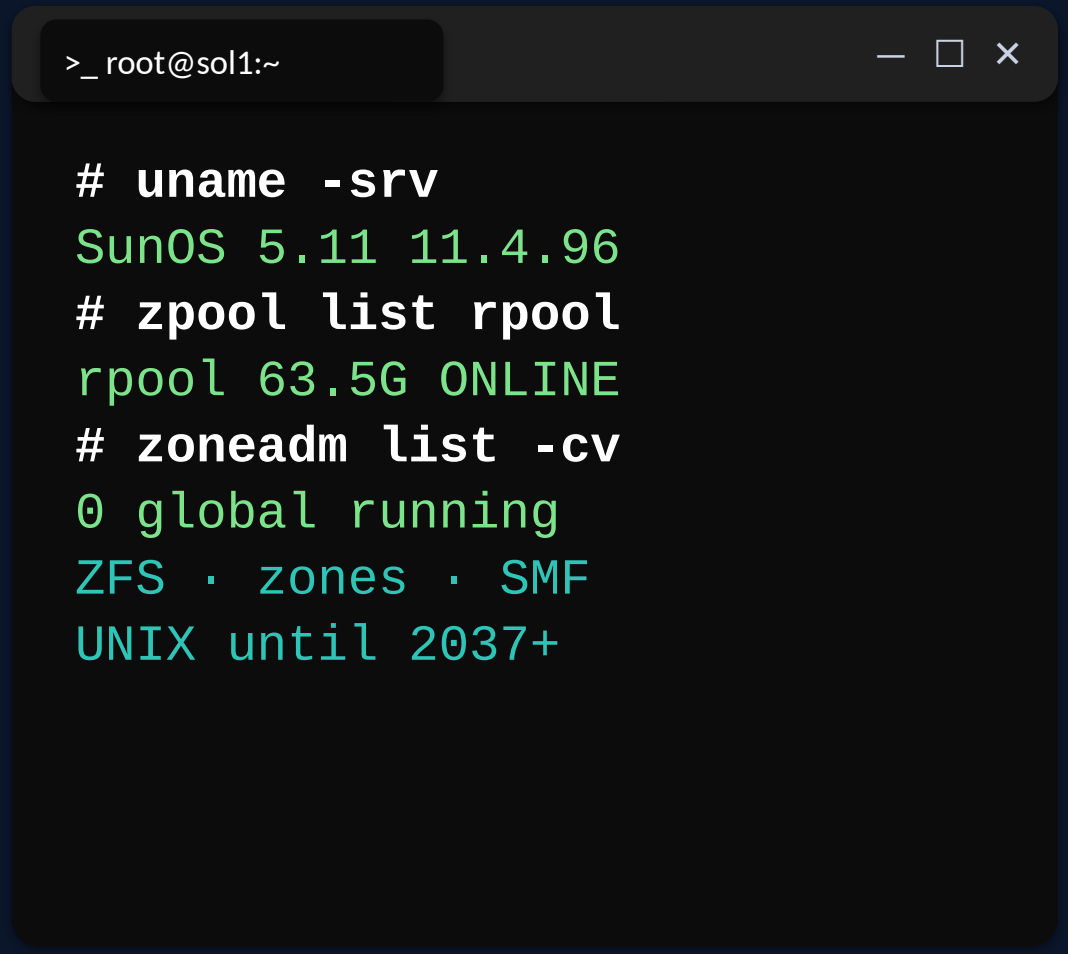



LESSON 9 OF 12

# Oracle Solaris 11.4

ZFS · Zones · SMF · LDoms · OLVM

## Oracle VM Server for SPARC (LDoms)

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

# What You Will Learn in Lesson 9

- Architecture: hypervisor in firmware, control / service / I/O / guest domains
- Supported servers: SPARC T4 and later, S7, T8, M8, Fujitsu M12
- Setting up the control domain (primary)
- Virtual services: vds (disk), vsw (switch), vcc (console)
- Creating, binding and starting a guest domain
- Live migration and dynamic reconfiguration
- Saving configurations to the service processor

# Domain Roles

| Role | Job |
| --- | --- |
| Hypervisor | Thin layer in SPARC firmware; partitions CPU threads and memory |
| Control domain (primary) | Runs ldmd and the ldm command; needs Solaris 11.4 |
| Service domain | Provides virtual disk, network and console to guests |
| I/O / root domain | Owns PCIe buses or SR-IOV functions directly |
| Guest domain | Runs applications; uses virtual devices; Solaris 10 or 11 |
| Key idea | CPU threads are dedicated, not time-shared — predictable performance |

# Control Domain Setup

```
primary# pkg list ldomsmanager ; svcs ldmd
primary# ldm list
NAME     STATE   FLAGS   CONS  VCPU  MEMORY  UTIL  UPTIME
primary  active  -n-c--  UART  256   511G    0.4%  2d 4h
primary# ldm add-vcc port-range=5000-5100 primary-vcc0 primary
primary# ldm add-vds primary-vds0 primary
primary# ldm add-vsw net-dev=net0 primary-vsw0 primary
primary# ldm set-core 4 primary              # whole cores for primary
primary# ldm set-memory 32G primary
primary# ldm add-spconfig initial            # save to the service processor
primary# shutdown -i6 -g0 -y ; svcadm enable vntsd
```

# Virtual Services

| Service | Name / Purpose |
| --- | --- |
| vds | Virtual disk server: exports ZFS volumes, LUNs, files as vdisks |
| vdsdev | One exported backend: ldm add-vdsdev <backend> vol@vds |
| vsw | Virtual switch on a physical NIC or aggregation |
| vnet | A guest's virtual NIC on a vsw |
| vcc + vntsd | Console concentrator; telnet localhost <port> |
| Multipathing | mpgroup for disks, IPMP / DLMP for vnets across 2 service domains |

# Creating a Guest Domain

```
primary# zfs create -V 40G rpool/ldoms/ldg1-disk0
primary# ldm add-domain ldg1
primary# ldm set-core 2 ldg1
primary# ldm set-memory 16G ldg1
primary# ldm add-vnet vnet0 primary-vsw0 ldg1
primary# ldm add-vdsdev /dev/zvol/dsk/rpool/ldoms/ldg1-disk0 ldg1-disk0@primary-vds0
primary# ldm add-vdisk disk0 ldg1-disk0@primary-vds0 ldg1
primary# ldm add-vdsdev options=ro /export/iso/sol-11_4-text-sparc.iso iso@primary-vds0
primary# ldm add-vdisk iso iso@primary-vds0 ldg1
primary# ldm set-var auto-boot\?=false ldg1
primary# ldm bind ldg1 ; ldm start ldg1
```

# Console, Install and Daily Commands

```
primary# ldm list ldg1
NAME   STATE   FLAGS   CONS  VCPU  MEMORY  UTIL  UPTIME
ldg1   active  -t----  5000  16    16G     6.2%  1m
primary# telnet localhost 5000
{0} ok devalias                        # disk0, iso, vnet0
{0} ok boot iso                        # text installer (lesson 2)
primary# ldm list -l ldg1 | less       # full details
primary# ldm list-bindings ; ldm list-devices -a
primary# ldm stop ldg1 ; ldm unbind ldg1
primary# ldm remove-domain ldg1
```

# Live Migration and Dynamic Reconfiguration

```
primary# ldm set-core 4 ldg1              # add cores while running (DR)
primary# ldm set-memory 24G ldg1          # memory DR
primary# ldm add-vdisk disk1 data1@primary-vds0 ldg1   # hot-add disk
# Live migration to another SPARC server (same storage visible there)
primary# ldm migrate-domain -n ldg1 root@sparc2   # -n = dry run
primary# ldm migrate-domain ldg1 root@sparc2
Target Password:
Migration of domain ldg1 completed.
primary# ldm set-domain perf-counters=global ldg1
primary# ldm list -o cpu,memory ldg1
```

# Saving and Backing Up Configurations

```
primary# ldm list-spconfig
factory-default
initial
prod-nov2026 [current]
primary# ldm add-spconfig prod-nov2026-b       # save after every change
primary# ldm list-constraints -x ldg1 > /var/tmp/ldg1.xml
primary# ldm add-domain -i /var/tmp/ldg1.xml   # recreate from XML
primary# ldm list-constraints -x > /var/tmp/all-domains.xml
# Also back up guest data: zfs snapshot / send of rpool/ldoms/*
# Manage many servers: Oracle Enterprise Manager
```

# Summary and Homework

- LDoms = firmware hypervisor; primary runs ldm (Solaris 11.4, OVM SPARC 3.6)
- Roles: control, service, I/O / root, guest; dedicated CPU threads
- Services: vcc + vntsd, vds + vdsdev, vsw + vnet
- add-domain → set-core/memory → add-vnet/vdisk → bind → start
- DR and migrate-domain (-n first); save with add-spconfig
- Homework: draw a 2-guest design; write the ldm commands for ldg2 with 1 core, 8 GB, one disk

# Thank You! 🙏

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**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.**