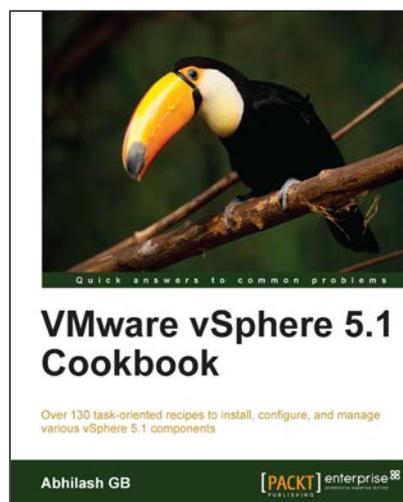


VMware vSphere 5.1 Cookbook

Abhilash GB



Chapter No. 13 "Using vSphere Management Assistant (vMA 5.1)"

In this package, you will find:

A Biography of the author of the book

A preview chapter from the book, Chapter NO.13 "Using vSphere Management Assistant (vMA 5.1)"

A synopsis of the book's content

Information on where to buy this book

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I would like to dedicate this book to my wife and my parents. Without their patience and support this book would not have been possible.

A big thanks to Dilip Venkatesh, Acquisition Editor, Packt Publishing, for giving me an opportunity to debut my first book. Special thanks to the Lead Technical Editors (Unnati Shah and Arun Nadar), the Project Coordinators (Vishal Bodwani and Arshad Sopariwala), and the Technical Reviewers (Christian Mohn, Chris Wahl, and Alessandro Cardoso) who helped me deliver this book.

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VMware vSphere 5.1 Cookbook

Amid all the recent competition from Citrix and Microsoft, VMware's vSphere product line is still the most feature-rich product in the virtualization industry. Knowing how to install and configure VMware vSphere components is important to give yourself a head start towards datacenter virtualization using VMware.

VMware vSphere 5.1 Cookbook is a task-oriented, fast-paced practical guide to installing and configuring vSphere 5.1 components. This book was written with the intention of providing the reader with a visual walkthrough of the most common configuration tasks that an administrator will perform in a VMware vSphere environment. It takes you through all of the steps required to accomplish a task, with less reading required. The book concentrates more on the actual task rather than theory around it, making it easier to understand what really is needed to achieve the task. However, most of the concepts has been well described, to help the reader understand its background and working.

The main highlight of this book is the use of the new vSphere 5.1 Web Client to accomplish most of the tasks. Although a few tasks cannot be accomplished using web client with the current vSphere version, VMware will be integrating them into the web client in future product releases.

What This Book Covers

Chapter 1, Upgrading to vSphere 5.1, discusses the procedures involved in upgrading the current vSphere environment to vSphere 5.1. It covers upgrading the vCenter Server and the ESXi host.

Chapter 2, Performing a Fresh Installation of vSphere 5.1, explains how to deploy a new vSphere 5.1 environment. It covers the installation of vCenter 5.1 and ESXi 5.1.

Chapter 3, vSphere Auto Deploy, explains how to install and configure Auto Deploy in order to provision ESXi servers. It also covers stateless caching and stateful installation.

Chapter 4, ESXi Image Builder, explains how to create, manage, and apply Image Profiles to ESXi hosts.

Chapter 5, Creating and Managing VMFS Datastores, explains how to create, view, and manage VMFS datastores on an ESXi host. It also covers datastore clusters and storage DRS.

Chapter 6, Managing iSCSI and NFS Storage, explains how to configure iSCSI and NAS storage on an ESXi host.

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Chapter 7, Profile-driven Storage and Storage I/O Control, explains how to use storage profiles to ensure that the VMs are placed in appropriate datastores, and how to use storage I/O control to manage queue bandwidth between VMs.

Chapter 8, Configuring the vSphere Network, explains how to set up and configure vSphere networking using vSphere standard switches and vSphere distributed switches. It also covers port mirroring, NetFlow, and PVLANS.

Chapter 9, Creating and Managing Virtual Machines, explains how to create and configure virtual machines in a vSphere environment.

Chapter 10, Configuring vSphere HA, explains how to configure High Availability for ESXi servers.

Chapter 11, Configuring vSphere DRS, DPM, and VMware EVC, explains how to enable and configure DRS on a cluster. It also covers vSphere Distributed Power Management (DPM) and VMware Enhanced vMotion Capability (EVC).

Chapter 12, Upgrading and Patching using VMware Update Manager, explains how to install and configure VMware Update Manager to manage patching and upgrading ESXi hosts. It also covers the installation and configuration of the Update Manager Download Service (UMDS).

Chapter 13, Using vSphere Management Assistant (vMA 5.1), explains how to deploy and configure vMA 5.1 to run commands/scripts with the need to authenticate every attempt.

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13

Using vSphere Management Assistant (vMA 5.1)

In this chapter we will cover the following:

- ▶ Deploying the vMA appliance
- ▶ Preparing the vMA for first use
- ▶ Configuring vMA to join an existing domain
- ▶ Adding vCenter to vMA with AD authentication
- ▶ Adding vCenter to vMA with fastpass (fpauth) authentication
- ▶ Adding an ESXi host to vMA
- ▶ Reconfiguring an added target server
- ▶ Running CLI commands on target servers

Introduction

The **vSphere Management Assistant (vMA)** is a virtual appliance that can be used to run remote commands or scripts on an ESXi host.

The vMA virtual machine runs an SLES 11 based operating system with the vSphere CLI (command line interface) packaged with it. It is generally used by administrators to run commands/scripts without the need to authenticate every attempt.

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Deploying the vMA appliance

The vMA appliance will be deployed as an appliance VM on an ESXi server. Download the vMA appliance from the following website:

https://my.vmware.com/web/vmware/details?downloadGroup=VSP510-vMA-510&productId=285#product_downloads

The vMA appliance can be deployed on an ESXi server by using vSphere Client or by using the vCenter Server.

vMA 5.1 can be deployed on the following systems:

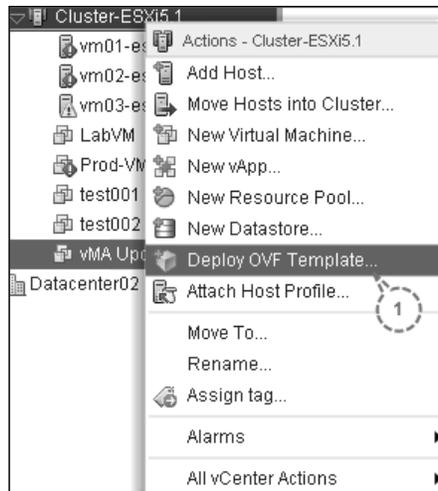
- ▶ vSphere 4.1 or later
- ▶ vCenter 5.0 or later

vMA 5.1 can be used to target operations on vSphere 5.0 and later, and vSphere 4.1 and later systems.

How to do it...

The following procedure will help you deploy the vMA appliance using the **vSphere Web Client interface**.

1. Download and extract the appliance ZIP bundle to a location accessible to the vSphere Web Client.
2. At the vSphere Web Client interface's inventory home, navigate to **Hosts and Clusters**.
3. Right-click on the ESXi cluster and then click on **Deploy OVF Template**.



- At the **Deploy OVF Template** wizard, select the **Local File** option and then click on the **Browse...** button.

Deploy OVF Template

1 Source

1 a Select source

1 b Review details

2 Destination

2a Select name and folder

2b Select storage

3 Ready to complete

Select source
Select the source location

Enter a URL to download and install the OVF package from the Internet, such as a local hard drive, a network share, or a CD/DVD drive.

URL

Local file

Browse...

- Browse and select the OVF file from the extracted location and then click on **Next** to continue with the wizard.
- Review the details of the OVF file and then click on **Next** to continue.

Review details	
Verify the OVF template details	
Product	vSphere Management Assistant (vMA)
Version	5.1.0.0
Vendor	VMware, Inc.
Publisher	<input checked="" type="checkbox"/> VMware, Inc. (Trusted certificate)
Download size	541.9 MB
Size on disk	1.5 GB (thin provisioned) 3.0 GB (thick provisioned)
Description	The vSphere Management Assistant (vMA) allows administrators to manage ESX/ESXi and vCenter Server systems.

- Accept the license agreement and then click on **Next**.
- Choose an inventory location for the appliance VM and then click on **Next**.
- Choose a datastore for the VM and then click on **Next**.

10. Choose a port group to which the vNIC will be mapped. Set the **IP allocation** policy and then click on **Next**.

Setup networks
Configure the networks the deployed template should use

Source	Destination	Configuration
Network 1	VM Network	✓

IP protocol: IPv4 IP allocation: Static - Manual

Source: Network 1 - Description
Network 1

Destination: VM Network - Protocol settings

DNS servers: 192.168.193.3 Gateway: 192.168.193.2
Netmask: 255.255.255.0

11. Specify an IP address for the VM's NIC and then click on **Next**.

All properties have valid values

Property	Value
Network 1 IP Address	The IP address for this interface. 192.168.193.88

12. Review the **Ready to complete** screen and then click on **Finish** to deploy the appliance.

 Note that it doesn't matter what IP allocation policy you choose or what IP address you specify; you will need to choose between a DHCP and a static configuration when you configure the appliance after the first boot.

How it works...

Once you finish the wizard, it will deploy the vMA appliance onto one of the ESXi hosts in the cluster. The inventory should now list a virtual machine with the name **vSphere Management Assistant (vMA)**. The appliance, however, is not ready for use yet. The appliance needs to be manually configured before its first use. Read the recipe *Preparing vMA for first use* for instructions on how to prepare the vMA appliance for first use.

Preparing vMA for first use

A vMA deployed appliance will need to go through a few manual configuration steps before you can begin using it. The configuration is done at the appliance's guest operating system level.



The vMA appliance runs **SUSE Linux Enterprise Linux (SLES) 11 SP1** as the guest operating system.

How to do it...

The follow procedure will help you prepare the vMA VM for first use:

1. Power on the vMA VM and wait for the VM to boot-up and display the network configuration main menu.

```
Starting network configuration ...
```

```
Main Menu
```

```
0) Show Current Configuration (scroll with Shift-PgUp/PgDown)
1) Exit this program
2) Default Gateway
3) Hostname
4) DNS
5) Proxy Server
6) IP Address Allocation for eth0
Enter a menu number [0]: _
```

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2. Enter 6 to select **IP Address Allocation for eth0** and supply the static configuration and then enter *y* to confirm the configuration.

```
Enter a menu number [0]: 6
Type Ctrl-C to go back to the Main Menu

Configure an IPv6 address for eth0? y/n [n]: n
Configure an IPv4 address for eth0? y/n [n]: y
Use a DHCPv4 Server instead of a static IPv4 address? y/n [n]: n
IPv4 Address []: 192.168.193.88
Netmask []: 255.255.255.0
IPv4 Address: 192.168.193.88
Netmask: 255.255.255.0
Is this correct? y/n [y]: _
```

3. Enter 2 to set the **Default Gateway**. Although, I have supplied an IPv4 address in this example, you can supply an IPv6 address instead. This step is completely dependent on your network infrastructure.

```
Enter a menu number [0]: 2
Warning: if any of the interfaces for this VM use DHCP,
the Hostname, DNS, and Gateway parameters will be
overwritten by information from the DHCP server.

Type Ctrl-C to go back to the Main Menu

0) eth0
Choose the interface to associate with default gateway [0]: 0
Gateway will be associated with eth0
IPv4 Default Gateway []: 192.168.193.2
IPv6 Default Gateway []: _
Hit "ENTER" to skip
```

4. Enter 4 and supply the **DNS Server** details. Although I have supplied a single DNS sever address in this example, most environments will have a secondary DNS server.

```
Enter a menu number [0]: 4
Warning: if any of the interfaces for this VM use DHCP,
the Hostname, DNS, and Gateway parameters will be
overwritten by information from the DHCP server.

Type Ctrl-C to go back to the Main Menu

DNS Server 1 []: 192.168.193.3
DNS Server 2 (optional) [192.168.193.3]: _
Hit "ENTER" to skip
```

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5. Enter 3 and supply a **hostname**.

```
Enter a menu number [0]: 3 ←
Warning: if any of the interfaces for this VM use DHCP,
the Hostname, DNS, and Gateway parameters will be
overwritten by information from the DHCP server.

Type Ctrl-C to go back to the Main Menu

New hostname [localhost]: vma51 ←
Host name has been set to vma51
```

6. Enter 5 and supply the **Proxy Server** information.

```
Enter a menu number [0]: 5 ←
Type Ctrl-C to go back to the Main Menu

Is an IPv4 proxy server necessary to reach the Internet? y/n [n]: y
Proxy Server (http:// will be auto prepended) []: 192.168.0.104 ←
Proxy Port []: 808_ ←
```

7. Enter 0 to view the current IP configuration of the appliance.

```
Enter a menu number [0]: 0 ←

Network Configuration for eth0
IPv4 Address: 192.168.193.88
Netmask: 255.255.255.0
IPv6 Address:
Prefix:

Global Configuration
IPv4 Gateway: 192.168.193.2
IPv6 Gateway:
Hostname: vma51
DNS Servers: 192.168.193.3
Proxy Server: 192.168.0.104:808
```

8. Enter 1 to exit the network configuration program and start the password configuration program.

```
Enter a menu number [0]: 1 ←

Starting password configuration ...
The root account is disabled in this vMA virtual machine, which means no one can
log in as root. The administrator account for vMA is called "vi-admin". In orde
r to log in to vMA, you need to log in as this user. This user has been pre-crea
ted in the vMA, and its password needs to be set now. Please enter a secure pass
word for the account now.

Please provide a password for the vi-admin user. If you are prompted for an old
password for this user, press <enter>.
Old Password:
```

9. Press the *Enter* key at the old password prompt, and then enter a new password. The new password must at least contain *nine* characters, including one upper case, one lower case, one numerical character, and one printable ASCII symbol.

```
Please provide a password for the vi-admin user. If you are prompted for an old
password for this user, press <enter>.
Old Password:
New UNIX password:
Retype new UNIX password:
Password for "vi-admin" is configured.

Starting certificate installation ...
Password changed.
```

Like with any Unix/Linux machine the password characters entered are not displayed.

10. The appliance will continue with loading the guest OS of the appliance, and will reach the main page.

```
vSphere Management Assistant (vMA) - 5.1.0.0 Build 782391
To manage this VM browse to https://192.168.193.88:5480/

VMA's web management Home Page URL

*Login
Configure Network
Set Timezone (Current:UTC)

Use Arrow Keys to navigate
and <ENTER> to select your choice.
```

For More Information:
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How it works...

Once the appliance has been configured for first use, you can perform various operations from the console of the appliance and its management home page.

When you log in using the `vi-admin` user, at the vMA appliance's management home page you get options to reconfigure the network, the time-zone, and to check for appliance updates.

The following tasks can be performed:

- ▶ From the console, you can perform the following tasks:
 - ❑ Add vCenter Servers or ESXi servers to vMA
 - ❑ Issue commands from the vMA console against the added servers
 - ❑ Configure the vMA's network and proxy settings
 - ❑ Configure the time-zone settings.
- ▶ From the Web UI, you can perform the following tasks:
 - ❑ Configure the vMA's network and proxy settings
 - ❑ Configure the time-zone settings
 - ❑ Update vMA



The `root` user account on the appliance is not enabled. For tasks requiring root privileges, use the `vi-admin` user and `sudo` to get privileges.

Configuring vMA to join an existing domain

The `vi-user` account can't be used to run commands against the **Active Directory** targets. To be able to run command on an AD target, you should either use the `vi-admin` account or log in to the vMA appliance using an AD user. To be able to log in to the vMA appliance using an AD user, the appliance first needs to be added to the AD. In this section we will learn how to do that.

How to do it...

The following procedure explains how to configure a vMA appliance to join an existing AD domain.

1. Log in to the vMA console or SSH to it as the `vi-admin` user.

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2. Issue the following command to add the vMA appliance to the domain:

Syntax:

```
sudo domainjoin-cli join <domain-name> <domain-admin-user>
```

Example:

```
sudo domainjoin-cli join vdescribed.com Administrator
```

```
vi-admin@localhost:~> sudo domainjoin-cli join vdescribed.com Administrator
vi-admin's password:
Joining to AD Domain: vdescribed.com
With Computer DNS Name: localhost.localdom

Administrator@VDESCRIBED.COM's password:
Warning: System restart required
Your system has been configured to authenticate to Active Directory for the
first time. It is recommended that you restart your system to ensure that all
applications recognize the new settings.

SUCCESS
vi-admin@localhost:~> _
```

3. Reboot the vMA appliance by issuing the command `sudo reboot`.
4. Verify whether the domain login was successful by issuing the following command:

```
sudo domainjoin-cli query
```

```
vi-admin@vma51:~> sudo domainjoin-cli query
Name = vma51
Domain = VDESCRIBED.COM
Distinguished Name = CN=VMA51,CN=Computers,DC=vdescribed,DC=com
vi-admin@vma51:~> _
```

Adding vCenter to vMA with AD authentication

You can add vCenter Servers to vMA with AD authentication.

How to do it...

The following procedure explains how to add the vCenter Server to the vMA by using AD authentication.

1. Log in to the vMA console or SSH to it as the `vi-admin`.

- Issue the following command:

```
vifp addserver <vCenter> --authpolicy adauth --username
<domain>\\<domain admin>
```

Example:

```
vifp addserver vcenter5x.vdescribed.com --authpolicy adauth
--username vdescribed.com\\Administrator
```

- Issue the command `vifp listservers` to verify that the server has been added.

```
vi-admin@localhost:~[vcenter5x.vdescribed.com]> vifp listservers
vcenter5x.vdescribed.com      vCenter ←
vi-admin@localhost:~[vcenter5x.vdescribed.com]>
```

How it works...

When executing this command make sure that you specify the username in the `<DOMAIN>\\<DOMAIN ADMIN>` format. Else, the authentication will be verified against the local credentials on the vCenter Server.



Note that we should be using two backward slashes. This is because on a Linux Shell two backward slashes (`\\`) is an escape sequence for a single backward slash (`\`).

If the `adauth` value is not specified by using the `authpolicy` switch then the default `fpauth` mechanism will be used.

Once configured correctly, you can issue vSphere CLI command on ESXi hosts managed by the added vCenter without a prompt for authentication.

Adding vCenter to vMA with fastpass (fpauth) authentication

You can add vCenter Servers to vMA with the standard/default fastpass authentication (`fpauth`). vMA's fastpass authentication method provides a mechanism to cache the target server's credentials, on the vMA machine, so that you don't have to authenticate every time you run a command against the target server.

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How to do it...

The following procedure explains how to add the vCenter Server to the vMA by using fastpass Authentication.

1. Log in to the vMA console or SSH to it as the `vi-admin` user.
2. Issue the following command:

```
vifp addserver <vCenter> --authpolicy fpauth
```

Example:

```
vifp addserver vcenter5x.vdescribed.com --authpolicy fpauth
```

```
vi-admin@localhost:~> vifp addserver vcenter5x.vdescribed.com
--authpolicy fpauth
Enter username for vcenter5x.vdescribed.com: Administrator
Administrator@vcenter5x.vdescribed.com's password:
This will store username and password in credential store which is a security risk. Do you want to continue?(yes/no): yes
vi-admin@localhost:~[vcenter5x.vdescribed.com]>
```

3. Issue the command `vifp listservers` to verify that the server has been added.

How it works...

Unlike AD authentication, the fastpass mechanism stores the username and password information in a local credential store.

The `vi-admin` credentials are stored in the following XML file:

```
/home/vi-admin/vmware/credstore/ vmcredentials.xml
```

By default the added server is set as the target. You can issue the following command to verify the same:

```
vifptarget -d
```

Adding an ESXi host to vMA

Instead of adding a vCenter Server to vMA, it is possible to add just the individual ESXi hosts. This is particularly useful if a single vCenter is used to manage multiple Data Centers and you don't want to expose all of the ESXi hosts managed by the vCenter to the vMA appliance.

How to do it...

The following procedure explains how to add an ESXi server to the vMA appliance.

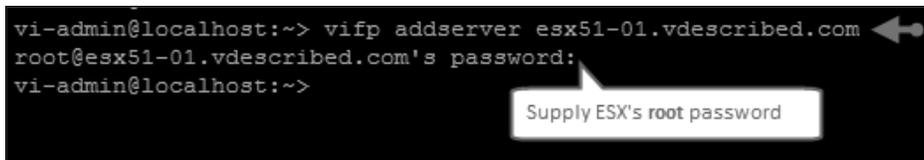
1. Log in to the vMA console or SSH to it as the `vi-admin` user.
2. Issue the following command:

```
vifp addserver <ESXi_server_name>
```

Example:

```
vifp addserver esx51-01.vdescribed.com
```

3. When prompted, specify the root password for the ESXi host.



```
vi-admin@localhost:~> vifp addserver esx51-01.vdescribed.com
root@esx51-01.vdescribed.com's password:
vi-admin@localhost:~>
```

Supply ESX's root password

4. Issue the `vifp listservers` command to verify that the ESXi host was added.



```
vi-admin@localhost:~> vifp listservers
vc51-01.vdescribed.com vCenter
esx51-01.vdescribed.com ESXi
vi-admin@localhost:~>
```

ESX Server has been added successfully

How it works...

When you add an ESXi server to vMA, unlike adding a vCenter Server, vMA doesn't store the root password in its credstore.

Instead, it will create two users on the target ESXi server:

- ▶ `vi-admin` with administrator privileges
- ▶ `vi-user` with read-only privilege

On the ESXi server, the `/etc/passwd` should show both the users have been created.

```
~ # cat /etc/passwd
root:x:0:0:Administrator:/:bin/sh
daemon:x:2:2:System daemons:/:sbin/nologin
nfsnobody:x:65534:65534:Anonymous NFS User:/:sbin/nologin
dcui:x:100:100:DCUI User:/:sbin/nologin
vpxuser:x:500:100:VMware VirtualCenter administration account:/:bin/sh
vi-admin00:x:1000:1000:ESXID=52186596-e95f-429f-7dff-3e44eb5754ab;VIMCID=420948F7-30FC-0FED-7133-779C591A0E9F;:/:bin/sh
vi-user00:x:1001:1001:ESXID=52186596-e95f-429f-7dff-3e44eb5754ab;VIMCID=420948F7-30FC-0FED-7133-779C591A0E9F;:/:bin/sh
~ #
```

vi-admin and vi-user entries

In the credstore on the vMA, you will see a `vi-admin` password entry for the ESXi server.

```
vi-admin@localhost:~> cat /home/vi-admin/.vmware/credstore/vmacredentials.xml
<?xml version="1.0" encoding="UTF-8"?>

<viCredentials>
  <version>1.0</version>
  <passwordEntry>
    <host>vc51-01.vdescribed.com</host>
    <username>Administrator</username>
    <password>r7+qxZeJia+vr6+9gp2mtqrfh6G2ur+vr6+gJLqMn4Ct16uopKSAwYyNhrbft
7S4haWe34iFmYaH24DWi4iilJm/xYGrhZiChaXY3bq6hNmZvJverfvtvp+Bh4m8gNuK7u6ims+b35GH
sXt2VgiDPgjrGocoHX7LF1WK7uZc3b8=</password>
  </passwordEntry>

  <passwordEntry>
    <host>esx51-01.vdescribed.com</host>
    <username>vi-admin00</username>
    <password>sKC12oiWlrCwsLWhoYGZiImruJ2hpKCwsLCwiLLeh7TJvbKV2p2en4KU2se1k
rOTld6loaCGqYGfl6e5poiFxbK53py215fCxLK3mb+L3sKHxISEpLewo5mch6WJhd6/v7mEvcG8ocSn
qbqY2pjIkKaAo7yUoMzM8fGdiyYTw+U=</password>
  </passwordEntry>
</viCredentials>
vi-admin@localhost:~>
```

Entry corresponding to the added ESXi server

To remove a server (ESXi/vCenter), issue the following command:

```
vifp removeserver <servername>
```

Examples:

```
Vifp removeserver vcenter5x.vdescribed.com
```

Reconfiguring an added target server

An added target server can be reconfigured for a change in the authentication policy, a change in the users authenticating the target or to recover a `fastpass` user in the event of a local credstore corruption.

How to do it...

The follow procedures will guide you through the steps required for the following:

- ▶ Changing the authentication policy
- ▶ Changing or recovering a user

Changing the authentication policy

The following procedure will help you change the authentication policy of a target that has already been added to vMA:

1. Issue the following command:

```
vifp recover <servername> --authpolicy <authpolicy type>
```

Example:

```
vifp recover vcenter5x.vdescribed.com --authpolicy fpauth
```

2. When prompted, supply the credentials.

Changing or recovering a user

The need to recover a user may arise if the login credentials corresponding to a user has changed or if vMA's credential store is corrupted. The following procedure will help you recover a target that has already been added to vMA:

1. Issue the following command:

```
vifp recover <servername>
```

Example:

```
vifp recover vcenter5x.vdescribed.com
```

```
vifp recover esx01.vdescribed.com
```

2. When prompted, supply the credentials.

How it works...

When you are switching over from `adauth` to `fpauth` or if you are reconfiguring a fastpass target, it will prompt you only for a password. Whereas, if you are reconfiguring an AD target, it will prompt you only for a username. If the intended target is not the default target then you will have to use the `vifptarget -s` command to set the required target.

Running CLI command on target servers

In this recipe we will learn how to issue commands on the added target servers.

How to do it...

The following procedures explain how to set a target server to direct commands to it. We will discuss all three methods.

Method 1 – Issue commands on the default target

1. Set the intended server as the default target for all commands.

Command:

```
vifptarget -s <servername>
```

Example:

```
vifptarget -s esx01.vdescribed.com
```

```
vifptarget -s vcenter5x.vdescribed.com
```

2. Similar to the CLI commands you would run at an ESXi host's console.

Example:

```
esxcli network nic list
```

Method 2 – Issue commands by specifying a target server

1. Issue the command specifying the server name.

Example:

```
esxcli -server esx01.vdescribed.com iscsi adapter list
```

```
vifptarget -s esx01.vdescribed.com
```

2. Supply the username and password when prompted.

Method 3 – Issuing commands against a vCenter Server added as the target

1. Issue the command specifying the vCenter Server and ESXi server:

Command:

```
esxcli --server <VC_server> --vihost <esx_host> network nic list
```

Example:

```
esxcli -server vcenter5x.vdescribed.com -vihost esx02.vdescribed.com network list
```

2. Supply the vCenter username and password when prompted.



Note that this method will ONLY prompt you for the vCenter's username and password. It will not prompt you for the ESXi host's root password.

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