

# The System Boot Process

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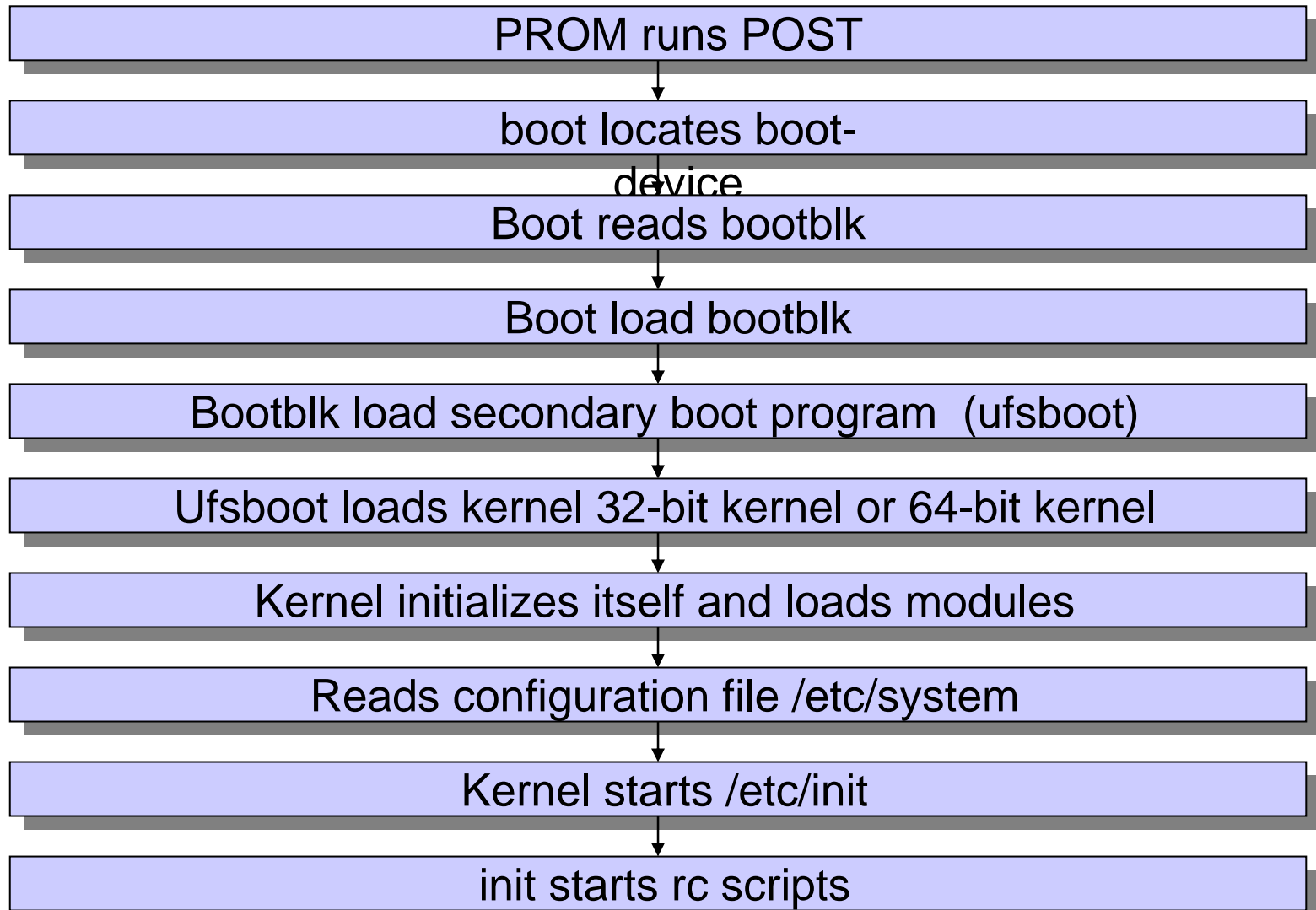
**Sun Microsystems Korea**

# Objectives

- ☞ overview Booting phase
- ☞ /etc/system file function
- ☞ *init* process function
- ☞ About /etc/inittab file
- ☞ run level concept and changing
- ☞ how to start script automatically
- ☞ how to troubleshoot a booting error

# The Boot Process

- ☞ Boot PROM phase
- ☞ Boot programs phase
- ☞ Kernel initialization phase
- ☞ init phase



# 1. Boot PROM Phase

- ❑ PROM runs the POST.
- ❑ boot determines the boot device.
- ❑ boot locates the bootblk on the boot device.
- ❑ boot loads the bootblk from its location on the boot device into memory.

## 2. Boot Programs Phase

- Bootblk loads the secondary boot program, ufsboot, from the boot device into memory.
  
- ufsboot locates and loads the appropriate two-part kernel
  - \* 32 bit kernel:  
/platform/`uname -m`/kernel/genunix  
/platform/`uname -m`/kernel/unix
  
  - \* 64bit kernel:  
/platform/`uname -m`/kernel/genunix  
/platform/`uname -m`/kernel/unix

### 3. The Kernel Initialization Phase

- The kernel initializes itself and begins loading modules(sys, exec, fs, misc, sched, strmod, drv ).

*/kernel*

*/usr/kernel*

*/platform/`uname -m`/kernel*

*/platform/`uname -i`/kernel*

The kernel reads its configuration file called */etc/system*.

moddir:

root device and root filesystem configuration:

exclude:

forceload:

set:

- The kernel starts the */sbin/init* process

# 4. The init Phase

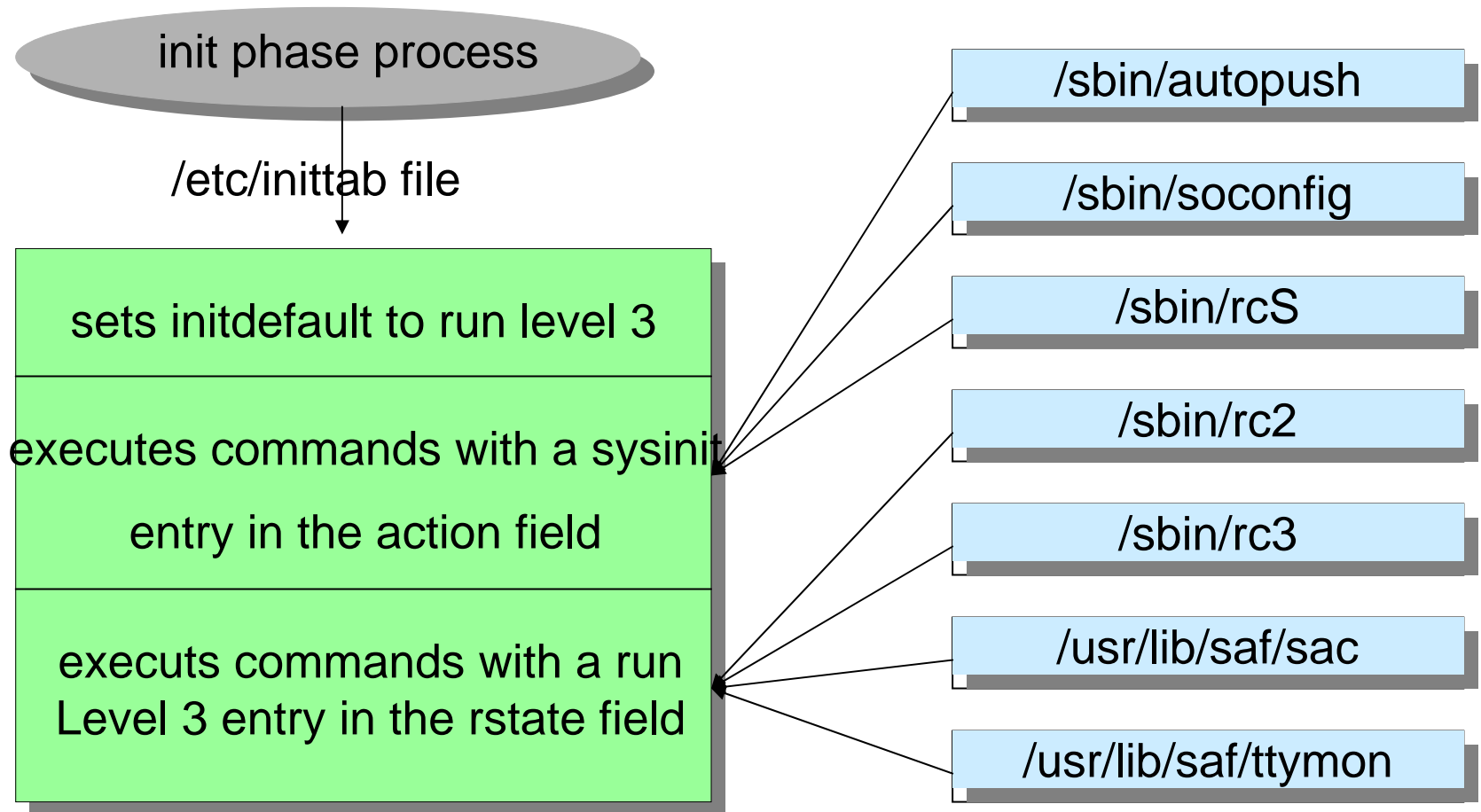
id : rstate : action : process

# vi /etc/inittab

```
ap::sysinit:/sbin/autopush -f /etc/iu.ap
ap::sysinit:/sbin/soconfig -f /etc/sock2path
fs::sysinit:/sbin/rcS sysinit      >/dev/msglog 2<>/dev/msglog </dev/console
is:3:initdefault:
p3:s1234:powerfail:/usr/sbin/shutdown -y -i5 -g0 >/dev/msglog 2<>/dev/msglog
sS:s:wait:/sbin/rcS                >/dev/msglog 2<>/dev/msglog </dev/console
s0:0:wait:/sbin/rc0                >/dev/msglog 2<>/dev/msglog </dev/console
s1:1:respawn:/sbin/rc1             >/dev/msglog 2<>/dev/msglog </dev/console
s2:23:wait:/sbin/rc2               >/dev/msglog 2<>/dev/msglog </dev/console
s3:3:wait:/sbin/rc3                >/dev/msglog 2<>/dev/msglog </dev/console
s5:5:wait:/sbin/rc5                >/dev/msglog 2<>/dev/msglog </dev/console
s6:6:wait:/sbin/rc6                >/dev/msglog 2<>/dev/msglog </dev/console
fw:0:wait:/sbin/uadmin 2 0          >/dev/msglog 2<>/dev/msglog </dev/console
of:5:wait:/sbin/uadmin 2 6          >/dev/msglog 2<>/dev/msglog </dev/console
rb:6:wait:/sbin/uadmin 2 1          >/dev/msglog 2<>/dev/msglog </dev/console
sc:234:respawn:/usr/lib/saf/sac -t 300
co:234:respawn:/usr/lib/saf/ttymon -g -h -p "`uname -n` console login: " -T sun -d /dev/console
-l console -m ldterm,ttcompat
sg:3:respawn:/usr/bin/banner hi     >/dev/msglog 2<>/dev/msglog </dev/console
```



# The init Process



# # vi /sbin/rc2

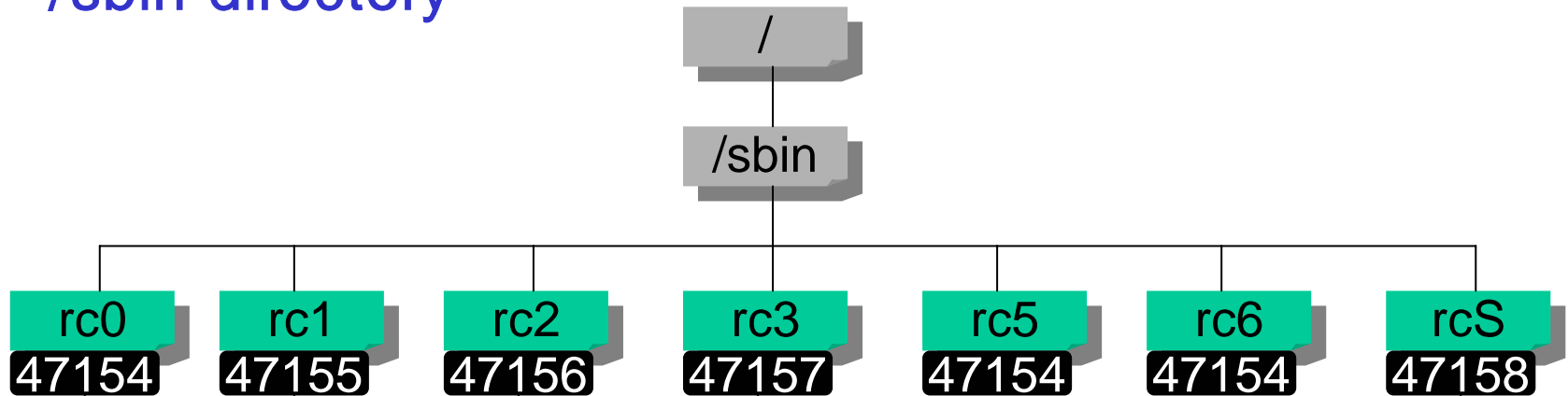
```
if [ $_INIT_PREV_LEVEL != 2 -a $_INIT_PREV_LEVEL != 3 -a -d /etc/rc2.d ]; then
    for f in /etc/rc2.d/S*; do
        if [ -s $f ]; then
            case $f in
                *.sh) . $f ;;
                *) /sbin/sh $f start ;;
            esac
        fi
    done
fi
```

# # vi /sbin/rc2 (con...)

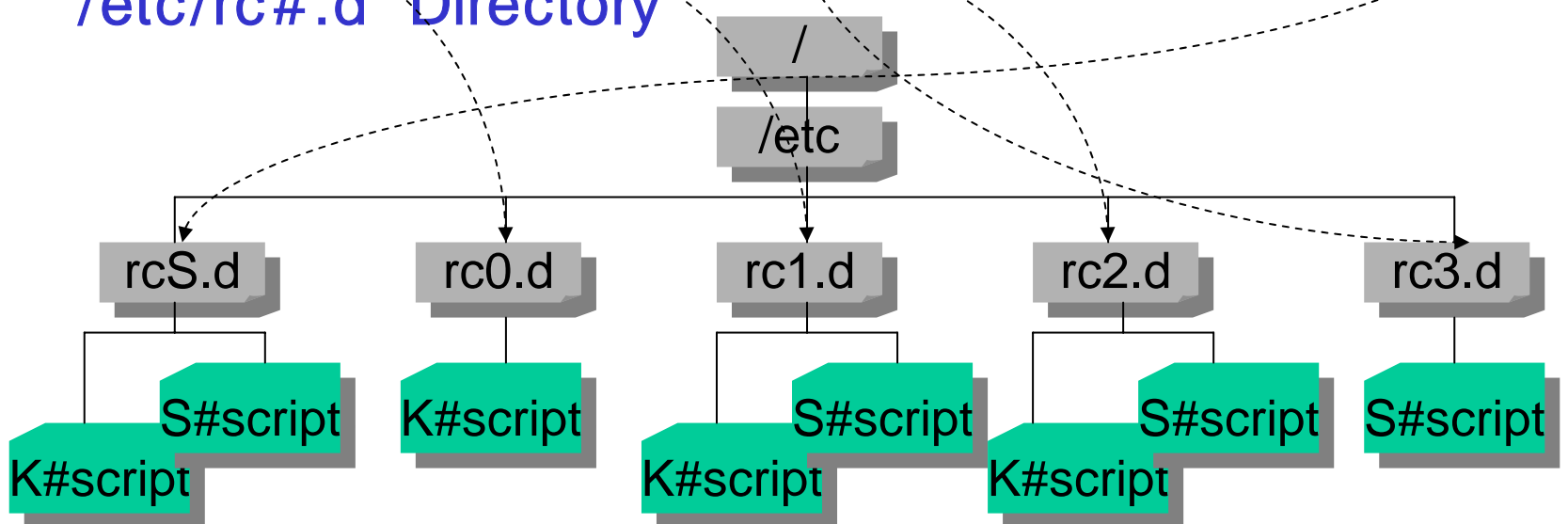
```
if [ -d /etc/rc2.d ]; then
    for f in /etc/rc2.d/K*; do
        if [ -s $f ]; then
            case $f in
                *.sh) . $f ;;
                *) /sbin/sh $f stop ;;
            esac
        fi
    done
fi
```

# Run Control Scripts

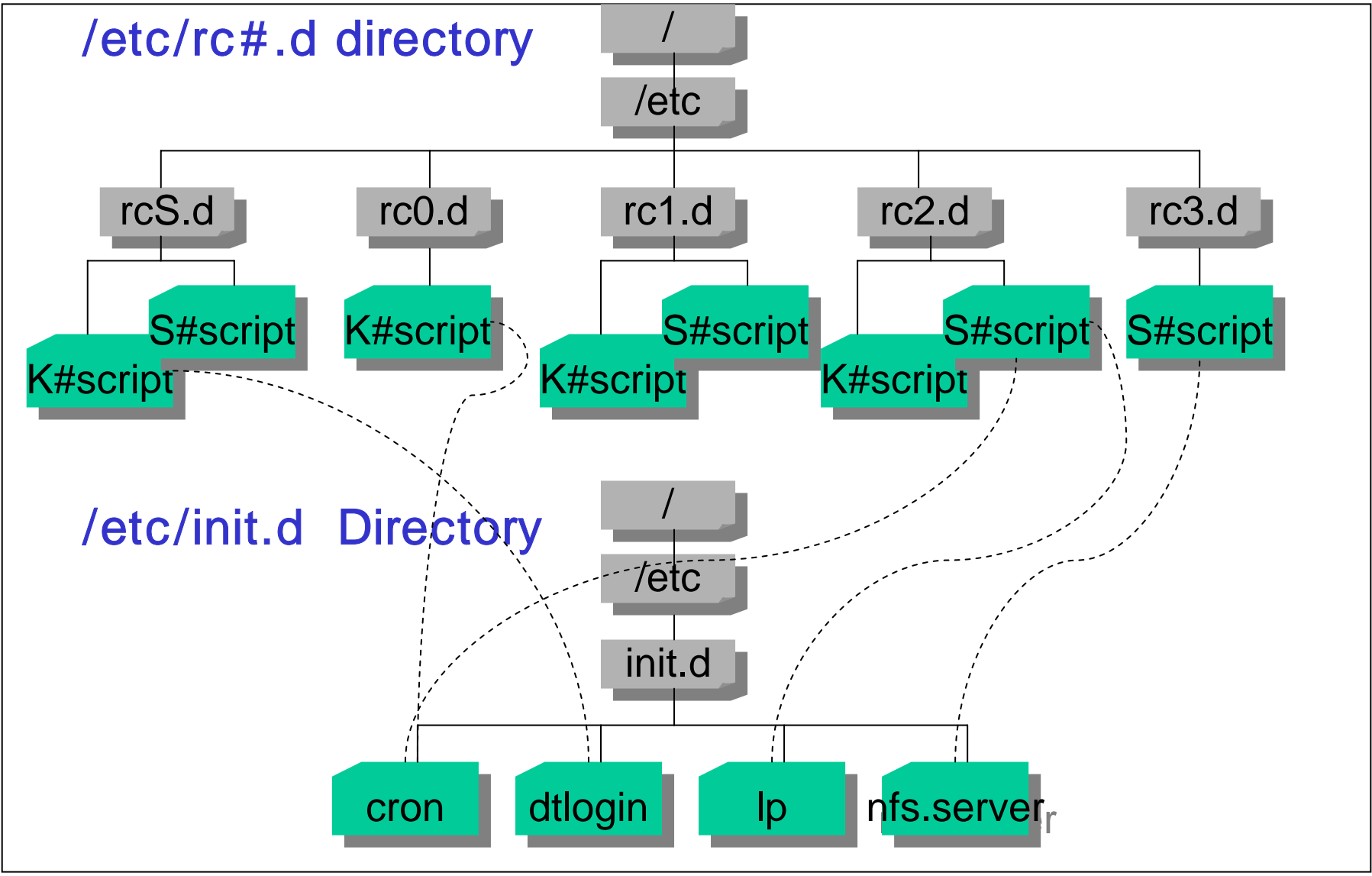
## /sbin directory



## /etc/rc#.d Directory



# Run Control Scripts ( link )



# System Shutdown command comparison

	run-level	rc script running	delay time(sec)	messages
init	all	ok	0	no
shutdown	all	ok	60	yes
halt	0	no	0	no
poweroff	5	no	0	no
reboot	6	no	0	no

# System Shutdown command comparison

Level S	Level 1	Level 0	Level 5	Level 6
init S	init 1	init 0	init 5	init 6
shutdown	shutdown -i 1	shutdown -i 0	shutdown -i 5	shutdown -i 6
		halt		
			poweroff	
				reboot

## how to troubleshoot a booting error

1. /etc/system file modification
2. File system corruption
3. Mount file system (rc script)
4. Super block error
5. Disk label (VTOC) lost
6. /etc/vfstab file error
7. NFS (remote mount) error



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