

Control Server

High Availability (HA) Backup and Restore Upgrade Guide

Aug 2020



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Document Updates

Revision	Location	Description
B	Appendix A Add Storage to Existing VEEAM Backup	New section
A	<i>Step 5 – Install and Configure Veeam Backup & Replication, To install and configure the Veeam Backup & Replication software package</i>	Updated the command in step 5 to run the installation script.
		Updated the estimated time for updates to complete in step 13.
		Added new step 15 concerning a Warning message after installation completes.
		Updated PowerShell instructions in step 17 (was step 16 before updates).
		Added additional steps to the procedure.
	<i>Step 5 – Install and Configure Veeam Backup & Replication, To open the Veeam Console and check for updates</i>	Added new step 2.

Acronyms and Abbreviations

HA	High Availability
DC	Domain Controller
HDD	Hard Disk Drive
EWS	Engineering Workstation
MC	Management Computer
PDH	Plant Data Highway
SSD	Solid State Drive
VM	Virtual Machine

Related Documents

Doc #	Title
GEH-6844	Control Server System Overview
GEH-6851	Control Server Core - High Availability (HA) Maintenance Guide

Safety Symbol Legend



Warning

Indicates a procedure or condition that, if not strictly observed, could result in personal injury or death.



Caution

Indicates a procedure or condition that, if not strictly observed, could result in damage to or destruction of equipment.



Attention

Indicates a procedure or condition that should be strictly followed to improve these applications.

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Notes

1 Introduction

This document defines the procedure to add the Backup and Restore option to an existing Control Server Core High Availability (HA) system. Consider the following:

- These procedures assume a basic familiarity with the platform hardware and the VMware environment. In some cases, the mainline procedure references an operation, with details provided in the section [Common Procedures](#) for referral as needed.
- These procedures do not make assumptions as to whether this upgrade is being performed before or after the hand-over procedures.
- The procedures require that the user know the administrative level credentials (user names and passwords) and instructs the user to log in using an administrative level account.

1.1 Prerequisites

- The Backup and Restore Package (instructions, binaries, license) is available to the MC3 Virtual Machine (VM) through a USB drive or a share name. (There must be a mechanism to transfer the files to the MC3 VM.)
- One or more hard disk backup drives (HDD) are available with an unused MC2 drive bay for each drive.
- The required Veeam® license is available (typically supplied on the upgrade media). It must be for the correct version of the software and cover the total number of CPUs in the two redundant servers (HS1 + HS2), plus the Management Computer (MC2).
- The MC3 VM is installed and running in the MC2 host.
- The HC1 VM (vCenter Appliance) and both host computers (HS1, HS2) are fully functional.
- Administrative level accounts are available for the vCenter Appliance (HC1) and MC3.
- A physical monitor (with a VGA cable connection) and keyboard (USB) are available for connecting to the console of the MC2 computer. A USB mouse is optional, but can be useful if you are not familiar with BIOS navigation using the keyboard.

1.2 Procedure Steps Overview

The basic steps in the upgrade procedure are as follows:

1. Add the Physical Backup Drive(s). Install the HDD backup drive(s) into an empty drive bay(s).
2. Configure the MC2 BIOS. Restart the server in the BIOS:
 - a. Configure the new HDD drive(s) for RAID access.
 - b. Create a new virtual RAID drive that uses the HDD backup drive(s).
3. Configure the MC2 Hypervisor and the MC3 VM.
 - a. Boot the MC2 computer into the normal Hypervisor.
 - b. Create a new Datastore (MC2 backup) to store its files on the virtual hard drive, covering the HDD backup drive(s).
 - c. Add a new hard drive to the MC3 VM that includes the entire storage area of the backup drive(s).
 - d. Add 2 GB of RAM to the MC3 VM configuration to cover the backup operations.
4. Configure the MC3 VM drives.
 - a. Update the drive letter assignments.
 - b. Initialize and configure the new virtual drive.
5. Install and configure Veeam Backup & Replication.
 - a. License and install the Veeam Backup & Replication software in the MC3 VM.
 - b. The Veeam software is configured automatically by the installation script.
6. Add VMs to the Backup & Replication schedule.
 - a. Run a *Create-BackupJob* script for each VM that is included in the backups.
 - b. This script sets up all backup parameters required for the default backup configuration.
7. Configure the HSn Hypervisors for Bandwidth Limiting.
 - a. Update the HS1 and HS2 server configurations to limit the Plant Data Highway (PDH) network bandwidth used for backups.
 - b. This operation can be done online; there is no impact on the running operation and no need to migrate VMs between the hosts.
8. (Optional) Trigger immediate full backups.
 - a. Trigger an immediate full backup to back up all VMs.
 - b. If this step is omitted, the first backup is performed at midnight in accordance with the normal backup schedule.

2 Procedure Steps



Attention

Perform the following procedures in the order specified. Most steps require that previous steps have already been completed.

2.1 Step 1 - Add Physical Backup Drive(s)

A standard MC2 server uses two or more Solid State Drives (SSD) to hold both the ESXi Hypervisor and all VMs running on this host. An optional Backup and Restore package adds one or more drives (typically HDD) to hold backup images of the VMs running in the Cluster Hosts (HS1, HS2).

The SSDs used for the hypervisor and VMs populates the drive bays beginning with the first bay (typically bay 0) and continuing up from there. Depending on the ordered configuration, this may be one large drive or multiple smaller drives. Applied as an MC2 host, the server uses multiple drives to increase capacity, not for redundancy. (This translates to using a RAID-0 array for the SSDs.)

The HDDs used for the Backup and Restore package populates the drive bays beginning with the highest bay and going down from there. Depending on the ordered configuration, this may be one drive or multiple drives. For Backup and Restore purposes, the server uses multiple drives to increase backup capacity, not for redundancy. (This translates to using a RAID-0 array for the HDD backup drives.)

This scheme allows for future expansion of either set of drives until all bays are filled. It also provides optical separation between the SSDs and HDDs to give a better indication of what the actual drive loading is on the server.

Note Drive bay insertion can be done while the server is running (also known as *hot swap*).

➤ **To add the physical backup drive(s):** install the backup drive(s) starting with the highest unused drive bay, working downward if there are multiple drives, as follows:

1. Remove the drive bay cover.
2. Insert and latch the HDD backup drive into the empty drive bay.
3. Verify that the drive light is illuminated, indicating that the drive is receiving power.

2.2 Step 2 - Configure MC2 BIOS

In this step, the user boots the MC2 server into its BIOS System Setup Utility function and configures the newly added hard drive(s) into a new RAID array (even if there is only one drive).



Attention

It is critical to use a RAID array even if there is only a single drive. This configuration requires high-level drive interface functionality that a direct-to-drive interface may not support. Without the RAID controller providing this high-level interface, the backups (normally captured every 24 hours) can take longer than 24 hours to complete. With these features, they are typically accomplished within one hour.

➤ To configure the MC2 server BIOS

1. Attach the monitor (VGA cable), keyboard (USB cable), and optional mouse (USB cable) to the MC2 server and verify the following:
 - a. The monitor displays the normal ESXi home window.
 - b. The screen comes out of dim screen saver mode when the **[Enter]** key is pressed. (This verifies that the keyboard is connected correctly, which will be important during the power-up sequence.)
2. Return to the computer with the server management tools, open the web browser, connect to the vCenter Appliance, and log in using an account with administrative access.
3. Select **Hosts and Clusters** and expand the Tree View to display the MC2 server (standard: 172.16.199.11) and its VMs (standard: HW1, MC3).
4. Right-click on **HW1** and select **Power**, then select **Shut Down Guest OS**.
5. Right-click on **MC3** and select **Power**, then select **Shut Down Guest OS**.
6. Wait for both VMs to shut down.

Tip

- *The HW1 VM takes longer to shut down than most other VMs.*
- *Click the **Refresh** icon on the toolbar to update the status of the two VMs.*
- *If there are issues shutting down the HW1 VM from the vCenter Appliance, open the HW1 console window and shut it down using the **Shut Down/Restart [F12]** option.*

7. Right-click on the MC2 server (standard: 172.16.199.11) and select **Maintenance Mode**, then select **Enter Maintenance Mode**.
8. From the *Confirm Maintenance Mode* dialog window, click **OK**.
9. Reboot the server. Right-click on the MC2 server (standard: 172.16.199.11) and select **Power**, then select **Reboot**.
10. Focusing on the MC2 Monitor (VGA), wait for it to shut down (it will take a few minutes), then (during reboot) press **[F2]** (when prompted) to enter the System Setup Utility.
11. Select **Device Settings** and press **[Enter]**.
12. Select the Integrated RAID controller and press **[Enter]**.
13. Select **Physical Disk Management** and press **[Enter]**.
14. Select the last physical disk (backup HDD) and press **[Enter]**.
 - a. If **Basic Properties** displays a status other than *Ready*, perform the following steps:

- i. From the **Operation** field, select **Convert to RAID capable**.
 - ii. Select **Go** and press **[Enter]**.
 - iii. From the *The operation has been performed successfully* dialog box, select **OK** and press **[Enter]**.
 - iv. Verify that **Basic Properties** now displays the status as *Ready*.
 - b. Press **[Esc]** or **Back** to exit the *Physical Disk configuration* dialog box.
15. Repeat step 14 for each additional Backup HDD in the system (typically down from the top bay).
 16. Press **[Esc]** or **Back** to exit the **Physical Disk Management** menu.
 17. To confirm the previous steps took effect, perform the following steps:
 - a. Select **Physical Disk Management** and press **[Enter]**.
 - b. Verify that all the backup physical HDDs display a status of *Ready*.
 - c. Press **[Esc]** or **Back** to exit the **Physical Disk Management** menu.
 18. Select **Configuration Management** and press **[Enter]**.
 19. Select **Create Virtual Disk** and press **[Enter]**.
 20. Set **Select RAID Level** to **RAID0**.
 21. Select **Select Physical Disks**, press **[Enter]**, and configure the physical disk as follows:
 - a. In the *Choose UnConfigured Physical Disks* section, select all of the HDD backup drives (select **Check All** if there are no other drives displayed besides the HDD backup drives).
 - b. Select **Apply Changes** and press **[Enter]**.
 - c. From the *The operation has been performed successfully* dialog box, select **OK** and press **[Enter]**.
 22. Select **Create Virtual Disk**, press **[Enter]**, and configure the virtual disk as follows:
 - a. From the *Creating Virtual Disks will cause the data...to be permanently deleted* dialog box, select (to enable) **Confirm**, select **Yes**, and press **[Enter]**.
 - b. From the *The operation has been performed successfully* dialog box, select **OK** and press **[Enter]**.
 - c. When you allocate the last available disk and the *Additional Virtual Disks cannot be created due to insufficient capacity or absence of configurable Physical Disks* dialog box displays, press **[Esc]** or **Back**.
 - d. Press **[Esc]** or **Back** to exit the **Create Virtual Disk** menu.
 23. Press **[Esc]** or **Back** to exit the **Configuration Management** menu.
 24. To confirm that the RAID array was created:
 - a. Select **Virtual Disk Management** and press **[Enter]**.
 - b. Verify that the Backup Virtual Disk displays as RAID0 with a state of *Ready*, and a size equal to <n> times the size of each of the <n> HDD backup disks.
 - c. Select the (new) backup Virtual Disk and press **[Enter]**.
 - d. Select **View Associated Physical Disks** and press **[Enter]**.
 - i. Verify that all of the HDD backup drives are listed in the *Associated Physical Disks* area.
 - ii. Press **[Esc]** or **Back** to exit the *View Associated Physical Disks* dialog box.
 - e. Press **[Esc]** or **Back** to exit the *Virtual Disk* dialog box.
 - f. Press **[Esc]** or **Back** to exit the *Virtual Disk Management* dialog box.
 25. Press **[Esc]** or **Finish** to exit the **Integrated RAID Controller** Main menu.

26. Press [**Esc**] or **Finish** to exit the **Device Settings** menu.
27. Press [**Esc**] or **Finish**, then acknowledge the *Confirm Exit* message by pressing [**Enter**] or selecting **Yes**.
28. The computer boots into the hypervisor as expected. Wait for it to complete startup (the VGA monitor displays the normal *Home* page, which provides the Shut Down/Restart option [F12]), then continue to the next step.

Note The monitor and keyboard interface to the MC2 server are no longer required and can be removed.

2.3 Step 3 - Configure MC2 Hypervisor and MC3 VM

In this step, the user creates a hypervisor Datastore using the backup drive(s), then adds and configures a new virtual hard drive to the MC3 VM that uses all of the space on that new Datastore.

➤ To create a Datastore

1. Connect to the vCenter Appliance and log in using an account with administrative access.
2. From the *Home* page, select **Storage**.
3. Add the Datastore as follows:
 - a. Right-click on **Datacenter1**, select **Storage**, then select **New Datastore**.
 - b. From the *Location* dialog box, click **Next**.
 - c. From the *Type* dialog box, select **VMFS** and click **Next**.
 - d. From the *Name and device selection* dialog box, perform the following steps:
 - i. In the **Enter a datastore name** field, change the Datastore name to **MC2 Backup**.
 - ii. From the **Select a host** drop-down menu, select **MC2** (standard: 172.16.199.11).
 - iii. Select the virtual backup drive.
 - iv. Click **Next**.
 - e. From the *Partition Configuration* dialog box, click **Next**.
 - f. From the *Ready to Complete* dialog box, click **Finish**.
4. Verify that the new MC2 Backup Datastore is displayed in the Storage Tree View.

➤ To configure the MC3 VM

1. From the *Home* page, select **Hosts & Clusters** (may need to expand the Tree View to make all items visible).
2. Right-click on the MC2 server (standard: 172.16.199.11) and select **Maintenance Mode**, then select **Exit Maintenance Mode**.
3. Power on the HW1 VM. Right-click on the HW1 VM and select **Power**, then select **Power On**. (Do not power on MC3, only HW1.)
4. Right-click on the MC3 VM and select **Edit Settings**.
5. Select the **Virtual Hardware** tab.

- Increase the amount of RAM allocated to this VM by 2 GB.

Tip ↗ *This can be done by changing the units to GB, then using the up-arrow increase option.*

- Add the virtual hard drive as follows:
 - From the **New device** drop-down menu, select **New Hard Disk** and click **Add**.
 - Expand the new **New Hard disk** entry.
 - From the **Location** field, select **Browse**.
 - Select the **MC2 Backup** entry.
 - Make a note of the *Free* space listed (typically in TB). This value is used to size the hard drive. Click **OK**.
 - From the **New Hard disk** line, set the **Disk Size** field equal to 0.02 TB less than the *Free* space previously noted. For example, if the *Free* space value is 3.64 TB, set the size of the disk to 3.62 TB.

Tip ↗ *Set the **MB - GB - TB** selection first, then type in the appropriate value. Decimal values are allowed, but cannot be achieved by just using the increase or decrease arrow keys in the size field.*

- From the **Disk Mode** field, select **Independent - Persistent**.
- Verify that the *Edit Settings* dialog box displays the new hard disk. Expand the New Hard disk item and verify that the MC2 Backup Datastore displays with the defined size and a Disk Mode of Independent - Persistent.
 - Click **OK** to exit the *Edit Settings* dialog box.
 - Power on the MC3 VM. Right-click on the MC3 VM and select **Power**, then select **Power On**.

2.4 Step 4 - Configure MC3 VM Drives

The original MC3 VM has the C: drive as its system drive and the D: drive as its virtual DVD. In this step, the user moves the DVD drive to the E: drive and sets the newly added virtual hard drive that stores the backups as the D: drive.

➤ To configure the MC3 VM drives

1. Open a terminal session to the MC3 VM and log in with an account with administrative privileges.

Note The preferred interface (for convenience only) is an Remote Desktop Protocol (RDP) connection from another computer or host. The vSphere Client console interface can also be used.

2. Right-click on the **Start** icon in the task bar and select **Disk Management**.

Tip ☞ You may want to expand the vertical height of the dialog box, or adjust the percentage of the dialog box reserved for the list (top) and drive map (bottom) to show all the drive map entries.

3. Change the drive letter from D: to E: as follows:
 - a. Right-click on the **CD-ROM 0** box (located to the left of the drive space) and select **Change Drive Letter and Paths**.
 - b. Select the **D:** entry and click **Change**.
 - c. From the **Assign the following drive letter:** drop-down menu, select **E**.
 - d. Click **OK**.
 - e. Click **Yes** to acknowledge the warning message *Some programs that rely on drive letters...*
4. Right-click on the **Disk 1 - Unknown - Offline** box (located to the left of the drive space) and select **Online**.
5. Right-click on the **Disk 1 - Unknown - Not Initialized** box (located to the left of the drive space), select **Initialize Disk**, and perform the following steps:
 - a. Verify that **Select disks** only includes the new virtual drive associated with the backup drives.
 - b. Verify that the **GPT** option is selected.
 - c. Click **OK**.
6. Verify that **Disk 1 - Basic - Online** (located to the left of the drive space) is displayed.
7. Right-click on **Disk 1 Drive Space (Unallocated)**, select **New Simple Volume**, and set the volume size as follows:
 - a. From the *Welcome to...Wizard* dialog box, click **Next**.
 - b. From the *Select Volume Size* dialog box, accept the default (maximum size) and click **Next**.
 - c. In the **Assign Drive Letter or Path** area, verify that the **Assign the following drive letter** is set to **D** and click **Next**.
 - d. From the *Format Partition* dialog box, perform the following steps:
 - i. Verify that **File system** is set to **NTFS**.
 - ii. Set **Allocation unit size** to **16K**.
 - iii. Set **Volume Label** to **Data**.
 - iv. Verify that **Perform a quick format** is enabled.
 - v. Click **Next**.
 - e. From the *Completing...* dialog box, click **Finish**.

8. Verify that **Disk1** displays a single **Data (D:)** partition that fills up its available space.
9. Exit the Disk Management application.

2.5 Step 5 - Install and Configure Veeam Backup & Replication

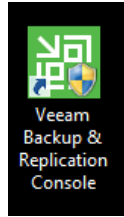
In this step, the user installs and configures the Veeam Backup & Replication software package.

Note This step can only be performed after the D: drive has been initialized and made available for use.

➤ To install and configure the Veeam Backup & Replication software package

1. Log into the MC3 VM using an account with administrative privileges.
2. Copy all the files on the Backup and Restore DVD to the C:\Installation directory. (Create this directory if it does not already exist.)
3. Open an Administrator Mode PowerShell® window.
4. Type the command `CD C:\Installation` and press **[Enter]** to change the default directory.
5. Type the command `.\Install-Veeam.ps1 -Core HA` and press **[Enter]** to run the installation script.
6. The script will launch the Veeam installer. Do not close the script window, it will continue applying Veeam settings after the installation procedure has ended. From the *Veeam installation* dialog box, press **Install** (located in the large green box to the upper left).
7. If the installer prompts to install .NET Framework, perform the following steps:
 - a. Press **OK** and wait for the installation to complete.
 - b. Press **Reboot** when prompted.
 - c. When the computer reboots, restart this procedure, but skip step 2.
8. Select *I accept the terms in the license agreement* and click **Next**.
9. Click **Browse**, select the license file in the C:\Installation directory, and click **Next**.
10. Leave the default feature settings and press **Next**.
11. When the installer indicates that SQL Server components are missing, press **Install** and wait for these components to be installed and configured.
12. Press **Next** when prompted.
13. From the *Default Configuration* dialog box, leave the defaults and click **Install**. The components are installed and updated. Wait for the updates to complete (~10-15 minutes).
14. From the *Completing Veeam... Wizard* dialog box, click **Finish**.
15. If a Warning message displays after installation is complete, click **Finish** to close the Installation Wizard.
16. From the main *Veeam Backup & Replication* installation window, click on the **X** in the upper right corner to close the window.
17. The PowerShell script will continue to clear the settings. Wait for it to complete, then close the script and reboot the server.

18. After reboot, double-click the **Veeam Backup & Replication Console** icon on the desktop.



19. When the *Veeam Backup & Replication* connection dialog box displays, leave the defaults and click **Connect**.

20. If Veeam prompts you to update components that are out of date, perform the following sub-steps. Otherwise, skip to the next step in this procedure.

a. Accept the defaults and click **Apply**.

b. When prompted, click **Finish**.

21. Exit the Veeam Console.

22. The script will launch the Veeam installer. Do not close the script window as it will continue applying Veeam settings after installation is complete. From the *Veeam installation* dialog box, press **Install** (located in the large green box to the upper left).

23. Reboot the server.

24. After reboot, log into the MC3 VM using an account with administrative privileges.

25. Post the reboot log into the MC3 VM.

26. Open an Administrator Mode PowerShell window on the Veeam VM.

27. Type the command `CD C:\Installation` and press [**Enter**] to set the default directory.

28. Type the command `.\Configure-Veeam.ps1 -Core HA` and press [**Enter**] to run the configuration script. The PowerShell script will adjust settings, create repositories, and copy the required script files.

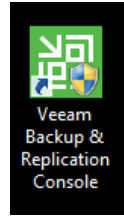
29. Verify that the configuration script runs with no errors.

30. Navigate to the **D:** drive and verify that a folder named *Backup* exists that contains the sub-folders *LongTerm* and *ShortTerm*, and the *Create-BackupJob.ps1* file.

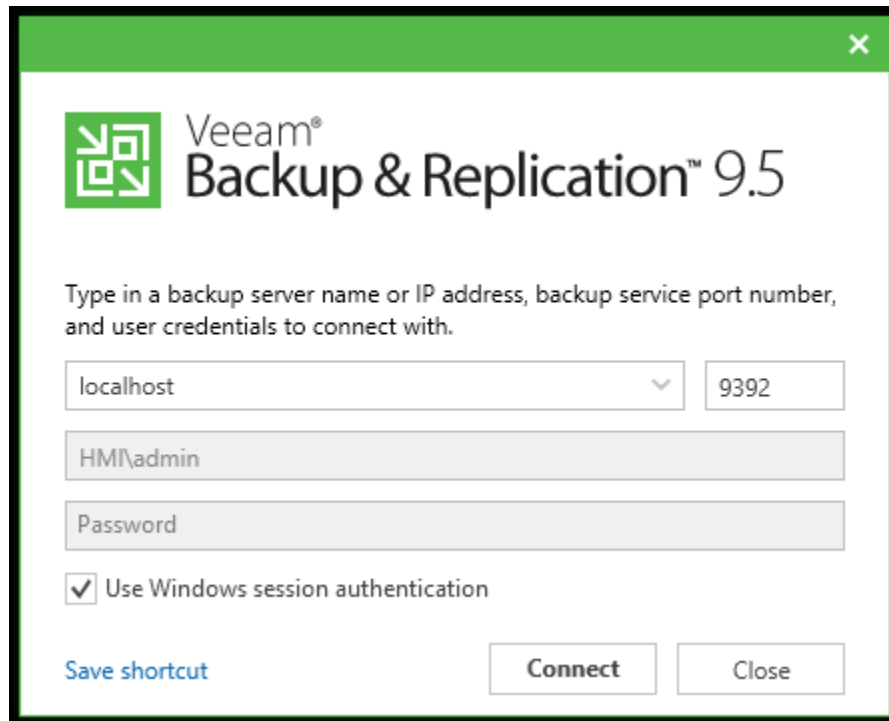
Note Do not close the PowerShell window. The subsequent steps in this document will require further use of the PowerShell window.

➤ **To open the Veeam Console and check for updates**

1. From the desktop, double-click the **Veeam Backup & Replication Console** icon.



2. When prompted, click **Yes** to continue.
3. When the *Veeam Backup & Replication* connection dialog box displays, accept the defaults (to connect to the version running on the local computer) and click **Connect**.



Veeam Backup & Replication Connection Dialog Box

The *Veeam Backup & Replication Console* window displays.

4. If Veeam prompts you to update components that are out of date, perform the following steps:
 - a. Accept the defaults and click **Apply**.
 - b. When prompted, click **Finish**.
5. Exit the Veeam Console.

2.6 Step 6 - Add VMs to Backup Schedule

In this step, the user adds VMs to the backup schedule using the supplied PowerShell script.

➤ To add VMs to the Backup schedule

1. Return to (or open) an Administrator Mode PowerShell window on the MC3 VM.
2. Type the command `CD D:\Backup` and press **[Enter]** to set the default directory.
3. Add each VM defined in the Cluster and on MC2 to the backup schedule. Type the command `.\Create-BackupJob.ps1<VMname>` and press **[Enter]**. The following guidelines apply:
 - a. The `<VMname>` parameter should be the name of the VM (such as DC1, DC2, or EWS1).
Example command: `.\Create-BackupJob.ps1 DC1`
Example command: `.\Create-BackupJob.ps1 EWS1`
 - b. PowerShell tab completion can make this job easier. Type the command `.\Cre` and press **[Tab]**.
 - c. Always include the following common infrastructure VMs in the backups (if they exist at this site): DC1, DC2, CA1, HC1, HW1, MC3.
 - d. If you enter the name of a VM that has not been defined, it will report an error and exit. You cannot create backup jobs for VMs that do not (yet) exist.
 - e. If a VM is already being backed up, the default is to not change the current backup definition. To delete the existing backup definition and recreate a new one from scratch, add the `-Force` option to the end of the command line.

Tip ↪ For help, type the command `Help .\Create-BackupJob.ps1` and press **[Enter]**.

4. Exit the PowerShell console.

2.7 Step 7 - Configure HSn Hypervisors for Bandwidth Limiting

The Backup and Restore package runs on the MC3 computer collecting information from the two cluster servers (HS1, HS2) over the PDH. If left unthrottled, it can easily saturate the PDH with a high level of traffic that can impact site operation. In this step, the user limits the amount of traffic to 20% of the 1Gbps link that connects the servers to the backup system.

➤ To configure the HSn Hypervisors for Bandwidth Limiting

1. Log into the vCenter Appliance Web Interface.
2. From the *Home* page, select **Hosts and Clusters**.
3. Expand the Tree View to display the HA cluster (standard: Cluster1).
4. Perform the following steps for each host in the cluster (HS1, HS2):
 - a. Select the appropriate host (standard: HS1 = 172.16.199.8, HS2 = 172.16.199.9).
 - b. Select the **Manage** tab, **Networking** group, and **Virtual Switches** pane.
 - c. Select **vSwitch0**.
 - d. Select the header in the *Management Network* section to highlight the section.
 - e. Set the bandwidth settings as follows:
 - i. Select the **Edit Settings** (pencil) icon.
 - ii. Select the **Traffic shaping** pane.
 - iii. Select (to enable) the **Override** check box, and select **Enabled** from the drop-down menu.
 - iv. Set the **Average bandwidth (kbit/s)** field to **200000** (two hundred thousand).
 - v. Set the **Peak bandwidth (kbit/s)** field to **200000** (two hundred thousand).
 - vi. Set the **Burst size (KB)** to **102400**.
 - vii. Click **OK**.
5. Repeat step 4 for each host in the cluster (HS1, HS2).
6. Exit the vCenter Appliance interface.

2.8 Step 8 (Optional) - Trigger Immediate Full Backups

Perform this step to immediately launch a full backup of the VMs. In this step, the user runs the Active Full backup operation to force a backup that refreshes all files from the VM and creates a new full backup. If you do not perform this step, a full backup will be done at the next scheduled backup time. By default, all VMs are scheduled to backup at midnight.

➤ To trigger immediate Full backup of the VMs

1. Log into the MC3 VM using an account with administrative privileges.
2. From the desktop, double-click the **Veeam Backup & Replication icon** to open the application.
3. From the server logon page, leave the default and click **Connect**.
4. From the Tree View select **Jobs**, then select **Backup**.
5. Select the appropriate jobs (VMs).

Tip

- Clicking on a job selects that job and only that job.
- To select additional jobs, press and hold [**Ctrl**] while clicking on a job. This toggles the selection state of that job without impacting other jobs that are selected.
- To select a block of jobs, select the first job then press and hold [**Shift**] and click on a second job. All jobs between the first and the second (inclusive) job will be selected.

-
6. With the appropriate jobs selected, click the **Active Full** icon from the toolbar (or right-click on any selected VM and select **Active Full**.)
 7. You can monitor the state of the active jobs from the Tree View, *Last 24 Hours, Running* section.

Tip

- Selecting a job provides detailed information about that job.
 - Jobs that are waiting for previous jobs to complete display a VM status of *Pending* in the lower section.
 - Jobs in progress display a VM status of the percentage completed. It is normal for that percentage completed to ramp up slowly then jump to 100%; the original estimated percentage is based on the configured disk size, not the used size.
 - Selecting the VM name in the lower panel provides details about the backup of that VM.
-

3 Common Procedures

The following sections provide some common procedures used in the Control Server HA environment.

3.1 Change BIOS Settings

A keyboard is the only necessary equipment to change the BIOS settings.

- **To change the BIOS settings:** apply the following guidelines.
 - Use the arrow keys to move up, down, left, and right.
 - The up and down arrows move from option to option.
 - In an option with radio buttons (only one option can be selected from a set), the current selection starts as the option that is currently enabled. Use the left and right arrow keys to change the enabled item within the option.
 - Use the space bar to toggle the Enable or Disable state of the currently selected check box.
 - Use the space bar to enumerate any drop-down menus, using the up or down arrows to select the appropriate entry.
 - Use the [Tab] key to change to the next editable or selectable field.
 - Use the [Esc] key to exit a window or return to the previous window (menu).
 - In confirmation or message dialog boxes, the YES item is typically the default selected item. Press [Enter] to continue.

3.2 VM Powerup

- **To power on a VM**
 1. Open the vCenter Web page (standard: <https://172.16.199.7>).
 2. From the *Home* page, select **Hosts and Clusters**.
 3. Expand the Tree View, locate and right-click on the appropriate VM, select **Power**, then select **Power On**.

3.3 Console Connections to VM

A VM console is the equivalent of connecting a monitor, keyboard, and mouse to a physical computer. It is typically used to manage a VM, and is the only option available prior to establishing the Ethernet networks required for remote login.

Note Using the current software, the vSphere Client Console functions better than the vCenter Web Server Console. GE recommends using the vSphere Client to establish a console connection to a VM even on Core HA systems where both are available.

3.3.1 Establish vSphere Client Connection to Host

➤ **To establish a vSphere client connection to a host**

1. Log into a computer with the VMware vSphere Client installed (such as MC3).
2. From the desktop, double-click the VMware vSphere Client icon to open the vSphere Client application.
3. In the **IP address** field, enter the host's IP address.
4. In the **User Name** field, enter the username for an administrative account.
5. In the **Password** field, enter the associated password.
6. Click **Login**.
7. From the *Security Warning* dialog box, click **Ignore**.
8. If the *Home* page displays, click **Inventory** to display the main *Inventory* page used to configure and monitor the hypervisor.

3.3.2 Establish Console Connection to VM

➤ **To establish a console connection to a VM**

1. Log into a computer with the VMware vSphere Client installed and establish a vSphere client connection to a host. (For instructions, refer to the previous procedure, *To establish a vSphere client connection to a host*.)
2. From the *Inventory* page, right-click on the appropriate VM and select **Open Console**.

3.3.3 vSphere Console Commands

- **To capture the keyboard and mouse:** click anywhere inside the console window.
- **To issue a [Ctrl] + [Alt] + [Delete] sequence:** press **[Ctrl]** + **[Alt]** + **[Insert]**.
- **To release the keyboard and mouse capture:** press and release **[Ctrl]** + **[Alt]**.

3.3.4 Disconnect Console Connection to VM



Attention

Disconnecting a console from a VM does not log the user out of the console session. Another person connecting to the console will inherit the session from the previous user. Always lock the screen (if supported) or log out from the VM prior to disconnecting the console.

➤ **To disconnect the console connection**

1. (Security Recommendation) Lock the VM screen or log off the VM.
2. Close the console window by clicking the red X in the upper right hand corner.

Notes

Appendix A Add Storage to Existing VEEAM Backup

➤ To add storage to an existing VEEAM Backup

1. Add a disk drive to MC2 as follows:
 - a. Refer to [Step 1 - Add Physical Backup Drives\(s\)](#).
 - b. Refer to [Step 2 - Configure MC2 BIOS](#).
2. Add the disk to MC2 Backup Datastore as follows:
 - a. Connect to the vCenter Appliance and log in using an account with administrative access.
 - b. From the *Home* page, select **Storage**.
 - c. Add the disk to the MC2 Backup Datastore.
 - i. Expand **Datacenter1**, select **MC2 Datastore**, then select **Actions... Increase Datastore Capacity**.
 - d. From the *Select Device* dialog box, select the newly installed hard disk and click **Next**.
 - e. From the *Specify Configuration* dialog box, drag the **Increase Size by** slider fully to the right and click **Next**.
 - f. From the *Ready to Complete* dialog box, click **Finish**.
3. Edit the MC3 VM to add additional space as follows:
 - a. Right-click on the MC3 VM and select **Edit Settings** (or select the MC3 VM, then select **Actions**, then select **Edit Settings**).
 - b. Expand **Hard Disk 2**, note the Maximum Size and set the **Disk Size** field to 0.02 TB less than the Maximum Size, then click **OK**.
4. Expand the MC3 D: Drive to include new space as follows:
 - a. Open a terminal session to the MC3 VM and log in with an account with administrative privileges.

Note The preferred interface (for convenience only) is an Remote Desktop Protocol (RDP) connection from another computer or host. The vSphere Client console interface can also be used.

- b. Right-click on the **Start** icon in the task bar and select **Disk Management**.
- c. Right-click on the **Data D:** volume and select **Extend Volume**.
- d. From the *Extend Volume Wizard*, click **Next**, then click **Next**, and then click **Finish**.

Notes



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