acl_list running-config
.
.
.
Router# show parser statistics
Last configuration file parsed:Number of Commands:1484, Time:820 ms

Parser cache:enabled, 1460 hits, 26 misses
```

These results show an improvement to the load time for the same configuration file from 1272 milliseconds (ms) to 820 ms when the Parser Cache feature was enabled. As indicated in the "hits" field of the **show** command output, 1460 commands were able to be parsed more efficiently by the parser cache.

Related Commands

Command	Description
clear parser cache	Clears the parse cache entries and hit/miss statistics stored for the Parser Cache feature.
parser cache	Enables or disables the Parser Cache feature.

show pci

To display information about the peripheral component interconnect (PCI) hardware registers or bridge registers for the Cisco 7200 series routers, use the **show pci** command in EXEC mode.

show pci {**hardware** | **bridge** [*register*]}

Syntax Description

hardware	Displays PCI hardware registers.
bridge	Displays PCI bridge registers.
register	(Optional) Number of a specific bridge register in the range from 0 to 7. If not specified, this command displays information about all registers.

Command Modes

EXEC

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The output of this command is generally useful for diagnostic tasks performed by technical support only.

Note The **show pci hardware** EXEC command displays a substantial amount of information.

Examples

The following is sample output for the PCI bridge register 1 on a Cisco 7200 series router:

```
Router# show pci bridge 1

Bridge 4, Port Adaptor 1, Handle=1
DEC21050 bridge chip, config=0x0
(0x00): cfid   = 0x00011011
(0x04): cfcs   = 0x02800147
(0x08): cfccid = 0x06040002
(0x0C): cfpmlt = 0x00010010

(0x18): cfsmlt = 0x18050504
(0x1C): cfsis  = 0x22805050
(0x20): cfmla  = 0x48F04880
(0x24): cfpmla = 0x00004880

(0x3C): cfbc   = 0x00000000
(0x40): cfseed = 0x00100000
(0x44): cfstwt = 0x00008020
```

The following is partial sample output for the PCI hardware register, which also includes information on all the PCI bridge registers on a Cisco 7200 series router:

```
Router# show pci hardware
```

```
GT64010 External PCI Configuration registers:
 Vendor / Device ID   : 0xAB114601 (b/s 0x014611AB)
 Status / Command     : 0x17018002 (b/s 0x02800117)
 Class / Revision     : 0x00000006 (b/s 0x06000000)
 Latency              : 0x0F000000 (b/s 0x0000000F)
 RAS[1:0] Base        : 0x00000000 (b/s 0x00000000)
 RAS[3:2] Base        : 0x00000001 (b/s 0x01000000)
 CS[2:0] Base         : 0x00000000 (b/s 0x00000000)
 CS[3] Base           : 0x00000000 (b/s 0x00000000)
 Mem Map Base         : 0x00000014 (b/s 0x14000000)
 IO Map Base          : 0x01000014 (b/s 0x14000001)
 Int Pin / Line       : 0x00010000 (b/s 0x00000100)

Bridge 0, Downstream MB0 to MB1, Handle=0
DEC21050 bridge chip, config=0x0
(0x00): cfid   = 0x00011011
(0x04): cfcs   = 0x02800143
(0x08): cfccid = 0x06040002
(0x0C): cfpmlt = 0x00011810

(0x18): cfsmlt = 0x18000100
(0x1C): cfsis  = 0x02809050
(0x20): cfmla  = 0x4AF04880
(0x24): cfpmla = 0x4BF04B00

(0x3C): cfbc   = 0x00000000
(0x40): cfseed = 0x00100000
(0x44): cfstwt = 0x00008020
.
.
.
```

show pci hardware

To display information about the Host-PCI bridge, use the **show pci hardware** command in EXEC mode.

show pci hardware

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The output of this command is generally useful for diagnostic tasks performed by technical support only:

```
Router# show pci hardware

hardware PCI hardware registers

Each device on the PCI bus is assigned a PCI device number.  For the
C2600, device numbers are as follows:

Device    Device number
0         First LAN device
1         Second LAN device
2         AIM device (if present)
3         Not presently used
4         Port module - first PCI device
5         Port module - second PCI device
6         Port module - third PCI device
7         Port module - fourth PCI device
8-14      Not presently used
15        Xilinx PCI bridge
```

Examples

The following is partial sample output for the PCI hardware register, which also includes information on all the PCI bridge registers.

```
router# show pci hardware

XILINX Host-PCI Bridge Registers:
Vendor / Device ID: 0x401310EE
Status / Command: 0x040001C6
PCI Slave Base Reg 0: 0x00000000
PCI Slave Base Reg 1: 0x04000000
```

Table 127 describes the significant fields shown in the display.

Table 127 show pci hardware Field Descriptions

Field	Description
Device/Vendor ID	Identifies the PCI vendor and device. The value 0x401310EE identifies the device as the Xilinx-based Host-PCI bridge for the Cisco 2600 router.
Status/Command	Provides status of the Host-PCI bridge. Refer to the PCI Specification for more information.
PCI Slave Base Reg 0	The base address of PCI Target Region 0 for the Host-PCI bridge. This region is used for Big-Endian transfers between PCI devices and memory.
PCI Slave Base Reg 1	The base address of PCI Target Region 1 for the Host-PCI bridge. This region is used for Little-Endian transfers between PCI devices and memory.

show perf-meas

To display the performance measurement of the router, use the **show perf-meas** command in user EXEC or privileged EXEC mode.

show perf-meas [*report-types* | **all**]

Syntax Description

report-types	(optional) Reports type. The values are: • 2t-to-hdlc - Display 2t-to-hdlc report2t-to-modem Display 2t-to-modem report • all - Display all reports • fe-to-hdlc- Displays fe-to-hdlc report • fe-to-modem- Displays fe-to-modem report • hdlc-to-2t- Display hdlc-to-2t report • hdlc-to-fe- Display hdlc-to-fe report • modem-to-2t - Display modem-to-2t report • modem-to-fe- Displays modem-to-fe report
all	(Optional) Display all reports.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
15.0(1)M	This command was introduced in a release earlier than Cisco IOS Release 15.0(1)M.

Usage Guidelines

Use the **show perf-meas** command to display the performance measurement of the router.

Examples

The following is sample output from the **show perf-meas** command. The field descriptions are self-explanatory.

```
Router# show perf-meas

******  P E R F O R M A N C E    M E A S U R E M E N T ******
              -------------------------------------------
Fastswitch packets from: Fast-Ethernet to Fast-Ethernet
- Min Time: 0 micro seconds
     - Avg Time: 0 micro seconds
     - Max Time: 0 micro seconds
     - Total number Fastswitch-packets: 0
     - Number of packets from output queue (non-Fastswitch): 0
-------------------------------------------------------------------------------|
                                  | Perf Ctr Min | Perf Ctr Avg | Perf Ctr Max |
```

```
-------------------------------------------------------------------------------|
Clock Cycles                        |  0           |  0           |  0          |
Total-Issued Instructions           |  0           |  0           |  0          |
Floating Point Instructions Issued  |  0           |  0           |  0          |
Integer Instructions Issued         |  0           |  0           |  0          |
Load Instructions Issued            |  0           |  0           |  0          |
Store Instructions Issued           |  0           |  0           |  0          |
Dual-Issued Instruction Pairs       |  0           |  0           |  0          |
Branch Pre-Fetches                  |  0           |  0           |  0          |
Slip Cycles                         |  0           |  0           |  0          |
Stall Cycles                        |  0           |  0           |  0          |
On-Chip Secondary Cache Misses      |  0           |  0           |  0          |
Primary Instruction Cache Misses    |  0           |  0           |  0          |
Primary Data Cache Misses           |  0           |  0           |  0          |
DTLB Misses                         |  0           |  0           |  0          |
ITLB Misses                         |  0           |  0           |  0          |
Joint TLB Instruction Misses        |  0           |  0           |  0          |
Joint TLB Data Misses               |  0           |  0           |  0          |
Taken Branch Instructions           |  0           |  0           |  0          |
Branch Instructions Issued          |  0           |  0           |  0          |
OCS Cache Write-Backs               |  0           |  0           |  0          |
Data Cache Write-Backs              |  0           |  0           |  0          |
Pending Load Stall Cycles           |  0           |  0           |  0          |
Number of Re-Misses                 |  0           |  0           |  0          |
FP Possible Exception Stall Cycle   |  0           |  0           |  0          |
-------------------------------------------------------------------------------|
```

show platform

To display platform information, use the **show platform** command in privileged EXEC mode.

show platform {**buffers** | **copp rate-limit** {**arp** | **dhcp** | **atm-oam** | **ethernet-oam** | **icmp** | **igmp** | **pppoe-discovery** | **atom ether-vc** | **all**} | **np copp** [*ifnum*] [**detail**] | **dma** | **eeprom** | **fault** | **hardware capacity** | **hardware pfc mode** | **internal-vlan** | **interrupts** | **netint** | **software ipv6-multicast connected** | **stats** | **tech-support** {**ipmulticast** [**vrf** *vrf-name*] *group-ip-addr src-ip-addr* | **unicast** [**vrf** *vrf-name*] *destination-ip-addr destination-mask* [**global**]} | **tlb** | **vfi dot1q-transparency** | **vlans**}

Cisco ASR 1000 Series Aggregation Services Routers

show platform

Syntax Description

buffers	Displays buffer-allocation information.
copp rate-limit	Displays Cisco Control Plane Policing (CoPP) rate-limit information on the Cisco 7600 SIP-400.
arp	Specifies Address Resolution Protocol (ARP) packet traffic.
dhcp	Specifies Dynamic Host Configuration Protocol (DHCP) packet traffic.
atm-oam	Specifies ATM Operation, Administration, and Maintenance (OAM) packet traffic.
ethernet-oam	Specifies Ethernet OAM packet traffic.
icmp	Specifies Internet Connection Management Protoocol Rate limiter.
igmp	Specifies Internet Group Management Potocol Rate limiter.
pppoe-discovery	Specifies Point-to-Point Protocol over Ethernet (PPPoE) discovery packet information.
atom ether-vc	Shows whether IP or routed mode interworking is configured.
all	Displays rate-limit information for all protocols.
np copp	Displays debug information for a given CoPP session ID or for all CoPP sessions.
ifnum	(Optional) A session ID.
detail	(Optional) Shows full rate-limited values.
dma	Displays Direct Memory Access (DMA) channel information.
eeprom	Displays CPU EEPROM information.
fault	Displays the fault date.
hardware capacity	Displays the capacities and utilizations for hardware resources; see the **show platform hardware capacity** command.
hardware pfc mode	Displays the type of installed Policy Feature Card (PFC).
internal-vlan	Displays the internal VLAN.
interrupts	Displays m8500 interrupt counters.
netint	Displays the platform network-interrupt information.
software ipv6-multicast connected	Displays all the IPv6 subnet Access Control List (ACL) entries on the Route Processor (RP); see the **show platform software ipv6-multicast** command.

stats	Displays Constellation WAN (CWAN) statistics.
tech-support ipmulticast	Displays IP multicast-related information for Technical Assistance Center (TAC).
vrf *vrf-name*	(Optional) Displays the Virtual Private Network (VPN) routing and forwarding (VRF) instance.
group-ip-addr	Group IP address.
src-ip-addr	Source IP address.
unicast	Displays IP unicast-related information for TAC.
destination-ip-addr	Destination IP address.
destination-mask	Destination mask.
global	(Optional) Displays global output.
tlb	Displays information about the translation look-aside buffer (TLB) register.
vfi	Displays CWAN virtual forwarding instance (VFI) commands.
dot1q-transparency	Displays the dot1q transparency setting.
vlans	Displays hidden VLAN-to-WAN interface mapping.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Cisco IOS Release 12.2(17d)SXB. This command was changed to include the **hardware pfc mode** keywords.
12.2(18)SXD	This command was modified to include the **software ipv6-multicast connected** keywords.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SRC	This command was modified to include additional keywords to support CoPP enhancements on the Cisco 7600 SIP-400 on the Cisco 7600 series router.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
12.2(33)SRD	This command was modified. The **atom ether-vc** keyword was added.

Usage Guidelines

This command is similar to the **show msfc** command.

This command can be used to verify the existence of a second Cisco IOS process on a single Cisco ASR 1000 RP on a Cisco ASR 1002 router or Cisco ASR 1004 router.

When this command is used with the **atom ether-vc** keyword, it is used on the line-card console.

Examples

The following sample output from the **show platform buffers** command displays buffer-allocation information:

```
Router# show platform buffers

Reg. set    Min    Max
  TX               640
 ABQ         640  16384
   0           0     40
   1        6715   8192
   2           0      0
   3           0      0
   4           0      0
   5           0      0
   6           0      0
   7           0      0
Threshold = 8192

Vlan  Sel  Min  Max  Cnt  Rsvd
1019    1 6715 8192    0     0
Router#
```

Cisco ASR 1000 Series Routers

The following example displays online status information for the shared port adapters (SPAs), Cisco ASR 1000 SPA Interface Processor (SIP), Cisco ASR 1000 Embedded Services Processor (ESP), Cisco ASR 1000 RP, power supplies, and fans. The ESPs are shown as F0 and F1. The RPs are shown as R0 and R1.

The State column should display “ok” for SIPs, SPAs, power supplies, and fans. For RPs and ESPs, the State column should display “ok, active” or “ok, standby.”

```
Router# show platform

Chassis type: ASR1006

Slot      Type                State                   Insert time (ago)
--------- ------------------- --------------------- -----------------
0         ASR1000-SIP10       ok                      18:23:58
 0/0      SPA-5X1GE-V2        ok                      18:22:38
 0/1      SPA-8X1FE-TX-V2     ok                      18:22:33
 0/2      SPA-2XCT3/DS0       ok                      18:22:38
1         ASR1000-SIP10       ok                      18:23:58
 1/0      SPA-2XOC3-POS       ok                      18:22:38
 1/1      SPA-8XCHT1/E1       ok                      18:22:38
 1/2      SPA-2XT3/E3         ok                      18:22:38
R0        ASR1000-RP1         ok, active        18:23:58
R1        ASR1000-RP1         ok, standby             18:23:58
F0        ASR1000-ESP10       ok, active              18:23:58
F1        ASR1000-ESP10       ok, standby             18:23:58
P0        ASR1006-PWR-AC      ok                      18:23:09
P1        ASR1006-FAN         ok                      18:23:09

Slot      CPLD Version        Firmware Version
--------- ------------------- ------------------------------------
0         06120701            12.2(33r)XN2
1         06120701            12.2(33r)XN2
R0        07082312            12.2(33r)XN2
R1        07082312            12.2(33r)XN2
F0        07051680            12.2(33r)XN2
F1        07051680            12.2(33r)XN2
```

Cisco ASR 1000 Series Routers—Verifying Dual Cisco IOS Processes on Single RP

In the following example, a second Cisco IOS process is enabled on a Cisco ASR 1004 router using stateful switchover (SSO). The output of the **show platform** command is provided before and after the SSO configuration to verify that the second Cisco IOS process is enabled and active.

```
Router# show platform

Chassis type: ASR1004

Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         ASR1000-SIP10       ok                    00:04:39
 0/0      SPA-5X1GE-V2        ok                    00:03:23
 0/1      SPA-2XT3/E3         ok                    00:03:18
R0        ASR1000-RP1         ok, active            00:04:39
F0        ASR1000-ESP10       ok, active            00:04:39
P0        ASR1004-PWR-AC      ok                    00:03:52
P1        ASR1004-PWR-AC      ok                    00:03:52

Slot      CPLD Version        Firmware Version
--------- ------------------- ------------------------------------
0         07091401            12.2(33r)XN2
R0        07062111            12.2(33r)XN2
F0        07051680            12.2(33r)XN2

Router# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# redundancy
Router(config-red)# mode sso
*May 27 19:43:43.539: %CMRP-6-DUAL_IOS_REBOOT_REQUIRED: R0/0: cmand:  Configuration must
be saved and the chassis must be rebooted for IOS redundancy changes to take effect
Router(config-red)# exit
Router(config)# exit
Router#
*May 27 19:44:04.173: %SYS-5-CONFIG_I: Configured from console by user on console


Router# copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]

Router# reload
Proceed with reload? [confirm]

*May 27 19:45:16.917: %SYS-5-RELOAD: Reload requested by user on console. Reload Reason:
Reload command.

<reload output omitted for brevity>

Router# show platform
Chassis type: ASR1004

Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         ASR1000-SIP10       ok                    00:29:34
 0/0      SPA-5X1GE-V2        ok                    00:28:13
 0/1      SPA-2XT3/E3         ok                    00:28:18
R0        ASR1000-RP1         ok                    00:29:34
 R0/0                         ok, active            00:29:34
 R0/1                         ok, standby           00:27:49
F0        ASR1000-ESP10       ok, active            00:29:34
P0        ASR1004-PWR-AC      ok                    00:28:47
```

```
P1         ASR1004-PWR-AC      ok                    00:28:47

Slot       CPLD Version        Firmware Version
---------- ------------------- ----------------------------------------
0          07091401            12.2(33r)XN2
R0         07062111            12.2(33r)XN2
F0         07051680            12.2(33r)XN2
```

Table 128 describes the significant fields shown in the display.

Table 128 show platform Field Descriptions

Field	Description
Slot	Chassis slot.
Type	Hardware type.

Table 128 show platform Field Descriptions (continued)

Field	Description
State	Online state of the hardware. One of the following values: **All Hardware** • booting—Hardware is initializing and software is booting. • disabled—Hardware is not operational. • init—Hardware or Cisco IOS process is initializing. • ok—Hardware is operational. • shutdown—Hardware was administratively shut down using the **no shutdown** command. • unknown—Hardware is not operational; state is unknown. **RP or ESP** • init, standby—Standby RP or ESP is operational but is not yet in a high availability (HA) state. An RP or ESP switchover is not yet possible. • ok, active—Active RP or ESP is operational. • ok, standby—Standby RP or ESP is operational. The standby RP or ESP is ready to become active in the event of a switchover. **SPA** • admin down—SPA was disabled using the **shutdown** command. • inserted—SPA is being inserted. • missing—SPA was removed. • out of service—SPA is not operational. • retrieval error—An error occurred while retrieving the SPA state; state is unknown. • stopped—SPA was gracefully deactivated using the **hw-module subslot stop** command. **Fan or Power Supply** • fan, fail—Fan is failing. • ps, fail—Power supply is failing.
Insert time (ago)	Amount of time (hh:mm:ss format) the hardware has been online.
CPLD Version	Complex programmable logic device version number.
Firmware Version	Firmware (ROMmon) version number.

Cisco 7600 Series Routers with Cisco 7600 SIP-400

The following sample output from the **show platform copp rate-limit arp** command displays the list of interfaces on which a rate limiter is active for ARP, along with the count of confirmed and exceeded packets for the rate limiter:

```
Router# show platform copp rate-limit arp

Rate limiter Information for Protocol arp:

  Rate Limiter Status: Enabled
  Rate : 20 pps
  Max Observation Period : 60 seconds
Per Interface Rate Limiter Information
  Interface              Conformed Pkts  Exceeded Pkts  Enabled  Obs Period (Mts)
  GigabitEthernet5/1         0               0          No       -
  GigabitEhternet5/1.1       14              0          No       -
  GigabitEthernet5/1.2       28              2          No       -
  GigabitEthernet5/2         0               0          No       -
  GigabitEthernet5/2.1       180             4          Yes      35
  GigabitEthernet5/2.2       200             16         Yes      Max
```

Table 129 describes the significant fields shown in the display.

Table 129 show platform copp rate-limit Field Descriptions

Field	Description
Rate Limiter Status	Indicates if a rate limiter has been enabled on the interface.
Rate	Indicates the configured rate in packets per second (pps) or bits per second (bps).
Max Observation Period	Indicates the configured observation period, in seconds, before the per-interface rate limiter is automatically turned off.
Per Interface Rate Limiter Information	Displays the list of interfaces on which the rate limiter is active. In this example: • GigabitEthernet5/1.1 is free from attack. • GigabitEthernet5/2.1 has an exceed count of 4, and has a rate limiter enabled. The observation period is 35 minutes, which indicates that currently the interface is free from attack and is being kept under observation. The interface will remain under observation for an additional 35 minutes. If it remains free from attack after that time, the rate limiter is automatically removed. • GigabitEthernet5/2.2 has an exceed count of 16 and has a rate limiter enabled. The observation period has been designated as Max. This indicates that the interface is still under attack and has not yet entered the observation time window.

The following sample from the **show platform eeprom** command displays CPU EEPROM information:

```
Router# show platform eeprom

MSFC CPU IDPROM:
IDPROM image:
```

```
IDPROM image block #0:
  hexadecimal contents of block:
  00: AB AB 02 9C 13 5B 02 00 00 02 60 03 03 E9 43 69    .....[....`...Ci
  10: 73 63 6F 20 53 79 73 74 65 6D 73 00 00 00 00 00    sco Systems.....
  20: 00 00 57 53 2D 58 36 4B 2D 53 55 50 33 2D 50 46    ..WS-X6K-SUP3-PF
  30: 43 33 00 00 00 00 53 41 44 30 36 34 34 30 31 57    C3....SAD064401W
  40: 4C 00 00 00 00 00 00 00 00 00 37 33 2D 37 34 30    L.........73-740
  50: 34 2D 30 37 00 00 00 00 00 00 30 35 00 00 00 00    4-07......05....
  60: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  70: 00 00 00 00 02 BD 00 00 00 00 00 09 00 05 00 01    ................
  80: 00 03 00 01 00 01 00 02 03 E9 00 00 00 00 00 00    ................
  90: 00 00 00 00 00 00 00 00 00 00 00 00                ............

  block-signature = 0xABAB, block-version = 2,
  block-length = 156, block-checksum = 4955

  *** common-block ***
  IDPROM capacity (bytes) = 512  IDPROM block-count = 2
  FRU type = (0x6003,1001)
  OEM String = 'Cisco Systems'
  Product Number = 'WS-X6K-SUP3-PFC3'
  Serial Number = 'SAD064401WL'
  Manufacturing Assembly Number = '73-7404-07'
  Manufacturing Assembly Revision = '05'
  Hardware Revision = 0.701
  Manufacturing bits = 0x0  Engineering bits = 0x0
  SNMP OID = 9.5.1.3.1.1.2.1001
  Power Consumption = 0 centiamperes    RMA failure code = 0-0-0-0
  CLEI =
  *** end of common block ***

IDPROM image block #1:
  hexadecimal contents of block:
  00: 60 03 02 67 0C 24 00 00 00 00 00 00 00 00 00 00    `..g.$..........
  10: 00 00 00 00 00 00 00 51 00 05 9A 3A 7E 9C 00 00    .......Q...:~...
  20: 02 02 00 01 00 01 00 00 00 00 00 00 00 00 00 00    ................
  30: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  40: 14 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00    ................
  50: 00 00 81 81 81 81 80 80 80 80 80 80 80 80 80 80    ................
  60: 80 80 06 72 00 46 37                               ...r.F7

  block-signature = 0x6003, block-version = 2,
  block-length = 103, block-checksum = 3108

  *** linecard specific block ***
  feature-bits =   00000000 00000000
  hardware-changes-bits =   00000000 00000000
  card index = 81
  mac base = 0005.9A3A.7E9C
  mac_len = 0
  num_processors = 2
  epld_num = 2
  epld_versions = 0001 0001 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
0000
  port numbers:
    pair #0: type=14, count=01
    pair #1: type=00, count=00
    pair #2: type=00, count=00
    pair #3: type=00, count=00
    pair #4: type=00, count=00
    pair #5: type=00, count=00
    pair #6: type=00, count=00
    pair #7: type=00, count=00
  sram_size = 0
```

```
  sensor_thresholds =
    sensor #0: critical = -127 oC (sensor present but ignored), warning = -127 oC (sensor
present but ignored)
    sensor #1: critical = -127 oC (sensor present but ignored), warning = -127 oC (sensor
present but ignored)
    sensor #2: critical = -128 oC (sensor not present), warning = -128 oC (sensor not
present)
    sensor #3: critical = -128 oC (sensor not present), warning = -128 oC (sensor not
present)
    sensor #4: critical = -128 oC (sensor not present), warning = -128 oC (sensor not
present)
    sensor #5: critical = -128 oC (sensor not present), warning = -128 oC (sensor not
present)
    sensor #6: critical = -128 oC (sensor not present), warning = -128 oC (sensor not
present)
    sensor #7: critical = -128 oC (sensor not present), warning = -128 oC (sensor not
present)
  max_connector_power = 1650
  cooling_requirement = 70
  ambient_temp = 55
  *** end of linecard specific block ***
```

The following sample output from the **show platform fault** command displays fault-date information:

```
Router# show platform fault

Fault History Buffer:
rsp72043_rp Software (rsp72043_rp-ADVENTERPRISEK9_DBG-M), Version 12.2(32.8.1)RE
C186 ENGINEERING WEEKLY BUILD, synced to V122_32_8_11_SR186
Compiled Wed 08-Apr-09 09:22 by abcd
Uptime 2w3d
Exception Vector: 0x1500 PC 0x0B13DD4C MSR 0x00029200 LR 0x0B13DD10

r0  0x0B13DD10 r1  0x1C58A1C8 r2  0xFFFCFFFC r3  0x189EDEF4
r4  0x00000000 r5  0x00000000 r6  0x1C58A1B0 r7  0x00029200
r8  0x00029200 r9  0x00000000 r10 0x00000001 r11 0x189EDEF0
r12 0x0000001B r13 0x04044000 r14 0x08736008 r15 0x115C0000
r16 0x00000000 r17 0x00000000 r18 0x00000000 r19 0x1B751358
r20 0x00000000 r21 0x00000000 r22 0x00000000 r23 0x00000000
r24 0x00000000 r25 0x00000000 r26 0x00000000 r27 0x00000001
r28 0x13255EC0 r29 0x1C59BD00 r30 0x13255EC0 r31 0x00000000

dec  0x00007333 tbu   0x00004660 tbl   0x594BBFC4 pvr   0x80210020
dear 0x00000000 dbcr0 0x41000000 dbcr1 0x00000000 dbcr2 0x00000000
iac1 0x00000000 iac2  0x00000000 dac1  0x00000000 dac2  0x00000000
```

The following sample output from the **show platform hardware pfc** mode command displays the PFC-operating mode:

```
Router# show platform hardware pfc mode

PFC operating mode : PFC3A
```

This example shows how to display platform network-interrupt information:

```
Router# show platform netint

Network IO Interrupt Throttling:
 throttle count=0, timer count=0
 active=0, configured=1
 netint usec=3999, netint mask usec=800
inband_throttle_mask_hi = 0x0
inband_throttle_mask_lo = 0x800000
```

This following sample output from the **show platform tlb** command displays the TLB-register information:

```
Router# show platform tlb

Mistral revision 5
TLB entries : 42
Virt Address range      Phy Address range      Attributes
0x10000000:0x1001FFFF   0x010000000:0x01001FFFF   CacheMode=2, RW, Valid
0x10020000:0x1003FFFF   0x010020000:0x01003FFFF   CacheMode=2, RW, Valid
0x10040000:0x1005FFFF   0x010040000:0x01005FFFF   CacheMode=2, RW, Valid
0x10060000:0x1007FFFF   0x010060000:0x01007FFFF   CacheMode=2, RW, Valid
0x10080000:0x10087FFF   0x010080000:0x010087FFF   CacheMode=2, RW, Valid
0x10088000:0x1008FFFF   0x010088000:0x01008FFFF   CacheMode=2, RW, Valid
0x18000000:0x1801FFFF   0x010000000:0x01001FFFF   CacheMode=0, RW, Valid
0x19000000:0x1901FFFF   0x010000000:0x01001FFFF   CacheMode=7, RW, Valid
0x1E000000:0x1E1FFFFF   0x01E000000:0x01E1FFFFF   CacheMode=2, RW, Valid
0x1E880000:0x1E899FFF   0x01E880000:0x01E899FFF   CacheMode=2, RW, Valid
0x1FC00000:0x1FC7FFFF   0x01FC00000:0x01FC7FFFF   CacheMode=2, RO, Valid
0x30000000:0x3001FFFF   0x070000000:0x07001FFFF   CacheMode=2, RW, Valid
0x40000000:0x407FFFFF   0x000000000:0x0007FFFFF   CacheMode=3, RO, Valid
.
.
.
0x58000000:0x59FFFFFF   0x088000000:0x089FFFFFF   CacheMode=3, RW, Valid
0x5A000000:0x5BFFFFFF   0x08A000000:0x08BFFFFFF   CacheMode=3, RW, Valid
0x5C000000:0x5DFFFFFF   0x08C000000:0x08DFFFFFF   CacheMode=3, RW, Valid
0x5E000000:0x5FFFFFFF   0x08E000000:0x08FFFFFFF   CacheMode=3, RW, Valid
```

This example shows how use the **atom ether-vc** keyword to display line-card information for an ES20 line card in slot 3.

```
Router# show platform copp rate-limit atom ether-vc

 AToM Ether VC Index(12902): segtype(3) seghandle(0x5ECF7F34)
  Disposition : flags(97) vlanid(502) local_vc_label(22691)
   ForwardingTable: oper(12) flags(0x2100) vlan(502) dest_index(0x9ED)
  Imposition: flags(0x21) egress_idx(0x0) ifnum(28)
   tx_tvc(0x7D83) rvclbl[0](3356) rigplbl[1](1011) label[2](0)
   label[3](0) ltl(0x9ED) mac(0014.1c80.f600) qos_info(0x0)
  Platform Data:
   loc_lbl acif_num fw_idx cword    eg_ifnum ckt_idx  vlan ac_hdl     vc_hash
   22691   615      0x0    0x3      28       0x8003   502  0x5ECF7F34 0x3266
  Platform Index(0x81F68003) is_sw(1) is_vfi(0) vlan(502) pseudo_port_offset(3)
tx_tvc(0x7D83)
  Statistics :  Packets    Bytes      Drop Pkts  Drop Bytes ID
   Disposition: 0          0          0          0          0
   Imposition : 0          0          0          0          0
     Vlan func[1]: 502 (0x1F6) func(0:invalid) feat  (0x0 )
    Tx TVC Table
            idx   ltl h pt cw vt efp  adj  v imp
            x---- x-- d d- d- d- x--- x--- d x---
  SIP10G EoMPLS disp detailed info:
    t vclbl    VLAN       Type    disp-idx
    - d------- x---(d---) ------- x-------
    0 00022691 01F6(0502) ether   00001692
  SIP10G EoMPLS ipiw disp detailed info:
    ipiw mac valid CE-MAC Address
    b--- b-------- --------------
    0001 000000001 0016.9c6e.7480
  VC Summary: vlan(502) VC count(1)
```

Related Commands

Command	Description
platform copp	Turns on or off rate-limiting for an interface on the Cisco 7600 SIP-400.
platform copp observation period	Sets the observation period before automatically turning off the per-interface rate limiter on the Cisco 7600 SIP-400.
pseudowire class	Specifies the name of a Layer 2 pseudowire class.
show msfc	Displays MSFC information.

show platform bridge

To display distributed or hardware-based bridging information, use the **show platform bridge** command in privileged EXEC mode.

show platform bridge [*interface-type interface-number*] [**vlan** *vlan-id*] [**summary**]

Syntax Description

interface-type interface-number	(Optional) Interface type and number.
vlan *vlan-id*	(Optional) Displays VLAN bridging information.
summary	(Optional) Displays a summary of bridging information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.

Examples

The following is sample output from the **show platform bridge** command:

```
Router# show platform bridge

VLAN Interface            CircuitId  LTL  PseudoPort State Options
  12 PO1/1/3.1               102    0xC3F    1/256   up    dot1q
  13 PO1/1/3.1               103    0xC3F    1/256   up    dot1q
  14 PO1/1/3.2               104    0xC3F    1/256   up    default
  15 PO1/1/3.2               105    0xC3F    1/256   up    default
  16 PO1/1/3.3               106    0xC3F    1/256   up    dot1q-tunnel
  17 PO1/1/3.3               107    0xC3F    1/256   up    dot1q-tunnel
  41 Gi8/0/17               1201    0xDE2    8/227   up    access
  41 Gi8/0/17               1202    0xDE3    8/228   up    access
  41 Gi8/0/17               1203    0xDE4    8/229   up    access
  41 Gi8/0/17               1204    0xDE5    8/230   up    access
  41 Gi8/0/17               1205    0xDE6    8/231   up    access
  41 Gi8/0/17               1206    0xDE7    8/232   up    access
  41 Gi8/0/17               1207    0xDE8    8/233   up    access
  41 Gi8/0/17               1208    0xDE9    8/234   up    access
  41 Gi8/0/17               1209    0xDEA    8/235   up    access
  41 Gi8/0/17               1210    0xDEB    8/236   up    access
  41 Gi8/0/17               1211    0xDEC    8/237   up    access
  41 Gi8/0/17               1212    0xDED    8/238   up    access
  41 Gi8/0/17               1213    0xDEE    8/239   up    access
  41 Gi8/0/17               1214    0xDEF    8/240   up    access
  41 Gi8/0/17               1215    0xDF0    8/241   up    access
```

Table 128 describes the significant fields shown in the display.

Table 130 show platform bridge Field Descriptions

Field	Description
VLAN	The VLAN for which bridging is configured.
Interface	The WAN interface on which bridging is configured. This can be an ATM, Gigabit Ethernet, POS, or Serial interface.
CircuitId	The circuit ID. The range is from 0 to 65536.
LTL	The local target logic (LTL) of the interface. LTL is 13 bits long. The format is eee ssss pppppp (e: extended port bits, s: slot bits, p: port bits). Extended bits along with port bits identify the pseudoport and slot bits identifies the slot.
PseudoPort	In the case of flexwan, the port numbering is from 133 to 192 for Bay 0 and 197 to 256 for Bay 1. There are 60 ports per packet processing engine (PPE). For the SIP200, the pseudoports are in the range of 137 to 256.
State	State indicates the status of the physical interface on which bridging is configured. The state is either up or down. If the state is down, then there is a problem and debugging needs to be done.
Options	Options specify whether split-horizon is enabled on the WAN interface. This can be access, default, dot1q, or dot1q-tunnel.

Related Commands

Command	Description
show platform	Displays platform information.

show platform cfm

To display connectivity fault management (CFM) commands, use the **show platform cfm** command in privileged EXEC mode.

show platform cfm {**epl** | **info** | **interface** {**fastethernet** | **gigabitethernet** | **port-channel**} *number* {**fwd_vlan** *vlan-number* | **level** | **vlan_list**}}

Syntax Description

epl	Displays CFM Ethernet private line (EPL) details.
info	Displays the CFM Platform Adaptation Layer (PAL) information.
interface	Specifies the interface type.
fastethernet	Specifies the FastEthernet interface.
gigabitethernet	Specifies the GigabitEthernet interface.
port-channel	Specifies the port-channel interface.
number	Interface number.
fwd_vlan	Displays the CFM forward VLAN list.
vlan-number	VLAN number.
level	Displays the CFM level for the interface.
vlan_list	Specifies CFM VLAN list.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI.

Examples

The following is sample output from the **show platform cfm info** command. The field descriptions are self-explanatory.

```
Router# show platform cfm info

CFM is disabled
 CFM unicast MAC 00d0.2b6c.b103, CFM multicast MAC 0180.c200.0030, AEB multicast MAC
0100.0ccc.ccc0
 CFM Ingress Control Packet System Statistics:
     Current software Rate Limit Setting: 1100 pkts/sec
     Statistics are collected in intervals of 3 seconds.
     Allow the first 3300 packets to pass each interval, drop thereafter
       Current Ingress Count in this interval: 0 pkts
       In this interval have we Exceeded Rate and Dropped pkts: NO
       For the last 3 intervals the maximum sample had 0 packets in one interval.
```

Related Commands

Command	Description
show platform	Displays platform information.

show platform diag

To display diagnostic and debug information for individual platform components, use the **show platform diag** command in privileged EXEC mode.

show platform diag

Syntax Description

diag	Displays diagnostic and debug information for the platform components.

Command Default

This command has no default settings.

Command Modes

privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 2.2	This command was introduced on the Cisco ASR 1000 Series Aggregation Services Routers.

Usage Guidelines

This command can be used to display debug and diagnostic information and indicate the status of field replaceable unit (FRU) components in any Cisco ASR 1000 Series Router.

Examples

The following example displays diagnostic information for the Cisco ASR 1000 SPA Interface Processor (SIP), shared port adapters (SPAs), Cisco ASR 1000 Embedded Services Processor (ESP), Cisco ASR 1000 Route Processors (RP), and power supplies. The ESP is shown as F0 or F1. The RPs are shown as R0 or R1. The power supplies are shown as P0 and P1

```
Router#show platform diag

Chassis type: ASR1004
Slot: 0, ASR1000-SIP10
Running state               : ok
Internal state              : online
Internal operational state  : ok
Physical insert detect time : 00:00:48 (4d22h ago)
Software declared up time   : 00:01:40 (4d22h ago)
CPLD version                : 07091401
Firmware version            : 12.2(33r)XNB

Sub-slot: 0/0, SPA-5X1GE-V2
Operational status          : ok
Internal state              : inserted
Physical insert detect time : 00:00:36 (4d22h ago)
Logical insert detect time  : 00:02:23 (4d22h ago)

Sub-slot: 0/1, SPA-2XT3/E3
Operational status          : ok
Internal state              : inserted
```

```
  Physical insert detect time : 00:00:36 (4d22h ago)
  Logical insert detect time  : 00:02:23 (4d22h ago)

Slot: R0, ASR1000-RP1
  Running state               : ok
  Internal state              : online
  Internal operational state  : ok
  Physical insert detect time : 00:00:48 (4d22h ago)
  Software declared up time   : 00:00:48 (4d22h ago)
  CPLD version                : 07062111
  Firmware version            : 12.2(33r)XNB

Sub-slot: R0/0,
  Running state               : ok, active
  Logical insert detect time  : 00:00:48 (4d22h ago)
  Became HA Active time       : 00:04:56 (4d22h ago)

Sub-slot: R0/1,
  Running state               : ok, standby
  Logical insert detect time  : 00:02:50 (4d22h ago)

Slot: F0, ASR1000-ESP10
  Running state               : ok, active
  Internal state              : online
  Internal operational state  : ok
  Physical insert detect time : 00:00:48 (4d22h ago)
  Software declared up time   : 00:01:40 (4d22h ago)
  Hardware ready signal time  : 00:00:49 (4d22h ago)
  Packet ready signal time    : 00:01:49 (4d22h ago)
  CPLD version                : 07051680
  Firmware version            : 12.2(33r)XNB

Slot: P0, ASR1004-PWR-AC
  State                       : ok
  Physical insert detect time : 00:01:40 (4d22h ago)

Slot: P1, ASR1004-PWR-AC
  State                       : ok
  Physical insert detect time : 00:01:40 (4d22h ago)
```

Table 131 describes the significant fields shown in the display.

Table 131 show platform diag Field Descriptions

Field	Description
Running state	The current online running state of the FRU component.
Internal state	The internal debug state of the FRU component for diagnostic purposes.
Internal operational state	The internal operational state of the FRU component for diagnostic purposes.
Physical insert detect time	The time of the most recent physical insertion of the FRU component detected by the platform code.
Software declared up time	The time that the software on the FRU component was declared running by the platform code.
Hardware ready signal time	The time that the hardware ready signal was detected by the platform code.

Table 131 show platform diag Field Descriptions (continued)

Field	Description
Packet ready signal time	The time that the Embedded Service Processor (ESP) packet ready signal was detected by the platform code.
CPLD version	The Complex Programmable Logic Device version number.
Firmware version	The Firmware (ROMmon) version number.
Logical insert detect time	The time that the SPA was logically detected by the platform code.
Became HA Active time	The time that this FRU became High Availability (HA) active status.

Related Commands

Command	Description
show platform	Displays platform information.
show platform hardware	Displays platform hardware information.
show platform software	Displays platform software information

show platform hardware capacity

To display the capacities and utilizations for the hardware resources, use the **show platform hardware capacity** command in privileged EXEC mode.

show platform hardware capacity [*resource-type*]

Syntax Description		
	resource-type	(Optional) Hardware resource type; see the "Usage Guidelines" section for the valid values.

Defaults

This command has no default settings.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(18)SXF	Support for this command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The valid values for *resource-type* are as follows:

- **acl**—Displays the capacities and utilizations for ACL/QoS TCAM resources.
- **cpu**—Displays the capacities and utilizations for CPU resources.
- **eobc**—Displays the capacities and utilizations for Ethernet out-of-band channel resources.
- **fabric**—Displays the capacities and utilizations for Switch Fabric resources.
- **flash**—Displays the capacities and utilizations for Flash/NVRAM resources.
- **forwarding**—Displays the capacities and utilizations for Layer 2 and Layer 3 forwarding resources.
- **ibc**—Displays the capacities and utilizations for interboard communication resources.
- **interface**—Displays the capacities and utilizations for interface resources.
- **monitor**—Displays the capacities and utilizations for SPAN resources.
- **multicast**—Displays the capacities and utilizations for Layer 3 multicast resources.
- **netflow**—Displays the capacities and utilizations for NetFlow resources.
- **pfc**—Displays the capacities and utilizations for all the PFC resources including Layer 2 and Layer 3 forwarding, NetFlow, CPU rate limiters, and ACL/QoS TCAM resources.
- **power**—Displays the capacities and utilizations for power resources.
- **qos**—Displays the capacities and utilizations for QoS policer resources.
- **rate-limiter**—Displays the capacities and utilizations for CPU rate limiter resources.

- **rewrite-engine**—Displays the packet drop and performance counters of the central rewrite engine on supervisors and line cards. For detailed information, see the **show platform hardware capacity rewrite-engine** command documentation.
- **system**—Displays the capacities and utilizations for system resources.
- **vlan**—Displays the capacities and utilizations for VLAN resources.

The **show platform hardware capacity cpu** command displays the following information:

- CPU utilization for the last 5 seconds (busy time and interrupt time), the percentage of the last 1-minute average busy time, and the percentage of the last 5-minute average busy time.
- Processor memory total available bytes, used bytes, and percentage used.
- I/O memory total available bytes, used bytes, and percentage used.

The **show platform hardware capacity eobc** command displays the following information:

- Transmit and receive rate
- Packets received and packets sent
- Dropped received packets and dropped transmitted packets

The **show platform hardware capacity forwarding** command displays the following information:

- The total available entries, used entries, and used percentage for the MAC tables.
- The total available entries, used entries, and used percentage for the FIB TCAM tables. The display is done per protocol base.
- The total available entries, used entries, and used percentage for the adjacency tables. The display is done for each region in which the adjacency table is divided.
- The created entries, failures, and resource usage percentage for the NetFlow TCAM and ICAM tables.
- The total available entries and mask, used entries and mask, reserved entries and mask, and entries and mask used percentage for the ACL/QoS TCAM tables. The output displays the available, used, reserved, and used percentage of the labels. The output displays the resource of other hardware resources that are related to the ACL/QoS TCAMs (such as available, used, reserved, and used percentage of the LOU, ANDOR, and ORAND).
- The available, used, reserved, and used percentage for the CPU rate limiters.

The **show platform hardware capacity interface** command displays the following information:

- Tx/Rx drops—Displays the sum of transmit and receive drop counters on each online module (aggregate for all ports) and provides the port number that has the highest drop count on the module.
- Tx/Rx per port buffer size—Summarizes the port-buffer size on a per-module basis for modules where there is a consistent buffer size across the module.

The **show platform hardware capacity monitor** command displays the following SPAN information:

- The maximum local SPAN sessions, maximum RSPAN sessions, maximum ERSPAN sessions, and maximum service module sessions.
- The local SPAN sessions used/available, RSPAN sessions used/available, ERSPAN sessions used/available, and service module sessions used/available.

The **show platform hardware capacity multicast** command displays the following information:

- Multicast Replication Mode: ingress and egress IPv4 and IPv6 modes.
- The MET table usage that indicates the total used and the percentage used for each module in the system.

- The bidirectional PIM DF table usage that indicates the total used and the percentage used.

The **show platform hardware capacity system** command displays the following information:

- PFC operating mode (PFC Version: PFC3A, PFC3B, unknown, and so forth)
- Supervisor redundancy mode (RPR, RPR+, SSO, none, and so forth)
- Module-specific switching information, including the following information:
  - Part number (WS-SUP720-BASE, WS-X6548-RJ-45, and so forth)
  - Series (supervisor engine, fabric, CEF720, CEF256, dCEF256, or classic)
  - CEF Mode (central CEF, dCEF)

The **show platform hardware capacity vlan** command displays the following VLAN information:

- Total VLANs
- VTP VLANs that are used
- External VLANs that are used
- Internal VLANs that are used
- Free VLANs

Examples

This example shows how to display CPU capacity and utilization information for the route processor, the switch processor, and the LAN module in the Cisco 7600 series router:

```
Router# show platform hardware capacity cpu

CPU Resources
  CPU utilization: Module             5 seconds       1 minute       5 minutes
                   1  RP               0% /  0%            1%              1%
                   1  SP               5% /  0%            5%              4%
                   7                  69% /  0%           69%             69%
                   8                  78% /  0%           74%             74%
  Processor memory: Module   Bytes:       Total           Used           %Used
                    1  RP             176730048       51774704             29%
                    1  SP             192825092       51978936             27%
                    7                 195111584       35769704             18%
                    8                 195111584       35798632             18%
  I/O memory: Module         Bytes:       Total           Used           %Used
              1  RP                     35651584       12226672             34%
              1  SP                     35651584        9747952             27%
              7                         35651584        9616816             27%
              8                         35651584        9616816             27%
Router#
```

This example shows how to display EOBC-related statistics for the route processor, the switch processor, and the DFCs in the Cisco 7600 series router:

```
Router# show platform hardware capacity eobc

EOBC Resources
  Module                    Packets/sec     Total packets     Dropped packets
  1  RP      Rx:                     61            108982                   0
             Tx:                     37             77298                   0
  1  SP      Rx:                     34            101627                   0
             Tx:                     39            115417                   0
  7          Rx:                      5             10358                   0
             Tx:                      8             18543                   0
  8          Rx:                      5             12130                   0
             Tx:                     10             20317                   0
```

```
Router#
```

This example shows how to display the current and peak switching utilization:

```
Router# show platform hardware capacity fabric

Switch Fabric Resources
  Bus utilization: current is 100%, peak was 100% at 12:34 12mar45
  Fabric utilization:      ingress                    egress
      Module channel speed current peak               current peak
       1      0        20G   100%  100% 12:34 12mar45  100%    100% 12:34 12mar45

       1      1        20G   12%    80% 12:34 12mar45   12%     80% 12:34 12mar45
       4      0        20G   12%    80% 12:34 12mar45   12%     80% 12:34 12mar45
      13      0         8G   12%    80% 12:34 12mar45   12%     80% 12:34 12mar45
Router#
```

This example shows how to display information about the total capacity, the bytes used, and the percentage that is used for the Flash/NVRAM resources present in the system:

```
Router# show platform hardware capacity flash

Flash/NVRAM Resources
  Usage: Module Device               Bytes:      Total          Used     %Used
         1  RP  bootflash:                     31981568      15688048       49%
         1  SP  disk0:                        128577536     105621504       82%
         1  SP  sup-bootflash:                 31981568      29700644       93%
         1  SP  const_nvram:                     129004           856        1%
         1  SP  nvram:                            391160         22065        6%
         7      dfc#7-bootflash:               15204352        616540        4%
         8      dfc#8-bootflash:               15204352             0        0%
Router#
```

This example shows how to display the capacity and utilization of the EARLs present in the system:

```
Router# show platform hardware capacity forwarding

L2 Forwarding Resources
           MAC Table usage:   Module  Collisions  Total       Used       %Used
                              6                0  65536         11          1%

             VPN CAM usage:                        Total       Used       %Used
                                                     512          0          0%
L3 Forwarding Resources
             FIB TCAM usage:                      Total        Used       %Used
                  72 bits (IPv4, MPLS, EoM)     196608          36          1%
                 144 bits (IP mcast, IPv6)       32768           7          1%

                     detail:      Protocol                    Used       %Used
                                  IPv4                          36          1%
                                  MPLS                           0          0%
                                  EoM                            0          0%

                                  IPv6                           4          1%
                                  IPv4 mcast                     3          1%
                                  IPv6 mcast                     0          0%

            Adjacency usage:                      Total        Used       %Used
                                                 1048576         175          1%

     Forwarding engine load:
                     Module       pps   peak-pps                     peak-time
                     6              8       1972  02:02:17 UTC Thu Apr 21 2005
```

```
Netflow Resources
          TCAM utilization:       Module       Created      Failed       %Used
                                  6                 1           0          0%
          ICAM utilization:       Module       Created      Failed       %Used
                                  6                 0           0          0%

                Flowmasks:   Mask#   Type        Features
                       IPv4:     0   reserved    none
                       IPv4:     1   Intf FulNAT_INGRESS NAT_EGRESS FM_GUARDIAN
                       IPv4:     2   unused      none
                       IPv4:     3   reserved    none

                       IPv6:     0   reserved    none
                       IPv6:     1   unused      none
                       IPv6:     2   unused      none
                       IPv6:     3   reserved    none

CPU Rate Limiters Resources
             Rate limiters:       Total         Used      Reserved       %Used
                   Layer 3            9            4             1         44%
                   Layer 2            4            2             2         50%
ACL/QoS TCAM Resources
  Key: ACLent - ACL TCAM entries, ACLmsk - ACL TCAM masks, AND - ANDOR,
       QoSent - QoS TCAM entries, QOSmsk - QoS TCAM masks, OR - ORAND,
       Lbl-in - ingress label, Lbl-eg - egress label, LOUsrc - LOU source,
       LOUdst - LOU destination, ADJ - ACL adjacency

  Module ACLent ACLmsk QoSent QoSmsk Lbl-in Lbl-eg LOUsrc LOUdst  AND  OR  ADJ
  6          1%     1%     1%     1%     1%     1%     0%     0%   0%  0%   1%

Router#
```

This example shows how to display the interface resources:

```
Router# show platform hardware capacity interface

Interface Resources
  Interface drops:
    Module    Total drops:    Tx            Rx      Highest drop port:  Tx  Rx
    9                          0             2                           0  48

  Interface buffer sizes:
    Module                              Bytes:     Tx buffer           Rx buffer
         1                                            12345               12345
         5                                            12345               12345
Router#
```

This example shows how to display SPAN information:

```
Router# show platform hardware capacity monitor

SPAN Resources
  Source sessions: 2 maximum, 0 used
    Type                                    Used
    Local                                      0
    RSPAN source                               0
    ERSPAN source                              0
    Service module                             0
  Destination sessions: 64 maximum, 0 used
    Type                                    Used
    RSPAN destination                          0
    ERSPAN destination (max  24)               0
Router#
```

This example shows how to display the capacity and utilization of resources for Layer 3 multicast functionality:

```
Router# show platform hardware capacity multicast

L3 Multicast Resources
  IPv4 replication mode: ingress
  IPv6 replication mode: ingress
  Bi-directional PIM Designated Forwarder Table usage: 4 total, 0 (0%) used
  Replication capability: Module                                IPv4        IPv6
                          5                                   egress      egress
                          9                                  ingress     ingress
  MET table Entries: Module                               Total    Used    %Used
                     5                                    65526       6       0%
Router#
```

This example shows how to display information about the system power capacities and utilizations:

```
Router# show platform hardware capacity power

Power Resources
  Power supply redundancy mode: administratively combined
                                                      operationally combined
  System power: 1922W, 0W (0%) inline, 1289W (67%) total allocated
  Powered devices: 0 total
Router#
```

This example shows how to display the capacity and utilization of QoS policer resources per EARL in the Cisco 7600 series router:

```
Router# show platform hardware capacity qos

 QoS Policer Resources
  Aggregate policers: Module                      Total         Used     %Used
                      1                            1024          102       10%
                      5                            1024            1        1%
  Microflow policer configurations: Module        Total         Used     %Used
                                    1                64           32       50%
                                    5                64            1        1%
Router#
```

This example shows how to display information about the key system resources:

```
Router# show platform hardware capacity system

System Resources
  PFC operating mode: PFC3BXL
  Supervisor redundancy mode: administratively rpr-plus, operationally rpr-plus
  Switching Resources: Module   Part number               Series      CEF mode
                       5        WS-SUP720-BASE        supervisor           CEF
                       9        WS-X6548-RJ-45            CEF256           CEF
Router#
```

This example shows how to display VLAN information:

```
Router# show platform hardware capacity vlan

VLAN Resources
  VLANs: 4094 total, 10 VTP, 0 extended, 0 internal, 4084 free
Router#
```

Related Commands

Command	Description
show msfc	Displays MSFC information.
show platform	Displays platform information.

show platform isg

To display Constellation WAN (CWAN) iEdge Route Processor information, use the **show platform isg** command in privileged EXEC mode.

show platform isg {**msi-all** | **slot** {*slot-number* | **all**} | **vrf** {*vrf-number* | **all**}}

Syntax Description

msi-all	Displays CWAN Multiservice Interface (MSI) information.
slot	Displays active slot session information.
slot-number	Slot number.
all	Displays information about all CWAN iEdge slots.
vrf	Displays CWAN iEdge VPN routing and forwarding (VRF) information.
vrf-number	VRF ID.
all	Displays information about all CWAN VRFs.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.

Examples

The following is sample output from the **show platform isg vrf all** command. The field descriptions are self-explanatory.

```
Router# show platform isg vrf all

dbg_stdby_cd_fibobj          35042
dbg_stdby_cd_rem_fibobj      492
dbg_stdby_cd_no_objhdl       1120
dbg_stdby_cd_no_ps           0
dbg_stdby_unpck_vrf_node     1612
dbg_stdby_unpck_pl_hdl       33922
dbg_stdby_unpck_rem_vrf_node 0
```

Related Commands

Command	Description
show platform	Displays platform information.

show platform oam

To display Operation, Administration, and Maintenance (OAM) information of a platform, use the **show platform oam** command in privileged EXEC mode.

show platform oam {**link-monitor** [**interface** *type number*] | **loopback**}

Syntax Description

link-monitor	Displays link monitoring information.
interface *type number*	(Optional) Displays the interface name and number.
loopback	Displays information about the loopback ports.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.

Examples

The following is sample output from the **show platform oam link-monitor interface GigabitEthernet 1/1** command. The fields are self-explanatory.

```
Router# show platform oam link-monitor interface GigabitEthernet 1/1

Interface Gi1/1:
  first_poll = 0
  symprd_tlv_sent = 0
  frmprd_tlv_sent = 0
  frm_poll_cnt = 1
  frmsec_poll_cnt = 10
  rxcrc_poll_cnt = 1
  txcrc_poll_cnt = 1
  symbol_period_start = 00:00:01.752
  prev_rx_error_frames = 2
  total_rx_error_frames = 0
  error_frame_period_start = 2
  total_frame_period_start = 20
  prev_error_frame_seconds = 0
  total_error_frame_seconds = 0
  prev_rx_crc_error_frames = 0
  prev_tx_crc_error_frames = 2
  total_frm_tlvs = 0
  total_frmsec_tlvs = 0
  total_symprd_tlvs = 0
  total_frmprd_tlvs = 0
```

Related Commands

Command	Description
show platform	Displays platform information.

show platform redundancy

To display platform-specific Constellation WAN (CWAN) redundancy information, use the **show platform redundancy** command in privileged EXEC mode.

show platform redundancy {**atm** | **ccb** *slot-number cpu-number* | **cwpa-ce3** | **cwpa-ct3** | **cwpa-e1** | **cwpa-stm1** | **cwpa-t1** | **frame-relay** | **hdlc** | **if-config** {*slot-number cpu-number* [*bay-number*] | **default-retvals**} | **mlp** | **multilink-vc** | **osm-chocx** | **osm-ct3** | **ppp** | **shadowstate** | **spa-chocx** | **spa-ct3** | **switchover**}

Syntax Description

atm	Displays CWAN ATM redundancy state information.
ccp	Displays the CWAN Configuration Control Block (CCB) list.
slot-number	Slot number.
cpu-number	CPU number.
cwpa-ce3	Displays CWAN port adapter (CWPA) Channelized E3 (CE3) redundancy state information.
cwpa-ct3	Displays CWPA-CT3 redundancy state information.
cwpa-e1	Displays CWPA-E1 redundancy state information.
cwpa-stm1	Displays CWPA Synchronous Transport Module level-1 (STM-1) virtual circuit (VC) information.
cwpa-t1	Displays CWPA-T1 redundancy state information.
frame-relay	Displays CWAN Frame Relay redundancy state information.
hdlc	Displays CWAN High-Level Data Link Control (HDLC) redundancy state information.
if-config	Displays the CWAN IF-configuration list.
bay-number	(Optional) Shared Port Adapter (SPA) bay number.
default-retvals	Displays default IF-configuration return values.
mlp	Displays CWAN Multilink Point-to-Point Protocol (MLP) redundancy state information.
multilink-vc	Displays CWAN Multilink VC information.
osm-chocx	Displays CWAN Optical Services Module (OSM) Channelized OC-12/OC-3 line card (CHOCX) redundancy state information.
osm-ct3	Displays CWAN OSM-CT3 redundancy state information.
ppp	Displays CWAN PPP redundancy state information.
shadowstate	Displays the CWAN interface descriptor block (IDB) shadow state.
spa-chocx	Displays CHOCX SPA VC information.
spa-ct3	Displays CT3 SPA VC information.
switchover	Displays CWAN switchover redundancy information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.

Examples

The following is sample output from the **show platform redundancy** command with the **if-config** keyword. The fields are self-explanatory.

```
Router# show platform redundancy if-config 4 0

Current number of elements = 0
Current maximum elements = 128
List was grown = 0 times
Number of elements sorted = 0
List errors = 0
List flags = 0x1E
Current element pointer = 0x0
List pointer = 0x50A27438
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
| C=Command T=Type P=Port t=timedOut D=Dirty S=Sync      |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|  C  | T  |  P   | key address | t | D | S | value      |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
```

Related Commands

Command	Description
show platform	Displays platform information.

show platform software filesystem

To display information about file systems, use the **show platform software filesystem** command in privileged EXEC or diagnostic mode.

show platform software filesystem {**bootflash: | stby-bootflash: | fpd: | harddisk: | stby-harddisk: | obfl: | stby-obfl: | usb0: | stby-usb0: | usb1: | stby-usb1:**} [**all**] [**details**]

Syntax Description

bootflash:	File system on the bootflash device.
stby-bootflash:	Standby file system on the bootflash device (if the standby Route Processor [RP] is preset).
fpd:	Synthetic file system that is used by the field-programmable device (FPD) upgrade process—for Cisco Technical Support only.
harddisk:	File system on the hard disk device.
stby-harddisk:	Standby file system on the harddisk device (if the standby RP is preset).
obfl:	File system on the on board failure logging (OBFL) device.
stby-obfl:	Standby file system on the OBFL device (if the standby RP is preset).
usb0:	File system on the USB0 device (if installed).
stby-usb0:	Standby file system on the USB0 device (if the standby RP is preset).
usb1:	File system on the USB1 device (if installed).
stby-usb1:	Standby file system on the USB1 device (if the standby RP is preset).
all	(Optional) All possible device information.
details	(Optional) File system details.

Command Default

No default behavior or values

Command Modes

Privileged EXEC (#)

Diagnostic (diag)

Command History

Release	Modification
Cisco IOS XE Release 2.1	This command was introduced on the Cisco ASR1000 Series Routers.

Usage Guidelines

Use this command to ascertain the presence or absence of specific files and to determine space usage in the file system. This command is helpful to monitor the growth of log file sizes, because rapid growth of log files could indicate possible problems with the router.

Examples

The following example displays information about the files in the bootflash file system. It also shows the number of bytes used out of the total available in the bootflash file system.

```
Router# show platform software filesystem bootflash:

-#- --length-- ---------date/time--------- path
  1       4096 Apr 01 2008 13:34:30 +00:00 /bootflash/
  2      16384 Dec 04 2007 04:32:46 +00:00 /bootflash/lost+found
  3       4096 Dec 04 2007 06:06:24 +00:00 /bootflash/.ssh
  4        963 Dec 04 2007 06:06:16 +00:00 /bootflash/.ssh/ssh_host_key
  5        627 Dec 04 2007 06:06:16 +00:00 /bootflash/.ssh/ssh_host_key.pub
  6       1675 Dec 04 2007 06:06:18 +00:00 /bootflash/.ssh/ssh_host_rsa_key
  7        382 Dec 04 2007 06:06:18 +00:00 /bootflash/.ssh/ssh_host_rsa_key.pub
  8        668 Dec 04 2007 06:06:24 +00:00 /bootflash/.ssh/ssh_host_dsa_key
  9        590 Dec 04 2007 06:06:24 +00:00 /bootflash/.ssh/ssh_host_dsa_key.pub
 10       4096 Dec 04 2007 06:06:36 +00:00 /bootflash/.rollback_timer
 11       4096 Mar 18 2008 17:31:17 +00:00 /bootflash/.prst_sync
 12       4096 Dec 04 2007 04:34:45 +00:00 /bootflash/.installer
 13  205951180 Mar 18 2008 17:23:03 +00:00 /bootflash/asr1000rp1-advipservicesk
 14   46858444 Mar 18 2008 17:28:55 +00:00 /bootflash/asr1000rp1-espbase.02.01.
 15   20318412 Mar 18 2008 17:28:56 +00:00 /bootflash/asr1000rp1-rpaccess-k9.02
 16   22266060 Mar 18 2008 17:28:57 +00:00 /bootflash/asr1000rp1-rpbase.02.01.0
 17   21659852 Mar 18 2008 17:28:57 +00:00 /bootflash/asr1000rp1-rpcontrol.02.0
 18   45934796 Mar 18 2008 17:28:58 +00:00 /bootflash/asr1000rp1-rpios-advipser
 19   34169036 Mar 18 2008 17:28:59 +00:00 /bootflash/asr1000rp1-sipbase.02.01.
 20   22067404 Mar 18 2008 17:29:00 +00:00 /bootflash/asr1000rp1-sipspa.02.01.0
 21       7180 Mar 18 2008 17:29:00 +00:00 /bootflash/packages.conf

461897728 bytes available (419782656 bytes used)
```

The following example displays information only about the bootflash file system itself, such as file system type and access permissions:

```
Router# show platform software filesystem bootflash: details

Filesystem: bootflash
Filesystem Path: /bootflash
Filesystem Type: ext2
Mounted: Read/Write
```

Table 132 describes the significant fields shown in the displays of file system information.

Table 132 show platform software filesystem Field Descriptions

Field	Description
#	Display line number.
Length	File size in bytes.
Date/Time	Date and time the file system was created.
Path	Full path of a file in the file system.
Filesystem Path	Root of the file system.
Filesystem Type	Type of file system. One of the following values: • ext2—Second extended file system. • jffs2—Journaling flash file system, version 2. • vfat—Virtual file allocation table (FAT16 or FAT32).
Mounted	Access permissions to the file system.

Related Commands

Command	Description
show platform software mount	Displays the mounted file systems (both physical and virtual) on a shared port adapter (SPA) in a SPA interface processor (SIP), on an Embedded Services Processor (ESP), or on a Route Processor (RP).
show platform software tech-support	Displays system information or creates a technical support information tar file for Cisco Technical Support.

show platform software memory

To display memory information for the specified process, use the **show platform software memory** command in privileged EXEC or diagnostic mode.

show platform software memory [**database** | **messaging**] {**chassis-manager** *slot* | **cpp-control-process** *process* | **cpp-driver** *process* | **cpp-ha-server** *process* | **cpp-service-process** *process* | **forwarding-manager** *slot* | **host-manager** *slot* | **interface-manager** *slot* | **ios** *slot* | **logger** *slot* | **pluggable-services** *slot* | **shell-manager** *slot*} [**brief**]

Syntax Description

database	(Optional) Displays database memory information for the specified process.
messaging	(Optional) Displays messaging memory information for specified process. The information displayed is for internal debugging purposes only.
chassis-manager *slot*	Displays memory information for the Chassis Manager process in the specified *slot*. Possible *slot* values are: • **0**—Cisco ASR 1000 Series SPA Interface Processor (SIP) slot 0 • **1**—Cisco ASR 1000 Series SIP slot 1 • **2**—Cisco ASR 1000 Series SIP slot 2 • **f0**—Cisco ASR 1000 Series Embedded Services Processor (ESP) slot 0 • **f1**—Cisco ASR 1000 Series ESP slot 1 • **fp active**—Active Cisco ASR 1000 Series ESP • **fp standby**—Standby Cisco ASR 1000 Series ESP • **r0**—Cisco ASR 1000 Series Route Processor (RP) slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP
cpp-control-process	Displays memory information for the specified Cisco Packet Processor (CPP) Client Control process. Possible *process* values are: • **cpp active**—Active CPP Client Control process • **cpp standby**—Standby CPP Client Control process The information displayed is for internal debugging purposes only.
cpp-driver	Displays memory information for the specified CPP Driver process. Possible *process* values are: • **cpp active**—Active CPPDriver process • **cpp standby**—Standby CPP Driver process The information displayed is for internal debugging purposes only.

cpp-ha-server	Displays memory information for the specified CPP High Availability (HA) Server process. Possible *process* values are: • **cpp active**—Active CPP HA Server process • **cpp standby**—Standby CPP HA Server process The information displayed is for internal debugging purposes only.
cpp-service-process	Displays memory information for the specified CPP Client Service process. Possible *process* values are: • **cpp active**—Active CPP Client Service process • **cpp standby**—Standby CPP Client Service process The information displayed is for internal debugging purposes only.
forwarding-manager *slot*	Displays memory information for the Forwarding Manager process in the specified *slot*. Possible *slot* values are: • **f0**—Cisco ASR 1000 Series ESP slot 0 • **f1**—Cisco ASR 1000 Series ESP slot 1 • **fp active**—Active Cisco ASR 1000 Series ESP • **fp standby**—Standby Cisco ASR 1000 Series ESP • **r0**—Cisco ASR 1000 Series RP slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP
host-manager *slot*	Displays memory information for the Host Manager process in the specified *slot*. Possible *slot* values are: • **0**—Cisco ASR 1000 Series SIP slot 0 • **1**—Cisco ASR 1000 Series SIP slot 1 • **2**—Cisco ASR 1000 Series SIP slot 2 • **f0**—Cisco ASR 1000 Series ESP slot 0 • **f1**—Cisco ASR 1000 Series ESP slot 1 • **fp active**—Active Cisco ASR 1000 Series ESP • **fp standby**—Standby Cisco ASR 1000 Series ESP • **r0**—Cisco ASR 1000 Series RP slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP

interface-manager *slot*	Displays memory information for the Interface Manager process in the specified *slot*. Possible *slot* values are: • **0**—Cisco ASR 1000 Series SIP slot 0 • **1**—Cisco ASR 1000 Series SIP slot 1 • **2**— Cisco ASR 1000 Series SIP slot 2 • **r0**—Cisco ASR 1000 Series RP slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP
ios *slot*	Displays memory information for the IOS process in the specified *slot*. Possible *slot* values are: • **0/0**—Cisco ASR 1000 Series SIP slot 0, bay 0 • **0/1**—Cisco ASR 1000 Series SIP slot 0, bay 1 • **0/2**—Cisco ASR 1000 Series SIP slot 0, bay 2 • **0/3**—Cisco ASR 1000 Series SIP slot 0, bay 3 • **1/0**—Cisco ASR 1000 Series SIP slot 1, bay 0 • **1/1**—Cisco ASR 1000 Series SIP slot 1, bay 1 • **1/2**—Cisco ASR 1000 Series SIP slot 1, bay 2 • **1/3**—Cisco ASR 1000 Series SIP slot 1, bay 3 • **2/0**—Cisco ASR 1000 Series SIP slot 2, bay 0 • **2/1**—Cisco ASR 1000 Series SIP slot 2, bay 1 • **2/2**—Cisco ASR 1000 Series SIP slot 2, bay 2 • **2/3**—Cisco ASR 1000 Series SIP slot 2, bay 3 • **r0**—Cisco ASR 1000 Series RP slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP

logger *slot*	Displays memory information for the logger process in the specified *slot*. Possible *slot* values are: • **0**—Cisco ASR 1000 Series SIP slot 0 • **1**—Cisco ASR 1000 Series SIP slot 1 • **2**—Cisco ASR 1000 Series SIP slot 2 • **f0**—Cisco ASR 1000 Series ESP slot 0 • **f1**—Cisco ASR 1000 Series ESP slot 1 • **fp active**—Active Cisco ASR 1000 Series ESP • **fp standby**—Standby Cisco ASR 1000 Series ESP • **r0**—Cisco ASR 1000 Series RP slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP
pluggable-services *slot*	Displays memory information for the pluggable-services process in the specified *slot*. Possible *slot* values are: • **r0**—Cisco ASR 1000 Series RP slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP
shell-manager *slot*	Displays memory information for the Shell Manager process in the specified slot. Possible *slot* values are: • **r0**—Cisco ASR 1000 Series RP slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP
brief	(Optional) Displays abbreviated memory information for the specified process.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Diagnostic (diag)

Command History

Release	Modification
Cisco IOS XE Release 2.1	This command was introduced on the Cisco ASR 1000 Series Routers.

Usage Guidelines

The specification of the **database** and **brief** keywords are optional.

The specification of a process and slot are required.

Examples

The following example displays memory information for the Forwarding Manager process for Cisco ASR 1000 Series RP slot 0:

```
Router# show platform software memory forwarding-manager r0
Module: cdllib
  allocated: 900, requested: 892, overhead: 8
  Allocations: 2, failed: 0, frees: 1
Module: eventutil
  allocated: 117379, requested: 117059, overhead: 320
  Allocations: 46, failed: 0, frees: 6
Module: uipeer
  allocated: 9264, requested: 9248, overhead: 16
  Allocations: 3, failed: 0, frees: 1
Module: Summary
  allocated: 127543, requested: 127199, overhead: 344
  Allocations: 51, failed: 0, frees: 8
```

Table 133 describes the significant fields shown in the display.

Table 133 show platform software memory Field Descriptions

Field	Description
Module:	Name of submodule.
allocated:	Memory, allocated in bytes.
requested:	Number of bytes requested by application.
overhead:	Allocation overhead.
Allocations:	Number of discrete allocation event attempts.
failed:	Number of allocation attempts that were attempted, but failed.
frees:	Number of free events.

The following example displays abbreviated (**brief** keyword) memory information for the Chassis Manager process for Cisco ASR 1000 Series ESP slot 0:

```
Router# show platform software memory chassis-manager f0 brief
  module            allocated     requested     allocs        frees
  ------------------------------------------------------------------------
  CPP Features      692           668           3             0
  Summary           497816        495344        323           14
  chunk             419322        419290        4             0
  eventutil         68546         66146         312           12
  uipeer            9256          9240          4             2
```

Table 134 describes the significant fields shown in the **brief** keyword display.

Table 134 show platform software memory brief Field Descriptions

Field	Description
module	Name of submodule.
allocated	Memory, allocated in bytes.
requested	Number of bytes requested by application.
allocs	Number of discrete allocation event attempts.
frees	Number of free events.

show platform software mount

To display the mounted file systems, both physical and virtual, for a Cisco ASR 1000 Series SPA Interface Processor (SIP), Cisco ASR 1000 Series Embedded Services Processor (ESP), or Cisco ASR 1000 Series Route Processor (RP), use the **show platform software mount** command in privileged EXEC or diagnostic mode.

show platform software mount [*slot* [**brief**]]

Syntax Description

slot	(Optional) Displays mounted file systems for the specified *slot*. Possible *slot* values are: • **0**—Cisco ASR 1000 Series SIP slot 0 • **1**—Cisco ASR 1000 Series SIP slot 1 • **2**—Cisco ASR 1000 Series SIP slot 2 • **f0**—Cisco ASR 1000 Series ESP slot 0 • **f1**—Cisco ASR 1000 Series ESP slot 1 • **fp active**—Active Cisco ASR 1000 Series ESP • **fp standby**—Standby Cisco ASR 1000 Series ESP • **r0**—Cisco ASR 1000 Series RP slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP
brief	(Optional) Displays abbreviated mounted file system information.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Diagnostic (diag)

Command History

Release	Modification
Cisco IOS XE Release 2.1	This command was introduced on the Cisco ASR 1000 Series Routers.

Usage Guidelines

If no slot is specified, the command returns mounted file systems for the active RP.

This command allows you to ascertain the presence or absence of specific system mounts. For example, this command might be used to determine /tmp-related mounts, which are used to create many run-time directories and files.

Users may be requested to execute this command to collect information about the underlying configuration of the platform software.

The RP output can differ depending on how the router was booted, and whether there are USB devices inserted.

The SIP and ESP output can differ depending on whether the chassis is a dual or single RP.

Examples

The following example displays mounted file systems for the active RP:

```
Router# show platform software mount
Filesystem                          Used   Available  Use% Mounted on
rootfs                                 0           0     -  /
proc                                   0           0     -  /proc
sysfs                                  0           0     -  /sys
none                                 524     1037640    1%  /dev
/dev/bootflash1                   298263       42410   88%  /bootflash
/dev/harddisk1                    609208     4025132   14%  /misc/scratch
/dev/loop1                         28010           0  100%  /tmp/sw/mount/2007-10-14_...
/dev/loop2                         26920           0  100%  /tmp/sw/mount/2007-10-14_...
/dev/loop3                         48236           0  100%  /tmp/sw/mount/2007-10-14_...
/dev/loop4                          6134           0  100%  /tmp/sw/mount/2007-10-14_...
/dev/loop5                         43386           0  100%  /tmp/sw/mount/2007-10-14_...
/dev/loop6                         30498           0  100%  /tmp/sw/mount/2007-10-14_...
/dev/loop7                         14082           0  100%  /tmp/sw/mount/2007-10-14_...
none                                 524     1037640    1%  /dev
/proc/bus/usb                          0           0     -  /proc/bus/usb
/dev/mtdblock1                       460        1588   23%  /obfl
automount(pid4165)                     0           0     -  /vol
```

The following example displays mounted file systems for the Cisco ASR 1000 Series ESP in ESP slot 0:

```
Router# show platform software mount f0
Filesystem                          Used   Available Use% Mounted on
rootfs                                 0           0     -  /
proc                                   0           0     -  /proc
sysfs                                  0           0     -  /sys
none                               10864      507124    3%  /dev
/dev/loop1                         41418           0  100%  /tmp/sw/fp/0/0/fp/mount
none                               10864      507124    3%  /dev
/proc/bus/usb                          0           0     -  /proc/bus/usb
/dev/mtdblock1                       504        1544   25%  /obfl
automount(pid3210)                     0           0     -  /misc1
```

The following example displays mounted file systems for the active Cisco ASR 1000 Series RP:

```
Router# show platform software mount rp active
Filesystem                          Used   Available  Use% Mounted on
rootfs                                 0           0     -  /
proc                                   0           0     -  /proc
sysfs                                  0           0     -  /sys
none                                 436     1037728    1%  /dev
/dev/bootflash1                   256809       83864   76%  /bootflash
/dev/harddisk1                    252112     4382228    6%  /misc/scratch
/dev/loop1                         30348           0  100%  /tmp/sw/mount/2007-09-27_...
/dev/loop2                         28394           0  100%  /tmp/sw/mount/2007-09-27_...
/dev/loop3                         42062           0  100%  /tmp/sw/mount/2007-09-27_...
/dev/loop4                          8384           0  100%  /tmp/sw/mount/2007-09-27_...
/dev/loop5                         41418           0  100%  /tmp/sw/mount/2007-09-27_...
/dev/loop6                         21612           0  100%  /tmp/sw/mount/2007-09-27_...
/dev/loop7                         16200           0  100%  /tmp/sw/mount/2007-09-27_...
none                                 436     1037728    1%  /dev
/proc/bus/usb                          0           0     -  /proc/bus/usb
```

```
/dev/mtdblock1                          484         1564   24%  /obfl
automount(pid4004)                        0            0     -  /vol
```

Table 135 describes the significant fields shown in the SIP slot (**0**, **1**, or **2**) displays.

Table 135 show platform software mount SIP slot Field Descriptions

Field	Description
Filesystem	Logical name of the file system device.
Used	Number of 1Kb blocks used.
Available	Number of free 1Kb blocks available.
Use%	Percentage of 1Kb blocks used of the total available.
Mounted on	Canonical path to the mounted file system.

The following example displays abbreviated (**brief** keyword) mounted file system information for Cisco ASR 1000 Series SIP slot 0:

```
Router# show platform software mount 0 brief
Mount point: rootfs
  Type     : rootfs
  Location : /
  Options  : rw

Mount point: proc
  Type     : proc
  Location : /proc
  Options  : rw

Mount point: sysfs
  Type     : sysfs
  Location : /sys
  Options  : rw

Mount point: none
  Type     : tmpfs
  Location : /dev
  Options  : rw

Mount point: /dev/loop1
  Type     : iso9660
  Location : /tmp/sw/cc/0/0/cc/mount
  Options  : ro

Mount point: none
  Type     : tmpfs
  Location : /dev
  Options  : rw

Mount point: /proc/bus/usb
  Type     : usbfs
  Location : /proc/bus/usb
  Options  : rw

Mount point: /dev/mtdblock1
  Type     : jffs2
  Location : /obfl
  Options  : rw,noatime,nodiratime
```

```
Mount point: automount(pid3199)
  Type     : autofs
  Location : /misc1
  Options  : rw,fd=5,pgrp=3199,timeout=60,minproto=2,maxproto=4,indirect
```

Table 136 describes the significant fields shown in the **brief** keyword display.

Table 136 show platform software mount brief Field Descriptions

Field	Description
Mount point:	Logical name of the file system device.
Type:	File system type.
Location:	Canonical path to the mounted file system.
Options:	Mount point type-specific flags and settings.

show platform software process list

To display a list of the processes running in a given slot, use the **show platform software process list** command in privileged EXEC or diagnostic mode.

show platform software process list *slot* [**name** *process-name* | **process-id** *process-id* | **summary**]

Syntax Description

slot	Displays running process information for the specified *slot*. Possible *slot* values are: • **0**—Cisco ASR 1000 Series SPA Interface Processor (SIP) slot 0 • **1**—Cisco ASR 1000 Series SIP slot 1 • **2**—Cisco ASR 1000 Series SIP slot 2 • **f0**—Cisco ASR 1000 Series Embedded Services Processor (ESP) slot 0 • **f1**—Cisco ASR 1000 Series ESP slot 1 • **fp active**—Active Cisco ASR 1000 Series ESP • **fp standby**—Standby Cisco ASR 1000 Series ESP • **r0**—Cisco ASR 1000 Series Route Processor (RP) slot 0 • **r1**—Cisco ASR 1000 Series RP slot 1 • **rp active**—Active Cisco ASR 1000 Series RP • **rp standby**—Standby Cisco ASR 1000 Series RP
name *process-name*	(Optional) Displays information for the specified process name.
process-id *process-id*	(Optional) Displays information for the specified process ID.
summary	(Optional) Displays summary process information for the running host.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Diagnostic (diag)

Command History

Release	Modification
Cisco IOS XE Release 2.1	This command was introduced on the Cisco ASR 1000 Series Routers.

Usage Guidelines

The **name** and **process-id** keywords can be used to narrow the process list display down to specific processes.

The **summary** keyword can be used to display summary information about running processes.

Examples

The following example displays information about running processes for Cisco ASR 1000 Series SIP slot 0:

```
Router# show platform software process list 0
Name                       Pid    PPid  Group Id  Status    Priority  Size
------------------------------------------------------------------------------
init                         1       0         1  S               20  1974272
ksoftirqd/0                  2       1         1  S               39  0
events/0                     3       1         1  S               15  0
khelper                      4       1         1  S               15  0
kthread                      5       1         1  S               15  0
kblockd/0                   19       5         1  S               15  0
khubd                       23       5         1  S               15  0
pdflush                     59       5         1  S               20  0
pdflush                     60       5         1  S               20  0
kswapd0                     61       5         1  S               15  0
aio/0                       62       5         1  S               15  0
xfslogd/0                   63       5         1  S               15  0
xfsdatad/0                  64       5         1  S               15  0
mtdblockd                  626       1         1  S               20  0
loop0                     1370       1         1  S                0  0
portmap                   1404       1      1404  S               20  2076672
portmap                   1406       1      1406  S               20  2076672
loop1                     1440       1         1  S                0  0
udevd                     2104       1      2104  S               16  1974272
jffs2_gcd_mtd1            2796       1         1  S               30  0
klogd                     3093       1      3093  S               20  1728512
automount                 3199       1      3199  S               20  2396160
xinetd                    3214       1      3214  S               20  3026944
xinetd                    3216       1      3216  S               20  3026944
pvp.sh                    3540       1      3540  S               20  3678208
inotifywait               3575    3540      3575  S               20  1900544
pman.sh                   3614    3540      3614  S               20  3571712
pman.sh                   3714    3540      3714  S               20  3571712
btrace_rotate.s           3721    3614      3721  S               20  3133440
agetty                    3822       1      3822  S               20  1720320
mcp_chvrf.sh              3823       1      3823  S               20  2990080
sntp                      3824       1      3824  S               20  2625536
issu_switchover           3825       1      3825  S               20  3899392
xinetd                    3827    3823      3823  S               20  3026944
cmcc                      3862    3714      3862  S               20  26710016
pman.sh                   3883    3540      3883  S               20  3571712
pman.sh                   4014    3540      4014  S               20  3575808
hman                      4020    3883      4020  R               20  19615744
imccd                     4114    4014      4114  S               20  31539200
inotifywait               4196    3825      3825  S               20  1896448
pman.sh                   4351    3540      4351  S               20  3575808
plogd                     4492    4351      4492  S               20  22663168
inotifywait               4604    3721      4604  S               20  1900544
```

Table 137 describes the significant fields shown in the display.

Table 137 show platform software process list Field Descriptions

Field	Description
Name	Name of the process.
Pid	Process ID.
PPid	Parent Process ID.
Group Id	Process group ID.

Table 137 show platform software process list Field Descriptions (continued)

Field	Description
Status	Process status.
Priority	Process priority.
Size	Virtual memory size (in bytes).

The following example displays information about a specific named process for Cisco ASR 1000 Series SIP slot 0:

```
Router# show platform software process list 0 name sleep
Name: sleep
  Process id       : 25938
  Parent process id: 3891
  Group id         : 3891
  Status           : S
  Session id       : 3816
  User time        : 0
  Kernel time      : 0
  Priority         : 20
  Virtual bytes    : 2482176
  Resident pages   : 119
  Resident limit   : 4294967295
  Minor page faults: 182
  Major page faults: 0
```

The following example displays information about a specific process identifier for Cisco ASR 1000 Series SIP slot 0:

```
Router# show platform software process list 0 process-id 1
Name: init
  Process id       : 1
  Parent process id: 0
  Group id         : 1
  Status           : S
  Session id       : 1
  User time        : 1
  Kernel time      : 741
  Priority         : 20
  Virtual bytes    : 1974272
  Resident pages   : 161
  Resident limit   : 4294967295
  Minor page faults: 756
  Major page faults: 0
```

Table 138 describes the significant fields shown in the **name** and **process-id** keyword displays.

Table 138 show platform software process list name and process-id Field Descriptions

Field	Description
Name	Name of the process.
Process id	Process ID.
Parent process id	Parent process ID.
Group id	Process group ID.
Status	Process status.

Table 138 show platform software process list name and process-id Field Descriptions (continued)

Field	Description
Session id	Process session ID.
User time	Time (in seconds) spent in user mode.
Kernel time	Time (in seconds) spent in kernel mode.
Priority	Process priority.
Virtual bytes	Virtual memory size (in bytes).
Resident pages	Resident page size.
Resident limit	Current limit on Resident pages.
Minor page faults	Number of minor page faults.
Major page faults	Number of major page faults.

The following example displays process summary information for Cisco ASR 1000 Series SIP slot 0:

```
Router# show platform software process list 0 summary
Total number of processes: 54
  Running          : 4
  Sleeping         : 50
  Disk sleeping    : 0
  Zombies          : 0
  Stopped          : 0
  Paging           : 0

  Up time          : 1562
  Idle time        : 1511
  User time        : 1606
  Kernel time      : 1319

  Virtual memory   : 587894784
  Pages resident   : 45436
  Major page faults: 25
  Minor page faults: 149098

Architecture     : ppc
  Memory (kB)
    Physical       : 524288
    Total          : 479868
    Used           : 434948
    Free           : 44920
    Active         : 183020
    Inactive       : 163268
    Inact-dirty    : 0
    Inact-clean    : 0
    Dirty          : 0
    AnonPages      : 76380
    Bounce         : 0
    Cached         : 263764
    Commit Limit   : 239932
    Committed As   : 201452
    High Total     : 0
    High Free      : 0
    Low Total      : 479868
    Low Free       : 44920
    Mapped         : 59996
    NFS Unstable   : 0
    Page Tables    : 1524
```

```
  Slab           : 73760
  VMmalloc Chunk : 426840
  VMmalloc Total : 474856
  VMmalloc Used  : 47372
  Writeback      : 0

Swap (kB)
  Total          : 0
  Used           : 0
  Free           : 0
  Cached         : 0

Buffers (kB)     : 6144

Load Average
  1-Min          : 0.00
  5-Min          : 0.00
  15-Min         : 0.00
```

Table 139 describes the significant fields shown in the **summary** keyword display.

Table 139 show platform software process list summary Field Descriptions

Field	Description
Total number of processes	Total number of processes in all possible states.
Running	Number of processes in the running state.
Sleeping	Number of processes in the sleeping state.
Disk sleeping	Number of processes in the disk-sleeping state.
Zombies	Number of processes in the zombie state.
Stopped	Number of processes in the stopped state.
Paging	Number of processes in the paging state.
Up time	System Up time (in seconds).
Idle time	System Idle time (in seconds).
User time	System time (in seconds) spent in user mode.
Kernel time	System time (in seconds) spent in kernel mode.
Virtual memory	Virtual memory size (in bytes).
Pages resident	Resident page size.
Major page faults	Number of major page faults.
Minor page faults	Number of minor page faults.
Architecture	System CPU architecture: PowerPC (ppc).
Memory (kB)	System memory heading.
Physical	Total physical memory (in kilobytes).
Total	Total available memory (in kilobytes). This value represents the physical memory available for kernel use.
Used	Used memory (in kilobytes).
Free	Free memory (in kilobytes).
Active	Most recently used memory (in kilobytes).

Table 139 show platform software process list summary Field Descriptions (continued)

Field	Description
Inactive	Memory (in kilobytes) that has been less recently used. It is more eligible to be reclaimed for other purposes.
Inact-dirty	Memory (in kilobytes) that may need to be written to persistent store (cache or disk).
Inact-clean	Memory (in kilobytes) that is readily available for re-use.
Dirty	Memory (in kilobytes) that is waiting to get written back to the disk.
AnonPages	Memory (in kilobytes) that is allocated when a process requests memory from the kernel via the malloc() system call. This memory has no file backing on disk.
Bounce	Memory (in kilobytes) that is allocated to bounce buffers.
Cached	Amount of physical RAM (in kilobytes) used as cache memory.
Commit Limit	Total amount of memory (in kilobytes) currently available to be allocated on the system. This limit is only adhered to if strict overcommit accounting is enabled.
Committed As	Total amount of memory (in kilobytes) presently allocated on the system. The committed memory is a sum of all of the memory that has been allocated by processes, even if it has not been used by them as of yet.
High Total	Total amount of memory (in kilobytes) that is not directly mapped into kernel space. The High Total value can vary based on the type of kernel used.
High Free	Amount of free memory (in kilobytes) that is not directly mapped into kernel space. The High Free value can vary based on the type of kernel used.
Low Total	Total amount of memory (in kilobytes) that is directly mapped into kernel space. The Low Total value can vary based on the type of kernel used.
Low Free	Amount of free memory (in kilobytes) that is directly mapped into kernel space. The Low Free value can vary based on the type of kernel used.
Mapped	Total amount of memory (in kilobytes) that has been used to map devices, files, or libraries using the **mmap** command.
NFS Unstable	Total amount of memory (in kilobytes) used for unstable NFS pages. Unstable NFS pages are pages that have been written into the page cache on the server, but have not yet been synchronized to disk.
Page Tables	Total amount of memory (in kilobytes) dedicated to the lowest page table level.
Slab	Total amount of memory (in kilobytes) used by the kernel to cache data structures for its own use.

Table 139 show platform software process list summary Field Descriptions (continued)

Field	Description
VMalloc Chunk	Largest contiguous block of available virtual address space (in kilobytes) that is free.
VMalloc Total	Total amount of memory (in kilobytes) of total allocated virtual address space.
VMalloc Used	Total amount of memory (in kilobytes) of used virtual address space.
Writeback	Memory (in kilobytes) that is actively being written back to the disk.
Swap (kB)	Swap memory heading.
Total	Total swap memory (in kilobytes).
Used	Used swap memory (in kilobytes).
Free	Free swap memory (in kilobytes).
Cached	Cached swap memory (in kilobytes).
Buffers (kB)	Buffers heading.
Load Average	Indicators of system load.
1-Min	Average number of processes running for the last minute.
5-Min	Average number of processes running for the last 5 minutes.
15-Min	Average number of processes running for the last 15 minutes.

show platform software tech-support

To display system information or create a technical support information tar file for Cisco Technical Support, use the **show platform software tech-support** command in privileged EXEC or diagnostic mode.

show platform software tech-support [**file** {**bootflash:***filename*.**tgz** | **fpd:***filename*.**tgz** | **harddisk:***filename*.**tgz** | **obfl:***filename*.**tgz** | **stby-bootflash:***filename*.**tgz** | **stby-harddisk:***filename*.**tgz** | **stby-obfl:***filename*.**tgz** | **stby-usb0:***filename*.**tgz** | **stby-usb1:***filename*.**tgz**}]

Syntax Description

file	(Optional) Creates a technical support information tar file for the specified destination file path.
bootflash:*filename*.**tgz**	Creates a technical support information tar file for the boot flash memory file system on the active RP.
fpd:*filename*.**tgz**	Creates a technical support information tar file for the field-programmable device (FPD) image package on the active RP. The information displayed is for internal debugging puposes only.
harddisk:*filename*.**tgz**	Creates a technical support information tar file for the hard disk file system on the active RP.
obfl:*filename*.**tgz**	Creates a technical support information tar file for the file system for Onboard Failure Logging (obfl) files. The information displayed is for internal debugging puposes only.
stby-bootflash: *filename*.**tgz**	Creates a technical support information tar file for the boot flash memory file system on the standby RP. The information displayed is for internal debugging puposes only.
stby-harddisk: *filename*.**tgz**	Creates a technical support information tar file for the hard disk file system on the standby RP. The information displayed is for internal debugging puposes only.
stby-obfl:*filename*.**tgz**	Creates a technical support information tar file for the Onboard Failure Logging (obfl) files on the standby RP. The information displayed is for internal debugging puposes only.
stby-usb0:*filename*.**tgz**	Creates a technical support information tar file for Universal Serial Bus (USB) memory. The information displayed is for internal debugging puposes only.
stby-usb1:*filename*.**tgz**	Creates a technical support information tar file for Universal Serial Bus (USB) memory. The information displayed is for internal debugging puposes only.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)
Diagnostic (diag)

Command History

Release	Modification
Cisco IOS XE Release 2.1	This command was introduced on the Cisco ASR 1000 Series Routers.

Usage Guidelines

If the **file** keyword is specified, the specification of the **bootflash:** or **harddisk:** keyword and filename is required.

The **show platform software tech-support** command without a destination file path specification returns a large volume of information in a short period of time. You should save the output of the **show platform software tech-support** command in a log file to send to Cisco Technical Support for analysis.

Examples

The following example displays system information for Cisco Technical Support:

```
Router# show platform software tech-support
---- show version installed -----
Type: provisioning file, Version: unknown
  Provisioned on: RP0, Status: active
  File: packages.conf.super
  Modified: 2007-11-07 15:06:12.212303000 +0000
  SHA1 (header): d929d995d5ba2d3dedf67137c3e0e321b1727d7b
  SHA1 (calculated): d929d995d5ba2d3dedf67137c3e0e321b1727d7b
  SHA1 (external): a16881b6a7e3a5593b63bf211f72b8af9c534063
instance address        : 0X890DE9B4
    fast failover address   : 00000000
    cpp interface handle  0
    instance address        : 0X890DE9B8
    fast failover address   : 00000000
    cpp interface handle  0
    instance address        : 0X890DE9BC
    fast failover address   : 00000000
...
```

Note The **show platform software tech-support** command returns a large volume of information in a short period of time. The example above has been abbreviated for the purposes of this description.

The following example creates a technical support information tar file for the boot flash memory file system on the active RP:

```
Router# show platform software tech-support file bootflash:tech_support_output.tgz
Running tech support command set; please wait...
Creating file 'bootflash:target_support_output.tgz.tgz' ...
File 'bootflash:target_support_output.tgz.tgz' created successfully
```

The following example creates a technical support information tar file for the hard disk file system on the active RP:

```
Router# show platform software tech-support file harddisk:tech_support_output.tgz
Running tech support command set; please wait...
Creating file 'harddisk:tech_support_ouput.tgz.tgz' ...
File 'harddisk:tech_support_ouput.tgz.tgz' created successfully
```

show platform subscriber-group

To display the subscriber group information, use the **show platform subscriber-group** command in privileged EXEC mode.

show platform subscriber-group {*vrf-number* | **all**} [**detail**]

Syntax Description

vrf-number	VRF identification number. Displays VPN routing and forwarding (VRF) information for the specified VRF ID.
all	Displays information about all VRFs.
detail	Displays detailed information about the subscriber group.

Command Default

No default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.1(1)S	This command was introduced.

Examples

This is sample output from the **show platform subscriber-group all** command:

```
Router#show platform subscriber-group all
Container0[:0] No of access sub-if(s) 1
Vlan 1014 p_cnt 1 Old Vlan 0 ip T
Container2[VRF2:2] No of access sub-if(s) 1
Vlan 1018 p_cnt 1 Old Vlan 0 ip T
```

This is sample output from the **show platform subscriber-group 0 detail** command:

```
Router#show platform subscriber-group 0 detail
----------------------------------------
VRF[:0] Container0 No of access sub-if(s) 1 Vlan 1014
Access Interfaces:
GigabitEthernet2/10.2
```

Related Commands

Command	Description
show platform	Displays platform information.

show platform supervisor

To display platform supervisor information, use the **show platform supervisor** command in privileged EXEC mode.

show platform supervisor mtu slot *slot-number* **port** *port-number*

Syntax Description

mtu	Displays supervisor operating Maximum Tranmission Unit (MTU).
slot *slot-number*	Displays information for the specified slot.
port *port-number*	Displays information for the specified port.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.

Examples

The following is sample output from the **show platform supervisor** command. The fields are self-explanatory.

```
Router# show platform supervisor mtu slot 5 port 1

 User configured MTU : 9216
 Real Operating MTU  : 9236
```

Related Commands

Command	Description
show platform	Displays platform information.

show power

To display information about the power status, use the **show power** command in user EXEC or privileged EXEC mode**.**

show power [**available** | **inline** [*interface number* | **module number**] | **redundancy-mode** | **status** {**all** | **fan-tray** *fan-tray-number* | **module** *slot* | **power-supply** *pwr-supply-number*} | **total** | **used**]

Syntax Description

available	(Optional) Displays the available system power (margin).
inline	(Optional) Displays the inline power status.
interface number	(Optional) Specifies the interface type; possible valid values are **ethernet**, **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **null**, **port-channel**, and **vlan**. See the "Usage Guidelines" section for additional information.
module number	Displays the power status for a specific module.
redundancy-mode	(Optional) Displays the power-supply redundancy mode.
status	(Optional) Displays the power status.
all	Displays all the FRU types.
fan-tray *fan-tray-number*	Displays the power status for the fan tray.
module *slo*t	Displays the power status for a specific module.
power-supply *pwr-supply-number*	Displays the power status for a specific power supply; valid values are **1** and **2**.
total	(Optional) Displays the total power that is available from the power supplies.
used	(Optional) Displays the total power that is budgeted for powered-on items.

Defaults

This command has no default settings.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17a)SX1	The output was changed to include the total system-power information.
12.2(17b)SXA	This command was changed to include information about the inline power status for a specific module.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(18)SXF	The output was changed to include information about the high-capacity power supplies.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The *interface-number* argument designates the module and port number. Valid values for *interface-number* depend on the specified interface type and the chassis and module that are used. For example, if you specify a Gigabit Ethernet interface and have a 48-port 10/100BASE-T Ethernet module that is installed in a 13-slot chassis, valid values for the module number are from 1 to 13 and valid values for the port number are from 1 to 48.

Valid values for *vlan-id* are from 1 to 4094.

The Inline power field in the **show power** output displays the inline power that is consumed by the modules. For example, this example shows that module 9 has consumed 0.300 A of inline power:

```
Inline power   #    current
module         9    0.300A
```

Examples

This example shows how to display the available system power:

```
Router> show power available

system power available = 20.470A
Router>
```

This example shows how to display power-supply redundancy mode:

```
Router# show power redundancy-mode

system power redundancy mode = redundant
Router#
```

This command shows how to display the system-power status:

```
Router> show power

system power redundancy mode = combined
system power total =     3984.12 Watts (94.86 Amps @ 42V)
system power used =      1104.18 Watts (26.29 Amps @ 42V)
system power available = 2879.94 Watts (68.57 Amps @ 42V)
                         Power-Capacity PS-Fan Output Oper
PS   Type                Watts   A @42V Status Status State
---- ------------------- ------- ------ ------ ------ -----
1    WS-CAC-3000W        2830.80 67.40  OK     OK     on
2    WS-CAC-1300W        1153.32 27.46  OK     OK     on
Note: PS2 capacity is limited to 2940.00 Watts (70.00 Amps @ 42V)
      when PS1 is not present
                         Pwr-Allocated  Oper
Fan  Type                Watts   A @42V State
---- ------------------- ------- ------ -----
1    FAN-MOD-9            241.50  5.75  OK
2                         241.50  5.75  failed
                         Pwr-Requested  Pwr-Allocated  Admin Oper
Slot Card-Type           Watts   A @42V Watts   A @42V State State
---- ------------------- ------- ------ ------- ------ ----- -----
1    WS-X6K-SUP2-2GE      145.32  3.46   145.32  3.46  on    on
2                           -      -      145.32  3.46  -     -
3    WS-X6516-GBIC        118.02  2.81   118.02  2.81  on    on
5    WS-C6500-SFM         117.18  2.79   117.18  2.79  on    on
7    WS-X6516A-GBIC       214.20  5.10     -     -     on    off (insuff cooling capacity)
8    WS-X6516-GE-TX       178.50  4.25   178.50  4.25  on    on
9    WS-X6816-GBIC        733.98 17.48     -     -     on    off (connector rating
exceeded)
Router>
```

This example shows how to display the power status for all FRU types:

```
Router# show power status all

FRU-type       #    current   admin state oper
power-supply   1    27.460A   on          on
module         1    4.300A    on          on
module         2    4.300A    -           -   (reserved)
module         5    2.690A    on          on
Router#
```

This example shows how to display the power status for a specific module:

```
Router# show power status module 1

FRU-type       #    current   admin state oper
module         1    -4.300A   on          on
Router#
```

This example shows how to display the power status for a specific power supply:

```
Router# show power status power-supply 1

FRU-type       #    current   admin state oper
power-supply   1    27.460A   on          on
Router#
```

This example displays information about the high-capacity power supplies:

```
Router# show power status power-supply 2

                      Power-Capacity PS-Fan Output Oper
PS   Type             Watts   A @42V Status Status State
---- ---------------- ------- ------ ------ ------ -----
1    WS-CAC-6000W     2672.04  63.62 OK     OK     on
2    WS-CAC-9000W-E   2773.68  66.04 OK     OK     on
Router#
```

This example shows how to display the total power that is available from the power supplies:

```
Router# show power total

system power total = 27.460A
Router#
```

This example shows how to display the total power that is budgeted for powered-on items:

```
Router# show power used

system power used = -6.990A
Router#
```

This command shows how to display the inline power status on the interfaces:

```
Router# show power inline

Interface            Admin    Oper    Power ( mWatt )  Device
-------------------- ----- ---------- --------------- -----------
FastEthernet9/1      auto  on         6300            Cisco 6500 IP Phone
FastEthernet9/2      auto  on         6300            Cisco 6500 IP Phone
.
.
. <Output truncated>
```

This command shows how to display the inline power status for a specific module:

```
Router# show power inline mod 7
```

```
Interface  Admin    Oper     Power       Device        Class
                            (Watts)
---------- ----- ---------- ------- --------------  -----------
Gi7/1      auto   on            6.3  Cisco IP Phone 7960  n/a
Gi7/2      static power-deny      0  Ieee PD              3
.
.
. <Output truncated>
```

Related Commands

Command	Description
power enable	Turns on power for the modules.
power redundancy-mode	Sets the power-supply redundancy mode.

show processes

To display information about the active Cisco IOS or IOS XE processes or the Cisco IOS Software Modularity POSIX-style processes, use the **show processes** command in user EXEC or privileged EXEC mode.

Cisco IOS Software

show processes [**history** | *process-id* | **timercheck**]

Cisco IOS Software Modularity Images and Cisco Catalyst 4500e Series Switches running IOS XE software

show processes

Syntax Description

history	(Optional) For Cisco IOS processes only. Displays the process history in an ordered format.
process-id	(Optional) For Cisco IOS processes only. An integer that specifies the process for which memory and CPU utilization data will be returned.
timercheck	(Optional) For Cisco IOS processes only. Displays the processes configured for a timer check.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
10.0	This command was introduced.
12.2(2)T	This command was modified. The **history** keyword was added.
12.3(2)T	This command was modified. The *process-id* argument was added.
12.2(18)SXF4	This command was modified. The syntax was modified to support Cisco IOS Software Modularity images.
12.3(14)T	This command was modified. The **timercheck** keyword was added.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
Cisco IOS XE Release 3.1.0.SG	This command was introduced on the Cisco Catalyst 4500e Serfies Switches.

Usage Guidelines

Cisco IOS Software Modularity

Although no optional keywords or arguments are supported for the base **show processes** command when a Software Modularity image is running, more details about processes are displayed using the **show processes cpu**, **show processes detailed**, **show processes kernel**, and **show processes memory** commands.

Examples

Example output varies between Cisco IOS software images and Cisco IOS Software Modularity software images. The following sections show output examples for each image:

- Cisco IOS Software
- Cisco IOS Software Modularity
- Cisco Catalyst 4500e Series Switches running IOS XE software

Cisco IOS Software

The following is sample output from the **show processes** command:

```
Router# show processes

CPU utilization for five seconds: 21%/0%; one minute: 2%; five minutes: 2%
 PID QTy       PC Runtime (ms)    Invoked   uSecs    Stacks TTY Process
   1 Cwe 606E9FCC             0          1       0 5600/6000   0 Chunk Manager
   2 Csp 607180F0             0     121055       0 2608/3000   0 Load Meter
   3 M*         0             8         90      88 9772/12000  0 Exec
   4 Mwe 619CB674             0          1       023512/24000  0 EDDRI_MAIN
   5 Lst 606F6AA4         82064      61496    1334 5668/6000   0 Check heaps
   6 Cwe 606FD444             0        127       0 5588/6000   0 Pool Manager
   7 Lwe 6060B364             0          1       0 5764/6000   0 AAA_SERVER_DEADT
   8 Mst 6063212C             0          2       0 5564/6000   0 Timers
   9 Mwe 600109D4             0          2       0 5560/6000   0 Serial Backgroun
  10 Mwe 60234848             0          2       0 5564/6000   0 ATM Idle Timer
  11 Mwe 602B75F0             0          2       0 8564/9000   0 ATM AutoVC Perio
  12 Mwe 602B7054             0          2       0 5560/6000   0 ATM VC Auto Crea
  13 Mwe 606068B8             0          2       0 5552/6000   0 AAA high-capacit
  14 Msi 607BABA4        251264     605013     415 5628/6000   0 EnvMon
  15 Mwe 607BFF8C             0          1       0 8600/9000   0 OIR Handler
  16 Mwe 607D407C             0      10089       0 5676/6000   0 IPC Dynamic Cach
  17 Mwe 607CD03C             0          1       0 5632/6000   0 IPC Zone Manager
  18 Mwe 607CCD80             0     605014       0 5708/6000   0 IPC Periodic Tim
  19 Mwe 607CCD24             0     605014       0 5704/6000   0 IPC Deferred Por
  20 Mwe 607CCE2C             0          1       0 5596/6000   0 IPC Seat Manager
```

Table 140 describes the fields shown in the display.

Table 140 show processes Field Descriptions

Field	Description
CPU utilization for five seconds	CPU utilization for the last 5 seconds. The second number indicates the percentage of CPU time spent at the interrupt level.
one minute	CPU utilization for the last minute.
five minutes	CPU utilization for the last 5 minutes.
PID	Process ID.
Q	Process queue priority. Possible values: C (critical), H (high), M (medium), and L (low).

Table 140 show processes Field Descriptions (continued)

Field	Description
Ty	Scheduler test. Possible values: • * (currently running) • E (waiting for an event) • S (ready to run, voluntarily relinquished processor) • rd (ready to run, wakeup conditions have occurred) • we (waiting for an event) • sa (sleeping until an absolute time) • si (sleeping for a time interval) • sp (sleeping for a time interval as an alternate call • st (sleeping until a timer expires) • hg (hung: the process will never execute again) • xx (dead: the process has terminated, but has not yet been deleted).
PC	Current program counter.
Runtime (ms)	CPU time that the process has used (in milliseconds).
Invoked	Number of times that the process has been invoked.
uSecs	Microseconds of CPU time for each process invocation.
Stacks	Low water mark/Total stack space available (in bytes).
TTY	Terminal that controls the process.
Process	Name of the process.

Note Because platforms have a 4- to 8- millisecond clock resolution, run times are considered reliable only after a large number of invocations or a reasonable, measured run time.

For a list of process descriptions, see http://www.cisco.com/en/US/products/sw/iosswrel/ps1828/products_tech_note09186a00800a65d0.shtml.

The following is sample output from the **show processes history** command:

```
Router# show processes history

PID Exectime(ms) Caller PC Process Name
   3           12 0x0        Exec
  16            0 0x603F4DEC GraphIt
  21            0 0x603CFEF4 TTY Background
  22            0 0x6042FD7C Per-Second Jobs
  67            0 0x6015CD38 SMT input
  39            0 0x60178804 FBM Timer
  16            0 0x603F4DEC GraphIt
  21            0 0x603CFEF4 TTY Background
  22            0 0x6042FD7C Per-Second Jobs
  16            0 0x603F4DEC GraphIt
  21            0 0x603CFEF4 TTY Background
```

```
  22           0 0x6042FD7C Per-Second Jobs
  67           0 0x6015CD38 SMT input
  39           0 0x60178804 FBM Timer
  24           0 0x60425070 Compute load avgs
  11           0 0x605210A8 ARP Input
  69           0 0x605FDAF4 DHCPD Database
  69           0 0x605FD568 DHCPD Database
  51           0 0x60670B3C IP Cache Ager
  69           0 0x605FD568 DHCPD Database
  36           0 0x606E96DC SSS Test Client
  69           0 0x605FD568 DHCPD Database
 --More--
```

Table 141 describes the significant fields shown in the display.

Table 141 show processes history Field Descriptions

Field	Description
PID	Process ID.
Exectime (ms)	Execution time (in milliseconds) of the most recent run or the total execution time of the most recent consecutive runs.
Caller PC	Current program counter of this process before it was suspended.
Process Name	Name of the process.

The following is sample output from the **show processes** *process-id* command:

```
Router# show processes 6

Process ID 6 [Pool Manager], TTY 0
Memory usage [in bytes]
 Holding: 921148, Maximum: 940024, Allocated: 84431264, Freed: 99432136
 Getbufs: 0, Retbufs: 0, Stack: 12345/67890
CPU usage
 PC: 0x60887600, Invoked: 188, Giveups: 100, uSec: 24
 5Sec: 3.03%, 1Min: 2.98%, 5Min: 1.55%, Average: 0.58%,
 Age: 662314 msec, Runtime: 3841 msec
 State: Running, Priority: Normal
```

Table 142 describes the fields shown in the display.

Table 142 show processes process-id Field Descriptions

Field	Description
Process ID	Process ID number and process name.
TTY	Terminal that controls the process.
Memory usage [in bytes]	This section contains fields that show the memory used by the specified process.
Holding	Amount of memory currently allocated to the process.
Maximum	Maximum amount of memory allocated to the process since its invocation.
Allocated	Bytes of memory allocated by the process.
Freed	Bytes of memory freed by the process.
Getbufs	Number of times that the process has requested a packet buffer.

Table 142 show processes process-id Field Descriptions (continued)

Field	Description
Retbufs	Number of times that the process has relinquished a packet buffer.
Stack	Low water mark/Total stack space available (in bytes).
CPU usage	This section contains fields that show the CPU resources used by the specified process.
PC	Current program counter of this process before it was suspended.
Invoked	Number of times that the process executed since its invocation.
Giveups	Number of times that the process voluntarily gave up the CPU.
uSec	Microseconds of CPU time for each process invocation.
5Sec	CPU utilization by process in the last five seconds.
1Min	CPU utilization by process in the last minute.
5Min	CPU utilization by process in the last five minutes.
Average	The average amount of CPU utilization by the process since its invocation.
Age	Milliseconds since the process was invoked.
Runtime	CPU time that the process has used (in milliseconds).
State	Current state of the process. Possible values: Running, Waiting for Event, Sleeping (Mgd Timer), Sleeping (Periodic), Ready, Idle, Dead.
Priority	The priority of the process. Possible values: Low, Normal, High.

Cisco IOS Software Modularity

The following is sample output from the **show processes** command when a Cisco IOS Software Modularity image is running:

```
Router# show processes

Total CPU utilization for 5 seconds: 99.7%; 1 minute: 98.9%; 5 minutes: 86.5%
PID   TID  Prio STATE       Blocked   Stack           CPU  Name
1     1    0    Ready                0    (128K)   2m28s  procnto-cisco
1     2    63   Receive     1        0    (128K)   0.000  procnto-cisco
1     3    10   Receive     1        0    (128K)   0.000  procnto-cisco
1     4    11   Receive     1        0    (128K)   1.848  procnto-cisco
1     5    63   Receive     1        0    (128K)   0.000  procnto-cisco
1     6    63   Receive     1        0    (128K)   0.000  procnto-cisco
12290 1    10   Receive     1        12288(128K)   0.080  chkptd.proc
12290 2    10   Receive     8        12288(128K)   0.000  chkptd.proc
3     1    15   Condvar     1027388  12288(128K)   0.016  qdelogger
3     2    15   Receive     1        12288(128K)   0.004  qdelogger
3     3    16   Condvar     1040024  12288(128K)   0.004  qdelogger
4     1    10   Receive     1        4096 (128K)   0.016  devc-pty
6     1    62   Receive     1        8192 (128K)   0.256  devc-ser2681
6     2    63   Intr                 8192 (128K)   0.663  devc-ser2681
7     1    10   Receive     1        32768(128K)   0.080  dumper.proc
7     2    10   Receive     1        32768(128K)   0.008  dumper.proc
7     3    10   Receive     1        32768(128K)   0.000  dumper.proc
7     4    10   Receive     1        32768(128K)   0.020  dumper.proc
7     5    10   Receive     1        32768(128K)   0.008  dumper.proc
4104  2    10   Receive     1        12288(128K)   0.000  pipe
4104  3    10   Receive     1        12288(128K)   0.000  pipe
--More--
```

Table 143 describes the significant fields shown in the display.

Table 143 show processes (Software Modularity) Field Descriptions

Field	Description
PID	Process ID.
TID	Task ID.
Prio	Process priority.
STATE	Current state of process.
Blocked	Thread (with given process ID) that is currently blocked by the process.
Stack	Size, in kilobytes, of the memory stack.
CPU	CPU time, in minutes and seconds, used by the process.
Name	Process name.

Cisco Catalyst 4500e Series Switches running IOS XE software

The following is sample output from the **show processes** command:

```
Switch# show processes
CPU utilization for five seconds: 1%; one minute: 4%;  five minutes: 3%
PID     TID     Runtime(ms) Invoked   uSecs  Stacks        Process
1               935         596       156971 84/8192       init
2               0           79        10405  0/8192        kthreadd
3               12          2206      5578   0/8192        migration/0
4               12          772       15601  0/8192        ksoftirqd/0
5               6           1089      6357   0/8192        migration/1
6               14          877       16484  0/8192        ksoftirqd/1
7               15          374       42475  0/8192        events/0
8               9           333       27531  0/8192        events/1
9               5           637       9070   0/8192        khelper
61              28          45        628533 0/8192        kblockd/0
62              80          175       461994 0/8192        kblockd/1
75              0           21        1238   0/8192        khubd
78              0           23        652    0/8192        kseriod
83              7           26        271115 0/8192        kmmcd
120             0           25        320    0/8192        pdflush
121             12          68        190382 0/8192        pdflush
122             0           29        172    0/8192        kswapd0
123             0           31        161    0/8192        aio/0
124             0           33        121    0/8192        aio/1
291             0           35        142    0/8192        kpsmoused
309             0           37        135    0/8192        rpciod/0
310             0           39        128    0/8192        rpciod/1
354             71          425       167583 84/8192       udevd
700             117         3257      35991  0/8192        loop1
716             0           55        1145   0/8192        loop2
732             115         2336      49574  0/8192        loop3
2203            86          627       138015 84/8192       dbus-daemon
2539            0           432       1974   84/8192       portmap
2545            0           434       2011   84/8192       portmap
2588            1           450       2384   84/8192       sshd
2602            2           444       6677   84/8192       xinetd
2606            1           444       3191   84/8192       xinetd
3757            0           71        70     84/8192       vsi work/0
--More--
```

Table 143 describes the significant fields shown in the display.

Table 144 show processes (Software Modularity) Field Descriptions

Field	Description
CPU utilization for five seconds	CPU utilization for the last 5 seconds. The second number indicates the percentage of CPU time spent at the interrupt level.
one minute	CPU utilization for the last minute.
five minutes	CPU utilization for the last 5 minutes.
PID	Process ID.
TID	Thread ID.
Runtime (ms)	CPU time that the process has used (in milliseconds).
Invoked	Number of times that the process has been invoked.
uSec	Microseconds of CPU time for each process invocation.
Stacks	Size, in kilobytes, of the memory stack.
Process	Process name.

Related Commands

Command	Description
show processes cpu	Displays detailed CPU utilization statistics (CPU use per process) when a Software Modularity image is running.
show processes detailed	Displays detailed information about POSIX and Cisco IOS processes when a Software Modularity image is running.
show processes kernel	Displays information about System Manager kernel processes when a Software Modularity image is running.
show processes memory	Displays amount of system memory used per system process.

show processes cpu

To display detailed CPU utilization statistics (CPU use per process) when Cisco IOS or Cisco IOS Software Modularity images are running, use the **show processes cpu** command in user EXEC or privileged EXEC mode.

Cisco IOS Software

show processes cpu [**history** [**table**] | **sorted** [**1min** | **5min** | **5sec**]]

Cisco IOS Software Modularity

show processes cpu [**detailed** [*process-id* | *process-name*] | **history**]

Syntax Description

history	(Optional) Displays CPU history in a graph format.
table	(Optional) Displays CPU history in a table format.
sorted	(Optional) For Cisco IOS images only. Displays CPU utilization sorted by percentage.
1min	(Optional) Sorts CPU utilization based on 1 minute utilization.
5min	(Optional) Sorts CPU utilization based on 5 minutes utilization.
5sec	(Optional) Sorts CPU utilization based on 5 seconds utilization.
detailed	(Optional) For Cisco IOS Software Modularity images only. Displays more detailed information about Cisco IOS processes (not for POSIX processes).
process-id	(Optional) For Cisco IOS Software Modularity images only. Process identifier.
process-name	(Optional) For Cisco IOS Software Modularity images only. Process name.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.0	This command was introduced.
12.2(2)T	This command was modified. The **history** keyword was added.
12.3(8)	This command was enhanced to display Address Resolution Protocol (ARP) output.
12.3(14)T	This command was enhanced to display ARP output.
12.2(18)SXF4	This command was enhanced to support Cisco IOS Software Modularity images.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
12.2(33)SCB3	This command was integrated into Cisco IOS Release 12.2(33)SCB3. Support was added for Cisco uBR10012 and uBR7200 routers.

Release	Modification
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
15.0(1)M	This command was modified. The output was modified to display the CPU time in microseconds that the process has used.

Usage Guidelines

Cisco IOS Software

If you use the optional **history** keyword, three graphs are displayed for Cisco IOS images:

- CPU utilization for the last 60 seconds
- CPU utilization for the last 60 minutes
- CPU utilization for the last 72 hours

Maximum usage is measured and recorded every second; average usage is calculated on periods of more than one second. Consistently high CPU utilization over an extended period indicates a problem. Use the **show processes cpu** command to troubleshoot. Also, you can use the output of this command in the Cisco Output Interpreter tool to display potential issues and fixes. Output Interpreter is available to registered users of Cisco.com who are logged in and have Java Script enabled.

For a list of system processes, go to http://www.cisco.com/en/US/products/sw/iosswrel/ps1828/products_tech_note09186a00800a65d0.shtml.

Cisco IOS Software Modularity

Cisco IOS Software Modularity images display only one graph that shows the CPU utilization for the last 60 minutes. The horizontal axis shows times (for example, 0, 5, 10, 15 minutes), and the vertical axis shows total percentage of CPU utilization (0 to 100 percent).

Examples

Example output varies between Cisco IOS software images and Cisco IOS Software Modularity software images. The following sections show output examples for each image:

- Cisco IOS Software
- Cisco IOS Software Modularity

Cisco IOS Software

The following is sample output from the **show processes cpu** command without keywords:

```
Router# show processes cpu

CPU utilization for five seconds: 0%/0%; one minute: 0%; five minutes: 0%
 PID Runtime(uS)     Invoked      uSecs   5Sec   1Min   5Min TTY Process
   1        4000          67         59  0.00%  0.00%  0.00%   0 Chunk Manager
   2        4000      962255          0  0.00%  0.00%  0.00%   0 Load Meter
   3           0           1          0  0.00%  0.00%  0.00%   0 cpf_process_tp
   4           0           1          0  0.00%  0.00%  0.00%   0 EDDRI_MAIN
   5   586520704      732013       6668  0.00%  0.11%  0.08%   0 Check heaps
   6        4000         991          4  0.00%  0.00%  0.00%   0 Pool Manager
   7           0           1          0  0.00%  0.00%  0.00%   0 DiscardQ Backg
   8           0           2          0  0.00%  0.00%  0.00%   0 Timers
   9           0           2          0  0.00%  0.00%  0.00%   0 ATM AutoVC Per
  10           0           2          0  0.00%  0.00%  0.00%   0 ATM VC Auto Cr
  11  2154956000     4809201        448  0.00%  0.03%  0.03%   0 EnvMon
```

```
 PID Runtime(uS)     Invoked      uSecs   5Sec   1Min   5Min TTY Process
  12           0           1          0  0.00%  0.00%  0.00%   0 OIR Handler
  13           0           1          0  0.00%  0.00%  0.00%   0 Crash writer
  14           0           1          0  0.00%  0.00%  0.00%   0 IPC Process le
  15           0       80189          0  0.00%  0.00%  0.00%   0 IPC Dynamic Ca
  16           0           1          0  0.00%  0.00%  0.00%   0 IPC Zone Manag
  17           0      962246          0  0.00%  0.00%  0.00%   0 IPC Service No
  18           0     4698177          0  0.00%  0.00%  0.00%   0 IPC Periodic T
  19           0     4698177          0  0.00%  0.00%  0.00%   0 IPC Deferred P
  20           0           1          0  0.00%  0.00%  0.00%   0 IPC Seat Manag
  21           0           1          0  0.00%  0.00%  0.00%   0 IPC Seat Contr
  22           0      962246          0  0.00%  0.00%  0.00%   0 IPC Loadometer
<snip>
```

The following is sample output of the one-hour portion of the output. The Y-axis of the graph is the CPU utilization. The X-axis of the graph is the increment within the time period displayed in the graph. This example shows the individual minutes during the previous hour. The most recent measurement is on the left of the X-axis.

```
Router# show processes cpu history

!--- One minute output omitted

6665776865756676676666666766767767676666676676767667666566667
6378016198993513709771991443732358689932740858269643922613
100
90
80         *  *                     * *     *  * *  *
70  * * ***** *  ** ***** ***  **** ******  *  *******     * *
60  #***##*##*#***#####*#*#########*#####*#*##*#*##*#*########*#
50  ############################################################
40  ############################################################
30  ############################################################
20  ############################################################
10  ############################################################
   0....5....1....1....2....2....3....3....4....4....5....5....
             0    5    0    5    0    5    0    5    0    5
              CPU% per minute (last 60 minutes)
             * = maximum CPU% # = average CPU%

!--- 72-hour output omitted
```

The top two rows, read vertically, display the highest percentage of CPU utilization recorded during the time increment. In this example, the CPU utilization for the last minute recorded is 66 percent. The device may have reached 66 percent only once during that minute, or it may have reached 66 percent multiple times. The device records only the peak reached during the time increment and the average over the course of that increment.

The following is sample output from the **show processes cpu** command on a Cisco uBR10012 router:

```
Router# show processes cpu

CPU utilization for five seconds: 2%/0%; one minute: 2%; five minutes: 2%
 PID Runtime(us)   Invoked      uSecs   5Sec   1Min   5Min TTY Process
   1           8       471         16  0.00%  0.00%  0.00%   0 Chunk Manager
   2           4       472          8  0.00%  0.00%  0.00%   0 Load Meter
   3           0         1          0  0.00%  0.00%  0.00%   0 IPC 0x50000 Vers
   4           0        10          0  0.00%  0.00%  0.00%   0 C10K Card Event
   5           0        65          0  0.00%  0.00%  0.00%   0 Retransmission o
   6           0         5          0  0.00%  0.00%  0.00%   0 IPC ISSU Dispatc
   7        5112       472      10830  0.63%  0.18%  0.18%   0 Check heaps
   8           0         1          0  0.00%  0.00%  0.00%   0 Pool Manager
   9           0         2          0  0.00%  0.00%  0.00%   0 Timers
```

```
  10           0          2           0  0.00%  0.00%  0.00%   0 Serial Backgroun
  11           0        786           0  0.00%  0.00%  0.00%   0 WBCMTS process
  12           0          1           0  0.00%  0.00%  0.00%   0 AAA_SERVER_DEADT
  13           0          1           0  0.00%  0.00%  0.00%   0 Policy Manager
  14           0          1           0  0.00%  0.00%  0.00%   0 Crash writer
  15           0          1           0  0.00%  0.00%  0.00%   0 RO Notify Timers
  16           0          1           0  0.00%  0.00%  0.00%   0 RMI RM Notify Wa
  17           0       2364           0  0.00%  0.00%  0.00%   0 Facility Alarm
  18           0         41           0  0.00%  0.00%  0.00%   0 IPC Dynamic Cach
```

The following is sample output from the **show processes cpu** command that shows an ARP probe process:

```
Router# show processes cpu | include ARP

17       38140    389690          97  0.00%  0.00%  0.00%   0 ARP Input
36           0         1           0  0.00%  0.00%  0.00%   0 IP ARP Probe
40           0         1           0  0.00%  0.00%  0.00%   0 ATM ARP INPUT
80           0         1           0  0.00%  0.00%  0.00%   0 RARP Input
114          0         1           0  0.00%  0.00%  0.00%   0 FR ARP
```

Table 145 describes the fields shown in the output.

Table 145 show processes cpu Field Descriptions

Field	Description
CPU utilization for five seconds	CPU utilization for the last 5 seconds. The second number indicates the percent of CPU time spent at the interrupt level.
one minutes	CPU utilization for the last minute.
five minutess	CPU utilization for the last 5 minutes.
PID	Process ID.
Runtime (us)	CPU time that the process has used (in microseconds).
Invoked	Number of times that the process has been invoked.
uSecs	Microseconds of CPU time for each process invocation.
5Sec	CPU utilization by task in the last 5 seconds.
1Min	CPU utilization by task in the last minute.
5Min	CPU utilization by task in the last 5 minutes.
TTY	Terminal that controls the process.
Process	Name of the process.

Note Because platforms have a 4- to 8-microsecond clock resolution, run times are considered reliable only after several invocations or a reasonable, measured run time.

Cisco IOS Software Modularity

The following is sample output from the **show processes cpu** command when a Software Modularity image is running:

```
Router# show processes cpu

Total CPU utilization for 5 seconds: 99.6%; 1 minute: 98.5%; 5 minutes: 85.3%
PID       5Sec    1Min     5Min Process
```

```
1          0.0%    0.1%     0.8% kernel
3          0.0%    0.0%     0.0% qdelogger
4          0.0%    0.0%     0.0% devc-pty
6          0.7%    0.2%     0.1% devc-ser2681
7          0.0%    0.0%     0.0% dumper.proc
4104       0.0%    0.0%     0.0% pipe
8201       0.0%    0.0%     0.0% mqueue
8202       0.0%    0.0%     0.0% fsdev.proc
8203       0.0%    0.0%     0.0% flashfs_hes_slot1.proc
8204       0.0%    0.0%     0.0% flashfs_hes_slot0.proc
8205       0.0%    0.0%     0.0% flashfs_hes_bootflash.proc
8206       0.0%    0.0%     0.0% dfs_disk2.proc
8207       0.0%    0.0%     0.0% dfs_disk1.proc
8208       0.0%    0.0%     0.0% dfs_disk0.proc
8209       0.0%    0.0%     0.0% ldcache.proc
8210       0.0%    0.0%     0.0% watchdog.proc
8211       0.0%    0.0%     0.0% syslogd.proc
8212       0.0%    0.0%     0.0% name_svr.proc
8213       0.0%    0.1%     0.0% wdsysmon.proc
8214       0.0%    0.0%     0.0% sysmgr.proc
8215       0.0%    0.0%     0.0% kosh.proc
12290      0.0%    0.0%     0.0% chkptd.proc
12312      0.0%    0.0%     0.0% sysmgr.proc
12313      0.0%    0.0%     0.0% syslog_dev.proc
12314      0.0%    0.0%     0.0% itrace_exec.proc
12315      0.0%    0.0%     0.0% packet.proc
12316      0.0%    0.0%     0.0% installer.proc
12317     29.1%   28.5%    19.6% ios-base
12318      0.0%    0.0%     0.0% fh_fd_oir.proc
12319      0.0%    0.0%     0.1% fh_fd_cli.proc
12320      0.0%    0.0%     0.0% fh_metric_dir.proc
12321      0.0%    0.0%     0.0% fh_fd_snmp.proc
12322      0.0%    0.0%     0.0% fh_fd_none.proc
12323      0.0%    0.0%     0.0% fh_fd_intf.proc
12324     48.5%   48.5%    35.8% iprouting.iosproc
12325      0.0%    0.0%     0.0% fh_fd_timer.proc
12326      0.0%    0.0%     0.0% fh_fd_ioswd.proc
12327      0.0%    0.0%     0.0% fh_fd_counter.proc
12328      0.0%    0.0%     0.0% fh_fd_rf.proc
12329      0.0%    0.0%     0.0% fh_server.proc
12330      0.0%    0.0%     0.0% cdp2.iosproc
12331      0.0%    0.0%     0.0% fh_policy_dir.proc
12332      0.0%    0.0%     0.0% ipfs_daemon.proc
12333      0.0%    0.0%     0.0% raw_ip.proc
12334      0.0%    0.0%     0.0% inetd.proc
12335     19.1%   20.4%    12.6% tcp.proc
12336      0.0%    0.0%     0.0% udp.proc
```

Table 146 describes the significant fields shown in the display.

Table 146 show processes cpu (Software Modularity) Field Descriptions

Field	Description
Total CPU utilization for five seconds	Total CPU utilization for the last 5 seconds. The second number indicates the percent of CPU time spent at the interrupt level.
1 minute	CPU utilization for the last minute.
5 minutes	CPU utilization for the last 5 minutes.
PID	Process ID.

Table 146 show processes cpu (Software Modularity) Field Descriptions (continued)

Field	Description
5Sec	Percentage of CPU time spent at the interrupt level for this process during the last five seconds.
1Min	Percentage of CPU time spent at the interrupt level for this process during the last minute.
5Min	Percentage of CPU time spent at the interrupt level for this process during the last five minutes.
Process	Process name.

The following is partial sample output from the **show processes cpu** command with the **detailed** keyword when a Software Modularity image is running:

```
Router# show processes cpu detailed

Total CPU utilization for 5 seconds: 99.6%; 1 minute: 99.3%; 5 minutes: 88.6%
PID/TID   5Sec    1Min     5Min Process             Prio  STATE        CPU
1         0.0%    0.7%     0.7% kernel                                 8.900
      1   0.4%    0.7%    11.4% [idle thread]          0  Ready        2m28s
      2   0.0%    0.0%     0.0%                       63  Receive      0.000
      3   0.0%    0.0%     0.0%                       10  Receive      0.000
      4   0.0%    0.0%     0.1%                       11  Receive      1.848
      5   0.0%    0.0%     0.0%                       63  Receive      0.000
.
.
.
PID/TID   5Sec    1Min     5Min Process             Prio  STATE        CPU
8214      0.0%    0.0%     0.0% sysmgr.proc                            0.216
      1   0.0%    0.0%     0.0%                       10  Receive      0.132
      2   0.0%    0.0%     0.0%                       10  Sigwaitin    0.000
      3   0.0%    0.0%     0.0%                       10  Receive      0.004
      4   0.0%    0.0%     0.0%                       10  Receive      0.000
      5   0.0%    0.0%     0.0%                       10  Receive      0.000
      6   0.0%    0.0%     0.0%                       10  Receive      0.004
      7   0.0%    0.0%     0.0%                       10  Receive      0.000
      8   0.0%    0.0%     0.0%                       10  Receive      0.000
      9   0.0%    0.0%     0.0%                       10  Receive      0.000
     10   0.0%    0.0%     0.0%                       10  Receive      0.000
     11   0.0%    0.0%     0.0%                       10  Receive      0.000
     12   0.0%    0.0%     0.0%                       10  Receive      0.000
     13   0.0%    0.0%     0.0%                       10  Receive      0.028
     14   0.0%    0.0%     0.0%                       10  Receive      0.040
     15   0.0%    0.0%     0.0%                       10  Receive      0.000
     16   0.0%    0.0%     0.0%                       10  Receive      0.000
     17   0.0%    0.0%     0.0%                       10  Receive      0.004
     18   0.0%    0.0%     0.0%                       10  Receive      0.000
     19   0.0%    0.0%     0.0%                       10  Receive      0.000
     20   0.0%    0.0%     0.0%                       10  Receive      0.000
     21   0.0%    0.0%     0.0%                       10  Receive      0.004
     22   0.0%    0.0%     0.0%                       10  Receive      0.000
PID/TID   5Sec    1Min     5Min Process             Prio  STATE        CPU
8215      0.0%    0.0%     0.0% kosh.proc                              0.044
      1   0.0%    0.0%     0.0%                       10  Reply        0.044
PID/TID   5Sec    1Min     5Min Process             Prio  STATE        CPU
12290     0.0%    0.0%     0.0% chkptd.proc                            0.080
      1   0.0%    0.0%     0.0%                       10  Receive      0.080
      2   0.0%    0.0%     0.0%                       10  Receive      0.000
PID/TID   5Sec    1Min     5Min Process             Prio  STATE        CPU
```

```
12312     0.0%    0.0%     0.0% sysmgr.proc                              0.112
      1   0.0%    0.0%     0.0%                        10  Receive       0.112
      2   0.0%    0.0%     0.0%                        10  Sigwaitin     0.000
PID/TID   5Sec    1Min     5Min Process             Prio  STATE         CPU
12316     0.0%    0.0%     0.0% installer.proc                           0.072
      1   0.0%    0.0%     0.0%                        10  Receive       0.000
      3   0.0%    0.0%     0.0%                        10  Nanosleep     0.000
      4   0.0%    0.0%     0.0%                        10  Sigwaitin     0.000
      6   0.0%    0.0%     0.0%                        10  Receive       0.000
Process sbin/ios-base, type IOS, PID = 12317
CPU utilization for five seconds: 12%/9%; one minute: 13%; five minutes: 10%
Task  Runtime(us)   Invoked  uSecs    5Sec   1Min   5Min TTY Task Name
   1         219      1503    145   0.00%  0.00%  0.00%   0 Hot Service Task
   2       23680     42384    558   2.39%  6.72%  4.81%   0 Service Task
   3        6104     11902    512   3.51%  1.99%  1.23%   0 Service Task
   4        1720      5761    298   1.91%  0.90%  0.39%   0 Service Task
   5           0         5      0   0.00%  0.00%  0.00%   0 Chunk Manager
   6           0         1      0   0.00%  0.00%  0.00%   0 Connection Mgr
   7           4       106     37   0.00%  0.00%  0.00%   0 Load Meter
   8        6240      7376    845   0.23%  0.15%  0.55%   0 Exec
   9         379        62   6112   0.00%  0.07%  0.04%   0 Check heaps
  10           0         1      0   0.00%  0.00%  0.00%   0 Pool Manager
  11           3         2   1500   0.00%  0.00%  0.00%   0 Timers
  12           0         1      0   0.00%  0.00%  0.00%   0 AAA_SERVER_DEADT
  13           0         2      0   0.00%  0.00%  0.00%   0 AAA high-capacit
  14         307       517    593   0.00%  0.05%  0.03%   0 EnvMon
  15           0         1      0   0.00%  0.00%  0.00%   0 OIR Handler
  16         283        58   4879   0.00%  0.04%  0.02%   0 ARP Input
  17           0         2      0   0.00%  0.00%  0.00%   0 Serial Backgroun
  18           0        81      0   0.00%  0.00%  0.00%   0 ALARM_TRIGGER_SC
  19           0         2      0   0.00%  0.00%  0.00%   0 DDR Timers
  20           0         2      0   0.00%  0.00%  0.00%   0 Dialer event
  21           4         2   2000   0.00%  0.00%  0.00%   0 Entity MIB API
  22           0        54      0   0.00%  0.00%  0.00%   0 Compute SRP rate
  23           0         9      0   0.00%  0.00%  0.00%   0 IPC Dynamic Cach
  24           0         1      0   0.00%  0.00%  0.00%   0 IPC Zone Manager
  25           0         1      0   0.00%  0.00%  0.00%   0 IPC Punt Process
  26           4       513      7   0.00%  0.00%  0.00%   0 IPC Periodic Tim
  27          11       513     21   0.00%  0.00%  0.00%   0 IPC Deferred Por
  28           0         1      0   0.00%  0.00%  0.00%   0 IPC Seat Manager
  29          83      1464     56   0.00%  0.00%  0.00%   0 EEM ED Syslog
.
.
.
```

Table 147 describes the significant fields shown in the display.

Table 147 show processes cpu detailed (Software Modularity) Field Descriptions

Field	Description
Total CPU utilization for five seconds	Total CPU utilization for the last 5 seconds. The second number indicates the percent of CPU time spent at the interrupt level.
1 minute	CPU utilization for the last minute.
5 minutes	CPU utilization for the last 5 minutes.
PID/TID	Process ID or task ID.
5Sec	Percentage of CPU time spent at the interrupt level for this process during the last five seconds.

Table 147 show processes cpu detailed (Software Modularity) Field Descriptions (continued)

Field	Description
1Min	Percentage of CPU time spent at the interrupt level for this process during the last minute.
5Min	Percentage of CPU time spent at the interrupt level for this process during the last five minutes.
Process	Process name.
Prio	Priority level of the process.
STATE	Current state of the process.
CPU	CPU utilization of the process in minutes and seconds.
type	Type of process; can be either IOS or POSIX.
Task	Task sequence number.
Runtime(us)	CPU time that the process has used (in microseconds).
Invoked	Number of times that the process has been invoked.
uSecs	Microseconds of CPU time for each process invocation.
5Sec	CPU utilization by task in the last 5 seconds.
1Min	CPU utilization by task in the last minute.
5Min	CPU utilization by task in the last 5 minutes.
TTY	Terminal that controls the process.
Task Name	Task name.

Related Commands

Command	Description
show processes	Displays information about active processes.
show processes memory	Displays the amount of system memory used per system process.

show processes detailed

To display detailed information about POSIX and Cisco IOS processes when Cisco IOS Software Modularity images are running, use the **show processes detailed** command in user EXEC or privileged EXEC mode.

show processes detailed [*process-id* | *process-name*]

Cisco Catalyst 4500e Series Switches running IOS XE software

show processes detailed [*process-id*]

Syntax Description

process-id	(Optional) Process identifier.
process-name	(Optional) Process name.

Command Default

If no process ID or process name is specified, detailed information is displayed about all processes.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2(18)SXF4	This command was introduced to support Software Modularity images.

Usage Guidelines

Use the **show processes detailed** command to gather detailed information about the number of tasks running, the process state, and other information about a process that is not displayed by the **show processes** command.

Examples

Example output varies between Cisco IOS software images and Cisco Catalyst 4500e Series Switches running IOS XE software. The following sections show output examples for each image:

- Cisco IOS Software
- Cisco Catalyst 4500e Series Switches running IOS XE software

Cisco IOS Software

The following is sample output from the **show processes detailed** command for the process named sysmgr.proc:

```
Router# show processes detailed sysmgr.proc

               Job Id: 67
                  PID: 8210
      Executable name: sysmgr.proc
      Executable path: sbin/sysmgr.proc
          Instance ID: 1
```

```
                  Args: -p
                Respawn: ON
          Respawn count: 1
  Max. spawns per minute: 30
           Last started: Mon Aug18  17:08:53 2003
          Process state: Run
                   core: SHAREDMEM MAINMEM
               Max. core: 0
                  Level: 39
PID    TID  Stack pri state       Blked  HR:MM:SS:MSEC FLAGS    NAME
8210   1      52K  10 Receive     1       0:00:00:0071 00000000 sysmgr.proc
8210   2      52K  10 Sigwaitinfo         0:00:00:0000 00000000 sysmgr.proc
8210   3      52K  10 Receive     8       0:00:00:0003 00000000 sysmgr.proc
8210   4      52K  10 Reply       1       0:00:00:0003 00000000 sysmgr.proc
8210   5      52K  10 Receive     1       0:00:00:0000 00000000 sysmgr.proc
8210   6      52K  10 Receive     1       0:00:00:0015 00000000 sysmgr.proc
8210   7      52K  10 Receive     1       0:00:00:0000 00000000 sysmgr.proc
8210   8      52K  10 Receive     1       0:00:00:0000 00000000 sysmgr.proc
------------------------------------------------------------------
                 Job Id: 78
                   PID: 12308
        Executable name: sysmgr.proc
        Executable path: sbin/sysmgr.proc
            Instance ID: 2
                  Args: -p
                Respawn: ON
          Respawn count: 1
  Max. spawns per minute: 30
           Last started: Mon Aug18  17:08:54 2003
          Process state: Run
                   core: SHAREDMEM MAINMEM
               Max. core: 0
                  Level: 40
PID    TID  Stack pri state       Blked  HR:MM:SS:MSEC FLAGS    NAME
12308  1      16K  10 Receive     1       0:00:00:0039 00000000 sysmgr.proc
12308  2      16K  10 Sigwaitinfo         0:00:00:0000 00000000 sysmgr.proc
------------------------------------------------------------------
```

Cisco Catalyst 4500e Series Switches running IOS XE software

The following is sample output from the **show processes detailed** command showing details of the "*iosd*" process:

```
Switch#show proc cpu
Switch#show processes detailed process iosd
Process Id         : 10319
Process Name       : iosd
Parent Process Id  : 9416
Group Id           : 10319
Status             : Sl
Session Id         : 9415
User Time          : 7875
Kernel Time        : 2281
Priority           :
Virtual Bytes      : 1819336
Resident Pages     : 953636
Resident Limit     : 4194303
Minor PageFaults   : 238050
Major PageFaults   : 1088
Cmdline arguments  : -n 2048 -m 256 -l lanbase

Thread Listing:
PID     C       TID     Stack         Pri   TTY   NAME
```

```
10319   1       10319   84            20    0     iosd
10319   0       10873   84            30    0     iosd
10319   0       10874   84            20    0     iosd

Task Listing:
PID     QTy PC       Runtime(ms) Invoked   uSecs  Stacks        TTY   Process
1       Cwe 29764508 4           7         0      504/35000     0     Chunk Manager
2       Csp 28101409 0           85        0      408/32000     0     Load Meter
3       Hwe 26994556 0           1         0      328/35000     0     Deferred Events
4       Mwe 27835771 0           6         0      7816/35000    0     SpanTree Helper
5       Mwe 27139064 0           1         0      328/35000     0     Retransmission of I
6       Mwe 27138527 0           1         0      328/35000     0     IPC ISSU Receive Pr
7       Lst 29780794 220         45        0      424/35000     0     Check heaps
8       Cwe 29784274 0           9         0      520/35000     0     Pool Manager
9       Mst 28412237 0           2         0      456/35000     0     Timers
10      Mwe 27212830 0           2         0      472/35000     0     Serial Background
11      Mwe 28504055 32          22        0      3176/35000    0     RF Slave Main Threa
12      Mwe 27808556 0           1         0      344/35000     0     ifIndex Receive Pro
13      Mwe 27917322 12          91        0      552/53000     0     IOSD ipc task
14      Mwe 27917399 0           2         0      584/53000     0     IOSD chasfs task
15      Mwe 28318114 0           2         0      1384/35000    0     cpf_msg_holdq_proce
16      Mwe 27927986 4           94        0      4904/35000    0     IOSd System Config
17      Cwe 27917853 0           227       0      536/35000     0     IOSD heartbeat proc
18      Mwe 28152849 8           14        0      488/35000     0     ARP Input
19      Lwe 28315806 0           1         0      312/35000     0     CEF MIB API
20      Lwe 28397268 0           1         0      280/35000     0     AAA_SERVER_DEADTIME
21      Mwe 28394584 0           2         0      456/35000     0     AAA high-capacity c
22      Mwe 28495535 0           1         0      392/41000     0     Policy Manager
23      Lwe 28553141 0           7         0      696/35000     0     Entity MIB API
24      Mwe 28793021 0           1         0      296/35000     0     IFS Agent Manager
--More--
```

Table 148 describes the significant fields shown in the display.

Table 148 show processes detailed Field Descriptions

Field	Description
Job Id	Job identifier.
PID	Process ID.
Executable name	Process name.
Executable path	Path and filename of the process.
Instance ID	Instance number.
Args	Arguments sent to the process at startup.
Respawn	Ability to respawn process: on or off.
Respawn count	Number of respawns of this process since boot where boot equals one.
Max. spawns per minute	Maximum number of respawns per minute for this process.
Last started	Date and time the process was last started.
Process state	Current state of process.
Core	Core dump options specified for the process.
Max. core	Maximum number of dumps allowed for this process.
Level	Internal number that determines the startup order for the process.
TID	Task ID.

Table 148 show processes detailed Field Descriptions (continued)

Field	Description
Stack	Size, in kilobytes, of the memory stack.
pri	Process priority.
state	Current state of process.
Blked	Thread (with given process ID) that is currently blocked by the process.
HR:MM:SS:MSEC	Time (in hours, minutes, seconds, and milliseconds) used by the process.
FLAGS	Process flags (bitmask).
NAME	Process name.

Related Commands

Command	Description
show processes	Displays information about active processes.

show processes interrupt mask buffer

To display information in the interrupt mask buffer, use the **show processes interrupt mask buffer** command in privileged EXEC mode.

show processes interrupt mask buffer

buffer	Displays stack trace and information about the places where interrupts have been masked more than the configured threshold time.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(2)T	This command was introduced.

Examples

The following is sample output from the **show processes interrupt mask buffer** command. The output displays stack trace and relevant information about the places where interrupts have been masked more than the configured threshold time:

```
Router# show processes interrupt mask buffer

Allowable interrupt mask time : 50 micro seconds
 Allowable number of half pipeline ticks for this platform : 5000
 Buffer Size            : 50 entries
 NETS Disable       : 3
 TTY  Disable        : 4
 ALL  Disable        : 4
 emt_call          : 11
 disable_interrupts : 12

  PID  Level  Time Spent(us)  Count  Stack Trace

    3   11      360            1       0x608C3C14 0x60894748 0x6089437C 0x608943AC
0x609CEC88 0x609CECFC 0x609C8524
    3   11      322            1       0x608C3C14 0x608943BC 0x609CEC88 0x609CECFC
0x609C8524 0x60867C28 0x607C70B0
    3   4       147            1       0x6078AED4 0x6078BE94 0x6078C750 0x6078C8D4
0x607E27F0 0x607E27C0 0x607E50B0
```

Related Commands

Command	Description
clear processes interrupt mask detail	Clears the interrupt masked details for all processes and stack traces which have been dumped into the interrupt mask buffer.
scheduler interrupt mask profile	Enables or disables interrupt mask profiling for all processes running on the system.
scheduler interrupt mask size	Configures the maximum number of entries that can exist in the interrupt mask buffer.

Command	Description
scheduler interrupt mask time	Configures the maximum amount of time a process can run with interrupts masked.
show processes interrupt mask detail	Displays interrupt masked details for the specified process or all processes in the system.

show processes interrupt mask detail

To display information about interrupt masking, use the **show processes interrupt mask detail** command in privileged EXEC mode.

show processes interrupt mask detail [*pid]*

Syntax Description

detail	Displays information about the total amount of time and the number of times interrupts have been masked by all processes.
pid	(Optional) An integer that specifies the process id for which to display the total accumulated time and the number of times interrupts have been masked.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(2)T	This command was introduced.

Examples

The following is sample output from the **show processes interrupt mask detail** command. the output displays information about the total amount of time and number of times interrupts have been masked by all processes:

```
Router# show processes interrupt mask detail

PID  Time Spent(us)    Count  Process Name

2       6388           1791   Load Meter
3       7957           16831  Exec
5       6710           2813   Check heaps
```

The following is sample output from the show processes interrupt mask detail command with the process ID specified. The output displays the total time (accumulative), number of times interrupts have been masked by a specific process:

```
Router# show processes interrupt mask detail 2

Process ID      : 2
 Process Name : Load Meter
 Total Interrupt Masked Time  : 6586 (us)
 Total Interrupt Masked Count : 1845
```

Related Commands

Command	Description
clear processes interrupt mask detail	Clears the interrupt masked details for all processes and stack traces which have been dumped into the interrupt mask buffer.
scheduler interrupt mask profile	Enables or disables interrupt mask profiling for all processes running on the system.

Command	Description
scheduler interrupt mask size	Configures the maximum number of entries that can exist in the interrupt mask buffer.
scheduler interrupt mask time	Configures the maximum amount of time a process can run with interrupts masked.
show processes interrupt mask buffer	Displays the information stored in the interrupt mask buffer.

show processes memory

To show the amount of memory used by each system process in Cisco IOS, Cisco IOS XE, or Cisco IOS Software Modularity images, use the **show processes memory** command in privileged EXEC mode.

Cisco IOS Software

show processes memory [*process-id* | **sorted** [**allocated** | **getbufs** | **holding**]]

Cisco IOS Software Modularity

show processes memory [**detailed** [*process-name*[**:***instance-id*] | *process-id* [**taskid** *task-id*]]] [**alloc-summary** | **sorted** {**start** | **size** | **caller**}]

Cisco Catalyst 4500e Series Switches running IOS XE software

show processes memory [**detailed** [**process iosd** | **task** *task-id*] | **sorted** [**allocated** | **getbufs** | **holding**]]

Syntax Description

Cisco IOS Software Syntax	
process-id	(Optional) Process ID (PID) of a specific process. When you specify a process ID, only details for the specified process will be shown.
sorted	(Optional) Displays memory data sorted by the Allocated,Getbufs,or Holding column. If the **sorted** keyword is used by itself, data is sorted by the Holding column by default.
allocated	(Optional) Displays memory data sorted by the Allocated column.
getbufs	(Optional) Displays memory data sorted by the Getbufs (Get Buffers) column.
holding	(Optional) Displays memory data sorted by the Holding column. This keyword is the default.
Cisco IOS Software Modularity Syntax	
detailed	(Optional) Displays detailed information about iosproc processes.
process-name	(Optional) Process name.
:*instance-id*	(Optional) Instance name of either the Cisco IOS task or POSIX process. The colon is required.
process-id	(Optional) Process identifier.
taskid	(Optional) Displays detailed memory usage of a Cisco IOS task within a process.
task-id	(Optional) Cisco IOS task identifier.
alloc-summary	(Optional) Displays summary POSIX process memory usage per allocator.
sorted	(Optional) Displays POSIX process memory usage sorted by start address, size, or the PC that called the process.
start	(Optional) Displays POSIX process memory usage sorted by start address of the process.
size	(Optional) Displays POSIX process memory usage sorted by size of the process.
caller	(Optional) Displays POSIX process memory usage sorted by the PC that called the process.

Command Default

Cisco IOS Software

The memory used by all types of system processes is displayed.

Cisco IOS XE and Software Modularity

The system memory followed by a one-line summary of memory information about each IOS XE or Software Modularity process is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
10.0	This command was introduced.
12.0(23)S	The **sorted**, **allocated**, **getbufs**, and **holding** keywords were added.
12.2(13)	The **sorted**, **allocated**, **getbufs**, and **holding** keywords were integrated in Cisco IOS Release 12.2(13).
12.2(13)S	The **sorted**, **allocated**, **getbufs**, and **holding** keywords were integrated in Cisco IOS Release 12.2(13)S.
12.2(13)T	The **sorted**, **allocated**, **getbufs**, and **holding** keywords were integrated in Cisco IOS Release 12.2(13)T.
12.0(28)S	The output of the header line was updated to support the Memory Thresholding feature.
12.2(22)S	The output of the header line was updated to support the Memory Thresholding feature.
12.3(7)T	The output of the header line was updated to support the Memory Thresholding feature.
12.0(30)S	The summary information (first lines of output) for this command was separated out and labeled by memory pool type (Total Process Memory, Total I/O Memory, and so on). This enhancement also corrected a total process memory mismatch error (mismatch between the **show processes memory** command, the **show processes memory sorted** command, and the **show memory** command and its variants).
12.2(28)S	The summary information (first lines of output) for this command was separated out and labeled by memory pool type (Total Process Memory, Total I/O Memory, and so on). This enhancement also corrected a total process memory mismatch error (mismatch between the **show processes memory** command, the **show processes memory sorted** command, and the **show memory** command and its variants).
12.3(11)T	The summary information (first lines of output) for this command was separated out and labeled by memory pool type (Total Process Memory, Total I/O Memory, and so on). This enhancement also corrected a total process memory mismatch error (mismatch between the **show processes memory** command, the **show processes memory sorted** command, and the **show memory** command and its variants).

Release	Modification
12.2(18)SXF4	The syntax was modified to support Cisco IOS Software Modularity images.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 3.1.0.SG	This command was introduced on the Cisco Catalyst 4500e Serfies Switches.

Usage Guidelines

The **show processes memory** command (and the **show processes memory sorted** command) displays a summary of total, used, and free memory, followed by a list of processes and their memory impact.

If the standard **show processes memory** *process-id* command is used, processes are sorted by their process ID (PID). If the **show processes memory sorted** command is used, the default sorting is by the Holding value.

Output Prior to Releases 12.3(7)T, 12.2(22)S, and 12.0(28)S

The first line (header line) of the **show processes memory** [**sorted**] command listed Total memory, Used memory, and Free memory values.

Output in Releases 12.3(7)T, 12.3(8)T, 12.2(22)S Through 12.2(27)S2, 12.0(28)S, and 12.0(29)S

In Releases 12.3(7)T, 12.2(22)S, and 12.0(28)S, the Memory Thresholding feature was introduced. This feature affected the header line and the Holding column of the **show processes memory** command as follows.

The value for Total in the **show processes memory** command and the values listed in the Holding column, showed the total (cumulative) value for the processor memory pools and the alternate memory pool* (typically, the I/O memory pool). However, the **show processes memory sorted** version of this command, and other commands, such as the **show memory summary** command, did not include the alternate memory pool in the totals (in other words, these commands showed the total value for the Processor memory pool only). This caused an observed mismatch of memory totals between commands.

If you are using these releases, use the output of the **show memory summary** command to determine the individual amounts of Total and Free memory for the Processor memory pool and the I/O memory pool.

Output in Releases 12.3(11)T, 12.2(28)S, 12.0(30)S and Later Releases

Beginning in Releases 12.3(11)T, 12.2(28)S, and 12.0(30)S, the summary information (first output lines) for the **show processes memory** command is separated by memory pool. For example, there are now individual lines for Total Process Memory, Total I/O Memory, and Total PCI Memory. If using these releases or later releases, your Total Process Memory should match the total process memory shown for other commands, such as the **show memory summary** command.

About Alternate Memory Pools

An “alternate memory pool” is a memory pool that can be used as an alternative to allocate memory when the target (main) memory pool has been filled. For example, many platforms have a memory type called “Fast” that is limited to a small size (because the memory media used for Fast memory is expensive). To prevent memory allocations from failing once the available Fast memory has been used up, the normal Processor memory can be configured as an alternative memory pool for the Fast memory pool.

Cisco IOS XE and Software Modularity

Use the **show processes memory** command without any arguments and keywords to display the system memory followed by a one-line summary of memory information about each modular Cisco IOS process. Use the **detailed** keyword with this command to display detailed memory information about all processes. Other arguments and keywords are used to display Cisco IOS Software Modularity process memory information for a specified process name or process ID.

On Cisco IOS XE images only, the **detailed** keyword will also show IOS task memory details.

Examples

Example output varies between Cisco IOS software releases. To view the appropriate output, choose one of the following sections:

- show processes memory Command for Releases Prior to 12.3(7)T, 12.2(22)S, and 12.0(28)S
- show processes memory Command for Releases Prior to 12.3(11)T, 12.2(28)S, and 12.0(30)S
- show processes memory Command for Cisco IOS Software Modularity
- Cisco Catalyst 4500e Series Switches running IOS XE software

show processes memory Command for Releases Prior to 12.3(7)T, 12.2(22)S, and 12.0(28)S

The following is sample output from the **show processes memory** command:

```
Router# show processes memory

Processor Pool Total:   25954228 Used:    8368640 Free:   17585588

 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0    8629528     689900    6751716          0          0 *Init*
   0   0      24048      12928      24048          0          0 *Sched*
   0   0        260        328         68     350080          0 *Dead*
   1   0          0          0      12928          0          0 Chunk Manager
   2   0        192        192       6928          0          0 Load Meter
   3   0     214664        304     227288          0          0 Exec
   4   0          0          0      12928          0          0 Check heaps
   5   0          0          0      12928          0          0 Pool Manager
   6   0        192        192      12928          0          0 Timers
   7   0        192        192      12928          0          0 Serial Backgroun
   8   0        192        192      12928          0          0 AAA high-capacit
   9   0          0          0      24928          0          0 Policy Manager
  10   0          0          0      12928          0          0 ARP Input
  11   0        192        192      12928          0          0 DDR Timers
  12   0          0          0      12928          0          0 Entity MIB API
  13   0          0          0      12928          0          0 MPLS HC Counter
  14   0          0          0      12928          0          0 SERIAL A'detect
.
.
.
  78   0          0          0      12992          0          0 DHCPD Timer
  79   0        160          0      13088          0          0 DHCPD Database
                                  8329440 Total
```

Table 149 describes the significant fields shown in the display.

Table 149 show processes memory Field Descriptions

Field	Description
Processor Pool Total	Total amount of memory, in kilobytes, held for the Processor memory pool.
Used	Total amount of used memory, in kilobytes, in the Processor memory pool.
Free	Total amount of free memory, in kilobytes, in the Processor memory pool.
PID	Process ID.
TTY	Terminal that controls the process.
Allocated	Bytes of memory allocated by the process.
Freed	Bytes of memory freed by the process, regardless of who originally allocated it.
Holding	Amount of memory, in kilobytes, currently allocated to the process.
Getbufs	Number of times the process has requested a packet buffer.
Retbufs	Number of times the process has relinquished a packet buffer.
Process	Process name.
Init	System initialization process.
Sched	The scheduler process.
Dead	Processes as a group that are now dead.
<value> Total	Total amount of memory, in kilobytes, held by all processes (sum of the "Holding" column).

The following is sample output from the **show processes memory** command when the **sorted** keyword is used. In this case, the output is sorted by the Holding column, from largest to smallest.

```
Router# show processes memory sorted

Processor Pool Total:   25954228 Used:    8371280 Free:   17582948

 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0    8629528     689900    6751716          0          0 *Init*
   3   0     217304        304     229928          0          0 Exec
  53   0     109248        192      96064          0          0 DHCPD Receive
  56   0          0          0      32928          0          0 COPS
  19   0      39048          0      25192          0          0 Net Background
  42   0          0          0      24960          0          0 L2X Data Daemon
  58   0        192        192      24928          0          0 X.25 Background
  43   0        192        192      24928          0          0 PPP IP Route
  49   0          0          0      24928          0          0 TCP Protocols
  48   0          0          0      24928          0          0 TCP Timer
  17   0        192        192      24928          0          0 XML Proxy Client
   9   0          0          0      24928          0          0 Policy Manager
  40   0          0          0      24928          0          0 L2X SSS manager
  29   0          0          0      24928          0          0 IP Input
  44   0        192        192      24928          0          0 PPP IPCP
  32   0        192        192      24928          0          0 PPP Hooks
  34   0          0          0      24928          0          0 SSS Manager
  41   0        192        192      24928          0          0 L2TP mgmt daemon
  16   0        192        192      24928          0          0 Dialer event
  35   0          0          0      24928          0          0 SSS Test Client
 --More--
```

The following is sample output from the **show processes memory** command when a process ID (*process-id*) is specified:

```
Router# show processes memory 1

Process ID: 1
Process Name: Chunk Manager
Total Memory Held: 8428 bytes

Processor memory holding = 8428 bytes
pc = 0x60790654, size =      6044, count =    1
pc = 0x607A5084, size =      1544, count =    1
pc = 0x6076DBC4, size =       652, count =    1
pc = 0x6076FF18, size =       188, count =    1

I/O memory holding = 0 bytes

Router# show processes memory 2

Process ID: 2
Process Name: Load Meter
Total Memory Held: 3884 bytes

Processor memory holding = 3884 bytes
pc = 0x60790654, size =      3044, count =    1
pc = 0x6076DBC4, size =       652, count =    1
pc = 0x6076FF18, size =       188, count =    1

I/O memory holding = 0 bytes
```

show processes memory Command for Releases Prior to 12.3(11)T, 12.2(28)S, and 12.0(30)S

The following example shows the output of the **show processes memory** command before the changes to the summary information were made. Note that the Total in the **show processes summary** command output indicates total memory for all memory pools; in this example, the **show processes memory** total of 35423840 can be obtained by adding the Processor and I/O totals shown in the output of the **show memory summary** command. Note also that the **show processes memory sorted** command lists the Total Processor Memory (matches the **show memory summary** Processor Total), but the **show processes memory** command (without the **sorted** keyword) lists the total for all memory pools (Processor plus I/O memory).

```
Router# show version | include IOS

Cisco IOS Software, 3600 Software (C3660-BIN-M), Version 12.3(9)

Router# show memory summary

               Head    Total(b)     Used(b)     Free(b)   Lowest(b)  Largest(b)
Processor   61E379A0    27035232     8089056    18946176    17964108    17963664
      I/O    3800000     8388608     2815088     5573520     5561520     5573472

.
.
.

Router# show processes memory

Total: 35423840, Used: 10904192, Free: 24519648
 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0   14548868    3004980    9946092          0          0 *Init*
   0   0      12732     567448      12732          0          0 *Sched*
.
.
```

```
.

Router# show processes memory sorted

Total: 27035232, Used: 8089188, Free: 18946044
 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0   14548868    3004980    9946092          0          0 *Init*
  64   0      76436       3084      74768          0          0 CEF process
.
.
.

Router# show version | include IOS

Cisco IOS Software, 3600 Software (c3660-p-mz), Version 12.0(29)S,

Router# show memory summary

               Head      Total(b)     Used(b)     Free(b)   Lowest(b)  Largest(b)
Processor    126CB10    49,331,668     6454676    42876992    42642208    42490796

Router# show processes memory

Total: 50,994,868, Used: 6220092, Free: 44774776
 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0    6796228     627336    5325956          0          0 *Init*
   0   0        200      29792        200          0          0 *Sched*
   0   0        192        744          0     349000          0 *Dead*
   1   0          0          0      12896          0          0 Chunk Manager
.
.
.

Router# show processes memory sorted

Total: 50,994,868, Used: 6222644, Free: 44772224
 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0    6796228     627336    5325956          0          0 *Init*
  13   0      39056          0      25264          0          0 Net Background
  48   0          0          0      24896          0          0 L2X SSS manager
  18   0          0          0      24896          0          0 IP Input
.
.
.
```

show processes memory Command for Cisco IOS Software Modularity

In a Cisco IOS Software Modularity image IOS, each process maintains its own heap memory, which is taken from the system memory in blocks. The process reuses this memory as required. If all the memory that was requested in a block is no longer in use, then the process can return the memory block to the system.

The following is sample output from the **show processes memory** command when a Cisco IOS Software Modularity image is running:

```
Router# show processes memory

System Memory : 262144K total, 113672K used, 148472K free

PID       Text    Data   Stack  Dynamic     Total Process
1            0       0      12        0        12 kernel
12290       52       8      28      196       284 dumper.proc
3           12       8       8      144       172 devc-pty
4          132       8       8       32       180 devc-ser2681
```

```
6           16      12      24       48       100 pipe
8199        12      12       8       48        80 mqueue
8200        16      24      48      452       540 fsdev.proc
8201        52      20       8       96       176 flashfs_hes_slot1.proc
8202        52      20       8       80       160 flashfs_hes_bootflash.proc
8203        52      20       8      128       208 flashfs_hes_slot0.proc
8204        20      68      12      164       264 dfs_disk1.proc
8205        20      68      12      164       264 dfs_disk0.proc
8206        36       4       8      144       192 ldcache.proc
8207        32       8      20      164       224 syslogd.proc
8208        24       4      28      464       520 name_svr.proc
8209       124     104      28      344       600 wdsysmon.proc
8210       100     144      52      328       624 sysmgr.proc
8211        12       4      28       64       108 kosh.proc
12308      100     144      16      144       404 sysmgr.proc
12309       24       4      12      112       152 chkptd.proc
12310       12       4       8       96       120 syslog_dev.proc
12311       44       4      24      248       320 fh_metric_dir.proc
12312       36       4      24      216       280 fh_fd_snmp.proc
12313       36       4      24      216       280 fh_fd_intf.proc
12314       32       4      24      216       276 fh_fd_timer.proc
12315       40       4      24      216       284 fh_fd_ioswd.proc
12316       28       4      24      200       256 fh_fd_counter.proc
12317       80      20      44      368       512 fh_server.proc
12326      140      40      28      280       488 tcp.proc
12327       48       4      24      256       332 udp.proc
12328        4       4      28     4660      4696 iprouting.iosproc
12329        4       4      36      600       644 cdp2.iosproc
```

Table 150 describes the significant fields shown in the display.

Table 150 show processes memory (Software Modularity) Field Descriptions

Field	Description
total	Total amount of memory, in kilobytes, on the device.
used	Amount of memory, in kilobytes, used in the system.
free	Amount of free memory, in kilobytes, available in the system.
PID	Process ID.
Text	Amount of memory, in kilobytes, used by the text segment of the specified process.
Data	Amount of memory, in kilobytes, used by the data segment of the specified process.
Stack	Amount of memory, in kilobytes, used by the stack segment of the specified process.
Dynamic	Amount of memory, in kilobytes, used by the dynamic segment of the specified process.
Total	Total amount of memory, in kilobytes, used by the specified process.
Process	Process name.

The following example shows the output of the **show processes memory detailed** command wherein the process (ios-base) holds sufficient memory to process request of the Cisco IOS tasks without having to request more memory from the system. So although the amount of memory of the Cisco IOS tasks increased, the ios-base process does not consume more system memory.

```
Router# show processes memory detailed 16424 sorted holding

System Memory : 2097152K total, 1097777K used, 999375K free, 0K kernel reserved
Lowest(b)     : 1017212928
Process sbin/ios-base, type IOS, PID = 16424
    248904K total, 0K text, 0K data, 168K stack, 248736K dynamic
    Heap : 385874960 total, 261213896 used, 124661064 free
 Task TTY  Allocated      Freed    Holding    Getbufs    Retbufs TaskName
    0   0  156853816      11168  156365472          0          0 *Init*
   38   0   65671128    3320184   62248368          0          0 PF_Init Process
  661   0   73106800   38231816   33093704          0          0 PIM Process
  487   0 2656186248 3806507384   33039576          0          0 cmfib
  652   0   56256064   19166160   27087872          0          0 MFIB_mrib_read
    4   0   91088216   68828800   13093720          0          0 Service Task
  629   0    2059320     132840    1927392          0          0 Const2 IPv6 Pro
   49   0 2155730560 2153990528    1741536          0    9579588 DiagCard1/-1
    0   0 2510481432 1396998880    1463056    2804860      23260 *Dead*
  444   0    7333952    5940064    1410992          0          0 FM core
  411   0   12865536    7934952    1396544          0          0 CMET MGR
  310   0  113849160  121164584    1284240          0          0 Exec
```

The following is sample output from the **show processes memory** command with details about the memory of process 12322 and the task with the ID of 1:

```
Router# show processes memory detailed 12322 taskid 1

System Memory : 262144K total, 113456K used, 148688K free

Process sbin/c7200-p-blob, type IOS, PID = 12322
    16568K total, 16K text, 8K data, 64K stack, 16480K dynamic

Memory Summary for TaskID = 1
Holding = 10248

        PC       Size  Count
0x7322FC74       9192      1
0x73236538        640      1
0x73231E8C        256      1
0x74175060        160      1
```

Table 151 describes the significant fields shown in the display that are different from Table 150 on page 952.

Table 151 show processes memory detailed process-id taskid Field Descriptions

Field	Description
type	Type of process: POSIX or Cisco IOS.
Memory summary for TaskID	Task ID.
Holding	Amount of memory, in bytes, currently held by the task.
PC	Caller PC of the task.
Size	Amount of memory, in bytes, used by this task.
Count	Number of times that task has been called.

The following is sample output from the **show processes memory** command with details about the memory of POSIX process ID 234567 with summary process memory usage per allocator:

```
Router# show processes memory detailed 234567 alloc-summary
```

```
System Memory : 262144K total, 113672K used, 148472K free

Process sbin/sysmgr.proc, type POSIX, PID = 12308
    404K total, 100K text, 144K data, 16K stack, 144K dynamic
    81920 heapsize, 68620 allocated, 8896 free

Allocated Blocks
Address    Usize      Size       Caller
0x0806C358 0x00000478 0x000004D0 0x721C7290
0x0806D1E0 0x00000128 0x00000130 0x72B90248
0x0806D318 0x00003678 0x000036E0 0x72B9820C
0x0806D700 0x000002A0 0x000002C0 0x72B8EB58
0x0806D770 0x00000058 0x00000060 0x72BA5488
0x0806D7D8 0x000000A0 0x000000B0 0x72B8D228
0x0806D8A8 0x00000200 0x00000208 0x721A728C
0x0806FF78 0x00000068 0x00000070 0x72BA78EC
0x08071438 0x0000005C 0x00000068 0x72B908A8
0x08071508 0x0000010E 0x00000120 0x72BA7AFC
0x08072840 0x000000A8 0x000000C0 0x7270A060
0x08072910 0x0000010C 0x00000118 0x7273A898
0x08072A30 0x000000E4 0x000000F0 0x72749074
0x08072B28 0x000000B0 0x000000B8 0x7276E87C
0x08072BE8 0x0000006C 0x00000078 0x727367A4
0x08072C68 0x000000B8 0x000000C0 0x7271E2A4
0x08072D30 0x000000D0 0x000000D8 0x7273834C
0x08072E10 0x00000250 0x00000258 0x72718A70
0x08073070 0x000002F4 0x00000300 0x72726484
0x08073378 0x000006A8 0x000006B0 0x73EA4DC4
0x08073A30 0x00000060 0x00000068 0x7352A9F8
0x08073B38 0x00000068 0x00000070 0x72B92008
0x08073BB0 0x00000058 0x00000060 0x72B9201C
0x08073EB8 0x00002FB4 0x000031C0 0x08026FEC
0x08074028 0x000020B8 0x000020C0 0x72709C9C
0x08077400 0x000000A0 0x000000A8 0x721DED94
0x08078028 0x000022B8 0x000022C0 0x727446B8
0x0807C028 0x00002320 0x00002328 0x72B907C4

Free Blocks
Address    Size
0x0806FFF0 0x00000010
0x080714A8 0x00000058
0x08073E18 0x00000098
0x08073FE8 0x00000018
0x08076FA0 0x00000328
0x080774B0 0x00000B50
0x0807FFB8 0x00000048
0x08080028 0x00003FD8
```

Table 152 describes the significant fields shown in the display.

Table 152 show processes memory detailed alloc-summary Field Descriptions

Field	Description
heapsize	Size of the process heap, in kilobytes.
allocated	Amount of memory, in kilobytes, allocated from the heap.
free	Amount of free memory, in kilobytes, in the heap for the specified process.
Address	Block address, in hexadecimal.
Usize	Block size, in hexadecimal, without the trailer header.

Table 152 show processes memory detailed alloc-summary Field Descriptions (continued)

Field	Description
Size	Block size, in hexadecimal.
Caller	Caller PC of the allocator of this block.

Cisco Catalyst 4500e Series Switches running IOS XE software

The following is sample output from the **show processes memory** command:

```
Switch#show proc memory
System memory  : 1943928K total, 733702K used, 1210221K free, 153224K kernel reserved
Lowest(b)      : 642265088
PID     Text          Data       Stack     Dynamic   RSS       Total     Process
1       252           480        84        444       1648      3648      init
2       0             0          0         0         0         0         kthreadd
3       0             0          0         0         0         0         migration/0
4       0             0          0         0         0         0         ksoftirqd/0
5       0             0          0         0         0         0         migration/1
6       0             0          0         0         0         0         ksoftirqd/1
7       0             0          0         0         0         0         events/0
8       0             0          0         0         0         0         events/1
9       0             0          0         0         0         0         khelper
61      0             0          0         0         0         0         kblockd/0
62      0             0          0         0         0         0         kblockd/1
75      0             0          0         0         0         0         khubd
78      0             0          0         0         0         0         kseriod
83      0             0          0         0         0         0         kmmcd
120     0             0          0         0         0         0         pdflush
121     0             0          0         0         0         0         pdflush
122     0             0          0         0         0         0         kswapd0
123     0             0          0         0         0         0         aio/0
124     0             0          0         0         0         0         aio/1
291     0             0          0         0         0         0         kpsmoused
309     0             0          0         0         0         0         rpciod/0
310     0             0          0         0         0         0         rpciod/1
354     92            180        84        136       456       2188      udevd
700     0             0          0         0         0         0         loop1
716     0             0          0         0         0         0         loop2
732     0             0          0         0         0         0         loop3
2203    424           164        84        132       1172      3180      dbus-daemon
2539    76            160        84        132       532       1788      portmap
2545    76            160        84        132       532       1788      portmap
2588    232           396        84        132       992       4596      sshd
2602    196           320        84        132       752       2964      xinetd
2606    196           320        84        132       748       2964      xinetd
3757    76            160        84        132       532       1788      vsi work/0
3758    76            160        84        132       532       1788      vsi work/1
--More--
```

The following is sample output from the **show processes memory detailed** command:

```
Switch#show proc memory detailed
System memory  : 1943928K total, 734271K used, 1209657K free, 153224K kernel reserved
Lowest(b)      : 642265088
PID     Text          Data       Stack     Dynamic   RSS       Total     Process
1       252           480        84        444       1648      3648      init
354     92            180        84        136       456       2188      udevd
2203    424           164        84        132       1172      3180      dbus-daemon
2539    76            160        84        132       532       1788      portmap
2545    76            160        84        132       532       1788      portmap
2588    232           396        84        132       992       4596      sshd
```

```
2602    196          320       84        132       752       2964      xinetd
2606    196          320       84        132       748       2964      xinetd
3757    76           160       84        132       532       1788      vsi work/0
3758    76           160       84        132       532       1788      vsi work/1
3891    848          148       84        88        1432      2984      check_gdb_statu
3895    72           160       84        132       580       1676      watchdog
4453    848          276       84        216       1512      3112      app_printf.sh
4465    848          272       84        212       1508      3108      app_printf.sh
4596    148          43972     84        528       5176      56664     slproc

TaskID  TTY   Allocated Freed     Holding   Getbufs   Retbufs   Task
1       0     327920    1544      367952    0         0         Chunk Manager
2       0     184       184       37032     0         0         Load Meter
3       0     0         0         40032     0         0         Deferred Events
4       0     17840     3888      40032     0         0         SpanTree Helper
5       0     0         0         40032     0         0         Retransmission of I
6       0     0         0         40032     0         0         IPC ISSU Receive Pr
7       0     0         0         40032     0         0         Check heaps
8       0     179248    173976    45304     144568    140316    Pool Manager
9       0     184       184       40032     0         0         Timers
10      0     184       184       40032     0         0         Serial Background
--More--
```

The following is sample output from the **show processes memory detailed** command specifying the *Iosd* process:

```
Switch#show proc memory detailed process iosd
Processor Pool Total:  805306368 Used:  225960152 Free:  579346216
      I/O Pool Total:   16777216 Used:     216376 Free:   16560840

 PID TTY  Allocated      Freed    Holding    Getbufs    Retbufs Process
   0   0  226577984    4410320  211589320          0          0 *Init*
   0   0          0    1591600          0          0          0 *Sched*
   0   0    2568488    1960496     676992    5368513     362940 *Dead*
   1   0     327920       1544     367952          0          0 Chunk Manager
   2   0        184        184      37032          0          0 Load Meter
   3   0          0          0      40032          0          0 Deferred Events
   4   0      17840       3888      40032          0          0 SpanTree Helper
   5   0          0          0      40032          0          0 Retransmission o
   6   0          0          0      40032          0          0 IPC ISSU Receive
   7   0          0          0      40032          0          0 Check heaps
   8   0     210880     205608      45304     170080     165828 Pool Manager
   9   0        184        184      40032          0          0 Timers
  10   0        184        184      40032          0          0 Serial Backgroun
--More--
```

The following is sample output from the **show processes memory sorted** command:

```
Switch#show proc memory sorted
System memory  : 1943928K total, 734279K used, 1209649K free, 153224K kernel reserved
Lowest(b)      : 642265088
PID     Text         Data      Stack     Dynamic   RSS       Total     Process
10319   67716        798420    84        252       954524    1012856   iosd
4888    1132         200108    84        4076      26772     275408    ffm
4884    620          690480    84        5328      18564     728076    eicored
7635    144          181696    84        7464      16660     202620    cli_agent
9374    1048         298308    84        1128      11488     328992    licensed
10335   1676         257544    84        1252      11044     293848    licenseagentd
4852    208          208996    84        1848      10812     237632    ha_mgr
7566    168          249336    84        1408      8560      273668    installer
7585    268          167656    84        1616      8432      185556    snmp_subagent
4880    308          135080    84        968       8200      153944    os_info_p
4894    100          232936    84        1144      8072      252748    plogd
```

```
7410    68          233708    84        1172      7928      253840    dtmgr
10329   160         142384    84        832       7144      228360    cpumemd
4968    104         158828    84        1052      7080      178184    iifd
5047    88          165604    84        700       6196      181184    pdsd
4870    80          157452    84        728       6088      172244    sysmgr
4856    200         132816    84        688       5872      147940    oscore_p
--More--
```

Table 153 describes the significant fields shown in the display.

Table 153 show processes memory Field Descriptions

Field	Description
Processor Pool Total	Total amount of memory, in kilobytes, held for the Processor memory pool.
I/O Pool Total	Total amount of memory, in kilobytes, held for the I/O memory pool.
Used	Total amount of used memory, in kilobytes, in the Processor/I/O memory pool.
Free	Total amount of free memory, in kilobytes, in the Processor/I/O memory pool.
PID	Process ID.
TTY	Terminal that controls the process.
Allocated	Bytes of memory allocated by the process.
Freed	Bytes of memory freed by the process, regardless of who originally allocated it.
Holding	Amount of memory, in kilobytes, currently allocated to the process.
Getbufs	Number of times the process has requested a packet buffer.
Retbufs	Number of times the process has relinquished a packet buffer.
Process	Process name.
Init	System initialization process.
Sched	The scheduler process.
Dead	Processes as a group that are now dead.
<value> Total	Total amount of memory, in kilobytes, held by all processes (sum of the “Holding” column).

Related Commands

Command	Description
show memory	Displays statistics about memory, including memory-free pool statistics.
show processes	Displays information about the active processes.