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Virtualized Management Server (VMS) Operations Guide

Release 2.00
B035-5371-125K
February 2016

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Revision History

Date	Description
February 2016	Corrected a step in the VMS migration procedure, "Performing Post-Migration Tasks for the Viewpoint VM." The migration procedure does not require you to stage a new instance of Viewpoint.
January 2016	Initial release version 2.0

Audience

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http://infocentral.daytonoh.teradata.com/tsd-library/isupr.cfm	Section of the intranet site for Teradata service documentation specific to software installation and upgrade information
http://tssprod.teradata.com:8080/TSFS/	Intranet site linking to Teradata software server

Product Safety Information

This document may contain information addressing product safety practices related to data or property damage, identified by the word *Notice*. A notice indicates a situation which, if not avoided, could result in damage to property, such as equipment or data, but not related to personal injury.

Example

Notice: Improper use of the Reconfiguration utility can result in data loss.

Virtualized Management Server Overview

Virtualized Management Server Description

The Virtualized Management Server (VMS) consolidates several software servers onto a single physical chassis. Virtualization technology allows multiple operating environments to run on a single VMS. These operating environments are called virtual machines (VMs).

The VMS is a physical chassis, updated by flashing. It runs under Kernel-based Virtual Machine (KVM), an open-source virtualization technology.

The VMS can host the following VMs:

- The CMIC VM provides server management services for the system in which it is located.
- The SWS VM is the service entry for the system.
- The Viewpoint VM manages a Teradata system.

Each VM operates like a physical machine. Each is self-contained and does not compete with the other VMs for resources.

There are multiple VMS offerings. The offerings can have different hardware specifications and different VM configurations.

Note:

- VMS 2.00 is compatible with all legacy VMS platforms.
- A Cabinet VMS cannot be upgraded to a System VMS.

Table 1: VMS Offerings

VMS	Intel Chassis	Configuration	Hosts
System 1U	SR1625	<ul style="list-style-type: none"> • 24 GB RAM • Two quad-core CPUs • Two 300 GB boot disks (RAID1 pair) • Two 600 GB Viewpoint data disks (RAID1 pair) 	<ul style="list-style-type: none"> • 1 CMIC • 1 SWS • 1 Viewpoint
Cabinet 1U	SR1625	<ul style="list-style-type: none"> • 12 GB RAM • One quad-core CPU • Two 300 GB boot disks (RAID1 pair) 	<ul style="list-style-type: none"> • 1 CMIC
System 1U	R1208	<ul style="list-style-type: none"> • 64 GB RAM 	<ul style="list-style-type: none"> • 1 CMIC

VMS	Intel Chassis	Configuration	Hosts
		<ul style="list-style-type: none"> Two six-core CPUs Two 600 GB boot disks (RAID1 pair) Two 600 - 900 GB Viewpoint data disks (RAID1 pair) 	<ul style="list-style-type: none"> 1 SWS 1 Viewpoint
Small System 1U	R1208	<ul style="list-style-type: none"> 32 GB RAM One six-core CPUs Two 600 GB boot disks (RAID1 pair) Two 600 GB Viewpoint data disks (RAID1 pair) 	<ul style="list-style-type: none"> 1 CMIC 1 SWS 1 Viewpoint
Cabinet 1U	R1208	<ul style="list-style-type: none"> 32 GB RAM One six-core CPU Two 600 GB boot disks (RAID1 pair) 	<ul style="list-style-type: none"> 1 CMIC
System 1U	R1208 (2) R1208WT	<ul style="list-style-type: none"> 128 GB RAM Two six-core CPUs Four 1.2 TB disks (RAID 1 pair) Two 1.2 TB disks (each RAID 0). Both disks are allocated to the Dumps VM 	<ul style="list-style-type: none"> 1 CMIC 1 SWS 1 Viewpoint 1 Dump Server Reserved for future use
Cabinet 1U	R1208 (2) R1208WT	<ul style="list-style-type: none"> 64 GB RAM One six-core CPU Two 600 GB boot disks (RAID1 pair) 	<ul style="list-style-type: none"> 1 CMIC

A VMS has the following six Ethernet ports:

- Two ports for Server Management networks
- Two ports for the BYNET interface
- One port for the public LAN
- One port reserved for use as an alternative public LAN

Each hosted VM is given access to two Server Management network interfaces and the public LAN. The Bynet interfaces are only allocated to the CMIC VM. The reserved alternate public interface is only allocated to the SWS VM and can be utilized for remote connectivity using a customer-provided server and modem if dial-up connectivity is required. Optional high speed and fiber-connect ethernet adapters can be used and allocated to any of the VMs, though typically is done to support the Guest VM connections to the public LAN.

VMS Constraints

Hosted applications may have feature and capacity limitations in the VMS environment that are different from those of the Enterprise environment. Each hosted application determines and document its capacity by loads given to the fixed resource allocation. When the

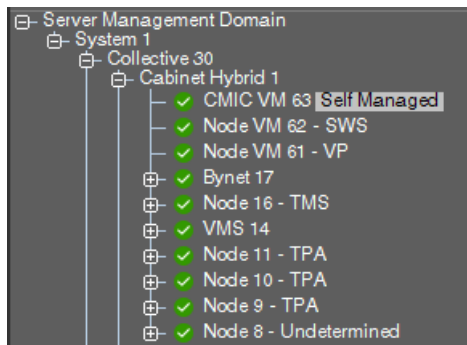
maximum load capacity is exceeded, the application allocation must be reallocated to a standalone server. The VMs are pre-allocated resources and are either on or off for a VMS.

System	Constraints
SWS	<ul style="list-style-type: none"> When installed on a System VMS, the SWS system supports a single Server Management domain, which then can support multiple database systems on a UDA Fabric. The SWS VM for VMS 2.00.01.00 runs on LINUX SLES 11 SP 3. If Symplicity is in use, there is a limitation of 128 arrays for the SWS VM.
Viewpoint	<ul style="list-style-type: none"> When installed on a System VMS, the Viewpoint Teradata Systems portlet limits the customer to only configuring one Teradata RDBMS system, Aster Cluster, or Hadoop cluster for monitoring. This is referred to as Single System Viewpoint. No restrictions are made based on hostnames or IP addresses for the values entered as the Teradata system TDPID. The Viewpoint VM for VMS 2.00.01.00 runs on LINUX SLES 11 SP 3.

Distinguishing the CMIC, SWS, and Viewpoint Server as a Virtual Machine or a Physical Chassis

To determine if a system uses a VMS with virtual CMIC, SWS, and Viewpoint, check for VMs in the Tree View in SMClient. Physical chassis will not contain VM in the title.

Figure 1: Tree View Showing Virtual Machines



If the SMClient Tree View is not available, use the following guidelines.

Table 2: Physical and Virtual Specifications

	Physical CMIC, SWS, Viewpoint	Virtual CMIC, SWS, Viewpoint
OS Disk Space	73 GB (approx)	20 to 60 GB (depending on the VMS type)

	Physical CMIC, SWS, Viewpoint	Virtual CMIC, SWS, Viewpoint
/var/opt/teradata	filesystem	filesystem in Viewpoint and SWS VMs
Linux Kernel	.TDC	.TDC
Viewpoint	Multiple or single Teradata systems	Single Teradata system only

Command-Line Interface and VMS Tools

Teradata VMS architecture has two user interfaces. The first interface, the VMS Tools are accessed from the Server Management Web Services interface and used for monitoring and management. The second interface is a standard command-line interface that provides all of the functionality as the VMS Tools provide.

A VMS administrator might consider using the command-line interface rather than the VMS Tools for specific situations, such as:

- Backing up and restoring a virtual machine
- Creating a VMS disk
- Applying VMS configuration templates
- Staging and configuring the VMS

Accessing an SWS Virtual Machine

Accessing an SWS Virtual Machine from a Physical VMS KVM

A physical KVM is an all-in-one device containing a video monitor, mouse, and keyboard. It is not the same as KVM virtualization software.

- 1 Make sure the KVM is connected to the VMS that hosts the SWS virtual machine.
- 2 From the VMS logon screen, log on to the system as an SWS user:
 - user name: `sws`
 - password: `smsws`

A window to the SWS VM desktop opens automatically.

Note: The user name `sws` is a special unprivileged VMS user account used only to access the SWS VM desktop using the physical VMS KVM.

Accessing the SWS VM Remotely

Access the SWS VM remotely by using Teradata ServiceConnect (powered by Axeda). The SWS virtual machine Device ID is an LTMS model. For more information, see *Teradata ServiceConnect™ Guide*

Working with the Virtualized Management Server

Determining the VMS Version

- 1 Do one of the following to determine the VMS version.

Option	Description
From SMClient	Select the VMS in the tree view and click Asset Info on the toolbar.
From SMClient	Select Tools > Firmware Version Checker
From the VMS command prompt	Type <code>/opt/teradata/vms/bin/vmsutil -v</code>

Considerations When Transferring Files to and from a VMS

Files can be transferred to and from the VMS using a DVD or a USB drive with no special considerations. However, special conditions apply when transferring files over the network:

- Run the file transfer commands (for example, `scp` and `sftp`) from a VMS command prompt. The `scp` and `sftp` commands are the secure versions of the `cp` and `ftp` commands.

Note: You cannot connect to the VMS as the root user. You can connect as `vms` (unprivileged user), but `/home/vms` and `/tmp` are limited in size.

- From the VMS, use IP addresses. The VMS does not have DNS configured.

Backing Up a VMS

The VMS is a self-contained system that includes the virtual machines (configuration and image files), as well as any VM backups created through the VMS VM backup feature. As part of backing up a VM, you may have also copied the individual VM backups off the VMS.

- 1 Log on to the VMS.
- 2 Shut down all VMs:

```
/etc/init.d/vms-vm stop
```

3 Shut down all VMS services:

```
/opt/teradata/vms/bin/vms-services stop
```

4 Copy the following VMS configuration directories from the VMS to your backup location:

- /datapart/vms/config/vm
- /datapart/vms/config/netconfig
- /datapart/vms/config/sws_ipaddr

5 Copy the following VM directories from the VMS to your backup location:

Note: These directories can be very large.

- /datapart/vms/config/vm-config
- /datapart/vms/data/images
- /datapart/vms/data/backup/vm-backup

6 Restart the VMS services:

```
/opt/teradata/vms/bin/vms-services start
```

7 Restart the VMs:

```
/etc/init.d/vms-vm start
```

Restoring a VMS

Use this procedure to restore a VMS from a VMS backup.

- If you do not have a bootable VMS, rebuild the VMS as described in [Rebuilding a VMS](#).
- If you do not have a VMS backup, restage the VMS as described in [Restaging a VMS](#).

1 Log on to the VMS.

2 Delete all VMs:

```
/opt/teradata/vms/bin/vm-delete -a
```

3 Shut down all VMS services:

```
/opt/teradata/vms/bin/vms-services stop
```

4 Copy the backed up VMS files and folders to the VMS, overwriting the existing files and folders.

5 Make sure the VMS network MAC addresses are correct by running the VMS network configuration utility:

```
/opt/teradata/vms/bin/vms-netconfig --edit
```

6 Reboot the VMS.

7 Restore any VMs from any individually backed-up VM backups.

These are backups you copied off of the VMS with the VMS VM backup feature.

8 Make sure the correct VMs are running:

```
/opt/teradata/vms/bin/vm-list
```

Rebuilding a VMS

- 1 Use this procedure to rebuild a VMS if you have a full VMS backup or virtual machine backups. If you have neither, restage the VMS as described in [Restaging a VMS](#)

Option	Description
If you have a full VMS backup:	<ol style="list-style-type: none"> Build and configure the VMS hardware as described in the appropriate <i>Hardware Service Guide</i>. Build the VMS disk as described in Building the VMS Disk. Boot the VMS. Restore the VMS. Make sure the VMS network MAC addresses are correct by running the VMS network configuration utility: <code>/opt/teradata/vms/bin/vms-netconfig --edit</code>
If you only have VM backups:	<ol style="list-style-type: none"> Restage the VMS as described in Restaging a VMS. Restore the VMS. Make sure the correct VMs are running: <code>/opt/teradata/vms/bin/vm-list</code>

Working with the Virtual Machines

Displaying the Status of Virtual Machines

The consoles are the virtual equivalent of the physical VGA and serial port consoles. They are not the normal remote networking consoles.

- 1 Log on to the VMS.
- 2 Use one of the following commands to display status for the VMs:

Task	Command
To display the general status of the VMs:	<code>/opt/teradata/vms/bin/vm-list</code>
To display the detailed status of the VMs:	<code>/opt/teradata/vms/bin/vm-list -l vmname</code>
To display the general performance of the VMs:	<code>virt-top</code>
To view log and trace data about VM management:	<code>/var/log/libvirt/libvirtd.log and /var/log/libvirt/qemu/ for individual VMs</code>

Starting and Stopping a Virtual Machine

When interacting with the operating system of a virtual machine, you can use the normal operating system utilities to shut down or reboot the operating system. Starting and stopping a VM is like pressing the virtual power button of the VM.

- 1 Log on to the VMS.
- 2 Use one of the following commands to start or stop a VM:

Task	Command
To start all the VMs on the VMS:	<code>/etc/init.d/vms-vm start</code>
To stop all the VMs on the VMS:	<code>/etc/init.d/vms-vm stop</code>
To start one VM:	<code>/opt/teradata/vms/bin/vm-start vmname</code>

Task	Command
	The underlying libvirt command: <code>virsh start <vm name></code>
To shut down a VM gracefully:	<code>/opt/teradata/vms/bin/vm-stop vmname</code> The underlying libvirt command is: <code>virsh stop <vm name></code>
To cause a hard shutdown of a VM:	<code>/opt/teradata/vms/bin/vm-stop --hard vmname</code> The underlying libvirt command is: <code>virsh destroy <vm name></code>
To mount a VM's disk:	<code># vm-stop -w <vm name></code> <code># cd /datapart/vms/data/images/<vm name></code> <code># modprobe fuse</code> <code># guestmount -i -a disk0.raw /mnt</code> For SWS and Viewpoint VMs, the disk filename is <i>disk0.qcow2</i> ... <code># umount /mnt</code>

Backing Up a Virtual Machine

Note: The virtual machine is shut down and unavailable during backup.

All virtual machines on a VMS can be backed up at the same time as the VMS. However, it may be more difficult to restore an individual VM from a full VMS backup. See [Backing Up a VMS](#).

Use this procedure to back up a VM onto the VMS itself.

- 1 Log on to the VMS.
- 2 Create the VM backup:

```
/opt/teradata/vms/bin/vm-backup --backup -d vmname --name backupname  
--restart-if-running
```

The VM automatically shuts down during this operation.

The VM backup is placed in `/datapart/vms/data/backup/vm-backup`.

- 3 Copy the VM backup from the VMS to a backup location.

You can use any transfer method to copy the backup. The VM images are already compressed.

Restoring a Virtual Machine from a VMS Virtual Machine Backup

If the backup is from the VMS backup feature, restore the virtual machine as described in [Restoring a Virtual Machine from a VMS Backup](#).

Use this procedure if the backup is from the VMS virtual machine backup feature.

- 1 Log on to the VMS.
- 2 If needed, copy the backup onto the VMS.
Put the backup into `/datapart/vms/data/backup/vm-backup`.
- 3 View the VM backups located on the VMS:
`/opt/teradata/vms/bin/vm-backup --list`
- 4 Restore the VM:
`/opt/teradata/vms/bin/vm-backup --restore backupname`

Restoring a Virtual Machine from a VMS Backup

If the backup is from the VMS virtual machine backup feature, restore the virtual machine as described in [Restoring a Virtual Machine from a VMS Virtual Machine Backup](#).

Use this procedure if the backup is from a VMS backup.

- 1 Log on to the VMS.
- 2 Copy the file image of the VM onto the VMS.
 - a Locate the backup directory:
`your backup path/datapart/vms/data/images/vmname`
 - b Copy the backup into the VMS VM image directory:
`/datapart/vms/data/images`
- 3 Copy the configuration of the VM onto the VMS.
 - a Locate the backup configuration:
`your backup path/datapart/vms/config/vm-config/vmname`
 - b Copy the backup into the VMS VM configuration directory:
`/datapart/vms/config/vm-config`
- 4 View the status of the VM:
`/opt/teradata/vms/bin/vm-list`
- 5 View the auto start list to verify the VM will start up at VMS boot:
`/etc/init.d/vms-vm auto-start-list`
- 6 If the VM does not display on the auto start list, add it:

```
/etc/init.d/vms-vm auto-start-add vmname
```

7 **Start the VM:**

```
/etc/init.d/vms-vm start vmname
```

Restoring a Virtual Machine by Restaging

1 Log on to the VMS.

2 Delete the existing VM:

```
/opt/teradata/vms/bin/vm-delete -d vmname
```

3 [Rebuild the VM.](#)

Accessing the Virtual VGA/Serial Consoles of a Virtual Machine

The VM virtual VGA/serial consoles are the virtual equivalents of the physical VGA and serial port consoles, and cannot be accessed using Secure Shell (SSH), etc.

1 Log on to the VMS.

2 Use one of the following commands to access various consoles of a VM:

Task	Command
To access the graphical console (the virtual "VGA" console):	<code>virt-viewer <i>vmname</i></code>
To access the text console (the virtual "serial port"):	<code>virsh console <i>vmname</i></code>
To exit the text console (the virtual "serial port"):	<code>Ctrl+] </code>

Accessing the VMS DVD or USB Drive from a Virtual Machine

Use this procedure to access the physical DVD or USB drive, by temporarily attaching it to the virtual machine.

1 Run SMClient.

2 In the Tree View, select the VM.

3 Select Functions > Attach Temporary Device.

4 Work through the guided procedure to select and attach the DVD or USB drive.

- The device will not auto-mount in the virtual machine.

- The device path will be provided during the guided procedure.
- 5 Remove the DVD or USB drive.

Preventing a Virtual Machine from Starting at VMS Boot

Use this procedure if you have relocated the Viewpoint or SWS virtual machine to an external server.

- 1 View the VMs that automatically start at VMS boot:

```
/etc/init.d/vms-vm auto-start-list
```

- 2 Add VMs to the auto start setting:

```
/etc/init.d/vms-vm auto-start-add vmname
```

- 3 Remove VMs from the auto start setting:

```
/etc/init.d/vms-vm auto-start-remove vmname
```


Working with the Virtual Management Server (VMS) Tools

Accessing VMS Tools

- 1 From the Server Management Web Services Home page, select Virtual Management Server (VMS) Tools.
- 2 If prompted, log on.

VMS Tools Details

The VMS Tools page lists information about each VMS.

Information	Description
CPUs	Number of CPUs configured for this VM
Enabled	Current state of the VM: <ul style="list-style-type: none"> • True = enabled • False = disabled
Memory	Amount of memory configured for the VM
Result	Status of an operation
State	Current running status of the VM
System Type	VMS type used to create the VM
Template	VM template used to create the VM
VM Name	Name of the VM on the VMS
VMS	Name representation of the VMS For example, VMS, 1,30,1,14 indicates system 1, collective 30, cabinet 1, and chassis 14
VMS Model	Chassis model of the VMS

Starting a VM

- 1 From the VMS Tools page, select the check box for one or more VMs to start.
- 2 From the Operation list, select Start.
- 3 Click Run.

Starting a VM triggers the VM to start its operating system.

Related Topics

[Starting and Stopping a Virtual Machine, on page 25](#)

Stopping a VM

- 1 From the VMS Tools page, select one or more VMs to stop.
- 2 From the Operation list, select Stop.
- 3 Click Run.

Stopping a VM shuts down the operating system then powers off.

Related Topics

[Starting and Stopping a Virtual Machine, on page 25](#)

Enabling a VM

- 1 From the VMS Tools page, select one or more VMs to enable.
- 2 From the Operation list, select Enable.
- 3 Click Run.

Enabling a VM results in the VM starting whenever the VMS starts or restarts. This operation does not impact a currently running VM.

Disabling a VM

- 1 From the VMS Tools page, select one or more VMs to disable.
- 2 From the Operation list, select Disable.
- 3 Click Run.

Disabling a VM prevents the VM from starting when the VMS starts or restarts. This operation does not impact a currently running VM.

Replacing Failed VMS Hardware

To replace failed VMS hardware, follow the hardware replacement procedures in the appropriate *Hardware Service Guide*.

If both OS drives in a VMS are replaced, follow the procedures in this chapter to restage the new OS drives.

Configuring VMS OS Drives

BIOS Configuration

You must do the following in the BIOS prior to configuring RAID.

- Enable CPU Virtualization technology
- In the Boot settings, verify that the DVD device (SATA) and Intel RAID Controller appear in the Boot list before any network interface

RAID Configurations

Depending on the VMS chassis, RAID configuration numbering and slots are different.

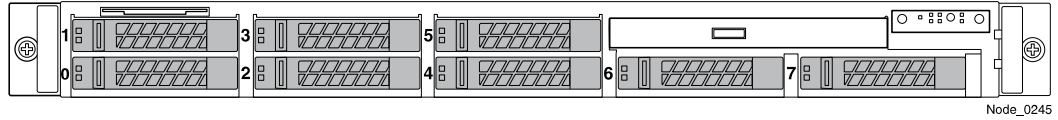
Note: RAID BIOS contains graphics that cannot be redirected through the VMS BMC. Be sure to access the [VM from a physical VMS KVM](#).

Intel R1208, R1208 (2), and R1208WT

- 1U System VMS, Intel R1208, R1208 (2), and R1208WT
- 1U Small System VMS, Intel R1208
- 1U Cabinet VMS, Intel R1208, 1208 (2), and R1208WT

Note: When configuring RAID on the Intel R1208/R1208 (2)/R1208WT, be sure the RAID Controller BIOS Version is 2.07.00 or greater and Firmware Version is 1.40.62-0665 or greater.

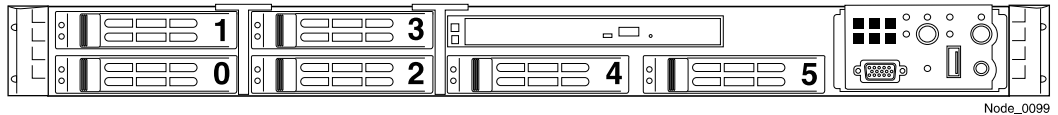
Figure 2: Intel R1208, R1208 (2), R1208 WT Hard Drive Numbering



Intel SR1625

- 1U System VMS, Intel SR1625
- 1U Cabinet VMS, Intel SR1625

Figure 3: Intel SR1625 Hard Drive Numbering



Configuring RAID

The VMS chassis should contain the appropriate drives for RAID1 configuration as follows:

- Slots 0 and 1 are equal-sized drives in a system VMS chassis and a small system VMS chassis boot disk (for example, 300 GB).
- Slots 0 and 1 are equal-sized drives in a cabinet VMS chassis boot disk (for example, 300 GB).
- Slots 2 and 3 are equal-sized drives in a Viewpoint VMS chassis data disk (for example, 600 GB).
- Slots 4 and 5 are equal-sized drives in R1208 (2) and R1208WT VMS chassis data disk.

- 1 Plug the boot disk drives into slots 0 and 1.
- 2 If you are configuring a Viewpoint VMS chassis, plug the data disk into slots 2 and 3.
- 3 If you are configuring R1208 (2) and R1208WT VMS chassis, plug the data disk into slots 4 and 5.
- 4 Boot the VMS.
- 5 In the BIOS message RAID Controller BIOS Version x.xx.xx, press Ctrl+G.
- 6 If the Import a Foreign **Configuration** window appears, then the RAID configuration has changed. If the configuration is correct for a VMS, click Ok to import the configuration.
- 7 In the Intel Adapter Selection window, select Adapter No. 0, and click Start.
- 8 In the Intel RAID BIOS Console **Virtual Configuration** window, make sure that the Logical View pane displays the appropriate drives for the VMS configuration:

Note: If you imported foreign configuration and the Logical View pane contains the appropriate drives, then the RAID configuration is complete.
- 9 Select **Configuration Wizard > Clear Configuration**, and click Next.
- 10 Select **Configuration Wizard > Add Configuration > Manual Configuration**, and click Next.

11 Configure the drive groups:

VMS Chassis	Description
All	In the Drive Group Definition window, at Drives, select Slot:0 and Slot:1.
System and small system	In the Drive Group Definition window, at Drives, select Slot:2 and Slot:3.
R1208 (2) and R1208WT	In the Drive Group Definition window, at Drives, select Slot:4 and Slot:5, and configure as RAID 0.

- a Click Add to Array.
- b In the Drives Groups window, click Accept DG.
- c Repeat for all drive groups.

12 Configure the spans:

VMS Chassis	Description
Cabinet	In the Span Definition window, at ArrayWithFreeSpace, select DriveGroup:0.
System and small system	In the Span Definition window, at ArrayWithFreeSpace, select DriveGroup:1.
R1208 (2) and R1208WT	In the Span Definition window, at ArrayWithFreeSpace, select DriveGroup:2 and DriveGroup:3, and configure as RAID 0.

- a Click Add to SPAN > Next.
- b In the Virtual Drive **Definition** window, select RAID1.
Leave the other default settings.
- c At Select Size, select the maximum disk size.
- d Click Accept.
- e If prompted, click Yes to accept Write Through Mode.
- f For DriveGroup:0, if the Virtual Drive **Definition** screen appears, click Back.
Leave the other default settings.
- g Click Next.
- h Repeat for all spans.

13 Make sure the configuration is correct:

- a In the Preview window, at Drives, make sure all drives are Online.
- b Make sure that the left pane displays the appropriate drives for the VMS configuration:

- A System VMS chassis and a Small System VMS chassis displays two virtual drives: DriveGroup:0 and DriveGroup1.
 - A Cabinet VMS chassis displays one virtual drive: DriveGroup:0.
 - A R1208 (2) and R1208WT also displays: DriveGroup:2.
- c Click Accept.
If a prompts asks you about SSD caching, click Cancel.
- 14 In the All data on the new Virtual Drives will be lost. Want to initialize? window, click Yes.
- 15 In the Intel RAID BIOS Console Virtual Drives window, click Back.
- 16 In the Intel RAID BIOS Console Virtual **Configuration** window, click Logical View and make sure the configuration for the VMS is correct.
- 17 Click Exit, and then click Yes at the prompt.
- 18 Press Ctrl+Alt+Del to reboot the VMS chassis.

Building the VMS Disk

- 1 Download the VMS Live file from the Teradata Software Server:
 - a Go to the Teradata Software Server: <http://tssprod.teradata.com:8080/TSFS/>.
 - b Click Hardware.
 - c Under the Hardware header, select Platforms.
 - d In the Sub Category list, select VMS and click Submit.
 - e Select the sm-vms-vmslive package and click Submit.
 - f From the sm-vms-vmslive package, extract the VMS Live file, `vmslive-xx.xx.xx.iso`.
- 2 Burn the ISO to a DVD.
- 3 Insert the DVD in the VMS and boot the VMS chassis.
- 4 At the boot prompt, type:

```
diskbuild
```

Note: If you let the menu time out it defaults to boot from the hard drive. If this happens, reboot the chassis.

The first local hard drive (volume) is automatically built as a VMS disk and, if successful, automatically reboots.

You may not be able to eject the DVD until after you boot into the VMS because both the BIOS and the VMS Live DVD lock the disk door.

If you boot back into the VMS Live DVD, type `harddisk` at the boot menu or wait for it to timeout.

- 5 Eject the DVD from the VMS.
From a VMS command prompt, type `eject` or use the disk eject button.

Configuring the VMS Network

Use this procedure to configure the VMS network if you are restaging, not restoring, from a VMS backup or if you replaced the system board or network adapters.

The VMS uses bridging to create virtual interfaces that are available to the virtual machines. The bridges are linked to a physical port on the VMS and network traffic is routed through the bridge to the virtual machines.

The network is configured during boot by reading a VMS configuration file. Do not manually create or modify the assorted `ifcfg` files in `/etc/sysconfig/network` as these files are recreated every time the VMS is booted.

- 1 Choose the SM network primary and secondary IP addresses to be used for the VMS.
Use the SMWeb IP Calculator on an existing CMIC to determine the primary and secondary IP addresses for your VMS. These must be managed SM network addresses.

- 2 Stop any running virtual machines.

```
/etc/init.d/vms-vm stop
```

- 3 Run the VMS network configuration utility:

```
/opt/teradata/vms/bin/vms-netconfig --edit
```

- 4 Make sure the bridge to port mappings are correct.

By default the ports are automatically associated with a bridge name. If you have installed a network adapter, create new bridge names and assign the ports to those bridge names.

- 5 If additional information about the VMS network MAC addresses is required, run:

```
hwinfo --netcards | grep -E "(Model:|HW Address:)"
```

- 2 port VMS IU primary/secondary network adapters have the model Intel 8257EB Gigabit Network Connection.
- 4 port VMS IU primary/secondary network adapters have the model Intel 82576 Gigabit Network Connection.

- 6 Using options 1 and 2 in the utility, set the SM network primary and secondary IP and netmasks.

- 7 Select Save Settings to save the configuration.

- 8 Exit the VMS network configuration utility.

- 9 Reset the network:

```
/opt/teradata/vms/bin/vms-netconfig -y --resetnetwork
```

You will lose your connection during the restart.

- 10 View a summary of the active VMS network:

```
/opt/teradata/vms/bin/vms-netconfig --showactive
```

- 11 If the VMS network MAC addresses changed, update them in the CMIC Configuration file.
- 12 Restart the virtual machines:

```
/etc/init.d/vms-vm start
```

Configuring Access to the SWS

Note: The SWS virtual machine may not be fully staged at this time. Use the IP address you intend to use for the SWS.

- 1 Configure the SWS Access feature of the VMS:

```
/opt/teradata/vms/bin/sws-access --set-ip SWS IP address
```
- 2 When launching the VNC connection, the default SWS Access port is 5902 . Run the following to specify an alternate port or VNC display:

```
/opt/teradata/vms/bin/sws-access --set-ip SWS IP address
```

Creating the Virtual Machines Without Using a Backup

Creating the virtual machine (VM) includes creating the virtual hardware and installing the initial operating system.

Note: Creating the VM does not include staging the applications and software, for example, Viewpoint.

Running the `vm-create` utility will install both the VM base image and the VMS VM Configuration Template. The VMS VM Configuration Template used is dependent on the role of the VMS.

Each VM also has a unique name within the VMS that is used by KVM as a domain name. The KVM virtualization infrastructure refers to VMs as domains. It's not required that each VM in the system have a unique VM name.

Note: The first time the system boots, there may be a long delay while the operating system resizes the partitions.

Downloading VMS VM Base Images

- 1 Download the most current CMIC VMS VM base image from the Teradata Software Server:
 - a Go to the Teradata Software Server: <http://tssprod.teradata.com:8080/TSFS/>.
 - b Click Hardware.
 - c Under the Hardware header, select Platforms.

- d In the Sub Category list, select CMIC and click Submit.
 - e Select the latest version of the sm-sw-cmic-vms-vm-baseimage package and click Submit.
 - f From the sm-sw-cmic-vms-vm-baseimage package, extract the CMIC VMS VM base image, `cmic-vms-vm-baseimage-12.XX.XX.00.tar.gz`.
Note: Do not unzip or untar the `cmic-vms-vm-baseimage` file.
- 2 Download the TD OS VMS VM base image from the Teradata Software Server:
 - a Go to the Teradata Software Server: <http://tssprod.teradata.com:8080/TSFS/>.
 - b Click Hardware.
 - c Under the Hardware header, select Platforms.
 - d In the Sub Category list, select VMS and click Submit.
 - e Select the `teradata-sles-kvm-domU` package and click Submit.
 - f From the `teradata-sles-kvm-domU` package, extract the TD OS VMS base image, `tdc-sles11sp3-kvm-73GB-base-managed-12.XX.XX.00.tar.gz`.
Note: Do not unzip or untar the `tdc-sles11sp3-vm-73GB-base-managed` file.
 - 3 Download the `cmic-vms-vm-baseimage` and `teradata-sles-kvm-domU` files from the network or copy them from a USB drive or DVD to the `/datapart` directory on the VMS.

Virtual Machine Configuration Templates

The VMS Virtual Machine configuration template you use depends on the type and role of VMS. You pass the configuration template name into the `vm-create` utility.

VMS Type	Intel Chassis	Configuration Template
System 1U	R1208	<code>systype2/cmic</code> <code>systype2/sws</code> <code>systype2/viewpoint</code>
Small System 1U	R1208	<code>systype2-small/cmic</code> <code>systype2-small/sws</code> <code>systype2-small/viewpoint</code>
Cabinet 1U	R1208	<code>cabtype2/cmic</code>
System 1U	SR1625	<code>systype1/cmic</code> <code>systype1/sws</code> <code>systype1/viewpoint</code>
Cabinet 1U	SR1625	<code>cabtype1/cmic</code>
System 1U	R1208 (2) and R1208WT	<code>systype3/cmic</code> <code>systype3/sws</code>

VMS Type	Intel Chassis	Configuration Template
		systype3/viewpoint systype3/dumps systype3/application
Cabinet 1U	R1208 (2) and R1208WT	cabtype3/cmhc

Virtual Machines on an Intel SR1625 Chassis

Creating Virtual Machines: 1U System VMS, SR1625 Chassis

Prerequisite: The base image file must reside in the /datapart directory on the VMS.

- 1 At a VMS command prompt, create the virtual machine by typing:

Virtual Machine	VMS Command
CMIC	<code>/opt/teradata/vms/bin/vm-create --name cmic --template systype1/cmhc --baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</code>
SWS	<code>/opt/teradata/vms/bin/vm-create --name sws --template systype1/sws --baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</code>
Viewpoint	<code>/opt/teradata/vms/bin/vm-create --name viewpoint --template systype1/viewpoint --baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</code>

- 2 Run the virtual machine by typing:

Virtual Machine	VMS Command
CMIC	<code>/opt/teradata/vms/bin/vm-start cmic</code>
SWS	<code>/opt/teradata/vms/bin/vm-start sws</code>
Viewpoint	<code>/opt/teradata/vms/bin/vm-start viewpoint</code>

- 3 Verify by typing:

Virtual Machine	VMS Command
CMIC	<code>virsh console cmic</code>
SWS	<code>virsh console sws</code>
Viewpoint	<code>virsh console viewpoint</code>

- 4 Press Enter if the login prompt does not appear.
- 5 Press CTRL+] to escape out of the console.

Creating a Virtual Machine: 1U Cabinet VMS, SR1625 Chassis

Prerequisite: The base image file must reside in the `/datapart` directory on the VMS.

- 1 At a VMS command prompt, create the virtual machine by typing:

```
/opt/teradata/vms/bin/vm-create --name cmic --template cabtype1/cmic
--baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-
managed-11.03.01.00.tar.gz
```

- 2 Run the virtual machine by typing:

```
/opt/teradata/vms/bin/vm-start cmic
```

- 3 Verify by typing:

```
virsh console cmic
```

- 4 Press Enter if the login prompt does not appear.

- 5 Press CTRL+] to escape out of the console.

Virtual Machines on an Intel R1208 Chassis

Creating Virtual Machines: 1U System VMS, R1208 Chassis

Prerequisite: The base image file must reside in the `/datapart` directory on the VMS.

- 1 At a VMS command prompt, create the virtual machine by typing:

Virtual Machine	VMS Command
CMIC	<code>/opt/teradata/vms/bin/vm-create --name cmic --template systype2/cmic --baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</code>
SWS	<code>/opt/teradata/vms/bin/vm-create --name sws --template systype2/sws --baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</code>
Viewpoint	<code>/opt/teradata/vms/bin/vm-create --name viewpoint --template systype2/viewpoint --baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</code>

- 2 Run the virtual machine by typing:

Virtual Machine	VMS Command
CMIC	<code>/opt/teradata/vms/bin/vm-start cmic</code>
SWS	<code>/opt/teradata/vms/bin/vm-start sws</code>
Viewpoint	<code>/opt/teradata/vms/bin/vm-start viewpoint</code>

- 3 Verify by typing:

Virtual Machine	VMS Command
CMIC	<code>virsh console cmic</code>
SWS	<code>virsh console sws</code>
Viewpoint	<code>virsh console viewpoint</code>

- 4 Press Enter if the login prompt does not appear.
- 5 Press CTRL+] to escape out of the console.

Creating Virtual Machines: 1U Small System VMS, R1208 Chassis

Prerequisite: The base image file must reside in the `/datapart` directory on the VMS.

- 1 At a VMS command prompt, create the virtual machine by typing:

Virtual Machine	VMS Command
CMIC	<code>/opt/teradata/vms/bin/vm-create --name cmic --template systype2-small/cmich --baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</code>
SWS	<code>/opt/teradata/vms/bin/vm-create --name sws --template systype2-small/sws --baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</code>
Viewpoint	<code>/opt/teradata/vms/bin/vm-create --name viewpoint --template systype2-small/viewpoint --baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</code>

- 2 Run the virtual machine by typing:

Virtual Machine	VMS Command
CMIC	<code>/opt/teradata/vms/bin/vm-start cmic</code>
SWS	<code>/opt/teradata/vms/bin/vm-start sws</code>
Viewpoint	<code>/opt/teradata/vms/bin/vm-start viewpoint</code>

- 3 Verify by typing:

Virtual Machine	VMS Command
CMIC	<code>virsh console cmic</code>
SWS	<code>virsh console sws</code>
Viewpoint	<code>virsh console viewpoint</code>

- 4 Press Enter if the login prompt does not appear.
- 5 Press CTRL+] to escape out of the console.

Creating a Virtual Machine: 1U Cabinet VMS, R1208 Chassis

Prerequisite: The base image file must reside in the `/datapart` directory on the VMS.

- 1 At a VMS command prompt, create the virtual machine by typing:

```
/opt/teradata/vms/bin/vm-create --name cmic --template cabtype2/cmic
--baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-
managed-11.03.01.00.tar.gz
```

- 2 Run the virtual machine by typing:

```
/opt/teradata/vms/bin/vm-start cmic
```

- 3 Verify by typing:

```
virsh console cmic
```

- 4 Press Enter if the login prompt does not appear.

- 5 Press CTRL+] to escape out of the console.

Virtual Machines on an Intel R1208 (2) or R1208WT Chassis

Creating Virtual Machines: 1U System VMS, R1208 (2) and R1208WT Chassis

Prerequisite: The base image file must reside in the /datapart directory on the VMS.

- 1 At a VMS command prompt, create the virtual machine by typing:

Virtual Machine	VMS Command
CMIC	<pre>/opt/teradata/vms/bin/vm-create --name cmic --template systype3/cmic --baseimage /datapart/tdc-sles11sp3- kvm-73GB-base-managed-11.03.01.00.tar.gz</pre>
SWS	<pre>/opt/teradata/vms/bin/vm-create --name sws --template systype3/sws --baseimage /datapart/tdc-sles11sp3- kvm-73GB-base-managed-11.03.01.00.tar.gz</pre>
Viewpoint	<pre>/opt/teradata/vms/bin/vm-create --name viewpoint -- template systype3/viewpoint --baseimage /datapart/tdc- sles11sp3-kvm-73GB-base-managed-11.03.01.00.tar.gz</pre>
Dump	<pre>/opt/teradata/vms/bin/vm-create --name dumps --template systype3/dumps --baseimage /datapart/tdc-sles11sp3- kvm-73GB-base-managed-11.03.01.00.tar.gz</pre>

- 2 Run the virtual machine by typing:

Virtual Machine	VMS Command
CMIC	<pre>/opt/teradata/vms/bin/vm-start cmic</pre>
SWS	<pre>/opt/teradata/vms/bin/vm-start sws</pre>
Viewpoint	<pre>/opt/teradata/vms/bin/vm-start viewpoint</pre>
Dump	<pre>/opt/teradata/vms/bin/vm-start dumps</pre>

- 3 Verify by typing:

Virtual Machine	VMS Command
CMIC	<code>virsh console cmic</code>
SWS	<code>virsh console sws</code>
Viewpoint	<code>virsh console viewpoint</code>
Dump	<code>virsh console dumps</code>

- 4 Press Enter if the login prompt does not appear.
- 5 Press CTRL+] to escape out of the console.

Creating a Virtual Machine: 1U Cabinet VMS, R1208 (2) and R1208WT Chassis

Prerequisite: The base image file must reside in the `/datapart` directory on the VMS.

- 1 At a VMS command prompt, create the virtual machine by typing:

```
/opt/teradata/vms/bin/vm-create --name cmic --template cabtype3/cmic  
--baseimage /datapart/tdc-sles11sp3-kvm-73GB-base-  
managed-11.03.01.00.tar.gz
```

- 2 Run the virtual machine by typing:

```
/opt/teradata/vms/bin/vm-start cmic
```

- 3 Verify by typing:

```
virsh console cmic
```

- 4 Press Enter if the login prompt does not appear.
- 5 Press CTRL+] to escape out of the console.

Staging and Configuring the Virtual Machines

Virtual machines (VMs) are treated as virtual chassis and are configured as if they are physically in the same cabinet as the VMS chassis. They use the same system IDs, collective IDs, and chassis IDs as the VMS chassis, but the chassis IDs do not physically exist. The CMIC Configuration MEPlugin is located in the same place as the other devices for that Collective. All VMSs and VMs must be added to the CMIC Configuration. If more than one VMS exists, configure the CMIC that is physically located outside that VMS to manage it. This external CMIC can be a separate, bare-metal CMIC or a separate VMS's VM CMIC.

Prior to configuring the CMIC, the following information and values must be obtained:

- Primary and Secondary MAC addresses for the VMS device.
- System, Collective, Cabinet and Chassis IDs for the VMS.
- Primary and Secondary MAC addresses for all VMs.
- Public network information for the virtual machines, including MAC addresses, IP addresses, netmask, and gateway.

The VM configuration should have the following structure `Chassis`

```
idnum=" "vmname" "vmoerole=" "vmsidnum=" "":
```

- **vmname:** The VM name used on the VMS that is hosting the VMs, available from running `vm-list` from a VMS command prompt.
- **vmoerole:** The VMs's operating environment role and will be one of the following:
 - CMIC is the CMIC.
 - SWS is the SWS node.
 - VP is the Viewpoint node.
 - DUMPS is the Dump Server node
- **vmssidnum:** The chassis ID of the VMS that is hosting the VMs. For example, for VMS 1, 3, 10, 6, `vmssidnum=6`.

Obtaining or Verifying VMS Network MAC Addresses

1 Log on to the VMS.

2 View the VMS network MAC addresses:

```
/opt/teradata/vms/bin/vms-netconfig --showactive
```

Obtaining or Verifying Virtual Machine Network MAC Addresses

1 Determine the MAC addresses for the VM that is being restaged:

```
/opt/teradata/vms/bin/vm-list -l vmname
```

2 Write down the MAC addresses from the output list.

Staging and Configuring the CMIC

Modifying the MAC Addresses in the CMIC Configuration

There are two CMICs that may need to be updated:

- The CMIC VM hosted on the restored VMS
- The CMIC that is managing the restored VMS; this CMIC may be outside the VMS being restored

1 From a browser, connect to the CMIC default address using `https://39.95.255.254:9981`.

For SMWeb 12.00, there is only a secure http.

- If you're restoring the CMIC VM from a backup, or you did not need to restore the CMIC VM, connect through its existing address
- If you've rebuilt the CMIC VM, connect through the default IP address:




```
http://39.95.255.254:9980
```

2 From the SMWeb Services Home Page, click Network, Devices, and CMICs.

3 Locate the CMIC and click the primary or secondary IP address.

4 On the CMIC Summary page, select CMIC > System > CMIC Configuration.

The CMIC Configuration Editor opens.

- 5 If the CMIC VM was rebuilt, get the backup CMIC Configuration.
You can either copy and paste it into the CMIC Configuration editor or load it from a local file.
- 6 [Using the previously obtained MAC addresses](#), update the MAC addresses for the virtual machines and the VMS.
- 7 Click  to validate the configuration.
- 8 Apply (put) the updated CMIC Configuration to the CMIC:
 - a Click .
 - b On the confirmation dialog box, click OK.
The CMIC automatically reboots and applies the configuration.
- 9 Back up the CMIC configuration.
 - a Click .
 - b On the security dialog box, click Save.
 - c In the Save As dialog box, navigate to the directory you want to use, then click Save.
The file is saved to the directory using the default file name and format, which is *CMICConfig_SystemID_CollectiveID_CabinetID_CMICChassisID.xml* (for example, *CMICConfig_1_90_1_6.xml*).
- 10 Back up the CMIC Configuration to your backup location.
For more information about the CMIC Configuration file, see *Teradata Server Management Web Services Configuration Guide (B035-5351)*.

Sample CMIC Configurations

The following is an example of a CMIC configurations:

Example of the VMS Chassis:

```
<!-- The VMS chassis -->
<Chassis idnum="1">
  <MEPlugin name="MEPlugin_VMS_R1208WT"/>
  <NetAdapter mac="ECF4BBCCB974">
    <IPv4 addr="39.86.0.1" netmask="255.240.0.0" type="primary"/>
  </NetAdapter>
  <NetAdapter mac="ECF4BBCCB975">
    <IPv4 addr="39.102.0.1" netmask="255.240.0.0" type="secondary"/>
  </NetAdapter>
  <IPv4 addr="153.64.206.3" netmask="255.240.0.0" type="bmc1"/>
</Chassis>
```

Example of VM hosted on the VMS:

```
<!-- Other VM hosted on the VMS -->
<Chassis idnum="62" vmname="sws" vmoerole="SWS">
  <MEPlugin name="MEPlugin_Node_KVM">
  <Settings>
```

```

    <VMS>
      <SystemID>1</SystemID>
      <CollectiveID>5</CollectiveID>
      <CabinetID>1</CabinetID>
      <ChassisID>1</ChassisID>
      <IPv4 type="primary">39.86.0.1</IPv4>
      <Pv4 type="secondary">39.102.0.1</IPv4>
    </VMS>
  </Settings>
</MEPlugin>
<NetAdapter mac="00163E0E725E">
  <IPv4 addr="39.86.0.62" cmicaccess="true"
netmask="255.240.0.0" type="primary"/>
</NetAdapter>
<NetAdapter mac="00163E5D5A64">
  <IPv4 addr="39.102.0.62" cmicaccess="true"
netmask="255.240.0.0" type="secondary"/>
</NetAdapter>
</Chassis>

```

Example of the CMIC managing the VMS:

```

<!-- CMIC managing the VMS -->
<Chassis idnum="63" type="cmic" vmname="cmic" vmoerole="CMIC">
  <MEPlugin name="MEPlugin_CMIC_KVM">
    <Settings>
      <VMS>
        <SystemID>1</SystemID>
        <CollectiveID>5</CollectiveID>
        <CabinetID>1</CabinetID>
        <ChassisID>1</ChassisID>
        <IPv4 type="primary">39.86.0.1</IPv4>
        <IPv4 type="secondary">39.102.0.1</IPv4>
      </VMS>
    </Settings>
  </MEPlugin>
  <NetAdapter mac="00163E070946">
    <IPv4 addr="39.86.0.63" netmask="255.240.0.0" type="primary"/>
    <IPv4 addr="39.113.62.22" netmask="255.240.0.0" type="bmc1"/>
  </NetAdapter>
  <NetAdapter mac="00163E2B2A40">
    <IPv4 addr="39.102.0.63" netmask="255.240.0.0" type="secondary"/>
  </NetAdapter>
  <NetAdapter mac="00163E3D2625">
    <IPv4 addr="153.64.206.4" gateway="153.64.207.254"
netmask="255.255.254.0" type="153.64.206.0/23"/>
  </NetAdapter>
</Chassis>

```

Staging and Configuring SWS

The SWS VM is treated as a managed node.

- 1 Configure DHCP for the Server Management primary and secondary networks.

- 2 Validate the sm3gnode package installed.

Staging and Configuring Viewpoint

This Viewpoint VM is treated as a managed node.

For information about configuring Viewpoint, see *Teradata Viewpoint Installation, Configuration, and Upgrade Guide for Customers, B035-2207*.

- 1 Configure DHCP for the Server Management primary and secondary networks.
- 2 Validate the sm3gnode package installed.

Staging and Configuring a Dump Server

- 1 Configure DHCP for the Server Management primary and secondary networks.
- 2 Validate the sm3gnode package installed.
- 3 Install the teradata-axeda-dump package.

Cloning a VMS Disk

Use this procedure when cloning was used to create the new VMS.

- 1 Set the physical network MACs and Server Management IP addresses:

```
/opt/teradata/vms/bin/vms-netconfig --edit
```

- 2 Delete the ssh host keys:

```
/datapart/vms/config/ssh_host_*
```

- 3 Display all VMs on the VMS:

```
/opt/teradata/vms/bin/vm-list
```

- 4 [Optional] Update the VMs to make them unique on the system.

It is currently not required for each virtual machine in the system to have a unique name.

```
/opt/teradata/vms/bin/vm-make-unique -d <vm name>[--newname <new vm name>]
```

Note: The vm-make-unique utility does not modify the virtual machines virtual disk contents, for example, network macs, etc. These must be updated manually.

- 5 [Optional] The CMIC automatically configures the VMS NTP configuration. To synchronize the VMS NTP's time before setting up the CMICs, manually configure it.

```
/usr/bin/wbemcli cm http://localhost/root/vms:sm_vms_ntp  
SetServers.Servers="xx.xx.xx.xx yy.yy.yy.yy"
```


Migrating from Xen to KVM

Preparing for the Migration

A system VMS has up to three VMs running on it: the CMIC, the SWS, and Viewpoint VMs. A cabinet VMS has one VM running on it: the CMIC VM. Migrating a VMS from Xen to KVM technology is not an in-place upgrade, and includes the following tasks:

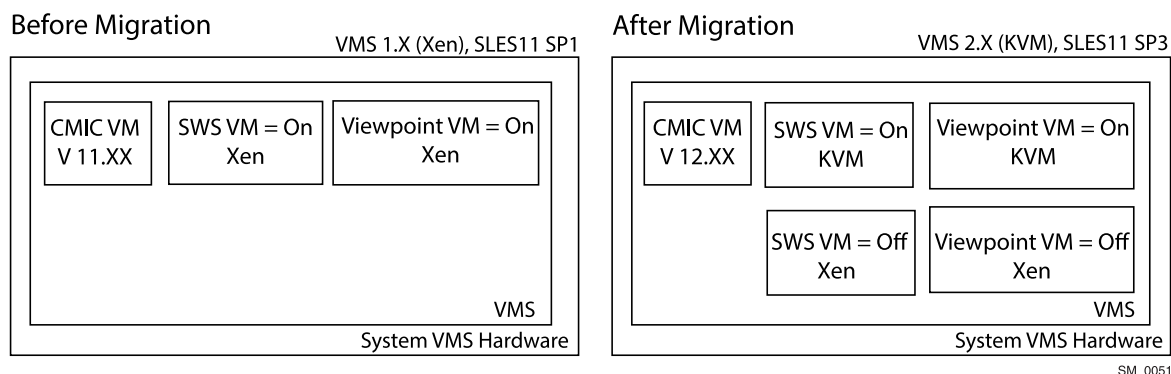
- Migrating the VMs from Xen to KVM so you do not lose data
- Replacing each VM with a new VM
- Upgrading each VM to SLES 11 SP3

Note: SLES 11 SP3 is required for running KVM.

- Migrating the VMS from Xen to KVM

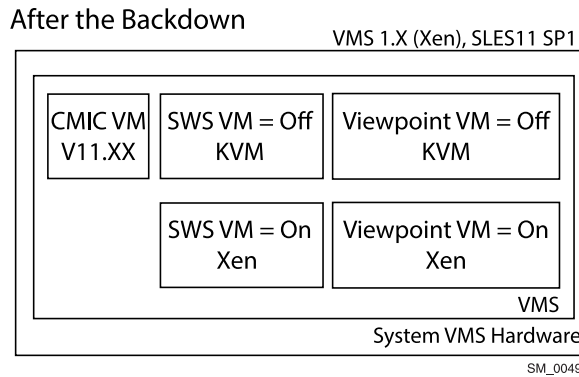
The following figure shows a system VMS before and after a migration.

Figure 4: System VMS Before and After Migration from Xen to KVM



The following figure shows a system VMS after backing down from a migration.

Figure 5: System VMS After Backing Down from KVM to Xen



Overview

The following table provides an overview of the tasks performed before or during the migration, and the packages used during the migration. See the Cert list for the most current versions of the packages.

Component	Description
ServiceConnect	<p>If you are performing the migration procedures remotely, use the procedure Preparing ServiceConnect for Performing the Migration Remotely in this guide.</p> <p>During the procedure, you will:</p> <ul style="list-style-type: none"> Use the <code>teradata-axeda</code> version 12.XX rpm package to upgrade SWSs running SLES 10 or SLES 11 SP1 and <code>Axeda 03.XX</code> or earlier to <code>Axeda 04.XX</code>. The package is available on TSS. <p>Note: JRE 7 is required for installing <code>teradata-axeda 04.XX</code>.</p> <p>Note: After the full migration procedure, the <code>teradata-axeda</code> version will be 12.XX.</p> <ul style="list-style-type: none"> After upgrading, you will gather information you will need during the migration. See: <ul style="list-style-type: none"> Determining the VMS Hardware Configuration Determining IP Addresses and Domain Names
CMIC VM	<p>Use the procedure Upgrading CMIC VMs to SLES 11 SP3 and CMIC 12.XX to upgrade the CMIC VMs from 11.06 to 12.XX. The CMIC 12.XX image (<code>sm-sw-cmicimage</code>) includes the SLES 11 SP3 operating system and is available on TSS.</p> <p>Note: You should upgrade 10.XX and 11.XX CMIC VMs to 11.06 before upgrading to 12.XX. See the <i>Teradata Server Management Web Services Configuration Guide</i>, release 11.06, for the upgrade procedure.</p> <p>Do not upgrade to CMIC 12.XX if your system requires any of the following plug-ins:</p> <ul style="list-style-type: none"> BYNET 32 and BYNET 64 CMIC Alcolu

Component	Description
	<ul style="list-style-type: none"> • Disk array SBB or XBB • Drive enclosure Ebbets • Node 2500A • Alcolu • Dell 2950 • PE 2950 • UPS APC and PWDEB <p>CMIC 12.XX does not support the following nodes, components, or features:</p> <ul style="list-style-type: none"> • 5400 nodes • 5400 CMICs • 5884 disk arrays • 55xx/ Alcolu (Intel SR2500) generation and earlier, including 55xx nodes and CMICs • UPS-based cabinets • 4600/ Blurr systems with JBOD drive enclosures • Windows nodes <p>Note: Windows nodes are not supported by CMIC 12.XX. They can remain in the <code>CMICConfig2.xml</code>, but they will have minimal management functionality. They will display an operational state of "Unsupported OS, Node Agent Lost Contact." Windows nodes should be retired from systems and removed from CMIC configuration before future upgrades. A future release will not recognize any Windows nodes.</p>
SWS VM	<p>Use the procedure Upgrading the SWS VM to SLES 11 SP3 to upgrade the SWS VM from SLES 10 or SLES 11 SP 1 to SLES 11 SP3.</p> <p>During the procedure, you will:</p> <ul style="list-style-type: none"> • Use the SLES 11 SP3 SWS VM base image (the gold SWS base image) to upgrade to SLES 11 SP3. The image is available on TSS. <p>Note: The <code>teradata-gsctools</code> package is included on the gold SWS base image.</p> <ul style="list-style-type: none"> • Run a <code>PreFlash</code> migration script. <p>Note: The script is available on TSS. A parameters file is needed for the script. A sample parameters file is available in the <code>LS1024_CMIC12_XEN_TO_KVM_Migration</code> Change Control. During the procedure, you will update the parameters file with the information needed to run the script.</p>
Viewpoint VM	<p>Use the procedure Preparing the Viewpoint VM for Migration. After completing the procedure, you will:</p> <ul style="list-style-type: none"> • Follow the appropriate procedure for flashing the VMS to 2.XX. • Use the Upgrading the Viewpoint VM to SLES 11 SP3 procedure to complete the migration. • These procedures require the following scripts and packages from TSS:

Component	Description
	<ul style="list-style-type: none"> • <code>install-viewpoint__SLES10-11</code> script to back up the Viewpoint VM network configuration in the first procedure and restore it in the second procedure • For Viewpoint VMs running SLES 10: <code>quota</code> package, version 3.13 or later • For Viewpoint VMs running SLES 11 SP1: <code>quota</code> package, version 3.16 or later • <code>tdc-SLES11sp3-base-image</code> package to upgrade the Viewpoint VM from SLES 10 or SLES 11 SP 1 to SLES 11 SP3 in the second procedure • Current <code>sm3gnode</code> package • Current <code>TDput</code> package • Current Viewpoint 15.11 packages (optional)
VMS	<p>Use one of the following procedures to migrate the VMS from 1.02 or 1.03 to VMS 2.XX.</p> <p>Note: Versions earlier than 1.02 are not supported. Upgrade the VMS to 1.02 or 1.03 before migrating to 2.00. See the <i>Virtualized Management Server (VMS) Operations Guide</i>, release 1.02 or 1.03, for the upgrade procedure.</p> <ul style="list-style-type: none"> • Flashing the VM from VMS 1.X to VMS 2.0: Java 7 • Flashing the VM from VMS 1.X to VMS 2.0: Java 8 <p>The procedures require the most current <code>sm-vms-vmsimage</code> package from TSS.</p> <p>Notice: You must first perform pre-migration preparation steps for the VMs before you migrate the VMS.</p>

Pre-Migration Tasks

Preparing ServiceConnect for Performing the Migration Remotely

If the SWS has `teradata-axeda` version 11.00 to 11.04, upgrade to 11.05 or later to get the `uploadmon` feature. Both `teradata-axeda 4.XX` and `teradata-axeda 11.05` require JRE 7.

Note: After the migration, the `teradata-axeda` ServiceConnect version will be 12.XX.

To perform the migration, the `teradata-axeda 04.XX` package requires the file `/etc/opt/teradata/axeda/SiteID`. This allows the creation of the `/etc/axeda.conf` file used during the migration.

- For sites with `teradata-axeda` versions 3.0 and 3.1, the `SiteID` file must be created manually.
- For sites with `teradata-axeda` versions 2.4 and earlier, the `SiteID` file exists and does not need to be created.

- 1 From the ServiceConnect Enterprise Server, open up a VNC remote session to the system being upgraded.

- 2 Go to the SWS VM desktop, open a shell, and log in as root.
- 3 Determine which teradata-axeda version is running by entering the following:

```
rpm -q teradata-axeda
```
- 4 If the teradata-axeda version at the site is 3.0 or 3.1, create an `/etc/opt/teradata/axeda/SiteID` file:
 - a At the prompt, enter `echo "SiteNameOnly" > /etc/opt/teradata/axeda/SiteID`
 - b Enter `chown root:root /etc/opt/teradata/axeda/SiteID`.
 - c Enter `chmod 0644 /etc/opt/teradata/axeda/SiteID`.
The file should contain no spaces.
- 5 On the Xen SWS VM, upgrade the Xen SWS VM to teradata-axeda 04.XX as described in *Teradata ServiceConnect™ Guide, B035-5373*.
JRE 7 is required when upgrading to teradata-axeda 04.XX.
- 6 On the Xen SWS VM and CMIC, add models TVI and LTMS to ServiceConnect assets as described in *Teradata ServiceConnect™ Guide, B035-5373*.
- 7 On the Xen SWS and CMIC, verify uploadmon works by typing the following command:

```
/opt/teradata/axeda/bin/uploadmon status
```


uploadmon is working when the output contains NORMAL OR CONFIGURED.

Determining the VMS Hardware Configuration

During the migration from Xen to KVM, you need to know which VMS hardware is hosting the SWS VM and Viewpoint VM. The information is used when upgrading the SWS VM and Viewpoint VM to SLES 11 SP 3. Determine the VMS hardware configuration before you begin the SWS VM or Viewpoint VM migration.

- 1 From the ServiceConnect Enterprise Server, open up a VNC remote session to the SWS desktop.
- 2 On the SWS VM desktop, open a shell and log in as root.
- 3 Connect to the VMS:
 - a Enter the following

```
ssh vms@<VMS IP address>
```
 - b Switch to user `root` by running `su`.
- 4 At the prompt, type `vmsutil -cfginfo`.
- 5 At the end of the output, find `Active VMSPlatform`, and note the hardware chassis type (Eagle, Romley, or Romley/Grantley).
- 6 For Romley and Romley/Grantley chassis types, determine the amount of memory:

- a Enter `# hwinfo --bios | grep -i " size: "`
Type *two* spaces after the first quotation mark. Type *one* space between the colon and the second quotation mark.
 - b Using the output from the command, add up the amount of memory for the chassis.
- 7 Use the chassis type and memory to determine which character string to use as input during the migration.
- The following shows the type of hardware and the corresponding input used when upgrading the SWS VM to SLES 11 SP3.

Chassis Type	Memory	Input Used During Upgrade
Eagle 1U	24 GB	systype1/sws
Romley 1U	32 GB	systype2-small/sws
Romley 1U	64 GB	systype2/sws
Romley.v2/Grantley	64 GB	systype3-small/sws
Romley.v2/Grantley	128 GB	systype3/sws

- The following shows the type of hardware and the corresponding input used when upgrading the Viewpoint VM to SLES 11 SP3.
- | Chassis Type | Memory | Input Used During Upgrade |
|--------------------|--------|---------------------------|
| Eagle 1U | 24 GB | systype1/viewpoint |
| Romley 1U | 32 GB | systype2-small/viewpoint |
| Romley 1U | 64 GB | systype2/viewpoint |
| Romley.v2/Grantley | 64 GB | systype3-small/viewpoint |
| Romley.v2/Grantley | 128 GB | systype3/viewpoint |
- 8 Record the systype (systype1, systype2-small, systype2, systype3-small, systype3) for use during the procedures.

Determining IP Addresses and Domain Names

The migration procedures assume one of the VMSs is a system VMS and contains all three VMs: CMIC VM, SWS VM, and Viewpoint VM. For sites that have a dedicated SWS and/or Viewpoint enterprise server, you will not need the domain name of the SWS VM and/or Viewpoint VM.

During the migration, you will need the following information.

- IP address of the SWS VM
- IP address of the VMS
- Domain name of the CMIC VM
- Domain name of the SWS VM
- Domain name of the Viewpoint VM

You will also need new domain names for the SWS and Viewpoint KVM VMs.

Notice: Do not use the same names as the Xen VMs.

- 1 Log on to the ServiceConnect Enterprise Server and open a VNC remote session to the SWS desktop.
- 2 From the SWS desktop, click SMWeb Client.
- 3 Find and record the domain names of the VMs:
 - a In the Tree View, select the CMIC VM that manages the VMS and VMs.
 - b Click Functions > Manage CMIC.
 - c Click CMIC > System > System **Configuration**.
The CMIC configuration displays in the CMIC **Configuration** Editor.
 - d Search for vmname (also known as a *domain name*).
 - e Record the vmname of the first VM you find.
 - f Repeat the last two steps for the remaining VMs
When finished, you should have a vmname for the CMIC VM, SWS VM, and Viewpoint VM.
 - g Under the last vmname, find the VMS entry and record its primary IP address.
 - h Exit the CMIC **Configuration** Editor.
- 4 Find and record the primary IP address of the SWS VM:
 - a Open a shell on the SWS desktop and switch to user *root* by running `su`.
 - b Enter the following:

```
ifconfig eth0
```
 - c Record the primary IP address displayed in the output.

Upgrading the CMIC VM and SWS VM and Preparing the Viewpoint VM

Upgrading CMIC VMs to SLES 11 SP3 and CMIC 12.XX

The CMIC image and CMIC VMs must be upgraded to SLES 11 SP3 and 12.XX before you can upgrade to VMS 2.XX. CMIC 12.XX is required for running KVM and can support Xen SWS VMs and Xen Viewpoint VMs. You cannot flash the VMS from 1.XX to 2.XX if any of the CMICs are older than CMIC 12.XX.

- If the SWS is running JRE 7, you must use ServiceConnect and VNC to connect to the SWS and upgrade the CMIC VMs. This method is covered in the following procedure.
- If the SWS is running JRE 8, you can use a browser to connect to the SMWeb Home page and upgrade the CMIC VMs.

Note: Upgrade all CMICs in the system before upgrading to VMS 2.00. Upgrade the non-SOV CMICs first: even CMICs first, then odd CMICs. Always upgrade the SOV CMIC last.

- 1 Log on to the ServiceConnect Enterprise Server, then:
 - a Go to the Asset field and select LTMS.
 - b From Assets, select the system being upgraded.
- 2 Open a VNC remote session to the SWS desktop.
- 3 Download the CMIC 12.XX image `sm-sw-cmicimage` from Teradata Software Server and place it on the SWS VM at `/var/opt/teradata/packages`.
- 4 Update the CMIC VM to CMIC 12.XX:
 - a From the SWS desktop, click SOV CMIC.
 - b From the SMWeb Home page, click Network Devices and CMICS.
 - c Log in to the CMIC.
 - d Select the CMIC to be updated.
 - e Select CMICS > CMIC Image Update.
 - f Select Continue, then Browse.
 - g Select the downloaded CMIC image placed on the SWS in `/var/opt/teradata/packages`.
 - h Select Open, then Upload.
The image file uploads to the CMIC.
 - i Select Continue.
A pre-flash analysis of the CMIC is performed.
 - j Select all CMICs except the SOV CMIC.

Notice: If there is more than one CMIC in the list, *update the SOV CMIC last*.

- k Select Continue.
The page shows current progress and notifies you when the CMIC image flash is complete. This process takes several minutes.
 - l Repeat the appropriate steps to flash the SOV CMIC.
- 5 Perform a CMIC Health Check to verify the update was successful.
 - a Click CMIC > CMIC Health Check.
 - b Resolve any problems before continuing.
Contact Teradata Customer Support if needed, to resolve any issues.

Upgrading the SWS VM to SLES 11 SP3

To upgrade the SWS VM to SLES 11 SP3, use content in the `README_SWSmigrate.txt` file to create the `PreFlash.parameters` file on the SWS. The `PreFlash-SwsMigrate-to-sp3KVM.sh` script will use the parameters file during the upgrade.

Preparing the `PreFlash.parameters` File for the SWS VM Upgrade Script

Before you can upgrade the SWS VM to SLES 11 SP3, you must create the `PreFlash.parameters` file.

- 1 Create the `PreFlash.parameters` file:
 - a Consult the Change Control for the sample text of the `PreFlash.parameters` file.
 - b Copy the following sample text from the Change Control.

```
Sample PreFlash.parameters file:
# Fill in this shell-style parameters file with your data.
# To run the PreFlash script with this file:
#   bash PreFlash-SwsMigrate-to-sp3KVM.sh --params
#   PreFlash.parameters

# sws primary addr (has cmicaccess in cmicconfig)
SWSIPv4=39.80.16.190

# sws domain name
SWSName=sws

# new sws domain name
NewSWSName=sws-k

# gold sws baseimage filename path
SWSImage=/datapart/path/teradata-sles11-kvmRC1-
swsgold__sles11kvmRC1_x8664.11.03.00.01.tar.gz

# VM template for provisioning (eg systype2/sws)
Template=systype2/sws

# cmic domain name (hosted by the VMS)
CMICName=cmic

# cmic primary addr (managing the SWS)
CMICIPv4=39.80.16.191

# if you use Axeda on the SWS: the version 12+ teradata-
axeda.rpm filename path
TeradataAxeda=/datapart/path/teradata-axeda-12.00.01.00-1.D.
15.10.7.887.x86_64.rpm
```

- c Open a text editor and paste the sample text into it.
 - d Save the file to the `/var/opt/teradata/packages` directory on the SWS VM and name it `PreFlash.parameters`.
- 2 In the `PreFlash.parameters` file, update the IP address of the SWS VM.

- a Open a shell on the SWS desktop, switch to user *root* by running `su`, and enter:

```
ifconfig eth0
```

The primary SWS IP address displays.
- b For `SWSIPv4`, replace `39.80.16.90` with the correct primary IP address of the SWS VM.
- 3 Update the domain names:
 - a In a shell, display the domain names by entering:

```
vm-list
```

Domain names of the VMS display in the `Name` column on the screen.
 - b In the `PreFlash.parameters` file, replace the following:
 - For `SWSName`, replace `sws` with the name of the Xen SWS VM.
 - For `NewSWSName`, replace `sws-k` with the name of the SWS VM that will be migrated to KVM.
- 4 Update the primary IP address of the CMIC managing the SWS VM:
 - a On the SWS VM desktop, click CMIC Monitor.
 - b Select the CMIC managing the SWS VM.
 - c Click `CMIC > Devices > Managed Elements`.
 - d In the tree, select the CMIC VM.
 - e Click the `Console Settings` tab and find the primary IP address.
 - f In the file, for `CMICIPv4`, replace `39.80.16.191` with the name of the CMIC primary IP address.
- 5 Update the VM template name:
 - a Determine which type of VMS contains the SWS VM.
See [Determining the VMS Hardware Configuration](#).
 - b In the file, for `Template`, replace `systype2/sws` with the appropriate template name.
- 6 For `SWSImage`, update the file name of the gold sws base image file used for migration of the SWS VM.
The file path is `/datapart/path` on the VMS.
- 7 If you are using `ServiceConnect`, update the file name of the Teradata-Axeda `rpm` package used for migration.
The file path is `/datapart/path` on the VMS. If you do not have `ServiceConnect`, type a `#` to comment out the line starting with `TeradataAxeda`.
- 8 Save the `PreFlash.parameters` file.
- 9 Go to [Running the SWS VM to SLES 11 SP3 Upgrade Script](#).

Running the SWS VM to SLES 11 SP3 Upgrade Script

Before running the script, you must create and revise the `PreFlash.parameters` file.

Before you begin, consider the following:

- Look at the `--help` option to see all the command line options for the script.
- Using the option `--debugContinueEverything` while running the script to answer yes to all prompts takes about 12 minutes.

1 Download the following files from TSS and place them on the SWS VM in `/var/opt/teradata/packages`:

- `teradata-sles11-kvmRC1-swsgold_sles11kvmRC1_x8664.11.03.00.01.tar.gz` or later
- `PreFlash-SwsMigrate-to-sp3KVM.sh`
- `teradata-axeda-12.00.01.00-1.D.15.10.7.887.x86_64.rpm` or later

2 Verify that the Xen SWS VM has access to the CMIC.

The migration script will check and use it.

- a From the SWS VM desktop, open a shell.
- b Type `MPPInfo`.

If the SWS VM has CMIC access, the command returns XML output.

3 From the SWS VM desktop, use the following command to connect to and log on to the VMS as root:

```
ssh vms@<primary VMS IP address>/datapart
```

4 Copy the following files from the SWS to the VMS:

- `teradata-sles11-kvmRC1-swsgold_sles11kvmRC1_x8664.11.03.00.01.tar.gz` or later
- `PreFlash-SwsMigrate-to-sp3KVM.sh`
- `PreFlash.parameters` file
- `teradata-axeda-12.00.01.00-1.D.15.10.7.887.x86_64.rpm` or later

```
scp root@<sws VM IP address>:</datapart/file name and path/>  
<directory on VMS>>
```

5 Run the migration script:

a Enter the following at the VMS prompt:

```
bash /datapart/path/<directory where the packages, script, and  
parameters files are stored>/PreFlash-SwsMigrate-to-sp3KVM.sh --  
params PreFlash.parameters --debugContinueEverything
```

b Answer the prompts from the script, including the root password of the SWS when prompted.

The script starts.

6 If the script completed successfully with the following message, do not flash the VMS at this time:

Completed successfully SWS is prepared to be migrated from Xen to KVM. You can now flash VMS

Notice: The Viewpoint VM must first be prepared for migration before you flash the VMS.

- 7 Review the output.
 - a Find topic breaks that start with:

```
"USER CHOSE DEBUG_Continue_Everything - Output Not Inspected. ====="
```

Topic breaks can occur in the following areas:

- ServiceConnect configuration
 - Outbox files to discard
 - User and group merge messages
 - File copy messages
 - Disk usage message
- b If the script completed unsuccessfully, fix any problems in the defined areas, then re-run the `PreFlash-SwsMigrate-to-sp3KVM.sh` script until no errors are present, or contact Teradata Customer Support for instructions.
- 8 Go to [Preparing the Viewpoint VM for Migration](#).

Preparing the Viewpoint VM for Migration

- 1 Check the version of the current Xen Viewpoint VM:

```
rpm -q viewpoint
```

Note: If the current Xen Viewpoint VM is older than version 15.11, upgrade Viewpoint to version 15.11.
- 2 Download the SLES 11 base image from the Teradata Software Server (TSS).
 - a Once in TSS, click view on the specific base image you want to download and then click Download all (zip) on the upper right corner of the next screen.
 - b Copy the SLES 11 base image to `/datapart/path` on the VMS.
- 3 Prepare the latest Viewpoint 15.11 packages and scripts:
 - a Download all latest Viewpoint 15.11 Packages and Scripts from TSS.
 - b Once in Teradata Software Server, click view on the specific Viewpoint build you want to download and then click Download all (zip) on the upper right corner of the next screen.
 - c Extract the zip file that was downloaded to your machine, and collect all of the files from the `/rpms` and `/scripts` folders. These will be the core files needed for viewpoint to be upgraded.
- 4 Download the appropriate `quota` package from TSS (version 3.13 for Viewpoint VMs running SLES 10, version 3.16 for Viewpoint VMs running SLES 11 SP1).

- 5 Copy the Viewpoint upgrade script, `install-viewpoint__SLES10-11_x8664.15.11.00.07-1.sh`, and the `quota` package, to the VMS:
From the console, enter:
 - a `ssh <user>@<vms-host>`
 - b `su root`
 - c `scp <user>@<server-with-scripts>:/var/opt/teradata/packages/viewpoint/install-viewpoint__SLES10-11_x8664.15.11.00.07-1.sh`
 - d `scp <user>@<server-with-scripts>:/var/opt/teradata/packages/viewpoint/quota`
- 6 Back up the existing Viewpoint VM image:
 - a Log on to the VMS.
 - b Create the VM backup:
From the console enter: `/opt/teradata/vms/bin/vm-backup --backup -d <viewpoint-vm-name> --name <backup-name> --restart-if-running`
As the Viewpoint VM automatically shuts down, a message may appear: OK to Shutdown?
 - c Answer `Yes` if necessary, to allow the Viewpoint VM to shut down.
Note: To display the general status of the VM backups, use `/opt/teradata/vms/bin/vmbackup-list`.
- 7 Copy the latest Viewpoint 15.11 upgrade scripts to the Viewpoint VM:
 - a `ssh <user>@<vms-host>`
 - b `su root`
 - c `scp install-viewpoint__SLES10-11_x8664.15.11.00.07-1.sh <user>@<viewpoint-vm>:/var/opt/teradata/packages/viewpoint`
- 8 Log on to the existing Viewpoint VM and run the VMS configuration and network files backup script at: `/var/opt/teradata/packages/viewpoint/install-viewpoint__SLES10-11_x8664.15.11.00.07-1.sh vmsbackup`.
 - a Answer the prompts.
Note: The script will take several minutes to run.
- 9 Depending on the Java version installed on the Viewpoint VM, go to [Flashing the VM from VMS 1.X to VMS 2.0: Java 7](#) or [Flashing the VM from VMS 1.X to VMS 2.0: Java 8](#).

Flashing the VMS

Flashing the VM from VMS 1.X to VMS 2.0: Java 7

An SWS running SLES 10 cannot use the SMWeb interface if it is running Java 7. If the SWS is running Java 8, go to [Flashing the VM from VMS 1.X to VMS 2.0: Java 8](#). Flash the VM with the CMIC Web pages:

Notice: Avoid using the VMS command line when flashing the VMS, as it bypasses important safeguards.

1 From the SWS, download the VMS firmware bundle from the Teradata Software Server:

- a Go to the Teradata Software Server: <http://tssprod.teradata.com:8080/TSFS/>.
- b Click Hardware.
- c Under the Hardware header, select Platforms.
- d In the Sub Category list, select VMS and click Submit.
- e Select the sm-vms-vmsimage package and click Submit.
- f From the sm-vms-vmsimage package, extract the VMS firmware bundle `vmsimage-02.xx.xx.zip`.

Note: Do not unzip the VMS firmware bundle.

2 Update the CMIC resident firmware with the VMS firmware bundle:

- a From the SWS, go to CMIC Monitor.
- b From the main menu, select CMICs > Firmware Upload.
- c Click Browse.
- d Choose File and select the `vmsimage` file acquired in the previous step.
- e Click Upload to upload the file to the CMICs.
- f When the upload completes, click Continue.

The CMIC selection screen shows you which CMICs will get a copy of the new VMS firmware bundle.

g Click Continue.

The distributing firmware bundle screen shows you the progress as the file is copied to the selected CMICs. When finished, it displays `Succeed` or `Finished`.

3 Click Home > Network Devices & CMICs.

The VMS is managed by one of the listed CMICs. A properly configured system will show your VMS chassis ID in the **Specific Chassis Hosted** column.

4 Select the primary IP address of the CMIC that is managing the VMS.

- 5 Select CMIC > Devices > Managed Elements.
 - a Select the VMS.
 - b Select the Methods tab.
 - c Select FWFlash.

A new tab opens.
 - d Enter the following information:
 - your name
 - 1
 - vms upgrade
 - e Press Run.

The flash takes several minutes to complete, then shows `Return Value=Success`
- 6 Select CMIC > Devices > Managed Elements.
 - a Select the VMS.
 - b Select the Methods tab.
 - c Select HardReset.

A new tab opens.
 - d Enter the following information:
 - your name
 - 1
 - vms upgrade
 - e Press Run.

The reboot takes several minutes.

Note: If you are using the SWS or CMIC on the rebooting VMS, ServiceConnect loses contact with the server for up to 15 minutes until the reboot completes.

Flashing the VM from VMS 1.X to VMS 2.0: Java 8

Use the SMWeb interface to flash the VM if you have Java 8 or later. However, if you are running from a SLES 10 SWS that cannot run Java 8, go to [Flashing the VM from VMS 1.X to VMS 2.0: Java 7](#). Flash the VM from the SMWeb interface.

Notice: Avoid using the VMS command line when flashing the VM. It bypasses important safeguards.

- 1 From the SWS, download the VMS firmware bundle from the Teradata Software Server:
 - a Go to the Teradata Software Server: <http://tssprod.teradata.com:8080/TSFS/>.

- b Click Hardware.
- c Under the Hardware header, select Platforms.
- d In the Sub Category list, select VMS and click Submit.
- e Select the sm-vms-vmsimage package and click Submit.
- f From the sm-vms-vmsimage package, extract the VMS firmware bundle `vmsimage-02.xx.xx.zip`.

Notice: Do not unzip the VMS firmware bundle.

- 2 Update the CMIC resident firmware with the VMS firmware bundle:
 - a Connect to the Server Management Web Services Home page.
 - b Select Network, Devices, and CMICs.
 - c From the main menu, select CMICs > Firmware Upload.
 - d Upload the VMS firmware bundle.
 - e Click Continue.
A page with all CMICs selected displays. Do not make any changes.
 - f Click Continue.
Wait for the distribution to complete before continuing.
- 3 On the Server Management Web Services Home page, select Server Management Client.
Note: If prompted, log on to Server Management Client as a Service User.
The SMClient software opens.
- 4 From the main menu, select Tools > Firmware Version Checker.
VMS chassis highlighted yellow indicate a more current version of firmware is available.
- 5 Flash any VMS chassis that are out-of-date:
 - a On the Firmware Version Checker window, select one or more components to flash.
 - b Select Functions > Flash.
 - c When prompted, click Yes.
Note: The VMS chassis does not automatically reboot.
- 6 Reboot the VMS chassis:
Note: All hosted VMs reboot.
 - a From the SMClient main menu, select Tools > Multi-Select.
The Multi-Select window appears.
 - b In the pane, highlight VMS.

- c At Select the function, select Reset and click Run.

Note: If you are using the SWS or CMIC on the rebooting VMS, SMClient loses contact with the server and exits if being run from the SWS desktop.

Verifying the Migration from VMS 1.X to VMS 2.X

- 1 Log on through VNC and verify that the SWS VM migration was successful:

Note: If the migration was successful, after 9 minutes you can access the site through ServiceConnect and log on to the SWS at the original IP address.

- a At the SWS desktop, open a shell.
- b Verify that the SWS upgrade to SLES 11 SP3 was successful by entering the following:

```
cat /etc/SuSE -release
```

Output should confirm that the SWS was upgraded to SLES 11 SP3.

- c Verify that the version of teradata-axeda is 12.XX:

Enter `rpm -q teradata-axeda`

- d If the SWS ran ServiceConnect, enter:

```
/opt/teradata/axeda/bin/uploadmon status
```

It should report the string: "NORMAL" : or CONFIGURE.

If the migration failed, after 15 minutes, you can access the site through ServiceConnect and log in to the SWS at the original IP address. If there were problems:

- If the VMS reboots and the VMS is not running VMS 2.00, check for errors in log files.
- In ServiceConnect for the site, look at Last Contact and refresh to see if it is counting upwards and not frozen.
- On the VMS, debug information can be found in `/datapart/VMS2.00_Migration_d/`.

- 2 Go to [Upgrading the Viewpoint VM to SLES 11 SP3](#).

Upgrading the Viewpoint VM to SLES 11 SP3

- 1 Install the `quota` package:
 - a From the SWS desktop, open a shell and use the following command to connect to and log on to the VMS as root.

```
ssh vms@<primary VMS IP address>/datapart>
```
 - b Enter the following command:

```
rpm -i <quota path and quota filename.rpm>
```
- 2 Find the information needed for the upgrade:

- a From the SWS desktop, open a shell and use the following command to connect to and log on to the VMS as root.

```
ssh vms@<primary VMS IP address>/datapart>
```
- b Determine which systype to use in the script.
See [Determining the VMS Hardware Configuration](#) to determine which one to use.
- c Enter the following command to determine the existing name of the Viewpoint VM:

```
vm-list
```
- d Determine the file path for the SLES 11 SP3 Viewpoint VM image file (`tdc-SLES11sp3-base-image`).

- 3 Replace the existing Viewpoint VM with the SLES 11 SP3 Viewpoint VM image:
 - a Run the following command, replacing the variables with the correct system names and systype:

Notice: To prevent confusion, do not use the same name for the new SLES11 SP3 Viewpoint VM name and the existing Viewpoint VM name.

```
/opt/teradata/vms/bin/vm-replace --name <new-SLES11-viewpoint-vm-name> --replace <existing-viewpoint-vm-name> --template <systypeX/viewpoint> --baseimage /datapart/<tdc-SLES11sp3-base-image>.
```

- b Answer the prompts.
- 4 Verify the SLES 11 SP3 Viewpoint VM was created and the upgrade to SLES 11 SP3 was successful:

- a Enter the following command:

```
vm-start <new-SLES11sp3-viewpoint-vm-name>
```

The Viewpoint VM should start up with the new SLES 11 SP3 configuration.

- b Enter the following command:

```
vm-list
```
- c Verify that the new Viewpoint VM appears in the list and is running.
- d Verify that the Viewpoint VM upgrade to SLES 11 SP3 was successful by entering the following:

```
cat /etc/SuSE -release
```

Output should confirm that the Viewpoint VM was upgraded to SLES 11 SP3.

- 5 Prepare the SLES11 SP3 Viewpoint VM to restore the Viewpoint VM data and network configuration:
 - a From the VMS, use `virsh console` to log on to the SLES11 SP3 Viewpoint VM as root:

```
virsh console <viewpoint-vm-name>
```

Note: On the SLES11 SP3 VM, the login has reset to the default `root/root`. This will be manually changed in the following steps.

- b Change the server password from root to desired password:

```
passwd
```

- c Record the new password for later use.

- d Look up the IP address of the SLES 11 SP3 Viewpoint VM and record for later use:

```
ifconfig eth0
```

- e Create the Viewpoint packages directory:

```
mkdir --packages /var/opt/teradata/packages/viewpoint/
```

- f Close the Virsh console:

```
ctrl + ]
```

- g From the VMS prompt, copy the Viewpoint upgrade script from the VMS to the Viewpoint VM:

```
scp install-viewpoint__SLES10-11_x8664.15.11.00.07-1.sh  
<user>@<recorded-ip>: /var/opt/teradata/packages/viewpoint/.
```

- h From the VMS, change the permissions on the file:

```
chmod a+x /var/opt/teradata/packages/viewpoint/install-  
viewpoint__SLES10-11_x8664.15.11.00.07-1.sh
```

- 6 Restore the Viewpoint VM configuration:

```
virsh console <viewpoint-new-vm-name>/var/opt/teradata/packages/  
viewpoint/install-viewpoint__SLES10-11_x8664.15.11.00.07-1.sh  
vmsrestore
```

The console displays the following: Restore Configuration data completed.

- 7 Restart the Viewpoint VM:

- a Enter the following:

```
shutdown -r now
```

- b Close the virsh console:

```
ctrl + ]
```

The vmsrestore operation is performed and the Viewpoint VM is restarted. The network configuration is now restored on the new SLES 11 SP3 KVM instance. The KVM Viewpoint VM is accessible in the same way the previous Xen Viewpoint VM was.

Performing Post-Migration Tasks

Performing Post-Migration Tasks for the Viewpoint VM

- 1 Open the CMIC Configuration of the CMIC managing the VMS and verify that the CMIC configuration file contains the name of the SLES 11 SP3 KVM Viewpoint VM.

If a VM name has not been updated from Xen to KVM, update it.

- 2 Install the `sm3gnode rpm` package on the SLES 11 SP3 Viewpoint VM:
 - a Download the most current version of the `sm3gnode rpm` package from the Teradata Software Server to the `/opt/teradata/cmhc/data` directory on the SWS.
 - b On the SWS desktop, open a shell and switch to user `root` by running `su`.
 - c Enter the following:

```
cd /opt/teradata/packages/cmhc/data
```
 - d Enter the following:

```
scp nodepkgs.zip root@<IP address of Viewpoint VM>:/var/opt/teradata/packages/viewpoint
```
 - e Enter the password for the Viewpoint VM.

The files are copied.
 - f Enter the following:

```
ssh root@<IP address of Viewpoint VM>
```
 - g Enter the password for the Viewpoint VM.
 - h Enter the following:

```
cd /var/opt/teradata/packages/viewpoint
```
 - i Install the package:

```
rpm -i <name of sm3gnode file>
```
- 3 Install the TDput software:
 - a Download the TDput package from the Teradata Software Server to the SWS.
 - b On the SWS desktop, open a shell.
 - c Enter the following:

```
cd /opt/teradata/packages/cmhc/data
```
 - d Enter the following:

```
scp TDput.zip root@<IP address of Viewpoint VM>:/var/opt/teradata/packages/viewpoint
```
 - e Enter the password for the Viewpoint VM.

The files are copied.
 - f Enter the following:

```
ssh root@<IP address of Viewpoint VM>
```
 - g Enter the password for the Viewpoint VM.
 - h Enter the following:

```
cd /var/opt/teradata/packages/viewpoint
```

- i Install the package:

```
rpm -i <name of TDput file>
```
- 4 If needed, install the latest Viewpoint 15.XX patch:
 - a Download the Viewpoint 15.XX install scripts and rpms from the Teradata Software Server to the SWS.
Once in Teradata Software Server, click view on the specific Viewpoint build you want to download and then click Download all (zip) on the upper right hand corner of the next screen.
 - b Copy the latest Viewpoint 15.XX packages and scripts from the SWS to the new SLES 11 SP3 Viewpoint VM:

```
scp <viewpoint 15.XX packages and scripts> root@<IP address of Viewpoint VM>:/var/opt/teradata/packages/viewpoint
```
 - c Enter the following:

```
ssh root@<IP address of Viewpoint VM>
```
 - d Enter the password for the Viewpoint VM.
 - e Enter the following:

```
cd /var/opt/teradata/packages/viewpoint
```
 - f Extract the zip file.
 - g Collect all of the files from the `/rpms` and `/scripts` folders and copy them to the Viewpoint VM:

```
scp -r <user>@<server-with-packages>:<location of Viewpoint15.11Packages and Scripts> /var/opt/teradata/packages/viewpoint/.
```
 - h Using the Viewpoint packages and scripts copied in the previous step, follow the *Teradata Viewpoint Installation, Configuration, and Upgrade Guide for Customers, B035-2207*, to upgrade viewpoint to the latest patch.
- 5 Reboot the Viewpoint node:

```
shutdown -r now
```
- 6 Remove the Viewpoint 15.11 scripts copied to the VMS as part of the prerequisite steps:

```
ssh <user>@<vms-host>  
  
su root  
  
rm /tmp/install-viewpoint__SLES10-11_x8664.15.11.00.07-1.sh
```

Performing Post-Migration Tasks for the VMs and VMS

Perform the following steps after you have verified that the migration updates are successful.

Notice: Keep the Xen VMs if you might need to back down from the migration.

- 1 Open the CMIC Configuration of the CMIC managing the VMS and verify that the CMIC configuration file contains the names of the KVM Viewpoint VM and KVM SWS VM.
If a VM name has not been updated from Xen to KVM, update the name.
- 2 Using Server Management Client, log in and verify that the new VMs are in the Tree View and have no errors.
- 3 On the VMS, clean up the data in `/datapart/VMS2.00_Migration_d/`.
- 4 Use `vm-backup` to make a backup of the Xen SWS VM.

Notice: Keep the Xen VMs if you might need to back down from the migration.

- 5 [Optional] If you do not need to back down from the migration, delete the Xen Viewpoint domain to reclaim disk space on `/datapart`:

- a To show the list of VMs type:

```
vms:/home/vms # /opt/teradata/vms/bin/vm-list
```

Output should look similar to the following. (Xen VP is the name of the Xen Viewpoint domain.)

Name	ID	Mem	VCPUs	Type	State	
Xen VP			7168	7	Xen	Not migrated to KVM
domain management						

- b Enter:

```
vms:/home/vms # /opt/teradata/vms/bin/vm-delete -d <Xen VP Domain>
```

Backing Down from KVM to Xen

Things to consider before backing down:

- Backing down from the KVM to Xen migration can be performed only if configuration changes have not been made since the migration. If you back down after configuration changes have been made, you will lose the changes.
- You can back down the SWS VM only, the Viewpoint VM only, or both.
- You can downgrade the CMIC VMs, but it is not necessary. A CMIC VM migrated from Xen to KVM will support running an SWS VM or Viewpoint VM configured with Xen.
- If the CMIC configuration has explicit PMAID settings or bonded network adapters, a CMIC VM can be downgraded only to 11.03, but no earlier.
- If the system has more than one CMIC VM:
 - Verify that the CMIC configuration contains a failover SOV CMIC. If a failover SOV CMIC has not been configured, configure one, or you will have no managing CMIC during the downgrade.
 - Downgrade the non-SOV CMICs first: even CMICs first, then odd CMICs.
 - Always downgrade the SOV CMIC last.
- If the system has only one CMIC VM (the SOV CMIC), you will lose contact with the CMIC VM for approximately ten minutes during the backdown or downgrade.

Backing Down VMs from KVM to Xen when the VMS is Running 2.XX

The following procedure assumes that the Xen configurations of the SWS VM and Viewpoint VM are disabled, but have not been deleted from the VMS.

Notice: This procedure is preferred over the following procedure because it provides minimal disconnected time, and the user can run all of the commands before the SWS is stopped. However, either procedure is acceptable if you are not connecting remotely via ServiceConnect on the SWS VM.

- 1 Use VNC to connect to the ServiceConnect Enterprise Server.
- 2 On the SWS VM desktop, open a shell and connect to the VMS:

```
ssh vms@<primary IP address of VMS>
```
- 3 On the VMS, display the names of the VMs:

```
vm-list
```
- 4 Record the domain names of the disabled Xen SWS VM and the disabled Xen Viewpoint VM.
- 5 If the disabled Xen SWS domain provided ServiceConnect functionality, you must set the Xen SWS domain to start automatically.
 - a Run the following command using the name of the disabled Xen SWS domain:

```
/etc/init.d/vms-vm auto-add-add <xen-sws-domain>
```
 - b Enter:

```
/etc/init.d/vms-vm auto-start-add <xen-sws-domain>
```
- 6 Set the Xen Viewpoint domain to start automatically:
 - a Run the following command using the name of the disabled Xen Viewpoint domain:

```
/etc/init.d/vms-vm auto-add-add <xen-vp-domain>
```
 - b Enter:

```
/etc/init.d/vms-vm auto-start-add <xen-vp-domain>
```
- 7 Using the CMIC Configuration Editor, change the KVM SWS VM and KVM Viewpoint VM domain names to the Xen SWS VM and Xen Viewpoint VM domains:
 - a For each VM, find the vmname parameter.
 - b Change the vmname parameter from the KVM domain name to the Xen domain name.
- 8 Flash the VMS from 2.XX to VMS 1.XX.
 - a From the CMIC Monitor page, download the firmware.
 - b From SMClient, flash the VMS.

When the VMS reboots, the KVM VMs (CMIC, Viewpoint, SWS) will stop, and the Xen VMs will automatically start after the VMS restarts.

Backing Down VMs from KVM to Xen when the VMS is Running 1.XX

The following procedure assumes that the Xen configurations of the SWS VM and Viewpoint VM have been deleted from the VMS, and that backups of the Xen SWS VM and Xen Viewpoint VM exist.

Notice: The previous procedure is preferred over this procedure because this procedure cannot be performed if you are using ServiceConnect on the SWS, as the SWS is not running until you run `vm-start`. However, either procedure is acceptable if you are not connecting remotely over ServiceConnect on the SWS VM.

- 1 Use VNC to connect to the ServiceConnect Enterprise Server.
- 2 On the SWS VM desktop, open a shell and connect to the VMS:

```
ssh vms@<primary IP address of VMS>
```
- 3 On the VMS, run `vm-list` to display the names of the VMs.
- 4 Record the domain names of the enabled KVM VMs.
- 5 Back up the KVM SWS VM.
- 6 Back up the KVM Viewpoint VM:
 - a Log on to the VMS.
 - b Create the VM backup: `/opt/teradata/vms/bin/vm-backup --backup -d viewpoint-vm-name --name backup-name --restart-if-running`

Note: The VM automatically shuts down and the VM backup is placed in `/datapart/vms/data/backup/vm-backup`
 - c Copy the VM backup from the VMS to a backup location.

Note: To display the status of the VMS: `/opt/teradata/vms/bin/vm-list`
- 7 Verify that a backup of the Xen Viewpoint image and Xen SWS image exist:

```
/opt/teradata/vms/bin/vm-backup --list
```
- 8 Restore the Xen SWS VM.
- 9 Restore the Xen Viewpoint VM:
 - a Log on to the VMS
 - b If needed, copy the backup onto the VMS:

```
/datapart/vms/data/backup/vm-backup.
```
 - c Find the name of the VM backup on the VMS:

```
/opt/teradata/vms/bin/vm-backup --list
```
 - d Restore the VM:

```
/opt/teradata/vms/bin/vm-backup --restore backupname
```
- 10 [Optional] If the disabled Xen SWS domain provided ServiceConnect functionality, you must set the Xen SWS domain to start automatically when the VMS reboots:

- a Run the following command using the name of the disabled Xen SWS domain:

```
/etc/init.d/vms-vm auto-add-add <xen-sws-domain>
```
- b Enter:

```
/etc/init.d/vms-vm auto-start-add <xen-sws-domain>
```
- 11 Set the restored Xen Viewpoint domain to start automatically when the VMS reboots:
 - a Enter:

```
/etc/init.d/vms-vm auto-add-add <xen-sws-domain>
```
 - b Enter:

```
/etc/init.d/vms-vm auto-start-add <xen-sws-domain>
```
- 12 Using the CMIC Configuration Editor, update the Viewpoint VM domain name.
 - a Find the `vmname` parameter.
 - b Change the `vmname` parameter from the KVM domain name to the Xen domain name.
- 13 Start the SWS and Viewpoint domains:
 - a Enter:

```
vm-start
```

When the VMS reboots, the KVM VMs (CMIC, Viewpoint, SWS) will stop, and the Xen VMs will automatically start after the VMS restarts.
- 14 [Optional] Remove the KVM SWS VM:

```
/opt/teradata/vms/bin/vm-delete -d sws-kvm-vm-name
```
- 15 [Optional] Remove the KVM Viewpoint VM:

```
/opt/teradata/vms/bin/vm-delete -d viewpoint-kvm-vm-name
```


Upgrading the VMS and Virtual Machines

Upgrading a VMS

Note: These procedures are intended for upgrading the CMIC 12.00 to a later version of the CMIC. If you are upgrading from an 11.06 or earlier version of the CMIC, you must migrate from Xen to KVM first. See [Migrating from Xen to KVM](#).

Upgrading a VMS Using Server Management Web Services

- 1 Download the VMS firmware bundle from the Teradata Software Server:
 - a Go to the Teradata Software Server: <http://tssprod.teradata.com:8080/TSFS/>.
 - b Click Hardware.
 - c Under the Hardware header, select Platforms.
 - d In the Sub Category list, select VMS and click Submit.
 - e Select the sm-vms-vmsimage package and click Submit.
 - f From the sm-vms-vmsimage package, extract the VMS firmware bundle `vmsimage-xx.xx.xx.zip`.

Note: Do not unzip the VMS firmware bundle.
- 2 Update the CMIC resident firmware with the VMS firmware bundle:
 - a Connect to the Server Management Web Services Home page.
 - b Select Network, Devices, and CMICs.
 - c From the main menu, select CMICs > Firmware Upload.
 - d Upload the VMS firmware bundle.
 - e Click Continue.

A page with all CMICs selected is displayed. Do not make any changes.
 - f Click Continue.

Wait for the distribution to complete before continuing.
- 3 On the Server Management Web Services Home page, select Server Management Client.

Note: If prompted, log on to Server Management Client as a Service User.

The SMClient software opens.

- 4 From the main menu, select Tools > Firmware Version Checker.

VMS chassis highlighted yellow indicate a more current version of firmware is available.

- 5 Flash any VMS chassis that are out of date:
 - a On the Firmware Version Checker window, select one or more components to flash.
 - b Select Functions > Flash.
 - c When prompted, click Yes.

Note: The VMS chassis does not automatically reboot.

- 6 Reboot the VMS chassis:

Note: All hosted VMs reboot.

- a From the SMClient main menu, select Tools > Multi-Select.
The Multi-Select window appears.
- b In the pane, highlight VMS.
- c At Select the function, select Reset and click Run.

Note: If you are using the SWS or CMIC on the rebooting VMS, SMClient loses contact with the server and exits if being run from the SWS desktop.

Upgrading a VMS Manually

- 1 Log on to the VMS.
- 2 View the current VMS version:

```
/opt/teradata/vms/bin/vmsutil -v
```
- 3 If the version is out of date, download the VMS firmware bundle from the Teradata Software Server onto the VMS `/datapart` directory.
- 4 Flash the VMS:

```
/opt/teradata/vms/bin/vmsutil -flash /datapart/firmwarebundle
```
- 5 Reboot the VMS:

```
reboot
```

Upgrading a CMIC Virtual Machine

- 1 Update the CMIC VM as described in the *Teradata Server Management Web Services Configuration Guide* (B035-5351).

Upgrading a Non-CMIC Virtual Machine

Upgrade of a non-CMIC VM is done as part of the PUT Install/Upgrade **Software** operation. PUT optionally creates a VM backup located on the VMS using *vmname* and then installs the upgrade package on the VM. See the appropriate *Parallel Upgrade Tool (PUT) Reference*.

To upgrade an SWS from SLES 10 to SLES 11, contact Teradata Customer Support.

Note: A VM backup/upgrade requires the VM to reboot.

Note: PUT is used to perform upgrade of a Teradata Viewpoint OS. It does not upgrade Teradata Viewpoint software or install packages. See the *Teradata Viewpoint Installation, Configuration, and Upgrade Guide for Customers (B035-2207)*.

VMS Linux Command Reference

Command Reference

This chapter describes the Linux commands for the most commonly used VMS utilities. The utilities can be run from the VMS console or from the command prompt.

Table 3: Command Reference

Command	Description
<code>brctl show</code>	Shows bridge information (the VMS uses bridges to attach the network interfaces to the VMs)
<code>create-support-files</code>	Gathers support information (including trace, config, log, and crashdump files) and places it into a zip file
<code>ipmitool</code>	Runs the Intelligent Platform Management Interface utility for monitoring, logging, recovery, inventory, and control of hardware
<code>setmbr</code>	Builds a VMS disk
<code>show-support-info</code>	Runs several information commands for the VMS
<code>sws-access</code>	Configures and launches the SWS Access feature
<code>virt-viewer</code>	Opens a window to a VM's virtual graphical console (the virtual VGA)
<code>vm-backup</code>	Creates a VMS VM backup and restores a VM from a VMS virtual machine backup. The following options are available: <ul style="list-style-type: none"> <code>-config</code>: Backs up a VM configuration. It does not back up the virtual images. <code>-delete</code>: Deletes VM backup files.
<code>vm-backup-config</code>	Creates backups of VM Config data
<code>vm-change-name</code>	Changes the name of an existing VM and operates only on VMS-specific VMs created with the VMS <code>vm-create</code> command ^a
<code>vm-create</code>	Creates a new VMS virtual machine ^a
<code>vm-create-baseimage</code>	Creates a VMS VM base image. For use as input into <code>vm-create</code> .
<code>vm-delete</code>	Permanently deletes a VM ^a from the VMS.
<code>vm-disk-add</code>	Attaches a disk to a VM ^a .
<code>vm-disk-df</code>	Show disk utilization of filesystems within a VM's OS disk image

Command	Description
<code>vm-disk-remove</code>	Detaches a disk from a VM ^a
<code>vm-disk-resize</code>	Resizes a VM's OS disk image
<code>vm-dump</code>	Triggers a VM core dump
<code>vm-dump-config</code>	Dumps the configuration data for one or more VMs
<code>vm-list</code>	Lists information on all VMs present on the VMS.
<code>vm-macgen.py</code>	Creates a new KVM MAC address
<code>vm-make-unique</code>	Makes an existing VM unique bu changing MAC addresses, etc. This does not create a clone. ^a
<code>vm-mount</code>	Temporarily mounts filesystems from a VM's OS disk image
<code>vm-network-add</code>	Adds bridged ethernet access to a VM
<code>vm-network-remove</code>	Removes bridged ethernet access to a VM
<code>vm-replace</code>	Replaces an existing KVM VM with a new VM created from a base image while preserving the original VM's MAC addresses.
<code>vm-start</code>	Starts a VM
<code>vm-stop</code>	Shuts down a VM
<code>vm-xml.py</code>	Collects sub-commands for dealing with libvirt XML for VM configuration files persisted to <code>ConfigDir/vm-config/xml</code> and for active versions running VMs.
<code>vms-netconfig</code>	Configures the VMS network interfaces
<code>vms-services</code>	Checks the status of services
<code>vmsutil</code>	Performs general tasks, such as flashing the VMS
<code>virt-top</code>	Shows ongoing information about the VM's virtual resource usage
<code>virsh</code>	The main KVM command line utility. Shows information about the VMs and KVM Host
<code>virsh console</code>	Attaches a console to a VM's virtual serial port
<code>virsh list</code>	Lists information about all/some domains
<code>/etc/init.d/vms-vm</code>	Starts/stops VMs and manipulates which VMs auto-start at VMS bootup
a. Contact Teradata Engineering before attempting to modify the VM configuration.	

Understanding VMS KVM Host

When you log on to the VMS you are logging on to KVM VMS, which:

- Performs all disk and network I/O for the VMs
- Is where you log on to interact with the VMs and the hypervisor

The KVM host can see all physical hardware except memory. The VMS KVM host is only allocated a small portion of the physical memory.

Note: Unless otherwise specified, all commands in the Troubleshooting section are run on the KVM host, not the individual VMs.

VMS Support Files

The VMS support files collect trace and log files, crash dumps, and various command outputs that are useful in troubleshooting problems with the VMS.

Gather support information:

```
/opt/teradata/vms/bin/create-support-files
```

The support file is located in:

```
/datapart/vms/support/
```

VM Status

Display VM status:

```
/opt/teradata/vms/bin/vm-list
```

Log and trace data about VM management (starting, stopping, and so on) are located in:

```
/var/log/messages and /var/log/libvirt/libvirtd.log
```

VMS Status

Besides the standard SLES OS utilities (such as `procinfo` and `top`), there are some VMS-specific utilities:

```
/opt/teradata/vms/bin/show-support-info
```

Runs various useful commands

```
brctl show
```

Network bridge information

Displaying Physical Memory Size

Show memory allocated to KVM Host:

```
/proc/meminfo
```

Crash/Memory/Kernel/Core Dumps

KVM Host does not have any `kernel-[syms|source|debuginfo]` packages installed. To analyze a kernel dump, transfer the dump somewhere that has those packages installed that match the VMS versions. The VMS support files feature does not collect kernel dumps, and these files can be very large, so decisions about how to transfer kernel dumps off the VMS are left to support personnel.

KVM Host kernel	Kernel core dumps are located in the respective VM, but not on the VMS KVM host: <code>/datapart/vms/kerneldump/</code> Note: The VMS does not use the <code>kdump</code> auto dump file compression feature causing the dump file to be very large. The dumps can be manually compressed following these guidelines: <ul style="list-style-type: none">• Dump files less than 4GB, use <code>zip</code>• Dump files 4GB or greater, use <code>gzip</code> or <code>bzip2</code> (because <code>zip</code> does not support files greater than 4GB)
VMS KVM Host software	Process crash dumps are located in: <code>/datapart/vms/crashdump/</code>
Virtual machines	VM kernel dumps are located inside the VM in: <code>/var/crash</code>
VMS information, processors and platform	<ul style="list-style-type: none">• Returns the VMS type: <code>/opt/teradata/vms/bin/vmsutil -cfg ActiveVMSPlatform</code>• Indicates the number of CPUs available on the VMS host (for example, KVM Host): <code>cat/proc/cpuinfo</code>

Log and Trace Files

The VMS services to `syslog`:

```
/var/log/messages
```

The VMS software trace files are located in:

```
/datapart/vms/trace/
```

Log and trace data about VM management activities are located in:

```
/var/log/libvirt/libvirtd.log and /var/log/libvirt/qemu/ for VM-specific log files.
```

VMS Disk Space

There are 3 directories where space may run out on the VMS:

<code>/datapart</code>	Usually used for temporarily holding files. The files in this directory are not necessary for VMS operation.
<code>/datapart/vms/data/images</code>	Houses the VM virtual disk images files. Do not delete the files in this directory.
<code>/datapart/vms/data/backup/vm-backup</code>	Houses the VM backup files. The files in this directory are not necessary for VMS operation.

Create disk space by deleting VM backups or VMs by doing one of the following:

- If you need to delete VM backups, use `vm-backup --delete`.
- If you need to delete a VM, use the `vm-delete` utility.

Monitoring VMS and Virtual Machine Performance and Resource Usage

Monitoring Utilities

The following utility monitors VMS and VM performance and resource usage.

<code>virt-top</code>	Shows "top" information about the virtual resource usage of a VM.
-----------------------	---

Linux Monitoring Utilities

The following utilities monitor VMS and VM performance and resource usage:

<code>vmstat</code>	Shows statistics about operating system memory, processes, etc.
Note: In this instance, "vm" does not refer to virtual machine.	
<code>sar -A -o sar.dat</code> <code>10</code>	Shows system activity.
<code>mpstat</code>	Shows the statistics of each processor.
<code>iostat</code>	Shows the input/output statistics.
<code>top</code>	Shows an ordered list of running processes.

Performing Fallback

Performing a VMS Fallback

The VMS fallback boots the VMS from the prior-flashed VMS firmware without losing the VM configuration or any data.

Note: The VMS has 2 flash slots. You can also fall back to the prior flash slot, as needed.

- 1 To perform fallback, reboot the VMS from the prior flashed VMS firmware:

Option	Description
If you can access a working VMS command prompt:	<ol style="list-style-type: none">a. Log on to the VMS.b. Recover to an alternative VMS image: <code>/opt/teradata/vms/bin/setmbr -s</code>c. Reboot the VMS.
If you cannot access a working VMS command prompt:	<ol style="list-style-type: none">a. Manually reboot the VMS.b. At the TDC Bootloader menu, select the alternative partition. (The alternate partition has the label Unknown).

Performing a CMI C Virtual Machine Fallback

- 1 Perform a fallback to the prior flashed CMIC image:

Option	Description
If you can access a working CMIC:	<ol style="list-style-type: none">a. Log on to the VMS.b. Recover to an alternative CMIC image: <code>/opt/teradata/cmic/bin/setmbr -s</code>c. Reboot the CMIC.
If you cannot access a working CMIC:	<ol style="list-style-type: none">a. Log on to the VMS.b. Stop the CMIC VM by typing <code>/opt/teradata/vms/bin/vm-stop vmname</code> to perform a graceful shutdown or <code>/opt/teradata/vms/bin/vm-stop -hard vmname</code> to perform a hard shutdown.c. Start the CMIC VMS and connect to it: <code>/opt/teradata/vms/bin/vm-start vmname; virt-viewer vmname</code> Note: Enter both commands on the same command line to avoid missing the boot menu.d. In the TDC Bootloader menu, select the alternative partition.

Performing a Non-CMIC Virtual Machine Fallback

- 1 Do one of the following to perform a non-CMIC VM fallback:
 - [Restore a Virtual Machine from a VMS Virtual Machine Backup](#)
 - [Restore a Virtual Machine from a VMS Backup](#)
 - [Restore a Virtual Machine by Restaging](#)

Note: If you have previously chosen to create a VM backup when using PUT, PUT creates a VM backup using *vmname*.

Scenario: A Virtual Machine Does Not Start

- 1 View the `auto start` list to verify the virtual machine will start up at VMS boot:

```
/etc/init.d/vms-vm auto-start-list
```
- 2 If the virtual machine does not display on the `auto start` list, add it:

```
/etc/init.d/vms-vm auto-start-add vmname
```
- 3 Check the `/var/log/messages` system log file for errors by searching for `vms-vm` or Error.
- 4 Check the `/var/log/boot.msg` boot log file for errors by searching for `vms-vm` or Error.
- 5 Continue with the following steps if the VM does not start due to virtual hardware and not the guest OS.

Note: There is a difference between a VM not starting because of the virtualization infrastructure (the equivalent of a physical hardware problem) and the OS installed onto the VM not starting. If the OS is having a problem, the VM is usually running (physical hardware is still running).

The primary reason a VM does not start is because a physical resource that has been allocated to it is having a problem (for example, a physical hard drive is not available).

- 6 Check the VM status:

```
/opt/teradata/vms/bin/vm-list
```
- 7 Try to start the VM and check any error output for information:

```
/opt/teradata/vms/bin/vm-start vmname
```

where *vmname* is the VM you are starting.
- 8 Check the `/var/log/messages` system log file.

Scenario: A VM Is Running, but the Guest OS Is Not Functioning

- 1 Connect to the virtual machine console via the VMS, using one of the following:

Note: There is currently no direct remote access to a VM system console, for example, via the SMClient's console connections (BMC Serial Over LAN), so access must be through the VMS.

- Log on to the VMS and run `virsh console vmname` to connect to the virtual serial port of the VM. (Press Ctrl+] to escape the console.)
 - From the VMS physical console or using an X server, run `virt-viewer vmname` to open a window to the virtual graphical/VGA console of the VM, and click inside the window to interact with it. (Press Ctrl+Alt to release your mouse from virt-viewer control.)
- 2 Restore the virtual machine from backup or by restaging:
 - [Restore a Virtual Machine from a VMS Virtual Machine Backup](#)
 - [Restore a Virtual Machine from a VMS Backup](#)
 - [Restore a Virtual Machine by Restaging](#)

Scenario: CMIC Virtual Machine Software Failure

Recover the CMIC VM using either of the methods below:

- Perform a fallback to the prior flashed CMIC image as described in [Performing a CMIC Virtual Machine Fallback](#).
- Restore the CMIC VM from backup or by restaging:
 - [Restore a Virtual Machine from a VMS Virtual Machine Backup](#)
 - [Restore a Virtual Machine from a VMS Backup](#)
 - [Restore a Virtual Machine by Restaging](#)

Note: You will lose any current management data (such as events).

Scenario: Non-CMIC Virtual Machine Software Failure

- 1 Restore the VM and its guest OS from backup or by restaging:
 - [Restore a Virtual Machine from a Virtual Machine Backup](#)
 - [Restore a Virtual Machine from a VMS Backup](#)
 - [Restore a Virtual Machine by Restaging](#)

Scenario: VMS Software Failure

- 1 [Perform a fallback to the prior flashed VMS firmware.](#)

Scenario: Virtual Machines Skipped During VMS Shutdown

During VMS shutdown, the system displays:

```
Stopping all domains
```

Each domain is given a specific amount of time to shut down cleanly before a hard shutdown.

Scenario: Cannot Access DVD from a Virtual Machine

There is a known hardware issue where the physical DVD drive unplugs and hot-plugs back in (by itself), which causes the DVD device attached to the VMs (`/dev/sr0`, `/dev/hdc`, or `/dev/xvdm`) to stop working. This appears to be a random event. If this happens, the VMs cannot access the physical DVD that was attached when they started.

To work around this issue, attach the drive temporarily to the VM, using the command in SMClient:

- 1 Detach the DVD from all VMs:

```
/opt/teradata/vms/bin/vm-disk-remove --perm -a --pdev cdrom
```
- 2 Run SMClient.
- 3 In the Tree View, select the VM where you want to attach the device.
- 4 Select Functions > Attach Temporary Device.
- 5 Follow the guided procedure.

