Monitor CPU Crypto Core Utilization

Feature Information

Summary Data

Status	New Feature
Introduced-In Release	21.2
Modified-In Release(s)	Not Applicable
Applicable Product(s)	ePDG
Applicable Platform(s)	ASR 5500 VPC-SI VPC-DI
Default Setting	Disabled
Related CDETS ID(s)	CSCvc38683
Related Changes in This Release	Not Applicable
Related Documentation	IPSec Reference Guide Command Line Interface Reference Guide

Revision History

Revision Details	Release	Release Date
New in this release.	21.2	April 27, 2017

Feature Description

This feature provides mechanisms to monitor the crypto-specific CPU cores using the StarOS threshold framework on the ASR 5500 (DPC, DPC2). Alarms and bulk statistics enable the crypto core utilization to be monitored. Packet drops can thus be prevented by taking preventive actions when the safe limit is exceeded. The high and low thresholds for the alarm can be configured using the **threshold cpu-crypto-cores-utilization** command.

For more information, refer the configuring and monitoring sections of this chapter.

Configuring Crypto Core Utilization Thresholds

Use the following configuration to set the threshold upper and lower limits, and the polling interval for crypto core utilization:

```
config
   threshold cpu-crypto-cores-utilization high_thresh [ clear low_thresh ]
   threshold poll cpu-crypto-cores-utilization interval duration
   end
```

Notes:

- Use the **threshold cpu-crypto-cores-utilization** *high_thresh* **[clear** *low_thresh* **]** command to specify the alarm or alert thresholds for crypto core utilization.
  - The measured value is the sum of the most recent system and IRQ core usage.
  - *high_thresh* and *low_thresh* must be an integer from 0 through 100.
- Use the **threshold poll cpu-crypto-cores-utilization interval** *duration* command to specify the polling interval after which the crypto core utilization is measured.
  - *duration* must be an integer from 30 through 60000.
  - Use the **default threshold poll crypto-cores-utilization interval** command to set the threshold polling interval to its default value.
  - Default polling interval: 300 seconds

Monitoring and Troubleshooting Crypto Core Utilization

Show Command(s) and/or Outputs

The show command(s) in this section are available in support of this feature:

show cpu

The output of the **show cpu info card** *card_num* **[cpu** *cpu_num* **] crypto-cores** will display statistics about the CPU crypto core usage:

The following is a sample output of this command:

```
Card 10, CPU 0:
  Status                : Active, Kernel Running, Tasks Running
  Load Average          : 0.14, 0.17, 0.13 (0.86 max)
  Total Memory          : 65536M (32768M node-0, 32768M node-1)
  Kernel Uptime         : 0D 0H 8M
  Last Reading:
    CPU Usage All       : 0.2% user, 0.1% sys, 0.0% io, 0.0% irq, 99.7% idle
      Node 0            : 0.1% user, 0.0% sys, 0.0% io, 0.0% irq, 99.8% idle
        Core 26         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 27         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 28         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 29         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 30         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 31         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 32         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 33         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
      Node 1            : 0.2% user, 0.1% sys, 0.0% io, 0.0% irq, 99.6% idle
        Core 38         : 0.4% user, 0.2% sys, 0.0% io, 0.0% irq, 99.4% idle
        Core 39         : 0.0% user, 0.0% sys, 0.0% io, 0.1% irq, 99.9% idle
        Core 40         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 41         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 42         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 43         : 0.1% user, 0.1% sys, 0.0% io, 0.0% irq, 99.8% idle
        Core 44         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 45         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
  5-Minute Average:
    CPU Usage All       : 0.2% user, 0.1% sys, 0.0% io, 0.0% irq, 99.7% idle
      Node 0            : 0.2% user, 0.1% sys, 0.0% io, 0.0% irq, 99.7% idle
        Core 26         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 27         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 28         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 29         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 30         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 31         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 32         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 33         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
      Node 1            : 0.2% user, 0.1% sys, 0.0% io, 0.0% irq, 99.7% idle
        Core 38         : 0.1% user, 0.1% sys, 0.0% io, 0.0% irq, 99.7% idle
        Core 39         : 0.0% user, 0.0% sys, 0.0% io, 0.1% irq, 99.9% idle
        Core 40         : 0.2% user, 0.1% sys, 0.0% io, 0.0% irq, 99.7% idle
        Core 41         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 42         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 43         : 0.0% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
        Core 44         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
        Core 45         : 0.0% user, 0.0% sys, 0.0% io, 0.0% irq, 100.0% idle
  Maximum/Minimum:
    CPU Usage All       : 0.4% user, 0.6% sys, 0.0% io, 0.0% irq, 99.0% idle
      Node 0            : 0.5% user, 0.8% sys, 0.0% io, 0.0% irq, 98.7% idle
        Core 26         : 0.3% user, 1.1% sys, 0.0% io, 0.0% irq, 98.6% idle
        Core 27         : 0.1% user, 0.3% sys, 0.0% io, 0.0% irq, 99.7% idle
        Core 28         : 0.1% user, 1.1% sys, 0.0% io, 0.0% irq, 98.9% idle
        Core 29         : 0.3% user, 2.6% sys, 0.0% io, 0.0% irq, 97.1% idle
        Core 30         : 0.2% user, 0.6% sys, 0.0% io, 0.0% irq, 99.2% idle
        Core 31         : 0.4% user, 0.2% sys, 0.0% io, 0.0% irq, 99.6% idle
        Core 32         : 0.3% user, 0.6% sys, 0.0% io, 0.0% irq, 99.2% idle
        Core 33         : 0.4% user, 0.1% sys, 0.0% io, 0.0% irq, 99.6% idle
      Node 1            : 0.5% user, 0.5% sys, 0.0% io, 0.0% irq, 98.9% idle
        Core 38         : 0.4% user, 1.4% sys, 0.0% io, 0.1% irq, 98.4% idle
        Core 39         : 0.7% user, 0.8% sys, 0.0% io, 0.2% irq, 98.5% idle
        Core 40         : 1.0% user, 1.6% sys, 0.0% io, 0.0% irq, 98.0% idle
        Core 41         : 0.2% user, 0.5% sys, 0.0% io, 0.0% irq, 99.3% idle
        Core 42         : 0.3% user, 0.7% sys, 0.0% io, 0.0% irq, 99.0% idle
```

```
Core 43         : 0.2% user, 0.5% sys, 0.0% io, 0.0% irq, 99.3% idle
Core 44         : 0.1% user, 0.1% sys, 0.0% io, 0.0% irq, 99.9% idle
Core 45         : 0.1% user, 0.5% sys, 0.0% io, 0.0% irq, 99.4% idle
```

show threshold

The following fields are available in the output of the **show threshold** command in support of this feature:

```
Threshold operation model: ALARM

Configured thresholds:
        Name:             crypto-cores-utilization
        Config Scope:     SYSTEM
        Threshold:        80%
        Clear Threshold:  10%
```

Table 1: show threshold Command Output Descriptions

Field	Description
Threshold operation model	Indicates that the threshold operation model is alarm.
Configured thresholds:	
Name	Statistics for the crypto core utilization threshold.
Config Scope	Indicates that the scope of configuration is across the system.
Threshold	Indicates the high threshold value of the crypto cores utilized, after which the alarm is generated.
Clear Threshold	Indicates the low threshold value of the crypto cores utilized, after which the alarm is cleared.

Bulk Statistics

The following bulk statistic included in the card schema support this feature.

Variable	Description	Data Type
cpu*cpu_no*-core*core_no*-coreused-crypto	**Description:** The percentage of resources on CPU <*cpu_no*> CORE <*core_no*> that are used for crypto operations. *cpu_no* must be an integer between 0 and 2. *core_no* must be an integer between 0 and 47. **Triggers:** N/A **Availability:** All **Type:** Gauge	Float

Thresholds

The following alarms are available in support of this feature:

- A **ThreshCPUCryptoCoresUtilization** alarm is generated when the crypto core utilization exceeds the configured high threshold.
- A **ThreshClearCPUCryptoCoresUtilization** alarm is generated when the crypto core utilization drops below the configured low threshold.