VYATTA, INC. | Vyatta System

Installing and Upgrading
FOR RED HAT KVM

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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.

Preface

On the Vyatta Subscription Edition, the Vyatta system is available packaged as a Kernel-Based Virtual Machine (KVM) for a Red Hat Enterprise Linux (RHEL) 6.1 environment.

This feature is available only in the Vyatta Subscription Edition.

This document describes information for installing and upgrading the Vyatta system as a prebuilt KVM image.

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

Readers should also be conversant with KVMs and the RHEL environment.

Organization of This Guide

This guide has the following chapters:

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 how to perform a new install of the Vyatta system onto the Red Hat KVM.

This chapter presents the following topics:

- Introduction
- Before You Begin
- Downloading the Vyatta System Image

Introduction

The Vyatta system supports the Red Hat Kernel-Based Virtual Machine hypervisor on RHEL 6.1. Like other virtualization platforms, the Red Hat KVM provides the ability to run multiple virtual systems on a single hardware platform. Vyatta provides a prebuilt system image that runs on the KVM on RHEL 6.1.

This feature is available only in the Vyatta Subscription Edition.

Before You Begin

Before installing the Vyatta system onto the KVM on RHEL 6.1, RHEL 6.1 must be installed on a server and be operational. RHEL and accompanying documentation can be obtained from Red Hat at
http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/index.html

Downloading the Vyatta System Image

The Vyatta system is available packaged for a variety of virtual environments. Download the system image packaged for KVM.

To download the Vyatta system image for KVM

1   Login to RHEL 6.1 as **root**.

2   Download the compressed Vyatta system image for KVM from the following location:

http://packages.vyatta.com/vyatta-supported/iso/stable/

You will be prompted for your username and password for the Vyatta repository.

3   From the list of Vyatta system images, locate the system image for KVM. The system image for KVM is labeled with the prefix **vyatta-kvm_**, for example, **vyatta-kvm_VSE6.3-2011.07.21_i386.img.gz**. By default, virtual system images are downloaded to the directory **/var/lib/libvirt/images/**.

4   After the compressed image has been downloaded, use **gunzip** to uncompress the image, as in the following example:

```
gunzip vyatta-kvm_VSE6.3-2011.07.21_i386.img.gz
```

The **.gz** extension is removed from the file. For example, the resulting file is **vyatta-kvm_VSE6.3-2011.07.21_i386.img**.

Installing the Vyatta System Image for KVM

After downloading the Vyatta system image for KVM, install it on RHEL 6.1.

To install the Vyatta system image for KVM on RHEL 6.1

1   Start the Virtual Machine Manager by selecting **Applications > System Tools > Virtual Machine Manager**. Alternatively, execute the **virt-manager** command from the Linux command line. The **Virtual Machine Manager** screen opens.
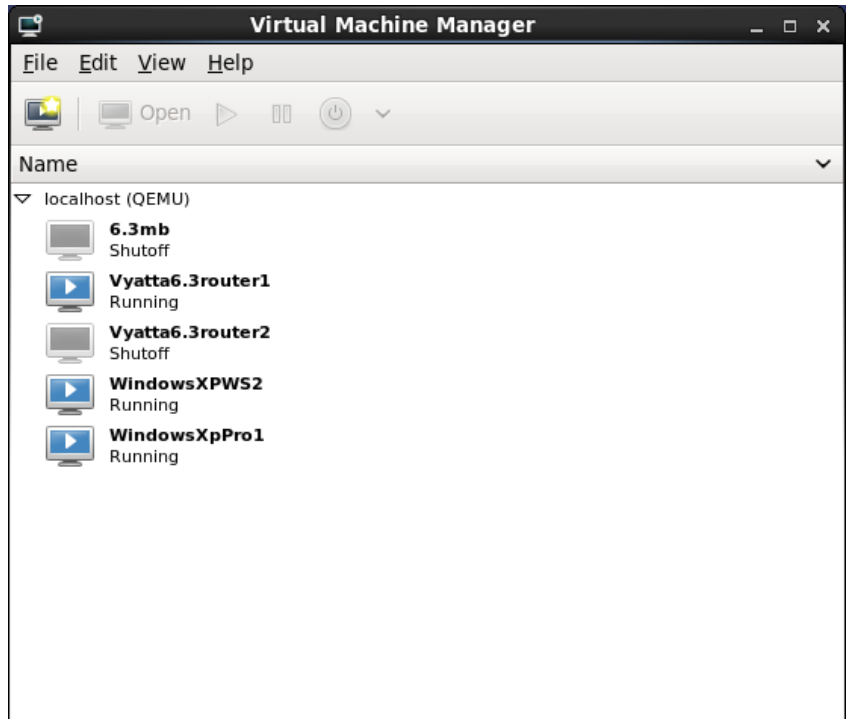
2 In the top left corner, click **Create a new virtual machine**. The **Create a new virtual machine** wizard opens at Step 1 of 5.
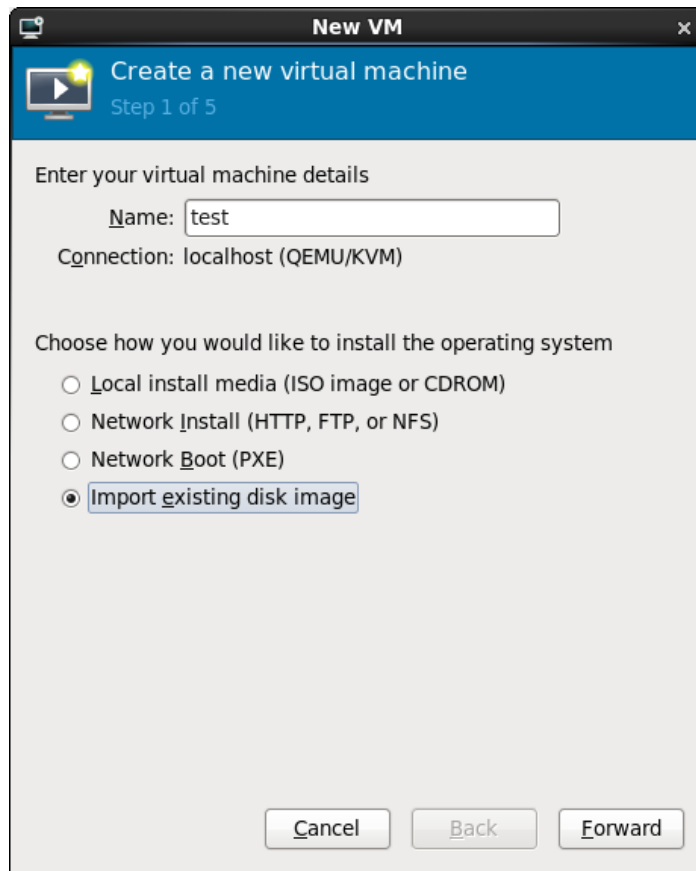
3   In the **Name:** field, enter a name for the new virtual machine and select **Import existing disk image**. Click **Forward**. The **Create a new virtual machine** wizard Step 2 of 5 opens.
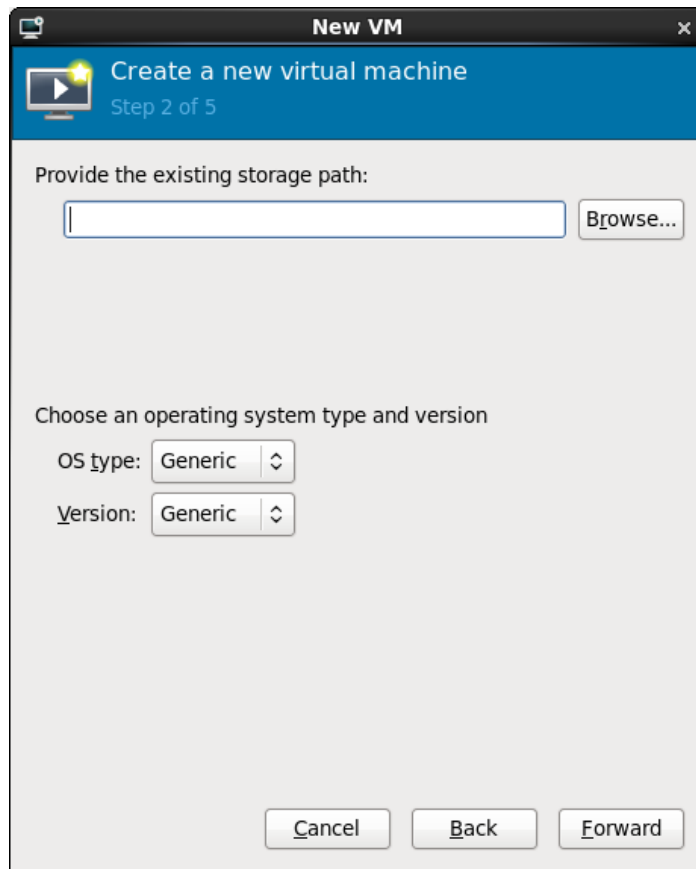
4   Press **Browse....** The **Locate or create storage volume** dialog opens.
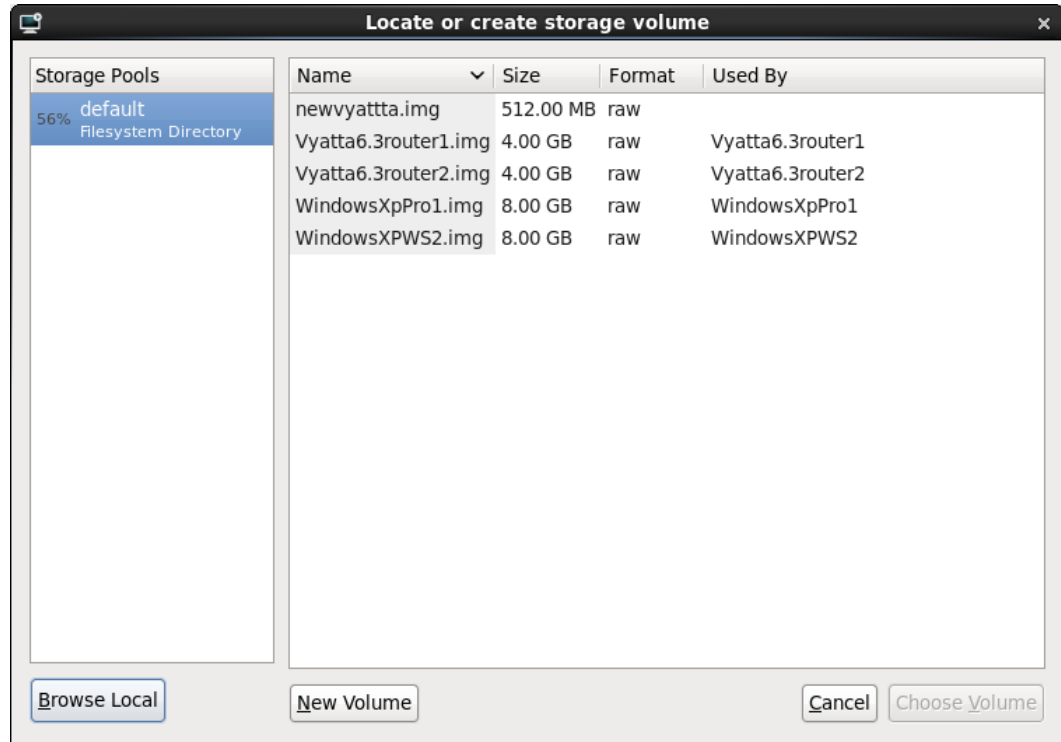
5   Click **Browse Local.** The **Locate existing storage** dialog opens.
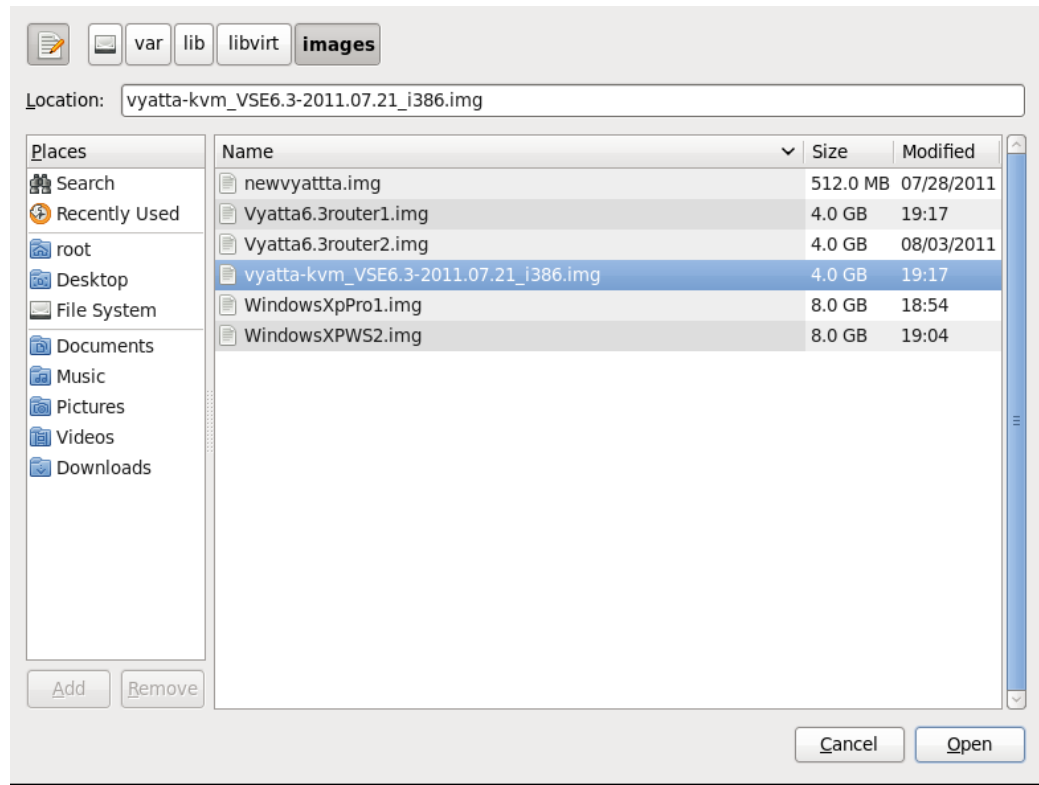
6   Navigate to the uncompressed Vyatta image that you downloaded. Click **Open**. The **Create a new virtual machine** wizard Step 2 of 5 screen reopens showing the specified image.
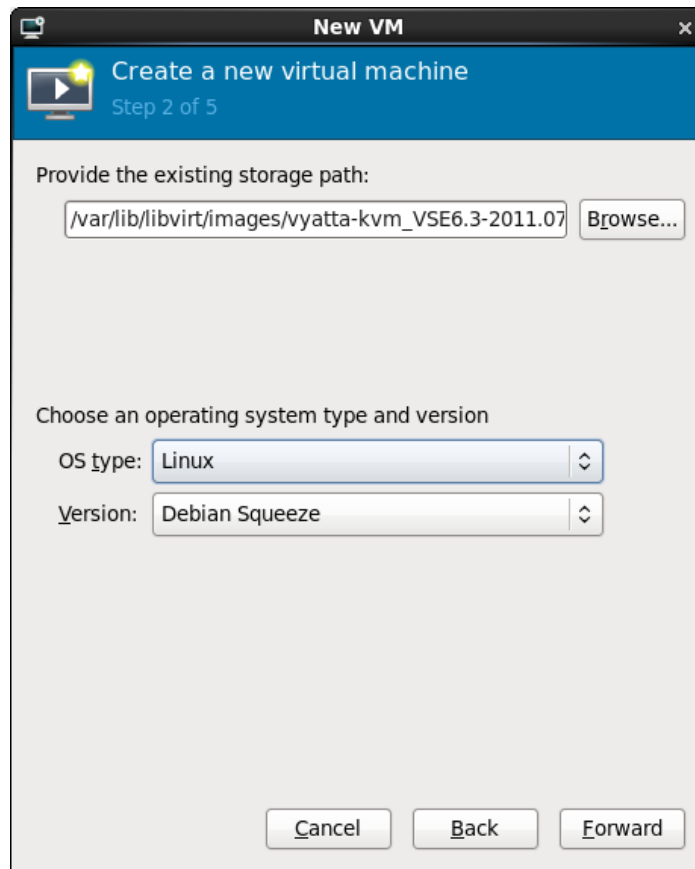
7   From the **OS type:** drop-down list, select **Linux**. From the **Version:** drop-down list, select **Debian Squeeze**. Click **Forward**. The **Create a new virtual machine** wizard Step 3 of 5 screen opens.
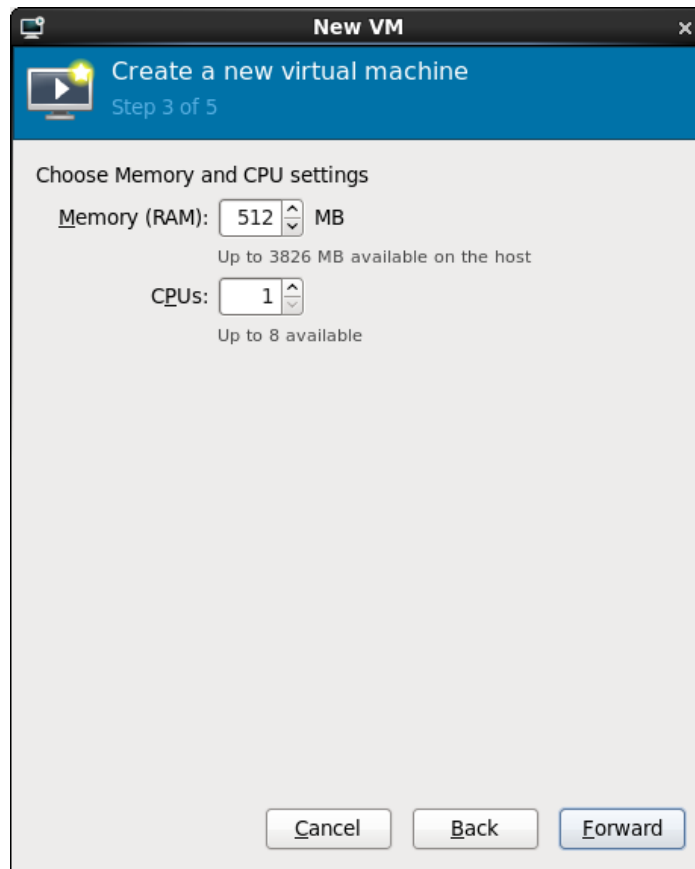
8 In the **Memory (RAM):** field, specify the amount of memory to allocate for the virtual machine. The minimum memory required for the Vyatta system is 512 MB. In the **CPUs:** field, specify the number of CPUs to allocate for the virtual machine. Press **Forward**. The **Create a new virtual machine wizard** Step 5 of 5 screen appears. (Note that step 4 of 5 does not appear.)
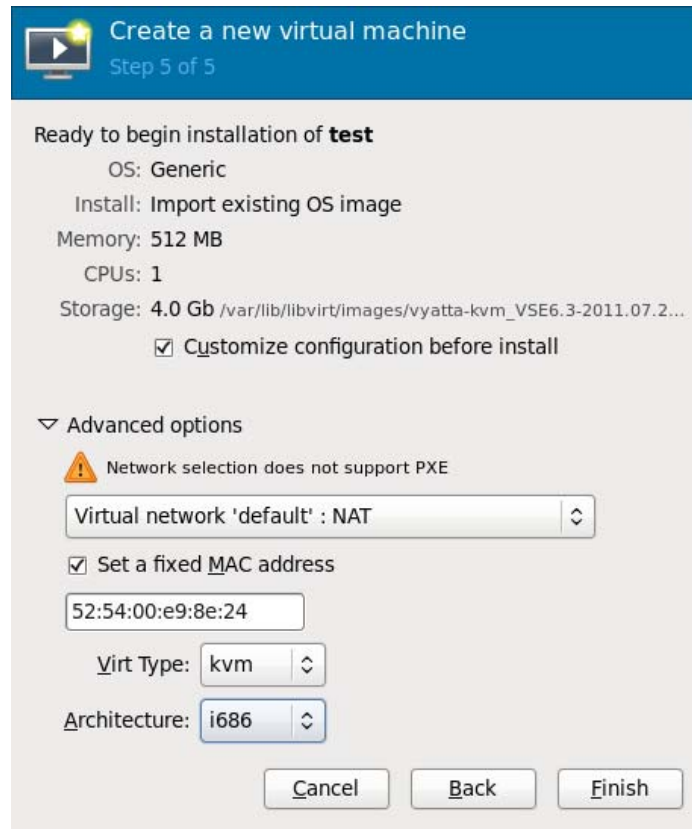
9   Check the **Customize configuration before install** checkbox. Under **Advanced options**, select the virtual network type that best meets your needs. Select **Set a fixed MAC address,** so that the system generates a unique MAC address for the main Ethernet interface. Leave **Virt Type:** as **kvm** and set the **Architecture:** field to **i686**. Click **Finish**. The configuration customization screen opens.
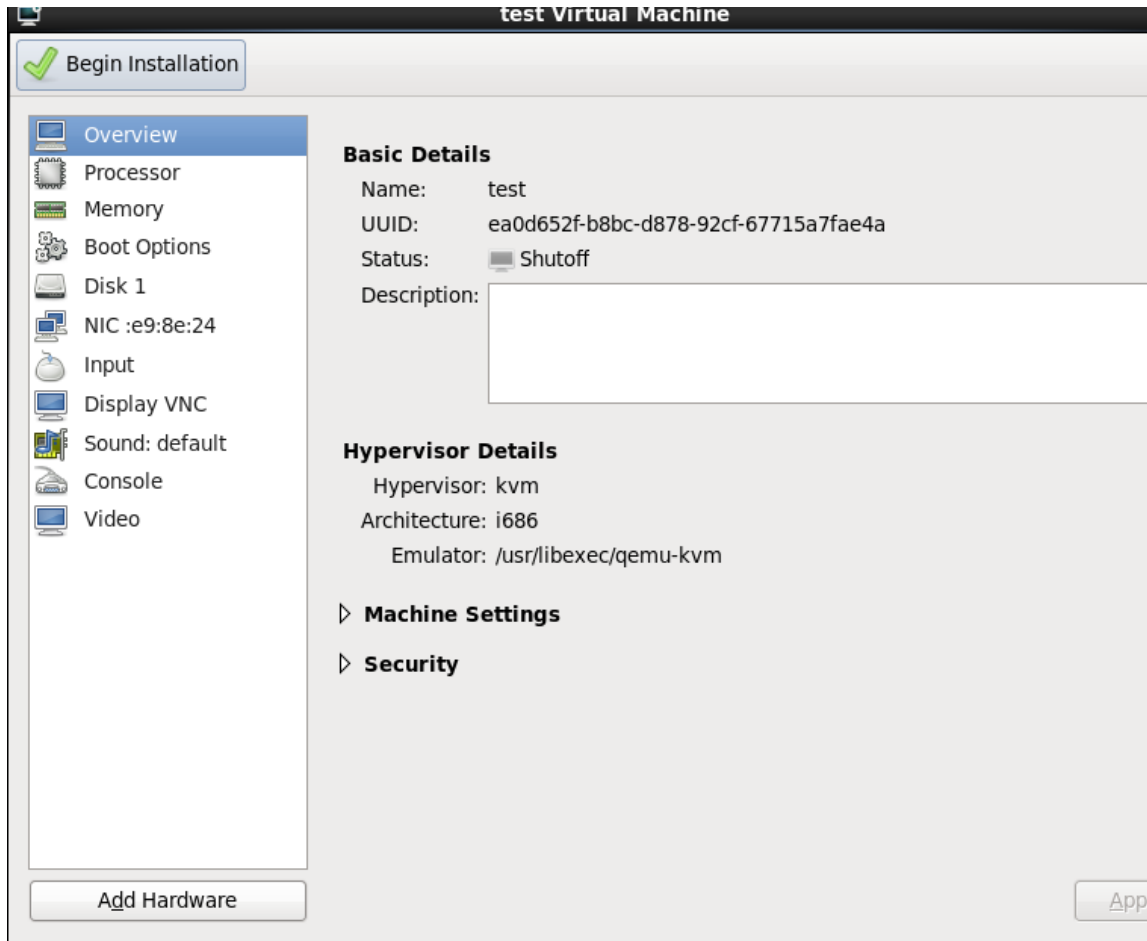
10 In the left menu bar, select **NIC**. The **Virtual Network Interface** configuration screen opens.
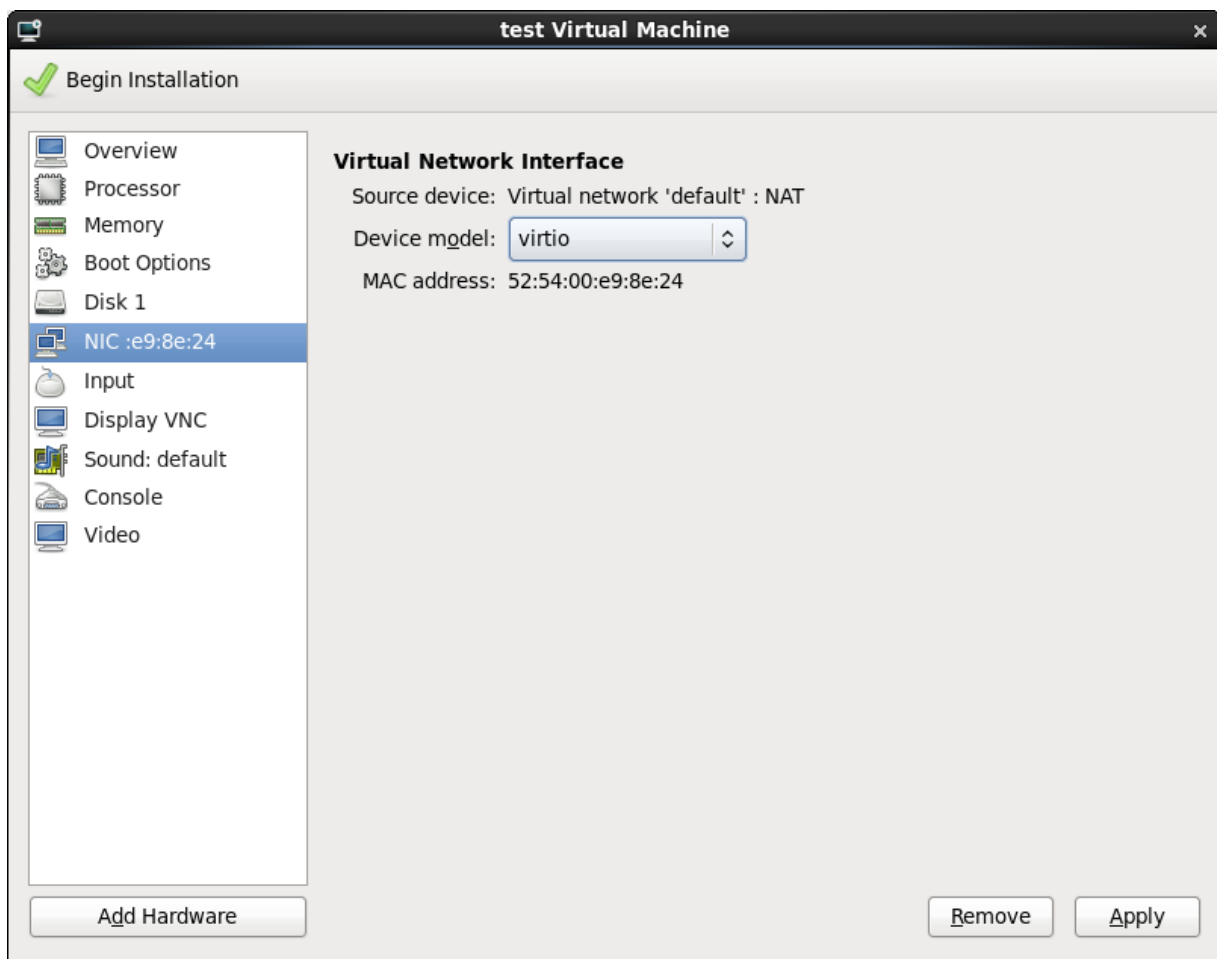
11 From the **Device model:** drop-down list, select **virtio** to enable the enhanced virtual network interface driver. Click **Apply**.

12 Select **Disk 1** in the left menu. The **Virtual Disk** screen opens.
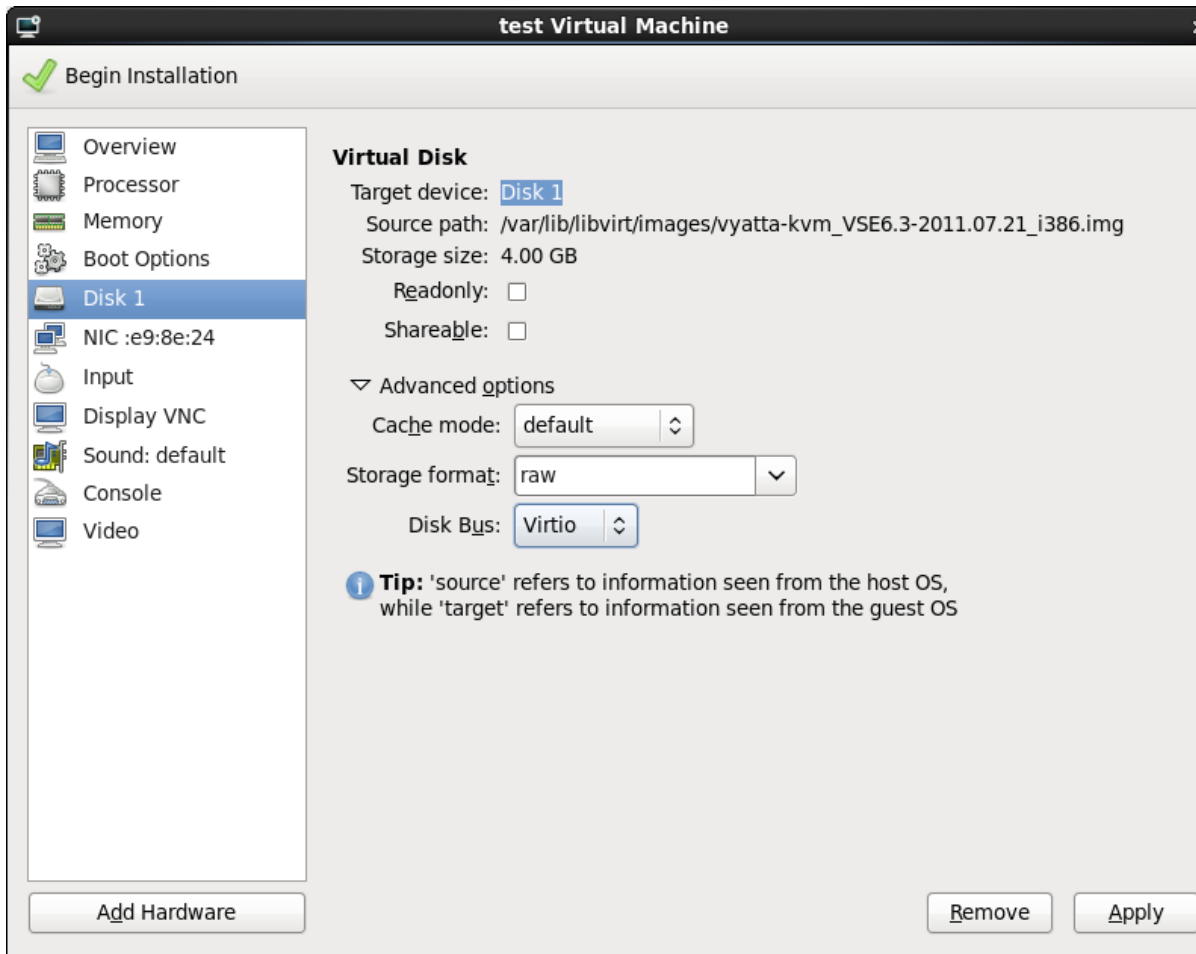
13 From the **Disk Bus:** drop-down list, select **Virtio** to enable the enhanced virtual disk driver. Leave other fields at their default values. Click **Apply.**

14 Remove any devices that are not required (such as the **Sound** device) by selecting the device and clicking **Remove.**

15 At the top left of the screen, click **Begin Installation**. The new virtual machine is created and begins to run in a separate window. When the Vyatta system finishes loading, the Vyatta login prompt appears in the virtual machine console.
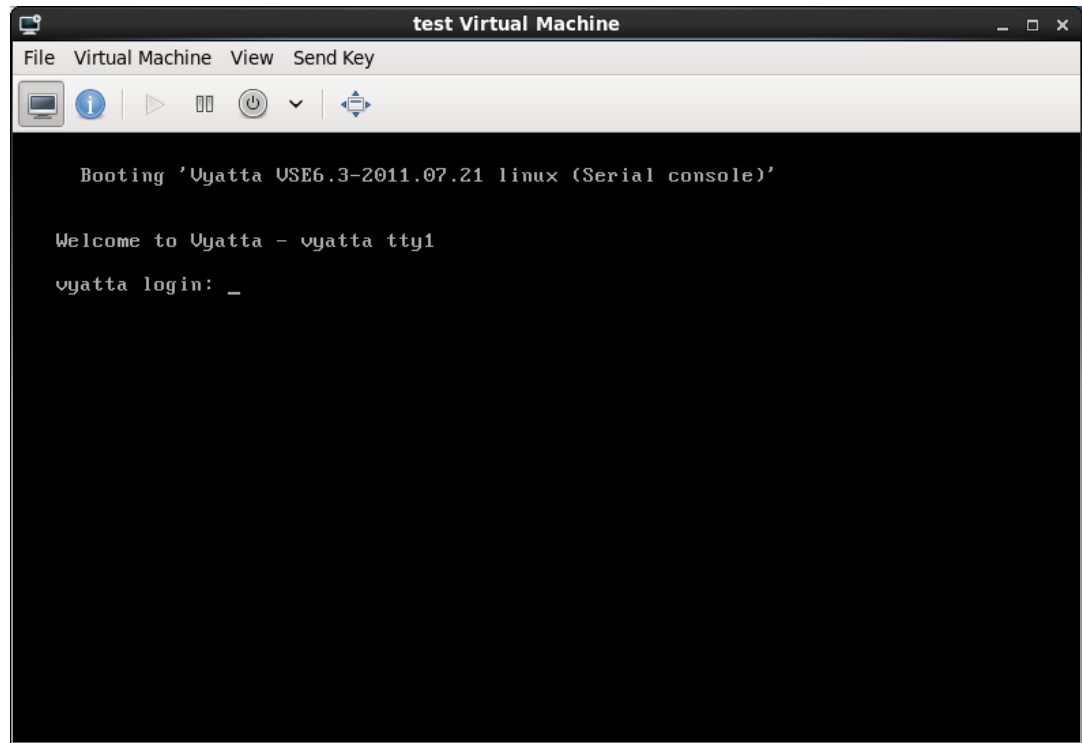
16 The new virtual machine (called **test** in the example) appears in the list of existing virtual machines in the Virtual Machine Manager.
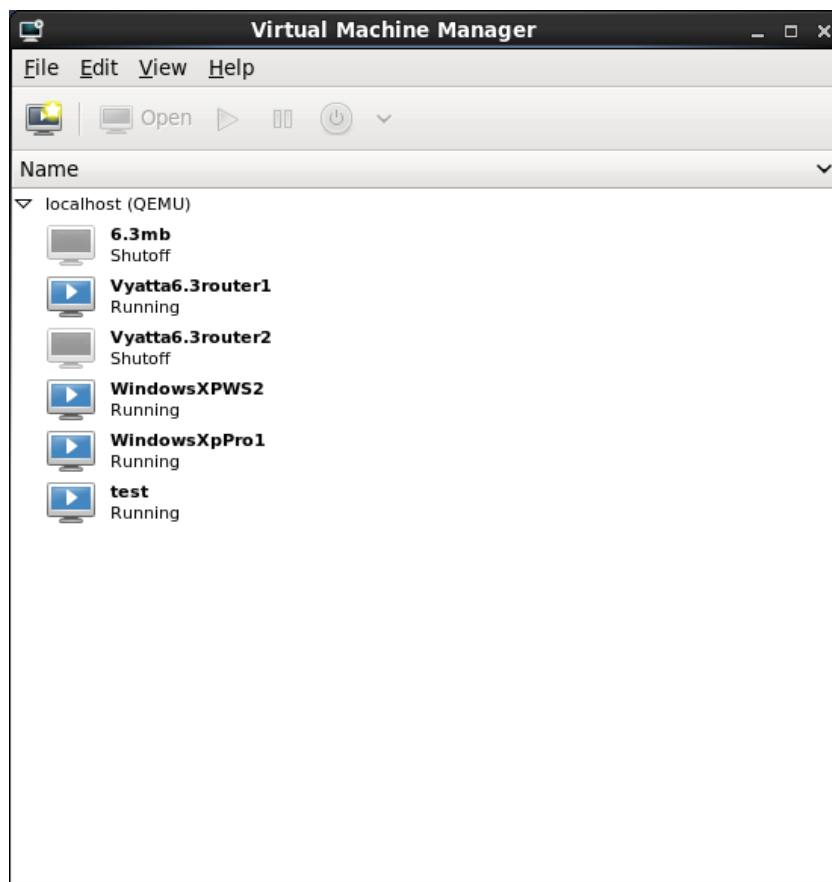
Testing Your Installation

Once the system has successfully booted you will see the **vyatta login:** prompt in the virtual machine console. This indicates that the system is operational, and you should proceed to test the system.

You should:

- Verify Release and System Type
- Verify Connectivity

Verify Release and System Type

Confirm that the correct release is running and that it is running on the device that you expect.

To verify release and system type

1 Login using the default login credentials: user **vyatta** with password **vyatta**.

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

Example 1-1   Displaying version information

```
vyatta@vyatta:~$ show version
Version:       VSE6.3-2011.08.31
Description:   Vyatta Subscription Edition 6.3 2011.08.31
Copyright:     2006-2011 Vyatta, Inc.
Built by:      autobuild@vyatta.com
Built on:      Wed Aug 31 02:44:28 UTC 2011
Build ID:      1108310303-d7a3790
System type:   Intel 32bit Virtual
Boot via:      image
Hypervisor:    KVM
Uptime:        20:08:51 up 11:47,  1 user,  load average: 0.00,
0.01, 0.05
vyatta@vyatta:~$
```

The **Version:** line shows the version number of the running system. The **Hypervisor:** line shows that the system is running on KVM.

Verify Connectivity

Confirm that the Vyatta system can access devices on the local network and, if applicable, access the Internet. A quick and easy way to do this is to configure an Ethernet interface on the system and then "ping" another host.

To test system connectivity

1 At the command prompt, enter the commands shown in the example to configure the Ethernet interface as a DHCP client.

Example 1-2   Configuring the Ethernet interface

```
vyatta@vyatta:~$ configure
vyatta@vyatta# set interfaces ethernet eth0 address dhcp
vyatta@vyatta# commit
```

```
vyatta@vyatta# exit
vyatta@vyatta:~$
```

NOTE *This example assumes that a DHCP server is present. If this is not the case, provide an IP
address on your existing subnet instead of specifying* **dhcp** *as the address. In order to access the
Internet and have domain names resolved, you will need to configure the address of the default
gateway as well as that of a name server using the* **set system gateway-address** *and* **set system
name-server** *commands in configuration mode.*

2   Confirm that the interface has been assigned an IP address using the **show
     interfaces** command. In this case the interface was assigned an IP address of
     192.168.1.50 by DHCP.

Example 1-3   Confirm that the interface has been assigned an IP address

```
vyatta@vyatta:~$ show interfaces
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface    IP Address                        S/L  Description
---------    ----------                        ---  -----------
eth0         192.168.1.50/24                    u/u
lo           127.0.0.1/8                        u/u
             ::1/128
vyatta@vyatta:~$
```

3   Ping another system on the local subnet to confirm that the interface is up (press
     <Ctrl>+c to stop the output). You will need to know the IP address of an existing
     system (in this case, 192.168.1.1).

Example 1-4   Confirm that the interface is operational

```
vyatta@vyatta:~$ ping 192.168.1.1
PING 192.168.1.1 (192.168.1.1) 56(84) bytes of data.
64 bytes from 192.168.1.1: icmp_req=1 ttl=64 time=2.79 ms
64 bytes from 192.168.1.1: icmp_req=2 ttl=64 time=1.17 ms
64 bytes from 192.168.1.1: icmp_req=3 ttl=64 time=1.16 ms
64 bytes from 192.168.1.1: icmp_req=4 ttl=64 time=1.13 ms
^C
--- 192.168.1.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 1.139/1.567/2.792/0.707 ms
vyatta@vyatta:~$
```

4   If the system has Internet access you can test it by pinging www.vyatta.com.

Example 1-5   Confirm that the system has Internet access

```
vyatta@vyatta:~$ ping www.vyatta.com
PING www.vyatta.com (76.74.103.45) 56(84) bytes of data.
64 bytes from www.vyatta.com (76.74.103.45): icmp_req=1 ttl=54 time=31.5
ms
64 bytes from www.vyatta.com (76.74.103.45): icmp_req=2 ttl=54 time=34.7
ms
64 bytes from www.vyatta.com (76.74.103.45): icmp_req=3 ttl=54 time=27.9
ms
64 bytes from www.vyatta.com (76.74.103.45): icmp_req=4 ttl=54 time=30.9
ms
64 bytes from www.vyatta.com (76.74.103.45): icmp_req=5 ttl=54 time=34.2
ms
^C
--- www.vyatta.com ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4004ms
rtt min/avg/max/mdev = 27.989/31.896/34.773/2.460 ms
vyatta@vyatta:~$
```

5   If you see responses from the Vyatta web site, your system can reach the Internet.

Chapter 2: Upgrading the System

This chapter explains how to upgrade Vyatta system software deployed on a Red Hat Kernel-Based Virtual Machine.

In this chapter:

- Release-Specific Upgrade Information
- Upgrading in a Virtual Environment

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.

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

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 fresh virtualized Vyatta system. To do this, following the instructions in Chapter 1: Installing the System.

Migrate your 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 IDs 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, **load 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.

Glossary

ACL	access control list
ADSL	Asymmetric Digital Subscriber Line
AMI	Amazon Machine Image
API	Application Programming Interface
AS	autonomous system
ARP	Address Resolution Protocol
AWS	Amazon Web Services
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
EBS	Amazon Elastic Block Storage
EC2	Amazon Elastic Compute Cloud
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
KVM	Kernel-Based Virtual Machine
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
RHEL	Red Hat Enterprise Linux
RIB	Routing Information Base
RIP	Routing Information Protocol
RIPng	RIP next generation
Rx	receive
S3	Amazon Simple Storage Service
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
VPC	Amazon virtual private cloud
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol

WAN	wide area network
WAP	wireless access point
WPA	Wired Protected Access