Virtualization

Exinda ExOS Version 6.3

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1 Introduction

Virtualization

Exinda Firmware Version: 6.3

1.1 Using this Guide

Throughout the manual the following text styles are used to highlight important points:

- Useful features, hints and important issues are called "notes" and they are identified in a light blue background.

Note: This is a note.

- Practical examples are presented throughout the manual for deeper understanding of specific concepts. These are called "examples" and are identified with a light green background.

This is an example.

- Warnings that can cause damage to the device are included when necessary. These are indicated by the word "caution" and are highlighted in yellow.

Caution: This is a caution.

1.2 Further Reading

In addition to this How to Guide, the following relevant user documentation is available and should be read in conjunction with this guide:

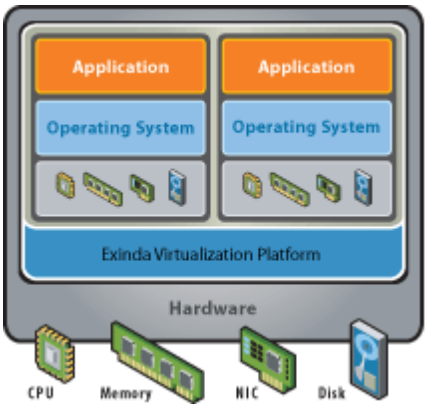
- Exinda User Manual
- Replify Sizing Guide
- Replify User Guide/Videos

Please visit http://www.exinda.com for more information.

Part II

2 Overview

Exinda Virtualization support allows 3rd party operating systems/products to be installed on selected Exinda hardware appliances.

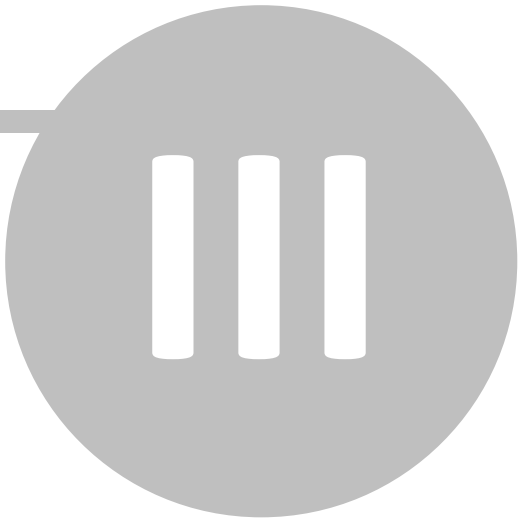


Once enabled, you can install any standard 32 or 64 bit x86 (Intel based) operating system onto an Exinda Virtualization Partition (EVP).

This How to Guide provides a general overview on how to use Exinda Virtual Partitions and also how to install supported 3rd party products.

Note: Virtualization requires an additional, optional license before this feature can be configured and used. Please contact Exinda TAC or your local Exinda representative if you do not have this license and you wish to use this feature.

Part



3 Requirements

In order to enable Virtualization support, the following requirements must be satisfied:

- **Only selected Exinda 60 series hardware is supported.** Currently, the following hardware is available for Virtualization:
  - Exinda 4061*
  - Exinda 6060
  - Exinda 8060
  - Exinda 10060
- **An optional Exinda Virtualization license must be purchased** for each Exinda appliance you want to enable Virtualization support.
- **ExOS 5.5 (or later) must be installed.**

Once an Exinda Virtualization license has been installed on supported hardware, the Virtualization functionality will be enabled.

*** Note**: The Exinda 4061 requires a 2GB RAM upgrade in order to enable Virtualization. This RAM is provided free of chare for all 4061s when an Exinda Virtualization license is purchased for that 4061.

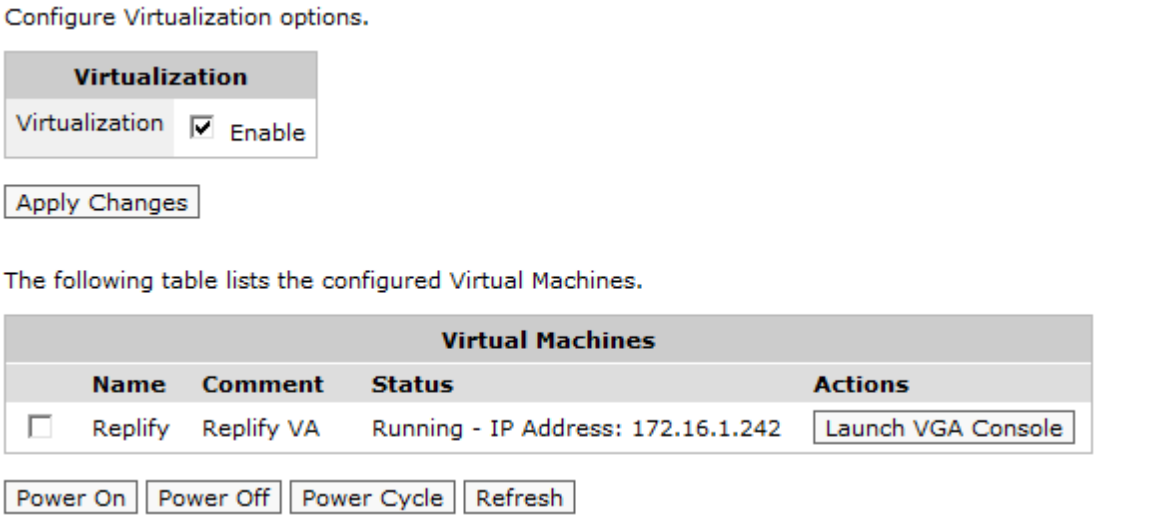
Part IV

4 Installation

Most of the Exinda Virtualization configuration is done via the CLI "virt vm" command. These commands can be used to create virtual machines, configure CPU, storage, RAM, network, etc.

```
exinda-16d806 (config) # virt vm MyVM ?
<cr>            Create this virtual machine (if it does not already exist)
arch            Set CPU architecture
boot            Configure boot options
comment         Set a comment describing this virtual machine
console         Configure or connect to the text or graphical console
copy            Make a duplicate copy of this virtual machine
feature         Enable certain virtualization features
install         Install an operating system onto this virtual machine (temporarily attach a CD and boot from it)
interface       Configure virtual interfaces
manufacture     Manufacture this virtual machine with an appliance image
memory          Set memory allowance
power           Turn this virtual machine on or off, plus other related options
rename          Rename this virtual machine
storage         Configure storage for this virtual machine
vcpus           Specify virtual CPUs
```

The System | Virtualization page on the Web UI, advanced mode, allows you to perform basic operations on the virtual machine, such as power on and off. You can also launch the VGA console.



Note: The 'Launch VGA Console' command requires Java to be installed and enabled. This will create a secure SSH connection to the Exinda appliance so that the VGA Console can be viewed securely. Therefore, direct SSH access to the Exinda appliance must be available.

Part V

5 Supported Products

Although almost any operating system can be installed onto an Exinda Virtualization Partition, Exinda currently approves and supports the following 3rd party products:

Vendor	Product	Description
exinda	Exinda SDP	Centrally Manage Unified Performance Management Solutions in Distributed Deployments.
REPLIFY	Reptor Virtual Appliance (VA)	Reptor Virtual Appliances can be configured as required, to emulate Data Center or Branch Office boxes, offering system administrators the maximum optimization and deployment flexibility benefits the Reptor Accelerator has to offer.
REPLIFY	Reptor Enterprize Manager (EM)	The Reptor Enterprize Manager provides centralized configuration of your Reptor Accelerator deployment, with detailed reporting on all of your Reptor Clients and Reptor Virtual Appliances.
Microsoft	Windows Server 2008 R2	Windows Server 2008 R2 builds on the successes and strengths of its Windows Server predecessors while delivering valuable new functionality and powerful improvements to the base operating system.

Part VI

6 Exinda SDP

Exinda's Service Delivery Point (SDP) is a revolutionary platform for centrally managing Exinda appliances distributed throughout the corporate network. As a virtual appliance, SDP further simplifies the task of installing, configuring, monitoring and reporting WAN optimization.

6.1 Exinda SDP VA

Note: The following CLI commands should be pasted into the Exinda CLI (configure terminal mode) or uploaded via the System | Maintenance | Import Config page on the Web UI, advanced mode.

To install the Exinda SDP Virtual Appliance, first assign a physical interface to the virtual infrastructure so that the virtual machine can have network connectivity.

The following command will add the physical interface specified, to a bridge that can later be attached to virtual machines. You should use a spare, unused interface on the Exinda appliance for this purpose (eth2 is usually a good choice). If the interface specified here is "eth2" for example, the bridge will be called "brvm2". You will need to use this bridge later on when configuring the virtual machine's network interfaces.

```
virt interface eth2
```

This command will fetch the Exinda SDP virtual disk image. The file is approximately 800MB, and once downloaded, will be uncompressed to about 2.7GB.

```
virt volume fetch url http://updates.exinda.com/vm/exinda/Exinda-SDP-x86_64-0.img
```

After the previous command has completed, go ahead and paste the following commands into the CLI to create the Virtual Machine. This will create a VM called "Exinda-SDP".

```
   virt vm Exinda-SDP
   virt vm Exinda-SDP arch x86_64
   virt vm Exinda-SDP boot auto-power last
   virt vm Exinda-SDP boot device order hd
   virt vm Exinda-SDP comment "Exinda SDP Server"
   virt vm Exinda-SDP feature acpi enable
   virt vm Exinda-SDP feature apic enable
no virt vm Exinda-SDP feature pae enable
 # Specify the bridge created above when setting the virtual interface.
   virt vm Exinda-SDP interface 1 bridge brvm2
   virt vm Exinda-SDP interface 1 model e1000
no virt vm Exinda-SDP interface 2
   virt vm Exinda-SDP memory 2048
   virt vm Exinda-SDP storage device bus virtio drive-number 1 source file Exinda-
SDP-x86_64-0.img mode read-write
   virt vm Exinda-SDP vcpus count 2
```

Now that the VM has been created, navigate to the System | Virtualization page on the Web UI, advanced mode. Power on the VM from this screen.

By default, the Exinda SDP Virtual Appliance is not activated or licensed. Please contact Exinda Support for assistance.

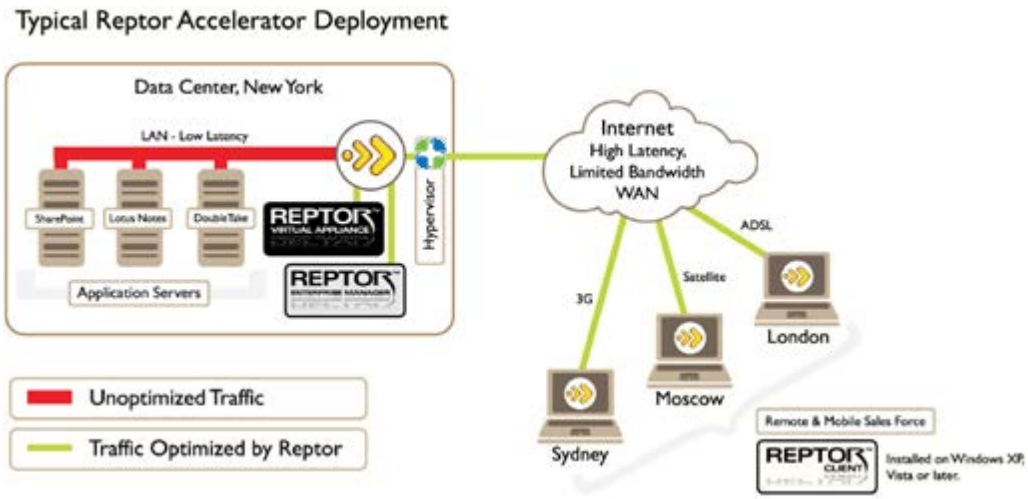
Note: The Exinda SDP's ethernet port will be attached to the bridge created during the first step. This means the virtualization interface (e.g. eth2) on the Exinda appliance will need to be connected to the network in order to access the SDP Virtual Appliance.

Note: The virtual disk image used for this Exinda SDP Virtual Appliance is an automatically expanding image. When first installed, it will be about 2.7GB, however, it is capable of automatically growing up to 50GB as space is used. Ensure you allow enough free space on the Exinda appliance for the image to grow.

Part VII

7 Replify Reptor

Replify Reptor is a fully featured, WAN Optimization Software Client (SoftWOC) for mobile workers, road warriors and tiny branch offices.



The Reptor Accelerator Suite vastly improves remote user experience through compression, cross-protocol data reduction, protocol manipulation and TCP optimization. Users will experience vastly improved response times and download speeds over a wide range of applications - including email, CRM, ERP, and collaboration applications.

Note: For more information how to configure Replify Reptor, consult the Replify User Guide.

7.1 Replify Reptor VA

Note: The following CLI commands should be pasted into the Exinda CLI (configure terminal mode) or uploaded via the System | Maintenance | Import Config page on the Web UI, advanced mode.

To install the Replify Reptor VA, first assign a physical interface to the virtual infrastructure so that the virtual machine can have network connectivity.

The following command will add the physical interface specified to a bridge that can later be attached to virtual machines. You should use a spare, unused interface on the Exinda appliance for this purpose (eth2 is usually a good choice). If the interface specified here is "eth2" for example, the bridge will be called "brvm2". You will need to use this bridge later on when configuring the virtual machine's network interfaces.

```
   virt interface eth2
```

The next step is to download the base virtual disk image from the Exinda updates server and create a secondary virtual disk for additional storage.

The first command will fetch the latest Replify Reptor VA base virtual disk image. The file is approximately 200MB large, and once downloaded, will be uncompressed to about 2GB. The second command will create an empty 40GB virtual disk image for additional storage. These commands may take around 5 mins to complete.

```
   virt volume fetch url http://updates.exinda.com/vm/replify/Replify-VA-i386-0.
img
   virt volume create disk file Replify-VA-i386-1.img size-max 40000
```

After the previous commands have completed, use the following CLI commands to create the Virtual Machine itself. This will create a VM called "Replify-VA".

```
   virt vm Replify-VA
   virt vm Replify-VA arch i386
   virt vm Replify-VA boot auto-power on
   virt vm Replify-VA boot device order hd
   virt vm Replify-VA comment "Replify Virtual Appliance"
   virt vm Replify-VA console graphics vnc
   virt vm Replify-VA console text tty
   virt vm Replify-VA feature acpi enable
   virt vm Replify-VA feature apic enable
no virt vm Replify-VA feature pae enable
 # Specify the bridge created above when setting the virtual interface.
   virt vm Replify-VA interface 1 bridge brvm2
   virt vm Replify-VA interface 1 model e1000
no virt vm Replify-VA interface 2
   virt vm Replify-VA memory 2048
   virt vm Replify-VA storage device bus ide drive-number 1 source file Replify-
VA-i386-0.img
   virt vm Replify-VA storage device bus ide drive-number 2 source file Replify-
VA-i386-1.img
   virt vm Replify-VA vcpus count 2
```

Now that the VM has been created, navigate to the System | Virtualization page on the Web UI, advanced mode and power on the VM from this screen. You can then launch the VGA console, view the Replify-VA VM boot up, then login to the CLI (by pressing ALT-F2 after boot-up). The default CLI login credentials are:

Username: root
Password: default

Warning: Currently, this VA requires manual intervention during first boot. Using the VGA console, you will be required to press CONTROL-D during boot-up, when prompted. After the VA has booted up, you will need to edit the /etc/fstab file and change the /dev/sda1 line item to /dev/hda1. Contact Exinda TAC for assistance with this step.

From the CLI, you can change IP address and network connectivity settings using the 'configure-network' command and expand the Replify VA file system to make use of the additional 40GB storage using the 'add-new-disk' command.

After IP address and network connectivity settings have been saved, you can then access the web-based UI by pointing your browser to https://<Replify-VA-IP>. The default Replify VA Web UI login credentials are:

Username: admin
Password: default

From this point forward, you should consult the Replify User Guide.

Note: The Replify VA's management port will be attached to the bridge created during the first step. This means the virtualization interface (e.g. eth2) on the Exinda appliance will need to be connected to the network in order to access the Replify Reptor UI.

7.2 Replify Reptor EM

Note: The following CLI commands should be pasted into the Exinda CLI (configure terminal mode) or uploaded via the System | Maintenance | Import Config page on the Web UI, advanced mode.

To install the Replify Reptor EM, first assign a physical interface to the virtual infrastructure so that the virtual machine can have network connectivity.

The following command will add the physical interface specified, to a bridge that can later be attached to virtual machines. You should use a spare, unused interface on the Exinda appliance for this purpose (eth2 is usually a good choice). If the interface specified here is "eth2" for example, the bridge will be called "brvm2". You will need to use this bridge later on when configuring the virtual machine's network interfaces.

```
virt interface eth2
```

The next step is to download the base virtual disk image from the Exinda updates server and create a secondary virtual disk for additional storage.

The first command will fetch the latest Replify Reptor EM base virtual disk image. The file is approximately 200MB large, and once downloaded, will be uncompressed to about 2GB. The second command will create an empty 3GB virtual disk image for additional storage. These commands may take around 5 mins to complete.

```
   virt volume fetch url http://updates.exinda.com/vm/replify/Replify-EM-i386-0.
img
   virt volume create disk file Replify-EM-i386-1.img size-max 3000
```

After the previous commands have completed, go ahead and paste the following commands into the CLI to create the Virtual Machine. This will create a VM called "Replify-EM".

```
   virt vm Replify-EM
   virt vm Replify-EM arch i386
   virt vm Replify-EM boot auto-power on
   virt vm Replify-EM boot device order hd
   virt vm Replify-EM comment "Replify Enterprize Manager"
   virt vm Replify-EM console graphics vnc
   virt vm Replify-EM console text tty
   virt vm Replify-EM feature acpi enable
   virt vm Replify-EM feature apic enable
no virt vm Replify-EM feature pae enable
 # Specify the bridge created above when setting the virtual interface.
   virt vm Replify-EM interface 1 bridge brvm2
   virt vm Replify-EM interface 1 model e1000
no virt vm Replify-EM interface 2
   virt vm Replify-EM memory 1024
   virt vm Replify-EM storage device bus ide drive-number 1 source file Replify-
EM-i386-0.img
   virt vm Replify-EM storage device bus ide drive-number 2 source file Replify-
EM-i386-1.img
   virt vm Replify-EM vcpus count 2
```

Now that the VM has been created, navigate to the System | Virtualization page on the Web UI, advanced mode. Power on the VM from this screen. You can then launch the VGA console, view the Replify-EM VM boot up, then login to the CLI (by pressing ALT-F2 after boot-up). The default CLI login credentials are:

Username: root
Password: default

Warning: Currently, this VA requires manual intervention during first boot. Using the VGA console, you will be required to press CONTROL-D during boot-up, when prompted. After the VA has booted up, you will need to edit the /etc/fstab file and change the /dev/sda1 line item to /dev/hda1. Contact Exinda TAC for assistance with this step.

From the CLI, you can change IP address and network connectivity settings using the 'configure-network' command and expand the Replify EM file system to make use of the additional 3GB storage using the 'add-new-disk' command.

After IP address and network connectivity settings have been saved, you can then access the web-based UI by pointing your browser to https://<Replify-EM-IP>. The default Replify EM Web UI login credentials are:

Username: admin
Password: default

From this point forward, you should consult the Replify User Guide.

Note: The Replify EM's management port will be attached to the bridge created during the first step. This means the virtualization interface (e.g. eth2) on the Exinda appliance will need to be connected to the network in order to access the Replify EM UI.

Part VIII

8 Microsoft Windows Server

Windows Server 2008 R2 builds on the successes and strengths of its Windows Server predecessors while delivering valuable new functionality and powerful improvements to the base operating system.

8.1 Microsoft Windows Server 2008 R2

To install Microsoft Windows Server 2008 R2 (Enterprise Edition), first assign a physical interface to the virtual infrastructure so that the virtual machine can have network connectivity.

The following command will add the physical interface specified, to a bridge that can later be attached to virtual machines. You should use a spare, unused interface on the Exinda appliance for this purpose (eth2 is usually a good choice). If the interface specified here is "eth2" for example, the bridge will be called "brvm2". You will need to use this bridge later on when configuring the virtual machine's network interfaces.

```
virt interface eth2
```

This command will fetch the Windows Server 2008 R2 Enterprise Edition (180 day evaluation) virtual disk image. The file is approximately 2.7GB, and once downloaded, will be uncompressed to about 6.7GB.

```
virt volume fetch url http://updates.exinda.com/vm/microsoft/Windows-Server-2008-R2-x86_64-0.img
```

After the previous command has completed, go ahead and paste the following commands into the CLI to create the Virtual Machine. This will create a VM called "Windows-Server-2008-R2".

```
   virt vm Windows-Server-2008-R2
   virt vm Windows-Server-2008-R2 arch x86_64
   virt vm Windows-Server-2008-R2 boot auto-power on
   virt vm Windows-Server-2008-R2 boot device order hd
   virt vm Windows-Server-2008-R2 comment "Windows Server 2008 R2"
   virt vm Windows-Server-2008-R2 console graphics vnc
   virt vm Windows-Server-2008-R2 console text tty
   virt vm Windows-Server-2008-R2 feature acpi enable
   virt vm Windows-Server-2008-R2 feature apic enable
no virt vm Windows-Server-2008-R2 feature pae enable
 # Specify the bridge created above when setting the virtual interface.
   virt vm Windows-Server-2008-R2 interface 1 bridge brvm2
   virt vm Windows-Server-2008-R2 interface 1 model e1000
no virt vm Windows-Server-2008-R2 interface 2
   virt vm Windows-Server-2008-R2 memory 2048
   virt vm Windows-Server-2008-R2 storage device drive-number 1 source file
Windows-Server-2008-R2-x86_64-0.img
   virt vm Windows-Server-2008-R2 vcpus count 2
```

Now that the VM has been created, navigate to the System | Virtualization page on the Web UI, advanced mode. Power on the VM from this screen. You should then launch the VGA console and continue with the configuration of the Windows Server. The default login credentials are:

Username: Administrator
Password: Pass@word1

By default, the Winders Server's license has not been activated. This is a special 180 day evaluation version of Windows Server 2008 R2 Enterprise Edition. There is a 10 day grace period before the Windows Server will require activation, so you should activate the Windows Server as soon as possible after installation in order to start the 180 day evaluation period (leave the Product Key blank when activating).

Note: The Windows Server's ethernet port will be attached to the bridge created during the first step. This means the virtualization interface (e.g. eth2) on the Exinda appliance will need to be connected to the network in order to access the Windows Server.

Note: The virtual disk image used for this Windows Server is an automatically expanding image. When first installed, it will be about 6.7GB, however, it is capable of automatically growing up to 130GB as space is used. Ensure you allow enough free space on the Exinda appliance for the image to grow.