**INITIAL SITE CONFIGURATION**

There are a number of configuration tasks that you should do as part of the initial site configuration.

The following configuration topics are described in this chapter:

■ “Enabling Replication to the Same Site”, below

■ “Sizing Considerations”, on page 22

■ “Setting Up Offsite Backups”, on page 27

Enabling Replication to the Same Site

When a single vCenter is used, for example with remote branch offices, when replicating from one datacenter to another

datacenter, both managed by the same vCenter Server, you have to enable replication to the same vCenter Server and pairing is

not required. In this case, replication to the same vCenter must be set in the Site Settings dialog.

To enable replication to the same vCenter Server:

1. In the Zerto User Interface, click SETTING ( ) in the top right of the header and select Site Settings.

The Site Settings dialog is displayed.

2. Click Policies.

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3. Check the Enable Replication to Self checkbox.

4. Click SAVE.

The Zerto Virtual Manager when used to protect to itself can manage the protection of up to 5000 virtual machines.

Sizing Considerations

There are a number of sizing issues to consider when setting up your disaster recovery, including the following:

■ “VMDK Size Limitations”, below

■ “WAN Sizing”, on page 23

VMDK Size Limitations

VMware imposes the following limits that impact on Zerto Virtual Replication.

ESXi 5.5 and higher hosts – Zerto does not apply any restrictions. Refer to any VMware documentation for any sizing

restrictions imposed by VMware.

ESXi 5.0 and 5.1 hosts – The sum of all VMDKs of all virtual machines protected on a particular ESXi must be lower than, by

default, 20TB. Using an ESX tweak, this can be extended to 64TB.

ESX/ESXi 4.x hosts – The sum of all VMDKs of all virtual machines protected on a particular ESXi must be lower than, by

default, 4TB. Using an ESX tweak, this can be extended to 32TB.

These limits include all virtual machines running on that host as well as the VRA and any shadow VRAs.

To adjust the VMDK size limitation:

1. Log in to vCenter Server or the ESX/ESXi host using VMware Infrastructure (VI) Client. If connecting to vCenter Server,

select the ESX/ESXi host from the inventory.

2. Click the Configuration tab.

3. Click Advanced Settings.

4. Select VMFS3.

5. Update the field in VMFS3.MaxHeapSizeMB.

In ESX/ESXi 4.x, the maximum heap size is 128MB.

In ESXi 5.x, the maximum heap size is 256MB.

6. Reboot the host for the changes to take effect.

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Note: The net effect of this change is that the ESX/ESXi kernel will require a small amount of additional memory, such as the

128MB used to get a maximum of 32TB for ESX/ESXi 4.x hosts specified in the above procedure, for the larger heap, but it will

allow virtual machines with more than 4TB (ESXi/ESX 4.x) or 8TB (ESXi 5.0/5.1) of virtual disk to be addressed.

WAN Sizing

When preparing your deployment, you need to verify that the connectivity between the two sites has bandwidth capacity that

can handle the data to be replicated between the sites.

You must use a minimum dedicated bandwidth of at least 5 Mb/sec.

Zerto Virtual Replication employs sophisticated compression algorithms to reduce the bandwidth required between the sites.

While compression can be very effective in reducing the bandwidth requirements, its efficiency is dependent on data

characteristics.

Note: Zerto Virtual Replication can also work with third-party WAN optimization and acceleration technologies, such as those

supplied by Riverbed Technologies and Silver Peak.

Estimating the bandwidth requirements between the protected and recovery sites involves the following:

1. Collect data characteristics for protected VMs.

2. Calculate the estimated bandwidth requirements.

Note: When the recovery site is Amazon Web Services (AWS), you estimate the required bandwidth for the protected

machines as described below.

Collecting Data Characteristics for VMs

Before you can collect the required data, you must first enable data collection in vCenter Server.

Enabling vCenter Server Data Collection

To enable vCenter Server data collection:

1. Connect to the vCenter Server.

2. In the Administration menu item, select vCenter Server Settings.

The vCenter Server Settings dialog is displayed.

3. Select Statistics.

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4. Make sure that the Statistics Level value for all interval durations up to and including the one day duration is at least 2.

If any of the durations have a value less than 2, do the following, starting with the smallest interval:

a) Select the interval and click Edit.

b) Change Statistics Level to Level 2.

c) Click OK.

5. Repeat step 4 for all the values up to and including the 1 day interval duration.

6. Click OK and wait for at least a day before using the aggregate usage data.

Collecting Data Characteristics for VMs

You can collect data characteristics for the virtual machines in a VPG in one of the following ways:

■ Via vSphere Client console performance statistics.

■ By running a script to collect the data characteristics.

■ By using operating system performance monitors, such as the Microsoft Performance Monitor utility for Windows

operating systems or the iostat command for Linux operating systems.

Collect data for a minimum of one day. Collecting this information impacts on performance and therefore the collection period

should be long enough to gather a true representation of usage but not too long.

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The first procedure described below, to collect data characteristics for the VMs via the vSphere Client console performance

statistics, uses a timeframe of one day. The second procedure, to collect data characteristics for the VMs by running a script to

collect the data characteristics, uses a timeframe of seven days.

Note: When running vCenter Server versions before version 5.x, if any of the virtual machines use NFS storage, metrics for the

NFS storage are not generated by the vCenter Server.

To collect data characteristics for the VMs via the vSphere Client console performance statistics:

1. In the vSphere Client console select the VM and open the Performance tab.

2. Click Advanced.

3. Click the Charts Options link.

The Customize Performance Chart dialog is displayed.

4. In Chart Options, drill-down in Disk and select Past day.

5. In Counters, click None to clear all the selections and then select Disk Write Rate or Write Rate.

6. Click OK.

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A chart similar to the following is generated:

Use the chart for the average write rate of the VM.

To collect data characteristics for the VMs via a script:

Note: The following script and the samples supplied with the download, require vSphere PowerCLI and permissions to access

the vCenter Server using the script.

■ Run a script similar to the following:

Note: If you want a value other than seven days, change the value of the adddays() function. For example to collect data

for three days, use adddays(-3).

Use the resulting file, C:\ZertoOutput.csv, for the average write rate of the VM.

Note: Versions of this script are included in the download with this document.

$report = @()

Get-VM | %{

$stats = Get-Stat -Entity $ -Stat disk.write.average -Start (Get-Date).adddays(-7) -

ErrorAction SilentlyContinue

if($stats){

$statsGrouped = $stats | Group-Object -Property MetricId

$row = "" | Select Name, WriteAvgKBps, WriteAvgMBps

$row.Name = $\_.Name

$row.WriteAvgKBps = ($statsGrouped |

where {$\_.Name -eq "disk.write.average"} |

%{$\_.Group | Measure-Object -Property Value -Average}).Average

$row.WriteAvgMBps = $row.WriteAvgKBps/1024

$row.WriteAvgKBps = "{0:N2}" -f $row.WriteAvgKbps

$row.WriteAvgMBps = "{0:N2}" -f $row.WriteAvgMBps

$report += $row

}

}

$report | Export-Csv "C:\ZertoOutput.csv"

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Calculating the Estimated Bandwidth Requirement

Use the average write rate for the virtual machines in a VPG in the Zerto WAN Sizing Estimator to estimate the minimum

bandwidth required.

For each VM you also must decide whether compression will be enabled for the VM, based on the data characteristics.

To estimate sizing using the Zerto WAN Sizing Estimator:

1. Open the Zerto WAN Sizing Estimator.

2. Enter the following information:

■ The VM name.

■ The Write KB/s data, based on the statistics gathered in the previous task. Use a period for the decimal mark.

■ Define whether compression is enabled for this VM: Select Yes or No.

■ The application data characteristics: Select Compressed or Compressible.

Note: The Zerto WAN Sizing Estimator colors the cell red if you decide to employ compression on compressible data and

orange if you decide to avoid compression for compressible data.

The Zerto WAN Sizing Estimator calculates the total bandwidth estimation for your deployment, using a minimum value of 5

Mb/sec. The estimation is displayed on the top of each page of the Zerto WAN Sizing Estimator.

You can estimate the WAN sizing required without using the Zerto WAN Sizing Estimator using the following procedure.

To estimate sizing without using the Zerto WAN Sizing Estimator:

1. For each virtual machine in the VPG multiply the KB/sec, based on the statistics gathered, by 8 and divide the result by

1024 to provide an answer in Mb/sec. Divide this result by 2 if compression is enabled for the VM and the data is

compressible.

2. Sum the results of step 1.

The result is an estimate of the required Mb/sec for the WAN.

Note: If the result is less than 5 Mb/sec, you must use a minimum dedicated bandwidth of at least 5 Mb/sec.

Setting Up Offsite Backups

Disaster recovery using Zerto Virtual Replication enables recovering from a disaster to any point between the moment just

before the disaster and a specified amount of time in the past up to 14 days. The recovery is done in real time at the recovery

site with a minimal RTO.

If there is an additional requirement to extend the recovery ability to more than 14 days, Zerto Virtual Replication provides an

offsite back up option that enables saving the protected virtual machines offsite for up to one year in a state where they can be

easily deployed.

The virtual machine files are saved in a repository for the required period. Each virtual machine can have multiple offsite

backups created according to a fixed schedule.

The offsite backups are managed by a Windows service, the Virtual Backup Appliance (VBA). The VBA is installed as part of

the Zerto Virtual Replication installation. During an offsite backup, the VBA communicates with the VRAs on the recovery site

to create the virtual machine files, such as the configuration and virtual disk files in a repository. The offsite backups are fixed

points saved either weekly or monthly in the repository. Before you can create an offsite backup for virtual machines, you must

first create one or more repositories for the offsite backup jobs.

The following offsite backup set up options are described in this section:

■ “Creating an Offsite Backup Repository”, below.

■ “Editing an Offsite Backup Repository”, on page 29.

WAN Mb/sec = SUM(KB/sec \* (8/1024/(1 or 2 if compressible data that will be compressed)))

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Creating an Offsite Backup Repository

You define the repositories where offsite backups are defined on the recovery site and can be stored, either locally at the

recovery site, or on a network share that uses the SMB, Server Message Block, protocol. The repository where you want this

offsite backup stored is specified when an offsite backup is defined.

To create an offsite backup repository:

1. In the Zerto User Interface, click SETUP > REPOSITORIES.

2. Click NEW REPOSITORY.

The New Repository dialog is displayed.

3. Specify the following settings:

Repository Name – Specify a unique name for the repository.

Repository Type – Specify the type of repository. The options are Local or Network Share (SMB). If Local is specified,

backups are stored on the local machine where the Zerto Virtual Manager is installed. If Network Share (SMB) is specified,

the network share drive must be an SMB drive and if specified the username and password to access the drive must be

provided. If the repository location is a network drive, this drive can be mounted to third party storage, such as Amazon

Web Services (AWS). Using TntDrive, from Amazon, enables you to save your offsite backups to a cloud repository

mounted disk as if you are using a LAN or locally mounted drive. You can mount one or more Amazon S3 (Simple Storage

Service) buckets as network drives or as removable local drives, and to use them exactly as you would use any other drive

folder on your computer.

Path – The path where the repository will reside. The path must be accessible from the Zerto Virtual Manager, so if the

repository is on a different domain to the Zerto Virtual Manager, the domain must be included in the path.

Username – Username to access the Network Share drive. The name can be entered using either of the following formats:

■ username

■ domain\username

This field is not displayed when the type is Local.

Password – Password to access the Network Share drive. This field is not displayed when the type is Local.

Enable Compression – Check this option to compress backups stored in the repository. Compression is done using zip

compression, set to level six. If you want better compression, which requires more CPU, or less compression to reduce the

CPU overhead, contact Zerto support.

Set as Default Repository– Check if you want the repository to be used as the default when specifying extended recovery

in a VPG.

4. Click VALIDATE.You must validate the path specified. If the folder does not exist, you are asked if you want to create it.

5. Click SAVE.

The repository is created.

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You can define more than one repository. When defining offsite backup, you specify which repository to use.

Note: When using Zerto Cloud Manager, you must also add the repository to either the vCenter resources or vCD resources in

the Zerto Cloud Manager, as described in the Zerto Cloud Manager Administration Guide.

Editing an Offsite Backup Repository

You edit the repositories from the Repositories tab.

To edit an offsite backup repository:

1. In the Zerto User Interface, click SETUP > REPOSITORIES.

2. Click EDIT for the repository to edit.

The Edit Repository dialog is displayed.

Edit any of the following settings:

Repository Name – Specify a unique name for the repository.

Repository Type – Either specify that the repository resides on a local or shared network disk, using the SMB protocol,

accessible from the recovery site. If the repository location is a network drive, this drive can be mounted to third party

storage, such as Amazon Web Services, AWS.

Path – The path from the recovery site where the repository will reside. The path must be accessible from the Zerto Virtual

Manager, so if the repository is on a different domain to the Zerto Virtual Manager, the domain must be included in the

path.

Username – Username to access the Network Share drive. The name can be entered using either of the following formats:

■ username

■ domain\username

This field is not displayed when the type is Local.

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Password – Password to access the Network Share drive. This field is not displayed when the type is Local.

Enable compression – Check this option to compress backups stored in the repository. Compression is done using zip

compression, set to level six. If you want better compression, which requires more CPU, or less compression to reduce the

CPU overhead, contact Zerto support.

Set as default repository– Check if you want the repository to be used as the default when specifying extended recovery in

a VPG.

3. Click VALIDATE.You must validate the path specified. If the folder does not exist, you are asked if you want to create it.

4. Click SAVE.

The updated definition of the repository is saved.