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smf(5)

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smf(5)

- Why SMF, Motivation and Solution
- What's In A Service
- Components
- Administrative commands
- Example : You mean I depend on that?
- Example : Solving a common problem
- A Couple Of Tips
- Enterprise Manifests
- Get Involved
- Q & A



Why SMF - Motivation

- Traditional init.d/rc mechanism is brittle
- No real concept of dependencies
 - What services are available on a system
 - A service is broken? Which one?
 - What does this service depend on? What depends on this service...
- Availability is paramount
 - The PHB does not care if component X is down, all the PHB sees is that the revenue generating app is down
- But security is also paramount



Why SMF - Solution

- Promote service to first class operating system object
- Consistent configuration handling
 - Generic meta-configuration
 - Dependencies, enabled, disabled
 - Configuration explicitly committed
 - Restore to known good snapshots
- Services automatically restarted
- Easy access to information about faulted services
- Securely delegate tasks to non-root users



What's in a service

- FMRI – Fault Managed Resource ID
 - svc:/network/smtp:sendmail
- Descriptive Name
- Instance
- Functional Categories
 - Application – traditional daemons
 - Device
 - Milestone - think run levels
 - Network - network services
 - Platform - platform specific services
 - System - platform independent system services
 - Site - site services



SMF Components

- **Administrative Commands**
 - `svcs(1)`, `svcprop(1)`, `svcadm(1M)`, `svccfg(1M)`
- **Master Restarter**
 - `svc.startd(1M)`
 - Responsible for starting and restarting services
 - Start services when their dependencies are met
 - Shuts services down when dependencies are not met
 - Restarts failed services
- **Repository daemon**
 - `svc.configd(1M)`
- **Delegated restarter**
- **Contracts**



Administrative Commands - svcs

```
# svcs
```

```
STATE      STIME    FMRI
legacy_run 21:38:51 lrc:/etc/rcS_d/S50sk98sol
legacy_run 21:39:07 lrc:/etc/rc2_d/S10lu
legacy_run 21:39:07 lrc:/etc/rc2_d/S20syssetup
legacy_run 21:39:07 lrc:/etc/rc2_d/S40llc2
.....
online     21:39:17 svc:/system/basicreg:default
online     21:39:52 svc:/system/webconsole:console
online     21:40:23 svc:/network/dns/client:default
online     21:40:28 svc:/system/filesystem/autofs:default
online     23:35:52 svc:/system/name-service-cache:default
online     23:35:52 svc:/network/smtp:sendmail
offline    21:38:37 svc:/application/x11/intel_vbios:default
```



svcs (cont)

-d show my dependencies

```
# svcs -d sendmail
```

STATE	STIME	FMRI
online	21:38:35	svc:/milestone/name-services:default
online	21:38:48	svc:/system/identity:domain
online	21:38:51	svc:/network/service:default
online	21:38:53	svc:/system/filesystem/local:default
online	21:39:03	svc:/system/system-log:default
online	21:40:28	svc:/system/filesystem/autofs:default

svcs (cont)

-D what depends on me

```
# svcs -D svc:/network/loopback
STATE      STIME  FMRI
disabled   11:44:03  svc:/network/physical:nwam
disabled   11:44:04  svc:/network/samba:default
disabled   11:44:04  svc:/network/rarp:default
disabled   11:44:04  svc:/network/winbind:default
disabled   11:44:04  svc:/network/wins:default
disabled   11:44:05  svc:/network/dns/server:default
disabled   11:44:05  svc:/network/ipv4-forwarding:default
disabled   11:44:05  svc:/network/ipv6-forwarding:default
disabled   11:44:05  svc:/network/slp:default
disabled   11:44:32  svc:/network/rpc/cde-tdbserver:tcp
disabled   11:44:32  svc:/network/cde-spc:default
disabled   11:44:33  svc:/network/shell:default
disabled   11:44:33  svc:/network/shell:kshell
online     11:44:11  svc:/network/physical:default
online     11:44:12  svc:/system/identity:node
online     11:44:16  svc:/milestone/network:default
online     11:44:21  svc:/milestone/single-user:default
online     11:44:31  svc:/network/inetd:default
online     11:44:33  svc:/network/ssh:default
online     11:44:34  svc:/network/rpc/cde-calendar-manager:default
online     11:47:54  svc:/network/dns/client:default
online     11:47:54  svc:/system/identity:domain
```



svcs (cont)

-D what depends on me (slightly smaller)

```
# svcs -D sendmail
STATE      STIME    FMRI
online     21:39:08 svc:/milestone/multi-user:default
```

-p what processes is this service running

```
# svcs -p sendmail
STATE      STIME    FMRI
online     23:35:52 svc:/network/smtp:sendmail
           23:35:52  2135 sendmail
           23:35:52  2137 sendmail
```



svcs (cont)

-l all available info about this service

```
# svcs -l sendmail
fmri      svc:/network/smtp:sendmail
name      sendmail SMTP mail transfer agent
enabled   true
state     online
next_state none
state_time Mon May 28 23:35:52 2007
logfile   /var/svc/log/network-smtp:sendmail.log
restarter svc:/system/svc/restarter:default
contract_id 104
dependency require_all/refresh file://localhost/etc/mail/sendmail.cf (online)
dependency require_all/refresh file://localhost/etc/nsswitch.conf (online)
dependency optional_all/none svc:/system/filesystem/autofs (online)
dependency require_all/none svc:/system/filesystem/local (online)
dependency require_all/none svc:/network/service (online)
dependency require_all/refresh svc:/milestone/name-services (online)
dependency optional_all/refresh svc:/system/identity:domain (online)
dependency optional_all/none svc:/system/system-log (online)
```



svcs (cont)

-xv explain the status of services that might require maintenance

```
# svcs -xv
```

```
svc:/application/x11/intel_vbios:default (Intel VBIOS Mode Table Patcher)
```

```
State: offline since Mon May 28 21:38:37 2007
```

```
Reason: Dependency file:///localhost/etc/X11/intel_vbios.conf is absent.
```

```
See: http://sun.com/msg/SMF-8000-E2
```

```
Impact: This service is not running.
```



svccprop

- Retrieve service configuration properties

```
# svccprop sendmail
config/value_authorization astring solaris.smf.value.sendmail
config/local_only boolean true
config-file/entities fmri file:///localhost/etc/mail/sendmail.cf
config-file/grouping astring require_all
config-file/restart_on astring refresh
config-file/type astring path
nsswitch/entities fmri file:///localhost/etc/nsswitch.conf
nsswitch/grouping astring require_all
nsswitch/restart_on astring refresh
.....
```



svcadm

- Manipulate service instances

```
# svcadm disable sendmail
```

```
# svcs sendmail
```

```
STATE      STIME    FMRI
```

```
disabled   1:02:01  svc:/network/smtp:sendmail
```

```
# svcadm enable sendmail
```

```
# svcs sendmail
```

```
STATE      STIME    FMRI
```

```
online     1:02:16  svc:/network/smtp:sendmail
```



svccfg

- Import, export and modify service configurations

```
# svccfg
```

```
svc:> select sendmail
```

```
svc:/network/smtp:sendmail> setprop restarter/logfile=/var/svc/log/network-smtp:sendmail.log
```

```
svc:/network/smtp:sendmail> exit
```

```
# svccfg
```

```
svc:> select sendmail
```

```
svc:/network/smtp:sendmail> listprop restarter/logfile
```

```
restarter/logfile astring /var/svc/log/network-smtp:sendmail.log
```

```
svc:/network/smtp:sendmail> setprop restarter/logfile=/var/svc/log/ieosug.log
```

```
svc:/network/smtp:sendmail> end
```



svccfg (cont)

- Of course interaction isn't for everyone so use `-f` to script `svccfg`

```
# cat sendmail.listprop
```

```
select sendmail
```

```
listprop restarter/logfile
```

```
end
```

```
# svccfg -f ./sendmail.listprop
```

```
restarter/logfile astring /var/svc/log/opensolaris-demo.log
```

```
# cat sendmail.default
```

```
select sendmail
```

```
setprop restarter/logfile=/var/svc/log/network-smtp:sendmail.log
```

```
end
```

```
# svcadm refresh sendmail
```

```
# svccfg -f ./sendmail.default
```

```
# svccfg -f ./sendmail.listprop
```

```
restarter/logfile astring /var/svc/log/network-smtp:sendmail.log
```

```
#
```



svccfg (cont)

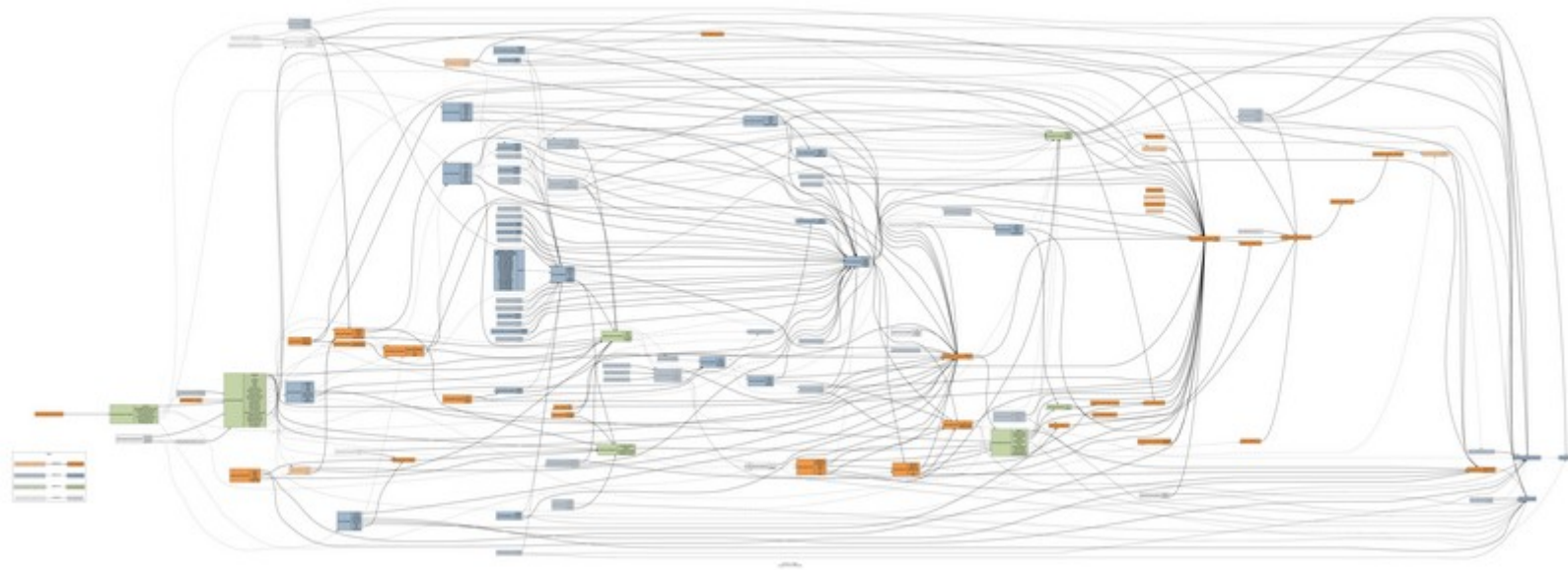
- Or call `svccfg` directly nameing your service with `-s`

```
# svccfg -s sendmail setprop restarter/logfile=/var/svc/test.log  
# svcadm refresh sendmail
```



You mean I depend on that?

- Output from scfdot
 - Just as well someone is looking after the others...





Solving A Common Problem (cont)

- We have all seen it, you go to a website, intent on looking at your favourite discussion board, blog or whatever, and instead you get greeted with ...



Solving A Common Problem (cont)





Solving A Common Problem

- And it could be worse, imagine if that was the software you use for streaming mp3s at home? Disaster I tell you :).
- So what do we have
 - Two interdependent services, if one is down, the other is useless (in this context)
 - Create a dependency, but let the OS manage it for you rather than an additional layer of monitoring software
 - Yes this is semi artificial, you really only want mysql to restart, but it is a presentation after all...



Solving A Common Problem (cont)

- Create two manifests to describe services
 - mysql-mp.xml
 - ♦ svc:/application/samp/mysql-mp
 - apache-mp.xml
 - ♦ svc:/application/samp/apache-mp
- apache-mp depends on mysql-mp
 - So if mysql goes down, we bring down apache as well and restart both of them
- Import the manifests
 - ♦ `svcfg import [mysql-mp|apache-mp].xml`



Solving A Common Problem (cont)

Now where are we ...

```
# svcs -l samp
STATE      STIME    FMRI
online     19:20:17 svc:/application/samp/mysql:default
online     19:20:18 svc:/application/samp/apache-mp:default
```

And apache depends on....

```
# svcs -d svc:/application/samp/apache-mp
STATE      STIME    FMRI
online     11:04:55 svc:/application/samp/mysql:default
```



Solving A Common Problem (cont)

Okay, lets kill off mysql

```
# pkill mysql
```

And what state are our services in now?

```
# svcs samp
STATE      STIME   FMRI
online     11:45:45 svc:/application/samp/apache-mp:default
online     11:45:24 svc:/application/samp/mysql:default
```



Tips

- Boot is very quiet now, use
 - `boot -m verbose` to see whats happening
- Where are all of my logfiles?
 - `/var/svc/logs`
- And the manifests to describe the services?
 - `/var/svc/manifests`
- `svcs -d, -D, -l` and `-xv` are your friends.



Enterprise Manifests

- Contributed Manifests
 - Oracle
 - Netbackup
 - Flexlm etc....
- <http://opensolaris.org/os/community/smf/manifests/>
- Oracle 10g Manifest
 - <http://padraigs.blogspot.com/2007/04/configuring-oracle-as-service-in-smf.html>



Get Involved

- SMF Community
 - <http://www.opensolaris.org/os/community/smf/>
- Ongoing Projects
 - Enhanced SMF Profiles
 - ♦ <http://www.opensolaris.org/os/project/smf-profiles/>
 - Visual Panels
 - ♦ <http://www.opensolaris.org/os/project/vpanels/>
 - SMF Documentation
 - ♦ <http://www.opensolaris.org/os/project/smf-doc/>



Credits, Q&A

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 - The various folks who have given, and posted, SMF presentations to OpenSolaris User Groups around the globe.
- Q&A

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Thank you!

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