

IoT: Client Devices

Configuring OS for Daemons

Starting Daemons

INIT, UPSTART, SYSTEMD

- ▶ Init was first, it's oldest - initially in Unix System V
- ▶ Upstart was next, used in Debian distros and Redhat
- ▶ Systemd is the most current service manager

SYSTEMD CRITICISM

- ▶ Complex, violates Unix design philosophy
- ▶ But still widely used

Our IoT system uses init.

```
/etc
[# ls
fstab      hosts      mtab      passwd-   random-seed  shadow-
group      init.d     network   profile   resolv.conf  ssh
group-     inittab    os-release profile.d  services     ssl
hostname   issue     passwd    protocols shadow
[# ls init.d
S01logging S20urandom S40network S50sshd    rcK        rcS
#
```

File Structure

init uses filenames to determine startup ordering

```
[
# Startup the system
[::sysinit:/bin/mount -t proc proc /proc
::sysinit:/bin/mount -o remount,rw /
::sysinit:/bin/mkdir -p /dev/pts
::sysinit:/bin/mkdir -p /dev/shm
::sysinit:/bin/mount -a
::sysinit:/bin/hostname -F /etc/hostname
# now run any rc scripts
::sysinit:/etc/init.d/rcS

# Put a getty on the serial port
ttyAMA0::respawn:/sbin/getty -L ttyAMA0 0 vt100 # GENERIC_SERIAL

# Stuff to do for the 3-finger salute
#::ctrlaltdel:/sbin/reboot

# Stuff to do before rebooting
::shutdown:/etc/init.d/rck
::shutdown:/sbin/swapoff -a
::shutdown:/bin/umount -a -r
```

inittab

Things we do when the system starts up

```
[
# Start all init scripts in /etc/init.d
# executing them in numerical order.
#
for i in /etc/init.d/S??* ;do

    # Ignore dangling symlinks (if any).
    [ ! -f "$i" ] && continue

    case "$i" in
        *.sh)
            # Source shell script for speed.
            (
                trap - INT QUIT TSTP
                set start
                . $i
            )
            ;;
        *)
            # No sh extension, so fork subprocess.

```

rcS

Starting all services on system start

```

[# Stop all init scripts in /etc/init.d
[# executing them in reversed numerical order.
[#
for i in $(ls -r /etc/init.d/S??*) ;do
[
[   # Ignore dangling symlinks (if any).
[   [ ! -f "$i" ] && continue

case "$i" in
    *.sh)
[       # Source shell script for speed.
[       (
[           trap - INT QUIT TSTP
[           set stop
[           . $i
[       )
[       ;;
[   *)
[       # No sh extension, so fork subprocess.

```

rck

Stopping all services on shutdown