Application Discovery Manager Administration Guide

vCenter Application Discovery Manager 6.2.2

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VMware, Inc.
3401 Hillview Ave.
Palo Alto, CA 94304
www.vmware.com

Contents

About This Book

The VMware vCenter™ Application Discovery Manager (ADM) Administration Guide provides information that the administrators are required to install and configure the ADM.

Intended Audience

This document is part of the VMware vCenter Application Discovery Manager documentation set, and is intended for use by system administrators and integrators responsible for installing ADM.

The installation procedures in this document must be performed by IT professionals familiar with virtualization and VMware technologies such as VMware ESX™ servers and related virtual and physical equipment.

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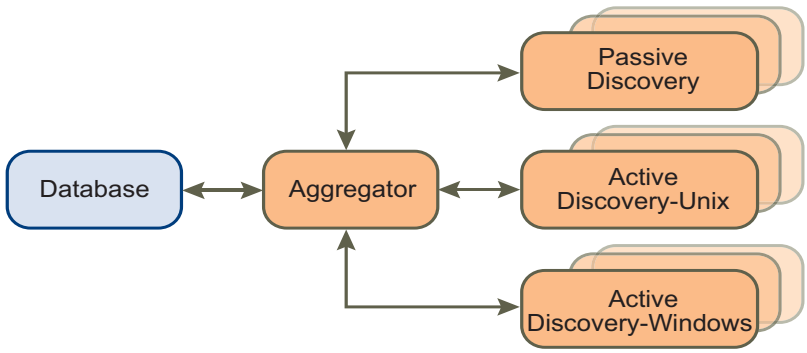
Overview 1

This chapter describes the different VMware vCenter Application Discovery Manager (ADM) architecture solutions and configuration. This chapter includes the following topics:

System Architecture

The ADM provides system architecture solutions to meet the requirements of different environments as shown in Figure 1-1.

Figure 1-1. ADM Components



VMware provides ADM on one or more appliances. The mode of the appliance determines which component is running. ADM components are described in Table 1-1.

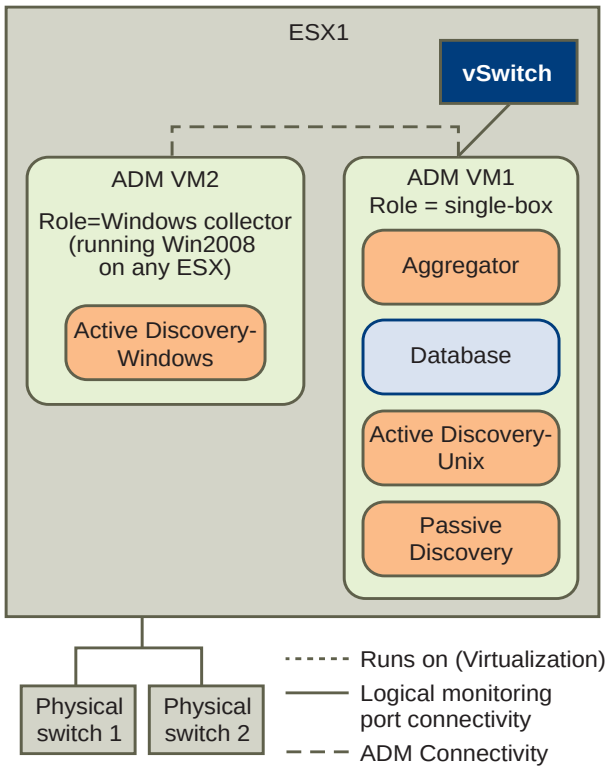
Table 1-1. ADM Components

Component	Description
Active Discovery- UNIX	Collects data from the configuration objects in your data center. The following discovery types apply: ■ IP discovery: A method for detecting hosts or other configuration items with a specific IP address when Passive Discovery fails to discover them. ■ Detail discovery: Extends the information obtained using Passive and IP Discovery. It uses common network protocols to remotely query servers in the managed network and obtains supplementary information about network hosts which is added to the database.
Active Discovery- Windows	A discovery engine that uses WMI based discovery policies for performing active discovery on Windows machines.
Passive Discovery	Passively observes the network traffic by performing a deep-packet analysis to discover applications and component relationships in physical and virtual environments. It also allows you to: ■ Map dependencies. ■ Count the activity of these dependencies. ■ Identify services.
Aggregator	Receives data from the discovery components and reconciles the data before transferring it to the database component. The aggregator also provides the user interface for using ADM and is the integration point for various integrations, for example, ERDB.
Database	An Oracle RDBMS used for storing discovered data and ADM configuration.

Single-Box Appliance

In a Single-Box appliance solution architecture, the ADM components are enabled on a single Virtual Appliance (VA) as shown in Figure 1-2.

Figure 1-2. Single-Box Appliance Architecture

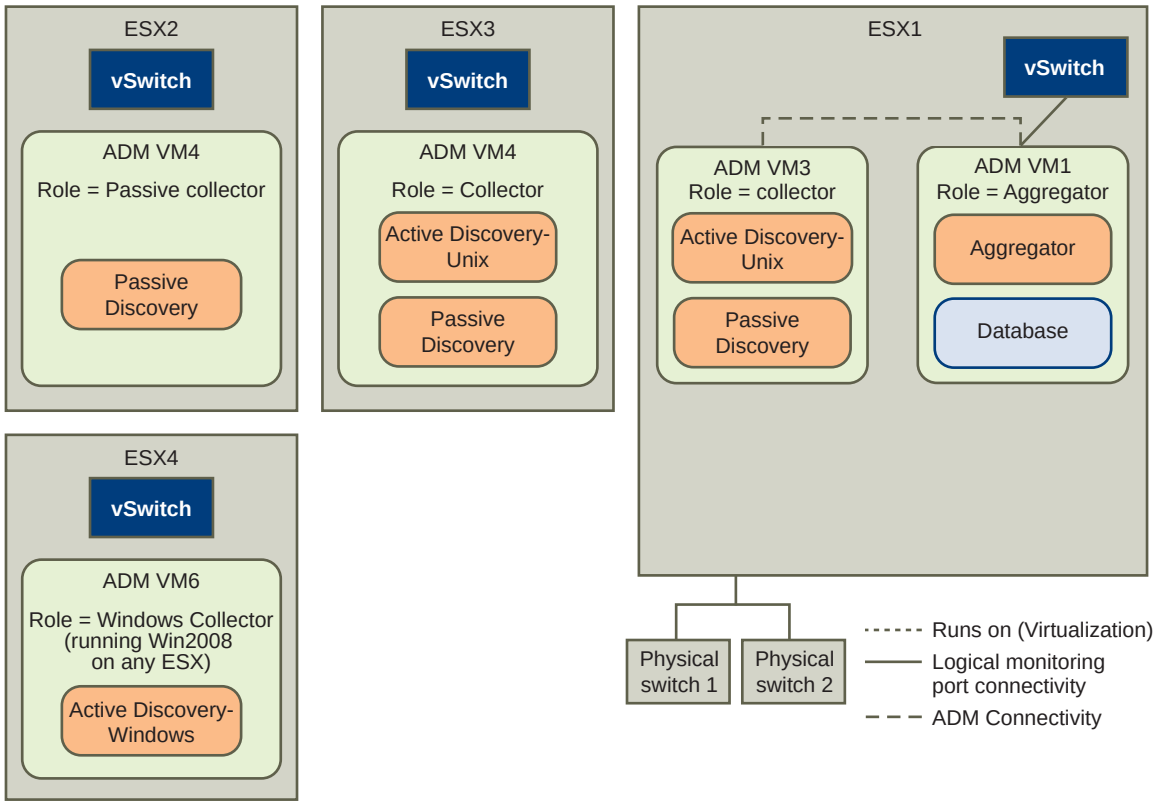


Chapter 3 provides the configuration instructions.

Distributed Appliance Solutions

The distributed appliance solution has at least one designated appliance enabled as a Collector, and another appliance enabled as an Aggregator and Database as shown in Figure 1-3.

Figure 1-3. Distributed Appliance Solution



NOTE In a Distributed with remote database setup, there is a designated appliance to host the database. Also, Passive and Detail Discovery can run on single or multiple Collectors.

Virtual and Physical Appliance Solutions

You can set up ADM either:

- On your ESX or ESXi servers as described in "Virtual Appliance Deployment" on page 11
- On existing IBM physical appliances, only upgrading is supported as described in "Upgrading ADM" on page 13.

Virtual Appliance Deployment

ADM version 6.2.2 is delivered as VA, which is a virtual machine image that includes an operating system and the relevant ADM software components installed on it. A VA can run one or multiple ADM components depending on the appliance role selected.

Deploying a virtual machine template in an Open Virtualization Format (OVF) onto the ESX or ESXi server creates an ADM Virtual Appliance. After deployment, power up the VA and then configure the standard appliance settings, network, and user information.

Download the following artifacts from the VMware Web site:

http://downloads.vmware.com/Application Discovery Manager

- Core ADM Template: An OVF template that includes all ADM components except for the Windows Collector and you can configure as Aggregator, Aggregator with remote database, Database, or Single-Box.
- Collector ADM Template: A smaller OVF template that includes the Passive Collector and Active and Passive Collector and you can configure as passive and active discovery Collector and Passive Discovery Collector.
- Windows Collector Installer: An executable file that installs the Windows Collector component on top of the Windows 2008 R2 operating systems.

Physical Appliance Deployment

ADM supports the upgrading of existing IBM single box and Distributed solutions (including those that use a remote database).

Mirrored Network Traffic

The method in which the appliance performs passive discovery is by analyzing mirrored traffic from a switch or router. Network devices that have the ability to configure a mirrored port (sometimes called as a Switched Port Analyzer, span port or monitor port) can forward a copy of all the network traffic from all (or selected) ports to one or more mirrored ports. Typically, each network device has all its ports mirrored to one port. These mirrored ports are then connected directly to one of the network interfaces on the ESX server.

IMPORTANT Consult IT professionals of your organization to ensure that the appropriate switches or routers that contains the network traffic is used for Discovery are configured properly for port mirroring and are accessible to the ADM appliance.

Perform one of the following steps if you have to connect multiple monitor ports:

- Connect the monitor ports to an aggregate switch (A-Switch), which is also configured with a monitor port. Plug the mirrored port of the A-Switch into the ESX server network interface.

  Contact your VMware Sales Representative if you require an A-Switch.
- Add few more network interfaces to ESX server.
- Install another ADM Passive Collector on a different ESX server.

NOTE The ADM Passive Collector can work with maximum of three monitor ports. If you have to connect more than three monitor ports, you must add another ADM Passive Collector.

vCollector

The ADM uses a virtual collector (vCollector) to listen to communication between virtual machines that run on the same VMware ESX Server. A vCollector is present inside a virtual machine and its listener collects the information about the virtual machines deployed on the ESX Server. By deploying a vCollector, the ADM is able to passively discover dependencies in a virtualized environment. You can then view information about the virtual machines that are deployed on the same ESX Server including:

- Dependency maps between virtual machines.
- Activity counts of the dependencies.
- Services running on the virtual machines.
- Additional information that is offered by the listener.

Mixed Environment

The ADM 6.2.2 release introduces ADM as a virtual appliance, but it also supports upgrading from 6.0 on a physical IBM appliances. You can upgrade your physical environment with additional virtual 6.2.2 appliances like mixed environment. This additional virtual appliance can play a role of Passive Collectors (vCollectors) or an additional Passive and Active Collectors.

NOTE All ADM appliances that participate in mixed environemnt mode must run the same 6.2.2 version of the ADM.

Where To Go Next

This section provides links that contains more information on the topics listed.

Installation of New or Additional ADM Components

Continue by configuring initial appliance settings as described in Chapter 2.

Licenses

You need a new license to use ADM after upgrading or migrating. Obtain the license from your VMware Sales representative. For more information, see "Licenses" on page 41.

Upgrading ADM

Continue with upgrade procedures as described in Chapter 6.

Migrating to a New Appliance

Continue with migration procedures as described in Chapter 7.

Security

For more information on ADM security, see Chapter 4..

Installing ADM 2

This chapter describes installation and deployment of the ADM. This chapter includes the following topics:

ADM Installation Requirements

ADM is an appliance that can run in a VMware infrastructure. This section contains requirements that must be met before you install and use the ADM appliance.

Installation Personnel

The installation procedures in this document must be performed by IT professionals familiar with virtualization and VMware technologies such as ESX servers and related virtual and physical equipment.

ESX Resources

To use the ADM appliance, you must install the ADM appliance on a VMware ESX server version 3.5 or later.

Configure the virtual machine on your ESX server according to the deployment model with resources as described in Table 2-1.

Table 2-1. Virtual Appliance Deployments

ADM Virtual Appliance (VA)	Memory (GB)	Number of vCPUs	NICs	Disk (GB)	OVF Template
Single-Box	4	4	4	80	Core
Aggregator + DB	4	4	1	80	Core
Aggregator	3	2	1	80	Core
Database	3	2	1	80	Core
Passive Collector	2	1	4	8	Collector
Linux Active + Passive Collector	4	2	4	8	Collector
Windows Active Discovery Collector	2	1	1	20	NA

NOTE VMware provides WinApe installer instead of OVF template for Windows 2008 R2 (Datacenter, Enterprise, and Standard) operating systems that hosts the WinApe.

Installing the vSphere Client

Install the vSphere client to work with VMware environment.

To download and install the vSphere Client

1 Launch Internet Explorer browser.

NOTE ADM supports Windows Internet Explorer 6.0 and later browsers.

2 In the address bar, type the IP number of the ESX Server where the virtual machine is installed, for example:

```
https://ESX Server IP
```

3 Click the **Download vSphere Client** link, and then save the client executable file to your local hard disk.

4 Run the executable file.

5 Accept the license and click **Next**.

6 Type the user name and organization details if they do not appear by default. Click **Next**.

7 At the next screen, click **Next** without selecting **Install vSphere Host Update Utility**.

8 If different from the default, specify the installation folder, and then click **Next.**

9 Click **Install**.

NOTE The vSphere client installation can take several minutes.

10 Click **Finish** to close the wizard.

Disabling vMotion

IMPORTANT ADM virtual appliances are not supported by vMotion. If the ADM virtual appliance is installed on a VMware DRS cluster, perform the following steps to disable automatic vMotion.

To disable automatic vMotion

1 In the vSphere client, select the cluster, right-click on it and select **Edit Settings**.

2 In the VMware DRS section, select **Virtual Machine Options**.

3 Select the ADM virtual appliances.

4 Select **Disable** from the **Automation Level** list box.

5 Click **OK**.

Preparing the Environment

Perform the following procedures before you set up the ADM.

Preparing an ESX Configuration

Create and configure a new vSwitch for each physical span port. Repeat the following procedures for each new vSwitch.

Creating a New vSwitch for Passive Discovery

To create a new vSwitch for Passive Discovery

1 Connect the monitor ports to available network interfaces on the ESX server.

2 Connect to the ESX server or vCenter by using vSphere client.

3 Navigate to the **Configuration** tab on the ESX server where you want to deploy ADM appliances.

4 Navigate to the networking configuration option.

5 Click **Add Networking** to open the Add network wizard.

6 Select connection type as Virtual Machine, and click **Next**.

7 Select the **vmnic** that is connected to the monitor port on the physical switch and click **Next**.

8 Specify a network label, for example, span port, for the new port group and click **Next**.

9 Click **Finish**.

Configuring the vSwitch General Settings for Passive Discovery

To configure the vSwitch general settings for Passive Discovery

1 Open the new vSwitch **Properties** window.

2 Select the vSwitch and click **Edit**.

3 Navigate to the **Security** tab and change the **Promiscuous Mode** from **Reject** to **Accept** and click **OK**.

4 Click the network adapters tab, select the relevant vmnic and click **Edit**.

5 Change the Configured Speed, Duplex to **10 MB, Full Duplex**.

6 Click **OK** and then **Close**.

Configuring the vSwitch for Passive Collector

Connect the Passive Collector to a port group. To define a port group

1 Create a port group in the vSwitch as follows:

   a Log in to the ESX Server or vCenter using vCenter Client. The Virtual Infrastructure Client screen appears.

   b Click the **Configuration** tab.

   c Select **Networking** from the **Hardware** list.

   IMPORTANT Perform the following steps to connect to vSwitches that span the internal traffic between virtual machines running on the ESX Server.

   d From the preceding screen, select **Properties**.

   e Select **Ports** and click **Add**.

   f Select **Virtual Machine** and click **Next**.

g Set the Network Label, for example, ADM span port and click **Next**.

h Verify that the port group is listed, and click **Finish**.

2 Change the **Promiscuous Mode** to **Accept**. This value is set to Reject by default.

a Select the port group that you created; for example, ADM span port.

b Click **Edit** and select **Security** tab.

c Select **Promiscuous Mode**, and then select **Accept** from the list box.

d Click **OK** and then **Close.**

Configuring dvSwitch for Passive Collector

If a virtual machine is directly connected to the network and not through the vSwitch, the physical Collector observes the traffic, while the vSwitch does not. This is termed as VMDirectPath.

- Software-based Cisco Nexus switches are supported.
- This procedure is relevant only for vSphere 4 and not for ESX 3.5.

To create a port group in the dvSwitch

1 Log in to the vCenter server with vCenter client.

2 Click **Configuration** and then select **Networking** from the **Inventory** tab.

3 Select **Distributed vSwitch**.

4 On the **Configuration** tab, select **New Port Group**.

5 Configure support for all VLANs by entering the details on the Create Distributed Virtual Port Group window as shown in Table 2-2.

Table 2-2. VLAN Support

Parameter	Value Specified
Name	A name for port group (ADM span port). The name must be same as in vSwitch procedure.
Number of ports	One for each ESX in data center
VLAN type	VLAN Trunking
VLAN ID	0-4094

6 Click **Next** to finish and return to the dvSwitch Network Configuration screen.

7 Select the **ADM span port** group and click **Properties**.

8 Click the **Security** tab on the ADM span port Properties window.

9 Select **Promiscuous Mode**, and then select **Accept** from the list box.

10 Click **OK** and then **Close**.

Deploying the Virtual Appliances

The ADM virtual appliance contains and runs one or more of the following components:

- Aggregator
- Database
- Active Discovery UNIX
- Passive Discovery

"System Architecture" on page 9 describes the appliance architecture.

Perform the following procedures by using a Windows machine with remote access to the ESX server.

Deploying the ADM Virtual Appliances

Virtual appliances are installed on the ESX server according the configurations in Table 2-3.

Table 2-3. Virtual Appliance Configuration

Appliance Type	OVF Template	Includes Component(s)
Aggregator	ADM Core	Aggregator
		Database
Single-Box	ADM Core	Aggregator
		Database
		Passive Discovery
		UNIX Active Discovery
Database	ADM Core	Database
Aggregator with remote database	ADM Core	Aggregator
Passive Discovery Collector	ADM Collector	Passive Discovery
Passive and Active Discovery Collector	ADM Collector	UNIX Active and Passive Discovery

NOTE Install a separate Windows Collector using an installation wizard as described in "Installing Windows Collector" on page 20.

IMPORTANT Performance of ADM Collectors is affected by distance and network latency between the Collectors and objects being discovered. For more information, see *VMware vCenter Application Discovery Manager Peformance and Scalability Guide*.

Before You Begin

Ensure all requirements are met as described in "ESX Resources" on page 15.

NOTE You can deploy ADM components in any order or even simultaneously by using the vSphere client.

Deployment Procedure

Repeat the following steps on each ADM virtual appliance, except the Windows Collector that is installed separately as described in "Installing Windows Collector" on page 20:

1 Download the ADM virtual appliance files from VMware Web site and extract the files to a local folder. The extracted Zip files include an OVF and a VMDK file.

The VA files are in Zip format with the following naming convention:

OVF Template-build number

where:

- *OVF Template* is as described in Table 2-3.
- *build number* is the ADM version and build number.

IMPORTANT Ensure that the build number is identical for all appliances deployed.

2 Log in to the ESX server by using the vSphere client.

NOTE If an SSL Certificate Warning message appears, click **Ignore**.

3 In the **File** menu, select **Deploy OVF Template**. Browse to the OVF file and select it.

4 Click **Next**. The OVF Template Details screen appears.

5 Click **Next**. The Name and Location screen appears.

6 Type a unique virtual appliance name according to the IT naming convention of your organization and with relevance to the appliance type as described in Table 2-3.

7 Click **Next**. The Datastore screen appears.

NOTE If there is more than one datastore, select the datastore where you want to install the virtual machine.

8 Click **Next**. The Network Mapping screen appears.

9 Click **Next**. The Ready to Complete screen appears. It displays details about the OVF file, size for download and size when extracted, virtual appliance name, host or cluster, data store and network mapping.

10 Click **Finish** to confirm the settings and begin the deployment.

NOTE The process of copying and configuring the ADM component can take several minutes. The deployment and configuration status appears in a message dialog box and the Recent Tasks pane.

11 Click **Close** in the message dialog box when deployment successfully completes.

12 Repeat this procedure until all components are deployed, and then continue with "Installing Windows Collector" on page 20.

Installing Windows Collector

Before You Begin

Ensure that the Windows machine on which the Collector is being installed meets the minimum requirements as described in "ESX Resources" on page 15.

Deployment

To deploy Windows Collector on a Windows machine

1 Download the VMware vCenter ADM Windows Collector executable file from VMware Web site to your local Windows machine.

2 Double-click the executable file.

NOTE If a warning appears about an unknown publisher, click **Run** to proceed.

The InstallShield Wizard screen appears.

3 Click **Next**. The License Agreement screen appears.

NOTE Use the scroll bar to view all of the license text. If you do not want to accept the license, you will be prompted to confirm this before the installation program closes.

4 Read the license, select **I accept the terms of the license agreement**, and click **Next**. The Choose Installation Folder screen appears.

NOTE The default installation path is: `C:\Program Files\VMware\ADM`.

5 If you want to change the default installation location, click **Change** and select the preferred installation directory.

6 Click **Next**. The Host Information screen appears.

7 Type the following information to configure the Windows Collector:

- Aggregator IP Address
- Windows Collector unique ID

> **NOTE** This is the same identifier that was defined on the Aggregator side for WMI discovery. The default value is 200.

8 Click **Next.** The Installation screen appears.

9 Click **Install** to begin the installation.

> **NOTE** The process of installing and configuring the Windows Collector can take several minutes.

10 Click **Finish** to close the InstallShield Wizard screen when the installation process is complete.

> **NOTE** If you try to deploy ADM Windows Collector on Windows 2003 R2 and Windows 2008 R2 environment, sometimes Java environment related errors appears. Click **OK** to all the messages that appear. There is no issue with the discovery process.

Uninstall

To uninstall the ADM Windows Collector

1 Open the Windows Control Panel.

2 In the Control Panel window, select **Program > Uninstall a Program**. The Uninstall or change a porgram screen appears.

3 Double-click or right-click and select **Uninstall** to initiate removal of the ADM Windows Collector.

> **NOTE** The removal of the Windows Collector can take several minutes.

4 Click **Finish** to close the InstallShield Wizard screen when the uninstallation process is complete.

Setting Up ADM 3

This chapter provides information for setting up the ADM virtual appliance deployments. This chapter includes the following topics.

Process

After the ADM appliance is deployed on the ESX Server, perform the following procedures:

NOTE ADM only supports using a static IP address for the ADM virtual machine.

Order of Setup

Repeat the setup procedures for all ADM components in the following order for all virtual appliances:

1 Database (where remote database is used)

2 Aggregator

3 Collectors (Passive, Active and Passive Collector)

The Windows Collector is set up as described in "Installing Windows Collector" on page 20.

ADM Setup Procedures

Before you begin ensure that you have performed the following.

1 Ensure all relevant components are deployed as described in "Deploying the Virtual Appliances" on page 18.

2 Obtain the required information for each appliance deployed in Step 1 and record these values as shown in Table 3-1.

Table 3-1. Network Values

Parameter	Value
Network IP address	
Network netmask	
Network gateway	
Domain Name Server (DNS) NOTE: You can enter up to three Domain Name Servers separated by comma.	
Fully Qualified (FQ) hostname	

Launching the First Boot Configuration Tool

Repeat the following steps for each ADM virtual appliance:

NOTE The Windows Active Collector is set up as described in "Installing Windows Collector" on page 20.

1 While selecting the virtual appliance, power it up by either:

- clicking the toolbar icon

  or

- right-clicking and selecting **Power** > **Power On**

NOTE Status of various tasks appear in the Recent Tasks pane on the bottom of the vSphere Client main screen.

2 Right-click the relevant appliance and select **Open Console** tab to monitor this procedure.

The appliance and relevant services start up. A Welcome message for the ADM first boot configuration tool (wizard) appears.

3 To launch the tool and configure the initial appliance settings, type **yes**. The wizard asks you to change the default password. You can change the default password by following the instructions described in "Configuring the Root Password" on page 24.

NOTE If you type **no** for the initial appliance settings message, you can run the initial configuration later by running the `system_setup` command.

NOTE If you type **no** for the change password message, the wizard prompts you to add network information. You can add the network information as described in "Configuring Static Network Settings" on page 25.

Configuring the Root Password

Perform the following procedure to change the root password.

User Name and Passwords

Passwords must contain a minimum of eight characters and it is recommended to include the following character types:

- numeric
- uppercase
- lowercase
- non-alphanumeric such as # or !

To change the root password

1 Type a new password for the root user and press **Enter**.

2 Retype the password and press **Enter** to confirm. The wizard now asks to add network information, type **yes**. The wizard prompts you to add network information and you can add the network information as described in "Configuring Static Network Settings" on page 25.

NOTE If you type **no**, you can add the network information by running the `system_setup` command and a message to set up the timezone appears. You can set up the timezone as described in "Configuring the Timezone and Time" on page 25.

Configuring Static Network Settings

The ADM only supports using a static IP address for the ADM virtual appliance.

NOTE Default values appear in parenthesis. Some of these values must be changed according to the following steps.

Beginning with the IP address, type the values that are recorded in "ADM Setup Procedures" on page 23, as described in Table 3-2.

Table 3-2. Network Settings

CLI prompt	Notes and Values
IP address	Type the IP address.
Netmask	Type the netmask.
Gateway	Type the gateway.
DNS	Type the DNS.
Hostname	Fully qualified hostname to be used by ADM, for example `localhost.localdomain.com`

If all the network information is correct, the wizard prompts you to set up the timezone. You can set up the timezone as described in "Configuring the Timezone and Time" on page 25.

Configuring the Timezone and Time

This prompt asks you to set up the timezone, type **yes**. The wizard displays the current timezone and prompts you to set up the time zone by clicking the number of your choice. The options available are as follows:

1 From zone list: If you select **1**, all possible zones are listed and you can enter the number of timezone that you want to set. The wizard displays the selected timezone and asks for confirmation. If you type **yes**, the timezone is selected and a message to set up the local time appears.

or

2 Manually: If you select **2**, a message that asks you to enter major world city in continent/city format appears. Enter the details as per the format and press **Enter**. If the timezone entered is present in the database, the timezone is selected and a message to set up the local time appears.

or

3 Exit TimeZone settings: If you select **3**, the wizard exits the timezone configuration and a message to set up the local time is displayed.

For more information about timezones, see Appendix A, "Time Zones," on page 59.

The wizard displays the current time and asks to set up the local time. Enter the current date and local time in *YYYY/MM/DD-HH:MM:SS* format, and press **Enter.**

The wizard displays all the settings that you have completed and asks for your confirmation to save the information. If you type **yes**, the wizard saves the settings and the system starts rebooting. After completion, the wizard displays the message to set the appliance role setting. You can configure the appliance role as described in "Configuring the Appliance Role" on page 26.

NOTE If you type **no**, the wizard does not save anything and you must start the settings from the beginning.

Configuring the Appliance Role

NOTE If you type **no** for appliance role set up, you must run the `role_setup` command to set up the appliance role.

For Core appliances deployed in"Deploying the Virtual Appliances" on page 18, the appliance role choices are shown in Table 3-3.

Table 3-3. Core Appliance Roles

Select	Role	Configures
1	Aggregator	Combined Aggregator and database appliance in distributed solution.
2	Single-Box	Single-Box solution.
3	Database	Database appliance in Distributed with remote database solution.
4	Aggregator with remote database	Aggregator appliance in Distributed with remote database solution.
5	Remind me later	Skips appliance role configuration for now. You must run the `role_setup` command to set up the appliance role.

To configure the appliance role for Core

1 Type **yes** at the appliance role prompt and press **Enter**.

2 Type the role number and press **Enter**.

NOTE If you select **4**, the wizard also asks to enter the database IP.

The wizard starts configuring appliance role and creates the initial database schema. This process might take some time.

The appliance role is then created. This process might take some time.

For Collector appliances deployed in "Deploying the Virtual Appliances" on page 18, the appliance role choices are shown in Table 3-4.

Table 3-4. Collector Appliance Roles

Select	Role	Configures
1	Passive and Active Discovery Collector	Single Collector for active and passive discovery
2	Passive Discovery Collector	This option also configures Passive Collector Internal.
3	Remind me later	Skips appliance role configuration for now. You must run the `role_setup` command to set up the appliance role.

To configure the appliance role for Collector

1 Type **yes** at the appliance role prompt and press **Enter**.

2 Type the role number and press **Enter**.

3 If you select **1**, you have to enter the Collector ID of your choice and press **Enter**. The default value is 100.

4 Type the Aggregator IP and press **Enter**.

The appliance role is then created. This process might take some time.

NOTE The Windows Active Collector role is installed by running an executable as described in "Installing Windows Collector" on page 20.

Post-Installation Steps

Before you login to the ADM console, clear the cache of your browser to prevent the possible appearance of incorrect information in the displays, application errors, and other error messages when opening the ADM.

NOTE Additional ADM UI administrators and the more limited *operator* users are later defined by the default ADM *admin* user. The *VMware vCenter Application Discovery Manager User's Guide* provides more details.

Active Directory Configuration

Lightweight Directory Access Protocol (LDAP) is a protocol that helps you to manage information about authorized users on a network such as names, phone numbers, addresses, and access rights. LDAP is vendor and platform neutral and works across different operating systems. Examples of LDAP server software are Microsoft Active Directory, Open LDAP, Apache Directory server, IBM Tivoli Directory server.

ADM 6.2.x supports user authentication over LDAP. Currently, ADM can authorize and authenticate users created in Microsoft Windows 2003 and Windows 2008 Active Directory Server.

For every upgrade of ADM version, you must configure the Active Directory server. You should reconfigure the Active Directory if a database restore is performed on the ADM setup.

Prerequisites: VMware recommends having a valid Active Directory server with or without SSL enabled in the same network where ADM Aggregator or Single-box is deployed for better performance reasons.

To configure Active Directory

1 Log in to the ADM as an administrator.

2 Navigate to **Manage** > **System**.

3 Click **Active Directory Configuration**.

The Active Directory Configuration screen appears.

4 Configure **Active Directory**.

Table 3-5. Active Directory Parameters

Option	Description
Domain Name	Domain name of the organization. For example, vmware.com.
Active Directory Server	Name or IP address of the Active Directory server.
Active Directory Port	Port to connect to the Active Directory server.

5 (Optional) If you want Active Directory communication to be encrypted using SSL, select **Enable SSL** and type the certificate password.

The default SSL certificate password is **changeit**.

6 Click **Save**.

If Active Directory configuration is valid, the management service is restarted.

After successful Active Directory configuration, access to the UI is lost for few minutes as the management service restarts. The *VMware vCenter Application Discovery Manager Online Help* provides detailed information about adding an Active Directory user.

Logging in to the ADM Console

After you complete the appliance installation, login to the system by using the browser and perform the following steps:

1 Type the IP address of the management appliance in the address bar and click **Go**. The login screen appears.

2 Type **admin** in the **Username** field and default password **123456** in the **Password** field.

3 Click **Login**.

IMPORTANT You might be required to upload a new license. Before proceeding, review the criteria and if necessary, perform the steps described in"Licenses" on page 41.

Initiating Passive Discovery

Only one Passive Discovery Policy Definition is present in the ADM. The first time you use ADM, you must set up the policy definition and start it.

To initiate Passive Discovery

1 Click **Manage**, and then select the **Passive Discovery** menu.

2 Select the components on which ADM performs Passive Discovery from the **Scope Component** field.

3 Based on your selection, type the appropriate IP information:

- IP range: Use Notation to type a group of hosts with similar IP addresses. For example, 192.0.2.* includes all hosts with IPs starting with 192.0.2. You can also search all hosts by typing an asterisk in each field. Use IP range to include a group of hosts within a defined IP range.
- IP: Add a single specific host to the group to include or exclude from the scope.
- Subnet NetMask: Configure the IP address scope by providing the base network address with the full dotted decimal notation for the subnet mask,
- Subnet Slash Notation: Configure the IP address scope by providing the base network address with the Classless Inter-Domain Routing (CIDR) notation for the subnet mask.

4 Click **Include** to include the components in the discovery or **Exclude** to exclude them from it.

5 Repeat Step 2 through Step 4 for each component that you are including or excluding from discovery.

6 Optionally, use the rules and rule templates to further define the scope criteria:

- Y: Instructs ADM to include the components in the Passive Discovery.
- N: Excludes the components from discovery.
- I: Allows you to ignore the rule.

7 If you select a rule template, click the blue link to customize the rule.

8 Click **Update** to save the settings.

9 Optionally, add a Passive Discovery Plan.

10 Restart Passive Discovery. Navigate to the **Manage** > **System** page, and click **Restart Discovery**.

11 Click **OK** in the message box that states:

Starting a new Passive Discovery deletes all existing discovery data. This might take a few minutes. The system is unavailable to all users during this process. Continue?

12 Click **OK** to begin the discovery process. The dashboard reappears with the Discovery status (initially "Discovering") in the top status bar of the ADM Console.

13 You can now begin using the ADM. The *VMware vCenter Application Discovery Manager User's Guide* provides an overview of Passive Discovery, and the online help provides more detail on the actions that you can perform.

Securing ADM 4

This chapter provides information on securing ADM appliance. This chapter includes the following topics:

Changing the Root Password

To change the root password

1 Log in to the ADM appliance by using a Secure Shell (SSH) client.

2 Run the `passwd` command:

a The wizard asks to enter a new password.

b Retype the password.

If both the passwords match, the password is changed and all authentication tokens gets updated.

Resetting the ADM Root Password

To reset the ADM root password

1 Using the VMware vSphere client, start or restart the virtual machine.

2 After the virtual machine restarts, click any key in the console window.

NOTE If you do not click any key in the console window immediately after the virtual machine restarts, you must restart the virtual machine and perform step 2 again.

To give you additional time when clicking a key in the console window, you can manually add a line to the VMX file. Adding the line to the file causes the BIOS to delay. For example, to cause a 10 second delay, power down the virtual machine, open the VMX file in a text editor, type the following line in the VMX file:

```
bios.bootDelay="10000"
```

The boot screen appears.

3 Press **e** to enter the GRUB boot menu.

The GNU GRUB loader screen appears.

4 Highlight (**2.6.24.7-9.smp.pae.gcc3.4.x86.i686**), and press **e**.

5 Select the kernel line and press **e** to edit the entry.

6 Place your cursor at the end of the line and append the line by typing:

```
single
```

7 Press **Enter** to commit the change.

8 Press **b** to start the system.

Your system starts without requiring a password.

9 Type the following command to reset the password:

```
passwd
```

10 Follow the prompts as they appear on the screen to set the password.

11 Type the following command to restart the system:

```
reboot
```

Your password is changed and restarts the system.

NOTE You can also reset the ADM root password by running `system_setup` command.

OpenSSL Self-Signed Test Certificates

The VMware vCenter Application Discovery Manager default installed certificate is created during the installation and is valid for one year to use the appliance until you acquire a local Certificate Authority (CA).

Public-facing secure Web sites must use a third-party CA. If you want to use the appliance in test environment and then deploy that appliance to a production environment, you must not change the hostname as the ADM does not support changing the hostname. Instead, you can set up an alias in the DNS to resolve the appliance hostname.

CA Signed Test Certificates

To create CA signed certificates, you must generate a certificate request file (`csr`). The certificate request file provides details about the requester of the certificate and the certificate is signed by the private key above to your trusted certificate authority.

Create the certificate request by typing:

```
openssl req –new –key server.key –out server.csr
```

Fill in the X.509 attributes as specified previously. For more details consult your CA.

To install the certificate provided by your CA, perform the steps described in "Copying the .key and .crt Files" on page 33.

Free CA providers, as http://www.cacert.org exist.

Self-Signed Certificates

Use self-signed certificates only in the test environments, or where only a limited number of connections is established. For example, peer-to-peer relationships can be a custom VPN or AS2 link between two companies, or between two different sites of the same company. Self-signed certificates become impractical as the number of certificates necessary to manage grows linearly with the number of peering relationships. A local CA, while more complex to setup, reduces the number of keys required to be distributed for verification, and replicates a real-world certificate environment. A CA can cost less to manage than hundreds or thousands of individual certificates on each peer system.

NOTE Do not use the self-signed certificates in production environments.

Certificate creation requires the openssl utility. The openssl utility is located in the ADM appliance folder.

```
/usr/bin/openssl
```

To create a certificate

1 To generate the Rivest, Shamir, and Adleman (RSA) key type:

```
cd /etc/httpd/conf/ssl.prm/
openssl genrsa 2048 > server.key
chmod 400 server.key
```

The openSSL utility can generate a Digital Signature Algorithm (DSA) key by using the gendsa option. For compatibility, VMware recommends RSA keys by using 2048-bits as the key size.

2 Create the certificate by typing:

```
openssl req –new –x509 –nodes –sha1 –days 365 –key server.key > server.crt
```

The `–new`, `–x509`, and `–nodes` arguments are required to create an unencrypted certificate. The `–days` argument specifies the length of time the certificate is valid.

For encrypted certificates, every time you are required to type the password until the key is loaded.

NOTE In most cases, encrypted certificates are not worth the operational burden, as each process restart or system restart requires you to manually type a password.

You can ask questions to complete X.509 attributes certificate. Adjust the answers to your local settings. If frequently typed, you can update the system openssl.cnf file (in the `/usr/share/ssl/` directory) with the correct defaults.

Table 4-1 lists X.509 attribute sample prompts and answers.

Table 4-1. X.509 Sample Prompts and Answers

Prompt	Answer
Country name (2 letter code) [AU]:	US
State or province name (full name) [Some-State]:	Massachusetts
Locality name (eg, city) [ ]:	Boston
Organization name (for example, company) [Internet Widgits Pty Ltd]:	YourCompanyOrg
Organizational unit name (for example, section) [ ]:	-
Common name (for example, YOUR name) [ ]:	hostname.domain
E-mail address [ ]:	postmaster@yourcompany.org

For web services, the common name field must exactly match the hostname (or VIP name, for hosts associated with a load balancer) of the system certificate is used on; otherwise, a certificate to hostname mismatch can occur. In peer-to-peer setups for AS2, this field can usually be set to a descriptive string.

The certificate data in the `server.crt` file must be transferred to all client systems that need to verify the key of the server to which it is connected. If this method does not scale, setup a CA, and distribute the signing certificate to the clients instead of each self-signed certificate. Optionally, you can extract the metadata.

Copying the .key and .crt Files

Type the following commands to copy the `.key` and `.crt` files:

```
cp server.crt /etc/httpd/conf/ssl.crt
cp server.key /etc/httpd/conf/ssl.key
```

To make the certificate effective, restart the Apache service by typing

```
adm_control.pl –-restart apache
```

Maintenance 5

This chapter describes the necessary concepts and procedures to maintain an ADM deployment. This chapter includes the following topics:

ADM Services

Table 5-1 describes the main ADM services.

Table 5-1. ADM Services

Service name	Description
apache	Web server service.
active_probe	Service responsible for performing Detail Discovery and runs on Linux Collectors and the Windows virtual machine. This service performs: ■ WMI-based discovery on the Windows Collector ■ SSH-, SNMP-, VI-SDK-, and Telnet-based discovery on the UNIX Collector
engine	The core of ADM and includes the following components: ■ User interface ■ Management ■ Reconciliations ■ Analytic
listener	Service responsible for the Passive Discovery mechanisms.
oracle	Database service.
vnc	Physical IBM Collectors only. The **vnc** service enables **VNC** access to the Windows instance so that the IP address can be configured.
vmware	Physical IBM Collectors only. The Windows instance on the appliance is installed on a virtual machine. The **vmware** service starts VMware so that the Windows instance can start.
watchdog	Service that monitors the health of the other services. If another service has a problem, **watchdog** service tries to identify the service and resolve the problem.

Managing Services with adm_control

ADM provides the `adm_control.pl` script to start, stop, and monitor ADM services. You can start or stop any service, but if you stop any service all dependent services are stopped as a result. All dependent services is listed during the stop process. Table 5-2 lists and describes the commands for the ADM services.

Table 5-2. ADM Service Commands

Use the Following Command	To
`adm_control.pl --status <service name>`	Display the status of the ADM service.
`adm_control.pl --stop <service name>`	Stop the ADM service.
`adm_control.pl --start <service name>`	Start a stopped ADM service.
`adm_control.pl --restart <service name>`	Stop and restart the ADM service.
`adm_control.pl --help`	Display all of the command options.
`adm_control.pl --command all`	Apply the command to all services.

Service name is a name of Service defined in Table 5-1.

NOTE Every appliance has only relevant services started and all the others are disabled depending on the role.

To run an adm_control.pl command

1 Log in to the appliance as user **`root`**.

2 Type the `adm_control.pl` command as demonstrated in Table 5-2, for example:

```
adm_control.pl --stop all
```

All services that are listed in Table 5-1 stop.

Product Support Packages

Create the product support packages to back up, restore, or troubleshoot the ADM.

Product support packages contain a real-time capture of the ADM database, configuration files, customization files, and logs. Table 5-3 describes the files the product support package contains and its use.

Table 5-3. Product Support Packages Files and Uses

File	Use
Database data	Back up and restore of the ADM database.
Active Probe and Passive Listener definition files	Back up and restore of the required ADM configurations.
Detail discovery and Passive Discovery fingerprints	Back up and restore of the custom ADM configurations.
Logs	Troubleshooting.
License file	Serial number used for managed server host.

VMware recommends that you create and save a support package prior to performing any maintenance procedures, such as an upgrade, restore, and fresh installations or before contacting VMware Customer Support.

Support packages are backups of the ADM and relevant configuration files. These packages contain troubleshooting log files and are used to restore your ADM environment.

You can create support packages either through the ADM Console or through the Command Line Interface (CLI).

NOTE Product support packages require a password for extraction. Contact VMware Customer Support to retrieve the password if you use the product support package to restore ADM or the ADM database as described in "Restoring an ADM Environment by Using a Product Support Package" on page 38.

CAUTION Re-imaging removes all files (including the support package) from the appliance, so save the support package elsewhere.

Using the ADM Console

Use the ADM Console to create a product support package in an Single-box setup deployment and to create a product support package for the Aggregator in any type of ADM deployment. Chapter 2 describes the different ADM deployment options:

NOTE The UI option is relevant only to the appliances with Aggregator component.

1 Log in to the ADM Console.

2 Navigate to **Manage > System > Create Product Support Package**.

3 Wait for a few minutes and then refresh the page to see if the **Status** has changed from **Pending** to **Success**.

4 Click the appropriate product support package Zip file displayed in the table and download it.

By default, the filenames are listed from the most current back date. Each product support package Zip filename includes the ADM database schema version, date, and timestamp for easy recognition.

5 Click **Save.**

NOTE By default, the ADM saves the product support packages only for seven days. Ensure to save to the product support package to another location if you want to save the information for longer duration.

Using the CLI

Use the CLI to create support packages for each collector or database in a distributed ADM deployment, or for the Aggregator, database, or Single-Box deployment when the Aggregator is not available through the ADM Console. Chapter 1 describes the different ADM deployment options:

1 Log in to the Collector or Aggregator appliance as user **`root`**.

NOTE Log in to the Aggregator to create a backup of the ADM database. You are not required to login to the remote database appliance to create a backup of the database files.

2 Change the directory to the `/home/nlayers/Seneca/management/APIs` directory.

3 Type the following command:

```
./InSight_control.sh supportpackage --get --output filename
filename.zip is created at the same location.
```

4 Copy and save the zip file from the ADM appliance to a different location.

NOTE Ensure to save to the product support package to another location if you want to save the information for longer duration. The ADM saves the package only for seven days if you select the default location.

Restoring an ADM Environment by Using a Product Support Package

To restore an ADM configuration

1 Backup your ADM environment as described in "Product Support Packages" on page 36.

2 Contact VMware Customer Support to retrieve the password for extracting the product support package.

3 Follow the steps in "Restore the ADM Database" on page 38.

4 If necessary, "Restoring the Custom Discovery and Configuration Files" on page 39.

IMPORTANT If you are migrating to a new appliance, follow the instructions in "Migrating to a New Appliance" on page 47.

NOTE In the following sections, the directory in which the product support package files are extracted is called as *supportpackagedir*.

Restore the ADM Database

The following steps describes restoration of the ADM database in an Single-Box and distributed deployment. Chapter 1 describes the different ADM deployment options:

1 Log in to the Aggregator or Single-Box appliance as user **root**.

NOTE In a distributed deployment the database is restored through the Aggregator. In a split set up with remote database, database is restored on the Database machine.

2 Create a temporary directory:

```
mkdir supportpackagedir
```

3 Copy the support package into the temporary directory that you created in Step 2.

4 Extract the support package into the temporary directory:

```
unzip support_package__version_date_and_timestamp.zip
```

where *version_date_and_timestamp* is the unique identifier of the package.

5 When prompted for the password, type the password you retrieved from VMware Customer Support.

6 After extraction completes, copy the database backup file:

```
supportpackagedir/supportpackage/backup.db_dump-main-db_schema_build-db_dump.gz
```

where *db_schema_build* is the database schema version and build number.

7 Place the copied file in the following directory:

```
/home/nlayers/Seneca/Control/bin/home/nlayers/Seneca/db_scripts/oracle
```

8 Type the following command to stop the engine service:

```
/adm_control.pl --stop engine
```

9 Type the following command to switch to the nlayers user:

```
su - nlayers
```

10 Change directory to:

```
cd /home/nlayers/Seneca/db_scripts/oracle
```

11 Type the following command to restore the db backup:

```
./db_restore.sh backup.db_dump-main-db_schema_build-db_dump.gz prod
```

where *db_schema_build* is the database schema version and build number.

NOTE The database restore process can take up to 30 minutes.

12 Exit from the nlayers user.

13 Type the following `adm_control.pl` command to start the services:

```
/home/nlayers/Seneca/Control/bin/adm_control.pl --start all
```

NOTE If the ADM configuration being restored has custom configuration files or fingerprints, you must complete the steps outlined in "Restoring the Custom Discovery and Configuration Files" on page 39.

Restoring the Custom Discovery and Configuration Files

ADM custom configuration files contain restore information for Passive Discovery custom fingerprints, Passive Discovery custom configuration, Detail Discovery custom fingerprints, and Detail Discovery custom configuration.

To restore the custom discovery and configuration files

1 Log in to the Collector or Single-Box setup as user **root**.

IMPORTANT For distributed solutions only: The custom files must reside on the Collector appliance. In this case complete the following steps on each Collector in the deployment.

If the feature can be customized, the `./custom/*` directory contains the files. If the directory is empty, no customization files are associated with the feature.

2 Create a temporary directory:

```
mkdir supportpackagedir
```

3 Copy the support package into the temporary directory you created in Step 2.

4 Extract the support package into the temporary directory:

```
unzip support_package__version_date_and_timestamp.zip
```

where *version_date_and_timestamp* is the unique identifier of the package.

5 When prompted for the password, type the password you retrieved from VMware Customer Support.

6 Copy all files from:

```
supportpackagedir/supportpackage/listener/custom/conf
```

7 Place the copied files to:

```
/home/nlayers/Seneca/probe
```

8 Copy all files from:

```
supportpackagedir/supportpackage/listener/custom/kb
```

9 Place the copied files to:

```
/home/nlayers/Seneca/probe/resources
```

10 Copy all files from:

```
supportpackagedir/supportpackage/active_discovery/custom/conf
```

11 Place the copied files to:

```
/home/nlayers/Seneca/ActiveProbe/conf
```

12 Change directory to:

```
/home/nlayers/Seneca/management/APIs
```

13 Type the following command:

```
./InSight_control.sh adkb --checkout /tmp
```

14 Copy all files and subdirectories from:

```
supportpackagedir/supportpackage/active_discovery/custom/kb/custom
```

15 Place the copied files to:

`/tmp/adkb/custom`

16 Overwrite any files or folders in the destination directory if prompted to do so.

17 Type the following command to check in the custom fingerprints:

`/home/nlayers/Seneca/management/APIs/InSight_control.sh adkb --checkin /tmp`

18 Type the following `adm_control.pl` command to restart the relevant services:

`/home/nlayers/Seneca/Control/bin/adm_control.pl --restart all`

NOTE **Distributed deployment:** Repeat Step 1 through Step 18 for each collector in the ADM deployment.

Reconfiguring an ADM Deployment

You can reconfigure deployment of physical IBM all-in one, Aggregator and database appliances as follows:

- "Adding a Remote Database to an Existing ADM Deployment" on page 40
- "Converting a Single-Box or Aggregator to a Remote Database" on page 40. Note important restrictions.
- "Moving a Database to a Remote Appliance" on page 41

Virtual components must be redeployed as described in "Installing ADM" on page 15.

Adding a Remote Database to an Existing ADM Deployment

To add a remote database to the ADM deployment

1 Ensure that all components are running ADM version 6.0 or later before adding the remote database to your ADM deployment. All appliances *must* be on the same version.

2 If you have an existing database, back it up using the steps described in "Product Support Packages" on page 36.

3 After ensuring that all components are running the same ADM version, follow the instructions described in "Upgrading Appliances" on page 44.

4 Restore the backed-up database to the new database appliance as described in "Restore the ADM Database" on page 38.

Converting a Single-Box or Aggregator to a Remote Database

Beware of the following before converting an existing component to a remote database:

CAUTION You cannot restore the data from a component that you are converting. All of the data on the Single-Box or Aggregator component that you are converting to a remote database is lost during conversion.

- You can only convert an Aggregator component that is not part of the ADM deployment into a remote database. For example, if you have an Aggregator appliance that you are using in a test environment, and another that you are using in your production environment, you can convert the test component into a remote database.
- You can convert an Aggregator component into a remote database when you already have more than one Aggregator appliance.
- You can convert an appliance that is running an Single-Box setup into a remote database.

To convert the component to a remote database

1 Setup the database appliance as described in the "ADM Setup Procedures" on page 23.

2 Log in to the database appliance as user **`root`**.

3 Ensure that the database mode is set correctly, as follows:

   a Type the command:

   /home/nlayers/Seneca/tools/appliance_conf.pl --status

   b If the mode is not database correct it by typing:

   /home/nlayers/Seneca/tools/appliance_conf.pl –mode=d

4 Make a note of the IP address of the remote database.

5 Run the `appliance_conf.pl` script on the Aggregator appliance:

   a Edit the file `/home/nlayers/Seneca/tools/remote.db.conf`.

   b Replace the existing IP address with the remote database appliance IP address.

   c Run the `appliance_conf.pl` script with the –mode=g option by typing:

   /home/nlayers/Seneca/tools/appliance_conf.pl –mode=g

6 Restart the appliance.

7 Clear the cache of your browser to prevent the possible appearance of incorrect information in the displays, application errors, and other error messages when opening the ADM.

Moving a Database to a Remote Appliance

To move a database to a remote appliance

1 Backup the database from the existing database as described in "Product Support Packages" on page 36.

2 Copy the database backup file backup.`db_dump–main–db_scheme_version–db_dump.gz` to the Remote Database appliance.

3 Restore the database on the Remote Database appliance as described in "Restore the ADM Database" on page 38.

4 Log in to the database appliance as user **`root`**.

5 Type the following command to ensure that the database mode is set to the correct mode:

/home/nlayers/Seneca/tools/appliance_conf.pl --status

6 If the mode is *database*, continue with the following step. If the mode is not *database*, type the following command to change the mode:

/home/nlayers/Seneca/tools/appliance_conf.pl –mode=d

7 Note the IP address of the remote database.

8 Continue to perform the steps described in "Adding a Remote Database to an Existing ADM Deployment" on page 40.

Licenses

You must renew the licenses when:

- reaching the expiration date
- expanding the customer-discovered network scope.

This procedure for uploading a new license must be performed following each:

- initial installation
- migration of ADM for 6.2.2 release.
- upgrade from ADM 6.0.x

It is not necessary to perform this procedure when upgrading from ADM 6.2.2 version.

Access the Licenses Properties screen from the **Manage > System > Licensing** menu in the ADM UI that displays the license information, which includes the licensed feature, quantity of available licenses, and expiry date.

The appropriate warning message appears on the Dashboard, Inventory and License Properties page. An ADM UI administrator can login to review license limitations and upload new licenses as required.

Uploading a License

IMPORTANT Before you begin, obtain the serial number for managed server host.

Perform the following procedure to upload a license.

1 Log in to the ADM UI as an *admin* user.

2 Navigate to the **Manage > System** screen and click **Licensing**. The License Properties screen appears

3 Click **Upload a new License**. The Upload a new license screen appears.

4 Enter the serial number and click **Apply**. If the serial number is valid, the serial number is uploaded and License Properties page is displayed.

Upgrading ADM 6

This chapter describes the necessary concepts and procedures to upgrade an ADM deployment. This chapter includes the following topics:

Overview

The following considerations apply for appliance upgrades and migration.

Appliance Type

You can upgrade ADM on physical ADM on virtual appliances running versions 6.1.x or later as described in "Upgrading Appliances" on page 44.

Mixed Environments

Some sites can have a combination of physical and virtual appliances. You must upgrade them to the same ADM version by using the procedures described in "Upgrading Appliances" on page 44. For more information about mixed environment, see "Mixed Environment" on page 13.

Licenses

You need a new license to use ADM after upgrading from 6.0.X. Obtain the license from your VMware Sales representative. "Licenses" on page 13 provides more information.

Appliance Migration

Chapter 7 describes procedures for migration to virtual appliances.

Backing Up Data

Backup the data to prevent loss during the migration and upgrade process. "Product Support Packages" on page 36 describes backup and restore procedures.

Upgrading Appliances

This section describes the upgrading of Application Discovery Manager versions 6.0.x or later for physical appliances and 6.1.x or later for virtual appliances.

Important Notes

- All appliances in your current environment must run ADM version 6.0.x or later. Also, upgrade all appliances to the same ADM version. Before upgrading the ADM, familiarize yourself with "Overview" on page 43.
- For distributed solutions, perform the upgrades in the following order:
  a Remote database appliance (where one exists)
  b Collectors
  c Aggregator
- Repeat the following procedures for all appliances and architecture solutions, unless otherwise indicated.

Preliminary Procedures

1 Backup your data as described in "Product Support Packages" on page 36 (performed on Aggregator or Single-Box appliance and collectors if custom fingerprints exists).

2 Log in to the appliance and open an SSH session and type the following command to monitor the progress of upgrade:

```
tail –f /var/log/nlayers/update.log
```

This SSH session is in addition to any other session opened for the purpose of upgrading. The above script also prints success or failure messages along with other useful information to stdout.

3 Perform all upgrades by using the CLI procedures as described in "Upgrading Appliances Using CLI" on page 44.

Upgrading Appliances Using CLI

To upgrade all appliances by using CLI

1 Download the `update_runner.pl` and `InSightUpdate–version.upd` files from http://downloads.vmware.com/Application Discovery Manager into:

```
/home/nlayers/rpms
```

NOTE It is recommended to create a directory corresponding to version you are upgrading to in the rpms directory and download the files to the created directory. For example, if you are upgrading to 6.x version create a directory named version 6.x.

2 Change file access:

```
chmod 744 update_runner.pl
```

3 Upgrade VMware ADM services:

```
./update_runner.pl –u –f InSightUpdate–version–build.upd
```

4 Wait for the upgrade to complete. For distributed solutions, repeat the upgrade procedures for all remaining appliances as described in "Upgrading Appliances" on page 44.

NOTE The upgrade process can take several minutes to complete. You cannot access the ADM Console while the upgrade is in progress.

5 Proceed with "Post-Upgrade Steps" on page 46.

NOTE WinApe is upgraded as part of aggregator upgrade and you are not required to upgrade it separately.

Post-Upgrade Steps

Before you login to the ADM console:

Clear the cache of your browser to prevent the possible appearance of incorrect information in the displays, application errors, and other error messages when opening the ADM.

IMPORTANT You might be required to upload a new license if you are upgrading from 6.0.x. Before proceeding, review the criteria and if necessary, perform the steps described in"Licenses" on page 13.

You can now begin using the ADM.

Migrating to a New Appliance 7

This chapter provides instructions on migration of an existing physical or virtual ADM appliance to a virtual appliance supplied by VMware. This chapter includes the following topics:

Overview

Additional documentation as described below is available at http://downloads.vmware.com/

Supported Migration

Appliance migration is supported from ADM 6.0.x. Upgrade earlier versions to the latest 6.0.x version by using the procedures described in the "Upgrading ADM" on page 43.

NOTE Part of the upgrade procedure to ADM 6.0.x can include upgrading custom fingerprints created in earlier version. Additional information on fingerprints is available in the *VMware vCenter Application Discovery Manager Fingerprint Developers Guide.*

Licenses

You need a new license to use ADM after migrating to a new appliance. Obtain the license from your VMware Sales representative. More information is provided in "Licenses" on page 13.

System Architecture

Detailed descriptions are provided in "System Architecture" on page 9. Migration steps differ for different appliance setups:

- Single-Box
- Distributed
- Distributed with remote database

IMPORTANT The new virtual appliance solutions feature separate virtual appliance components for Collectors, Database, and the Aggregator. Initial setup and data restoration is therefore performed separately for each component.

Migrate or upgrade all appliances to the same ADM version in the following order:

1 Remote database (for Distributed with remote database solution)

2 Collectors (for all Distributed solutions)

3 Aggregator

Process

The migration process is as follows:

1 Record the current appliance network settings as described in "ADM Setup Procedures" on page 23.

2 Backup your data as described in "Product Support Packages" on page 36.

IMPORTANT The backup procedures involve copying custom ADM files. Ensure that the files maintain the original nLayers ownership after copying. Editing the files as root might change the ownership of the files.

3 Backup UNIX Collectors if custom fingerprints exist.

4 Backup Windows Collector fingerprints as described in "Backing Up WinApe Migration Files" on page 48 and shutdown all old appliances.

5 Install and deploy the new virtual appliance as described in "Deploying the Virtual Appliances" on page 18.

6 Restart the appliance and performing initial setup tasks as described in Chapter 3.

7 Restore UNIX Collector fingerprints.

8 Restore Windows Collector fingerprints as described in "Restoring WinApe Migration Files" on page 49.

Preliminary Procedures

CAUTION Backup of existing data is essential to prevent data loss during the migration process.

For all solutions, back up files are needed for WinApe migration to another computer as shown in table Table 7-1.

The following table describes the WinApe migrations files. For virtual appliance, the default location is `C:\Program Files\VMware\ADM`. For physical appliance, the default location is `C:\Program Files\nLayers\InSightActiveDiscovery`.

Table 7-1. WinApe Migration Files

File	Remark
\lib\java\adkbcustom.jar	Always

Backing Up WinApe Migration Files

NOTE You can only manually backup the WinApe migration files.

1 Log in to the WinApe appliance.

2 Navigate to the folder where WinApe is installed.

3 Create the backup of `adkbcustom.jar` file present in `\lib\java` folder.

Restoring WinApe Migration Files

NOTE Backup your ADM environment as described in "Backing Up WinApe Migration Files" on page 48.

The following procedures describes the restoration of WinApe migration files.

1 Log in to the WinApe appliance.

2 Copy the `adkbcustom.jar` backup file.

3 Navigate to the `\lib` folder.

4 Replace the current file in `\lib` folder with the copied file.

5 Run the `services.msc` command.

6 Restart the service VMware vCenter ADM Windows Collector.

Data Restoration

This section provides information about data restoration for Single-Box, distributed, and distributed with remote database solution.

Single-Box Solution

1 Restore the ADM database as described in "Restoring an ADM Environment by Using a Product Support Package" on page 38.

2 Restore the custom discovery and configuration files as described in "Restoring the Custom Discovery and Configuration Files" on page 39.

3 For WinApe, first create the backup as described in "Backing Up WinApe Migration Files" on page 48 and then restore it as described in "Restoring WinApe Migration Files" on page 49.

Distributed Solutions

These steps apply to distributed solutions without a remote database. Perform the following steps on all appliances in the following order: Collectors, WinApe, and Aggregator.

Collectors

Repeat the following steps for each Collector appliance:

1 Log in to the Collector virtual appliance.

2 Restore the custom discovery and configuration files as described in "Restoring the Custom Discovery and Configuration Files" on page 39.

WinApe

Repeat the following steps for each Windows appliance:

1 Log in to the WinApe appliance.

2 Backup the WinApe migration files as described in "Backing Up WinApe Migration Files" on page 48.

3 Restore the WinApe migration files as described in "Restoring WinApe Migration Files" on page 49.

Aggregator

1 Log in to the Aggregator virtual appliance.

2 Restore the ADM database as described in "Troubleshooting ADM by Using the Product Support Package" on page 51.

3 Make the necessary changes in the Active probe configuration screen under the **Manage > System** menu of the ADM console to reflect the new collector appliance. The *VMware vCenter Application Discovery Manager User's Guide*.

Distributed Solution with Remote Database

These steps apply to distributed solutions with a remote database. Perform the following steps on all appliances in the following order: Collectors, WinApe, database, Aggregator.

Collectors

Repeat the following steps for each Collector appliance:

1 Log in to the Collector virtual appliance.

2 Restore the custom discovery and configuration files as described in "Restoring the Custom Discovery and Configuration Files" on page 39.

WinApe

Repeat the following steps for each Windows appliance:

1 Log in to the WinApe appliance.

2 Backup the WinApe migration files as described in "Backing Up WinApe Migration Files" on page 48.

3 Restore the WinApe migration files as described in "Restoring WinApe Migration Files" on page 49

Database

1 Log in to the database virtual appliance.

2 Restore the ADM database as described in "Restoring an ADM Environment by Using a Product Support Package" on page 38.

Aggregator

1 Log in to the Aggregator virtual appliance.

2 Make the necessary changes in the Active probe configuration screen under the **Manage > System** menu of the ADM console to reflect the new collector appliance. The *VMware vCenter Application Discovery Manager User's Guide*.

Post-Migration Steps

Before you login to the ADM console:

Clear the cache of your browser to prevent the possible appearance of incorrect information in the displays, application errors, and other error messages when opening the ADM.

NOTE ADM default groups does not get refreshed during the upgrade. The *Management* chapter of the *VMware vCenter Application Discovery Manager User's Guide* provides more information on groups administration.

You can now begin using the ADM.

Troubleshooting ADM

8

This chapter provides instructions on troubleshooting of the ADM. This chapter includes the following topics:

Troubleshooting ADM by Using the Product Support Package

You can use the ADM product support package for troubleshooting:

1 Create an ADM product support package as described in "Product Support Packages" on page 36.

2 Contact your VMware Customer Support representative and provide them with the product support package that you generated in Step 1.

Troubleshooting Error Messages During WMI Discovery

WMI Discovery might fail on a target Windows XP machine with an Access Denied error message even if you provide valid credentials. This issue occurs because the **Use simple file sharing** option is selected by default for some of the Windows XP deployments.

To troubleshoot WMI Discovery failure

1 On the **Tools** tab, select **Folder Options**.

2 Select the **View** tab.

3 In the **Advance settings** box, deselect the **Use simple file sharing** option.

4 Click **OK**.

Detail Discovery Troubleshooting

This section describes utilities and programs that help with troubleshooting.

1 Create an ADM detail discovery product support package as described in "Using ADM Console" on page 52.

2 Contact your VMware Customer Support representative and provide them with the product support package that you generated in Step 1.

Using ADM Console

You must first create a detail discovery product support package for detail discovery troubleshooting.

To create a detail discovery product support package

1 Log in to the ADM console.

2 Navigate to **Discovery** > **Inventory**.

3 Click a host that is already discovered using detail discovery method.

4 On the **Detail Discovery Policies** tab, select name of the policy for which you need to create a support package.

5 Click **Support Package**.

Creation of support package takes about five minutes. Navigate to **Manage** > **System** > **Support Package List** to download the support package.

WMI

WMI Detail Discovery requires specific permissions and configuration on the target host. Microsoft includes a testing tool, called WBemTest, on every computer that has WMI installed. This tool tests for the same permission and configurations that ADM requires. For example, if an access denied failure occurs while connecting to the target host, the WbemTest tool raises a similar error indicating a problem with the target host configuration.

To perform troubleshooting

1 Check permissions and configuration using the WBemTest tool. More information is available on the Microsoft Web site:

http://technet.microsoft.com/en-us/library/cc785775.aspx

2 Check ADM Discovery using the utilities described in the following sections.

single.sh

The `single.sh` utility is a stand-alone command line utility that runs Detail Discovery on a specific host. The `single.sh` utility creates a support package that contains the Detail Discovery results and more useful information. VMware Customer Support can use this support package to analyze the problems offsite.

NOTE This section refers to support packages used specifically for Detail Discovery troubleshooting. Other support packages are used for backing up, restoring, upgrading, and troubleshooting of the ADM application and are described in Chapter 5.

This utility is useful for testing the communication parameters for connecting to a host (for example, the user and password), and to find out the retrievable properties from a host without having to go through the process of defining a Detail Discovery policy in the ADM Console.

Location

```
/home/nlayers/Seneca/ActiveProbe/bin/single.sh
```

Usage

```
single.sh [-A Attribute Artifacts] [-a address] [--AddExU Additional Unix Exclude Directories]
[--AddExW Additional Windows Exclude Directories] [--AddIncU Additional Unix Search Scope]
[--AddIncW Additional Windows Search Scope] [-c host] [-d port] [-D Configuration Items] [-e
Management IP] [--ExU Unix Exclude Directories] [--ExW Windows Exclude Directories] [-G CI
Groups] [-h] [-i] [--IncU Unix Search Scope] [--IncW Windows Search Scope] [-j classpath] [-l]
[-M maxdepth] [-n path] [-p ports] [-P Access profile] [-r filename] [-t timeout] [-T Discovery
result translator class] [-v] [-w]
```

Table 8-1 lists and describes parameters for the `single.sh` utility.

Table 8-1. single.sh Parameters

Parameter	Description
`–A,––planArtifacts Attribute Artifacts`	Attribute artifacts to discover.
`–a, –address address`	Address(es) of the discovery target. Use commas as separators.
`–AddExU Additional UNIX Exclude Directories`	Additional Exclude directories from search in the UNIX file system.
`–AddExW Additional Windows Exclude Directories`	Additional Exclude directories from search in the Windows file system.
`–AddIncU Additional UNIX Search Scope`	Additional Scope for search in the UNIX file system.
`–AddIncW Additional Windows Search Scope`	Additional Scope for search in the Windows file system.
`–c, –Collector host`	Specifies the Collector that runs the actual discovery.
`–d, –debug port`	Start JVM with enabled remote debugging on the specified port and wait for ENTER key before continuing.
`–D, –planCis Configuration Items`	Configuration items to discover.
`–e, –management Management IP`	Specifies the management IP to use if an access profile is read from the management (using the `–P` option).
`–ExU UNIX Exclude Directories`	Exclude directories from search in UNIX file system.
`–ExW Windows Exclude Directories`	Exclude directories from search in Windows file system.
`–G, –planCiGroups CI Groups`	Configuration Item groups to discover.
`–h, –help`	Brief help message.
`–i, –interactive`	Interactive mode that allows you to type protocol-specific commands.
`–IncU UNIX Search Scope`	Scope for search in UNIX file system.
`–IncW Windows Search Scope`	Scope for search in Windows file system.
`–j, –classpath classpath`	Adds additional path to the classpath. This additional path will have the highest priority.
`–l, planhelp`	Prints information about available artifacts and artifact groups.
`–M, –maxdepth maxdepth`	Maximum depth for search in file system.
`–n, –outputPrefix path`	Specifies the path prefix of the output file (for example, `/tmp/`). Note: The directory path must end with a backslash (/). If this option is not used, a predefined filename is used, and the file is created in the current working directory.
`–p, –ports port`	One or more ports to use when connecting to the target host (for scanning as well). Use commas as separators. These ports applies even if the connection details are fetched from the management.
`–P, –accessProfile Access profile`	Discovery parameters or policy/access profile name to fetch from the management.
`–r, –read filename`	Read from a playback or snmpdump file instead of going out to the network.
`–t, –timeout timeout`	Connect timeout to use when connecting to the target host. If connection details are fetched from the management, they will override this parameter.

Table 8-1. single.sh Parameters (Continued)

Parameter	Description
`–T, –translator Discovery result translator class`	Specify the discovery result translator class. Predefined translators are available through their aliases, for example: ■ class com.nlayers.seneca.ap.mediation.DoNothingDiscoveryResultTranslator *adm* ■ class com.nlayers.seneca.ap.mediation.cim.AdmToCimXmlDiscoveryResultTranslator *cimxml* ■ class com.nlayers.seneca.ap.mediation.cim.AdmToCimDiscoveryResultTranslator *cim* are available Values in brackets are aliases
`–v, verbosehelp`	Print verbose help.
`–w, –wait`	Slows down playback to be the same duration as the original execution.

Examples:

To probe target IP 1.2.3.4 on UNIX using protocol SSH

```
./single.sh –P \"ssh:username=root,password=54321\" –a 1.2.3.4
./single.sh –P \"ssh:username=root\" –a 1.2.3.4
```

(A password will be requested by the application interactively without echoing.)

To probe target IP 1.2.3.4 on UNIX using protocol TELNET

```
./single.sh –P \"telnet:username=root,password=54321\" –a 1.2.3.4
```

To probe target IP 1.2.3.4 on UNIX using protocol SNMP

```
./single.sh –P \"snmp:communityString=public\" –a 1.2.3.4
```

To probe target IP 1.2.3.4 on Windows using protocol WMI

```
single.bat –P \"wmi:domain=il.nlayers.com,username=administrator,password=54321\" –a 1.2.3.4
```

(default locator credentials will be used from properties file)

To probe target IP 1.2.3.4 using protocol VI-SDK

```
./single.sh –P \"visdk:username=administrator,password=54321\" –a 1.2.3.4
```

Create debug package:

```
single.sh –a address –P Access profile
```

Read from playback file:

```
single.sh –r filename
```

Access profile can have one of the following formats:

- Name of a Detail Discovery policy. In this case the necessary information is read from a Detail Discovery policy defined in the user console.
- Full definition of the needed discovery details in a protocol-specific format:

  ```
  protocol–name:prop1=value1,prop2=value2,...
  ```

The following protocol names are supported: SSH, Telnet, SNMP, VI-SDK and WMI.

In addition, all protocols supports the -timeout parameter with a default value of 20000 milliseconds. The ports parameter is supported for all protocols except WMI and VI-SDK, with default ports of 22 for SSH, 23 for Telnet, and 161 for SNMP.

Note the following:

- Escaped double-quotes surround the protocol information—these must be used.
- Unknown arguments are ignored.
- Omitted password fields are requested by the application interactively without echoing.

Default search scope for different platforms:

- Windows:
  - Include: `[/Program Files]`
  - Exclude: `[/Documents and Settings, /WINDOWS]`
- UNIX:
  - Include:

    ```
    [/bin, /sbin, /usr/bin, /usr/sbin, /usr/local, /usr/local/bin, /usr/local/sbin, /usr,
    /opt]
    ```

  - Exclude:

    ```
    [/boot, /dev, /devices, /proc, /unix, /kernel, /platform, /cdrom, /CDROM, /sd_cdrom,
    /SD_CDROM, /Mail, /mail, /nsmail,  /vol, /lost+found, /media, /tmp, /mnt, /jumpstart,
    /pcfs, /sys, /usr/kvm/sys, /stand, /var/news, /var/log, /var/run, /var/lock, /var/www,
    /var/cache, /var/tmp, /etc/gconf]
    ```

snmpdump

The snmpwalk program is bundled with Linux, which runs SNMP on a given IP address and creates a textual dump of the whole tree of results. This program is often used while extending and debugging the SNMP portion of the Detail Discovery knowledge base.

A new Detail Discovery feature allows VMware Customer Support to record a complete snapshot of the SNMP responses of a network host, using snmpwalk. You can use the resulting dump file to fix SNMP Detail Discovery problems encountered by VMware Customer Support.

A standardized script called `snmpdump.sh` is now supplied with ADM to create this snmpwalk dump file.

Location

`/home/nlayers/Seneca/ActiveProbe/bin/snmpdump.sh`

Usage

Running `snmpdump.sh` on the command line yields the following usage information:

```
./snmpdump.sh host_ip output_file
```

The first parameter is the host IP to query.

The second parameter is the name of the file in which to save the results.

Examples

Create an snmpwalk dump for IP 1.2.3.4 and save the results into file `snmpdump.1.2.3.4.txt`:

```
./snmpdump.sh 1.2.3.4 snmpdump.1.2.3.4.txt
```

nlcapture

You can use the `nlcapture` utility in place of tcpdump to capture network activity. This utility supports the same default parameters as tcpdump, but sets the snaplen to be large enough so as to not truncate packets.

In addition, this utility provides a parameter not supported by tcpdump: -R, which filters packets based on their protocol (for example, HTTP) or based on protocol-specific attributes.

Similar to tcpdump, you can use nlcapture to filter an existing capture file and transform it to a new, filtered file. See usage below.

Location

`/home/nlayers/Seneca/tools/nlcapture.pl`

Usage

Running `nlcapture` on the command line yields:

```
nlcapture.pl tcpdump options [–R ethereal display filter string]
```

For example:

To listen on eth1 and capture all HTTP and ICMP packets into the file `bla.dump`:

```
nlcapture.pl –i eth1 –R "http||icmp" –w myoutput.dump
```

As explained earlier, `nlcapture` supports all common tcpdump parameters such as -i. Additionally, it supports the `–R` parameter to filter on the network protocol or according to the value of specific protocol fields. Protocol names are written in lowercase. The following URL provides details on the filters that you can use:

http://www.ethereal.com/docs/man-pages/ethereal-filter.4.html

The filters of `nlcapture` utility are different from the tcpdump filters. They are easier to use and understand.

Uninstalling ADM 9

This chapter provides information for uninstalling the ADM appliance and includes "Uninstalling the ADM Appliance" on page 57.

Uninstalling the ADM Appliance

To uninstall the ADM appliance, follow the procedure of your organization for removing a virtual machine.

Time Zones

A

This appendix lists ADM time zones as shown in Table A-1.

Table A-1. Time Zones for ADM

Asia/Baku - Asia/Nicosia	Asia/Tel_Aviv - Etc/Greenwich	Etc/GMT - Indian/Reunion	Mexico/BajaNorte - US/Aleutian
Asia/Baku	Asia/Tel_Aviv	Etc/GMT	Mexico/BajaNorte
Asia/Bangkok	Asia/Istanbul	Europe/Amsterdam	Mexico/General
Asia/Beirut	Asia/Makassar	Europe/Andorra	Mexico/BajaSur
Asia/Bishkek	Asia/Macau	Europe/Athens	Mideast/Riyadh89
Asia/Brunei	Asia/Macao	Europe/Belfast	Mideast/Riyadh88
Asia/Kuala_Lumpur	Asia/Jerusalem	Europe/Berlin	Mideast/Riyadh87
Asia/Choibalsan	Asia/Hong_Kong	Europe/Brussels	Pacific/Enderbury
Asia/Colombo	Asia/Dhaka	Europe/Bucharest	Pacific/Apia
Asia/Damascus	Asia/Dacca	Europe/Budapest	Pacific/Efate
Asia/Dili	Asia/Chungking	Europe/Copenhagen	Pacific/Funafuti
Asia/Dubai	Asia/Chongqing	Europe/Gibraltar	Pacific/Fakaofo
Asia/Dushanbe	Asia/Ashkhabad	Europe/Helsinki	Pacific/Fiji
Asia/Gaza	Asia/Ashgabat	Europe/Kaliningrad	Pacific/Port_Moresby
Asia/Harbin	Atlantic/Cape_Verde	Europe/Kiev	Pacific/Galapagos
Asia/Hovd	Atlantic/Azores	Europe/Luxembourg	Pacific/Guadalcanal
Asia/Irkutsk	Atlantic/Bermuda	Europe/Madrid	Pacific/Guam
Asia/Jakarta	Atlantic/Canary	Europe/Malta	Pacific/Johnston
Asia/Jayapura	Atlantic/South_Georgia	Europe/Minsk	Pacific/Kiritimati
Asia/Kabul	Atlantic/Faeroe	Europe/Monaco	Pacific/Kosrae
Asia/Kamchatka	Atlantic/Madeira	Europe/Paris	Pacific/Majuro
Asia/Karachi	Atlantic/St_Helena	Europe/Riga	Pacific/Marquesas
Asia/Kashgar	Atlantic/Stanley	Europe/Samara	Pacific/Midway
Asia/Katmandu	Atlantic/Reykjavik	Europe/Simferopol	Pacific/Nauru
Asia/Krasnoyarsk	Atlantic/Jan_Mayen	Europe/Sofia	Pacific/Niue
Asia/Novosibirsk	Australia/Lindeman	Europe/Stockholm	Pacific/Norfolk
Asia/Kuching	Australia/West	Europe/Tallinn	Pacific/Noumea
Asia/Kuwait	Australia/LHI	Europe/Tirane	Pacific/Palau
Asia/Magadan	Australia/Perth	Europe/Uzhgorod	Pacific/Ponape

Table A-1. Time Zones for ADM (Continued)

Asia/Manila	Australia/Victoria	Europe/Vaduz	Pacific/Samoa
Asia/Muscat	Australia/ACT	Europe/Vienna	Pacific/Rarotonga
Asia/Phnom_Penh	Australia/Melbourne	Europe/Vilnius	Pacific/Saipan
Asia/Omsk	Australia/Lord_Howe	Europe/Zaporozhye	Pacific/Tahiti
Asia/Oral	Australia/Tasmania	Europe/Zurich	Pacific/Tarawa
Asia/Yekaterinburg	Australia/Hobart	Europe/Warsaw	Pacific/Tongatapu
Asia/Pontianak	Australia/North	Europe/San_Marino	Pacific/Truk
Asia/Pyongyang	Australia/Darwin	Europe/Vatican	Pacific/Wake
Asia/Qatar	Australia/Yancowinna	Europe/Moscow	Pacific/Wallis
Asia/Qyzylorda	Australia/Broken_Hill	Europe/Rome	Pacific/Yap
Asia/Rangoon	Australia/Queensland	Europe/London	Pacific/Pitcairn
Asia/Riyadh	Australia/Brisbane	Europe/Lisbon	Pacific/Auckland
Asia/Saigon	Australia/South	Europe/Tiraspol	Pacific/Pago_Pago
Asia/Sakhalin	Australia/NSW	Europe/Oslo	Pacific/Gambier
Asia/Samarkand	Australia/Adelaide	Europe/Chisinau	Pacific/Chatham
Asia/Tashkent	Australia/Canberra	Europe/Prague	Pacific/Kwajalein
Asia/Tbilisi	Australia/Sydney	Europe/Bratislava	Pacific/Honolulu
Asia/Urumqi	Brazil/DeNoronha	Europe/Ljubljana	Pacific/Easter
Asia/Vientiane	Brazil/East	Europe/Sarajevo	US/Samoa
Asia/Vladivostok	Brazil/Acre	Europe/Skopje	US/Hawaii
Asia/Yakutsk	Brazil/West	Europe/Zagreb	US/Arizona
Asia/Ulaanbaatar	Canada/Newfoundland	Europe/Dublin	US/Eastern
Asia/Yerevan	Canada/Central	Europe/Nicosia	US/Pacific
Asia/Ujung_Pandang	Canada/Yukon	Europe/Belgrade	US/Michigan
Asia/Ulan_Bator	Canada/Pacific	Europe/Istanbul	US/Mountain
Asia/Tokyo	Canada/Saskatchewan	Europe/Mariehamn	US/Central
Asia/Thimphu	Canada/Atlantic	Indian/Antananarivo	US/Alaska
Asia/Thimbu	Canada/Eastern	Indian/Chagos	US/Aleutian
Asia/Tehran	Canada/Mountain	Indian/Christmas	
Asia/Taipei	Chile/EasterIsland	Indian/Cocos	
Asia/Singapore	Chile/Continental	Indian/Comoro	
Asia/Shanghai	Etc/Universal	Indian/Kerguelen	
Asia/Seoul	Etc/Zulu	Indian/Mahe	
Asia/Riyadh89	Etc/UCT	Indian/Maldives	
Asia/Riyadh88	Etc/UTC	Indian/Mauritius	
Asia/Riyadh87	Etc/GMT0	Indian/Mayotte	
Asia/Nicosia	Etc/Greenwich	Indian/Reunion	

ADM API Tutorial

B

This appendix describes the ADM API and explains how to access and use it. Topics include:

API Features

The API of ADM allows clients to query its database and export parts of it by means of a web services API. The following cases are explained in the following sections:

- Writing the system status into an XML output file; "Insight_control" on page 61.
- Synchronization of CMDB applications with data of ADM; "Asynch API" on page 62.
- Population of third party applications with data of ADM.
- Dumping of entire database tables and uploading to an FTP server; "Dump API" on page 62.
- Access to filtered data by bulk (paginated); "Bulk API" on page 63.

You can divide the API into three sections, where two are dedicated to querying the ADM (Dump and Bulk), and the third is in charge of tracking those queries (Asynch).

Insight_control

The Insight_control utility writes the system status into an XML output file.

To run Insight_control utility

1 Log in to the appliance as user **root**.

2 Change the directory by typing:

```
cd /home/nlayers/Seneca/management/APIs
```

3 Type the following command to generate a system status output file:

```
./InSight_control.sh systemstatus --get --output /tmp/systemstatus
```

NOTE You can substitute a different file and path for `/tmp/systemstatus`.

Service Status

Service status can be:

- Running: The service is running.
- Disabled: The ADM intentionally stops the service.
- Not Running (Purposely Stopped): The service was stopped intentionally, for example, a service was manually stopped by the `adm_control.pl --stop` command.

Sample Status Output

```
<SystemStatus>
        <version>6.1.0-6013</version>
        <uptime> 09:20:15  up 7 days, 18 min,  1 user,  load average: 1.36, 2.17, 1.71</uptime>
        <engine>Running</engine>
        <listener>Not Running (Purposely Stopped)</listener>
        <active_probe>Not Running (Purposely Stopped)</active_probe>
        <oracle>Running</oracle>
        <apache>Running</apache>
        <watchdog>Running</watchdog>

</SystemStatus>
```

Asynch API

Operations in ADM's API are asynchronous. The client has to track the progress (or lack thereof) of this task and retrieve its results.

NOTE The operations within the context of the web-service client are synchronic, that is, the calling of the function that does the actual delivery of the query is synchronic, and the client blocks until that operation is completed.

Tasks are uniquely identified by a Universal Unique Identifier, whose string representation is returned upon a task creation. Future references to a task must be done using this same string.

Tasks have predefined parameters regarding their life-span in every state, for example, a finished task waits in the system for 24 hours before its resources are recalled and the task is deleted. A task can have any of the following states, which you can retrieve by using getTaskState (String id):

- PENDING: The task is created and initialized and is waiting to be executed by ADM.
- RUNNING: A getTaskProgress() returns an Integer between 0 and 100.
- CANCELLED: System can cancel a task if it takes too long to execute.
- RUNNING: The task is being executed. You can track the process by calling getTaskProgress(String id). A task can be in this state for a limited amount of time; system cancels all the offending tasks.
- FINISHED: The task has finished running successfully, and its produce is ready and waiting to be collected by the client.
- ERROR/CANCEL: The task has either failed or been canceled (using cancelTask(String id)).

Dump API

The Dump API provides you with the possibility of dumping the complete contents of a table (or small set of tables) that corresponds to a given entity (HOSTS, SERVICES, CONNECTIONS, and so on.). In this API, flexibility has been traded for speed, and it is intended for those cases where an application intends to mirror ADM's data, and periodically synchronize with it.

The Dump API works as follows:

1 Select the type of entities that it needs and a discovery date (optional) for those entities.

2 Call `dump( )` with those parameters, and obtain the task UUID in a string form.

3 Track the progress of the task using the Asynch API (`getTaskState( )` and `getTaskProgress( )`).

4 Repeat Step 3 until the task reaches the FINISHED or ERROR state.

5 If the task is in the FINISHED state, then the files containing the dumped database tables are ready and waiting to be collected (either using SSH or in the FTP server if supplied). The files are stored in a subdirectory whose name is identical to the task ID.

Bulk API

The Bulk API provides you with the possibility of querying the ADM with more sophisticated filters, and browsing the result set by means of pagination. The results are delivered in subsets (pages) of a predefined size and formatted in XML CIM. This API is intended for those cases where an application intends to browse on finely-filtered segment of the ADM's data.

The Bulk API works as follows

1 Create the filter object and select the level of granularity of the results.

2 Call `query( )` with the filter object and obtain the task UUID in string form.

3 After the task is FINISHED, you can retrieve the maximum amount of pages available in this result set by calling `getPageAmount( )`.

4 At this moment, there is an iterator in ADM that you can control by the following calls, and the results retrieved from them:

   a `hasNextPage( )`

   b `getNextPage()`

5 After finishing retrieval of all the data with the specific query, you must call `closeQuery()` to release all resources associated with this query.

Web Services API

The preferred method to access ADM's API is through the web services API, which provides for a standardized way of communication and high interoperability. This API is not locked in a given programming language.

ADM offers a description of the API in a machine-readable document formatted in Web Services Description Language (WSDL). With this document, automated tools available for the popular programming languages can create the low-level code necessary to access transparently the functionality provided by the ADM.

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