



# Backup & DR Automation With Veeam



Melissa Palmer  
Senior Technologist  
vMiss33



Karinne Bessette  
Technologist  
@v\_Rinne



# Agenda



Why Veeam?

Save Time with Automation

Automation with VAO

Demo

Automated Testing with Veeam DataLabs

# Why Veeam?



## Simple

- Built-in intelligence
- Actionable insights
- 100% verified recovery
- Scalable architecture



## Flexible

- Software defined
- Hardware agnostic
- Copy data management
- Cloud ready



## Reliable

- "It Just Works"
- Portable data format
- Instant recovery
- Strong support

# A Single Platform for Cloud, Virtual and Physical

## Virtual

vmware

Microsoft  
Hyper-V

NUTANIX AHV

## Physical

Windows

Linux

ORACLE  
SOLARIS



## SaaS

Office 365

OneDrive

## Cloud

Microsoft Azure

veeam | CSPARTNER  
PROGRAM

aws

IBM Cloud



Monitoring and analytics



Orchestration



Backup and replication

DataLabs



Universal Storage APIs

Hewlett Packard  
Enterprise

NUTANIX

Lenovo

IBM

cisco

PURESTORAGE

DELL EMC

NetApp

FUJITSU

EXAGRID



Object Storage

# Save Time With Automation

- ✓ Automated reporting
- ✓ PowerShell SnapIn
- ✓ vSphere Web Client Plug-in
- ✓ Rest APIs
- ✓ Data Integration API





# RESTful API



# Tagging



# PowerShell

**Account** Show/Hide List Operations Expand Operations

GET /v4/Accounts

Response Class (Status 200)  
OK

Model Example Value

Response Content Type application/json

Parameter	Value	Description	Parameter Type	Data Type
name			query	string
accountType			query	string

Try it out

POST /v4/Accounts

POST /v4/Accounts/{accountId}

GET /v4/Accounts/{accountId}

POST /v4/Accounts/{accountId}

AmazonS3CompatibleObjectStorage Show/Hide List Operations Expand Operations

AmazonS3ObjectStorage Show/Hide List Operations Expand Operations

**AzureObjectStorage** Show/Hide List Operations Expand Operations

GET /v4/AzureResources/containers

GET /v4/AzureResources/containers/{Name}

GET /v4/AzureResources/containers/{containerName}/folders

POST /v4/AzureResources/containers/{containerName}/folders

GET /v4/AzureResources/containers/{containerName}/folders/{Name}

BackupGroupData Show/Hide List Operations Expand Operations

BackupOrganization Show/Hide List Operations Expand Operations

**Virtual Machines** Select virtual machines as you add new

**Add Objects**


Select objects:

- VMs and Tags
  - vcneter01.tech.local
    - dpt
      - adm
      - care
      - it
      - mik
      - web
    - apache01
    - apache02
  - Storage profile

Type in an object name to search for

Add Cancel

CommandType	Name
Cmdlet	Add-VB0BackupItem
Cmdlet	Add-VB0ExcludedBackupItem
Cmdlet	Add-VB0Job
Cmdlet	Add-VB0Organization
Cmdlet	Add-VB0Proxy
Cmdlet	Add-VB0Repository
Cmdlet	Connect-VB0Server
Cmdlet	Disable-VB0Job
Cmdlet	Disconnect-VB0Server
Cmdlet	Enable-VB0Job
Cmdlet	Export-VB0Log
Cmdlet	Get-VB0BackupItem
Cmdlet	Get-VB0Command
Cmdlet	Get-VB0DataManagementSession
Cmdlet	Get-VB0EmailSettings
Cmdlet	Get-VB0EntityData
Cmdlet	Get-VB0ExcludedBackupItem
Cmdlet	Get-VB0FolderExclusions
Cmdlet	Get-VB0HistorySettings
Cmdlet	Get-VB0InternetProxySettings
Cmdlet	Get-VB0Job
Cmdlet	Get-VB0JobSession



Protect with DR automation at the core

# Veeam Availability Orchestrator

# Environments

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Bigger



More complex



Change rapidly

# DR planning

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Time



Resources



Personnel



# Orchestration Automation

## Veeam Availability Orchestrator

- Create, customize and update compliance and DR documentation on a recurring schedule or on demand
- Extensible orchestration of disaster recovery and planned migrations of any app, any data at any time meets SLAs
- Planned migrations, patch testing and application upgrades. All with a proven security and audit trail

## Veeam Datalabs

Leverage data for greater business acceleration

- Achieve faster application deployment
- Implement DevOps and DevTest environments

- ✓ Gain operational efficiency via automated testing
- ✓ Empower application delivery and deployment
- ✓ Achieve SLAs via testing against RTO and RPO targets
- ✓ Reliable and simple-to-use BCDR orchestration

# Orchestration Automation

## Challenge

- ① Improve DR and migration success
- ① Maximize application development
- ① Maintain service continuity
- ① Prove reliability of platform

## Solution

- ✓ Intelligent orchestration for DR and migration operations
- ✓ Deploy test and sand-box environments from backup
- ✓ Automated testing of DR and migration plans
- ✓ Showcase SLA attainment with documented outcomes

Non-stop operations and business acceleration



## Veeam® Availability Orchestrator v3

Non-stop operations and business acceleration for today's modern enterprise with reliable and simple-to-use BCDR orchestration, automated testing and assured compliance.

### Key capabilities for Veeam Replicas, Veeam Backups, and NetApp ONTAP Snapshots



#### Reliable recovery

- Reliable, scalable orchestration
- Application-centric



#### Automated testing

- Non-disruptive
- Scheduled and on demand
- Readiness checks



#### Dynamic documentation

- Audit trails
- Compliance reporting
- Built-in change tracking
- Proactive remediation

# Automation with VAO

- Automation of recovery with Orchestration Plans
- Upload custom PowerShell scripts for use in Orchestration Plans
- Automation of testing Orchestration plans with Veeam DataLabs on demand or scheduled
- REST API & Swagger UI

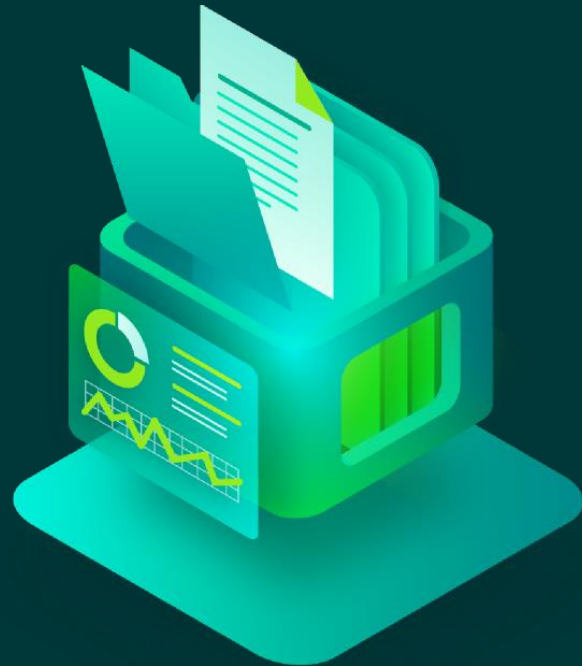


# Orchestration Plans

The background features a dark teal color with abstract, wavy, light teal lines that create a sense of movement. A pattern of small, light teal dots is overlaid on these waves, particularly concentrated in the upper right and lower right areas, giving the impression of a digital or networked environment.

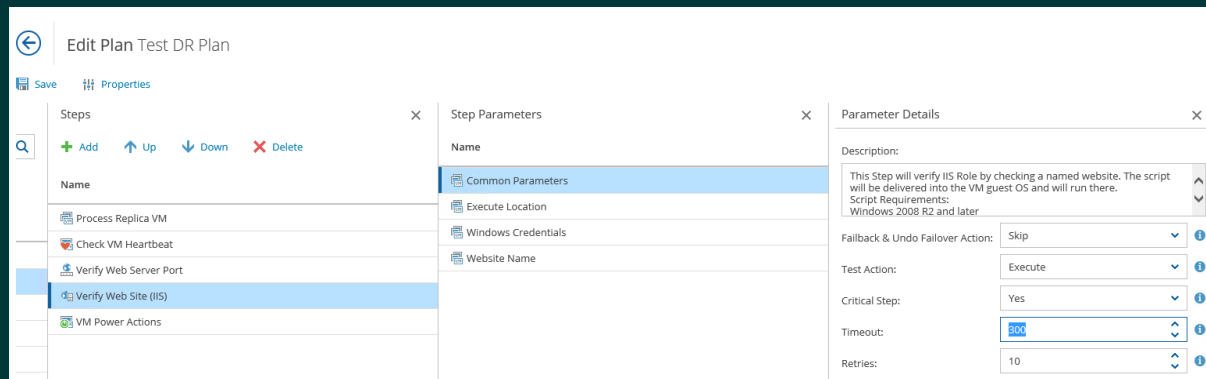
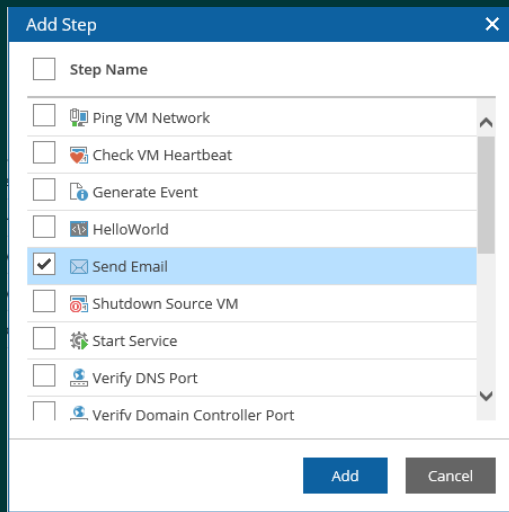
# What is an Orchestration Plan?

- A collection of
  - Virtual Machines
  - RPO/RTO
  - Plan Steps
  - Recovery Location (if applicable)
  - Fully Documented



# Plan Steps and Step Parameters

- Add or remove steps for each VM in the plan
- Change execution order
- Customize parameter settings for each plan step



# Orchestration Plan Steps Available

Register VM	Verify Exchange Mailbox
Process Replica VM	Verify Exchange MAPI Connectivity
Restore VM	Verify Exchange Services
Ping VM Network	Verify Global Catalog Port
Check VM Heartbeat	Verify Mail Server Port
Generate Event	Verify SharePoint URL
Prepare DC for DataLab	Verify SQL Database
Send Email	Verify SQL Port
Shutdown Source VM	Verify Web Server Port
Start Service	Verify Web Site (IIS)
Veeam Job Actions	VM Power Actions
Verify DNS Port	Custom Script
Verify Domain Controller Port	Protect VM Group



# Parameter Variables

Parameter Variable	Content
%vm_fqdn%	FQDN of the currently processed VM
%current_vm_ip%	IP address of the currently processed VM
%current_vm_name%	Name of the currently processed VM
%current_vm_ip_list%	All IP addresses of the currently processed VM
%replica_vm_ip%	IP address of the currently processed replica VM
%replica_vm_ip_list%	All IP addresses of the currently processed replica VM
%replica_vm_name%	Name of the currently processed replica VM
%replica_vm_state%	State of the currently processed replica VM
%source_vm_ip%	IP address of the source VM
%source_vm_ip_list%	All IP addresses of the source VM
%source_vm_name%	Name of the source VM
%plan_name%	Name of the orchestration plan
%vao_server_name%	Name of the VAO server
%plan_state%	Current state of the orchestration plan
%plan_test_mode%	Boolean variable that indicates whether the plan is currently being tested (True/False)
%group_name%	Name of the currently processed VM group
%plan_summary%	Output information on the orchestration plan (error/warning/success for all steps)
%group_summary%	Output information on the currently processed VM group
%vm_summary%	Output information on the currently processed VM
%vao_ui%	URL to access HOME page of the VAO UI

# Adding Custom Scripts - PowerShell

Execute **PowerShell** scripts on a Veeam Backup & Replication server, the VAO server, or inside each VM included in the plan.

You can customize settings required for script execution and pass various parameters into the script: credentials, runtime variables (such as *vm\_name* or *plan\_state*) and any other custom parameters you require.



PowerShell

The image shows two screenshots of the 'Add Custom Script Step' dialog box. The top screenshot shows the 'Custom Script Step Info' tab with fields for Name (HelloWorld), Description (Testing custom scripts), and File (HelloWorld.ps1). The bottom screenshot shows the 'Step Visibility' tab with a checkbox labeled 'Include this Step in all VAO Scopes' which is checked.

**Add Custom Script Step**

Custom Script Step Info

Provide details for the new Custom Script Step, and browse to the necessary script file

Name: HelloWorld

Description: Testing custom scripts

File: HelloWorld.ps1 [Browse...](#)

Next Cancel

**Add Custom Script Step**

Custom Script Step Info

By default, the Custom Script Step will be included in all VAO Scopes

If you do not want the Step to be included in all Scopes, clear the check box below. You can later control step visibility per-scope using the *Plan Components - Plan Steps* page.

Summary

☒ Include this Step in all VAO Scopes

Back Next Cancel

# Custom Scripts – Common Parameters

Parameter	Description	Default Value
Critical Step	Defines whether the step is critical for VM recovery. If you mark the step as Critical, its failure for a VM from a critical VM group will halt the plan.	No
Execute Location	Defines whether the script will run on the Veeam Backup & Replication server, on the VAO server or in-guest of the VM.	Veeam Backup Server
Windows Credentials	Credentials required to gain access to the in-guest OS. Applies only if the <b>Execute Location</b> parameter value is set to In-Guest OS.	—
Timeout	Maximum amount of time (in seconds) for the step to execute.	300
Retries	Number of retries that will be attempted if the step fails on the first try.	10
Failback & Undo Failover Action	Defines whether the step will be executed during the Failback and Undo Failover operations.	Skip
Test Action	Defines whether the step will be executed during plan testing in a DataLab.	Skip

VAO already includes a number of out-of-the-box common default parameters that you can configure

# Configuring Common Parameters

## Execute Location

- Guest OS (*requires Windows credentials*)
- Veeam Backup Server
- VAO Server

### Parameter Details

Name:

ExecuteLocation

Description:

Specifies a location for the script execution - Veeam Backup & Replication server, VAO server or the VM Guest OS. If you set the parameter value to In-Guest, specify a value for the Credentials parameter as well - this will allow authentication inside the Guest OS

Type:

ExecuteLocation

Default Value:

Veeam Backup Server

Veeam Backup Server

In-Guest OS

VAO Server

# Adding Custom Parameters

- Script parameters must match custom step parameters in the VAO UI
- To add custom parameters:
  - Script > Step Parameters > Add
  - Script errors and exceptions may cause failover plans to halt

The screenshot displays two overlapping windows from the Veeam VAO UI. The 'Step Parameters' window is in the background, showing a list of parameter categories: 'Common Parameters', 'Execute Location', and 'Parameter'. The 'Parameter' category is selected and highlighted in blue. Above the list are buttons for '+ Add', 'X Remove', and a floppy disk icon for 'Save'. The 'Parameter Details' window is in the foreground, showing the configuration for a new parameter. It has fields for 'Name' (set to 'Parameter'), 'Description' (set to 'John D, 3/22/18 - parameter to do ....'), 'Type' (set to 'Text' with a dropdown arrow), and 'Default Value' (set to '%plan\_state%' with a blue button containing three dots to the right).

Step Parameters	
+ Add   X Remove   Save	
Name	
Common Parameters	
Execute Location	
<b>Parameter</b>	

Parameter Details	
Name:	Parameter
Description:	John D, 3/22/18 - parameter to do ....
Type:	Text ▼
Default Value:	%plan_state% ...

# Script Output, Errors, and Warnings

To show custom script information in the console and log files:

- Write-Host cmdlet

To show errors and warnings during script execution and pass to VAO:

- Write-Error cmdlet
- Write-Warning cmdlet

```
Param(
    [Parameter(Mandatory=$true)]
    [string]$folderName
)

try {
    $fileName = "HelloWorld.txt"
    "Hello World!" | Out-File -FilePath "$folderName\$fileName"
    Write-Host "File $fileName was created in folder $folderName"
}
catch {
    Write-Error "Failed to create file in folder $folderName"
    Write-Error $_.Exception.Message
}
```



# Fundamentals of Automated Testing in VAO



Demo





The secret behind the automation

# What are Veeam DataLabs?

# Veeam DataLabs

Designed to help users maintain availability and security by reducing the risks of malware, rolling out new upgrades and patches, DevOps, DevTest, and even mitigate compliance risks.

## Features

On-Demand  
Sandbox



SureBackup and  
SureReplica



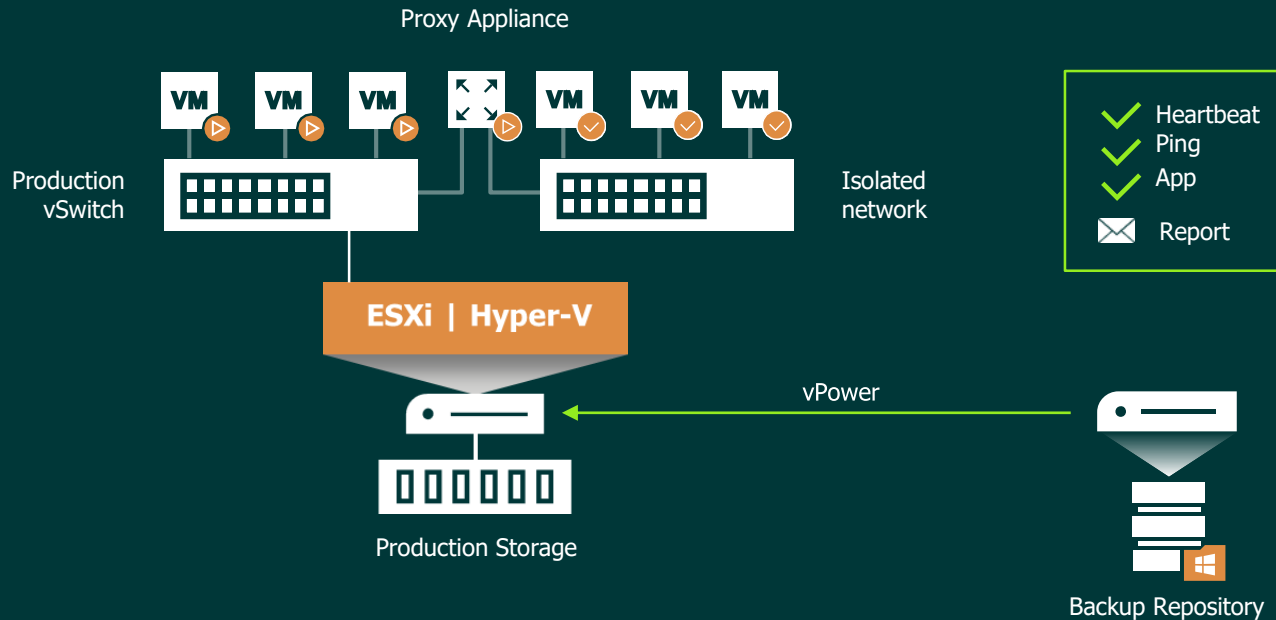
Staged Restore



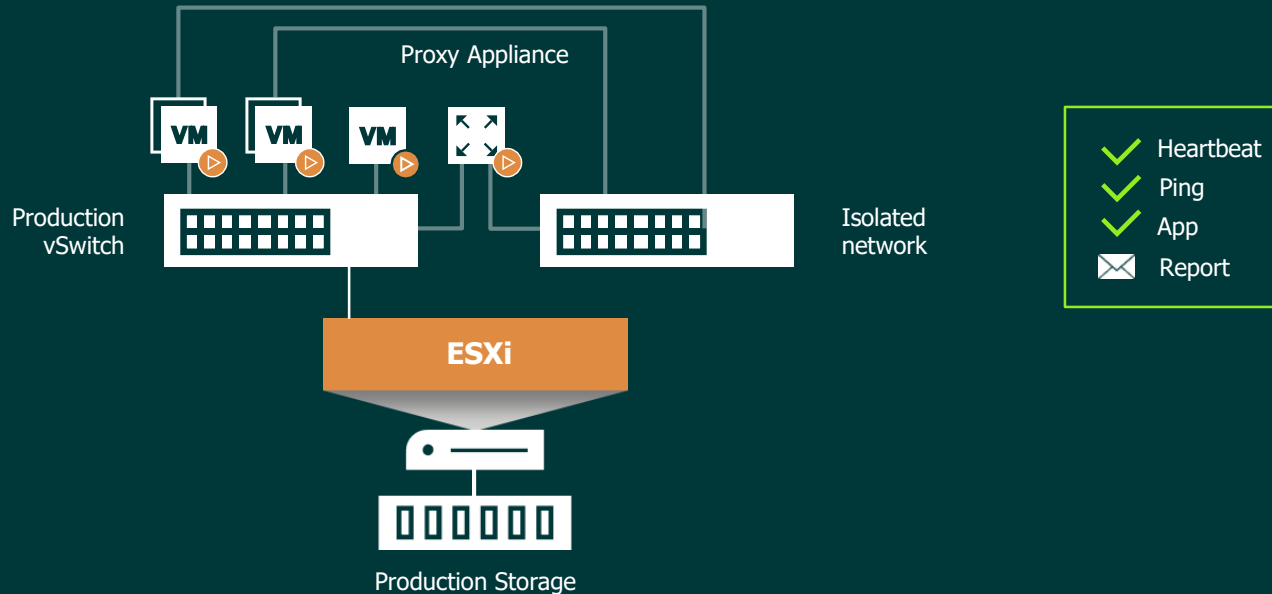
Secure Restore



# How DataLabs works with Backups

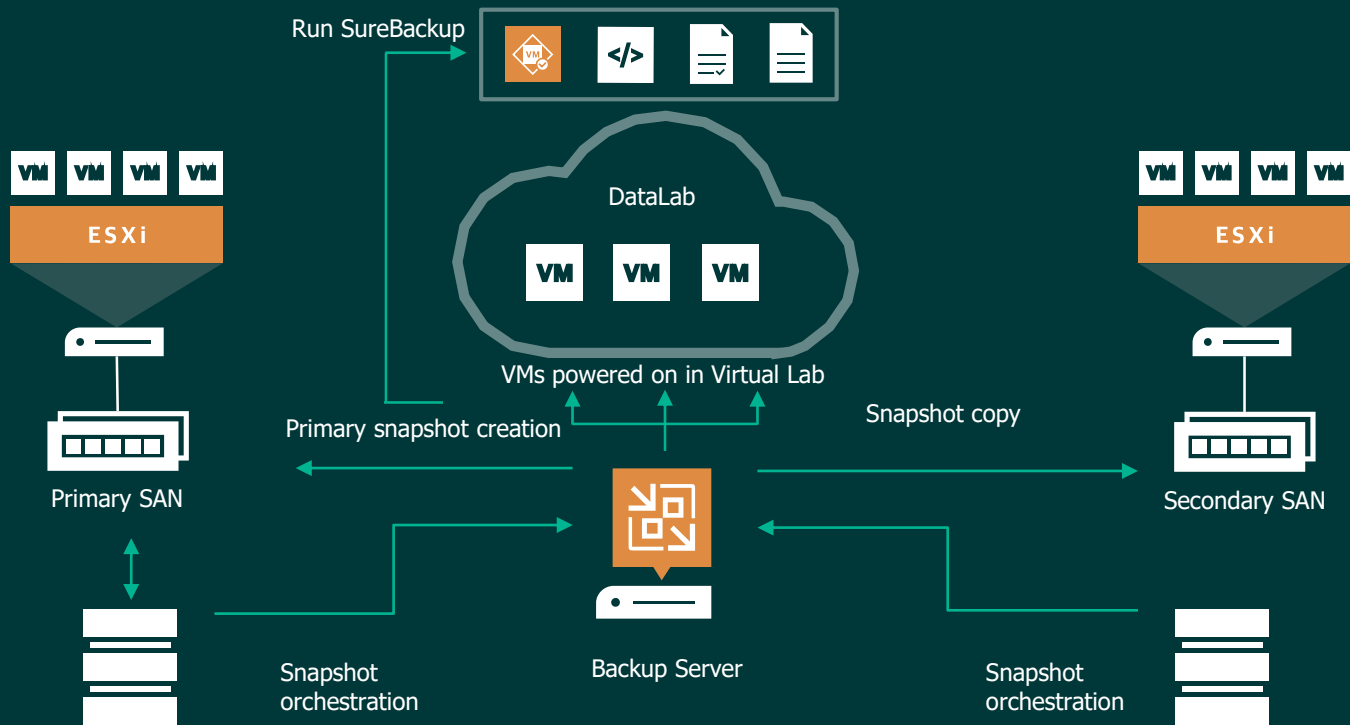


# How DataLabs works with Replicas



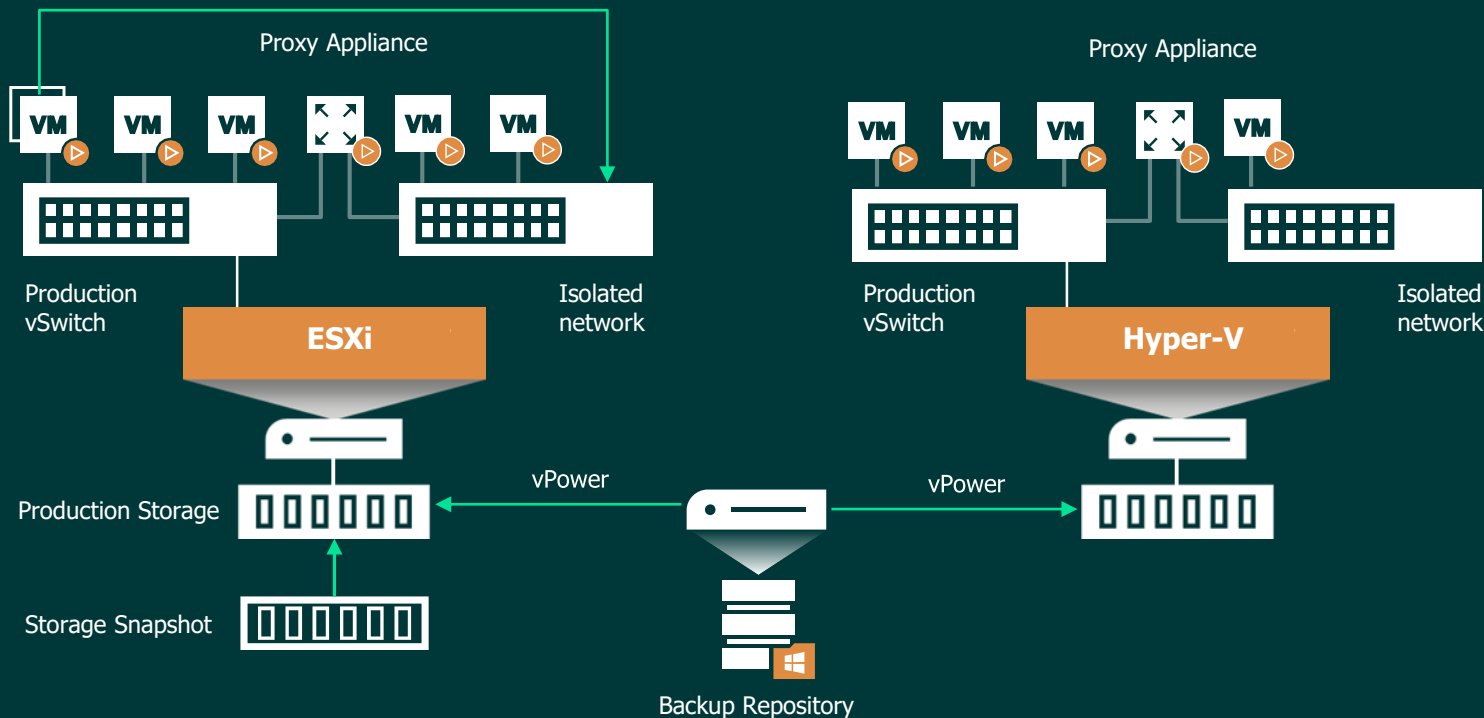
# The Storage Snapshots advantage

Create a powerful backup and DR strategy with Veeam Snapshot only backup jobs, SureBackup and Veeam On-Demand Sandbox For Storage Snapshots



# On Demand Sandbox

Start a copy of your production environment at any time for a variety of **testing**, **security**, **training** or **troubleshooting** purposes



# Use cases for Veeam DataLabs



Increase  
Innovation



Improve DevOps,  
IT services  
& operations



Security

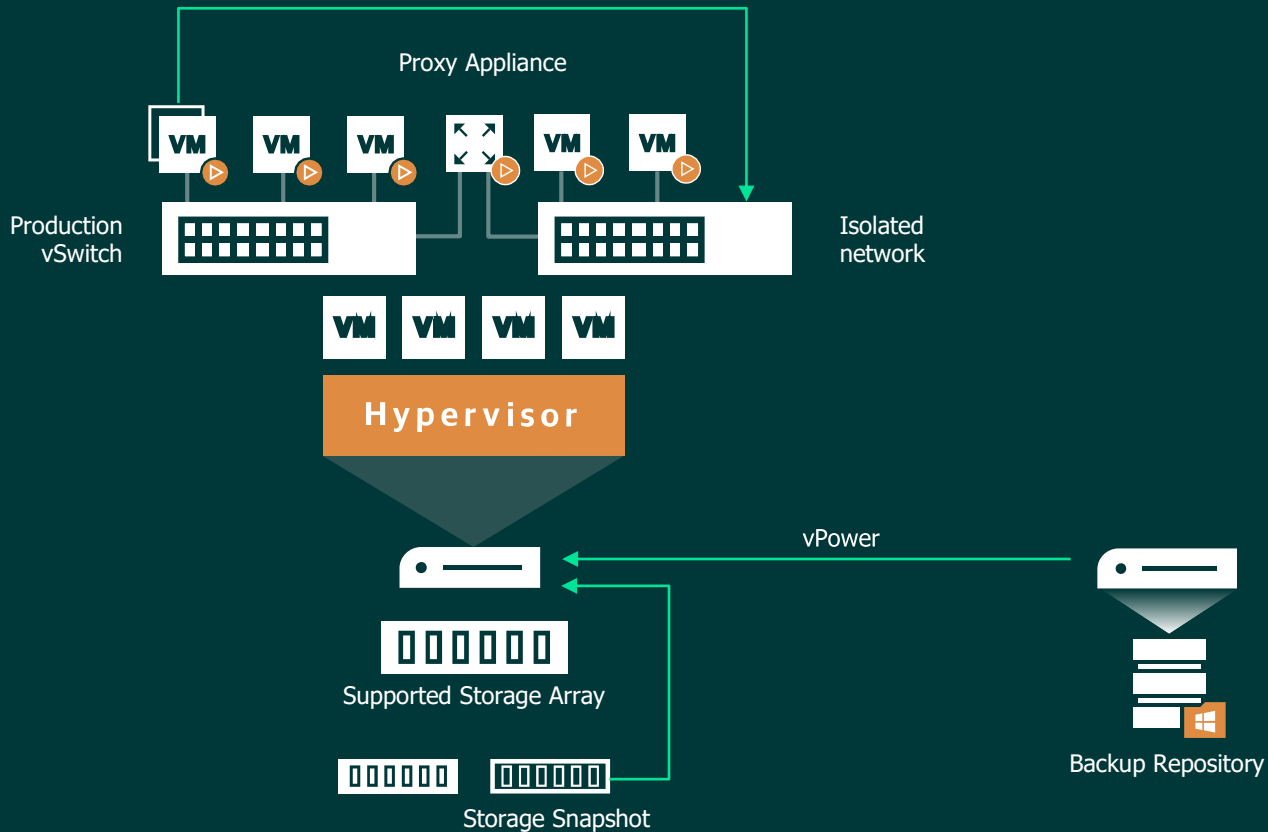


Compliance &  
analytics



Disaster Recovery  
Simulation

# DataLabs Simplified View



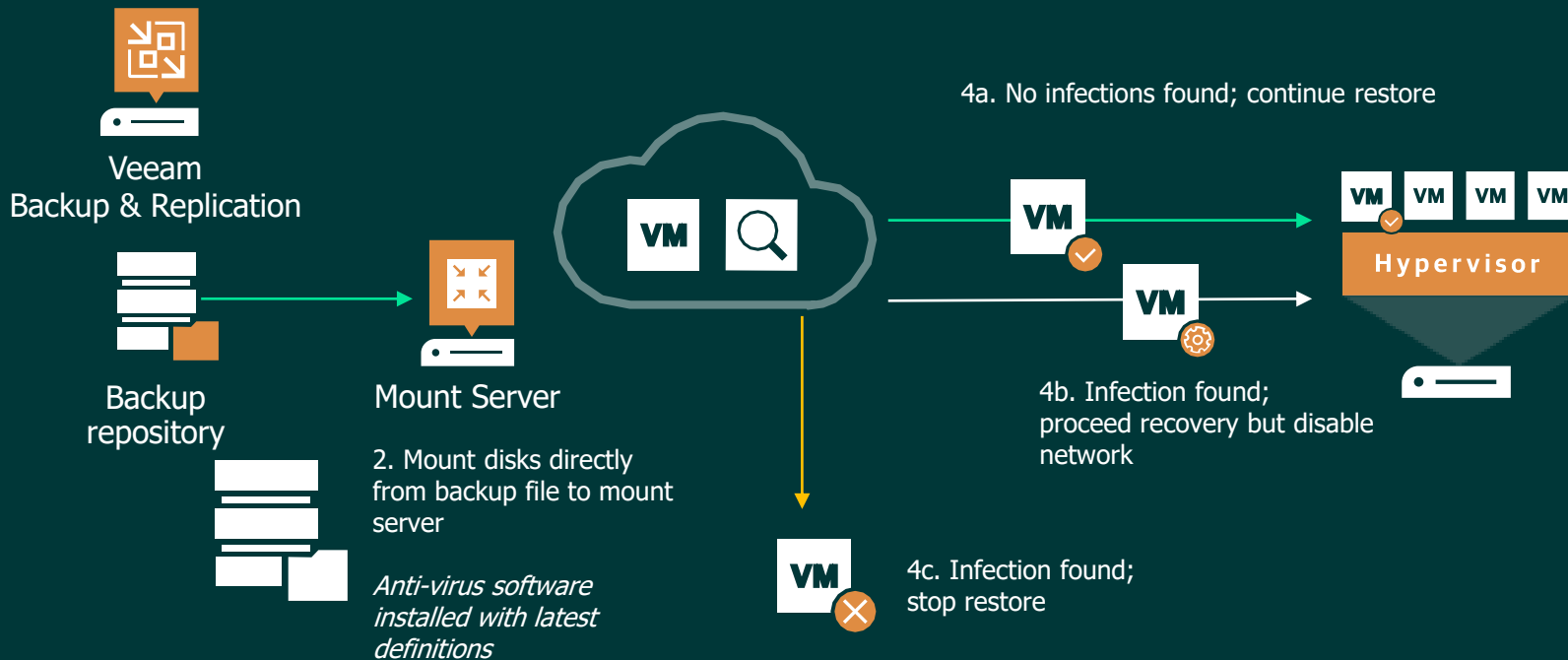


# Secure Restore



1. Select restore point

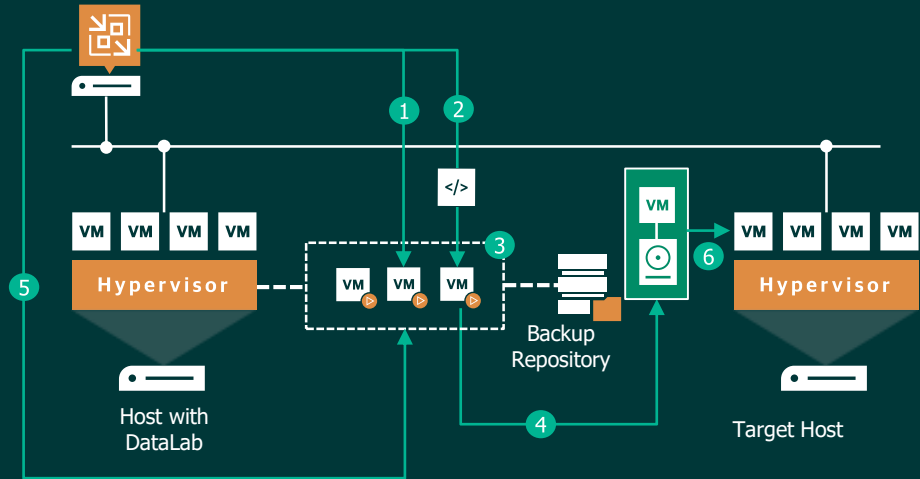
3. Anti-virus check



# Staged Restore

For staged restore, Veeam Backup & Replication uses a **preconfigured DataLab**, an **executable script** located on the backup server, and credentials to connect to VMs and run the script.

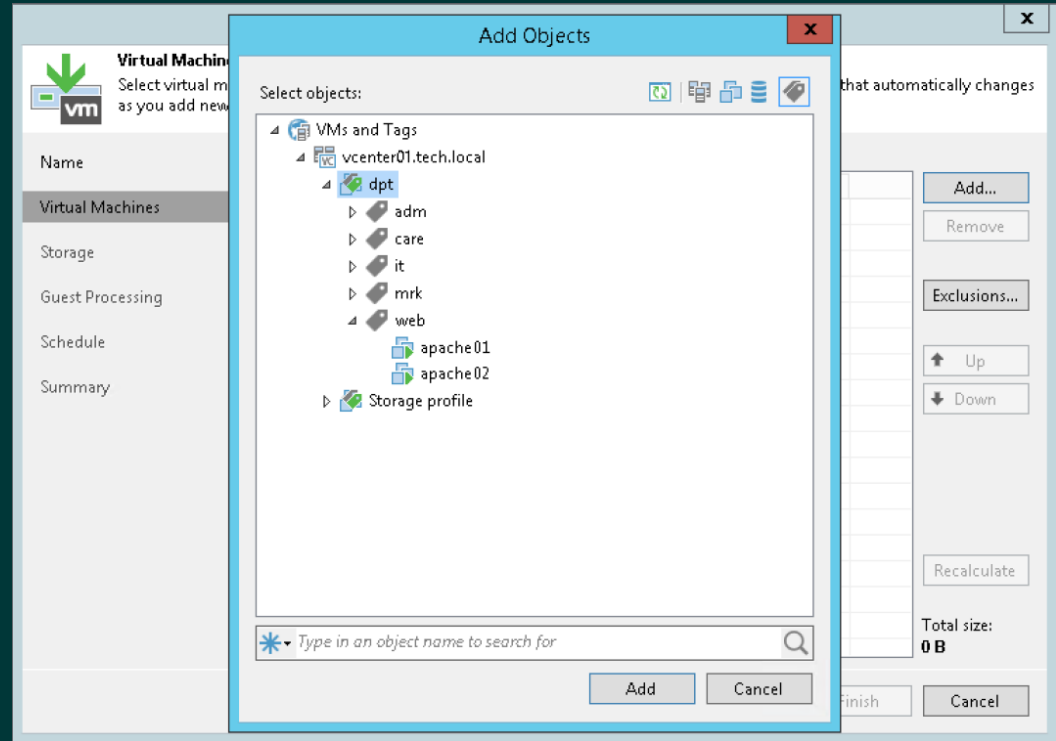
- 1 VMs started directly from compressed and deduplicated backup repository files
- 2 Script is copied from the backup server to VMs that are being restored
- 3 Copied script is run on every VM
- 4 VM changes during script execution are written to VM delta files
- 5 After the script execution is complete, VMs are powered off in the virtual lab
- 6 VMs are restored in a changed state to the production environment



# Random B&R Stuff

The background is a solid dark teal color. Overlaid on this are several large, flowing, wavy shapes in a lighter teal shade. These shapes are composed of numerous small dots, creating a halftone or stippled effect. The overall composition is abstract and modern.

- SLA based policies
- Based on tags
- Automated through VMware vCenter



# Other Veeam Automation Resources



[/VeeamHub](#)



[/veeamagent](#)



GALAXY

[/VeeamHub/Veeam](#)



CHEF™

[/cookbooks/veeam](#)



[forums.veeam.com/](#)



[tag:veeam](#)



Thank you

veeAM