

Installing and configuring HP Integrity VM for HP SIM 5.x



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Introduction

This paper will explain the procedure to install and configure HP Integrity Virtual Machine for HP Systems Insight Manager on BL60P. The virtual machine environment consists of:

- VM Host
- Virtual Machines (also known as Guest)

The VM Host virtualizes the CPU, Memory and any input/output devices, enabling you to allocate resources. The Virtual Machines are abstraction of real, physical machines. They are fully loaded, operational systems, complete with operating systems, management utilities, applications and network, running in a virtual environment.

HP SIM can help manage HP Integrity Virtual Machines and associate the Virtual Machines with the VM Host.

Note: On the BL60P, make sure the USB DVD player is connected to USB01, prior to installing the operating system. This allows the drivers to be installed correctly and identify the USB DVD player.

Requirement

This paper assumes the user will have knowledge on HP-UX 11.11, 11.23 and the ability to install software from a depot file.

Software

- HP-UX 11.23 v2 May 2005 or later operating environment
- PRM SW Libraries (B697BA)
- Integrity Virtual Machine (integrity_vm.depot)
- HP-UX software patches: PHKL_32518, PHKL_33052
- HP SIM 5.1 or later

Hardware

- Integrity Server
- 2GB Memory Minimum
- 17GB per VM

Installing and configuring HPVM

Installing

Install the PRM and the Integrity VM software into a depot directory, then install as follows:

```
# swinstall -x autoreboot=true -s /path-to-depot-file B7697BA T2801AA
```

To verify that Intergrity VM installed successfully enter the following command:

```
# hpvminfo
```

hpvminfo: Running on HPVM host.

Configuring

Creating storage space for the virtual machine

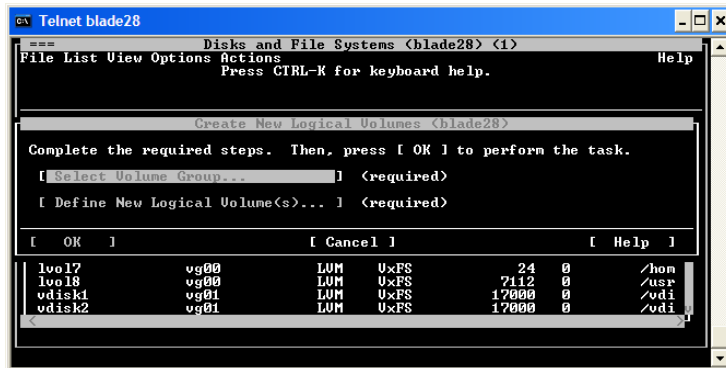
When you create a guest, you specify the virtual storage device that the guest will use. It is best practice to allocate the storage devices the guest will use first. The example below uses SAM to allocate the Logical Volume that will be used for a single guest.

Launch SAM

```
# SAM
```

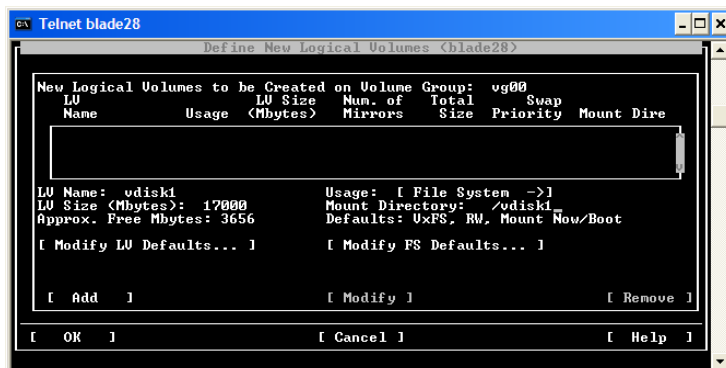
Select **Disk and File Systems>Logical Volumes>Action>Create**, the **Create New Logical Volume** menu appears as shown in Figure 1.

Figure 1 Create New Logical Volume menu



Tab down to **Select Volume Group** and provide the Volume Group name. If you have two LV, it will be either vg00 or vg01. Next, select **Define New Logical Volume**. The **Define New Logical Volume** menu appears as shown in Figure 2.

Figure 2 Define New Logical Volume menu



Provide an **LV Name**, for example `vdisk1`. Next, select the **LV Size**; ensure it is large enough to accommodate an operating system and some applications. In Figure 2, the **LV Size** is 17GB. Next, select the **Mount Directory**, such as `/vdisk1`, then click **[Add]**. Once the LV is added, select **[OK]** and exit SAM.

Creating virtual switches

To provide network access for the guests, you must create virtual network switches (vswitch) for them. To create virtual switches, use the **hpvmnet** command. The following is the basic command used to create a virtual switch:

```
# hpvmnet -c -S switchname -n 1
```

- `-c` indicates the create of a vswitch
- `-S switchname` specifies the name of the virtual switch
- `-n 1` associates the new vswitch with the physical network device `lan1`

For example, to create two vswitches: `vswA` and `vswB`, enter the following command:

```
# hpvmnet -c S vswA -n1
# hpvmnet -c -S vswB -n2
```

To verify the creation of the vswitch, enter the following command:

```
# hpvmnet
```

To start the vswitch:

```
# hpvm -S vswA -b
# hpvm -S vswB -b
```

Verify if the vswitches are up:

```
# hpvmnet
```

Name	Number	State	Mode	PPA	MAC Address	IP Address
localnet	1	Up	Shared		N/A	N/A
vswA	2	Up	Shared	lan1	0x0016353c0daf	
vswB	3	Up	Shared	lan2	0x0016353c0dba	

To delete a vswitch, first stop the vswitch and then enter the **hpvmnet** command with the `-d` option. For example:

```
# hpvmnet -S vswA -h
hpvmnet: Halt the vswitch 'vswA' ? [n]: y
```

```
# hpvmnet -S vswA -d
hpvmnet: Remove the vswitch 'vswA' ? [n]: y
```

Creating a guest

To create a guest, use the `hpvmcreate` command, specifying the guest characteristic options for the virtual devices, such as network, storage, and DVD.

The following example creates a guest with 1CPU, 1GB RAM, access to the network using `vswA`, and access to raw logical volume name `rvdisk1`.

```
# hpvmcreate -P vm01 -c1 -r1G -a network:lan::vswitch:vswA -a
disk:scsi::lv:/dev/vg01/rvdisk1
```

- `-P` indicates guest name
- `-c` number of virtual CPU
- `-r` number of virtual memory
- `-a` indicates the addition of resource to use

- network
- disk
- dvd

Note: The default amount of virtual CPU and Memory is 1.

To verify the guest create, enter the following command:

```
# hpvmstatus
[Virtual Machines]
Virtual Machine Name      VM # OS Type  State      # vCPUs # Devs  # Nets  Memory
=====
vm01                      1  HPUX      Off        1      1      1      1 GB
```

Adding USB DVD Player

To add a USB DVD player, ensure the DVD player is connected to USB01 port on the BL20P dongle. Use the **ioscan** command to discover the DVD player:

```
# ioscan -funC disk
Class | H/W Path  Driver S/W State  H/W Type  Description
=====
disk  1 0/1/1/0.0.0 sdisk CLAIMED  DEVICE  TEAC USB DVDROM
      /dev/dsk/c0t0d0 /dev/rdisk/c0t0d0
```

The path to the DVD player is /dev/rdisk/c0t0d0. Use the **hpvmmodify** command to make changes or additions to the guest.

To add the DVD player to vm01, enter the following command:

```
# hpvmmodify -P vm01 -a dvd:scsi::disk:/dev/rdisk/c0t0d0
```

Verify that the devices number has increased to 2 devices:

```
# hpvmstatus
[Virtual Machines]
Virtual Machine Name      VM # OS Type  State      # vCPUs # Devs  # Nets  Memory
=====
vm01                      1  HPUX      On         1      2      1      1 GB
```

Booting guest

To start the guest, use the **hpvmstart** command.

```
#hpvmstart -P vm01
```

Opening minor device and creating guest machine container

Creation of VM, minor device 1

Allocating guest memory: 1024MB

```
    allocating low RAM (0-40000000, 1024MB)
```

```
/opt/hpvm/lbin/hpvmapp (/var/opt/hpvm/uuids/5f35dd00-105a-11db-96a4-0016353c0dba
```

```
/vmm_config.current): Allocated 1073741824 bytes at 0x6000000100000000
```

```
    allocating firmware RAM (ffaa0000-ffab5000, 84KB)
```

```
/opt/hpvm/lbin/hpvmapp (/var/opt/hpvm/uuids/5f35dd00-105a-11db-96a4-0016353c0dba
```

```
/vmm_config.current): Allocated 86016 bytes at 0x6000000140000000
```

```

Loading boot image
Image initial IP=102000 GP=5E4000
Initialize guest memory mapping tables
Starting event polling thread
Starting thread initialization
Daemonizing....

```

hpvmstart: Successful start initiation of guest 'vm01'
Verify if the guest's state is on run the command:

```

# hpvmstatus
[Virtual Machines]
Virtual Machine Name      VM # OS Type  State      # vCPUs # Devs # Nets Memory
=====
vm01                      1  HPUX      On         1       2       1   2 GB

```

To access the virtual console, use the **hpvmconsole** command:

```

# hpvmconsole -P vm01

vMP MAIN MENU

CO: Console
CM: Command Menu
CL: Console Log
SL: Show Event Logs
VM: Virtual Machine Menu
HE: Main Help Menu
X: Exit Connection

```

```
[vm01] vMP> CO
```

Note: The virtual console will have a lower case 'v' in front of the Management Processor (MP).

Installing the operating system on the guest

There are two ways to install the HP-UX OS on the virtual machine guest:

- Physical DVD
- Ignite Server

To install using a physical DVD device, ensure the DVD was added to the guest, as explained in Adding USB DVD Player.

Launch the virtual console to access the EFI Boot Manager. The EFI Boot Manager is the initial screen that displays during the boot process. If the screen displays a command prompt, you will need to reset the system. This can be done by going back to the MP screen and using the Reset command:

```
[vm01] vMP>CM>RS
```

After executing the command, go back to the console to see the EFI Boot Manager, as shown below.

```

EFI Boot Manager ver 1.10 [14.62] [Build: Tue Nov  8 09:15:06 2005]

Please select a boot option

EFI Shell [Built-in]
Boot option maintenance menu
Use ^ and v to change option(s). Use Enter to select an option

```

Once the EFI Boot Manager is displayed:

- Select EFI Shell
- Enter fs0: INSTALL

- The installation will start.

To boot from LAN, make sure you have access to an Ignite Server and that it is configured correctly to handle PXE request. Launch the virtual console to access the EFI Boot Manager.

```
EFI Boot Manager ver 1.10 [14.62] [Build: Tue Nov 8 09:15:06 2005]
```

Please select a boot option

```
EFI Shell [Built-in]
```

```
Boot option maintenance menu
```

```
Use ^ and v to change option(s). Use Enter to select an option
```

Once the EFI Boot Manager is displayed:

- Select Boot option maintenance menu
- Select Add a boot option
- Select the device with a MAC Address, this is the LAN
 - Enter a Description: lan1boot
 - Enter N for no bootoptions
 - Save in NVRAM and then [Exit]
- Select lan1boot
- The guest will connect to the ignite server through PXE

Note: Linux and Windows operating systems are not supported.

Installing a guest software depot

The Integrity VM product also contains guest software that you can install on a virtual machine after you have installed its HP-UX operating system. Installing this depot improves the performance of the guest's operating system and provides the **hpvminfo** and **hpvmcollect** commands to guest administrators. After you install Integrity VM, the media is in the form of an SD (Software Distributor) distribution tape file located in `/opt/hpvm/guest-images/hpux/hpvm_guest_depot.sd`. This file can be used to create a general-purpose SD depot on the system you specify. For example, to create the guest depot on `myhost.corporate.com:/your/depot`, enter the following commands:

1. On the VM Host, create the general-purpose depot:

```
# swcopy -s /opt/hpvm/guest-images/hpux/hpvm_guest_depot.sd \* /
> @myhost.corporate.com:/your/depot
```

2. Verify that the software depot has been copied correctly:

```
# swverify -d \* @myhost.corporate.com:/your/depot
```

3. On the VM Host, register the new depot on `depot-host`:

```
# swreg -l depot /your/depot
```

4. On the guest, install the HPVM-Guest bundle from the new depot:

```
# swinstall -s /your/depot
```

Managing HPVM in HP SIM

Managing your Integrity Virtual Machines (VM) with HP System Insight Manager (HP SIM) requires Virtual Server Environment (VSE) Management Software installed on the same server as HP SIM. More information on VSE can be found at:

<http://docs.hp.com/en/T2786-90012/T2786-90012.pdf>

Installing HP SIM and VSE

Use the following procedure to install HP SIM and the VSE Management Software on an HP-UX CMS.

1. Install the software by executing the following command:

```
/usr/sbin/swinstall -x autoreboot=true \  
-s path-to-depot-file HPSIM-HP-UX VSEgmt
```

2. Configure HP SIM by executing the following command:

```
/opt/mx/bin/mxinitconfig -a
```

This command performs HP SIM setup tasks, including database initialization. It typically takes several minutes for the `mxinitconfig` command to complete. Errors and exceptions are logged to the file `/var/opt/mx/logs/initconfig.log`.

Configure the VSE Management Software by executing the following command:

```
/opt/vse/bin/vseinitconfig -a
```

The `vseinitconfig` command logs status, errors, and exceptions to the file `/var/opt/vse/logs/vseinitconfig.log`.

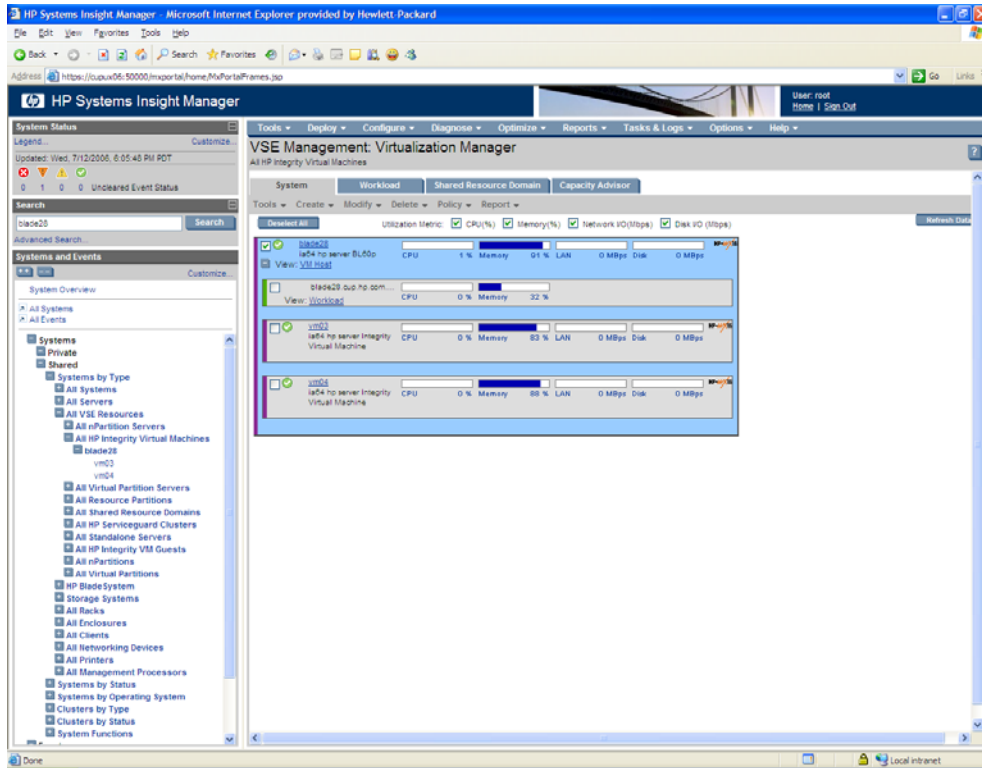
Configuring HP SIM for VSE

1. Ensure that the **ssh** command is installed and configured for HP SIM on each of your managed systems. To configure **ssh** for HP SIM, select the systems to configure, and choose **Configure → Configure or Repair Agents...** from the HP SIM menu bar.
2. Select the managed systems and choose **Configure>Configure VSE Agents>Install VSE Agents...** from the HP SIM menu bar. Click **Run Now** to start the installation. Review the output for error messages before continuing.
3. Run the HP SIM discovery process again on the managed systems where agent software has been installed. This will cause HP SIM to update its information about these systems. Select the affected systems and choose **Options>Discovery...** from the HP SIM menu bar, and then click **Run Now**.

The Virtual Host and the virtual machine can be managed with HP SIM, as shown in Figure 3.

Note: VSE is not required for the Virtual Machine Host and Virtual Machines to be associated. Once discovered and identified, the virtual machine associates itself to the host.

Figure 3 VSE Management Virtualization Manager



For more information

Integrity Virtual Machine Overview

http://h20293.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=integrity_vm

HP Integrity Virtual Machines Installation, Configuration and Administration

<http://docs.hp.com/en/T2767-90004/T2767-90004.pdf>

VSE Management Software Quick Start Guide

<http://docs.hp.com/en/T2786-90012/T2786-90012.pdf>

VSE Management Overview

<http://h20293.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=vse>

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