



## PXF Information

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The PXF processor is turned on by default. If it is ever disabled, you must enable it to take advantage of IP packet switching and feature acceleration.



**Note**

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The VPN Acceleration Module (VAM) is not compatible with the PXF processor.

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**Note**

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Before enabling the PXF processor, you must have IP routing and IP CEF switching turned on.

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To manually disable or enable the PXF processor, use the global commands:

```
hostname (config)# [no] ip pxf
```

The following features are supported by the PXF processor and are enabled using standard IOS procedures:

- CEF—Cisco Express Forwarding
- NetFlow
- NAT—Network Address Translation
- WFQ—weighted fair queuing
- WRED—weighted random early detection
- ACL—access control list
- CBWRED—class-based weighted random early detection
- CBWFQ—class-based weighted fair queuing
- CAR—committed access rate

See the [“Related Documentation” section on page xvii](#) to find documents about enabling these features.

## Using show Commands

Use the global **show version** or **show c7400** commands to obtain information about the hardware and software installed on your router. Examples of each follow.

## Using the show version Command

Use the **show version** command to display the configuration of the system hardware and the software version.

The following example of the **show version** command provides information about a Cisco 7401ASR router:

```
Router# show version

Cisco Internetwork Operating System Software
IOS (tm) 7400 Software (C7400-JS-M), Version 12.2
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Sat 19-May-01 11:31 by
Image text-base:0x60008960, data-base:0x617CA000

ROM:System Bootstrap, Version 12.2(1r)DD1, RELEASE SOFTWARE (fc1)
BOOTFLASH:7400 Software (C7400-KBOOT-M),
12.2(20010427:125)

router uptime is 17 hours, 2 minutes
System returned to ROM by reload at 01:09:49 UTC Sat Jan 1 2000
System image file is "tftp://000.000.000.000//tftpboot/biff/122_1_DX/c7400-
mz.V122_1_DX.5.19.01"

cisco 7401ASR (NSE) processor (revision A) with 245760K/16384K bytes of memory
Processor board ID 4294967295
R7000 CPU at 375Mhz, Implementation 39, Rev 3.3, 256KB L2, 2000KB L3 Cache
1 slot ASR midplane, Version 2.0

Last reset from power-on
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
PXF processor tmc is running.
8 Ethernet/IEEE 802.3 interface(s)
2 Gigabit Ethernet/IEEE 802.3 interface(s)
509K bytes of non-volatile configuration memory.

64256K bytes of ATA PCMCIA card at slot 0 (Sector size 512 bytes).
8192K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x100
```

## Using the show c7400 Command

Use the **show c7400** command to obtain information about the router.

```
Router# show c7400
Network IO Interrupt Throttling:
  throttle count=0, timer count=0
  active=0, configured=1
  netint usec=4000, netint mask usec=200
Midplane EEPROM:
  Hardware revision 2.0          Board revision UNKNOWN
  Serial number 0000000000 Part number 00-0000-00
  Test history 0xFF             RMA number 000-000-000
  MAC Pool Size 64             MAC Addr Base 0000.000.0000
  Chassis Model 0x1
  EEPROM format version 1
  EEPROM contents (hex):
    0x00:01 01 02 00 FF FF FF FF 49 16 41 02 00 04 C1 28
    0x10:54 40 00 40 FF FF FF FF FF FF FF FF FF FF FF FF
    0x20:62 20 00 00 63 2F 55 7C 00 00 00 00 60 63 B2 D0
    0x30:00 00 00 00 62 6D 0C 50 00 00 00 00 00 00 00 00

C7401ASR CPU EEPROM:
  Hardware Revision :1.0
  PCB Serial Number :CAB0516HKEC
  Part Number :73-5697-02
  Board Revision :02
  RMA Test History :00
  RMA Number :0-0-0-0
  RMA History :00
  Deviation Number :0-0
  Product Number :CISCO7401
  Top Assy. Part Number :800-09092-02
  EEPROM format version 4
  EEPROM contents (hex):
    0x00:04 FF 40 02 7E 41 01 00 C1 8B 43 41 42 30 35 31
    0x10:36 48 4B 45 43 82 49 16 41 02 42 30 32 03 00 81
    0x20:00 00 00 00 04 00 80 00 00 00 00 CB 94 43 49 53
    0x30:43 4F 37 34 30 31 20 20 20 20 20 20 20 20 20 20
    0x40:20 C0 46 03 20 00 23 84 02 FF FF FF FF FF FF FF
    0x50:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x60:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x70:FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

## Using the show pxf Commands

Following are five specific **show pxf** commands and several subcommands. Included in this section are examples for each command.

- show pxf accounting ?
- show pxf accounting summary
- show pxf accounting *interface*
- show pxf crash
- show pxf info

- show pxf interface
- show pxf feature ?

Sample output for these commands follows.

## Using the show pxf accounting ? Command and Subcommands

The following is an example of the **show pxf accounting ?** command with sample output:

```
Router# show pxf accounting ?

ATM          ATM interface
Ethernet     IEEE 802.3
FastEthernet FastEthernet IEEE 802.3
Hssi         High Speed Serial Interface
Null         Null interface
POS          Packet over Sonet
Serial       Serial
summary     PXF summary statistics
```

The following is an example of the **show pxf accounting summary** command with sample output:

```
Router# show pxf accounting summary

Pkts      Dropped  RP Processed      Ignored
Total          0          90          0
>
>PXF complex busy      : 8%
>PXF input pipeline full: 0%
>

>PXF Statistic:
>Packets RP -> PXF:
>  switch ip:          0
>  switch raw:         90
>  qos fastsend:       0
>  qos enqueue:        0
>Total:                90
>
>Packets PXF -> RP:
>  qos pkts:           0
>  fast pkts:          0
>  drops:total         0
>  punts:total         90
>  "  not IP           :      89
>  "  CEF receive      :      1
>Total:                90
>
>Packets ignored:      0 | ring space:
>  shadow ring full:   0 |   shadow ring: 16382
>  in ring full:      0 |   inring:      995
>  PXF inactive:      0
>
>tx credits:           0 | delayed credits:  0
>holdq enqueues:       0 | requeue drops:   0
>interrupts:           90 | pending read bytes: 0
>L2TP tunnel read:    0 | session stats:   0
>
Interface Pkts In  Chars In  Pkts Out  Chars Out  Punted  Dropped
Et0/0      0      0      0      0      0      93      0
Gi0/0      0      0      0      0      0      0      0
Fa1/0      0      0      0      0      0      0      0
```

```

Fa4/0      0          0          0          0          0          0
Vt1       0          0          0          0          0          0
Lo0       0          0          0          0          0          0

```

The following is an example of the **show pxf accounting interface** command with sample output:

```
Router# show pxf accounting POS4/0
```

```

Interface      Pkts In   Chars In   Pkts Out   Chars Out   Punted
POS4/0         19       1064       0           0           44

```

## Using the show pxf crash Command

The following is an example of the **show pxf crash** command with sample output:

```
Router#show pxf crash
```

```

EX_Type = 0x80000000
EX_ID(b0~3,16~17) = 0x00400
CPU_EX_ID(b0~15) = 0x0004
IHB_EX_Type(b0~5) = 0x00
XRAM0(b0~13) = 0x00000
XRAM1(b0~13) = 0x00000
XRAM2(b0~13) = 0x00000
XRAM3(b0~13) = 0x00000
Pipeline:7FDEFD pdone[3210]:1F 17 17 1D

ICM0(b4~13) = 0x00000 ICM1(b4~13) = 0x00000
ICM2(b4~13) = 0x00010 ICM3(b4~13) = 0x00000
LOCK0(b0~4) = 0x00000 LOCK1(b0~4) = 0x00000
LOCK2(b0~4) = 0x00000 LOCK3(b0~4) = 0x00000
CPU0/2: SW EX Type=0x00000000 LBUS EX Type=0x00000081 HW EX
Type=0x00000400

CPU:row=0x0 column=0x2 cpu=0x2
PC:0000098E LR:0000087F CR:002C4C00
r0:00000000 r1:8001CEA0 r2:80784390 r3:00000000
r4:00005400 r5:80D3BA04 r6:80A7CA00 r7:00000004
r8:00000000 r9:00000008 r10:80092324 r11:800A6200
r12:00000033 r13:00000008 r14:00000000 r15:00000000
misr1a:00000000 misr1bhi:00000000 misr1blo:00000000 misr2hi:00000000
misr2lo:00000000 reserve:00000000 reserve:00000000 reserve:00000000
sisr1a:01000040 sisr1b:00000000 irhi:4402200F irlo:00000000
cAll:C20DE822 DCD1:00020400 DCD2:00000002 CNTL:00000000
TBuf intr 0:1111111F
TBuf intr 1:020FFFF0
TBuf intr 2:00003C80
TBuf intr 3:80000000
TBuf intr 4:00000400
Xram return:00000000
Icram return hi:80024E00
Icram return lo:800A4E00
TBuf addr 0:005E6800 TBuf sblock1 0:8078A374 TBuf sblock0 0:804FD600
TBuf addr 1:005E6800 TBuf sblock1 1:8078A374 TBuf sblock0 1:804FD600
TBuf addr 2:005E6800 TBuf sblock1 2:8078A374 TBuf sblock0 2:804FD600
TBuf addr 3:005E6800 TBuf sblock1 3:8078A374 TBuf sblock0 3:804FD600
TBuf addr 4:005E6800 TBuf sblock1 4:8078A374 TBuf sblock0 4:804FD600
TBuf addr 5:005E6800 TBuf sblock1 5:8078A374 TBuf sblock0 5:804FD600
TBuf addr 6:005E6800 TBuf sblock1 6:8078A374 TBuf sblock0 6:804FD600
TBuf addr 7:005E6800 TBuf sblock1 7:8078A374 TBuf sblock0 7:804FD600

```

## Using the show pxf info Command

The following is an example of the **show pxf info** command with sample output:

```
Router# show pxf info
pxf:tmc type TMC ASIC Pass1 (no ECC) revision 3
ucode:filename 'system:pxf/ucode0' revision 1.1
state: is running, number of starts 1
uptime:15:24:18
Memory Configuration:
  Bank Name                               Total      Reserved  In-use     Free
  tmc internal memory column 0           16 Kb      10 Kb      0 bytes    6144
bytes
  tmc column 0 memory bank 0             32 Mb      26 Mb      16 Kb      5554 Kb
  tmc internal memory column 1           16 Kb      512 bytes   0 bytes    15 Kb
  tmc column 1 memory bank 0             32 Mb      669 Kb     2015 Kb    29 Mb
  tmc internal memory column 2           16 Kb      6656 bytes  0 bytes    9728
bytes
  tmc column 2 memory bank 0             32 Mb      441 Kb     800 Kb     30 Mb
  tmc internal memory column 3           16 Kb      15 Kb      0 bytes    512
bytes
  tmc column 3 memory bank 0             32 Mb      2092 Kb    128 Kb     29 Mb
```

## Using the show pxf interface Command

The **show pxf interface** command provides a summary of the interfaces in the router and which PXF features or capabilities are enabled on these interfaces. The following is an example of the **show pxf interface** command:

```
Router# show pxf interface
  Intf  I/f #  Attributes
Fa0/0   3      Raw, Encap, QoS(Cr 0, Thrsh 2, Max 101)
Et1/0   4      Raw, Encap
Et1/1   5      Raw, Encap, QoS(Cr 0, Thrsh 2, Max 13)
Et1/2   6      Raw, Encap
Et1/3   7      Raw, Encap
Se2/0   8      Raw, Encap, QoS(Cr 0, Thrsh 2, Max 5)
Se2/1   9      Raw, Encap, QoS(Cr 0, Thrsh 2, Max 5)
Se2/2  10     Raw, Encap, QoS(Cr 0, Thrsh 2, Max 5)
Se2/3  11     Raw, Encap, QoS(Cr 0, Thrsh 2, Max 5)
Fa3/0  12     Raw, Encap
PO4/0  13     Raw, Encap
AT5/0  14     Raw, Encap
```

## Using the show pxf feature ? Command and Subcommands

The following is an example of the feature-specific **show pxf feature ?** command with sample output:

```
Router# show pxf feature ?
  cef  PXF CEF info
  nat  PXF NAT info
```

- **show pxf feature cef ?**

```
Router# show pxf feature cef ?
entry
Shadow 16-4-4-8 PXF Mtrie:
  41 leaves, 1968 leaf bytes, 15 nodes, 267000 node bytes
  5 invalidations
  46 prefix updates
  refcounts: 66746 leaf, 66720 node
```

Prefix/Length	Refcount	Parent
0.0.0.0/0	62282	
0.0.0.0/32	3	0.0.0.0/0
171.69.12.128/27	34	0.0.0.0/0
171.69.12.128/32	3	171.69.12.128/27
171.69.12.129/32	3	171.69.12.128/27
171.69.12.130/32	3	171.69.12.128/27
171.69.12.131/32	3	171.69.12.128/27
171.69.12.132/32	3	171.69.12.128/27
171.69.12.138/32	3	171.69.12.128/27
171.69.12.139/32	3	171.69.12.128/27
171.69.12.140/32	3	171.69.12.128/27
171.69.12.141/32	3	171.69.12.128/27
171.69.12.142/32	3	171.69.12.128/27
171.69.12.143/32	3	171.69.12.128/27
171.69.12.145/32	3	171.69.12.128/27
171.69.12.146/32	3	171.69.12.128/27
171.69.12.147/32	3	171.69.12.128/27

(display text omitted)

- **show pxf feature nat ?**

```
Router# show pxf feature nat ?
entry toaster nat entry
stat toaster nat processing info
tcp toaster nat tcp logging info
```

- Router# **show pxf feature nat entry**

```
Router# show pxf feature nat entry
--- 171.69.12.175      192.168.0.129      ---
--- 171.69.12.161      192.168.0.7        ---
--- 171.69.12.162      192.168.0.2        ---
--- 171.69.12.163      192.168.0.3        ---
--- 171.69.12.164      192.168.0.4        ---
--- 171.69.12.165      192.168.0.13       ---
--- 171.69.12.166      192.168.0.5        ---
```

- Router# **show pxf feature nat stat**

```
Router# show pxf feature nat stat
NAT translation processing information
total nat entries = 0x1000, entries (used, free) = (0x7, 0xFF9)
untranslated flows:0x7022D
translated flows:0x1030
icmp extendable flows:0x0
noop alloc miss:0x0
entry alloc miss:0x0
entry delete miss:0x0
```

