SysVinit, upstart and systemd in Red Hat Enterprise Linux and Fedora

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Inits in Fedora and RHEL

- SysVinit
  - Fedora < 9
  - Red Hat Enterprise Linux < 6.0

- upstart
  Fedora 9 – 14
  Red Hat Enterprise Linux 6

- systemd
  Fedora 15 (Rawhide)

SysVinit – basic deployment

- /etc/inittab
- system boot

  ```
  si::sysinit:/etc/rc.d/rc.sysinit

  id:3:initdefault:

  l3:3:wait:/etc/rc.d/rc 3
  ```

- ttys

  ```
  1:2345:respawn:/sbin/mingetty tty1

  x:5:respawn:/etc/X11/prefdm -nodaemon
  ```

- control-alt-delete

  ```
  ca::ctrlaltdel:/sbin/shutdown -t3 -r now
  ```

- runlevel change

  ```
  telinit <runlevel>
  ```

upstart – basic deployment

- /etc/init/
- system boot
  - **startup** event

    `/etc/init/rcS.conf`

    `/etc/rc.d/rc.sysinit`

    `exec telinit $runlevel`

  - **runlevel** event

    `/etc/init/rc.conf -> /etc/rc.d/rc $RUNLEVEL`

- ttys

  `/etc/init/start-ttys.conf`

  `initctl start tty TTY=$tty`

- control-alt-delete

  `/etc/init/control-alt-delete.conf`

systemd – basic deployment

- **`/etc/systemd/system`**, **`/lib/systemd/system`**

- system boot

  `default-target -> multiuser.target wants basic.target`
  `wants sysinit.target`

- ttys

  getty.target -> getty.target.wants

  `getty@tty1.service` **`->`**
  `/lib/systemd/system/getty@.service`

- control-alt-delete

  `ctrl-alt-del.target`

- Change target

  `systemctl isolate <target>`

controlling services

- SysVinit

```
$ service <service> status
$ service status –all
# service <service> start|stop
```

- upstart

```
$ initctl status <job>
$ initctl list
# initctl start|stop <job>
```

- systemd

```
# systemctl
# systemctl list-units –all
# systemctl status <unit>
# systemctl start|stop <unit>
```

Installing services

- SysVinit

  edit <service> file

  ```
  # chkconfig: 2345 90 60
  # chkconfig: - 86 14


  # cp <service> /etc/rc.d/init.d
  # chkconfig add <service>
  ```


- upstart

  ```
  # cp <job>.conf /etc/init
  ```

Install units

- systemd
  edit <unit file>

  ```
  [Unit]
  After=syslog.target
  [Install]
  WantedBy=multi-user.target


  # cp <unit> /lib/systemd/system
  # systemctl enable <unit>
  ```

Enabling/disabling service

- SysVinit
  ```
  # chkconfig [--level <levels>] <service> on
  # chkconfig [--level <levels>] <service> off|reset
  ```

- upstart
  add `start on runlevel RUNLEVEL=[<levels>]` to job file
  remove <job> file or since upstart-0.6.7 add `manual` stanza to job

- systemd
  ```
  # ln -s /lib/systemd/system/<unit>
  /etc/systemd/system/<target>.wants
  # rm /etc/systemd/system/<target>.wants/<unit> or
  systemctl disable <unit>
  # systemctl daemon-reload
  ```

Documentation

- SysVinit

  inittab(5)

- upstart

  http://upstart.ubuntu.com

  init(5)

- systemd

  http://www.freedesktop.org/wiki/Software/systemd

  SysVinit_to_Systemd_Cheatsheet

  systemd(1), systemd.unit(5), systemd.special(7)

Thank you