Appendix B

Troubleshooting System Configuration Using System Error Messages

This appendix lists error messages you may receive from the IRIX operating system and offers references to appropriate areas of the documentation describing the system functions that are likely related to the error message.

Often times, system errors will be accompanied by several error messages that together will lead you to determining the actual problem. Read the section for each message and use your best judgement to determine which messages reflect the core problem and which are caused by the effects of the core problem on other parts of the system. For example, you may see a message indicating that the system disk is full from the kernel, as well as one from the objectserver. Creating space on the system disk is likely to solve this problem, and the objectserver message can safely be ignored.

For error messages not covered in this guide or related IRIX Administration Guides, see the file */usr/include/sys/errno.h*, the *intro*(2) reference page, and the *Owner's Guide* for your system.

Some error messages are "customized" with specific information from your system configuration. Where this is the case, the messages listed in this appendix may contain an ellipsis (...) to indicate specific information that has been left out of the example, or the notation is made that the message you receive may be similar to the listed message, rather than an exact match.

Cadmin Objectserver Messages

You may see messages similar to the following:

- `objectserver: base verify: search for root returned errors`
- `objectserver: addToCollection: set error for collection '5(Permission Denied)'`

These error messages indicate a problem with the Objectserver database. The *Objectserver* will probably terminate after displaying these messages. Or, due to the corruption in the database, the **root** user will probably not be allowed to perform any tasks via the graphical interface.

Do not attempt to correct this error yourself. Contact your local support provider for help.

The cadmin objectserver also issues messages pertaining to disk space and peripheral devices, and those messages are documented in the sections and volumes that describe those devices.

Disk Space Messages

The following messages deal with standard disk operations, such as messages indicating you are low on or out of available disk space.

- `unix: <disk id>: Process ... ran out of disk space`
- `unix: <disk id>: Process ... ran out of contiguous space`
- `objectserver: The system disk is 100% full`
- `objectserver: The /usr disk directory is 100% full`
- `objectserver: The system disk is 95% full`
- `objectserver: The /usr disk directory is 95% full`

If the disk becomes completely full, you will not be able to create new files or write additional information to existing files. If the system disk becomes full, your system may not respond to commands.

Note: Do not shut down or restart the system until you free up some disk space. Without free disk space, the system may not be able to restart properly.

Please release disk space in one of these ways:

1. Empty your dumpster by choosing "Empty Dumpster" from the Desktop toolchest.
2. Remove or archive old or large files or directories.
   - To find old or large files, double-click the *launch icon* to start the Search tool, then use its online help.
   - It's a good idea to search for files named *core*; these are often very large, and are created by an application when it encounters a problem.
   - If you remove the files from the desktop, empty your dumpster again.
   - To archive files (copy them onto a backup tape), use the Backup & Restore tool; start it by double-clicking the launch icon.
3. If your system disk is almost full, check:
   - */var/tmp* and */tmp*: These are public directories that often become full; delete unwanted files or directories that you find here.
   - */var/adm/SYSLOG*: If this file seems very large (over 200 KB), remove all but a few lines of it; do not remove the entire file.
   - */var/adm/crash*: When the system has a serious failure (crash), it places information into two files: *vmcore.*<*number*> and *unix.*<*number*>. If you find files with these names, back them up to tape so you can give the files to your local support organization, then remove the files from your system.
   - If you remove the files from the desktop, empty your dumpster again.
   - *mbox* in all home directories. If these files are large, ask the owners to please delete all but critical messages.
4. Remove optional or application software.
   - To start the Software Manager, choose "Software Manager" from the System toolchest.

If you want to be notified at a different level of disk use (for example, to be notified when the disk is 90% full), a *Privileged User* can follow these steps:

1. Start the Disk Manager by double-clicking the *launch icon*.
2. Click the button beneath the photo of the disk whose warning threshold you want to change (the system disk is labeled 0,1).
3. Highlight the number in the *Notify when* field, type 90, then click *OK*.

Also, see "Useful Disk Usage Commands" on page 109.

General System Messages

The following messages indicate general system configuration issues that should be noted or attended to.

File Permission Issues

You may see the message:

- `unix: WARNING: inode 65535: illegal mode 177777`

This message indicates that a program attempted to access a file to which it has no access permission.

The *find* command can be used to identify the filename, permissions, and directory path that the file resides in. Use the **-inum** option of *find* to specify the inode number in order to locate the file. Once the file has been located, the permissions of the file can be changed by the owner of the file or the superuser (**root**).

IP (Network) Address Issues

The following issues pertain to the basic configuration of your system for the network and the immediate networking hardware.

Default Internet Address

You may see the message:

- `unix: network: WARNING IRIS'S Internet address is the default`

The IP address is not set on this system. To set the IP address, see "Setting the Network Address" on page 71.

Duplicate IP Address

You may see the messages:

- `unix: arp: host with ethernet address ... is using my IP address ...`
- `unix: arp: host with ethernet address ... is still using my IP address ...`

Your system's IP address is the same as another system's. Each system on the network must have a unique IP address so the network can send information to the correct location. Typically an address conflict occurs when a new system is added to the network and the system's Administrator assigns an IP address that is already in use.

Check to make certain your system is using the correct IP address and then contact the owner of the other system to determine which system needs to change its address.

Ethernet Cable Issues

You may see the following messages:

- `unix: ec0: no carrier: check Ethernet cable`

This message indicates that the Ethernet cable has become loose, or some connection has been lost. This message may appear if the other systems on the network have been shut down and turned off.

- `unix: ec0: late xmit collision`

This message indicates that the Ethernet interface has detected a transmission by another system on the network that was sent beyond the boundaries of the Ethernet standard transmission timing.

The most common causes of the late collisions are due to networks that have been configured outside of the network specification boundaries:

- Long AUI transceiver cables. The length of the AUI cable should not exceed 50 meters.
- New or recently added network segments that extend the network's total length.
- Faulty or failing transceivers.
- Faulty or failing Ethernet controllers.

If the problem persists, contact your network administrator or your local support provider.

login and su Issues

These messages are typically informational. They appear when another user attempts to log on to the system or use another account and the attempt either fails or succeeds.

login Messages

You may see the message:

- `login: failed: <user> as <user>`

The *login* failures indicate that the user didn't specify the correct password or misspelled the login name. The */var/adm/SYSLOG* file contains the hostname that the user attempted to log in from and the account (username) the user attempted to log in to on the local system.

su Messages

You may see the message:

- `su: failed: ttyq# changing from <user> to root`

The *su* messages are typically informational. They appear when a user attempts to switch user accounts. Typically users are attempting to become **root** or superuser when this message appears.

The *su* failures indicate that the user didn't specify the correct password or misspelled the login name. The */var/adm/SYSLOG* file contains the hostname, tty port number (*ttyq#*), the name of the user that attempted to perform the *su* command, and the account the user attempted to use.

Network Bootup Issues

This message indicates that the *bootp* program was remotely invoked from your system:

- `bootp: reply boot file /dev/null`

Usually a filename that is given after the *bootp* command contains code that can remotely startup a remote system. This startup file can be used to restart a diskless system, boot an installation program (*sa*), boot a system into *sash*, or boot X-terminals. The *bootp* program is a communications program that talks between the systems and the remote network device and facilitates the reading of the startup file across the network.

Operating System Rebuild Issues

You may see the following message:

- `lboot: Automatically reconfiguring the operating system`

This informational message indicates that there has been a change to one or more of the operating system files or to the system hardware since the system last restarted. The system may automatically build a new kernel to incorporate the changes, and the changes should take place once the system has been rebooted.

The operating system file changes that can cause this message to be displayed include installing additional software that requires kernel modifications and additions or changes in some kernel tunable parameters. If this message appears every time the system boots, then check the date on one of the operating system files. The date on the file may have been set to a date in the future.

Power Failure Detected

You may see the following message:

- `unix: WARNING: Power failure detected`

This message indicates that the system has detected that the AC input voltage has fallen below an acceptable level. This is an informational message that is logged to */var/adm/SYSLOG*.

Although this is an informational message, it's a good idea to check all of the AC outlets and connections, and check the system components for disk drive failures or overheated boards. On *Challenge* and *Onyx* systems, the system controller attempts to gracefully shut down the system; this includes stopping all processes and synchronizing the disk. For additional information, refer to the section titled Using System Controller in the *Challenge and Onyx Diagnostic Roadmap*.

SCSI Controller Reset

You may see messages similar to the following:

- `unix: wd93 SCSI Bus=0 ID=7 LUN=0: SCSI cmd=0x12 timeout after 10 sec. Resetting SCSI`
- `unix: Integral SCSI bus ... reset`

This message indicates that the SCSI controller has made an inquiry of the device (where the ID number is located) and it did not respond.

This message is a notification to the user that the system has encountered a problem accessing the SCSI device. There are several reasons why this message may have been displayed:

- The SCSI device that was being accessed doesn't support the type of inquiry that the controller has made.
- There is a physical problem with the SCSI device or controller.

If this message continues to appear, look at the */var/adm/SYSLOG* file and see if there are any messages that follow this one to help isolate or identify the problem, or contact your local support provider.

syslogd Daemon Issues

You may see the following message:

- `syslogd: restart`

The *syslogd* messages are typically informational only. The messages indicate the start and stop of the *syslogd* daemon. These messages are written to */var/adm/SYSLOG* when the system is shut down or rebooted.

System Clock and Date Issues

You may see this message:

- `unix: WARNING: clock gained ... days`

This is an informational message that indicates that the system has been physically turned off for *x* number of days (where *x* is indicated by the message found in */var/adm/SYSLOG*).

To correct this problem, you should reset the system date and time. For more information on setting the system time, see the *date*(1) reference page and "Changing the Date and Time" on page 75 of this Guide.

You may see this message:

- `unix: WARNING: CHECK AND RESET THE DATE!`

This message is typically preceded by several different types of time and date messages. Some of the messages are informational, and others indicate a problem with the system date, time, or hardware. Check the log file */var/adm/SYSLOG* for other clock, date, or time-related problems. If you don't see any other date, time, or clock messages, try setting the *verbose* option of *chkconfig* on.

For more information on setting the date, and tim, see the *date*(1) reference page and "Changing the Date and Time" on page 75 of this Guide. For *chkconfig* options, refer to the *chkconfig*(1M) reference page.

Time Server Daemon Messages:

- `timed: slave to gate-host-name`

The time server daemon (*timed*) logs informational entries into */var/adm/SYSLOG*. No action is required by the user. The *timed* daemon will automatically perform the necessary adjustments. Refer to the *timed*(1M) reference page for more information about the time server daemon.

System Restarting Information

You may see the following messages:

- `INFO: The system is shutting down.`
- `INFO: Please wait.`
- `syslogd: going down on signal 15`
- `syslogd: restart`
- `unix: [WIRIX Release ...`
- `unix: Copyright 1987-1995 Silicon Graphics, Inc`
- `unix: All Rights Reserved.`

The messages logged during system startup contain information about the operating system environment that the system is using. The startup messages include the version of the IRIX operating system that is loaded on the system, and Silicon Graphics copyright information. The operating system version information can be helpful to support providers when you report any problems that the system may encounter.

The messages that are logged during system *shutdown* are also sent to */var/adm/SYSLOG*. These are informational messages that are broadcast to all users who are logged onto the system and the system console. There is no action required.

Trap Held or Ignored

You may see these messages:

- `unix: WARNING: Process ... generated trap, but has signal 11 held or ignored`
- `unix: Process ... generated trap, but has signal 11 held or ignored`

This message indicates that the process is an infinite loop, therefore the signal/trap message that followed was held or ignored.

This message is usually caused by a temporary “out of resources” condition or a bug in the program. If it is a resource issue, you should be able to execute the program again without seeing this message again. If the message reappears after executing the program, you might have encountered a bug in the program.

Memory and Swap Messages

The following messages you may see deal with issues of system memory and swap space, and the way the system manages these resources.

Growreg Insufficient Memory

You may see this message:

- `unix: growreg – temporarily insufficient memory to expand region`

This message indicates that there is not enough memory (both real and virtual) available for use by programs running on your system. There is no memory available to start any new processes or programs.

If this message continues to appear, you can correct the problem as directed in the troubleshooting section titled “Swapping and Paging Messages” on page 295.

Panic Page Free

If you see this message:

- `PANIC: panic pagefree: page use 0`

This indicates that the system thinks that an address of a page of memory is out of the legal range of values, or that the system is trying to free a page of memory that is already marked as free.

This panic message results in the system halting immediately and ungracefully. When the system halts, it attempts to save the contents of the kernel stack and memory usage information in a crash file. The page free panic is usually caused by a physical memory problem or possible disk corruption. If this message occurs again, contact your local support provider.

Physical Memory Problems

You may see a message similar to this:

- `unix: CPU Error/Addr 0x301 <RD PAR>: 0xbd59838`

Your system contains several modular banks of random-access memory; each bank contains a SIMM. One or more of these SIMMs is either loose or faulty. You must correct the problem so your system and software applications can run reliably.

Follow these steps:

1. Shut down the system.
2. Refer to your *Owner's Guide*. It shows you how to visually identify a loose SIMM and re-seat it. If the SIMM is not loose, you may need to replace it. Contact your local support organization.

   If your *Owner's Guide* does not contain information about SIMMs, contact your local support organization.

Recoverable Memory Errors

The following are informational messages. They indicate that the hardware detected a memory parity error and was able to recover from the parity condition. No action is required unless the frequency of this message increases. Please note the hexadecimal number, which represents the memory location in a SIMM.

- `unix: Recoverable parity error at or near physical address 0x9562f68 <0x308>, Data: 0x8fbf001c/0x87b00014`

  This message indicates that the system has tried to read a programs allotted memory space and an error has been returned. The error that returns usually indicates a memory parity error.

- `unix: Recoverable memory parity error detected by CPU at 0x9cc4960 <0x304> code:30`

  This is an informational message that indicates that the *Central Processing Unit (CPU)* detected a memory parity error and is reporting it to */var/adm/SYSLOG.* No action is required unless the frequency of this message increases. Please note the hexadecimal number, which represents the memory location in a *SIMM*.

- `unix: Recoverable memory parity error corrected by CPU at 0x9cc4960 <0x304> code:30`

This is an informational message that indicates that the Central Processing Unit (CPU) detected a memory parity error and was able to recover from the parity condition. No action is required unless the frequency of this message increases. Please note the hexadecimal number, which represents the memory location in a *SIMM*.

Savecore I/O Error

If you see this message:

- `savecore: read: I/O Error`

This message indicates that when the system rebooted after a system crash, the program *savecore* was not able to read */dev/swap* in order to save the memory core image at the time of the crash.

The program *savecore* is executed after the system restarts with superuser permissions. If *savecore* was not able to read the memory core image (*/dev/swap*), then it is possible that you have disk problems within the swap partition. This message might be followed by disk error messages. If the problem persists, then you should contact your local support provider.

Swapping and Paging Messages

Swapping and Paging are the methods by which the operating system manages the limited memory resources in order to accommodate multiple processes and system activities.In general, the operating system keeps in actual RAM memory only those portions of the running programs that are currently or recently in use. As new sections of programs are needed, they are paged (or "faulted") into memory, and as old sections are no longer needed they are paged out.

Swapping is similar to paging, except that entire processes are swapped out, instead of individual memory pages, as in paging. The system maintains a section of hard disk for swapping. If this space is filled, no further programs can be swapped out, and thus no further programs can be created.

The following messages may indicate a swapping or paging problem:

- `Swap out failed on logical swap`

For some reason, the operating system was unable to write the program to the swap portion of the disk. No action is necessary as the process is still in memory. See "Swap Space" on page 114.

- `Paging Daemon (vhand) not running – NFS server down?`

  The system determines that *vhand* is not executing, possibly because it is waiting for an I/O transfer to complete to an NFS server (especially if the NFS file system is hand mounted). No action should be necessary as the system will restart *vhand* when needed.

- `bad page in process (vfault)`

  The page being faulted into memory is not a recognized type. The recognized types are demand fill, demand zero, in file, or on swap. Reboot your system and if the error persists, check your application and your disk.

- `unix: WARNING: Process ... killed due to bad page read`

  The page being faulted into memory could not be read for some reason and the process was killed. Restart the program or reboot the system, and if the error persists, check your application and your disk.

- `unix: Process ... killed due to insufficient memory/swap`

  Your system uses a combination of physical memory (RAM) and a small portion of the disk (swap space) to run applications. Your system does not have enough memory and swap space at this time. It had to stop a program from running to free up some memory.

- `unix: ... out of logical swap space during fork – see swap(1M)`

  Your system does not have enough memory and swap space at this time. It could not start a new process.

If you run out of swap space or memory frequently, you should:

1. Exit from applications when you are not using them. Remember to check all your Desks.
2. Order additional memory from your local support or sales organization.
3. Turn on virtual swap space. Refer to the *swap*(1M) reference page and "Swap Space" on page 114 first.

   The Administrator should log in as **root** and enter the command:

   `chkconfig`

If the *chkconfig* listing shows a line that says `vswap off`, give the commands:

```
chkconfig vswap on
```

```
/etc/init.d/swap start
```

If *vswap* was already on, go on to the next step.

4. Create a file that the system can use for additional swap space. Note that this decreases your available disk space by the size of the file. If you create a 10 MB swap file, you'll no longer have access to that 10MB of disk space.

   To create a 10 MB swap file, the Administrator should log in as **root** and enter these commands:

   ```
   mkdir -p /var/swap
   ```

   ```
   /usr/sbin/mkfile 10m /var/swap/swap1
   ```

   ```
   /sbin/swap -a /var/swap/swap1
   ```

   To make this permanent, so you have the swap space available every time you restart the system, add this line to the */etc/fstab* file:

   ```
   /var/swap/swap1 swap swap pri=3
   ```

   For more information, see the *swap*(1M) reference page or "Swap Space" on page 114.

5. You can permanently increase swap space by repartitioning the disk. You can find instructions to do this in the *IRIX Admin: Disks and Filesystems* volume.

Other Memory Messages

You may see the following error messages or similar messages from time to time:

- `unix: Memory Parity Error in SIMM S9 (Bank 0, Byte 2)`

  The CPU detected a memory parity error in the listed SIMM. A parity error indicates that some or all of the individual memory bits may have been incorrectly read or written. Note the SIMM information and reboot the system. If the same SIMM shows repeated errors, check the SIMM as described in "Physical Memory Problems" on page 293.

- `unix: Process...sent SIGBUS due to Memory Error in SIMM S9`

Note the SIMM information and reboot the system. If the same SIMM shows repeated errors, check the SIMM as described in "Physical Memory Problems" on page 293.

- `Ran out of action blocks`

  A resource used by the multiprocessor kernel for inter-CPU interrupts has run out. If this happens frequently, use the *systune*(1M) command to increase the value of the parameter *nactions* as described in the section titled "Tuning The Operating System" on page 205.

- `mfree map overflow`

  Fragmentation of some resource (such as message queues) contributed to the loss of some of the resource. No action is necessary.

System Panic Messages

The following messages indicate problems that should be resolved by rebooting the system. You should not be overly concerned about these instances unless they become frequent. There are other PANIC messages that are generated by the kernel not listed here. Follow these instructions for all PANIC messages.

- `bumprcnt – region count list overflow`

  This message indicates an unresolvable problem with the operating system. Reboot your system.

- `PANIC: kernel fault`

  This message indicates that the kernel experienced an unresolvable problem and shut itself down . By the time you see this message in the system message log, you will have rebooted the system. Note the message exactly on paper in your system log book for reference if it happens again.

The system is said to have panicked if the software or hardware reached a state where it could no longer operate. If the system fails again, or if you receive an unusually large number of error messages, please contact your local support provider. It helps the support provider if you save this information:

- If there are any files in the */var/adm/crash* directory, back them up to tape. Double-click the *launch icon* to start the Backup & Restore tool.
- After you back up the files, you can remove them.

- Check the System Log Viewer and save all the messages that you see. Double-click the *launch icon* to start the System Log Viewer.
- Have you changed any kernel tunable parameters recently? If so, try resetting them to their former or default or self-configuring settings. See “Tuning The Operating System” on page 205.