
CPU Patrol Diagnosis User's Guide

Preface

Purpose

This manual describes the method of using the CPU Patrol Diagnosis function to diagnose the CPU. The CPU Patrol Diagnosis function enables you to diagnose the CPU while the system is operating.

Intended Readers

This manual is intended for the following readers.

- System support engineers
- System administrator who introduce and operate this software
- Technicians who maintain system hardware

Manual Configuration

Chapter1 Outline

Outline of the CPU Patrol Diagnosis function.

Chapter2 Operations

Operation of the CPU Patrol Diagnosis.

Chapter3 Command reference

Explanation of command.

Chapter4 Detailed error information

Detailed information list notified when diagnosis error is detected.

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Notes

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Chapter 1 Outline

This chapter describes the outline of the CPU Patrol Diagnosis.

1.1 System requirements

1.1.1 Hardware

CPU Patrol Diagnosis supports the following platforms.

- GP7000F Model 200/200R/400R/400A/600/600R/1000/2000
- PRIMEPOWER200/400/800/1000/2000
- PRIMEPOWER650/850/1500 *1)

*1) Supports only the SPARC64(TM) GP processor.

1.1.2 Software

The following software must be installed.

- Solaris (TM) 2.6 Operation Environment or later version
- Enhanced Support Facility 1.8 or later version

1.2 Outline of function

CPU Patrol Diagnosis provides the following functions.

- All CPUs of online are diagnosed while the system is operating.
- Whether patrol start by command or start automatically at OS boot can be selected.
- Interval time from the completion of the diagnosis of all CPUs to beginning of the diagnosis again can be set.
- The message is output when diagnosis error is detected, and the abnormal CPU is made offline.

Chapter 2 Operations

This chapter describes the operations and operating notes of CPU Patrol Diagnosis.

2.1 Setting the definition file

The CPU Patrol Diagnosis is executed based on the definition file.

The definition file is set by the option parameter of the `ptlset` command. After package installation, the definition file with the following default is made.

Default of definition file

| definition | Default |
|-------------------------------|------------|
| Automatic operation execution | Off |
| Patrol interval | 10 minutes |

(1) Automatic operation execution

It is defined whether to start CPU Patrol Diagnosis automatically when the operating system is started.

(2) Patrol interval

The patrol interval is waiting time until the diagnosis begins again after completing the diagnosis of all CPU.

Please refer to "3.1 3.1 `ptlset`" for method of setting the definition file.

2.2 Displaying the definition file

Execute the `ptlinfo` command to display the content of the definition file.

Please refer to "3.2 3.2 `ptlinfo`" for method of displaying the definition file.

2.3 Starting the CPU Patrol Diagnosis

The CPU patrol diagnosis has the start method by two kinds. (the method by the start command and the method of the start when the operating system starts).

Execute the `ptlstart` command when starting by the start command.

Please refer to "3.3 3.3 `ptlstart`" for details of start command.

It is necessary to set the definition file beforehand to start automatically when the operating system is booted.

Please refer to "3.1 3.1 `ptlset`" for method of setting the definition file.

2.4 Stopping the CPU Patrol Diagnosis

When stop command "`ptlstop`" is executed, CPU Patrol Diagnosis is stopped.

Please refer to "3.4 3.4 `ptlstop`" for details of stop command.

Moreover, this patrol diagnosis stops by shutting down the operating system.

2.5 Abnormal CPU detection message

(1) Notification of error

Abnormal cpu is made offline when diagnosis error is detected in the CPU Patrol Diagnosis, and error information is notified. Error message which this patrol diagnosis notifies are shown below.

Message

`host_name:FJSVmadm:A:XXXX:FJSVcpupd:Diagnosis Error (last passed=mm/dd/yyyy hh:mm:ss), CPU offline`

The following messages are notified when CPU cannot be made offline.

`host_name:FJSVmadm:A:XXXX:FJSVcpupd:Diagnosis Error (last passed=mm/dd/yyyy hh:mm:ss), incomplete CPU offline`

Description

| Message | Meaning |
|-------------|--|
| XXXX | An abnormal CPU number is indicated. |
| Last passed | Date and time when diagnosis result is normalcy are indicated. |

| | |
|------------------------|--|
| | When abnormality is detected by the first diagnosis, this message isn't displayed. |
| CPU offline | It is shown to have made CPU offline. |
| Incomplete CPU offline | It is shown not to be able to have made CPU offline. |

Solution

Call a Fujitsu engineer.

(2) Error log file

When the error is detected, the following information is output to the error log file with the notification of the error.

Please refer to Chapter 4 for details of the content of the error.

| Log file name | Explanation |
|---|---|
| /var/opt/FJSVcpupd/log/fjptlerr.log | The following error information is accumulated. - An abnormal CPU number - Error occurrence date - Detailed error information |
| /var/opt/FJSVcpupd/log/fjptlerr.log.old | When the size of the file of /var/opt/FJSVcpupd/log/fjptlerr.log reaches about 64Kbyte, the log file is copied into /var/opt/FJSVcpupd/log/fjptlerr.log.old . |

2.6 Operating notes

- The performance of other applications might drop when the patrol interval short. (The default value(10 minutes) is recommended about the patrol interval.)
- When number of online CPU is one or process was bound to CPU, the CPU is not made offline even if the error is detected.
- When CPU or the system board is detached by Dynamic Reconfiguration, it is necessary to stop CPU Patrol Diagnosis beforehand.
- When the package of CPU Patrol Diagnosis is installed, "/var/opt/FJSVcpupd/" directory is made. This directory is used to output the diagnosis results and the log. The influence is never exerted on the system though this directory remains without being removed after uninstalling the package when the log file is exist in this directory.

Chapter 3 Command reference

This chapter describes the commands to operate the CPU Patrol Diagnosis.

When command is executed on the unsupported platform, the following message is displayed.
"CPU patrol diagnosis is not supported on this platform"

3.1 ptlset

NAME

ptlset - Sets a definition file

SYNOPSIS

```
/opt/FJSVcpupd/sbin/ptlset [ -a status ] [ -t time ]
```

DESCRIPTION

The ptlset command sets the contents of the definition file.

[Example 1: Enables automatic execution at OS boot]

```
# /opt/FJSVcpupd/sbin/ptlset -a on  
#
```

[Example 2: Changes the patrol interval (two hours)]

```
# /opt/FJSVcpupd/sbin/ptlset -t 120  
#
```

OPTIONS

The ptlset command has the following options.

-a status

Automatic execution is set. One of the following is specified for status.

| Status | Meaning |
|--------|---|
| on | Enables automatic execution at OS boot |
| off | Disables automatic execution (Default is off) |

CPU Patrol Diagnosis is started at OS boot from next time when this option is set to on.

-t time

Patrol interval is set. from 1 minute to 1440 minutes can be specified. (default: 10)

The patrol interval is an interval until the diagnosis is repeated again after all CPU is diagnosed.

EXIT STATUS

This command returns one of the following exit status:

0 Normal End

>0 Abnormal End

3.2 ptlinfo

NAME

ptlinfo - displays a definition file

SYNOPSIS

```
/opt/FJSVcpupd/sbin/ptlinfo
```

DESCRIPTION

The ptlinfo command displays the contents of the definition file.

[Example]

```
# /opt/FJSVcpupd/sbin/ptlinfo  
auto-execution:off  
interval:10  
#
```

OPTIONS

None

EXIT STATUS

This command returns one of the following exit status:

0 Normal End
>0 Abnormal End

3.3 ptlstart

NAME

ptlstart - Starts the CPU Patrol Diagnosis

SYNOPSIS

/opt/FJSVcpupd/sbin/ptlstart

DESCRIPTION

The ptlstart command starts the CPU Patrol Diagnosis.

The following message is displayed when normally starting.

ptlstart: CPU Patrol Diagnosis started

When CPU Patrol Diagnosis has already operated, the following message is displayed.

ptlstart: CPU Patrol Diagnosis already started

OPTIONS

None

EXIT STATUS

This command returns one of the following exit status:

0 Normal End
>0 Abnormal End

3.4 ptlstop

NAME

ptlstop - Stops the CPU Patrol Diagnosis

SYNOPSIS

/opt/FJSVcpupd/sbin/ptlstop

DESCRIPTION

The ptlstop command stops the CPU Patrol Diagnosis.

The following message is displayed when normally stopping.

ptlstart: CPU Patrol Diagnosis stopped

When CPU Patrol Diagnosis has already stopped, the following message is displayed.

ptlstart: CPU Patrol Diagnosis already stopped

OPTIONS

None

EXIT STATUS

This command returns one of the following exit status:

0 Normal End
>0 Abnormal End

Chapter 4 Detailed error information list

When abnormal CPU is detected, the following information is output to the error log file.

Detailed error informations are shown below.

| |
|---|
| Detailed error information |
| Error: Mnemonic code Register: Register Expected: Expectation value(hexadecimal 16 digits) Actual: Actual value (hexadecimal 16 digits) |
| Failed CPU core (Reliability) Test Discord Register : Register number Expect Expectation value Result Result value |
| Failed CPU core (load/store unit) Test Address Expect Result Address Expectation value Result value |
| Failed single precision calc2 test. |
| Failed double precision calc2 test. |
| Failed single precision calc1 test. |
| Failed double precision calc1 test. |
| Error: a + b Expected: Expectation value Actual: Actual value |
| Error a - b Expected: Expectation value Actual: Actual value |
| Error a * b Expected: Expectation value Actual: Actual value |
| Error a / b Expected: Expectation value Actual: Actual value |
| Error: a + (a + b) Expected: Expectation value Actual: Actual value |
| Error: a - (a + b) Expected: Expectation value Actual: Actual value |
| Error: a + (a * b) Expected: Expectation value Actual: Actual value |
| Error: a - (a * b) Expected: Expectation value Actual: Actual value |
| Error: a + (a / b) Expected: Expectation value Actual: Actual value |
| Error: a - (a / b) Expected: Expectation value Actual: Actual value |
| Error: a * (a + b) Expected: Expectation value Actual: Actual value |
| Error: a * (a - b) Expected: Expectation value Actual: Actual value |
| Error: a / (a - b) Expected: Expectation value Actual: Actual value |
| Error: a / (a - b) Expected: Expectation value Actual: Actual value |
| Error: a * (a / b) Expected: Expectation value Actual: Actual value |
| Error: a / (a * b) Expected: Expectation value Actual: Actual value |
| Error: a + b Expected: Expectation value Actual: Actual value |
| Error: a - b Expected: Expectation value Actual: Actual value |
| Error: a * b Expected: Expectation value Actual: Actual value |
| Error: a / b Expected: Expectation value Actual: Actual value |
| Error: a + (a - b) Expected: Expectation value Actual: Actual value |
| Error: a - (a + b) Expected: Expectation value Actual: Actual value |
| Error: a + (a * b) Expected: Expectation value Actual: Actual value |
| Error: a - (a * b) Expected: Expectation value Actual: Actual value |
| Error: a + (a / b) Expected: Expectation value Actual: Actual value |
| Error: a - (a / b) Expected: Expectation value Actual: Actual value |
| Error: a * (a + b) Expected: Expectation value Actual: Actual value |

| |
|---|
| Error: exp(log(10)) Expected: Expectation value Actual: Actual value |
| Error: log(1) Expected: Expectation value Actual: Actual value |
| Error: log(2) Expected: Expectation value Actual: Actual value |
| Error: log(10) Expected: Expectation value Actual: Actual value |
| Error: log(100) Expected: Expectation value Actual: Actual value |
| Error: log(exp(0)) Expected: Expectation value Actual: Actual value |
| Error: log(exp(1)) Expected: Expectation value Actual: Actual value |
| Error: log(exp(10)) Expected: Expectation value Actual: Actual value |
| Error: tan(-2pi) Expected: Expectation value Actual: Actual value |
| Error: tan(-7pi/4) Expected: Expectation value Actual: Actual value |
| Error: tan(-5pi/4) Expected: Expectation value Actual: Actual value |
| Error: tan(-pi) Expected: Expectation value Actual: Actual value |
| Error: tan(-3pi/4) Expected: Expectation value Actual: Actual value |
| Error: tan(-pi/4) Expected: Expectation value Actual: Actual value |
| Error: tan(0.0) Expected: Expectation value Actual: Actual value |
| Error: tan(pi / 4) Expected: Expectation value Actual: Actual value |
| Error: tan(3pi/4) Expected: Expectation value Actual: Actual value |
| Error: tan(pi) Expected: Expectation value Actual: Actual value |
| Error: tan(5pi/4) Expected: Expectation value Actual: Actual value |
| Error: tan(7pi/4) Expected: Expectation value Actual: Actual value |
| Error: tan(2pi) Expected: Expectation value Actual: Actual value |
| Error: sqrt(0) Expected: Expectation value Actual: Actual value |
| Error: sqrt(1) Expected: Expectation value Actual: Actual value |
| Error: sqrt(4) Expected: Expectation value Actual: Actual value |
| Error: sqrt(9) Expected: Expectation value Actual: Actual value |
| Error: sqrt(16) Expected: Expectation value Actual: Actual value |
| Error: sqrt(25) Expected: Expectation value Actual: Actual value |
| Error: sqrt(36) Expected: Expectation value Actual: Actual value |
| Error: sqrt(49) Expected: Expectation value Actual: Actual value |
| Error: sqrt(64) Expected: Expectation value Actual: Actual value |
| Error: sqrt(81) Expected: Expectation value Actual: Actual value |
| Error: sqrt(100) Expected: Expectation value Actual: Actual value |
| Failed systest for VIS. Reg Expect Result Register Expectation value Result value |