

# **Citrix Workload Balancing Installation**

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# Chapter 1

## Designing Your Workload Balancing Deployment

You can install Workload Balancing on one computer (physical or virtual) or distribute the components across multiple computers. The three most common deployment configurations are the following:

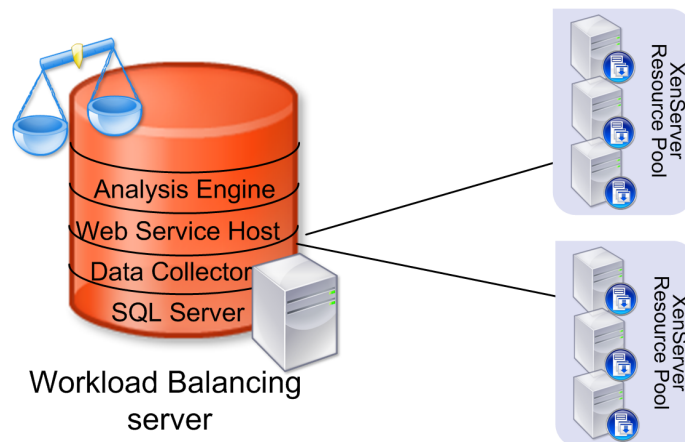
- All components are installed on a single server
- The data collector is installed on a dedicated server
- All components are installed on a single server, but the data store is installed on central database server

Because one data collector can monitor multiple resource pools, you do not need multiple data collectors to monitor multiple pools.

### Deploying One Server

Depending on your environment and goals, you can install Workload Balancing and the data store on one server. In this configuration, one data collector monitors all the resource pools.

This illustration shows a Workload Balancing deployment where Workload Balancing and the data store are on one computer. Workload Balancing is collecting data for multiple XenServer resource pools.



The following table shows the advantages and disadvantages to a single-server deployment:

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Simple installation and configuration.</li> <li>• No Windows domain requirement.</li> </ul>	<ul style="list-style-type: none"> <li>• Single point of failure.</li> </ul>

## Planning for Future Growth

If you anticipate that you will want to add more resource pools in the future, consider designing your Workload Balancing deployment so that it supports growth and scalability. Consider:

- **Using SQL Server for the data store.** In large environments, consider using SQL Server for the data store instead of SQL Server Express. Because SQL Server Express has a 4GB disk-space limit, Workload Balancing limits the data store to 3.5GB when installed on this database. SQL Server has no preset disk-space limitation.
- **Deploying the data store on a dedicated server.** If you deploy SQL Server on a dedicated server (instead of collocating it on the same computer as the other Workload Balancing services), you can let it use more memory.

## Increasing Availability

If Workload Balancing's recommendations or reports are critical in your environment, consider implementing strategies to ensure high availability, such as one of the following:

- Installing multiple data collectors, so there is not a single point of failure.
- Configuring Microsoft clustering. This is the only true failover configuration for single-server deployments.

However, Workload Balancing services are not "cluster aware," so if the primary server in the cluster fails, any pending requests are lost when the secondary server in the cluster takes over.

- Making Workload Balancing part of a XenServer resource pool with High Availability enabled.

## Multiple Server Deployments

In some situations, you might need to deploy Workload Balancing on multiple servers. When you deploy Workload Balancing on multiple servers, you place its key services on one more servers:

- *Data Collection Manager service.* Collects data from the virtual machines and their hosts and writes the data to the data store. This service is also referred to as the "data collector."
- *Web Service Host.* Facilitates communications between the XenServer and the Analysis Engine. Requires a security certificate, which you can create or provide during Setup.
- *Analysis Engine service.* Monitors resource pools and determines if a resource pool needs optimizations.

The size of your XenServer environment affects your Workload Balancing design. Since every environment is different, the size definitions that follow are examples of environments of that size:

Size	Example
Small	One resource pool with 2 hosts and 8 virtual machines
Medium	Two resource pools with 6 hosts and 8 virtual machines per pool
Large	Five resource pools with 16 hosts and 64 virtual machines per pool

## Deploying Multiple Servers

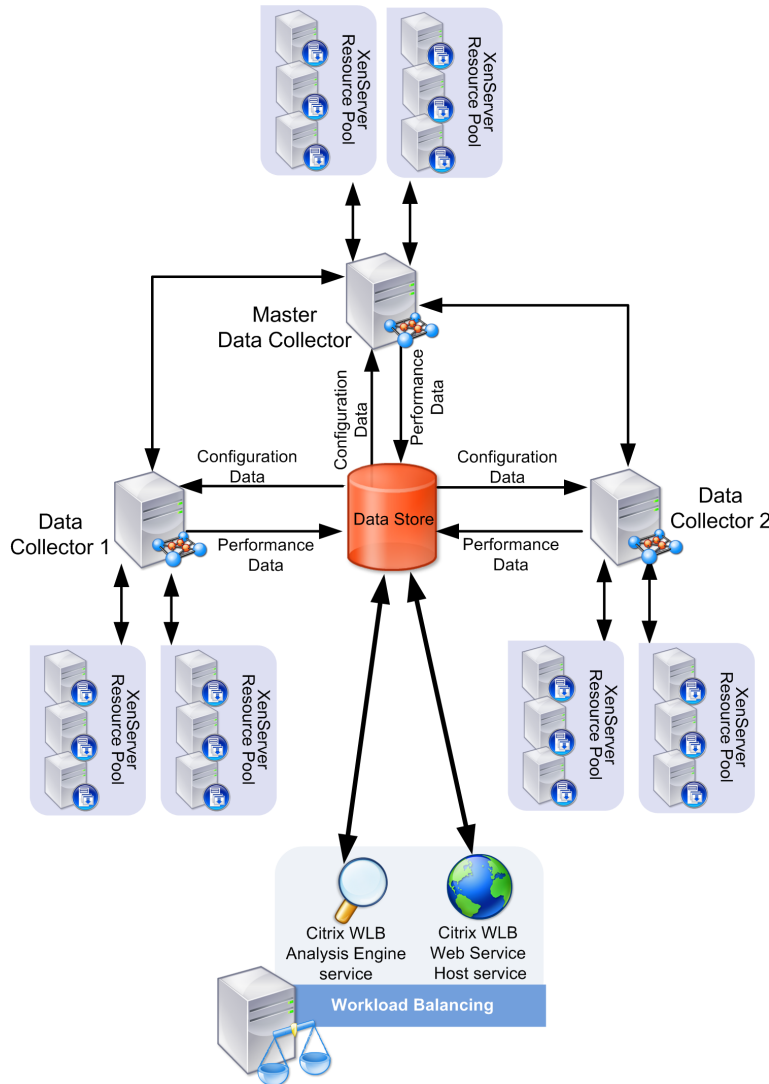
Having multiple servers for Workload Balancing's services may be necessary in large environments. For example, having multiple servers may reduce "bottlenecks." If you decide to deploy Workload Balancing's services on multiple computers, all servers must be members of mutually trusted Active Directory domains.

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Provides better scalability.</li> <li>• Can monitor more resource pools.</li> </ul>	<ul style="list-style-type: none"> <li>• More equipment to manage and, consequently, more expense.</li> </ul>

### Deploying Multiple Data Collectors

Workload Balancing supports multiple data collectors, which might be beneficial in environments with many resource pools. When you deploy multiple data collectors, the data collectors work together to ensure all XenServer resource pools are being monitored at all times.

An illustration of three data collectors monitoring XenServer resource pools



All data collectors collect data from their own resource pools. One data collector, referred to as the master, also does the following:

- Checks for configuration changes and determines the relationships between resource pools and data collectors
- Checks for new XenServer resource pools to monitor and assigns these pools to a data collector
- Monitors the health of the other data collectors

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If a data collector goes offline or you add a new resource pool, the master data collector rebalances the workload across the data collectors. If the master data collector goes offline, another data collector assumes the role of the master.

### Considering Large Environments

In large environments, consider the following:

- When you install Workload Balancing on SQL Server Express, Workload Balancing limits the size of the metrics data to 3.5GB. If the data grows beyond this size, Workload Balancing starts grooming the data, deleting older data, automatically.
- Citrix recommends putting the data store on one computer and the Workload Balancing services on another computer.
- For Workload Balancing data-store operations, memory utilization is the largest consideration.

## Workload Balancing Security

Citrix designed Workload Balancing to operate in a variety of environments, and Citrix recommends properly securing the installation. The steps required vary according to your planned deployment and your organization's security policies. This topic provides information about the available options and makes recommendations.



**Important:** Citrix does not recommend changing the privileges or accounts under which the Workload Balancing services run.

### Encryption Requirements

XenServer communicates with Workload Balancing using HTTPS. Consequently, you must create or install an SSL/TLS certificate when you install Workload Balancing (or the Web Services Host, if it is on a separate server). You can either use a certificate from a Trusted Authority or create a self-signed certificate using Workload Balancing Setup.

The self-signed certificate Workload Balancing Setup creates is not from a Trusted Authority. If you do not want to use this self-signed certificate, prepare a certificate before you begin Setup and specify that certificate when prompted.

If desired, during Workload Balancing Setup, you can export the certificate so that you can import it into XenServer after Setup.



**Note:** If you create a self-signed certificate during Workload Balancing Setup, Citrix recommends that you eventually replace this certificate with one from a Trusted Authority.

### Domain Considerations

When deploying Workload Balancing, your environment determines your domain and security requirements.

- If your Workload Balancing services are on multiple computers, the computers must be part of a domain.
- If your Workload Balancing components are in separate domains, you must configure trust relationships between those domains.



**SQL Server Authentication Requirements**

When you install SQL Server or SQL Server Express, you must configure Windows authentication (also known as Integrated Windows Authentication). Workload Balancing does not support SQL Server Authentication. For more information, see [Workload Balancing System Requirements](#).



# Chapter 2

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## Workload Balancing Installation Overview

Workload Balancing is a XenServer feature that helps manage virtual-machine workloads within a XenServer environment. Workload Balancing requires that you:

1. Install SQL Server or SQL Server Express.
2. Install Workload Balancing on one or more computers (physical or virtual). See [Designing Your Workload Balancing Deployment](#).

Typically, you install and configure Workload Balancing after you have created one or more XenServer resource pools in your environment.

You install all Workload Balancing functions, such as the Workload Balancing data store, the Analysis Engine, and the Web Service Host, from Setup.

You can install Workload Balancing in one of two ways:

- **Installation Wizard.** Start the installation wizard from Setup.exe. Citrix suggests installing Workload Balancing from the installation wizard because this method checks your system meets the installation requirements.
- **Command Line.** If you install Workload Balancing from the command line, the prerequisites are not checked. For Msixexec properties, see [Windows Installer Commands for Workload Balancing](#).

When you install the Workload Balancing data store, Setup creates the database. You do not need to run Workload Balancing Setup locally on the database server: Setup supports installing the data store across a network.

If you are installing Workload Balancing services as components on separate computers, you must install the database component before the Workload Balancing services.

After installation, you must configure Workload Balancing before you can use it to optimize workloads. For information, see [Initializing and Configuring Workload Balancing](#).

For information about System Requirements, see [Workload Balancing System Requirements](#). For installation instructions, see [Installing Workload Balancing](#).

### Workload Balancing System Requirements

This topic provides system requirements for:

- [Supported XenServer Versions](#) on page 12
- [Supported Operating Systems](#) on page 12
- [Recommended Hardware](#) on page 12
- [Data Collection Manager](#) on page 12
- [Analysis Engine](#) on page 12

- [Web Service Host](#) on page 12

For information about data store requirements, see [Workload Balancing Data Store Requirements](#).

### Supported XenServer Versions

- XenServer 5.5

### Supported Operating Systems

Unless otherwise noted, Workload Balancing components run on the following operating systems (32-bit and 64-bit):

- Windows Server 2008
- Windows Server 2003, Service Pack 2
- Windows Vista
- Windows XP Professional, Service Pack 2 or Service Pack 3

If you are installing with the User Account Control (UAC) enabled, see Microsoft's documentation.

### Recommended Hardware

Unless otherwise noted, Workload Balancing components require the following hardware (32-bit and 64-bit):

- CPU: 2GHz or faster
- Memory: 2GB recommended (1GB of RAM required)
- Disk Space: 20GB (minimum)

When all Workload Balancing services are installed on the same server, Citrix recommends that the server have a minimum of a dual-core processor.

### Data Collection Manager

Operating System Components	• Microsoft .NET Framework 3.5, Service Pack 1 or higher
Hard Drive	1GB

### Analysis Engine

Operating System Components	• Microsoft .NET Framework 3.5, Service Pack 1 or higher
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### Web Service Host

Operating System Components	• Microsoft .NET Framework 3.5, Service Pack 1 or higher
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## Workload Balancing Data Store Requirements


This topic provides information about the SQL Server versions and configurations that Workload Balancing supports. It also provides information about additional compatibility and authentication requirements.

## Installation Requirements for SQL Server

In addition to the prerequisites SQL Server and SQL Server Express require, the data store also requires the following:



**Note:** In this topic, the term *SQL Server* refers to both SQL Server and SQL Server Express unless the version is mentioned explicitly.

Operating System	<p>One of the following, as required by your SQL Server edition:</p> <ul style="list-style-type: none"> <li>• Windows Server 2008</li> <li>• Windows Server 2003, Service Pack 1 or higher</li> <li>• Windows Vista and Windows XP Professional (for SQL Server Express)</li> </ul>
Database	<p>The 32-bit or 64-bit edition of:</p> <ul style="list-style-type: none"> <li>• SQL Server 2008 Express. The 32-bit edition is available on the Workload Balancing installation media in the <b>sql</b> folder.</li> <li>• SQL Server 2008 (Standard edition or better)</li> <li>• SQL Server 2005, Service Pack 1 or higher (Standard edition or better)</li> </ul> <p> <b>Note:</b> Windows Server 2008 servers require SQL Server 2005, Service Pack 2 or higher.</p>
Required Configurations	<ul style="list-style-type: none"> <li>• Configure SQL Server for case-insensitive collation. Workload Balancing does not currently support case-sensitive collation.</li> <li>• Microsoft SQL Server 2005 Backward Compatibility Components. See <a href="#">Backwards Compatibility Requirement for SQL Server 2008</a> on page 13 for more information.</li> </ul>
Hard Drive	<p>SQL Server Express: 5GB</p> <p>SQL Server: 20GB</p>

## SQL Server Database Authentication Requirements

During installation, Setup must connect and authenticate to the database server to create the data store. Configure the SQL Server database instance to use either:

- **Windows Authentication mode**, or
- **SQL Server and Windows Authentication mode** (Mixed Mode authentication)

If you create an account on the database for use during Setup, the account must have **sysadmin** privileges for the database instance where you want to create the Workload Balancing data store.

## Backwards Compatibility Requirement for SQL Server 2008

After installing SQL Server Express 2008 or SQL Server 2008, you must install the SQL Server 2005 Backward Compatibility Components on all Workload Balancing computers before running Workload Balancing Setup. The Backward Compatibility components let Workload Balancing Setup configure the database.

The Workload Balancing installation media includes the 32-bit editions of SQL Server Express 2008 and the SQL Server 2005 Backward Compatibility Components.

- 
- While some SQL Server editions may include the Backward Compatibility components with their installation programs, their Setup program might not install them by default.
  - You can also obtain the Backward Compatibility components from the download page for the latest Microsoft SQL Server 2008 Feature Pack.

Install the files in the **sql** folder in the following order:

1. **en\_sql\_server\_2008\_express\_with\_tools\_x86.exe**. Installs SQL Server Express, 32-bit edition. Requires installing Microsoft .NET Framework 3.5, Service Pack 1 first.
2. **SQLServer2005\_BC.msi**. Installs the SQL Server 2005 Backward Compatibility Components for 32-bit computers.

## Operating System Language Support

Workload Balancing is supported on the following operating system languages:

- US English
- Japanese (Native JP)



**Note:** In configurations where the database and Web server are installed on separate servers, the operating system languages must match on both computers.

## Preinstallation Considerations

You may need to configure software in your environment so that Workload Balancing can function correctly. Review the following considerations and determine if they apply to your environment. Also, check the XenServer readme for additional, late-breaking release-specific requirements.

- **Account for Workload Balancing.** Before Setup, you must create a user account for XenServer to use to connect to Workload Balancing (specifically the Web Service Host service).

This user account can be either a domain account or an account local to the computer running Workload Balancing (or the Web Service Host service).



**Important:** When you create this account in Windows, Citrix suggests enabling the **Password never expires** option.

During Setup, you must specify the authorization type (a single user or group) and the user or group with permissions to make requests of the Web Service Host service. For additional information, see [Authorization for Workload Balancing](#).

- **SSL/TLS Certificate.** XenServer and Workload Balancing communicate over HTTPS. Consequently, during Workload Balancing Setup, you must provide either an SSL/TLS certificate from a Trusted Authority or create a self-signed certificate.
- **Group Policy.** If the server on which you are installing Workload Balancing is a member of a Group Policy Organizational Unit, ensure that current or scheduled, future policies do not prohibit Workload Balancing or its services from running.



**Note:** In addition, review the applicable release notes for release-specific configuration information.

## Installing Workload Balancing

Before installing Workload Balancing, you must:

1. Install a SQL Server or SQL Server Express database as described in [Workload Balancing Data Store Requirements](#).
2. Have a login on the SQL Server database instance that has SQL Login creation privileges. For SQL Server Authentication, the account needs **sysadmin** privileges.
3. Create an account for Workload Balancing, as described in [Preinstallation Considerations](#) and have its name on hand.
4. Configure all Workload Balancing servers to meet the system requirements described in [Workload Balancing System Requirements](#).

After Setup is finished installing Workload Balancing, verify that it *installed successfully*. Then you must [configure Workload Balancing](#) before it begins gathering data and making recommendations.

### To install Workload Balancing on a single server

The following procedure installs Workload Balancing and all of its services on one computer:

1. Launch the **Workload Balancing Setup** wizard from Autorun.exe, and select the **Workload Balancing installation** option.
2. After the initial Welcome page appears, click **Next**.
3. In the Setup Type page, select **Workload Balancing Services and Data Store**, and click **Next**. This option lets you install Workload Balancing, including the Web Services Host, Analysis Engine, and Data Collection Manager services. After you click Next, Workload Balancing Setup verifies that your system has the correct prerequisites.
4. Accept the End-User License Agreement.
5. In the Component Selection page, select all of the following components:

- **Database**. Creates and configures a database for the Workload Balancing data store.
- **Services**.
- **Data Collection Manager**. Installs the Data Collection Manager service, which collects data from the virtual machines and their hosts and writes this data to the data store.
- **Analysis Engine**. Installs the Analysis Engine service, which monitors resource pools and recommends optimizations by evaluating the performance metrics the data collector gathered.
- **Web Service Host**. Installs the service for the Web Service Host, which facilitates communications between XenServer and the Analysis Engine.

If you enable the Web Service Host component, Setup prompts you for a security certificate. You can either use the self-signed certificate Workload Balancing Setup provides or specify a certificate from a Trusted Authority.

6. In the **Database Server** page, in the **SQL Server Selection** section, select one of the following:
  - **Enter the name of a database server**. Lets you type the name of the database server that will host the data store. Use this option to specify an instance name.



**Note:** If you installed SQL Express and specified an instance name, append the server name with `\yourinstancename`. If you installed SQL Express without specifying an instance name, append the server name with `\sqlexpress`.

- 
- **Choose an existing database server** . Lets you select the database server from a list of servers Workload Balancing Setup detected on your network. Use the first option (**Enter the name of a database**) if you specified an instance name.
7. In the **Install Using** section, select one of the following methods of authentication:
    - **Windows Authentication** . This option uses your current credentials (that is, the Windows credentials you used to log on to the computer on which you are installing Workload Balancing). To select this option, your current Windows credentials must have been added as a login to the SQL Server database server (instance).
    - **SQL Server Authentication** . To select this option, you must have configured SQL Server to support Mixed Mode authentication.



**Note:** Citrix recommends clicking Test Connect to ensure Setup can use the credentials you provided to contact the database server.

8. In the **Database Information** page, select **Install a new Workload Balancing data store** and type the name you want to assign to the Workload Balancing database in SQL Server. The default database name is *WorkloadBalancing*.
9. In the **Web Service Host Account Information** page, select **HTTPS end point** (selected by default). Edit the port number, if necessary; the port is set to 8012 by default.



**Note:** If you are using Workload Balancing with XenServer, you must select HTTPS end points. XenServer can only communicate with the Workload Balancing feature over SSL/TLS. If you change the port here, you must also change it on XenServer using either the **Configure Workload Balancing** wizard or the XE commands. Make sure that the port you specify for the Web Service is open in any firewalls, including the Windows Firewall.

10. For the account (on the Workload Balancing server) that XenServer will use to connect to Workload Balancing, select the authorization type, **User** or **Group**, and type one of the following :
  - **User name**. Enter the name of the account you created for XenServer (for example, *workloadbalancing\_user*).
  - **Group name**. Enter the group name for the account you created. Specifying a group name lets you specify a group of users that have been granted permission to connect to the Web Service Host on the Workload Balancing server. Specifying a group name lets more than one person in your organization log on to Workload Balancing with their own credentials. (Otherwise, you will need to provide all users with the same set of credentials to use for Workload Balancing.)

Specifying the authorization type lets Workload Balancing recognize the XenServer's connection. For more information, see [Authorization for Workload Balancing](#). You do not specify the password until you configure Workload Balancing.

11. In the **SSL/TLS Certificate** page, select one of the following certificate options:
  - **Select existing certificate from a Trusted Authority**. Specifies a certificate you generated from a Trusted Authority before Setup. Click **Browse** to navigate to the certificate.
  - **Create a self-signed certificate with subject name**. Setup creates a self-signed certificate for the Workload Balancing server. Delete the certificate-chain text and enter a subject name.
  - **Export this certificate for import into the certificate store on XenServer**. If you want to import the certificate into the Trusted Root Certification Authorities store on the computer running XenServer, select this check box. Enter the full path and file name where you want the certificate saved.
12. Click **Install**.



## To install the data store separately

The following procedure installs the Workload Balancing data store only:

1. From any server with network access to the database, launch the **Workload Balancing Setup** wizard from Autorun.exe, and select the **WorkloadBalancing** installation option.
2. After the initial **Welcome** page appears, click **Next**.
3. In the **Setup Type** page, select **Workload Balancing Database Only**, and click **Next**.

This option lets you install the Workload Balancing data store only.

After you click **Next**, Workload Balancing Setup verifies that your system has the correct prerequisites.

4. Accept the **End-User License Agreement**, and click **Next**.
5. In the **Component Selection** page, accept the default installation and click **Next**.

This option creates and configures a database for the Workload Balancing data store.

6. In the **Database Server** page, in the **SQL Server Selection** section, select one of the following:
  - **Enter the name of a database server.** Lets you type the name of the database server that will host the data store. Use this option to specify an instance name.



**Note:** If you installed SQL Express and specified an instance name, append the server name with `\yourinstancename`. If you installed SQL Express without specifying an instance name, append the server name with `\sqlexpress`.

- **Choose an existing database server.** Lets you select the database server from a list of servers Workload Balancing Setup detected on your network.
7. In the **Install Using** section, select one of the following methods of authentication:
    - **Windows Authentication.** This option uses your current credentials (that is, the Windows credentials you used to log on to the computer on which you are installing Workload Balancing). To select this option, your current Windows credentials must have been added as a login to the SQL Server database server (instance).
    - **SQL Server Authentication.** To select this option, you must have configured SQL Server to support Mixed Mode authentication.



**Note:** Citrix recommends clicking **Test Connect** to ensure Setup can use the credentials you provided to contact the database server.

8. In the **Database Information** page, select **Install a new Workload Balancing data store** and type the name you want to assign to the Workload Balancing database in SQL Server. The default database name is *WorkloadBalancing*.
9. Click **Install** to install the data store.

## To install Workload Balancing components separately

The following procedure installs Workload Balancing services on separate computers:

1. Launch the **Workload Balancing Setup** wizard from Autorun.exe, and select the **WorkloadBalancing** installation option.
2. After the initial **Welcome** page appears, click **Next**.
3. In the **Setup Type** page, select **Workload Balancing Server Services and Database**.

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This option lets you install Workload Balancing, including the Web Services Host, Analysis Engine, and Data Collection Manager services.

Workload Balancing Setup verifies that your system has the correct prerequisites.

4. Accept the **End-User License Agreement**, and click **Next**.
5. In the **Component Selection** page, select the services you want to install:
  - **Services** .
  - **Data Collection Manager**. Installs the Data Collection Manager service, which collects data from the virtual machines and their hosts and writes this data to the data store.
  - **Analysis Engine**. Installs the Analysis Engine service, which monitors resource pools and recommends optimizations by evaluating the performance metrics the data collector gathered.
  - **Web Service Host**. Installs the service for the Web Service Host, which facilitates communications between XenServer and the Analysis Engine.

If you enable the Web Service Host component, Setup prompts you for a security certificate. You can either use the self-signed certificate Workload Balancing Setup provides or specify a certificate from a Trusted Authority.

6. In the **Database Server** page, in the **SQL Server Selection** section, select one of the following:
  - **Enter the name of a database server**. Lets you type the name of the database server that is hosting the data store.



**Note:** If you installed SQL Express and specified an instance name, append the server name with `\yourinstancename` . If you installed SQL Express without specifying an instance name, append the server name with `\sqlexpress`.

- **Choose an existing database server**. Lets you select the database server from a list of servers Workload Balancing Setup detected on your network.



**Note:** Citrix recommends clicking **Test Connect** to ensure Setup can use the credentials you provided to contact the database server successfully.

7. In the **Web Service Information** page, select **HTTPS end point** (selected by default) and edit the port number, if necessary. The port is set to 8012 by default.



**Note:** If you are using Workload Balancing with XenServer, you must select HTTPS end points. XenServer can only communicate with the Workload Balancing feature over SSL/TLS. If you change the port here, you must also change it on XenServer using either the **Configure Workload Balancing** wizard or the XE commands. Make sure that the port you specify for the Web Service is open in any firewalls, including the Windows Firewall.

8. For the account (on the Workload Balancing server) that XenServer will use to connect to Workload Balancing, select the authorization type, **User** or **Group**, and type one of the following:
  - **User name**. Enter the name of the account you created for XenServer (for example, `workloadbalancing_user`).
  - **Group name**. Enter the group name for the account you created. Specifying a group name lets more than one person in your organization log on to Workload Balancing with their own credentials. (Otherwise, you will need to provide all users with the same set of credentials to use for Workload Balancing.)
  - Specifying the authorization type lets Workload Balancing recognize the XenServer's connection. For more information, see [Authorization for Workload Balancing](#). You do not specify the password until you configure Workload Balancing.
9. In the **SSL/TLS Certificate** page, select one of the following certificate options:

- **Select existing certificate from a Trusted Authority.** Specifies a certificate you generated from a Trusted Authority before Setup. Click **Browse** to navigate to the certificate.
- **Create a self-signed certificate with subject name.** Setup creates a self-signed certificate for the Workload Balancing server. To change the name of the certificate Setup creates, type a different name.
- **Export this certificate for import into the certificate store on XenServer.** If you want to import the certificate into the Trusted Root Certification Authorities store on the computer running XenServer, select this check box. Enter the full path and file name where you want the certificate saved.

10. Click **Install**.

### To verify your Workload Balancing installation

Workload Balancing Setup does not install an icon in the Windows Start menu. Use this procedure to verify that Workload Balancing installed correctly before trying to connect to Workload Balancing with the Workload Balancing Configuration wizard.

1. Verify Windows **Add or Remove Programs** lists **Citrix Workload Balancing** in its in the list of currently installed programs.
2. Check for the following services in the Windows **Services** panel:
  - Citrix WLB Analysis Engine
  - Citrix WLB Data Collection Manager
  - Citrix WLB Web Service Host

All of these services must be started and running before you start configuring Workload Balancing.

3. If Workload Balancing appears to be missing, check the installation log to see if it installed successfully:
  - If you used the Setup wizard, the log is at %Documents and Settings%\username\Local Settings\Temp\msibootstrapper2CSM\_MSI\_Install.log (by default). On Windows Vista and Windows Server 2008, this log is at %Users%\username\AppData\Local\Temp\msibootstrapper2CSM\_MSI\_Install.log. User name is the name of the user logged on during installation.
  - If you used the Setup properties (Msiexec), the log is at C:\log.txt (by default) or wherever you specified for Setup to create it.



# Chapter 3

## Windows Installer Commands for Workload Balancing

The Workload Balancing installation supports using the Msiexec command for Setup. The Msiexec command lets you install, modify, and perform operations on Windows Installer (.msi) packages from the command line.

Set properties by adding *Property="value"* on the command line after other switches and parameters.

The following sample command line performs a full installation of the Workload Balancing Windows Installer package and creates a log file to capture information about this operation.

```
msiexec.exe /I C:\path-to-msi\workloadbalancingx64.msi /quiet
PREREQUISITES_PASSED="1"
DBNAME="WorkloadBalancing1"
DATABASESERVER="WLB-DB-SERVER\INSTANCENAME"
HTTPS_PORT="8012"
WEBSERVICE_USER_CB="0"
USERORGROUPACCOUNT="domain\WLBgroup"
CERT_CHOICE="0"
CERTNAMEPICKED="cn=wlb-cert1"
EXPORTCERT=1
EXPORTCERT_FQFN="C:\Certificates\WLB Cert.cer"
INSTALLDIR="C:\Program Files\Citrix\WLB"
ADDLOCAL="Database,Complete,Services,DataCollection,
Analysis_Engine,DWM_Web_Service" /l*v log.txt
```

There are two Workload Balancing Windows Installer packages: `workloadbalancing.msi` and `workloadbalancingx64.msi`. If you are installing Workload Balancing on a 64-bit operating system, specify `workloadbalancingx64.msi`.

To see if Workload Balancing Setup succeeded, see [To verify your Workload Balancing installation](#).



**Important:** Workload Balancing Setup does not provide error messages if you are installing Workload Balancing using Windows Installer commands if the system is missing prerequisites. Instead, installation fails.

### ADDLOCAL

#### Definition

Specifies one or more Workload Balancing features to install. The values of ADDLOCAL are Workload Balancing components and services.

---

### Possible values

- **Database.** Installs the Workload Balancing data store.
- **Complete.** Installs all Workload Balancing features and components.
- **Services.** Installs all Workload Balancing services, including the Data Collection Manager, the Analysis Engine, and the Web Service Host service.
- **DataCollection.** Installs the Data Collection Manager service.
- **Analysis\_Engine.** Installs the Analysis Engine service.
- **DWM\_Web\_Service.** Installs the Web Service Host service.

### Default value

Blank

### Remarks

- Separate entries by commas.
- The values must be installed locally.
- You must install the data store on a shared or dedicated server before installing other services.
- You can only install services standalone, without installing the database simultaneously, if you have a Workload Balancing data store installed and specify it in the installation script using *DBNAME* and *DATABASESERVER* for the database type.

## CERT\_CHOICE

### Definition

Specifies for Setup to either create a certificate or use an existing certificate.

### Possible values

- **0.** Specifies for Setup to create a new certificate.
- **1.** Specifies an existing certificate.

### Default value

1

### Remarks

- You must also specify *CERTNAMEPICKED*.

## CERTNAMEPICKED

### Definition

Specifies the subject name when you use Setup to create a self-signed SSL/TLS certificate. Alternatively, this specifies an existing certificate.

### Possible values

**cn.** Use to specify the subject name of certificate to use or create.

#### Example

`cn=wlb-kirkwood`, where *wlb-kirkwood* is the name you are specifying as the name of the certificate to create or the certificate you want to select.

### Default value

Blank.

### Remarks

You must specify this parameter with [CERT\\_CHOICE](#).

## DATABASESERVER

### Definition

Specifies the database, and its instance name, where you want to install the data store. You can also use this property to specify an existing database that you want to use or upgrade.

### Possible values

User defined.



**Note:** If you specified an instance name when you installed SQL Server or SQL Express, append the server name with `\yourinstancename`. If you installed SQL Express without specifying an instance name, append the server name with `\sqlexpress`.

### Default value

Local

#### Example

`DATABASESERVER="WLB-DB-SERVER\SQLEXPRESS"`, where `WLB-DB-SERVER` is the name of your database server and `SQLEXPRESS` is the name of the database instance.

### Remarks

- Required property for all installations.
- Whether installing a database or connecting to an existing data store, you must specify this property with `DBNAME`.
- Even if you are specifying a database on the same computer as you are performing Setup, you still must define the name of the database.
- When you specify `DATABASESERVER`, in some circumstances, you must specify also [WINDOWS\\_AUTH](#) and its accompanying properties.

---

## DBNAME

### Definition

The name of the Workload Balancing database that Setup will create or upgrade during installation.

### Possible values

User defined.

### Default value

WorkloadBalancing

### Remarks

- Required property for all installations. You must set a value for this property.
- Whether connecting to or installing a data store, you must specify this property with `DATABASESERVER`.
- Even if you are specifying a database on the same computer as you are performing Setup, you still must define the name of the database.
- Localhost is not a valid value.

## DBUSERNAME

### Definition

Specifies the user name for the Windows or SQL Server account you are using for database authentication during Setup.

### Possible values

User defined.

### Default value

Blank

### Remarks

- This property is used with `WINDOWS_AUTH` and `DBPASSWORD`.
- Because you specify the server name and instance using `DATABASESERVER`, do not qualify the user name.



## DBPASSWORD

### Definition

Specifies the password for the Windows or SQL Server account you are using for database authentication during Setup.

### Possible values

User defined.

### Default value

Blank.

### Remarks

- This property is used with [WINDOWS\\_AUTH](#) and [DBUSERNAME](#).

## EXPORTCERT

### Definition

Set this value to export an SSL/TLS certificate from the server on which you are installing Workload Balancing. Exporting the certificate lets you import it into the certificate stores of computers running XenServer.

### Possible values

- **0**. Does not exports the certificate.
- **1**. Exports the certificate and saves it to the location of your choice with the file name you specify using `EXPORTCERT_FQFN`.

### Default value

0

### Remarks

- Use with [EXPORTCERT\\_FQFN](#), which specifies the file name and path.
- Setup does not require this property to run successfully. (That is, you do not have to export the certificate.)
- This property lets you export self-signed certificates that you create during Setup as well as certificates that you created using a Trusted Authority.

---

## EXPORTCERT\_FQFN

### Definition

Set to specify the path (location) and the file name you want Setup to use when exporting the certificate.

### Possible values

The fully qualified path and file name to which to export the certificate. For example, C:\Certificates\WLBCert.cer.

### Default value

Blank.

### Remarks

You must use this property with [EXPORTCERT](#).

## HTTPS\_PORT

### Definition

Use this property to change the default port over which Workload Balancing (the Web Service Host service) communicates with XenServer.

Specify this property when you are running Setup on the computer that will host the Web Service Host service. This may be either the Workload Balancing computer, in a one-server deployment, or the computer hosting the services.

### Possible values

User defined.

### Default value

8012

### Remarks

- If you set a value other than the default for this property, you must also change the value of this port in XenServer, which you can do with the **Configure Workload Balancing** wizard. The port number value specified during Setup and in the **Configure Workload Balancing** wizard must match.

## INSTALLDIR

### Definition

*Installation directory*, where *Installation directory* is the location where the Workload Balancing software is installed.

### Possible values

User configurable

### Default value

C:\Program Files\Citrix

## PREREQUISITES\_PASSED

### Definition

You must set this property for Setup to continue. When enabled (`PREREQUISITES_PASSED = 1`), Setup skips checking preinstallation requirements, such as memory or operating system configurations, and lets you perform a command-line installation of the server.

### Possible values

- **1**. Indicates for Setup to not check for preinstallation requirements on the computer on which you are running Setup. You must set this property to **1** or Setup fails.

### Default value

0

### Remarks

- This is a required value.

## RECOVERYMODEL

### Definition

Specifies the SQL Server database recovery model.

### Possible values

- **SIMPLE**. Specifies the SQL Server Simple Recovery model. Lets you recover the database from the end of any backup. Requires the least administration and consumes the lowest amount of disk space.

- 
- **FULL**. Specifies the Full Recovery model. Lets you recover the database from any point in time. However, this model uses consumes the largest amount of disk space for its logs.
  - **BULK\_LOGGED**. Specifies the Bulk-Logged Recovery model. Lets you recover the database from the end of any backup. This model consumes less logging space than the Full Recovery model. However, this model provides more protection for data than the Simple Recovery model.

**Default value**

SIMPLE

**Remarks**

For more information about SQL Server recovery models, see the Microsoft's MSDN Web site and search for "Selecting a Recovery Model."

## USERORGROUPACCOUNT

**Definition**

Specifies the account or group name that corresponds with the account XenServer will use when it connects to Workload Balancing. Specifying the name lets Workload Balancing recognize the connection.

**Possible values**

- **User name**. Specify the name of the account you created for XenServer (for example, `workloadbalancing_user`).
- **Group name**. Specify the group name for the account you created. Specifying a group name lets more than one person in your organization log on to Workload Balancing with their own credentials. (Otherwise, you will have to provide all users with the same set of credentials to use for Workload Balancing.)

**Default value**

Blank.

**Remarks**

- This is a required parameter. You must use this parameter with [WEBSERVICE\\_USER\\_CB](#).
- To specify this parameter, you must create an account on the Workload Balancing server before running Setup. For more information, see [Authorization for Workload Balancing](#).
- This property does not require specifying another property for the password. You do not specify the password until you configure Workload Balancing.

## WEBSERVICE\_USER\_CB

**Definition**

Specifies the authorization type, user account or group name, for the account you created for XenServer before Setup. For more information, see [Authorization for Workload Balancing](#).

**Possible values**

- **0.** Specifies the type of data you are specifying with `USERORGROUPACCOUNT` corresponds with a group.
- **1.** Specifies the type of data you are specifying with `USERORGROUPACCOUNT` corresponds with a user account.

**Default value**

0

**Remarks**

- This is a required property. You must use this parameter with `USERORGROUPACCOUNT`.

## WINDOWS\_AUTH

**Definition**

Lets you select the authentication mode, either Windows or SQL Server, when connecting to the database server during Setup. For more information about database authentication during Setup, see [SQL Server Database Authentication Requirements](#) on page 13.

**Possible values**

- **0.** SQL Server authentication
- **1.** Windows authentication

**Default value**

1

**Remarks**

- If you are logged into the server on which you are installing Workload Balancing with Windows credentials that have an account on the database server, you do not need to set this property.
- If you specify `WINDOWS_AUTH`, you must also specify `DBUSERNAME` and `DBPASSWORD` if you want to specify an account other than the one you are logged onto the server on which you are running Setup.
- The account you specify must be a login on the SQL Server database with **sysadmin** privileges.

