



Deployment Options Configuration Guide, 17.2.0

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About This Guide

This guide describes deployment options for the AT&T Vyatta vRouter (referred to as a virtual router, vRouter, or router in the guide).



Deployment Options

Run from LiveCD

LiveCD runs the AT&T Vyatta vRouter software on a RAM disk that resides on the host system. The system uses the RAM disk for writeable sections of the file system and uses an external system, such as a TFTP server or USB memory stick, for the storage of configuration files.

LiveCD runs on a system 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. In addition, you cannot upgrade an installation from LiveCD; each upgrade requires fresh LiveCD. While you are running the system from LiveCD, you are not able to access other applications or programs on your system.

LiveCD is also required to install the AT&T Vyatta vRouter to a persistent device, such as a hard disk.

As a method of deployment, running from LiveCD is best suited for evaluation and test scenarios.

You can read about using LiveCD in AT&T Vyatta vRouter LiveCD Installation Guide.

Install on hardware

The AT&T Vyatta vRouter installs and runs on most standard x86 servers and PCs. The system installs from AT&T Vyatta vRouter LiveCD onto a variety of persistent devices, including a hard drive, USB memory stick, and compact Flash.

You install the system from LiveCD, which you create before installation. The installation process uses LiveCD as the source image, formats the device on which the system is being installed, installs the system, and, if possible, preserves configuration from previous installations. When the installation is completed, you reboot your system and the newly installed system begins running.

Note: Not all hardware supports the ability to boot from a USB device or compact Flash; check the BIOS of your hardware to see if it does.

You can read about installing onto a hard disk or other persistent device in AT&T Vyatta vRouter Hard Disks and Persistent Devices Installation Guide

Install into a virtualized or cloud environment

The AT&T Vyatta vRouter runs as a software appliance in a virtual or cloud computing environment, allowing you to virtualize your network. The AT&T Vyatta vRouter software appliance is optimized for a number of virtual environments. These environments provide a great deal of flexibility as to how the virtual machine is configured, especially with respect to memory and Ethernet interfaces. Multiple AT&T Vyatta vRouter systems run simultaneously on a single hardware platform that is configured for multiple virtual machines.

The AT&T Vyatta vRouter software runs in the following virtual environments:

- VMware ESX and ESXi
- Linux KVM
- Microsoft Hyper-V
- Citrix XenServer

You can read about installing onto VMware ESX and ESXi in AT&T Vyatta vRouter VMware Installation Guide, about installing onto Linux KVM in AT&T Vyatta vRouter Linux KVM Installation Guide, and about installing onto Citrix XenServer in AT&T Vyatta vRouter XenServer Installation Guide.

Overview of installing on VMware ESX and ESXi



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

AT&T provides a prebuilt VMware template that can be used to create AT&T Vyatta vRouter virtual machines on VMware ESX or ESXi. AT&T also provides an ISO that can be installed on VMware ESX or ESXi.

The AT&T Vyatta vRouter can also run in an OpenStack cloud with VMware vSphere as the hypervisor.

Overview of installing on Linux KVM

The AT&T Vyatta vRouter supports the Kernel-Based Virtual Machine (KVM) hypervisor on Linux operating systems. Like other virtualization platforms, the Linux KVM provides the ability to run multiple virtual systems on a single hardware platform. AT&T provides a prebuilt Linux KVM image that runs on the KVM. This image has a number of Linux KVM-specific modifications and optimizations.

Note: KVM uses Linux bridging functionality that includes IGMP/MLD snooping. The IGMP/MLD snooping support in Linux works correctly on a Linux KVM host, but does not work correctly when there is more than one router connected to a single network. Therefore, we recommend that you disable the IGMP/MLD snooping on the Linux host when KVM is used.

Overview of installing on Microsoft Hyper-V

Microsoft Hyper-V is a virtualization platform. Like other virtualization platforms, Hyper-V provides the ability to run multiple virtual machines on a single hardware platform. You can run the AT&T Vyatta vRouter as a virtual machine on the Hyper-V platform.

Hyper-V Manager is the management system for Hyper-V. Hyper-V Manager enables you to manage multiple physical servers that are running Hyper-V, in addition to all the virtual machines that are running on each of the physical servers. On Hyper-V, virtual machines are created by using virtual machine templates. For each release of its software, AT&T provides a Hyper-V virtual machine template that you can use to create virtual machines that are running the AT&T Vyatta vRouter. In addition, AT&T also provides an ISO image that you can install on any system that is running a hypervisor.

AT&T provides a prebuilt Virtual Hard Disk (VHD) for Hyper-V that you can use to run the AT&T Vyatta vRouter on a Hyper-V virtual machine. Using the VHD simplifies the installation.

AT&T also provides an ISO that you can install on a Hyper-V virtual machine.

Overview of installing on Citrix 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. XenServer runs on both Windows and Linux operating systems. Refer to XenServer documentation for more details.

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

On XenServer, virtual machines are created by using virtual machine templates. For each release of its software, AT&T provides an XenServer virtual machine template to create virtual machines that are running the AT&T Vyatta vRouter. AT&T also provides an ISO image that can be installed as a domU (guest) on any system that is running a hypervisor.

Configuring the vRouter by Using cloud-init

The vRouter supports cloud-init, an open-source, multidistribution package that you can use to automate the initialization of vRouter images that run on the cloud.

For more information about cloud-init, refer to <https://cloudinit.readthedocs.io/en/latest/index.html>.



Supported cloud-init configuration functionality

The vRouter supports most of the basic cloud-init configuration functionality, including the following:

- Host name configuration
- User configuration
- Automatic resizing of the vRouter image based on available storage
- SSH configuration (host and server keys)

By default, the vRouter images run DHCP on all interfaces. All images also enable SSHD and NETCONF to facilitate remote configuration.

You can perform any additional configuration by using the cloud-init `runcmd` command. Because the vRouter runs `runcmd` commands inside vSphere CLI (vCLI), all you have to do in your cloud-init script is add the configuration commands to run, as shown in the following example, which enables the Telnet service on the vRouter.

```
runcmd:  
- |  
  configure  
  set service telnet  
  commit  
  exit
```

Unsupported cloud-init functionality

The vRouter does not explicitly support the cloud-init functionality for installing arbitrary packages.

Supported cloud-computing services and data sources

The vRouter supports the following cloud-computing services and data sources:

- Amazon Web Services (AWS)
- OpenStack
- NoCloud

NoCloud configuration example

To configure a cloud-ready vRouter image, perform the following steps on the system that hosts the vRouter virtual machine (VM).

1. Create two templates: meta-data and user-data.

Note: cloud-init supports different formats of user-data templates, including cloud-config, a YAML-based template that lets you define, among other things, SSH authorized keys and command-execution directives.

The following example shows how to create a YAML-formatted meta-data template that specifies the instance ID of the vRouter and its local host name.

```
$ { echo instance-id: iid-local01; echo local-hostname: vrouter; } > meta-data
```

The following example shows how to create a YAML-formatted user-data template that supplies an RSA key for SSH and enables the HTTPS service on the vRouter.

```
$ printf "#cloud-config\nssh_authorized_keys:\n - ssh-rsa  
AAAAB3NzaC1yc2EAAAABIwAAAGEA3FSyQwBI6Z+nCSjUUK8EEAnnkhX1ukKoUPND/  
RRClWz2s5TCzIkd30u5+Cyz71X0XmazM315WgeErvtIwQMyT1KjNoMhoJMrJnWqQP0t5Q8zWd9qG7PB19+eiH5qV7NZ  
mykey@host\nruncmd:\n - configure\n - set service https\n - commit" > user-data
```

2. Create an ISO image (seed.iso) that contains the meta-data and user-data templates.
The following example shows how to create an ISO image that contains the meta-data and user-data templates.

```
$ genisoimage -output seed.iso -volid cidata -joliet -rock user-data meta-data
```

3. Attach the seed.iso image to the vRouter VM as a CD-DVD drive.



When the vRouter starts, cloud-init uses the information contained in the meta-data and user-data templates to configure the vRouter.