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.

```bash
#!/sbin/sh
#
# Copyright 2004 Sun Microsystems, Inc. All rights reserved.
# 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 rclevel.d where level is the run level to be entered, e.g. rc0.d, rc1.d, etc.

These rclevel.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 S89PREPRESERVE
K06mipagent S10lu S70uucp S94ncalogd
K15imq S20sysetup S72autoinstall S98deallocate
K16apache S40llc2 S73caches.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: