



C120-E253-02EN

# System Parameter Diagnosis 1.1

## User's Guide



**FUJITSU**





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# Preface

## Purpose

This manual explains the System Parameter Diagnosis which detects abnormality of system configuration in Solaris (TM) 8 Operating System, Solaris (TM) 9 Operating System and Solaris (TM) 10 Operating System.

## Intended Readers

This manual targets the system administrator who introduces the system and operates it.

## Configuration

The configuration of this manual and the content are as follows.

- "Chapter 1 Function of System Parameter Diagnosis" explains the function of the System Parameter Diagnosis.
- "Chapter 2 Command Reference" explains the use of the command.
- "Chapter 3 Message" explains the meaning of messages and corrective action.

## Related Manual

Please refer to the following manuals when you use this manual if necessary.

- Solaris Tunable Parameters Reference Manual
- Hardware Platform Guide

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# **Chapter1    Function of System Parameter Diagnosis**

## 1.1 Overview

System Parameter Diagnosis detects system settings that has high possibility to be changed by system administrator and that disturb normal operation of the Solaris (TM) Operating System, and reports them. For more information about the system settings that are used, see "1.3 Target System Parameters".

- Kernel tunable parameters' name and value in `/etc/system` file
- Free space of the directory that Crash Dump is output to.

When you boot or shut down a system, System Parameter Diagnosis checks the parameters automatically. If the `/etc/system` file has been changed, System Parameter Diagnosis backs up the `/etc/system` file to the `/var/opt/FJSVparam/log` directory.

If improper settings are detected, System Parameter Diagnosis outputs the messages, and some tunable parameters are modified to the latest effective backup values or default values.

When the tunable parameters in the `/etc/system` file are changed, the validity of the settings can be checked using `fjprmchk(1M)`.

```
example# /opt/FJSVparam/bin/sparcv9/fjprmchk
```

Moreover, tunable parameters can be set and diagnosed at the same time using `fjprmset(1M)`.

```
example# /opt/FJSVparam/bin/sparcv9/fjprmset -a  
semsys:seminfo_semmni=20
```

For more information about these commands, see "Chapter2 Command Reference".



## 1.2 Operational Environment

The system parameter diagnosis can be executed in the following environments.

- Hardware
  - PRIMEPOWER, GP7000F
- Software
  - Solaris 8 64-bit operating system
  - Solaris 9 64-bit operating system
  - Solaris 10 64-bit operating system

## 1.3 Target System Parameters

This section explains the targeted system parameters.

For more information about each tunable parameters, see "Solaris Tunable Parameters Reference Manual".

The System V IPC parameters are not diagnosed in the Solaris 10 OS.

### 1.3.1 System V IPC Parameters

System parameters' syntax, range of value between minimum and maximum, and values calculated by parameters are examined. When `fjprmchk(1M)` or `fjprmset(1M)` is executed, the message is output about range of value.

When you boot or shut down a system, `semsys:seminfo_semmnu` and `semsys:seminfo_semume` in the `/etc/system` file can be modified to the latest effective backup values or default values.

- System V Message Queues
  - `msgsys:msginfo_msgmax`
  - `msgsys:msginfo_msgmnb`
  - `msgsys:msginfo_msgmni`
  - `msgsys:msginfo_msgtql`
- System V Semaphores
  - `semsys:seminfo_semaem`
  - `semsys:seminfo_semmni`
  - `semsys:seminfo_semmns`
  - `semsys:seminfo_semmnu`
  - `semsys:seminfo_semmnl`
  - `semsys:seminfo_semopm`
  - `semsys:seminfo_semume`
  - `semsys:seminfo_sevmx`
- System V Shared Memory
  - `shmsys:shminfo_shmmax`
  - `shmsys:shminfo_shmmin` (only Solaris 8 OS)
  - `shmsys:shminfo_shmmni`
  - `shmsys:shminfo_shmseg` (only Solaris 8 OS)

### 1.3.2 fsflush and Related Parameters

When physical memory is 256 Gbytes or more, the values of fsflush and related tunable parameters are examined.

- `tune_t_fsflushr`
- `autoup`
- `memscrub_period_sec`

### 1.3.3 Special Usage Parameter

When you boot or shut down a system, this parameter is removed because this parameter should not be set in a normal system.

- `RT:rt_maxpri`

### 1.3.4 Multiple-defined Parameters

When `fjprmchk(1M)` or `fjprmset(1M)` is executed, parameter names which are set several times are examined.

### 1.3.5 Free Disk Space for Saving Crash Dump Files

Size of swap space and free disk space of the `savecore` directory are examined. For more information about the settings, see "Hardware Platform Guide".



# **Chapter2 Command Reference**

## 2.1 fjprmchk(1M)

### NAME

fjprmchk – diagnose system parameters

### SYNOPSIS

`/opt/FJSPparam/bin/sparcv9/fjprmchk`

### DESCRIPTION

`fjprmchk` diagnoses tunable parameters' syntax, range of value between minimum and maximum, values calculated by combining parameters and multiple-defined parameter name in the `/etc/system` file. When improper settings are detected, `fjprmchk` outputs the messages. For more information about diagnosed system parameters, see "1.3 Target System Parameters".

### OPTIONS

None

### EXIT STATUS

The following exit values are returned.

0

Successful completion.

1

A warning or information problem was detected.

2

A critical problem was detected.

>3

An error occurred.

### FILES

`/etc/system`

`/var/opt/FJSPparam/log/boot_ok.[0-9]`

`/var/opt/FJSPparam/log/pre_mod.[0-9]`

`/var/opt/FJSPparam/log/fjparam.[01]`

### SEE ALSO

`fjprmset(1M)`

## 2.2 fjprmset(1M)

### NAME

fjprmset - set tunable parameters

### SYNOPSIS

```
/opt/FJSPparam/bin/sparcv9/fjprmset [-f] -a pname=value ... [-d pname ...]
```

```
/opt/FJSPparam/bin/sparcv9/fjprmset [-f] [-a pname=value ...] -d pname ...
```

```
/opt/FJSPparam/bin/sparcv9/fjprmset [-f] -i [prm_file]
```

### DESCRIPTION

fjprmset diagnoses tunable parameters of the `/etc/system` file and adds, modifies, and removes the parameters. Only the tunable parameter that is set by the following form can be specified.

```
set|SET [module:]symbol=value
```

When an improper setting is detected, fjprmset outputs a message. The improper setting is not reflected to the `/etc/system` file.

### OPTIONS

The following options are supported:

**-a** *pname=value*

Add a parameter. Specify both parameter's name and value for setting. Multiple **-a** and **-b** options can be specified at the same time, but the same parameter name can not be specified. When used with the **-f** option, an existing parameter is modified.

**-d** *pname*

Delete a parameter. Specify a parameter name for deleting. Multiple **-a** and **-b** options can be specified at the same time, but the same parameter name can not be specified.

**-f**

Modify parameters unconditionally. Usually, existing parameters are not changed.

**-i**

Specify parameters in the *prm\_file* file in order to add or to delete them. The parameter must be described as the following form, and each parameter must be ended by a new line.

Add or Modify: *pname=value*

Delete: *pname*

**-i** option cannot be used with **-a** option or **-d** option. When used with the **-f**

option, an existing parameter is modified.

## OPERANDS

The following operand is supported:

*prm\_file*

A path name of a file that describes parameter's name and value. When *prm\_file* is omitted, parameter's name and value are read from a standard input up to an EOF.

## EXIT STATUS

The following exit values are returned:

0

Successful completion.

1

A problem about an existing tunable parameter was detected.

2

A problem about a specified tunable parameter was detected.

>3

An error occurred.

## FILES

*/etc/system*

*/var/opt/FJSVparam/log/boot\_ok.[0-9]*

*/var/opt/FJSVparam/log/pre\_mod.[0-9]*

*/var/opt/FJSVparam/log/fjparam.[01]*

## SEE ALSO

*fjprmchk(1M)*

## NOTES

The length of a character string that can be specified in each parameter is up to 75 characters. The character string includes parameter's name and value. Standard white-space characters cannot be used in the character string.



# Chapter3 Messages

The System Parameter Diagnosis outputs the following messages.

For more information about tunable parameters, see "Solaris Tunable Parameters Reference Manual".

**critical: *pname* (*value*) is an invalid parameter.**

[MEANING]

Tunable parameter *pname* that cannot be used was detected.

[ACTION]

Remove the parameter *pname*.

**critical: *seminfo\_semmnu* (*value1*) and *seminfo\_semume* (*value2*) occupy 100% available memory.**

[MEANING]

The kernel memory may be exhausted under the current settings.

[ACTION]

Modify the value of relevant parameters.

**warning: *shminfo\_shmmni* (*value*) may occupy more than 25% available memory.**

[MEANING]

System V shared memory may not be used because over 25% of the kernel memory available is being used.

[ACTION]

Reduce the value of `shmsys:shminfo_shmmni`.

**warning: *seminfo\_semmns* (*value1*), *seminfo\_semmni* (*value2*), *seminfo\_semume* (*value3*) and *seminfo\_semmnu* (*value4*) may occupy more than 25% available memory.**

[MEANING]

System V semaphores may not be used because over 25% of the kernel memory available is being used.

[ACTION]

Modify the value of the relevant parameters.

**warning: msginfo\_msgmni (*value1*) and msginfo\_msgttl (*value2*) may occupy more than 25% available memory.**

[MEANING]

System V message queues may not be used because over 25% of the kernel memory available is being used.

[ACTION]

Modify the value of the relevant parameters.

**warning: *pname* is an invalid parameter.**

[MEANING]

There is a mistake in the form of the tunable parameter *pname*.

[ACTION]

Check the syntax of a relevant parameter.

**warning: tune\_t\_fsflushr (*value1*) and autoup (*value2*) and memscrub\_period\_sec (*value3*) may fully occupy CPU activity.**

[MEANING]

CPU may be occupied, so the system performance degrades.

[ACTION]

Modify each value to more than `tune_t_fsflushr=10`, `autoup=60`, and `memscrub_period_sec=172800`. For more information, see "Hardware Platform Guide".

**warning: seminfo\_semmns (*value1*) is effective up to *<value2>*.**

[MEANING]

The value of `semsys:seminfo_semmns` is too large.

[ACTION]

Modify the *value1* of `semsys:seminfo_semmns` to less than *value2*.

**warning: seminfo\_semmnu (*value1*) is effective up to *<value2>*.**

[MEANING]

The value of `semsys:seminfo_semmnu` is too large.

[ACTION]

Modify the *value1* of `semsys:seminfo_semmnu` to less than *value2*.

**warning: seminfo\_semume (*value1*) is effective up to seminfo\_semmns <*value2*>.**

[MEANING]

The value of `semsys:seminfo_semume` is larger than the value of `semsys:seminfo_semmns`.

[ACTION]

Modify the *value1* of `semsys:seminfo_semume` to less than the *value2* of `semsys:seminfo_semmns`.

**warning: *pname* is set duplicatedly. *pname* (*value*) is chosen as an effective value.**

[MEANING]

Tunable parameter *pname* is multiple-defined, so *value* is chosen as an effective value.

[ACTION]

Modify the relevant parameter.

**warning: insufficient dump device (*value* MB) for crash dump.**

[MEANING]

A crash dump cannot be output because swap space of the dump device is insufficient.

[ACTION]

Extend swap space of the dump device. For more information about the dump device, see "Hardware Platform Guide".

**warning: insufficient savecore device (*value* MB).**

[MEANING]

A crash dump cannot be output because free disk space of the savecore directory is insufficient.

[ACTION]

Increase free space in the file system where the `savecore` directory is located.

**info: *pname* (*value1*) is out of the range (*value\_min* - *value\_max*).**

[MEANING]

The value of a tunable parameter *pname* (*value1*) exceeds the range between *value\_min* and *value\_max*. The parameter is regarded as default.

[ACTION]

Modify the relevant parameter (*value1*) to within the range between *value\_min* and *value\_max*.