

# VMware App Volumes Installation Guide

VMware App Volumes 2.14



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# About This Book

The *VMware App Volumes Installation Guide* provides information on how to install, deploy, and upgrade VMware App Volumes<sup>®</sup>

## Intended Audience

This information is intended for experienced IT system administrators who are familiar with virtual machine technology and datacenter operations.

## VMware Technical Publications Glossary

VMware Technical Publications provides a glossary of terms that might be unfamiliar to you. For definitions of terms as they are used in VMware technical documentation, go to <http://www.vmware.com/support/pubs>.

# Introduction to VMware App Volumes

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VMware App Volumes provides a system to deliver applications to desktops through virtual disks. Applications are bundled in AppStacks and delivered by attaching a standard VMDK file to a virtual machine. You can centrally manage the applications with the App Volumes Manager and there is no need to modify the desktops or individual applications. Applications delivered using App Volumes look and feel natively installed and you can update or replace the applications in real time.

All applications are provisioned during login time and App Volumes users have a persistent user experience wherein they can install their own applications and have them persist across sessions.

A typical App Volumes environment consists of a few key components that interact with each other and an external infrastructure.

**Table 2-1. App Volumes Components**

Component	Description
App Volumes Administrator or User	Active Directory (AD) or organizational unit (OU) account to which AppStacks and Writable Volumes are assigned. User must have local administrator privileges.
App Volumes Manager	Web-based interface integrated with Active Directory (AD) and vSphere. Consists of services that orchestrate application delivery and interface the vSphere environment. You can use App Volumes Manager for the following tasks: <ul style="list-style-type: none"><li>■ Manage assignments of volumes to users, groups, and target computers.</li><li>■ Collect AppStacks and Writable Volumes usage information.</li><li>■ Maintain a history of administrative actions.</li><li>■ Automate assignment of applications and Writable Volumes for agents during desktop startup and user login.</li></ul> See <a href="#">Install App Volumes Manager</a> and the Configuring App Volumes Manager in the administration guide.
App Volumes database	A Microsoft SQL or SQL Server Express database that contains configuration information for AppStacks, Writable Volumes, and users. See <a href="#">Software Requirements</a> .
App Volumes agent	Software installed on all Windows desktops where AppStacks and Writable Volumes are assigned. See <a href="#">Install App Volumes Agent</a> .

**Table 2-1. App Volumes Components (Continued)**

Component	Description
AppStacks	This is a read-only volume containing one or more Windows applications. Once provisioned, an individual AppStack or multiple AppStacks can be mapped to a user, a group of users, or computers at login, or in real-time and to computers only at the time of startup. Refer to the administration guide for details.
Writable Volume	<p>Read and write volume for persisting user-specific information between sessions. You can use Writable Volumes to store the following data:</p> <ul style="list-style-type: none"> <li>■ User installed applications and application settings</li> <li>■ Application licensing information</li> <li>■ User and computer profile</li> <li>■ Data files</li> </ul> <p><b>Note</b> Users can have more than one Writable Volume assigned to them. For details about using Writable Volumes and restrictions, see the Writable Volumes sections in the administration guide.</p>
Provisioning Desktop	A clean virtual machine that contains the necessary applications for installation into AppStacks. The desktop must have the App Volumes agent installed and configured to connect to the App Volumes Manager. See the administration guide for information about AppStacks.
Target Computer	A VDI desktop, physical client computer, Remote Desktop Services (RDS) Host or Citrix XenApp Server where users log in to access their applications delivered from the AppStack. The target computer must have the App Volumes agent installed and configured to connect to the App Volumes Manager.

**Table 2-1. App Volumes Components (Continued)**

Component	Description
VMware vCenter Server	App Volumes uses vCenter Server to connect to resources within the vSphere environment. See <i>Configuring a Machine Manager</i> section in the App Volumes administration guide.
Storage Group	<p>You can use Storage Groups to automatically replicate AppStacks or distribute Writable Volumes across many datastores. They are also used to define a group of datastores that should all contain the same AppStacks. Some of the attributes for the group, such as template location and strategy, only apply when using the group for distributing writable volumes. The distribution strategy setting controls how Writable Volumes are distributed across the group.</p> <ul style="list-style-type: none"> <li>■ Spread. Distribute files evenly across all the storage locations. When a file is created, the storage with the most available space is selected.</li> <li>■ Round Robin. Distribute files by sequentially using the storage locations. When a file is created, the storage with the oldest used time is selected.</li> </ul> <p>You can manage the capabilities of storage groups by selecting required storage and ignoring unwanted or slow-performing storages while mounting volumes. When you mark a storage as <b>Not Attachable</b>, the App Volumes Manager ignores the storage while mounting volumes.</p> <p>For example, you can set up two vCenter Server instances. Each server can have a local storage and shared storage capability. You can mark the slower-performing storage as <b>Not Attachable</b>. This storage is ignored by the App Volumes Manager while mounting volumes and can be used solely for replication of AppStacks.</p>

# System Requirements

You must verify that your system meets the requirements before you install VMware App Volumes.

This chapter includes the following topics:

- [Software Requirements](#)
- [Infrastructure and Networking Requirements](#)

## Software Requirements

Ensure that your system meets certain database and browser requirements when working with App Volumes.

### Database Requirements

App Volumes Manager supports different versions of the Microsoft SQL database.

- SQL Server 2012 SP1, SP2, and SP3 (when App Volumes Manager is installed on Microsoft Server 2012 R2), Express, Standard, and Enterprise editions
- SQL Server 2008 R2 SP2, Express, Standard, Enterprise, and Datacenter editions
- SQL Server 2014 SP1 and SP2 (supported on App Volumes 2.12 and later)
- SQL Server 2016 SP1

For High Availability, App Volumes supports the following database features :

- SQL Server Clustered Instances
- SQL Server Mirroring

### Browser Requirements

Use App Volumes Manager on one of the following supported browsers:

- Internet Explorer 9 or later
- Mozilla Firefox 28 or later
- Safari 7 or later
- Google Chrome 21 or later



## Infrastructure and Networking Requirements

Infrastructure and networking requirements for App Volumes include requirements for App Volumes Manager, agent, and Active Directory.

**Table 3-1. Infrastructure Requirements**

Component	Details
App Volumes Manager	<ul style="list-style-type: none"> <li>■ Microsoft Windows Server 2008 R2, Standard, Enterprise, or Datacenter editions</li> <li>■ Microsoft Windows Server 2012 R2 Standard and Datacenter editions</li> <li>■ Microsoft Windows Server 2016</li> <li>■ .NET 3.5 framework</li> <li>■ 4 vCPU required</li> <li>■ 4 GB RAM</li> <li>■ 1 GB disk space</li> </ul>
App Volumes Agent (client OS)	<ul style="list-style-type: none"> <li>■ Windows Server 2008 R2, 2012 R2, and 2016 for Server VDI</li> <li>■ Microsoft Windows 7 SP1 Professional and Enterprise editions (Microsoft Hot fix 3033929 applied)</li> <li>■ Microsoft Windows 8.1 Professional and Enterprise</li> <li>■ Microsoft Windows 10 Build 1607 Current Branch &amp; LTSC</li> <li>■ Microsoft Windows 10 Build 1607 Current Branch for Business</li> <li>■ Microsoft Windows 10, version 1703, also known as Creators Update</li> <li>■ Microsoft Windows 10, version 1709 and 1803</li> <li>■ Windows 10 Anniversary edition Version 1607</li> <li>■ Both 64-bit and 32-bit versions of OS are supported</li> <li>■ 1 GB RAM</li> <li>■ 1 vCPU</li> <li>■ 5 MB disk space</li> </ul> <p data-bbox="810 1392 1412 1451"><b>Note</b> Disable the GPO Control Read and Write Access to Removable Devices or Media option.</p>
App Volumes Agent (RDSH)	<ul style="list-style-type: none"> <li>■ Microsoft Windows Server 2008 R2 Standard, Enterprise, and Datacenter editions with RDSH role enabled</li> <li>■ Microsoft Windows Server 2012 R2 Standard and Datacenter editions with RDSH role enabled</li> <li>■ Microsoft Windows Server 2016 with 2K16</li> <li>■ 1 vCPU</li> <li>■ 1 GB RAM</li> <li>■ 5 MB disk space</li> </ul>

**Table 3-1. Infrastructure Requirements (Continued)**

Component	Details
VMware software for VMDK Direct Attached Mode (Preferred)	<ul style="list-style-type: none"> <li>■ VMware ESXi 5.5.x, 6.x and vCenter Server (ESXi and vCenter Server must be the same version)</li> <li>■ VMware Virtual SAN 6.2</li> <li>■ VMware Horizon with View 6.0.1 or later</li> <li>■ Citrix XenDesktop 5.5, 5.6, and 7.x</li> <li>■ Citrix XenApp 6.5 and 7.x</li> <li>■ ESXi 5.5 U3b or 6.0 U1 required for vMotion support (Storage vMotion is not supported)</li> </ul>
SMB file share if using VHD mode	<ul style="list-style-type: none"> <li>■ SMB 2.0</li> <li>■ SMB version 3.02 (Windows Server 2012 R2) is recommended for a better performance</li> </ul>
Active Directory	Microsoft Active Directory domain, 2003 functional level or later. Read-only account access.

**Table 3-2. Networking Requirements**

Component	Purpose	Port number
App Volumes Manager	Agent and Manager communications	<ul style="list-style-type: none"> <li>■ TCP 80 (HTTP)</li> <li>■ TCP 443 (HTTPS)</li> <li>■ TCP 5985 for PowerShell Web services</li> </ul>
App Volumes SQL Database	Database communication	TCP 1433 (SQL)

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## Installing App Volumes

Installing App Volumes involves installing the App Volumes Manager, App Volumes agents, and related components.

Before installing App Volumes, ensure that you have created and set up the requisite user accounts and Active Directory credentials.

This chapter includes the following topics:

- [User Accounts and Credentials](#)
- [Install App Volumes Manager](#)
- [Install App Volumes Agent](#)
- [Verify License](#)
- [Scaling App Volumes Manager](#)

### User Accounts and Credentials

Users and administrators require certain account permissions to install and manage App Volumes components.

#### User Accounts

You can create user accounts and grant privileges for different roles. User names must contain only ASCII characters:

- To integrate App Volumes with vCenter Server, you must create a service account within a vCenter Server with administrator privileges. Optionally, you can create a service account with privileges granted by a custom user role.
- If you plan to use a direct connection to the ESXi host or plan to use the **Mount to Host** option with a vCenter Server connection, you must have administrator privileges on all ESXi hosts.

## Active Directory Credentials

The App Volumes Manager connects to Active Directory using the service account. To prepare for installation, you must create an account within the Active Directory domain that meets the following requirements:

- Provides read access to the Active Directory domain. Administrator privileges are not required.
- Has a password that does not expire.

If your environment contains domains that are configured for one-way or two-way trust, you can configure separate credentials to access these domains. These credentials are used when connecting to any trust instead of the primary domain credentials.

## Administrators Group

Access to the App Volumes Manager is restricted to the App Volumes administrators group. When you perform the initial configuration, you must provide the name of the Active Directory security group that will have access to the App Volumes Manager.

Local administrator privileges are required for the following actions:

- Install App Volumes components on target servers.
- Use writable volumes with user-installed applications.
- Provision AppStack.

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**Note** The Active Directory service account user is not required to be an administrator.

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## Install App Volumes Manager

App Volumes Manager is a Web console that is used for administration and configuration of App Volumes and assignment of AppStacks and writable volumes.

### Prerequisites

- Download the App Volumes installer.
- Ensure that you have the SQL Server authentication details with you.
- Verify that your environment meets the system requirements. See [Infrastructure and Networking Requirements](#) and [Software Requirements](#).
- Verify that your account has local administrator privileges on the target server.

### Procedure

- 1 Run the `setup.exe` installer file.
- 2 Read and accept the End-User License Agreement and click **Next**.
- 3 Select **Install App Volumes Manager** and click **Next**.

## 4 Select a database option:

Option	Description
Local installation of SQL Server Express	The database is installed automatically.
Remote SQL Server 2012	Enter the required server authentication details.

## 5 Select the database connection method.

Option	Description
Windows Integrated Authentication	Provide owner permissions on the new database to the App Volumes Manager server.
SQL authentication	Create a user and provide owner permissions to the user on the new database.

A new ODBC connection named svmanager is created.

6 Select the **Overwrite existing database (if any)** check box and click **Next**.

**Note** Ensure that the **Overwrite existing database (if any)** check box is deselected when you upgrade App Volumes or install an additional instance of App Volumes Manager.

## 7 Select the ports on which App Volumes Manager can listen for incoming connections.

By default, communication occurs over SSL and the default value of the port is 443. Specify the port value as 80 (or equivalent) for App Volumes Manager to listen on a HTTP port.

8 (Optional) Check the **Allow Connections over HTTP (insecure)** box.

If you have specified the App Volumes Manager to listen on a HTTP port in Step 7, you must check this box. Checking this box disables SSL and all communication with App Volumes Manager becomes insecure .

**Caution** Do not enable HTTP in a production environment.

9 (Optional) Check the **Allow TLS v1.0 protocol (not recommended)** box if you want to configure a TLS v1.0 connection for App Volumes Manager.

**Caution** This box is unchecked by default. Enabling TLS v1.0 is not recommended.

10 Click **Next** and enter the path where App Volumes Manager should be installed..11 Click **Install** to begin the installation.**What to do next**

Log in to App Volumes Manager and configure the Active Directory, vCenter Server, Machine Managers, and Storage as soon as you have installed App Volumes Manager. Configure the connection to the SQL database and SSL for App Volumes Manager. See the administration guide for detailed information.

## Configure a SQL Server ODBC Connection

When you install App Volumes Manager, a new ODBC connection is created. You must configure a connection to the SQL database and set up the required permissions.

See the Microsoft SQL ODBC documentation for instructions about configuring the SQL Server ODBC connection.

### Prerequisites

Verify that `svmanager_setup.exe` executable is located on the machine where App Volumes Manager is installed.

### Procedure

- 1 Log in as administrator to the machine where App Volumes Manager is installed.
- 2 Navigate to `C:\Program Files (86)\Cloud Volumes\Manager`.
- 3 Run `svmanager_setup.exe`.
- 4 Follow the on-screen instructions to connect to the database and set up permissions.

## Install App Volumes Agent

After you have installed App Volumes Manager, install the App Volumes agent on the provisioning computer and target desktops.

For improved security when using the App Volumes agent, disable weak ciphers in SSL and TLS to ensure that Windows-based machines running the agent do not use weak ciphers when they communicate using SSL/TLS protocol. See *Disable Weak Ciphers in SSL and TLS* in the Horizon 7 documentation.

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**Important** Do not install the agent on the same machine where the App Volumes Manager is installed.

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You can also install the agent silently using the Microsoft Windows Installer (MSI). See [Install App Volumes Agent Silently](#) for more information.

### Prerequisites

- Ensure that you have installed the App Volumes Manager and you have the host IP address and port number.
- Verify that your environment meets the system requirements. See [Chapter 3 System Requirements](#).
- Verify that your account has local administrator privileges on the target computer.
- Install Windows Updates from January 2016 onwards on the target computer.
- If you intend to use this virtual machine as a provisioning computer, create a clean snapshot or take a backup of this machine. Revert to this snapshot or the backup before provisioning new AppStacks.

**Procedure**

- 1 Run the App Volumes installer.

The same installer is used to install App Volumes Manager and the agent.

- 2 Read and accept the End User License Agreement and click **Next**.

- 3 Select **Install App Volumes Agent** and click **Next**.

- 4 Enter the IP address and port number.

The default port number for App Volumes Manager is 443. Enter 80 for the port number if you have configured App Volumes Manager to listen on an HTTP port.

- 5 (Optional) Check the **Disable Certificate Validation with App Volumes Manager** box if you do not want the agent to validate the App Volumes Manager certificate.

Certificate validation is enabled by default.

- 6 Click **Install** and follow any on-screen instructions.

- 7 Click **Finish** to exit the wizard after the installation is completed.

- 8 Restart your provisioning virtual machine to complete the agent installation.

**What to do next**

Configure SSL certificates for the agent. You can also disable SSL communication and certificate validation between App Volumes Manager and agent. See the administration guide for detailed information.

**Install App Volumes Agent Silently**

You can install App Volumes agent silently using the Microsoft Windows Installer (MSI).

You perform a silent install using the command line and you do not need to use the App Volumes installer. You can also upgrade the agent silently. See [Upgrade App Volumes Agent Silently](#).

**Prerequisites**

- Ensure that you have installed the App Volumes Manager and you have the host IP address and port number.
- Verify that your environment meets the system requirements. See [Chapter 3 System Requirements](#).
- Verify that your account has local administrator privileges on the target computer.
- Install Windows Updates from January 2016 onwards on the target computer.
- If you intend to use this virtual machine as a provisioning computer, create a clean snapshot or take a back up of this machine. Revert to this snapshot or backup before you provision new AppStacks.

**Procedure**

- 1 Open a Windows command prompt on your machine.

- 2 Type the following command to install the agent:

```
msiexec.exe /i "App Volumes Agent.msi" /qn MANAGER_ADDR=<Manager_FQDN/IP>
MANAGER_PORT=<port>
```

## Verify License

You must verify the App Volumes license information before configuring other components. A valid license is required to activate and use App Volumes.

### Prerequisites

Ensure that you have downloaded and installed the App Volumes license file. The production license file can be downloaded from the VMware App Volumes product download page.

### Procedure

- 1 From the App Volumes Manager console, click **Get Started > License**.
- 2 Verify the license information that is displayed.  
If you have an evaluation license, you can use App Volumes until the expiration date.
- 3 (Optional) To apply a different license, click **Edit** and browse to the location of the license you want to upload.
- 4 Click **Upload** to upload the App Volumes license file.
- 5 Click **Next** and follow on-screen instructions.

## Scaling App Volumes Manager

You can install an additional App Volumes Manager component on multiple servers and point them to a shared SQL database.

Multiple App Volumes Managers can be load balanced by a hardware load balancer. Alternatively, you can configure the App Volumes agent to communicate with multiple App Volumes Manager servers.

To install additional App Volumes Manager instances, follow standard installation procedures and point a new instance to the existing SQL database. See [Install App Volumes Manager](#).

---

**Note** Ensure that the **Create a new database or overwrite the existing database** check box in the installation wizard is deselected.

---

While configuring an App Volumes agent, you can specify the load balanced FQDN of the App Volumes Manager.

Configure the App Volumes agent to communicate with multiple managers by modifying the following registry key:

```
HKLM\SYSTEM\CurrentControlSet\Services\svservice\Parameters
```

Add string values named ManagerN (where N is number from 0 to 9) and value data of App Volumes Manager FQDN.



# Upgrading App Volumes Components

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You can upgrade the different App Volumes components using the installer.

If you have App Volumes 2.12 or later installed on your system, you can upgrade to the latest version without uninstalling your currently installed version. However, you must upload the prepackaged templates again manually.

If you have App Volumes 2.11 or earlier installed on your system, you must first uninstall that version before upgrading to the latest version.

This chapter includes the following topics:

- [Upgrade App Volumes Manager](#)
- [Upgrade App Volumes Templates](#)
- [Upgrade App Volumes Agent](#)

## Upgrade App Volumes Manager

Download and run the latest version of the App Volumes installer to upgrade your App Volumes Manager.

Note the following points about upgrading App Volumes:

- You can upgrade from App Volumes 2.12 to the latest version without uninstalling the 2.12 installation.

In App Volumes releases prior to 2.12, you had to uninstall the App Volumes Manager installation on your machine before you could upgrade to the latest version. Thus App Volumes Manager configuration details and settings were not retained and you had to reconfigure them. With the new upgrade feature, you can upgrade to the latest version without losing your settings.

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**Important** If you want to upgrade from a version earlier than App Volumes 2.12, you must uninstall that version before installing the latest version.

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- If you want to upgrade multiple App Volumes Managers which point to a central database, open `services.msc` and stop the App Volumes Manager service on each server. You must then run the installer on each server to upgrade App Volumes.

### Prerequisites

- Download the latest App Volumes installer from My VMware.

- Schedule a maintenance window to ensure that there is no service degradation during the upgrade process.
- Detach all volumes.
- In the Windows **Start** menu, open **Control Panel** and click **Administrative Tools > ODBC data source**. Note down the database and server name defined in the system ODBC source *svmanager*.
- Back up the App Volumes database using SQL Server tools.
- Create a full server back up or snapshot of the App Volumes Manager server.

#### Procedure

- 1 Log in as administrator on the machine where App Volumes Manager is installed.
- 2 Locate the App Volumes installer that you downloaded and double-click the `setup.exe` file.
- 3 Select the App Volumes Manager component and click **Install**.

A notification window with the upgrade process details is displayed.

- 4 Click **Next** to confirm the upgrade.
- 5 Click **Install** to begin the installation.

A Status Bar shows the progress of the installation. The installation process takes 5 to 10 minutes to complete. During this time, configuration information is first backed-up, new files are installed, and the configuration information is restored.

- 6 Click **Finish** to complete the installation.

App Volumes Manager is upgraded.

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**Note** All certificates that you had previously configured are retained and you do not need to reconfigure them.

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#### What to do next

Upgrade the App Volumes agent and templates. See [Upgrade App Volumes Templates](#) and [Upgrade App Volumes Agent](#).

## Upgrade App Volumes Templates

You can upgrade all available templates from an ESXi host or upload new templates for AppStacks and writable volumes.

Prepackaged AppStacks or Writable Volumes templates are VMDK files typically located in `<user>/cloudvolumes/apps_templates/`.

**Important** If you have upgraded App Volumes from an earlier version, you must upload the prepackaged templates again manually. You cannot upgrade the templates by copying them directly to the storage location as the location is locked by App Volumes Manager to prevent accidental deletion of volumes. However, any user-defined custom templates are automatically carried over, and you do not have to upload them again.

### Procedure

- 1 From the App Volumes Manager console, click **Configuration > Storage > Upload Prepackaged Volumes**.
- 2 Enter the ESXi host information and select the volumes you want to upload.

Option	Description
Storage	The storage location where the existing or new template is stored.
ESX Host	The name of the ESX host.
ESX Username	A user name used to log in to the ESX host.
ESX Password	The password for the user name.
Volumes	The prepackaged templates that you want to upload.

- 3 Click **Upload**.

## Upgrade App Volumes Agent

You can upgrade the App Volumes agent to the latest available version, and if your current installed version is App Volumes 2.12, you do not need to uninstall it before upgrading.

You can also upgrade the agent silently. See [Upgrade App Volumes Agent Silently](#).

### Prerequisites

- Download the latest App Volumes installer from My VMware.
- Schedule a maintenance window to ensure that there is no service degradation during the uninstall and subsequent upgrade process.
- Upgrade the App Volumes Manager. See [Upgrade App Volumes Manager](#).
- Unassign all AppStacks and writable volumes from the target computer where you plan to upgrade the agent.

### Procedure

- 1 Log in as administrator on the machine where the App Volumes agent is installed.
- 2 Locate the App Volumes installer you have downloaded and run the `setup.exe` file.
- 3 Select the App Volumes agent component in the **Installer** window and click **Install**.

- 4 Click **Next** to begin the installation.

The installer backs up the configuration files and services.

- 5 Click **Finish** when you see the confirmation message.

## Upgrade App Volumes Agent Silently

You can also upgrade the App Volumes agent silently using the Microsoft Windows Installer (MSI). If your current installed version is App Volumes 2.12, you do not need to uninstall it before upgrading.

You perform a silent upgrade using the command line and you do not need to use the App Volumes installer.

### Prerequisites

- Schedule a maintenance window to ensure that there is no service degradation during the uninstall and subsequent upgrade process.
- Upgrade the App Volumes Manager. See [Upgrade App Volumes Manager](#).
- Unassign all AppStacks from the target computer where you plan to upgrade the agent.

### Procedure

- 1 Open a Windows command prompt on your machine.
- 2 Type the following command to upgrade the agent:

```
msiexec.exe /i "App Volumes Agent.msi" /qn REINSTALLMODE=vomus REINSTALL=ALL
```