Startup Scripts

init executes the system startup scripts. These scripts are really just garden variety shell scripts that are interpreted by **sh**. The scripts are kept in the **/etc/init.d** directory and links to them are made in the directories **/etc/rc0.d**, **/etc/rc1.d**, etc.

A sample script might be **boot.server** found in **/etc/rc0.d** on your Solaris system.

```
#!/sbin/sh
#
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# Use is subject to license terms.
#
# ident "@(#)boot.server        1.2     04/10/21 SMI"

[ ! -d /usr/bin ] && exit

# Start/stop processes required for boot server

case "$1" in
'start')

        # If /rplboot exists become a boot server for x86 clients

        if [ -d /rplboot ]; then
                /usr/sbin/rpld -a
        fi
        ;;

'stop')
        /usr/bin/pkill -x -u 0 rpld

        ;;
*)
        echo "Usage: $0 { start | stop }"
        exit 1
        ;;
esac
exit 0
```

Some of the tasks that are often performed in the startup scripts are:

- Setting the name of the computer

- Setting the time zone

- Checking the disks with **fsck**, only in automatic mode

- Mounting the system's disks

- Removing old files from the **/tmp** directory

- Configuring network interfaces

- Starting up daemons and network services

Most startup scripts are quite verbose and print out a description of everything they are doing. This can be quite helpful if the system hangs midway through booting or if you are trying to locate an error in one of the scripts.

Solaris uses System V-style startup scripts. The System V **init** defines 7 "run levels", each of which represents a particular complement of services that the system should be running.

- Level 0 is the level in which the system is completely shut down.

- Level 1 or S represents single-user mode.

- Level 2 through 5 are multiuser levels.

- Level 6 is a "reboot" level.

Level 0 and 6 are special in that the system cannot actually remain in them. It shuts down or reboots as a side effect of entering them. On most systems the normal multiuser run level is 2 or 3. Run levels 4 and 5 are rarely used and run levels 1 and S are different on each system.

As the machine boots, **init** ratchets its way up from run level 0 to the default run level set in **/etc/inittab**. To accomplish the transition between pair of adjacent run levels, **init** runs the actions spelled out for that transition in **/etc/inittab**. The same progression is made in reverse order when the machine is shut down.

The master copies of the startup scripts live in a directory called **init.d**. The **init.d** directory is in **/etc**. Each script is responsible for one daemon or one particular aspect of the system. The scripts understand the arguments **start** and **stop** to mean that the service they deal with should be initialized or halted. Most also understand **restart**, which is typically the same as a **stop** followed by a **start**. As a sysadmin, you can manually start and stop individual services by running the associated **init.d** script with an appropriate argument.

Although the scripts in **init.d** can start and stop individual services, **init** needs additional information about which scripts to run and with what arguments to enter any given run level. Instead of looking directly at the **init.d** directory when it takes the system to a new run level, **init** looks at a directory called **rc**_level_**.d** where _level_ is the run level to be entered, e.g. **rc0.d**, **rc1.d**, etc.

These **rc**_level_**.d** directories typically contain symbolic links that point back to the scripts in the **init.d** directory. The names of these symbolic links all start with an **S** or **K** followed by an integer and the name of the service that the script controls, e.g. **S47pppd**. When **init** transitions from a lower run level to a higher one, it runs all of the scripts that start with an **S** in ascending numerical order with the argument

start. When **init** transitions from a higher run level to a lower one, it runs all of the scripts that start with a **K** in descending numerical order with the argument stop.

Below is the directory listing for **/etc/rc2.d** on your Solaris system.

```
# ls
K05appserv          README          S47pppd               S89PRESERVE
K06mipagent         S10lu           S70uucp               S94ncalogd
K15imq              S20sysetup      S72autoinstall        S98deallocate
K16apache           S40llc2         S73cachefs.daemon
K27boot.server      S42ncakmod      S81dodatadm.udaplt
#
```

When Solaris enters run level 2 from a lower run level, the following scripts would execute in this order:

When Solaris enters run level 2 from a higher run level, the following scripts would execute in this order: