



Process Interrupt Mask Profiler Enhancement

The Process Interrupt Mask Profiler Enhancement feature collects information about processes that have masked interrupts. This feature is useful in identifying how many times a process has masked interrupts and how much time a process has spent in an interrupt masked state since the profiling was enabled.

History for the Process Interrupt Mask Profiler Enhancement Feature

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

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Information About the Process Interrupt Mask Profiler Enhancement

To configure the Process Interrupt Mask Profiler Enhancement feature, you should understand the following concept:

- [Process Interrupt Mask Profiler Detail Collection, page 1](#)

Process Interrupt Mask Profiler Detail Collection

The Process Interrupt Mask Profiler Enhancement feature improves the diagnostic ability of the Process Interrupt Mask Profiler tool by including the collection of the following details:

How to Use the Process Interrupt Mask Profiler

- The total amount of time a process has masked interrupts (either by calling disable_interrupts or raise_interrupt_level, or emt_call) since the Process Interrupt Mask Profiler has been enabled.
- The number of times a process has masked interrupts (either by calling disable_interrupts or raise_interrupt_level, or emt_call) since the Process Interrupt Mask Profiler has been enabled.

In addition, the Process Interrupt Mask Profiler feature adds ability to account for the time spent in emt_call.

How to Use the Process Interrupt Mask Profiler

This section contains the following tasks:

- [Configuring the Process Interrupt Mask Profiler, page 2](#)
- [Displaying Process Interrupt Mask Profiling Details, page 3](#)

Configuring the Process Interrupt Mask Profiler

Perform this task to configure the Process Interrupt Mask Profiler Enhancement feature.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **scheduler interrupt mask time *threshold-time***
4. **scheduler interrupt mask size *buffersize***
5. **scheduler interrupt mask profile**
6. **exit**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
	Example: Router> enable	
Step 2	configure terminal	Enters global configuration mode.
	Example: Router(config)# configure terminal	
Step 3	scheduler interrupt mask time <i>threshold-time</i>	(Optional) Configures the maximum time that a process can run with interrupts masked before another entry is created in the interrupt mask buffer. The default is 50 microseconds. <ul style="list-style-type: none"> • This example sets the value to 100 microseconds.
	Example: Router(config)# scheduler interrupt mask time 100	

Command or Action	Purpose
Step 4 <code>scheduler interrupt mask size buffersize</code> Example: Router(config)# scheduler interrupt mask size 100	(Optional) Specifies the number of entries that can exist in the interrupt mask buffer. The default value is 50 entries. <ul style="list-style-type: none"> This example sets the number of entries to 100.
Step 5 <code>scheduler interrupt mask profile</code> Example: Router(config)# scheduler interrupt mask profile	Enables process interrupt mask profiling on the system.
Step 6 <code>exit</code> Example: Router(config)# exit	Exits global configuration mode.

Configuration Example for the Process Interrupt Mask Profiler Enhancement

The following example show enabling the process interrupt mask profiler, setting the amount of time a process can run with interrupts masked to 100 microseconds, and the maximum number of entries in the interrupt mask buffer to 100.

```
Router(config)# scheduler interrupt mask time 100
Router(config)# scheduler interrupt mask size 100
Router(config)# scheduler interrupt mask profile
```

Displaying Process Interrupt Mask Profiling Details

Perform this task to display the contents of the interrupt mask buffer.

SUMMARY STEPS

1. `enable`
2. `show processes interrupt mask buffer`
3. `show processes interrupt mask detail [pid]`

DETAILED STEPS

Step 1	enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	show processes interrupt mask buffer	Displays the stack trace and relevant information about places where interrupts have been masked for more than the configured threshold time.
Step 3	show processes interrupt mask buffer detail [pid]	Displays the total time (accumulative) and the number of times interrupts have been masked by for a specific process. • This example shows how to display this information for the process with the PID 2.

Example

To display the contents of the interrupt mask buffer, use the following command:

```
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       60             1        0x608C3C14 0x60894748 0x6089437C 0x608943AC
0x609CEC88 0x609CECF0 0x609C8524
3          11       322            1        0x608C3C14 0x608943BC 0x609CEC88 0x609CECF0
0x609C8524 0x60867C28 0x607C70B0
3          4        147            1        0x6078AED4 0x6078BE94 0x6078C750 0x6078C8D4
0x607E27F0 0x607E27C0 0x607E50B0
```

To display information about total amount of time and number of times interrupts have been masked by all processes, use the following command:

```
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
```

To display total time (accumulative) and number of times interrupts have been masked by a process with the PID 2, use the following command:

```
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
```

Additional References

The following sections provide references related to the Process Interrupt Mask Profiler Enhancement feature.

Related Documents

Related Topic	Document Title
Basic router configuration information	<i>Cisco IOS Configuration Fundamentals Configuration Guide</i> , Release 12.4

Standards

Standard	Title
None	—

MIBs

MIB	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
None	—

Technical Assistance

Description	Link
The Cisco Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

Command Reference

This section documents the following new commands only.

- [clear processes interrupt mask detail](#)
- [scheduler interrupt mask profile](#)
- [scheduler interrupt mask size](#)
- [scheduler interrupt mask time](#)
- [show processes interrupt mask buffer](#)
- [show processes interrupt mask detail](#)

clear processes interrupt mask detail

To clear interrupt mask details for all processes in the interrupt mask buffer, use the **clear processes interrupt mask detail** command in privileged EXEC mode.

clear processes interrupt mask detail

Syntax Description This command has no arguments or keywords.

Command Modes Privileged EXEC

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

Examples The following example shows how to clear interrupt mask details for all processes:

```
Router# clear processes interrupt mask detail
```

Related Commands	Command	Description
	show process interrupt mask buffer	Displays the information stored in the interrupt mask buffer.
	show processes interrupt mask detail	Displays interrupt masked details for the specified processes or all processes in the system.
	scheduler interrupt mask profile	Starts interrupt mask profiling for all processes running on the system
	scheduler interrupt mask time	Configures the maximum time that a process can run with interrupts masked.
	scheduler interrupt mask size	Configures the maximum number of entries that can exist in the interrupt mask buffer.

 scheduler interrupt mask profile

scheduler interrupt mask profile

To start interrupt mask profiling for all processes running on the system, use the **scheduler interrupt mask profile** command in global configuration mode. To stop interrupt mask profiling, use the **no** form of this command.

scheduler interrupt mask profile

no scheduler interrupt mask profile

Syntax Description This command has no arguments or keywords.

Defaults Interrupt mask profiling is disabled by default.

Command Modes Global configuration

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

Usage Guidelines This command enables the collection of details regarding the total amount of time a process has masked interrupts since the interrupt mask profiler was enabled.

Examples The following example shows how to enable interrupt mask profiling:

```
Router(config)# scheduler interrupt mask profile
```

Related Commands	Command	Description
	clear processes interrupt mask detail	Clears the interrupt masked details for all processes and stack traces that have been dumped into the interrupt mask buffer.
	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 allowed time that a process can run with interrupts masked.
	show process interrupt mask buffer	Displays the information stored in the interrupt mask buffer.
	show processes interrupt mask detail	Displays interrupt masked details for the specified process or all processes in the system.

scheduler interrupt mask size

To configure the maximum number of entries that can exist in the interrupt mask buffer, use the **scheduler interrupt mask size** command in global configuration mode. To reset the maximum number of entries that can exist in the interrupt mask buffer to the default, use the no form of this command.

scheduler interrupt mask size *buffersize*

no scheduler interrupt mask size

Syntax Description	<i>buffersize</i>	Specifies the number of entries that can exist in the interrupt mask buffer.
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Defaults The default buffer size is 50 entries.

Command Modes Global configuration

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

Examples The following example shows how to configure 100 entries the maximum number of entries that can exist in the interrupt mask buffer:

```
Router(config)# scheduler interrupt mask size 100
```

Related Commands	Command	Description
	clear processes interrupt mask detail	Clears the interrupt masked details for all processes and stack traces that 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 time	Configures the maximum amount of time a process can run with interrupts masked.
	show processes interrupt mask buffer	Displays interrupt masked details for the specified process or all processes in the system and displays information stored in the interrupt mask buffer.
	show processes interrupt mask detail	Displays interrupt masked details for the specified or all processes in the system.

 scheduler interrupt mask time

scheduler interrupt mask time

To configure the maximum time that a process can run with interrupts masked before another entry is created in the interrupt mask buffer, use the **scheduler interrupt mask time** command in global configuration mode. To reset the threshold time to the default, use the **no** form of this command.

scheduler interrupt mask time *threshold-time*

no scheduler interrupt mask time

Syntax Description	<i>threshold-time</i>	Specifies the maximum amount of time a process can be in interrupt masked state without creating an entry in the interrupt mask buffer.
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Defaults The default threshold time value is 50 microseconds.

Command Modes Global configuration

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

Usage Guidelines This command configures the maximum time allowed that a process can run with interrupts masked.

Examples The following shows how to configure 100 microseconds as the maximum time a process can run with interrupts masked before another entry is created in the interrupt mask buffer:

```
Router(config)# scheduler interrupt mask time 100
```

Related Commands	Command	Description
	clear processes	Clears the interrupt masked details for all processes and stack traces that have been dumped into the interrupt mask buffer.
	interrupt mask detail	
	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.
	show processes interrupt mask buffer	Displays the information stored in the interrupt mask buffer.
	show processes interrupt mask detail	Displays interrupt masked details for the specified process or all processes in the system.

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.
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Command Modes	Privileged EXEC
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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:
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```
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 time	Configures the maximum amount of time a process can run with interrupts masked.

■ show processes interrupt mask buffer

Command	Description
scheduler interrupt mask size	Configures the maximum number of entries that can exist in the interrupt mask buffer.
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.
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Command Modes	Privileged EXEC
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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.

■ **show processes interrupt mask detail**

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

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