

dCache Integration into systemd

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Acknowledgment

We would like to thank

Christoph Anton Mitterer

for his active discussions,
contributions and testing of dCache
integration with systemd.



systemd

- service state & dependency management
- process isolation
- resource management
- event management
- ...

systemd Utilities

systemctl journalctl notify analyze cglsgctop loginctl nspawn

systemd Daemons

systemd
journald networkd
loginduser session

systemd Targets

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

systemd Core

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

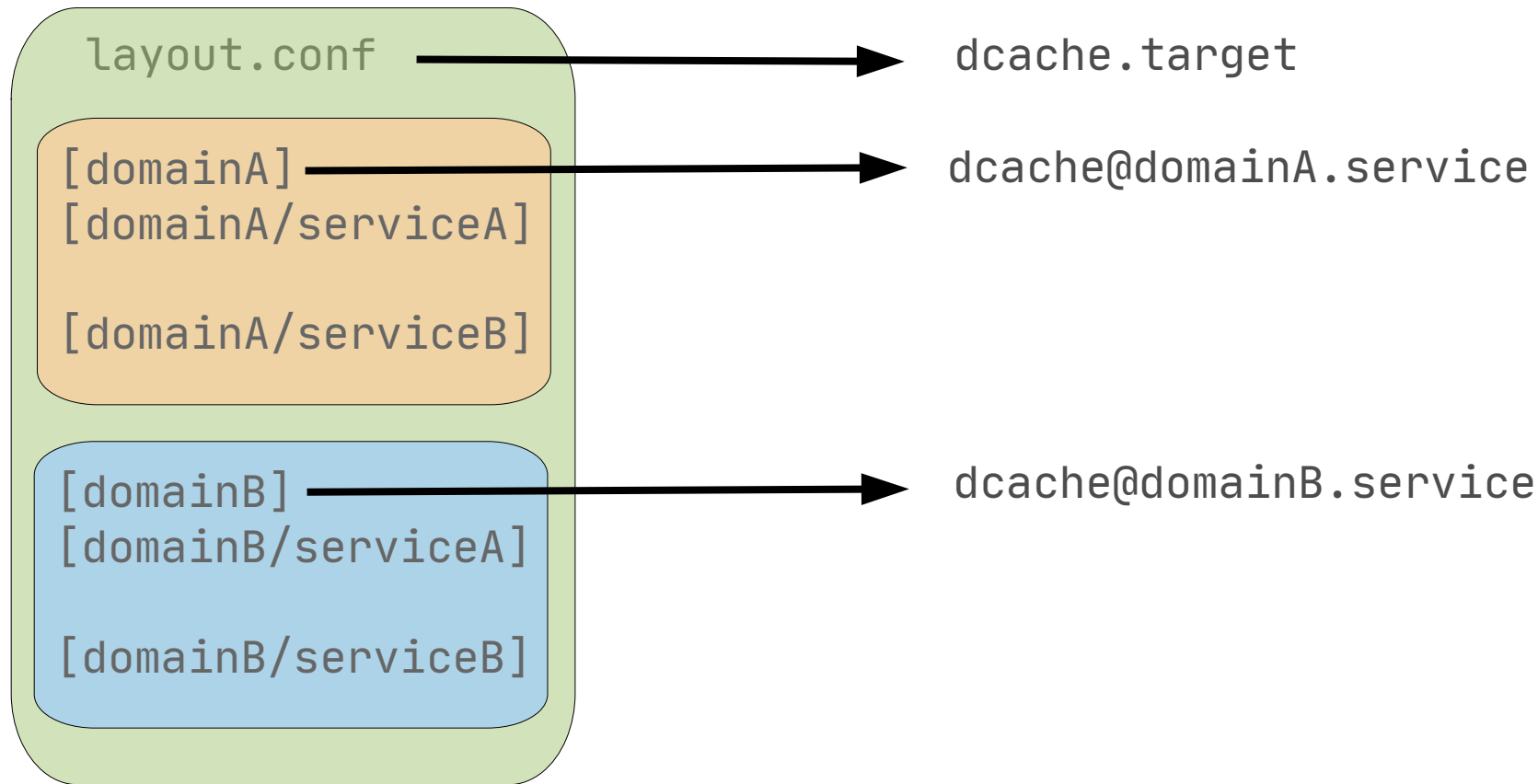
systemd Libraries

dbus-1 libpam libcap libcryptsetup tcpwrapper libaudit libnotify

Linux Kernel

cgroups autofs kdbus

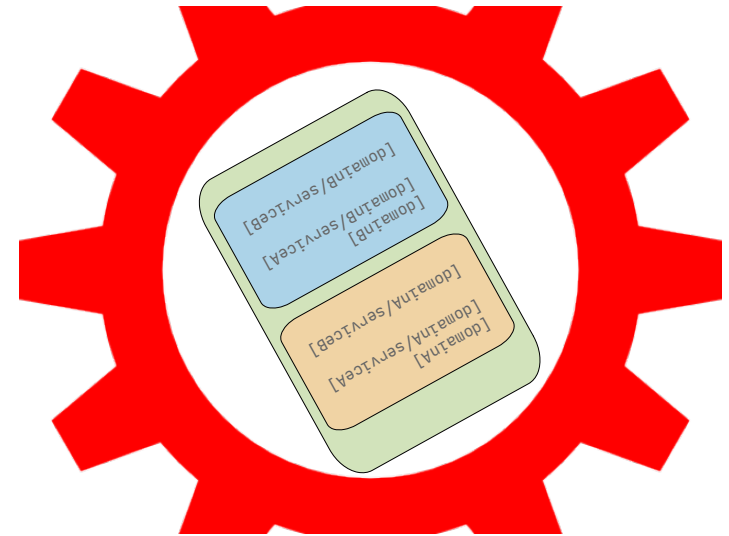
The Anatomy of dCache Service



The generator

- Generate service units from layout.conf
- **MUST** be executed when:
 - ✓ domains added/removed
 - ✓ java options are changed
 - ✓ user is changed

```
# systemctl daemon-reload
```



dcache@xxx.service

```
[Unit]
Description=dCache core-dcache-lab007 domain
After=network.target
PartOf=dcache.target

[Service]
Type=simple
WorkingDirectory=/usr/share/dcache
Restart=always
RestartSec=10
SuccessExitStatus=143
ProtectSystem=full
ProtectHome=true
NoNewPrivileges=true
SyslogIdentifier=dcache@core-dcache-lab007
Environment="CLASSPATH=/usr/share/dcache/classes/*" "LD_LIBRARY_PATH=/usr/lib/dcache"
User=dcache
ExecStart=/usr/bin/java -server -Xmx8192m -XX:MaxDirectMemorySize=512m ...
LimitNOFILE=65535
LimitNPROC=infinity

[Install]
WantedBy=dcache.target
```

dcache@xxx.service

- Per domain systemd unit
- Can be managed independent of others
 - stop/start/enable

```
root@dcache-lab007:~  
# systemctl status dcache@core-dcache-lab007.service  
• dcache@core-dcache-lab007.service - dCache core-dcache-lab007 domain  
  Loaded: loaded (/run/systemd/generator/dcache@core-dcache-lab007.service; bad; vendor pre  
set: disabled)  
  Active: active (running) since Fri 2020-11-06 15:09:24 CET; 2 days ago  
    Main PID: 143861 (java)  
      CGroup: /system.slice/system-dcache.slice/dcache@core-dcache-lab007.service  
              └─143861 /usr/bin/java -server -Xmx8192m -XX:MaxDirectMemorySize=512m -Dsun.ne...  
  
Nov 06 15:09:24 dcache-lab007 dcache@core-dcache-lab007[143861]: Jolokia: Agent started w...
```

dcache.target

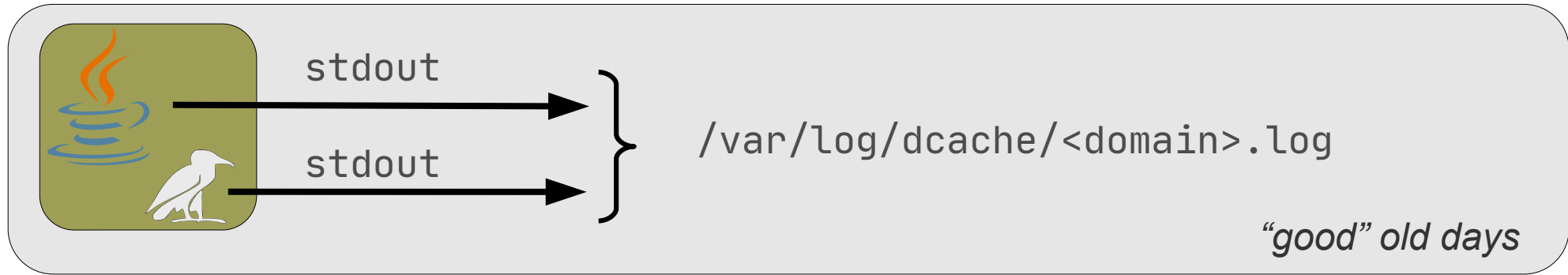
- Grouping target
- Can be used to stop/start all defined domains
 - Doesn't track when a domain is dead !!!

```
# systemctl status dcache.target
• dcache.target - dCache target to start/stop all dcache@*.service instances
  Loaded: loaded (/usr/lib/systemd/system/dcache.target; enabled; vendor preset: disabled)
  Active: active since Fri 2020-11-06 15:09:24 CET; 2 days ago

Nov 06 15:09:24 dcache-lab007 systemd[1]: Reached target dCache target to start/stop al...s.
Hint: Some lines were ellipsized, use -l to show in full.
# _
```

```
# systemctl list-dependencies dcache.target
dcache.target
• └─dcache@cleaner.service
• └─dcache@core-dcache-lab007.service
# _
```


Where are my logs!



Where are my logs!

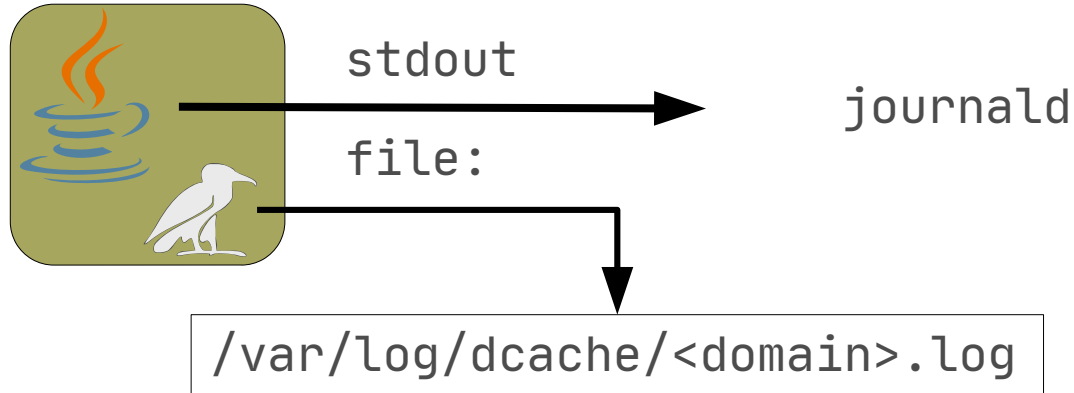
``dcache.log.destination = console``



More about it from Christian Voß

Soft escape

'dcache.log.destination = file'



!!! All JVM specific errors logged to the journal !!!

If you not convinced (plan-B)

``dcache.systemd.strict=false``

```
# dcache status
```

WARNING:

"dcache status" is deprecated and will be removed in the future.

Please consider switching to systemctl to manage dCache.

DOMAIN	STATUS	PID	USER	LOG
core-dcache-lab007	stopped		dcache	/var/log/dcache/core-dcache-lab007.log
cleaner	stopped		dcache	/var/log/dcache/cleaner.log

#

Documentation

- The book

<https://github.com/dCache/dcache/blob/master/docs/TheBook/src/main/markdown/install.md#starting-dc-ache>

- Migration guide (Yes!)

<https://github.com/dCache/upgrade-guide-62/blob/master/UPGRADE62.md>

The Cheatsheet

Command	Description
<code>systemctl start/stop/status/enable dcache.target</code>	Execute the command for all defined domains
<code>systemctl start/stop/status/enable dcache@xxx.service</code>	Execute the command for a specified single domain
<code>journalctl -u dcache@xxx.service</code>	Access the logs of a specified domain
<code>systemctl list-dependencies dcache.target</code>	List all defined domains
<code>systemctl daemon-reload</code>	Re-generate domain units
<code>systemctl daemon-reexec</code>	Restart systemd daemon if it crashed config error ()

Questions?