

**Lift and Shift Guide - Moving Oracle
Solaris 10 Guest Domains to SPARC
Servers Running Oracle Solaris 11**



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Using This Documentation

- **Overview** – Provides instructions for lifting and shifting Oracle Solaris 10 Guest Domains to SPARC systems running Oracle Solaris 11.
- **Audience** – Experienced Oracle Solaris system administrators
- **Required knowledge** – Experience administering Oracle Solaris computer systems.

Product Documentation Library

Documentation and resources for this product and related products are available at https://docs.oracle.com/cd/E94980_01.

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Understanding the Lift and Shift Process

These topics describe concepts for migrating an Oracle Solaris 10 guest domain to a SPARC system running Oracle Solaris 11:

- [“Lift and Shift Scenario Overview” on page 9](#)
- [“Scope – Is this Lift and Shift Scenario Right for You?” on page 10](#)
- [“Requirements” on page 11](#)
- [“Considerations” on page 12](#)
- [“Contingency Plan” on page 13](#)
- [“Nomenclature Used in Examples” on page 14](#)

Lift and Shift Scenario Overview

This section describes the process of lifting an Oracle Solaris 10 guest domain from a system running Oracle Solaris 10, and shifting it to a system that is running Oracle Solaris 11. The guest domain retains the Oracle Solaris 10 OS. This type of lift and shift scenario is sometimes referred to as a virtual-to-virtual lift and shift because a virtual domain is moved from one virtual environment to another.

This lift and shift scenario makes use of Oracle VM Template (OVMT) utilities, which are well suited to lift-and-shift an Oracle VM Server for SPARC (logical domains) environment from one machine, the source system, to another machine, the target system, supporting the SPARC sun4v architecture. This scenario only supports domains that use virtual disks.

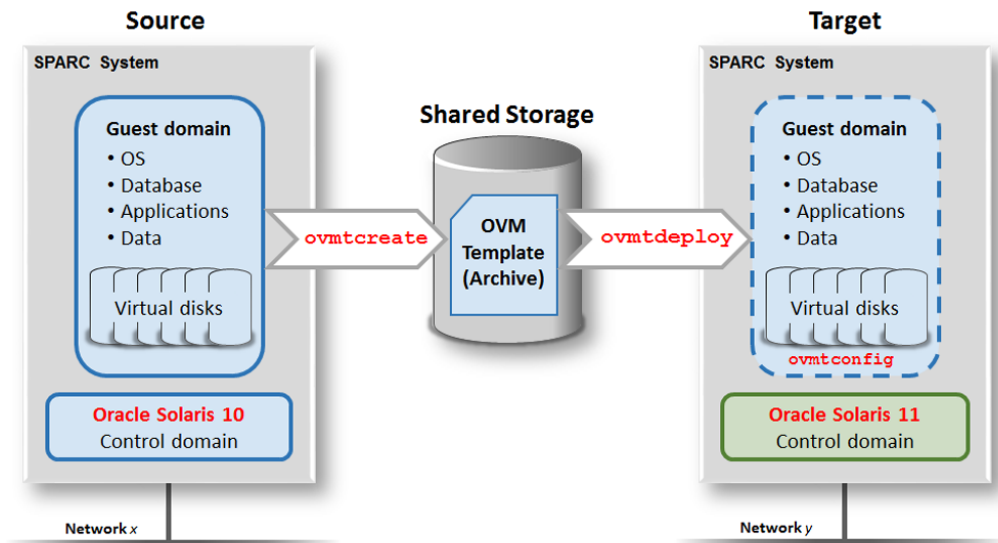
As shown in the following illustration, the process involves using the `ovmtcreate` utility to create a template based on the source guest domain. The template is an archive of multiple files, including the domain's compressed virtual disk files. The archive is created on storage that is shared between the source system and target system. When you create the archive, you can select which virtual disks are captured in the archive. This guide describes the following approaches:

- **Capture all the virtual disks in the archive** – The archive includes the OS, applications, and data. This is the method used in the main portion of this document.

- **Capture a subset of the guest domain's virtual disks (referred to in this document as the alternate method)**– The archive only includes the software components that are on the virtual disks you included in the archive. When the archive is used to deploy the new guest domain, only those software components are migrated to the target. Depending on your migration plans, you might need to take additional steps to migrate the remaining software components. For more details, see [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)” on page 85](#).

The `ovmtdeploy` utility uses the archive to deploy the guest domain on the target system. Depending on how the archive was created, the guest domain's software components such as the OS, databases, applications, and data are migrated to the target system.

After the migration, you might need to reconfigure some of the guest domain's parameters such as the host name, networking, and database parameters. This lift and shift scenario describes how to perform these tasks.



Scope – Is this Lift and Shift Scenario Right for You?

To determine if this lift and shift scenario is right for your situation, review the scope (this section), [“Requirements” on page 11](#) and [“Considerations” on page 12](#).

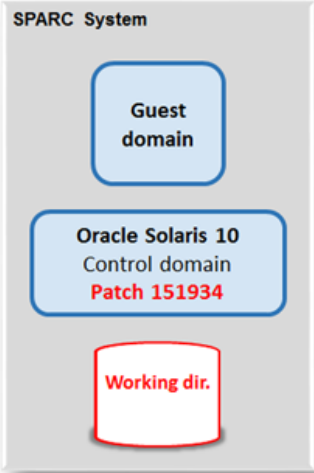
This lift and shift procedure is limited to systems with this configuration:

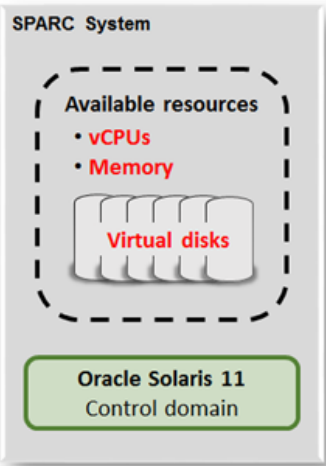

- **Source System** – An Oracle SPARC system with guest domains running Oracle Solaris 10 with virtual disks
- **Target System** – An Oracle SPARC system running Oracle Solaris and Oracle VM Server for SPARC

Requirements

The table lists requirements for this lift and shift scenario. This document includes instructions for satisfying these requirements.

Note - If you plan to only migrate the OS virtual disks (the alternative method), the requirements are slightly different. See [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)”](#) on page 85.

<p style="text-align: center;">Source</p>  <p>The diagram illustrates the Source System architecture. It is a SPARC System containing three main components: a Guest domain (represented by a blue rounded rectangle), an Oracle Solaris 10 Control domain (represented by a blue rounded rectangle with the text 'Patch 151934' in red), and a Working dir. (represented by a red rounded rectangle).</p>	<p>Source System</p> <p>Patch 151934 – You must be able to download and install the latest version of the Oracle VM Server for SPARC patch 151934-06 (or later) on the control domain of the source system.</p> <p>Working directory – The <code>ovmtcreate</code> command requires temporary space in a working directory where the guest domain's storage is compressed.</p> <p>There is no way of knowing in advance how much compression will be achieved, which makes it difficult to estimate the size of the working directory. As a conservative best practice, ensure that the working directory has space equal to the guest domain's virtual disk storage, divided by 2.</p> <p>For instructions, see “Prepare the Source System” on page 35.</p>
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<p style="text-align: center;">Target</p> 	<p>Target System</p> <p>Must be running Oracle Solaris 11.3 (with SRU 31 or later) or Oracle Solaris 11.4. The ovmtools package must be installed.</p> <p>The target system must provide sufficient resources for the incoming guest domain:</p> <ul style="list-style-type: none"> ■ CPU and Memory Resources –Prior to the lift and shift activity, you must ensure that there are enough available CPU and memory resources to support the guest domain. ■ Virtual Disks – The exact same number of virtual disks with the same capacities that the guest domain has on the source system. <p>For instructions, see “Prepare the Target System” on page 37.</p>
<p style="text-align: center;">Shared Storage</p> 	<p>Storage Space for Creating the Source Archive – Even though the archive file is compressed, it is usually large. As a best practice, ensure that the minimum shared storage space is equal to the guest domain's virtual disk storage, divided by 2.</p> <p>In this document, the shared storage is attached to the target system. The target system exports the storage, and it is mounted by the source system.</p> <p>For instructions, see “Prepare a Shared Storage Location for the Archive” on page 43.</p>

Considerations

While planning the lift and shift migration, take these key points into consideration.

Lift and Shift Duration

The lift and shift process requires the shutdown of the source guest domain during the archive creation which can take a few hours to complete.

The duration of the lift and shift process varies based on many factors, with these factors having a significant impact on the overall duration:

- Size of the guest domain's storage – All the virtual disks are copied and compressed into an archive file. The larger the storage, the longer the compression takes to complete.
- Compute resources of the source control domain – The `ovmtcreate` command that creates the archive file, runs in the source control domain.
- Compute resources of the target control domain – The `ovmtdeploy` command that creates the guest domain, runs in the target control domain.

The lift and shift example described in this guide, based on a guest domain consisting of 1.4 TB of storage, took several hours to complete.

Optionally, the lift and shift process can be accelerated by temporarily shifting some CPU and memory resources on the source system to the control domain during the creation of the archive. These resources can be borrowed from other guest domains that can afford to be shut down for a period of time. When the archive is complete, the resources are returned to the guest domains. This guide describes how to do this.

Network Configuration Differences

The network topology (IP addresses, DNS configuration, and so on) is copied from the Oracle Solaris 10 source machine, but can be changed if required, to suit the network topology of the target system.

Contingency Plan

After the guest domain is moved to the target system, the guest domain on the source system remains offline and the guest domain operations transition to the target system. However, in the unlikely event of an unsuccessful migration, the Solaris 10 guest domain can be restarted on the source system to resume services and end the down time.

If the deployment of the guest domain on the target needs to be removed for any reason, you can use the `ovmtdeploy -U` command. See [“\(If Needed\) Undo the Deployment” on page 55](#).

Nomenclature Used in Examples

The lift and shift process in this document is based on a real in-house lift and shift activity. The examples provided in this document are excerpts from that activity. The example systems and the output from the systems are consistent from the beginning to the end of this document.

These systems are used in the examples:

- **Source system** – A SPARC T4-2 system with running the Oracle Solaris 10 OS. The guest domain to be moved has these characteristics:
 - Oracle Solaris 10 OS
 - 1396 GB of storage space provided by virtual disks
 - Oracle 12.1 Database
- **Target system** – A SPARC S7-2, with 128 vCPUs and 260 GB of memory, running the Oracle Solaris 11 OS.

In the screen output examples, the command line prompt indicates which system (target or source) and which logical domain (control or guest) is executing the command. This table lists the host names that are displayed in the prompts.

System	Host Name in Prompt	Description
Source System	SourceControlDomain	Represents the control domain on the source system. In screen output examples, this domain is displayed as primary.
	SourceGuestDomain	Represents the guest domain on the source system.
Target System	TargetControlDomain	Represents the control domain on the target system. In screen output examples, this domain is displayed as primary.
	TargetGuestDomain	Represents the guest domain once it has been shifted to the target system.

Assessing the Source and Target Systems

Moving logical domains requires careful consideration, with special attention given to assessing the domain's hardware resources, software applications, data, and performance characteristics. The target system that receives the domain must match some aspects of the source system's configuration, such as the storage space. Other resources such as CPU and memory, can be changed as the guest domain is migrated to the target system.

The configuration of logical domains differ in many aspects. This chapter takes into account variations that are typically found in a virtualized compute environment, and includes a variety of Oracle Solaris and Oracle VM Server for SPARC commands that you can run to assess your environment.

These topics describe how to assess the source and target systems:

- [“Collect Performance Data on the Source System” on page 15](#)
- [“Obtain Configuration Details from the Source Control Domain” on page 17](#)
- [“Obtain Configuration Details from the Source Guest Domain” on page 23](#)
- [“Identify the Target System's Topology” on page 29](#)

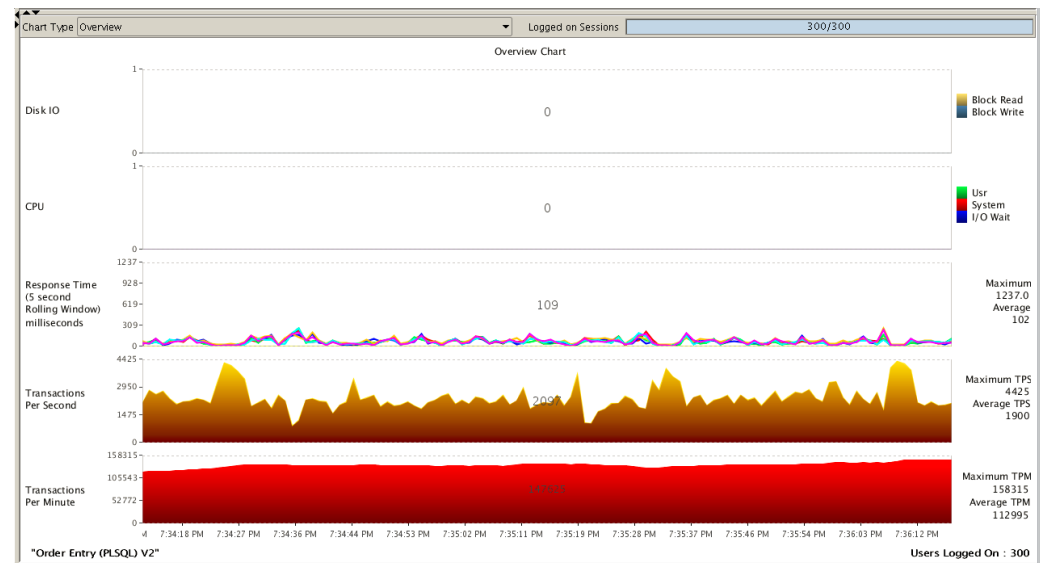
▼ Collect Performance Data on the Source System

Collecting performance data before the lift and shift provides a baseline for comparison in the new environment. In particular, make note of the CPU utilization so that you can estimate the most appropriate resources that the guest domain should have in the target system.

- **Use whatever tools and metrics that are best suited to your environment.**

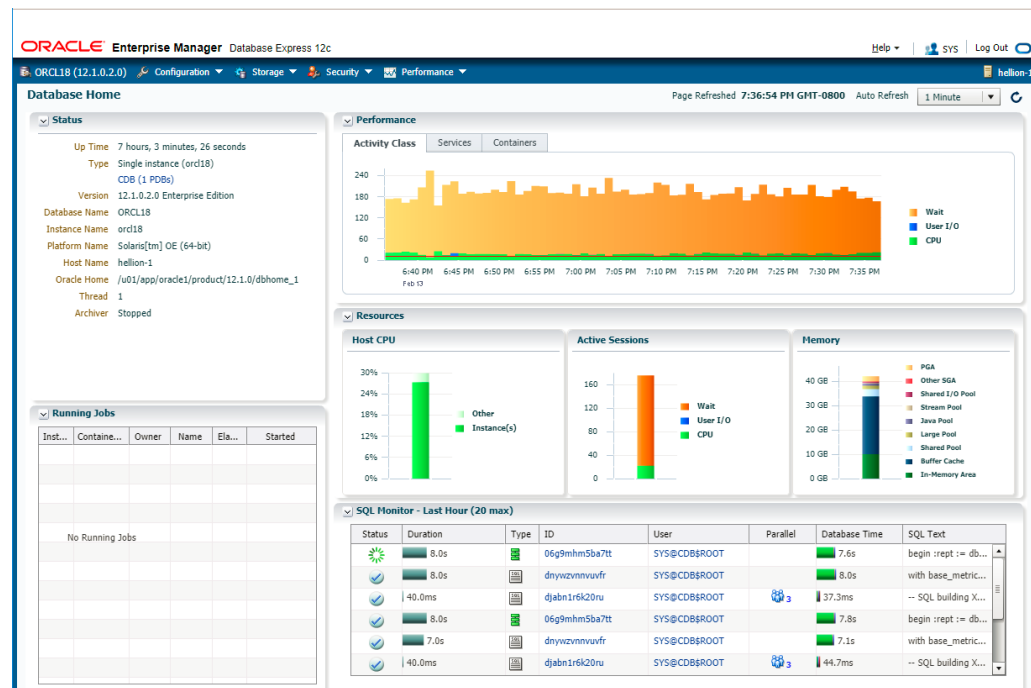
In this example, Swingbench is used to run a database workload.

An OLTP workload (SOE schema) consisting of 300 users was run over several hours to produce a consistent workload:



The same activity was monitored using Enterprise Manager Database Express:

Note – For more information on Enterprise Manager Database Express, refer to this web page:
<http://www.oracle.com/technetwork/database/manageability/emx-intro-1965965.html>



▼ Obtain Configuration Details from the Source Control Domain

The steps and examples in this section provide commands you can use to determine the configuration of your source system, including details about the guest domain that you plan to lift and shift. The configuration information helps you prepare the target system. After the lift and shift process, the configuration information can also serve as a sanity check by comparing the information with the same information on the guest domain on the target system.

As you perform this procedure, take into account the state of your source system and adjust or omit steps as needed.

1. **(Optional) On the source system, start a process that captures the output that is collected in this task.**

Capturing the commands and output provides a means to refer back to the data that is collected.

There are a variety of methods to capture output. You can run the [script\(1M\)](#) command to make a record of a terminal session, or use a terminal window with command and output collection capabilities.

Example:

```
root@SourceControlDomain# script /tmp/source_guest_domain_output.txt
```

Note – When you want to stop capturing output, type Ctrl-D.

2. **From the source control domain, display basic information about the source system.**

```
root@SourceControlDomain# uname -a
SunOS SourceControlDomain 5.10 Generic_150400-52 sun4v sparc sun4v
```

3. **List the server type and the memory and CPU resources.**

```
root@SourceControlDomain# prttdiag | head -2
System Configuration: Oracle Corporation sun4v SPARC T4-2
Memory size: 32768 Megabytes

root@SourceControlDomain# psrinfo -pv
The physical processor has 16 virtual processors (0-15)
  SPARC-T4 (chipid 0, clock 2848 MHz)
```

4. **List the source system's CPU configuration.**

In this example, the solaris10 guest domain is spread across 10 cores (80 vCPUs).

```
root@SourceControlDomain# ldm ls -o core

NAME
primary

CORE
  CID  CPUSET
  0    (0, 1, 2, 3, 4, 5, 6, 7)
  1    (8, 9, 10, 11, 12, 13, 14, 15)
-----

NAME
solaris10
```

CORE

CID	CPUSET
2	(16, 17, 18, 19, 20, 21, 22, 23)
3	(24, 25, 26, 27, 28, 29, 30, 31)
4	(32, 33, 34, 35, 36, 37, 38, 39)
8	(64, 65, 66, 67, 68, 69, 70, 71)
9	(72, 73, 74, 75, 76, 77, 78, 79)
10	(80, 81, 82, 83, 84, 85, 86, 87)
11	(88, 89, 90, 91, 92, 93, 94, 95)
12	(96, 97, 98, 99, 100, 101, 102, 103)
13	(104, 105, 106, 107, 108, 109, 110, 111)
14	(112, 113, 114, 115, 116, 117, 118, 119)

5. Identify the guest domain's vCPU and memory configuration.

Make note of the CPU resources that are assigned to the guest domain. The target system must provide equal or greater resources to the guest domain (see [“Prepare the Target System” on page 37](#)).

In this example, the guest domain called `solaris10` has 80 vCPUs and 128 GB of memory.

```
root@SourceControlDomain# ldm ls
```

NAME	STATE	FLAGS	CONS	VCPU	MEMORY	UTIL	NORM	UPTIME
primary	active	-n-cv-	UART	16	32G	1.7%	1.7%	4d 13h 3m
solaris10	active	-n----	5000	80	128G	0.2%	0.2%	17h 1m

6. List versions of the logical domain components.

```
root@SourceControlDomain# ldm -V
```

```
Logical Domains Manager (v 3.2.0.4.2)
```

```
  Hypervisor control protocol v 1.12
```

```
  Using Hypervisor MD v 1.4
```

```
System PROM:
```

Hostconfig	v. 1.4.9	@(#)Hostconfig 1.4.9 2016/06/28 06:37
Hypervisor	v. 1.15.5.a	@(#)Hypervisor 1.15.5.a 2016/08/09 15:21
OpenBoot	v. 4.38.5	@(#)OpenBoot 4.38.5 2016/06/22 19:34

7. List the logical domain services.

```
root@SourceControlDomain# ldm ls-services
```

```
VCC
```

NAME	LDOM	PORT-RANGE
primary-vcc0	primary	5000-5100

```
VSW
```

NAME	LDOM	MAC	NET-DEV	ID	DEVICE	LINKPROP	DEFAULT-
VLAN-ID	PVID	VID	MTU	MODE	INTER-VNET-LINK		
primary-vsw0	primary	00:00:5E:00:53:79	aggr1	0	switch@0	1	1
1500 on							

VDS	NAME	LDOM	VOLUME	OPTIONS	MPGROUP	DEVICE
primary-vds0	primary		solaris10_root1		/dev/rdisk/	
c0t600144F0CD152C9E000057F54CA40024d0s2			solaris10_root2		/dev/rdisk/	
c0t600144F0CD152C9E000057F54CF20025d0s2			solaris10-disk1		/dev/rdisk/	
c0t600144F0CD152C9E000057F54D4D0026d0s2			solaris10-disk2		/dev/rdisk/	
c0t600144F0CD152C9E000057F54D780027d0s2			solaris10-disk3		/dev/rdisk/	
c0t600144F0CD152C9E000057F54DA20028d0s2			solaris10-disk4		/dev/rdisk/	
c0t600144F0CD152C9E000057F54DD40029d0s2						

8. Display network configuration information.

In this example, the virtual network (vnet0) on the virtual switch is connected to the physical aggregated interface aggr1.

```
root@SourceControlDomain# dladm show-link
vsw0          type: non-vlan  mtu: 1500      device: vsw0
igb0          type: non-vlan  mtu: 1500      device: igb0
igb1          type: non-vlan  mtu: 1500      device: igb1
usbecm0       type: non-vlan  mtu: 1500      device: usbecm0
aggr1         type: non-vlan  mtu: 1500      aggregation: key 1
```

```
root@SourceControlDomain# dladm show-aggr
key: 1 (0x0001) policy: L4      address: 00:00:5E:00:53:8e (auto)
device        address            speed      duplex    link    state
igb0          00:00:5E:00:53:8e      1000 Mbps  full     up      attached
igb1          00:00:5E:00:53:8f      1000 Mbps  full     up      attached
```

```
root@SourceControlDomain# ldm ls -o net
NAME
primary
MAC
00:00:5E:00:53:8e
VSW
NAME      MAC      NET-DEV  ID  DEVICE  LINKPROP  DEFAULT-VLAN-ID  PVID  VID  MTU
MODE  INTER-VNET-LINK
primary-vsw0 00:14:4f:f9:3d:79 aggr1    0   switch@0  1         1              1500
on
```

```

NAME
solaris10
MAC
00:00:5E:00:53:79
NETWORK
NAME      SERVICE          ID  DEVICE      MAC              MODE  PVID  VID              MTU  MAXBW
LINKPROP
vnet0     primary-vsw0@primary  0   network@0    00:00:5E:00:53:9d  1                    1500

```

9. Display the storage topology of the source system and guest domain.

Identify the guest domain's storage topology, the total storage capacities, and the amount of storage used. This information is used to prepare the target system. The target system must provide the same storage topology and storage capacities to the guest domain. When the archive is created, you can choose one of these methods to migrate the OS, applications, and data:

- **Capture all the virtual disks in the archive** – When the archive is used to deploy the new guest domain, the OS and application data are migrated to the target. This is the method used in this example.
- **Capture only the OS virtual disks (Alternate Method)**– When the archive is used to deploy the new guest domain, only the software on the captured virtual disks is migrated to the target. For more details, see [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)” on page 85](#). If you plan to use this method, identify the which software components are on each virtual disk.

In this example, the `solaris10` guest domain has six virtual disks (`root_disk1` through `data_disk4`).

Make note of the IDs assigned to each disk. When the guest is moved to the target system, each disk device must have the same ID. After the move, you might need to manually reassign the IDs, which is described in [“Review the Target Control Domain Services” on page 57](#).

In this example, the guest domain's `root_disk1` has an ID of 0, `root_disk2` has an ID of 1, and so on.

```
root@SourceControlDomain# ldm ls -o disk
```

```

NAME
primary

VDS
NAME      VOLUME  OPTIONS  MPGROUP  DEVICE
primary-vds0  solaris10_root1  /dev/rdisk/c0t600144F0CD152C9E000057F54CA40024d0s2
              solaris10_root2  /dev/rdisk/c0t600144F0CD152C9E000057F54CF20025d0s2
              solaris10-disk1  /dev/rdisk/c0t600144F0CD152C9E000057F54D4D0026d0s2
              solaris10-disk2  /dev/rdisk/c0t600144F0CD152C9E000057F54D780027d0s2
              solaris10-disk3  /dev/rdisk/c0t600144F0CD152C9E000057F54DA20028d0s2

```

```
solaris10-disk4          /dev/rdisk/c0t600144F0CD152C9E000057F54DD40029d0s2
-----
```

NAME
solaris10

DISK

NAME	VOLUME	TOUT ID	DEVICE	SERVER	MPGROUP
root_disk1	solaris10_root1@primary-vds0	0	disk@0	primary	
root_disk2	solaris10_root2@primary-vds0	1	disk@1	primary	
data_disk1	solaris10-disk1@primary-vds0	2	disk@2	primary	
data_disk2	solaris10-disk2@primary-vds0	3	disk@3	primary	
data_disk3	solaris10-disk3@primary-vds0	4	disk@4	primary	
data_disk4	solaris10-disk4@primary-vds0	5	disk@5	primary	

10. Identify the amount of storage that is assigned to the guest domain:

a. List the disk sizes.

Make note of the number of disks, their sizes, and order. The same virtual disk topology and capacities are replicated on the target system. See [“Prepare the Target System” on page 37](#).

Note - The virtual disk uses the SCSI LUN as the back end, therefore capacities are displayed using the `iostat` command. If the virtual disk uses a different back end, use the appropriate command to display the capacities.

You can either enter this command, once for each disk:

```
iostat -En Disk_Name | grep -i size
```

where *Disk_Name* is the name obtained from the previous step, for example:
c0t600144F0CD152C9E000057F54CA40024d0 (note that the slice designation is omitted)

Or you can list all of the disk sizes with this single command line:

```
root@SourceControlDomain# ldm ls -p -o disk primary | grep dev= | sed -e 's,^.*rdsk\n/,,' -e 's,s2.*,,' | xargs iostat -En {} | egrep "c0t6|Size" | grep -i size
Size: 322.12GB <322122547200 bytes>
Size: 322.12GB <322122547200 bytes>
Size: 161.06GB <161061273600 bytes>
Size: 161.06GB <161061273600 bytes>
Size: 214.75GB <214748364800 bytes>
Size: 214.75GB <214748364800 bytes>
```

b. Determine the total disk size.

Add the individual disk sizes and make note of the total disk size. The size is later used in [“Prepare a Shared Storage Location for the Archive” on page 43](#).

In this example, this calculation provides the total amount of disk space of the guest domain's virtual disks (numbers are in GB and rounded).

$322 + 322 + 161 + 161 + 215 + 215 = 1396 \text{ GB}$

▼ Obtain Configuration Details from the Source Guest Domain

The steps and examples in this section provide commands you can use to gather additional information about the guest domain.

As you perform this procedure, take into account the state of your guest domain and adjust or omit steps as needed.

1. Log into the guest domain and identify the source guest domain's host name.

```
SourceGuestDomain:/# ls /etc/hostname*
hostname.vnet0
```

```
SourceGuestDomain:/# cat /etc/hostname.vnet0
SourceGuestDomain
```

2. Display the guest domain storage topology.

```
SourceGuestDomain:/# zpool list
```

NAME	SIZE	ALLOC	FREE	CAP	HEALTH	ALTROOT
rpool	298G	39.2G	259G	13%	ONLINE	-
u01	149G	11.7G	137G	7%	ONLINE	-

```
SourceGuestDomain:/# zpool status
```

```
pool: rpool
state: ONLINE
```

```
scan: resilvered 9.71M in 0h0m with 0 errors on Tue Feb 13 18:56:07 2018
```

```
config:
```

NAME	STATE	READ	WRITE	CKSUM
rpool	ONLINE	0	0	0
mirror-0	ONLINE	0	0	0
c0d0s0	ONLINE	0	0	0
c0d1s0	ONLINE	0	0	0

```
errors: No known data errors
```

```
pool: u01
state: ONLINE
scan: none requested
```

```
config:
```

NAME	STATE	READ	WRITE	CKSUM
u01	ONLINE	0	0	0
mirror-0	ONLINE	0	0	0
c0d2	ONLINE	0	0	0
c0d3	ONLINE	0	0	0

```
errors: No known data errors
```

```
SourceGuestDomain:/# zpool status -xv
all pools are healthy
```

3. Identify the guest domain's disks.

In this example, disks listed by the `format` command are coming from the disks assigned from the control domain. Disks 4 and 5 are unused for the zpools. Instead they are used for the ASM disk group DATA.

```
SourceGuestDomain:/# format
```

```
Searching for disks...done
```

```
AVAILABLE DISK SELECTIONS:
```

0. c0d0 <SUN-ZFSStorage7420-1.0 cyl 9749 alt 2 hd 254 sec 254>
/virtual-devices@100/channel-devices@200/disk@0
1. c0d1 <SUN-ZFSStorage7420-1.0 cyl 9749 alt 2 hd 254 sec 254>
/virtual-devices@100/channel-devices@200/disk@1
2. c0d2 <SUN-ZFS Storage 7420-1.0-150.00GB>
/virtual-devices@100/channel-devices@200/disk@2
3. c0d3 <SUN-ZFS Storage 7420-1.0-150.00GB>
/virtual-devices@100/channel-devices@200/disk@3
4. c0d4 <SUN-ZFS Storage 7420-1.0-200.00GB>
/virtual-devices@100/channel-devices@200/disk@4
5. c0d5 <SUN-ZFS Storage 7420-1.0-200.00GB>
/virtual-devices@100/channel-devices@200/disk@5

```
Specify disk (enter its number): CTRL-C
```

4. Display the network topology of the source guest domain.

```
SourceGuestDomain:/# ifconfig -a
```



```
lo0: flags=2001000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4,VIRTUAL> mtu 8232 index 1
    inet 127.0.0.1 netmask ff000000
vnet0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 2
    inet 192.0.2.100 netmask ffffffff broadcast 192.0.2.255
    ether 00:00:5E:00:53:9d
```

```
SourceGuestDomain:/# netstat -rn
```

```
Routing Table: IPv4
```

Destination	Gateway	Flags	Ref	Use	Interface
default	192.0.2.1	UG	1	582	
192.0.2.0	192.0.2.100	U	1	130	vnet0
224.0.0.0	192.0.2.100	U	1	0	vnet0
127.0.0.1	127.0.0.1	UH	4	81	lo0

5. Display the application topology.

In this example, the source domain is installed with Oracle ASM and Oracle Database (12.1.0.2) with Enterprise Manager Database Express (a feature of the Oracle Database). Another system in the compute environment is deployed to run a database workload (Swingbench) against the database.

```
-bash-3.2$ cat /var/opt/oracle/oratab
+ASM:/u01/app/oracle1/product/12.1.0/grid:N          # line added by Agent
orcl18:/u01/app/oracle1/product/12.1.0/dbhome_1:N    # line added by Agent
```

```
-bash-3.2$ crsctl status resource -t
```

Name	Target	State	Server	State details
Local Resources				
ora.DATA.dg	ONLINE	ONLINE	SourceGuestDomain	STABLE
ora.LISTENER.lsnr	ONLINE	ONLINE	SourceGuestDomain	STABLE
ora.asm	ONLINE	ONLINE	SourceGuestDomain	Started,STABLE
ora.ons	OFFLINE	OFFLINE	SourceGuestDomain	STABLE
Cluster Resources				
ora.cssd				
1	ONLINE	ONLINE	SourceGuestDomain	STABLE
ora.diskmon				
1	OFFLINE	OFFLINE		STABLE
ora.evmd				

1	ONLINE	ONLINE	SourceGuestDomain	STABLE
ora.orcl18.db				
1	ONLINE	ONLINE	SourceGuestDomain	Open,STABLE

6. Determine which physical disk is mapped to the DATA disk group.

In this example, the DATA disk group is mapped to /dev/rdisk/c0d4s0 and /dev/rdisk/c0d5s0. You can verify this in the following ways:

■ Use a simple sqlplus command in the ASMhome:

```
select NAME,DISK_NUMBER,PATH from v$asm_disk
```

NAME	DISK_NUMBER	PATH
DATA_0000	0	/dev/rdisk/c0d4s0
DATA_0001	1	/dev/rdisk/c0d5s0

■ From the command line of ASM home:

```
ASMCMD> lsdg
State Type Rebal Sector Block AU Total_MB Free_MB Req_mir_free_MB Usable_file_MB Offline_disks
Voting_files Name
MOUNTED NORMAL N 512 4096 16777216 409568 259968 0 129984 0 N
DATA/
```

```
ASMCMD> lsdk -p -G DATA
Group_Num Disk_Num Incarn Mount_Stat Header_Stat Mode_Stat State Path
1 0 4113230313 CACHED MEMBER ONLINE NORMAL /dev/rdisk/c0d4s0
1 1 4113230314 CACHED MEMBER ONLINE NORMAL /dev/rdisk/c0d5s0
```

7. View the services available on the source environment.

The LISTENER status shows the services available.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/lsnrctl status
LSNRCTL for Solaris: Version 12.1.0.2.0 - Production on 13-FEB-2018 02:32:07
Copyright (c) 1991, 2014, Oracle. All rights reserved.
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=SourceGuestDomain)(PORT=1521)))
STATUS of the LISTENER
-----
Alias                LISTENER
Version              TNSLSNR for Solaris: Version 12.1.0.2.0 - Production
Start Date           13-FEB-2018 10:28:30
Uptime                0 days 16 hr. 3 min. 36 sec
Trace Level           off
```

```

Security                ON: Local OS Authentication
SNMP                    OFF
Listener Parameter File /u01/app/oracle1/product/12.1.0/grid/network/admin/listener.ora
Listener Log File       /u01/app/oracle1/diag/tnslsnr/SourceGuestDomain/listener/alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=SourceGuestDomain)(PORT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=SourceGuestDomain)(PORT=5500))
(Security=(my_wallet_directory=/u01/app/oracle1/product/12.1.0/dbhome_1/admin/orcl18/xdw_wallet))
(Presentation=HTTP)(Session=RAW))
Services Summary...
Service "+ASM" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
Service "orcl18" has 1 instance(s).
  Instance "orcl18", status READY, has 1 handler(s) for this service...
Service "orcl18XDB" has 1 instance(s).
  Instance "orcl18", status READY, has 1 handler(s) for this service...
Service "pdworcl" has 1 instance(s).
  Instance "orcl18", status READY, has 1 handler(s) for this service...
The command completed successfully

```

8. Display some data.

In this example, tables of the sales order in the user application schema housed in a pluggable database are displayed (26258963 and 70359059 are the number of rows in ORDERS and ORDERS_ITEMS). After the lift and shift process, the same query is repeated to provide a sanity check for the database (see [“Configure Guest Domain Database Components” on page 70](#)).

```
SQL> -bash-3.2$ sqlplus /nolog
```

```

SQL*Plus: Release 12.1.0.2.0 Production on Tue Feb 12 02:33:53 2018
Copyright (c) 1982, 2014, Oracle. All rights reserved.

```

```

SQL> connect / as sysdba
Connected.

```

```
SQL> set pages 1000
```

```

SQL> select * from v$pdb$ ;
  CON_ID  DBID  CON_UID GUID      NAME          OPEN_MODE  RES OPEN_TIME          CREATE_SCN TOTAL_SIZE
BLOCK_SIZE RECOVERY SNAPSHOT_PARENT_CON_ID

```

```

-----
-----
-----
-----

```

```

2 923046337 923046337 5FD409E1C9B47424E05400144FF9359D PDB$SEED READ ONLY NO 11-FEB-18
12.33.26.810 PM -08:00
                                2055907 775946240          8192 ENABLED          0

3 2925223297 2925223297 5FD41B67429003BEE05400144FF9359D PDBORCL READ WRITE NO 11-FEB-18
12.33.28.113 PM -08:00
                                2065658 6447693824         8192 ENABLED          0

```

```

SQL> alter session set container=PDBORCL ;
Session altered.

```

```

SQL> show con_id
CON_ID
-----
3

```

```

SQL> connect soe/soe@pdborcl
Connected.

```

```

SQL> select table_name from user_tables ;
TABLE_NAME
-----
CUSTOMERS
ADDRESSES
CARD_DETAILS
WAREHOUSES
ORDER_ITEMS
ORDERS
INVENTORIES
PRODUCT_INFORMATION
LOGON
PRODUCT_DESCRIPTIONS
ORDERENTRY_METADATA

11 rows selected.

```

```

SQL> select count(*) from ORDERS ;
COUNT(*)
-----
26258963
SQL> select count(*) from ORDER_ITEMS ;
COUNT(*)
-----
70359059

```

▼ Identify the Target System's Topology

The target system is the system where the guest domain will be deployed.

In this example, the target system is an Oracle SPARC S7-2 running the Oracle Solaris 11 OS. At this point, the Oracle VM Server for SPARC configuration has been initialized with one control domain. All the CPU and memory resources are allocated to the control domain.

As you perform this procedure, take into account the state of your target system and adjust or omit steps as needed.

1. **(Optional) On the target system, start a process that captures the output that is collected in this task.**

Capturing the commands and output provides a means to refer back to the collected data.

There are a variety of methods to capture output. You can run the `script(1M)` command to make a record of a terminal session, or use a terminal window with command and output collection capabilities.

2. **Identify the model of the target system.**

For example:

```
root@TargetControlDomain# prttdiag |head -1
System Configuration:  Oracle Corporation  sun4v SPARC S7-2
```

3. **Ensure that the target system is at the minimum required Oracle Solaris 11 SRU level.**

The Oracle Solaris 11.3 SRU version should be SRU 31 or later to ensure that the latest `ovmtutils` package is installed. The latest package provides utilities that are used in this lift and shift scenario.

For the alternate method, the target must run Oracle Solaris 11.4 with SRU 7 or later.

For additional details about Oracle Solaris 11 SRUs, refer to MOS Doc IDs 2385753.1 and 2045311.1 on <https://support.oracle.com>.

In this example, the output of `0.5.11-0.175.3.31.0.6.0` (key numbers are bold) indicates that the target system is running Oracle Solaris 11 with SRU 31.

```
root@TargetControlDomain# pkg list entire
NAME (PUBLISHER)      VERSION                                IFO
entire                0.5.11-0.175.3.31.0.6.0             i--
```

4. **Check the target system's network parameters.**

In this example, the target machine is on a different subnet (198.51.100.x) than the Source environment (192.0.2.x). This change in the network topology is addressed in [“Reconfigure the Target Guest Domain” on page 64](#).

```
root@TargetControlDomain# netstat -rn
```

Routing Table: IPv4

Destination	Gateway	Flags	Ref	Use	Interface
default	198.51.100.1	UG	10	90185345	
198.51.100.0	198.51.100.36	U	9	489772632	aggr0
127.0.0.1	127.0.0.1	UH	5	13612	lo0
203.0.113.0	203.0.113.77	U	3	3515034	net4

5. List the version of the logical domains manager.

```
root@TargetControlDomain# ldm -V
```

```
Logical Domains Manager (v 3.5.0.0.31)
  Hypervisor control protocol v 1.12
  Using Hypervisor MD v 1.4
```

System PROM:

Hostconfig	v. 1.8.3.a	@(#)Hostconfig 1.8.3.a 2016/09/16 14:15
Hypervisor	v. 1.17.3.a	@(#)Hypervisor 1.17.3.a 2016/09/16 13:38
OpenBoot	v. 4.40.3	@(#)OpenBoot 4.40.3 2016/08/17 12:17

6. List the OS version of the control domain on the target system.

```
root@TargetControlDomain# uname -a
```

```
SunOS TargetControlDomain 5.11 11.3 sun4v sparc sun4v
```

7. Identify the target system's CPU type and resources.

The purpose of these commands is to show that available CPU resources in the target system might be entirely in the control domain if the target system is freshly installed. The `psrinfo` command provides information about the CPU type, vCPUs per core, and the processor speed for the purpose of estimating the required resources for the target guest domain.

```
root@TargetControlDomain# ldm ls
```

NAME	STATE	FLAGS	CONS	VCPU	MEMORY	UTIL	NORM	UPTIME
primary	active	-n-c--	UART	128	260352M	0.3%	0.3%	2m

```

root@TargetControlDomain# psrinfo -pv
The physical processor has 8 cores and 64 virtual processors (0-63)
  The core has 8 virtual processors (0-7)
  The core has 8 virtual processors (8-15)
  The core has 8 virtual processors (16-23)
  The core has 8 virtual processors (24-31)
  The core has 8 virtual processors (32-39)
  The core has 8 virtual processors (40-47)
  The core has 8 virtual processors (48-55)
  The core has 8 virtual processors (56-63)
    SPARC-S7 (chipid 0, clock 4267 MHz)
The physical processor has 8 cores and 64 virtual processors (64-127)
  The core has 8 virtual processors (64-71)
  The core has 8 virtual processors (72-79)
  The core has 8 virtual processors (80-87)
  The core has 8 virtual processors (88-95)
  The core has 8 virtual processors (96-103)
  The core has 8 virtual processors (104-111)
  The core has 8 virtual processors (112-119)
  The core has 8 virtual processors (120-127)
    SPARC-S7 (chipid 1, clock 4267 MHz)

```

8. List the target system control domain services.

In this example, the Oracle VM Server for SPARC services have been configured, and the purpose of this step is to confirm that they are configured.

```

root@TargetControlDomain# ldm ls-services

```

VCC		
NAME	LDOM	PORT-RANGE
ovmt-vcc0	primary	5001-5100

VSW				
NAME	LDOM	MACADDRESS	NET-DEV	DVID PVID VIDs
primary-vsw0	primary	01:00:5E:90:10:72	aggr0	1 1 --

VDS					
NAME	LDOM	VOLUME	OPTIONS	MPGROUP	DEVICE
ovmt-vds0	primary				

9. List the target control domain's network parameters.

```

root@TargetControlDomain# ldm ls -o net

```

NAME

```
primary

MAC
    01:00:5E:90:10:e6

VSW
NAME          MACADDRESS          NET-DEV  DVID|PVID|VIDs
-----
primary-vsw0  01:00:5E:90:10:72  aggr0    1|1|--
      DEVICE          :switch@0      ID      :0
      LINKPROP        :phys-state    MTU     :1500
      INTER-VNET-LINK :on/auto      MODE    :--
      VSW-RELAY-MODE  :local
```

10. List the control domain virtual disk information.

```
root@TargetControlDomain# ldm ls -o disk

NAME
primary

VDS
NAME          VOLUME          OPTIONS          MPGROUP          DEVICE
ovmt-vds0
```

11. Identify the ZFS storage pools and capacities.

The source archive (.ova file) can be quite large. In this example scenario, the file is approximately 97GB, and it created in a shared storage location (see [“Prepare a Shared Storage Location for the Archive” on page 43](#)).

```
root@TargetControlDomain# zpool list
NAME    SIZE  ALLOC  FREE  CAP  DEDUP  HEALTH  ALTROOT
rpool   1.09T  200G   912G  18%  1.00x  ONLINE  -
vpool   1.09T  284G   828G  25%  1.00x  ONLINE  -
```

12. Check the zpool status.

```
root@TargetControlDomain# zpool status

pool: rpool
state: ONLINE
scan: none requested
config:

          NAME          STATE          READ WRITE CKSUM
```



```

rpool                ONLINE      0      0      0
mirror-0            ONLINE      0      0      0
  c0t5000CCA0804047E8d0 ONLINE      0      0      0
  c0t5000CCA080405774d0 ONLINE      0      0      0

errors: No known data errors

pool: vpool
state: ONLINE
scan: none requested
config:

NAME                STATE      READ  WRITE  CKSUM
vpool                ONLINE      0      0      0
  mirror-0            ONLINE      0      0      0
    c0t5000CCA080408CFCd0 ONLINE      0      0      0
    c0t5000CCA080401028d0 ONLINE      0      0      0
```

13. Go to the next set of tasks.

See [“Preparing the Source, Target, and Shared Storage”](#) on page 35.

Preparing the Source, Target, and Shared Storage

These topics describe how to prepare the source system, the target system, and the shared storage for the lift and shift process:

- “Prepare the Source System” on page 35
- “Prepare the Target System” on page 37
- “Prepare a Shared Storage Location for the Archive” on page 43

▼ Prepare the Source System

Perform this procedure on the Oracle Solaris 10 system that is hosting the guest domain that you plan to migrate to another system.

1. **(Recommended) Apply the latest Critical Patch Updates to the guest domain.**
Refer to this Oracle website for further details:<https://www.oracle.com/security-alerts/>
2. **Ensure that any long running transactions and connections are either left to complete or terminated based on business considerations.**
3. **Backup any critical data before the start of this process, so that you can fall back to this system if anything goes wrong.**
4. **Clean up and delete unwanted data on the source guest domain.**
5. **Install the Oracle VM Server for SPARC patch 151934-06 (or later) on the control domain of the source system.**

Installation of the patch provides ovmtcreate and supporting utilities that are required for this lift and shift scenario.

- a. **Determine if the patch is already installed.**

Use the patchadd command. For example:

```
# patchadd -p | grep 151934
```

b. Log into My Oracle Support (<https://support.oracle.com>).

c. Search for the latest version of patch 151934 for the Oracle Solaris on SPARC (64-bit) platform.

Tip – Use 151934- (number with a dash) as the search string so that all versions of the patch are displayed.

d. If the patch is not installed, or if there is a later version of the patch, download the latest version.

e. Use the patchadd command to install the patch.

The patching process installs the ovmtcreate utility in the /opt/SUNWldm/lib/contrib directory.

6. Prepare a working directory for the lift.

The ovmtcreate command requires temporary space in a working directory to compress the guest domain's storage. As a conservative best practice, create a directory that has space equal to the guest domain's virtual disk storage, divided by 2. For the alternative method, you only need the half the space of the virtual disks you plan to include in the archive.

For best performance, create the working directory on a source system local disk. This avoids copying the disk images over the network. If local storage is not available, you can create a working directory on network storage.

These command line examples display the available space in the working directory called /WorkingDirectory.

```
root@SourceControlDomain# zfs list wpool
NAME      USED    AVAIL    REFER    MOUNTPOINT
wpool     1.63M   650G    39K      /WorkingDirectory
```

```
root@SourceControlDomain# df -h /WorkingDirectory
Filesystem      size  used  avail capacity  Mounted on
wpool           650G   39K   650G    1%         /WorkingDirectory
```

7. If the guest domain hasn't been rebooted recently, reboot it.

Rebooting a domain helps to ensure that it is in a healthy state. If there is a problem, it is easier to troubleshoot before the domain is moved to another system.

8. (Optional) Assign additional available virtual CPU and memory resources to the source system's control domain.

Ensuring that the control domain has the maximum amount of virtual CPU and memory resources improves the performance of the archive creation. After the archive is created, return the control domain's resources to their original values. As a general rule, the control domain should have a minimum of two CPU cores.

To perform this step, there must be available vCPUs and memory in the source system which are not used or can be borrowed from guest domains that can be shutdown for a temporary period of time.

Note - Performing this step might require a reboot of the source system which might increase down time.

For more information about CPU and memory allocation, refer to the *Oracle VM Server for SPARC Administration Guide* based on the version of the virtualization software that is running on the source system. The documentation libraries are available at: <https://docs.oracle.com/en/virtualization/oracle-vm-server-sparc/>

For example:

```
root@SourceControlDomain# ldm set-core 4 primary
root@SourceControlDomain# ldm set-mem 24G primary
```

Related Information

- [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)” on page 85](#)

▼ Prepare the Target System

Use this procedure to ensure that the target system is configured to provide CPU, memory, and storage resources for the incoming guest domain.

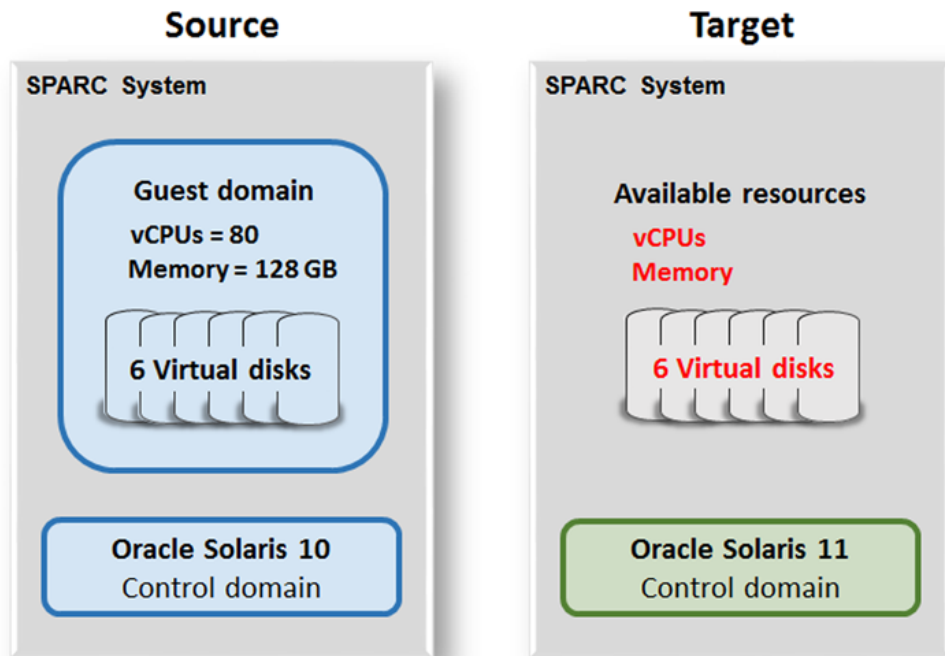
- **CPU Resources** – During the shift, you can assign any amount of CPU resources to the guest domain that are appropriate for the guest domain's workload. However, prior to the lift and shift, you must ensure that those CPU resources are available as described in this procedure.

If you are uncertain about the CPU utilization of the guest domain's workload on the target system, then the target system should provide at minimum the same available CPU and memory resources that the guest domain had on the source system. This conservative approach helps maintain the same or better performance level of the workload after the migration. On the other hand, if the CPU utilization is estimated to be significantly lower for the guest domain on the target system, for example, if the target system has faster CPUs,

then the target system can provide fewer CPU resources to the guest domain. In some cases, using fewer CPU cores reduces software licensing costs.

- **Memory Resources** – By default, the target guest domain is allocated the same amount of memory that it had on the source system. Ensure that there is at least the same amount of memory is available on the target system as described in this procedure.
- **Storage Resources** – The number of available virtual disks and sizes on the target must match what the guest domain has the source system as described in this procedure.

For the lift and shift example in this document, the guest domain is allocated the same amount of resources that it had on the target system, as shown in this diagram.



1. Check the target system's storage capacity.

In this example, the LUNS on the target system's control domain are provisioned with the exact same capacity as in the source system (see [“Obtain Configuration Details from the Source Control Domain” on page 17](#)).

The disks are provisioned in this fashion:

Disk Number	Contents
5, 6	Root disks (rpool)
7, 8	u01 zpool (Oracle binaries)
9, 10	ASM disks

a. Obtain disk names.

In this example, six disk names are displayed as

c0t600144F09F2C0BFD00005A2865A20004d0, c0t600144F09F2C0BFD00005A2865B50005d0, and so on.

```
root@TargetControlDomain# format
Searching for disks...done
```

```

5. c0t600144F09F2C0BFD00005A2865A20004d0 . . .
6. c0t600144F09F2C0BFD00005A2865B50005d0 . . .
7. c0t600144F09F2C0BFD00005A2865C30006d0 . . .
8. c0t600144F09F2C0BFD00005A2865D30007d0 . . .
9. c0t600144F09F2C0BFD00005A2865E20008d0 . . .
10. c0t600144F09F2C0BFD00005A2865F40009d0 . . .
```

```
Specify disk (enter its number): Specify disk (enter its number): CTRL-C
```

b. Display the disk capacities.

The disk topology and capacities must match the disk topology and capacities that the source provided to the guest domain. See [“Obtain Configuration Details from the Source Control Domain” on page 17](#).

You can use the `iostat -En` command with each disk name that was provided in the previous step. For example:

```
iostat -En c0t600144F09F2C0BFD00005A2865A20004d0
```

Repeat for each disk.

Alternatively, in this example, the `iostat` command used in a `for/do` ksh shell script so that sizes are reported for each disk listed in the previous step.

```
root@TargetControlDomain# for d in c0t600144F09F2C0BFD00005A2865A20004d0 \
```

```
c0t600144F09F2C0BFD00005A2865B50005d0 c0t600144F09F2C0BFD00005A2865C30006d0 \
c0t600144F09F2C0BFD00005A2865D30007d0 c0t600144F09F2C0BFD00005A2865E20008d0 \
c0t600144F09F2C0BFD00005A2865F40009d0; do iostat -En $d | egrep "c0|Size" | sed -e
's,d0,*.d0,,'; done
```

```
c0t600144F09F2C0BFD00005A2865A20004d0
Size: 322.12GB <322122547200 bytes>
c0t600144F09F2C0BFD00005A2865B50005d0
Size: 322.12GB <322122547200 bytes>
c0t600144F09F2C0BFD00005A2865C30006d0
Size: 161.06GB <161061273600 bytes>
c0t600144F09F2C0BFD00005A2865D30007d0
Size: 161.06GB <161061273600 bytes>
c0t600144F09F2C0BFD00005A2865E20008d0
Size: 214.75GB <214748364800 bytes>
c0t600144F09F2C0BFD00005A2865F40009d0
Size: 214.75GB <214748364800 bytes>
```

Note that the sizes shown represent the raw whole disk capacity including reserved area. The actual usable sizes are as follows, respectively:

```
c0t600144F09F2C0BFD00005A2865A20004d0 300 GB
c0t600144F09F2C0BFD00005A2865B50005d0 300 GB
c0t600144F09F2C0BFD00005A2865C30006d0 150 GB
c0t600144F09F2C0BFD00005A2865D30007d0 150 GB
c0t600144F09F2C0BFD00005A2865E20008d0 200 GB
c0t600144F09F2C0BFD00005A2865F40009d0 200 GB
```

This example shows that the target system is configured to provide the exact same virtual disks and capacities that the guest domain had on the source system.

c. (If needed) Configure virtual disks for the incoming guest domain.

For information about configuring virtual disks, refer to Using Virtual Disks in the *Oracle VM Server for SPARC 3.5 Administration Guide* at:

https://docs.oracle.com/cd/E80106_01/html/E80109/usingvirtualdiskswithldoms.html

2. Configure CPU and memory resources to support the incoming guest domain.

a. Ensure that the path of the `ovmtdploy` command is in your `PATH` variable.

For example:

```
root@TargetControlDomain# export PATH=$PATH:/opt/ovmtutils/bin
```


b. Determine the amount of resources that are required for the guest domain.

When the `ovmtdeploy` command is used, by default it assigns resources based on what is specified in the archive. You can use the `-l` option to list the contents of the archive without deploying the domain to verify the configuration.

In this example, when the guest domain is moved to the target system, it will have the same CPU and memory resources that it had in the source system, which is 80 vCPUs, and 128 GB of memory.

```
root@TargetControlDomain# ovmtdeploy -l /ovas/solaris10.ova
Oracle VM for SPARC Deployment Utility
ovmtdeploy Version 3.6.0.0.10.2483

STAGE 1 - EXAMINING SYSTEM AND ENVIRONMENT
...
STAGE 2 - ANALYZING ARCHIVE & RESOURCE REQUIREMENTS
-----
...
Virtual machine 1
-----
Name: solaris10
Description: source S10 domain with 80 vCPUs, 128G memory, 6 disk image(s)
vcpu Quantity: 80
Memory Quantity: 128G
Disk image 1: ovf:/disk/devicedisk0 -> devicedisk0
Disk image 2: ovf:/disk/devicedisk1 -> devicedisk1
Disk image 3: ovf:/disk/devicedisk2 -> devicedisk2
Disk image 4: ovf:/disk/devicedisk3 -> devicedisk3
Disk image 5: ovf:/disk/devicedisk4 -> devicedisk4
Disk image 6: ovf:/disk/devicedisk5 -> devicedisk5
Network adapter 1: Ethernet_adapter_0 -> primary-vsw0
source S10 domain:
    name
```

c. List the target system's CPU and memory resources.

If your system has multiple domains, add the vCPU and memory resources for all domains to determine the total allocated resources.

In this example, the target system is set to factory defaults, and all of the resources are currently assigned to the control domain. To make resources available for the guest domain, some resources must be removed from the control domain.

```
root@TargetControlDomain# ldm ls
NAME          STATE    FLAGS    CONS    VCPU    MEMORY    UTIL    NORM    UPTIME
```

```
primary    active    -n-c--    UART      128      260352M    0.3%    0.3%    1d
```

Note that the `ldm ls` command only displays resources that are allocated to domains. If there are unallocated resources, they are not displayed. If you need to identify unallocated resources, run these commands.

- List the number of unallocated cores:

```
# ldm list-devices -p core | grep cid | wc -l
```
- List the unallocated memory (add the values displayed under the size column):

```
# ldm list-devices memory
```

d. Set aside CPU and memory resources for the guest domain.

In this example, the target control domain's resources are reduced to free up resources for the incoming guest domain, while maintaining an optimal amount of resources to continue providing services.

```
root@TargetControlDomain# ldm set-core 2 primary
root@TargetControlDomain# ldm set-mem 32G primary
```

3. Save the new logical domain resource configuration.

This ensures that the configuration is saved and used after a power cycle. If it isn't saved, the configuration is lost after a power cycle.

a. Add a logical domain configuration to the service processor.

```
root@TargetControlDomain# ldm add-spconfig solaris10config
```

b. Check the current logical domain configuration on the service processor.

In this example, the output shows that the newly created `solaris10config` configuration will become active after the next power cycle.

```
root@TargetControlDomain# ldm ls-spconfig

factory-default
solaris10config [next poweron]
```

c. Power cycle the target system.

- i. Log in to the service processor (SP) as the SP admin or root user.**

ii. Stop the system:

```
-> stop /SYS
```

iii. After the system is completely stopped, start the system:

```
→ start /SYS
```

The system takes a few minutes to initialize the new SP configuration and boot the OS.

4. After the system boots, log in and check the SP configuration.

Ensure that the new configuration is the current configuration.

```
root@TargetControlDomain# ldm ls-spconfig
```

```
factory-default
solaris10config [current]
```

5. Verify the CPU and memory configuration.

In this example, the output shows that the control domain has reduced resources. Unallocated resources are now available to be allocated to the incoming guest domain.

```
root@TargetControlDomain# ldm ls
```

NAME	STATE	FLAGS	CONS	VCPU	MEMORY	UTIL	NORM	UPTIME
primary	active	-n-cv-	UART	16	32G	0.7%	0.7%	1m

Related Information

- [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)” on page 85](#)

▼ Prepare a Shared Storage Location for the Archive

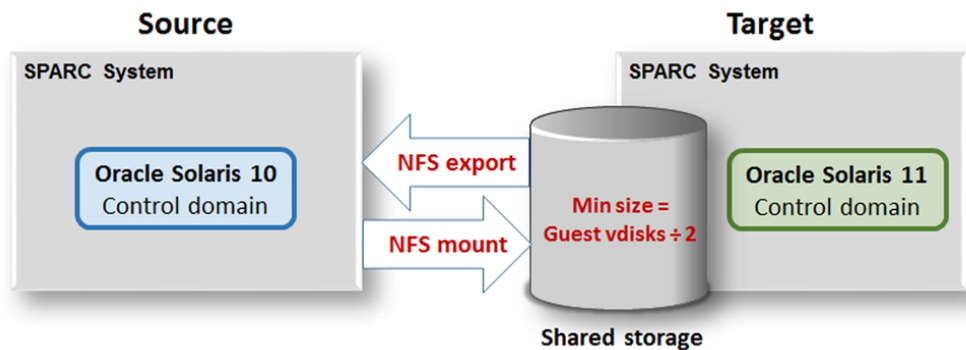
This procedure establishes shared storage where the source archive will be created.

Note - If you plan to use the alternate method to only include a subset of virtual disks in the archive, do not follow this procedure. Instead, perform [“Prepare Shared Storage \(Alternate Method\)” on page 87](#).

The storage must meet these requirements:

- **Shared storage** – The location must be accessible to the source system and the target system. The archive is usually large. Using storage that is shared between the source and control systems avoids having to copy the file across the network to the source system.
- **Sufficient storage space** – The shared storage must have enough available storage space to store the source archive. The file is usually very large (97 GB in this example). The archive will contain compressed versions of the guest domain's virtual disks. As a best practice, ensure that the minimum shared storage space is equal to the guest domain's virtual disk storage, divided by 2.

In this example, the shared storage is created on the target system and exported using NFS. From the source system, the file system is mounted.



1. **Ensure that there is enough available storage capacity on the file system you plan to use for the archive.**
 - a. **Calculate the space needed to create the archive.**

Take the guest domain's total virtual disk size (obtained in [“Obtain Configuration Details from the Source Control Domain” on page 17](#)) and divide by two. This calculation takes into account that the disk images will be compressed in the archive file, yet is conservative enough to ensure adequate storage space for the archive file.

For this example scenario, this calculation is made (numbers are rounded):

$$1396 \text{ GB} \div 2 \approx 700 \text{ GB}$$
 - b. **Identify available storage in the target system control domain, such as a data zpool, as in this example, vpool.**

The command output shows that there is 1006 GB available storage capacity, which is sufficient space to contain the archive for this example scenario.

```
root@TargetControlDomain# zpool list vpool
NAME      SIZE      ALLOC    FREE    CAP    DEDUP    HEALTH  ALTROOT
vpool    1.09T    24M     1006G    1%     1.00x    ONLINE  -
```

c. (If needed) Add storage space to accommodate the storage space requirements.

2. On the target control domain, create and export a file system for the source archive.

```
root@TargetControlDomain# zfs create -o mountpoint=/ovas vpool/ovas
root@TargetControlDomain# zfs set share.nfs=on vpool/ovas
root@TargetControlDomain# zfs set share.nfs.root=\* vpool/ovas
root@TargetControlDomain# zfs set share.nfs.rw=\* vpool/ovas
root@TargetControlDomain# exportfs
vpool_ovas      /ovas      sec=sys,root,rw
```

3. On the source control domain, create a mount point for the shared storage, and mount the shared storage.

```
root@SourceControlDomain# mkdir /ovas
root@SourceControlDomain# mount TargetControlDomain:/ovas /ovas
```

4. On the source control domain, confirm that the shared storage is mounted and accessible.

```
root@SourceControlDomain# df -h /ovas
Filesystem                size      used    avail capacity Mounted on
TargetControlDomain:/ovas  1.1T      24M     1006G      1%    /ovas
```

```
root@SourceControlDomain# ls -al /ovas
total 2097436
drwxr-xr-x  3   root   root    4   Feb 12 13:36 .
drwxr-xr-x 42   root   root   55   Feb 13 10:35 ..
```

5. Go to the next set of tasks.

See [“Lifting and Shifting the Guest Domain” on page 47](#).

Lifting and Shifting the Guest Domain

These topics describe how to create the archive of the source guest domain and then deploy the guest domain on the target system:

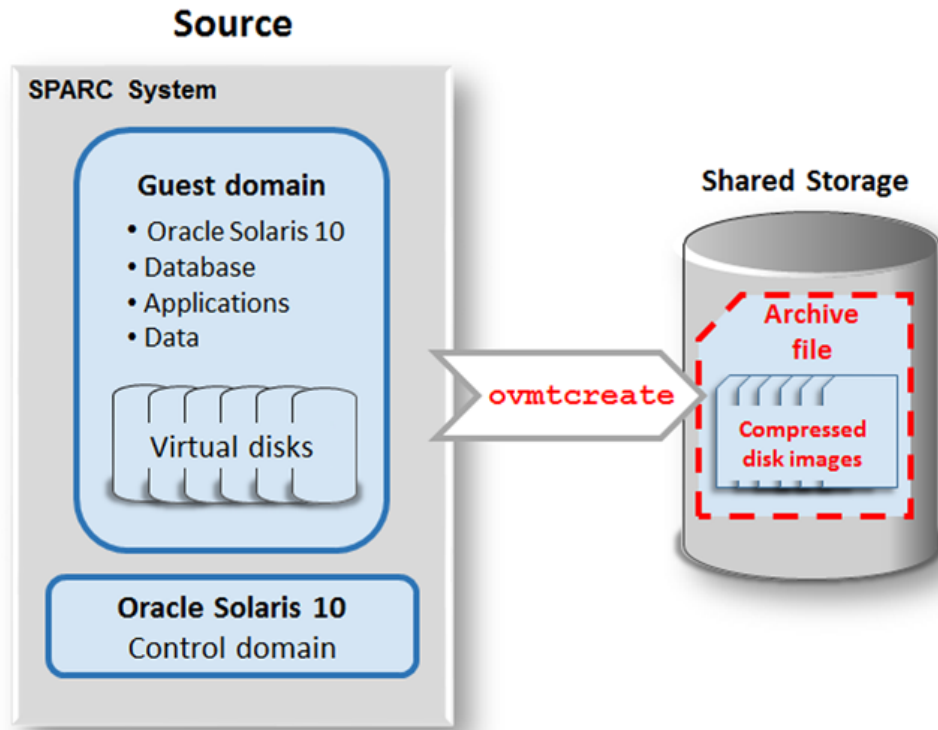
- [“Create the Archive of the Source Guest Domain” on page 47](#)
- [“Deploy the Guest Domain on the Target System” on page 51](#)
- [“\(If Needed\) Undo the Deployment” on page 55](#)

▼ Create the Archive of the Source Guest Domain

Once you have prepared the source system, target system, and shared storage (see [“Preparing the Source, Target, and Shared Storage” on page 35](#)), you can create the source system archive.

Note - If you plan to use the alternate method to only include a subset of virtual disks in the archive, do not follow this procedure. Instead, perform [“Create the Source Archive \(Alternate Method\)” on page 88](#).

This procedure creates an archive file on the shared storage. The archive file contains compressed versions of all of the source guest domain's virtual disks and configuration files.



1. **Ensure that the latest version of patch 151934 is installed on the source system.**

The latest patch is required so that the source system has the latest versions of OVMT utilities (see [“Prepare the Source System” on page 35](#)).

```
root@SourceControlDomain# showrev -p | grep 151934
Patch: 151934-06 Obsoletes: Requires: Incompatibles: Packages: SUNWldmib, SUNWldm
```

2. **On the source system, login as the Oracle user and shutdown the Oracle environment including the database, any applications, third party products, and so on.**

This example is of an Oracle restart environment, so the `crsctl` command is used.

Note – It is a good practice to perform this step to avoid any application related errors on the target after the deployment. After the deployment, `crsctl` can be used to restart and enable the high availability components.

```
$ crsctl stop has
$ crsctl disable has
```

3. Stop the source guest domain.

This step is important because the `ovmtcreate` utility requires the Oracle Solaris 10 domain to be in a bound state.

```
root@SourceControlDomain# ldm stop solaris10
```

4. Create the archive of the source guest domain.

Use the `ovmtcreate` command that was obtained from patch 151934 (see [“Prepare the Source System” on page 35](#)).

The `ovmtcreate` command examines the topology of a logical domain to create an archive, which is in the form of an OVF archive (.ova file).

Run this command as superuser on the source control domain.

Not all `ovmtcreate` options are listed here. For more information about `ovmtcreate`, refer to the [ovmtcreate \(1M\) man page](#).

Syntax

```
/opt/SUNWldm/lib/contrib/ovmtcreate -d GuestDomain -w Working_Directory -o Archive_File_on_Shared_Storage -s "Description"
```

Where:

- `-d GuestDomain` – The name of your guest domain.
- `-w Working_Directory` – The full path to the working directory that you prepared in [“Prepare the Source System” on page 35](#).
- `-o Archive_File_on_Shared_Storage` – The full path name of the location that you prepared in [“Prepare a Shared Storage Location for the Archive” on page 43](#).
- `-s Description` – A short description of the archive.

Note – For Oracle Solaris 10, the full path to the command is `/opt/SUNWldm/lib/contrib/ovmtcreate`.

```
root@SourceControlDomain# ovmtcreate -d solaris10 -w /WorkingDirectory -o /ovas/solaris10.ova -s "source S10 domain"
```

```
Oracle VM for SPARC Template Creation Utility
ovmtcreate      Version:  on10-patch20171108123131
```

STAGE 1 - EXAMINING SYSTEM AND ENVIRONMENT

```
-----
Performing platform & prerequisite checks
Checking user permissions
Checking for required packages
Checking for required services
Checking directory permissions
```

STAGE 2 - ANALYZING DOMAIN

```
-----
Retrieving and processing attributes
Checking domain state
Getting domain resource settings
Discovering network topology
Discovering disk topology
```

STAGE 3 - ARCHIVE CREATION

```
-----
Checking destination and current directory capacity
Processing disk images 1 of 6
Processing disk images 2 of 6
Processing disk images 3 of 6
Processing disk images 4 of 6
Processing disk images 5 of 6
Processing disk images 6 of 6
Creating XML configuration
Calculating manifest checksums
Creating archive file
Checking archive
```

PROCESS COMPLETED

```
-----
Started: Tue Feb 13 15:34:10 PST 2018
Completed: Tue Feb 13 22:15:06 PST 2018
Elapsed time: 6:40:56
```

5. Verify the creation of the source archive.

```
root@SourceControlDomain# Shared_Location# ls -rtlh *.ova
-rw-r--r--  1 root      97G Feb 13 22:15 solaris10.ova
```

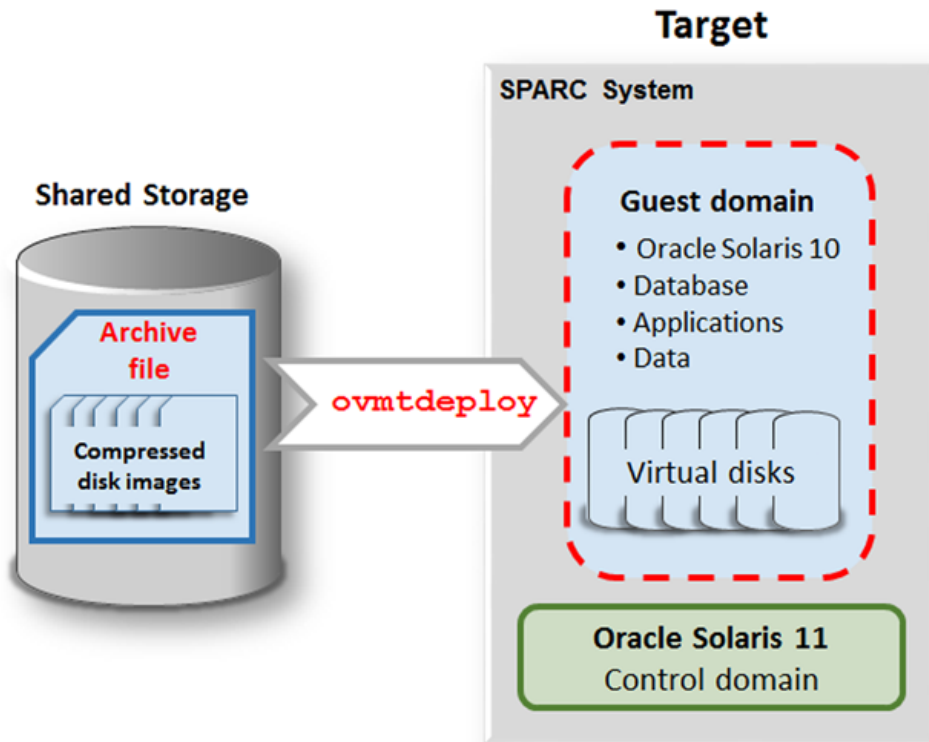
6. (If needed) Reconfigure the source system's CPU and memory resources to their original values.

Perform this step if you changed the CPU and memory resources in [“Prepare the Source System”](#) on page 35.

▼ Deploy the Guest Domain on the Target System

This procedure uses the `ovmtdploy` command to deploy the guest domain on the target system using the archive.

Note - If you plan to use the alternate method to only include a subset of virtual disks in the archive, do not follow this procedure. Instead, perform [“Deploy the Guest Domain on the Target System \(Alternate Method\)”](#) on page 91.



1. Ensure that the source archive file (.ova) is available in the shared storage.

See [“Prepare a Shared Storage Location for the Archive” on page 43.](#)

```
root@TargetControlDomain:Shared_Storage# ls -rlth
-rw-r--r--  1 root    root          97G Feb 13 22:15 solaris10.ova
```

2. Deploy the guest domain on the target system.

The `ovmtdeploy` command reads the contents of the `.ova` archive and creates an operational logical domain.

Syntax

```
/opt/ovmtutils/bin/ovmtdeploy -d GuestDomain -t Virtual_Switch -E Virtual_Network
-C Comma_Separated_Cores -v Comma_Separated_Target_Devices Shared_Storage
```

Where:

- `-d GuestDomain` – The name of your guest domain.
- `-t Virtual_Switch` – The virtual switch.
- `-E Virtual_Network` – The virtual network.
- `-C Comma_Separated_Cores` – A comma separated number or range of cores (for example, `-C 4,5,8-16`). If this option is omitted, the guest domain is assigned the same number of cores that the guest domain had on the source system.
- `-v Comma_Separated_Target_Devices` – The target storage devices for the guest domain.
Important –The disk names are provided in a comma separated list. The disks must be listed with the exact same disks and corresponding capacities and in the same order as they were listed on the source system. See [“Obtain Configuration Details from the Source Control Domain” on page 17.](#)
- `Shared_Storage` – The pathname to the `.ova` archive file on the shared storage location.

Note – For Oracle Solaris 11, the full path to the command is `/opt/ovmtutils/bin/ovmtdeploy`.

Note - If something goes wrong, you can undo the deployment. See [“\(If Needed\) Undo the Deployment” on page 55.](#)

Example A – Deploying a Guest Domain with Default CPU and Memory Resources

In this example, the `cores` option (`-C`) is omitted so that the deployed guest domain is assigned CPU and memory resources based on what is specified in the archive. The result is that the guest domain is deployed with the same resources that it had on the source system.

A deployment of the 97 GB example `.ova` file took approximately 2.5 hours to complete.

The following command line is shown in multiple lines for readability, but is entered on one line.

```
root@TargetControlDomain:/ovas# ovmtdeploy -d solaris10 -t primary-vsw0 -E vnet0 -v
/dev/rdisk/c0t600144F09F2C0BFD00005A2865A20004d0s2,/dev/rdisk/
c0t600144F09F2C0BFD00005A2865B50005d0s2,
/dev/rdisk/c0t600144F09F2C0BFD00005A2865C30006d0s2,/dev/rdisk/
c0t600144F09F2C0BFD00005A2865D30007d0s2,
/dev/rdisk/c0t600144F09F2C0BFD00005A2865E20008d0s2,/dev/rdisk/
c0t600144F09F2C0BFD00005A2865F40009d0s2
/ovas/solaris10.ova
```

Oracle VM for SPARC Deployment Utility

ovmtdeploy Version 3.5.0.2.1

STAGE 1 - EXAMINING SYSTEM AND ENVIRONMENT

Checking user privileg
Performing platform & prerequisite checks
Checking for required services
Named resources available

STAGE 2 - ANALYZING ARCHIVE & RESOURCE REQUIREMENTS

Checking .ova format and contents
Validating archive configuration
Checking sufficient resources present

STAGE 3 - EXTRACTING ARCHIVE

Extracting archive
Validating checksums
Decompressing disk image(s)
Disk /dev/rdisk/c0t600144F09F2C0BFD00005A2865A20004d0s2 was automatically
expanded to use entire device

Decompressing disk image(s)
Disk /dev/rdisk/c0t600144F09F2C0BFD00005A2865B50005d0s2 was automatically
expanded to use entire device

Decompressing disk image(s)
Disk /dev/rdisk/c0t600144F09F2C0BFD00005A2865C30006d0s2 was automatically
expanded to use entire device

```
Decompressing disk image(s)
Disk /dev/rdisk/c0t600144F09F2C0BFD00005A2865D30007d0s2 was automatically
expanded to use entire device
```

```
Decompressing disk image(s)
Disk /dev/rdisk/c0t600144F09F2C0BFD00005A2865E20008d0s2 was automatically
expanded to use entire device
```

```
Decompressing disk image(s)
Disk /dev/rdisk/c0t600144F09F2C0BFD00005A2865F40009d0s2 was automatically
expanded to use entire device
```

```
STAGE 4 - DEPLOYING DOMAIN
-----
```

```
Creating domain and adding resources
Validating deployment
```

Example B – Deploying a Guest Domain While Specifying the Number of Cores

In this example, the target control domain's cores are listed to see what cores are available. Then the core option (-C) is used to specify the number of cores to assign to the guest domain. In this example, the deployed guest domain is assigned 8 cores instead of the 10 cores that it had on the source system.

The second command line is shown in multiple lines for readability, but is entered on one line.

```
root@TargetControlDomain# ldm ls-devices core
CORE
  ID      %FREE  CPUSSET
  8        100   (64, 65, 66, 67, 68, 69, 70, 71)
  9        100   (72, 73, 74, 75, 76, 77, 78, 79)
  10       100   (80, 81, 82, 83, 84, 85, 86, 87)
  11       100   (88, 89, 90, 91, 92, 93, 94, 95)
  64       100   (512, 513, 514, 515, 516, 517, 518, 519)
  65       100   (520, 521, 522, 523, 524, 525, 526, 527)
  66       100   (528, 529, 530, 531, 532, 533, 534, 535)
  67       100   (536, 537, 538, 539, 540, 541, 542, 543)
  72       100   (576, 577, 578, 579, 580, 581, 582, 583)
  73       100   (584, 585, 586, 587, 588, 589, 590, 591)
  74       100   (592, 593, 594, 595, 596, 597, 598, 599)
  75       100   (600, 601, 602, 603, 604, 605, 606, 607)

root@TargetControlDomain# ovmtdeploy -d solaris10 -C 64-67,72-75 -t primary-vsw0 -E
vnet0
-v /dev/rdisk/c0t600144F09F2C0BFD00005A2865A20004d0s2,/dev/rdisk/
c0t600144F09F2C0BFD00005A2865B50005d0s2,
```

```
/dev/rdisk/c0t600144F09F2C0BFD00005A2865C30006d0s2,/dev/rdisk/  
c0t600144F09F2C0BFD00005A2865D30007d0s2,  
/dev/rdisk/c0t600144F09F2C0BFD00005A2865E20008d0s2,/dev/rdisk/  
c0t600144F09F2C0BFD00005A2865F40009d0s2  
/ovas/solaris10.ova  
. . .
```

3. Consider your next action:

- Complete the lift and shift. See [“Reviewing and Reconfiguring the Shifted Guest Domain” on page 57](#).
- Something is not correct with the deployment. See [“\(If Needed\) Undo the Deployment” on page 55](#).

▼ (If Needed) Undo the Deployment

In the event that the deployment is unsatisfactory, you can undo the deployment with this procedure.

● **Undo the guest domain deployment.**

Syntax

```
/opt/ovmtutils/bin/ovmtdeploy -U GuestDomain
```

Where *GuestDomain* – is the name of the guest domain to undeploy.

Example

```
root@TargetControlDomain# /opt/SUNWldm/lib/contrib/ovmtdeploy -U solaris10
```


Reviewing and Reconfiguring the Shifted Guest Domain

These topics describe how to review the newly deployed guest domain, and how to reconfigure the guest domain so it functions in the new environment:

- [“Review the Target Control Domain Services” on page 57](#)
- [“Review the Target Guest Domain Services” on page 61](#)
- [“Reconfigure the Target Guest Domain” on page 64](#)
- [“Configure Guest Domain Database Components” on page 70](#)
- [“Collect Performance Data on the Target System” on page 81](#)
- [“Perform Assurance Tests and Release the Guest Domain into Production” on page 83](#)

▼ Review the Target Control Domain Services

Use this procedure to verify that the target system recognizes the shifted guest domain

1. **On the control domain, list the logical domains.**

In this example, the new solaris10 guest domain is listed.

```
root@TargetControlDomain# ldm ls
```

NAME	STATE	FLAGS	CONS	VCPU	MEMORY	UTIL	NORM	UPTIME
primary	active	-n-cv-	UART	16	32G	0.1%	0.1%	15d 15h 47m
solaris10	active	-n----	5001	80	128G	0.0%	0.0%	1h 16m

2. **List the logical domain services.**

```
root@TargetControlDomain# ldm ls-services
```

VCC

NAME	LDOM	PORT-RANGE
ovmt-vcc0	primary	5001-5100

VSW

NAME	LDOM	MACADDRESS	NET-DEV	DVID PVID VIDS
------	------	------------	---------	--------------------

```

-----
primary-vsw0 primary      01:00:5E:90:10:72  aggr0      1|1|--

VDS
NAME          LDOM      VOLUME          OPTIONS  MPGROUP  DEVICE
ovmt-vds0     primary   solaris10-vol0   /dev/rdisk/
c0t600144F09F2C0BFD00005A2865A20004d0s2
solaris10-vol1   /dev/rdisk/
c0t600144F09F2C0BFD00005A2865B50005d0s2
solaris10-vol2   /dev/rdisk/
c0t600144F09F2C0BFD00005A2865C30006d0s2
solaris10-vol3   /dev/rdisk/
c0t600144F09F2C0BFD00005A2865D30007d0s2
solaris10-vol4   /dev/rdisk/
c0t600144F09F2C0BFD00005A2865E20008d0s2
solaris10-vol5   /dev/rdisk/
c0t600144F09F2C0BFD00005A2865F40009d0s2

```

3. List the target system's network information.

```
root@TargetControlDomain# ldm ls -o net
```

```
NAME
primary
```

```
MAC
01:00:5E:90:10:e6
```

```

VSW
NAME          MACADDRESS          NET-DEV  DVID|PVID|VIDs
-----
primary-vsw0  01:00:5E:90:10:72  aggr0    1|1|--
DEVICE        :switch@0          ID       :0
LINKPROP      :phys-state        MTU      :1500
INTER-VNET-LINK :on/auto          MODE     :--
VSW-RELAY-MODE :local

```

```
-----
NAME
solaris10
```

```
MAC
01:00:5E:90:10:3b
```

```

NETWORK
NAME          SERVICE          MACADDRESS          PVID|PVLAN|VIDs
-----
vnet0         primary-vsw0@primary  01:00:5E:90:10:da  1|--|--

```

```

DEVICE      :network@0      ID      :0
LINKPROP    :--             MTU      :1500
MAXBW       :--             MODE     :--
CUSTOM      :disable
PRIORITY    :--             COS      :--
PROTECTION  :--

```

4. Check target guest domain's virtual disk configuration.

a. List the target system's virtual disk information.

The number of virtual disks and the disk IDs assigned to each of the guest domain's disk devices must match the source guest domain's configuration (obtained in [“Obtain Configuration Details from the Source Control Domain” on page 17](#)).

In this example, the guest domain (solaris10) number of disks, disk devices and ID assignments match the source guest domain configuration.

```
root@TargetControlDomain# ldm ls -o disk
```

```
NAME
```

```
primary
```

```
VDS
```

NAME	VOLUME	OPTIONS	MPGROUP	DEVICE
ovmt-vds0	solaris10-vol0			/dev/rdisk/
c0t600144F09F2C0BFD00005A2865A20004d0s2				
	solaris10-vol1			/dev/rdisk/
c0t600144F09F2C0BFD00005A2865B50005d0s2				
	solaris10-vol2			/dev/rdisk/
c0t600144F09F2C0BFD00005A2865C30006d0s2				
	solaris10-vol3			/dev/rdisk/
c0t600144F09F2C0BFD00005A2865D30007d0s2				
	solaris10-vol4			/dev/rdisk/
c0t600144F09F2C0BFD00005A2865E20008d0s2				
	solaris10-vol5			/dev/rdisk/
c0t600144F09F2C0BFD00005A2865F40009d0s2				

```
-----
NAME
```

```
solaris10
```

```
DISK
```

NAME	VOLUME	TOUT ID	DEVICE	SERVER	MPGROUP
vdisk0	solaris10-vol0@ovmt-vds0	0	disk@0	primary	
vdisk1	solaris10-vol1@ovmt-vds0	1	disk@1	primary	
vdisk2	solaris10-vol2@ovmt-vds0	2	disk@2	primary	
vdisk3	solaris10-vol3@ovmt-vds0	3	disk@3	primary	
vdisk4	solaris10-vol4@ovmt-vds0	4	disk@4	primary	

```
vdisk5          solaris10-vol5@ovmt-vds0      5      disk@5  primary
```

- b. If there is a mismatch, correct the ID assignments by removing and reattaching each non-matching virtual disk.

- i. Stop the guest domain.

```
# ldm stop-domain guest_domain_name
```

- ii. Run these commands for each virtual disk that requires an ID reassignment.

```
# ldm rm-vdisk vdisk_name target_guest_domain
```

```
# ldm add-vdisk id=ID vdisk_name volumename
```

- iii. Start the guest domain.

```
# ldm start-domain guest_domain_name
```

5. List the target system's CPU resources.

```
root@TargetControlDomain# ldm ls -o core
```

NAME

primary

CORE

CID	CPUSET
0	(0, 1, 2, 3, 4, 5, 6, 7)
1	(8, 9, 10, 11, 12, 13, 14, 15)

NAME

solaris10

CORE

CID	CPUSET
2	(16, 17, 18, 19, 20, 21, 22, 23)
3	(24, 25, 26, 27, 28, 29, 30, 31)
64	(512, 513, 514, 515, 516, 517, 518, 519)
65	(520, 521, 522, 523, 524, 525, 526, 527)
66	(528, 529, 530, 531, 532, 533, 534, 535)
67	(536, 537, 538, 539, 540, 541, 542, 543)
72	(576, 577, 578, 579, 580, 581, 582, 583)
73	(584, 585, 586, 587, 588, 589, 590, 591)
74	(592, 593, 594, 595, 596, 597, 598, 599)
75	(600, 601, 602, 603, 604, 605, 606, 607)

6. List the control domain's data links.

```
root@TargetControlDomain# dladm show-link
```

LINK	CLASS	MTU	STATE	OVER
net3	phys	1500	down	--
net4	phys	1500	up	--
net1	phys	1500	down	--
net2	phys	1500	up	--
net0	phys	1500	up	--
aggr0	aggr	1500	up	net0 net2
net6	phys	1500	up	--
ldoms-vsw0.vport0	vnic	1500	up	aggr0

<<<<< This link will be used by the guest domain (solaris10)

▼ Review the Target Guest Domain Services

Use this procedure to review the newly created target guest domain.

1. Log into the new guest domain on the target system.

Note - For the commands that are performed on the target guest domain, the prompt displays the name of the source guest domain, because the guest domain still has the original configuration from the source system.

In this example, the `listen_addr` property of the SMF service `svc:/ldoms/vntsd` is set to the default of `localhost`, so `localhost` is used with the `telnet` command. If your `listen_addr` is set to something different, specify the host name accordingly.

```
root@TargetControlDomain# telnet localhost 5001
```

```
Trying TargetGuestDomain_IP_Address...
Connected to TargetControlDomain.
Escape character is '^]'.
Connecting to console "solaris10" in group "solaris10" ....
Press ~? for control options ..
TargetGuestDomain console login: root
Password:
Last login: Tue Feb 13 09:50:01 on console
Oracle Corporation      SunOS 5.10      Generic Patch   January 2005
```

You might see these types of messages on the console. The messages are expected because Database (ASM) environment on the source was disabled before the start of the archive process. Subsequent steps enable the database (ASM) services.

```
WARNING: pool 'u01' could not be loaded as it was last accessed by another system (host:
SourceGuestDomain hostid: 0x00fbb157)
Not waiting for filesystem containing /u01/app/oracle1/product/12.1.0/grid/bin/crsctl
because Oracle HA daemon is not enabled.
root: Oracle Cluster Ready Services startup disabled.
root: Could not access /var/opt/oracle/scls_scr/SourceGuestDomain/oracle1/ohasdstr.
```

2. List the guest domain's ZFS storage pools.

In this example, the zpool u01 hosting the database/asm is not listed. This is expected, because the ovmtdeploy process only mounts the root disk (rpool).

This example is performed on the target guest domain.

```
SourceGuestDomain:/# zpool list
NAME      SIZE  ALLOC   FREE   CAP  HEALTH  ALTROOT
rpool    298G   39.2G   259G   13%  ONLINE  -
```

3. Check the status of the ZFS storage pool.

```
SourceGuestDomain:/# zpool status
pool: rpool
state: ONLINE
scan: resilvered 9.71M in 0h0m with 0 errors on Fri Feb 14 18:56:07 2018
config:
```

NAME	STATE	READ	WRITE	CKSUM
rpool	ONLINE	0	0	0
mirror-0	ONLINE	0	0	0
c0d0s0	ONLINE	0	0	0
c0d1s0	ONLINE	0	0	0

4. List the guest domain's disks.

```
SourceGuestDomain:/# format
```

```
Searching for disks...done
```

```
AVAILABLE DISK SELECTIONS:
```

```
0. c0d0 <SUN-ZFSSStorage7420-1.0 cyl 9749 alt 2 hd 254 sec 254>
   /virtual-devices@100/channel-devices@200/disk@0
1. c0d1 <SUN-ZFSSStorage7420-1.0 cyl 9749 alt 2 hd 254 sec 254>
```

```

/virtual-devices@100/channel-devices@200/disk@1
2. c0d2 <SUN-ZFS Storage 7355-1.0-150.00GB>
/virtual-devices@100/channel-devices@200/disk@2
3. c0d3 <SUN-ZFS Storage 7355-1.0-150.00GB>
/virtual-devices@100/channel-devices@200/disk@3
4. c0d4 <SUN-ZFS Storage 7355-1.0-200.00GB>
/virtual-devices@100/channel-devices@200/disk@4
5. c0d5 <SUN-ZFS Storage 7355-1.0-200.00GB>
/virtual-devices@100/channel-devices@200/disk@5
Specify disk (enter its number): CTRL-C

```

5. Check the state of the u01 pool.

In this example, the u01 pool is online, indicating that the database/ASM can be enabled. This example verifies that the target guest domain recognizes the u01 pool.

Note - The other 2 disks (c0d4 and c0d5) are for the ASM, and are usable in an ASM disk group only after the ASM is started.

```
SourceGuestDomain:/# zpool import
```

```

pool: u01
  id: 7027624999306136701
  state: ONLINE
  status: The pool was last accessed by another system.
  action: The pool can be imported using its name or numeric identifier and
         the '-f' flag.
  see: http://www.sun.com/msg/ZFS-8000-EY
config:
  u01          ONLINE
  mirror-0     ONLINE
    c0d2       ONLINE
    c0d3       ONLINE

```

6. Check the guest domain's network topology.

In this example, the IP address under the Gateway column indicates that the network topology has been copied as-is from the source environment.

```
SourceGuestDomain:/# netstat -rn
```

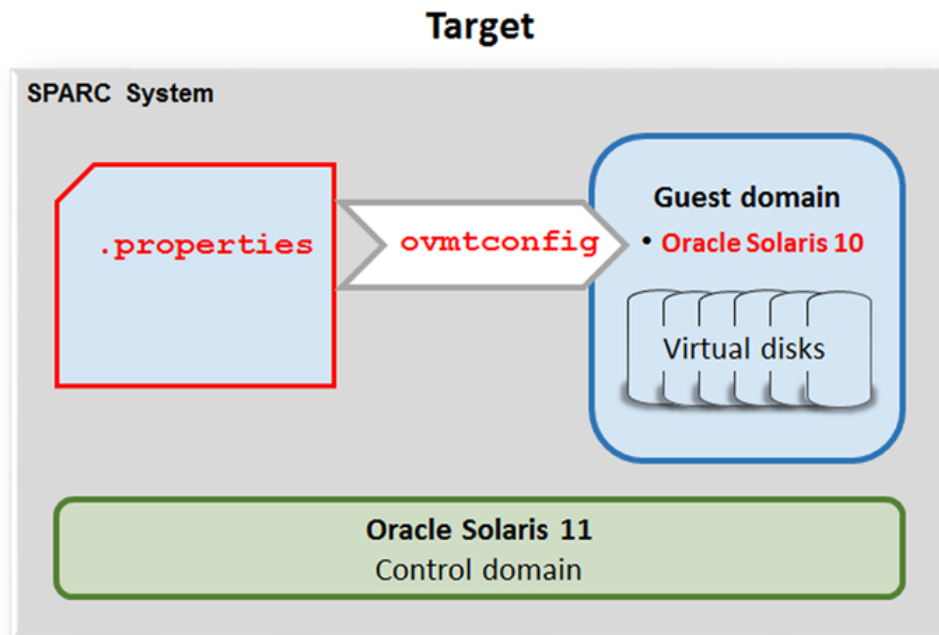
Routing Table: IPv4					
Destination	Gateway	Flags	Ref	Use	Interface
default	192.0.2.1	UG	1	582	
192.0.2.0	192.0.2.100	U	1	130	vnet0
224.0.0.0	192.0.2.100	U	1	0	vnet0

```
127.0.0.1      127.0.0.1      UH      4      81    lo0
```

The target system is on different subnet than the source system, therefore the guest domain must be reconfigured. See [“Reconfigure the Target Guest Domain” on page 64](#).

▼ Reconfigure the Target Guest Domain

This procedure first unconfigures the guest domain, then uses the `ovmtconfig` utility to configure the domain with the correct parameters.



1. **On the control target domain, prepare configuration files for the `ovmtconfig` utility.**

The `ovmtconfig` utility requires a configuration properties file that provides the guest domain configuration parameters. The `solaris.properties` file is available in the `/opt/ovmtutils/share/props` directory.

- a. **Make a copy of the `solaris.properties` file to use for the guest domain's configuration properties file.**

```
root@TargetControlDomain# cp -ip /opt/ovmtutils/share/props/solaris.properties
/var/tmp/solaris10.props
```

- b. **Edit the file and enter the parameters that are appropriate for the guest domain.**

In this example, the `solaris10.props` file was modified with these parameters.

```
root@TargetControlDomain# cat /var/tmp/solaris10.props

com.oracle.solaris.system.computer-name=TargetGuestDomain
com.oracle.solaris.system.time-zone=US/Pacific
com.oracle.solaris.root-password=GuestDomain_root_Password
com.oracle.solaris.system.ifname=net0
com.oracle.solaris.network.ipaddr.0=New_Subnet_IP_Address
com.oracle.solaris.network.netmask.0=255.255.254.0
com.oracle.solaris.network.gateway.0=New_Subnet_Gateway
com.oracle.solaris.network.dns-servers.0="203.0.113.4,203.0.113.8,203.0.113.12"
com.oracle.solaris.network.dns-search-domains.0="example1.com,example2.com,example3.com"
com.oracle.solaris.network.name-service=none
```

- c. **Copy and modify the `ovmt_s10_sysidcfg.sh` script.**

The `ovmt_s10_sysidcfg.sh` script is used by the `ovmtconfig` utility to configure an Oracle Solaris 10 domain based on property values.



Caution - The default script resets the `/export/home` file system in the guest domain. This action deletes all the potential local home directories of users that existed on the source system. If no users have their home directories in the guest domain (for example, home directories are provided by NFS servers), then there is no need to modify this script.

In this example, the database admin user has a local home directory that must be preserved, therefore the script must be modified.

The `sed` command is used to copy and comment out the `resetZFS` line in the file: Then the permissions are changed to enable the execution permission.

```
root@TargetControlDomain# sed -e 's, resetZFS, #resetZFS,' /opt/ovmtutils/share/
scripts/ovmt_s10_sysidcfg.sh > /var/tmp/ovmt_s10_sysidcfg.sh

root@TargetControlDomain# chmod a+rx /var/tmp/ovmt_s10_sysidcfg.sh
```

2. Login to the target guest domain as superuser.

3. Unconfigure the guest domain.

The `sys-unconfig` command resets a system's configuration so that it is ready to be reconfigured. The system's configuration consists of the hostname, Network Information Service (NIS) domain name, timezone, IP address, IP subnet mask, and root password. For more information, refer to the [sys-unconfig\(1M\) man page](#).

Note - For the commands in the procedure that are performed on the target guest domain, the prompt displays the name of the source domain until the guest domain is reconfigured with the `ovmtconfig` command.

```
SourceGuestDomain:/# sys-unconfig
```

```
WARNING
```

```
This program will unconfigure your system. It will cause it
to revert to a "blank" system - it will not have a name or know
about other systems or networks.
```

```
This program will also halt the system.
```

```
Do you want to continue (y/n) ? y
svc.startd: The system is coming down. Please wait.
svc.startd: 104 system services are now being stopped.
Feb 27 05:25:54 SourceGuestDomain last message repeated 1 time
Feb 27 05:26:45 SourceGuestDomain syslogd: going down on signal 15
svc.startd: The system is down.
syncing file systems... done
Program terminated
NOTICE: Entering OpenBoot.
NOTICE: Fetching Guest MD from HV.
NOTICE: Starting additional cpus.
NOTICE: Initializing LDC services.
NOTICE: Probing PCI devices.
NOTICE: Finished PCI probing.

SPARC S7-2 / OPCSLSCS, No Keyboard
Copyright (c) 1998, 2016, Oracle and/or its affiliates. All rights reserved.
OpenBoot 4.40.3, 128.0000 GB memory installed, Serial #83527483.
Ethernet address 01:00:5E:90:10:3b, Host ID: 000a873b.
{0} ok
```

4. Log into the target control domain as superuser and stop the guest domain.

```
root@TargetControlDomain# ldm ls
NAME          STATE    FLAGS    CONS    VCPU  MEMORY  UTIL  NORM  UPTIME
primary       active   -n-cv-   UART    16    32G     0.1%  0.1%  15d 15h 59m
solaris10     active   -t----   5001    80    128G     0.0%  0.0%  2m

root@TargetControlDomain# ldm stop solaris10
Remote graceful shutdown or reboot capability is not available on solaris10
LDom solaris10 stopped
```

5. Reconfigure the guest domain.

Use the ovmtconfig command.

Syntax

```
/opt/ovmtutils/bin/ovmtconfig -d domain_name -c command -v -P
properties_filename
```

where:

- *domain_name* – is the guest domain's name.
- *command* – is the full path name of the ovmt_s10_sysidcfg.sh script.
- -v – Creates logical domain properties from consolidated properties.
- *properties_filename* – is the full path name of the properties file.

Note – For Oracle Solaris 11, the full path to the command is /opt/ovmtutils/bin/ovmtconfig.

Example:

```
root@TargetControlDomain# ovmtconfig -d solaris10 -c /var/tmp/ovmt_s10_sysidcfg.sh -v -
P /var/tmp/solaris10.props
```

```
Oracle VM for SPARC Configuration Utility
ovmtconfig          Version: 3.5.0.0.31
```

```
STAGE 1/7 - EXAMINING SYSTEM AND ENVIRONMENT
```

```
-----
```

```
Checking user permissions
Checking packages
Checking host domain name
Checking host domain type
Checking services
```

```
STAGE 2/7 - PROCESSING COMMAND LINE OPTIONS
```

```
-----
```

```

Parsing properties files
Creating consolidated properties list
Checking command actions

STAGE 3/7 - ANALYZING TARGET DOMAIN
-----
Analyzing domain disk topology for domain solaris10
Discovering 1 volumes for vDisks
Examining 1 backend devices
unbinding domain solaris10
Creating 1 virtual disks for back mount

Created virtual disk 0

STAGE 4/7 - PERFORMING BACKMOUNT
-----
Finding Solaris device for vdisks
Importing zpools for 1 Solaris devices
Detected conflicting zpool name, attempting rename
Getting boot file system for properties in 1 zpool
Setting properties in 1 zpools
Mounting ZFS file systems
Mounting ZFS found in zpool rpool_1

STAGE 5/7 - PERFORMING ACTIONS ON TARGET DOMAIN
-----
Executing: /var/tmp/ovmt_s10_sysidcfg.sh ... ok

STAGE 6/7 - UNMOUNTING AND RESTORING DOMAIN STATE
-----
Rolling back commands completed

STAGE 7/7 - SETTING TARGET DOMAIN ENVIRONMENT
-----
Checking 10 properties to set as domain variables
Process completed

```

6. Check the state of the guest domain.

```

root@TargetControlDomain# ldm ls
NAME          STATE    FLAGS  CONS  VCPU  MEMORY  UTIL  NORM  UPTIME
primary       active   -n-cv-  UART   16    32G     0.1%  0.1%  15d 16h 9m
solaris10     bound    -----  5001   80    128G

```

7. Start the guest domain.

In this example, some of the error messages about various Oracle Database components are expected. These components are enabled in subsequent steps.

The Fcode errors can also be ignored as described in My Oracle Support Doc ID 2174444.1.

```
root@TargetControlDomain# ldm start solaris10
LDom solaris10 started
root@TargetControlDomain# telnet localhost 5001
Trying 0.0.0.0...
Connected to 0.
Escape character is '^]'.

Connecting to console "solaris10" in group "solaris10" ....
Press ~? for control options ..
USB keyboard
Creating new rsa public/private host key pair
Creating new dsa public/private host key pair
Configuring network interface addresses: vnet0.

rebooting system due to change(s) in /etc/default/init
syncing file systems... done
rebooting...
Resetting...
NOTICE: Entering OpenBoot.
NOTICE: Fetching Guest MD from HV.
NOTICE: Starting additional cpus.
NOTICE: Initializing LDC services.
NOTICE: Probing PCI devices.
NOTICE: Finished PCI probing.

SPARC S7-2 / OPCSLSCS, No Keyboard
Copyright (c) 1998, 2016, Oracle and/or its affiliates. All rights reserved.
OpenBoot 4.40.3, 128.0000 GB memory installed, Serial #83527483.
Ethernet address 01:00:5E:90:10:3b, Host ID: 000a873b.

Boot device: disk File and args:
WARNING: Unsupported bootblk image, can not extract fcode

WARNING: Bootblk fcode extraction failed
SunOS Release 5.10 Version Generic_150400-57 64-bit
Copyright (c) 1983, 2018, Oracle and/or its affiliates. All rights reserved.
TargetGuestDomain console login: Feb 14 05:41:47 TargetGuestDomain root: Not waiting
for
filesystem containing /u01/app/oracle1/product/12.1.0/grid/bin/crsctl because
Oracle HA daemon is not enabled.
Feb 14 05:41:47 TargetGuestDomain root: Oracle Cluster Ready Services startup disabled.
Feb 14 05:41:47 TargetGuestDomain root: Could not access /var/opt/oracle/scls_scr/
TargetGuestDomain/oracle1/ohasdstr.
```

```
TargetGuestDomain console login: Feb 14 05:41:47 TargetGuestDomain root: Starting
  execution of Oracle Clusterware init.ohasd
Feb 14 05:41:47 TargetGuestDomain root: Waiting for filesystem containing /u01/app/
oracle1/product/12.1.0/grid/bin/clsecho.
```

8. Check the state of the guest domain.

```
bash-3.2# uname -a
SunOS <TargetGuestDomain> 5.10 Generic_150400-57 sun4v sparc sun4v
```

```
bash-3.2# netstat -rn
```

```
Routing Table: IPv4
  Destination          Gateway             Flags  Ref    Use  Interface
  -----
default               198.51.100.1       UG      1     345
198.51.100.0          198.51.100.112    U        1     163 vnet0
224.0.0.0             198.51.100.112    U        1        0 vnet0
127.0.0.1             127.0.0.1         UH       4      78 lo0
```

```
bash-3.2# ifconfig -a
lo0: flags=2001000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4,VIRTUAL> mtu 8232 index 1
    inet 127.0.0.1 netmask ffffffff
vnet0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 2
    inet 198.51.100.112 netmask fffffe00 broadcast 198.51.100.255
    ether 01:00:5E:90:10:da
```

9. Import the u01 pool.

Use the `-f` (force) option, otherwise the command will fail because the new guest domain is not yet completely configured on the target system.

```
bash-3.2# zpool import -f u01
```

```
bash-3.2# zpool list
NAME    SIZE  ALLOC  FREE  CAP  HEALTH  ALTROOT
rpool   298G  39.2G  259G  13%  ONLINE  -
u01     149G  11.7G  137G   7%  ONLINE  -
```

▼ Configure Guest Domain Database Components

If your migrated guest domain doesn't include Oracle Database, skip this section and follow your application specific procedures to modify the network and storage information.

The Oracle Database environment moved to a domain with a new hostname, and therefore requires some reconfiguration.

This procedure describes the reconfiguration process. The steps were derived and modified from the MOS document titled *How to Reconfigure Oracle Restart on 12c / 12.1* (Doc ID 1570358.1).

1. Reconfigure Oracle Restart.

a. Unconfigure Oracle Restart.

Ignore the error messages in the output. The messages are expected because the grid infrastructure is not yet running.

```
bash-3.2# cd /u01/app/oracle1/product/12.1.0/grid/crs/install/
bash-3.2# ./roothas.pl -deconfig -force
Using configuration parameter file: ./crsconfig_params
CRS-4639: Could not contact Oracle High Availability Services
CRS-4000: Command Stop failed, or completed with errors.
CRS-4639: Could not contact Oracle High Availability Services
CRS-4000: Command Delete failed, or completed with errors.
CLSU-00100: operating system function: opendir failed with error data: 2
CLSU-00101: operating system error message: No such file or directory
CLSU-00103: error location: scrsearch1
CLSU-00104: additional error information: cant open scr home dir scls_scr_getval
CRS-4639: Could not contact Oracle High Availability Services
CRS-4000: Command Stop failed, or completed with errors.
2018/01/03 07:45:33 CLSRSC-337: Successfully deconfigured Oracle Restart stack
```

b. Configure Oracle Restart.

```
bash-3.2# cd ../../
bash-3.2# ./root.sh
Performing root user operation.
```

The following environment variables are set as:

```
ORACLE_OWNER= oracle1
ORACLE_HOME= /u01/app/oracle1/product/12.1.0/grid
Copying dbhome to /usr/local/bin ...
Copying oraenv to /usr/local/bin ...
Copying coraenv to /usr/local/bin ...
```

Entries will be added to the /var/opt/oracle/oratab file as needed by Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.

```

Using configuration parameter file: /u01/app/oracle1/product/12.1.0/grid/crs/
install/crsconfig_params
LOCAL ADD MODE
Creating OCR keys for user 'oracle1', privgrp 'dba'..
Operation successful.
LOCAL ONLY MODE
Successfully accumulated necessary OCR keys.
Creating OCR keys for user 'root', privgrp 'root'..
Operation successful.
CRS-4664: Node TargetGuestDomain successfully pinned.
2018/01/03 07:46:38 CLSRSC-330: Adding Clusterware entries to file '/etc/inittab'

Jan  3 07:45:19 TargetGuestDomain last message repeated 19 times
Jan  3 07:46:43 TargetGuestDomain root: Starting execution of Oracle Clusterware
init.ohasd
Jan  3 07:46:43 TargetGuestDomain oracle1: exec /u01/app/oracle1/product/12.1.0/
grid/perl/bin/perl
-I/u01/app/oracle1/product/12.1.0/grid/perl/lib /u01/app/oracle1/product/12.1.0/
grid/bin/crswrapexece.pl
/u01/app/oracle1/product/12.1.0/grid/crs/install/
s_crsconfig_TargetGuestDomain_env.txt
/u01/app/oracle1/product/12.1.0/grid/bin/ohasd.bin "reboot"

TargetGuestDomain    2018/01/03 07:47:09    /u01/app/oracle1/product/12.1.0/grid/
cdata/TargetGuestDomain
/backup_20180103_074709.olr    0
Jan  3 07:47:13 TargetGuestDomain oracleoks: NOTICE: OKSK-00028: In memory kernel
log buffer address: 0x30014875728, size: 10485760
Jan  3 07:47:13 TargetGuestDomain oracleoks: NOTICE: OKSK-00027: Oracle kernel
distributed lock manager hash size is 31251
Jan  3 07:47:13 TargetGuestDomain oracleoks: NOTICE: OKSK-00004: Module load
succeeded. Build information:
(Low DEBUG) USM_12.1.0.2.0_SOLARIS.SPARC64_140611.5 2014/07/02 02:53:30
Jan  3 07:47:13 TargetGuestDomain oracleoks: NOTICE: ADVMK-0001: Module load
succeeded. Build information:
(Low DEBUG) - USM_12.1.0.2.0_SOLARIS.SPARC64_140611.5 built on 2014/07/02
02:59:14.
Jan  3 07:47:13 TargetGuestDomain oracleoks: NOTICE: ACFSK-0037: Module load
succeeded. Build information:
(Low DEBUG) USM_12.1.0.2.0_SOLARIS.SPARC64_140611.5 2014/07/02 03:05:09
CRS-2791: Starting shutdown of Oracle High Availability Services-managed resources
on 'TargetGuestDomain'
CRS-2673: Attempting to stop 'ora.evmd' on 'TargetGuestDomain'
CRS-2677: Stop of 'ora.evmd' on 'TargetGuestDomain' succeeded
CRS-2793: Shutdown of Oracle High Availability Services-managed resources on
'TargetGuestDomain' has completed
CRS-4133: Oracle High Availability Services has been stopped.

```



```

Jan  3 07:47:16 TargetGuestDomain oracle1: exec /u01/app/oracle1/product/12.1.0/
grid/perl/bin/perl
-I/u01/app/oracle1/product/12.1.0/grid/perl/lib /u01/app/oracle1/product/12.1.0/
grid/bin/crswrapexece.pl
/u01/app/oracle1/product/12.1.0/grid/crs/install/
s_crsconfig_TargetGuestDomain_env.txt
/u01/app/oracle1/product/12.1.0/grid/bin/ohasd.bin "reboot"

Jan  3 07:47:16 TargetGuestDomain oracle1: exec /u01/app/oracle1/product/12.1.0/
grid/perl/bin/perl
-I/u01/app/oracle1/product/12.1.0/grid/perl/lib /u01/app/oracle1/product/12.1.0/
grid/bin/crswrapexece.pl
/u01/app/oracle1/product/12.1.0/grid/crs/install/
s_crsconfig_TargetGuestDomain_env.txt
/u01/app/oracle1/product/12.1.0/grid/bin/ohasd.bin "reboot"
CRS-4123: Oracle High Availability Services has been started.
2018/01/03 07:47:31 CLSRSC-327: Successfully configured Oracle Restart for a
standalone server

```

c. Check the status of Oracle Restart.

```
bash-3.2# /u01/app/oracle1/product/12.1.0/grid/bin/crsctl status resource -t
```

Name	Target	State	Server	State details
Local Resources				
ora.ons		OFFLINE OFFLINE	TargetGuestDomain	STABLE
Cluster Resources				
ora.cssd				
1	OFFLINE	OFFLINE		STABLE
ora.diskmon				
1	OFFLINE	OFFLINE		STABLE
ora.evmd				
1	ONLINE	ONLINE	TargetGuestDomain	STABLE

2. Add the LISTENER resource.

Replace the old source guest domain name with a new target guest domain name in the listener.ora parameter file.

```
-bash-3.2$ cat /u01/app/oracle1/product/12.1.0/grid/network/admin/listener.ora
```

```
# listener.ora Network Configuration File: /u01/app/oracle1/product/12.1.0/grid/network/
admin/listener.ora
# Generated by Oracle configuration tools.

LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = TargetGuestDomain)(PORT = 1521))
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))
    )
  )
ENABLE_GLOBAL_DYNAMIC_ENDPOINT_LISTENER=ON          # line added by Agent
VALID_NODE_CHECKING_REGISTRATION_LISTENER=SUBNET    # line added by Agent

-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/srvctl add listener

-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/srvctl start listener
```

3. Check the state of the LISTENER resource.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/crsctl status resource -t
-----
Name          Target  State        Server          State details
-----
Local Resources
-----
ora.LISTENER.lsnr
      ONLINE  ONLINE      TargetGuestDomain  STABLE
ora.ons
      OFFLINE OFFLINE      TargetGuestDomain  STABLE
-----
Cluster Resources
-----
ora.cssd
      1        OFFLINE OFFLINE          STABLE
ora.diskmon
      1        OFFLINE OFFLINE          STABLE
ora.evmd
      1        ONLINE  ONLINE      TargetGuestDomain  STABLE
-----
```

4. Check the LISTENER status.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/lsnrctl status

LSNRCTL for Solaris: Version 12.1.0.2.0 - Production on 03-JAN-2018 07:51:07
```

Copyright (c) 1991, 2014, Oracle. All rights reserved.

Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=TargetGuestDomain)(PORT=1521)))
STATUS of the LISTENER

```
-----
Alias                LISTENER
Version              TNSLSNR for Solaris: Version 12.1.0.2.0 - Production
Start Date           03-JAN-2018 07:50:37
Uptime               0 days 0 hr. 0 min. 30 sec
Trace Level          off
Security              ON: Local OS Authentication
SNMP                 OFF
Listener Parameter File /u01/app/oracle1/product/12.1.0/grid/network/admin/
listener.ora
Listener Log File     /u01/app/oracle1/diag/tnslsnr/TargetGuestDomain/listener/
alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=TargetGuestDomain)(PORT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
The listener supports no services
The command completed successfully
```

5. Make note of which spfile was last used by the ASM instance when it was running on the source domain.

You can obtain this information from the ASM alert log file. For example:

```
-bash-3.2$ grep "Using parameter settings in server-side spfile" /u01/app/oracle1/diag/
asm/+asm/+ASM/trace/alert_+ASM.log | tail -1
```

```
Using parameter settings in server-side spfile +DATA/ASM/ASMPARAMETERFILE/registry.
253.962164099
```

6. Add and start ASM.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/srvctl add asm
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/srvctl start asm
```

7. Check the state of ASM.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/crsctl status resource -t
-----
Name          Target  State      Server          State details
-----
Local Resources
-----
ora.LISTENER.lsnr
```

ora.asm	ONLINE	ONLINE	TargetGuestDomain	STABLE
ora.ons	ONLINE	ONLINE	TargetGuestDomain	Started,STABLE
	OFFLINE	OFFLINE	TargetGuestDomain	STABLE

Cluster Resources				

ora.cssd				
1	ONLINE	ONLINE	TargetGuestDomain	STABLE
ora.diskmon				
1	OFFLINE	OFFLINE		STABLE
ora.evmd				
1	ONLINE	ONLINE	TargetGuestDomain	STABLE

8. Mount the ASM diskgroup and verify that the spfile is in place.

```
TargetGuestDomain$ /u01/app/oracle1/product/12.1.0/grid/bin/sqlplus / as sysasm
```

```
SQL*Plus: Release 12.1.0.2.0 Production on Wed Jan 3 08:35:48 2018
```

```
Copyright (c) 1982, 2014, Oracle. All rights reserved.
```

```
Connected to:
```

```
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
With the Automatic Storage Management option
```

```
SQL> alter diskgroup DATA mount ;
```

```
Diskgroup altered.
```

```
SQL> exit
```

```
Disconnected from Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit
Production
With the Automatic Storage Management option
```

```
asmcmd
```

```
ASMCMD> lsdg
```

```
State   Type    Rebal Sector Block      AU Total_MB Free_MB Req_mir_free_MB
Usable_file_MB Offline_disks Voting_files Name
MOUNTED NORMAL N         512  4096 16777216  409568 259968          0
129984          0          N DATA/
```

```
ASMCMD> lsdsdsk -p -G DATA
```

```
Group_Num Disk_Num Incarn Mount_Stat Header_Stat Mode_Stat State Path
1          0 2419482960 CACHED MEMBER ONLINE NORMAL /dev/rdsd/
c0d4s0
```

```

          1          1 2419482961 CACHED      MEMBER      ONLINE      NORMAL /dev/rdsdsk/
c0d5s0
ASMCMD> cd +DATA/ASM/ASMPARAMETERFILE
ASMCMD> pwd
+DATA/ASM/ASMPARAMETERFILE
ASMCMD> ls
REGISTRY.253.962164099

```

9. Reconfigure the ASM spfile.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/sqlplus / as sysasm
```

```
SQL*Plus: Release 12.1.0.2.0 Production on Wed Jan 3 07:55:53 2018
```

```
Copyright (c) 1982, 2014, Oracle. All rights reserved.
```

```
Connected to:
```

```
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
With the Automatic Storage Management option
```

```
SQL> create pfile='/tmp/init+ASM.ora' from spfile='+DATA/ASM/ASMPARAMETERFILE/REGISTRY.
253.962164099';
File created.
```

```
SQL> create spfile='+DATA' from pfile='/tmp/init+ASM.ora';
File created.
```

```
SQL> show parameter pfile
```

NAME	TYPE	VALUE
spfile	string	

10. Restart the ASM instance to ensure that the spfile is in use.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/srvctl stop asm -f
```

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/srvctl start asm
```

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/crsctl status resource -t
```

Name	Target	State	Server	State details
Local Resources				
ora.DATA.dg	ONLINE	ONLINE	TargetGuestDomain	STABLE
ora.LISTENER.lsnr	ONLINE	ONLINE	TargetGuestDomain	STABLE
ora.asm				

ora.ons	ONLINE	ONLINE	TargetGuestDomain	Started,STABLE
	OFFLINE	OFFLINE	TargetGuestDomain	STABLE

Cluster Resources				

ora.cssd				
1	ONLINE	ONLINE	TargetGuestDomain	STABLE
ora.diskmon				
1	OFFLINE	OFFLINE		STABLE
ora.evmd				
1	ONLINE	ONLINE	TargetGuestDomain	STABLE

11. **From the alert log file, make note of the spfile that was last used by the database instance, then check it's in place in ASM.**

This example uses parameter settings in the server-side spfile +DATA/ORCL18/PARAMETERFILE/spfile.273.962165423.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/asmcmd
ASMCMD> cd +DATA/ORCL18/PARAMETERFILE/
ASMCMD> ls
spfile.273.962165423
ASMCMD> exit
```

12. **Add the database to Oracle Restart.**

Note – The first command line is shown on multiple lines for readability, but is entered on a single line.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/srvctl add database -d orcl18 -o
$ORACLE_HOME
-p "+DATA/ORCL18/PARAMETERFILE/spfile.273.962165423" -a DATA
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/srvctl start db -d orcl18
```

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/crsctl status resource -t
```

Name	Target	State	Server	State details

Local Resources				

ora.DATA.dg				
	ONLINE	ONLINE	TargetGuestDomain	STABLE
ora.LISTENER.lsnr				
	ONLINE	ONLINE	TargetGuestDomain	STABLE
ora.asm				
	ONLINE	ONLINE	TargetGuestDomain	Started,STABLE

ora.ons		OFFLINE	OFFLINE	TargetGuestDomain	STABLE

Cluster Resources					

ora.cssd					
1	ONLINE	ONLINE		TargetGuestDomain	STABLE
ora.diskmon					
1	OFFLINE	OFFLINE			STABLE
ora.evmd					
1	ONLINE	ONLINE		TargetGuestDomain	STABLE
ora.orcl18.db					
1	ONLINE	ONLINE		TargetGuestDomain	Open,STABLE

13. Check that the LISTNER has services from the database.

```
-bash-3.2$ /u01/app/oracle1/product/12.1.0/grid/bin/lsnrctl status
```

```
LSNRCTL for Solaris: Version 12.1.0.2.0 - Production on 03-JAN-2018 08:04:01
```

```
Copyright (c) 1991, 2014, Oracle. All rights reserved.
```

```
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=TargetGuestDomain)(PORT=1521)))
STATUS of the LISTENER
```

```
-----
Alias                LISTENER
Version              TNSLSNR for Solaris: Version 12.1.0.2.0 - Production
Start Date           03-JAN-2018 07:50:37
Uptime               0 days 0 hr. 13 min. 24 sec
Trace Level          off
Security             ON: Local OS Authentication
SNMP                 OFF
Listener Parameter File /u01/app/oracle1/product/12.1.0/grid/network/admin/
listener.ora
Listener Log File     /u01/app/oracle1/diag/tnslsnr/TargetGuestDomain/listener/
alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=TargetGuestDomain)(PORT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=TargetGuestDomain)(PORT=5500))
    (Security=(my_wallet_directory=/u01/app/oracle1/product/12.1.0/dbhome_1/admin/
orcl18/xdw_wallet))
    (Presentation=HTTP)(Session=RAW))
Services Summary...
Service "+ASM" has 1 instance(s).
  Instance "+ASM", status READY, has 1 handler(s) for this service...
```

```
Service "orcl18" has 1 instance(s).
  Instance "orcl18", status READY, has 1 handler(s) for this service...
Service "orcl18XDB" has 1 instance(s).
  Instance "orcl18", status READY, has 1 handler(s) for this service...
Service "pdborcl" has 1 instance(s).
  Instance "orcl18", status READY, has 1 handler(s) for this service...
The command completed successfully
```

14. Check the DB instance.

```
-bash-3.2$ u01/app/oracle1/product/12.1.0/dbhome_1/bin/sqlplus / as sysdba
```

```
SQL*Plus: Release 12.1.0.2.0 Production on Wed Jan 3 08:41:21 2018
```

```
Copyright (c) 1982, 2014, Oracle. All rights reserved.
```

```
Connected to:
```

```
Oracle Database 12c Enterprise Edition Release 12.1.0.2.0 - 64bit Production
With the Partitioning, Automatic Storage Management, OLAP, Advanced Analytics
and Real Application Testing options
```

```
SQL> show sga
```

```
Total System Global Area 4.2950E+10 bytes
Fixed Size                  7643936 bytes
Variable Size               7113546976 bytes
Database Buffers            2.4964E+10 bytes
Redo Buffers                 126566400 bytes
In-Memory Area              1.0737E+10 bytes
```

```
SQL> show parameter pfile
```

NAME	TYPE	VALUE
spfile	string	+DATA/ORCL18/PARAMETERFILE/spfile.
273.962165423		

15. Ensure that the tnsnames.ora file in the/u01/app/oracle1/product/12.1.0/dbhome_1/network/admin directory reflects the new hostname.

Edit the file and make the change.

16. Check that the SOE schema is consistent with what was captured in the source domain before the archive creation.

The last two SQL results should match the same count as in the source domain steps. The source count was captured in [“Obtain Configuration Details from the Source Control Domain” on page 17](#).

```
SQL> alter session set container=PDBORCL ;
Session altered.
```

```
SQL> show con_id
CON_ID
-----
3
```

```
SQL> connect soe/soe@pdborcl
Connected.
```

```
SQL> select table_name from user_tables ;
TABLE_NAME
-----
CUSTOMERS
ADDRESSES
CARD_DETAILS
WAREHOUSES
ORDER_ITEMS
ORDERS
INVENTORIES
PRODUCT_INFORMATION
LOGON
PRODUCT_DESCRIPTIONS
ORDERENTRY_METADATA

11 rows selected.
```

```
SQL> select count(*) from ORDERS ;
COUNT(*)
-----
26258963
SQL> select count(*) from ORDER_ITEMS ;
COUNT(*)
-----
70359059
```

▼ Collect Performance Data on the Target System

Collecting performance data can be compared to the data collected on the source system. In particular, compare the CPU utilization. In some cases the new system provides improved

compute performance for the workload in the target guest domain which might result in significantly lower CPU utilization than at the source system. In this case, consider assigning fewer CPU resources (preferably in core increments) to the guest domain.

- **Use the same performance tools and metrics that were used to measure performance of the guest domain on the source system.**

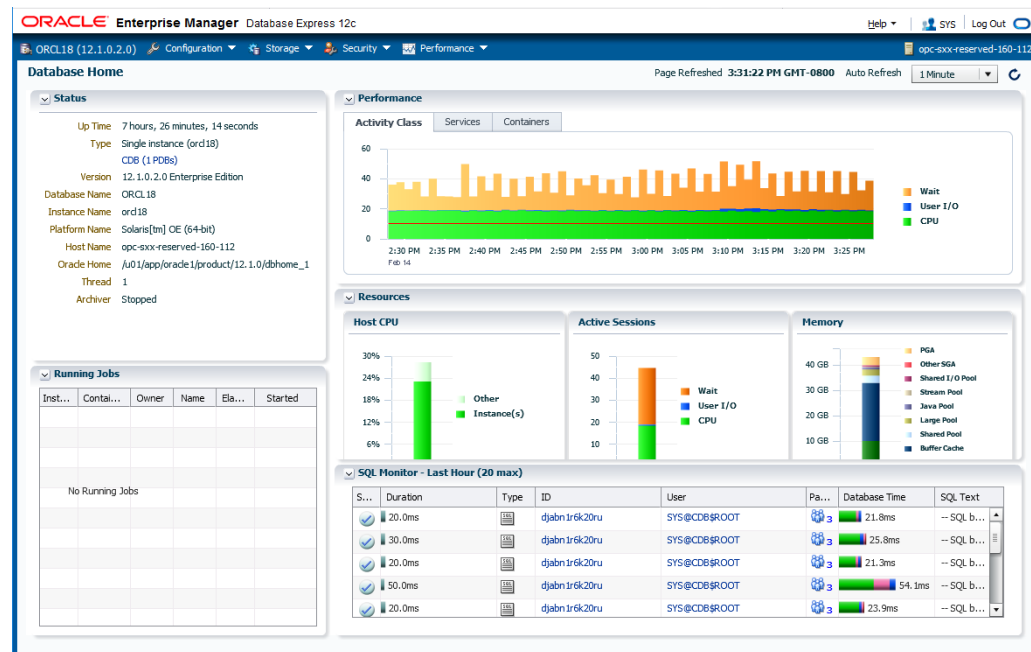
See [“Collect Performance Data on the Source System”](#) on page 15.

In this example, the same Swingbench application is used to run a database workload on the target guest domain and then compared to the benchmark results from the source system.



The same activity was also monitored using the same Enterprise Manager Database Express:

Note – For more information on Enterprise Manager Database Express, refer to this web page:
<http://www.oracle.com/technetwork/database/manageability/emx-intro-1965965.html>



▼ Perform Assurance Tests and Release the Guest Domain into Production

1. Use the assurance tests for your environment to ensure the guest domain is operable.
2. Release the guest domain for use in your environment.
3. Now that the lift and shift is complete, you can either delete the archive file on the shared storage, or reuse it to deploy a guest domain on another target system.

Lifting and Shifting the Virtual Disks Separately (Alternate Method)

In previous chapters, the `ovmcreate` command captures all of the source guest domain virtual disks in the archive. In this alternate method, the `ovmcreate -I` option enables you to specify a specific subset of virtual disks to be included in the archive.

Excluding large virtual disks can significantly shorten the time required to create and deploy the archive. For a comparison, the method used earlier, with 1396 GB of software, took 6 hours and 40 minutes to create the archive. The example in this chapter, with 644 GB of software, took approximately 2 hours and 55 minutes.

This alternate method is convenient when you want to exclude certain virtual disks from the archive. For example, you plan to use alternative means of migrating application data. You might capture the OS virtual disks in the archive. For the applications or data virtual disks, you plan to physically move the original storage device to the target system, or you want to use application-based data replication. There are also a variety of Oracle Solaris utilities you can use to migrate data to the target system.

The flow of this alternate lift and shift method is similar to the process described in earlier chapters, with a few exceptions that are described in this chapter.

To use the alternate method, perform the tasks in this table.

Order	Links to Tasks
1	Review the requirements in “Requirements (Alternate Method)” on page 86
2	Perform all the tasks in “Assessing the Source and Target Systems” on page 15
3	“Prepare the Source System” on page 35
4	“Prepare the Target System” on page 37
5	“Prepare Shared Storage (Alternate Method)” on page 87
6	“Create the Source Archive (Alternate Method)” on page 88
7	“Deploy the Guest Domain on the Target System (Alternate Method)” on page 91
8	“Migrate the Application Data (Alternate Method)” on page 94
9	Perform all the tasks in “Reviewing and Reconfiguring the Shifted Guest Domain” on page 57

Requirements (Alternate Method)

The table lists requirements for this lift and shift scenario. This document includes instructions for satisfying these requirements.

Source System

Patch 151934 – You must be able to download and install the latest version of the Oracle VM Server for SPARC patch 151934-06 (or later) on the control domain of the source system.

Working directory – The `ovmtcreate` command requires temporary space in a working directory where the guest domain's storage is compressed.

There is no way of knowing in advance how much compression will be achieved, which makes it difficult to estimate the size of the working directory. As a conservative best practice, ensure that the working directory has space equal to the guest domain's virtual disks that you plan to capture in the archive, divided by 2.

For instructions, see [“Prepare the Source System” on page 35](#).

Target System

Must be running Oracle Solaris 11.4 with SRU 7 or later, and with the `ovmtutils` package installed.

The target system must provide sufficient resources for the incoming guest domain:

- **CPU and Memory Resources** – Prior to the lift and shift activity, you must ensure that there are enough available CPU and memory resources to support the guest domain.
- **Virtual Disks** – The exact same number of virtual disks with the same capacities that the guest domain has on the source system.

For instructions, see [“Prepare the Target System” on page 37](#).

Shared Storage

Provide storage space for creating the source archive. The shared storage is attached to the target system. The target system exports the storage, and it is mounted by the source system. For instructions, see [“Prepare Shared Storage \(Alternate Method\)” on page 87](#)

Related Information

- [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)” on page 85](#)
- [“Assessing the Source and Target Systems” on page 15](#)

▼ Prepare Shared Storage (Alternate Method)

1. **Ensure that there is enough available storage capacity on the file system you plan to use for the archive.**

- a. **Calculate the space needed to create the archive.**

Add the sizes of guest domain's virtual disks that you plan to include in the archive (obtained in [“Obtain Configuration Details from the Source Guest Domain” on page 23](#)) and divide by two. This calculation takes into account that the disk images will be compressed in the archive file, yet is conservative enough to ensure adequate storage space for the archive file.

For this alternative method scenario, the two OS virtual disks will be captured in the archive, and this calculation is made (numbers are rounded):

$644 \text{ GB} \div 2 \approx 322 \text{ GB}$

- b. **Identify available storage in the target system control domain, such as a data zpool, as in this example, vpool.**

The command output shows that there is 1006 GB available storage capacity, which is sufficient space to contain the archive for this example scenario.

```
root@TargetControlDomain# zpool list vpool
NAME      SIZE  ALLOC   FREE   CAP  DEDUP   HEALTH  ALTROOT
vpool    1.09T   24M   1006G    1%   1.00x  ONLINE  -
```

- c. **(If needed) Add storage space to accommodate the storage space requirements.**

2. **On the target control domain, create and export a file system for the source archive.**

```
root@TargetControlDomain# zfs create -o mountpoint=/ovas vpool/ovas
root@TargetControlDomain# zfs set share.nfs=on vpool/ovas
root@TargetControlDomain# zfs set share.nfs.root=\* vpool/ovas
```

```

root@TargetControlDomain# zfs set share.nfs.rw=\* vpool/ovas
root@TargetControlDomain# exportfs
vpool_ovas      /ovas    sec=sys,root,rw

```

3. **On the source control domain, create a mount point for the shared storage, and mount the shared storage.**

```

root@SourceControlDomain# mkdir /ovas
root@SourceControlDomain# mount TargetControlDomain:/ovas /ovas

```

4. **On the source control domain, confirm that the shared storage is mounted and accessible.**

```

root@SourceControlDomain# df -h /ovas
Filesystem                size      used    avail capacity Mounted on
TargetControlDomain:/ovas 1.1T       24M    1006G      1%    /ovas

root@SourceControlDomain# ls -al /ovas
total 2097436
drwxr-xr-x  3   root   root    4   Feb 12 13:36 .
drwxr-xr-x 42   root   root   55   Feb 13 10:35 ..

```

Related Information

- [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)” on page 85](#)
- [“Assessing the Source and Target Systems” on page 15](#)

▼ Create the Source Archive (Alternate Method)

This procedure creates an archive file on the shared storage. The archive file contains compressed versions of the source guest domain's virtual disks that you specify and configuration files.

1. **Ensure that the latest version of patch 151934 is installed on the source system.**

The latest patch is required so that the source system has the latest versions of OVMT utilities (see [“Prepare the Source System” on page 35](#)).

```

root@SourceControlDomain# showrev -p | grep 151934
Patch: 151934-06 Obsoletes: Requires: Incompatibles: Packages: SUNWldmib, SUNWldm

```

2. **On the source system, login as the Oracle user and shutdown the Oracle environment including the database, any applications, third party products, and so on.**

This example is of an Oracle restart environment, so the `crsctl` command is used.

Note – It is a good practice to perform this step to avoid any application related errors on the target after the deployment. After the deployment, `crsctl` can be used to restart and enable the high availability components.

```
$ crsctl stop has
$ crsctl disable has
```

3. Stop the source guest domain.

This step is important because the `ovmtcreate` utility requires the Oracle Solaris 10 domain to be in a bound state.

```
root@SourceControlDomain# ldm stop solaris10
```

4. On the source control domain, create a text file that lists the virtual disks you want captured in the archive:

a. Generate a list of all the guest domain virtual disks.

Run the following command line script to generate a list of all the virtual disk names associated with the source guest domain (`solaris10` in our example). The list is redirected to a file called `/ovas/vdisks.txt` on shared storage.

```
root@SourceControlDomain# ldm list -p -o disk solaris10 | nawk -F '|' \
'{ if($1=="VDISK") { split($2,VDISK,"=") ; print VDISK[2] } }' > /ovas/vdisks.txt
```

b. Edit the file so it only lists the virtual disks that you want captured in the archive.

Example of the edited file:

```
root@SourceControlDomain# cat /ovas/vdisks.txt
solaris10_root1
solaris10_root2
```

5. Run the `ovmtcreate` command and include the `-I` option to specify the `vdisks.txt` file.

Use the `ovmtcreate` command that was obtained from patch 151934 (see [“Prepare the Source System” on page 35](#)).

The `ovmtcreate` command examines the topology of a logical domain to create an archive, which is in the form of an OVF archive (`.ova`).

Run this command as superuser on the source control domain.

Not all ovmtcreate options are listed here. For more information about ovmtcreate, refer to the [ovmtcreate \(1M\) man page](#).

Syntax

```
/opt/SUNWldm/lib/contrib/ovmtcreate -d GuestDomain -I vdisk_filename -w  
Working_Directory -o Archive_File_on_Shared_Storage -s "Description"
```

Where:

- -d *GuestDomain* – The name of your guest domain.
- -I *vdisk_filename* – When specified, enables you to specify a file path name that contains a list of virtual disks to include in the archive. If not specified, all virtual disks associated with the domain are included in the archive.
- -w *Working_Directory* – The full path to the working directory that you prepared in [“Prepare the Source System” on page 35](#).
- -o *Archive_File_on_Shared_Storage* – The full path name of the location that you prepared in [“Prepare a Shared Storage Location for the Archive” on page 43](#).
- -s *Description* – A short description of the archive.

Note – For Oracle Solaris 10, the full path to the command is /opt/SUNWldm/lib/contrib/ovmtcreate.

```
root@SourceControlDomain# ovmtcreate -d solaris10 -I /ovas/vdisks.txt -  
w /WorkingDirectory -o /ovas/solaris10.ova -s "source S10 domain"
```

```
Oracle VM for SPARC Template Creation Utility  
ovmtcreate      Version: on10-patch20171108123131
```

STAGE 1 - EXAMINING SYSTEM AND ENVIRONMENT -----

```
Performing platform & prerequisite checks  
Checking user permissions  
Checking for required packages  
Checking for required services  
Checking directory permissions
```

STAGE 2 - ANALYZING DOMAIN -----

```
Retrieving and processing attributes  
Checking domain state  
Getting domain resource settings  
Discovering network topology  
Discovering disk topology
```

STAGE 3 - ARCHIVE CREATION

```

-----
Checking destination and working directory capacity
Processing disk images 1 of 2
Processing disk images 2 of 2
Creating XML configuration
Calculating manifest checksums
Creating archive file
Checking archive

```

```

PROCESS COMPLETED
-----

```

```

Started: Wed Apr 11 16:53:50 PDT 2018
Completed: Wed Apr 11 19:49:13 PDT 2018
Elapsed time: 2:55:23

```

6. Verify the creation of the source archive file.

```

root@SourceControlDomain# Shared_Location# ls -rtlh *.ova
-rw-r--r-- 1 root 97G Feb 13 22:15 solaris10.ova

```

7. (If needed) Reconfigure the source system's CPU and memory resources to their original values.

Perform this step if you changed the CPU and memory resources in [“Prepare the Source System” on page 35](#).

Related Information

- [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)” on page 85](#)
- [“Deploy the Guest Domain on the Target System \(Alternate Method\)” on page 91](#)

▼ Deploy the Guest Domain on the Target System (Alternate Method)

1. Ensure that the source archive file (.ova) is available in the shared storage.

See [“Prepare a Shared Storage Location for the Archive” on page 43](#).

```

root@TargetControlDomain:Shared_Storage# ls -rtlh
-rw-r--r-- 1 root root 97G Feb 13 22:15 solaris10.ova

```

2. Deploy the guest domain on the target system.

The `ovmtdeploy` command reads the contents of the `.ova` archive and creates an operational logical domain.

Note - If something goes wrong, you can undo the deployment. See [“\(If Needed\) Undo the Deployment” on page 55.](#)

Example A – Deploying a Guest Domain with Default CPU and Memory Resources

In this example, the cores option (-C) is omitted so that the deployed guest domain is assigned CPU and memory resources based on what is specified in the archive. The result is that the guest domain is deployed with the same resources that it had on the source system.

For the -v option, specify the same number of virtual disks that were captured using the ovmtcreate command in [“Create the Source Archive \(Alternate Method\)” on page 88.](#)

The following command line is shown in multiple lines for readability, but is entered on one line.

```
root@TargetControlDomain:/ovas# ovmtdeploy -d solaris10 -t primary-vsw0 -E vnet0 -v
/dev/rdisk/c0t600144F09F2C0BFD00005A2865A20004d0s2,/dev/rdisk/
c0t600144F09F2C0BFD00005A2865B50005d0s2
/ovas/solaris10.ova
```

Oracle VM for SPARC Deployment Utility

ovmtdeploy Version 3.5.0.2.1

STAGE 1 - EXAMINING SYSTEM AND ENVIRONMENT

Checking user privileg
Performing platform & prerequisite checks
Checking for required services
Named resources available

STAGE 2 - ANALYZING ARCHIVE & RESOURCE REQUIREMENTS

Checking .ova format and contents
Validating archive configuration
Checking sufficient resources present

STAGE 3 - EXTRACTING ARCHIVE

Extracting archive
Validating checksums
Decompressing disk image(s)
Disk /dev/rdisk/c0t600144F09F2C0BFD00005A2865A20004d0s2 was automatically
expanded to use entire device

```
Decompressing disk image(s)
Disk /dev/rdisk/c0t600144F09F2C0BFD00005A2865B50005d0s2 was automatically
expanded to use entire device
```

STAGE 4 - DEPLOYING DOMAIN

```
-----
```

```
Creating domain and adding resources
Validating deployment
```

Example B – Deploying a Guest Domain While Specifying the Number of Cores

In this example, the target control domain's cores are listed to see what cores are available. Then the core option (-C) is used to specify the number of cores to assign to the guest domain. In this example, the deployed guest domain is assigned 8 cores instead of the 10 cores that it had on the source system.

For the -v option, specify the same number of virtual disks that were captured using the ovmtcreate command in [“Create the Source Archive \(Alternate Method\)” on page 88](#).

The second command line is shown in multiple lines for readability, but is entered on one line.

```
root@TargetControlDomain# ldm ls-devices core
```

```
CORE
```

ID	%FREE	CPUSET
8	100	(64, 65, 66, 67, 68, 69, 70, 71)
9	100	(72, 73, 74, 75, 76, 77, 78, 79)
10	100	(80, 81, 82, 83, 84, 85, 86, 87)
11	100	(88, 89, 90, 91, 92, 93, 94, 95)
64	100	(512, 513, 514, 515, 516, 517, 518, 519)
65	100	(520, 521, 522, 523, 524, 525, 526, 527)
66	100	(528, 529, 530, 531, 532, 533, 534, 535)
67	100	(536, 537, 538, 539, 540, 541, 542, 543)
72	100	(576, 577, 578, 579, 580, 581, 582, 583)
73	100	(584, 585, 586, 587, 588, 589, 590, 591)
74	100	(592, 593, 594, 595, 596, 597, 598, 599)
75	100	(600, 601, 602, 603, 604, 605, 606, 607)

```
root@TargetControlDomain# ovmtdeploy -d solaris10 -C 64-67,72-75 -t primary-vsw0 -E
```

```
vnet0
```

```
-v /dev/rdisk/c0t600144F09F2C0BFD00005A2865A20004d0s2,/dev/rdisk/
c0t600144F09F2C0BFD00005A2865B50005d0s2,
```

```
/ovas/solaris10.ova
```

```
. . .
```

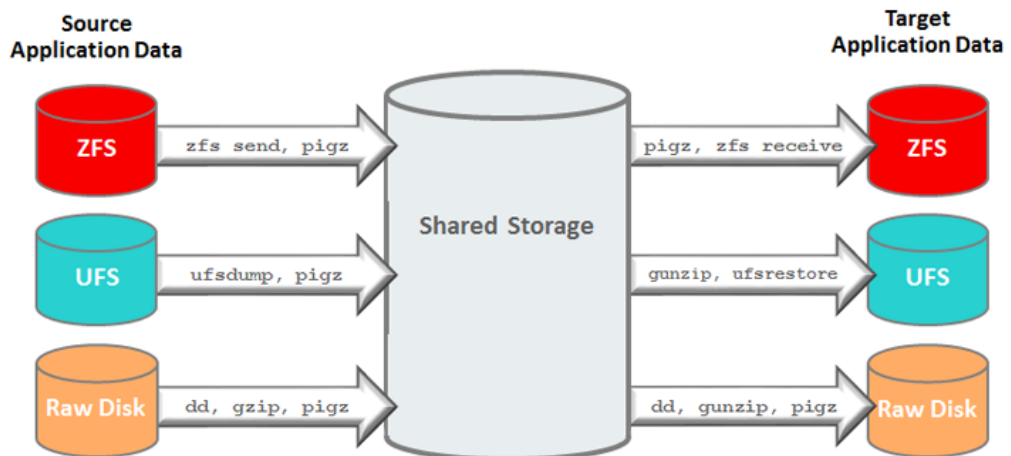
Related Information

- [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)” on page 85](#)
- [“Migrate the Application Data \(Alternate Method\)” on page 94](#)

▼ Migrate the Application Data (Alternate Method)

1. **If you created the archive with a subset of the virtual disks (by using the `ovmtcreate -I` option), take action to migrate remaining data.**

Different utilities are used to transfer workload components based on the type of file system where the component resides. In some cases, the output of one command is piped to `pigz` or `gunzip` to improve efficiency through compression and decompression that those commands provide. This diagram shows the different utilities.



2. **Go to the next set of tasks.**

Perform all the tasks in [“Reviewing and Reconfiguring the Shifted Guest Domain” on page 57](#).

Related Information

- [“Lifting and Shifting the Virtual Disks Separately \(Alternate Method\)” on page 85](#)
- [“Reviewing and Reconfiguring the Shifted Guest Domain” on page 57](#)

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