

# VMware vFabric AppInsight Installation Guide

vFabric AppInsight 1.1

This document supports the version of each product listed and supports all subsequent versions until the document is replaced by a new edition. To check for more recent editions of this document, see <http://www.vmware.com/support/pubs>.

EN-000796-00

**vmware**<sup>®</sup>

You can find the most up-to-date technical documentation on the VMware Web site at:

<http://www.vmware.com/support/>

The VMware Web site also provides the latest product updates.

If you have comments about this documentation, submit your feedback to:

[docfeedback@vmware.com](mailto:docfeedback@vmware.com)

Copyright © 2012 VMware, Inc. All rights reserved. This product is protected by U.S. and international copyright and intellectual property laws. VMware products are covered by one or more patents listed at <http://www.vmware.com/go/patents>.

VMware is a registered trademark or trademark of VMware, Inc. in the United States and/or other jurisdictions. All other marks and names mentioned herein may be trademarks of their respective companies.

2011

**VMware, Inc.**  
3401 Hillview Ave.  
Palo Alto, CA 94304  
[www.vmware.com](http://www.vmware.com)

# Contents

	About vFabric AppInsight Installation Guide	5
<b>1</b>	vFabric AppInsight System Requirements and Prerequisites	7
<b>2</b>	Install vFabric AppInsight	9
<b>3</b>	Registering the vCenter Adapter	11
<b>4</b>	Deploy a Network Probe	13
	Configure Cisco Nexus 1000V Switches	13
<b>5</b>	Managing Application Server Performance with the Code Agent	15
	Environments Supported for Code Agent Installation	15
	Code Agent Download Options	16
	Deploying Code Agents in Medium to Large Environments	17
	Uninstall a Code Agent	18
<b>6</b>	Troubleshooting Installation Issues	19
	Exception When Deploying the Code Agent	19
	JBoss Server Service has Long Initialization	20
	Calls to Application Components Are Too Slow	20
	Using Insight with OpenJDK Causes a Java Virtual Machine to Crash	20
<b>7</b>	Uninstall vFabric AppInsight	21
	Index	23



# About vFabric AppInsight Installation Guide

---

VMware vFabric AppInsight is a performance management product for application owners who deploy applications on hybrid clouds and in dynamic virtual environments. AppInsight monitors the availability, performance, and cost of those applications.

vFabric AppInsight provides you with an at-a-glance health state for your application. With AppInsight, you can focus on problematic areas in all levels of code, middleware, and Infrastructure. You can then apply one or more remedial actions.

Monitoring can include:

- Network-based monitoring
- Code-level monitoring
- Application infrastructure overview
- Application middleware overview
- Application cost monitoring

## Intended Audience

This information is intended for anyone who wants to install vFabric AppInsight to monitor service levels such as availability, performance, and cost of applications.



# vFabric AppInsight System Requirements and Prerequisites

# 1

Before you begin the installation, your system must meet specific requirements and prerequisites. You must have specific ports open for the AppInsight server virtual machine and network probe.

## VMware ESX<sup>®</sup> Servers on Which to Install vFabric AppInsight

- ESX 4.1.x, or 5.0
- vSphere 4.1 or 5.0

## Space and Memory Requirements

You must have the following disk space and memory for the AppInsight server virtual machine and the network probe.

System Item	Requirement
AppInsight Server virtual machine	50 GB disk space; 8 GB memory, 4 vCPU
Network probe	6 GB disk space; 1 GB memory, 2 vCPU

## Open Port Requirements

You must have the following open ports for the AppInsight server virtual machine and the network probe.

System Item on Which to Open Port	TCP Port	Usage
AppInsight Server virtual machine	80, 8443	AppInsight user interface connection from the external client
AppInsight Server virtual machine	21234	(Optional) Code agent connection with the AppInsight server
AppInsight Server virtual machine and network probe	1194	Network probe connection to this AppInsight server virtual machine
AppInsight Server virtual machine and network probe	123 (UDP Port)	NTP on the AppInsight server virtual machine

## Screen Resolution

AppInsight is supported for screen resolutions of 1024 x 768 pixels, and higher.

VMware recommends that you view AppInsight in full screen mode.

## vFabric AppInsight Installation Prerequisites

Verify that you have the following prerequisites before you install AppInsight.

- Admin-level access to vCenter Server for the automated installation process.
- Defined routable IP addresses for servers and probes.
- SSL private keys if HTTPS sites are to be monitored.
- **Administrator** privileges on the client machine to install Adobe Flash Player 10. Adobe Flash Player 10 is installed as an ActiveX Control. Use Internet Explorer to download the software.
- Synchronize the time on the hosts on which the AppInsight server and the AppInsight network probes will be installed. If the time is not synchronized, AppInsight might lose data and experience delays in the monitoring process. To synchronize the time, set an NTP server in the **Configuring Time** option for each ESX host in vCenter.

## Web Interface Support

AppInsight is supported on the following Web browsers:

- Microsoft Internet Explorer 8, 9
- Google Chrome 12
- Mozilla FireFox 3.6
- Safari 4.0.4

## Application Servers That vFabric AppInsight Supports

You can use AppInsight with any application server that supports HTTP.

To enable a code agent to monitor applications, the application server must be one of the following servers:

- TC Server versions 2.5 and 2.6
- Tomcat versions 6.x and 7
- JBoss versions 5.01, 5.1, and 6



# Install vFabric AppInsight

---

You install vFabric AppInsight by importing the AppInsight OVA file in the vSphere Client.

You first import AppInsight to the vSphere Client, then open AppInsight in a browser.

## Prerequisites

VMware recommends that you use a fixed IP address. To use Fixed IP, verify that you have the following information:

- Default gateway
- DNS
- Network 1 interface IP address
- Network 1 interface netmask

## Procedure

- 1 In the **File** menu of the vSphere Client, select **Deploy OVF Template**.
- 2 Follow the prompts in the wizard.
  - Import the `appinsight.ova` file. You can import from a local file or a URL. If you select the URL option, the import process might take a few minutes, depending on your Internet connection.
  - If you are using DHCP, you can click **Next** in the Networking Properties page of the wizard. If you are using Fixed IP, you must enter the relevant details.

A Linux SuSE virtual machine is created with the AppInsight server installed.

- 3 After the virtual machine completes the deployment process, power it on.

Powering on might take a few minutes.
- 4 Follow the prompts in the **Console** tab of the virtual machine to specify passwords for the user root and admin, and to select your time zone.

It might take up to five minutes for the configuration to complete. You cannot open AppInsight until this process has finished.
- 5 Open a Web browser and navigate to `HTTP://AppInsight virtual machine IP address`.

The login page for AppInsight opens.
- 6 Log in to AppInsight using the default login name **admin**.

This user has full administrative access to AppInsight. Use the password that you specified in [Step 4](#).

The login is required to access the AppInsight user interface.

The vFabric AppInsight **Dashboard** opens.

**What to do next**

Click **Start** to open the **Getting Started** tab of the **Admin** module, to:

- 1 Register the vCenter adapter. See [Chapter 3, “Registering the vCenter Adapter,”](#) on page 11
- 2 Deploy one or more network probes, the code agent, or both, so that monitoring can begin. See [Chapter 4, “Deploy a Network Probe,”](#) on page 13 and [“Deploy a Code Agent,”](#) on page 16.
- 3 Define your application. See *VMware vFabric AppInsight User’s Reference*.

## Registering the vCenter Adapter

---

After you install AppInsight, you must register the vCenter adapter so that network agents can be deployed.

### Prerequisites

Verify that you have the login details and vCenter Server details for the adapter.

### Procedure

- 1 In the **Admin** module, click the **Adapters** tab.
- 2 Click **Add** and select **vCenter Server**.

Adapter-specific parameter text boxes appear. When default values exist for any of the parameters, they appear in the relevant text box. Do not change the values unnecessarily.

- 3 Type a logical name for your adapter in the Adapter Name text box.
- 4 Type appropriate information in all of the other text boxes.

You must enter the vCenter Server credentials in the User name and Password text boxes.

- 5 Click **Save** and when prompted, select the check box to accept the certificate.
- 6 Click **Save**.

The adapter appears in the list at the top of the **Adapters** tab.

### What to do next

Deploy one or more network probes so that monitoring can begin. See [Chapter 4, “Deploy a Network Probe,”](#) on page 13.



## Deploy a Network Probe

---

To monitor network traffic, you can install one or more network probes on one or more virtual machines. AppInsight begins to detect the network structure when the first probe powers on.

You can have components detected by a network probe and a code agent, but you cannot monitor a virtual machine using both a network probe and the code agent. You can change the monitoring method after installation. See *VMware vFabric AppInsight User's Reference*.

### Prerequisites

You must register the vCenter adapter before you can deploy a network probe. See [Chapter 3, "Registering the vCenter Adapter,"](#) on page 11.

### Procedure

- 1 On the **Getting Started** tab of the **Admin** module, click the link for deploying a network probe.
- 2 Select the hosts or clusters on which to install a probe and click **Install Probes**.  

A probe is installed on each selected host, even if another probe is already installed on the host. When you select a cluster, each host that the cluster contains is selected.

The Probe Installation window displays a separate entry for each host that you select. Each entry appears in a separate pane.
- 3 (Optional) Configure the probe for each probe entry.
- 4 (Optional) To add an additional probe to a host, click **Install another probe on this host** at the bottom of the host entry and configure the probe.
- 5 When you finish adding host-probe combinations, click **Install Probes**.
- 6 Review the installation information, and click **OK**.  

The Probe Status column in the Probes Deployment window shows the installation progress. Probe installation might take several minutes.
- 7 (Optional) To change the settings, click **Back**.

The probe is installed and is powered on, AppInsight begins the monitoring process, detecting and mapping the network structure.

## Configure Cisco Nexus 1000V Switches

You can use AppInsight to monitor network traffic on Cisco Nexus 1000V switches.

See the Nexus documentation for how to create a port group and configure port mirroring.

### **Prerequisites**

Verify that you have a port group for each Nexus 1000V switch that you want AppInsight to monitor. The port group name must be in the format *<name\_of\_Nexus\_switch>\_AppInsight*, for example, **switch13\_AppInsight**.

### **Procedure**

- 1 Install a AppInsight network probe.
- 2 Configure port mirroring.
  - a On the Cisco Nexus 1000V switch, select the server ports to monitor as the source ports.
  - b On the Cisco Visual Switch Manager, identify the interface on which the AppInsight network probe was added to the port group, for example, Vethernet1, and select that interface as the destination port.

The probes power on and begin monitoring the Nexus 1000V switches.

# Managing Application Server Performance with the Code Agent

# 5

You can use the code agent to monitor application server performance. The code agent is a byte code instrumentation that collects metrics from multiple agents and streams those metrics to the AppInsight server.

The code agent must be installed on each application server on which you want to monitor application server performance.

When you use the code agent to monitor a virtual machine, the latency and performance metrics do not take into account any latency caused by the network. Therefore, the metric might return low latency and high performance values and a high performance index even though network problems exist.

You cannot monitor a virtual machine using both a network probe and the code agent. However, you can change the monitoring method after installation. See *VMware vFabric AppInsight User's Reference*.

This chapter includes the following topics:

- [“Environments Supported for Code Agent Installation,”](#) on page 15
- [“Code Agent Download Options,”](#) on page 16
- [“Deploying Code Agents in Medium to Large Environments,”](#) on page 17
- [“Uninstall a Code Agent,”](#) on page 18

## Environments Supported for Code Agent Installation

The code agent can be installed on many operating systems.

**Table 5-1.** Supported Environments for Installing Code Agents

Application Server	Operating System	JVM Version
Tomcat 6.xx	Windows, Linux	Sun 1.6, OpenJDK 1.6
Tomcat 7.xx	Windows, Linux	Sun 1.6, OpenJDK 1.6
JBoss 5.xx	Windows, Linux	Sun 1.6, OpenJDK 1.6
JBoss 6.xx	Windows, Linux	Sun 1.6, OpenJDK 1.6
TC Server 2.1.x	Windows, Linux	Sun 1.6, OpenJDK 1.6
TC Server 2.5.x	Windows, Linux	Sun 1.6, OpenJDK 1.6
TC Server 2.6.x	Windows, Linux	Sun 1.6, OpenJDK 1.6
TC Server 2.7.x	Windows, Linux	Sun 1.6, OpenJDK 1.6

## Code Agent Download Options

You can download a code agent through the AppInsight application, or by using a URL.

- [Deploy a Code Agent](#) on page 16

You can install code agents on application servers to gather metrics from the applications running on the server. The accumulated metrics for each application appear in AppInsight.

- [Download the Code Agent .jar File from a URL](#) on page 17

You can download the code agent from a URL, without first logging in to AppInsight.

## Deploy a Code Agent

You can install code agents on application servers to gather metrics from the applications running on the server. The accumulated metrics for each application appear in AppInsight.

### Prerequisites

Ensure that any servers on which you are installing code agents are time synchronized with the AppInsight server.

Ensure that any WAR files on the servers on which you are installing the code agent have a unique file name.

### Procedure

- 1 On the **Getting Started** tab in the **Admin** module, under Deployment, click the **Code Agent** link.
- 2 Click **Download**.
- 3 Select a location in which to save the downloaded file and click **Save**.
- 4 Copy the `java-agent.jar` file to the application server, in the location in which you want to install the code agent.
- 5 Open the console on the application server and navigate to the directory in which the JAR file is located.
- 6 Run `java -jar JAR_file_location --ip IP_address_of_AppInsight_server --path path_where_application_server_is_installed -n`.

For example,

```
java -jar /tmp/java-agent.jar --ip 1.2.3.4 --path /tmp/apache-tomcat-6.0.35 -n
```

- a (Optional) If you are deploying the code agent in one of the following environments, add the appropriate argument to the end of the command.

Deployment Environment	Argument to Add to the Deployment Command
Deployment to a specific JBoss profile	<code>--jboss_profile Name_of_profile</code>
Deployment on a Tomcat server that runs as a Windows service	<code>--service Name_of_service</code>
Deployment when the path to <code>catalina_base</code> and <code>catalina_home</code> differs	<code>--catalina_base Path_to_location_of_catalina_base</code>

- 7 Restart the application server.

The code agent is installed on the application server and application monitoring begins.



## Download the Code Agent .jar File from a URL

You can download the code agent from a URL, without first logging in to AppInsight.

### Prerequisites

Ensure that any servers on which you are installing code agents are time synchronized with the AppInsight server.

### Procedure

- 1 Go to `https://AppInsight_IP_Address/am-apm-web/downloadbci/java-agent.jar` and download `java-agent.jar`.

Use `admin` as the user name and password to access the site.

- 2 Copy the `java-agent.jar` file to the application server, in the location in which you want to install the code agent.
- 3 Open the console on the application server and navigate to the directory in which the JAR file is located.
- 4 Run `java -jar JAR_file_location --ip IP_address_of_AppInsight_server --path path_where_application_server_is_installed -n`.

For example,

```
java -jar /tmp/java-agent.jar --ip 1.2.3.4 --path /tmp/apache-tomcat-6.0.35 -n
```

- a (Optional) If you are deploying the code agent in one of the following environments, add the appropriate argument to the end of the command.

Deployment Environment	Argument to Add to the Deployment Command
Deployment to a specific JBoss profile	<code>--jboss_profile Name_of_profile</code>
Deployment on a Tomcat server that runs as a Windows service	<code>--service Name_of_service</code>
Deployment when the path to <code>catalina_base</code> and <code>catalina_home</code> differs	<code>--catalina_base Path_to_location_of_catalina_base</code>

- 5 Restart the application server.

The code agent is installed on the application server and application monitoring begins.

## Deploying Code Agents in Medium to Large Environments

If the size of your environment is such that you require 30 or more code agents to be deployed, you need to install additional collectors to maximize performance. The collector is a data collection hub that receives information from the code agents, which it processes and sends to AppInsight.

When you first deploy a code agent, the collector is transparently created during the process. You require an additional collector for every 30 code agents that are deployed. To support code agents in a large environment, you download and install `collector.ova`, which creates a virtual machine and deploys a collector.

### Procedure

- 1 Import the `collector.ova` file.

You can import from a local file or a URL.

- 2 In the Console tab in the vSphere Client, log in to the collector.  
Type **root** for the user name and **vmware** for the password.
- 3 Use SFTP to access the AppInsight server and download `insight-vfabric-tc-server-dashboard.zip` from `/opt/vmware/apm/bci-agent` to the collector virtual machine.
- 4 Run `unzip insight-vfabric-tc-server-dashboard.zip -d /usr/local/tcserver/springsource-tc-server-standard/templates/` to extract the file in the templates directory in the tc server installation.
- 5 Run `cd /usr/local/tcserver/springsource-tc-server-standard/templates` to open the templates directory and verify that the ZIP file extracted correctly.
- 6 Run `cd /usr/local/tcserver/springsource-tc-server-standard/` to move to the tc server baseline directory.
- 7 Create a new instance of the collector by running `./tcruntime-instance.sh create insight-dashboard -t insight-dashboard`.
- 8 Use SFTP to access the AppInsight server and download `bci-agent.tbz2` from `/opt/vmware/apm/bci-agent` to the collector virtual machine, and extract the archive.
- 9 From the extracted archive, copy `insight-dashboard-apm-insight-1.6-apm-20110904.3.jar` to `/usr/local/tcserver/springsource-tc-server-standard/insight-dashboard/insight/dashboard-plugins`.
- 10 Copy `apm.plugin.properties` to `/usr/local/tcserver/springsource-tc-server-standard/insight-dashboard/insight/`.
- 11 Edit `apm.plugin.properties` to the IP address of AppInsight by changing the value of `rabbitmq.agent.host` to the IP address of AppInsight.
- 12 Save the changes.
- 13 Run the `update-dashboard-ip.sh` script located in `/usr/local/tcserver/springsource-tc-server-standard`.
- 14 Change directory to `/usr/local/tcserver/springsource-tc-server-standard/insight-dashboard/bin`.
- 15 Run `./tcruntime-ctl.sh start` to start the collector.
- 16 Ensure that the collector and the AppInsight server clocks are all synchronized.

### What to do next

In a browser, type `collector ip:8080/insight admin insight` to ensure that the collector is running.

Install code agents. See [Chapter 5, “Managing Application Server Performance with the Code Agent,”](#) on page 15.

When installing the code agents, ensure that you specify the IP address of the collector. The IP address is either the address of the AppInsight server or the address of the collector that you installed.

Ensure that the collector is synchronized with the application servers on which the code agents are deployed.

## Uninstall a Code Agent

You can remove a code agent from an application server if you no longer require it to monitor the application.

### Procedure

- 1 Open the console on the application server and navigate to the directory in which the JAR file is located.
- 2 Stop the application.
- 3 Run `java -jar path_to_JAR_file --uninstall`.

# Troubleshooting Installation Issues

---

Occasionally, you might experience difficulty installing AppInsight or deploying adapters. Start by checking that the operating systems, servers, and so on are supported for AppInsight installation and adapter deployments.

Troubleshooting solutions for more commonly experienced issues are described here. You can also refer to the release notes for the AppInsight version that you are using or search the [AppInsight Knowledge Base](#).

These issues are addressed.

- [Exception When Deploying the Code Agent](#) on page 19  
Deploying code agents might result in an error.
- [JBoss Server Service has Long Initialization](#) on page 20  
Starting a JBoss server takes too long.
- [Calls to Application Components Are Too Slow](#) on page 20  
When you call an application component, you must wait a long time to get the response.
- [Using Insight with OpenJDK Causes a Java Virtual Machine to Crash](#) on page 20  
The Java virtual machine crashes.

## Exception When Deploying the Code Agent

Deploying code agents might result in an error.

### Problem

You receive an error message when you attempt to deploy the AppInsight code agent, and the process does not complete.

### Cause

One or more components, or the specific version of a component, does not support AppInsight code agents. Unsupported components might include

- Java virtual machines other than HotSpot or OpenJDK virtual machines
- Tomcat that is installed from an unsupported Linux package
- 32-bit JBoss
- OSGi framework
- Some native libraries
- Some Java wrappers

**Solution**

- ◆ Verify that all the components related to the environment in which you are deploying the AppInsight code agent are supported.

## JBoss Server Service has Long Initialization

Starting a JBoss server takes too long.

**Problem**

When you start the JBoss server, the service takes a very long time to initialize.

**Cause**

A long initialization time for services on JBoss servers is a known JBoss issue and is expected behavior.

**Solution**

You need to wait until the service initializes.

## Calls to Application Components Are Too Slow

When you call an application component, you must wait a long time to get the response.

**Problem**

When you call an application component, the response is very slow to be returned. The response time has degraded.

**Cause**

A related plug-in to the application is causing performance degradation. Examples of plug-ins are vFabric Gemfire, Ehcache, and so on.

**Solution**

- 1 (Optional) Remove the `insight-plugin-xxxx.jar` file from the `SERVER_HOME/insight/collection-plugins` directory in the code agent and restart the application server.
- 2 (Optional) Increase the heap size of the application and restart the application server.

## Using Insight with OpenJDK Causes a Java Virtual Machine to Crash

The Java virtual machine crashes.

**Problem**

When AppInsight is being used with OpenJDK, the Java virtual machine crashes.

**Cause**

There is a known issue in OpenJDK 1.6 in which the instrumentation API requires a larger stack size than is required for the HotSpot Java virtual machine. When AppInsight is used with the OpenJDK and the stack size is less than 256KB, the Java virtual machine crashes.

**Solution**

- ◆ Ensure that a stack size of at least 256KB (`-Xss256k`) is used when using AppInsight with OpenJDK.

# Uninstall vFabric AppInsight

---

To remove AppInsight from your system, you must delete the network probes and uninstall the AppInsight server virtual machine.

## Procedure

- 1 On the **Getting Started** tab of the **Admin** module, click the link for deploying network probes.
- 2 To delete all probes, select the check boxes and click **Delete Probe** and click **Yes** when prompted to confirm the deletion.
- 3 If some probes remain, delete them from the vSphere Client.
  - a Power off the virtual machine.
  - b Right-click the machine name and select **Delete from Disk**.
- 4 Delete the promiscuous port groups that AppInsight created.
  - a In the vSphere Client, select a host that has a probe installed, click the **Configuration** tab, and click the **Networking** link.
  - b For each vSwitch, delete any port groups called vSwitch n appinsight, where *n* is a unique number for the vSwitch name.
  - c Repeat steps [Step 4a](#) through [Step 4b](#) for each host on which a probe is installed.
- 5 In the vSphere Client, delete the virtual machine on which the AppInsight server was deployed.
  - a Power off the virtual machine.
  - b Right-click the machine name and select **Delete from Disk**.



# Index

## A

- adapters
  - registering **11**
  - vCenter **11**
- AppInsight
  - ESX servers **7**
  - installing **9**
  - logging in **9**
  - uninstalling **21**
- application server, managing performance **15**

## C

- code agents
  - deploying **16, 17**
  - download options **16**
  - in large environments **17**
  - install collector **17**
  - managing performance **15**
  - supported installation environments **15**

## D

- deploying
  - code agents **16, 17**
  - network probes **13**

## E

- ESX server support **7**

## G

- getting started
  - deploy code agent **16, 17**
  - deploy network probe **13**
  - download code agent from URL **17**
  - register vCenter adapter **11**

## I

- installing, AppInsight **9**

## L

- login to AppInsight **9**

## N

- network probes, deploying **13**
- Nexus 1000V switches, configuring **13**

## P

- prerequisites **7**

## R

- requirements
  - open ports **7**
  - space and memory **7**
  - supported servers **7**
  - system **7**

## S

- system requirements **7**

## T

- troubleshooting
  - code agent does not deploy **19**
  - Java virtual machine crashes **20**
  - long JBoss server initialization **20**
  - slow response time **20**
- troubleshooting installation issues **19**

## U

- uninstalling, code agents **18**
- uninstalling AppInsight **21**

## V

- vFabric AppInsight, See AppInsight

