Recovery from an LED 553 in AIX 3.1 or 3.2

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> **Note:** The information in this document has **not** been verified for AIX 4.1.

Causes of an LED 553

An LED 553 occurs during IPL on a RISC System/6000 if the system cannot read or run the /etc/inittab file. On early releases, this could occur when the /tmp or / (root) file system is full. On level 2004 and beyond, the cause is more likely to be a missing /bin/bsh file or a problem with one of the shell profiles.

Summary of the Recovery Procedure

To recover from an LED 553, check /dev/hd3 and /dev/hd4 for space problems, and erase files if necessary. Check the /etc/inittab file for corruption, and fix it if necessary. If the inittab file was not corrupted, you will need to check the shell profiles, the /bin/bsh file, and some other files.

Steps

1. Turn the key to the Service position.

2. With BOSboot or installation media **of the same version and level as the operating system**, boot the system.

> **Warning:** If you boot a 3.2 system with 3.1 media, or boot a 3.1 system with 3.2 media, then you will not be able to use the standard scripts (getrootfs or /etc/continue) to bring your workstation into full maintenance mode.
>
> Moreover, performing the scripts on a 3.1 system with 3.2 boot media may actually remove some files and prevent your system from booting successfully in normal mode until missing files (/etc/mount and /etc/umount) are replaced on the disk.

Notes:

a. For information on BOSboot diskettes, refer to InfoExplorer or order fax #2462 from 1-800-IBM-4FAX (or 415-855-4FAX outside the U.S. from a fax machine phone).

b. If booting from diskettes, when you see LED c07, insert the next diskette. This may be the optional display extensions diskette (required for AIX 3.2.5) or the display diskette.

c. If you have AIX 3.2.5, used a fddi network install, and selected that option for the install device, you will need the communications extensions diskette. If this diskette is not available, you can build it from another system with fddi installed or call your branch office for assistance.

Follow the prompts to the installation/maintenance menu.

3. Choose the maintenance shell (option 5 for AIX 3.1, option 4 for AIX 3.2).

4. Determine the hdisk# to use with the getrootfs or /etc/continue command. If you have only one disk, then `hdisk0` is the proper hdisk# to use. If you have more than one disk, do the following:

   - **For AIX 3.2.4 or later:**

     Run

     ```
     getrootfs
     ```

     The output indicates the disk that should be used with getrootfs in the next step.

   - **For AIX 3.1 to 3.2.3e:**

     Run

     ```
     lqueryvg -Atp hdisk# | grep hd5
     ```

     for each hdisk# (hdisk0, hdisk1, etc.) until you get output that looks like:

     ```
     00005264feb3631c.2  hd5 1
     ```

The exact output you get will be different but will follow the form

```
large_number.x  hd5 1
```

You may find more than one disk has this output. These will all be disks which belong to the rootvg volume group. You may use any of the disks identified to be in rootvg in the following step.

5. Now access the rootvg volume group by running /etc/continue (for AIX 3.1) or getrootfs (for AIX 3.2). ('#' is the number of the fixed disk, determined in step 4.)

   For AIX 3.1 only, run

   ```
   /etc/continue hdisk#
   ```

   For AIX 3.2 only, run

   ```
   getrootfs hdisk#
   ```

   If you get errors from /etc/continue or getrootfs, do not continue with the rest of this procedure. Correct the problem causing the error. If you need assistance correcting the problem causing the error, contact one of the following:

   - local branch office
   - your point of sale
   - 1-800-CALL-AIX (to register for fee-based services)

   All of the above avenues for assistance may be billable.

6. For AIX 3.2.4 or greater, enter the following command:

   ```
   ODMDIR=/dev/objrepos
   ```

7. Use the df command to check for free space in /dev/hd3 and /dev/hd4.

   ```
   df  /dev/hd3
   df  /dev/hd4
   ```

8. If df showed that either file system is out of space, erase some files from that file system. Three files you may want to erase are /smit.log, /smit.script, and /.sh_history.

9. Next, check the /etc/inittab file for corruption. It may be empty or missing, or it may have an incorrect entry. For comparison, see "Sample /etc/inittab Files" at the end of this document.

10. If the inittab file is corrupt, set your terminal type in preparation for editing the file. (xxx is a terminal type, such as hft, ibm3151, or vt100.)

    ```
    TERM=xxx
    export TERM
    ```

    Now use an editor to create the /etc/inittab file. For an example, see "Sample /etc/inittab Files" at the end of this document. If your /etc/inittab file was corrupt and you recreated it, you may not need to perform any of the following steps.

11. Use the following command to check for any modifications or problems with permission.

    ```
    ls -al /.profile /etc/environment /etc/profile
    ```

    Example output:

    ```
    -rw-r--r--  1 root  system  158 Dec 14 1993  /.profile
    -rw-rw-r--  1 root  system 1389 Oct 26 1993  /etc/environment
    -rw-r--r--  1 root  system 1214 Jan 22 1993  /etc/profile
    ```

    One of the above files may contain a command that is valid only in the Korn shell. Change the command to something that is also valid in the Bourne shell. For example, change

    ```
    export PATH=/bin:/usr/bin/:/etc:/usr/ucb:.
    ```

    to

    ```
    PATH=/bin:/usr/bin/:/etc:/usr/ucb:.
    export PATH
    ```

12. **For AIX 3.1:**

    Make sure the following files and directory are not missing or moved.

    ```
    /bin/sh
    /bin/bsh
    /bin
    ```

13. **For AIX 3.2:**

    Check for missing or moved files with the following command:

    ```
    ls -al /bin /bin/bsh /bin/sh /bootrec /lib /u /unix
    ```

    Example output:

```
lrwxrwxrwx 1 root sys      8 Aug 5 1994 /bin -> /usr/bin
-r-xr-xr-x 3 bin  bin 256224 Jun 4 1993 /bin/bsh
-r-xr-xr-x 3 bin  bin 256224 Jun 4 1993 /bin/sh
lrwxrwxrwx 1 root sys     17 Aug 5 1994 /bootrec -> /usr/sbin/bootrec
lrwxrwxrwx 1 root sys      8 Aug 5 1994 /lib -> /usr/lib
lrwxrwxrwx 1 root sys      5 Aug 5 1994 /u -> /home
lrwxrwxrwx 1 root sys     18 Aug 5 1994 /unix -> /usr/lib/boot/unix
```

    If any of the above files are missing, the problem may be a missing symbolic link. Use the commands from the list below that correspond to the missing links:

    ```
    ln -s /usr/bin /bin
    ln -s /usr/lib/boot/unix /unix
    ln -s /usr/sbin/bootrec /bootrec
    ln -s /usr/lib /lib
    ln -s /home /u
    ```

14. **For AIX 3.1:**

Make sure the following are not missing or corrupt.

```
/etc/fsck
/etc/brc
```

15. **For AIX 3.2:**

    Use the following command to make sure that fsck and rc.boot are not missing or corrupt:

    ```
    ls -l /etc/fsck /sbin/rc.boot
    ```

    Example output:

```
lrwxrwxrwx 1 root system    14 Aug  5 1994 /etc/fsck -> /usr/sbin/fsck
-rwxrwxr-- 1 root system 33760 Aug 30 1993 /sbin/rc.boot
```

---

16. If you are running AIX 3.2, make sure the /etc/inittab file is the 3.2 version. For that version, the line that begins with "brc" should be

    ```
    brc::sysinit:/sbin/rc.boot 3 >/dev/console 2>&1
    ```

    For AIX 3.1, the line reads

    ```
    brc::sysinit:/etc/brc >/dev/console 2>&1
    ```

    See "Sample /etc/inittab Files" at the end of this document for an example.

17. If you have not found any obvious problems, try substituting ksh for bsh with the following commands. (The first command saves your bsh before you copy over it.)

    ```
    cp /bin/bsh /bin/bsh.orig
    cp /bin/ksh /bin/bsh
    ```

    If you can then reboot successfully, you know that one of the profiles was causing problems for bsh. Check the profiles again by running the following:

    ```
    /bin/bsh.orig /.profile
    /bin/bsh.orig /etc/profile
    /bin/bsh.orig /etc/environment
    ```

    If you receive errors with any of the above commands, you know there is a command in that profile that bsh cannot handle.

If you followed all of the above steps and the system still stops at an LED 553 during a reboot in Normal mode, you may want to pursue further system recovery assistance from one of the following:

- local branch office
- your point of sale
- 1-800-CALL-AIX (to register for fee-based services)

All of the above avenues for assistance may be billable.

For reasons of time and the integrity of your AIX operating system, the best alternative at this point may be to reinstall AIX.

Sample /etc/inittab Files

Sample /etc/inittab for AIX 3.1

```
: @(#)inittab    1.22  com/cfg/etc,3.1,9021 4/6/90 17:18:07
init:2:initdefault:
brc::sysinit:/etc/brc >/dev/console 2>&1 # Phase 2 of system boot
rc:2:wait:/etc/rc > /dev/console 2>&1  # Multi-User checks
srcmstr:2:respawn:/etc/srcmstr          # System Resource Controller
rctcpip:2:wait:/etc/rc.tcpip > /dev/console 2>&1 # Start TCP/IP daemons
cons:0123456789:respawn:/etc/getty /dev/console
piobe:2:once:/bin/rm -f /usr/lpd/pio/flags/*
cron:2:respawn:/etc/cron
qdaemon:2:once:/bin/startsrc -sqdaemon
writesrv:2:once:/bin/startsrc -swritesrv
```

Sample /etc/inittab for AIX 3.2

```
: @(#)49  1.28  com/cfg/etc/inittab, bos, bos320 10/3/91 10:46:51
init:2:initdefault:
brc::sysinit:/sbin/rc.boot 3 >/dev/console 2>&1 # Phase 3 of system boot
rc:2:wait:/etc/rc > /dev/console 2>&1  # Multi-User checks
fbcheck:2:wait:/usr/lib/dwm/fbcheck >/dev/console 2>&1
srcmstr:2:respawn:/etc/srcmstr          # System Resource Controller
rctcpip:2:wait:/etc/rc.tcpip > /dev/console 2>&1 # Start TCP/IP daemons
rcnfs:2:wait:/etc/rc.nfs > /dev/console 2>&1 # Start NFS Daemons
cons:0123456789:respawn:/etc/getty /dev/console
piobe:2:wait:/bin/rm -f /usr/lpd/pio/flags/*
cron:2:respawn:/etc/cron
qdaemon:2:wait:/bin/startsrc -sqdaemon
writesrv:2:wait:/bin/startsrc -swritesrv
```

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