QuickStart Guide

VMware vCenter Server Heartbeat 6.4

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About This Book

This *Quick Start Guide* provides an introduction to VMware vCenter Server Heartbeat and guides you through the steps required to install vCenter Server Heartbeat in the most common environment and to perform basic configuration. This guide also provides a brief introduction to basic administration tasks and advanced configuration features, and provides pointers to more detailed information in other manuals.

Intended Audience

This guide assumes the reader has working knowledge of networks including the configuration of TCP/IP protocols and domain administration on the Windows™ 2003 and 2008 platforms, notably in Active Directory and DNS.

VMware Technical Publications Glossary

VMware Technical Publications provides a glossary of terms that might be unfamiliar to you. For definitions of terms as they are used in VMware technical documentation go to http://www.vmware.com/support/pubs.

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Abbreviations Used in Figures

The figures in this book use the abbreviations listed in Table 1.

Table 1. Abbreviations

Abbreviation	Description
NIC	Network Interface Card
P2P	Physical to Physical
P2V	Physical to Virtual
V2V	Virtual to Virtual

Technical Support and Education Resources

The following sections describe the technical support resources available to you. To access the current versions of this guide and other publications, go to www.vmware.com/support/pubs.

Online and Telephone Support

Go to www.vmware.com/support to use online support to submit technical support requests, view your product and contract information, and register your products.

Go to www.vmware.com/support/phone_support.html to find out how to use telephone support for the fastest response on priority 1 issues (applies to customers with appropriate support contracts).

Support Offerings

Go to www.vmware.com/support/services to find out how VMware support offerings can help meet your business needs.

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Go to www.vmware.com/services to access information about education classes, certification programs, and consulting services. VMware Education Services courses offer extensive hands-on labs, case study examples, and course materials designed for use as on-the-job reference tools. Courses are available onsite, in the classroom, and live online. For onsite pilot programs and implementation best practices, VMware Consulting Services provides offerings to help you assess, plan, build, and manage your virtual environment.

Getting Started with vCenter Server Heartbeat

<div style="text-align:right">**1**</div>

This guide introduces you to vCenter Server Heartbeat and provides an overview of the procedure to get vCenter Server Heartbeat up and running quickly. It contains the following sections:

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vCenter Server Heartbeat Overview

vCenter Server Heartbeat is a Windows based application specifically designed to provide high availability protection for vCenter Server and/or SQL Server configurations without requiring specialized hardware. This guide can be used to install vCenter Server Heartbeat in a Local Area Network (LAN) employing a Physical to Virtual or Virtual to Virtual architecture with or without SQL Server either local or remote.

VMware describes the organization of vCenter Server Heartbeat servers based upon Pairs and Pair status. VMware refers to two servers (either virtual or physical) with vCenter Server Heartbeat installed working together as a vCenter Server Heartbeat Pair. Each server instance in the Pair is assigned both an Identity (Primary or Secondary) and a Role (active or passive). Identity is used to describe the instance of the server while the Role is used to describe what the server instance is doing. When the Identity is assigned to a server it normally will not change over the life of the server whereas the Role of the server is subject to change as a result of the operations the server is performing.

vCenter Server Heartbeat operates using a Public (Principal) network connection for user access and a separate private (channel) network connection between the servers for control and data transfer.

The VMware Channel is a crucial component of the setup and can be configured in a number of ways. Both the Primary and Secondary servers must have two or more network interface connections (NICs). The Principal (Public) network requires one NIC. The VMware Channel uses a separate NIC for the private connection between the servers. A second pair of NICs can be used to provide a degree of redundancy for the VMware Channel.

Installation Prerequisites

Before starting the installation process, ensure that your server(s) and environment meet the following prerequisites.

Table 1-1. Pre-Installation Checklist

Checked	Description of Items to be Checked
❏	Verify that the server is not configured as a domain controller, global catalog sever, or DNS server and that there are no other business critical applications running on the server.
❏	Verify that the Primary server is a member of the domain. The Domain for the Primary server will not change throughout the installation process although the Primary and Secondary server names will be changed as part of the installation procedure.
❏	Verify that the Operating System is Windows 2008 or later and that all current Microsoft security updates have been applied. If .Net 2.0 SP2 is not installed vCenter Server Heartbeat will install it during the installation process.
❏	Verify that vCenter Server 4.1 or later is installed. vCenter Server Heartbeat supports protection of both standalone instances and also when in Linked Mode groups.
❏	Verify that vCenter Guided Consolidation, vCenter Update Manager, and vCenter Converter are configured using Fully Qualified Domain Names (FQDN) if installed.
❏	Verify that the server has 2GB of RAM minimum (Recommended 4GB) in addition to any other memory requirements for the Operating System or vCenter Server.
❏	Verify that the server has at least 2GB of available disk space on the drive where vCenter Server Heartbeat will be installed.
❏	Verify that the user is logged into the domain and that the account used to perform the installation has local administrator rights.
❏	All applications to be protected are installed and configured on the server.
❏	Reserve 3 public IP addresses (1 for Principal and 2 for Managed IPs) and 2 private IPs for the VMware Channel (1 for each server). The Management IP address is unique for each server in the in the pair and should be adjacent to the Principal (Public) IP address.
❏	Verify that the Managed IP setting in the Virtual Infrastructure Client is the same IP address used for the vCenter Server Heartbeat Principal (Public) IP address.
❏	Verify that all VMware components are bound to the Principal (Public) IP address on the Principal (Public) network adapter.
❏	If installing with vCenter Server and SQL Server on the same host, verify that vCenter Server and SQL Server are installed on separate disk drives.
❏	Verify the Primary server's Principal (Public) NIC is configured with a static IP address, correct network mask, correct gateway IP address, correct preferred and secondary (if applicable) DNS server address
❏	Verify the Primary server's VMware Channel NIC is configured with a static IP address in a different subnet than the Principal (Public) network, correct network mask, no gateway IP address, no DNS server IP address, and NetBIOS is enabled (disabled by setup during the installation process).
❏	Verify that all firewalls have been configured to allow traffic on both the Client Connection port (52267) which should be configured by process and the specific Default Channel port (57348).
❏	Verify that Windows Server Backup Feature and Command Line Tools have been installed on the Primary server prior to cloning. Installation of Windows Server Backup Feature and Command Line Tools will also install Windows PowerShell.

Installation Process

vCenter Server Heartbeat is a versatile solution that provides complete protection for vCenter Server and SQL Server and although vCenter Server Heartbeat can be deployed in multiple configurations, this guide focuses on installation of vCenter Server Heartbeat using the most common deployment options.For other supported configurations, see the *vCenter Server Heartbeat Installation Guide*.

vCenter Server Heartbeat is installed on both the Primary and Secondary server of a vCenter Server Heartbeat Pair. VMware recommends that you use the Pre-Installation Checklist to ensure all prerequisites have been met.

Unique server names are required for each server to ensure that the vCenter Server application to operates properly. To create unique names, the installation process requires that you rename both the Primary and Secondary servers to ensure proper configuration and prevent name resolution problems when clients attempt to access the vCenter Server application.

For example, before installing vCenter Server Heartbeat your vCenter Server is named "vCenterServer". During the vCenter Server Heartbeat installation process on "vCenterServer" you clone "vCenterServer" (the Primary server) to create a Secondary server.

After installation you rename the Secondary server to "vCSHB-Secondary" and then rename the Primary server to "vCSHB-Primary". You then use the Configure Server wizard and identify the *Name used to connect to vCenter or SQL Server* as "vCenterServer" thereby allowing access to vCenter Server on either the Primary or Secondary servers.

NOTE   When protecting SQL Server, the SQL Server instance service must run under an account with administrator rights rather than the Network Service or Local System account. If required, change the **Log On AS** property by navigating to **Start** > **Administrative Tools** > **Services**. Select the SQL Service instance and click **Properties**. Select the **Log On** tab and select **This account**. Provide the new account credentials and click **OK**. Once complete, restart the SQL Server instance service.

Primary Server

Installation of vCenter Server Heartbeat begins on the Primary server and uses a multi-step process to configure the installation.

To install vCenter Server Heartbeat on the Primary server

NOTE   vCenter Server Heartbeat prompts you to enter a valid serial number during the installation process. If you do not enter a valid serial number during the installation process, vCenter Server Heartbeat installs in evaluation mode.

1   Having verified all of the environmental prerequisites are met, download the vCenter Server Heartbeat self-extracting file to an appropriate location on the Primary server.

2   Open **Network Connections**, right-click the VMware Channel network connection and select **Properties**. Select **Internet Protocol (TCP/IP)** and click **Properties**.

3   Click **Advanced**, select the **DNS** tab, and clear the **Register this connection's addresses in DNS** check box. Click **OK** three times to close the dialogs.

4   Right-click the Principal (Public) network connection and select **Properties**. Select **Internet Protocol (TCP/IP)** and click **Properties**.

5   Click **Advanced**, select the **DNS** tab, and clear the **Register this connection's addresses in DNS** check box. Click **OK** three times to close the dialogs.

6   Navigate to **Start** > **Administrative Tools** > **Services** to launch the Service Control Manager.

7   If protecting vCenter Server 5.0, select the following services and set them to *Manual*.

- VMware VirtualCenter Server

- VMware vSphere Profile-Drive Storage

- vCenter Inventory Service

- VMware VirtualCenter Management Webservices

8   Clone the Primary server using VMware vCenter virtual machine cloning or another third-party utility to create a cloned image of the Primary server. The clone must be completely identical with no changes to the Name, SID, or domain membership. Do not start the cloned server.

9 Double-click the self-extracting file to initiate the installation process on the Primary server. The **Setup Introduction** dialog appears. Review the information and click **OK**.

> NOTE If you click **Exit** after Setup has started, you are prompted to save your settings. When you run `Setup.exe` later, you will be asked if you want to use the previously saved configuration.

10 The **Self-Extractor** dialog appears. Click **Setup** to continue.

11 The **Setup Type** page appears. Because this is a new installation of vCenter Server Heartbeat, select **Install vCenter Server Heartbeat** and click **Next**.

> NOTE The left pane of each page in the setup wizard provides information about the setup process.

12 Select the physical identity of the server on the **Physical Hardware Identity** page. Select **Primary** as the server identity and click **Next**.

13 Read the license agreement carefully and select **I accept terms of the License Agreement**. Click **Next**.

14 Click **Add** to enter a valid serial number for production mode or leave blank to install in the evaluation mode and click **Next**.

15 Select **LAN** for the network topology and click **Next**.

16 The Secondary Server is Virtual option uses the VMware vCenter virtual machine cloning to create a clone of the Primary server while the Secondary Server is Physical option uses the native vCenter Server Heartbeat cloning process to create a clone of the physical server. Select the **Secondary Server is Virtual** option and click **Next**.

17 Configure the installation paths. The default installation location is `C:\Program Files\VMware\VMware vCenter Server Heartbeat`, but you can change it by manually typing a path to another install location.

> NOTE The path of the VMware installation folder cannot contain Unicode characters. If vCenter Server Heartbeat is installed in a folder that has a path containing Unicode characters, this causes the VMware vCenter Server Heartbeat service will to fail to start. The path of the VMware installation folder can only contain lower and upper case letters A to Z, digits from 0 to 9, and the following special characters: space \ _ - ( ) . : Additionally, vCenter Server Heartbeat does not support file or folder names ending with a period "." or space " ".

Alternatively, click **Browse** to select a different location. Click **Next**.

18 Identify the network adapters (NICs) for use in the VMware Channel on the **Channel Adapter Identification** page by selecting the VMware Channel NIC from the list. Click the adapter name to display the selected NIC properties in the lower pane. You must select at least one NIC to proceed with the installation.

If no NICs are available, click **Open Network Connections** to review the network configuration of your machine and verify that you have the correct number of NICs installed. After selecting the appropriate NIC, click **Next**.

> NOTE Only one channel can be configured for each NIC. To configure more than one VMware Channel you must identify more than one NIC. A disabled NIC does not appear in this list. Enable the NIC to display it. If a NIC is disconnected, its IP addresses do not appear in the lower pane.

19 The **VMware Channel IP Configuration** page prompts you to configure the VMware Channel(s) IP network addresses. Click **Add** for each available VMware Channel connection. For the Primary server, select from a drop-down menu that lists all local IP addresses. Type the reciprocal IP address on the Secondary server into the **IP Address On Secondary** text box. You must specify all VMware Channel IP addresses in subnets outside of the normal Principal (Public) IP addressing schema. Click **OK**. Repeat this step for additional NICs.

> NOTE If you receive a warning message that the other server in the pair cannot be contacted, disregard and click **No** to continue.

20 Review and adjust, if necessary, the **Default Channel port**. Click **Next**.

21 Select the Principal (Public) NIC(s). The IP address information is displayed for each NIC. Click **Next**.

> NOTE Adjacent IP addresses should be reserved and used for the Principal (Public) IP address and the Management IP addresses for the Primary and Secondary Servers.

22 Select **Use same IP addresses for Secondary (Recommended for HA secondary)** and click **Add** to specify the IP address.

23 Add the Principal (Public) network address. Click **Next**.

24 The vCenter Server Heartbeat Console connects to an IP address of the active server using the default Client Connection port of 52267. If this port is already in use, type an available Client Connection port in the text box. Click **Next**.

25 Select the applications to protect. All licensed vCenter Server Heartbeat features are listed.

> NOTE If you are protecting vCenter only or vCenter and SQL Server, provide a Username and Password for an account with rights to Virtual Infrastructure.

- If installing vCenter Server locally and the SQL Server on a separate server, select **Protect Virtual Center only**.

- If installing SQL Server remotely, upon completion of the vCenter Server installation locally, repeat the installation procedure at the remote SQL Server location and select **Protect SQL Server only**.

- If installing both vCenter Server and SQL Server locally, select **Protect Virtual Center and SQL Server**.

26 The **Microsoft Windows Backup Configuration** page prompts you to select options to facilitate the clone of the Primary server onto the Secondary server. The cloning process requires pertinent components of the Primary server for restoration on to the Secondary server. Create a shared folder on the local server and type the path to the folder in the **Folder** text box.

> NOTE When installing into a Windows Server 2008 environment, you must specify a UNC path to the backup file location. Type a UNC path to a location using the machine name or IP address and shared folder into the **Folder** text box, for example: \\10.0.0.16\Backup.

27 Type a **User** and **Password** that grants access to the shared folder. Click **Next**.

28 Review the summary of options and configuration information for the installation. Click **Next**.

29 Pre-install checks run to verify that the options selected are compatible with the current configuration. Setup checks the available disk space, system memory, operating system compatibility, and dependencies between modules.

> NOTE The *Progress* pane on the **Pre-Install Checks** page displays the progress of these checks. When finished, the *Report* pane displays the results.

30 If some pre-install checks are unsuccessful, click the **Back** button to go back through the wizard, make the necessary changes, and run the pre-install checks again. If the pre-install checks are successful, click **Next**.

31 The next page displays the progress of the installation. During this process, Setup installs the necessary files and folders onto your system and applies the configuration you specified. Setup also installs Heartbeat Diagnostics and configures it with the default settings. Once complete, click **Next**.

32 The vCenter Server Heartbeat Packet Filter driver installs on each network card of the production server. If you see warnings that the driver is unsigned or did not complete the Windows Logo tests, click **Install**. If Windows is configured to display Signed Driver warnings, you may see multiple warnings. The *Report* pane displays the results. Click **Next**.

By default, the vCenter Server Heartbeat Packet Filter driver is bound to all Principal (Public) network cards present on the machine. The vCenter Server Heartbeat Packet Filter is not bound to the network cards forming VMware Channel connections as these cards maintain unique IP addresses irrespective of the role of the server. vCenter Server Heartbeat also disables NetBIOS on the VMware Channel NIC(s) to prevent domain name conflicts on the subnet.

33 When the Setup wizard confirms the successful completion of the installation, click **Finish**.

34 The Configure Server wizard is launched and allows you to configure the Primary server.

35 Click the **Public** tab.

36 In the *Name used to connect to vCenter or SQL Server* field, enter the DNS name by which application clients connect to the application. Normally this is the original name of the vCenter Server or SQL Server. There is only one *Name used to connect to vCenter or SQL Server* and it is the same on all servers in the cluster.

37 In the **NIC** drop-down, select the Principal (Public) NIC.

38 In the **Public IP** drop-down, select the Principal (Public) IP address assigned to the Principal (Public) NIC.

39 In the first **Mask** field, enter the Subnet Mask of the Principal (Public) IP address.

40 In the **Mgmt IP** field, enter a reserved Management IP address for the Primary server.

NOTE The Management IP address is unique for each server in the in the pair and should be adjacent to the Principal (Public) IP address.

41 In the second **Mask** field, enter the Subnet Mask of the Management IP address and click **Finish**.

Secondary Server

The process of installing vCenter Server Heartbeat on the Secondary server is similar to installing vCenter Server Heartbeat on the Primary server.

To install vCenter Server Heartbeat on the Secondary server

1 Before powering on the Secondary server image, edit the image settings.

   a Select the Principal (Public) virtual network adapter and clear the **Connected** and **Connect at power on** check boxes.

   b Repeat the process on the VMware Channel virtual network adapter.

   c Power on the Secondary server image.

   d After the Secondary server starts, open **Network Connections**, right-click the VMware Channel network connection, and select **Properties**. Select **Internet Protocol (TCP/IP)** and click **Properties**.

   e Configure the appropriate VMware Channel IP address and Subnet Mask. Click **Advanced**

   f Click the **WINS** tab, select **Disable NetBIOS over TCP/IP** and Click **OK** three times to close the dialogs.

   g Right-click the Secondary server image and select **Edit Settings**.

   h Select the VMware Channel virtual network adapter and select the **Connected** and **Connect at power on** check boxes. IP communications with the Secondary server go through the VMware Channel.

   NOTE Do not connect the Principal (Public) virtual network adapter at this time to prevent an IP address conflict on the network.

2 To install the vCenter Server Heartbeat on the Secondary server, execute the self-extracting file to start the installation process. The **Setup Introduction** dialog appears. Review the information and click **OK**.

NOTE If you click **Exit** after Setup has started, you are prompted to save your settings. When you run the self-extracting file again later, you will be asked if you want to use the previously saved configuration.

3   The **Self-Extractor** dialog appears. Click **Setup** to continue.

4   The **Setup Type** page appears. As with the installation on the Primary server, select **Install VMware vCenter Server Heartbeat** and click **Next**.

> NOTE   The left pane of each page in the setup wizard provides information about the setup process.

5   Select the identity of the server on the **Physical Hardware Identity** page. Select **Secondary** as the server identity and click **Next**.

6   Identify the location of the shared folder containing the backup file from the Primary server. Manually type the location path in the text box using the UNC path. Click **Next**.

7   The pre-install checks run. Click **Next**.

> NOTE   The pre-install checks will return the message that the Primary and Secondary server's names match. This is expected and installation will be allowed to continue.

If some pre-install checks are unsuccessful, click the **Back** button to go back through the wizard, make the necessary changes, and run the pre-install checks again.

8   The next page displays the progress of the installation. During this process, Setup installs the necessary files and folders onto your system and applies the configuration you specified. Setup also installs Heartbeat Diagnostics and configures it with the default settings.

9   The *Report* pane displays the results of the installation. Click **Next**.

10 The progress of the VMware vCenter Server Heartbeat Packet Filter installation is displayed. Click **Next**.

11 The vCenter Server Heartbeat Packet Filter driver installs on each network card of the Secondary server. If you see warnings that the driver is unsigned or did not complete the Windows Logo tests, click **Install**. If Windows is configured to display Signed Driver warnings, you may see multiple warnings. The *Report* pane displays the results. Click **Next**.

12 Once the vCenter Server Heartbeat Packet Filter is complete, the Principal (Public) network adapter can be reconnected. Right-click the Secondary server image name and select **Edit Settings**.

13 Select the Principal (Public) virtual network adapter, select the **Connected** and **Connect at power on** check boxes, and click **OK**.

14 In the **Channel Adapter Identification** page, select the appropriate adapter and review the IP address configuration in the lower pane. Click **Next**.

15 Although you previously configured the IP address of the Principal (Public) network connections, you can make any last minute changes on the Secondary server through vCenter Server Heartbeat. Click **Next**.

16 The **Duplicate Installation Complete** page is displayed. Click **Finish**.

17 The Configure Server wizard is launched.

18 Click the **Public** tab.

19 In the *Name used to connect to vCenter or SQL Server* for the vCenter Server or SQL Server, enter the DNS name by which application clients connect to the application. Normally this is the original name of the vCenter Server or SQL Server. There is only one *Name used to connect to vCenter or SQL Server* and it is the same on all servers in the cluster.

20 In the **NIC** drop-down, select the Principal (Public) NIC.

21 In the **Public IP** drop-down, select the Principal (Public) IP address assigned to the Principal (Public) NIC.

22 In the first **Mask** field, enter the Subnet Mask of the Principal (Public) IP address.

23 In the **Mgmt IP** field, enter a reserved Management IP address for the Secondary server.

> NOTE   The Management IP address is unique for each server in the in the pair and should be adjacent to the Principal (Public) IP address.

24   In the second **Mask** field, enter the Subnet Mask of the Management IP address.

25   Click **Finish**. Do not start vCenter Server Heartbeat.

26   Verify that the pre-populated management names and IP addresses to be used are configured and available in the DNS servers before starting vCenter Server Heartbeat for the first time.

Renaming the Servers

After installation you must rename the Secondary and Primary servers.

To rename the Secondary server

1   Navigate to **Start** > **Administrative Tools** > **Services** and set the VMware vCenter Server Heartbeat service to **Manual**, **Stopped**, and close the dialog.

2   Right-click the Secondary server image and select **Edit Settings.**

3   Disable the virtual network adapters for both the VMware Channel and Principal (Public) NICs.

4   Open Network Connections, right-click the Principal (Public) network connection and select **Properties**. Select **Internet Protocol (TCP/IP)** and click **Properties**.

5   Change the IP address to the match that of the Secondary management IP address previously entered in the Configure Server wizard. Click **OK** twice to close the dialogs.

6   Navigate to the server's **System Properties**, select the **Computer Name** tab, and click **Change** to rename the Secondary server and join a Workgroup. When requested, restart the server.

7   Right-click the Secondary server image and select **Edit Settings**.

8   Re-enable the virtual network adapters for both the VMware Channel and Principal (Public) NICs.

9   Navigate to the server's **System Properties**, select the **Computer Name** tab, and click **Change** to join the domain. When requested, restart the server.

To rename the Primary Server

1   Navigate to **Start** > **Administrative Tools** > **Services** and set the VMware vCenter Server Heartbeat service to **Manual**, **Stopped**, and close the dialog.

2   Navigate to the server's **System Properties**, select the **Computer Name** tab, and click **Change** to rename the Primary server. When requested, restart the server.

Post Installation

On both the Primary and Secondary servers, navigate to **Start** > **Administrative Tools** > **Services** and set the VMware vCenter Server Heartbeat service to **Automatic**, and close the dialog. See "Post Installation Configuration" on page 14.

NOTE   If SQL Server is to be installed on a separate host from vCenter Server, repeat the installation process for the Primary and Secondary servers at the remote site and select **SQL Server only**. See go to "Primary Server" on page 9.

Post Installation Configuration

Upon completion of installation, a series of tasks must be performed to ensure that vCenter Server Heartbeat is properly configured.

1   Verify that the `SetSPN.exe` (Service Principal Names) executable is present in the `Windows\System32` directory on both the Primary and Secondary servers (this is normally present as a component of the Windows 2008 operating system).

   `SetSPN.exe` is a Microsoft command-line tool that reads, modifies, or deletes the Service Principal Names (SPN) directory property for an Active Directory service account and is required to be present on both servers prior to starting vCenter Server Heartbeat for the first time.

2   Start vCenter Server Heartbeat on the Primary server. Right-click the vCenter Server Heartbeat System Tray icon and select **Start VMware vCenter Server Heartbeat**. The icons change from a double dash (**–/–**) to a **P**, indicating the server is the Primary server, and an **A** indicating the server is acting in an active role (**P/A**).

3   Start vCenter Server Heartbeat on the Secondary server. Right-click the vCenter Server Heartbeat System Tray icon and select **Start VMware vCenter Server Heartbeat**. The icon changes from a double dash (**–/–**) to an **S**, indicating that the server is the Secondary server, and a dash (**–**), indicating that the server is in a passive role (**S/–**).

The Primary and Secondary servers establish a handshake and commence replication.

4   Verify that Nslookup resolves as shown below:

- Nslookup resolves the Service Name to the Public IP
- Nslookup resolves Primary Name to Primary Management IP
- Nslookup resolves Secondary Name to Secondary Management IP

Configuring SQL Server Plug-in to run with the Correct Credentials

After installation, you must configure the SQL Server Plug-in with the correct credentials.

To add the SQL Server Plug-in credentials

1   Launch the vCenter Server Heartbeat Console and navigate to the **Applications: Tasks** page.

2   Click **User Accounts**. Verify that the user account under which you installed vCenter Server Heartbeat is present in the list of User Accounts. If it is present and is a member of the Domain Admins group, Enterprise Admins group, or has been delegated Administrator rights, go to Step 6.

3   In the **User Accounts** dialog, click **Add**.

4   Enter the credentials of a domain account that is a member of the Domain Admins group, Enterprise Admins group, or one that has been delegated Administrator rights and click **OK**.

5   Once the account has been successfully added to the list, click **Close**.

6   In the **Tasks** pane, select the Network Configuration task *Set SPN (Primary)*.

7   Click **Edit**.

8   In the **Edit Task** dialog, in the **Run As:** drop-down field, select an account with appropriate rights (the account previously added).

9   Click **OK**.

10 In the **Tasks** pane, select the Network Configuration task *Set SPN (Secondary)*.

11 Click **Edit**.

12 In the **Edit Task** dialog, in the **Run As:** drop-down field, select an account with appropriate rights (the account previously added).

13 Click **OK**.

14 After successfully configuring the correct credentials, select the *Set SPN (Primary)* task and click **Run Now**.

Installing the View Composer Plug-in

After installation you must install the View Composer Plug-in.

To install the View Composer Plug-in after vCenter Server Heartbeat has been installed

1   Ensure that View Composer has been installed on both the Primary and Secondary servers with the same configuration settings.

2   Launch the vCenter Server Heartbeat Console.

3   Navigate to **Applications: Plug-ins** and click **Install**.

4   Browse to the plug-in file located at:
     `<unzipped_folder>\<vCenterServerHeartbeatVersion–x86/x64>\plugins\ViewComposer\Vie`
     `wComposerNFPlugin.dll`.

5   Click **OK** to install the View Composer Plug-in.

6   View the *Plug-ins* pane to verify that `ViewComposerNFPlugin.dll` is present and was successfully
     installed

Configure the Application Timeout Exception

vCenter Server Heartbeat can alert the Administrator if the time taken to start or stop the entire application
exceeds the expected time during the following operations:

- vCenter Heartbeat startup

- Shutdown with protected applications

- Switchover

- Failover

- When the Administrator selects **Start Application**

- When the Administrator selects **Stop Application**

NOTE   vCenter Server Heartbeat does not issue the timeout warning when it is performing the service
restart recovery action provided by the periodic service monitoring. If there are multiple applications
installed, vCenter Server Heartbeat will total the individual timeouts set for each application and issue a
single *Application Timeout Exception* alert.

Configure timeout settings

NOTE   The Start Timeout value should be configured according to vCenter inventory size and the *Stop Timeout*
value according to inventory size and operational load. For example, if the inventory is large (more than 500
hosts and 15K Virtual machines, the Start time can be 20-30 minutes. Use the *Start Timeout* experienced as a
guide to assist in determining the *Stop Timeout* value.

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1   Right-click on the application and select **Edit** from the menu or select the application and click **Edit** at the
     top of the pane to invoke the **Edit Application** dialog.

2   Enter new values into the **Stop Timeout** and **Start Timeout** text boxes or use the arrow buttons to adjust
     the values (seconds). Click **OK**.

vCenter Server with SQL Server on a Separate Host

When vCenter Server Heartbeat is installed in an environment where SQL Server is on a separate host from
vCenter Server, increase the default Heartbeat interval for the vCenter Server from 20 to 30 seconds to ensure
proper failover.

Installation Verification

The Installation Verification process validates the proper installation of vCenter Server Heartbeat and tests the
software's operation safely exercising the ability of vCenter Server Heartbeat to perform a failover, switchover,
and to replicate data and allows you to verify the operations complete successfully without risk to data. These
exercises build upon one another and therefore must be performed in order.

VMware does not recommend attempting to test a failover in a production environment on a operating server pair using methods such as unplugging a power cord. When power is lost, any data not written to the passive server can be lost. VMware recommends performing a switchover rather than a failover to test the operation of the passive server.

Table 1-2. Acceptance Verification

Exercise	Machine	Activity	Result
Failover Simulation Exercise		This exercise demonstrates that the Secondary server can function as the Primary Server without the test data being immediately replicated back to the original server. During the exercise, you will stop the Primary server from providing service and hide it from the network, then introduce the Secondary server to the network and allow it to provide service. Using the System Tray icon, verify that the Primary server displays **P/A** indicating that it is the active server. On the Secondary server, repeat the process and verify that the Secondary server displays **S/—** indicating that it is passive. Using the vCenter Server Heartbeat Console, navigate to the **Data: Replication** tab. Verify that both the *File System* and the *Registry* Status display as **Synchronized**. Notify any local users that the service will be unavailable for the duration of the exercise.	
	Primary	Right-click on the System Tray icon and select **Shutdown VMware vCenter Server Heartbeat**. Select the option to **Stop all protected applications**.	vCenter Server Heartbeat stops all monitored services and exits. This can be verified by navigating to the Service Control Manager and viewing the status of the protected services.
	Primary	Right-click on the System Tray icon and select **Shutdown VMware vCenter Server Heartbeat**. Select the option to **Stop all protected applications**.	Primary server becomes passive.
	Primary	Right-click on the System Tray icon and select **Start VMware vCenter Server Heartbeat**. Once vCenter Server Heartbeat has started, right-click on the System Tray icon and select **Shutdown VMware vCenter Server Heartbeat**. Select the option to **Stop all protected applications**.	This activates the network packet filter hiding the Primary server from the network. This can be verified by navigating to the Service Control Manager and viewing the status of the protected services.
	Secondary	Navigate to **Start > All Programs > VMware > VMware vCenter Server Heartbeat > Configure Server** to launch the Configure Server wizard. Select the Machine tab and in the *Active Server* pane, select Secondary server to make the Secondary server's role active. Right-click on the System Tray icon and select **Start VMware vCenter Server Heartbeat**.	The Secondary server starts as the active server. The System Tray icon displays as **S/A**.
	Client	Compare the application functional status to the predefined criteria for availability and performance.	Secondary server behaves as the Primary server.
Data Replication Exercise		The Data Replication exercise follows the Failover Simulation exercise performed previously. The objective is to take a working active server (the Secondary server) and synchronize it with the passive (Primary server). This exercise also demonstrates that all the correct services stopped when the Primary server became passive. vCenter Server Heartbeat is running on the Secondary active server. Using the System Tray icon, verify that the server status displays **S/A**. vCenter Server Heartbeat is not running on the Primary server which is set to passive. Using the System Tray icon, verify that the server status displays **—/—** to indicate that vCenter Server Heartbeat is not running. Notify any local users that the service will be unavailable for the duration of the exercise.	
	Primary	Right-click on the System Tray icon and select **Start VMware vCenter Server Heartbeat**.	vCenter Server Heartbeat starts. Launch the vCenter Server Heartbeat Console. Select the **Server: Summary** tab to show the connection from the Secondary (active) to Primary (passive).

Table 1-2. Acceptance Verification

Exercise	Machine	Activity	Result
	Primary	Select the **Data: Replication** tab and wait for both the *File System* and the *Registry* status to display **Synchronized**. Access the vCenter Server Heartbeat logs and confirm that no exception errors occurred during the synchronization process.	Data replication resumes from the Secondary server back to the Primary server. Both the *File System* & *Registry* status become **Synchronized**.
Switchover Exercise		This exercise demonstrates the ability to switch the functionality and operations of the active server on command to the other server in the pair using the vCenter Server Heartbeat Console. Perform this exercise only after successfully completing the Failover Simulation and Data Replication Exercises. Notify any local users that the service will be unavailable for the duration of the exercise. Using the System Tray icon, verify that the Secondary server is active (**S/A**) and servicing clients. On the Primary server, verify that the server is passive using the System Tray icon status (**P/—**). On the Secondary server, launch the vCenter Server Heartbeat Console and select the **Data: Replication** tab. Verify that both the *File System* and *Registry* status are **Synchronized**.	
	vCenter Server Heartbeat Console	Click on the Server: Summary tab. Select the Primary server icon and click Make Active.	The vCenter Server Heartbeat Console **Server: Summary** page displays the applications stopping on the active server. Once all applications are stopped, the active server becomes passive and the passive server becomes active. The Console shows the applications starting on the newly active server. Both the *File System* and *Registry* status are **Synchronized**.
	Any	Confirm application performance and availability meets previously defined criteria. Verify that client applications are running as expected after the switchover process.	Services continue to be provided as before the switchover occurred. You may need to refresh or restart some client applications as a result of a switchover.