

The init process

David Morgan

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Members of the Cast

- Starring roles
 - The kernel
 - The init process
- Supporting roles
 - /etc/rc.d/rc.sysinit
 - /etc/rc
 - /sbin/mingetty
- Cast of thousands
 - links in /etc/rc.d/rc?.d
 - to scripts in /etc/rc.d/init.d
 - to /etc/rc.d/rc.local

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Starring role: init Process

- Father of all processes
 - init is to process structure as root is to file structure
 - always PID number “1”
- Creates other processes
- According to /etc/inittab
 - sysinit system boot process(es)
 - initdefault runlevels for process selection
 - wait processes to run
 - respawn processes to run and rerun

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/etc/inittab lineitem format


● **id : runlevels : action : process**

- id lineitem identifier
- runlevels for which ones to run process
- action when to run process
- process program to run

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Runlevels

- Runlevel – a system configuration allowing only selected processes to exist
- 0 halt
- 1 single user mode
- 2 multiuser
- 3 full multiuser
- 4 unused
- 5 X11 (GUI)
- 6 reboot



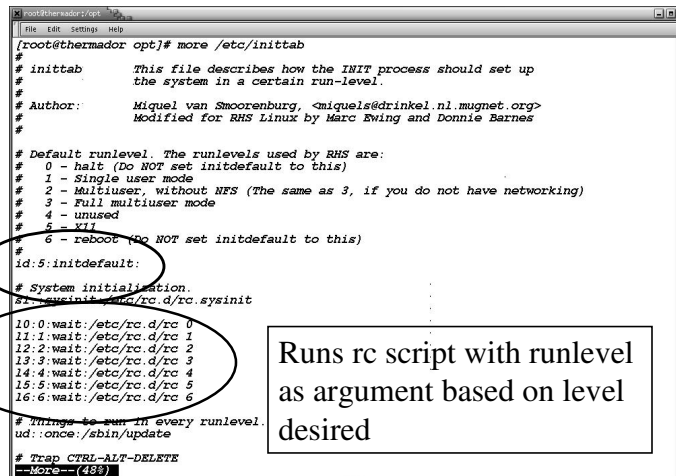
```
root@thermador:/opt
File Edit Settings Help
[root@thermador opt]# runlevel
N 5
[root@thermador opt]#
```

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/etc/inittab

default run level is 5 here (boot to GUI)

What happens if default is 3?



```
root@thermador:/etc
File Edit Settings Help
[root@thermador opt]# more /etc/inittab
#
# inittab      This file describes how the INIT process should set up
#             the system in a certain run-level.
#
# Author:     Miguel van Smoorenburg, <miguels@drinkel.nl.mugnet.org>
#             Modified for RHEL Linux by Marc Ewing and Donnie Barnes
#
# Default runlevel. The runlevels used by RHEL are:
# 0 - halt (Do NOT set initdefault to this)
# 1 - Single user mode
# 2 - Multiuser, without NFS (The same as 3, if you do not have networking)
# 3 - Full multiuser mode
# 4 - unused
# 5 - X11
# 6 - reboot (Do NOT set initdefault to this)
#
id:5:initdefault:
# System initialization.
*~:~:wait:/etc/rc.d/rc.d/rc.sysinit
10:0:wait:/etc/rc.d/rc 0
11:1:wait:/etc/rc.d/rc 1
12:2:wait:/etc/rc.d/rc 2
13:3:wait:/etc/rc.d/rc 3
14:4:wait:/etc/rc.d/rc 4
15:5:wait:/etc/rc.d/rc 5
16:6:wait:/etc/rc.d/rc 6
# Things to run in every runlevel.
ud::once:/sbin/update
# Trap CTRL-ALT-DELETE
--More--(48%)
```

Runs rc script with runlevel as argument based on level desired

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Actions

- `initdefault` set runlevel after “system boot”
- `sysinit` include process in “system boot”
- `wait` process run when runlevel entered
- `respawn` process restarted whenever ended

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Setting Runlevel

```
id    runlevel    action
```

```
id :    3    : initdefault :
```

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System boot process(es)

id	action	process
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si	:: sysinit	:/etc/rc.d/rc.sysinit
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Processes to Run

id	runlevel	action	process
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13	: 3	: wait	:/etc/rc.d/rc 3
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Processes to Rerun

id	runlevels	action	process
1	: 12345	: respawn	: /sbin/mingetty tty1
2	: 2345	: respawn	: /sbin/mingetty tty2
3	: 2345	: respawn	: /sbin/mingetty tty3
4	: 2345	: respawn	: /sbin/mingetty tty4
5	: 2345	: respawn	: /sbin/mingetty tty5
6	: 2345	: respawn	: /sbin/mingetty tty6

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