Installing and Upgrading

REFERENCE GUIDE

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PROPRIETARY NOTICES

Contents

Quick List of Examples

Use this list to help you locate examples you'd like to look at or try.

Quick List of Commands

Use this list to help you quickly locate commands.

Preface

This document describes the various deployment, installation, and upgrade options for Vyatta software.

This preface provides information about using this guide. The following topics are presented:

- Intended Audience
- Organization of This Guide
- Document Conventions
- Vyatta Publications

Intended Audience

This guide is intended for experienced system and network administrators. Depending on the functionality to be used, readers should have specific knowledge in the following areas:

- Networking and data communications

- TCP/IP protocols

- General router configuration

- Routing protocols

- Network administration

- Network security

- IP services

Organization of This Guide

This guide has the following aid to help you find the information you are looking for:

- Quick List of Commands

  Use this list to help you quickly locate commands.

This guide has the following chapters:

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Document Conventions

This guide uses the following advisory paragraphs, as follows.

WARNING *Warnings alert you to situations that may pose a threat to personal safety.*

CAUTION *Cautions alert you to situations that might cause harm to your system or damage to equipment, or that may affect service.*

NOTE *Notes provide information you might need to avoid problems or configuration errors.*

This document uses the following typographic conventions.

`Monospace`	Examples, command-line output, and representations of configuration nodes.
`bold Monospace`	Your input: something you type at a command line.
bold	Commands, keywords, and file names, when mentioned inline. Objects in the user interface, such as tabs, buttons, screens, and panes.
italics	An argument or variable where you supply a value.
<key>	A key on your keyboard, such as <Enter>. Combinations of keys are joined by plus signs ("+"), as in <Ctrl>+c.
[key1 | key2]	Enumerated options for completing a syntax. An example is [enable | disable].
num1–numN	A inclusive range of numbers. An example is 1–65535, which means 1 through 65535, inclusive.
arg1..argN	A range of enumerated values. An example is eth0..eth3, which means eth0, eth1, eth2, or eth3.
arg[*arg*...] *arg*[,*arg*...]	A value that can optionally represent a list of elements (a space-separated list and a comma-separated list, respectively).

Vyatta Publications

Full product documentation is provided in the Vyatta technical library. To see what documentation is available for your release, see the *Guide to Vyatta Documentation*. This guide is posted with every release of Vyatta software and provides a great starting point for finding the information you need.

Additional information is available on www.vyatta.com and www.vyatta.org.

Chapter 1: Installing the System

This chapter describes methods for performing a new install of the Vyatta system. This chapter presents the following topics:

- Deployment Options
- Using LiveCDs
- Installing onto Persistent Devices
- Installing into a Virtualized Environment
- Testing Your Installation

Deployment Options

The Vyatta system supports a number of flexible deployment options:

- **Run from LiveCD.** You can run the Vyatta system directly from a LiveCD. A LiveCD runs the Vyatta software on a RAM disk on the host machine, without disturbing or changing the existing operating system on the host machine. As a method of deployment, this method of deployment is best suited for evaluation and test scenarios. In addition, a LiveCD is also required as a first step in installing to a persistent hardware device, such as a hard disk.

  You can read about using LiveCDs in "Using LiveCDs" on page 2.

- **Install on a persistent device on physical hardware.** The Vyatta system can be installed and run on most standard x86 servers and PCs. The system can be installed from a LiveCD onto a variety of persistent devices, including hard drive, USB memory stick, and compact Flash.

  NOTE *Not all hardware supports the ability to boot from USB device or Flash; check the BIOS of your hardware to see if yours does.*

  You can read about installing onto a hard disk or other persistent device in "Installing onto Persistent Devices" on page 4.

- **Install into a virtualized environment or cloud.** The Vyatta system can be run as a software appliance in a virtual or cloud computing environment, allowing you to virtualize your network. The Vyatta software appliance has been optimized for XenServer and VMware virtual environments. These platforms provide a great deal of flexibility as to how the virtual machine can be configured, especially with respect to memory and Ethernet interfaces. Multiple Vyatta systems can be run simultaneously on a single hardware platform configured for multiple virtual machines.

  You can read about installing into a virtualized environment in "Installing into a Virtualized Environment" on page 9.

Using LiveCDs

You can run directly from LiveCD, or you can use it to install onto a persistent device or into a virtualized environment.

This section presents the following topics:

- About LiveCDs
- Creating a LiveCD

- Booting from a LiveCD
- Installing from a LiveCD

About LiveCDs

A LiveCD runs the Vyatta software on a RAM disk on the host machine. The system uses the RAM disk for writeable sections of the file system and uses the floppy drive or a TFTP server for saving configuration files.

The LiveCD can run on a machine with an existing operating system without disturbing or changing the previously installed operating system. Configuration is not stored on the system, but you can save configuration to a persistent device such as a USB memory stick. Also, you cannot upgrade an installation run from LiveCD; each upgrade requires a fresh LiveCD. While you are running the system from a LiveCD, you will not be able to access other applications or programs on your machine.

A LiveCD is also required to install the Vyatta system to a persistent device, such as a hard disk using, either an image-based install or a disk-based install.

You can read about image-based installs in "Image-Based Install" on page 5.

You can read about disk-based installs in "Disk-Based Install" on page 6.

Creating a LiveCD

To create a LiveCD

1   Download one of the ISO software images directly from the Vyatta web site.

- Vyatta Subscription Edition customers use
  http://www2.vyatta.com/support/software/.

- Vyatta community users use http://www.vyatta.com/downloads/.

2   Use CD-burning software to create a bootable ISO image. Note that:

- The CD must be an ISO image: it won't work to just copy files onto the CD.

- The CD must be bootable.

See the documentation for your CD-burning utility for information on how to burn a bootable ISO image.

Booting from a LiveCD

Get ready

- Make sure your BIOS is configured to boot from CD-ROM.

1   With the system powered down, connect a VGA monitor and keyboard to it.

2   Insert the Vyatta LiveCD into the CD drive and close the drive.

3   Power up the system.

NOTE *Systems with a Flash device may boot slowly from LiveCD, as the system looks for DMA that does not exist on the IDE device. This is expected behavior.*

After the startup messages complete, the **Vyatta login** prompt appears:

```
vyatta login:
```

This prompt means that your system is running.

If you want to simply run the system from the LiveCD, you can go directly to the section on testing your installation to confirm that you have booted the correct system and can access the system from your network.

For information on configuring your BIOS to boot from a specific device, see "Specifying the Boot Device in the System BIOS" on page 9. For information on testing your installation, see "Testing Your Installation" on page 13.

Installing from a LiveCD

If you want to use the LiveCD to perform an image-based install, see "Image-Based Install" on page 5.

If you want to use the LiveCD to perform a disk-based install, see "Disk-Based Install" on page 6.

Installing onto Persistent Devices

This section describes options for installing the Vyatta system onto a persistent device.

In this section:

- Types of Persistent Install
- Image-Based Install
- Disk-Based Install
- Sample Disk-Based Install Session
- Specifying the Boot Device in the System BIOS

Types of Persistent Install

There are two types of installations that can be performed on a persistent device:

- **Image-based install.** The simplest, most flexible, and most powerful way to install a Vyatta system is using a binary system image. With this method, you can install multiple versions of the Vyatta system as images and switch between the images simply and easily. You install the image from a LiveCD then you reboot your system and it runs the image.

- **Disk-based install.** A disk-based install also installs from a LiveCD onto a persistent device such as a hard disk partition. However, unlike an image-based install, a disk-based install uses a traditional layout of files on the disk. Additional system images may be added at a later time to a system created using a disk-based install.

Image-Based Install

To perform an image-based install, you run the **install-image** command from a running LiveCD system. The system can be installed to any persistent device, such as a hard disk, USB stick, or compact Flash.

The **install-image** command uses the LiveCD as the source of the image, formats the device that the system will be installed to, installs the system, and attempts to preserve the Vyatta configuration from a previous installation (if one is found).

The newly-installed system is run the next time the system reboots.

Get ready

- Make sure you have a minimum of 1 GB of free space on your hard disk, USB stick, or Flash card for a root partition. A minimum of 2 GB of free space is recommended for a production installation.

- Find out the device name onto which the software is to be installed.

NOTE *The installation process reformats the specified partition, so it is critical to specify the correct partition. For systems dedicated to Vyatta, the system selected defaults can be used. If you are installing onto a USB memory stick, insert the memory stick into a USB port. The system will detect that the USB device is installed and notify you; record the name of the device as displayed in the system message (for example, **/dev/sdb**). Specify this device when prompted during the installation procedure.*

- If you want to install onto a USB stick, check the BIOS setup of your hardware to confirm that it supports the ability to boot from a USB device.

To install

1   Create and run the Vyatta LiveCD.

2   Login as user **vyatta** with password **vyatta** and run the **install-image** command.

3   Remove the LiveCD.

4   Make sure your BIOS is configured to boot from the persistent device the system was installed to.

5   Reboot the system.

6   Test your installation.

For information on creating and booting from a LiveCD, see "Using LiveCDs" on page 2.

For a sample of the system feedback within a disk-based install session, see "Sample Disk-Based Install Session" on page 7.

For information on configuring your BIOS to boot from a specific device, see "Specifying the Boot Device in the System BIOS" on page 9.

For information on testing your installation, see "Testing Your Installation" on page 13.

Disk-Based Install

To perform a disk-based install, you run the **install-system** command from a running LiveCD system. The system can be installed to any persistent device, such as a hard disk, USB stick, or compact Flash.

The **install-system** command uses the LiveCD as the source of the image, formats the device that the system will be installed to, installs the system, and attempts to preserve the Vyatta configuration from a previous installation (if one is found).

The newly-installed system is run the next time the system reboots.

Get ready

•   Make sure you have a minimum of 1 GB of free space on your hard disk, USB stick, or Flash card for a root partition. A minimum of 2 GB of free space is recommended for a production installation.

•   Find out the device name onto which the software is to be installed.

NOTE *The installation process reformats the specified partition, so it is critical to specify the correct partition. For systems dedicated to Vyatta, the system selected defaults can be used. If you are installing onto a USB memory stick, insert the memory stick into a USB port. The system will detect that the USB device is installed and notify you; record the name of the device as displayed in the system message (for example,* ***/dev/sdb****). Specify this device when prompted during the installation procedure.*

- If you want to install onto a USB stick, check the BIOS setup of your hardware to confirm that it supports the ability to boot from a USB device.

To install

1   Create and run the Vyatta LiveCD.

2   Login as user **vyatta** with password **vyatta** and run the **install-system** command.

3   Remove the LiveCD.

4   Make sure your BIOS is configured to boot from the persistent device the system was installed to.

5   Reboot the system.

6   Test the installation.

For information on creating and booting from a LiveCD, see "Using LiveCDs" on page 2.

For a sample of the system feedback within a disk-based install session, see "Sample Disk-Based Install Session" on page 7.

For information on configuring your BIOS to boot from a specific device, see "Specifying the Boot Device in the System BIOS" on page 9.

For information on testing your installation, see "Testing Your Installation" on page 13.

Sample Disk-Based Install Session

The following is a sample disk-based installation session using the **install-system** command. Image-based installations using the **install-image** command are virtually identical.

Example 1-1   Sample install session

```
Last login: Mon Oct 29 15:37:50 2007
Linux vyatta 2.6.20 #1 SMP Fri Sep 21 02:22:08 PDT 2007 i686
Welcome to Vyatta.
This system is open-source software. The exact distribution terms for
```

```
each module comprising the full system are described in the individual
files in /usr/share/doc/*/copyright.
vyatta:~# install-system
Welcome to the Vyatta install program.  This script
will walk you through the process of installing the
Vyatta image to a local hard drive.

Would you like to continue? (Yes/No) [Yes]: <Enter>
Probing drives: OK
Looking for pre-existing RAID groups...none found.
The Vyatta image will require a minimum 1000MB root.
Would you like me to try to partition a drive automatically
or would you rather partition it manually with parted?  If
you have already setup your partitions, you may skip this step.

Partition (Auto/Parted/Skip) [Auto]: <Enter>

I found the following drives on your system:
 sda      1074MB


Install the image on? [sda] <Enter>

This will destroy all data on /dev/sda.
Continue? (Yes/No) [No]: Yes

How big of a root partition should I create? (1000MB - 1074MB) [1074]MB:
<Enter>

Creating filesystem on /dev/sda1: OK
Mounting /dev/sda1
Copying system image files to /dev/sda1:OK
I found the following configuration files
config/config.boot
Which one should I copy to sda? [/config/config.boot]: <Enter>

Enter password for administrator account
Enter vyatta password:vyatta
Retype vyatta password:vyatta
I need to install the GRUB boot loader.
I found the following drives on your system:
 sda      1074MB

Which drive should GRUB modify the boot partition on? [sda]: <Enter>

Setting up grub: OK
Done!
vyatta:~#
```

Specifying the Boot Device in the System BIOS

Prior to booting, you should make sure that the system BIOS is set to boot from the device that you expect it to.

To change the boot device

1   During the boot sequence press the appropriate key sequence (for example, <F2>) to interrupt the boot sequence and enter your system's BIOS setup program.

2   In the boot sequence menu arrange the boot devices such that the device name (for example, "USB HDD" for a USB stick or "IDE" or "SATA" for a compact Flash) is first in the list so that the system will attempt to boot from it first.

3   Save the settings and reboot the system. When the system restarts, it will boot from the device specified.

Installing into a Virtualized Environment

The Vyatta system supports the following types of installation into both VMware and XenServer virtualized environments.

In this section:

- Installing on VMware
- Installing on XenServer

Installing on VMware

This system presents the following topics:

- Before You Begin
- Installing on VMware ESX/ESXi 4
- Installing on VMware ESX/ESXi 3

Currently, the Vyatta system supports running on VMware ESX and ESXi.

Like other virtualization platforms, VMware products provide the ability to run multiple virtual systems on a single hardware platform. VMware ESX and ESXi are virtualization platforms that run directly on system hardware in a 64-bit environment.

Vyatta provides a prebuilt VMware virtual appliances that can be run as a virtual machine on VMware ESX or ESXi. You can obtain the Vyatta VMware virtual appliances from the Vyatta web site.

- Vyatta subscription customers use http://www2.vyatta.com/support/software/.

- Vyatta community customers use http://www.vyatta.com/downloads/.

Before You Begin

Before installing the Vyatta system, VMware must be installed on a server and be operational. VMware ESX or ESXi and accompanying documentation can be obtained from VMware at http://www.vmware.com.

The installation procedures provided assume an operational VMware system.

Installing on VMware ESX/ESXi 4

To install the Vyatta VMware virtual appliance on VMware ESX/ESXi 4

1 Copy the URL for the ESX 4 OVF file from the Vyatta web site.

- Vyatta Subscription Edition customers use http://www2.vyatta.com/support/software/.

- Vyatta community users use http://www.vyatta.com/downloads/.

2 Open the vSphere Client GUI.

3 From the File menu, select **Deploy OVF Template > Deploy from URL**.

4 Paste the URL for the OVF file in the field provided.

5 Follow the deployment dialog customizing for the local site. The virtual appliance can be run within VMware ESX/ESXi 4 like any other virtual machine.

6 Start the virtual machine.

7 Test the installation.

For information on testing your installation, see "Testing Your Installation" on page 13.

Installing on VMware ESX/ESXi 3

To install the Vyatta VMware virtual appliance on VMware ESX/ESXi 3

1 Copy the URL for the ESX 3 OVF file from the Vyatta web site.

- Vyatta Subscription Edition customers use http://www2.vyatta.com/support/software/.

- Vyatta community users use http://www.vyatta.com/downloads/.

2   Open the VMware Infrastructure Client GUI.

3   From the File menu, select **Virtual Appliance** > **Import** > **Import from URL**.

4   Paste the URL for the OVF file in the field provided.

5   Follow the deployment dialog customizing for the local site. The virtual appliance can be run within VMware ESX/ESXi 3 like any other virtual machine.

6   Start the virtual machine.

7   Test the installation.

For information on testing your installation, see "Testing Your Installation" on page 13.

Installing on XenServer

This section presents the following topics:

- Before You Begin
- Installing the Vyatta Template
- Creating a Vyatta Virtual Machine
- Operating a Vyatta Virtual Machine

Citrix XenServer is a server virtualization platform. Like other virtualization platforms, XenServer provides the ability to run multiple virtual machines on a single hardware platform.

XenCenter is the management system for XenServer. XenCenter allows you to manage multiple physical servers running XenServer, in addition to all the virtual machines running on each of the physical servers.

Virtual machines are created on XenServer using virtual machine templates. For each release of its software, Vyatta provides a XenServer virtual machine template that can be used to create virtual machines running the Vyatta system.

The Vyatta template is designed to work with XenServer 5.5 and XenCenter 5.5. To use the template, you must:

- Download the template.
- Import the template into XenServer.
- Create a Vyatta virtual machine from the template.

Before You Begin

Before installing the Vyatta template, XenServer 5.5 must be installed on a server and XenCenter 5.5 must be installed on a management PC. Instructions for downloading and installing these products can be found at http://www.citrix.com.

Installing the Vyatta Template

In order to allow Vyatta system virtual machines to run on XenServer 5.5, you must install the Vyatta XenServer template.

To install the Vyatta XenServer template

1   Download the compressed Vyatta XenServer template file from the Vyatta web site to a location accessible by your XenCenter machine.

- • Vyatta Subscription Edition customers use http://www2.vyatta.com/support/software/.
- • Vyatta community users use http://www.vyatta.com/downloads/.

2   Extract the Vyatta XenServer template file from the compressed download file.

3   Within XenCenter, select **Templates** > **Import Template**.

4   On the Import Source screen, browse to the extracted template file and select **Exported Template** as the **Import Type**. Click Next; the Home Server screen opens.

5   On the Home Server screen, select the server to be used as the home server for any virtual machines created from the template. Click Next; the Storage screen opens.

6   On the Storage screen, select the storage repository where virtual disks for the template will be stored. Click Import and wait for the template to be imported. The Network screen opens.

7   On the Network screen, set up any required network interfaces. Click Next; the Finish screen opens.

8   On the Finish screen, click Finish to complete the import process. The imported Vyatta template appears in the left pane of XenCenter.

Creating a Vyatta Virtual Machine

Once the Vyatta template is loaded on the XenServer machine, you can create a virtual machine from the template.

To create a Vyatta virtual machine

1   Within XenCenter, select the XenServer that you wish to add the new virtual machine to.

2   Click the **New VM** button. The Template screen opens.

3   From the Template screen, select the Vyatta template that imported. Click Next; the Name screen opens.

4   On the Name screen, enter a name and a description for the new virtual machine. Click Next; the Location screen opens.

5   On the Location screen, select **Empty DVD Drive**. Click Next; the CPU & Memory screen opens.

6   On the CPU & Memory screen, specify the number of CPUs and the amount of memory that the virtual machine is to use. Click Next; the Virtual Disks screen opens.

7   On the Virtual Disks screen, specify a virtual disk for the Vyatta virtual machine. Click Next; the Virtual Interfaces screen opens.

8   On the Virtual Interfaces screen, specify the virtual network interfaces to be installed on the Vyatta virtual machine. Click Next; the Finish screen opens.

9   On the Finish screen, select Start VM automatically if you would like the Vyatta virtual machine to start when the XenServer machine starts. Click Finish. The new virtual machine appears in the left pane of XenCenter.

Operating a Vyatta Virtual Machine

Once a Vyatta virtual machine has been created on XenServer, the virtual machine can be operated from XenCenter in the same way as any other virtual machine on XenServer.

To operate the Vyatta virtual machine

1   Select the Vyatta virtual machine in the left pane of XenCenter. Click the **Start** button.

2   Select the Console tab to access the Vyatta console.

3   Test the installation.

For information on testing your installation, see "Testing Your Installation" on page 13.

Testing Your Installation

Once the system has successfully booted you will see the **vyatta login:** prompt. This indicates that the system is operational.

You should:

•   Verify Release and System Type

•   Verify Connectivity

Verify Release and System Type

The next step is to confirm that the correct release is running and it is running on the device that you expect.

To verify release and system type

1   Login as user **vyatta** with password **vyatta** (default login ID).

2   Run the **show version** command, as in the following example.

Example 1-2   Displaying version information

```
vyatta@vyatta:~$ show version
Version  :    999.kenwoodse.02200016
Copyright:    2006-2010 Vyatta, Inc.
Built by :    autobuild@vyatta.com
Built on :    Sat Feb 20 08:16:24 UTC 2010
Build ID :    1002200816-658521f
Boot via :    image
Uptime   :    01:25:29 up 9 days,  4:29,  2 users,  load average: 0.00,
0.00, 0.00
vyatta@vyatta:~$
```

The **Version:** line shows the version number of the running system. The **Boot via:** line shows the type of system that is running:

- **livecd** — The system booted from a LiveCD.

- **image** — The system booted from a persistent device and is running as an image-based system

- **disk** — The system booted from a persistent device and is running as a disk-based system.

Verify Connectivity

The final step is to confirm that the Vyatta system can be accessed on the local network. A quick and easy way to do this is to configure an Ethernet interface on the system and then "ping" the interface from another host on the network.

NOTE *Make sure that the system is physically connected to the network first.*

To test system connectivity

1   At the command prompt, enter the commands shown in the example, substituting an IP address on your existing subnet. In our example:

- The subnet is 192.168.1.0/24

- The IP address of the interface is 192.168.1.81

Make the appropriate substitutions for your network, as in the following example.

Example 1-3   Configuring a test Ethernet interface

```
vyatta@vyatta:~$ configure
vyatta@vyatta# set interfaces ethernet eth0 address 192.168.1.81/24
vyatta@vyatta# commit
vyatta@vyatta# exit
vyatta@vyatta:~$
```

2   From another host on the same subnet, ping the interface to ensure that it is up. From a Linux or Windows command prompt, enter the following command (substituting the IP address you assigned to the interface):

```
ping 192.168.1.81
```

- If the Vyatta system is reachable, you will see replies from it in response to the pings. If so, your system is installed and accessible on your network.

Chapter 2: Upgrading the System

This chapter describes options for upgrading Vyatta system software

In this chapter:

- Release-Specific Upgrade Information
- Upgrade Options
- Image-Based Upgrades
- Upgrading in a Virtual Environment
- Package Upgrades (Deprecated)

Release-Specific Upgrade Information

Your system may have special upgrade considerations, depending on your release.

For release-specific upgrade information, and to ensure that configuration information is correctly preserved, see the Release Notes for your release.

Upgrade Options

You have two options for upgrading Vyatta system software:

- **An image-based upgrade.** This is the supported upgrade method for physical hardware systems. An image-based upgrade is a simple matter of downloading a new system image and adding it along with previous versions of the system using the **add system image** command. You can perform this procedure on a physical hardware system—whether it was previously disk-based or image-based. The system automatically migrates your configuration to the installed image and selects it to run on the next system reboot.

  The procedure for performing an image-based upgrade is in the section .

- **Upgrade for a virtualized environment.** The virtual environment supplied with each new Vyatta release is tuned to ensure the most optimal settings for components such as Ethernet drivers. For this reason, Vyatta recommends that upgrades to virtual systems be clean installs followed by a configuration file migration from the old system to the new system.

  The procedure for upgrading in a virtual environment is provided in the section .

Package upgrade is no longer supported.

Before upgrading, save your existing configuration file for reference. Your configuration file is named **config.boot** and is located in the directory **/config**.

Image-Based Upgrades

Before upgrading, save your existing configuration file for reference. Your configuration file is named **config.boot** and is located in the directory **/config**.

To perform an image-based upgrade, you use the **add system image** command.

The **add system image** command uses a Vyatta system ISO file as the image source. It installs the image with existing images and sets the new image as the default boot image. The new image is run the next time the system reboots.

To get ready

• Make sure you have enough space on your root partition to load the image. You can determine the amount of space available using the **show system storage** command.

To upgrade

1 Run the **add system image** command using the location of the Vyatta system image ISO file as an argument. For example, to install **xxx.iso** located at http://www.vyatta.com/downloads/ you would do the following:

NOTE *Vyatta subscription customers use: http://www2.vyatta.com/support/software/.*

Example 2-1   Adding a system image

```
vyatta@vyatta:~$ add system image http://www.vyatta.com/downloads/xxx.iso
Welcome to the Vyatta install program.  This script
will walk you through the process of installing the
Vyatta image to a local hard drive.
Would you like to continue? (Yes/No) [Yes]:<Enter>
Trying to fetch ISO file from http://www.vyatta.com/downloads/xxx.iso
############################################################################
100.0%
ISO download suceeded.
Checking MD5 checksums of files on the ISO image...OK.
You are running an installed system. Do you want to use the current install
partition? (Yes/No) [Yes]:<Enter>

Done!
Installing "xxx" release.
Copying new release files...
Would you like to save the current configuration
directory and use the current start-up configuration
for the new version? (Yes/No) [Yes]:<Enter>
Copying current configuration...
Setting up grub configuration...
Done.
```

---

2 (Optional) Confirm that the ISO loaded and is ready to run the next time the system is rebooted using the **show system image** command as follows:

Example 2-2   Showing system images

```
vyatta@vyatta:~$ show system image
The system currently has the following image(s) installed:

    1: xxx (default boot)
    2: yyy (running version)

vyatta@vyatta:~$
```

3   Reboot the system using the **reboot** command

Example 2-3   Rebooting to restart the system image

```
vyatta@vyatta:~$ reboot
Proceed with reboot? [confirm][y]

Broadcast message from root@vyatta (pts/0) (Thu Mar  4 19:50:09 2010):

The system is going down for reboot NOW!

vyatta@vyatta:~$
```

The system restarts using the new system image.

Upgrading in a Virtual Environment

Upgrading in a virtual environment involves two steps:

1   Install a fresh virtualized environment.

2   Migrate your configuration.

Install the new virtualized Vyatta system

Install a new virtualized Vyatta system by following the installation instructions for your virtual environment:

- To install a new VMware environment, follow the instructions in the section "Installing on VMware" on page 9.

- To install a new XenServer environment, follow the instructions in the section "Installing on XenServer" on page 11.

Migrate the configuration

1   In configuration mode on the old system, use the **save** command to save the current configuration.

2   For all Ethernet interfaces, remove the hardware ID values using the **delete interfaces ethernet** *ethx* **hw-id** command to remove the hardware ID values, then **commit** and **save** the configuration to a name other than config.boot (for example, **save oldconfig**).

3   Use the **load** command to return the original configuration to the old system.

4   Use the **set service ssh** command and then the **commit** command to configure the system to allow for SCP file transfer.

5   In configuration mode on the new system, assign an IP address to an interface residing on the same subnet as one on the old system (for example, **set interfaces ethernet eth0 address 192.168.1.99/24**), and then commit the change.

6   Copy the saved configuration (the one with the hardware UDs removed) from the old system to the new system. For example, if the old system is at 192.168.1.20, the saved configuration file is name **oldconfig**, and the username **vyatta** is available on the old system, issue the **scp** command as follows:

```
scp vyatta@192.168.1.20:/config/oldconfig /config/oldconfig
```

7   Load the copied configuration using the **load** command (for example, l**oad oldconfig**). At this point, the configuration on the new system should match that on the old system (except for the hardware IDs).

8   Shut down the old system using the **shutdown** command.

Package Upgrades (Deprecated)

NOTE *Package upgrades are deprecated and are no longer supported. Use image-based upgrade in preference to package upgrade.*

The package upgrade method of upgrading and the **full-upgrade** command are no longer supported. Note that, while the **full-upgrade** command is still visible in the command line, it is not supported. Instead, use image upgrade to upgrade your system.

Chapter 3: Installation and Upgrade Commands

This chapter describes installation and upgrade commands.

This chapter presents the following commands.

Configuration Commands	
system package auto-sync <days>	Specifies how often the repository cache should be updated.
system package repository <repository>	Records information about a software repository.
Operational Commands	
add system image	Adds a Vyatta system image to the currently running system.
clone system image	Creates a copy of a Vyatta system image installed on the local system or on a remote system.
delete system image	Deletes a Vyatta system image.
full-upgrade (deprecated)	*Not supported.*
install-image	Installs a Vyatta system image to a persistent device.
install-system	Installs Vyatta system software to a persistent device.
rename system image	Renames a Vyatta system image.
set system image default-boot	Selects a Vyatta system image to be run when the system is next rebooted.
show system image	Displays a list of Vyatta system images installed on the system.

add system image

Adds a Vyatta system image to the currently running system.

Syntax

add system image {*iso-filename* | *iso-URL* [**username** *username* **password** *password*]}

Command Mode

Operational mode.

Parameters

iso-filename	The name of the Vyatta system image file to be added.
iso-URL	The URL location of the Vyatta system image file to be added.
username	Optional. The username required to login to the remote system at the specified URL location.
password	Optional. The password required to login to the remote system at the specified URL location. If the username is specified, then a password must also be specified.

Default

None.

Usage Guidelines

Use this command to add a Vyatta system image to the currently running system. A system image can be added to a system that was installed using a disk-based install (using the **install-system** command) or an image-based install (using the **install-image** command). Once added, it will be set as the new default boot image and will be run the next time the system is booted.

The command will validate the MD5 checksums of the files contained in the ISO image to ensure that it has not been corrupted. In addition, it will not allow more than a single copy of an image to exist on the same system.

The *iso-filename* or *iso-URL* argments provide the source for the ISO image file.

NOTE *If you are accessing the ISO image on the web, in most browsers right-clicking the link to the file will provide access to the URL which can then be copied and pasted as the iso-URL argument to this command.*

The following table shows the syntax for file specification for different file locations.

Table 3-1

Location	Specification
An absolute path	For *iso-filename* use standard UNIX file specification.
A relative path	For *iso-filename* you can also specify the path name relative to the current directory.
FTP server	Use the following syntax for the *iso-URL* argument: ftp://*user*:*passwd*@*host*/*image-file* where *user* is the username on the host, *passwd* is the password associated with the username, *host* is the host name or IP address of the FTP server, and *image-file* is the ISO image file, including the path. Alternatively, the username and password can be specified as **username** and **password** arguments to the add system image command. If you do not specify *user* and *passwd* you are prompted for them.
SCP server	Use the following syntax for the *iso-URL* argument: scp://*user*:*passwd*@*host*/*image-file* where *user* is the username on the host, *passwd* is the password associated with the username, *host* is the host name or IP address of the SCP server, and *image-file* is the ISO image file, including the path. Alternatively, the username and password can be specified as **username** and **password** arguments to the add system image command. If you do not specify user and passwd you will be prompted for them.
HTTP server	Use the following syntax for the *iso-URL* argument: http://*host*/*image-file* where *host* is the host name or IP address of the HTTP server and *image-file* is the ISO image file, including the path.
TFTP server	Use the following syntax for the *iso-URL* argument: tftp://*host*/*image-file* where *host* is the host name or IP address of the TFTP server, and *image-file* is the ISO image file, including the path relative to the TFTP root directory.

clone system image

Creates a copy of a Vyatta system image installed on the local system or on a remote system.

Syntax

clone system image [*user@host:*]*source-image-name new-image-name* [**clean**]

Availability

Vyatta Subscription Edition.

Command Mode

Operational mode.

Parameters

user	The user name on a remote host. Required for remote host access via SCP. Not required for cloning a local system image.
host	The hostname or IP address of a remote host. Required for remote host access using SCP. Not required for cloning a local system image.
source_image-name	The name of the system image to be copied. The source image can exist on the local system or a remote system.
new-image-name	The name of the new (copied) system image. An image with this name must not already exist on the system.
clean	Creates an empty read-write directory tree for the new image. This creates a new image that is functionally equivalent to the source image as it existed when it was originally installed.

Default

None.

Usage Guidelines

Use this command to create a copy of a system image installed on the local system or on a remote system to the local system.

If *user@host* is specified, the image is fetched from the named host using the SCP protocol. If *user@host* is omitted, the *source-image-name* is the name of an image that already exists on the system. The *new-image-name* is the image name that the system uses for the clone. There must be no image by that name already existing on the system.

Command completion is performed for local image names if *user@host* is not specified. No command completion is performed on remote image names if *user@host* is specified.

If the **clean** argument is omitted, the command copies the **squashfs** file being used by the image named *source-image-name* as well as the read-write directory tree of *source-image-name*. If the **clean** argument is given, then the read-write directory tree of *source-image-name* is NOT copied. Instead, an empty read-write directory tree is created for the new image. This creates a new image that is functionally equivalent to the source image as it existed when it was initially installed.

Images created by this command behave the same as images installed by the install-image or the add system image commands.

The **https** and **ssh** services must both be enabled on the remote Vyatta system in order for the clone system image command to work properly. The **https** service is enabled using **set service https** in Configuration mode. The **ssh** service is enabled using **set service ssh** in Configuration mode.

NOTE *This command is only available in the Vyatta Subscription Edition.*

delete system image

Deletes a Vyatta system image.

---

delete system image [*image-name*]

Operational mode.

---

image-name	The name of the Vyatta system image to be deleted.

When used with no options, the system prompts for the image to delete.

Use this command to delete a Vyatta system image from the local disk drive.

The image and all of its local files, including its Vyatta configuration file, are all destroyed. Since this command is destructive, the system prompts for confirmation.

Command completion displays all valid completions for the *image-name* argument. If the *image-name* argument is omitted, the system displays a list of available images and prompts you to select one.

If the system was originally installed in disk-based mode, an **image-name** option is available that you can use to direct that the disk-based installation should be deleted.

The system does not allow you to delete the currently running system image. However, the system does allow you to delete the image currently selected to be run at the next reboot. If you choose this, the system uses the currently running image when the system is next rebooted.

full-upgrade (deprecated)

This command is deprecated. Please see the section "Upgrade Options" on page 17 for alternatives.

install-image

Installs a Vyatta system image to a persistent device.

Syntax

install-image

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to install a Vyatta system binary image onto a persistent device, such as a hard disk.

This command is similar to the install-system command in functionality. Once the installation is complete you can add multiple Vyatta versions into the same partition, using the **add system image** command, and you can then choose which version to boot, using the **set system image default-boot** command. This allows you to move easily between different versions of the system.

If you have a new system and want to install the Vyatta system from scratch, you can boot the Vyatta LiveCD and then run the **install-image** command to install the image on the LiveCD to the disk. The **install-image** command operates similarly to the **install-system** command—it creates and formats a new disk partition and then installs the image to the partition while preserving the system configuration.

install-system

Installs Vyatta system software to a persistent device.

Syntax

install-system

Command Mode

Operational mode.

Parameters

None.

Default

None.

Usage Guidelines

Use this command to install Vyatta software from a LiveCD onto a persistent device such as a hard disk.

This command is similar to the **install-image** command in functionality. Once the installation is complete you can add multiple Vyatta versions into the same partition, using the **add system image** command, and you can then choose which version to boot, using the **set system image default-boot** command. This allows you to move easily between different versions of the system.

If you have a new system and want to install the Vyatta system from scratch, you can boot the Vyatta LiveCD and then run the **install-system** command to install the system on the LiveCD to the disk. The **install-system** command operates similarly to the **install-image** command—it creates and formats a new disk partition and then installs the system to the partition while preserving the system configuration.

rename system image

Renames a Vyatta system image.

Syntax

rename system image *old-image-name new-image-name*

Command Mode

Operational mode.

Parameters

old-image-name	The name of an existing Vyatta system image to be renamed.
new-image-name	The new name of the Vyatta system image.

Default

None.

Usage Guidelines

Use this command to rename a Vyatta system image.

The old name must match the name of an image on the system. The system does not allow you to rename the currently running system image. The new system image name cannot be in use by another image.

set system image default-boot

Selects a Vyatta system image to be run when the system is next rebooted.

Syntax

set system image default-boot [*image-name*]

Command Mode

Operational mode.

Parameters

image-name	The name of the Vyatta system image to be run when the system is rebooted.

Default

If used with no image name specified, the system displays a list of available images and prompts you to select one.

Usage Guidelines

Use this command to specify which Vyatta system image is to be run when the system is next rebooted.

When multiple system images have been installed using the **add system image** command, you can use this command to direct the system to boot from a specific system image the next time it is restarted.

Command completion displays all valid completions for the *image-name* argument. If the *image-name* argument is omitted, the system displays a list showing all images installed on the system and prompts you to select one. If the system was originally installed in disk-based mode, then a special **image-name** option is available so that you can select the disk-based system as the default system from which to boot.

show system image

Displays a list of Vyatta system images installed on the system.

Syntax

show system image [storage | version]

Command Mode

Operational mode.

Parameters

storage	Display the amount of disk space used by each image.
version	Include the image version number in the display of system images.

Default

None.

Usage Guidelines

Use this command to display a list of all Vyatta system images currently installed on the system.

The command output identifies the image that is currently running, as well as the image that has been selected to run when the system is next rebooted. If the system was originally installed in disk-based mode, then one of the image names identifies that installation.

system package auto-sync <days>

Specifies how often the repository cache should be updated.

Syntax

set system package auto-sync [*days]*

delete system package auto-sync

show system package auto-sync

Command Mode

Configuration mode.

Configuration Statement

```
system {
    package {
        auto-sync days
    }
}
```

Parameters

days	Sets the system to update the repository cache every specified number of days. The range is 1 to 4294967296. The default is 1.

Default

The repository cache is updated once per day.

Usage Guidelines

Use this command to specify how often the repository cache should be updated.

Use the **set** form of this command to specify how often the repository cache should be updated.

Use the **delete** form of this command to restore the configuration to the default.

Use the **show** form of this command to view the configuration.

system package repository <repository>

Records information about a software repository.

set system package repository *repository* [**component** *component* | **description** *desc* | **distribution** *dist* | **password** *password* | **url** *url* | **username** *username*]

delete system package repository *repository* [**component** | **description** | **distribution** | **password** | **url** | **username**]

show system package repository *repository* [**component** | **description** | **distribution** | **password** | **url** | **username**]

Command Mode

Configuration mode.

Configuration Statement

```
system {
    package {
        repository respository {
            component component[ component...]
            description desc
            distribution dist
            password password
            url url
            username username
        }
    }
}
```

Parameters

repository	Multi-node. A label for the repository; for example, "community".
	You can define more than one software repository by creating multiple repository nodes.

component	The component names within the repository.
	You can configure more than one component by creating a space-separated list of repository components enclosed in double-quotes (for example, "comp1 comp2 comp3"). The stock component is main.
desc	A brief description for the repository.
dist	The name of the distribution. Supported values are as follows:
	stable: The latest stable release of software.
	testing: The latest test version of software. Testing software is typically more recent than the stable release but has not completed testing.
password	A password for accessing restricted repositories.
url	The full URL of the server hosting the software repository, including the path if required.
username	A username for accessing restricted repositories.

Default

None.

Usage Guidelines

Use this command to create a configuration node to specify information about one or more software respositories. This information is needed obtain software updates from the Vyatta software archive.

Note that the repository can be a Vyatta repository storing Vyatta system packages, or some other Debian package repository; however, at least one Vyatta software repository must be configured to obtain Vyatta system software updates. When the **full-upgrade** command is run, all configured repositories are accessed.

Access to the Vyatta Core repository is unlimited. Access to the Vyatta Subscription Edition repository is restricted to customers with support contracts: for these repositories, a username/password combination is required.

Use the **set** form of this command to create or modify repository configuration.

Use the **delete** form of this command to remove repository configuration.

Use the **show** form of this command to view repository configuration information.

Glossary

ACL	access control list
ADSL	Asymmetric Digital Subscriber Line
API	Application Programming Interface
AS	autonomous system
ARP	Address Resolution Protocol
BGP	Border Gateway Protocol
BIOS	Basic Input Output System
BPDU	Bridge Protocol Data Unit
CA	certificate authority
CCMP	AES in counter mode with CBC-MAC
CHAP	Challenge Handshake Authentication Protocol
CLI	command-line interface
DDNS	dynamic DNS
DHCP	Dynamic Host Configuration Protocol
DHCPv6	Dynamic Host Configuration Protocol version 6
DLCI	data-link connection identifier
DMI	desktop management interface
DMZ	demilitarized zone
DN	distinguished name
DNS	Domain Name System
DSCP	Differentiated Services Code Point
DSL	Digital Subscriber Line
eBGP	external BGP

EGP	Exterior Gateway Protocol
ECMP	equal-cost multipath
ESP	Encapsulating Security Payload
FIB	Forwarding Information Base
FTP	File Transfer Protocol
GRE	Generic Routing Encapsulation
HDLC	High-Level Data Link Control
I/O	Input/Ouput
ICMP	Internet Control Message Protocol
IDS	Intrusion Detection System
IEEE	Institute of Electrical and Electronics Engineers
IGP	Interior Gateway Protocol
IPS	Intrusion Protection System
IKE	Internet Key Exchange
IP	Internet Protocol
IPOA	IP over ATM
IPsec	IP security
IPv4	IP Version 4
IPv6	IP Version 6
ISP	Internet Service Provider
L2TP	Layer 2 Tunneling Protocol
LACP	Link Aggregation Control Protocol
LAN	local area network
LDAP	Lightweight Directory Access Protocol
LLDP	Link Layer Discovery Protocol
MAC	medium access control

MIB	Management Information Base
MLPPP	multilink PPP
MRRU	maximum received reconstructed unit
MTU	maximum transmission unit
NAT	Network Address Translation
ND	Neighbor Discovery
NIC	network interface card
NTP	Network Time Protocol
OSPF	Open Shortest Path First
OSPFv2	OSPF Version 2
OSPFv3	OSPF Version 3
PAM	Pluggable Authentication Module
PAP	Password Authentication Protocol
PAT	Port Address Translation
PCI	peripheral component interconnect
PKI	Public Key Infrastructure
PPP	Point-to-Point Protocol
PPPoA	PPP over ATM
PPPoE	PPP over Ethernet
PPTP	Point-to-Point Tunneling Protocol
PVC	permanent virtual circuit
QoS	quality of service
RADIUS	Remote Authentication Dial-In User Service
RIB	Routing Information Base
RIP	Routing Information Protocol
RIPng	RIP next generation

Rx	receive
SLAAC	Stateless Address Auto-Configuration
SNMP	Simple Network Management Protocol
SMTP	Simple Mail Transfer Protocol
SONET	Synchronous Optical Network
SSH	Secure Shell
SSID	Service Set Identifier
STP	Spanning Tree Protocol
TACACS+	Terminal Access Controller Access Control System Plus
TCP	Transmission Control Protocol
TKIP	Temporal Key Integrity Protocol
ToS	Type of Service
Tx	transmit
UDP	User Datagram Protocol
vif	virtual interface
VLAN	virtual LAN
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
WAN	wide area network
WAP	wireless access point
WPA	Wired Protected Access