



SERVICE MANAGEMENT FACILITY

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Agenda

- ▶ What is SMF and Why SMF?
- ▶ Services and Instances
 - ▶ Administration
- ▶ Manifests
- ▶ SMF Repository
- ▶ Boot process today
- ▶ Links
- ▶ Questions?

What is SMF?

- ▶ Service Management Facility
- ▶ `smf(5)`
- ▶ Infrastructure to manage services
- ▶ Service can be
 - ▶ a running application
 - ▶ a software state of device
 - ▶ or a set of other services

Why SMF?

- ▶ Consistent description of service
- ▶ Possibility to state dependencies
- ▶ Whole system view
- ▶ Management
- ▶ Enabling/disabling services
- ▶ Troubleshooting
- ▶ SMF
- ▶ Parallel startup

What is SMF?

Services

- ▶ Service is an abstract description of long-lived software object
 - ▶ Can have multiple instances
 - ▶ Has well defined state
 - ▶ It defines dependencies
 - ▶ It defines methods — **start, stop, refresh**

What is SMF?

Milestones

- ▶ Form of synchronization
- ▶ Analogous to run-levels
 - ▶ `S - milestone/single-user:default`
 - ▶ `2 - milestone/multi-user:default`
 - ▶ `3 - milestone/multi-user-server:default`

What is SMF? I

Components

- ▶ Administrative commands `svcadm(1M)`, `svccfg(1M)` ...
- ▶ Master Restarter – `svc.startd(1M)`
 - ▶ Responsible for starting and restarting services
 - ▶ Starts services when their dependencies are met ...
 - ▶ ... or shuts them down when their dependencies are no longer met
 - ▶ Restarts failed services
- ▶ Repository daemon – `svc.configd(1M)`
- ▶ Delegated restarter
 - ▶ Special restarter for related set of services
 - ▶ `inetd(1M)` the only one so far
 - ▶ Responsible for internet services
 - ▶ `/etc/inet/inetd.conf` deprecated
 - ▶ `inetconv(1M)`

Services and Instances I

- ▶ FMRI
 - ▶ `svc://<scope>/<category>/<name>:<instance>`
- ▶ Each service can have (zero) one or more instances
 - ▶ Usually has one – default
 - ▶ `svc://localhost/network/smtp:sendmail`
 - ▶ `svc://localhost/network/smtp:qmail`
- ▶ State
 - ▶ `online` – enabled and running
 - ▶ `offline` – enabled but not (yet) running
 - ▶ `disabled`
 - ▶ `maintenance` – configuration problem
 - ▶ `legacy_run`
 - ▶ `degraded`

Services and Instances II

- ▶ Method
 - ▶ Method for starting and stopping the instance
 - ▶ Some built in - `:kill`
- ▶ Enable/Disable
 - ▶ By default enabling/disabling is permanent but can be temporary

Services and Instances

Administration

- ▶ `svcs(1)`
 - ▶ Report service status
- ▶ `svccprop(1)`
 - ▶ Retrieve service configuration properties
- ▶ `svcadm(1M)`
 - ▶ Manipulate service instances
 - ▶ ... issues requests for actions on services executing within the service management facility
- ▶ `svccfg(1M)`
 - ▶ import, export, and modify service configurations

Administration

svcs(1) |

▶ \$ svcs

STATE	STIME	FMRI
legacy_run	Apr_21	lrc:/etc/rcS_d/S50sk98sol
legacy_run	Apr_21	lrc:/etc/rcS_d/S51installupdates
legacy_run	Apr_21	lrc:/etc/rc2_d/S10lu
...		
disabled	Apr_21	svc:/network/nfs/server:default
online	Apr_21	svc:/network/pfil:default
online	Apr_21	svc:/network/loopback:default
online	Apr_21	svc:/system/filesystem/root:default
online	Apr_21	svc:/system/scheduler:default
...		

Administration

svcs(1) II

- ▶ list process IDs and names associated with each service
- ▶ `$ svcs -p sendmail`

STATE	STIME	FMRI
online	Apr_21	svc:/network/smtp:sendmail
	Apr_21	390 sendmail
	Apr_21	391 sendmail

Administration

svcs(1) III

- ▶ List dependencies of the specified service(s)
- ▶ `$ svcs -d sendmail`

STATE	STIME	FMRI
online	Apr_21	svc:/system/identity:domain
online	Apr_21	svc:/system/filesystem/local:default
online	Apr_21	svc:/milestone/name-services:default
online	Apr_21	svc:/network/service:default
online	Apr_21	svc:/system/system-log:default
online	Apr_27	svc:/system/filesystem/autofs:default

Administration

svcs(1) IV

- ▶ Explain the status of services that might require maintenance ...
- ▶ `$ svcs -xv`

```
svc:/application/print/server:default (LP print server)
  State: disabled since Fri Apr 21 16:39:45 2006
Reason: Disabled by an administrator.
  See: http://sun.com/msg/SMF-8000-05
  See: man -M /usr/share/man -s 1M lpsched
Impact: 2 dependent services are not running:
  svc:/application/print/rfc1179:default
  svc:/application/print/ipp-listener:default
```

Administration

svccprop(1)

- ▶ retrieve service configuration properties
- ▶ `$ svccprop http:apache2`

```
httpd/ssl boolean false
httpd/stability astring Evolving
network/entities fmri svc:/milestone/network:default
network/grouping astring require_all
network/restart_on astring error
network/type astring service
...
```

Administration

svccfg(1M)

- ▶ import, export, and modify service configurations

Administration

svcadm(1M)

- ▶ manipulate service instances

Manifests

- ▶ Manifests are XML files describing the service or service bundles
- ▶ It is **not** the repository itself
- ▶ See `/usr/share/lib/xml/dtd/service_bundle.dtd.1`
- ▶ Default location for (Sun delivered) is `/var/svc/manifests`
- ▶ ... methods are in `/lib/svc/method`

SMF Repository

- ▶ All manifests stored in persistent, transaction-based repository
 - ▶ Transactions/snapshots allow “undo”, rollback to safe configuration
- ▶ (They say) **NOT** a giant registry: mainly svc mgmt properties
- ▶ Data imported either at boot time from manifests or via `svccfg import`
- ▶ `svccfg(1M)` used to manipulate repository data
- ▶ `svcprop(1)` used to view repository data
- ▶ `svc.configd(1M)` is the repository daemon

Boot process today

- ▶ `$ cat /etc/inittab | tail -7`
ap::sysinit:/sbin/autopush -f /etc/iu.ap
sp::sysinit:/sbin/soconfig -f /etc/sock2path
smf::sysinit:/lib/svc/bin/svc.startd ...
p3:s1234:powerfail:/usr/sbin/shutdown -y -i5 -g0 ...
pt:s1234:powerfail:/etc/init.d/installupdates lock

Links

- ▶ `http://opensolaris.org/os/community/smf/`
- ▶ `http://www.sun.com/bigadmin/content/selfheal/smf-quickstart.html`
- ▶ `smf(5)`
- ▶ `service_bundle(5)`

Questions?

THANK YOU!

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