VYATTA, INC. | Vyatta System

Installing and Upgrading

REFERENCE GUIDE

VYATTA

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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

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:

Document Conventions

This guide contains advisory paragraphs and uses typographic conventions.

Advisory Paragraphs

This guide uses the following advisory paragraphs:

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.*

Typographic Conventions

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.
[*arg1* | *arg2*]	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 in the first case and a comma-separated list in the second case).

Vyatta Publications

More information about the Vyatta system is available in the Vyatta technical library, and on www.vyatta.com and www.vyatta.org.

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.

Chapter 1: Installing the System

This chapter describes methods for performing a new install of the Vyatta system.

In this chapter:

- Deployment Options
- About LiveCDs
- Image-Based Install
- Disk-Based Install
- Sample Disk-Based Install Session
- Specifying the Boot Device in the System BIOS
- Installing on VMware
- Installing on XenServer
- Testing Your Installation

Deployment Options

The Vyatta system supports a number of flexible deployment options. This section describes each option so that you can determine the best option for your needs and environment and explains how to deploy in each case:

- **Run on 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. This method of deployment is best suited for evaluation and test scenarios though a LiveCD is also required as a first step in installing to a persistent hardware device like a hard disk. You can read more about LiveCDs here.

- **Install on physical hardware.** The Vyatta system can be installed and run on most standard x86 servers and PCs. The system can be installed 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 your hardware to see if yours does.*

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. You can read about this installation method here.

— **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. You can read about this installation method here.

- **Install into a virtualized environment or cloud.** Alternatively, 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.

    — **VMware.** Instructions for installing the Vyatta system on VMware can be found in here.

— **XenServer.** Instructions for installing the Vyatta system on XenServer can be found in here.

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 used to install the Vyatta system to a persistent device such as a hard disk using either an image-based install (described in Image-Based Install) or a disk-based install (described in Disk-Based Install).

Creating a LiveCD

To create a LiveCD, download one of the ISO software images directly from the Vyatta web site.

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

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

Then 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 an ISO image.

Running from LiveCD

To get ready

• Make sure your BIOS is configured to boot from CD-ROM. For details, see Specifying the Boot Device in the System BIOS.

To boot from LiveCD

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, go to the section Testing Your Installation to confirm that you have booted the correct system and can access the system from your network.

If you want to use the LiveCD to perform an image-based install, go to the section Image-Based Install.

If you want to use the LiveCD to perform a disk-based install, go to the section 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 Flash card.

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 installed system is run the next time the system reboots.

To 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. For this information, see About LiveCDs.

2   Login as user **vyatta** with password **vyatta** and run the **install-image** command. To see sample system feedback for this command, see Sample Disk-Based Install Session.

3   Remove the LiveCD.

4   Make sure your BIOS is configured to boot from the persistent device the system was installed to. For this information, see Specifying the Boot Device in the System BIOS.

5   Reboot the system.

6   Test the installation. For this information, see Testing Your Installation.

Disk-Based Install

To perform an 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 Flash card.

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 installed system is run the next time the system reboots.

To 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. For this information, see About LiveCDs.

2. Login as user **vyatta** with password **vyatta** and run the **install-system** command. To see sample system feedback for this command, see Sample Disk-Based Install Session.

3. Remove the LiveCD.

4. Make sure your BIOS is configured to boot from the persistent device the system was installed to. For this information, see Specifying the Boot Device in the System BIOS.

5. Reboot the system.

6. Test the installation. For this information, see Testing Your Installation.

Sample Disk-Based Install Session

The following is a sample disk-based installation session using **install-system**. Image-based installations using **install-image** 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
/opt/vyatta/etc/config/config.boot
Which one should I copy to sda? [/opt/vyatta/etc/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 on VMware

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/.

Installing VMware Products

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 this information, see Testing Your Installation.

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 this information, see Testing Your Installation.

Installing on XenServer

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.

Installing XenServer and XenCenter

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 customers use:
    http://www2.vyatta.com/support/software/.

— Vyatta community customers 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 this information, see Testing Your Installation.

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 an 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
[edit]
vyatta@vyatta# set interfaces ethernet eth0 address 192.168.1.81/24
[edit]
vyatta@vyatta# commit
[edit]
vyatta@vyatta# exit
exit
vyatta@vyatta:~$
```

2 From another host on the same subnet, ping the interface to ensure that it is up.

3 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:

- Upgrade Options
- Upgrade Method Availability
- Package Upgrades

Upgrade Options

You have four options for upgrading Vyatta system software:

- **An image-based upgrade.** 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 any system—whether it was previously disk-based or image-based, and whether it is deployed on physical hardware or in a virtualized environment. The system automatically migrates your configuration to the installed image and selects it to run on the next system reboot. The procedure for doing this is here.

- **A fresh disk-based install from LiveCD.** Upgrading a persistent device install from LiveCD using the **install-system** command provides a "clean" install of the standard Vyatta release: your saved configuration file is preserved, but everything else, including non-Vyatta packages, is removed. You should only upgrade from LiveCD if you haven't installed additional packages beyond the standard Vyatta release (or you don't care if you lose them). This simple disk-based install is applicable in a physical hardware environment. The procedure for doing this is here.

- **A fresh virtual system**. In virtual environments, you can also upgrade by simply installing a new virtual system. Note that using this upgrade method does not preserve configuration so in most cases, you will prefer an image-based upgrade for your virtualized environment. The procedure for installing a Vyatta VMware virtual appliance is provided here. The procedure for installing a Vyatta XenServer template is provided here.

- **A package upgrade.** The Vyatta system also allows you to upgrade software components, or "packages," individually using the **full-upgrade** command. This is called a "package upgrade." This procedure preserves configuration and can be accomplished on systems created using either a disk-based install or an image-based install in physical hardware and virtualized environments. You obtain the packages from the Vyatta software repository. The procedure for package upgrade is provided here.

Upgrade Method Availability

The options available to you for upgrade and automatic migration of configuration information depend on how recent your current Vyatta software is.

- Image-based upgrades are available for Release 6.0 and later. Configuration is automatically migrated.

- Package upgrades are available for VC4.0 and Release 3.x and later. Configuration is automatically upgraded.

- Systems prior to VC4.0 or R3.0 must be freshly installed from a LiveCD.

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

Image-Based Upgrade

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

NOTE *This option is only available for systems already running Release 6.0 and later software.*

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   Show 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   Reboot

```
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 will restart using the new system image.

Package Upgrades

Software component updates are stored in *packages*. A package is a precompiled software component that can be installed or upgraded independently of other software components on your machine. Each package contains software and any scripts required to install, configure, or remove the package.

The Vyatta system keeps a record of which of all available packages have been installed on the system and which have not. The system also keeps track of differences between packages, including differences between versions of packages, as necessary, as well as dependencies between packages. When you direct the system to install a package (using the full-upgrade command), the system also installs any packages on which the specified package depends and requires a reboot.

Installation of packages is atomic: all packages, and the packages on which they depend must install successfully, or else the installation will be rolled back, leaving the system as it was before.

Some updates (for example, a kernel upgrade) require a system reboot. In general, updates do not require a reboot, though rebooting after a package upgrade is good practice.

Vyatta software can be updated using Vyatta's online package archive system. Your system must be set up to connect to the Internet and access a DNS server.

Locate the Vyatta software repository

If you want to be able to retrieve the latest updates of Vyatta software, you must inform the system of the location of the Vyatta software repository. Then you'll be able to find out what software updates are available for your system.

The Vyatta community software repository is available to the Vyatta community at http://packages.vyatta.com/vyatta.

The Vyatta subscription software repository is available to Vyatta subscribers at http://packages.vyatta.com/vyatta-supported. This repository requires a user login and password to be configured in your system package configuration.

Configure the Vyatta repository options

Software update is configured in the **system package** configuration node. To use the automatic upgrade feature, the system must be configured to include following options:

- **repository**: A user-defined label for this software repository within the configuration. (Multiple repositories can be configured.)

- **components**: Which components should be upgraded from this repository. Typically, the **main** component is upgraded.

- **distribution**: The distribution or release to upgrade to. When possible, you will typically want to upgrade to the **stable** distribution.

- **url**: The location of the Vyatta repository. This is
  http://packages.vyatta.com/vyatta for Vyatta community users and
  http://packages.vyatta.com/vyatta-supported for Vyatta subscription users.

- **user name**: Your Vyatta subscriber login ID. Required to access the Vyatta
  subscription repository. It is not required to access the community repository.

- **password**: Your Vyatta subscriber login password. Required to access the Vyatta
  subscription repository. It is not required to access the community repository.

You can view package configuration by using the **show system package** command in
configuration mode, as shown in Example 2-4.

Example 2-4   Viewing the "system package" configuration node

```
vyatta@R1# show system package
 repository my-repository {
    components main
    distribution stable
    url http://packages.vyatta.com/vyatta-supported
    user-name jane
    password mypassword
 }
[edit]
vyatta@R1#
```

Download and install updates

To download and install updates you must login as a user with administrative
privileges (for example, as user **vyatta**) and precede the **full-upgrade** command by the
sudo option (that is, issue the command as **sudo full-upgrade**).

The **full-upgrade** command is used to download and install updates from the
repository specified in the **system package** configuration above.

Before upgrading, make sure your configuration is backed up somewhere external to
the Vyatta system. Perform this procedure from an attached keyboard and monitor
or using a serial console.

If you have extra packages installed that aren't in your new release, you can elect to
keep them using the **-k** option to the **full-upgrade** command. If you choose to keep
the extra packages, they are included in the package list when you issue the **show
version all** command. Keep in mind that the extra packages could affect the behavior
of your system.

You can explicitly control which packages are retained during the upgrade process
using **full-upgrade -i**. For more information, see the documentation for the
full-upgrade command.

NOTE *Some older versions of the system (for example, Release 3.0 and earlier) do not support the*
*-k and -i options of the **full-upgrade** command. In this case, issue the **full-upgrade** command with*
no options.

Log in as a user with administrative privileges (for example, as user **vyatta**) and enter
the command as shown. If prompted for information, press <Enter> to accept the
default values.

Example 2-5   Performing a full upgrade

```
vyatta@R1:~$ sudo full-upgrade -k
Reading package lists...
Building dependency tree...
Reading state information...
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
...
vyatta@R1:~$
```

NOTE *It is strongly recommended that you let the upgrade process proceed until completion. If you*
interrupt it, you may have to manually intervene in subsequent upgrades for the upgrade to
complete successfully.

Upgraded packages are listed on the screen as they are upgraded. Your configuration
is automatically modified to reflect changes in command syntax between VC4.0 and
the current Vyatta Core release (for community users) or R3.0 and the current Vyatta
Subscription Edition release (for subscription users).

Please note the following:

• If you are upgrading from an SSH or Telnet session, your session is terminated.
  The upgrade continues to completion and the system automatically reboots. For
  additional control during the upgrade process, we recommend that you upgrade
  using a system console.

• If the **set system syslog console** command is configured, then prior to upgrade,
  you should configure, commit, and save the following command:

  ```
  set system syslog console facility all
  ```

  Issuing this command restores default facility of the **syslog** command as seen
  pre-5.0.2 (for community users) and pre-3.4.0 (for subscription users) for the
  console method.

Chapter 3: Configuration Commands

This chapter describes installation and upgrade configuration commands.

This chapter presents the following commands.

system package	Specifies the information needed for automatic software updates.
system package auto-sync <days>	Specifies how often the repository cache should be updated.
system package repository <repository>	Specifies information about the software repository.
system package repository <repository> components <component>	Specifies a repository component name.
system package repository <repository> description <desc>	Specifies a brief description for the repository.
system package repository <repository> distribution <dist>	Specifies a distribution name.
system package repository <repository> password <password>	Specifies a password for accessing a software repository.
system package repository <repository> url <url>	Specifies the URL of the server hosting a software repository.
system package repository <repository> username <username>	Specifies a user name for accessing a software repository.

system package

Specifies the information needed for automatic software updates.

Syntax

set system package

delete system package

show system package

Command Mode

Configuration mode.

Configuration Statement

```
system {
    package {
    }
}
```

Parameters

None.

Default

None.

Usage Guidelines

Use this command to specify the information needed to obtain software updates from the Vyatta software archive.

Vyatta system packages are stored in the Vyatta software repositories. All customers have access to the community repository. Only customers with support contracts have access to the subscription repository.

Use the **set** form of this command to specify the information needed for automatic software updates.

Use the **delete** form of this command to remove the automatic software update configuration.

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

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 1-4294967296
    }
}
```

Parameters

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

Default

The default is 1.

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>

Specifies information about the software repository.

Syntax

set system package repository *repository*

delete system package repository *repository*

show system package repository *repository*

Command Mode

Configuration mode.

Configuration Statement

```
system {
    package {
        repository text {
        }
    }
}
```

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.

Default

None.

Usage Guidelines

Use this command to specify a software repository and set its properties.

The repository a Vyatta software repository or some other debian package repository. When the **full-upgrade** command is run, all configured repositories are accessed.

Use the **set** form of this command to create a software repository or modify its information.

Use the **delete** form of this command to remove a respository.

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

system package repository <repository> components <component>

Specifies a repository component name.

set system package repository *repository* **components** *component*

delete system package repository *repository* **components** *component*

show system package repository *repository* **components**

Command Mode

Configuration mode.

Configuration Statement

```
system {
    package {
        repository text {
            components text
        }
    }
}
```

Parameters

repository	The repository label.
component	The component name(s) within the repository.
	To specify more than one component, use a space-separated list enclosed in double quote marks (for example, "comp1 comp2 comp3"). The stock component is **main**.

Default

None.

Usage Guidelines

Use this command to specify a repository component name.

Use the **set** form of this command to specify a repository component name.

Use the **delete** form of this command to remove the component name.

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

system package repository <repository> description <desc>

Specifies a brief description for the repository.

Syntax

set system package repository *repository* **description** *desc*

delete system package repository *repository* **description**

show system package repository *repository* **description**

Command Mode

Configuration mode.

Configuration Statement

```
system {
    package {
        repository text {
            description text
        }
    }
}
```

Parameters

repository	The repository label.
desc	A brief description for the repository.

Default

None.

Usage Guidelines

Use this command to specify a repository description.

Use the **set** form of this command to specify a brief description for the repository.

Use the **delete** form of this command to remove the description.

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

system package repository <repository> distribution <dist>

Specifies a distribution name.

set system package repository *repository* **distribution** *dist*

delete system package repository *repository* **distribution**

show system package repository *repository* **distribution**

Configuration mode.

```
system {
    package {
        repository text {
            distribution text
        }
    }
}
```

repository	The repository label.
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.

None.

Usage Guidelines

Use this command to specify a distribution name.

The stable distribution contains the latest stable release of Vyatta software. The testing distribution is typically newer and typically contains more recent software features; however, it has not completed testing.

Use the **set** form of this command to specify a distribution name.

Use the **delete** form of this command to remove the distribution name.

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

system package repository <repository> password <password>

Specifies a password for accessing a software repository.

Syntax

set system package repository *repository* **password** *password*

delete system package repository *repository* **password**

show system package repository *repository* **password**

Command Mode

Configuration mode.

Configuration Statement

```
system {
    package {
        repository text {
            password text
        }
    }
}
```

Parameters

repository	The repository label.
password	The password required for access to the repository.

Default

None.

Usage Guidelines

Use this command to specify a password for access to the repository.

Some repositories require a username and password and others do not. For example, the **packages.vyatta.com/vyatta-supported** repository requires a user name and password but the **packages.vyatta.com/vyatta** repository does not. For repositories requiring login credentials, set the password using this command and the user name using the system package repository <repository> username <username> command.

Use the **set** form of this command to specify a password.

Use the **delete** form of this command to remove the password.

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

system package repository <repository> url <url>

Specifies the URL of the server hosting a software repository.

Syntax

set system package repository *repository* **url** *url*

delete system package repository *repository* **url**

show system package repository *repository* **url**

Command Mode

Configuration mode.

Configuration Statement

```
system {
    package {
        repository text {
            url text
        }
    }
}
```

Parameters

repository	The repository label.
url	The full URL of the server hosting the software repository, including the path if required.

Default

None.

Usage Guidelines

Use this command to specify the URL of a server hosting a software repository.

Use the **set** form of this command to set the server URL.

Use the **delete** form of this command to remove the server URL.

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

system package repository <repository> username <username>

Specifies a user name for accessing a software repository.

Syntax

set system package repository *repository* **username** *username*

delete system package repository *repository* **username**

show system package repository *repository* **username**

Command Mode

Configuration mode.

Configuration Statement

```
system {
    package {
        repository text {
            username text
        }
    }
}
```

Parameters

repository	The repository label.
username	The user name required for access to the repository.

Default

None.

Usage Guidelines

Use this command to specify a user name for accessing a software repository.

Some repositories require a username and password and others do not. For example, the **packages.vyatta.com/vyatta-supported** repository requires a user name and password but the **packages.vyatta.com/vyatta** repository does not. For repositories requiring login credentials, set the user name using this command and the password using the system package repository <repository> password <password> command.

Use the **set** form of this command to specify a user name.

Use the **delete** form of this command to remove the user name.

Use the **show** form of this command to view the user name.

Chapter 4: Operational Commands

This chapter describes installation and upgrade operational commands.

This chapter presents the following commands.

add system image	Adds a Vyatta system image to the currently running system.
delete system image	Deletes a Vyatta system image.
full-upgrade	Upgrades Vyatta system software.
install-image	Installs a Vyatta system image to a persistent device.
install-system	Installs Vyatta system software to a persistent device.
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*}

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.

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 install-system) or an image-based install (using install-image). 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* provide the source for the ISO image file. The following table shows the syntax for file specification for different file locations.

Table 4-1   Specifying locations for the ISO system image file

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.

Table 4-1   Specifying locations for the ISO system image file

Location	Specification
FTP server	Use the following syntax for *iso-URL*: ftp://*user:passwd@host*/*image-file* where *user* is the user name on the host*, passwd* is the password associated with the user name, *host* is the host name or IP address of the FTP server, and *image-file* is the ISO image file, including the path. If you do not specify *user* and *passwd* you will be prompted for them.
SCP server	Use the following syntax for *iso-URL*: scp://*user:passwd@host*/*image-file* where *user* is the user name on the host*, passwd* is the password associated with the user name, *host* is the host name or IP address of the SCP server, and *image-file* is the ISO image file, including the path. If you do not specify *user* and *passwd* you will be prompted for them.
HTTP server	Use the following syntax for *iso-URL*: http://*host*/*image-fil*e 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 *iso-URL*: 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.

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, then an "image-name" option will be 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

Upgrades Vyatta system software.

Syntax

full-upgrade [**-h** | **-i** | **-k**]

Command Mode

Operational mode.

Parameters

-h	"Help." Displays help for the **full-upgrade** command.
-i	"Interactive upgrade." Displays the prompts generated by the various packages during an upgrade. This option is for expert users only.
-k	"Keep all non-Vyatta packages." Where possible, this option retains all non-Vyatta packages during the upgrade.

Default

When used with no parameters, this command displays the same information as when used with the **-h** option.

Usage Guidelines

Use this command to upgrade system software.

Log in as a user with administrative privileges (e.g. **vyatta**) and use "**sudo full-upgrade**". Prior to its use the appropriate repository must be configured. The repository information can be changed using system package repository <repository> and related commands.

The **-i** option is for expert users only. This option should only be selected for upgrades executed from the local console; for example, it should not be used from a Telnet or SSH session.

There may be cases where, due to package dependencies, it is not possible to keep all non-Vyatta packages when the **-k** option is specified. Some of the non-Vyatta packages may be removed or changed to a different version. After the upgrade is complete, the system will consist of all the packages from the latest Vyatta release

plus all the non-Vyatta packages that the system was able to keep. The **-k** option is recommended for users who have manually installed non-Vyatta software on their system and do not want to remove it.

install-image

Installs a Vyatta system image to a persistent device.

---

install-image

Operational mode.

None.

None.

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.

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" will be 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

Command Mode

Operational mode.

Parameters

None.

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 select to run when the system is next rebooted. If the system was originally installed in disk-based mode, then one of the "image names" will identify that installation.

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
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
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
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