

The logo features the letters 'OS' in white, bold, sans-serif font, enclosed within a solid red square. To the right of this square, the letters 'EC' are displayed in a black, bold, sans-serif font. The entire logo is centered horizontally and vertically on the page.

OS EC

LET'S MAKE **IT** BETTER

O mnie...

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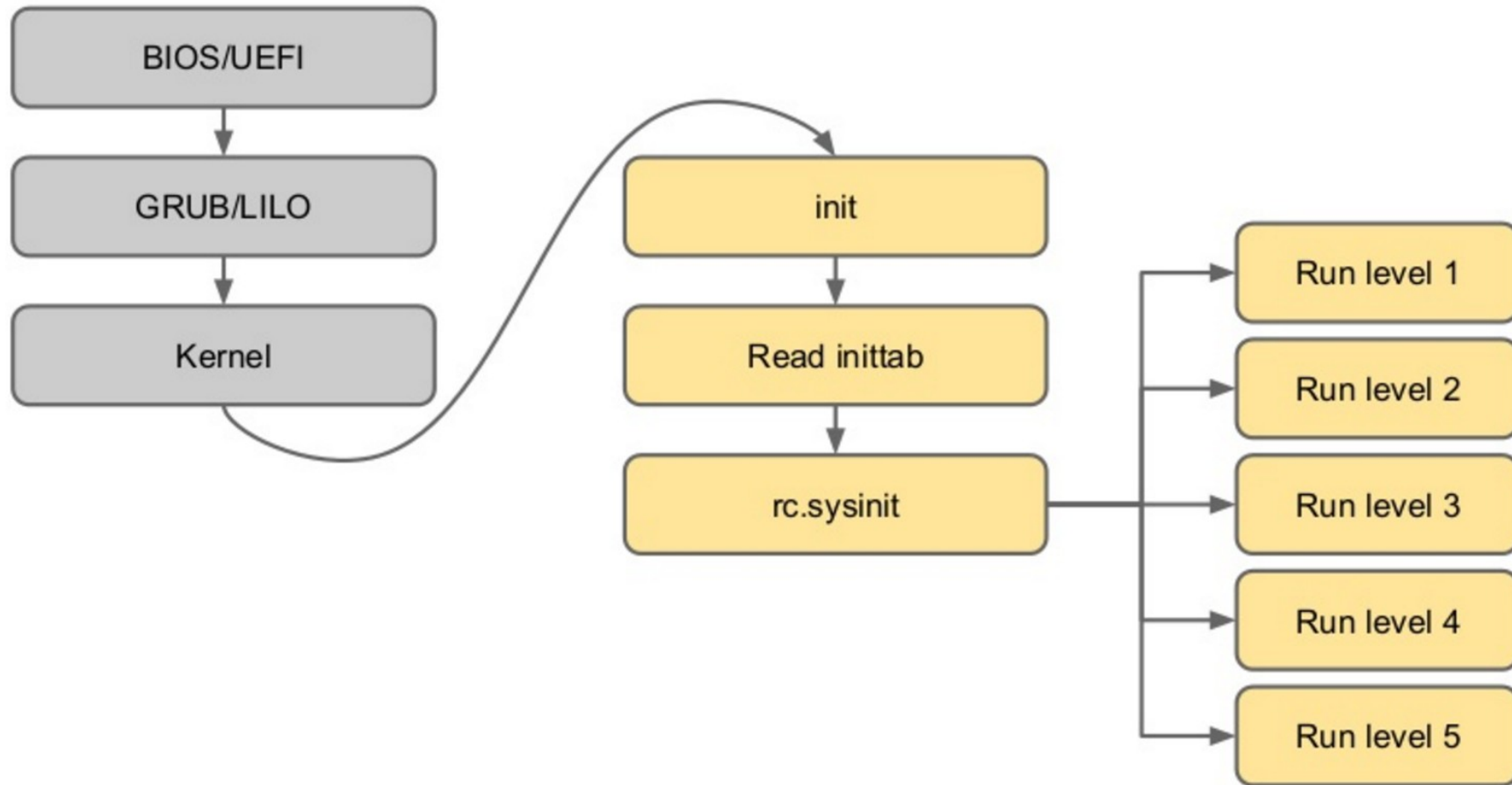


■ Soooo... co będziemy robić?

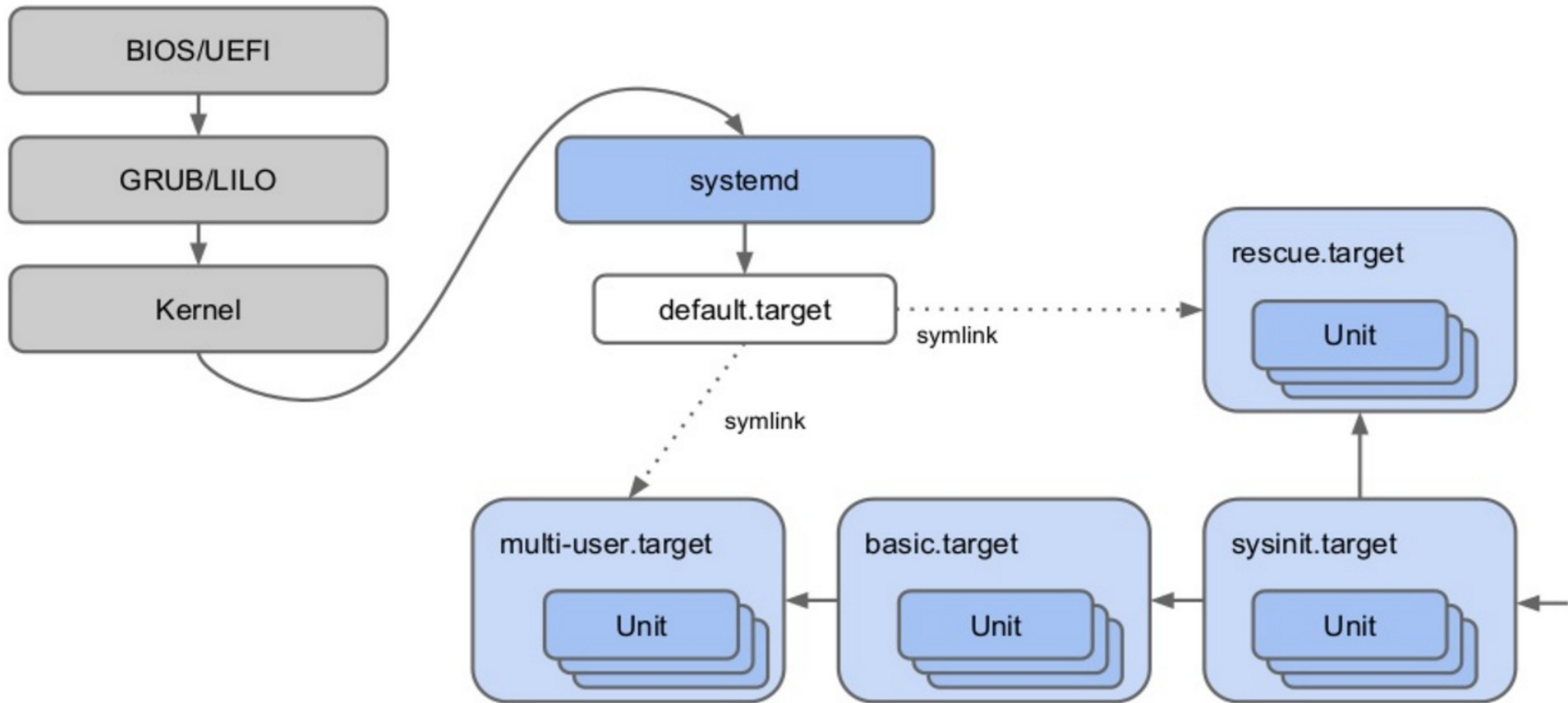
systemd – od zera do bohatera

`#systemd #adminworks #sysops #fedora #rhel7 #centos`

Szczypta historii



Szczypta historii



Szczypta historii

Systemd vs SysVinit

Systemd Commands: <http://linuxide.com/linux-command/linux-systemd-commands/>

Service Related Commands

Comments	SysVinit	Systemd
Start a service	service dummy start	systemctl start dummy.service
Stop a service	service dummy stop	systemctl stop dummy.service
Restart a service	service dummy restart	systemctl restart dummy.service
Reload a service	service dummy reload	systemctl reload dummy.service
Service status	service dummy status	systemctl status dummy.service
Restart a service if already running	service dummy condrestart	systemctl condrestart dummy.service
Enable service at startup	chkconfig dummy on	systemctl enable dummy.service
Disable service at startup	chkconfig dummy off	systemctl disable dummy.service
Check if a service is enabled at startup	chkconfig dummy	systemctl is-enabled dummy.service
Create a new service file or modify configuration	chkconfig dummy --add	systemctl daemon-reload

Note : New version of systemd support "systemctl start dummy" format.

Runlevels

Comments	SysVinit	Systemd
System halt	0	runlevel0.target, poweroff.target
Single user mode	1, s, single	runlevel1.target, rescue.target
Multi user	2	runlevel2.target, multi-user.target
Multi user with Network	3	runlevel3.target, multi-user.target
Experimental	4	runlevel4.target, multi-user.target
Multi user, with network, graphical mode	5	runlevel5.target, graphical.target
Reboot	6	runlevel6.target, reboot.target
Emergency Shell	emergency	emergency.target
Change to multi user runlevel/target	telinit 3	systemctl isolate multi-user.target (OR systemctl isolate runlevel3.target)
Set multi-user target on next boot	sed s/^id:.*:initdefault:/id:3:initdefault:/	ln -sf /lib/systemd/system/multi-user.target /etc/systemd/system/default.target
Check current runlevel	runlevel	systemctl get-default
Change default runlevel	sed s/^id:.*:initdefault:/id:3:initdefault:/	systemctl set-default multi-user.target

Miscellaneous Commands

Comments	SysVinit	Systemd
System halt	halt	systemctl halt
Power off the system	poweroff	systemctl poweroff
Restart the system	reboot	systemctl reboot
Suspend the system	pm-suspend	systemctl suspend
Hibernate	pm-hibernate	systemctl hibernate
Follow the system log file	tail -f /var/log/messages or tail -f /var/log/syslog	journalctl -f

Systemd New Commands

Comments	Systemd
Execute a systemd command on remote host	systemctl dummy.service start -H user@host
Check boot time	systemd-analyze or systemd-analyze time
Kill all processes related to a service	systemctl kill dummy
Get logs for events for today	journalctl --since=today
Hostname and other host related information	hostnamectl
Date and time of system with timezone and other information	timedatectl

systemd is a **service** manager

systemd is a **system** manager

systemd is more than just an init system

systemd

```
[root@forum ~]# systemd-analyze critical-chain
The time after the unit is active or started is printed after the "@" character.
The time the unit takes to start is printed after the "+" character.

multi-user.target @4min 54.544s
├─cloud-final.service @4min 53.685s +858ms
│ └─cloud-config.service @4min 52.853s +831ms
│   └─cloud-config.target @4min 52.853s
│     └─cloud-init.service @4.389s +4min 48.462s
│       └─network.target @4.385s
│         └─network.service @1.184s +3.198s
│           └─basic.target @1.070s
│             └─paths.target @1.068s
│               └─brandbot.path @1.068s
│                 └─sysinit.target @1.050s
│                   └─systemd-update-utmp.service @1.039s +9ms
│                     └─auditd.service @904ms +132ms
│                       └─systemd-tmpfiles-setup.service @820ms +82ms
│                         └─rhel-import-state.service @582ms +227ms
│                           └─local-fs.target @555ms
│                             └─run-user-1002.mount @4min 44.514s
│                               └─local-fs-pre.target @545ms
│                                 └─systemd-tmpfiles-setup-dev.service @448ms +89ms
│                                   └─kmod-static-nodes.service @298ms +65ms
│                                     └─systemd-journald.socket
│                                       └─.slice
```

systemd

systemd Utilities

systemctl journalctl notify analyze cgls cgtop loginctl nspawn

systemd Daemons

systemd
journald networkd
logind user session

systemd Targets

bootmode basic multi-user graphical user-session
shutdown reboot dbus telephony user-session display service
dlog logind user-session tizen service

systemd Core

manager unit login namespace log
systemd service timer mount target multiseat inhibit
snapshot path socket swap session pam cgroup dbus

systemd Libraries

dbus-1 libpam libcap libcryptsetup tcpwrapper libaudit libnotify

Linux Kernel

cgroups autofs kdbus

systemd



systemd system management

systemctl start *unit* \$ systemctl status *unit*
systemctl stop *unit* \$ systemctl is-enabled *unit*
systemctl restart *unit* # systemctl enable *unit*
systemctl reload *unit* # systemctl disable *unit*
systemctl mask *unit*
\$ systemctl help *unit*
systemctl isolate *target*
systemctl daemon-reload

systemd

unit files

1. .service
 - daemons and services (init.d)
2. .socket
 - network / IPC sockets (xinetd)
3. .mount
 - mountpoint (fstab)
4. .device
 - drivers (udev)
5. .automount
 - removable media & network drives (autofs)
6. .swap
 - swap files/partitions (fstab)
7. .target
 - group units
8. .path
 - file system changes (inotify)
9. .timer
 - service scheduling (crond)
10. .snapshot
 - save state of all services
11. .slice
 - set resource limitation (cgroup)
12. .scope
 - group arbitrary processes (cgroup)

systemd

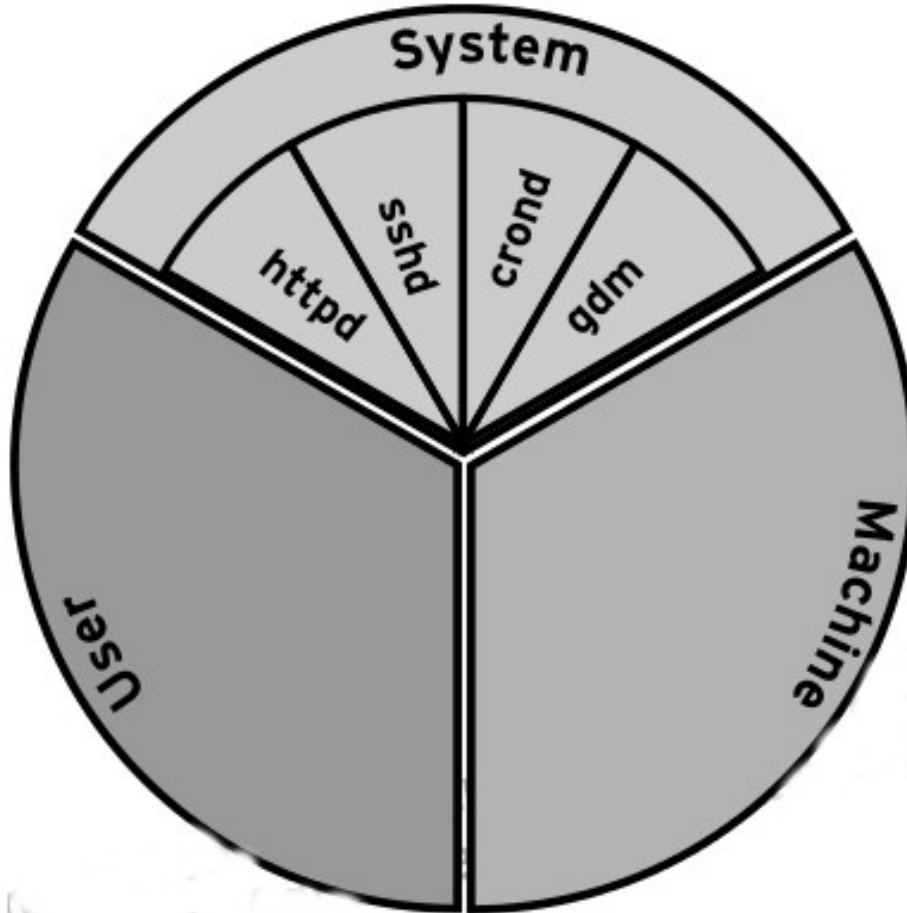
```
[pgacek@forum ~]$ systemctl status -l sshd
● sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enabled)
   Drop-In: /etc/systemd/system/sshd.service.d
            └─50-CPUAccounting.conf
   Active: active (running) since czw 2017-06-01 15:30:56 CEST; 3s ago
     Docs: man:sshd(8)
           man:sshd_config(5)
  Main PID: 16018 (sshd)
    CGroup: /system.slice/sshd.service
            └─16018 /usr/sbin/sshd -D

cze 01 15:30:56 forum.osecdev.eu systemd[1]: Starting OpenSSH server daemon...
cze 01 15:30:56 forum.osecdev.eu sshd[16018]: Server listening on 0.0.0.0 port 22.
cze 01 15:30:56 forum.osecdev.eu sshd[16018]: Server listening on :: port 22.
cze 01 15:30:56 forum.osecdev.eu systemd[1]: Started OpenSSH server daemon.
```

Power management

- `systemctl reboot`
- `systemctl poweroff`
- `systemctl suspend`
- `systemctl hibernate`
- `systemctl hybrid-sleep`

systemd - let's tune!



- Slices
 - Custom slice:
 - `<name>.slice`
 - `<parent>-<name>.slice`
- CPU, memory, I/O
 - Accounting – true/ false
 - Shares – CPUShares=1024 (default)
 - MemoryLimit=256M
- `<name>.slice`
- `/etc/systemd/system/<name>.service.d/*.conf`
- `systemctl set-property sshd.service CPUShares=`
- `systemd-run --slice=<name>.slice sshd.service`

systemd - let's tune!

```
top - 09:49:20 up 8 min, 4 users, load average: 3,34, 2,44, 1,14
Tasks: 88 total, 4 running, 84 sleeping, 0 stopped, 0 zombie
%Cpu(s): 98,0 us, 2,0 sy, 0,0 ni, 0,0 id, 0,0 wa, 0,0 hi, 0,0 si, 0,0 st
KiB Mem : 1016416 total, 772332 free, 90268 used, 153816 buff/cache
KiB Swap: 0 total, 0 free, 0 used. 759356 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2115	root	20	0	116120	1032	764	R	50,2	0,1	3:20.71	sha512sum
2119	bob	20	0	116120	1028	764	R	40,2	0,1	2:01.00	sha512sum
2312	pgacek	20	0	116120	1032	764	R	9,6	0,1	0:01.71	sha512sum



Q&A

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