

# Advanced tips & tricks from Veeam



**Rick Vanover**

**RICKATRON**

**VMware vExpert | Microsoft MVP | Cisco Champion**



**@Veeam @RickVanover**



# Technical Tips and Tricks

Details we'll cover in this presentation:

- Backup tips in relationship to the vCenter infrastructure
- A “How-To” for a software-defined backup strategy
- Storage considerations for backup
- Infrastructure component design
- New storage system tips (VSAN & VVOL)
- Advanced option considerations

# vCenter and the art of Backups

vCenter database health and performance are critical to backups happening in a timely and successful manner.

- There are a lot of queries back and forth to the managed object reference; which is powered by the vCenter DB
- This is the #1 reason backups randomly fail

# Tips and Tricks

- Don't reboot vCenter during backups (or restart vpxd)
- The database maintenance plans as well as occasional manual tasks are critical to vCenter DB health
- **Don't** install Veeam (or other significant applications) on the vCenter Server operating system
- Consider *the number* of backup jobs in place. Causes Veeam DB growth and increases CPU/Memory usage (don't do one job per VM).

# Favorite view of good information

The screenshot displays the Veeam Backup & Replication software interface. The top navigation bar includes 'HOME', 'VIEW', and 'JOB' tabs. The 'JOB' tab is active, showing a list of jobs. A job named 'hv\_test' is selected, and its progress window is open. The window shows the job is 'Stopped' and 'Success'. A tooltip is visible over the 'Percent busy for processing stages' section, showing the following data:

Stage	Percent busy
Source	99%
Proxy	3%
Network	8%
Target	21%

The main window also displays a summary of the job progress, including duration, processing rate, and bottleneck. The status is 'Success' with 1 warning and 0 errors. The throughput table shows the following data:

VM name	Status	Action	Duration
dc1.main.su...	Success	Preparing next VM for processing	0:00:05
		Processing dc1.main.support2.veeam.local	0:00:38
		All VMs have been queued for processing	
		Job finished at 9/24/2015 1:23:54 AM	

The bottom status bar indicates '1 JOB SELECTED' and provides information about the connection to the backup infrastructure.

# Favorite view of good information

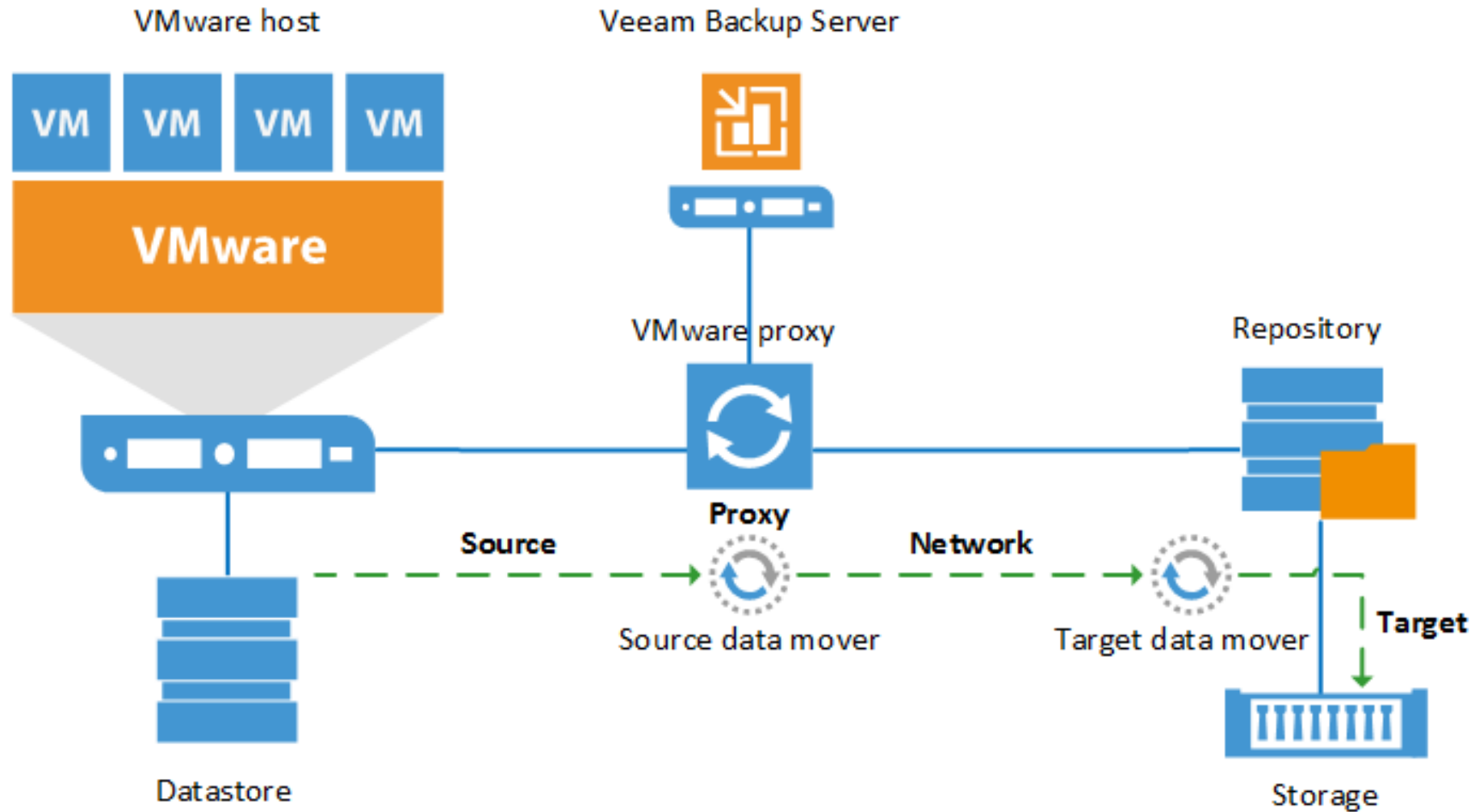
The screenshot shows a window titled "hv\_test (Full)" with a blue header bar. In the top left corner, there is a green checkmark icon. The window is divided into several sections:

- Job progress:** A progress bar is visible, followed by the text "1 of 1 VMs".
- Summary:** A section containing job details:
  - Duration: 1
  - Processing rate: 8 MB/s
  - Bottleneck: Source
- Percent busy for processing stages:** A tooltip box is open, displaying the following data:

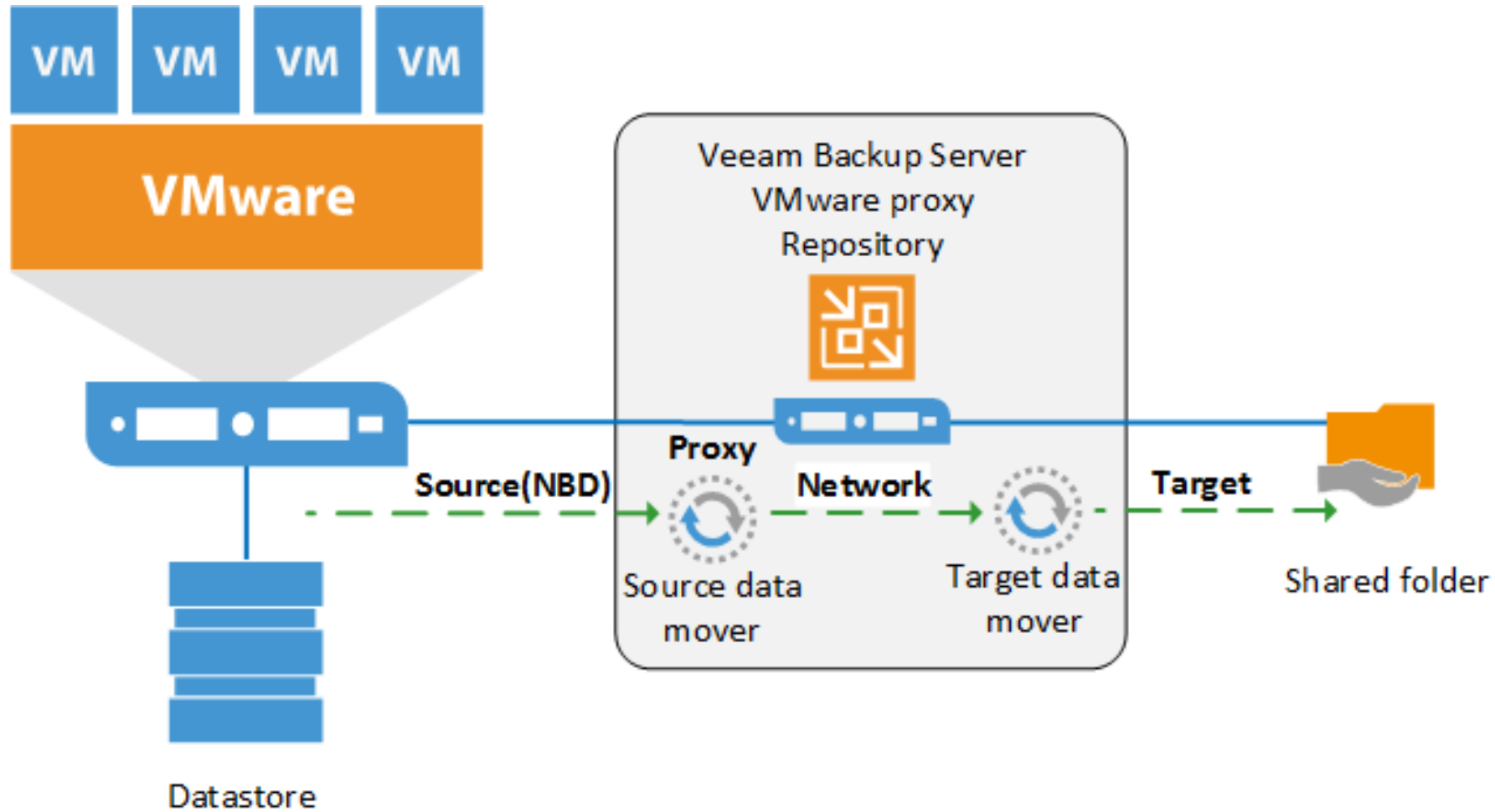
Source	99%
Proxy	3%
Network	8%
Target	21%
- Status:** A section showing the overall job status:
  - Success: 1 (with a green checkmark icon)
  - Warnings: 0
  - Errors: 0
- Transfer Statistics:** A section showing data transfer details:
  - Read: 38.0 GB
  - Transferred: 9.3 GB (4.1x)

At the bottom of the window, there are two buttons: "Show Details" on the left and "OK" on the right.

# Components: 18.000 meter view



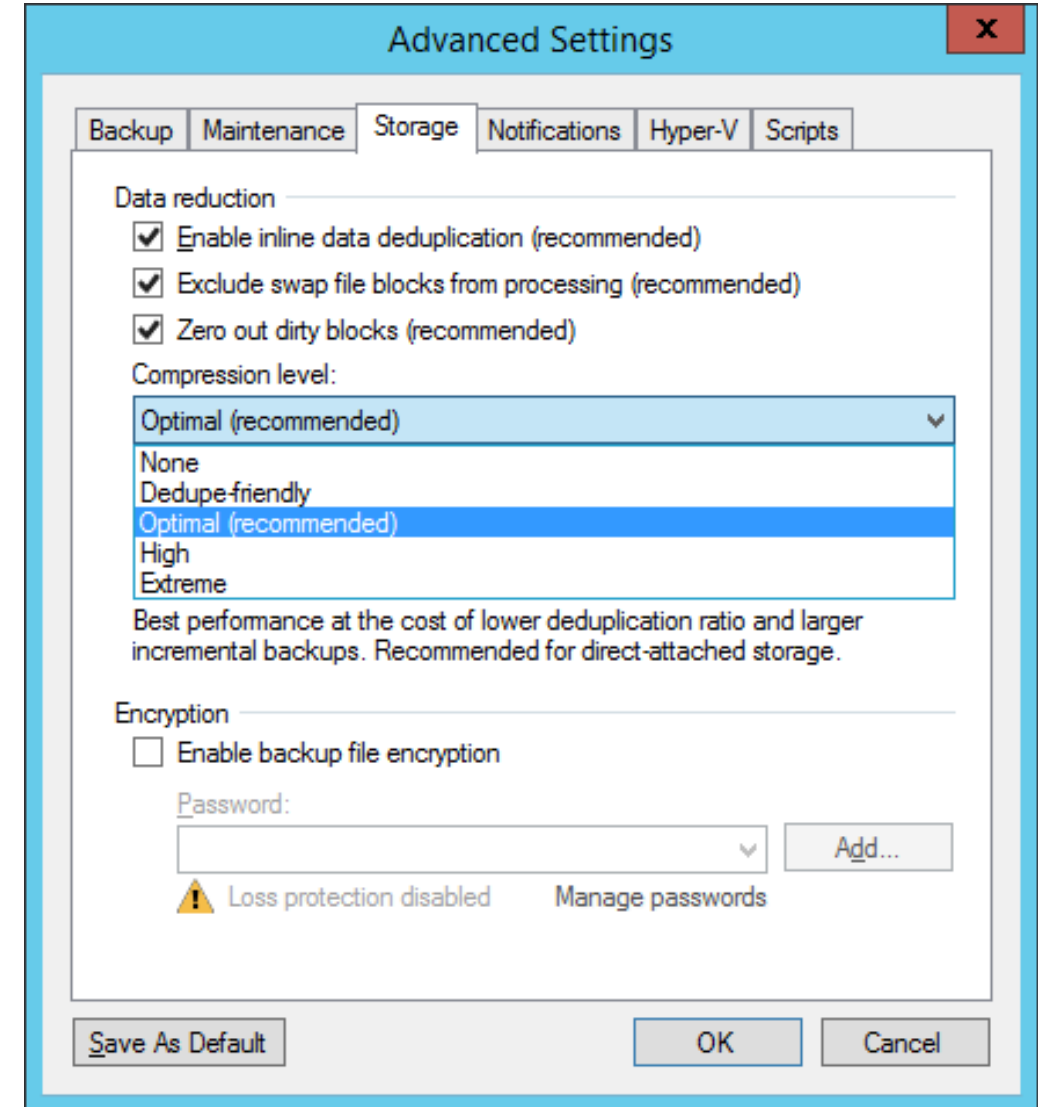
# Components: Optionally All-In-1



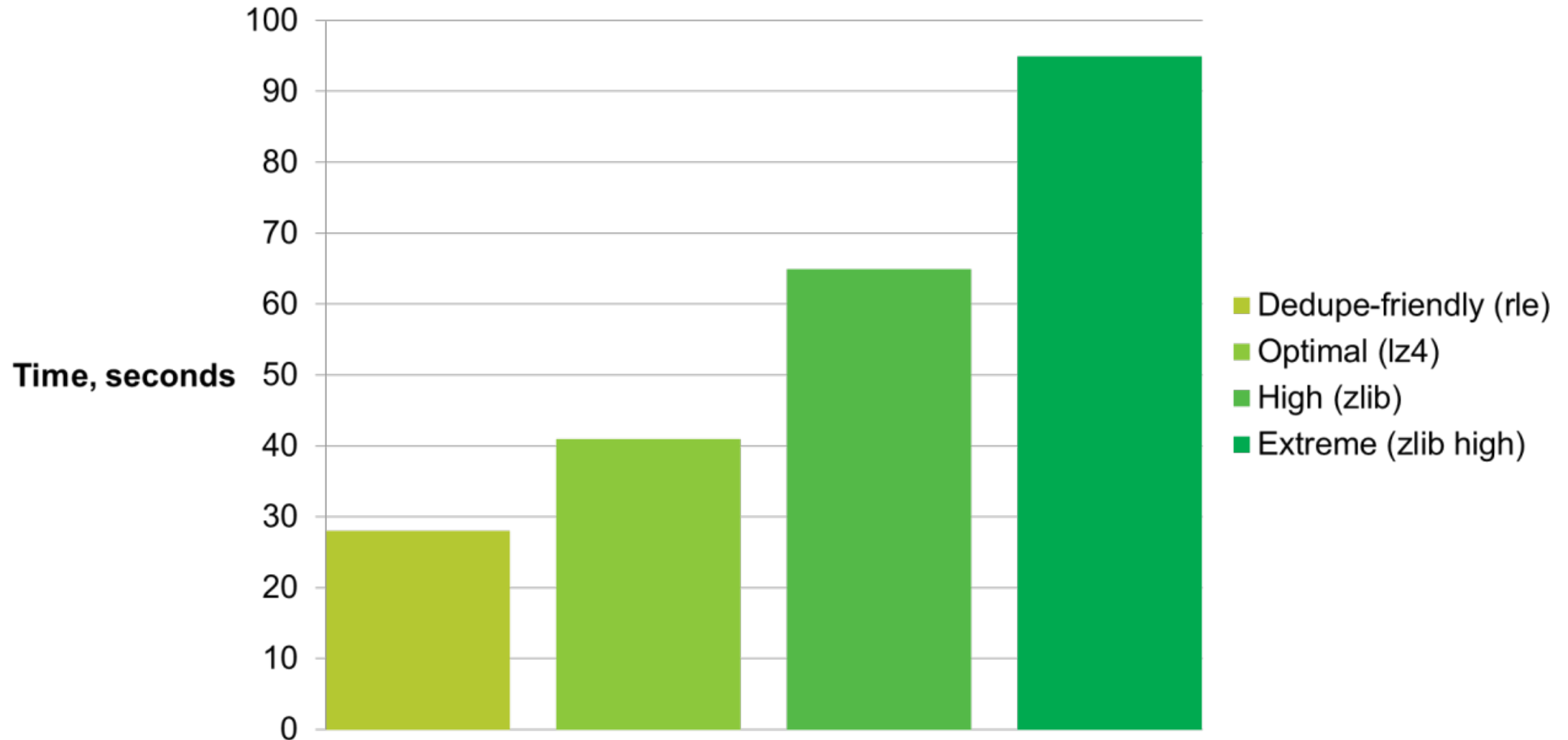


# When bottleneck says Proxy...

Take a look at the job settings, they may have been made a bit too optimistic for the resources in place.



# Compression level comparison



# Additional tweak: Concurrency

1 core per job, don't over-assign the capabilities of the proxies!

**Edit VMware Proxy**

**Server**  
Choose server for new backup proxy. You can only select between Microsoft Windows servers added to the managed servers which are not proxies already.

**Server**  
Traffic Rules  
Summary

Choose server:  
vk-veeam9.support2.veeam.local [Add New...](#)

Proxy description:  
Created by Veeam Backup & Replication

Transport mode:  
Automatic selection [Choose...](#)

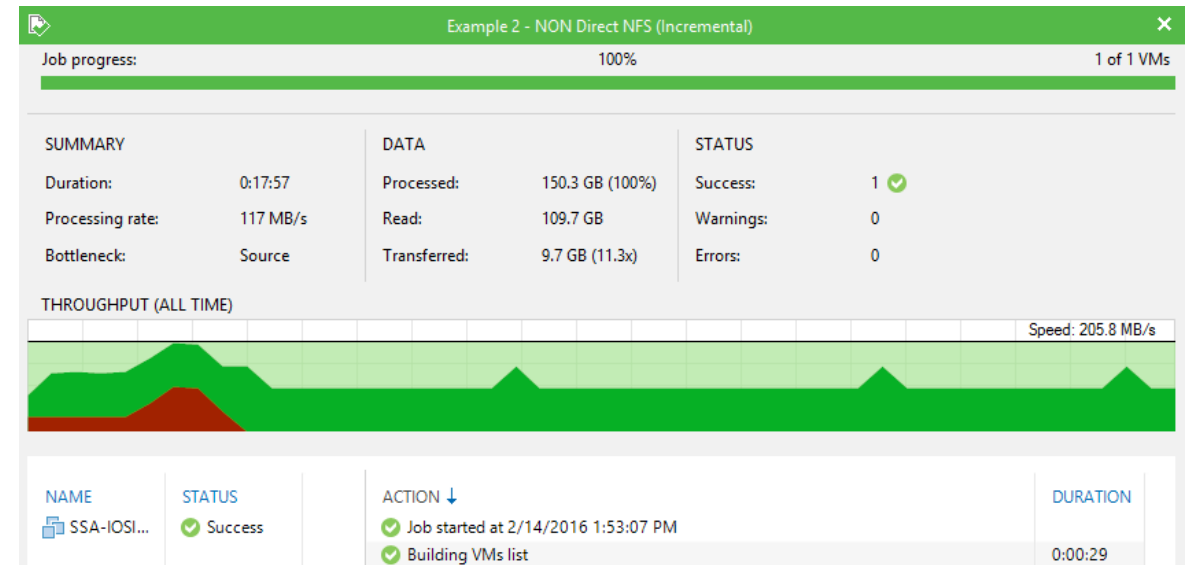
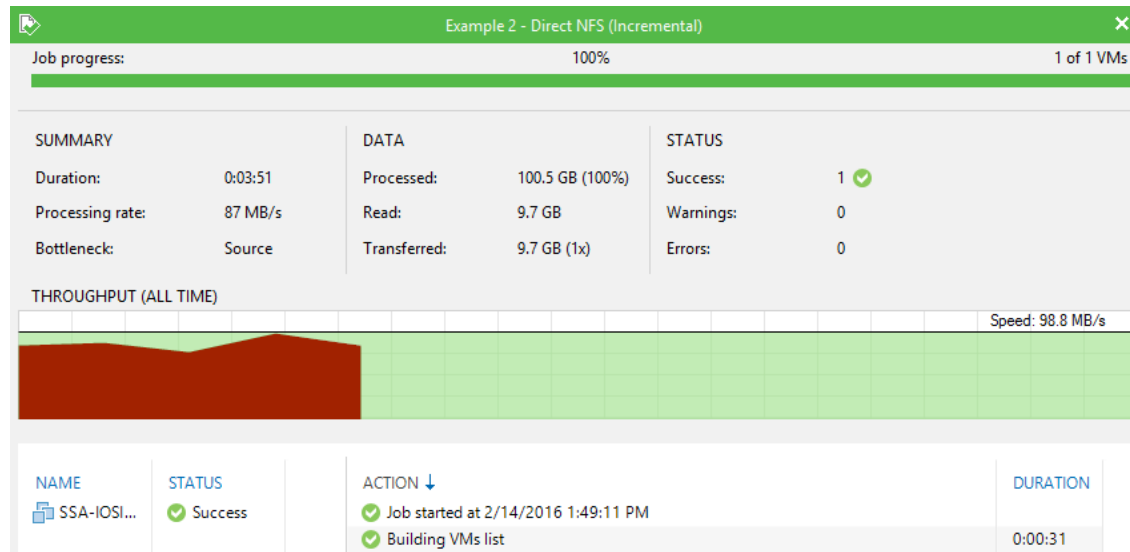
Connected datastores:  
Automatic detection (recommended) [Choose...](#)

Max concurrent tasks:  
2 [^](#) [v](#)

[< Previous](#) [Next >](#) [Finish](#) [Cancel](#)

# Storage Goodness!

Direct NFS in v9 is very underrated!



SUMMARY		DATA	
Duration:	0:03:51	Processed:	100.5 GB (100%)
Processing rate:	87 MB/s	Read:	9.7 GB
Bottleneck:	Source	Transferred:	9.7 GB (1x)

SUMMARY		DATA	
Duration:	0:17:57	Processed:	150.3 GB (100%)
Processing rate:	117 MB/s	Read:	109.7 GB
Bottleneck:	Source	Transferred:	9.7 GB (11.3x)

# Hypervisor-converged storage

More opportunities for convergence in your data center!

Best example here is VMware Virtual SAN or VSAN. VSAN 6.2 is now available with vSphere 6 Update 2, cool new features:

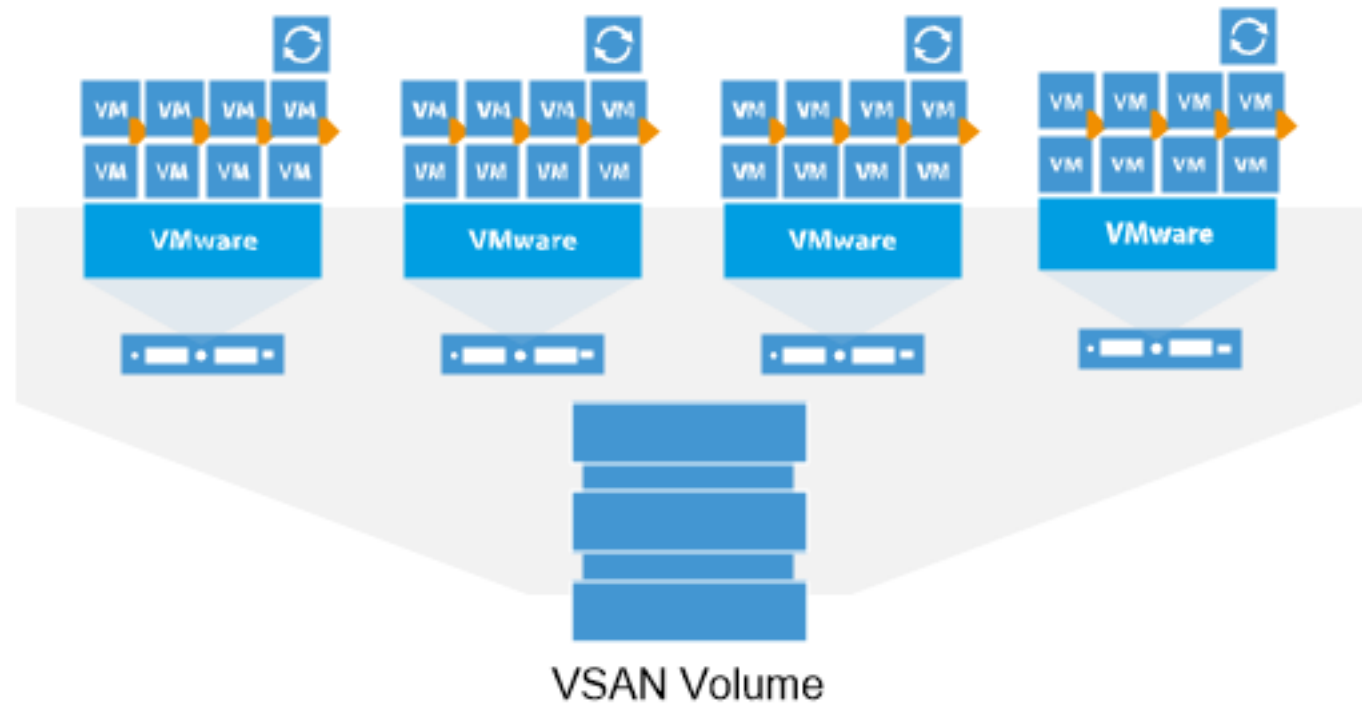
- Erasure coding
- Deduplication and compression
- IOPs limits for objects (like VMs)
- ROBO and stretch cluster support and more

*Read Cormac's blog: <http://vee.am/vsan62>*

# What about availability?

Ensure FULL backup and restore support when it comes to protecting VMs on VSAN. Veeam is VSAN aware:

- Proxy on each host
- Queries VSAN data
- Moves data from best node



# Specifically for VVOL and VSAN

**The Storage Policy-Based Management association is critical when it comes to backup and restore.**

Otherwise, why use the new frameworks if you can't ensure their service levels on restore.

**Free tip:** Veeam Quick Migration can be used to migrate *to* VSAN and VVOL storage resources, consider that for your migration plan.

# SPBM Association on restore

Backup Job SSA-RDS036	1	Endpoint: SSA-RDS036	Stopped	Success	<not scheduled>	ExaGrid Deduplication
Example 1 - File Copy Job	1	File Copy	Stopped	Success	3/11/2016 11:00:...	[SSA-RDS036.SSA.LAB] C
Example 1 - VEAD VEX - Active Directory & Exchange	1	VMware Back...	Stopped	Success	<not scheduled>	ExaGrid Deduplication

### Full VM Restore Wizard

**Datastore**

By default, original datastore and disk type are selected for each VM file. You can change them by selecting desired VM file, and clicking Datastore or Disk Type. Use multi-select (Ctrl-click and Shift-click) to select multiple VMs at once.

Virtual Machines

Restore Mode

Host

Resource Pool

**Datastore**

Folder

Network

Reason

Summary

Files location:

File	Size	Datastore	Disk type
SSA-VM001			
Configuration files		3par vVol (VVol No Requirements Policy) [...]	
Hard disk 1 (SS...	40.0 ...	3par vVol (VVol No Requirements Policy) [...]	Same as sour

Select multiple VMs to apply settings in bulk.

Datastore...

Disk Type...

< Previous

Next >

Finish

Cancel

### Select Datastore

Select datastore:

heldev05.dev.amust.local

Virtual SAN Default Storage Policy

VVol No Requirements Policy

3par vVol [2.1 TB free]

VNXe\_LUNGroup\_DRS

3par fc [127.2 GB free]

ai\_nimble(194.61)\_fc\_vol1 [7.9 GB free]

ai\_nimble(194.61)\_fc\_vol2 [7.9 GB free]

ai\_nimble\_iscsi\_vol1 [7.9 GB free]

ai\_nimble\_iscsi\_vol2 [7.9 GB free]

ai\_nimble\_iscsi\_vol3 [7.9 GB free]

ai\_nimble\_iscsi\_vol4 [7.9 GB free]

ai\_vnxe\_lun1 [1.2 GB free]

aryleev\_lun\_DS [8.8 GB free]

heldev05-ds1 [2.2 TB free]

Nimble FC 1996 8 GB free1

Type in an object name to search for

OK

Cancel



# SPBM done wrong

Powered Off

SSA-VM001-R-NoPolicy

Guest OS: Microsoft Windows Server 2008 R2 (64-bit)

Compatibility: ESXi 6.0 and later (VM version 11)

VMware Tools: Not running, not installed

DNS Name:

IP Addresses:

Host: heldev04.dev.amust.local



[Launch Remote Console](#)

[Download Remote Console](#) 

▶ VM Hardware ☐

▶ Advanced Configuration ☐

▶ Notes ☐

▼ VM Failure Response ☐

Failure

Failure response


▼ VM Storage Policies ☐

VM Storage Policies

 WOL No Requirements Policy

 Virtual SAN Default Storage Policy

VM Storage Policy Compliance

 Not Applicable

Last Checked Date

3/11/2016 2:12 PM

[Check Compliance](#)

# More advanced VMware storage

If using next generation storage technologies (VVOLs and VSAN) ensure that Storage Policy-Based Management is supported upon restore. This is NOT what you want to see:

SSA-VM001-R-NoPolicy

Guest OS: Microsoft Windows Server 2008 R2 (64-bit)

Compatibility: ESXi 6.0 and later (VM version 11)

VMware Tools: Not running, not installed

DNS Name:

IP Addresses:

Host: heldev04.dev.amust.local

Powered Off

Launch Remote Console

Download Remote Console

VM Hardware

Advanced Configuration

Notes

VM Failure Response

VM Storage Policies

VM Storage Policies	VVol No Requirements Policy
	Virtual SAN Default Storage Policy
VM Storage Policy Compliance	Not Applicable
Last Checked Date	3/11/2016 2:12 PM

Check Compliance

# Don't skip the 3-2-1 Rule

Hyper-convergence is awesome, but our responsibilities don't go away!

3 Different copies of data

2 Different media

1 of which is off-site

# 3-2-1

RULE MADE EASY WITH  
Veeam Backup & Replication

## The rule

**3** Copies of Important Data



1 0 0 1  
1 0 0  
0 0  
1

**2** Different Media



**1** Of which is Off-Site



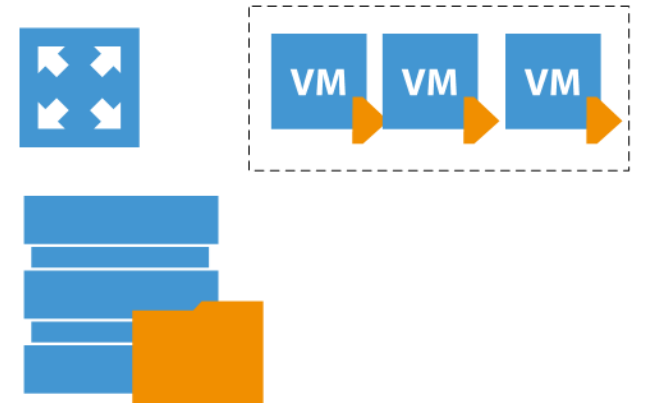
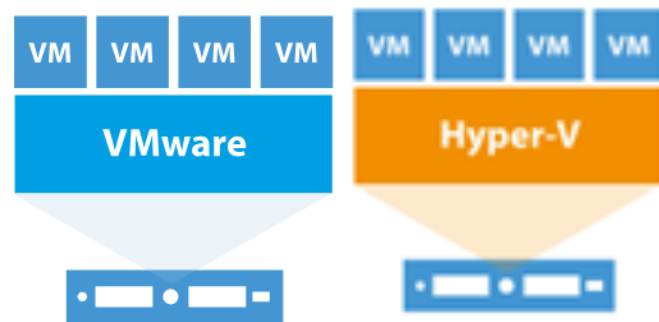
**0** Errors using SureBackup for your VMware Backups

# 3 Different copies of data

Running workloads “count” as one copy.

The other two are where you need to think a bit:

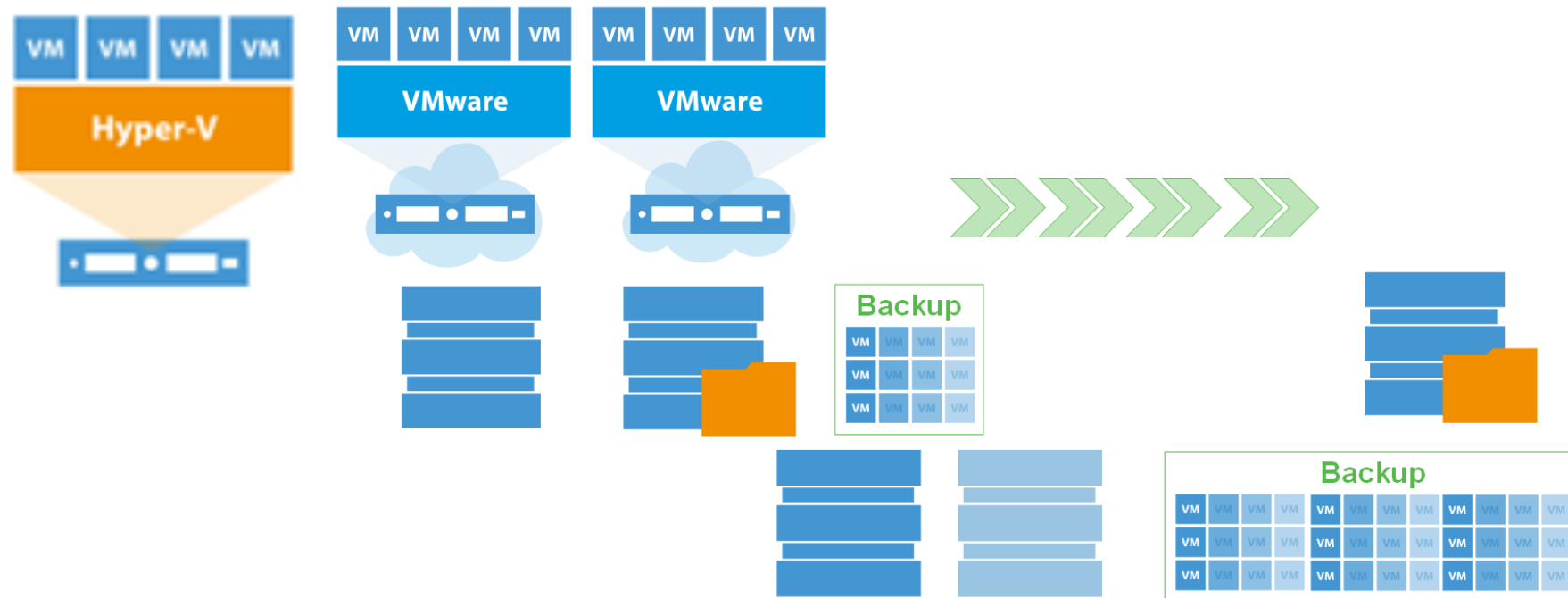
- Backups
- Replicas
- Tape
- Cloud
- Storage snapshots



# The 3-2-1 Rule Rocks

The 3-2-1 Rule can address nearly any failure scenario.

It also doesn't require any specific technology.



# What is offline storage anymore?

Attributes such as:

- Out of band communication
- Protocol reliance
- Traversal of authentication mechanisms
- Consider also some physical access controls
- Rickatron special: The 3-2-1 (+1+1) Rule
- One offline
- One with access control

# Right for today: vSphere Tags

What are policies, and why you need them?

Datacenters are becoming complex

Many VMs = many different protection needs

A multitude of jobs are hard to maintain

Some VMs may be left unprotected

# Transition from jobs to policies

1

Define a  
“Desired State”

2

Create Rules to  
reach the Desired  
State

3

Have task to apply  
rules and correct drift



# Desired State - How

2012-testVM

Actions

Summary

Monitor

Manage

Related Objects

Powered Off

[Launch Remote Console](#)  
[Download Remote Console](#)

2012-testVM

Guest OS: Microsoft Windows Server 2012 (64-bit)

Compatibility: ESXi 5.1 and later (VM version 9)

VMware Tools: Not running, version:9350 (Upgrade available)

DNS Name:

IP Addresses:

Host: esxi01.skunkworks.local

VM Hardware

Advanced Configuration

Notes

VM Failure Response

Update Manager Compliance

VM Storage Policies

Tags

Assigned Tag	Category	Description
4-Hour	RPO	
SQL	VM purpose	

Assign... Remove...


vSphere tags

A VM can have multiple tags

Native property of the workload, not the backup software


# Rules - What

Use the tags to say what the rules are









 Tags

Items

Tags Categories



Categories: All Categories Filter

Tag Name	1 ▲ Category	Description
 Encryption NO	Backup Encryption	
 Encryption YES	Backup Encryption	
 Linux VM	VM purpose	
 RPO 12 Hours	RPO	Backup is executed every 12 Hours
 RPO 24 Hours	RPO	Backup is executed every 24 hours
 RPO 4 Hours	RPO	Backup is executed every 4 hours
 RPO No Backup	RPO	No backup needed for this VM
 SQL	VM purpose	

# The “No-Backup” Tag

 RPO No Backup	RPO	No backup needed for this VM
---	-----	------------------------------

As users apply policies themselves, admins need to be sure a VM doesn't need a backup because the user decided so, and not because it was forgotten

A quick report can show VMs with no RPO tags

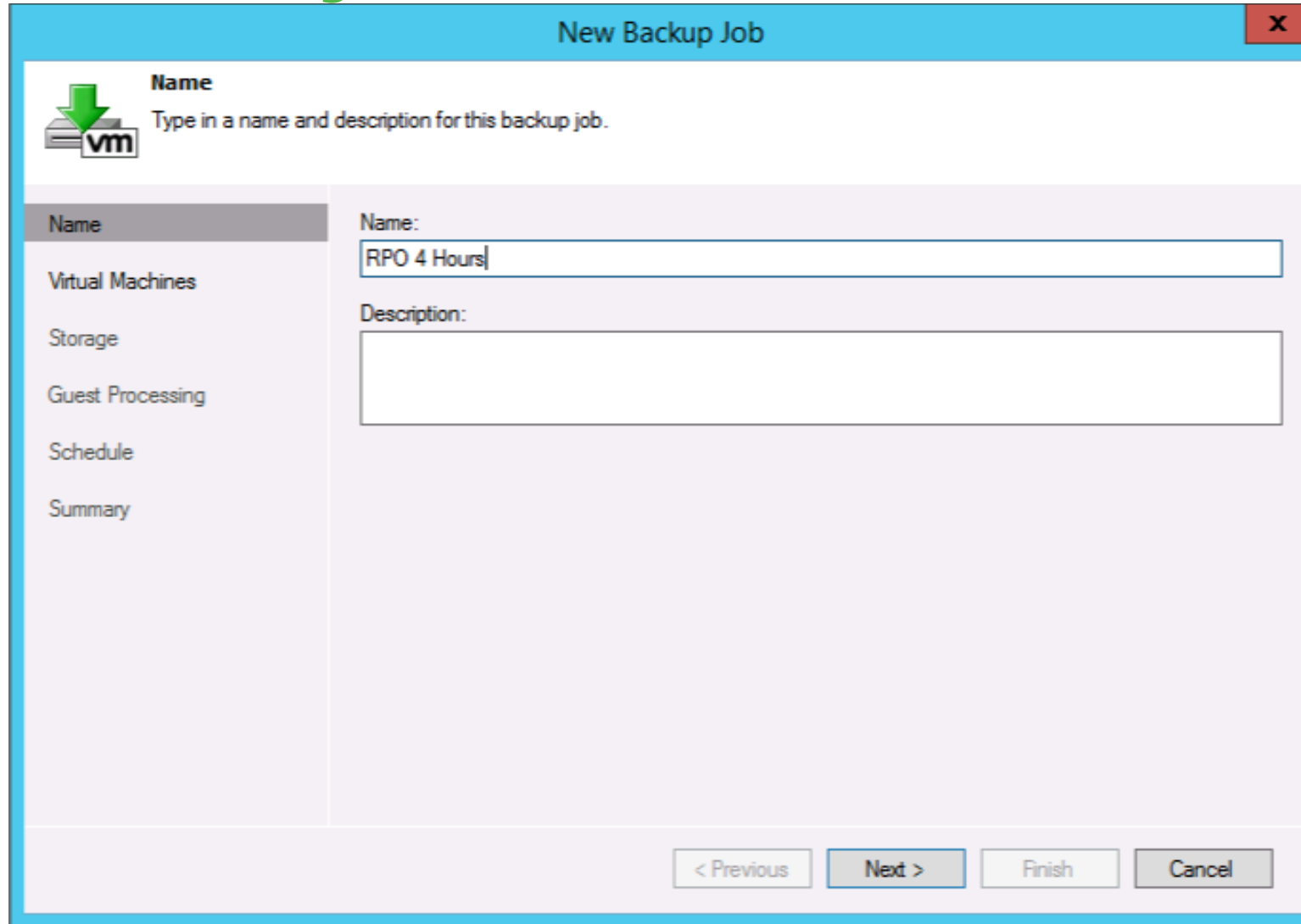
# Rules - How

Policies in the backend are consumed by JOBS (or tasks, or schedules, or batch...)


Jobs are difficult to maintain at scale if they deal with single VMs or groups


The environment is highly changing, instead of changing jobs frequently, let's have them adjust automatically

# Tag-based jobs in Veeam



**New Backup Job**

 **Name**  
Type in a name and description for this backup job.



**Name**

Virtual Machines

Storage

Guest Processing

Schedule

Summary

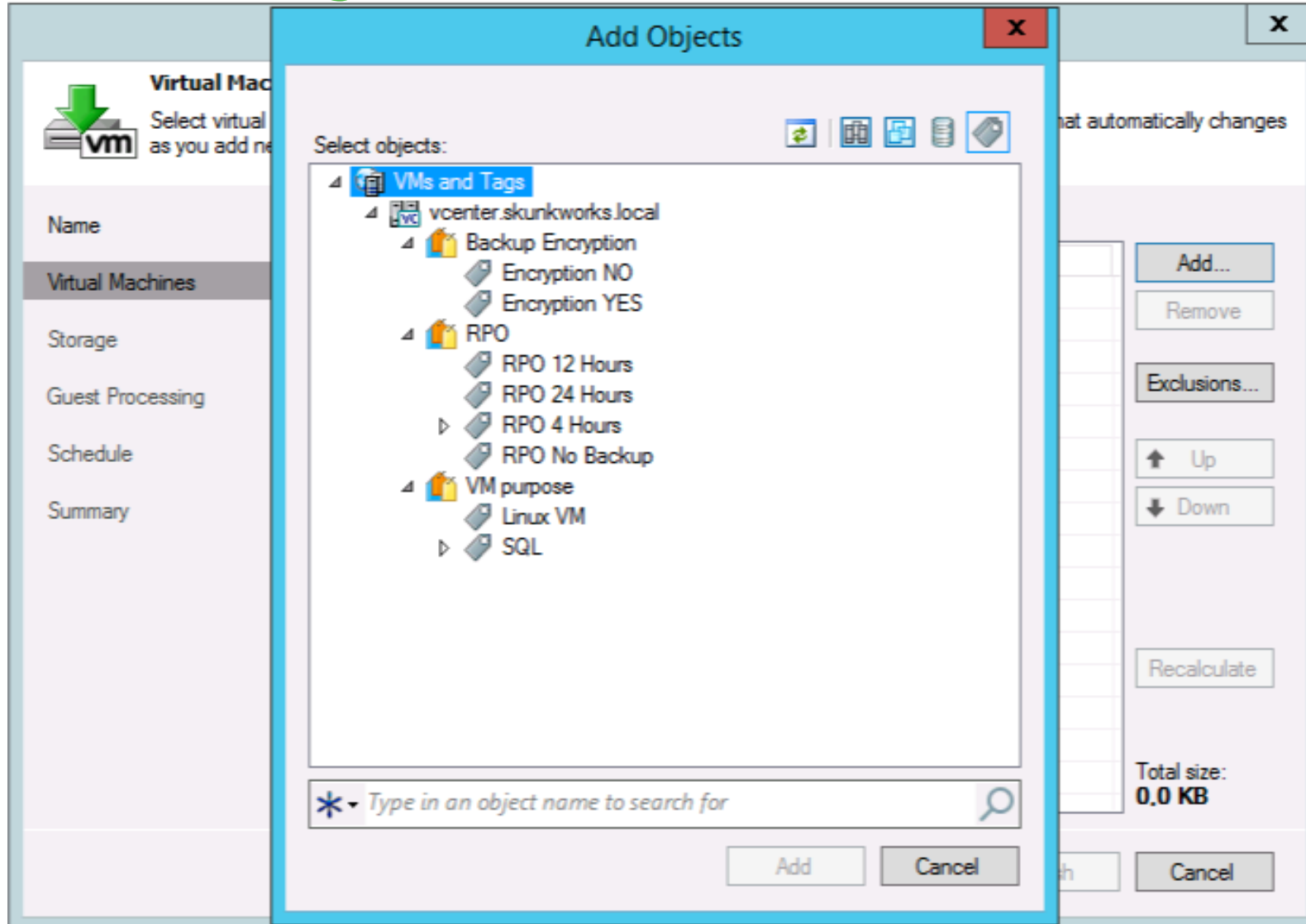
Name:

RPO 4 Hours

Description:

< Previous   Next >   Finish   Cancel

# Tag-based jobs in Veeam



# VM with no backup

The screenshot shows the Veeam ONE Monitor interface. On the left is the 'Infrastructure View' tree, which includes a hierarchy of servers and VMs. Under 'esx18.veeam.local', there is a 'Resources' folder containing several VMs, including 'srv01' which is highlighted with a red warning icon. The main panel is titled 'Veeam ONE Monitor' and has a navigation bar with tabs like 'Summary', 'Alarms', 'Overall', 'CPU', 'Memory', 'Network', 'Datastore', 'Virtual Disks', 'Tasks & Events', 'Console', and 'Processes'. The 'Alarms' tab is selected, showing a list of alarms for the selected object 'srv01'. The list includes four entries: three warnings and one error, all related to backup status. Below the list is an 'Alarm details' section with fields for Description, Knowledge, and Cause.

Status	Alarm Time	Source	Type	Name	Repeat Count
Warning	6:48:27 AM	This object (srv01)	VM with no backups	1	
Warning	3:45:07 AM	This object (srv01)	Too many snapshots on the VM	1	
Warning	3:45:07 AM	This object (srv01)	Latest snapshot age	1	
Error	3:45:07 AM	This object (srv01)	Latest snapshot size	1	

**Alarm details**

**Description**  
This VM does not have any restore points

**Knowledge**  
This VM has not been backed up within the defined RPO (Recovery Point Objective) interval

**Cause**  
Veeam backup or replication job for this VM did not complete successfully or there is no job configured for this VM

Veeam ONE can identify VM with no backups

you can configure an alarm and assign a script that will either start a backup job or create it from scratch

# VM with no backup

## Details

### Protected VMs

Last Backup State	VMs	Location	Backup Type	Backup Job	Oldest Backup Date	Available Restore Points	Last Backup Date
<input type="checkbox"/> Failed							
	srv04	vcenter01>esx18.veeam.local	Backup	Mediaserver Backup	27.10.2014	7	31.10.2014
<input type="checkbox"/> Success							
	websrv01	vcenter01>esx18.veeam.local	Backup	IAS Backup	27.10.2014	8	04.11.2014
	websrv02	vcenter01>esx18.veeam.local	Backup	IAS Backup	27.10.2014	8	04.11.2014
<input type="checkbox"/> Warning							
	k-db01	vcenter01>esx18.veeam.local	Backup	CRM Database Daily Backup	22.10.2014	14	03.11.2014

### Unprotected VMs (VMware)

Location	VM Age	VMs	Creation Date	Last Backup Date	VM Size (GB)	Creator
<input type="checkbox"/> vcenter01>esx18.veeam.local		33				
	<input type="checkbox"/> Not defined					
		alba-01	Not defined	-	0	Not defined
		crm-frontend	Not defined	-	9	Not defined
		crm-services	Not defined	-	0	Not defined
		dc01	Not defined	-	0	Not defined
		Exchange_Virtual_Lab	Not defined	-	0	Not defined
		fileserver03	Not defined	03.10.2014	0	Not defined
		finance01	Not defined	-	0	Not defined
		hp_appliance01	Not defined	-	0	Not defined
		hp_appliance02	Not defined	-	0	Not defined
		mediaserver01	Not defined	-	0	Not defined
		mediaserver02	Not defined	-	0	Not defined
		mediaserver03	Not defined	-	0	Not defined

Veeam ONE can report all VMs with missing backups