

BIG-IP[®] Virtual Edition Setup Guide for VMware vCloud Director

Version 11.6



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Publication Date

This document was published on September 1, 2015.

Publication Number

MAN-0410-04

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Chapter 1

Getting Started with BIG-IP Virtual Edition

- *What is BIG-IP Virtual Edition?*
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What is BIG-IP Virtual Edition?

BIG-IP® Virtual Edition (VE) is a version of the BIG-IP system that runs as a virtual machine in specifically-supported hypervisors. BIG-IP VE creates a virtual instance of a hardware-based BIG-IP system running a VE-compatible version of BIG-IP® software.

***Note:** The BIG-IP VE product license determines the maximum allowed throughput rate. To view this rate limit, you can display the BIG-IP VE licensing page within the BIG-IP Configuration utility. Lab editions have no guarantee of throughput rate and are not supported for production environments.*

About BIG-IP VE compatibility with vCloud Director hypervisor products

Each time there is a new release of BIG-IP® Virtual Edition (VE) software, it includes support for additional hypervisor management products. The Virtual Edition and Supported Hypervisors Matrix on the AskF5™ website, <http://support.f5.com>, details which hypervisors are supported for each release.

***Important:** Hypervisors other than those identified in the matrix are not supported with this BIG-IP version; installation attempts on unsupported platforms might not be successful.*

About the hypervisor guest definition requirements

The vCloud Director virtual machine guest environment for the BIG-IP® Virtual Edition (VE), at minimum, must include:

- 2 x virtual CPUs
- 4 GB RAM
- 1 x VMXNET3 virtual network adapter or Flexible virtual network adapter (for management)
- 1 x virtual VMXNET3 virtual network adapter (three are configured in the default deployment for dataplane network access)
- SCSI disk storage; download the image size that provides sufficient space to meet your requirements. An optional secondary disk might also be required as a datastore for specific BIG-IP modules. For information about datastore requirements, refer to the BIG-IP module's documentation.

***Note:** Refer to *Increasing the disk space allotted to the BIG-IP virtual machine for details on changing the disk size after initial download.**

***Important:** You must supply at least the minimum virtual configuration limits to avoid unexpected results.*

For production licenses, F5 Networks suggests using the maximum configuration limits for the BIG-IP VE system. For lab editions, required reserves can be less. For each virtual machine, the vCloud Director virtual machine guest environment permits a maximum of 10 virtual network adapters (either 10 VMXNET3 with 1 management + 9 dataplane or 1 Flexible management + 9 VMXNET3 dataplane).

There are also some maximum configuration limits to consider for deploying a BIG-IP VE virtual machine, such as:

- CPU reservation can be up to 100 percent of the defined virtual machine hardware. For example, if the hypervisor has a 3 GHz core speed, the reservation of a virtual machine with 2 CPUs can be only 6 GHz or less.
- To achieve licensing performance limits, all allocated RAM must be reserved.

- For production environments, virtual disks should be deployed Thick (allocated up front). Thin deployments are acceptable for lab environments.

Important: There is no longer any limitation on the maximum amount of RAM supported on the hypervisor guest.

Disk space guidelines

This table details the capabilities and limitations of the disk space options you can choose.

Provisioned disk space	Capabilities and Limitations	Special Considerations
7 GB	The Local Traffic Manager (LTM [®]) module is supported, but there is no space available for installing LTM upgrades.	Disk space can be increased if you need upgrade LTM, or decide to provision additional modules.
31 GB	The LTM module is supported. There is also sufficient space available for installing LTM upgrades.	Disk space can be increased if you decide to provision additional modules. You can also install another instance of LTM on a separate partition.
104 GB (OS only) or 124 GB (with Datastore)	All modules and combinations are supported. There is also sufficient space available for installing upgrades.	If you plan to use the Acceleration Module (AM) in addition to other modules, you must add a second 20 GB disk in addition to the 104 GB operating system disk used by the other modules. The 20 GB volume serves as a dedicated Datastore for AM. Do not use this volume for any other purpose. If you need additional space, increase the disk space allotted to this VE. For information on configuring the Datastore volume, refer to <i>Disk Management for Datastore</i> published on the AskF5™ web site, http://support.f5.com .

Guest memory guidelines

The general memory requirement recommendation for BIG-IP[®] Virtual Edition (VE) is 2 GB per virtual CPU. Additionally, the following memory guidelines may be helpful in setting expectations, based on which modules are licensed on VE guests.

Provisioned memory	Supported module combinations	Module specific concerns
12 GB or more	All module combinations are fully supported.	N/A
8 GB	Provisioning more than three modules together is not supported.	GTM™ and Link Controller™ do not count toward the module-combination limit.
More than 4 GB, but less than 8 GB	Provisioning more than three modules together is not supported. (See module-specific concerns relating to AAM.)	Application Acceleration Manager™ (AAM) cannot be provisioned with any other module; AAM™ can only be provisioned as standalone. GTM and Link Controller do not count toward the module-combination limit.
4 GB or less	Provisioning more than two modules together is not supported.	AAM can only be provisioned as dedicated.

Chapter 2

Deploying BIG-IP Virtual Edition

- *Host machine requirements and recommendations*
- *About BIG-IP VE vCloud Director deployment*

Host machine requirements and recommendations

To successfully deploy and run the BIG-IP® VE system, the host system must satisfy minimum requirements.

The host system must include:

- VMware vCloud Director. The *Virtual Edition and Supported Hypervisors Matrix*, published on the AskF5™ web site, <http://support.f5.com> identifies the versions that are supported.
- VMware ESX or ESXi. The *Virtual Edition and Supported Hypervisors Matrix*, published on the AskF5™ web site, <http://support.f5.com> identifies the versions that are supported.
- VMware vSphere client
- Connection to a common NTP source (this is especially important for each host in a redundant system configuration)

The hypervisor CPU must meet the following requirements:

- Use 64-bit architecture.
- Have support for virtualization (AMD-V or Intel VT-x) enabled.
- Support a one-to-one thread-to-defined virtual CPU ratio, or (on single-threading architectures) support at least one core per defined virtual CPU.
- If you use an Intel processor, it must be from the Core (or newer) workstation or server family of CPUs.

SSL encryption processing on your VE will be faster if your host CPU supports the Advanced Encryption Standard New Instruction (AES-NI). Contact your CPU vendor for details on which CPUs provide AES-NI support.

The hypervisor memory requirement depends on the number of licensed TMM cores. The table describes these requirements.

Number of Cores	Memory Required
1	2 Gb
2	4 Gb
4	8 Gb
8	16 Gb

About BIG-IP VE vCloud Director deployment

To deploy the BIG-IP® Virtual Edition (VE) system on VMware vCloud Director, you need to perform these tasks:

- Verify the host machine requirements.
- Deploy an instance of the BIG-IP system as a virtual machine on a host system.
- Power on the BIG-IP VE virtual machine.
- Assign a management IP address to the BIG-IP VE virtual machine.

After you complete these tasks, you can log in to the BIG-IP VE system and run the Setup utility. Using the Setup utility, you can perform basic network configuration tasks, such as assigning VLANs to interfaces.

Deploying the BIG-IP VE virtual machine

The first step in deploying BIG-IP® Virtual Edition (VE) is to download the compressed OVF file to your local system. Next, you can run the Deploy OVF Template wizard from within the vCloud Director vSphere client. Follow the steps in this procedure to create an instance of the BIG-IP system that runs as a virtual machine on the host system.

Important: Do not modify the configuration of the vCloud Director guest environment with settings less powerful than the ones recommended in this document. This includes the settings for the CPU, RAM, and network adapters. Doing so might produce unexpected results.

Note: The following procedures are a suggested guideline. F5 Networks highly suggests that you consult vCloud Director documentation for template creation as the steps might differ with your organization's vCloud Director deployment.

1. In a browser, open the F5 Downloads page (<https://downloads.f5.com>).
2. Download the BIG-IP VE file package ending with `-vCloud.zip`.
3. Extract the file from the Zip archive.
4. Start the vCloud Director vSphere web-based client and log in.
5. Click **Catalogs > My Organization's Catalogs** and on the **vApp Templates** tab, click **Upload**.
6. Browse for and select the extracted `.ovf` file, type a name for the template, and click **Upload**.
7. Type a name and optional description for the vApp template.
8. Select a virtual data center and catalog.
9. Click **Upload**.
Click **Launch Uploads and Downloads Progress Window** to track the progress.
10. Click **My Cloud > vApps**.
11. Click **Add vApp from Catalog**.
12. Select **My organization's catalogs** or **Public catalogs** from the list, select a vApp template, and click **Next**.
You can also enter an optional description for the vApp.
13. Read and accept the license agreement, and click **Next**.
The Name and Location pane opens.
14. In the Inventory Location area, select a folder name and click **Next**.
15. Under **Configure Virtual Machines**, specify the full name and computer name for the vApp, and configure the network settings.
 - a) Select the network for NIC0 from the list of networks.
This network is used to manage the BIG-IP system. The **Select IP Assignment – Static** settings have no effect, so you should configure IP address for management interface through the console after the VM starts. When using DHCP, you should have a DHCP server on that network.
 - b) Select the networks for NIC1, NIC2, and NIC3.
 - c) Click **Next**.
16. Configure organizational settings, such as **Fence vApp** and **IP persistence** for example, and click **Next**.
17. Verify the settings and click **Finish** to start deployment.

Powering on the virtual machine

You power on the virtual machine so that you can begin assigning IP addresses.

1. In the vCloud Director web interface, click **My Cloud > vApps**.
2. Select the vApp to power on.
3. Click **Start**.
The virtual machine starts.

There are two default accounts used for initial configuration and setup:

- The root account provides access locally, or using SSH, or using the F5 Configuration utility. The root account password is `default`.
- The admin account provides access through the web interface. The admin account password is `admin`.

You should change passwords for both accounts before bringing a system into production.

Assigning a management IP address to a virtual machine

The virtual machine needs an IP address assigned to its virtual management port.

***Tip:** The default configuration for new deployments and installations is for DHCP to acquire the management port IP address.*

1. From the main vSphere client screen, click the Administration menu.
2. At the password prompt, type `default`.
3. Type `config` and press Enter.
The F5 Management Port Setup screen opens.
4. Click **OK**.
5. If you want DHCP to automatically assign an address for the management port, select **Yes**. Otherwise, select **No** and follow the instructions for manually assigning an IP address and netmask for the management port.

You can use a hypervisor generic statement such as `tmsh show sys management-ip` to confirm that the management IP address has been properly assigned.

***Tip:** F5 Networks highly recommends that you specify a default route for the virtual management port, but it is not required for operating the virtual machine.*

Chapter

3

Updating a BIG-IP VE Virtual Machine

- *About updates to the BIG-IP VE virtual machine*
-

About updates to the BIG-IP VE virtual machine

BIG-IP® VE updates within the same major version are installed in the same manner as updates to BIG-IP software already installed on BIG-IP hardware. You do not need to reinstall BIG-IP VE in the hypervisor guest environment to upgrade your system. To update a BIG-IP VE virtual machine, you can use the Software Management tool in the Configuration utility, or you can upgrade the software from the command line. The update procedure described here uses the Software Management tool.

Downloading and importing a BIG-IP VE update

To install an update, BIG-IP software needs access to the ISO file. If the update is a hotfix, you need the ISO files for both the base version and the hotfix before you can successfully import and install a hotfix update.

1. In a browser, open the F5 Downloads page (<https://downloads.f5.com>).
2. Download the version's base ISO file, such as 11.5, and its associated MD5 checksum file.

***Tip:** The location to which you download ISO files is not significant. Just make sure you can navigate to that location when you perform the import task.*

3. Download the update ISO file, such as `Hotfix-BIGIP-11.5.1-511.0-HF3.iso`, and its associated MD5 checksum file.

***Important:** Before you perform the installation, F5 recommends testing the integrity of the ISO files to verify that you have downloaded clean copies. Use an MD5 verification program to ensure that the downloaded ISO file's checksums match the values in their corresponding MD5 files.*

4. On the Main tab, click **System > Software Management > Image List > Import**.
The Import Software Image screen opens.
5. Click **Browse** to navigate to the downloaded base level installation file.
6. When the image name appears in the **Software Image** field, click **Import** to begin the operation.

***Important:** Do not navigate away from this screen before the operation completes; the system might not import the image successfully. Wait for the operation to complete before continuing with any other work on the BIG-IP VE system.*

The system presents a progress indicator during the operation; when the import is complete, the Import page closes and the downloaded base image displays as an available image.

7. Click the Hotfix List tab.
The Available Images portion of the screen displays any hotfixes you have imported previously.
8. At the right side of the screen, click **Import**.
The Import Hotfix screen opens.
9. Click **Browse** to navigate to the downloaded hotfix installation file.
10. When the image name appears in the **Software Image** field, click **Import** to begin the operation.

***Important:** Do not navigate away from this screen before the operation completes; the system might not import the image successfully. Wait for the operation to complete before continuing with any other work on the BIG-IP VE system.*

The system presents a progress indicator during the operation; when the import is complete, the Import page closes and the downloaded hotfix displays in the list of available images.

Installing a BIG-IP VE update

After you download and import the software installation image, you can initiate the installation operation. There are three boot locations on which you can install images on the BIG-IP® system. The process for installing a hotfix or a base version is essentially the same.

1. On the Main tab of the navigation pane, click **System > Software Management**.
The Software Management Image List screen opens.
2. In the Available Images area, select the software image you want to install and click **Install**.
The Install Software Image popup screen opens.
3. Select the disk you want to install the image on, and then type or select a volume name, and click **Install**.
The upgrade process installs the software on the inactive disk location that you specify. This process usually takes between three and ten minutes.

***Tip:** If there is a problem during installation, you can use log messages to troubleshoot a solution. The system stores the installation log file as `/var/log/liveinstall.log`.*

The software image is installed.

When the installation operation is complete, you can safely reboot the newly installed volume or partition.

Rebooting after a BIG-IP VE update

When the installation operation is complete, you can safely reboot into the newly installed volume or partition.

1. On the Main tab, click **System > Software Management**.
The Software Management Image List screen opens.
2. On the menu bar, click **Boot Locations**.
The Boot Locations screen opens.
3. In the Boot Location column, click the link representing the boot location you want to activate.
The properties screen for the boot location opens.
4. Click **Activate**.
A confirmation screen opens.
5. Click **OK** to initiate the reboot operation.
The system presents progress messages during the restart operation.

When the BIG-IP® VE system reboot is complete, the system presents the login screen. To configure the system, log in using an account that has administrative permissions.

Appendix

A

Deployment Best Practices

- *Best practices for deploying BIG-IP VE on vCloud Director*

Best practices for deploying BIG-IP VE on vCloud Director

When deploying BIG-IP® Virtual Edition (VE) on a vCloud Director host, use these best practices.

Issue	Recommendation
Redundant system configuration	Run the two units of an active-standby pair on separate physical hosts. You can accomplish this in two ways: either manually create a virtual machine peer on each host, or, if you are using VMware Dynamic Resource Scheduler (DRS), create a DRS rule with the option Separate Virtual Machine that includes each unit of the BIG-IP® VE redundant pair.
Live migration of BIG-IP VE virtual machines	Perform live migration of BIG-IP VE virtual machines on idle BIG-IP VE virtual machines only. Live migration of BIG-IP VE while the virtual machine is processing traffic could produce unexpected results.
Resource reservations	By default, BIG-IP VE is deployed with a 2000 or 4000 MHz CPU, and 2, 4, or 8 GB of memory reservation. Together, these reservations typically prevent system instability on heavily loaded hosts and are considered minimal. The CPU reservation can be up to 100 percent of the defined virtual machine hardware. For example, if the hypervisor has a 3 GHz core speed, the reservation of a virtual machine with 2 CPUs can be only 6 GHz or less.
Disable hyper-threading on older processors	F5 Networks recommends turning off Hyper-Threading Technology when using host machines with Intel Pentium 4 era processors. Doing so will prevent possible timing issues with BIG-IP VE. <hr/> Important: <i>Production licenses are not supported on Pentium 4 processors.</i> <hr/>

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