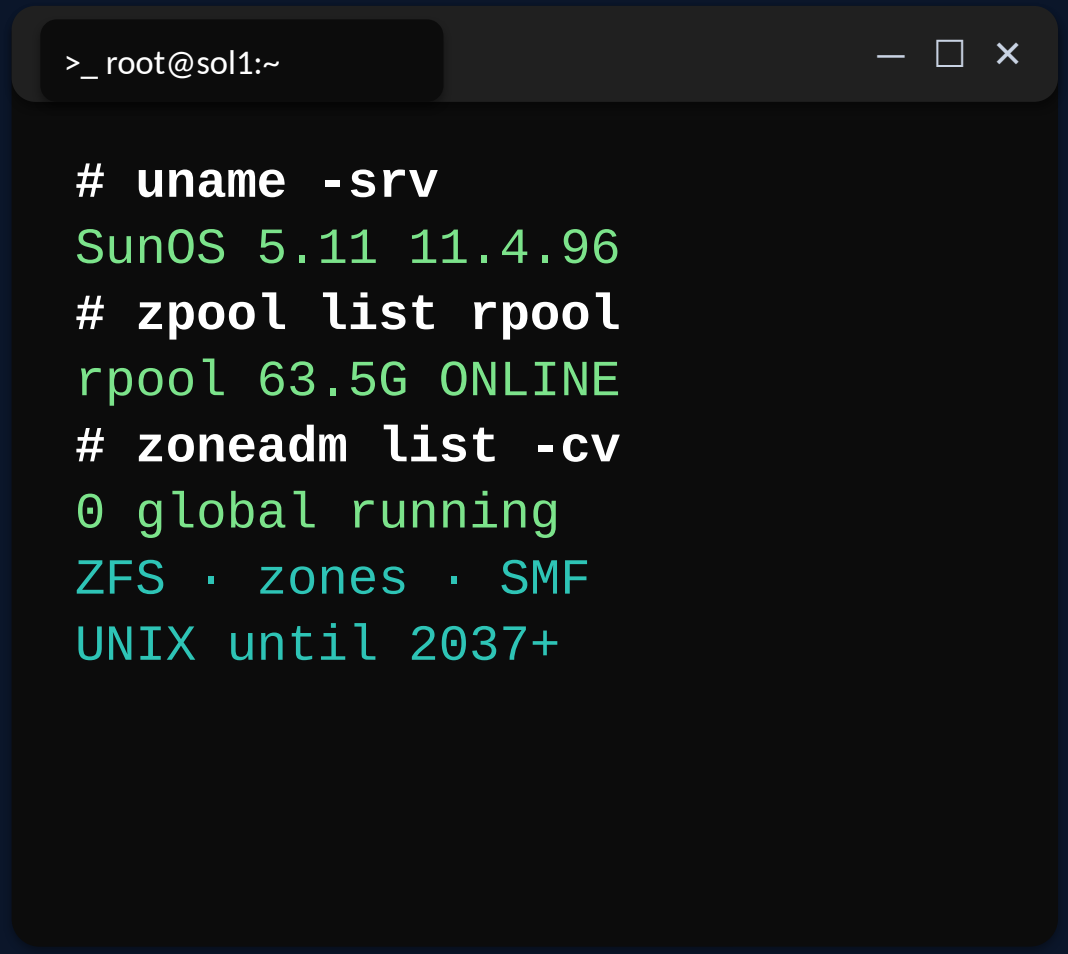



LESSON 4 OF 12

# Oracle Solaris 11.4

ZFS · Zones · SMF · LDoms · OLVM

## SMF Services & the Fault Management Architecture

Full Course · Solaris 11.4 SRU96 · OVM (Nov 2026)

# What You Will Learn in Lesson 4

- SMF concepts: services, instances, FMRIs, states
- svcs: list, explain (-x), dependencies (-d / -D)
- svcadm: enable, disable, restart, clear, refresh
- svccfg and svcprop: properties and configuration
- Writing a manifest for your own service
- Milestones and boot troubleshooting
- FMA: fmadm faulty, fmdump, and repair

# SMF Concepts and States

| Term | Meaning |
| --- | --- |
| Service FMRI | svc:/network/ssh:default  (service + instance) |
| online | Running normally |
| disabled | Turned off by the administrator |
| offline | Enabled but waiting for a dependency |
| maintenance | Failed too often — needs you: fix, then svcadm clear |
| degraded | Running with reduced capability |
| Restarter | svc.startd (daemons) or inetd (on-demand services) |
| Repository | /etc/svc/repository.db — all service configuration |

# svcs: What Is Running and Why Not

```
root@sol1:~# svcs | head -4
STATE          STIME    FMRI
online         21:04:11 svc:/system/svc/restarter:default
online         21:04:15 svc:/network/ssh:default
root@sol1:~# svcs -a | grep -c disabled
root@sol1:~# svcs -x
svc:/network/http:apache24 (Apache 2.4 HTTP server)
 State: maintenance since November 20, 2026 at 09:52:13 PM PST
Reason: Start method exited with $SMF_EXIT_ERR_CONFIG.
   See: /var/svc/log/network-http:apache24.log
root@sol1:~# svcs -l ssh ; svcs -d ssh ; svcs -D ssh ; svcs -p ssh
```

# svcadm: Control Services

```
root@sol1:~# svcadm enable -r apache24       # -r: also enable dependencies
root@sol1:~# svcadm disable -t sendmail      # -t: temporary, until reboot
root@sol1:~# svcadm restart ssh
root@sol1:~# svcadm refresh ssh              # re-read configuration
root@sol1:~# tail -5 /var/svc/log/network-http:apache24.log
root@sol1:~# vim /etc/apache2/2.4/httpd.conf  # fix the real problem first
root@sol1:~# svcadm clear apache24           # leave maintenance
root@sol1:~# svcs apache24
online         22:01:47 svc:/network/http:apache24
root@sol1:~# svcadm milestone -d all          # default boot milestone
```

# svccfg and svcprop: Properties

```
root@sol1:~# svcprop -p config network/dns/client
root@sol1:~# svccfg -s network/dns/client
svc:/network/dns/client> setprop config/nameserver = net_address: (192.168.56.1)
svc:/network/dns/client> setprop config/search = astring: ("lab.local")
svc:/network/dns/client> listprop config
svc:/network/dns/client> exit
root@sol1:~# svcadm refresh dns/client
root@sol1:~# svccfg -s name-service/switch setprop config/host = astring: "files dns"
root@sol1:~# svcadm refresh name-service/switch
root@sol1:~# svccfg -s ssh listcust           # what did admins change?
```

# Your Own Service: a Manifest

```
root@sol1:~# svcbundle -o /var/tmp/myapp.xml \
      -s service-name=site/myapp -s model=daemon \
      -s start-method='/opt/myapp/bin/myapp --serve' \
      -s rc-script=  -s enabled=true
root@sol1:~# svccfg validate /var/tmp/myapp.xml
root@sol1:~# cp /var/tmp/myapp.xml /lib/svc/manifest/site/
root@sol1:~# svcadm restart manifest-import
root@sol1:~# svcs myapp
online         22:14:03 svc:/site/myapp:default
root@sol1:~# pkill myapp ; sleep 2 ; svcs -p myapp   # SMF restarted it
```

# Milestones and Boot Troubleshooting

| Tool | Use |
| --- | --- |
| milestone/single-user | Minimal system; boot -m milestone=single-user |
| milestone/multi-user-server | Normal server state (default: all) |
| boot -m verbose | Show each service as it starts (x86: add in GRUB) |
| boot -s | Single-user shell for repairs |
| svcs -x / svcs -xv | First command after any boot problem |
| /lib/svc/bin/restore_repository | Recover a damaged SMF repository |
| /var/svc/log/*.log | Per-service logs |

# FMA: The Fault Manager

```
root@sol1:~# fmadm faulty
--------------- ------------------------------------  -------------- ---------
TIME            EVENT-ID                              MSG-ID         SEVERITY
Nov 20 22:31:07 7f3c...e21a                           ZFS-8000-D3    Major
Problem in: zfs://pool=datapool/vdev=3a1f...  Status: faulted
Action: Run 'zpool status -x' and replace the bad device.
root@sol1:~# fmdump                 # fault log    ; fmdump -e : error telemetry
root@sol1:~# fmdump -v -u 7f3c...e21a
root@sol1:~# fmadm repaired zfs://pool=datapool/vdev=3a1f...   # after the fix
root@sol1:~# fmstat ; svcs fmd
```

# Summary and Homework

- States: online, disabled, offline, maintenance, degraded
- svcs -x explains problems; svcs -d / -D / -p for details
- svcadm enable -r / disable -t / restart / refresh / clear
- Configuration in properties: svcprop, svccfg setprop, refresh
- svcbundle writes manifests; SMF restarts dead daemons
- FMA: fmadm faulty, fmdump, fmadm repaired
- Homework: create site/myapp, kill it, watch SMF restart it

# Thank You! 🙏

Free videos & PDFs: www.MyWebUniversity.com

Slides for this lesson: MyWebUniversity.com/presentations

**YouTube: @MyWebUniversity · @MyWebUniversity-Dari**

Wahidullah Lutfy — Founder and Director of IT of MyWebUniversity, and CS teacher

Book: The Direct Path to Linux Ubuntu (Amazon · Barnes & Noble)

**Learn it, then pass it on.**