



Platform Automated Monitoring

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Platform Automated Monitoring

Table 1: Feature History

Feature Name	Release Information	Feature Description
Support For Platform Automated Monitoring	Cisco IOS XE Dublin 17.12.1y	<p>With this release, cBR-8 supports Platform Automated Monitoring (PAM), which is a system monitoring tool that is integrated with Cisco IOS XE Software image to monitor the following issues:</p> <ul style="list-style-type: none">• Process Crashes• When StandbySUP cannot bootstrap <p>PAM is an IOSd-process running on the Supervisor Card (SUP) to periodically monitor the system’s crash. When an RP/FP/CC crashinfo or corefile is detected, the syslog displays on the active SUP’s IOSd console.</p> <p>The benefit of PAM is that you can use a script (for example, EEM) to monitor PAM and automatically submit a TAC case and share the core/crashinfo with TAC, when a crash event is detected.</p>

PAM Process

PAM is an IOSd-process running on the Supervisor Card (SUP) to periodically monitor the system’s crash. Use the **show process | in PAM** command to check if the PAM process is running:

```
router#show process | in PAM
314 Mwe 633F12E936BA 142300 563398 252 15808/24000 0 CBR PAM Process
```

The preceding output is a sample showing an example of the cbr-8 PAM process already running.

A hidden ***.pam file** is created in the `/harddisk/core/` path. This is an empty file which is used to record the last monitored timestamp of the PAM process. Only the corefile/crashinfo whose timestamp is newer than the ***.pam file** timestamp, is considered processed by PAM.

Use the following command to view the ***.pam file** file.

```
router#dir harddisk:core
Directory of harddisk:/core/

4751365  -rw-                1  Feb 20 2024 13:56:27 +08:00  .pam
```

PAM process handles two timers:

- **5-minute Periodical Timer:** PAM initiates a 5 minute to check the new crashinfo/corefile on both active and standby SUP. The following messages are possible outputs which can be displayed on the SUP's IOSd console:

- Initial Message

```
%PAM-4-TEMP_CORE: PAM detects a new core file %s start to dump at %s.
Need to wait for several minutes to get the full core file.
```

- This is an example of a successful dump of a core file case:

```
%PAM-3-CRASH: PAM detects crash <crashinfo or corefile path>
```

- This is an example of an incomplete dump of a core file case:

```
%PAM-3-CORE_UNCOMPLETE: PAM detects core file <uncomplete core file path> doesn't
generate successfully.
```

- Here is a sample output that is displayed on the console:

```
router#dir harddisk:core
Directory of harddisk:/core/

2981892  -rw-                11010048  Feb 20 2024 23:23:22 +08:00
router_SIP_1_vidman_7014_1704986383.core.gz.TEMP_IN_PROGRESS
3080199  -rw-                1  Feb 20 2024 23:19:51 +08:00  .pam
2981891  -rw-                7884800  Feb 20 2024 23:19:46 +08:00
router_SIP_1_vidman_7014_1704986383.core
2981889  -rw-                0  Feb 20 2024 23:19:46 +08:00
router_SIP_1_vidman%cc_1_0%0.TEMP_IN_PROGRESS
```

```
Feb 20 23:19:51.179 CST: %PAM-4-TEMP_CORE: PAM detects a new core file
harddisk:core/router_SIP_1_vidman_7014_1704986383.core
start to dump at Feb 20 2024 23:19:47 +08:00. Need to wait for several minutes to get
the full core file.
```

```
Feb 20 23:29:51.397 CST: %PAM-3-CRASH: PAM detects crash for process vidman on fru CC
slot 1,
path: harddisk:core/router_SIP_1_vidman_7014_1704986383.core.gz
```

```
router#
```

- **30 Minutes One Time Timer:** This timer begins when the standby SUP initializes with a bootup image. If the boot fails and the timer expires, then the following error message about the standby SUP bootup failure displays:

```
%PAM-3-FAILURE: StandbySUP stuck at booting state for 30 minutes.
```

Location and Format of the Crashinfo Or Corefile

The following tables show the Location and Format of the Crashinfo Or Corefile with examples:

Table 2: Crashinfo

Type	Location and Format With Example
cdman crashinfo	harddisk:<hostname>_SIP_<slot>_cdman_crashinfo_xxx.log Example: harddisk:L08_SIP_6_cdman_crashinfo_7437_09152023155523.log
iosd-clc crashinfo	harddisk:Slot-<slot>-0_crashinfo_SIP_<slot>_xxx.log Example: harddisk:Slot-0-0_crashinfo_SIP_00_00_20230905-155430-CST
sup-iosd crashinfo	bootflash:<hostname>_crashinfo_RP_<slot>_xxx Example: bootflash:L08_crashinfo_RP_01_00_20221201-191258-EDT Sample Console Message: %PAM-3-CRASH: PAM detects crash for process linux_iosd-image on fru RP slot 0, path: bootflash:L08_crashinfo_RP_00_00_20240129-153213-CST

Table 3: Corefile

Type	Location and Format With Example
Linecard process core	harddisk:core/<hostname>_SIP_<slot>_<process_name>_<pid>_xxx.core.gz Examples: harddisk:core/L08_SIP_1_ubrc1c-k91c-ms_8030_1698622516.core.gz harddisk:core/RPCC01_SIP_2_CDM_PKTIO_7481_1700073874.core.gz
RP process core	harddisk:core/<hostname>_<process_name>_<pid>_xxx.core.gz Examples: harddisk:core/L08_dbm_19549_20231122-100257-CST.core.gz harddisk:core/L08_fman_fp_image_28299_20231019-200127-MST.core.gz harddisk:core/L08_cpp_cp_svr_27953_20231019-200045-MST.core.gz Sample Console Messages: Jan 11 23:19:51.179 CST: %PAM-4-TEMP_CORE: PAM detects a new core file harddisk:core/L08_SIP_1_vidman_7014_1704986383.core start to dump at Jan 11 2024 23:19:47 +08:00. Need to wait for several minutes to get the full core file. Jan 11 23:29:51.397 CST: %PAM-3-CRASH: PAM detects crash for process vidman on fru CC slot 1, path: harddisk:core/L08_SIP_1_vidman_7014_1704986383.core.gz

Type	Location and Format With Example
Incomplete core file	<p>harddisk:core/<hostname>_<process_name>_<pid>_xxx.core</p> <p>Examples:</p> <p>harddisk:core/L08_SIP_1_cdman_7797_1701140043.core</p> <p>harddisk:core/L08_SIP_1_cdman%cc_1_0%0.TEMP_IN_PROGRESS</p> <p>Sample Console Messages:</p> <p>Jan 12 20:44:14.315 CST: %PAM-3-CORE_UNCOMPLETE: PAM detects core file harddisk:core/L08_SIP_1_CDM_RT_7802_1705062593.core doesn't generate successfully.</p>

Table 4: Kernel Core

Type	Location and Format With Example
Kernel Core	<p>harddisk:core/kernel.CC_CYLONS_<slot>_<timestamp>.core.flat.gz</p> <p>harddisk:core/kernel.RP_CBR_<slot>_<timestamp>.core.flat.gz</p> <p>Examples:</p> <p>harddisk:core/kernel.CC_CYLONS_6_20231026003938.txt</p> <p>harddisk:core/kernel.CC_CYLONS_6_20231026003938.core.flat.gz</p> <p>harddisk:core/kernel.RP_CBR_1_20230126014834.core.flat.gz</p> <p>harddisk:core/kernel.RP_CBR_1_20230126014834.txt</p> <p>Sample Console Messages:</p> <p>Jan 11 23:44:52.451 CST: %PAM-4-TEMP_CORE: PAM detects a new core file harddisk:core/kernel.CC_CYLONS_1.core.TEMP_IN_PROGRESS start to dump at Jan 11 2024 23:44:49 +08:00. Need to wait for several minutes to get the full core file.</p> <p>Jan 11 23:49:52.684 CST: %PAM-3-CRASH: PAM detects crash for process kernel on fru CC slot 1, path: harddisk:core/kernel.CC_CYLONS_1_20240111154328.core.flat.gz</p>

Table 5: StandbySUP Crash or Core

StandbySUP Crash or Core	Location and Format With Example
Kernel Core	<p>stby-harddisk:core/<hostname>_<process_name>_<pid>_xxx.core.gz</p> <p>Examples:</p> <p>stby-harddisk:core/L08_dbm_19549_20231122-100257-CST.core.gz</p> <p>Sample Console Messages:</p> <p>Jan 12 14:44:30.949 CST: %PAM-3-CRASH: PAM detects crash for process cpp on fru RP slot 1, path: stby-harddisk:core/L08_cpp_cp_svr_21886_20240112-142857-CST.core.gz</p> <p>Note If ActiveSUP crashes after a SUPSO event, then a new ActiveSUP can also detect and report the old ActiveSUP's crashinfo or core file.</p>

Limitations of PAM

- If you configure the **exception crashinfo file** command, then this feature does not work.

Configuring the **exception crashinfo file** command allows you to define a custom prefix of the crashinfo file. PAM cannot detect such crashinfo since it cannot know which process/fru/slot crash happened.

- If the standbySUP cannot bootup, PAM cannot cover the following cases:
 - StandbySUP is removed intentionally.
 - StandbySUP is inserted and under ROMMON state without bootup image. This may occur due to **config-register** configured as **0x0**.
 - StandbySUP is inserted but stops responding and does not have a bootup image. This may occur due to a hardware issue.

In releases before Cisco IOS XE Dublin 17.12.1y, there is no support for a unified syslog, which covers all modules or processes crash. You must manually filter several syslogs to obtain the relevant log information and manually submit the log files to TAC.

