

Solaris Volume Manager : Components



Solaris Volume Manager - Components

- Solaris Packages
- User Commands
- Graphical Interface
- Daemons
- Libraries
- Kernel Modules
- RCM Framework
- Devices
- In-core Metadb's

Solaris Packages

- SDS 4.2.1
 - > SUNWmdr - core kernel & /etc files
 - > SUNWmdu - user commands, libraries and docs
 - > SUNWmdx - 64-bit SPARC kernel drivers
 - > SUNWmdg - metatool GUI
 - > SUNWmdnr - log daemon config files
 - > SUNWmdnu - log daemon core files
 - > SUNWmdja - Japanese language support

Solaris Packages

- Solaris 9 SVM
 - > SUNWmdr - core kernel & /etc files
 - > SUNWmdu - user commands, libraries and docs
 - > SUNWmdx - 64-bit SPARC kernel drivers
 - > SUNWlvma - log daemon and SunMC API's
 - > SUNWlvmr - log daemon config files
 - > SUNWlvmg - SunMC plugins
- Language support comes with Solaris
 - > SUNWmddr - RCM support (backport from S10)

Solaris Packages

- Solaris 10 SVM
 - > SUNWmdr - core kernel & /etc files
 - > SUNWmdu - user commands, libraries and docs
 - > SUNWmddr - RCM components
 - > SUNWlvma - log daemon and SunMC API's
 - > SUNWlvmr - log daemon config files
 - > SUNWlvmg - SunMC plugins
- Language support comes with Solaris
- No separate 64-bit package required
 - > SPARC is 64-bit only, x64 support included.

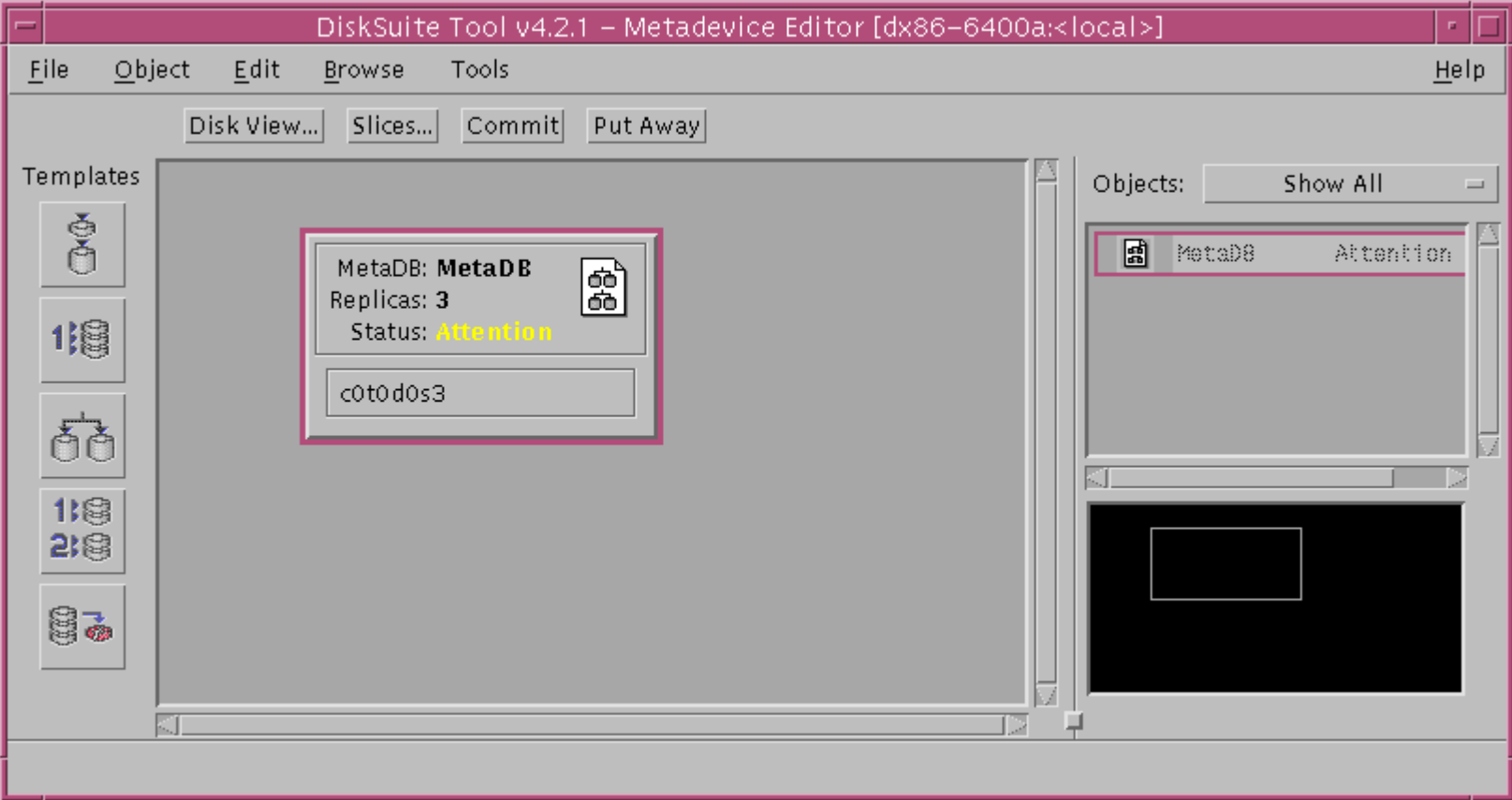
User Commands

- /usr/sbin/meta*
 - > Dynamically linked commands
- /sbin/meta*
 - > Statically linked commands (4.2.1 & S9)
 - > Required commands for boot support
- /etc/lvm/md.tab
 - > User's configuration file
- /etc/lvm/md.cf
 - > System's private configuration file

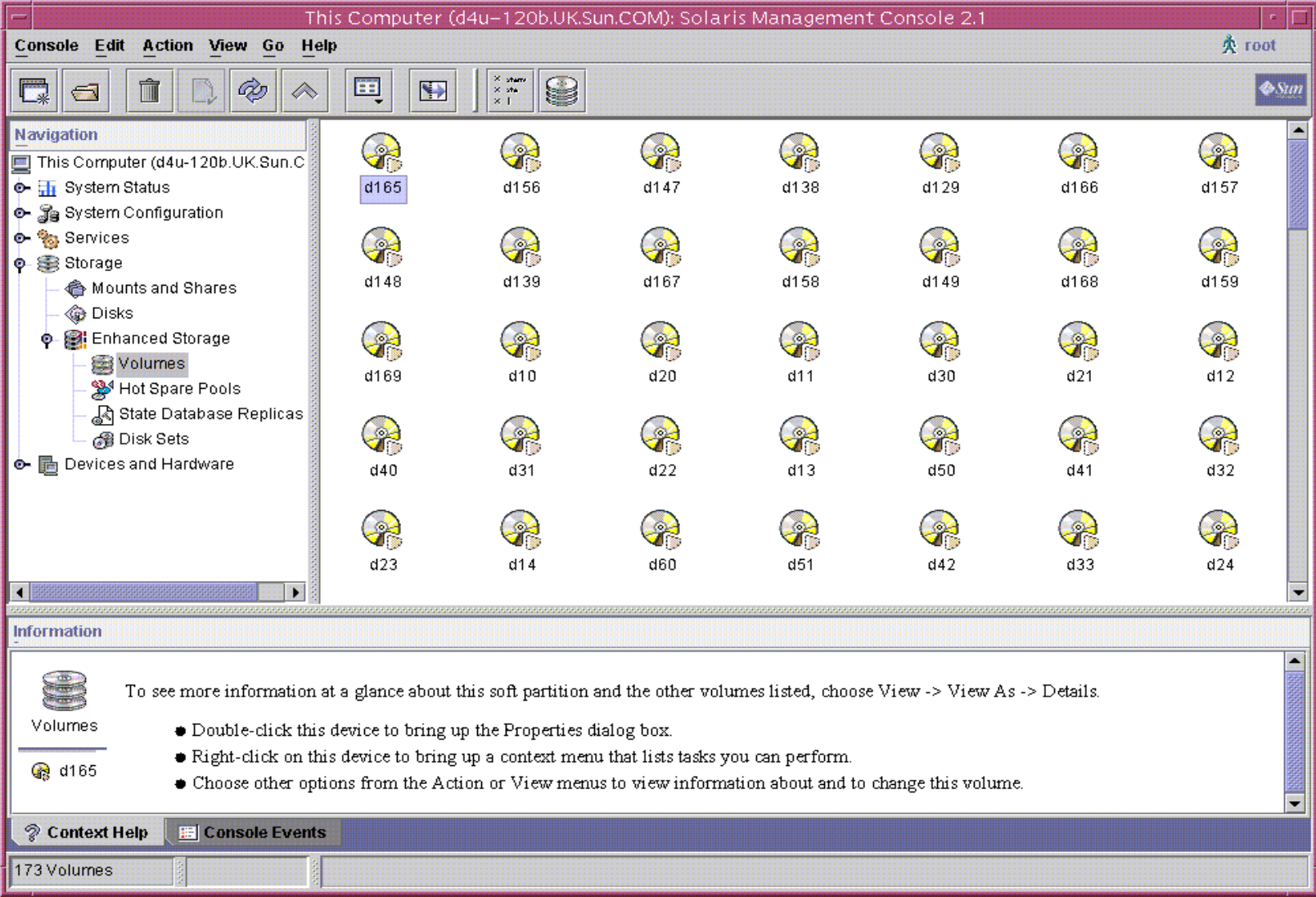
Graphical Interface

- SDS 4.2.1 - metatool
 - > Custom GUI for SDS only
- Solaris 9 onwards – SunMC plugin
 - > Integrates SVM management with other Solaris functionality
 - > Single admin station to manage many servers

Graphical Interface



Graphical Interface



Daemons

- mdmonitord
 - > Scans devices for component failures
 - > Runs on failure or via a timer
- rpc.metad
 - > Metaset configuration daemon
- rpc.mdcommd
 - > Multi-owner metaset control daemon
- rpc.metamhd
 - > Multi-Host metaset control daemon

Daemons – SunCluster

- `rpc.metamedd`
 - > SunCluster mediator daemon
- `rpc.metacl`
 - > SunCluster proxy transport daemon

Libraries

- libmeta
 - > Primary userland library
 - > Used by every meta* command
- libpreen
 - > Provides metadvice layout data to fsck
 - > Helps avoid multiple fsck's on the same disk
- libsvm
 - > Support for upgrades and installs with SVM

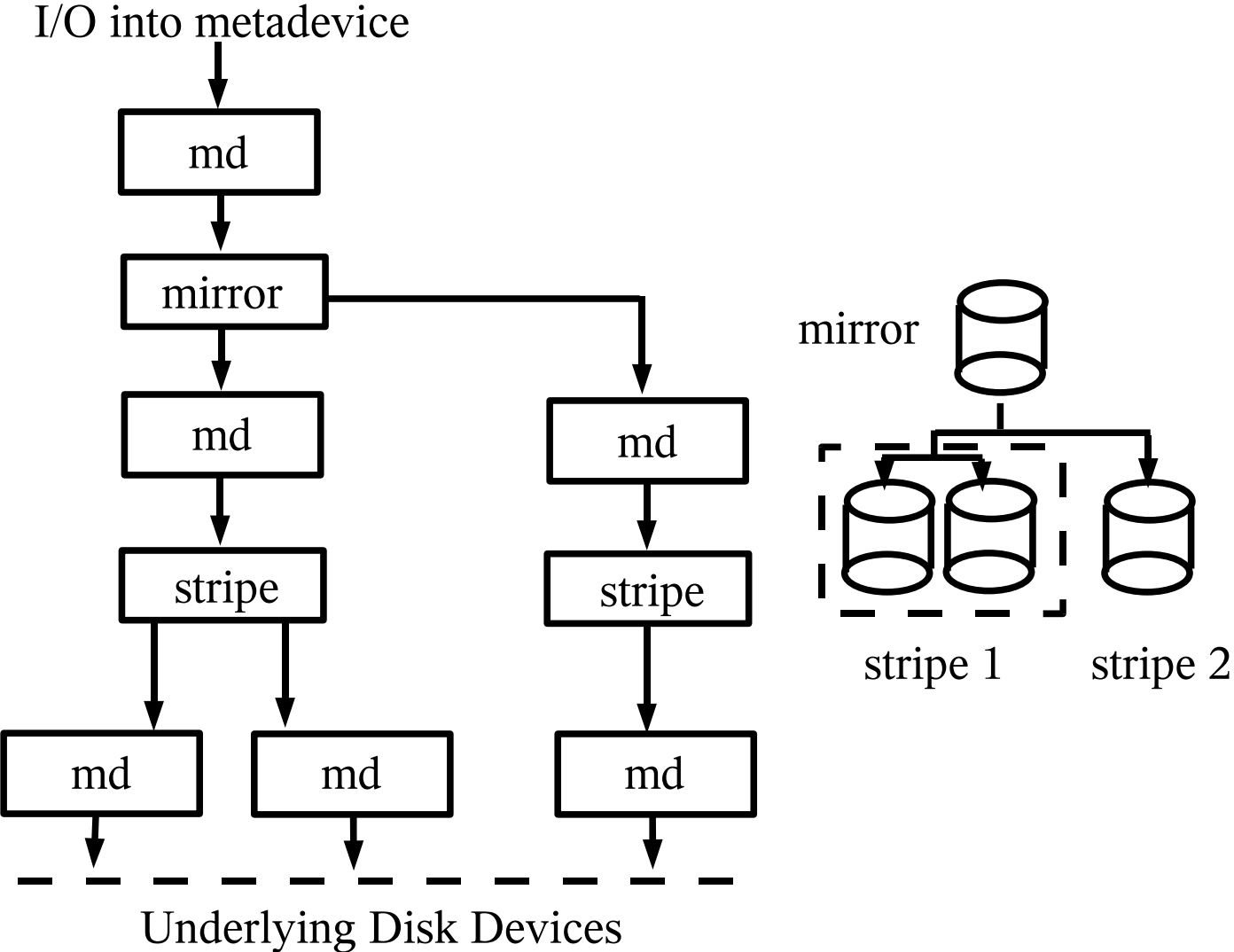
Kernel Modules

- md
 - > Core SVM module
 - > Interfaces SVM to the rest of the kernel
- md_mirror, md_stripe, md_raid, md_sp
 - > Metadevice drivers
 - > Provide core device support
- md_hotspares, md_notify, md_trans
 - > SVM utility drivers
 - > Provide services to SVM itself

Kernel Modules

- Devices build in layers
 - > All top level access through md
- Can mix device types, eg :
 - > Softparts on top of RAID's
 - > Mirror made from Stripes of Softparts
- “Top-level” metadvice is the one that gets used
 - > Eg – the mirror, rather than the sub-mirrors

Kernel Modules



RCM Framework

- SUNW_svm_rcm.so module
 - > /usr/lib/rcm/modules/SUNW_svm_rcm.so
- Interfaces SVM into DR operations
- Designed to block “offline” requests if :
 - > The device contains a meta replica
 - > The device is a working part of a metadvice
- Calls into libmeta to get component state

Devices Tree

- Created on reconfig reboot
- Numbers specified in `/kernel/drv/md.conf`
- Admin Device
 - > One per system
 - > Provides ioctl interface to kernel modules
- Local Set Devices
 - > `/dev/md/(r)dsk`
- Shared Set Devices
 - > `/dev/md/{setname}/(r)dsk`

Devices Tree – S10 onwards

- Dynamically created via devfsadm framework
- SVM link module to create nodes
 - > /usr/lib/devfsadm/linkmod/SUNW_md_link.so
- Delivered as part of the SUNWcsu package

In-Core Metadb's

- Created in kernel memory on boot / set take
- Working copy of the configuration / status data
 - > Used by metastat etc
- On-disk metadb's are copies of the in-core db

Header Files

- Delivered as part of SUNWhea package

6 -> ls usr/include

```
mdiox.      mdmn_changelog.h  metamed.h      metamhd.h
meta.h      meta_basic.h      meta_runtime.h metacl.h
metad.h     metadyn.h
```

7 -> ls usr/include/sys/lvm

```
md_mhdx.h      md_stripe.h
md_mirror.h    md_trans.h
md_basic.h     md_mirror_shared.h  mdio.h
md_convert.h   md_names.h          mdmed.h
md_crc.h       md_notify.h         mdmn_commd.h
md_hotspares.h md_raid.h           mdvar.h
md_mddb.h      md_rename.h
md_mdiox.h     md_sp.h
```

SVM Components