buffer public through user (ERM)

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buffer public

To enter buffer owner configuration mode to set thresholds for buffer usage, use the **bufferpublic** command in resource policy node configuration mode. To exit buffer owner configuration mode, use the **no** form of this command.

buffer public

no buffer public

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Resource policy node configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

This command allows you to enter buffer owner configuration mode to set rising and falling values for critical, major, and minor thresholds for buffer usage.

Examples

The following example shows how to enter buffer owner configuration mode to set thresholds for buffer usage:

```
Router(config-res-policy-node)# buffer public
```

Related Commands

Command	Description
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.

Command	Description
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show buffer leak	Displays the buffer details.
show resource all	Displays all the resource details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level ROs.

cpu interrupt

To enter CPU owner configuration mode to set thresholds for interrupt level CPU utilization, use the **cpuinterrupt**command in resource policy node configuration mode. To exit CPU owner configuration mode, use the **no** form of this command.

cpu interrupt

no cpu interrupt

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Resource policy node configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

This command allows you to enter CPU owner configuration mode to set rising and falling values for critical, major, and minor thresholds for interrupt level CPU utilization.

Examples

The following example shows how to enter CPU owner configuration mode to set thresholds for interrupt level CPU utilization:

```
Router(config-res-policy-node)# cpu interrupt
```

Related Commands

Command	Description
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.

Command	Description
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level ROs.

cpu process

To enter CPU owner configuration mode to set thresholds for process level CPU utilization, use the **cpuprocess**command in resource policy node configuration mode. To exit CPU owner configuration mode, use the **no** form of this command.

cpu process

no cpu process

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Resource policy node configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

This command allows you to enter CPU owner configuration mode to set rising and falling values for critical, major, and minor thresholds for process level CPU utilization.

Examples

The following example shows how to enter CPU owner configuration mode to set thresholds for process level CPU utilization:

```
Router(config-res-policy-node)# cpu process
```

Related Commands

Command	Description
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.

Command	Description
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level ROs.

cpu total

To enter CPU owner configuration mode to set thresholds for total CPU utilization, use the **cputotal**command in resource policy node configuration mode. To exit CPU owner configuration mode, use the **no** form of this command.

cpu total

no cpu total

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Resource policy node configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

This command allows you to enter CPU owner configuration mode to set rising and falling values for critical, major, and minor thresholds for total CPU utilization.

Examples

The following example shows how to enter CPU owner configuration mode to set thresholds for total CPU utilization:

```
Router(config-res-policy-node)# cpu total
```

Related Commands

Command	Description
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.

Command	Description
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level ROs.

critical rising

To set critical level threshold values for the buffer, CPU, and memory ROs, use the **criticalrising**command in buffer owner configuration mode, CPU owner configuration mode, or memory owner configuration mode. To disable this function, use the **no** form of this command.

critical rising *rising-threshold-value* [**interval** *interval-value*] [**falling** *falling-threshold-value* [**interval** *interval-value*]] [**global**]

no critical rising

Syntax Description

rising-threshold-value	The rising threshold value as a percentage. Valid values are from 1 to 100.
interval	(Optional) Specifies the time, in seconds, during which the variation in rising or falling threshold values is not reported to the RU, resource groups, or resource user types. For example, if the buffer usage count remains above the configured threshold value for the configured interval, a notification is sent to the RU, resource group, or resource user types.
interval-value	The time, in seconds, during which the variation in rising or falling threshold values are not reported to the RU, resource groups, or resource user types. Valid values are from 0 to 86400. The default value is 0.
falling	(Optional) Specifies the falling threshold value as a percentage.
falling-threshold-value	(Optional) The falling threshold value as a percentage. Valid values are from 1 to 100.
global	(Optional) Configures a global threshold. The **global** keyword is optional when you set critical threshold values for public buffer, processor CPU, I/O memory, and processor memory. The **global** keyword is required when you set critical threshold values for interrupt CPU and total CPU.

Command Default

Disabled

Command Modes

Buffer owner configuration CPU owner configuration Memory owner configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

The interval is the dampening or observation interval time, in seconds, during which the variations in the rising and falling threshold values are not reported to the RUs. That is, the interval is the time the system waits to check whether the threshold value stabilizes. The interval is set to avoid unnecessary and unwanted threshold notifications. If not configured, the system defaults to 0 seconds.

This command allows you to configure three types of thresholding:

- System Global Thresholding
- User Local Thresholding
- Per User Global Thresholding

System Global Thresholding

System global thresholding is used when the entire resource reaches a specified value. That is, RUs are notified when the total resource utilization goes above or below a specified threshold value. The notification order is determined by the priority of the RU. The RUs with a lower priority are notified first and expected to reduce the resource utilization. This notification order prevents the sending of unwanted notifications to high-priority RUs.

You can set rising and falling threshold values. For example, if you set a total CPU utilization threshold value of 90% as the rising critical value and 20% as falling critical value, when the total CPU utilization crosses the 90% mark, a critical Up notification is sent to all the RUs and when the total CPU utilization falls below 20%, a critical Down notification is sent to all the RUs. The same criteria also apply to buffer ROs and memory ROs.

User Local Thresholding

User local thresholding is used when a specified RU exceeds the configured limits. The user local thresholding method prevents a single RU from monopolizing the resources. That is, the specified RU is notified when the resource utilization of the specified RU goes above or below a configured threshold value. For example, if you set a CPU utilization threshold value of 90% as the rising critical value and 20% as falling critical value, when the CPU utilization of the specified RU crosses the 90% mark, a critical Up notification is sent to that RU only and when the CPU utilization of the specified RU falls below 20%, a critical Down notification is sent to that RU only. The same method also applies to buffer and memory ROs.

Per User Global Thresholding

Per user global thresholding is used when the entire resource reaches a specified value. This value is unique for each RU and notification is sent only to the specified RU. User global thresholding is similar to user local thresholding, except that the global resource usage is compared against the thresholds. That is, only the specified RU is notified when the total resource utilization goes above or below a configured threshold value. For example, if you have set a CPU utilization threshold value of 90% as the rising critical value and 20% as falling critical value, when the total CPU utilization crosses the 90% mark, a critical Up notification is sent to the specified RU only and when the total CPU utilization falls below 20%, a critical Down notification is sent to the specified RU only. The same method also applies to buffer and memory ROs.

Threshold Violations

The Cisco IOS device sends out error messages when a threshold is violated. The following examples help you understand the error message pattern when different threshold violations occur in buffer, CPU, and memory ROs:

System Global Threshold Violation in Buffer RO

The threshold violation in buffer RO for a system global threshold shows the following output:

```
System global threshold-Violation (keywords Critical, Major and Minor alone will vary
accordingly)
==========================================================================================
00:15:11: %SYS-4-GLOBALBUFEXCEED: Buffer usage has gone above global buffer Critical
threshold
configured <value> Current usage :<value>
```

For example:

```
00:15:11: %SYS-4-GLOBALBUFEXCEED: Buffer usage has gone above global buffer Critical
threshold
configured 144 Current usage :145
System global threshold- Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
==========================================================================================
00:17:10: %SYS-5-GLOBALBUFRECOVER: Buffer usage has gone below global buffer Critical
threshold
configured <value> Current usage :<value>
```

For example:

```
00:17:10: %SYS-5-GLOBALBUFRECOVER: Buffer usage has gone below global buffer Critical
threshold
configured 90 Current usage :89
```

Per User Global Threshold Violation in Buffer RO

The threshold violation in buffer RO for a user global threshold shows the following output:

```
User global threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
==========================================================================================
00:24:04: %SYS-4-RESGLOBALBUFEXCEED: Buffer usage has gone above buffer Critical
threshold configured by resource user  <user-name>
configured 144 Current usage :145
User global threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
==========================================================================================
00:25:08: %SYS-4-RESGLOBALBUFRECOVER: Buffer usage has gone below buffer Critical
threshold configured by resource user  <user-name>
configured 126 Current usage :125
```

User Local Threshold Violation in Buffer RO

The threshold violation in buffer RO for a user local threshold shows the following output:

```
User local threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:31:15: %SYS-4-RESBUFEXCEED: Resource user  user_1 has exceeded the buffer Critical
threshold. configured 108 Current usage :109
User local threshold- Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:31:05: %SYS-5-RESBUFRECOVER: Resource user  user_1 has recovered after exceeding the
buffer Critical threshold. configured 90 Current usage :89
```

System Global Threshold Violation in CPU RO

The threshold violation in CPU RO for a system global threshold shows the following output:

```
System global threshold- Violation
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly )
==========================================================================================
00:19:36: %SYS-4-CPURESRISING: System is seeing global cpu util 19% at total level more
than the configured minor limit 11%
System global threshold - Recovery
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly
==========================================================================================
00:20:56: %SYS-6-CPURESFALLING: System is no longer seeing global high cpu at total level
for the configured minor limit 10%, current value 4%
```

Per User Global Threshold Violation in CPU RO

The threshold violation in CPU RO for a user global threshold shows the following output:

```
User global threshold - Violation
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly
==========================================================================================
00:14:21: %SYS-4-CPURESRISING: Resource user <user-name> is seeing global cpu util 11% at
total level more than the configured minor limit 6 %
```

For example:

```
00:14:21: %SYS-4-CPURESRISING: Resource user Test-proc-14:99s:1w:100n is seeing global
cpu util 11% at total level more than the configured minor limit 6%
User global threshold- Recovery
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly
==========================================================================================
00:14:46: %SYS-6-CPURESFALLING: Resource user <user-name> is no longer seeing global high
cpu at total level for the configured critical limit 9%, current value 4%
```

For example:

```
00:14:46: %SYS-6-CPURESFALLING: Resource user Test-proc-14:99s:1w:100n is no longer
seeing global high cpu at total level for the configured critical limit 9%, current value
4%
```

User Local Threshold Violation in CPU RO

The threshold violation in CPU RO for a user local threshold shows the following output:

```
User local threshold - Violation (keywords Critical, Major and Minor will vary
accordingly  - only process level)
==========================================================================================
00:12:11: %SYS-4-CPURESRISING: Resource user <user-name> is seeing local cpu util 15% at
process level more than the configured minor limit 6%
```

For example:

```
00:12:11: %SYS-4-CPURESRISING: Resource user Test-proc-9:85s:15w:100n is seeing local cpu
util 15% at process level more than the configured minor limit 6%
User local threshold- Recovery (keywords Critical, Major and Minor will vary accordingly
- only process level)
==========================================================================================
00:13:11: %SYS-6-CPURESFALLING: Resource user <user-name> is no longer seeing local high
cpu at process level for the configured critical limit 9%, current value 3%
```

System Global Threshold Violation in Memory RO

The threshold violation in memory RO for a system global threshold shows the following output:

```
System global threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly )
(If violation happens in IO memory pool will be : I/O)
==========================================================================================
13:53:22: %SYS-5-GLOBALMEMEXCEED: Global Memory has exceeded the Minor threshold
Pool: Processor  Used: 422703520  Threshold: 373885200
```

For example:

```
13:54:03: %SYS-5-GLOBALMEMEXCEED: Global Memory has exceeded the Critical threshold
Pool: Processor  Used: 622701556  Threshold: 467356500
System global threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
(If recovery happens in IO memory pool will be : I/O)
==========================================================================================
%SYS-5-GLOBALMEMRECOVER: Global Memory has recovered  after exceeding Minor threshold
Pool: Processor  Used: 222473448  Threshold: 355190940
```

For example:

```
13:50:41: %SYS-5-GLOBALMEMRECOVER: Global Memory has recovered  after exceeding Critical
threshold
Pool: Processor  Used: 222473152  Threshold: 443988675
```

Per User Global Threshold Violation in Memory RO

The threshold violation in memory RO for a user global threshold shows the following output:

```
User global threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
(If violation happens in IO memory pool will be : I/O)
==========================================================================================
00:53:14: %SYS-4-RESGLOBALMEMEXCEED: Global Memory has exceeded the Minor threshold
configure by resource user <XYZ>
Pool: Processor  Used: 62273916  Threshold: 62246820
User global threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
(If recovery happens in IO memory pool will be : I/O)
==========================================================================================
00:32:56: %SYS-4-RESGLOBALMEMRECOVER: Global Memory has recovered after exceeding the
Critical threshold configure by resource user <XYZ>
Pool: Processor  Used: 329999508  Threshold: 375865440
```

User Local Threshold Violation in Memory RO

The threshold violation in memory RO for a user local threshold shows the following output:

```
User local threshold- Violation (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
01:05:42: %SYS-4-RESMEMEXCEED: Resource user <XYZ> has exceeded the Critical memory
threshold
Pool: Processor Used: 103754740 Threshold: 103744700
User local threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:44:43: %SYS-5-RESMEMRECOVER: Resource user <XYZ> has recovered after exceeding the
Critical memory threshold
Pool: Processor Used: 328892280 Threshold :375865440
```

Examples

Configuring Critical Rising Values for System Global Thresholding

The following example shows how to configure the critical threshold values for system global thresholding with a critical rising threshold of 90% at an interval of 12 seconds and a critical falling threshold of 20% at an interval of 10 seconds:

```
Router(config-owner-cpu)# critical rising 90 interval 12 falling 20 interval 10 global
Router(config-owner-buffer)# critical rising 90 interval 12 falling 20 interval 10 global
Router(config-owner-memory)# critical rising 90 interval 12 falling 20 interval 10 global
```

Configuring Critical Rising Values for User Local Thresholding

The following example shows how to configure the critical threshold values for user local thresholding with a critical rising threshold of 90% at an interval of 12 seconds and a critical falling threshold of 20% at an interval of 10 seconds:

```
Router(config-owner-cpu)# critical rising 90 interval 12 falling 20 interval 10
Router(config-owner-buffer)# critical rising 90 interval 12 falling 20 interval 10
Router(config-owner-memory)# critical rising 90 interval 12 falling 20 interval 10
```

Configuring Critical Rising Values for Per User Global Thresholding

The following example shows how to configure the critical threshold values for per user global thresholding with a critical rising threshold of 90% at an interval of 12 seconds and a critical falling threshold of 20% at an interval of 10 seconds:

```
Router(config-owner-cpu)# critical rising 90 interval 12 falling 20 interval 10 global
Router(config-owner-buffer)# critical rising 90 interval 12 falling 20 interval 10 global
Router(config-owner-memory)# critical rising 90 interval 12 falling 20 interval 10 global
```

Related Commands

Command	Description
buffer public	Enters the buffer owner configuration mode and sets threshold values for buffer usage.
cpu interrupt	Enters the CPU owner configuration mode and sets threshold values for interrupt level CPU utilization.
cpu process	Enters the CPU owner configuration mode and sets threshold values for processor level CPU utilization.
cpu total	Enters the CPU owner configuration mode and sets threshold values for total CPU utilization.
memory io	Enters the memory owner configuration mode and sets threshold values for I/O memory.
memory processor	Enters the memory owner configuration mode and sets threshold values for processor memory.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level ROs.

instance (resource group)

To add request/response units (RUs) to a specified resource group, use the **instance** command in resource group configuration mode. To disable this function, use the **no** form of this command.

instance *instance-name*

no instance *instance-name*

Syntax Description

instance-name	Name of the RU you want to add to the resource group (for example, **http**, **snmp**).

Command Default

Disabled

Command Modes

Resource group configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

Before adding RUs to a resource group, you must create a resource group using the **usergroup***resource-group-name***type***resource-user-type* command in ERM configuration mode.

For example, you have a resource group named lowPrioUsers with a type of iosprocess. You have low-priority RUs or tasks such as HTTP and Simple Network Management Protocol (SNMP), and you want to set a threshold for all the low-priority RUs as a group. You must add the RUs to the resource group using the **instance***instance-name* command and then apply a resource policy.

If the resource policy you applied sets a minor rising threshold value of 10 percent for the resource group, when the accumulated usage of both HTTP and SNMP RUs crosses 10 percent a notification is sent to the RUs in the resource group lowPrioUsers. For example, if HTTP usage is 4 percent and SNMP usage is 7 percent, a notification is sent to the resource group.

Examples

The following example shows how to add an HTTP RU to a resource group named lowPrioUsers:

```
Router(config-erm)# user group lowPrioUsers type iosprocess
Router(config-res-group)# instance http
```

Related Commands

Command	Description
policy (resource group)	Applies a policy to all the RUs in the resource group.
user (ERM)	Creates a resource group.

major rising

To set major level threshold values for the buffer, CPU, and memory resource owners (ROs), use the **majorrising**command in buffer owner configuration mode, CPU owner configuration mode, or memory owner configuration mode. To disable this function, use the **no** form of this command.

major rising *rising-threshold-value* [**interval** *interval-value*] [**falling** *falling-threshold-value* [**interval** *interval-value*]] [**global**]

no major rising

Syntax Description

rising-threshold-value	The rising threshold value as a percentage. Valid values are from 1 to 100.
interval	(Optional) Specifies the time, in seconds, during which the variation in rising or falling threshold values are not reported to the request/response unit (RU), resource group, or resource user types. For example, if the buffer usage count remains above the configured threshold value for the configured interval, a notification is sent to the RU, resource group, or resource user types.
interval-value	The time, in seconds, during which the variation in rising or falling threshold values is not reported to the RU, resource group, or resource user types. Valid values are from 0 to 86400. The default value is 0.
falling	(Optional) Specifies the falling threshold value as a percentage.
falling-threshold-value	(Optional) The falling threshold value. Valid values are from 1 to 100.
global	(Optional) Configures a global threshold. The **global** keyword is optional when you set major threshold values for public buffer, processor CPU, I/O memory, and processor memory. The **global** keyword is required when you set major threshold values for interrupt CPU and total CPU.

Command Default

Disabled

Command Modes

Buffer owner configuration CPU owner configuration Memory owner configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

The interval is the dampening or observation interval time, in seconds, during which the variations in the rising and falling threshold values are not notified to the ROs or RUs. That is, the interval is the time the system waits to check whether the threshold value stabilizes. The interval is set to avoid unnecessary and unwanted threshold notifications. If not configured, the system defaults to 0 seconds.

This command allows you to configure three types of thresholding:

- System Global Thresholding
- User Local Thresholding
- Per User Global Thresholding

System Global Thresholding

System global thresholding is used when the entire resource reaches a specified value. That is, RUs are notified when the total resource utilization goes above or below a specified threshold value. The notification order is determined by the priority of the RU. The RUs with a lower priority are notified first, and are expected to reduce the resource utilization. This notification order prevents the high-priority RUs from being sent unwanted notifications.

You can set rising and falling threshold values. For example, if you have set a total CPU utilization threshold value of 70% as the rising major value and 15% as the falling major value, when the total CPU utilization crosses the 70% mark, a major Up notification is sent to all the RUs and when the total CPU utilization falls below 15%, a major Down notification is sent to all the RUs. The same criteria apply to buffer ROs and memory ROs.

User Local Thresholding

User local thresholding is used when a specified RU exceeds the configured limits. The user local thresholding method prevents a single RU from monopolizing resources. That is, the specified RU is notified when its resource utilization exceeds or falls below a configured threshold value. For example, if you set a CPU utilization threshold value of 70% as the rising major value and 15% as the falling major value, when the CPU utilization of the specified RU crosses the 70% mark, a major Up notification is sent to that RU only and when the CPU utilization of the specified RU falls below 15%, a major Down notification is sent to only that RU. The same method also applies to buffer and memory ROs.

Per User Global Thresholding

Per user global thresholding is used when the entire resource reaches a specified value. This value is unique for each RU and notification is sent only to the specified RU. User global thresholding is similar to user local thresholding, except that the global resource usage is compared against the thresholds. That is, only the specified RU is notified when the total resource utilization exceeds or falls below a configured threshold value. For example, if you set a CPU utilization threshold value of 70% as the rising major value and 15% as the falling major value, when the total CPU utilization crosses the 70% mark, a major Up notification is sent to only the specified RU and when the total CPU utilization falls below 15%, a major

Down notification is sent to only the specified RU. The same method also applies to buffer and memory ROs.

Threshold Violations

The Cisco IOS device sends out error messages when a threshold is violated. The following examples help you understand the error message pattern when different threshold violations occur in buffer, CPU, and memory ROs:

System Global Threshold Violation in Buffer RO

The threshold violation in buffer RO for a system global threshold shows the following output:

```
System global threshold-Violation (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:15:11: %SYS-4-GLOBALBUFEXCEED: Buffer usage has gone above global buffer Major
threshold
configured <value> Current usage :<value>
```

For example:

```
00:15:11: %SYS-4-GLOBALBUFEXCEED: Buffer usage has gone above global buffer Major
threshold
configured 100 Current usage :101
System global threshold- Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:17:10: %SYS-5-GLOBALBUFRECOVER: Buffer usage has gone below global buffer Major
threshold
configured <value> Current usage :<value>
```

For example:

```
00:17:10: %SYS-5-GLOBALBUFRECOVER: Buffer usage has gone below global buffer Critical
threshold
configured 70 Current usage :69
```

Per User Global Threshold Violation in Buffer RO

The threshold violation in buffer RO for a user global threshold shows the following output:

```
User global threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:24:04: %SYS-4-RESGLOBALBUFEXCEED: Buffer usage has gone above buffer Major threshold
configured by resource user  <user-name>
 configured 100 Current usage :101
User global threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:25:08: %SYS-4-RESGLOBALBUFRECOVER: Buffer usage has gone below buffer Major threshold
configured by resource user  <user-name>
configured 76 Current usage :75
```

User Local Threshold Violation in Buffer RO

The threshold violation in buffer RO for a user local threshold shows the following output:

```
User local threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
========================================================================================
00:31:15: %SYS-4-RESBUFEXCEED: Resource user  user_1 has exceeded the buffer Major
threshold. configured 108 Current usage :109
User local threshold- Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
========================================================================================
00:31:05: %SYS-5-RESBUFRECOVER: Resource user  user_1 has recovered after exceeding the
buffer Major threshold. configured 90 Current usage :89
```

System Global Threshold Violation in CPU RO

The threshold violation in CPU RO for a system global threshold shows the following output:

```
System global threshold- Violation
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly )
==========================================================================================
00:19:36: %SYS-4-CPURESRISING: System is seeing global cpu util 19% at total level more
than the configured major limit 11%
System global threshold - Recovery
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly )
==========================================================================================
00:20:56: %SYS-6-CPURESFALLING: System is no longer seeing global high cpu at total level
for the configured major limit 10%, current value 4%
```

Per User Global Threshold Violation in CPU RO

The threshold violation in CPU RO for a user global threshold shows the following output:

```
User global threshold - Violation
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly )
==========================================================================================
00:14:21: %SYS-4-CPURESRISING: Resource user <user-name> is seeing global cpu util 11% at
total level more than the configured major limit 6%
```

For example:

```
00:14:21: %SYS-4-CPURESRISING: Resource user Test-proc-14:99s:1w:100n is seeing global
cpu util 11% at total level more than the configured major limit 6%
User global threshold- Recovery
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly )
==========================================================================================
00:14:46: %SYS-6-CPURESFALLING: Resource user <user-name> is no longer seeing global high
cpu at total level for the configured critical limit 9%, current value 4%
```

For example:

```
00:14:46: %SYS-6-CPURESFALLING: Resource user Test-proc-14:99s:1w:100n is no longer
seeing global high cpu at total level for the configured critical limit 9%, current value
4%
```

User Local Threshold Violation in CPU RO

The threshold violation in CPU RO for a user local threshold shows the following output:

```
User local threshold - Violation (keywords Critical, Major and Minor will vary
accordingly  - only process level)
==========================================================================================
00:12:11: %SYS-4-CPURESRISING: Resource user <user-name> is seeing local cpu util 15% at
process level more than the configured minor limit 6 %
```

For example:

```
00:12:11: %SYS-4-CPURESRISING: Resource user Test-proc-9:85s:15w:100n is seeing local cpu
util 15% at process level more than the configured minor limit 6%
User local threshold- Recovery (keywords Critical, Major and Minor will vary accordingly
- only process level)
==========================================================================================
00:13:11: %SYS-6-CPURESFALLING: Resource user <user-name> is no longer seeing local high
cpu at process level for the configured critical limit 9%, current value 3%
```

System Global Threshold Violation in Memory RO

The threshold violation in memory RO for a system global threshold shows the following output:

```
System global threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
(If violation happens in IO memory pool will be : I/O)
==========================================================================================
13:53:22: %SYS-5-GLOBALMEMEXCEED: Global Memory has exceeded the Minor threshold
Pool: Processor  Used: 422703520  Threshold: 373885200
```

For example:

```
13:54:03: %SYS-5-GLOBALMEMEXCEED: Global Memory has exceeded the Critical threshold
Pool: Processor  Used: 622701556  Threshold: 467356500
System global threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
(If recovery happens in IO memory pool will be : I/O)
==========================================================================================
%SYS-5-GLOBALMEMRECOVER: Global Memory has recovered  after exceeding Minor threshold
Pool: Processor  Used: 222473448  Threshold: 355190940
```

For example:

```
13:50:41: %SYS-5-GLOBALMEMRECOVER: Global Memory has recovered  after exceeding Critical
threshold
Pool: Processor  Used: 222473152  Threshold: 443988675
```

Per User Global Threshold Violation in Memory RO

The threshold violation in memory RO for a user global threshold shows the following output:

```
User global threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
(If violation happens in IO memory pool will be : I/O)
==========================================================================================
00:53:14: %SYS-4-RESGLOBALMEMEXCEED: Global Memory has exceeded the Minor threshold
configure by resource user <XYZ>
Pool: Processor  Used: 62273916  Threshold: 62246820
User global threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
(If recovery happens in IO memory pool will be : I/O)
==========================================================================================
00:32:56: %SYS-4-RESGLOBALMEMRECOVER: Global Memory has recovered after exceeding the
Critical threshold configure by resource user <XYZ>
Pool: Processor  Used: 329999508  Threshold: 375865440
```

User Local Threshold Violation in Memory RO

The threshold violation in memory RO for a user local threshold shows the following output:

```
User local threshold- Violation (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
01:05:42: %SYS-4-RESMEMEXCEED: Resource user <XYZ> has exceeded the Critical memory
threshold
Pool: Processor Used: 103754740 Threshold: 103744700
User local threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:44:43: %SYS-5-RESMEMRECOVER: Resource user <XYZ> has recovered after exceeding the
Critical memory threshold
Pool: Processor Used: 328892280 Threshold :375865440
```

Examples

Configuring Major Rising Values for System Global Thresholding

The following example shows how to configure the major threshold values for system global thresholding with a major rising threshold of 70% at an interval of 12 seconds and a major falling threshold of 15% at an interval of 10 seconds:

```
Router(config-owner-cpu)# major rising 70 interval 12 falling 15 interval 10 global
Router(config-owner-buffer)# major rising 70 interval 12 falling 15 interval 10 global
Router(config-owner-memory)# major rising 70 interval 12 falling 15 interval 10 global
```

Configuring Major Rising Values for User Local Thresholding

The following example shows how to configure the major threshold values for user local thresholding with a major rising threshold of 70% at an interval of 12 seconds and a major falling threshold of 15% at an interval of 10 seconds:

```
Router(config-owner-cpu)# major rising 70 interval 12 falling 15 interval 10
Router(config-owner-buffer)# major rising 70 interval 12 falling 15 interval 10
Router(config-owner-memory)# major rising 70 interval 12 falling 15 interval 10
```

Configuring Major Rising Values for Per User Global Thresholding

The following example shows how to configure the major threshold values for per user global thresholding with a major rising threshold of 70% at an interval of 12 seconds and a major falling threshold of 15% at an interval of 10 seconds:

```
Router(config-owner-cpu)# major rising 70 interval 12 falling 15 interval 10 global
Router(config-owner-buffer)# major rising 70 interval 12 falling 15 interval 10 global
Router(config-owner-memory)# major rising 70 interval 12 falling 15 interval 10 global
```

Related Commands

Command	Description
buffer public	Enters the buffer owner configuration mode and sets threshold values for buffer usage.
cpu interrupt	Enters the CPU owner configuration mode and sets threshold values for interrupt level CPU utilization.
cpu process	Enters the CPU owner configuration mode and sets threshold values for processor level CPU utilization.
cpu total	Enters the CPU owner configuration mode and sets threshold values for total CPU utilization.
memory io	Enters the memory owner configuration mode and sets threshold values for I/O memory.
memory processor	Enters the memory owner configuration mode and sets threshold values for processor memory.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level ROs.

memory io

To enter memory owner configuration mode to set threshold values for I/O memory, use the **memoryio**command in resource policy node configuration mode. To exit memory owner configuration mode, use the **no** form of this command.

memory io

no memory io

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Resource policy node configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

This command allows you to enter memory owner configuration mode to set rising and falling values for critical, major, and minor thresholds for I/O memory.

Examples

The following example shows how to enter memory owner configuration mode to set threshold values for I/O memory:

```
Router(config-res-policy-node)# memory io
```

Related Commands

Command	Description
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.

Command	Description
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level ROs.

memory processor

To enter memory owner configuration mode to set the threshold values for the processor memory, use the **memoryprocessor**command in resource policy node configuration mode. To exit memory owner configuration mode, use the **no** form of this command.

memory processor

no memory processor

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Resource policy node configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

This command allows you to enter memory owner configuration mode to set rising and falling values for critical, major, and minor thresholds for the processor memory.

Examples

The following example shows how to enter memory owner configuration mode to set the threshold values for the processor memory:

```
Router(config-res-policy-node)# memory processor
```

Related Commands

Command	Description
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.

Command	Description
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level ROs.

memory statistics history table

To change the number of hours for which the memory log is maintained, use the **memorystatisticshistorytable**command in global configuration mode. To return the logging to its default values, use the **no** form of this command.

memory statistics history table *number-of-hours*

no memory statistics history table *number-of-hours*

Syntax Description

number-of-hours	Number of hours of history for which the log is maintained. Valid values are from 12 to 72. The default value is 24.

Command Default

The memory log is maintained for 24 hours.

Command Modes

Global configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

This command allows you to change the number of hours for which the memory log is maintained. You cannot disable this command. The **no** form of the command only returns the logging to its default value.

Examples

The following example shows how to change the memory log time to 48 hours of history:

```
Router(config)# memory statistics history table 48
```

Related Commands

Command	Description
show memory statistics history table	Displays the history of memory consumption on the Cisco IOS router over a specified period of time.

minor rising

To set minor level threshold values for the buffer, CPU, and memory resource owners (ROs), use the **minorrising**command in buffer owner configuration mode, CPU owner configuration mode, or memory owner configuration mode. To disable this function, use the **no** form of this command.

minor rising *rising-threshold-value* [**interval** *interval-value*] [**falling** *falling-threshold-value* [**interval** *interval-value*]] [**global**]

no minor rising

Syntax Description

rising-threshold-value	The rising threshold value as a percentage. Valid values are from 1 to 100.
interval	(Optional) Specifies the time, in seconds, during which the variation in rising or falling threshold values are not reported to the request/response unit (RU), resource group, or resource user types. For example, if the buffer usage count has gone above the configured threshold value and if it remains longer than the configured interval, a notification is sent to the RU, resource group, or resource user types.
interval-value	(Optional) The time, in seconds, during which the variation in rising or falling threshold values are not reported to the RU, resource group, or resource user types. Valid values are from 0 to 86400. The default value is 0.
falling	(Optional) Specifies the falling threshold value as a percentage.
falling-threshold-value	(Optional) The falling threshold value as a percentage. Valid values are from 1 to 100.
global	(Optional) Configures a global threshold. The **global** keyword is optional when you set major threshold values for public buffer, processor CPU, I/O memory, and processor memory. The **global** keyword is required when you set major threshold values for interrupt CPU and total CPU.

Command Default

Disabled by default.

Command Modes

Buffer owner configuration CPU owner configuration Memory owner configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

The interval is the dampening or observation interval time in seconds during which the variations in the rising and falling threshold values are not notified to the ROs or RUs. That is, the interval is the time the system waits to check whether the threshold value stabilizes or not. The interval is set to avoid unnecessary and unwanted threshold notifications. If not configured, the system defaults to 0 seconds.

This command allows you to configure three types of thresholding:

- System Global Thresholding
- User Local Thresholding
- Per User Global Thresholding

System Global Thresholding

System global thresholding is used when the entire resource reaches a specified value. That is, RUs are notified when the total resource utilization goes above or below a specified threshold value. The notification order is determined by the priority of the RU. The RUs with a lower priority will be notified first, so that these low-priority RUs are expected to reduce the resource utilization. This order prevents the high-priority RUs from getting affected with unwanted notifications.

You can set rising and falling threshold values. For example, if you have set a total CPU utilization threshold value of 60% as the rising minor value and 5% as falling minor value, then when the total CPU utilization crosses the 60% mark, a minor Up notification is sent to all the RUs and when the total CPU utilization falls below 5%, a minor Down notification is sent to all the RUs. The same criteria apply to buffer ROs and memory ROs.

User Local Thresholding

User local thresholding is used when a specified RU exceeds the configured limits. The user local thresholding method prevents a single RU from monopolizing the resources. That is, the specified RU is notified when the resource utilization of the specified RU goes above or below a configured threshold value. For example, if you have set a CPU utilization threshold value of 60% as the rising minor value and 5% as the falling minor value, when the CPU utilization of the specified RU crosses the 60% mark, a minor Up notification is sent to only that RU and when the CPU utilization of the specified RU falls below 5%, a minor Down notification is sent to only that RU. The same method also applies to buffer and memory ROs.

Per User Global Thresholding

Per user global thresholding is used when the entire resource reaches a specified value. This value is unique for each RU and notification is sent only to the specified RU. User global thresholding is similar to user local thresholding, except that the global resource usage is compared against the thresholds. That is, only the specified RU is notified when the total resource utilization exceeds or falls below a configured threshold value. For example, if you have set a CPU utilization threshold value of 60% as the rising minor value and 5% as the falling minor value, when the total CPU utilization crosses the 60% mark, a minor Up notification is sent to only the specified RU and when the total CPU utilization falls below 5%, a minor Down notification is sent to only the specified RU. The same criteria also apply to buffer and memory ROs.

Threshold Violations

The Cisco IOS device sends out error messages when a threshold is violated. The following examples help you understand the error message pattern when different threshold violations occur in buffer, CPU, and memory ROs:

System Global Threshold Violation in Buffer RO

The threshold violation in buffer RO for a system global threshold shows the following output:

```
System global threshold-Violation (keywords Critical, Major and Minor alone will vary
accordingly)
==========================================================================================
00:15:11: %SYS-4-GLOBALBUFEXCEED: Buffer usage has gone above global buffer Critical
threshold
configured <value> Current usage :<value>
```

For example:

```
00:15:11: %SYS-4-GLOBALBUFEXCEED: Buffer usage has gone above global buffer Critical
threshold
configured 144 Current usage :145
System global threshold- Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
==========================================================================================
00:17:10: %SYS-5-GLOBALBUFRECOVER: Buffer usage has gone below global buffer Critical
threshold
configured <value> Current usage :<value>
```

For example:

```
00:17:10: %SYS-5-GLOBALBUFRECOVER: Buffer usage has gone below global buffer Critical
threshold
configured 90 Current usage :89
```

Per User Global Threshold Violation in Buffer RO

The threshold violation in buffer RO for a user global threshold shows the following output:

```
User global threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
==========================================================================================
00:24:04: %SYS-4-RESGLOBALBUFEXCEED: Buffer usage has gone above buffer Critical
threshold configured by resource user  <user-name>
configured 144 Current usage :145
User global threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
==========================================================================================
00:25:08: %SYS-4-RESGLOBALBUFRECOVER: Buffer usage has gone below buffer Critical
threshold configured by resource user <user-name>
configured 126 Current usage :125
```

User Local Threshold Violation in Buffer RO

The threshold violation in buffer RO for a user local threshold shows the following output:

```
User local threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:31:15: %SYS-4-RESBUFEXCEED: Resource user  user_1 has exceeded the buffer Critical
threshold. configured 108 Current usage :109
User local threshold- Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:31:05: %SYS-5-RESBUFRECOVER: Resource user  user_1 has recovered after exceeding the
buffer Critical threshold. configured 90 Current usage :89
```

System Global Threshold Violation in CPU RO

The threshold violation in CPU RO for a system global threshold shows the following output:

```
System global threshold- Violation
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly
==========================================================================================
00:19:36: %SYS-4-CPURESRISING: System is seeing global cpu util 19% at total level more
than the configured minor limit 11%
System global threshold - Recovery
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly
==========================================================================================
00:20:56: %SYS-6-CPURESFALLING: System is no longer seeing global high cpu at total level
for the configured minor limit 10%, current value 4%
```

Per User Global Threshold Violation in CPU RO

The threshold violation in CPU RO for a user global threshold shows the following output:

```
User global threshold - Violation
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly
==========================================================================================
00:14:21: %SYS-4-CPURESRISING: Resource user <user-name> is seeing global cpu util 11% at
total level more than the configured minor limit 6 %
```

For example:

```
00:14:21: %SYS-4-CPURESRISING: Resource user Test-proc-14:99s:1w:100n is seeing global
cpu util 11% at total level more than the configured minor limit 6%
User global threshold- Recovery
(1) keywords Critical, Major and Minor will vary accordingly
(2) keywords total, process and interrupt will vary accordingly
==========================================================================================
00:14:46: %SYS-6-CPURESFALLING: Resource user <user-name> is no longer seeing global high
cpu at total level for the configured critical limit 9%, current value 4%
```

For example:

```
00:14:46: %SYS-6-CPURESFALLING: Resource user Test-proc-14:99s:1w:100n is no longer
seeing global high cpu at total level for the configured critical limit 9%, current value
4%
```

User Local Threshold Violation in CPU RO

The threshold violation in CPU RO for a user local threshold shows the following output:

```
User local threshold - Violation (keywords Critical, Major and Minor will vary
accordingly  - only process level)
==========================================================================================
00:12:11: %SYS-4-CPURESRISING: Resource user <user-name> is seeing local cpu util 15% at
process level more than the configured minor limit 6%
```

For example:

```
00:12:11: %SYS-4-CPURESRISING: Resource user Test-proc-9:85s:15w:100n is seeing local cpu
util 15% at process level more than the configured minor limit 6%
User local threshold- Recovery (keywords Critical, Major and Minor will vary accordingly
- only process level)
==========================================================================================
00:13:11: %SYS-6-CPURESFALLING: Resource user <user-name> is no longer seeing local high
cpu at process level for the configured critical limit 9%, current value 3%
```

System Global Threshold Violation in Memory RO

The threshold violation in memory RO for a system global threshold shows the following output:

```
System global threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
(If violation happens in IO memory pool will be : I/O)
==========================================================================================
13:53:22: %SYS-5-GLOBALMEMEXCEED: Global Memory has exceeded the Minor threshold
Pool: Processor  Used: 422703520  Threshold: 373885200
```

For example:

```
13:54:03: %SYS-5-GLOBALMEMEXCEED: Global Memory has exceeded the Critical threshold
Pool: Processor  Used: 622701556  Threshold: 467356500
System global threshold - Recovery ( keywords Critical, Major and Minor alone will vary
accordingly )
(If recovery happens in IO memory pool will be : I/O)
==========================================================================================
%SYS-5-GLOBALMEMRECOVER: Global Memory has recovered after exceeding Minor threshold
Pool: Processor  Used: 222473448  Threshold: 355190940
```

For example:

```
13:50:41: %SYS-5-GLOBALMEMRECOVER: Global Memory has recovered after exceeding Critical
threshold
Pool: Processor  Used: 222473152  Threshold: 443988675
```

Per User Global Threshold Violation in Memory RO

The threshold violation in memory RO for a user global threshold shows the following output:

```
User global threshold - Violation (keywords Critical, Major and Minor alone will vary
accordingly)
(If violation happens in IO memory pool will be : I/O)
==========================================================================================
00:53:14: %SYS-4-RESGLOBALMEMEXCEED: Global Memory has exceeded the Minor threshold
configure by resource user <XYZ>
Pool: Processor  Used: 62273916  Threshold: 62246820
User global threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
(If recovery happens in IO memory pool will be : I/O)
==========================================================================================
00:32:56: %SYS-4-RESGLOBALMEMRECOVER: Global Memory has recovered after exceeding the
Critical threshold configure by resource user <XYZ>
Pool: Processor  Used: 329999508  Threshold: 375865440
```

User Local Threshold Violation in Memory RO

The threshold violation in memory RO for a user local threshold shows the following output:

```
User local threshold- Violation (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
01:05:42: %SYS-4-RESMEMEXCEED: Resource user <XYZ> has exceeded the Critical memory
threshold
Pool: Processor Used: 103754740 Threshold: 103744700
User local threshold - Recovery (keywords Critical, Major and Minor alone will vary
accordingly)
=========================================================================================
00:44:43: %SYS-5-RESMEMRECOVER: Resource user <XYZ> has recovered after exceeding the
Critical memory threshold
Pool: Processor Used: 328892280 Threshold :375865440
```

Examples

Configuring Minor Rising Values for System Global Thresholding

The following example shows how to configure the minor threshold values for the system global thresholding with a minor rising threshold of 60% at an interval of 12 seconds and a minor falling threshold of 5% at an interval of 10 seconds:

```
Router(config-owner-cpu)# minor rising 60 interval 12 falling 5 interval 10 global
Router(config-owner-buffer)# minor rising 60 interval 12 falling 5 interval 10 global

Router(config-owner-memory)# minor rising 60 interval 12 falling 5 interval 10 global
```

Configuring Minor Rising Values for User Local Thresholding

The following example shows how to configure the minor threshold values for user local thresholding with a minor rising threshold of 60% at an interval of 12 seconds and a minor falling threshold of 5% at an interval of 10 seconds:

```
Router(config-owner-cpu)# minor rising 60 interval 12 falling 5 interval 10
Router(config-owner-buffer)# minor rising 60 interval 12 falling 5 interval 10

Router(config-owner-memory)# minor rising 60 interval 12 falling 5 interval 10
```

Configuring Minor Rising Values for Per User Global Thresholding

The following example shows how to configure the minor threshold values for per user global thresholding with a minor rising threshold of 60% at an interval of 12 seconds and a minor falling threshold of 5% at an interval of 10 seconds:

```
Router(config-owner-cpu)# minor rising 60 interval 12 falling 5 interval 10 global
Router(config-owner-buffer)# minor rising 60 interval 12 falling 5 interval 10 global
Router(config-owner-memory)# minor rising 60 interval 12 falling 5 interval 10 global
```

Related Commands

Command	Description
buffer public	Enters the buffer owner configuration mode and sets threshold values for buffer usage.
cpu interrupt	Enters the CPU owner configuration mode and sets threshold values for interrupt level CPU utilization.
cpu process	Enters the CPU owner configuration mode and sets threshold values for processor level CPU utilization.
cpu total	Enters the CPU owner configuration mode and sets threshold values for total CPU utilization.
memory io	Enters the memory owner configuration mode and sets threshold values for I/O memory.
memory processor	Enters the memory owner configuration mode and sets threshold values for processor memory.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
slot (ERM policy)	Configures line cards.

Command	Description
system (ERM policy)	Configures system level ROs.

policy (ERM)

To configure an Embedded Resource Manager (ERM) resource policy, use the **policy** command in ERM configuration mode. To disable this function, use the **no** form of this command.

policy *policy-name* [**global** | **type** *resource-user-type*]

no policy *policy-name*

Syntax Description

policy-name	Name of the policy you want to configure.
global	(Optional) Configures a global policy.
type	(Optional) Specifies a type for the policy you are configuring.
resource-user-type	(Optional) Name of the resource user type.

Command Default

Disabled

Command Modes

ERM configuration (config-erm)

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.

Usage Guidelines

You can configure a resource policy only in ERM configuration mode.

Examples

The following example shows how to configure a resource policy with the policy name cpu_mem_policy and the resource user type iosprocess:

```
Router(config-erm)# policy cpu_mem_policy type iosprocess
```

Related Commands

Command	Description
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
show resource database	Displays the resource database details.
show resource owner	Displays the resource owner details.
show resource relationship	Displays the resource relationship details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level resource owners.

policy (resource group)

To apply an already configured policy to a specified resource group, use the **policy** command in resource group configuration mode. To disable this function, use the **no** form of this command.

policy *policy-name*

no policy *policy-name*

Syntax Description

policy-name	Name of the policy to apply to the resource group.

Command Default

Disabled

Command Modes

Resource group configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

Before applying a policy to a resource group, you must configure a resource policy using the **policy***policy-name* command in Embedded Resource Manager (ERM) configuration mode and create a resource group using the **usergroup***resource-group-name***type***resource-user-type* command in ERM configuration mode.

When you apply a policy using the **policy***policy-name* command in resource group configuration mode, you are applying a policy (which contains the thresholds) to the resource group you created using the **usergroup***resource-group-name***type***resource-user-type* command in ERM configuration mode.

For example, you create a resource group with the name lowPrioUsers and type iosprocess and have low-priority resource users (RUs) or tasks such as HTTP and Simple Network Management Protocol (SNMP) that you want to set a threshold for as a group. You must add the RUs to lowPrioUsers using the **instance***instance-name* command and then apply a resource policy. If the resource policy you apply sets a minor rising threshold value of 10 percent, a notification is sent to the RUs in lowPrioUsers when the accumulated usage of both HTTP and SNMP RUs crosses the 10 percent threshold (for example, if HTTP usage is 4 percent and SNMP usage is 7 percent).

Examples

The following example shows how to apply a resource policy named group-policy1 to a resource group named lowPrioUsers:

```
Router(config-erm)# user group lowPrioUsers type iosprocess
Router(config-res-group)# policy group-policy1
```

Related Commands

Command	Description
instance (resource group)	Adds the RUs to the resource group.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
user (ERM)	Creates a resource group.

resource policy

To enter Embedded Resource Manager (ERM) configuration mode to configure an ERM policy, use the **resourcepolicy** command in global configuration mode. To exit ERM configuration mode, use the **no** form of this command.

resource policy

no resource policy

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Examples

The following example shows how to configure an ERM policy:

```
Router(config)# resource policy
Router(config-erm)# policy memory_policy type iosprocess
Router(config-erm-policy)# system
Router(config-policy-node)# memory processor
Router(config-owner-memory)# critical rising 80
Router(config-owner-memory)# major rising 40 falling 35
```

Related Commands

Command	Description
policy (ERM)	Configures an ERM resource policy.
show resource all	Displays all the resource details.
show resource all	Displays resource details for all RUs.
show resource database	Displays the resource database details.

Command	Description
show resource owner	Displays the resource owner details.
show resource relationship	Displays the resource relationship details.
slot (ERM policy)	Configures line cards.
system (ERM policy)	Configures system level resource owners.

show resource all

To display the details of a Resource Owner (RO), use the **showresourceall**command in user EXEC or privileged EXEC mode.

show resource all [**brief** | **detailed**]

Syntax Description

brief	(Optional) Displays the brief details of the ROs.
detail	(Optional) Displays all the details of the ROs.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.

Examples

The following is sample output from the **showresourceall**command:

```
Router# show resource all
Resource Owner: cpu
Resource User Type: iosprocess
Resource User: Init(ID: 0x1000001)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777217           0         0          0  0.00%  0.00%  0.00% Init
  Resource User: Scheduler(ID: 0x1000002)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777218           0         0          0  0.00%  0.00%  0.00% Scheduler
  Resource User: Dead(ID: 0x1000003)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777219           0         0          0  0.00%  0.00%  0.00% Dead
  Resource User: Interrupt(ID: 0x1000004)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777220           0         0          0  0.00%  0.00%  0.00% Interrupt
  Resource User: Memory RO RU(ID: 0x1000005)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777221           0         0          0  0.00%  0.00%  0.00% Memory RO RU
  Resource User: Chunk Manager(ID: 0x1000006)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777222           0        13          0  0.00%  0.00%  0.00% Chunk Manager
  Resource User: Load Meter(ID: 0x1000007)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777223        2872     36029         79  0.00%  0.00%  0.00% Load Meter
  Resource User: Check heaps(ID: 0x1000009)
```

```
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777225      352744     33446      10546  0.00%  0.20%  0.17% Check heaps
  Resource User: Pool Manager(ID: 0x100000A)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777226           0         1          0  0.00%  0.00%  0.00% Pool Manager
  Resource User: Buffer RO RU(ID: 0x100000B)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777227           0         0          0  0.00%  0.00%  0.00% Buffer RO RU
  Resource User: Timers(ID: 0x100000C)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777228           0         2          0  0.00%  0.00%  0.00% Timers
  Resource User: Serial Background(ID: 0x100000D)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777229           0         2          0  0.00%  0.00%  0.00% Serial Backgroun
  Resource User: AAA_SERVER_DEADTIME(ID: 0x100000E)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777230           0         1          0  0.00%  0.00%  0.00% AAA_SERVER_DEADT
  Resource User: AAA high-capacity counters(ID: 0x100000F)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777231           0         2          0  0.00%  0.00%  0.00% AAA high-capacit
  Resource User: Policy Manager(ID: 0x1000010)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777232           0         1          0  0.00%  0.00%  0.00% Policy Manager
  Resource User: Crash writer(ID: 0x1000011)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777233           0         1          0  0.00%  0.00%  0.00% Crash writer
  Resource User: RO Notify Timers(ID: 0x1000012)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777234           0         1          0  0.00%  0.00%  0.00% RO Notify Timers
  Resource User: RMI RM Notify Watched Policy(ID: 0x1000013)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777235           0         1          0  0.00%  0.00%  0.00% RMI RM Notify Wa
  Resource User: EnvMon(ID: 0x1000014)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777236       11164     92859        120  0.00%  0.00%  0.00% EnvMon
  Resource User: IPC Dynamic Cache(ID: 0x1000015)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777237           0      3004          0  0.00%  0.00%  0.00% IPC Dynamic Cach
  Resource User: IPC Periodic Timer(ID: 0x1000017)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777239           0    180082          0  0.00%  0.00%  0.00% IPC Periodic Tim
  Resource User: IPC Managed Timer(ID: 0x1000018)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777240         572     79749          7  0.00%  0.00%  0.00% IPC Managed Time
  Resource User: IPC Deferred Port Closure(ID: 0x1000019)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777241           4    180088          0  0.00%  0.00%  0.00% IPC Deferred Por
  Resource User: IPC Seat Manager(ID: 0x100001A)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777242       97560   1408799         69  0.23%  0.02%  0.00% IPC Seat Manager
  Resource User: IPC Session Service(ID: 0x100001B)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777243           0         1          0  0.00%  0.00%  0.00% IPC Session Serv
  Resource User: ARP Input(ID: 0x100001C)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777244          20      3082          6  0.00%  0.00%  0.00% ARP Input
  Resource User: EEM ED Syslog(ID: 0x100001D)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
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Resource Owner: memory
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
Chunk Elements :
Allocated Size(b): 35152564 Count: 91901 Freed Size(b): 31793276 Count: 39159
Processor memory
Total Memory held : 46596832 bytes
pc = 0x403089D8, size =  10499724, count =    1
pc = 0x402996C8, size =   6737976, count = 8298
pc = 0x402F0C9C, size =   5821352, count =   10
pc = 0x40A25134, size =   4194324, count =    1
pc = 0x41D6D414, size =   1704144, count =   52
pc = 0x40451BE0, size =   1114180, count =   17
pc = 0x402D0DAC, size =    917600, count =    1
pc = 0x4043E5F4, size =    836076, count = 12291
pc = 0x404A276C, size =    617476, count =    1
pc = 0x41CDED1C, size =    569844, count =  125
pc = 0x4194C2D0, size =    524292, count =    1
pc = 0x405FD93C, size =    516100, count =    1
pc = 0x414D67AC, size =    473224, count =  199
pc = 0x41016294, size =    458756, count =    1
pc = 0x4046E618, size =    432096, count =    1
pc = 0x400A1134, size =    412420, count =    1
pc = 0x402ABB50, size =    317316, count =   93
pc = 0x41D53668, size =    262148, count =    1
pc = 0x4049BA04, size =    206640, count =   84
pc = 0x41E3FE30, size =    196620, count =    3
pc = 0x40B05214, size =    196612, count =    1
pc = 0x40494D94, size =    180180, count = 4095
pc = 0x402ABB6C, size =    144708, count =   93
pc = 0x41586A38, size =    144004, count =    1
pc = 0x4030B408, size =    140028, count =    7
pc = 0x415090EC, size =    131768, count =    4
pc = 0x41E37B94, size =    131088, count =    4
pc = 0x4195C348, size =    131076, count =    1
pc = 0x400A1194, size =    124420, count =    1
pc = 0x41503BC4, size =    122768, count =    1
pc = 0x404E888C, size =    114660, count = 4095
pc = 0x40494D50, size =    114660, count = 4095
pc = 0x404D99B0, size =    114660, count = 4095
pc = 0x4023F5B4, size =     98312, count =    2
pc = 0x41E45894, size =     97456, count =  626
pc = 0x41E2D4C4, size =     91584, count =   12
pc = 0x416D9768, size =     84004, count =    1
pc = 0x40452790, size =     84000, count = 3000
pc = 0x40322A74, size =     81948, count =    7
pc = 0x41D0FF4C, size =     81924, count =    1
pc = 0x40E9F7B0, size =     81364, count =    1
pc = 0x414FB1BC, size =     78740, count =    2
pc = 0x414D4A64, size =     72916, count =    2
pc = 0x40328770, size =     72144, count =   36
pc = 0x414FA938, size =     71592, count =    2
pc = 0x414EF938, size =     71096, count =    2
pc = 0x41947EEC, size =     65540, count =    1
pc = 0x41935B5C, size =     65540, count =    1
pc = 0x4193A348, size =     65540, count =    1
pc = 0x4193FF5C, size =     65540, count =    1
pc = 0x41D6E32C, size =     65540, count =    1
pc = 0x41DD534C, size =     65540, count =    1
pc = 0x414B5870, size =     65540, count =    1
pc = 0x4078521C, size =     65540, count =    1
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I/O memory
Total Memory held : 9816224 bytes
pc = 0x4029983C, size =   9791584, count = 8290
pc = 0x403EC2A4, size =      8208, count =    1
pc = 0x403F8CD0, size =      8208, count =    1
pc = 0x403EC2E0, size =      4112, count =    1
pc = 0x403F8D0C, size =      4112, count =    1
Resource User: Scheduler(ID: 0x1000002)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
Processor memory
Total Memory held : 13052 bytes
pc = 0x4037BCC8, size =     12004, count =    1
pc = 0x40327110, size =      1048, count =   24
Resource User: Dead(ID: 0x1000003)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
Processor memory
Total Memory held : 447448 bytes
pc = 0x404A276C, size =    395636, count =    5
pc = 0x4043E5F4, size =     18676, count =  271
pc = 0x40494D94, size =      6888, count =   82
pc = 0x4044B9E4, size =      6672, count =    6
pc = 0x40C8BAB4, size =      5780, count =   34
pc = 0x404943DC, size =      2836, count =   82
pc = 0x40494D50, size =      2796, count =   82
pc = 0x4044DAF0, size =      2224, count =    2
pc = 0x40393168, size =      1772, count =    1
pc = 0x40FF2688, size =       728, count =    6
pc = 0x40CBC5A4, size =       400, count =    4
pc = 0x40455144, size =       320, count =   10
pc = 0x40C9A8D8, size =       288, count =    8
pc = 0x40CADE10, size =       260, count =    5
pc = 0x40B19484, size =       256, count =    2
pc = 0x4052BD2C, size =       208, count =    4
pc = 0x40CADE50, size =       188, count =    5
pc = 0x4044FBD8, size =       184, count =    1
pc = 0x40A9B2F0, size =       184, count =    1
pc = 0x40CBC45C, size =       160, count =    2
pc = 0x4038BF34, size =       144, count =    2
pc = 0x40529610, size =       136, count =    2
pc = 0x405CF034, size =       104, count =    1
pc = 0x414D67AC, size =       104, count =    1
pc = 0x4038BF68, size =        88, count =    2
pc = 0x4044F078, size =        84, count =    3
pc = 0x41555624, size =        84, count =    1
pc = 0x40685250, size =        76, count =    1
pc = 0x40481AD4, size =        68, count =    1
pc = 0x4044DB18, size =        56, count =    2
pc = 0x401B6960, size =        48, count =    1
Resource User: Interrupt(ID: 0x1000004)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 39652 Count: 1070
Processor memory
Total Memory held : 0 bytes
Resource User: Memory RO RU(ID: 0x1000005)
Chunk Elements :
Allocated Size(b): 12320 Count: 120 Freed Size(b): 10164 Count: 99
Processor memory
Total Memory held : 131080 bytes
pc = 0x40357C54, size =     65540, count =    1
pc = 0x40357D98, size =     65540, count =    1
Resource User: Chunk Manager(ID: 0x1000006)
Chunk Elements :
Allocated Size(b): 124 Count: 6 Freed Size(b): 48 Count: 3
Processor memory
Total Memory held : 9788 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x40332490, size =      3008, count =    2
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: Load Meter(ID: 0x1000007)
Chunk Elements :
Allocated Size(b): 44 Count: 1 Freed Size(b): 44 Count: 1
Processor memory
Total Memory held : 3780 bytes
pc = 0x4037BCC8, size =      3004, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: Check heaps(ID: 0x1000009)
Chunk Elements :
Allocated Size(b): 44 Count: 1 Freed Size(b): 44 Count: 1
Processor memory
Total Memory held : 7236 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x41E2B0D0, size =       324, count =    1
pc = 0x403604BC, size =       140, count =    1
pc = 0x40351D2C, size =        76, count =    1
pc = 0x40351CF8, size =        56, count =    1
Resource User: Pool Manager(ID: 0x100000A)
Chunk Elements :
Allocated Size(b): 44 Count: 1 Freed Size(b): 0 Count: 0
Processor memory
```

```
Total Memory held : 6780 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: Buffer RO RU(ID: 0x100000B)
Chunk Elements :
Allocated Size(b): 4960 Count: 40 Freed Size(b): 4092 Count: 33
Processor memory
Total Memory held : 0 bytes
Resource User: Timers(ID: 0x100000C)
Chunk Elements :
Allocated Size(b): 44 Count: 1 Freed Size(b): 44 Count: 1
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Resource User: PF_Init Process(ID: 0x100004F)
Chunk Elements :
Allocated Size(b): 8104 Count: 126 Freed Size(b): 1400 Count: 29
Processor memory
Total Memory held : 31204 bytes
pc = 0x4027EF10, size =     21540, count =    5
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4044DAF0, size =      1112, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x4038BF68, size =       308, count =    7
pc = 0x4038BF34, size =       280, count =    7
pc = 0x403604BC, size =       280, count =    2
pc = 0x41E45ED0, size =       240, count =    5
pc = 0x401FB400, size =       236, count =    5
pc = 0x40529610, size =       136, count =    2
pc = 0x4047D560, size =       108, count =    2
pc = 0x4038C114, size =        88, count =    2
pc = 0x4044DB18, size =        72, count =    1
pc = 0x40211DCC, size =        56, count =    2
pc = 0x4038E038, size =        44, count =    1
pc = 0x40402C98, size =        32, count =    1
pc = 0x40455144, size =        32, count =    1
Resource User: PF_Split Sync Process(ID: 0x1000052)
Chunk Elements :
Allocated Size(b): 6092 Count: 87 Freed Size(b): 5644 Count: 81
Processor memory
Total Memory held : 10356 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4060364C, size =      1760, count =   10
pc = 0x41E45894, size =       960, count =    2
pc = 0x4060AE18, size =       856, count =   10
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: RPC pf-split-rp(ID: 0x1000053)
Chunk Elements :
Allocated Size(b): 1348 Count: 20 Freed Size(b): 1304 Count: 19
Processor memory
Total Memory held : 6780 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: RPC idprom-MP(ID: 0x1000054)
Chunk Elements :
Allocated Size(b): 4708 Count: 68 Freed Size(b): 4664 Count: 67
Processor memory
Total Memory held : 16648 bytes
pc = 0x405023D4, size =      9732, count =   18
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
pc = 0x405D000C, size =       136, count =    1
Resource User: Net Input(ID: 0x1000055)
Chunk Elements :
Allocated Size(b): 88 Count: 2 Freed Size(b): 0 Count: 0
Processor memory
Total Memory held : 6780 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: Compute load avgs(ID: 0x1000056)
Chunk Elements :
Allocated Size(b): 11948724 Count: 215941 Freed Size(b): 11948724 Count: 215941
Processor memory
Total Memory held : 10720 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x404FC9C0, size =      3940, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: RTTYS Process(ID: 0x1000057)
Chunk Elements :
Allocated Size(b): 44 Count: 1 Freed Size(b): 0 Count: 0
Processor memory
Total Memory held : 6780 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: BACK CHECK(ID: 0x1000059)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
Processor memory
Total Memory held : 6780 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: chkpt message handler(ID: 0x100005A)
Chunk Elements :
Allocated Size(b): 156 Count: 2 Freed Size(b): 0 Count: 0
Processor memory
Total Memory held : 6780 bytes
pc = 0x4037BCC8, size =      6004, count =    1
pc = 0x4035E160, size =       636, count =    1
pc = 0x403604BC, size =       140, count =    1
Resource User: cpf_process_msg_holdq(ID: 0x100005B)
Chunk Elements :
Allocated Size(b): 152 Count: 3 Freed Size(b): 0 Count: 0
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Resource Owner: Buffer
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
Getbufs  Retbufs  Holding  RU Name
1367     31237    4294937426 Init
Resource User: Scheduler(ID: 0x1000002)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Scheduler
Resource User: Dead(ID: 0x1000003)
Getbufs  Retbufs  Holding  RU Name
6        3        3        Dead
Resource User: Interrupt(ID: 0x1000004)
Getbufs  Retbufs  Holding  RU Name
221580   221580   0        Interrupt
Resource User: Memory RO RU(ID: 0x1000005)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Memory RO RU
Resource User: Chunk Manager(ID: 0x1000006)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Chunk Manager
Resource User: Load Meter(ID: 0x1000007)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Load Meter
Resource User: Check heaps(ID: 0x1000009)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Check heaps
Resource User: Pool Manager(ID: 0x100000A)
Getbufs  Retbufs  Holding  RU Name
5554     0        5554     Pool Manager
Resource User: Buffer RO RU(ID: 0x100000B)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Buffer RO RU
Resource User: Timers(ID: 0x100000C)
```

```
Getbufs  Retbufs  Holding  RU Name
0        0        0        Timers
Resource User: Serial Background(ID: 0x100000D)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Serial Backgroun
Resource User: AAA_SERVER_DEADTIME(ID: 0x100000E)
Getbufs  Retbufs  Holding  RU Name
0        0        0        AAA_SERVER_DEADT
Resource User: AAA high-capacity counters(ID: 0x100000F)
Getbufs  Retbufs  Holding  RU Name
0        0        0        AAA high-capacit
Resource User: Policy Manager(ID: 0x1000010)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Policy Manager
Resource User: Crash writer(ID: 0x1000011)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Crash writer
Resource User: RO Notify Timers(ID: 0x1000012)
Getbufs  Retbufs  Holding  RU Name
0        0        0        RO Notify Timers
Resource User: RMI RM Notify Watched Policy(ID: 0x1000013)
Getbufs  Retbufs  Holding  RU Name
0        0        0        RMI RM Notify Wa
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Resource User: DHCPD Timer(ID: 0x100011B)
Getbufs  Retbufs  Holding  RU Name
0        0        0        DHCPD Timer
Resource User: DHCPD Database(ID: 0x100011C)
Getbufs  Retbufs  Holding  RU Name
0        0        0        DHCPD Database
Resource User: draco-oir-process:slot 2(ID: 0x100011E)
Getbufs  Retbufs  Holding  RU Name
0        0        0        draco-oir-proces
Resource User: SCP async: Draco-LC4(ID: 0x1000125)
Getbufs  Retbufs  Holding  RU Name
35849    243101   4294760044 SCP async: Draco
Resource User: IFCOM Msg Hdlr(ID: 0x1000127)
Getbufs  Retbufs  Holding  RU Name
2        2        0        IFCOM Msg Hdlr
Resource User: IFCOM Msg Hdlr(ID: 0x1000128)
Getbufs  Retbufs  Holding  RU Name
28       28       0        IFCOM Msg Hdlr
Resource User: Exec(ID: 0x100012C)
Getbufs  Retbufs  Holding  RU Name
912      912      0        Exec
Resource Owner: test_mem
Resource User Type: test_process
Resource User Type: mem_rut
Resource Owner: test_cpu
Resource User Type: test_process
Resource User Type: cpu_rut
```

The following is a sample output from the **showresourceallbrief**command:

```
Router# show resource all brief
Resource Owner: cpu
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777217          0         0          0  0.00%  0.00%  0.00% Init
  Resource User: Scheduler(ID: 0x1000002)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777218          0         0          0  0.00%  0.00%  0.00% Scheduler
  Resource User: Dead(ID: 0x1000003)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777219          0         0          0  0.00%  0.00%  0.00% Dead
  Resource User: Interrupt(ID: 0x1000004)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777220          0         0          0  0.00%  0.00%  0.00% Interrupt
  Resource User: Memory RO RU(ID: 0x1000005)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
```

```
16777221           0         0          0  0.00%  0.00%  0.00% Memory RO RU
  Resource User: Chunk Manager(ID: 0x1000006)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777222           0        13          0  0.00%  0.00%  0.00% Chunk Manager
  Resource User: Load Meter(ID: 0x1000007)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777223        2872     36069         79  0.00%  0.00%  0.00% Load Meter
  Resource User: Check heaps(ID: 0x1000009)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777225      353092     33481      10546  0.00%  0.17%  0.17% Check heaps
  Resource User: Pool Manager(ID: 0x100000A)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777226           0         1          0  0.00%  0.00%  0.00% Pool Manager
  Resource User: Buffer RO RU(ID: 0x100000B)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777227           0         0          0  0.00%  0.00%  0.00% Buffer RO RU
  Resource User: Timers(ID: 0x100000C)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777228           0         2          0  0.00%  0.00%  0.00% Timers
  Resource User: Serial Background(ID: 0x100000D)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777229           0         2          0  0.00%  0.00%  0.00% Serial Backgroun
  Resource User: AAA_SERVER_DEADTIME(ID: 0x100000E)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777230           0         1          0  0.00%  0.00%  0.00% AAA_SERVER_DEADT
  Resource User: AAA high-capacity counters(ID: 0x100000F)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777231           0         2          0  0.00%  0.00%  0.00% AAA high-capacit
  Resource User: Policy Manager(ID: 0x1000010)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777232           0         1          0  0.00%  0.00%  0.00% Policy Manager
  Resource User: Crash writer(ID: 0x1000011)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777233           0         1          0  0.00%  0.00%  0.00% Crash writer
  Resource User: RO Notify Timers(ID: 0x1000012)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777234           0         1          0  0.00%  0.00%  0.00% RO Notify Timers
  Resource User: RMI RM Notify Watched Policy(ID: 0x1000013)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777235           0         1          0  0.00%  0.00%  0.00% RMI RM Notify Wa
  Resource User: EnvMon(ID: 0x1000014)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777236       11176     92958        120  0.00%  0.00%  0.00% EnvMon
  Resource User: IPC Dynamic Cache(ID: 0x1000015)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777237           0      3007          0  0.00%  0.00%  0.00% IPC Dynamic Cach
  Resource User: IPC Periodic Timer(ID: 0x1000017)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777239           0    180279          0  0.00%  0.00%  0.00% IPC Periodic Tim
  Resource User: IPC Managed Timer(ID: 0x1000018)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777240         572     79833          7  0.00%  0.00%  0.00% IPC Managed Time
  Resource User: IPC Deferred Port Closure(ID: 0x1000019)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777241           4    180285          0  0.00%  0.00%  0.00% IPC Deferred Por
  Resource User: IPC Seat Manager(ID: 0x100001A)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777242       97684   1410183         69  0.00%  0.03%  0.00% IPC Seat Manager
  Resource User: IPC Session Service(ID: 0x100001B)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777243           0         1          0  0.00%  0.00%  0.00% IPC Session Serv
  Resource User: ARP Input(ID: 0x100001C)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777244          20      3085          6  0.00%  0.00%  0.00% ARP Input
  Resource User: EEM ED Syslog(ID: 0x100001D)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777245           0        49          0  0.00%  0.00%  0.00% EEM ED Syslog
  Resource User: DDR Timers(ID: 0x100001E)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777246           0         2          0  0.00%  0.00%  0.00% DDR Timers
  Resource User: Dialer event(ID: 0x100001F)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777247           0         2          0  0.00%  0.00%  0.00% Dialer event
```

```
  Resource User: Entity MIB API(ID: 0x1000020)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777248          28        16       1750  0.00%  0.00%  0.00% Entity MIB API
  Resource User: Compute SRP rates(ID: 0x1000021)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777249           0     18037          0  0.00%  0.00%  0.00% Compute SRP rate
  Resource User: SERIAL A'detect(ID: 0x1000022)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777250           0         1          0  0.00%  0.00%  0.00% SERIAL A'detect
  Resource User: GraphIt(ID: 0x1000023)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777251           0    180267          0  0.00%  0.00%  0.00% GraphIt
  Resource User: rf proxy rp agent(ID: 0x1000024)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777252          40       416         96  0.00%  0.00%  0.00% rf proxy rp agen
  Resource User: HC Counter Timers(ID: 0x1000025)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777253          60     41360          1  0.00%  0.00%  0.00% HC Counter Timer
  Resource User: Snmp ICC Process(ID: 0x1000026)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777254           0         1          0  0.00%  0.00%  0.00% Snmp ICC Process
  Resource User: Cat6k SNMP(ID: 0x1000027)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777255          20        29        689  0.00%  0.00%  0.00% Cat6k SNMP
  Resource User: Cat6k SNMP Trap handler(ID: 0x1000028)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777256           0         7          0  0.00%  0.00%  0.00% Cat6k SNMP Trap
  Resource User: Critical Bkgnd(ID: 0x1000029)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777257           0         1          0  0.00%  0.00%  0.00% Critical Bkgnd
  Resource User: Net Background(ID: 0x100002A)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777258         112     44787          2  0.00%  0.00%  0.00% Net Background
  Resource User: Logger(ID: 0x100002B)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777259           0        50          0  0.00%  0.00%  0.00% Logger
  Resource User: TTY Background(ID: 0x100002C)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777260           0    180263          0  0.00%  0.00%  0.00% TTY Background
  Resource User: Per-Second Jobs(ID: 0x100002D)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777261          52    180549          0  0.00%  0.00%  0.00% Per-Second Jobs
  Resource User: Per-minute Jobs(ID: 0x100002E)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
.
.
.
Resource User: Exec(ID: 0x100012C)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777516        8964       965       9289  0.39%  0.66%  1.55% Exec
Resource Owner: memory
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
Processor memory
Allocated   Freed  Holding   Blocks
55233064  8636232 46596832    48832
I/O memory
Allocated   Freed  Holding   Blocks
 9816224        0  9816224     8294
  Resource User: Scheduler(ID: 0x1000002)
Processor memory
Allocated   Freed  Holding   Blocks
   13052        0    13052       25
  Resource User: Dead(ID: 0x1000003)
Processor memory
Allocated   Freed  Holding   Blocks
  687916   240468   447448      630
  Resource User: Interrupt(ID: 0x1000004)
Processor memory
Allocated   Freed  Holding   Blocks
       0        0        0        0
  Resource User: Memory RO RU(ID: 0x1000005)
Processor memory
```

```
Allocated   Freed  Holding   Blocks
  131080        0   131080        2
  Resource User: Chunk Manager(ID: 0x1000006)
Processor memory
Allocated   Freed  Holding   Blocks
   14300     4512     9788        5
  Resource User: Load Meter(ID: 0x1000007)
Processor memory
Allocated   Freed  Holding   Blocks
    3920      140     3780        3
  Resource User: Check heaps(ID: 0x1000009)
Processor memory
Allocated   Freed  Holding   Blocks
    7376      140     7236        6
  Resource User: Pool Manager(ID: 0x100000A)
Processor memory
Allocated   Freed  Holding   Blocks
    6780        0     6780        3
  Resource User: Buffer RO RU(ID: 0x100000B)
Processor memory
Allocated   Freed  Holding   Blocks
       0        0        0        0
  Resource User: Timers(ID: 0x100000C)
Processor memory
Allocated   Freed  Holding   Blocks
    6920      140     6780        3
  Resource User: Serial Background(ID: 0x100000D)
Processor memory
Allocated   Freed  Holding   Blocks
    6920      140     6780        3
.
.
.
Resource User: IFCOM Msg Hdlr(ID: 0x1000128)
Getbufs  Retbufs  Holding  RU Name
28       28       0        IFCOM Msg Hdlr
  Resource User: Exec(ID: 0x100012C)
Getbufs  Retbufs  Holding  RU Name
1404     1404     0        Exec
Resource Owner: test_mem
 Resource User Type: test_process
 Resource User Type: mem_rut
Resource Owner: test_cpu
 Resource User Type: test_process
 Resource User Type: cpu_rut
```

The following is sample output from the **showresourcealldetailed**command:

```
Router# show resource all detailed
Resource Owner: cpu
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777217           0         0          0  0.00%  0.00%  0.00% Init
  Resource User: Scheduler(ID: 0x1000002)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777218           0         0          0  0.00%  0.00%  0.00% Scheduler
  Resource User: Dead(ID: 0x1000003)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777219           0         0          0  0.00%  0.00%  0.00% Dead
  Resource User: Interrupt(ID: 0x1000004)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777220           0         0          0  0.00%  0.00%  0.00% Interrupt
  Resource User: Memory RO RU(ID: 0x1000005)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777221           0         0          0  0.00%  0.00%  0.00% Memory RO RU
  Resource User: Chunk Manager(ID: 0x1000006)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777222           0        13          0  0.00%  0.00%  0.00% Chunk Manager
  Resource User: Load Meter(ID: 0x1000007)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777223        2872     36075         79  0.00%  0.00%  0.00% Load Meter
  Resource User: Check heaps(ID: 0x1000009)
```

```
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777225      353168     33486      10546  0.00%  0.10%  0.15% Check heaps
  Resource User: Pool Manager(ID: 0x100000A)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777226           0         1          0  0.00%  0.00%  0.00% Pool Manager
  Resource User: Buffer RO RU(ID: 0x100000B)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777227           0         0          0  0.00%  0.00%  0.00% Buffer RO RU
  Resource User: Timers(ID: 0x100000C)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777228           0         2          0  0.00%  0.00%  0.00% Timers
  Resource User: Serial Background(ID: 0x100000D)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777229           0         2          0  0.00%  0.00%  0.00% Serial Backgroun
  Resource User: AAA_SERVER_DEADTIME(ID: 0x100000E)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777230           0         1          0  0.00%  0.00%  0.00% AAA_SERVER_DEADT
  Resource User: AAA high-capacity counters(ID: 0x100000F)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777231           0         2          0  0.00%  0.00%  0.00% AAA high-capacit
  Resource User: Policy Manager(ID: 0x1000010)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777232           0         1          0  0.00%  0.00%  0.00% Policy Manager
  Resource User: Crash writer(ID: 0x1000011)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777233           0         1          0  0.00%  0.00%  0.00% Crash writer
  Resource User: RO Notify Timers(ID: 0x1000012)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777234           0         1          0  0.00%  0.00%  0.00% RO Notify Timers
  Resource User: RMI RM Notify Watched Policy(ID: 0x1000013)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777235           0         1          0  0.00%  0.00%  0.00% RMI RM Notify Wa
  Resource User: EnvMon(ID: 0x1000014)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777236       11176     92958        120  0.00%  0.00%  0.00% EnvMon
  Resource User: IPC Dynamic Cache(ID: 0x1000015)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777237           0      3008          0  0.00%  0.00%  0.00% IPC Dynamic Cach
  Resource User: IPC Periodic Timer(ID: 0x1000017)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
.
.
.
Resource Owner: memory
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
Chunk Elements :
Allocated Size(b): 35152564 Count: 91901 Freed Size(b): 31793276 Count: 39159
Processor memory
 Address      Bytes     Prev     Next Ref   Alloc PC  What
4393BAA0 0010499772 00000000 4433F15C 001 513DD000  *Init*
4433F15C 0000012852 4393BAA0 44342390 001 513DD000  *Init*
44342390 0000005052 4433F15C 4434374C 001 513DD000  List Headers
4434374C 0000000096 44342390 443437AC 001 513DD000  *Init*
443437AC 0000000096 4434374C 4434380C 001 513DD000  *Init*
4434380C 0000000096 443437AC 4434386C 001 513DD000  *Init*
4434386C 0000000096 4434380C 443438CC 001 513DD000  *Init*
443438CC 0000000096 4434386C 4434392C 001 513DD000  *Init*
4434392C 0000004356 443438CC 44344A30 001 513DD000  TTY data
44344A30 0000000564 4434392C 44344C64 001 513DD000  TTY Output Buf
44344C64 0000000096 44344A30 44344CC4 001 513DD000  *Init*
44344CC4 0000001552 44344C64 443452D4 001 513DD000  Watched messages
443452D4 0000010052 44344CC4 44347A18 001 513DD000  Watched Boolean
44347A18 0000001552 443452D4 44348028 001 513DD000  Watched Semaphore
44348028 0000000380 44347A18 443481A4 001 513DD000  Watched Message Queue
443481A4 0000003052 44348028 44348D90 001 513DD000  Read/Write Locks
44348D90 0000020052 443481A4 4434DBE4 001 513DD000  RMI-RO_RU Chunks
4434DBE4 0000000116 44348D90 4434DC58 001 513DD000  Resource Owner IDs
4434DC58 0000001552 4434DBE4 4434E268 001 513DD000  String-DB entries
4434E268 0000000532 4434DC58 4434E47C 001 513DD000  String-DB handles
4434E47C 0000000076 4434E268 4434E4C8 001 513DD000  NameDB String
4434E4C8 0000000116 4434E47C 4434E53C 001 513DD000  Resource User Type IDs
4434E53C 0000000184 4434E4C8 4434E5F4 001 513DD000  *Init*
```

```
4434E5F4 0000002100 4434E53C 4434EE28 001 513DD000  Resource Owner IDs
4434EE28 0000000076 4434E5F4 4434EE74 001 513DD000  NameDB String
4434EE74 0000000076 4434EE28 4434EEC0 001 513DD000  NameDB String
4434EEC0 0000065588 4434EE74 4435EEF4 001 513DD000  Buffer RU Notify Chunks
44360754 0000000076 44360698 443607A0 001 513DD000  *Init*
443607A0 0000002100 44360754 44360FD4 001 513DD000  Resource User Type IDs
44360FD4 0000004148 443607A0 44362008 001 513DD000  Resource User IDs
44362008 0000000076 44360FD4 44362054 001 513DD000  NameDB String
44362054 0000000076 44362008 443620A0 001 513DD000  NameDB String
443620A0 0000000096 44362054 44362100 001 513DD000  *Init*
443623AC 0000000076 44362100 443623F8 001 513DD000  NameDB String
443623F8 0000010052 443623AC 44364B3C 001 513DD000  List Elements
44364B3C 0000010052 443623F8 44367280 001 513DD000  List Elements
4436758C 0000001552 4436752C 44367B9C 001 513DD000  Reg Function iList
44367B9C 0000000164 4436758C 44367C40 001 513DD000  *Init*
44367C40 0000000076 44367B9C 44367C8C 001 513DD000  Parser Linkage
44367C8C 0000000076 44367C40 44367CD8 001 513DD000  Parser Linkage
44367CD8 0000000076 44367C8C 44367D24 001 513DD000  Parser Linkage
44367D70 0000000076 44367D24 44367DBC 001 513DD000  Parser Linkage
44367DBC 0000000076 44367D70 44367E08 001 513DD000  Cond Debug definition
44367E08 0000000076 44367DBC 44367E54 001 513DD000  Parser Linkage
44367E54 0000000076 44367E08 44367EA0 001 513DD000  Cond Debug definition
44367EA0 0000000076 44367E54 44367EEC 001 513DD000  Cond Debug definition
44367EEC 0000000076 44367EA0 44367F38 001 513DD000  Cond Debug definition
44367F38 0000000076 44367EEC 44367F84 001 513DD000  Cond Debug definition
44367F84 0000000384 44367F38 44368104 001 513DD000  *Init*
4436B5C8 0000000076 4436B57C 4436B614 001 513DD000  Init
4436B614 0000000076 4436B5C8 4436B660 001 513DD000  Init
4436B660 0000000076 4436B614 4436B6AC 001 513DD000  Init
4436BC04 0000000076 4436BBB8 4436BC50 001 513DD000  Init
4436BC50 0000003460 4436BC04 4436C9D4 001 513DD000  *Hardware IDB*
4436C9D4 0000000076 4436BC50 4436CA20 001 513DD000  Init
4436CA20 0000001080 4436C9D4 4436CE58 001 513DD000  Index Table Block
4436CE58 0000000076 4436CA20 4436CEA4 001 513DD000  Init
4436CEA4 0000000076 4436CE58 4436CEF0 001 513DD000  Init
4436CEF0 0000000308 4436CEA4 4436D024 001 513DD000  Init
4436D024 0000000076 4436CEF0 4436D070 001 513DD000  NameDB String
4436D070 0000000104 4436D024 4436D0D8 001 513DD000  NameDB String
4436D434 0000000096 4436D188 4436D494 001 513DD000  Init
4436D740 0000000096 4436D494 4436D7A0 001 513DD000  Init
4436D7A0 0000010052 4436D740 4436FEE4 001 513DD000  Packet Elements
4436FEE4 0000000372 4436D7A0 44370058 001 513DD000  Pool Info
44370058 0000000372 4436FEE4 443701CC 001 513DD000  Pool Info
443701CC 0000000372 44370058 44370340 001 513DD000  Pool Info
44370340 0000000860 443701CC 4437069C 001 513DD000  *Packet Header*
4437069C 0000000372 44370340 44370810 001 513DD000  Pool Info
44370810 0000000860 4437069C 44370B6C 001 513DD000  *Packet Header*
44370B6C 0000000860 44370810 44370EC8 001 513DD000  *Packet Header*
44370EC8 0000000860 44370B6C 44371224 001 513DD000  *Packet Header*
44371224 0000000860 44370EC8 44371580 001 513DD000  *Packet Header*
44371580 0000000860 44371224 443718DC 001 513DD000  *Packet Header*
443718DC 0000000860 44371580 44371C38 001 513DD000  *Packet Header*
44371C38 0000000860 443718DC 44371F94 001 513DD000  *Packet Header*
44371F94 0000000860 44371C38 443722F0 001 513DD000  *Packet Header*
443722F0 0000000860 44371F94 4437264C 001 513DD000  *Packet Header*
4437264C 0000000860 443722F0 443729A8 001 513DD000  *Packet Header*
443729A8 0000000860 4437264C 44372D04 001 513DD000  *Packet Header*
.
.
.
Resource User: Compute SRP rates(ID: 0x1000021)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
Processor memory
 Address      Bytes     Prev     Next Ref   Alloc PC  What
446D502C 0000006052 446D4D5C 446D67D0 001 513DD000  Init
446D67D0 0000000188 446D502C 446D688C 001 513DD000  Process Events
5055163C 0000000684 505512CC 505518E8 001 513DD000  Init
  Resource User: SERIAL A'detect(ID: 0x1000022)
Chunk Elements :
Allocated Size(b): 44 Count: 1 Freed Size(b): 0 Count: 0
Processor memory
 Address      Bytes     Prev     Next Ref   Alloc PC  What
```

```
44722FCC 0000000684 4471DE58 44723278 001 513DD000  Init
50598A4C 0000006052 505989E8 5059A1F0 001 513DD000  Init
5059A1F0 0000000188 50598A4C 5059A2AC 001 513DD000  Process Events
  Resource User: GraphIt(ID: 0x1000023)
Chunk Elements :
Allocated Size(b): 44 Count: 1 Freed Size(b): 44 Count: 1
Processor memory
 Address      Bytes     Prev     Next Ref   Alloc PC  What
447235B8 0000000684 4472356C 44723864 001 513DD000  Init
5059A8A8 0000006052 5059A350 5059C04C 001 513DD000  Init
5059C04C 0000000188 5059A8A8 5059C108 001 513DD000  Process Events
  Resource User: rf proxy rp agent(ID: 0x1000024)
Chunk Elements :
Allocated Size(b): 39056 Count: 504 Freed Size(b): 33756 Count: 452
Processor memory
 Address      Bytes     Prev     Next Ref   Alloc PC  What
446B752C 0000000144 446B74D4 446B75BC 001 513DD000  NameDB String
44728FC0 0000000684 44728F74 4472926C 001 513DD000  Init
44B19780 0000001160 44B1867C 44B19C08 001 513DD000  IPC Port
44B204A0 0000000148 44B2042C 44B20534 001 513DD000  IPC Name String
44B220E8 0000000096 44B2202C 44B22148 001 513DD000  rf proxy rp agent
44B22148 0000001160 44B220E8 44B225D0 001 513DD000  IPC Port
44B22938 0000000076 44B2287C 44B22984 001 513DD000  NameDB String
44B22984 0000000096 44B22938 44B229E4 001 513DD000  rf proxy rp agent
44B22D4C 0000000076 44B22C90 44B22D98 001 513DD000  NameDB String
44B22D98 0000000096 44B22D4C 44B22DF8 001 513DD000  rf proxy rp agent
44B23160 0000000076 44B230A4 44B231AC 001 513DD000  NameDB String
44B231AC 0000000096 44B23160 44B2320C 001 513DD000  rf proxy rp agent
44B2320C 0000000076 44B231AC 44B23258 001 513DD000  IPC Name String
50543ABC 0000000104 50543A00 50543B24 001 513DD000  IPC Name
5061CC34 0000000188 5059EC00 5061CCF0 001 513DD000  Process Events
5061CDB4 0000006052 5061CD68 5061E558 001 513DD000  Init
50A8780C 0000000132 50A877C0 50A87890 001 513DD000  IPC Name String
50AC8094 0000065588 50AC7C0C 50AD80C8 001 513DD000  EvtMgr active chunk
50AD986C 0000001160 50AD80C8 50AD9CF4 001 513DD000  IPC Port
  Resource User: HC Counter Timers(ID: 0x1000025)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
.
.
.
Resource User: NetFlow Agg Task(ID: 0x1000114)
Getbufs  Retbufs  Holding  RU Name
0        0        0        NetFlow Agg Task
  Resource User: CWAN OIR IPC Ready Process(ID: 0x1000115)
Getbufs  Retbufs  Holding  RU Name
0        0        0        CWAN OIR IPC Rea
  Resource User: PF Clock Process(ID: 0x1000116)
Getbufs  Retbufs  Holding  RU Name
0        0        0        PF Clock Process
  Resource User: CEF IPC Background(ID: 0x1000117)
Getbufs  Retbufs  Holding  RU Name
0        0        0        CEF IPC Backgrou
  Resource User: RTTYS Process(ID: 0x1000118)
Getbufs  Retbufs  Holding  RU Name
0        0        0        RTTYS Process
  Resource User: DHCPD Timer(ID: 0x100011B)
Getbufs  Retbufs  Holding  RU Name
0        0        0        DHCPD Timer
  Resource User: DHCPD Database(ID: 0x100011C)
Getbufs  Retbufs  Holding  RU Name
0        0        0        DHCPD Database
  Resource User: draco-oir-process:slot 2(ID: 0x100011E)
Getbufs  Retbufs  Holding  RU Name
0        0        0        draco-oir-proces
  Resource User: SCP async: Draco-LC4(ID: 0x1000125)
Getbufs  Retbufs  Holding  RU Name
35908    243517   4294759687 SCP async: Draco
  Resource User: IFCOM Msg Hdlr(ID: 0x1000127)
Getbufs  Retbufs  Holding  RU Name
2        2        0        IFCOM Msg Hdlr
  Resource User: IFCOM Msg Hdlr(ID: 0x1000128)
Getbufs  Retbufs  Holding  RU Name
```

```
28        28        0         IFCOM Msg Hdlr
  Resource User: Exec(ID: 0x100012C)
Getbufs  Retbufs  Holding  RU Name
17552    17552    0        Exec
Resource Owner: test_mem
 Resource User Type: test_process
 Resource User Type: mem_rut
Resource Owner: test_cpu
 Resource User Type: test_process
 Resource User Type: cpu_rut
```

The table below describes the significant fields shown in the display.

Table 1 show resource all Field Descriptions

Field	Description
Runtime(ms)	The runtime of the process in milliseconds.
Invoked	The number of times a Resource User (RU) has been allowed to run.
uSecs	The amount of runtime per invocation in microseconds.
Allocated Size(b)	The number of bytes of memory that is allocated.
Freed Size(b)	The number of bytes of memory that is freed.
Count	The number of elements that are allocated or freed. For example, if two elements of 50 bytes each are allocated, then the allocated count is 2 and allocated size is 100.
pc	Displays the details of the memory that is held by a process. Each line of the output displays one or more blocks of memory. The pc is the allocator pc of a particular block of memory.
size	The total size of memory allocated to each block. The sum of the size of all blocks is equivalent to the total memory held by the process.
count	The count is the number of blocks of memory.
Getbufs	The number of buffers allocated by the RU.
Retbufs	The number of buffers freed by the RU.
Holding	The number of buffers the RU is holding currently.

Related Commands

Command	Description
buffer public	Enters the buffer owner configuration mode and sets thresholds for buffer usage.
cpu interrupt	Enters the CPU owner configuration mode and sets thresholds for interrupt level CPU utilization.
cpu process	Enters the CPU owner configuration mode and sets thresholds for processor level CPU utilization.
cpu total	Enters the CPU owner configuration mode and sets thresholds for total CPU utilization.
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
memory io	Enters the memory owner configuration mode and sets threshold values for I/O memory.
memory processor	Enters the memory owner configuration mode and sets threshold values for processor memory.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource database	Displays the database details of ROs.
show resource owner	Displays the RO details.
show resource relationship	Displays the relationship between the RUs and the ROs.

show resource database

To display the details of a resource owner, use the **showresourcedatabase** command in user EXEC or privileged EXEC mode.

show resource database

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.

Examples

The following is sample output from the **showresourcedatabase**command:

```
Router# show resource database
List of all Resource Owners :
Owner: cpu                       Id:0x1
Owner's list of monitors is empty.
Owner: memory                    Id:0x2
Owner's list of monitors is empty.
Owner: Buffer                    Id:0x3
Owner's list of monitors is empty.
Owner: test_mem                  Id:0x4
Owner's list of monitors is empty.
Owner: test_cpu                  Id:0x5
Owner's list of monitors is empty.
Owner: test_RO0                  Id:0x7
Owner's list of monitors is empty.
Owner: test_RO1                  Id:0x8
Owner's list of monitors is empty.
Owner: test_RO2                  Id:0x9
Owner's list of monitors is empty.
Owner: test_RO3                  Id:0xA
Owner's list of monitors is empty.
Owner: test_RO4                  Id:0xB
Owner's list of monitors is empty.
Owner: test_RO5                  Id:0xC
Owner's list of monitors is empty.
.
.
.
List of all Resource Usertypes :
```

```
RUT: iosprocess                Id:0x1
RUT: test_process              Id:0x2
RUT: mem_rut                   Id:0x3
RUT: cpu_rut                   Id:0x4
RUT: test_RUT0                 Id:0x5
RUT: test_RUT1                 Id:0x6
RUT: test_RUT2                 Id:0x7
RUT: test_RUT3                 Id:0x8
RUT: test_RUT4                 Id:0x9
RUT: test_RUT5                 Id:0xA
.
.
.
List of all Resource User Groups :
List of all Resource Users :
usertype: iosprocess                Id:0x1
 user: Init                      Id:0x1000001, priority:0
 user: Scheduler                 Id:0x1000002, priority:0
 user: Dead                      Id:0x1000003, priority:0
 user: Interrupt                 Id:0x1000004, priority:0
 user: Memory RO RU              Id:0x1000005, priority:0
 user: Chunk Manager             Id:0x1000006, priority:1
 user: Load Meter                Id:0x1000007, priority:1
 user: Check heaps               Id:0x1000009, priority:4
 user: Pool Manager              Id:0x100000A, priority:1
 user: Buffer RO RU              Id:0x100000B, priority:0
 user: Timers                    Id:0x100000C, priority:3
 user: Serial Background         Id:0x100000D, priority:3
 user: ALARM_TRIGGER_SCAN        Id:0x100000E, priority:4
 user: AAA_SERVER_DEADTIME       Id:0x100000F, priority:4
 user: AAA high-capacity counter Id:0x1000010, priority:3
 user: Policy Manager            Id:0x1000011, priority:3
 user: Crash writer              Id:0x1000012, priority:3
 user: RO Notify Timers          Id:0x1000013, priority:3
 user: RMI RM Notify Watched Pol Id:0x1000014, priority:3
 user: EnvMon                    Id:0x1000015, priority:3
 user: OIR Handler               Id:0x1000016, priority:3
 user: IPC Dynamic Cache         Id:0x1000017, priority:3
 user: IPC Zone Manager          Id:0x1000018, priority:3
 user: IPC Periodic Timer        Id:0x1000019, priority:3
 user: IPC Managed Timer         Id:0x100001A, priority:3
 user: IPC Deferred Port Closure Id:0x100001B, priority:3
.
.
.
Resource Monitor: test_ROM0, ID: 0x1B
 Not Watching any Relations.
 Not Watching any Policies.
Resource Monitor: test_ROM1, ID: 0x1C
 Not Watching any Relations.
 Not Watching any Policies.
Resource Monitor: test_ROM2, ID: 0x1D
 Not Watching any Relations.
 Not Watching any Policies.
```

Related Commands

Command	Description
buffer public	Enters the buffer owner configuration mode and sets thresholds for buffer usage.
cpu interrupt	Enters the CPU owner configuration mode and sets thresholds for interrupt level CPU utilization.
cpu process	Enters the CPU owner configuration mode and sets thresholds for processor level CPU utilization.

Command	Description
cpu total	Enters the CPU owner configuration mode and sets thresholds for total CPU utilization.
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
memory io	Enters the memory owner configuration mode and sets threshold values for I/O memory.
memory processor	Enters the memory owner configuration mode and sets threshold values for processor memory.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
show resource owner	Displays the RO details.
show resource relationship	Displays the relationship between the RUs and the ROs.

show resource owner

To display the details of a resource owner (RO), use the **showresourceowner** command in user EXEC or privileged EXEC mode.

show resource owner {*resource-owner-name* | **all**} **user** {*resource-user-type-name* | **all**} [**brief** [**triggers**] | **detailed** [**triggers**] | **triggers**]

Syntax Description

resource-owner-name	Name of the specified RO whose details are displayed.
all	Displays details of all the ROs.
user	Displays details of the specified resource user (RU) type.
resource-user-type-name	Single resource user type.
all	Displays details of all the resource user types.
brief	(Optional) Displays brief details.
detailed	(Optional) Displays complete details.
triggers	(Optional) Displays the triggers.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.

Examples

The following is sample output from the **showresourceowner**command:

```
Router# show resource owner all user all
Resource Owner: cpu
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
```

```
16777217           0         0          0  0.00%  0.00%  0.00% Init
Resource User: Scheduler(ID: 0x1000002)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777218           0         0          0  0.00%  0.00%  0.00% Scheduler
Resource User: Dead(ID: 0x1000003)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777219           0         0          0  0.00%  0.00%  0.00% Dead
Resource User: Interrupt(ID: 0x1000004)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777220           0         0          0  0.00%  0.00%  0.00% Interrupt
Resource User: Memory RO RU(ID: 0x1000005)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777221           0         0          0  0.00%  0.00%  0.00% Memory RO RU
Resource User: Chunk Manager(ID: 0x1000006)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777222           4         3       1333  0.00%  0.00%  0.00% Chunk Manager
Resource User: Load Meter(ID: 0x1000007)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777223           4       292         13  0.00%  0.00%  0.00% Load Meter
Resource User: Check heaps(ID: 0x1000009)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777225         376       192       1958  0.00%  0.02%  0.00% Check heaps
Resource User: Pool Manager(ID: 0x100000A)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777226           0         1          0  0.00%  0.00%  0.00% Pool Manager
Resource User: Buffer RO RU(ID: 0x100000B)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777227           0         0          0  0.00%  0.00%  0.00% Buffer RO RU
Resource User: Timers(ID: 0x100000C)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777228           0         2          0  0.00%  0.00%  0.00% Timers
Resource User: Serial Background(ID: 0x100000D)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
.
.
.
Resource Owner: memory
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
Chunk Elements :
Allocated Size(b): 25967632 Count: 46612 Freed Size(b): 21487684 Count: 26053
Processor memory
Total Memory held : 15250376 bytes
pc = 0x6072D840, size =   4040536, count =    6
pc = 0x6034E040, size =   1937508, count =    2
pc = 0x6070DAF0, size =    560096, count =    1
pc = 0x606D7530, size =    556220, count =  685
pc = 0x613AFA74, size =    350972, count =   25
pc = 0x60ECA4F0, size =    280004, count =    1
pc = 0x606DEC1C, size =    270600, count =  100
pc = 0x616EF268, size =    262148, count =    1
pc = 0x6085C318, size =    196620, count =    3
pc = 0x61479630, size =    144004, count =    1
pc = 0x613E1DB0, size =    131768, count =    4
.
.
.
I/O memory
Total Memory held : 4059856 bytes
pc = 0x606DEC30, size =   3408704, count =   52
pc = 0x606DEB94, size =    442464, count =    6
pc = 0x606D76A4, size =    179872, count =  146
pc = 0x600ED530, size =     16448, count =    4
pc = 0x600ED498, size =      8256, count =    4
pc = 0x6080D3F0, size =      4112, count =    1
  Resource User: Scheduler(ID: 0x1000002)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
Processor memory
Total Memory held : 12172 bytes
pc = 0x607B44F0, size =     12004, count =    1
pc = 0x607643B8, size =       168, count =    4
.
```

```
.
.
Resource User: Critical Bkgnd(ID: 0x1000026)
Chunk Elements :
Allocated Size(b): 44 Count: 1 Freed Size(b): 0 Count: 0
Processor memory
Total Memory held : 6780 bytes
pc = 0x607B44F0, size =      6004, count =    1
pc = 0x6079CB28, size =       636, count =    1
pc = 0x6079EE84, size =       140, count =    1
.
.
.
Resource Owner: Buffer
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
Getbufs  Retbufs  Holding  RU Name
319      51       268      Init
Resource User: Scheduler(ID: 0x1000002)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Scheduler
Resource User: Dead(ID: 0x1000003)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Dead
Resource User: Interrupt(ID: 0x1000004)
Getbufs  Retbufs  Holding  RU Name
1356     1356     0        Interrupt
Resource User: Memory RO RU(ID: 0x1000005)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Memory RO RU
Resource User: Chunk Manager(ID: 0x1000006)
Getbufs  Retbufs  Holding  RU Name
0        0        0        Chunk Manager
.
.
.
Resource Owner: test_mem
 Resource User Type: test_process
 Resource User Type: mem_rut
Resource Owner: test_cpu
 Resource User Type: test_process
 Resource User Type: cpu_rut
Resource User: test_RU0(ID: 0x4000001)
>>>RU: Blank
Resource User: test_RU1(ID: 0x4000002)
>>>RU: Blank
Resource User: test_RU2(ID: 0x4000003)
>>>RU: Blank
Resource User: test_RU3(ID: 0x4000004)
>>>RU: Blank
.
.
.
Resource User Type: test_RUT143
 Resource User Type: test_RUT144
 Resource User Type: test_RUT145
 Resource User Type: test_RUT146
 Resource User Type: test_RUT147
```

The following is sample output from the **showresourceowneralluserallbrief**command:

```
Router# show resource owner all user all brief

Resource Owner: cpu
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777217           0         0          0  0.00%  0.00%  0.00% Init
Resource User: Scheduler(ID: 0x1000002)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777218           0         0          0  0.00%  0.00%  0.00% Scheduler
Resource User: Dead(ID: 0x1000003)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
```

```
16777219           0         0          0  0.00%  0.00%  0.00% Dead
Resource User: Interrupt(ID: 0x1000004)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777220           0         0          0  0.00%  0.00%  0.00% Interrupt
Resource User: Memory RO RU(ID: 0x1000005)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777221           0         0          0  0.00%  0.00%  0.00% Memory RO RU
Resource User: Chunk Manager(ID: 0x1000006)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777222           4         3       1333  0.00%  0.00%  0.00% Chunk Manager
Resource User: Load Meter(ID: 0x1000007)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777223           4       322         12  0.00%  0.01%  0.00% Load Meter
Resource User: Check heaps(ID: 0x1000009)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777225         424       214       1981  0.00%  0.04%  0.00% Check heaps
.
.
.
Resource Owner: memory
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
Processor memory
Allocated   Freed  Holding   Blocks
21916780  6666404 15250376     8688
I/O memory
Allocated   Freed  Holding   Blocks
 4059856        0  4059856      213
Resource User: Scheduler(ID: 0x1000002)
Processor memory
Allocated   Freed  Holding   Blocks
   12172        0    12172        5
.
.
.
Resource Owner: test_mem
 Resource User Type: test_process
 Resource User Type: mem_rut
Resource Owner: test_cpu
 Resource User Type: test_process
 Resource User Type: cpu_rut
Resource User: test_RU0(ID: 0x4000001)
>>>RU: Blank
Resource User: test_RU1(ID: 0x4000002)
>>>RU: Blank
Resource User: test_RU2(ID: 0x4000003)
>>>RU: Blank
Resource User: test_RU3(ID: 0x4000004)
>>>RU: Blank
Resource User: test_RU4(ID: 0x4000005)
>>>RU: Blank
.
.
.
Resource Owner: test_RO0
Resource User Type: test_RUT0
Resource User Type: test_RUT1
Resource User Type: test_RUT2
Resource User Type: test_RUT3
Resource User Type: test_RUT4
Resource User Type: test_RUT5
Resource User Type: test_RUT6
Resource User Type: test_RUT7
Resource User Type: test_RUT8
Resource User Type: test_RUT9
Resource User Type: test_RUT10
Resource User Type: test_RUT11
Resource User Type: test_RUT12
Resource User Type: test_RUT13
Resource User Type: test_RUT14
Resource User Type: test_RUT15
Resource User Type: test_RUT16
```

The following is sample output from the **showresourceowneralluserallbrieftriggers**command:

```
Router# show resource owner all user all brief triggers

Resource Owner: cpu
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777217           0         0          0  0.00%  0.00%  0.00% Init
Resource User: Scheduler(ID: 0x1000002)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777218           0         0          0  0.00%  0.00%  0.00% Scheduler
Resource User: Dead(ID: 0x1000003)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777219           0         0          0  0.00%  0.00%  0.00% Dead
Resource User: Interrupt(ID: 0x1000004)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777220           0         0          0  0.00%  0.00%  0.00% Interrupt
Resource User: Memory RO RU(ID: 0x1000005)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777221           0         0          0  0.00%  0.00%  0.00% Memory RO RU
Resource User: Chunk Manager(ID: 0x1000006)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777222           4         3       1333  0.00%  0.00%  0.00% Chunk Manager
.
.
.
Resource Owner: test_mem
Resource User Type: test_process
Resource User Type: mem_rut
Resource Owner: test_cpu
Resource User Type: test_process
Resource User Type: cpu_rut
Resource User: test_RU0(ID: 0x4000001)
>>>RU: Blank
Resource User: test_RU1(ID: 0x4000002)
>>>RU: Blank
Resource User: test_RU2(ID: 0x4000003)
>>>RU: Blank
Resource User: test_RU3(ID: 0x4000004)
>>>RU: Blank
Resource User: test_RU4(ID: 0x4000005)
>>>RU: Blank
Resource User: test_RU5(ID: 0x4000006)
>>>RU: Blank
```

The following is sample output from the **showresourceowneralluseralldetailed**command:

```
Router# show resource owner all user all detailed

Resource Owner: cpu
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777217           0         0          0  0.00%  0.00%  0.00% Init
Resource User: Scheduler(ID: 0x1000002)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777218           0         0          0  0.00%  0.00%  0.00% Scheduler
Resource User: Dead(ID: 0x1000003)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777219           0         0          0  0.00%  0.00%  0.00% Dead
Resource User: Interrupt(ID: 0x1000004)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777220           0         0          0  0.00%  0.00%  0.00% Interrupt
Resource User: Memory RO RU(ID: 0x1000005)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777221           0         0          0  0.00%  0.00%  0.00% Memory RO RU
Resource User: Chunk Manager(ID: 0x1000006)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777222           4         3       1333  0.00%  0.00%  0.00% Chunk Manager
Resource User: Load Meter(ID: 0x1000007)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
```

```
16777223           4       353         11  0.00%  0.01%  0.00% Load Meter
Resource User: Check heaps(ID: 0x1000009)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777225         456       232       1965  0.00%  0.01%  0.00% Check heaps
Resource User: Pool Manager(ID: 0x100000A)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777226           0         1          0  0.00%  0.00%  0.00% Pool Manager
Resource User: Buffer RO RU(ID: 0x100000B)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777227           0         0          0  0.00%  0.00%  0.00% Buffer RO RU
Resource User: Timers(ID: 0x100000C)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777228           0         2          0  0.00%  0.00%  0.00% Timers
.
.
.
Resource Owner: memory
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
Chunk Elements :
Allocated Size(b): 25967632 Count: 46612 Freed Size(b): 21487684 Count: 26053
Processor memory
 Address      Bytes     Prev     Next Ref   Alloc PC  What
63700E18 0000020052 636FDCD4 63705C6C 001 6412D2C0  Managed Chunk Queue Elements
63705C6C 0000012852 63700E18 63708EA0 001 6412D2C0  *Init*
63708EA0 0000010052 63705C6C 6370B5E4 001 6412D2C0  List Elements
6370B5E4 0000005052 63708EA0 6370C9A0 001 6412D2C0  List Headers
6370C9A0 0000009052 6370B5E4 6370ECFC 001 6412D2C0  Interrupt Stack
6370ECFC 0000000096 6370C9A0 6370ED5C 001 6412D2C0  *Init*
6370ED5C 0000000084 6370ECFC 6370EDB0 001 6412D2C0  *Init*
6370EDB0 0000000132 6370ED5C 6370EE34 001 6412D2C0  *Init*
6370EE34 0000000092 6370EDB0 6370EE90 001 6412D2C0  *Init*
6370EE90 0000000436 6370EE34 6370F044 001 6412D2C0  *Init*
6370F044 0000000076 6370EE90 6370F090 001 6412D2C0  *Init*
6370F090 0000000132 6370F044 6370F114 001 6412D2C0  *Init*
6370F114 0000000092 6370F090 6370F170 001 6412D2C0  *Init*
.
.
.
Resource User: Scheduler(ID: 0x1000002)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
Processor memory
 Address      Bytes     Prev     Next Ref   Alloc PC  What
63799F04 0000012052 63799EB8 6379CE18 001 6412D2C0  Scheduler Stack
643E9A38 0000000076 643D9A04 643E9A84 001 6412D2C0  *Sched*
644C47F0 0000000076 644C4790 644C483C 001 6412D2C0  *Sched*
645FF744 0000000096 645FF6E8 645FF7A4 001 6412D2C0  *Sched*
64904354 0000000112 649040D0 649043C4 001 6412D2C0  *Sched*
  Resource User: Dead(ID: 0x1000003)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
Processor memory
 Address      Bytes     Prev     Next Ref   Alloc PC  What
63F9D328 0000000096 63F984D4 63F9D388 001 6412D2C0  AAA MI SG NAME
  Resource User: Interrupt(ID: 0x1000004)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
```

The following is sample output from the **showresourceowneralluseralldetailedtriggers**command:

```
Router# show resource owner all user all detailed triggers
Resource Owner: cpu
 Resource User Type: iosprocess
  Resource User: Init(ID: 0x1000001)
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777217           0         0          0  0.00%  0.00%  0.00% Init
Resource User: Scheduler(ID: 0x1000002)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777218           0         0          0  0.00%  0.00%  0.00% Scheduler
Resource User: Dead(ID: 0x1000003)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777219           0         0          0  0.00%  0.00%  0.00% Dead
```

```
Resource User: Interrupt(ID: 0x1000004)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777220           0         0          0  0.00%  0.00%  0.00% Interrupt
Resource User: Memory RO RU(ID: 0x1000005)
RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777221           0         0          0  0.00%  0.00%  0.00% Memory RO RU
Resource User: Chunk Manager(ID: 0x1000006)
.
.
.
Resource User: Scheduler(ID: 0x1000002)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
Processor memory
 Address      Bytes     Prev     Next Ref   Alloc PC  What
63799F04 0000012052 63799EB8 6379CE18 001 6412D2C0  Scheduler Stack
643E9A38 0000000076 643D9A04 643E9A84 001 6412D2C0  *Sched*
644C47F0 0000000076 644C4790 644C483C 001 6412D2C0  *Sched*
645FF744 0000000096 645FF6E8 645FF7A4 001 6412D2C0  *Sched*
64904354 0000000112 649040D0 649043C4 001 6412D2C0  *Sched*
  Resource User: Dead(ID: 0x1000003)
Chunk Elements :
Allocated Size(b): 0 Count: 0 Freed Size(b): 0 Count: 0
.
.
.
Resource User Type: test_RUT142
Resource User Type: test_RUT143
Resource User Type: test_RUT144
Resource User Type: test_RUT145
Resource User Type: test_RUT146
Resource User Type: test_RUT147
Resource User Type: test_RUT148
Resource User Type: test_RUT149
```

The table below describes the significant fields shown in the display.

Table 2 show resource owner Field Descriptions

Field	Description
Runtime(ms)	The runtime of the process in milliseconds.
Invoked	The number of times an RU has been allowed to run.
uSecs	The amount of runtime per invocation in microseconds.
Allocated Size(b)	The number of bytes of memory that are allocated.
Freed Size(b)	The number of bytes of memory that are freed.
Count	The number of elements that are allocated or freed. For example, if two elements of 50 bytes each are allocated, the allocated count is 2 and allocated size is 100.

Field	Description
pc	Displays the details of the memory that is held by a process. Each line of the output displays one or more blocks of memory. The pc is the allocator pc of a particular block of memory.
size	The total size of memory allocated to each block. The sum of the size of all blocks is equivalent to the total memory held by the process.
count	The count is the number of blocks of memory.
Getbufs	The number of buffers allocated by the RU.
Retbufs	The number of buffers freed by the RU.
Holding	The number of buffers the RU is holding currently.

Related Commands

Command	Description
buffer public	Enters buffer owner configuration mode and sets thresholds for buffer usage.
cpu interrupt	Enters CPU owner configuration mode and sets thresholds for interrupt level CPU utilization.
cpu process	Enters CPU owner configuration mode and sets thresholds for processor level CPU utilization.
cpu total	Enters CPU owner configuration mode and sets thresholds for total CPU utilization.
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
memory io	Enters memory owner configuration mode and sets threshold values for I/O memory.
memory processor	Enters memory owner configuration mode and sets threshold values for processor memory.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.

Command	Description
show resource all	Displays all the resource details.
show resource database	Displays the entire database of all resource entry relationships.
show resource relationship	Displays the relationship between the RUs and the ROs.

show resource relationship

To display the details of relationships between different resource owners, use the **showresourcerelationship** command in user EXEC or privileged EXEC mode.

show resource relationship user *resource-user-type*

Syntax Description

user	Identifies a resource user (RU).
resource-user-type	Type of RU.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.

Examples

The following is sample output from the **showresourcerelationship** command:

```
Router# show resource relationship
Resource User Type: iosprocess (ID: 0x1)
 -> Resource Owner: cpu (ID: 0x1)
 -> Resource Owner: memory (ID: 0x2)
 -> Resource Owner: Buffer (ID: 0x3)
 -> Resource User: Init (ID: 0x1000001)
 -> Resource User: Scheduler (ID: 0x1000002)
 -> Resource User: Dead (ID: 0x1000003)
 -> Resource User: Interrupt (ID: 0x1000004)
 -> Resource User: Memory RO RU (ID: 0x1000005)
 -> Resource User: Chunk Manager (ID: 0x1000006)
 -> Resource User: Load Meter (ID: 0x1000007)
 -> Resource User: Check heaps (ID: 0x1000009)
 -> Resource User: Pool Manager (ID: 0x100000A)
 -> Resource User: Buffer RO RU (ID: 0x100000B)
 -> Resource User: Timers (ID: 0x100000C)
 -> Resource User: Serial Background (ID: 0x100000D)
 -> Resource User: ALARM_TRIGGER_SCAN (ID: 0x100000E)
 -> Resource User: AAA_SERVER_DEADTIME (ID: 0x100000F)
 -> Resource User: AAA high-capacity counters (ID: 0x1000010)
 -> Resource User: Policy Manager (ID: 0x1000011)
 -> Resource User: Crash writer (ID: 0x1000012)
 -> Resource User: RO Notify Timers (ID: 0x1000013)
 -> Resource User: RMI RM Notify Watched Policy (ID: 0x1000014)
 -> Resource User: EnvMon (ID: 0x1000015)
 -> Resource User: OIR Handler (ID: 0x1000016)
 -> Resource User: IPC Dynamic Cache (ID: 0x1000017)
 -> Resource User: IPC Zone Manager (ID: 0x1000018)
 -> Resource User: IPC Periodic Timer (ID: 0x1000019)
 -> Resource User: IPC Managed Timer (ID: 0x100001A)
 -> Resource User: IPC Deferred Port Closure (ID: 0x100001B)
 -> Resource User: IPC Seat Manager (ID: 0x100001C)
 -> Resource User: IPC Session Service (ID: 0x100001D)
 -> Resource User: Compute SRP rates (ID: 0x100001E)
 -> Resource User: ARP Input (ID: 0x100001F)
 -> Resource User: DDR Timers (ID: 0x1000020)
 -> Resource User: Dialer event (ID: 0x1000021)
 -> Resource User: Entity MIB API (ID: 0x1000022)
 -> Resource User: SERIAL A'detect (ID: 0x1000023)
 -> Resource User: GraphIt (ID: 0x1000024)
 -> Resource User: HC Counter Timers (ID: 0x1000025)
.
.
.
Resource User Type: test_RUT141 (ID: 0x92)
 -> Resource Owner: test_RO0 (ID: 0x7)
 Resource User Type: test_RUT142 (ID: 0x93)
 -> Resource Owner: test_RO0 (ID: 0x7)
 Resource User Type: test_RUT143 (ID: 0x94)
 -> Resource Owner: test_RO0 (ID: 0x7)
 Resource User Type: test_RUT144 (ID: 0x95)
 -> Resource Owner: test_RO0 (ID: 0x7)
 Resource User Type: test_RUT145 (ID: 0x96)
 -> Resource Owner: test_RO0 (ID: 0x7)
 Resource User Type: test_RUT146 (ID: 0x97)
 -> Resource Owner: test_RO0 (ID: 0x7)
 Resource User Type: test_RUT147 (ID: 0x98)
 -> Resource Owner: test_RO0 (ID: 0x7)
 Resource User Type: test_RUT148 (ID: 0x99)
 -> Resource Owner: test_RO0 (ID: 0x7)
 Resource User Type: test_RUT149 (ID: 0x9A)
 -> Resource Owner: test_RO0 (ID: 0x7)
```

Related Commands

Command	Description
buffer public	Enters buffer owner configuration mode and sets thresholds for buffer usage.
cpu interrupt	Enters CPU owner configuration mode and sets thresholds for interrupt level CPU utilization.
cpu process	Enters CPU owner configuration mode and sets thresholds for processor level CPU utilization.
cpu total	Enters CPU owner configuration mode and sets thresholds for total CPU utilization.
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
memory io	Enters memory owner configuration mode and sets threshold values for the I/O memory.

Command	Description
memory processor	Enters memory owner configuration mode and sets threshold values for the processor memory.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
show resource database	Displays the entire database of all resource entry relationships.
show resource owner	Displays the RO details.

show resource user

To display the policy details or Resource User (RU) template details of a resource user, use the **showresourceuser** command in user EXEC or privileged EXEC mode.

show resource user {**all** | *resource-user-type*} [**brief** | **detailed**]

Syntax Description

all	Displays the policy details of all the RUs.
resource-user-type	Type of RU. For example, iosprocess.
brief	(Optional) Displays a short description of the policy details.
detailed	(Optional) Displays all details of a policy.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.

Examples

The following is sample output from the **showresourceuser**command:

```
Router# show resource user all
Resource User Type: iosprocess
Resource Grp: Init
Resource Owner: memory
Processor memory
Allocated   Freed  Holding   Blocks
27197780  8950144 18247636     6552
I/O memory
Allocated   Freed  Holding   Blocks
 7296000     9504  7286496      196
Resource Owner: cpu
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777224       14408       116     124206 100.40%  8.20%  1.70% Init
Resource Owner: Buffer
Getbufs  Retbufs  Holding  RU Name
332      60       272      Init
Resource User: Init
Resource User: Scheduler
Resource Owner: memory
Processor memory
Allocated   Freed  Holding   Blocks
   77544        0    77544        2
Resource Owner: cpu
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777218           0         0          0  0.00%  0.00%  0.00% Scheduler
Resource Owner: Buffer
Getbufs  Retbufs  Holding  RU Name
0        0        0        Scheduler
Resource User: Dead
Resource Owner: memory
Processor memory
Allocated   Freed  Holding   Blocks
 1780540      260  1780280      125
Resource Owner: cpu
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777219           0         0          0  0.00%  0.00%  0.00% Dead
Resource Owner: Buffer
Getbufs  Retbufs  Holding  RU Name
9        8        1        Dead
Resource User: Interrupt
Resource Owner: memory
Processor memory
Allocated   Freed  Holding   Blocks
       0        0        0        0
Resource Owner: cpu
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777220           0         0          0  0.00%  0.00%  0.00% Interrupt
Resource Owner: Buffer
Getbufs  Retbufs  Holding  RU Name
14128    14128    0        Interrupt
Resource User: Memory RO RU
Resource Owner: memory
Processor memory
Allocated   Freed  Holding   Blocks
  132560     1480   131080        2
Resource Owner: cpu
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777221           0         0          0  0.00%  0.00%  0.00% Memory RO RU
Resource Owner: Buffer
Getbufs  Retbufs  Holding  RU Name
64       64       0        Memory RO RU
.
.
.
Resource Owner: cpu
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777401        7124      4250       1676  0.00%  0.03%  0.01% Exec
  Resource Owner: Buffer
Getbufs  Retbufs  Holding  RU Name
38       38       0        Exec
 Resource User: BGP Router
  Resource Owner: memory
Processor memory
Allocated   Freed  Holding   Blocks
   43380    26556    16824        8
  Resource Owner: cpu
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777404          12     19705          0  0.00%  0.00%  0.00% BGP Router
  Resource Owner: Buffer
Getbufs  Retbufs  Holding  RU Name
0        0        0        BGP Router
 Resource User: BGP I/O
  Resource Owner: memory
Processor memory
Allocated   Freed  Holding   Blocks
    6892     6892        0        0
  Resource Owner: cpu
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777405           0         1          0  0.00%  0.00%  0.00% BGP I/O
  Resource Owner: Buffer
Getbufs  Retbufs  Holding  RU Name
```

```
0        0        0        BGP I/O
 Resource User: BGP Scanner
  Resource Owner: memory
Processor memory
Allocated   Freed  Holding   Blocks
    9828     9828        0        0
  Resource Owner: cpu
    RUID Runtime(ms)   Invoked      uSecs   5Sec   1Min   5Min Res Usr
16777406         660       659       1001  0.00%  0.00%  0.00% BGP Scanner
  Resource Owner: Buffer
Getbufs  Retbufs  Holding  RU Name
0        0        0        BGP Scanner
Resource User Type: test_process
Resource User Type: mem_rut
Resource User Type: cpu_rut
```

The table below describes the significant fields shown in the display.

Table 3 show resource user Field Descriptions

Field	Description
Allocated	The number of bytes of memory that is allocated.
Freed	The number of bytes of memory that is freed.
Count	The number of elements that are allocated or freed. For example, if two elements of 50 bytes each are allocated, the allocated count is 2 and allocated size is 100.
Runtime(ms)	The runtime of the process in milliseconds.
Invoked	The number of times an RU has been allowed to run.
uSecs	The amount of runtime per invocation in microseconds.
Getbufs	The number of buffers allocated by the RU.
Retbufs	The number of buffers freed by the RU.
Holding	The number of buffers the RU is holding currently.

Related Commands

Command	Description
buffer public	Enters buffer owner configuration mode and sets thresholds for buffer usage.
cpu interrupt	Enters CPU owner configuration mode and sets thresholds for interrupt-level CPU utilization.
cpu process	Enters CPU owner configuration mode and sets thresholds for processor-level CPU utilization.

Command	Description
cpu total	Enters CPU owner configuration mode and sets thresholds for total CPU utilization.
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
memory io	Enters memory owner configuration mode and sets threshold values for I/O memory.
memory processor	Enters memory owner configuration mode and sets threshold values for processor memory.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.
show resource database	Displays entire database of all resource entry relationships.
show resource owner	Displays the RO details.

slot (ERM policy)

To configure line cards, use the **slot**command in ERM policy configuration mode.

slot *slot-number*

Syntax Description

slot-number	Integer that identifies a slot number or the start of a range of slots.

Command Default

Disabled.

Command Modes

ERM policy configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

You can configure line cards using the **slot***slot-number* command in ERM policy configuration mode. This command is available only in distributed platforms such as the Route Switch Processor (RSP). You must use a Cisco 7500 router with a line card for executing this command.

Examples

The following example shows how to configure the line card 0:

```
Router(config-erm-policy)# slot 0
```

Related Commands

Command	Description
buffer public	Enters the buffer owner configuration mode and sets thresholds for buffer usage.
cpu interrupt	Enters the CPU owner configuration mode and sets thresholds for interrupt level CPU utilization.

Command	Description
cpu process	Enters the CPU owner configuration mode and sets thresholds for processor level CPU utilization.
cpu total	Enters the CPU owner configuration mode and sets thresholds for total CPU utilization.
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
memory io	Enters the memory owner configuration mode and sets threshold values for I/O memory.
memory processor	Enters the memory owner configuration mode and sets threshold values for processor memory.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.

system (ERM policy)

To configure system level resource owners (ROs), use the **system**command in Embedded Resource Manager (ERM) policy configuration mode.

system

Syntax Description

This command has no arguments or keywords.

Command Default

No system level ROs are configured.

Command Modes

ERM policy configuration

Command History

Release	Modification
12.3(14)T	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Examples

The following example shows how to configure system level ROs:

```
Router(config-erm-policy)# system
```

Related Commands

Command	Description
buffer public	Enters the buffer owner configuration mode and sets thresholds for buffer usage.
cpu interrupt	Enters the CPU owner configuration mode and sets thresholds for interrupt level CPU utilization.
cpu process	Enters the CPU owner configuration mode and sets thresholds for processor level CPU utilization.
cpu total	Enters the CPU owner configuration mode and sets thresholds for total CPU utilization.

Command	Description
critical rising	Sets the critical level threshold values for the buffer, CPU, and memory ROs.
major rising	Sets the major level threshold values for the buffer, CPU, and memory ROs.
memory io	Enters the memory owner configuration mode and sets threshold values for I/O memory.
memory processor	Enters the memory owner configuration mode and sets threshold values for processor memory.
minor rising	Sets the minor level threshold values for the buffer, CPU, and memory ROs.
policy (ERM)	Configures an ERM resource policy.
resource policy	Enters ERM configuration mode.
show resource all	Displays all the resource details.

user (ERM)

To apply a global policy, create a resource group, or add resource users (RUs) to a resource group, use the **user**command in Embedded Resource Manager (ERM) configuration mode. To disable applying the policy, use the **no** form of this command.

user {*resource-instance-name resource-user-type resource-policy-name* | **global** *global-policy-name* | **group** *resource-group-name* **type** *resource-user-type*}

no user {*resource-instance-name resource-user-type resource-policy-name* | **global** *global-policy-name* | **group** *resource-group-name* **type** *resource-user-type*}

Syntax Description

resource-instance-name	Name of the RU to which you are applying a policy.
resource-user-type	Name of the RU type.
resource-policy-name	Name of the policy you are applying to the specified RU.
global	Applies a global policy.
global-policy-name	Name of the global policy you are applying.
group	Specifies a resource group to which the policy is being applied.
resource-group-name	Name of the resource group to which the policy is being applied.
type	Specifies the type of the RU to which the policy is being applied.
resource-user-type	Name of the RU type to which the policy is being applied.

Command Default

No policy is configured.

Command Modes

ERM configuration (config-erm)

Command History

Release	Modification
12.3(14)T	This command was introduced.

Release	Modification
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.

Usage Guidelines

This command helps you to apply the various policies (system global, per-user local, and user global) to resource owners (ROs), RUs, or a group of RUs.

Use the **user***resource-instance-nameresource-user-typeresource-policy-name* command to apply a specified policy to a RU. This policy is also known as a per-user local policy or per-user template.

Use the **userglobal***global-policy-name* command to apply a global thresholding policy to all the users.

Use the **usergroup***resource-group-name***type***resource-user-type* command to create a resource group and to enter resource group configuration mode. After you create the resource group, you can add RUs using the **instance***instance-name* command and apply the same thresholding policy to all the RUs against the resource group using the **policy***policy-name* command in resource group configuration mode.

For example, you created a resource group named lowPrioUsers with a type of iosprocess. You have low-priority RUs or tasks such as HTTP and Simple Network Management Protocol (SNMP), and you want to set a threshold for all the low-priority RUs as a group. You must add the RUs to the resource group using the**instance***instance-name* command and then apply a resource policy. If the resource policy you apply sets a minor rising threshold value of 10 percent for the resource group, when the accumulated usage of both HTTP and SNMP RUs crosses the 10 percent mark, a notification is sent to the RUs in the resource group lowPrioUsers. That is, if HTTP usage is 4 percent and SNMP usage is 7 percent, a notification is sent to lowPrioUsers.

Examples

The following example shows how to apply a per-user thresholding policy for the resource instance EXEC, resource user type iosprocess, and resource policy name policy-test1:

```
Router(config-erm)# user EXEC iosprocess policy-test1
```

The following example shows how to apply a global thresholding policy with policy name global-global-test1:

```
Router(config-erm)# user global global-global-test1
```

The following example shows how to create a resource group with the resource group name lowPrioUsers and RU type as iosprocess, and how to add the RU HTTP to the resource group and apply a thresholding policy group-policy1:

```
Router(config-erm)# user group lowPrioUsers type iosprocess
Router(config-res-group)# instance http
Router(config-res-group)# policy group-policy1
```

Related Commands

Command	Description
instance (resource group)	Adds RUs to a resource group.
policy (ERM)	Configures an ERM resource policy.
policy (resource group)	Applies the same policy to all the RUs in a resource group.
resource policy	Enters ERM configuration mode.
show resource all	Displays resource details for all RUs.