PRIMEQUEST

Virtual Machine Function Installation Guide

Preface

This manual should be used for introducing a virtualization system using the PRIMEQUEST Virtual Machine Function running on Fujitsu PRIMEQUEST.

The Linux Virtual Machine Function is defined as the Fujitsu-supported set of the Red Hat Virtualization system included in Red Hat Enterprise Linux 5.

Using open source software, Red Hat Virtualization contains a number of technologies from developers all over the world.
Being open source software, however, it contains not only stable functionality but also some which are not yet sufficiently stable enough for production environments.

Fujitsu has verified the operation of the Linux Virtual Machine Function on PRIMEQUEST and defined those functions that can be used safely as the Fujitsu-supported set. The supported set is described herein. This set does not cover any functions not included herein or those explicitly stated as unsupported.

Fujitsu will expand the supported set in partnership with the Open Source Community.

This section explains:

- Targeted Readers
- Knowledge Assumed of the Reader
- Related Manuals
- Note on Safety-Critical Applications
- Abbreviations
- Notation Rules
- Denotation
- CLI (command line interface) Notation
- Trademarks
- Notice

Targeted Readers

This manual is targeted at all those who are going to install a virtualization system using Fujitsu PRIMEQUEST.

Knowledge Assumed of the Reader

In addition to the information included herein, the readers should understand the concepts and use of Red Hat® Enterprise Linux® 5. They should also know how to install and manage the PRIMEQUEST console and operating systems running on virtual machines.

Related Manuals

- Refer to the following manuals as necessary when using this book.PRIMEQUEST 500/400 Series Installation Manual (C122-E001-08EN)

- PRIMEQUEST 500/400 Series Reference Manual : Basic Operation/GUI/Commands (C122-E003-08EN)

- PRIMEQUEST 580/540/480/440 System Design Guide (C122-B001-08EN)

- PRIMEQUEST 520/420 System Design Guide (C122-B009-05EN)

- PRIMEQUEST 500/400 Series Installation Manual (C122-E001-08EN)

- PRIMEQUEST 500/400 Series Reference Manual : Messages/Logs (C122-E004-08EN)

- PRIMEQUEST Installation Support Tool User's Guide (Red Hat) (C122-E005-10EN)

- PRIMEQUEST SystemcastWizard Lite User's Guide (C122-E010-13EN)

- PRIMEQUEST Bundled-Software Package Installer (C122-E006-06EN)

- PRIMEQUEST System Parameter Check Tool User's Guide (C122-E009-04EN)

- System Data Output Tool (fjsnap) User's Guide (README file)

- The Information Collection Option for The Virtual Machine Function (vmfjsnap) User's Guide (README file)

- PRIMECLUSTER Installation and Administration Guide (Linux for Itanium)

Note on Safety-Critical Applications

This product has been developed, designed, and manufactured for general-purpose applications such as office use, personal use, and normal industrial use. This product was not developed, designed, nor manufactured for applications requiring extremely high levels of safety, such as those related to the reactors of nuclear facilities, the automatic control of airplanes, air traffic control, control of mass-transit systems, life support equipment, missile launch controls in weapons systems, etc. Exposure to significant risks is a possibility if the necessary degrees of safety cannot be ensured (hereinafter abbreviated to "safety-critical applications"). Customers are requested not to use this product for safety-critical applications without additional safety measures. Fujitsu Limited and its affiliated companies shall not be liable for any claims or indemnities arising from a customer or a third party using this product for safety-critical applications.

Abbreviations

The following product names are referred herein to as listed below:

Formal product name	Abbreviation			
Red Hat® Enterprise Linux® 5.*n* (for Intel Itanium)	RHEL5.*n* (IPF)	RHEL5.*n* [(*1)]	RHEL5	RHEL

(*1): "n" in "5.n" is a number that indicates the version of Minor Release.

Denotation

- The term "Linux" denotes Red Hat® Enterprise Linux® 5.1 (for Intel Itanium).

- "RHEL5.n or later" applies to as follows:

Notation	RHEL5.1	Minor Releases after RHEL5.1
RHEL5.1 or later	Yes	Yes
RHEL5.2 or later		Yes

Notation Rules

The fonts and symbols used herein have special meanings as listed below:

Font or symbol	Meaning	Example of use
" "	Indicates the title of a document to be referenced.	See "User's Guide" of PRIMEQUEST
' '	Indicates a chapter, section, or item to be referenced.	See '1.3 Installing the Host OS'
[ ]	Indicates a window name, button name in a window, tab name, or dropdown menu.	Click the [OK] button.

Notation of measurement units

The abbreviations KB, MB, and GB are used herein to refer, respectively, to kilobyte(s), megabyte(s), and gigabyte(s). So, "1KB" refers to 1024bytes.

Icon Notation

In this manual, following icons are used to indicate the items to be noted.

Icon	Description
Note	Describes an item to be noted.
See	Provides the names of sections to be referenced.
Information	Describes reference information.

CLI (command line interface) Notation

The following notational convention is used to define the syntax of commands.
The notational convention of commands is as follows:

Notational convention

- A variable that will be assigned a value is enclosed in < >.
- An optional element is enclosed in [ ].
- A group of options selectable for an optional keyword is enclosed in [ ] with the options separated from one another with |.

- A group of options selectable for a required keyword is enclosed in { } with the options separated from one another with |.

Prompt notations

Each prompt notation indicates the domain in which commands are to be executed. The notations are as follows:

- guest#: Guest domain

- system#: Host OS

Example

```
system# /etc/xen/scripts/network-bridge start vifnum=<I/F Number>
```

Trademarks

- Microsoft and Windows are trademarks of Microsoft Corporation based in the United States of America and registered in this and other countries.

- Linux is a trademark or registered trademark of Mr. Linus Torvalds in the United States of America and other countries.

- Red Hat, RPM, and all other trademarks and logos based on Red Hat are trademarks of Red Hat, Inc. based in the United States of America and are registered in some countries.

- The other product names are product names, trademarks, or registered trademarks of the respective companies.

Notice

- When building or operating virtual systems, be sure to stay within the set stated herein.

- Do not reprint any information herein without permission.

- The information herein is subject to change without prior notice.

Revision History

Version	Date	Revision (Type) (Note)	Revised contents
First Version	2007.12	-	-

(Note)   Indicates the number of the latest version. However, items with an asterisk (*) indicate the numbers of the previous version.

Contents

Chapter 1   System Installation and Environment Setting

This chapter describes the flow of virtual system installation, how to install the host OS on the physical machine, and how to set up the host OS environment.

1.1 Flow of Creating the Virtual System Environment

When you install a virtual system, first install the host OS on the physical machine and configure the environment. Next, install guest domains. If you install multiple guest domains, repeat the required number of installation operations.

The flow of virtual system installation is outlined in Figure 1.1.

Figure 1.1 Flow of creating the virtual system environment
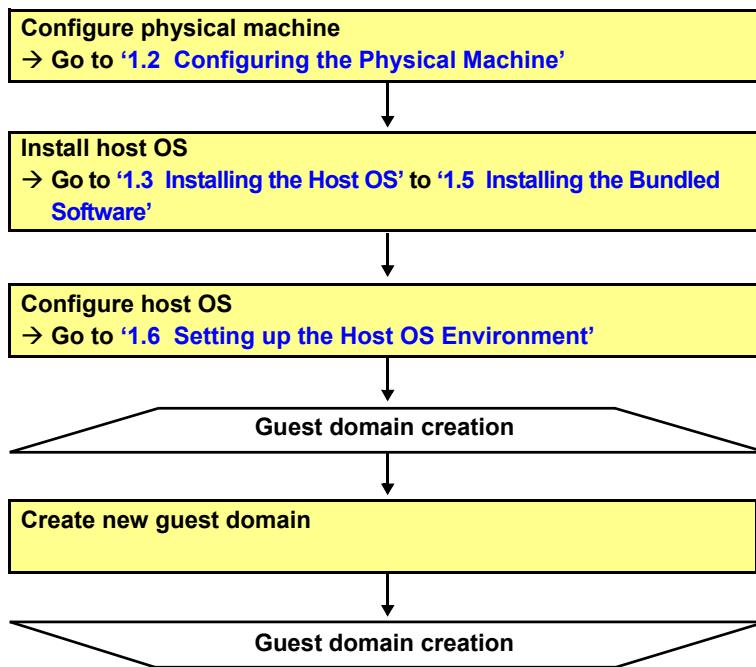
After installing the virtual system, back up the virtual system for maintenance work.

1.2　Configuring the Physical Machine

Before setting up the virtual system, check the following settings.

- [Hyper-Threading] must be set to Disabled.
  If [Hyper-Threading] is set to Enabled, be sure to set it to Disabled.

　　For details, see "PRIMEQUEST 500/400 Series Installation Manual."
See

1.3 Installing the Host OS

This section describes how to install the host OS. With the PRIMEQUEST Virtual Machine Function, the hypervisor is also installed when you install the host OS.

To install the PRIMEQUEST virtual machine function, you need RHEL5.1. If another operating system has already been installed, take the following steps to install RHEL5.1.

When you install the host OS, create only partitions that are to be used on the host OS.

You can install the host OS in one of the following two ways:

- Use the installation support tool
  Use the installation support tool to configure the following settings for the hardware partition on which the host OS is installed before installation.
  - The CD-ROM/DVD-ROM drive must be assigned to the hardware partition on which the host OS is installed.
  - The physical machine must be configured so that it can be booted from the CD-ROM/DVD-ROM drive when the host OS is installed.

If you use the installation support tool to install the host OS, be sure to select "Host" for [OS Variant] in the OS selection window.

After installing the host OS, follow the instructions to insert the CD that comes with the hardware. After the host OS is rebooted, installation of the bundled software begins.

- For details on the installation support tool, see "PRIMEQUEST Installation Support Tool User's Guide (Red Hat)."
- For details on the bundled software installer, see "PRIMEQUEST Bundled-Software Package Installer Users Guides."

- Use SystemcastWizard Lite

  For details, see "PRIMEQUEST SystemcastWizard Lite User's Guide."

1.4　Checking the Settings after Host OS Installation

Setting up a virtual system requires checking the settings mentioned below. Check each of these items.

Install PRIMECLUSTER GDS/GLS as needed.

- All the required packages must be installed
  To set up a virtual system, you need the packages listed below.
  Execute the "rpm" command to check that these packages are installed.
  - kernel-xen
  - xen
  - xen-libs
  - xen-ia64-guest-firmware
  - bridge-utils
  - vnc
  - libvirt
  - libvirt-python
  - python-virtinst
  - virt-manager

  Information　If the host OS is installed using the installation support tool or SystemcastWizard Lite, the above packages will be automatically installed.

- SELinux must be disabled
  Check that "Disabled" is set in "SELINUX" in the "/etc/selinux/config" file.

  Information　If the host OS is installed using the installation support tool or SystemcastWizard Lite, the above setting will be automatically configured.

- Uninstall unnecessary packages
  For the virtualization system, the packages listed below are not necessary.
  Uninstall them by using the "rpm" command.
  - system-config-kdump
  - kexec-tools

- Install the PRIMECLUSTER GDS (if used)
  If you use the PRIMECLUSTER GDS (PRIMECLUSTER Global Disk Services), install PRIMECLUSTER GDS. For installation procedures, see the manual of "PRIMECLUSTER GDS."

- Install the PRIMECLUSTER GLS (if used)
  If you use the PRIMECLUSTER GLS (PRIMECLUSTER Global Link Services), install PRIMECLUSTER GLS. For installation procedures, see the manual of "PRIMECLUSTER GDS."

1.5 Installing the Bundled Software

Of the software that comes with the PRIMEQUEST hardware, this section explains what you need to install for a virtual system.

Table 1.1 Software that comes with PRIMEQUEST hardware for virtual systems

No.	Name	Function	Supported OS		Note
			Host OS (Red Hat Enterprise Linux)	Guest OS (Red Hat Enterprise Linux)	
1	PSA	Hardware system management	Yes	No	Software that comes with PRIMEQUEST hardware [*1]
2	System Data Output Tool (fjsnap)	Runs on an OS to collect information required for support activities by executing commands.	Yes	Yes	Software that comes with PRIMEQUEST hardware [*1]
3	The Information Collection Option for The Virtual Machine Function (vmfjsnap)	Runs on the host OS to collect information required for support activities for the virtual system by executing commands.	Yes	No	Software that comes with PRIMEQUEST hardware [*1] [*2]

(*1) Use the "Installation support tool / Bundled-software installer" or "SystemcastWizard Lite" to install the software.

(*2) vmfjsnap is called from fjsnap to collect the system information of the virtual system (vmfjsnap cannot be used directly).

> **Note**
> • A memory dump warning (diskdump) may appear if you execute a system parameter check from the PRIMEQUEST System Parameter Check Tool (the fjprmchk command) on the guest OS (RHEL). No action is necessary.

> **See**
> • For details on the installation support tool, see "PRIMEQUEST Installation Support Tool User's Guide (Red Hat)."
> • For details on the installer for collecting bundled software, see "PRIMEQUEST Bundled-Software Package Installer."
> • For details on SystemcastWizard Lite, see "PRIMEQUEST SystemcastWizard Lite User's Guide."
> • For details on PSA and the system information collection tool, see "PRIMEQUEST 500/400 Series Installation Manual."
> • For details on the functions and configuration of the system parameter check, see "PRIMEQUEST System Parameter Check Tool User's Guide."

PSA

PSA (PRIMEQUEST Server Agent) performs hardware error monitoring and configuration management.
Be sure to install PSA when you operate PRIMEQUEST.
PSA is installed by using the "PRIMEQUEST Installation Support Tool / bundled-software package installer" or "SystemcastWizard Lite" (can also be installed manually).

> **Note** Set the Software Watchdog to [Disable] (perform no monitoring) for PSA OS hang monitoring.

> **See** For the installation of PSA, see "PRIMEQUEST 500/400 Series Installation Manual."

System Data Output Tool (fjsnap)

If a system error occurs, this software package collects the system information necessary for troubleshooting (configuration information, operating information, user-defined settings, log data, etc.). fjsnap offers two types of function. One is the regular system information output function (fjsnap command), and the other is a simpler version that collects less information to reduce the load on the system (fjsnaplt command). Execute one of these functions as appropriate to the circumstances. The fjsnap tool can be used in the same way as in native Linux.

> **See**
> • For the installation of fjsnap, see "The Information Collection Option for The Virtual Machine Function (vmfjsnap) User's Guide (README file)."
> • For how to use fjsnap, see "PRIMEQUEST 500/400 Series Reference Manual : Messages/Logs."

The Information Collection Option for The Virtual Machine Function (vmfjsnap)

This option expands the function of the System Data Output Tool (fjsnap) so that the necessary support information can be collected at one time.
If vmfjsnap is installed together with the System Data Output Tool (fjsnap), vmfjsnap is called from fjsnap to collect the necessary support information when the system information collection tool (the fjsnap or fjsnaplt command) is executed. Therefore, direct execution of vmfjsnap is not required.
Be sure to install vmfjsnsap as well as fjsnap in the virtual system environment.

> **See** For the installation of vmfjsnap, see 'The Information Collection Option for The Virtual Machine Function (vmfjsnap) User's Guide (README file).'

1.6   Setting up the Host OS Environment

This section describes the settings you need to make to run the host OS in a virtual machine environment after installation. The items you need to set are as follows:

- Setting the boot parameters
  Set the boot parameters of the host OS.
  For details, see '1.6.1 Setting the boot parameters.'

- Setting the xend service
  Edit the configuration file for the xend service of the host OS.
  For details, see '1.6.2 Setting the xend service.'

- Setting the network for the host OS
  In addition to the network setting for the host OS itself, you need to edit the network configuration file of the host in the following cases.

  – The administrative LAN connected to MMB is configured for redundancy

  – The administrative network, public network, and backup network are configured for redundancy.

  – The tag VLAN is used.

  For details, see '1.6.3 Setting the network for the host OS.'

- Setting a virtual bridge
  Set virtual bridges on the host OS to enable guest domains to connect to the network. You do not need to set virtual bridges if you connect them only to the default gateway.
  For details on the virtual bridge, see '1.6.4 Setting a virtual bridge.'

- Configuring the xendomains service
  Configure the xendomains service of the host OS so that guest domains can be started and stopped automatically.
  For details, see '1.6.5 Setting auto start and stop of guest domains.'

- Configuring of the hypervisor log collection
  Configure the log collection to collect logs of the hypervisor.
  For details, see '1.6.6 Configuring the hypervisor log collection.'

After completing all the host OS environment setup steps, reboot the host OS.

1.6.1 Setting the boot parameters

Set the boot parameters of the host OS as follows.
Add the boot parameter to the "append" line of "/boot/efi/efi/redhat/elilo.conf."

> **Note**
> If there is "--" in the "append" line, add the parameter before "--." Before "--" comes hypervisor, after "--" comes the boot parameter of the host OS.

◆ **Setting the number of virtual CPUs**

Set the number of virtual CPUs to be used by the host OS. To change the number of virtual CPUs to be used by the host OS, add "dom0_max_vcpus" as a hypervisor parameter.
If you omit "dom0_max_vcpus" in the boot parameter, the number of virtual CPUs of the host OS will be 1.

【*Example*】
The following example shows that one virtual CPU is used on the host OS

```
dom0_max_vcpus=1
```

> **Note**
> Make sure that the number of virtual CPUs to be used by the host OS is not greater than the number of physical CPUs.

◆ **Setting the memory**

Set the memory size to be used by the host OS. To set the memory size to be used by the host OS, add "dom0_mem" as a hypervisor boot parameter.
You can specify the memory size with the suffix K, M, or G, which respectively represent kilobytes, megabytes, and gigabytes (1M = 1024K). If you omit the suffix, the memory size will be in kilobytes.
If you omit "dom0_mem," the memory size to be used by the host OS will be 512MB.

【*Example*】
The following example shows that 1024MB of memory is used on the host OS.

```
dom0_mem=1024M
```

> **Note**
> • Make sure that the memory to be used by the host OS is greater than 1024MB and not greater than the physical memory.
> • Using the "xm list" or other view commands will display a value less than the amount of memory specified in "dom0_mem."

◆ **Setting the console**

Set the output destination of the console I/O of the host OS. In order to send the output of the host OS to the VGA console, add "console" to the hypervisor and boot parameter of the host OS.
Set "vga" for the hypervisor and "tty0" for the host OS for the output destination of the console I/O.

【*Example*】
The console of the host OS is output to the VGA console.

```
console=vga -- console=tty0
```

1.6.2   Setting the xend service

The xend service allows the host OS to administer guest domains. In the xend service configuration file (/etc/xen/xend-config.sxp), set the parameters as described below.

◆ **Domain console password**
You can set the password to log in to the console of a guest domain by VNC. If you set a password, edit the "vncpasswd" parameter.

```
(vncpasswd '<password>')
```

> **Note**
> If you do not set a password, all the users of the host OS can log in to the console.
> From the standpoint of security, we recommend setting a password.

◆ **Collecting a dump of the guest domain**
To enable dump collection, be sure to specify "yes" for the "enable-dump" parameter, which enables the host OS to save dumps of guest OSes automatically if a guest OS panics (crashes).

```
(enable-dump 'yes')
```

1.6.3   Setting the network for the host OS

The following describes how to set the network for the host OS. In the following cases, you need to set the network for the host OS in addition to the network of the host OS itself.

- When creating a redundant administrative LAN connected to MMB
  When you create a redundant administrative LAN connected to MMB, perform the procedures described in "PRIMEQUEST 500/400 Series Installation Manual."

- When creating a redundant administrative network, redundant public network, and redundant backup network.
  – When you create the redundant virtual network with PRIMECLUSTER GLS, see the manual for "PPRIMECLUSTER GLS."
  – When you create the redundant virtual network with Bonding.'

- Use the tag VLAN

In other cases, the network setting for the host OS is not required. Set a virtual bridge as described in '1.6.4 Setting a virtual bridge.'

1.6.4   Setting a virtual bridge

To connect guest domains to the network, a virtual bridge is required on the host OS.

Connecting a virtual bridge to a physical network interface enables the guest domain to connect to an external network.
If you connect a virtual bridge as the only default gateway, this setting is unnecessary.

See   Design the configuration of the virtual network in advance to set the virtual bridge.

If you create two or more virtual bridges, add the following setting to "/etc/modprobe.conf." Without this setting, the number of virtual bridges you can create is limited to four.

```
options netloop nloopbacks=<total-number-of-virtual-bridges-required-in-one-
virtual-system>
```

<total-number-of-virtual-bridges-required-in-one-virtual-system>
Specify the total number of virtual bridges required in one virtual system.
If you do not configure this setting, up to four virtual bridges that are connected to the virtual network interface of the host OS can be created.

【*Example*】
The following example shows how to set the parameter when you create up to 8 virtual bridges.

```
options netloop nloopbacks=8
```

Note   Do not connect an administrative LAN connected to MMB to a virtual bridge.

A virtual bridge is created with the following procedures.

Figure 1.2 Virtual bridge setting procedure

[1] Place the script for creating the virtual bridge in the specified directory

↓

[2] Edit the shell script to call the shell script for creating the virtual bridge

↓

[3] Add the execute permission

↓

[4] Register the script with the xend service
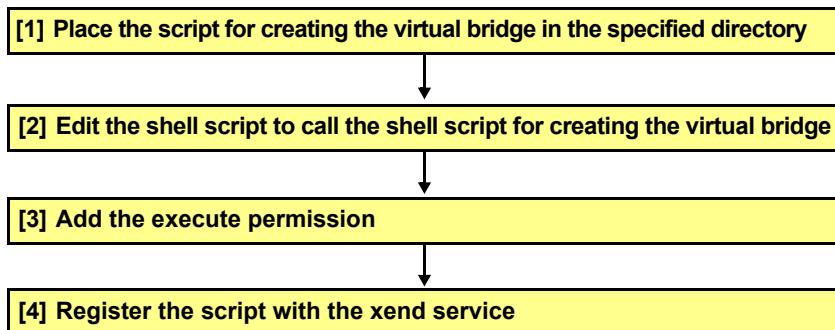
You need to reboot the host OS to enable the script you created.

[1] Place the script for creating the virtual bridge in the specified directory
Place the shell script to call the script for creating the virtual bridge and the following shell script for creating the virtual bridge into /etc/xen/scripts.

[2] Edit the shell script to call the shell script for creating the virtual bridge
Note the following points when you create the shell script:

- Script execution formats
  The shell script is executed in one of the formats shown below when xend starts or stops.
  - When xend starts

When xend starts, the shell script is executed in the following format:

```
system# <virtual-bridge-creation-script> start
```

Create a virtual bridge when you specify "start" in the script.

– When xend stops

When xend stops, the shell script is executed in the following format:

```
system# <virtual-bridge-creation-script> stop
```

When you specify "stop" in the script, delete the virtual bridge created at "start."

- Editing the shell script to call the shell script for creating the virtual bridge
  Edit the shell script for creating the virtual bridge.

[3] Add the execute permission

Use the "chmod" command to add execute permission to the script.

```
system# chmod +x <script-to-call-the-virtual-bridge-creation-script>
```

<script-to-call-the-virtual-bridge-creation-script>
  Specify the file name of the shell script you have made.

[4] Register the script with the xend service

To register the script with the xend service, edit the "network-script" parameter in the configuration file "/etc/xen/xend-config.sxp."
"network-bridge" is set for the "network-script" parameter. Replace this with the name of the shell script you have made.

【*Before change*】

```
(network-script network-bridge)
```

⬇

【*After change*】

```
(network-script <script-to-call-the-virtual-bridge-creation-script>)
```

<script-to-call-the-virtual-bridge-creation-script>
 Specify the file name of the shell script you have made.

- Virtual bridge configuration for creating a redundant virtual network
  - For a virtual bridge configuration in which you create a redundant virtual network with PRIMECLUSTER GLS, see the manual for "PRIMECLUSTER GLS."

Sample script to call the shell script for creating the virtual bridge

Shown below is a sample script to call the shell script for creating the virtual bridge.
In the sample configuration of the virtual bridge, the following four virtual bridges are created.

- xenbr0: Virtual bridge of Configuration1 (xenbr) that is connected to the physical network interface "eth0."

- gextbr1: Virtual bridge of Configuration2 (gextbr) that is connected to the physical network interface "eth1."

- intbr2: Virtual bridge of Configuration3 (intbr) that is connected to the host OS and the guest OS1, guest OS2, and guest OS3.

- gintbr3: Virtual bridge of Configuration4 (gintbr) that is connected to the guest OS2 and guest OS3.

Figure 1.3 Sample configuration of a virtual bridge
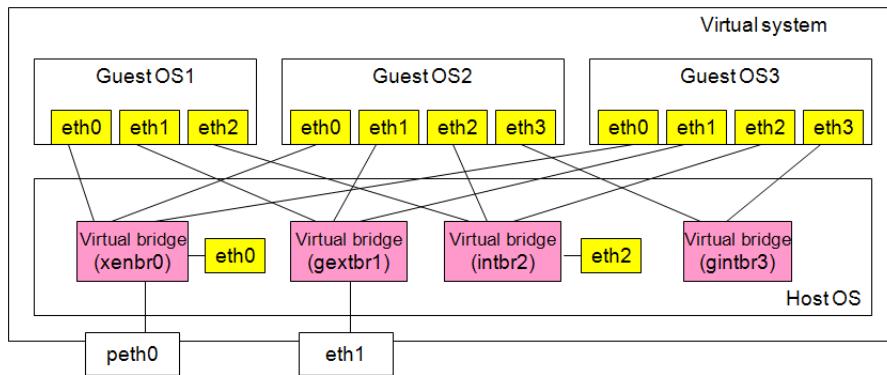
【*Example*】

Shell script to call the virtual bridge creation script

```
#!/bin/sh
#
# Sample of Create/Delete virtual bridge
#
# $1 start : Create virtual bridge
#    stop  : Delete virtual bridge
#    status: Display virtual bridge information

# Exit if anything goes wrong
set -e

command=$1
xenscript=/etc/xen/scripts/network-bridge
xenscriptgext=/etc/xen/scripts/gext-network-bridge
xenscriptgint=/etc/xen/scripts/gint-network-bridge
xenscriptint=/etc/xen/scripts/int-network-bridge


# op_start:subscript for start operation #
op_start () {
        $xenscript     $command vifnum=0 netdev=eth0
        $xenscriptgext $command extnum=1 netdev=eth1
        $xenscriptint  $command vifnum=2 lodev=eth1 mac=
02:17:42:2F:00:01 ip=192.168.1.10/24
        $xenscriptgint $command intnum=3

}

# op_stop:subscript for stop operation #
op_stop () {
        # same operation as start
        op_start
}

case "$command" in
        start)
                # Create your virtual bridge
                op_start
        ;;

        stop)
                # Delete virtual bridge
                op_stop
        ;;

        status)
                # display virtual bridge information
                $xenscript status
        ;;

        *)
                echo "Unknown command: $command" >&2
                echo 'Valid commands are: start, stop, status' >&2
                exit 1

esac
```

1.6.5   Setting auto start and stop of guest domains

The "xendomains" service starts and stops guest domains on the host OS. The following describes how the "xendomains" service works when the host OS boots or shuts down.

- When the host OS boots
  The "xendomains" service uses the domain configuration file in the "/etc/xen/auto/" directory to start guest domains automatically.

- When the host OS shuts down
  The "xendomains" service stops running guest domains, and then shuts down the host OS after stopping all guest domains automatically.

> **Note**
> - To have the guest domain start automatically by using the "xendomains" service, be sure to configure settings for the auto creation of the virtual bridge. For details on the virtual bridge, see '1.6.4 Setting a virtual bridge.'
> - Under the following conditions, a timeout may occur during an auto start of a guest domain and the domain may not be started automatically.
>   - If the number of the guest domains that are set to start automatically is large
>   - If the amount of resources for the guest domains that are set to start automatically is large
>   - If the load on the host OS is high
>
>   To check if the auto start is successful, run the "xm list" command 10 minutes after the host OS is booted. Use the "xm create" command to manually start the guest domains that were not started automatically.

The following describes how to set the "xendomains" service.
Take the following steps to configure the "xendomains" service.

- Setting an environment variable
  Be sure to change "XENDOMAINS_SAVE" in "/etc/sysconfig/xendomains" as follows.

  【*Before change*】

  ```
  XENDOMAINS_SAVE=/var/lib/xen/save
  ```

  ↓

  【*After change*】

  ```
  XENDOMAINS_SAVE=
  ```

- Configuring the init script
  Enable the init script which automatically starts and stops guest domains. Enabling the init script allows the auto start and stop of guest domains.
  To check the status of the init script, execute the following command on the host OS.

  ```
  system# chkconfig --list xendomains
  ```

  The init script is enabled when the host OS is installed.

– When the init script is enabled

The following is displayed when the init script is enabled.

```
system# chkconfig --list xendomains
xendomains          0:off  1:off  2:off  3:on   4:on   5:on   6:off
```

Execute the following command to disable the init script.

```
system# chkconfig xendomains off
```

– When the init script is disabled

The following is displayed when the init script is disabled.

```
system# chkconfig --list xendomains
xendomains          0:off  1:off  2:off  3:off  4:off  5:off  6:off
```

Execute the following command to enable the init script.

```
system# chkconfig xendomains on
```

– When the init script is not registered

The following is displayed when the init script is not registered.

```
system# chkconfig --list xendomains
service xendomains supports chkconfig, but is not referenced in any runlevel (run
'chkconfig --add xendomains')
```

Execute the following command to register the init script.

```
system# chkconfig --add xendomains
```

1.6.6 Configuring the hypervisor log collection

Configure the settings so that the hypervisor log is collected for maintenance.

Setting an environment variable

Change "XENCONSOLED_LOG_HYPERVISOR" in "/etc/sysconfig/xend" as below.

【*Before change*】

```
#XENCONSOLED_LOG_HYPERVISOR=no
```

↓

【*After change*】

```
XENCONSOLED_LOG_HYPERVISOR=yes
```