

vFabric ApplInsight Installation and Users Guide

vFabric ApplInsight 1.0

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About vFabric AppInsight Installation and Users Guide

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 cost monitoring

Intended Audience

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

General Concepts in vFabric AppInsight

1

vFabric AppInsight uses unique concepts and terms to describe AppInsight features and actions. Understanding these concepts and terms helps you to understand and use AppInsight.

vFabric AppInsight Terms

AppInsight includes the following key objects.

Application	An application is a logical unit of Web software. For example, in a Web business program, you might define the processes related to the human resources department as one application and the processes related to accounting as another application.
Tier	A logical group of components.
Component	<p>When you install AppInsight network probes, and optionally VMware agents and complementary VMware products, they detect the computing traffic and suggest potential application components.</p> <p>You must add at least one component to an application so that AppInsight can determine the entire application structure, study transactions, and show monitoring data.</p> <p>Web Application components are Web servers for which the network traffic is monitored.</p> <p>BCI components are application server components that installed BCI agents detect. Each component represents an individual WAR file. For example, if you have three applications on a single server, the topology structure shows one application server and three application BCI components. If no BCI agent is installed, the topology structure shows only the application server and a Web application component.</p>
Transaction	A cross-tier action between transaction elements. For example, a login transaction.
Transaction Element	The smallest building block within a component.

Viewing vFabric AppInsight Details

AppInsight includes several functions so that you can quickly see more details about items of interest.

- You can use the Time Picker to select the period for which you want to see data. The Time Picker pane also shows a graph for the Hit Rate metric over the period.

- When you point to an application object, a pop-up window provides additional high-level detail.
- Many application objects are clickable links. When you select an application object, a new page or window opens that presents details of that object. Depending on the application object that you select, you can navigate through several layers of detail.

Best Practices in vFabric AppInsight

2

Use best practices to optimize the performance of vFabric AppInsight.

Virtual Machine Configuration

- In the event that the host of a virtual machine is stopped and restarted, it is important that the virtual machine is restarted as soon as possible, to minimize data loss. You set auto restart parameters for the machine in the vSphere Client.
- For accurate data monitoring, use VMware Tools in the vSphere Client to synchronize the time of the guest operating system on the virtual machine with the time of the host.

Adding Components

To limit skewed metrics, do not add network-monitored application components and code-monitored application components in the same tier. Such practice might affect latency calculations because network monitoring also includes the network overhead latency.

Monitoring Options

- If possible, implement code monitoring through BCI agents to monitor application components. If you cannot use code monitoring, use network monitoring.
- You can use both code monitoring and network monitoring to monitor some servers. If you do so, place the network-monitored application component in a different tier than the code-monitored application component.

vFabric AppInsight System Requirements and Prerequisites

3

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[®] Servers on Which to Install vFabric AppInsight

- ESX 4.0.x, 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; 0.5GB memory, 2 vCPU

* In an environment of less than 30 application components, 2vCPU are sufficient.

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) BCI 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	5671	(When multiple BCI collectors are installed) BCI collector connection to the AppInsight message queue
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.
- VMware Tools is installed.
- 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 BCI 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 vSphere, select **Deploy OVF Template**.
- 2 Follow the prompts in the wizard.
 - Import the `apm-va.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, LDAP manager 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 Log in to AppInsight using the console.
- 6 Run the `update-dashboard-ip.sh` script located in `/opt/vmware/apm/bin`.
- 7 Download `modifyMaxAge.sh` from the [AppInsight download page](#) and run the script.
- 8 Open a Web browser and navigate to `HTTP://<AppInsight virtual machine IP address>`.

The login page for AppInsight opens.

- 9 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.

What to do next

- 1 Install the vCenter adapter. See [Chapter 5, “Registering vCenter Adapter,”](#) on page 15
- 2 Deploy one or more network probes so that monitoring can begin. See [“Deploy a Network Probe,”](#) on page 17.

Registering vCenter Adapter

After you have installed 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 **Adapters & Deployment**.
- 2 Click **Create New Adapter**.
- 3 From the **Adapter Type** menu, 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. The values are editable, but it is recommended that you do not change them unnecessarily.

- 4 Type a logical name for your adapter in the **Adapter Name** text box.
- 5 Type appropriate information in all the other text boxes.
In the User name and Password text boxes, enter the vCenter Server credentials.
- 6 Click **Save**.

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

What to do next

Deploy one or more network probes so that monitoring can begin. See [“Deploy a Network Probe,”](#) on page 17.

Deploying Probes

You must deploy at least one probe on the network to monitor traffic and detect applications.

You deploy network probes directly from AppInsight.

In addition to network probes, you can deploy VMware agents, such as the BCI agent, to monitor data in AppInsight, and complementary VMware products, such as vCenter Chargeback, to monitor the cost of applications.

This chapter includes the following topics:

- [“Deploy a Network Probe,”](#) on page 17
- [“Configure Cisco Nexus 1000V Switches,”](#) on page 18

Deploy a Network Probe

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

Prerequisites

You must register the vCenter adapter before you can deploy a network probe. See [Chapter 5, “Registering vCenter Adapter,”](#) on page 15.

Procedure

- 1 On the **Adapters & Deployment** tab of the **Admin** module, click **Deploy Network Probes**.
- 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 Management 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.

It might take some time before monitored data appears in the dashboard.

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 BCI Agents

7

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

A BCI agent must be installed on each application server before you can use it to monitor application server performance.

Note that, if you monitor a platform solely with a BCI agent, 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.

If you monitor a platform using both a network probe and the BCI agent, the metric counts the hits and output twice. The average for the latency is calculated in different ways by the network probe and the BCI agent.

The file that you use for deploying a BCI agent depends on the application server on which it is being installed.

This chapter includes the following topics:

- [“Environments Supported for BCI Agent Installation,”](#) on page 19
- [“Deploy the BCI Agent on Tomcat Versions 6 and 7,”](#) on page 21
- [“Manually Deploy BCI Agents on TC Server Application Servers,”](#) on page 22
- [“Manually Deploy the BCI Agent on Tomcat Versions 6 and 7,”](#) on page 23
- [“Deploy The BCI Agent on JBoss Application Servers,”](#) on page 24
- [“Deploying BCI Agents in Medium to Large Environments,”](#) on page 25
- [“Uninstalling the BCI Agent,”](#) on page 26

Environments Supported for BCI Agent Installation

There are many environment permutations on which the BCI agent can be installed. Here are the permutations that have been verified by VMware.

Table 7-1. Supported Environments for installing BCI Agents

Application Server	Operating System	Operating System Version	JVM Version
Tomcat 7	Centos	5.5, 32-bit	1.6U23
Tomcat 7	Fedora	14, 64-bit	1.6U23
Tomcat 7	Fedora	14, 32-bit	1.6U23
Tomcat 7	SuSE	11, 32-bit	1.6U23
Tomcat 7	Ubuntu	9, 32-bit	1.6U22

Table 7-1. Supported Environments for installing BCI Agents (Continued)

Application Server	Operating System	Operating System Version	JVM Version
Tomcat 7	Ubuntu	10.1, 32-bit	1.6U21
Tomcat 7	Ubuntu	10.1, 32-bit	1.6U22
Tomcat 7	Ubuntu	11, 32-bit	1.6U22
Tomcat 7	Ubuntu	11, 32-bit	1.6U26
Tomcat 7	Ubuntu	11, 32-bit	1.6U18
Tomcat 7	Windows	2003, 32-bit	1.6U22
Tomcat 7	Windows	2008, 64-bit	1.6U25
Tomcat 6	Centos	5.5, 32-bit	1.6U23
Tomcat 6	Fedora	14, 32-bit	1.6U23
Tomcat 6	SuSE	11, 32-bit	1.6U23
Tomcat 6	Ubuntu	9.0.4, 32-bit	1.6U22
Tomcat 6	Ubuntu	9.0.4, 32-bit	1.6U26
Tomcat 6	Ubuntu	11, 64-bit	1.6U24
Tomcat 6	Ubuntu	11, 32-bit	1.6U22
Tomcat 6	Ubuntu	11, 32-bit	1.6U26
Tomcat 6	Ubuntu	11, 32-bit	1.6U18
Tomcat 6	Ubuntu	10.1, 32-bit	1.6U07
Tomcat 6	Ubuntu	10.1, 32-bit	1.6U13
Tomcat 6	Ubuntu	10.1, 32-bit	1.6U21
Tomcat 6	Ubuntu	10.1, 32-bit	1.5U22
Tomcat 6	Windows	2003, 32-bit	1.6U22
Tomcat 6	Windows	2003, 32-bit	1.6U25
Tomcat 6	Windows	2008, 64-bit	1.6U25
TC Server 2.6	Ubuntu	9, 32-bit	1.6U22
TC Server 2.5	Ubuntu	9, 32-bit	1.6U18
TC Server 2.5	Ubuntu	11, 32-bit	1.6U26
TC Server 2.5	SuSE	11, 64-bit	1.6U22
TC Server 2.5	Ubuntu	10, 32-bit	1.6U18
TC Server 2.5	Ubuntu	10, 32-bit	1.6U22
JBoss 6	Ubuntu	11, 64-bit	1.6U24
JBoss 6	Ubuntu	9.0.4	1.6U22
JBoss 6	Windows	2003, 32-bit	1.6U22
JBoss 5.1	Ubuntu	10.1, 32-bit	1.6U13
JBoss 5.1	Ubuntu	9.0.4, 32-bit	1.6U22
JBoss 5.0.1	Centos	5.5, 32-bit	1.6U23
JBoss 5.0.1	SuSE	11, 32-bit	1.6U23
JBoss 5.0.1	Ubuntu	10.1, 32-bit	1.6U22

Table 7-1. Supported Environments for installing BCI Agents (Continued)

Application Server	Operating System	Operating System Version	JVM Version
JBoss 5.0.1	Ubuntu	9.0.4, 32-bit	1.6U22
JBoss 5.0.1	Fedora	14, 32-bit	1.6U23

Deploy the BCI Agent on Tomcat Versions 6 and 7

BCI agents sit on application servers and monitor BCI components.

When a BCI agent is deployed, it identifies each WAR file as an individual BCI component. For example, if you have three applications on a single server, the topology structure shows one application server and three application BCI components. If no BCI agent is installed, the topology structure shows only the application server and a Web application component.

Prerequisites

Verify the name of the Tomcat `CATALINA_BASE` and `CATALINA_HOME` parameters by running `ps -aef | grep catalina`.

`Dcatalina.base` = points to the path of `catalina.base`, for example, `/var/lib/tomcat6`.

`Dcatalina.home` = points to the path of `catalina.home`, for example, `/usr/share/tomcat6`.

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

Procedure

- 1 On the Tomcat application server, create a temporary directory.
- 2 Stop the Tomcat application server.
- 3 In **Admin > Adapters & Deployment**, click **Download BCI Agent** and download `/bci/springsource-insight-tomcat-6-7-agent-javaagent.zip` to the application server temporary directory on which the application to monitor is installed.
- 4 Run `unzip springsource-insight-tomcat-6-7-agent-javaagent.zip` to extract the file to the temporary directory.
- 5 Change directory to `springsource-insight-tomcat-6-7-javaagent-1.6.0.CI-SNAPSHOT`
- 6 Run the `install.sh` command for Linux or `install.bat` for Windows.

Type the appropriate answers when you are prompted.

Option	Description
CATALINA_BASE	Type the path that you verified in the prerequisites.
CATALINA_HOME	Type the path that you verified in the prerequisites.
AppInsight Server IP address	Type the IP address of your AppInsight server.

The installation process backs up the application server, installs the BCI agent, and displays a success message.

- 7 Verify that the changes you have made are retained.
Occasionally, the agent installation process overwrites the `setenv.sh` file in the `CATALINA_BASE/bin` directory.
- 8 Restart the Tomcat application server using the same user login credentials as were used during the application server installation.

What to do next

Create an application. See [Chapter 10, "Create Applications,"](#) on page 35.

Manually Deploy BCI Agents on TC Server Application Servers

You can install BCI agents on TC Server application servers to gather metrics from the applications that are running on the server. The accumulated metrics for each application appear in AppInsight.

Note that if you have already-deployed applications from an earlier AppInsight installation, you must deploy the applications again after deploying BCI agents.

Prerequisites

- Verify that you have a virtual machine installed, running TC Server 2.5, or later.
- Verify the version of the Tomcat server on which TC Server is based.
You can verify where the Tomcat and TC Server is installed by running `readlink -e `locate tcserver`` (note the use of "grave" symbols, not apostrophes). If this call does not work, run `locate tomcat` or `locate tcserver`.
- Ensure that any servers on which you are installing BCI agents are time synchronized with the AppInsight server.

Procedure

- 1 In **Admin > Adapters & Deployment**, click **Download BCI Agent** and `downloadinsight-vfabric-tc-server-agent.zip`.
- 2 Stop the application server.
- 3 Extract the file to the `templates` directory of the TC server installation.
- 4 Create a new instance of a BCI agent.

From `TC_ROOT`, type

the `./tcruntime-instance.bat create INSTANCE_NAME -t insight-agent -v TOMCAT_VERSION` command.

`INSTANCE_NAME` is the name of the TC Server instance. This name corresponds to the name of the directory in which the instance is located.

`TOMCAT_VERSION` is the version of Tomcat to use. If a version is not specified, a default version is used.

Before you create the new BCI agent, you can set the Tomcat version by going to the `TC_ROOT` directory of TC Server. This directory contains two folders, `tomcat-6.x.x.x.RELEASE` and `tomcat-7.x.x.x.RELEASE`. The following example shows how you can set the version.

```
#cd /opt/vmware/tcserver-instance
#ls *.RELEASE
>tomcat-6.0.32.C.RELEASE, tomcat-7.0.16.A.RELEASE
```

You then create the new instance of BCI agent, for example `./tcruntime-instance.sh create BCI-Tomcat6.0-t insight-agent -v 6.0.32.C.RELEASE`.

- 5 Open `TC_ROOT/INSTANCE_NAME/insight/insight.properties`, and change the `connect.uri` to your AppInsight server URI from `127.0.0.1:21234` to `[AppInsight server IP]:21234`.
- 6 Deploy your application in `TC_ROOT/INSTANCE_NAME`.
Alternatively, for simple applications you can copy the application WAR files to `TC_ROOT/INSTANCE_NAME/webapps`
- 7 Restart the application server.

What to do next

Create an application. See [Chapter 10, “Create Applications,”](#) on page 35.

Manually Deploy the BCI Agent on Tomcat Versions 6 and 7

You can manually deploy the BCI agent on Tomcat version 6 or 7 application servers that run on a Windows operating system.

Prerequisites

Verify the names of the Tomcat CATALINA_BASE and CATALINA_HOME directories.

- CATALINA_HOME is the directory in which you installed Tomcat.
- CATALINA_BASE is the base directory to which most relative paths are resolved.

If you do not configure Tomcat 6 and 7 for multiple instances by setting a CATALINA_BASE directory, CATALINA_BASE is set to the value of CATALINA_HOME.

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

Procedure

- 1 Create a temporary directory on the Tomcat application server.
- 2 Stop the Tomcat application server.
- 3 In **Admin > Adapters & Deployment**, click **Download BCI Agent** and download `/bci/springsourceinsight-tomcat-6-7-agent-javaagent.zip` to the temporary directory (DIST_DIR) of the application server on which the application is to be installed.
- 4 Extract `springsourceinsight-tomcat-6-7-agent-javaagent.zip` to DIST_DIR.
- 5 Copy the JAR files in `DIST_DIR\lib` to `CATALINA_HOME\lib`.
- 6 Copy the `DIST_DIR\insight` directory to `CATALINA_HOME`.
- 7 Go to `CATALINA_HOME\insight\insight.properties` and change `dashboard.jms.connect.uri` to your AppInsight server URI.
- 8 (Optional) Change the default agent authentication credentials if necessary.

The modified part of `insight.properties` might look as follows.

```
#
# The Spring Insight Agent configuration file
#
#####
# ActiveMQ URI to the Dashboard JMS Broker
# The transport specified here should match the transport specified
# in the dashboard configuration (e.g. tcp, ssl). If ssl is
# used, you must create a keystore and set the keyStore and
# trustStore system properties as described in the dashboard
# configuration. Though not required, using an ip address here
# instead of a hostname for the dashboard is advisable for security.
dashboard.jms.connect.uri: ssl://[Appinsight Server IP]:21234
#####
# Credentials
```

```
# These credentials are used to connect to the dashboard. They
# can be shared between agents.
agent.auth: agent
agent.auth.password: insight
```

- 9 Copy `insight-agent.war` from `DIST_DIR\webapps` to `CATALINA_BASE\webapps`.
- 10 Copy all the JAR files in `DIST_DIR\bin` to `CATALINA_HOME\bin`.
- 11 (Optional) If the `CATALINA_BASE\bin\setenv.bat` file does not exist, copy it from `DIST_DIR\bin` to `CATALINA_BASE\bin`.
- 12 (Optional) if the `setenv.bat` file exists, add the following at the end of the file.
 - a Add set "CATALINA_OPTS=%CATALINA_OPTS% -javaagent:%CATALINA_HOME%\bin\aspectjweaver-1.6.12.M2.jar".
 - b Add set "CATALINA_OPTS=%CATALINA_OPTS% -Djava.library.path=%CATALINA_HOME%\insight\sigar-lib -Dinsight.base=%CATALINA_HOME%\insight -Dinsight.logs=%CBASE%\logs" where %CBASE is set to the value of CATALINA_BASE.
- 13 In the `setenv.bat` file under the `GENERAL_JVM_OPTS` parameter, verify that the `-Xmx` and `-XX:MaxPermSize` attributes have been assigned realistic values.

A realistic value for `-Xmx` is at least 512MB, and for `-XX:MaxPermSize` at least 256MB.
- 14 Restart the application server.

You can verify that the agent has connected with the AppInsight dashboard by checking the log for `[com.springsource.insight.agent.command.SyncAgentProcessor][listenerContainer-1] - Received new configuration from dashboard -- updating.`

Deploy The BCI Agent on JBoss Application Servers

You can install BCI agents on JBoss 5.0.1, 5.1 and 6.0 application servers to gather metrics from the applications that are running on the server. The accumulated metrics for each application appear in AppInsight.

When a BCI agent is deployed, it identifies each WAR file as an individual BCI component. For example, if you have three applications on a single server, the topology structure shows one application server and three application BCI components. If no BCI agent is installed, the topology structure shows only the application server and a Web application component.

Prerequisites

Verify the path to the JBoss home directory.

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

Procedure

- 1 On the JBoss application server, create a temporary directory.
- 2 Stop the application server.
- 3 In **Admin > Adapters & Deployment**, click **Download BCI Agent** and download `/bcispringsource-insight-jboss-<server version>.GA-agent-javaagent.zip` to the application server temporary directory on which the application to monitor is installed.

- 4 Extract the downloaded file to the temporary directory.

Option	Description
JBoss 5.0.1	Run <code>unzip springsource-insight-jboss-5.0.1.GA-agent-javaagent.zip</code> .
JBoss 5.1	Run <code>unzip springsource-insight-jboss-5.1.0.GA-agent-javaagent.zip</code> .
JBoss 6.0	Run <code>unzip springsource-insight-jboss-6.0.0.GA-agent-javaagent.zip</code> .

- 5 Change directory to `springsource-insight-jboss-<server version>.GA-agent-javaagent-1.6.0.CI-SNAPSHOT`.
- 6 Run the `install.sh` command for Linux or `install.bat` for Windows.

Type the appropriate answers when you are prompted.

Option	Description
JBoss Installation	Type the path to the JBoss home directory.
Profile	Select the required profile.
AppInsight Server IP address	Type the IP address of your AppInsight server.

The installation process backs up the application server, installs the BCI agent and displays a success message.

- 7 Start the JBoss application server.

What to do next

Create an application. See [Chapter 10, “Create Applications,”](#) on page 35.

Deploying BCI Agents in Medium to Large Environments

If the size of your environment is such that you require 30 or more BCI 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 BCI agents, which it processes and sends to AppInsight.

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

Procedure

- 1 Import the `collector.ova` file.
You can import from a local file or a URL.
- 2 In the **Admin** module, click **Adapters & Deployment**.
- 3 Click **Download BCI Agent**.
The AppInsight downloads page appears.
- 4 Download `insight-vfabric-tc-server-dashboard.zip` and 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 From the AppInsight downloads page, download `bci-agent.tbz2` and extract the archive.
- 9 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.
- 12 Change the value of `rabbitmq.agent.host` to the IP address of AppInsight.
- 13 Save the changes.
- 14 Run the `update-dashboard-ip.sh` script located in `/usr/local/tcserver/springsource-tc-server-standard`.
- 15 Change directory to `/usr/local/tcserver/springsource-tc-server-standard/insight-dashboard/bin`.
- 16 Run `./tcruntime-ctl.sh start` to start the collector.
- 17 Ensure that the collector is synchronized with the AppInsight server.

What to do next

Install BCI agents. See [Chapter 7, “Managing Application Server Performance with BCI Agents,”](#) on page 19.

When installing the BCI 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 BCI agents are deployed.

Uninstalling the BCI Agent

You uninstall the BCI agent by reverting the application server configuration to the preinstallation state.

Select the process that applies to the application server you are using.

- [Uninstall the BCI Agent from JBoss or Tomcat](#) on page 26

If you used an automatic installation of the BCI agent, you can use this procedure to uninstall it from an application server. If you did not use automatic installation, you uninstall the BCI agent by reversing the manual process you used to install it on the application server. After the BCI agent is uninstalled, you deploy the preinstallation backup of your application.

- [Uninstall the BCI Agent from TC Server](#) on page 27

To uninstall the BCI agent from TC Server, you must delete the instance directory that was created during the BCI template installation, then deploy your application to a new instance.

Uninstall the BCI Agent from JBoss or Tomcat

If you used an automatic installation of the BCI agent, you can use this procedure to uninstall it from an application server. If you did not use automatic installation, you uninstall the BCI agent by reversing the manual process you used to install it on the application server. After the BCI agent is uninstalled, you deploy the preinstallation backup of your application.

This file is used as a backup for restoration. Changes made subsequent to the backup are not restored.

Prerequisites

You must have installed the BCI agent using the automatic process.

During the installation of the BCI agent, the installation script saves a copy of your application server (for example, for Tomcat the script saves the directories in CATALINA_HOME and CATALINA_BASE) in the /tmp directory. Verify that this file still exists before uninstalling the BCI agent.

Procedure

- 1 Stop the application server.
- 2 Delete your application server directory.
For Tomcat, the directories to delete are CATALINA_HOME and CATALINA_BASE, and their subdirectories.
For JBoss, the directory to delete is JBOSS_HOME and its subdirectories.
- 3 Extract the backup file from the /tmp directory.
- 4 Restart the application server.

Uninstall the BCI Agent from TC Server

To uninstall the BCI agent from TC Server, you must delete the instance directory that was created during the BCI template installation, then deploy your application to a new instance.

Prerequisites

Verify that you have a backup of your application.

Procedure

- 1 Stop the application server.
- 2 Delete the directory that was created by the previous installation process.
- 3 Create a new a new instance, without the BCI agent template.
- 4 Deploy your application to the new instance.
- 5 Restart the application server.

The application is deployed without the BCI agent.

Monitoring Data Using Complementary VMware Products

8

You can integrate complementary VMware products into AppInsight to increase the volume of information that is monitored, to define workflow actions, and to focus on specific areas of interest.

You install complementary VMware products as their respective documentation describes. You then must register an AppInsight adapter for the product, so that monitoring can occur.

- | | |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| vCenter Chargeback | Monitors the monetary cost of an application. |
| vFabric Hyperic | Monitors the platforms and the servers running on those platforms. |
| vCenter Orchestrator | Enables workflows, such as starting a virtual machine or sending a notification in the event of an alert, to be created to automate action performance in AppInsight. |

This chapter includes the following topics:

- [“Register Adapters for Integrating Complementary VMware Products,”](#) on page 29
- [“Integrating vCenter Chargeback to Monitor Application Cost,”](#) on page 30
- [“Integrating vFabric Hyperic to Monitor Application Performance,”](#) on page 31

Register Adapters for Integrating Complementary VMware Products

You can integrate complementary VMware products with AppInsight to enhance its monitoring capabilities. As part of the integration process, you must register adapters for each product.

Prerequisites

- Verify that you have registered the vCenter Server adapter. This is required for all complementary VMware products.
- If you are adding vCenter Chargeback, the cost model that you want to apply in AppInsight must be set in vCenter Chargeback.
- Verify that you have appropriate login details and server machine details for the adapter that you are adding.

Product	Minimum Required User Permissions
vCenter Chargeback	Report Generator, or an equivalent custom role
vCenter Orchestrator	<ul style="list-style-type: none">■ Execute rights for running workflows.■ Read rights on the Root object to search for vCenter objects through the Soap API.
vFabric Hyperic	Super User

Procedure

- 1 In the **Admin** module, click **Adapters & Deployment**.
- 2 Click **Create New Adapter**.
- 3 From the **Adapter Type** menu, select the type of adapter to configure.
- 4 Type a name for your adapter in the **Adapter Name** text box.

The additional text boxes that appear depend on the adapter type that you select.

When default values are specified, the values appear in the text boxes. The values are editable, but VMware recommends that you do not change them unnecessarily.

- 5 Type appropriate information in all the other text boxes.

Enter user name and password credentials that already exist for the agent or complementary VMware product for which you are configuring the adapter.

The user that you specify must have sufficient permissions to read and write to the complementary product. Minimum permissions for each product are provided in its product-specific integration topic.

- 6 Click **Save**.

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

AppInsight starts monitoring using the installed product, or in the case of Orchestrator, is available to perform actions as required.

Integrating vCenter Chargeback to Monitor Application Cost

vCenter Chargeback is an application that helps you see the cost of virtual machines. You can integrate vCenter Chargeback with AppInsight to compute the cost of platforms, tiers, applications, and components, and to identify correlations between application performance indicators and application cost. You can also receive notifications when operational costs exceed threshold specifications.

When vCenter Chargeback is integrated with AppInsight, it can calculate the cost of each application. It can also calculate the individual cost of the following computing resources of an application:

- CPU
- Disk read and write
- Memory
- Storage
- vCPU

Costs are calculated over one hour, for example between 13:00 and 14:00, and for 24-hour periods, from 00:00 to 23:59 according to the vCenter Chargeback server time. You can see the costs by opening the **Application** module and selecting the **Cost** KPI in the **Metrics** tab.

The cost currency is taken from the vCenter Chargeback cost model that you specify.

When you first integrate vCenter Chargeback with AppInsight, it might take up to two hours before you can view data.

Requirements for vCenter Chargeback Integration

You configure the virtual machines on which to monitor application cost in vCenter Chargeback.

- All of the virtual machines that are being monitored for cost must be part of a hierarchy in vCenter Chargeback. Data does not appear for virtual machines that are not configured in this manner.

It is good practice to locate all the virtual machines for AppInsight in a single hierarchy in vCenter Chargeback.

- AppInsight supports vCenter Chargeback v. 2.0.
- Verify that the cost model that you want to use in AppInsight is available in vCenter Chargeback.

You must register vCenter Server adapter before you can use this product.

To use vCenter Chargeback with AppInsight, you must register vCenter Chargeback in the AppInsight Adapter Manager. See, [“Register Adapters for Integrating Complementary VMware Products,”](#) on page 29.

Integrating vFabric Hyperic to Monitor Application Performance

vFabric Hyperic is an application that helps you view the performance of servers and the services that run on them. You can integrate vFabric Hyperic 4.5, or later, with AppInsight to monitor virtual machines and the servers running on those virtual machines.

You install a Hyperic agent on each of the virtual machines to monitor.

Note that when configuring a Hyperic adapter to retrieve data from the Hyperic server, the collection intervals of the Hyperic "Availability" metrics might change to one collection per minute.

For information about how to deploy agents, see the vFabric Hyperic documentation set appropriate to your version.

You must register vCenter Server adapter before you can use this product.

To use vFabric Hyperic with AppInsight, you must register vFabric Hyperic in the AppInsight Adapter Manager. See [“Register Adapters for Integrating Complementary VMware Products,”](#) on page 29.

Ensure that the Hyperic server and AppInsight server are time synchronized with the Hyperic agents.

Integrating vCenter Orchestrator to Manage Remedial Actions

9

vCenter Orchestrator, which is installed with the vCenter Server, provides a library of extensible workflows for creating and running processes that you can use to manage remedial actions in AppInsight. You must register Orchestrator with AppInsight before you can use it.

After you have registered the Orchestrator adapter, there are various default actions that you can perform.

You can also define additional actions in the **Admin** module, in the **Alerts** view. Actions can be added to provide email notifications when there is a change in state. If an action requires a user to enter data, a dialog box appears with relevant prompts.

You must register vCenter Server adapter before you can use this product.

After the vCenter Server adapter is registered, you must register vCenter Orchestrator in the AppInsight Adapter Manager. See [“Register Adapters for Integrating Complementary VMware Products,”](#) on page 29.

This chapter includes the following topics:

- [“Add Orchestrator Workflows,”](#) on page 33
- [“Delete an Orchestrator Action,”](#) on page 34

Add Orchestrator Workflows

You can add Orchestrator workflows that are not covered by the default workflow actions provided in AppInsight. You use JMX to add workflow actions from Orchestrator to AppInsight.

After you have registered the Orchestrator adapter, there are various default actions that you can perform.

- Reset virtual machine and stand by
- Power off virtual machine and stand by
- Start virtual machine and stand by
- Revert to current snapshot
- Reboot the guest operating system
- Send notification by email

You access these default actions by clicking the Actions arrow at the top of the **Summary** tab of a virtual machine.

You can also define actions in the **Admin** module, in the **Alerts** view. Actions can be added to provide email notifications when there is a change in state. If an action requires a user to enter data, a dialog box appears with relevant prompts.

Prerequisites

- You must be logged in to AppInsight to add workflow actions using JMX. If you are not already logged in, you are prompted to do so before you can access the JMX Web page.
- AppInsight supports vCenter Orchestrator version 4.1.0.
- You can only add workflow actions to AppInsight that fit these protocols:
 - The action can only have a single virtual machine as a parameter, or the action can only contain basic parameters, such as int, boolean, and so on. You cannot add a workflow that has both a virtual machine and basic parameters.
 - The action cannot require movement from one virtual machine or host to another.

Procedure

- 1 Add a workflow to Orchestrator, or select an existing one. Refer to the Orchestrator documentation if you need assistance.
- 2 In your Web browser, open [https://\[AppInsight Server IP\]:8443/am-apm-web/jmx/mbean.jsp?mbean=com.vmware.am.apm.action.svc:name=ConfiguredActionService&platform=true](https://[AppInsight Server IP]:8443/am-apm-web/jmx/mbean.jsp?mbean=com.vmware.am.apm.action.svc:name=ConfiguredActionService&platform=true).
The JMX page appears.
- 3 In the JMX Web page, locate the `addAction` operation.
 - a In the Parameters text box, type the exact name of the workflow that you specified in Orchestrator
 - b Click the addAction **Hit Me!** button.

A new tab appears in the browser to confirm the workflow was successfully created.

Depending on the workflow action that you create, the action either appears in the **Actions** menu, or the **Alerts** tab of the **Admin** menu.

- If you add a workflow that has a virtual machine, the workflow is added to the VM Actions list in the **Summary** tab. This workflow can only contain a single virtual machine.
- If you add a basic parameters workflow, or a workflow without any parameters, go to the **Alerts** tab, click **Add Action** and select the new workflow from the menu.

Delete an Orchestrator Action

You can delete the Orchestrator actions that you added to AppInsight.

Procedure

- 1 In your Web browser, open [https://\[AppInsight Server IP\]:8443/am-apm-web/jmx/mbean.jsp?mbean=com.vmware.am.apm.action.svc:name=ConfiguredActionService&platform=true](https://[AppInsight Server IP]:8443/am-apm-web/jmx/mbean.jsp?mbean=com.vmware.am.apm.action.svc:name=ConfiguredActionService&platform=true).
The JMX page appears.
- 2 In the JMX Web page, locate the `deleteAction` operation.
 - a In the Parameters text box, type the exact name of the workflow that you are deleting.
 - b Click the deleteAction **Hit Me!** button.

The action is deleted from the appropriate menu.

Create Applications

You create applications from the Dashboard. After you create the application, you must add one or more components so that monitoring can begin.

Procedure

- 1 In the dashboard, click **Create Application**.
- 2 Type a name for the new application in the **Specify New Application** text box.
- 3 Click **Create**.

The application is created.

What to do next

Add one or more components to the application. See [Chapter 11, “Adding Components,”](#) on page 37.

Adding Components

Before AppInsight can start to monitor your application, you must add at least one component.

You add components in the **Structure** tab of the **Application** module. The **Structure** tab is visible when you are in the **Manage** view of the **Application** module.

In the Mapped Components table in the **Structure** tab, you can see a list of all the components that AppInsight has detected, their virtual machine names and the monitoring type, such as network or code, and their protocol, such as HTTP, HTTPS, and so on.

After you add the first component to an application, you can use the **Show Hints** function in the topology map to add other components to the application. Tiers are not visible in the topology until after the first component is added to the application.

To limit skewed metrics, do not add network-monitored application components and code-monitored application components in the same tier. Such practice might affect latency calculations because network monitoring also includes the network overhead latency.

When dependencies between IP addresses are discovered, a hint appears to indicate the dependencies. Each IP address has a separate hint. A hint that is located to the left of the virtual machine indicates an incoming dependency. A hint that is located to the right of the virtual machine indicates an outgoing dependency.

If a port for incoming traffic is detected for the virtual machine, the hint includes a plus sign (+). Clicking the sign adds the component and removes the component from the Mapped Components table. If more than one port is discovered for a single IP address, a component is added for each port.

When an IP address is detected, a hint appears, but you cannot add the component until the port is known.

- [Add a Mapped Component to an Application](#) on page 37
You can add components that AppInsight has detected to your application.
- [Add an Unmapped Component to an Application](#) on page 38
You can add components that AppInsight has not detected to your application.

Add a Mapped Component to an Application

You can add components that AppInsight has detected to your application.

Prerequisites

You must have created an application. See [Chapter 10, “Create Applications,”](#) on page 35.

Procedure

- 1 Select the application to which you are adding a component.

- 2 In the **Manage** view of the **Application** module, click the **Structure** tab.

The Mapped Components table appears on the left. In the Mapped Components table, you see a list of all the components that AppInsight has detected.

A map of the application's topology appears on the right, showing components and the tiers to which they are added. Before you add the first component to the application, the map area is blank.

- 3 Select an object in the Mapped Components table, and click **Add to Application**.

- 4 Select the tier to which the component is to be added from the tier menu.

If you are adding the first component to the application, you must type a name for the first tier in the **New Tier Name** text box.

- 5 (Optional) If the component uses HTTPS protocol, select an SSL key.

- 6 (Optional) If the component uses HTTPS protocol, and you have set the SSL key, you can set a password for the key.

- 7 Click **OK**.

The component is added to the map. If the tier was not already in the map, it is added.

If you switch from topology Map View to Table View, the component is in the table.

Add an Unmapped Component to an Application

You can add components that AppInsight has not detected to your application.

You can add a new component in either the map or table view.

Procedure

- 1 In the **Manage** view of the **Application** module, click the **Structure** tab.

The Mapped Components table appears on the left. In the Mapped Components table, you see a list of all the components that AppInsight has detected.

A map of the application's topology appears on the right, showing components and the tiers to which they are added. Before you add the first component to the application, the map area is blank.

- 2 Below the Mapped Components table, click the **Add an unmapped component** link.

The Add Component dialog box appears.

- 3 Type data in the **Name**, **IP**, and **Port** text boxes.

- 4 Select the tier for the component from the menu.

If you are adding the first component to the application, you must type a name for the first tier in the **New Tier Name** text box.

- 5 Select the protocol for the component from the menu.

- 6 Click **OK**.

The component is added to the map. If the tier was not already in the map, it is added.

If you switch from topology Map View to Table View, the component is in the table.

- 7 (Optional) If you selected the HTTPS protocol, you must set the SSL key.

- a Click the Action arrow for the component's tier in the topology map, and select **Set SSL key**.

- b Select the SSL key,

- c (Optional) Set a password for the key.
- d Click **OK**.

Transaction Management

Some transactions are detected and monitored by AppInsight. Other detected potential transactions are not automatically monitored, but you can add them and have AppInsight calculate their KPIs.

You can view transactions for your application by clicking **Manage** in the **Application** module and opening the **Transactions** tab.

Transactions Pool Table

At the top of the **Transactions** tab is a table of transactions and potential transactions. The icon at the far left of each row denotes whether the item is a potential transaction (light colored icon) or an actual transaction (dark colored icon.)

The table specifies the name of each transaction or potential transaction and, in the case of transactions, specifies in the Source column whether its was automatically added and monitored by AppInsight or was changed by a user from a potential transaction to a transaction. The following information is included:

Table 12-1. Transaction Pool Table

Column Name	Description
Name	The name of the transaction or potential transaction. You can change the name of a transaction by selecting it and clicking Rename .
Source	Whether a transaction was automatically detected and monitored by AppInsight, or whether it was changed from a potential transaction to a transaction by a user.
Tier	The left-most tier on which the transaction begins.
Component	The left-most component to which the transaction relates.
Latency	The latency of the transaction.
Hits	The number of hits on the transaction.

When you select a transaction in the table, its topology appears in the map beneath the table.

When you select a potential transaction in the table and click **Start Monitoring**, the item becomes a transaction and monitoring of its Performance, Usage and Health KPIs commences.

Manually Add a Transaction Element

You can add a transaction element manually using JMX.

Prerequisites

You must be logged in to AppInsight to add workflow actions using JMX. If you are not already logged in, you will be prompted to do so before you can access the JMX Web page.

Procedure

- 1 In your Web browser, open `https://[AppInsight Server IP]:8443/am-apm-web/jmx/mbean.jsp?mbean=com.vmware.am.apm.app:name=InitialConfigurationService&platform=true`.

The JMX page appears.

- 2 In the JMX Web page, locate the `addWebTransactionElementByComponentName` operation.
 - a In the Parameters **ComponentName** text box, type the name of the component to which the transaction element relates.
 - b In the Parameters **URL** text box, type the URL of the transaction element.

You can group multiple URLs and add them as a single transaction element by using wildcards for specific sections of the URL. For example, `/inbox/john /inbox/tim /inbox/<username>` might be grouped to one transaction element using the URL `inbox/*`.

- 3 Click the `addWebTransactionByComponentName` **Hit Me!** button.

A new tab appears in the browser to confirm the workflow was successfully created.

After a few minutes, the transaction element appears in the topology.

Adding Tiers to the Topology

You can add tiers to the topology of an application, to logically group components.

Tiers are not visible in an application's topology until the first component has been added to the application. After one tier has been added to the topology, additional tiers can be added on the left or right sides.

Prerequisites

Add a component to the application, so that a tier appears in the application's topology. See [Chapter 11, "Adding Components,"](#) on page 37.

Procedure

- 1 Select the Actions arrow at the top of a tier.
- 2 From the Tier Actions menu, select **Add Tier on Right** or **Add Tier on Left**.
- 3 In the dialog box, type a name for the tier and click **OK**.

The tier appears in the topology.

What to do next

Add components to the tier. See [Chapter 11, "Adding Components,"](#) on page 37.

Configure KPI Metrics Thresholds

Every key performance indicator (KPI) metric has a threshold defined that shows how it is behaving relative to expectation. You can set static thresholds or they can be dynamically configured by AppInsight. The thresholds that are set determine when the color of the KPI changes.

You set KPI thresholds in the **Application** module.

Procedure

- 1 In the **Metrics** tab, click the gear wheels icon in the top right corner of the KPI graph to open the threshold editor.

The data that you see depends on the type of KPI that you are viewing.

- 2 Verify that the **Calculate KPI State** button is toggled **On** so that other settings can be edited.

You can toggle the button **Off** after saving your changes, to prevent the KPI from being included in the monitored objects.

- 3 (Optional) To have AppInsight determine thresholds, click **Dynamic** and proceed to step [Step 6](#).

Dynamic thresholds are calculated based on historic data for the same hour of the same day.

A Warning threshold is calculated as twice the standard deviation.

A Critical threshold is calculated as four times the standard deviation.

- 4 (Optional) To manually set thresholds, click **Static**.
- 5 Adjust the thresholds as required.

Option	Description
Performance KPI	Use the text boxes on the left of the graph to set the warning and critical thresholds. In the Single Hit Time menu, you can set the acceptable time limit for a reply to be sent back to the origin of the request. The time that you select represents the length of time that is tolerated (t). The Frustrated time is four times t .
Usage KPI	In the Hits section, the text boxes on the left of the graph represent the low hits and high hits thresholds. Hits are counted per minute. Errors are counted as a percentage. Use the Hits and Errors buttons to toggle between thresholds for hits and for errors. Set upper and lower thresholds for hits because too many or too few hits might cause a change in state.
Middleware KPI	Use the text boxes to set the warning and critical percentages for the total number of servers on which a component runs. If the stated percentage is equalled or exceeded, the color of the KPI changes.

Option	Description
Infrastructure KPI	Use the text boxes to set the warning and critical percentages. If the stated percentage of the total number of platforms is equalled or exceeded, the color of the KPI changes accordingly.
Transaction Health KPI	Use the text boxes to set the warning and critical percentages. If the stated percentage of the total number of an object's transactions is equalled or exceeded, the color of the KPI changes accordingly.
Tier Health KPI	Use the text boxes to set the warning and critical percentages. If the stated percentage of the total number of tiers is equalled or exceeded, the color of the KPI changes accordingly.
Component Health KPI	(Visible when a tier is selected.) Use the text boxes to set the warning and critical percentages. If the stated percentage of the total number of objects is equalled or exceeded, the color of the KPI changes accordingly.
Cost KPI	Use the text boxes to set the warning and error values. The two fields on the left of the graph represent the warning and critical thresholds.

When the thresholds appear on a graph, the red threshold line might be above or below the yellow threshold line. The positioning of the thresholds depends on whether the seriousness of the state relates to a metric being too high or too low. For example, in the Cost KPI, a high cost is serious so the red threshold is above the yellow threshold. In a performance index score, a low score is more serious so the red threshold is below the yellow threshold.

Thresholds in the graph cover the period of the last seven days, assuming that the application has been installed for at least that time, and the predicted thresholds for the next seven days.

The thresholds appear on the graph as red and yellow lines.

- 6 Click **Save** to apply your changes.

Monitoring Application Performance

By monitoring the performance of your applications, you can detect areas to adjust to achieve service level agreements. AppInsight comprises views that show different perspectives of the monitored data.

The **Application** module is divided into views. Within each view, you can focus on areas of information to see in-depth information.

AppInsight uses several modules to monitor application performance, and for administration purposes.

- [vFabric AppInsight Dashboard](#) on page 47
The AppInsight dashboard provides you with a high-level overview of your applications and their health. You can select an application to view more detail. You can also create applications from the dashboard.
- [Application Module](#) on page 48
In the **Application** module, you can view summary data, metrics, topology mapping, event notifications and samples for your application.
- [Admin Module](#) on page 52
In the **Admin** module, you can register adapters for agents and complementary VMware products so they can be integrated in AppInsight and view the adapters' status, access the probe deployment page, view and configure alerts, download the client log for troubleshooting purposes, manage users and configure auto refresh options.

vFabric AppInsight Dashboard

The AppInsight dashboard provides you with a high-level overview of your applications and their health. You can select an application to view more detail. You can also create applications from the dashboard.

You can hover over an application icon, to view high-level detail about it.

The dashboard shows all of the applications that AppInsight is monitoring. The size of each application circle indicates its number of hits relative to the other monitored applications. The color of the circle indicates its health state.

Table 15-1. Health Status Indicator Colors

Color	Health Status
Green	Item is within specified thresholds for acceptable performance
Yellow	Item is within the specified thresholds for warning about performance
Red	Item is outside specified thresholds for acceptable performance

In addition to the applications, widgets list the five slowest applications, the five most used applications, and the most prominent notifications for the monitored applications. You can select an application in a widget to focus in on more detail.

When you select an application, the Application module Summary view appears. You can click **Manage** to edit the general details of the application, modify its structure, or manage its transactions.

Application Module

In the **Application** module, you can view summary data, metrics, topology mapping, event notifications and samples for your application.

Key User Interface Elements in the Application Module

Some user interface elements are common to all views in the **Application** module.

Table 15-2. User Interface Elements in the Application Module

User Interface Element	Comment
Time Picker button	<p>Expands the Time Picker pane, which shows a graph of the period of time for which data is provided.</p> <p>In the Time Picker pane, you can select alternative time periods.</p> <p>By default, the Time Picker button name is the range of time related to the time period that you selected. If you have not selected a time period, the default of ten minutes is used.</p>
Inventory button	<p>Shows a group of icons for tiers, transactions, components, and platforms that represent the items on which data is monitored.</p> <p>The number next to each icon indicates how many instances of the item are being monitored.</p> <p>You can click the Inventory button to expand the Navigation pane, which shows a table listing the names of the monitored items and their health status.</p>

Customizing Views in the Application Module

- You can click **Customize** in the title bar of a line graph widget in the **Application** module to select additional metrics to show in the graph. Note that selecting additional metrics might change the default colors of the display.
- You can click **Notifications** in the title bar of a KPI graph to display or hide notification markers on the graph. When you click a notification marker, information relevant to the notification appears. You can click the link in the notification description dialog box to open the Notifications view, to see additional information.

The letter that appears in the notification marker indicates its type.

A	Alert notification
I	Infrastructure notification
C	Configuration notification

The **Application** module includes several views.

- [Summary View](#) on page 49
In the **Summary** view, you see widgets that provide an overview of the AppInsight object that you selected, for the selected period.

- [Metrics View](#) on page 49
In the **Metrics** view, you can see summaries of performance, use, application infrastructure, cost, and the health of transactions and tiers.
- [Topology View](#) on page 50
In the **Topology** view, you see the platforms, components, and transactions of your application, including the identities of the virtual machines on which the application is running. The information that you see depends on the object that you have selected.
- [Notifications View](#) on page 51
In the **Notifications** view, a table shows information related to AppInsight alerts and configuration changes in your application.
- [Samples View](#) on page 52
AppInsight randomly samples transactions that network probes or BCI agents monitor. A sample traces a transaction element to identify all of its internal calls and methods. The sample also traces the time that elapses from when requests are made until the replies are received.

Summary View

In the **Summary** view, you see widgets that provide an overview of the AppInsight object that you selected, for the selected period.

The widgets that appear depend on the type of AppInsight object that you select. Generally, the following widgets appear.

General Details Widget	The General Details widget provides high level information about the object, including where it is running, how it is being monitored, average latency, performance index score, hits and errors rates, and so on.
Transactions Widget	The Transactions widget provides health, performance index, latency, hits and errors data for each of the object's transactions.
Key Metrics Widget	The Key Metrics widget provides information about the average latency, hit rate, and error rate for the object.
Notifications Widget	The Notifications widget provides information about recent alerts and logging data.
State Over Time Widget	The State Over Time Widget provides information about the changes in the state of the object that have occurred during the specified period.

You can click a link in a widget to focus in on a detail of interest.

Metrics View

In the **Metrics** view, you can see summaries of performance, use, application infrastructure, cost, and the health of transactions and tiers.

The type of information that is available depends on the KPI metric that you select.

When you select a KPI metric, you can select latency displays by clicking the icons at the bottom of the page. You see the name of each icon when you point to it.

Table 15-3. Description of KPI Metrics

KPI Metric	Description
Performance	The Performance KPI is calculated on the basis of a performance index score. A performance index score is an industry standard used for reporting and comparing the performance of software applications in computing.
Usage	The Usage KPI comprises the Hits KPI and the Errors KPI. The Usage KPI is based on all the application's hits. The state is calculated as the worst case between hits and errors.
Middleware	The Middleware KPI is available when the vFabric Hyperic agent is installed. <ul style="list-style-type: none"> ■ The Application Middleware KPI for the platform is the availability and other metrics, taken from the vFabric Hyperic agent. ■ The Application Middleware KPI for an application component is the availability of the server. ■ The Application Middleware KPI for a tier is calculated as a percentage of its application component's appinfra states. ■ The Application Middleware KPI for an application is calculated as a percentage of its tiers appinfra states.
Infrastructure	The Infrastructure KPI shows the availability and other infrastructure metrics, taken from both vCenter Server and vFabric Hyperic.
Transaction Health	The Transaction Health KPI state is calculated as a percentage of the states of the application's transactions.
Tier Health	The Tier Health KPI state is calculated as a percentage of the states of the application's tiers.
Component Health	The Component Health KPI state is calculated as a percentage of the states of the application's components.
Cost	The Cost KPI is the application's average cost per day, taken from the vCenter Chargeback agent, if installed.

Topology View

In the **Topology** view, you see the platforms, components, and transactions of your application, including the identities of the virtual machines on which the application is running. The information that you see depends on the object that you have selected.

You can view application topology as a logical map or in table format.

The color of the icons in the map indicate their health status.

Table 15-4. Health Status Indicator Colors

Color	Health Status
Green	Item is within specified thresholds for acceptable performance
Yellow	Item is within the specified thresholds for warning about performance
Red	Item is outside specified thresholds for acceptable performance

You cannot edit information in the **Topology** view. To edit information, click **Manage**.

Map

Each box in the map represents an application component.

The map is divided by tier.

You can view the following data in the application component box, depending on the selected object.

Information Type	Example
Component health status indicator	yellow (warning)
Platform health status indicator	green (OK)
Platform on which the component is running	virtual machine #1
IP address of the virtual machine on which the component resides and its port	
Monitoring level	network, code
Protocol	HTTP, JBoss, MySQL

Key monitored data for the application component appears in a bar across the bottom of the box.

When you are viewing the map of a transaction, you see the transaction element name in the application component box, and the transaction element's monitored data. You do not see platform data. Key monitored data for the application component to which the transaction is connected appears in a bar across the bottom of the box.

Table

The table shows the same information as that in the map, in tabular format. The table is categorized by tier.

Each row in the table represents an individual application component within the specified tier.

Notifications View

In the **Notifications** view, a table shows information related to AppInsight alerts and configuration changes in your application.

The information that you see includes a variety of data.

Data	Description
Object	The name of the object for which the notification was generated.
Description	<ul style="list-style-type: none"> ■ In the case in which KPI thresholds have been defined, when a threshold has been exceeded you see details of the deterioration or improvement. ■ In the case of a configuration change, for example if the Tomcat server.xml file changes, you see the original text and the changed text. ■ In the case of WAR or JAR files, the list of files within the archive that changed.
Time	Time that the action that caused the notification occurred.
Type	Whether the notification was generated by an alert, or because of a detected code change.
Generator	The source from which the notification originated, including vFabric AppInsight, vSphere and vFabric Hyperic.

Samples View

AppInsight randomly samples transactions that network probes or BCI agents monitor. A sample traces a transaction element to identify all of its internal calls and methods. The sample also traces the time that elapses from when requests are made until the replies are received.

Sample data appears in tabular format. When you select a sample in the table, additional details appear in the Sample Details pane.

Table 15-5. Samples Table Content

Column	Description
Start Time	The time at which the sample was taken.
Transaction Element	The name of the transaction element.
Component	The component of which the transaction element is a part.
Latency	The time in seconds that elapsed from the time the HTTP request was sent until a response was received.
Bytes	The number of bytes received in the HTTP response.
Error Status	The error status code, in the case in which an error occurred.
URL	The URL on which the HTTP query was sent.
Sample Type	Either Network or BCI, depending on whether the data was detected by a network probe or BCI agent.
Source IP: Port	The IP address at which the transaction started.
Destination IP: Port	The IP address at which the transaction finished.

Admin Module

In the **Admin** module, you can register adapters for agents and complementary VMware products so they can be integrated in AppInsight and view the adapters' status, access the probe deployment page, view and configure alerts, download the client log for troubleshooting purposes, manage users and configure auto refresh options.

Adapters & Deployment

Use the links on the **Adapters & Deployment** tab to navigate to the probe deployment page and to download the BCI agent.

In this tab you also register adapters for agents and complementary VMware products.

Alerts

Use the **Alerts** tab to define new alerts, or edit or cancel existing ones and to view data about configured alerts.

Support

Use the **Support** tab to:

- Download the client log for troubleshooting
- Go to the Support page and download a snapshot
- Enable auto refresh and specify the number of milliseconds between refresh cycles

Users

Use the **Users** tab to add or delete users, allocate permissions and create passwords.

Non-Administrator users can change their own password in this tab.

Define Alerts

You can define the conditions under which AppInsight generates an alert, and specify one or more actions to take when an alert is generated. Alerts can be generated for any AppInsight application, tier, component, platform or transaction that has a state.

You can define new alerts, or edit or cancel existing ones. If you are defining a new alert, follow all the steps in the procedure. If you are editing an existing alert, follow the appropriate steps in the procedure to make the necessary changes.

Procedure

- 1 In the **Admin** module, click **Alerts**.
A table appears with key data for all active alerts.
- 2 Click **New Alert**.
- 3 Type a name for the alert in the **Alert Name** text box.
- 4 Select the AppInsight object type from the **Object Type** menu.
If you choose any object type other than **Application**, additional menus appear.
- 5 (Optional) If you choose any object type other than **Application**, take these steps.
 - a Select the application to which the object belongs from the **Choose Application** menu.
 - b Select the object for which you are defining the alert from the object-specific menu.
- 6 In the Actions pane, define when an alert is generated.
 - a Select the KPI to which the alert relates.
 - b Select the state change that generates the alert.
 - c Select the time frame over which the state is calculated.
AppInsight analyses the object over the entire time period to determine the state.
- 7 (Optional) Specify the actions to occur when an alert generates a notification.
If you do not specify an action, notifications appear only in the Notifications table.

Option	Description
Click Add Action in the left pane	Specify an action when an alert is generated when a state deteriorates.
Click Add Action in the right pane	Specify an action when an alert is generated when a state improves.

The Create Alert Action dialog box appears.

- a From the **Choose Action** menu, select the action to be performed when the alert is generated .
The parameters that appear relate to the action that you select. There is only one default action, **Send notification**.
- b Type relevant data for each of the parameters and click **OK** in the Choose Action box.
The action for the new alert appears in place of the Choose Action box.
- c (Optional) Click the delete icon in an action to delete it from the alert.

- d (Optional) Click **Add Action** to add more actions to be performed when the alert is generated.
- e Click **Save**.

The alert appears in the Alerts table.

Create a vFabric AppInsight Snapshot for Troubleshooting

An AppInsight snapshot is a collection of logs, configuration files, and internal databases. If you encounter difficulties with AppInsight, the VMware technical support representative might ask you to create and submit an AppInsight snapshot.

You access the snapshot creation page through the **Deployment** module.

Procedure

- 1 In the **Support** tab of the **Admin** module, click **Go to Support Page**.
- 2 In the Diagnostic Support area, select either **Default** or a **Custom** option.

Option	Description
Default	Collects all of the logs, configuration, and server databases of the AppInsight server and its probes and agents for the previous four days.
Custom: Server only	Snapshot of the server excluding probes and agents.
Custom: Commands only	Includes server commands, but excludes probe data, logs, and database data.
Custom: Time delineated	Enables you to select a period of time in hours.

- 3 Click **Create Snapshot**.
Snapshot creation might take several minutes.
- 4 When the snapshot has been created, click **Snapshot Directory** to access the snapshot.
The snapshots are date stamped in the format *yyyymmdd*.

Delete an Application

If an application is no longer relevant, you can delete it from AppInsight.

Prerequisites

Open the application to delete.

Procedure

- 1 In the **Application** module, click **Manage** and open the **General Details** tab to see the application settings.
- 2 Click **Delete** and in the Confirm Deletion dialog box click **Yes**.

The application, its tiers, and all of its components, transactions, and transaction elements are deleted from AppInsight.

Delete a Tier

If a tier is no longer relevant, you can delete it from AppInsight.

Prerequisites

Open the application that contains the tier to delete.

Procedure

- 1 In the **Application** module, click **Manage** and open the **Structure** tab to see the application map.
- 2 Click the Actions arrow at the top right of the tier box, and select **Delete Tier**.
- 3 In the Confirm Deletion dialog box, click **Yes**.

The tier and all of its components, transactions, and transaction elements are deleted.

Components revert to potential components. Transactions revert to potential transactions.

Managing AppInsight Users

You manage AppInsight users in the **Admin** module. Users can have either an Administrator or an Application Owner role.

General user management tasks, such as creating or deleting users, assigning permissions, and so on can only be performed by Administrator users. Application Owner users can change their passwords.

When you select a user in the Users table, their details appear in the User Details pane.

User Roles and Permissions

Administrator

A user with the Administrator role has read/write permissions for all parts of AppInsight. An Administrator cannot view other users' passwords, but can specify a new password for a user when necessary.

Application Owner

The permissions that an Application Owner has are specified by the Administrator.

For each application, the Administrator can specify the following permissions:

View	The user can view content.
Actions	The user can perform AppInsight actions such as resetting virtual machines or reverting to the current snapshot.
Write	The user can manage topology and thresholds, and can create and edit alerts.

- [Add a New User](#) on page 60
You create AppInsight users in the **Users** view of the **Admin** tab.
- [Change a Password](#) on page 60
If you are an Administrator, you can change passwords in the **Users** tab of the **Admin** module.
- [Unlock a User Account](#) on page 60
If a user enters an incorrect password multiple times, the account is locked.
- [Delete a User Account](#) on page 61
You delete AppInsight user accounts in the **Users** tab of the **Admin** module. Only users with an Administrator role can delete users.

Add a New User

You create AppInsight users in the **Users** view of the **Admin** tab.

Procedure

- 1 In the **Users** tab, click **New User**.
- 2 In the New User dialog box, type a user name for the user.
- 3 Select either **Application Owner** or **Administrator** from the **Role** menu.
- 4 Type a password in the **New Password** text box and retype it in the **Confirm Password** text box.
- 5 Click **Add**.

The new user name appears in the list in the Users table.

- 6 Ensure that the new user's name is selected, and for each application, select the checkboxes that define the permissions for the user.

An unselected checkbox means that the user does not have that permission.

- 7 Click **Save**.

The new user account is created.

Change a Password

If you are an Administrator, you can change passwords in the **Users** tab of the **Admin** module.

If you have the Application Owner role, you can change your own password.

Procedure

- 1 In the Users table, select the name of the user whose password is being changed.
The attributes for the user appear in the User Details pane.
- 2 Type a password for the user in the **New Password** text box.
- 3 Confirm the password in the **Confirm Password** text box.
- 4 Click **Update Password**.
- 5 Advise the user of the new password.

Unlock a User Account

If a user enters an incorrect password multiple times, the account is locked.

The account unlocks after 15 minutes.

Procedure

- 1 Wait for 15 minutes and enter the correct password.
- 2 (Optional) If you have forgotten your password, contact your AppInsight Administrator to have a new password defined.

The lock is removed from the user's account.

Delete a User Account

You delete AppInsight user accounts in the **Users** tab of the **Admin** module. Only users with an Administrator role can delete users.

Procedure

- 1 In the **Users** tab, select the name of the user to delete.
- 2 Click **Delete User**.
- 3 Click **Yes** when you are prompted to confirm the action.

The user account is deleted from the Users table.

Uninstall vFabric AppInsight

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

Procedure

- 1 In the **Admin** module, click **Adapters & Deployment**, and click the **Deploy Network Probes** link.
- 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**.

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