



# Citrix XenServer® Workload Balancing 7.1 Quick Start Guide

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Citrix XenServer ® Workload Balancing 7.1 Quick Start Guide

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# Chapter 1. Introduction

The XenServer Workload Balancing virtual appliance is a Linux-based virtual machine which allows you to quickly deploy the XenServer Workload Balancing feature in your environment. You can configure the Workload Balancing virtual appliance in just a few easy steps:

1. Download the Workload Balancing virtual appliance from <http://www.citrix.com/downloads>, and import it into XenCenter.
2. Configure Workload Balancing Appliance from the virtual appliance console.
3. Connect your pool to the Workload Balancing virtual appliance.

**Note:**

Workload Balancing is available for XenServer Enterprise edition customers or those who have access to XenServer through their XenApp/XenDesktop entitlement. For more information about XenServer licensing, see the [XenServer 7.1 Licensing FAQ](#). To upgrade, or to buy a XenServer 7.1 license, visit the [Citrix website](#).

**Note:**

Workload Balancing 7.1 is supported on XenServer 7.1, 7.0, 6.5.0, 6.1.0, and 6.0.

The sections that follow explain these steps. For an overview of Workload Balancing and additional information, see the *XenServer Workload Balancing 7.1 Administrator's Guide* and the *XenCenter Help*.

To balance a pool with Workload Balancing, the pool's hosts must meet the requirements for XenMotion (live migration) as described in the *Workload Balancing Administrator's Guide*.

## 1.1. Importing the Workload Balancing Virtual Appliance

The Workload Balancing virtual appliance is a single pre-installed virtual machine designed to run on a XenServer host. Before importing it review the prerequisite information and considerations.

### 1.1.1. Prerequisites

This appliance is designed to run on XenServer 7.1 and higher. It is capable of monitoring pools running XenServer 5.5 hosts and higher. Citrix recommends using the XenCenter 7.1 management console to import the virtual appliance. The Workload Balancing virtual appliance requires a minimum of 2GB of RAM and 8GB of disk space to run.

### 1.1.2. Information to Consider Before Importing the Virtual Appliance

Before importing the virtual appliance, note the following information and make the appropriate changes to your environment, as applicable. Also, check the Workload Balancing release notes for additional, late-breaking, release-specific requirements.

- **Communications Port.** Before you launch the Workload Balancing Configuration wizard, determine the port over which you want the Workload Balancing virtual appliance to communicate. You will be prompted for this port during Workload Balancing Configuration. By default, Workload Balancing server uses 8012.

**Note:**

Do not set the Workload Balancing port to port 443. The Workload Balancing virtual appliance cannot accept connections over port 443 (the standard SSL/HTTPS port).

- **Account for Workload Balancing.** The Workload Balancing Configuration wizard requires that you select and enter a user name and password for the Workload Balancing account and the database account. You do not need to create these accounts before running the Configuration wizard. The Configuration wizard will create these accounts for you.
- **Monitoring Across Pools.** You can put the Workload Balancing virtual appliance in one pool and monitor a different pool with it. (For example, the Workload Balancing virtual appliance is in Pool A but you are using it to monitor Pool B.)

**Note:**

The Workload Balancing virtual appliance requires that the time on the physical computer hosting the virtual appliance matches that in use by the monitored pool. There is no way to change the time on the Workload Balancing virtual appliance, so Citrix recommends pointing both the physical computer hosting Workload Balancing and the hosts in the pool it is monitoring to the same Network Time (NTP) server.

- **XenServer and Workload Balancing communicate over HTTPS.** Therefore, during Workload Balancing Configuration, Workload Balancing automatically creates a self-signed certificate on your behalf. You can change this certificate to one from a certificate authority and/or configure XenServer to verify the certificate. For information, see the *Workload Balancing Administrator's Guide*.
- **Storing Historical Data and Disk Space Size.** The amount of historical data you can store is based on the size of the virtual disk allocated to Workload Balancing (by default 8GB) and the minimum disk required space, which is 2048MB by default and controlled by the **GroomingRequiredMinimumDiskSizeInMB** parameter in the `wlb.conf` file. If you want to store a lot of historical data (for example, if you want to use the WLB Poor Audit trail feature and configure the report granularity to medium or above) you can either archive the data as described in the *Workload Balancing Administrator's Guide* or make the virtual disk size assigned to the Workload Balancing virtual appliance larger.

To increase the disk size, import the virtual appliance and then increase the virtual-disk size by following the procedures in the *Workload Balancing Administrator's Guide*.

- **Load balancing Workload Balancing.** If you want to manage your Workload Balancing virtual appliance by using that same appliance (that is, use the virtual appliance to manage itself), you must specify shared remote storage when importing the virtual appliance.

**Note:** Workload Balancing cannot perform **Start On** placement recommendation for the Workload Balancing virtual appliance when you are using Workload Balancing to manage itself (instead of managing it with a different Workload Balancing appliance like you could if you were running the virtual appliance in a different pool). The reason that Workload Balancing cannot make placement recommendations when it is managing itself is because the virtual appliance must be running for it to perform that function. However, it can balance the Workload Balancing virtual appliance just like it would balance any other VM it is managing.

### 1.1.3. Planning for Resource Pool Sizing

Workload Balancing requires specific configurations to run successfully in large pools.

### 1.1.4. Downloading the Virtual Appliance

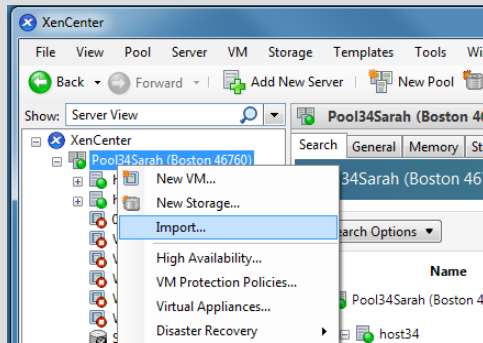
The Workload Balancing virtual appliance is packaged in an `.xva` format. You can download the virtual appliance from the Citrix download page <http://www.citrix.com/downloads>. When downloading the file, save it to a folder on your local hard drive (typically on the computer where XenCenter is installed). When the `.xva` download is complete, you can import it into XenCenter.

### 1.1.5. Importing the Virtual Appliance into XenCenter

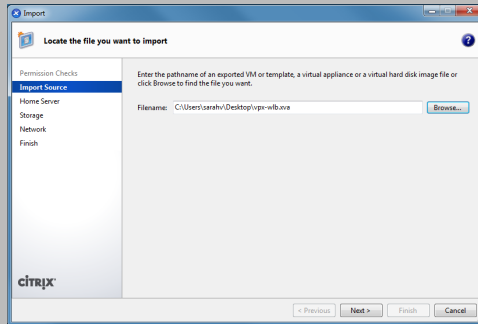
Use XenCenter to import the Workload Balancing virtual appliance into a pool.

#### To import the virtual appliance into XenServer

1. Open XenCenter. Right-click on the pool (or host) into which you want to import the virtual appliance package, and select **Import**.



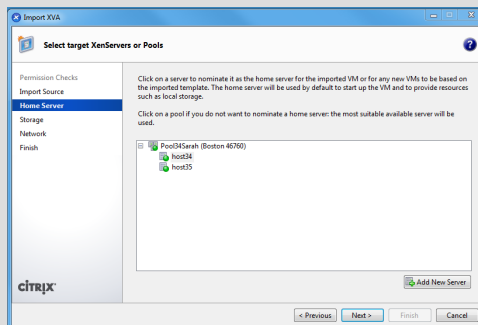
2. Browse to the vpx-wlb.xva package.



3. Select the pool or Home Server where you want to run the Workload Balancing virtual appliance.

When you select the pool, the VM will automatically start on the most suitable host in that pool.

Alternatively, if you do not plan to manage the Workload Balancing virtual appliance using Workload Balancing, you may want to a Home Server for the Workload Balancing virtual appliance so it always starts on the same host.

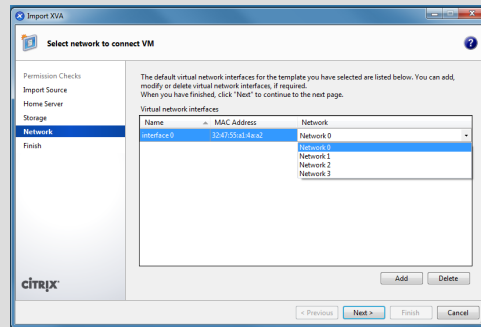


4. Choose a storage repository on which to store the virtual disk for the Workload Balancing virtual appliance. This repository must have a minimum of 8GB of free space.

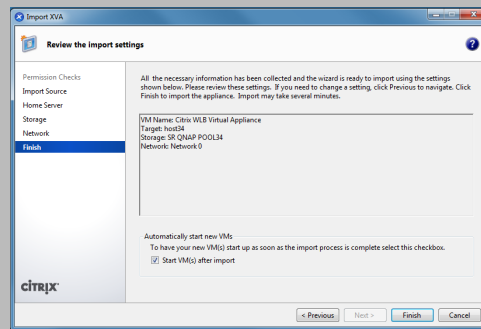
You can choose either local or remote storage. However, if you choose local storage, you cannot manage the virtual appliance with Workload Balancing.

5. Do both of the following:

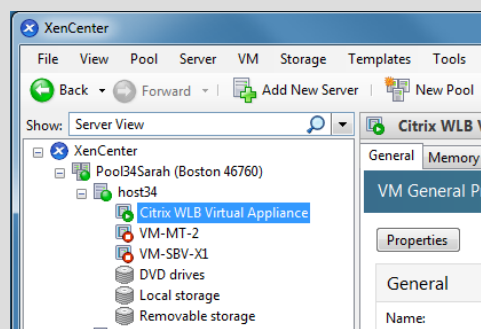
1. Define the virtual interface(s) for the Workload Balancing virtual appliance. In this release, Workload Balancing is designed to communicate on a single virtual interface.
2. Choose a network that can access the pool you want Workload Balancing to manage.



6. Leave the **Start VM(s) after import** check box enabled, and click **Finish** to import the virtual appliance.



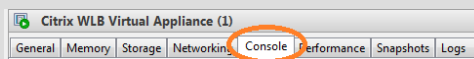
7. After you finish importing the Workload Balancing .xva file, the Workload Balancing virtual machine appears in the **Resource** pane in XenCenter.



## 1.2. Configuring the Workload Balancing Virtual Appliance

After you finish importing the Workload Balancing virtual appliance, you must configure it before you can use it to manage your pool. To guide you through the configuration, the Workload Balancing virtual appliance provides you with a configuration wizard in XenCenter. To display it, select the virtual appliance in the Resource pane and click the **Console** tab. For all options, press **Enter** to accept the default choice.

1. After importing the Workload Balancing virtual appliance, click the **Console** tab.



2. Enter **yes** to accept the terms of the license agreement. To decline the EULA, enter **no**.

**Note:** The Workload Balancing virtual appliance is also subject to the licenses contained in the /opt/vpx/wlb directory in the Workload Balancing virtual appliance.

3. Enter and confirm a new root password for the Workload Balancing virtual machine. Citrix recommends selecting a strong password.

**Note:** When you enter the password, the console does not display placeholders, such as asterisks, for the characters.

```
Citrix Workload Balancing Virtual Appliance
Welcome to the Virtual Appliance configuration wizard.
Choose a root password for this virtual machine. This password
will only be used for appliance configuration or maintenance.
Changing password for user root.
New UNIX password: █
```

4. Enter the computer name you want to assign to the Workload Balancing virtual appliance.

```
Citrix Workload Balancing Virtual Appliance
Answer the following questions to configure networking:
Choose a short hostname for this virtual machine.
Specify a hostname: █
```

5. Enter the domain suffix for the virtual appliance.

For example, if the fully qualified domain name (FQDN) for the virtual appliance will be `wlb-vpx-pos-pool.domain4.bedford4.ctx`, then enter `domain4.bedford4.ctx`.

**Note:** The Workload Balancing virtual appliance does not automatically add its FQDN to your Domain Name System (DNS) server. Consequently, if you want the pool to use an FQDN to connect to Workload Balancing, you must add the FQDN to your DNS server.

```
Citrix Workload Balancing Virtual Appliance
Answer the following questions to configure networking:
Choose a short hostname for this virtual machine.
Specify a hostname: wlb-upx-pos-pool
Enter the domain suffix for this machine. e.g. mydomain.com: █
```

6. Enter `y` to use DHCP to obtain the IP address automatically for the Workload Balancing virtual machine. Otherwise, enter `n` and then enter a static IP address, subnet mask, and gateway for the virtual machine.

**Note:** Using DHCP is acceptable provided the lease of the IP address will not expire. It is important that the IP address does not change: if it changes, it will break the connection between XenServer and Workload Balancing.

```
Citrix Workload Balancing Virtual Appliance
Answer the following questions to configure networking:
Choose a short hostname for this virtual machine.
Specify a hostname: wlb-upx-pos-pool
Enter the domain suffix for this machine. e.g. mydomain.com: domain4.bedford4.ctx
Do you want to use DHCP to configure the network settings? (y/n): n
Specify an IP address: 10.204.154.52
Specify a Netmask: 255.255.255.0
Specify a Gateway: █
```



7. Enter a user name for the Workload Balancing database, or press **Enter** to use the default user name (postgres) of the database account.

You are creating an account for the Workload Balancing database. The Workload Balancing services use this account to read/write to the Workload Balancing database. Note the user name and password since you may need them if you ever want to administer to the Workload Balancing PostgreSQL database directly (for example, if you wanted to export data).

```
Citrix Workload Balancing Virtual Appliance
Create a PostgreSQL user.
This user will be used for logging in to local PostgreSQL database server.
User name (leave empty for default user name [postgres]):
```

8. Enter a password for the Workload Balancing database. After pressing **Enter**, messages appear stating that the Configuration wizard is loading database objects.

```
Citrix Workload Balancing Virtual Appliance
Create a PostgreSQL user.
This user will be used for logging in to local PostgreSQL database server.
User name (leave empty for default user name [postgres]):
Enter password for postgres:
Confirm:
```

9. Enter a user name and password for the Workload Balancing Server.

This creates the account XenServer uses to connect to Workload Balancing. The default user name is **wluser**.

```
Citrix Workload Balancing Virtual Appliance
Create a PostgreSQL user.
This user will be used for logging in to local PostgreSQL database server.
User name (leave empty for default user name [postgres]):
Enter password for postgres:
Confirm:
Loading objects into database... [ OK ]
Restarting PostgreSQL server... Stopping PostgreSQL database server...
[ OK ] Stopped PostgreSQL database server.
Starting PostgreSQL database server...
[ OK ] Started PostgreSQL database server.
Choose user name and password for Workload Balancing Server.
User name [default:wluser]:
```

10. Enter the port for the Workload Balancing Server. This is the port over which you the Workload Balancing server communicates.

By default, the Workload Balancing server uses 8012. The port number cannot be set to 443, which is the default SSL port number.

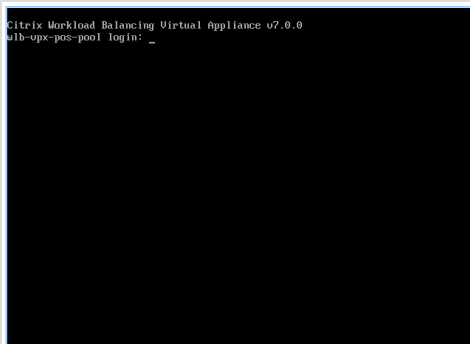
**Note:** If you change the port here, you must specify that new port number when you connect the pool to Workload Balancing (for example, by specifying the port in the **Connect to WLB Server** dialog).

Make sure that the port you specify for Workload Balancing is open in any firewalls.

After you press **Enter**, Workload Balancing continues with the virtual appliance configuration, including creating self-signed certificates.

```
Citrix Workload Balancing Virtual Appliance
Create a PostgreSQL user.
This user will be used for logging in to local PostgreSQL database server.
User name (leave empty for default user name [postgres]):
Enter password for postgres:
Confirm:
Loading objects into database... [ OK ]
Restarting PostgreSQL server... Stopping PostgreSQL database server...
[ OK ] Stopped PostgreSQL database server.
Starting PostgreSQL database server...
[ OK ] Started PostgreSQL database server.
Choose user name and password for Workload Balancing Server.
User name [default:wluser]:
Enter password for wluser:
Confirm:
Enter the port for Workload Balancing Server [default:8012]:
```

11. At this time, you can also log in to the virtual appliance by entering the VM user name (typically "root") and the root password you created in step 2. However, logging in is only required when you want to run Workload Balancing commands or edit the Workload Balancing configuration file.



After you finish configuring the Workload Balancing, continue on to connect your pool to the Workload Balancing virtual appliance as described in the [Section 1.3, "Connecting to the Workload Balancing Virtual Appliance"](#).

If necessary, you can find the Workload Balancing configuration file in the following location: `/opt/vpx/wlb/wlb.conf`. The Workload Balancing log file is in this location: `/var/log/wlb/LogFile.log`. More information about these files and their purpose is in the *Workload Balancing Administrator's Guide*.

### 1.3. Connecting to the Workload Balancing Virtual Appliance

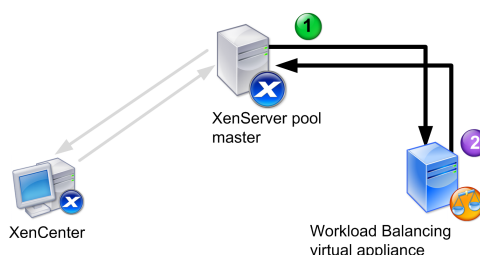
**Note:**

Workload Balancing is available for XenServer Enterprise edition customers or those who have access to XenServer through their XenApp/XenDesktop entitlement. For more information about XenServer licensing, see the [XenServer 7.1 Licensing FAQ](#). To upgrade, or to buy a XenServer 7.1 license, visit the [Citrix website](#).

After Workload Balancing configuration, you must connect the pool you want managed to the Workload Balancing virtual appliance using either the XE commands or the **Connect to WLB Server** dialog box in XenCenter.

To complete the XenCenter procedure that follows, you need the:

- IP address or FQDN of the Workload Balancing virtual appliance and its port number
- Credentials for the resource pool (that is, the pool master) you want Workload Balancing to monitor.
- Credentials for the Workload Balancing account you created during Workload Balancing configuration. XenServer uses this account to communicate with Workload Balancing.



***This illustration shows how (1) XenServer communicates with Workload Balancing using an account you created during Workload Balancing configuration and (2) the Workload Balancing virtual appliance authenticates to XenServer using the credentials for the pool.***

If you want to specify the Workload Balancing FQDN when connecting to the Workload Balancing server (that is, in the **Connect to WLB Server** dialog), you must first add its host name and IP address to your DNS server.

When you first connect to Workload Balancing, it uses the default thresholds and settings for balancing workloads. Automatic features, such as Automated Optimization Mode, Power Management, and Automation, are disabled by default.

## Connecting to Workload Balancing and Certificates

If you want to upload a different (trusted) certificate or configure certificate verification, note the following before connecting your pool to Workload Balancing:

- If you want XenServer to verify the self-signed Workload Balancing certificate, you must use the Workload Balancing IP address to connect to Workload Balancing. The self-signed certificate is issued to Workload Balancing based on its IP address.
- If you want to use a certificate from a certificate authority, it is easier to specify the FQDN when connecting to Workload Balancing. However, you may be able to specify a static IP address in the **Connect to WLB Server** dialog and then use the IP address as the Subject Alternative Name (SAN) in the certificate.

More information about configuring certificates is provided in the *Workload Balancing Administrator's Guide*.

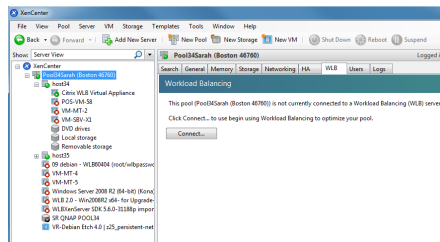
### 1.3.1. To connect your pool to the Workload Balancing virtual appliance

**Note:**

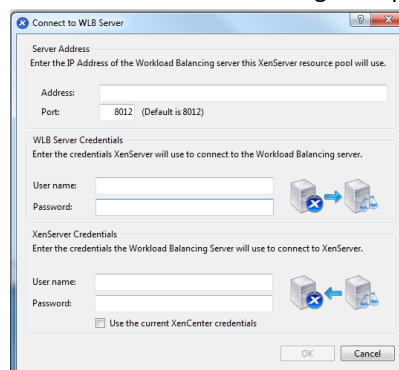
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1. In the **Infrastructure** pane of XenCenter, select XenCenter > your-resource-pool.
2. In the **Properties** pane, click the **WLB** tab.

The **WLB** tab displays the Connect button.



3. In the **WLB** tab, click **Connect**. The **Connect to WLB Server** dialog box appears.



4. In the **Server Address** section, enter the following:
  - a. In the **Address** box, type the IP address or FQDN of the Workload Balancing virtual appliance. For example, your WLB-appliance-computername.yourdomain.net.

**Tip:**

To obtain the IP address for the WLB virtual appliance, see [Section 1.3.1.1, “To obtain the IP address for the WLB virtual appliance”](#).

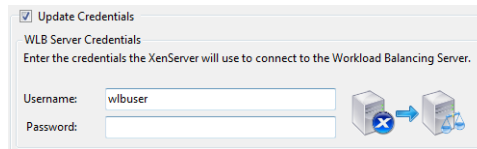
- b. (Optional.) If you changed the Workload Balancing port during Workload Balancing Configuration, enter the port number in the **Port** box. XenServer uses this port to communicate with Workload Balancing.

By default, XenServer connects to Workload Balancing on port 8012.

**Note:**

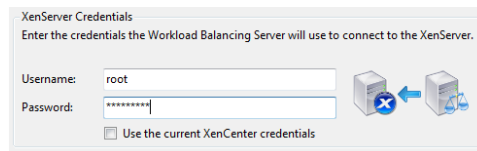
Do not edit the port number unless you have changed it during Workload Balancing Configuration. The port number specified during Workload Balancing Configuration, in any firewall rules, and in the **Connect to WLB Server** dialog must match.

5. In the **WLB Server Credentials** section, enter the user name and password the XenServer pool (master) will use to connect to the Workload Balancing virtual appliance.



This must be the account you created during Workload Balancing Configuration. By default, the user name for this account is wlbuser.

6. In the **XenServer Credentials** section, enter the user name and password for the pool you are configuring (typically the password for the pool master). Workload Balancing will use these credentials to connect to the hosts in the pool.



To use the credentials with which you are currently logged into XenServer, select the **Use the current XenCenter credentials** check box. If you have assigned a role to this account using the Role Based Access Control feature (RBAC), be sure the role has sufficient permissions to configure Workload Balancing. For more information, see the RBAC section of the *Workload Balancing Administrator's Guide*.

7. After connecting the pool to the Workload Balancing virtual appliance, Workload Balancing automatically begins monitoring the pool with the default optimization settings. If you want to modify these settings or change the priority given to specific resources, wait at least sixty seconds (until the XenCenter Log shows discovery is finished) before proceeding and see the *Workload Balancing Administrator's Guide*.

**Important:**

After Workload Balancing is running for a period of time, if you do not receive optimal recommendations, Citrix strongly recommends you evaluate your performance thresholds as described in *Workload Balancing Administrator's Guide*. It is critical to set Workload Balancing to the correct thresholds for your environment or its recommendations might not be appropriate.

**1.3.1.1. To obtain the IP address for the WLB virtual appliance**

1. Select the Workload Balancing virtual appliance in the Resource pane in XenCenter, and click on the **Console** tab.
2. Log in to the appliance. Enter the VM user name (typically "root") and the root password you created when you imported the appliance.
3. Enter the following command at the prompt:

```
ifconfig
```