



Unit 3

System startup and shutdown



Unit objectives

After completing this unit, you should be able to:

- Describe the system startup process
- Explain how to shut down the system
- Describe the contents of the **/etc/inittab** file
- Manage the system environment

Startup modes

Normal mode

- Login prompt
- All processes running
- Multi-user mode

System Management Services

- Not AIX
- Runs from FIRMWARE
- Sets boot list

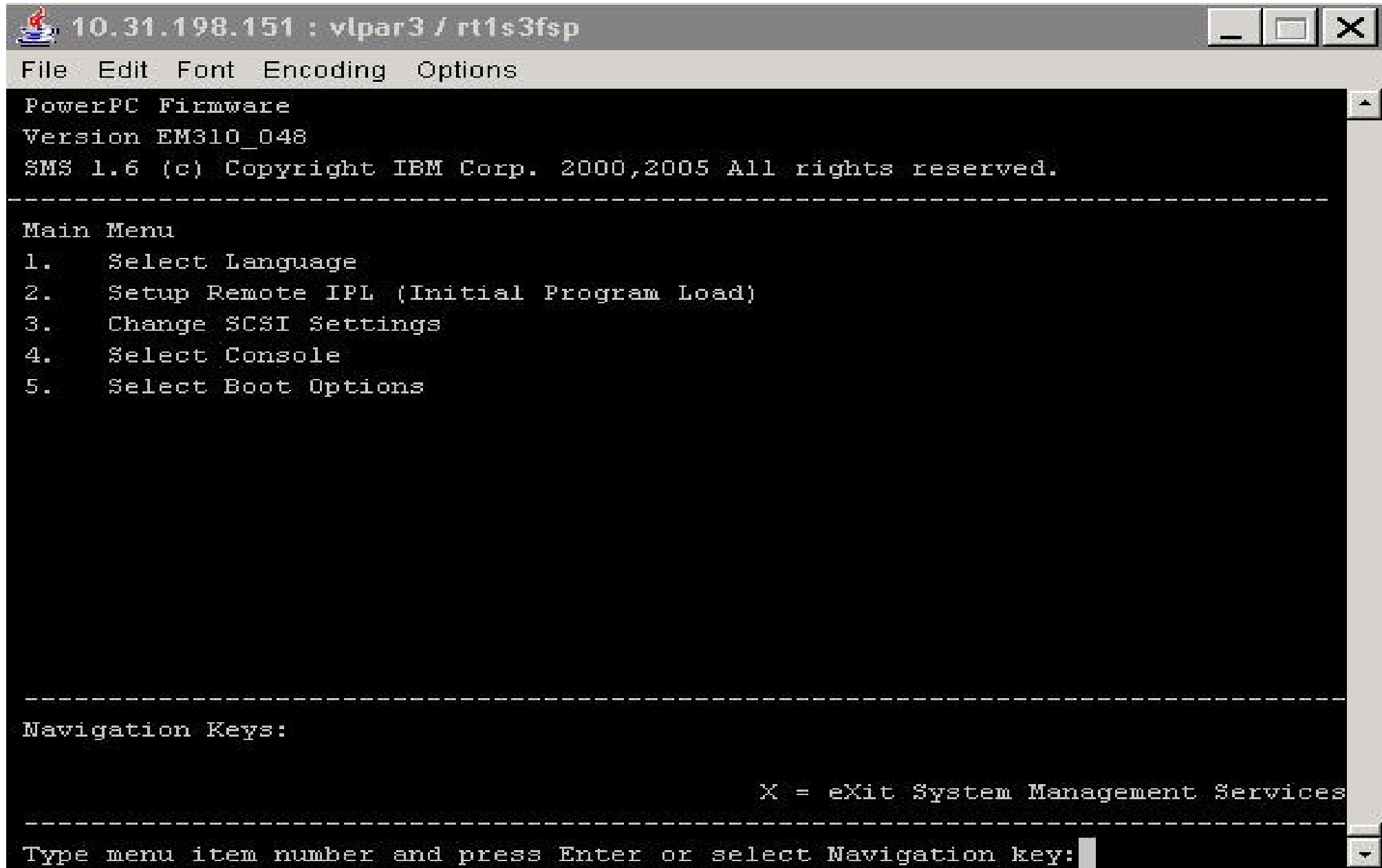
Maintenance mode

- Maintenance menu
- Recover **root** password
- Fix machine that won't boot

Diagnostics

- AIX diagnostics

Starting System Management services



The screenshot shows a terminal window titled "10.31.198.151 : vlp3r3 / rt1s3fsp". The window contains the following text:

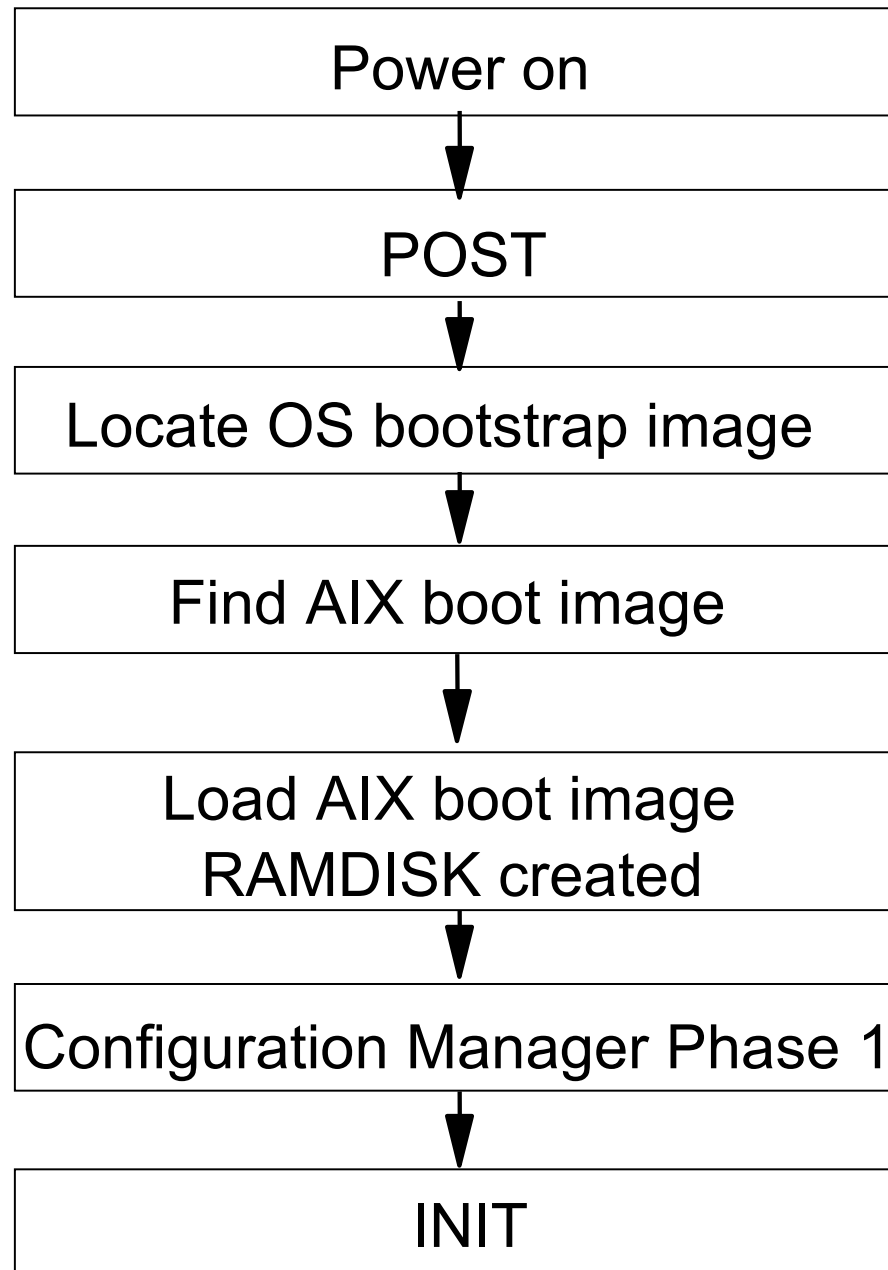
```
PowerPC Firmware
Version EM310_048
SMS 1.6 (c) Copyright IBM Corp. 2000,2005 All rights reserved.
-----
Main Menu
1.  Select Language
2.  Setup Remote IPL (Initial Program Load)
3.  Change SCSI Settings
4.  Select Console
5.  Select Boot Options

-----

Navigation Keys:

X = eXit System Management Services
-----
Type menu item number and press Enter or select Navigation key: 
```

System p server start up process overview



Normal IPL

The `bootinfo` command

- To view the architecture type:

```
# bootinfo -p
```

rs6k MCA model

rspc PCI model (POWER Reference Platform)

chrp PCI model (Common Hardware Reference)

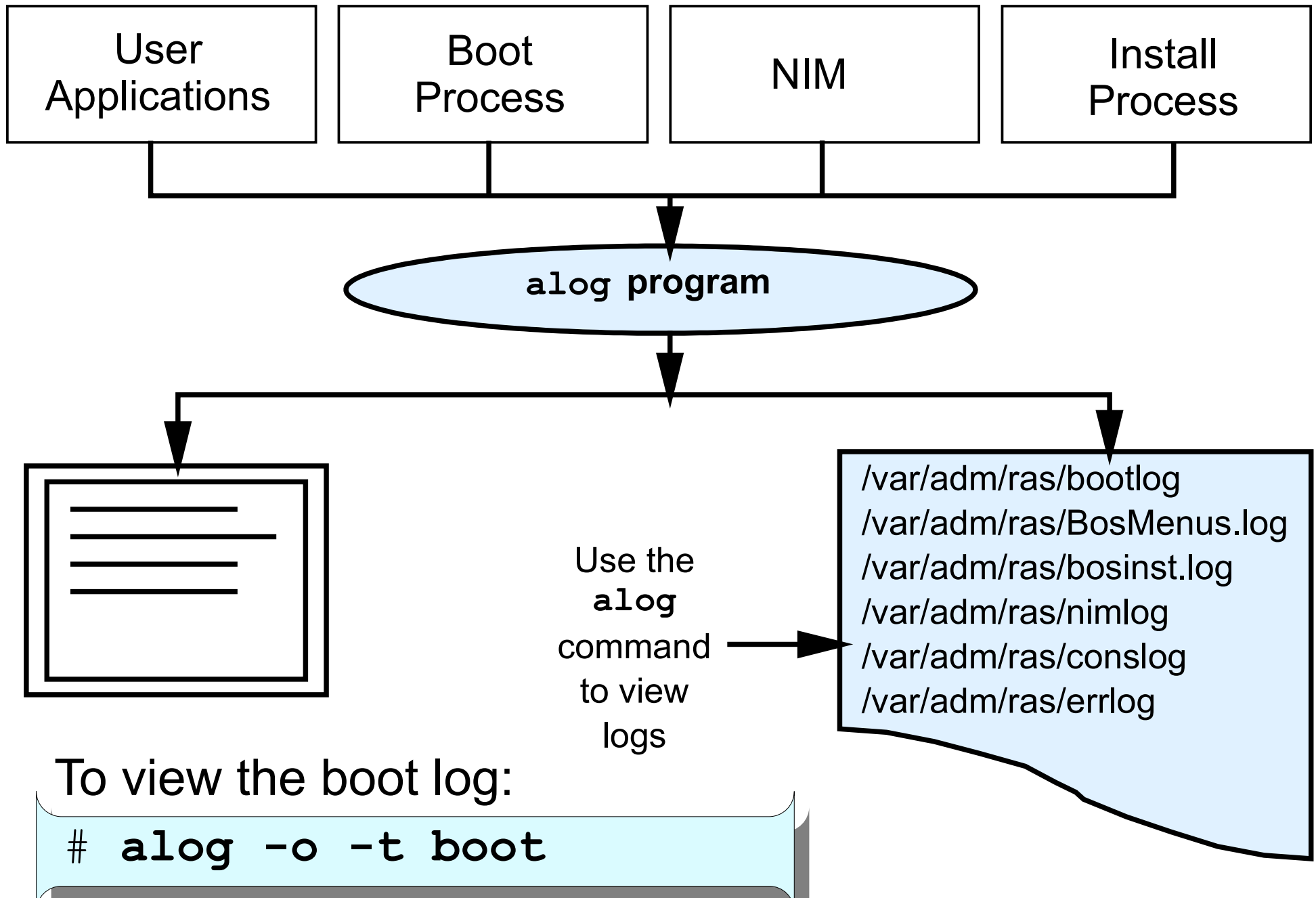
- To view the bit addressing:

```
# bootinfo -y
```

32 32-bit

64 64-bit

The alog command



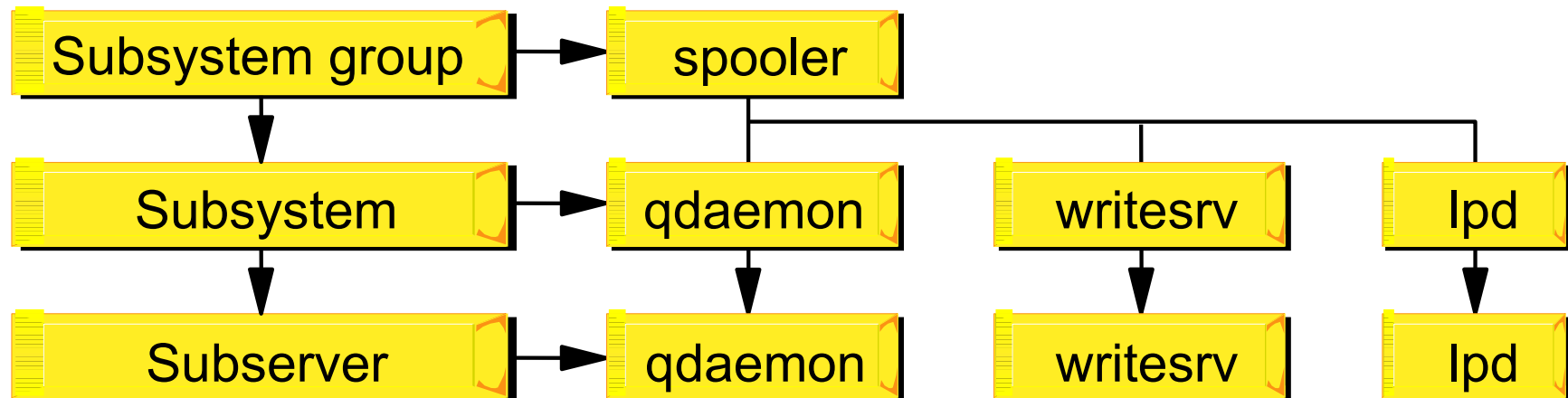
/etc/inittab

Format of the line: **id:runlevel:action:command**

```
init:2:initdefault:
brc::sysinit:/sbin/rc.boot 3 >/dev/console 2>&1 # Phase 3 of system boot
powerfail::powerfail:/etc/rc.powerfail 2>&1 | alog -tboot > /dev/console ...
mkatmpvc:2:once:/usr/sbin/mkatmpvc >/dev/console 2>&1
atmsvcd:2:once:/usr/sbin/atmsvcd >/dev/console 2>&1
load64bit:2:wait:/etc/methods/cfg64 >/dev/console 2>&1 # Enable 64-bit execs
tunables:23456789:wait:/usr/sbin/tunrestore -R > /dev/console 2>&1 ...
rc:23456789:wait:/etc/rc 2>&1 | alog -tboot > /dev/console # Multi-User checks
fbcheck:23456789:wait:/usr/sbin/fbcheck 2>&1 | alog -tboot > /dev/console ...
srcmstr:23456789:respawn:/usr/sbin/srcmstr # System Resource Controller
rctcpip:23456789:wait:/etc/rc.tcpip > /dev/console 2>&1 # Start TCP/IP daemons
rcnfs:23456789:wait:/etc/rc.nfs > /dev/console 2>&1 # Start NFS Daemons
cron:23456789:respawn:/usr/sbin/cron
piobe:2:wait:/usr/lib/lpd/pio/etc/piointit >/dev/null 2>&1 # pb cleanup
qdaemon:23456789:wait:/usr/bin/startsrc -sqdaemon
writesrv:23456789:wait:/usr/bin/startsrc -swritesrv
uprintfd:23456789:respawn:/usr/sbin/uprintfd
shdaemon:2:off:/usr/sbin/shdaemon >/dev/console 2>&1 # High availability daemon
l2:2:wait:/etc/rc.d/rc 2
l3:3:wait:/etc/rc.d/rc 3
l4:4:wait:/etc/rc.d/rc 4
. . .
```

System resource controller

- Provides a single interface to control subsystems
- Controls individual subsystems or groups of subsystems



System resource controller syntax

- List SRC status:

```
# lssrc -g spooler
```

subsystem	Group	PID	Status
qdaemon	spooler	8022	active
writesrv	spooler	9558	active
lpd	spooler		inoperative

- Start a subsystem:

```
# startsrc -s lpd
0513-059 The lpd Subsystem has been started. Subsystem PID is 12472.
```

- Refresh a subsystem:

```
# refresh -s lpd
0513-095 The request for subsystem refresh was completed successfully.
```

- Stop a subsystem:

```
# stopsrc -s lpd
0513-044 The lpd Subsystem was requested to stop.
```

Stopping processes

- `# ps -ef`

UID	PID	PPID	C	STIME	TTY	TIME	CMD
root	1	0	0	May 04	-	0:11	/etc/init
root	2626	1	0	May 04	-	1:17	/usr/sbin/syncd 60
root	4136	1	0	May 04	-	0:00	/usr/sbin/srcmstr
root	4964	4136	0	May 04	-	0:00	/usr/sbin/inetd
root	6734	1	0	May 04	-	0:02	/usr/sbin/cron
root	8022	4136	0	May 04	-	0:00	/usr/sbin/qdaemon
root	9036	1	0	May 04	-	0:00	/usr/sbin/uprintfd
root	9345	1	0	May 04	-	0:02	/usr/bin/program

- For process not started by **srcmstr**:

```
# kill 9345
```

- For processes started by SRC:

```
# stopsrc -s qdaemon
```

System shutdown

- The **shutdown** command:
 - Gracefully stops all activity on the system and advises all logged on users
 - Warns users of an impending shutdown

```
# shutdown +2 The system will be down until 3AM
```

```
Broadcast message from root@localhost (tty) at  
1:30:20...
```

```
The system will be down until 3AM
```

```
shutdown: PLEASE LOG OFF NOW!!!
```

```
All processes will be killed in 2 minutes
```

Manage the system environment

smit system

System Environments

Move cursor to desired item and press Enter.

- Stop the System
- AIX Security Expert
- Assign the Console
- Change / Show Date, Time, and Time Zone
- Manage Language Environment
- Change / Show Characteristics of Operating System
- Change / Show Number of Licensed Users
- Broadcast Message to all Users
- Manage System Logs
- Change / Show Characteristics of System Dump
- Change/Show Documentation Services
- Change System User Interface
- Change/Show Default Browser
- Change/Show Documentation Services
- Web-based System Manager
- Enable 64-bit Application Environment
- Manage Remote Reboot Facility
- Manage System Hang Detection

F1=Help
F9=Shell

F2=Refresh
F10=Exit

F3=Cancel
Enter=Do

F8=Image

Manage Language Environment

smit mlang

Manage Language Environment

Move cursor to desired item and press Enter.

Change/Show Primary Language Environment

Add Additional Language Environments

Remove Language Environments

Change/Show Language Hierarchy

Set User Languages

Change/Show Applications for a Language

Convert System Messages and Flat Files

F1=Help

F2=Refresh

F3=Cancel

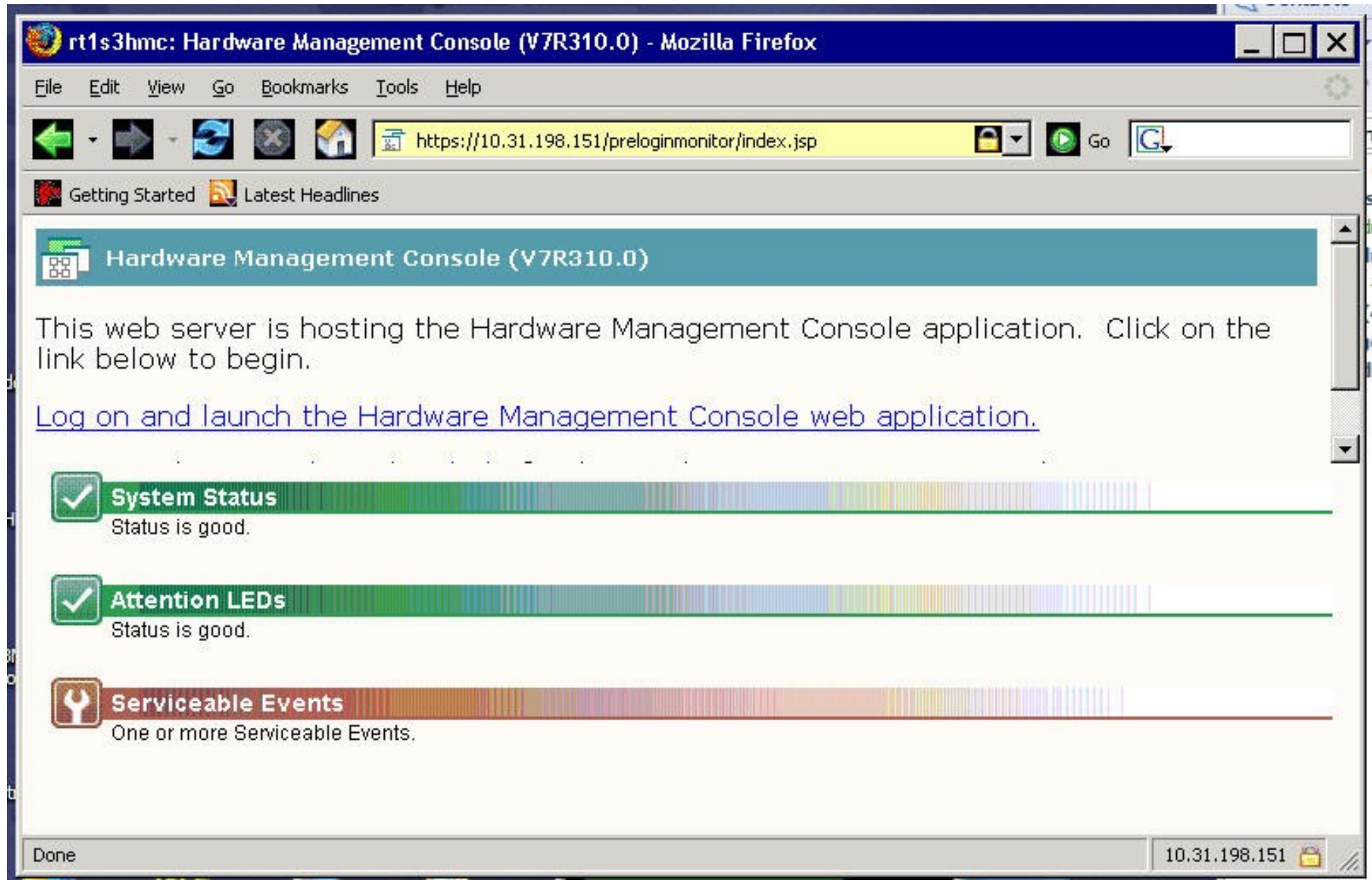
F8=Image

F9=Shell

F10=Exit

Enter=Do

Hardware Management Console



HMC – LPAR operations menu

The screenshot displays the Hardware Management Console (HMC) interface within a Mozilla Firefox browser window. The address bar shows the URL: `https://10.31.198.151 - rt1s3hmc: Hardware Management Console Workplace (V7R310.0) - Mozilla Firefox`. The main title is "Hardware Management Console".

Left Navigation Panel:

- Welcome
- Systems Management
 - Servers
 - rt1s3fsp
 - Custom Groups
 - System Plans
 - HMC Management
 - Service Management
 - Updates

Main Content Area:

Contents of: rt1s3fsp

Toolbar: Select, Name, IP, Status, Processi, Memo (GB), Activ Profil, Environme, Referer Code, Tasks.

Select	Name	IP	Status	Processi	Memo (GB)	Activ Profil	Environme	Referer Code
<input type="checkbox"/>	rt1s3vio				1	default	Virtual I/O Ser	
<input type="checkbox"/>	Teds_pla						r Linux	
<input type="checkbox"/>	vlpar2						r Linux	
<input checked="" type="checkbox"/>	vlpar3						r Linux	

Operations Menu (Context Menu for vlpar3):

- Properties
- Change Default Profile
- Operations
 - Restart
- Configuration
 - Shut Down
- Hardware Information
 - Manage Attention LED
- Dynamic Logical Partitioning
 - Schedule Operations
- Console Window
- Serviceability

Tasks: vlpar3 [Expand All | Collapse All]

- Properties
- Change Default Profile
- ☒ Operations
- ☒ Configuration
- ☒ Hardware Information
- ☒ Dynamic Logical Partitioning

Status: Open Serviceable Events

Bottom status bar: `javascript:void(0);` | 10.31.198.151

Checkpoint

1. What is the first process that is created on the system and which file does it reference to initiate all the other processes that have to be started?

2. Which AIX feature can be used to stop and start groups of daemons or programs?

3. True or False? You can only execute the shutdown command from the console.

Checkpoint solutions

- What is the first process that is created on the system and which file does it reference to initiate all the other processes that have to be started?

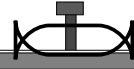
The initial process is **init**, which checks **/etc/inittab** for information regarding other processes that have to be started.

- Which AIX feature can be used to stop and start groups of daemons or programs?

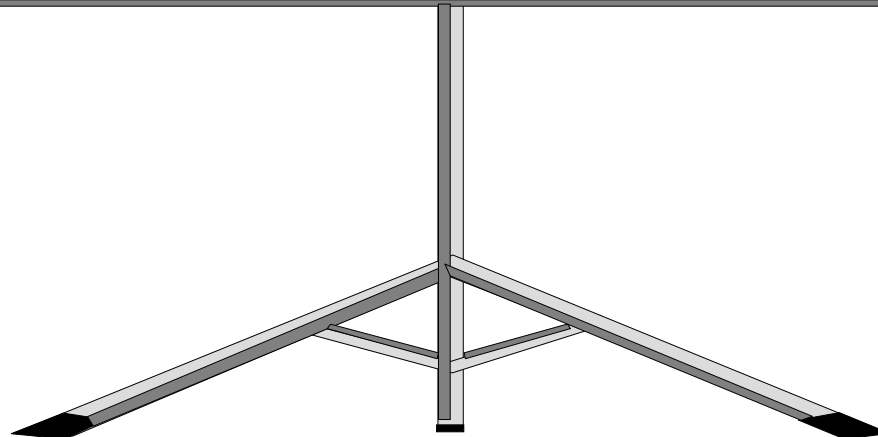
The System Resource Controller (SRC)

- True or **False**? You can only execute the shutdown command from the console.

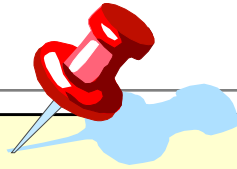
Exercise 3: System startup and shutdown



- Multi-user mode
- Boot using System Management Services
- System Resource Controller (SRC)
- Resetting the run level (INIT)



Unit summary



- When the system boots up, it first runs through a number of hardware checks before starting the processes defined in the **/etc/inittab** file.
- The LED codes produced during the boot process can be used to identify problems. Alternatively, the boot log file can be accessed to obtain the system messages produced during the boot phase.
- Once the system is up, it can be shut down by an authorized user from any terminal.
- SMIT can be used to change common system settings such as the language used, and the date and time used by the system.