VMware vFabric Data Director Installation Guide

vFabric Data Director 1.0.1

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About VMware vFabric Data Director

The *VMware vFabric Data Director Installation Guide* provides information about installing VMware® vFabric Data Director, including configuring networks, deploying Data Director in vSphere Client as a virtual appliance (vApp) running on a vCenter Server, and performing setup and configuration using the Data Director administration UI.

The Data Director software solution enables you to manage an environment with large numbers of databases, and offers application developers self-service database creation and resource allocation. Data Director supports flexible, policy-based resource management, and provides resource isolation at the organization and database levels. Data Director enables you to implement security policies through role-based access control. You can delegate and grant customizable roles and privileges to specify users' allowed actions.

Self-service database lifecycle management enables application developers to create new databases, manage schemas, set up backups, perform restores, clone databases for testing and development, scale database sizes up, and decommission databases. Customizable database configuration and backup templates enable administrators to control database parameters and enforce resource allocation policies, while simplifying database creation and resource allocation for application developers.

Intended Audience

This document is for administrators and application developers.

- System administrators use this document to learn about managing and monitoring a Data Director environment. System administrators create organizations, allocate resources to them, and perform other high-level tasks.
- Organization administrators use this document to learn about managing and monitoring database groups and databases. Organization administrators can use and customize database templates, can assign resources, and can monitor their organization.
- Application developers use this document to learn about managing and monitoring databases.

Updated Information

This *vFabric Data Director Installation Guide* is updated with each release of the product or when necessary.

This table provides the update history of the *vFabric Data Director Installation Guide*.

Revision	Description
EN-000710-02	■ The topic, "Prerequisites for Data Director," on page 9 clarifies the number of vCPUs that Data Director supports.
EN-000710-01	■ The topic Chapter 5, "vFabric Data Director Upgrade," on page 35 describes how to upgrade the Data Director virtual appliance and database virtual machines (DBVMs).
EN-000710-00	Initial release.

Installation Prerequisites and vSphere Setup 1

Before you start installing Data Director, you must understand the environment requirements, you must set up vSphere, and you must determine your networking configuration.

This chapter includes the following topics:

Prerequisites for Data Director

Before you can install and run Data Director, your environment must meet the software, tools, and hardware prerequisites.

- vSphere 5.0 Enterprise or vSphere Enterprise Plus
  - VMware vSphere Client
  - VMware vCenter Server 5.0 and modules (ISO or ZIP)
  - ESXi ISO or ESXi offline bundle ZIP
  - vSphere Update Manager
  - vSphere VMFS-5
  - VMware Virtual Hardware 7
- vFabric Data Director. Download the following client tools and drivers from the Data Director Download page.
  - Data Director Client Tools (Linux 32-bit or 64-bit)
  - Data Director JDBC drivers
- Web browser. Use one of the following.
  - Firefox 3.6 or later
  - Internet Explorer 7 or later
  - Flash Player 10.1 or later

The following are the minimum requirements for Data Director.

- 2 ESXi servers with 12GB of RAM combined.
- 1 vCenter Server system (can be running on a virtual machine).
- 1 Windows system for running vSphere Client.

- 40GB of shared storage, configured as two datastores.
- 1 Gigabit Ethernet VLAN.

  This VLAN will carry Data Director network traffic.
- One or more Gigabit Ethernet VLANs for one or more database networks.

  Database networks carry SQL traffic to and from Data Director databases. Database clients such as JDBC and libpq send and receive SQL traffic from database servers on these networks. Data Director supports multiple database networks for better network isolation, for example, to isolate QA SQL traffic from production SQL traffic. See Chapter 2, "Planning the Network Configuration," on page 15.
- Hardware to run the test application.

Check with your company's network administrators or IT staff to determine a setup that is appropriate for your organization. For example, one possible setup for a 4-VLAN configuration is as follows.

- 4 ESXi servers with 64GB of RAM combined.
- 1 vCenter Server.
- 1 Windows system for running vSphere Client.
- 500GB of shared storage configured as two or more datastores.
- 4 Gigabit Ethernet VLANs.

  These Gigabit Ethernet VLANs will carry Data Director network traffic.
- One or more Gigabit Ethernet VLANs for one or more database networks.

  Database networks will carry SQL traffic to and from Data Director databases. Database clients such as JDBC and libpq send and receive SQL traffic from database servers on these networks. Data Director supports multiple database networks for better network isolation, for example, to isolate QA SQL traffic from production SQL traffic. See Chapter 2, "Planning the Network Configuration," on page 15.
- Hardware to run the test application

Data Director licensing supports up to 8 vCPUs.

Data Director provides several database configuration templates in different sizes: tiny, small, medium, large, and giant. You can estimate the resources that your Data Director deployment requires based on your installation's expected database sizes. For example, a database instance that uses the Tiny database configuration template has the following settings.

Table 1-1. Settings for a Tiny Database Configuration

Resource	Setting
vCPUs	1
Memory size	512MB
Recommended database storage allocation	5GB

For a base installation that uses the Tiny database template, use a cluster with the following CPU and memory resources.

Table 1-2. Resource Requirements for a Base Installation Using the Tiny Database Template

Resource	Requirements
CPU	4GHz and an additional 400 MHz for each database instance
Memory	8GB of available memory and an additional 512 MB of available memory for each database instance

vSphere Settings for Data Director

Before you can install Data Director, set up the vSphere Cluster to deploy Data Director to, and enable the cluster for vSphere High Availability (HA), and vSphere Dynamic Resource Scheduler (DRS). Data Director also requires that you have Network Time Protocol (NTP) enabled in your environment.

Create and Configure the Data Director Cluster

A cluster is a group of hosts. When a host is added to a cluster, the host's resources become part of the cluster's resources. Clusters enable the vSphere High Availability (HA) and vSphere Distributed Resource Scheduler (DRS) solutions. Cluster settings must be compatible with Data Director.

Before you can install Data Director, you must create a vSphere cluster for use by Data Director. See also the *vSphere Resource Management* documentation and the *vSphere Availability* documentation.

Prerequisites

- Connect to the vCenter Server system by using a vSphere Client. You cannot create clusters if the client is connected directly to a host.
- Verify that you have sufficient permissions to create a cluster.
- Verify that a datacenter exists in the vCenter Server inventory.

Procedure

1 In the vSphere Client, select **Home > Inventory > Hosts and Clusters**.

2 Right-click a datacenter or a folder within a datacenter and select **New Cluster**.

3 Complete the Cluster Features page.

   a Name the cluster.

   b Select the **Turn On vSphere HA** and **Turn On vSphere DRS** check boxes.

   vSphere DRS must be enabled. Do not change this setting.

   c Click **Next**.

   In DRS clusters, Storage I/O Control is enabled by default. Do not change this setting.

4 On the vSphere DRS page, set the automation level to **Partially automated** and click **Next**.

5 On the Power Management page, leave power management set to **Off** or select a power management setting appropriate for your environment, and click **Next**.

6 On the vSphere HA page, select the HA settings required for the Data Director cluster and click **Next**.

Option	Description
Host Monitoring Status	Leave **Enable Host Monitoring** selected.
Admission Control	Leave **Enable** selected.
Admission Control Policy	Specify a policy suitable for your environment. See the *vSphere High Availability* documentation.

7 On the Virtual Machine Options page, select the settings required for the Data Director cluster settings and click **Next**.

Option	Description
VM Restart Priority	Any option that does not disable VM restart priority is acceptable. Data Director requires that VM restart priority is enabled.
Host Isolation Response	Leave the default or change the setting to support your environment.

8 On the VM Monitoring page, select the following settings and click **Next**.

Option	Description
VM Monitoring	Select **VM and Application Monitoring**.
Default Cluster Settings	Leave the monitoring sensitivity at the default.

9 Finish the cluster setup.

a Leave **VMware Enhanced vMotion Compatibility** disabled and click **Next**.

b Leave the swap file location at its default and click **Next**.

c Review the cluster settings and click **Finish**.

What to do next

You can customize the cluster even further to suit your environment requirements. See the *vFabric Data Director Administrator and User Guide*.

Enable vSphere Network Time Protocol

The Network Time Protocol (NTP) daemon ensures that time-dependent processes occur in sync across hosts. Enable the NTP daemon on the ESXi hosts.

Prerequisites

Verify that the ESXi hosts in the Data Director clusters are running.

Procedure

1 Using a vSphere Client, connect to the vCenter Server system that manages the ESXi hosts in the Data Director cluster.

2 In the left navigation pane, select one of the hosts.

3 In the main pane, click the **Configuration** tab, and click **Time Configuration**.

4 Click **Properties** and click **Options**.

5 Click **NTP Settings** and click **Add**.

6 In the Add NTP Server dialog box, type a valid NTP server address and click **OK**.

7 Select the **Restart NTP service to apply changes** check box and click **OK**.

8 In the Time Configuration dialog, confirm that the **NTP Client Enabled** check box is selected.

- If it is selected, click **OK**.
- If it is not selected, click the **Options** button. In the Service Commands section of the NTP Daemon (ntdp) Options dialog, click **Start** and click **OK**.

9 Repeat for the other hosts in the Data Director cluster.

Virtual Switches and Port Groups in vSphere

You create virtual switches and port groups in vSphere for use in Data Director.

vSphere port groups correspond to networks in Data Director. You can later allocate the vSphere port groups for resource bundles for the Data Director Management Server or DB Access Networks. See the *vFabric Data Director Administrator and User Guide*.

Planning the Network Configuration 2

When you install Data Director, the installer prompts you for the IP addresses for the different networks in the Data Director environment. Data Director network traffic runs on several different networks. Before you start the installation, review the supported Data Director network configurations and plan your Data Director network configuration.

Work with your enterprise's network and IT staff and use the *vFabric Data Director Worksheets* to plan and implement the VLANs, virtual switches, and port groups (networks) that will carry Data Director network traffic.

For information about vSphere networking, see the *vSphere Networking* documentation.

This chapter includes the following topics:

Network Configurations for vFabric Data Director

The Data Director system carries different types of network traffic on different networks. To prepare your network worksheet, you must understand the different networks and servers in the Data Director environment.

Data Director Management Server and DB Name Server

Data Director deploys the Management Server and a DB Name Server on virtual machines.

Management Server The Management Server performs all management operations.

DB Name Server The DB Name Server provides the DB Name Service. The DB Name Service provides a single entry point to databases. When Data Director creates a vFabric Postgres (vPostgres) database, it provides a connection string for that vPostgres database. The connection string contains the DB Name Service IP address, port, database server id, database name, and user name.

When a database client or application wants to connect to a vPostgres database using the Data Director JDBC or libpq drivers, the driver retrieves the database IP address from the DB Name Server using the connection string. The driver sets up the connection between the application and the target database. When you use the application to access the database, the application uses that connection. This means that the DB Access Network must be visible from all database clients.

The advantage provided by DB Name Service is that the database applications are not affected when the database server's IP address changes. This enables databases to use dynamic IP addresses from a DHCP server and lowers management costs.

Data Director Networks

Data Director uses the following networks to carry different types of network traffic.

vCenter Network — Carries management traffic between vCenter Server and the Data Director Management Server. This network carries commands that the Management Server uses to interact with vCenter Server and all the ESXi hosts managed by that vCenter Server.

Internal Network — Carries internal management traffic among vPostgres databases, the Data Director Management Server, and the DB Name Server. Due to security considerations, internal management traffic must have its own network, it cannot share a network with other types of traffic, and it must have DHCP enabled.

Web Console Network — Carries traffic between Web clients (console) and the Data Director Management Server.

DB Name Service Network — Carries traffic for the name service for vPostgres databases. The DB Name Server performs database name to IP address translation (database connection services) and must be reachable from database clients.

DB Access Networks — Data Director includes one or more DB Access Networks for carrying SQL traffic between database clients and vPostgres databases' virtual machines (DBVMs). Each DB Access Network must have DHCP enabled.

Traffic for more than one Data Director network can be on the same physical network. For example, vCenter Network traffic can share the identical vSphere network with the Web Console Network traffic.

Some possible network configurations are as follows.

- Four separate networks, one for carrying each type of Data Director network traffic, plus one or more networks for carrying database (SQL) network traffic to and from vPostgres databases. See "Four VLAN Network Configuration," on page 20.
- Two networks, one for carrying database (SQL) network traffic and one shared network that carries all Data Director Management Server network traffic. This configuration is the minimum network configuration. See "Minimum Two VLAN Network Configuration," on page 22.

Database clients, such as the PgAdmin tool, send and receive SQL traffic from database servers on the DB Access Network. Data Director supports more than one database network VLAN for better network isolation, for example, to isolate QA SQL traffic from production traffic.

If you set up two separate database networks, the database network traffic can use the vCenter Network, Web Console Network, or DB Name Server Network. Placing database traffic in the same network for vCenter, Web Console, or DB Name Server can carry a security risk.

You can have as many database networks as your site requires. However, database clients must have access to the DB Name Service Network.

Relating Networks in vSphere and Data Director

Data Director components communicate by using vSphere networking resources. Before you start planning your network, you must understand vSphere and Data Director networking.

Data Director requires networks to carry communications among its components, including the following.

- Communication between the Data Director Management Server and database servers.
- Communication between database servers and applications.
- Communication between the Data Director DB Name Server and applications.

vSphere administrators create switches and networks for each ESXi host. As a vSphere administrator, you can either designate existing networks for Data Director use, or create and configure networks for Data Director use. These networks will be used for the Management Server and for one or more DB Access Networks.

You specify the different networks at different times in the installation and setup process.

vCenter Network and Web Console Network

You specify the vSphere port groups (networks) to use for vCenter Network and Web Console Network during Data Director vApp deployment.

NOTE Set up vSphere Update Manager to use the vCenter Network to communicate with Data Director. If vSphere Update Manager uses a different network, it cannot function properly.

Internal Network and DB Name Service Network

You set up the Internal Network and DB Name Service Network after the Data Director vApp deploys, during the Data Director setup process. See "Configure Network Mapping," on page 33. DHCP must be enabled on these networks.

DB Access Network

A DB Access Network is the interface to the database virtual machines (DBVMs) and carries SQL traffic. DBVMs run the actual databases and are created when users create databases. DHCP must be enabled on DB Access networks. You can configure as many DB Access networks as there are databases. You select the vSphere networks to use for the DB Access Network when you create resource bundles. See the *vFabric Data Director Administrator and User Guide*.

Best practice is to set up your Data Director networks as separate subnets, such as using different VLANs, to provide the best security. Use VLANs with 1-Gigabit or higher speed Ethernet interfaces.

In addition to network setup, you must also open certain ports in your firewall. See "Data Director Networks, IP Allocation, and Firewalls," on page 17.

Data Director Networks, IP Allocation, and Firewalls

To plan your network, you must understand DNS Server requirements and know which firewall ports must be open for Data Director traffic. This section describes DNS server requirements, firewall ports and the network traffic they carry, and network configuration requirements.

The Data Director vApp requires the use of DHCP IP address allocation policy. Set up a DHCP server for the Internal Network and the DB Access Network. If you select a static IP address for the Web Console Network adapter on the Management Server, a DHCP server on the Web Console Network is not required.

You can assign static IP addresses to the DB Name Service Network Adapter on the DB Name Server and the vCenter Network adapters on both the Management Server and the DB Name Server. DHCP service is not required on their corresponding networks.

Data Director network configuration depends upon your existing network configuration. Consult with your network or IT administrators and use the *vFabric Data Director Worksheets* to record the network settings, IP addressing methods, and IP addresses that must set up Data Director networks and network adapters.

Some points to consider are as follows.

- The DNS server, netmask, and gateway are properties of a vSphere network. As part of network configuration, you might be asked to specify information about the DNS server, netmask, and gateway.
  - If your network uses DHCP IP address allocation, the DHCP server supplies IP addresses for these properties during DHCP configuration.
  - If your network uses static IP address allocation, you will be asked to supply a subset of the IP addresses for the DNS server, netmask, and gateway.
- During Data Director vApp deployment, you configure the Management Server - Web Console Network Adapter. This is how users connect to the Data Director web UI.
- The Management Server Network gateway and DNS server information is configured with the Web Console Network Adapter's configuration.
- The DB Name Service Server's network gateway and DNS server information is configured with the DB Name Service Network Adapter's configuration.
- If a vSphere network is used by multiple Data Director networks, information that was already specified and cannot be changed is displayed but is grayed out.
- The use of DHCP-assigned addresses for certain adapters requires the use of Dynamic DNS so that FQDNs specified during configuration can be mapped to dynamically assigned IP addresses. See "IP Address and DHCP Setup," on page 20 for details.
- If you deploy Data Director with a static IP address for the Web Console Network, specify the central DNS server in the network properties.

Firewall Ports to Open For Data Director Network Traffic

Data Director requires that you open specific ports on your firewall to handle Data Director network traffic. The following tables list the ports to open on your firewall to handle outgoing and incoming Data Director network traffic.

Firewall Ports for Outgoing Data Director Network Traffic

The following table lists the ports to open on your firewall to handle outgoing Data Director network traffic.

Table 2-1. Data Director vApp Outgoing Network Traffic

From	To	To port	Traffic type
■ Management Server - vCenter network adapter ■ Management Server - Web Console network adapter ■ DB Name Server - vCenter network adapter ■ DB Name Server - DB Name Service network adapter	vCenter Server, ESXi host	TCP 443	vSphere Management network traffic
Management Server - Web Console Network Adapter	Mail server	TCP 25, TCP 587	SMTP traffic
Management Server - Web Console Network Adapter DB Name Server - DB Name Service Network Adapter	DNS server	UDP 53, TCP 53	DNS traffic

Firewall Ports for Incoming Data Director Network Traffic

The following table lists the ports to open on your firewall to handle imcoming Data Director network traffic.

Table 2-2. Data Director vApp Incoming Network Traffic

From	To	To port	Traffic type
Any	DB Name Server - DB Name Service Network Adapter	5432	Incoming database traffic, including PostgreSQL traffic.
Any	Management Server - Web Console network adapter	80,443	Web Console traffic.
Any	■ DB Access Network 1 ■ DB Access Network 2 ■ ... ■ DB Access Network *n*	5432	Incoming database traffic, including PostgreSQL traffic.
vCenter Update Manager on vCenter Network	■ DB Name Server - vCenter Network Adapter ■ Management Server - vCenter Network Adapter	5489	Incoming update traffic from the vCenter Update Manager to the Management Server and DB Name Server networks' update agents.

IP Address and DHCP Setup

This section provides information about the requirements for Data Director IP address and DHCP setup.

IP Address and DHCP Setup for Data Director Network Traffic

Table 2-3. Required IP Addresses and DHCP Setup

Data Director Networks	DHCP Required	IP Address	FQDN
vCenter Network	no	■ 1 IP address used by the Data Director Management Server. ■ 1 IP Address used by the Data Director DB Name Server.	Not required.
Internal Network	yes	■ 1 IP address used by the Data Director Management Server. ■ 1 IP Address used by the Data Director DB Name Server. ■ *n* IP addresses used by the database virtual machines (DBVMs). These IP addresses must be assigned by the DHCP server. For the Data Director Management Server, these IP addresses can be static or assigned by the DHCP server.	Required only if you cannot provide two static IP addresses, in which case Dynamic DNS is required.
Web Console Network	no	1 IP address used by the Data Director Management Server. This IP address can be static or assigned by the DHCP server.	One FQDN.
DB Name Service Network	no	1 IP addresses used by Data Director DB Name Server. This IP address can be static or assigned by the DHCP server.	One FQDN.
DB Access Networks	yes	*n* IP addresses used by the database virtual machines (DBVMs). These IP addresses must be assigned by the DHCP server and DB Name Server.	Not required.

Multiple-Gateway Network Setups

You can configure the Management Server virtual machine and the DB Name Server virtual machine with one network gateway.

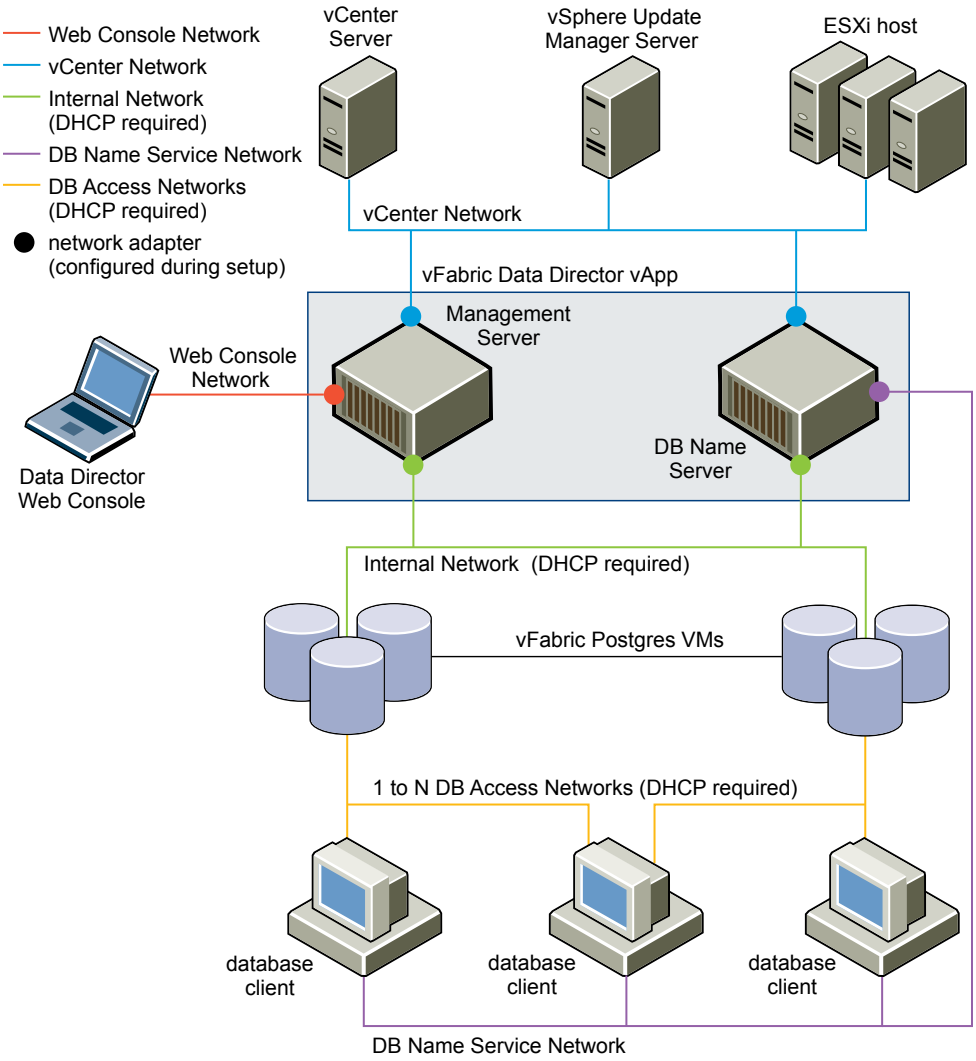
The Management Server virtual machine uses the gateway associated with its Web Console Network Adapter. The DB Name Server virtual machine uses the gateway associated with its DB Name Service Network Adapter. If any network traffic that originates from the Management Server and DB Name Server virtual machines requires routing, that routing can be done only through the configured gateway. Network setups that require more than one gateway in either the Management Server or DB Name Server virtual machine are not currently supported and cannot be configured.

Four VLAN Network Configuration

A possible network configuration is to have four separate VLANs for the different types of Data Director network traffic and one or more separate DB Access Networks for database (SQL) network traffic. This configuration requires 1-Gigabit or greater Ethernet interfaces.

The following diagram illustrates a four-VLAN network configuration.

Figure 2-1. A Four-VLAN Network Diagram



This example configuration uses four VLANs with DHCP servers mapped in the Data Director setup wizard after the Deploy OVF Template wizard successfully completes.

- One VLAN mapped to the vCenter Network, which carries Management Server traffic between vCenter Server, the Data Director Management Server, and the DB Name Server. The Data Director Management Server acquires virtual resource information over this network. vSphere Update Manager (VUM) communicates with the DB Name Server to get the database server IP address through the vCenter Network.
- One VLAN mapped to the Internal Network, which carries management traffic between the Data Director Management Server and the agents running in the database virtual machines (DBVMs), and DB Name Server traffic between the database virtual machines and the LDAP Server when an IP address changes. A DHCP Server is required on the Internal Network.
- One VLAN mapped to the Web Console Network, which carries Data Director UI traffic to a web browser. The Web Console network adapter is defined in the Data Director vApp. Any Web client that will use the Data Director Management Server must have access to this network using HTTPS.

- One VLAN mapped to the DB Name Service Network enables database client applications to connect to DBVMs. The clients request the database virtual machine IP address from the DB Name Server using the DB Name Service network. The DB Name Server provides connection information to a database client application, which then connects to the database using its Database Access Network. Any database client that will issue SQL traffic to a database managed by Data Director must have access to this network using port 389.

In addition, DB Access Networks carry SQL traffic between database client applications and the vPostgres databases. These networks are not defined at installation. DB Access Networks are made available when Data Director system administrators define resource bundles in the Data Director UI and assign the resource bundles to organizations. A DHCP Server is required on the DB Access Networks. Set aside at least one network for the DB Access Network.

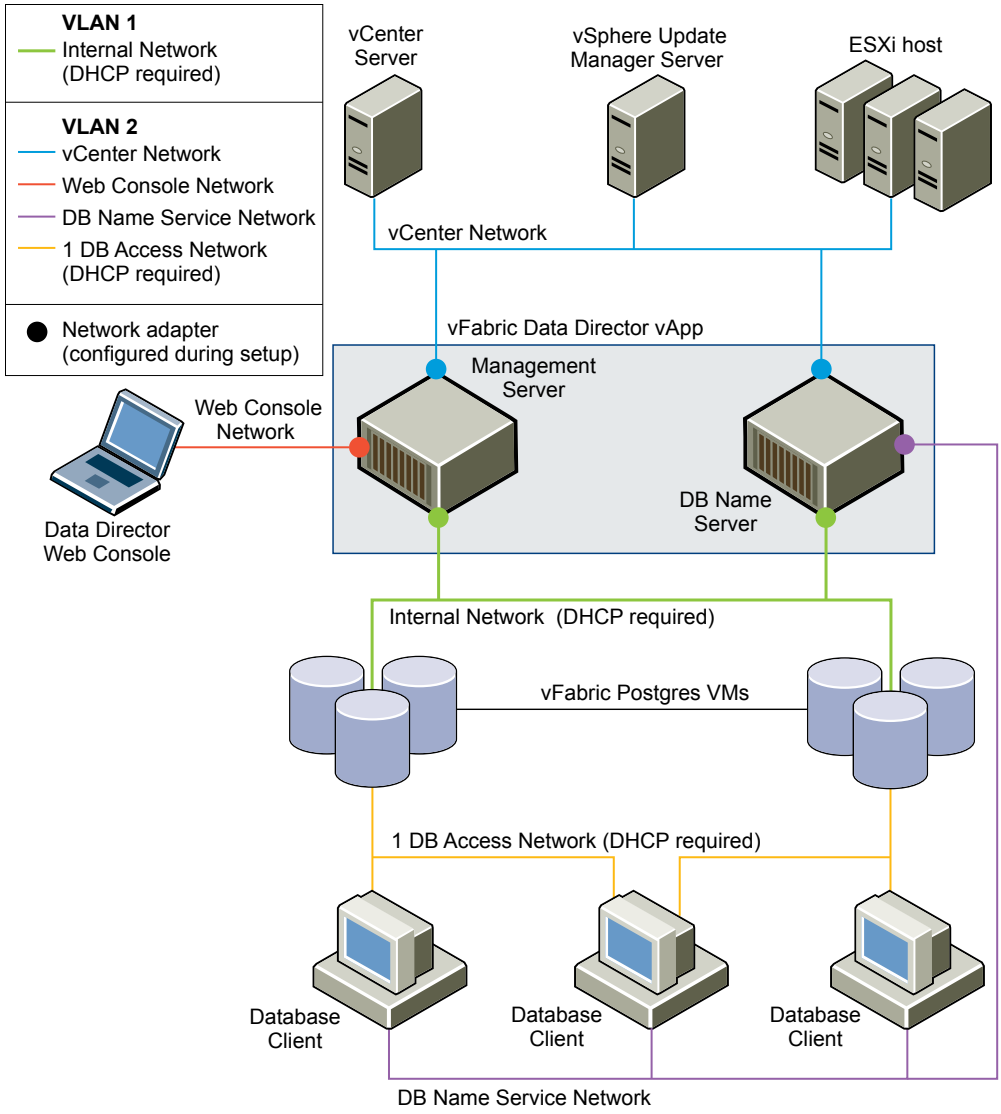
Minimum Two VLAN Network Configuration

A minimum network configuration includes one network to carry Internal Network traffic, and one network for all other traffic. This setup requires two networks with 1-Gigabit or greater Ethernet interfaces.

NOTE Avoid single-network configurations. Because of security considerations, place the Internal Network on its own isolated vSphere network.

The following diagram illustrates a two-VLAN network configuration.

Figure 2-2. A Two-VLAN Network Diagram



Traffic on Each VLAN

The two VLANs carry the following traffic.

- One VLAN is for the shared network for vCenter, Web Console, DB Name Service, and DB Access Networks.
- One VLAN is for the Internal Network. This VLAN carries internal management traffic between databases, the Data Director Management Server, and the DB Name Server. The Internal Network must be a VLAN.

Required IP Addresses and DHCP Setup

This minimum configuration requires DHCP on the shared (vCenter Server/Web Console/Internal) and DB Access networks. To handle internal management traffic, the network DHCP range should have at least as many IP addresses as the number of databases. See "Data Director Networks, IP Allocation, and Firewalls," on page 17.

Limitations

Using only two VLANs has some limitations.

- Because all vCenter Network traffic, Web Console Network traffic, and SQL traffic is carried by one network, you cannot isolate databases into different networks.
- vCenter Server, ESXi hosts, and Data Director Management Server traffic is exposed to regular database users, which can introduce security risks.

Deploy the Data Director vApp

3

The Data Director OVA file contains the compressed open virtualization format files that compose the Data Director vApp. After setting up vSphere and planning the network configuration, download the Data Director OVA file and deploy it as a vSphere virtual appliance (vApp).

Before you start deployment, you must know how you will map the networks in the Data Director vApp to the networks in your vSphere inventory and have the mappings at hand, including the fully qualified domain names (FQDNs) or the IP addresses for each of the Data Director networks. See the *vFabric Data Director Worksheets*.

Prerequisites

- Log in to vSphere Client as an administrator.
- Verify that DHCP is enabled in your vSphere installation.
- Verify that the cluster you created for Data Director deployment meets all requirements. See "Create and Configure the Data Director Cluster," on page 11.
- Verify that the ESXi hosts in the Data Director cluster are running.
- Verify that NTP has been set up in the environment. See "Enable vSphere Network Time Protocol," on page 12.

Procedure

1 Start the Wizard and Specify vApp Properties on page 26

In this first part of Data Director OVA deployment, you specify basic information about the product, including its name, location, and storage.

2 Specify Network Mappings and Network Properties on page 26

As part of vApp deployment, you have to specify the vSphere Networks that Data Director uses for its vCenter Network and its Web Console Network. You also have to specify the FDQN to connect to the Web Management console and, if you are using static IP, the static IP address.

3 Finish Data Director vApp Deployment on page 27

The Data Director vApp must be bound to a service to enable it to register as a vCenter extension at runtime. To finish Data Director vApp deployment, you select a service binding for the Data Director vApp, and confirm the deployment settings.

Start the Wizard and Specify vApp Properties

In this first part of Data Director OVA deployment, you specify basic information about the product, including its name, location, and storage.

Prerequisites

You will select the disk format for the vApp virtual disks as part of deployment. For information about the supported disk formats and their trade-offs, see the *vSphere Storage* documentation or the VMware Knowledge Base article *Using thin provisioned disks with virtual machines*.

Procedure

1 In vSphere Client, right-click the cluster in which to deploy the Data Director vApp.

2 Select **File > Deploy OVF Template**.

3 Answer the prompts from the wizard.

Wizard Screen	Action
Source	Enter or browse to the location of your Data Director vApp OVA file.
OVF Template Details	Confirm the product information.
Name and Location	Specify a name and select the target datacenter for your deployment.
Resource Pool	Select the cluster to which you want to deploy this vApp. If you select the cluster, the vApp is deployed to the cluster's root resource pool. If the cluster has child resource pools, you can choose one of the child resource pools.
Storage	Select a destination storage for the Data Director files.
Disk Format	Select the disk format for the vApp virtual disks.

What to do next

Click **Next** to continue to "Specify Network Mappings and Network Properties," on page 26.

Specify Network Mappings and Network Properties

As part of vApp deployment, you have to specify the vSphere Networks that Data Director uses for its vCenter Network and its Web Console Network. You also have to specify the FDQN to connect to the Web Management console and, if you are using static IP, the static IP address.

Prerequisites

Specify vApp properties in the Deploy OVF Template Wizard. See "Start the Wizard and Specify vApp Properties," on page 26.

Prepare your network setup worksheets. See the *vFabric Data Director Worksheets*.

Procedure

1 In the Network Mapping screen, choose the vSphere networks that will carry traffic for the two Data Director Networks.

Table 3-1. Data Director Networks

Data Director Network	Description
vCenter Network	The vCenter Network carries management traffic between vCenter Server and the Data Director Management Server. Select the vSphere Network that you decided to use for this traffic.
Web Console Network	The Web Console Network carries traffic between web clients and the Data Director Management Server. Select the vSphere Network that you decided to use for this traffic.

If you are using static IP addresses, enter the values for Static IP Address, Netmask, Gateway, DNS Server 1, and optionally DNS Server 2 from your worksheet. If you are using DHCP, leave these fields at the preset values.

2 Click **Next** to continue.

Finish Data Director vApp Deployment

The Data Director vApp must be bound to a service to enable it to register as a vCenter extension at runtime. To finish Data Director vApp deployment, you select a service binding for the Data Director vApp, and confirm the deployment settings.

Procedure

1 In the Configure Service Bindings screen, left-click the vCenter Extension service binding, select the service binding, and click **Next**.

2 Review the settings, and change settings if necessary.

3 (Optional) Select the **Power on after deployment** check box to power up Data Director when deployment is complete.

4 Click **Finish** to confirm the settings and start the Data Director vApp deployment process.

The Data Director vApp deploys on the designated cluster and powers up. This process can take a few minutes. The deployed Data Director vApp appears in the vSphere host's inventory list. When you expand the vApp, you see the following Data Director virtual machines.

- Management Server
- DB Name Server

What to do next

Set up Data Director. See Chapter 4, “Set Up Data Director,” on page 29.

Set Up Data Director

4

After you successfully deploy the Data Director vApp, you configure Data Director using the Data Director setup wizard. As part of the setup process you specify user management mode, network mapping, and license information.

Prerequisites

- Complete the network planning for your environment. See the *vFabric Data Director Worksheets*.
- Deploy the Data Director vApp.

Procedure

1 Start the Data Director Setup Wizard on page 30

You start the setup wizard from a Web browser. You must know the FQDN of the Management Server to start the wizard.

2 Accept the License Agreement on page 30

When you connect to Data Director for the first time, the VMware End User License Agreement appears. Before you set up Data Director, read and accept the license agreement.

3 Create the Initial Data Director System Administrator Account on page 31

The initial Data Director system administrator performs Data Director setup and configuration, creates other system administrators and organization administrators, creates and allocates resources for organizations, and monitors resource usage. You specify the initial Data Director system administrator account when you connect to Data Director for the first time.

4 Set User Management Mode on page 31

User management mode controls how users are assigned and managed across different organizations in Data Director. You must understand the choices because you cannot change them after you set them.

5 Configure the Branding Settings on page 32

You can optionally specify branding information that will appear on Data Director page headers and in the login screen. Branding information includes your company name, logo, and About and Support URLs.

6 Configure SMTP Settings on page 32

You configure SMTP settings to enable Data Director to send notification emails to users. Notifications such as alarms might go to system administrators. Notifications, such as registration confirmation and password change emails, might enable self-registration.

7 Configure the vCenter Network and Its Network Adapters on page 32

Data Director uses the vCenter Network to communicate with the vCenter Server system. You configure the vCenter Network and its network adapters to enable this communication.

8 Configure Network Mapping on page 33

The Network Mapping screen of the setup wizard allows you to map the vSphere networks to the type of Data Director network traffic they will carry.

9 Configure Networks and Network Adapters on page 33

To allow the Management Server and DB Name Server to communicate by using the Internal and DB Name Service Networks, you set up the network settings and configure the adapters.

10 Enter License Information on page 34

Data Director offers evaluation and permanent licenses, with database usage designated as production or nonproduction.

11 Review Data Director Setup on page 34

The setup wizard's Summary screen allows you to review your configuration, make changes, and complete the setup process.

Start the Data Director Setup Wizard

You start the setup wizard from a Web browser. You must know the FQDN of the Management Server to start the wizard.

Procedure

1 Find the Data Director FQDN.

a Log in to the vSphere Client as an administrator.

b In the inventory list in the left pane, expand the Data Director vApp and right-click the Management Server virtual machine.

c Click **Edit virtual machine settings**.

d Click the **Options** tab, and click **Properties**.

The Data Director FQDN is the first property listed in the vApp Property Configuration window.

2 Start the wizard by typing the following URL into a Web browser.

`https://FQDN/datadirector`

The Data Director Setup wizard starts.

Accept the License Agreement

When you connect to Data Director for the first time, the VMware End User License Agreement appears. Before you set up Data Director, read and accept the license agreement.

Data Director is a licensed product. You must accept the end user license agreement to continue setting up Data Director.

Procedure

1 Use the scroll bar to read the entire Data Director license agreement.

2 Click the **I agree to the terms in the license agreement** radio button to accept the agreement.

3 Click **Next** to continue.

Create the Initial Data Director System Administrator Account

The initial Data Director system administrator performs Data Director setup and configuration, creates other system administrators and organization administrators, creates and allocates resources for organizations, and monitors resource usage. You specify the initial Data Director system administrator account when you connect to Data Director for the first time.

Prerequisites

- Complete the License Agreement acceptance in the Data Director Setup wizard.
- Decide on the login and account information for the initial Data Director system administrator.

Procedure

1 Type the system administrator email and password.

2 Type the system administrator first and last name.

3 (Optional) Enter a phone number.

4 Click **Next** to continue.

Set User Management Mode

User management mode controls how users are assigned and managed across different organizations in Data Director. You must understand the choices because you cannot change them after you set them.

Data Director offers the following user management modes.

Global user management mode	Global user management mode is used by enterprises that plan to operate Data Director internally only, and do not plan to allow access from users outside the enterprise. In this mode, organizations can represent enterprise business units, database groups can represent departments within the business units, and databases pertain to the departments that the database groups represent. Global user management mode is the default.
By Organization user management mode	By Organization user management mode is used by service providers that plan to host multiple enterprises within Data Director. In this mode, organizations each represent self-contained, separate enterprises that cannot see each others' users and have no visibility outside their own organization. By Organization database groups can represent business units and departments within the enterprise, and databases pertain to those business units and departments.

Prerequisites

Complete the system administrator account setup in the Data Director Setup wizard.

Procedure

1 Select the user management mode that you want to use in your Data Director installation.

2 Click **Next** to continue.

Configure the Branding Settings

You can optionally specify branding information that will appear on Data Director page headers and in the login screen. Branding information includes your company name, logo, and About and Support URLs.

Prerequisites

Complete the User Management Mode selection in the Data Director Setup wizard.

Procedure

1 (Optional) Add branding information for your company.

If you do not want to add branding information now, you can add it later.

2 Click **Next** to continue.

Configure SMTP Settings

You configure SMTP settings to enable Data Director to send notification emails to users. Notifications such as alarms might go to system administrators. Notifications, such as registration confirmation and password change emails, might enable self-registration.

You can specify SMTP settings now or configure SMTP later. If you do not configure SMTP, Data Director cannot send email to users.

Prerequisites

Complete the Branding Settings page in the Data Director Setup wizard.

Procedure

1 Enter the SMTP settings for your environment.

2 Click **Next** to continue.

Configure the vCenter Network and Its Network Adapters

Data Director uses the vCenter Network to communicate with the vCenter Server system. You configure the vCenter Network and its network adapters to enable this communication.

Prerequisites

- Plan the network setup for your environment. See the *vFabric Data Director Worksheets*.
- Complete the SMTP settings in the Data Director Setup wizard.

Procedure

1 Click the **Edit** button.

2 Select the **DHCP** or **Static IP** check box.

You can select both check boxes if your environment supports both protocols.

3 If you selected **Static IP**, enter a valid netmask.

4 Click **OK** to accept the network settings.

5 Enter the FQDN for the Management Server - vCenter Network adapter.

6 Enter the FQDN for the DB Name Server - vCenter Network adapter.

7 If you selected **Static IP**, enter the IP address for each adapter in the address text box.

8 Click **Next** to continue.

Configure Network Mapping

The Network Mapping screen of the setup wizard allows you to map the vSphere networks to the type of Data Director network traffic they will carry.

Prerequisites

- Plan the network setup for your environment. See the *vFabric Data Director Worksheets*.
- Complete the vCenter Network setup in the Data Director Setup wizard.

Procedure

1 Use the **Internal Network** drop-down menu to configure the network mapping.

The Internal Network traffic must be on a different network than other network traffic.

2 Use the drop-down menu for the other networks (Web Console, Internal, and DB Name Service Network) to configure their network mapping.

During development and prototyping, you can use one network for these three types of network traffic. In a production environment, each Data Director network must map to a different vSphere network.

3 Click **Next** to continue.

Data Director setup maps the networks. This can take a few minutes. When mapping finishes, Data Director setup continues to the Network Configuration screen.

Configure Networks and Network Adapters

To allow the Management Server and DB Name Server to communicate by using the Internal and DB Name Service Networks, you set up the network settings and configure the adapters.

Prerequisites

- Plan the network setup for your environment. See the *vFabric Data Director Administrator and User Guide*.
- Complete the Network Mapping screen of the Data Director Setup wizard.

Procedure

1 Click the **Edit** button.

2 Select the **DHCP** or **Static IP** check box.

You can select both check boxes if your environment supports both protocols.

3 If you selected Static IP, enter a valid netmask.

4 Click **OK** to accept the network settings.

5 Type the FQDN for the Management Server - Internal Network adapter.

6 Type the FQDN for the DB Name Server - DB Name Service Network adapter.

7 Type the FQDN for the DB Name Server - Internal Network adapter.

8 If you selected **Static IP**, type the IP address for each adapter in the address text box.

9 Click **Next** to continue.

Data Director setup maps the networks. This can take a few minutes. When mapping completes, Data Director setup continues to the License screen.

Enter License Information

Data Director offers evaluation and permanent licenses, with database usage designated as production or nonproduction.

See the *vFabric Data Director Administrator and User Guide* for a discussion of Data Director and vFabric Postgres licensing.

Prerequisites

- Obtain license keys for your Data Director products from your VMware representative.
- Complete the Networks and Network Adapters page of the Data Director Setup wizard.

Procedure

1 Enter Data Director and vFabric Postgres license keys in the **License key** text boxes.

2 Click the **Add License Keys** button.

3 Click **Next** to continue.

Review Data Director Setup

The setup wizard's Summary screen allows you to review your configuration, make changes, and complete the setup process.

Procedure

1 In the Summary screen, review the setup.

Some of the settings you specify, such as the user management mode and the initial Data Director administrator account, cannot be changed after setup finishes.

2 Click **Back** to make changes or **Finish** to accept your settings.

When configuration finishes, the Data Director login page appears.

What to do next

Log in using the administrator account that you set up and start using Data Director. See the *vFabric Data Director Administrator and User Guide*.

vFabric Data Director Upgrade 5

vFabric Data Director Upgrade describes how to upgrade the Data Director virtual appliance and database virtual machines (DBVMs).

Upgrading is a multistage process in which you perform procedures in a particular order. Follow the process to ensure a smooth upgrade with a minimum of system downtime. Follow the safeguards to avoid losing data or access to Data Director. Without planning, you might incur more downtime than is necessary.

Before you begin the upgrade, verify that you completed the following tasks:

- Your vFabric Data Director deployment is running in the VMware vSphere 5.0 environment.
- VMware vSphere Update Manager 5.0 (VUM) is installed and available in that environment. Use VUM to apply updates to Data Director.
- Made backups of your Data Director vApp and database virtual machines.

For information about VMware vSphere Update Manager, see the *vSphere Upgrade* documentation.

This chapter includes the following topics:

About the vFabric Data Director Upgrade Process

The vFabric Data Director Upgrade involves two processes: upgrading the Data Director virtual appliance and upgrading the database virtual machines (DBVMs). A particular upgrade might require that you upgrade only the Data Director virtual appliance or that you upgrade the database virtual machines as well.

Use VMware vSphere Upgrade Manager (VUM) to upgrade the Data Director virtual appliance. Use the Data Director Web-based administration UI to upgrade existing database virtual machines.

As part of configuring the Data Director virtual appliance upgrade, you specify a remediation task. Remediation is the process in which VUM applies patches, extensions, and upgrades to vSphere objects such as the Data Director virtual appliance.

Upgrading a virtual machine can require that the virtual machine is powered up, powered off, and rebooted multiple times. You can specify when to apply the updates for powered on virtual machines, powered off virtual machines, and suspended virtual machines.

Data Director Upgrade Virtual Appliance Process Overview

To upgrade vFabric Data Director virtual appliances, you log in to vSphere Client as an administrator and perform upgrade tasks such as downloading the upgrade package, taking pre-upgrade snapshot backups, and using vSphere Update Manager (VUM) to apply the upgrade.

The following process is the sequence of tasks for upgrading Data Director virtual appliances.

1 Obtain the Data Director upgrade package.

2 In the vSphere Client, take a snapshot backup of the Data Director virtual appliance.

3 In the vSphere Client, start vSphere Update Manager (VUM) or connect to the VUM server.

4 Download the upgrade package and accept the EULA.

5 Define the upgrade baseline and attach it to the current Data Director virtual appliance.

6 Verify that the Data Director virtual appliance needs to be updated by scanning the baseline and comparing it with the virtual appliance.

7 In the Data Director Web administration UI, shut down Data Director.

8 In the vSphere Client, configure the upgrade remediation job and start the Data Director virtual appliance upgrade.

If the Data Director virtual appliance upgrade succeeds, log in to the Data Director Web administration UI and perform any necessary administration tasks.

If the Data Director virtual appliance upgrade does not complete, revert to the virtual machine snapshot that you took earlier, fix the blocking issue, and restart the upgrade process.

If the Data Director upgrade includes updates to database virtual machines (DBVMs), see"Data Director Upgrade Database Virtual Machines Process Overview," on page 36.

Data Director Upgrade Database Virtual Machines Process Overview

Data Director upgrades can include upgrades to the database virtual machines (DBVMs). To upgrade database virtual machines, you log in to Data Director as a system administrator, publish the new database virtual machine template, and upgrade each database to the new template.

If a Data Director upgrade includes updates to database virtual machine templates, proceed as follows.

1 Log in to the Data Director Web administration UI as an administrator and open the **Administration** tab.

2 Publish the new database virtual machine template.

3 For each database to upgrade:

   a Right-click the database and select **Upgrade.**

   b Check the **Upgrade to latest version** check box.

   c Specify a start time.

The upgrade proceeds automatically.

Upgrade a Data Director Virtual Appliance

Administrators upgrade the Data Director virtual appliance from vSphere Client using VMware vSphere Update Manager (VUM).

A new version of vFabric Data Director includes updates to the database virtual machine (DBVM) binaries. You want to upgrade your Data Director database virtual machines to the latest version.

Prerequisites

You are logged in to a vSphere Client as an administrator.

Verify that Data Director is deployed and running.

Verify that the VUM plugin is installed and available.

You took a snapshot backup of the Data Director vApp's virtual machines with a retention time of at least 1 day.

You obtained the upgrade source URL, either from an email notification or from your VMware representative.

Procedure

1 Start vSphere Update Manager on page 37

Administrators use the vSphere Update Manager to perform upgrades and to apply patches.

2 Configure Proxy Settings on page 38

If your site uses a proxy server to access the Web, configure the vSphere Update Manager to use the proxy server. You need access to upgrade your Data Director virtual appliance.

3 Download the Upgrade Source and Accept the EULA on page 38

To start the Data Director upgrade process, download the upgrade source from the URL supplied to you, either in an email notification or by your VMware representative, and accept the EULA.

4 Create an Upgrade Baseline on page 39

You upgrade virtual appliances by using a predefined virtual appliance upgrade baseline, or by creating a custom virtual appliance upgrade baseline. Data Director virtual appliance upgrades require that you create a custom virtual appliance upgrade baseline.

5 Specify Upgrade Compliance Settings on page 39

Upgrade compliance settings ensure that the upgrade baseline does not conflict with the current state of your Data Director virtual appliance.

6 Shut Down Data Director on page 40

Certain administrative tasks require that you shut down Data Director. These tasks include applying upgrades and patches. Data Director system administrators shut down Data Director using the Data Director Web UI.

7 Configure the Upgrade Remediation Task and Run the Upgrade Process on page 40

The upgrade remediation task is the process by which vSphere Update Manager applies patches, extensions, and upgrades to the Data Director virtual appliance. Configure and run the remediation task to complete the Data Director virtual appliance upgrade process.

Start vSphere Update Manager

Administrators use the vSphere Update Manager to perform upgrades and to apply patches.

Prerequisites

You received the URL for downloading the Data Director upgrade source.

Procedure

1 Log in to vSphere Client as an administrator.

2 On the **Home** page of the vSphere Client, select **Hosts and Clusters**.

3 Click the **Update Manager** tab.

4 Open the **Admin View**.

You perform the upgrade tasks in the **Admin View**.

If your site uses a proxy server to access the Web, see "Configure Proxy Settings," on page 38. Otherwise, go to "Download the Upgrade Source and Accept the EULA," on page 38.

Configure Proxy Settings

If your site uses a proxy server to access the Web, configure the vSphere Update Manager to use the proxy server. You need access to upgrade your Data Director virtual appliance.

Prerequisites

Obtain the values for the proxy server URL and port.

Procedure

1 Click the **Configuration** tab.

2 In the Proxy Settings section, click **Use proxy**.

3 Enter appropriate values for the proxy URL and port.

4 Click **Test Connection** to ensure that the settings are correct.

5 Click **Apply.**

vSphere Update Manager can access the Web using your site's proxy server.

Download the Upgrade Source and Accept the EULA

To start the Data Director upgrade process, download the upgrade source from the URL supplied to you, either in an email notification or by your VMware representative, and accept the EULA.

Prerequisites

You have the URL from which to download the upgrade source.

Procedure

1 Log in to vSphere Client as an administrator.

2 In the **Download Settings** tab, click **Add Download Source**.

3 Enter the upgrade source URL in the **Source URL** text box.

4 Click **Validate URL** to verify connectivity to the upgrade URL.

5 Click **OK** to add the download source to VUM.

6 Click **Apply.**

7 Click **Download Now.**

8 In the **VA Upgrades** tab, select the upgrade.

9 Click **EULA** to accept the end user license agreement.

The Upgrade source is downloaded.

Create an Upgrade Baseline

You upgrade virtual appliances by using a predefined virtual appliance upgrade baseline, or by creating a custom virtual appliance upgrade baseline. Data Director virtual appliance upgrades require that you create a custom virtual appliance upgrade baseline.

Prerequisites

You are logged in to vSphere Client as an administrator.

Verify that the vSphere Client is connected to a vCenter Server system with which vSphere Update Manager is registered.

Procedure

1 In the **Baselines and Groups** tab, click **VMs/VAs** to review the existing baselines and groups.

2 Click **Create.** to start the New Baseline wizard.

3 Enter a meaningful name, such as Data Director VA Upgrade 1.5, and click **Next.**

4 Click **Add Multiple Rules** to create a set of rules that determine the target upgrade version for virtual appliances.

5 Review the baseline settings and click **Finish.**

Specify Upgrade Compliance Settings

Upgrade compliance settings ensure that the upgrade baseline does not conflict with the current state of your Data Director virtual appliance.

Prerequisites

You are logged in to vSphere Client as an administrator.

Verify that vSphere Client is connected to a vCenter Server system with which vSphere Update Manager is registered.

Procedure

1 In vSphere Client, select Inventory > VMs and Templates, then click **Upgrade Manager**.

2 Open the **Compliance View** and select the virtual appliance to upgrade.

3 Click**Attach.**

4 Select the upgrade baseline.

5 Click **Attach.**

6 Verify that the virtual appliance needs to be updated.

   a In the inventory list in the left pane, right-click the baseline.

   b Select **Scan for Updates**.

VUM scans the baseline against the virtual appliance and determines whether the virtual appliance is up-to-date with the latest Data Director version. A VUM scan result of 100% means that your Data Director version is up to date.

What to do next

If the Data Director virtual appliance is up to date, discontinue the upgrade process. If the Data Director virtual appliance is not up-to-date, go to "Shut Down Data Director," on page 40 to continue the upgrade process.

Shut Down Data Director

Certain administrative tasks require that you shut down Data Director. These tasks include applying upgrades and patches. Data Director system administrators shut down Data Director using the Data Director Web UI.

Prerequisites

You are logged in to the Data Director Web administration UI as a system administrator.

Procedure

1 In the **Administration** tab, open the Version page.

2 Click **Shut Down Data Director.**

Data Director shuts down and a prompt appears instructing you to wait. Wait for a few minutes before continuing.

Configure the Upgrade Remediation Task and Run the Upgrade Process

The upgrade remediation task is the process by which vSphere Update Manager applies patches, extensions, and upgrades to the Data Director virtual appliance. Configure and run the remediation task to complete the Data Director virtual appliance upgrade process.

Prerequisites

You are logged in to vSphere Client as an administrator.

Verify that vSphere Client is connected to a vCenter Server system with which vSphere Update Manager is registered.

Procedure

1 In the left pane of the VMs and Templates view, right-click the virtual appliance to upgrade and select **Remediate.**

2 Select the upgrade baseline to apply and click **Next.**

3 Run the virtual appliance upgrade remediation task.

The upgrade can take a few hours to complete.

4 Type a unique name and an optional description for the task.

5 Select **Immediately** to begin the upgrade process immediately after you complete the wizard and click **Next.**

6 Configure the rollback option, name the snapshot backup to roll back to, and click **Next.**

7 Review the task definition and click **Finish.**

Data Director restarts when the upgrade remediation task completes.

What to do next

If upgrade does not succeed, revert both of the Data Director virtual appliance's virtual machines to the snapshot that you took and reboot the virtual appliance. Resolve the blocking issue, for example, insufficient resources, and restart the upgrade process with the remediation task configuration step. Step 3?

Upgrade Data Director Database Virtual Machines (DBVMs)

Data Director system administrators upgrade Database Virtual Machines from the Data Director Web UI.

Prerequisites

Verify that Data Director is deployed and running.

Verify that the Data Director virtual appliance was upgraded and an updated database configuration template is available. See "Upgrade a Data Director Virtual Appliance," on page 36.

Make backups of the databases that you plan to upgrade.

Procedure

1 Log in to the Data Director Web UI as a system administrator.

2 In the **Administration** tab, publish the new database template.

   a In the left pane, expand **Templates** and select **Database Configuration Templates**.

   b In the DB Configuration Templates pane, right-click the new database template and select **Publish.**

   Data Director publishes the updated template.

   c Perform the same steps to publish new Backup Configuration templates.

3 In each organization tab, right-click a database and select **Upgrade**.

4 Select the **Upgrade to latest version** check box, and specify the start time.

   The Tasks pane shows the upgrade task progress.

When the upgrade completes, use the DBVM as usual.

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