

Infrastructure Navigator User's Guide

vCenter Infrastructure Navigator 1.0.0

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VMware vCenter Infrastructure Navigator User's Guide

The *VMware vCenter Infrastructure Navigator User's Guide* describes the tasks that users can perform using VMware vCenter™ Infrastructure Navigator.

Infrastructure Navigator is an application awareness plug-in to the vCenter Server that provides continuous dependency mapping of applications.

Intended Audience

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

Infrastructure Navigator Overview

VMware vCenter Infrastructure Navigator is an application awareness plug-in to the vCenter Server that provides continuous dependency mapping of applications.

Infrastructure Navigator offers application context to the virtual infrastructure administrators to monitor and manage the virtual infrastructure inventory objects and actions. Administrators can use Infrastructure Navigator to understand the impact of the change on the virtual environment in their application infrastructure.

NOTE Plug-ins (also referred to as Extensions) expand the capabilities of vCenter Server by adding features and functionality to the base product.

This chapter includes the following topics:

- [“Infrastructure Navigator Functionality,”](#) on page 7
- [“Infrastructure Navigator Target Users and Benefits,”](#) on page 8
- [“Essential Concepts of Infrastructure Navigator,”](#) on page 8
- [“Infrastructure Navigator Architecture,”](#) on page 9
- [“Components of Infrastructure Navigator,”](#) on page 9

Infrastructure Navigator Functionality

Infrastructure Navigator provides a centralized view of your application environment.

Infrastructure Navigator performs the following high-level functions:

- Maps virtual infrastructure resources such as virtual machines, Web servers, mail servers, database servers, application servers, cache servers, messaging servers, application management servers, and virtualization management servers.
- Displays relationships between applications and virtual machines through application dependency mapping.
- Detects inconsistencies from the norm and helps you troubleshoot errors.
- Allows you to take advantage of integration with other VMware products such as VMware vCenter Server and VMware vCenter Site Recovery Manager (SRM).

Infrastructure Navigator Target Users and Benefits

Infrastructure Navigator creates a detailed model of the application environment and offers application context to its users.

Infrastructure Navigator helps virtual infrastructure administrators to accurately answer the following questions:

- Which application services are running on my virtual machines?
- What are the dependencies among application services running on different virtual machines?
- Where are the hidden optimization opportunities and how can I capitalize on them?
- How do certain application changes impact my environment?
- What are the risks involved in making changes in the virtual environment?
- How do certain virtual machine's issues impact application operation and how can I prevent or solve these issues?

Essential Concepts of Infrastructure Navigator

Before working with VMware vCenter Infrastructure Navigator, you must understand certain concepts related to Infrastructure Navigator.

Mapping

Mapping is a continuous process that creates and maintains a detailed model of your application environment.

Services

Infrastructure Navigator maps services that are installed and running in your virtual environment. Services include Web servers, mail servers, database servers, application servers, cache servers, messaging servers, application management servers, and virtualization management servers. To view the list of services supported by Infrastructure Navigator, see [“Services Supported,”](#) on page 12

vCenter Entity

A vCenter entity is any entity that is part of the Hosts and Clusters inventory pane except a virtual machine. For example, a vCenter Server, an ESX host, a cluster, a datastore are all vCenter entities.

Change

A change is any change in the virtual environment. For example, installing a service is a change.

Incoming Dependency

When a virtual machine or a service running on it requires information from a service running on the selected virtual machine, a dependency exists between the two virtual machines. This dependency is known as an incoming dependency.

For example, if the selected virtual machine serves another virtual machine it is an incoming dependency.

Outgoing Dependency

When the selected virtual machine or a service running on it requires information from a service running on another virtual machine, a dependency exists between the two virtual machines. This dependency is known as an outgoing dependency.

For example, if the selected virtual machine is served by another virtual machine it is an outgoing dependency.

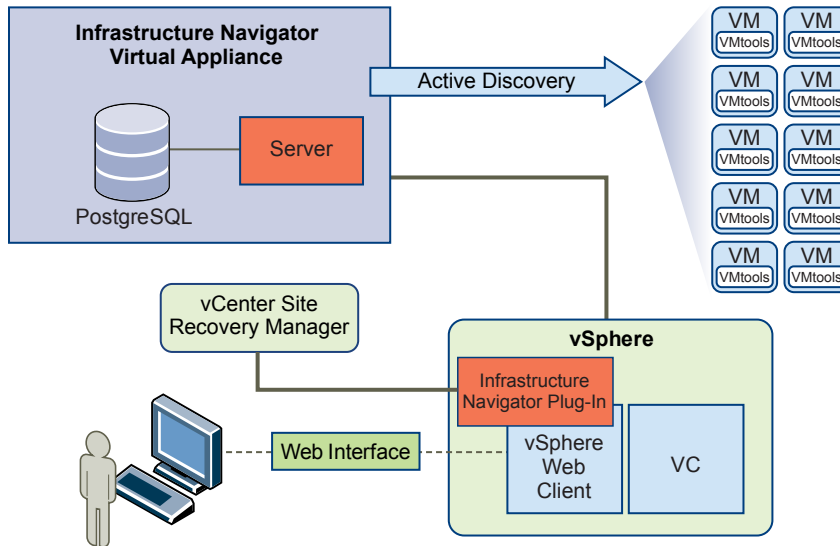
Infrastructure Navigator Architecture

Infrastructure Navigator is a virtual appliance that you can import on the vCenter Server. A virtual appliance is a virtual machine image that contains software designed to run in a virtual machine.

With the components of Infrastructure Navigator, you can map services running in your virtual environment, examine the application discovery status, view and analyze the dependency map, and have a centralized view of the entire application environment.

The architecture illustrates various components of Infrastructure Navigator and their dependencies.

Figure 1-1. Infrastructure Navigator Architecture Diagram



Components of Infrastructure Navigator

A component is a software or software design with a well-defined interface. A component represents specific behavior of the system.

Table 1-1 lists and describes the principal components of Infrastructure Navigator.

Table 1-1. Infrastructure Navigator Components

Component	Description
Server in Infrastructure Navigator virtual machine	The Server component reconciles the data from Active Discovery and transfers the data to the Database component.
Database in Infrastructure Navigator virtual machine	The Database component stores the data received from the Server component. The Database component also stores Infrastructure Navigator configurations. NOTE Infrastructure Navigator does not support storing of data in an external database.
Infrastructure Navigator Plug-In in the vSphere Web Client	The Infrastructure Navigator Plug-In in the vSphere Web Client provides a graphical user interface that you use to view and analyze dependencies.

Mapping Overview

Mapping is a continuous process that creates and maintains a detailed model of your application environment. The mapping process populates the Infrastructure Navigator Database with the mapped items and identifies the relationships between them.

This chapter includes the following topics:

- [“Mapping Services,”](#) on page 11
- [“Active Discovery,”](#) on page 12
- [“Remapping Services,”](#) on page 12
- [“Services Supported by Infrastructure Navigator,”](#) on page 12

Mapping Services

Infrastructure Navigator maps services that are installed and running in your virtual environment. Services include Web servers, mail servers, database servers, application servers, cache servers, messaging servers, application management servers, and virtualization management servers. With the mapped data, you can visualize dependencies between services and virtual machines through application dependency mapping.

Infrastructure Navigator maps services running on virtual machines only if all the following conditions are satisfied:

- The virtual machine is powered on.
- The virtual machine can be reached on the network.
- The vCenter credentials are valid.
- The virtual machine is running on a supported ESX version.
- VMware Tools is installed and running on the virtual machine.
- The VMware Tools version is supported by Infrastructure Navigator.
- The virtual machine has a supported guest operating system on it.

NOTE Microsoft Windows NT, Microsoft Windows 2000, Apple Macintosh, FreeBSD, SCO UnixWare 7, Sun Solaris 9, and Sun Solaris 10 (64-bit) are not supported by Infrastructure Navigator. Also, Infrastructure Navigator does not support virtual machines with guest operating system defined during creation as Other (64-bit) and Other (32-bit).

If any one of these condition fails, an Access failed error message is displayed in the Discovery Status field.

Active Discovery

In Infrastructure Navigator, active discovery is the method used to access the virtual machines. Active discovery is a multithreaded process that uses VMware Tools to access virtual machines.

Infrastructure Navigator starts the mapping process shortly after installation only if you have provided valid administrator-level vCenter credentials. Mapping is continuous, unless you stop or disable Infrastructure Navigator.

Infrastructure Navigator begins to populate the inventory table within an hour after you install the virtual appliance. To view the complete information in the inventory table, dependency map, and dependency table, wait until you have collected at least one hour of data.

NOTE If the initial mapping process is incomplete, a `This VM is pending application mapping` message is displayed in place of the dependency map.

Remapping Services

After initial deployment, Infrastructure Navigator remaps services at a predefined time interval. Remapping ensures that the Infrastructure Navigator database is up to date and is synchronized with the changes in the virtual environment. The default frequency for remapping is one hour, and is displayed in the Successful Discovery field.

A change is any change in the virtual environment. For example, installing a service is a change. A change in the virtual environment takes effect only after remapping.

When the specified time interval has elapsed, Infrastructure Navigator rediscovers the change. For example, if you install a service on a powered-on virtual machine, Infrastructure Navigator discovers this service within one hour, the default frequency for remapping.

Also, the vCenter Server is refreshed once in every five minutes and the Discovery Status field represents this. For example, consider a virtual machine with services installed and running on it is powered off. Within five minutes after the virtual machine is powered off, Infrastructure Navigator discovers the change as the vCenter Server is refreshed and updates this in the Discovery Status field. The services that have been discovered on the virtual machine before the virtual machine was powered off remain on the virtual machine. The Successful Discovery field displays the time elapsed since Infrastructure Navigator last discovered the virtual machine when it was up and running.

Services Supported by Infrastructure Navigator

Infrastructure Navigator maps services that are installed and running in your virtual environment.

Services Supported

[Table 2-1](#) lists and describes the services supported by Infrastructure Navigator along with the supported versions and service name as displayed in the UI.

Table 2-1. Services Supported

Category	Service Name	Version	Description
Web Server	Apache HTTP	2.0.X, 2.2.X	The Apache HTTP Server, also known as Apache, is an open-source Web server that provides HTTP services in sync with the current HTTP standards.
	IIS	6.0.X	The Internet Information Services (IIS) is a flexible, secure, and easy-to-manage Web server developed by Microsoft for use with Microsoft Windows.

Table 2-1. Services Supported (Continued)

Category	Service Name	Version	Description
	Nginx	0.7, 0.8	The nginx is a lightweight, HTTP, and reverse proxy server, as well as a mail proxy server that runs on UNIX, Linux, BSD variants, Mac OS X, Solaris, and Microsoft Windows.
Cache Server	GemFire	6.0, 6.5	VMware vFabric GemFire is a distributed data management platform that provides dynamic scalability, high performance, and data management capabilities of a database.
Mail Server	Exchange	2003, 2007, 2010	Microsoft Exchange Server is the server side of the messaging application used by enterprises.
Database Server	Oracle DB	11g	The Oracle Database is an Object-Relational Database Management System (ORDBMS).
	MS-SQL DB	9.0, 10.0, 10.5	Microsoft SQL Server is a relational model database server.
	DB2	9.5, 9.7	IBM DB2 Enterprise Server Edition is a relational model database server that runs on Unix, Linux, IBM i, z/OS and Windows servers.
	MySQL DB	5.1, 5.5	MySQL is an open source Relational Database Management System (RDBMS) that runs as a server, providing multi-user access to a number of databases.
	Sybase DB	15.0, 15.5	Adaptive Server Enterprise (ASE) is a Relational Database Management System (RDBMS) developed by Sybase Corporation.
Application Server	Apache Tomcat	6.0.X, 7.0	Apache Tomcat is an open-source software implementation of the Java Servlet and JavaServer Pages (JSP) technologies that provides an environment for Java code to run.
	tc Server	2.0, 2.1.1	tc Server is a lightweight application server that provides an enterprise version of the Apache Tomcat application server optimized for cloud and virtual environments.
	WebSphere	6.1, 7.0	WebSphere Application Server (WAS) is a software application server developed by IBM that builds, deploys, and manages SOA business applications and services.
	WebLogic	10.3	Oracle WebLogic Server is an application server for building and deploying enterprise Java EE applications.
	JBoss	5.1, 6.0	JBoss Application Server is an open-source Java EE-based application server that provides Java EE 5 features along with extended enterprise services including clustering, caching, and persistence.
	SharePoint	2007, 2010	Microsoft SharePoint is a centralized web application platform and a replacement for multiple web applications. In the user interface, the single server installation of SharePoint appears as SharePoint Server, Web-server Front End appears as SharePoint Web Server, and Application appears as SharePoint Application Server.
Virtualization Management	VMware vCenter	4.1, 5.0	VMware vCenter Server centrally manages VMware vSphere environments and improves IT administrators control over the virtual environment.
Application Management	Hyperic	4.4, 4.5, 4.6	VMware vFabric Hyperic automatically discovers new virtual machines as they come online, eliminating the need for manual updating of monitoring configurations. Infrastructure Navigator maps Hyperic Agent and Hyperic Server running in your virtual environment.
Messaging Server	RabbitMQ	1.8.1, 2.3.1	RabbitMQ is an open-source, enterprise messaging system that uses Advanced Message Queuing Protocol (AMQP). RabbitMQ provides robust messaging for applications.

Getting Started with Infrastructure Navigator

3

You can use the Infrastructure Navigator portal to view and analyze the information collected during discovery.

This chapter includes the following topics:

- [“Log in to the Infrastructure Navigator Portal,”](#) on page 15
- [“Enable or Disable Infrastructure Navigator Plug-In,”](#) on page 16

Log in to the Infrastructure Navigator Portal

You can access the Infrastructure Navigator portal through the vSphere Web Client. Infrastructure Navigator is compatible only with the vSphere Web Client and does not support the .NET client.

Prerequisites

Install and deploy the Infrastructure Navigator plug-in on a vCenter Server from which you want to administer Infrastructure Navigator. For more information, see *vCenter Infrastructure Navigator Installation and Administration Guide*.

Procedure

- 1 Log in to the vSphere Web Client.
- 2 Specify the IP address of the vCenter Server.
- 3 In the Username text box, type your user name.
- 4 In the Password text box, type your password.
- 5 Click **Login** to connect to the vCenter Server.
- 6 In the toolbar, locate and click the **Navigator** tab.

Services running in your virtual environment are displayed.

NOTE Infrastructure Navigator displays the services running in your virtual environment within an hour or so after you install the virtual appliance. To view the complete information, wait until you have collected at least one hour of data.

Enable or Disable Infrastructure Navigator Plug-In

You can enable or disable Infrastructure Navigator plug-in through the Plug-in Manager. After you install the Infrastructure Navigator plug-in, it is enabled by default.

Prerequisites

Install and deploy the Infrastructure Navigator plug-in on a vCenter Server from which you want to administer Infrastructure Navigator. For more information, see *vCenter Infrastructure Navigator Installation and Administration Guide*.

Procedure

- 1 Start the vSphere Web Client and log in to the vCenter Server.
- 2 Navigate to **vCenter Management > System Administration > Plug-in Management**.
The Plug-in Management screen appears.
- 3 Right-click **vCenter Infrastructure Navigator** and navigate to **Other > Disable**.
The Disable Plug-in dialog box appears.
- 4 Click **Yes** to disable the Infrastructure Navigator plug-in.

NOTE Disabling the plug-in does not remove it from the client. You must uninstall the plug-in to remove it.

- 5 To enable the disabled plug-in, right-click **vCenter Infrastructure Navigator** and navigate to **Other > Enable**.
The Enable Plug-in dialog box appears.
- 6 Click **Yes** to enable the Infrastructure Navigator plug-in.

When you disable the plug-in, the **Navigator** tab and the Navigator portlet in the **Summary** tab is not visible in the vSphere Web Client, but Infrastructure Navigator continues the mapping process in the background.

Application Visibility at the Virtual Machine Level

4

You can view the application dependency of a virtual machine to manage your vSphere inventory. The inventory appears in the left pane and displays all the virtual machines managed by the vCenter Server.

You can view the application dependency of a virtual machine, by selecting a virtual machine from the inventory. The selected virtual machine name is highlighted in the inventory and its details appear in the Navigator portlet in the **Summary** tab.

This chapter includes the following topics:

- [“Understanding the Navigator Portlet,”](#) on page 17
- [“Viewing Application Dependencies of a Virtual Machine,”](#) on page 18
- [“Viewing the Dependency Map,”](#) on page 18
- [“Viewing the Dependency Table,”](#) on page 19
- [“Viewing Details of a Virtual Machine,”](#) on page 20

Understanding the Navigator Portlet

The Navigator portlet in the **Summary** tab gives a summarized result of the mapping process carried out on the selected virtual machine.

[Table 4-1](#) lists and describes the fields in the Navigator portlet.

Table 4-1. Navigator Portlet

Field	Value
Discovery Status	Displays the discovery status of the virtual machine. <ul style="list-style-type: none">■ Normal: Indicates absence of any error. For more information, see “Mapping Services,” on page 11.■ Access failed: Indicates that the mapping process failed on the selected virtual machine and displays an error message stating the reason for failure. The field also displays a green icon for a Normal status and a gray icon for a Access failed status.
Successful Discovery	Displays the time elapsed since the last successful discovery of the virtual machine.
Application services	Displays a comma-separated list of services installed and running on the selected virtual machine. In case of multiple services with the same version or multiple services without any version, the service name is displayed once with number of instances in parenthesis.
Dependencies	Displays the total number of dependencies including incoming and outgoing dependencies. Click Dependencies to view the number of incoming and outgoing dependencies.

Table 4-1. Navigator Portlet (Continued)

Field	Value
Incoming	When a virtual machine or a service running on it requires information from a service running on the selected virtual machine, a dependency exists between the two virtual machines. This dependency is known as an incoming dependency. For example, if the selected virtual machine serves another virtual machine it is an incoming dependency.
Outgoing	When the selected virtual machine or a service running on it requires information from a service running on another virtual machine, a dependency exists between the two virtual machines. This dependency is known as an outgoing dependency. For example, if the selected virtual machine is served by another virtual machine it is an outgoing dependency.

To view the dependency map of the selected virtual machine, click **Show dependencies** at the bottom of the Navigator portlet or click the **Navigator** tab that appears in the toolbar.





Viewing Application Dependencies of a Virtual Machine

The **Navigator** tab displays the first level application dependencies of a selected virtual machine in a map and tabular form.

The **Navigator** tab also displays additional information about the selected virtual machine in the information panel at the bottom of the screen. By default, the **Navigator** tab opens the dependency map of the selected virtual machine.

Viewing the Dependency Map

The dependency map is a map of relationships that displays the services installed and running on a virtual machine. The dependency map displays all virtual machines connected to the selected virtual machine by incoming or outgoing dependencies. If you have integrated SRM with Infrastructure Navigator, the SRM Protection Groups and SRM Recovery Plans of the selected virtual machine are also displayed in the dependency map. If a virtual machine is part of a vApp, then the vApp name is also displayed in the dependency map.

In a dependency map, the selected virtual machine is highlighted in dark blue, and virtual machines are identified by virtual machine names and are represented by . The names that appear below the virtual machine name indicate the services running on the selected virtual machine and are represented by . If SRM is integrated, then the SRM information also appears and is represented by . If a virtual machine is part of a vApp, then the vApp name also appears, and is represented by .

In case of an outgoing connection from the selected virtual machine (VM1) to another virtual machine (VM2) that is part of the virtual environment monitored by Infrastructure Navigator, VM2 appears in the dependency map as an outgoing dependency. In case of an incoming connection from a virtual machine (VM1) to the selected virtual machine (VM2) that is part of the virtual environment monitored by Infrastructure Navigator, VM1 appears in the dependency map as an incoming dependency.

The arrows in a dependency map determine whether a dependency is outgoing or incoming. An outgoing arrow from the selected virtual machine denotes an outgoing dependency and an incoming arrow to the selected virtual machine denotes incoming dependency.

In the dependency map, you can double-click another virtual machine to navigate to that virtual machine and view its dependency map. The navigation is successful when the following changes occur:

- The other virtual machine is highlighted in dark blue.
- The other virtual machine is highlighted in the left inventory pane.

- The information panel displays details of the other virtual machine.





NOTE If the initial mapping process is incomplete, a `This VM is pending application mapping` message is displayed in place of the dependency map.

Understanding the Dependency Map Toolbar

You can use the control buttons on the Dependency Map toolbar to manage the dependency map.

The Dependency Map toolbar appears above the dependency map. [Table 4-2](#) lists available control buttons and describes their behavior.

Table 4-2. Dependency Map Control Buttons

Control Button	Description
	Toggle Overview button opens an overview image to the left of the dependency map. You can click the overview image to easily navigate within the dependency map. Click the Toggle Overview button again to close the overview image.
	Zoom In button magnifies the dependency map by preset levels. You can use your mouse wheel to change the size of the dependency map. Place the cursor on the dependency map and roll the mouse wheel forward to zoom in on the map.
	Zoom Out button shrinks the dependency map by preset levels. You can use your mouse wheel to change the size of the dependency map. Place the cursor on the dependency map and roll the mouse wheel backward to zoom out.
	Fit Content button adjusts the magnification of the dependency map so that the dependency map exactly fits in the rectangular map pane.

You can also move the dependency map in any direction. To move the dependency map, left-click on the dependency map and drag the mouse in the desired direction without releasing the mouse button.

Viewing the Dependency Table

The dependency table is the dependency map in a tabular form. In addition to the virtual machine name and services installed, it displays the virtual machine state, virtual machine status, discovery status, and the time elapsed since last successful discovery of the selected virtual machine.

In the **Navigator** tab, click **Table** to view the first level application dependency table of the selected virtual machine along with the incoming dependency table and outgoing dependency table.

The three tables displayed are the sub tables of the inventory table.

- The Incoming dependencies table displays the details of all virtual machines that depend on the selected virtual machine.
- The *Virtual Machine name* table displays the details of the selected virtual machine.
- The Outgoing dependencies table displays the details of all virtual machines that the selected virtual machine depends on.

If the virtual machine has no incoming dependencies, a `No incoming dependencies` message is displayed in place of the Incoming dependencies table. If the virtual machine has no outgoing dependencies, a `No outgoing dependencies` message is displayed in place of the Outgoing dependencies table.

[Table 4-3](#) lists and describes the fields in the dependency table.

Table 4-3. Dependency Table

Field	Value
VM Name	Displays the virtual machine name as displayed in the vCenter inventory panel.
Services	Displays a comma-separated list of mapped services along with their versions that are running on the selected virtual machine. In case of multiple services with the same version or multiple services without any version, the service name is displayed once with the number of instances in parenthesis.
Discovery Status	Displays the discovery status of the virtual machine. <ul style="list-style-type: none"> ■ Normal. Indicates absence of any error. For more information, see “Mapping Services,” on page 11. ■ Access failed. Indicates that the mapping process failed on the selected virtual machine, and displays an error message stating the reason for failure. The field also displays a green icon for a Normal status and a gray icon for Access failed status.
Successful Discovery	Displays the time elapsed since the last successful discovery of the virtual machine.
Protection Group	Displays the SRM protection group of the virtual machine. A blank field indicates that the virtual machine does not belong to any SRM protection group.
Recovery Plans	Displays a comma-separated list of SRM recovery plans for the virtual machine. A blank field indicates that the virtual machine does not belong to any SRM recovery plan.

The Protection Group and Recovery Plans column appears only if you decide to integrate Infrastructure Navigator with SRM. For information about SRM integration, see *vCenter Infrastructure Navigator Installation and Administration Guide*.

Viewing Details of a Virtual Machine

The information panel displays the details of the selected virtual machine and appears at the bottom of the dependency table and dependency map. The information displayed in the information panel is not displayed in the dependency map or the dependency table.

[Table 4-4](#) lists and describes the fields in the information panel.

Table 4-4. Information Panel

Field	Value
Guest OS	The name of the guest operating system installed on the selected virtual machine.
DNS name	The Domain Name System (DNS) name of the selected virtual machine.
IP Addresses	A comma-separated list of IP addresses of the selected virtual machine.
Host	The name of the ESX host on which the selected virtual machine resides.
Cluster	The name of the cluster assigned to the selected virtual machine.
Storage	The name of the storage assigned to the selected virtual machine.
Networks	The name of the network assigned to the selected virtual machine.
VMware Tools	Displays the status of the VMware Tools installed on the selected virtual machine.
vApp Name	The name of the vApp to which the selected virtual machine belongs.

Application Visibility at the vCenter Entity Level

5

You can view the services installed and running on a vCenter entity to manage your vSphere inventory. The inventory appears in the left pane and displays all the vCenter entities managed by the vCenter Server.

You can view the services installed and running on a vCenter entity, by selecting a vCenter entity from the inventory. The selected vCenter entity name is highlighted in the inventory and its details appear in the Navigator portlet in the **Summary** tab.

This chapter includes the following topics:

- [“Understanding the Navigator Portlet,”](#) on page 21
- [“Viewing Application Dependencies of a vCenter Entity,”](#) on page 22
- [“Viewing the Inventory Table,”](#) on page 22
- [“Filter Text in the Inventory Table,”](#) on page 23
- [“Viewing Details of a vCenter Entity,”](#) on page 24

Understanding the Navigator Portlet

The Navigator portlet in the **Summary** tab gives a summarized result of the mapping process carried out on the selected vCenter entity.

[Table 5-1](#) lists and describes the fields in the Navigator portlet.

Table 5-1. Navigator Portlet

Field	Value
Known Application Services	Displays the total number of services installed and running on the selected vCenter entity. Services include Web servers, mail servers, database servers, application servers, cache servers, messaging servers, application management servers, and virtualization management servers. You can click Known Application Services to view the number of Web servers, mail servers, database servers, application servers, cache servers, messaging servers, application management servers, and virtualization management servers discovered by Infrastructure Navigator.
Web Server	Displays the number of Web servers installed and running on the selected vCenter entity. Supported Web servers include Apache HTTP, IIS, and Nginx.
Mail Server	Displays the number of mail servers installed and running on the selected vCenter entity. Microsoft Exchange is the only supported mail server.
Database Server	Displays the number of database servers installed and running on the selected vCenter entity. Supported database servers include Oracle DB, MS-SQL DB, DB2, MySQL DB, and Sybase DB.
Application Server	Displays the number of application servers installed and running on the selected vCenter entity. Supported application servers include Apache Tomcat, tc Server, WebSphere, WebLogic, SharePoint, and JBoss.

Table 5-1. Navigator Portlet (Continued)

Field	Value
Cache Server	Displays the number of cache servers installed and running on the selected vCenter entity. GemFire is the only supported cache server.
Messaging Server	Displays the number of messaging servers installed and running on the selected vCenter entity. RabbitMQ is the only supported messaging server.
Application Management	Displays the number of application management servers installed and running on the selected vCenter entity. Hyperic is the only supported application management server.
Virtualization Management	Displays the number of virtualization management servers installed and running on the selected vCenter entity. VMware vCenter is the only supported virtualization management server.

To view the inventory table of the selected vCenter entity, click **Show all in inventory** at the bottom of the Navigator portlet or click the **Navigator** tab that appears in the toolbar.

Viewing Application Dependencies of a vCenter Entity

The **Navigator** tab displays the inventory table of the selected vCenter entity. **Navigator** tab also displays additional information about the selected vCenter entity in the information panel at the bottom of the screen.

Viewing the Inventory Table

Each row in the inventory table displays information about virtual machines that belong to the selected vCenter entity.

For example, if you select an ESX host, then all the virtual machines on that ESX host are listed in the inventory table. The virtual machine data displayed in each row of the inventory table is identical to the dependency table of that virtual machine.

[Table 5-2](#) lists and describes the fields in the inventory table.

Table 5-2. Inventory Table

Field	Value
VM Name	Displays the virtual machine name as displayed in the VC inventory panel.
VM State	Displays the current state of the virtual machine. <ul style="list-style-type: none"> ■ Powered Off ■ Powered On
VM Status	Displays the current status of the virtual machine. <ul style="list-style-type: none"> ■ Normal ■ Alert <p>The field also displays a green icon for a Normal status and a red icon for an Alert status.</p>
Services	Displays a comma-separated list of mapped services along with their versions that are running on the selected virtual machine. <p>In case of multiple services with the same version or multiple services without any version, the service name is displayed once with number of instances in parenthesis.</p>
Discovery Status	Displays the discovery status of the virtual machine. <ul style="list-style-type: none"> ■ Normal. Indicates absence of any error. For more information, see “Mapping Services,” on page 11. ■ Access failed. Indicates that the mapping process failed on the selected virtual machine and displays an error message stating the reason for failure. <p>The field also displays a green icon for a Normal status and a gray icon for Access failed status.</p>
Successful Discovery	Displays the time elapsed since the last successful discovery of the virtual machine.

Table 5-2. Inventory Table (Continued)

Field	Value
Protection Group	Displays the SRM protection group of the virtual machine. A blank field indicates that the virtual machine does not belong to any SRM protection group.
Recovery Plans	Displays a comma-separated list of SRM recovery plans for the virtual machine. A blank field indicates that the virtual machine does not belong to any SRM recovery plan.

The Protection Group and Recovery Plans column appears only if you decide to integrate Infrastructure Navigator with SRM. For information about SRM integration, see *vCenter Infrastructure Navigator Installation and Administration Guide*.

Customize Inventory Table

You can customize the inventory table by adding or removing columns. By default, Infrastructure Navigator does not display information about the state and the status of virtual machines in the inventory table.

Procedure

- 1 Select a vCenter entity from the inventory pane.
- 2 To view the inventory table of the selected vCenter entity, click **Navigator** tab.
- 3 Right-click any column heading.
- 4 In the options menu, click **Show/Hide Columns**.
All columns of the inventory table appear in a list.
- 5 To add a column, select an item from the list and click **OK**.
- 6 To hide a column, deselect an item from the list and click **OK**.

Filter Text in the Inventory Table

Infrastructure Navigator enables you to search through the inventory table by filtering the information about a specific object.

You can search while typing and also filter the text alternatively. You can specify the search criteria to search for a specific object. For example, you can enter partial host name as the search criteria.

Procedure

- 1 Select a vCenter entity from the inventory.
- 2 Click the **Navigator** tab.
The **Filter** text box appears above the inventory table.
- 3 In the **Filter** text box, type the search criteria for the object that you want to find in the inventory table.
Only the rows matching the search criteria are retained in the table.
- 4 (Optional) Click **Clear**, to redisplay all the data that was initially displayed in the inventory table.
The filter can be cleared in order to redisplay all the data.

Viewing Details of a vCenter Entity

By default, the information panel displays the details of the virtual machine that appears in the first row of the inventory table of the selected vCenter entity. As you select different rows in the inventory table, the information displayed in the information panel changes accordingly.

The information panel that appears below the inventory table is identical to the information panel that appears below the dependency map and the dependency table of the selected virtual machine.

To view the list and description of the fields in the information panel, see [Table 4-4](#).

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