Vembu

Vembu VMBackup User Guide

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Vembu VMBackup User Guide

Introduction

Vembu VMBackup is a comprehensive data protection solution that is designed to help users backup virtual data centers (Virtual machines in VMware and Hyper-V server environment) in a more secured fashion and simplest way possible. While Optional Cloud Disaster Recovery option provides the ability to have data redundancy and disaster recovery in the event of data center downtime.

Vembu VMBackup User Guide

Architecture

- VMware Architecture
- Hyper-V Architecture

Vembu VMBackup User Guide

VMware Architecture

- VMware Backup
- VMware Replication
- Data Transport Modes
- Changed Block Tracking
- Application Aware Consistancy

Back to Architecture

Vembu VMBackup User Guide

VMware Backup

Backing up virtual machines from a VMware environment involves the following steps:

- Vembu VMBackup requires login credentials of VMware production servers and once provided it opens communication with VMware ESXi production storage and backup VM data as per configuration.
- Vembu VMBackup works as a proxy between ESXi host and Vembu BDR Backup Server.
- The backed up VM data will be compressed and encrypted on-fly for security and minimal transfer purposes.
- On reaching backup server, the backup data will be compressed and encrypted at rest on storage repositories. This ensures room to store more data.

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Back to VMware Architecture

Vembu VMBackup User Guide

VMware Replication

Apart from backup and restore of virtual machines, Vembu VMBackup also supports replicating virtual machines from one production hosts to another. The steps involved in replicating VMs using Vembu VMBackup is briefed in below architecture:

- Vembu VMBackup acts as an agent that communicates with VMware ESXi production storage and replicates VM data to another ESXi host.
- Vembu VMBackup works as a proxy between both the ESXi hosts.
- Replicated VM will be in power-off mode.
- Supports VM Failover and Failback.

Back to VMware Architecture

Vembu VMBackup User Guide

Data Transport Modes

Vembu VMBackup uses different types of transport modes for backing up virtual machines from VMware environment based on user environment and server model. They are:

- VMware Direct SAN Access Mode
- HotAdd Transport
- NBD AND NBDSSL mode

Back to VMware Architecture

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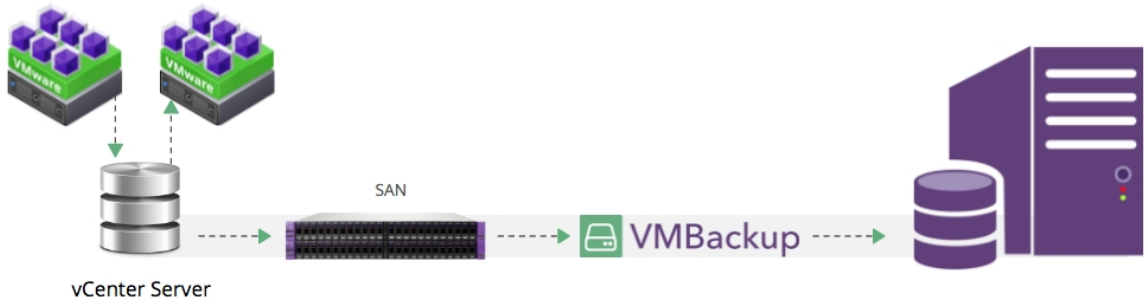
VMware Direct SAN Access Mode

- Data on VMware VM files in SAN environments that are connected via FC or iSCSI will be transferred using the Direct SAN transport mode.
- Vembu VMBackup client and ESX(i) hosts should share the same SAN environment to initiate this direct SAN transport mode.
- The direct SAN transport mode provides faster data transfer speed with less resource utilization.



Requirements of SAN Transport mode:

- SAN Mode works only in physical proxy(client) machine and only with SAN storage connected with Fiber Channel or iSCSI SAN Storage.
- A virtual machine on SAN Storage or iSCSI SAN storage in the same ESXi server.
- For a Windows Server 2008 or Windows Server 2012 proxy, set SAN Policy onlineAll for ALL the paths.
- SAN transport is not always the best choice for restores.
- When writing using SAN mode during restore, disk size should be a multiple of the underlying VMFS block size, otherwise writes to the last fraction of a disk will fail. For example, if a datastore has 1MB block size and the virtual disk is 16.3MB large, the last 0.3MB will not get written and will fail with the Invalid Argument error. Your software must add 0.7MB of zeroes to complete the block. This caveat does not apply to eager-zeroed thick disk.
- Vmware tools must be installed.

Back to Data Transport Modes

Vembu VMBackup User Guide

HotAdd Transport

HotAdd involves attaching a virtual disk to the backup proxy just like attaching disk to a virtual machine. The term HotAdd refers to the way backups are completed. In HotAdd mode, the data volumes containing virtual machines to be backed up are automatically mounted to the proxy; So that they can be accessed by the proxy as a local disk.

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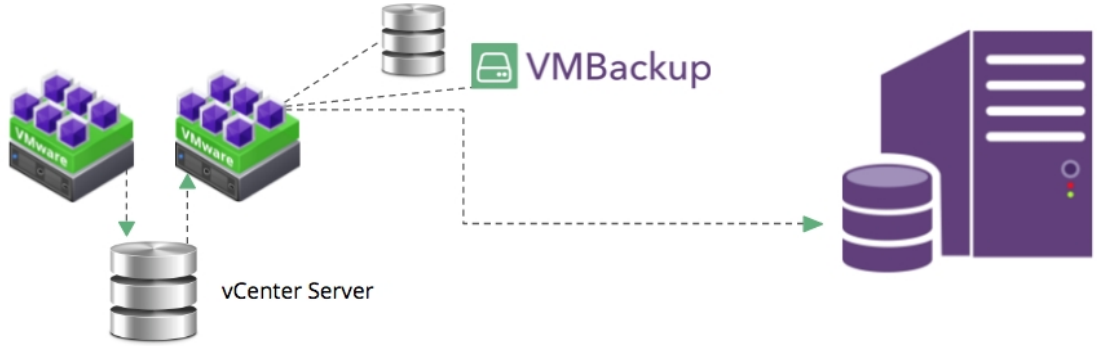
The ESX host, that the proxy is running on, must have access to all data stores for the virtual machine. If the virtual machine and the proxy are not on the same host, all data stores must be shared between the hosts. HotAdd mode can closely match the performance of SAN mode.

- Vembu VMBackup Client needs to be installed on anyone of the Windows VM or you may dedicate a VM to enable Hot-Add transport mode.
- The virtual disk of the VM which needs to be backed up can be directly attached to the Vembu VMBackup Client VM.
- Vembu VMBackup Client will read the attached disks and send the backup data to Vembu BDR Backup Server's storage repositories.



Requirements of HotAdd Transport mode:

- HotAdd is a SCSI feature and does not work for IDE disks.
- HotAdd Mode works only in virtual proxy(client) machine and only with SCSI disk.
- HotAdd mode is best when the proxy(client) machine is a virtual machine and resides on the same data center as the VM to be backed up.
- If proxy machine is present in some other data center, it should have VM access to be backed up.
- VMware tools must be installed.
- For a Windows Server 2008 or Windows Server 2012 proxy, set SAN Policy onlineAll for ALL paths.

Back to Data Transport Modes

Vembu VMBackup User Guide

NBD AND NBDSSL mode

- NBD (network block device) & NBDSSL (encrypted NBD) transmit data over the TCP/IP connection between the ESX server and the proxy computer.
- NBD serves as a fall back when other transport modes are not available. The local area network (LAN) can be the production network or a dedicated backup network.
- NBDSSL is similar to NBD mode, but data transfer between the proxy computer and the ESX server is encrypted. Encryption should be used for sensitive information, even within a private network.

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Back to Data Transport Modes

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Changed Block Tracking

- Using this feature, Vembu BDR backup VMs on host-level through VADP that tracks the changed blocks information of backup data since the previous run of backup job.
- This improves the speed of backup jobs by reducing workload and time taken for job completion.
- Incremental backup without CBT enabled tracks VMFS file system instead tracking host level and restricts users to get changed block information. This results in prolonged backup time as well as increase in backup size.
- Please be informed that Vembu BDR can run CBT tracking method only on VMWare VMs with hardware version 7 and later, while CBT is force disabled on early versions.
- For the backup job, CBT tracks the existing VM data and compares it with the checksums of backed up data. This gives the sum total of changed blocks information and finally the changed blocks alone will get backed up.

Back to VMware Architecture

Vembu VMBackup User Guide

Application Aware Process

- Application-aware process is to create consistent database snapshots by quiescing Microsoft applications using Microsoft VSS
- This option allows you to stop the backup if any one of application writers (Eg: MS Exchange Writer) were in an unstable state or if VSS writers were not processed successfully after the snapshot.
- Along with application consistency, it will truncate the logs based on the configuration.

Back to VMware Architecture

Vembu VMBackup User Guide

Hyper-V Architecture

- Hyper-V Backup

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- Changed Block Tracking
- Application Aware Consistancy

Back to Architecture

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Hyper-V Backup

Backing up virtual machines from a Hyper-V server involves the following steps:

- Vembu VMBackup Client/Proxy is a transport software, which sits on the source Hyper-V Server and is used to process the VM data
- Vembu VMBackup Client works as a proxy between Hyper-V Server and Vembu BDR Backup Server
- Vembu VMBackup Client/Proxy backs up the VM data from the storage location and compresses, encrypts and delivers it to the Vembu BDR Backup server's storage repository

Back to Hyper-V Architecture

Vembu VMBackup User Guide

Changed Block Tracking

- After successful completion of full backup, Vembu CBT driver creates a bitmap file and tracks associated VHD files for changed blocks information.
- When an incremental is scheduled, the block level changes alone will get backed up. This improves the incremental performance and consistency of backup.
- This also results in reduced workload and less time taken for backup job to complete.

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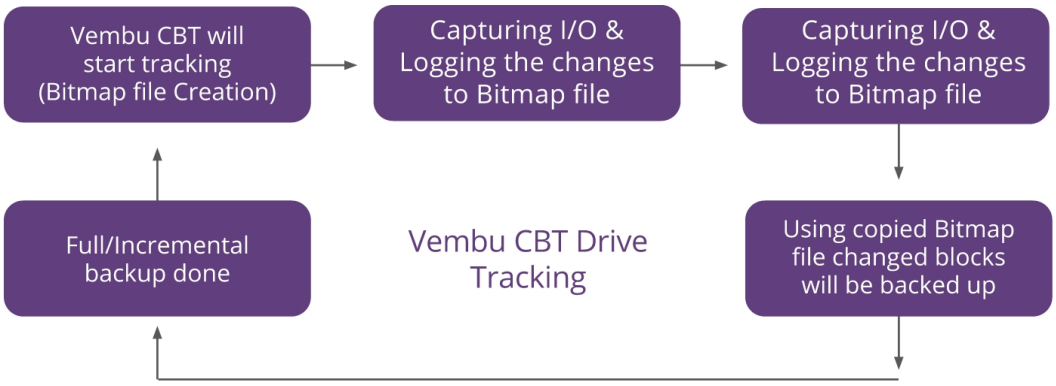

Back to Hyper-V Architecture

Vembu VMBackup User Guide

Application Aware Consistency

- Application-aware process is to create consistent database snapshots by quiescing Microsoft applications using Microsoft VSS.
- This option allows you to stop the backup if any one of application writers (Eg: MS Exchange Writer) were in an unstable state or if VSS writers were not processed successfully after the snapshot.
- After successful completion of backups, it purges the log file to the main file.

Back to Hyper-V Architecture

Vembu VMBackup User Guide

Backup Components

- BDR Backup server
- Storage Repository
- Backup Proxy
- OffsiteDR server
- CloudDR
- Vembu Universal Explorer

Vembu VMBackup User Guide

Vembu BDR Backup Server

Vembu BDR backup server is a Windows/Linux based server machine that can be installed as a service and works flawlessly on both (physical and virtual) environments. It serves the major contribution to users with handful of features such as:

- Quick VM Recovery
- Restore processes

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- VembuHIVE File System
- Backup storage management, compression/encryption and 4-tier verification

Back to Components

Vembu VMBackup User Guide

Storage Repository

Vembu BDR repository management has a hybrid volume manager that supports scalable and extendable backup storage of different storage media such as Local drives, NAS(NFS and CiFS) and SAN(iSCSI and FC).

VembuHIVE™

Vembu's patented document-oriented backup data repository. Having replaced all structural file system metadata with content metadata and intelligently indexed each document, Vembu is able to virtualize VembuHIVE™ as a file system, with respect to backup documents.

Back to Components

Vembu VMBackup User Guide

Backup Proxy

Vembu VMBackup client/proxy is installed on the source system to process backup data. A Vembu proxy retrieves system files, user files, and granular application data. For end-to-end data security, military-grade encryption is applied on the fly as a Vembu proxy transfers data to a Vembu Backup server.

Back to Components

Vembu VMBackup User Guide

OffsiteDR Server

Vembu OffsiteDR server is a Windows/Linux based server that maintains an offsite copy of server data which can be installed either as a service or as a application based on user requirement and works flawlessly on both (physical and virtual) environments. It also serves users with features that are available in backup server:

- Quick VM Recovery
- Restore processes
- VembuHIVE File System
- Backup storage management, compression/encryption and 4-tier verification

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Back to Components

Vembu VMBackup User Guide

CloudDR

Vembu CloudDR is a cloud based disaster recovery server that maintains an offsite copy of backup server data. Users are recommended to opt for Vembu CloudDR for two major reasons:

- Vembu Cloud offers a download- Anytime, anywhere option which is more helpful for disaster recovery and downloading backup data have no speed limit as well.
- Archiving older data in Vembu Cloud is comparatively low cost.

Back to Components

Vembu VMBackup User Guide

Vembu Universal Explorer

Vembu universal explorer is a single recovery tool that lets a user to granularly recover data from the various Microsoft application backups such as: Exchange, SQL, SharePoint and Active directory.

- User can perform granular restore of emails/mailboxes/exchange stores from Microsoft Exchange
- User can perform granular restore of Microsoft SQL databases and tables
- Supports document level restore for Microsoft SharePoint
- Supports granular recovery for Microsoft Active Directory

Back to Components

Vembu VMBackup User Guide

System Requirements

- VMware
- Hyper-V

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VMware

- BDR Backup Server
- OffsiteDR Server
- Backup Proxy
- Supported Platform

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- Port Configuration
- Naming Conventions
- Target/Source Host Permissions

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Minimum Configuration

BDR Backup Server	
OS	• Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2016 • Linux Ubuntu LTS 12.04 • Linux Ubuntu LTS 14.04 • Linux Ubuntu LTS 16.04
Instant Boot Infrastructure	• VMware vSphere • Microsoft Hyper-V • KVM Hypervisor
Memory	8 GB
CPU	Quad Core Xenon Processor
Meta Data Storage	10% of the planned total backup data size
Network Card	1 Gbps & above
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Recommended Configuration

BDR Backup Server	
OS	• Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2016 • Linux Ubuntu LTS 12.04 • Linux Ubuntu LTS 14.04
Instant Boot Infrastructure	• VMware vSphere • Microsoft Hyper-V • KVM Hypervisor

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Memory	16 GB
CPU	Octa Core Dual Processor
Meta Data Storage	10% of the planned total backup data size
Network Card	1 Gbps & above
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Back to VMware vSphere Requirements

Vembu VMBackup User Guide

Minimum Configuration

OffsiteDR Server	
OS	• Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2016 • Linux Ubuntu LTS 12.04 • Linux Ubuntu LTS 14.04 • Linux Ubuntu LTS 16.04
Instant Boot Infrastructure	• VMware vSphere • Microsoft Hyper-V • KVM Hypervisor
Memory	8 GB
CPU	Quad Core Xenon Processor
Meta Data Storage	10% of the planned total backup data size
Network Card	1 Gbps & above
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Recommended Configuration

	OffsiteDR Server
OS	• Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2016 • Linux Ubuntu LTS 12.04

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	• Linux Ubuntu LTS 14.04
Instant Boot Infrastructure	• VMware vSphere • Microsoft Hyper-V • KVM Hypervisor
Memory	16 GB
CPU	Octa Core Dual Processor
Meta Data Storage	10% of the planned total backup data size
Network Card	1 Gbps & above
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Back to VMware vSphere Requirements

Vembu VMBackup User Guide

Minimum Configuration

VMBackup Client	
OS	• Windows Server 2003 SP2 64 bit • Windows 7 64 bit • Windows Server 2008 64 bit • Windows Server 2008 R2 • Windows Server 2012 • Windows Server 2012 R2 • Windows Server 2016
Instant Boot Infrastructure	N/A
Memory	2 GB
CPU	Dual Core Processor
Meta Data Storage	N/A
Network Card	N/A
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Recommended Configuration

VMBackup Client	
OS	• Windows Server 2003 SP2 64 bit • Windows 7 64 bit

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	• Windows Server 2008 64 bit • Windows Server 2008 R2 • Windows Server 2012 • Windows Server 2012 R2
Instant Boot Infrastructure	N/A
Memory	4 GB
CPU	Dual Core Processor
Meta Data Storage	N/A
Network Card	N/A
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Back to VMware vSphere Requirements

Vembu VMBackup User Guide

Supported Plaftorm

- Following are the Virtual infrastructure platforms supported by Vembu VMBackup, with their respective supported versions listed:

Virtual Infrastructure	Version
Platform	• VMware vSphere 6.0 • VMware vSphere 5.x • VMware vSphere 4.x
Hypervisor	• ESX(i) 6.0 • ESX(i) 5.x • ESX(i) 4.x
Management Server	• vCenter Server 6.0 • vCenter Server 5.x • vCenter Server 4.x

- Following are the specification virtual machine specification and requirement supported by Vembu VMBackup:

VM Specification	Requirement
Virtual Hardware	• Virtual hardware of all types and versions are supported, which includes support to virtual disks larger than 2 TB. (i.e) Support extends upto recent addition- 62TB VMDK. • VMware does not support snapshotting VMs with disks engaged in SCSI bus sharing;

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	Such VMs are not supported by Vembu VMBackup. • RDM virtual disks in physical mode, Independent disks, and disks connected via in-guest iSCSI initiator are not supported, and are skipped from processing automatically. Network shares and mount points targeted to 3rd party storage devices are also skipped as these volumes/disks are not visible in the VM configuration file.
OS	• All VMware supported operating systems. • Application-aware processing support from Microsoft Windows 2003 SP1 and later.
Software	• VMware Tools (optional). VMware Tools are required for following operations: application-aware processing and file-level restore from Microsoft Windows guest OS. • All latest OS service packs and patches (required for application-aware processing)

Back to VMware vSphere Requirements

Vembu VMBackup User Guide

Port Configuration

Port	Use
TCP Port 32004	For processing Backup/Restore/Delete/ Replication requests
HTTP Port 6060, 6061	For processing WebService requests
TCP Port 32005	For UI Communication
HTTPS TCP 443	For Esx(i) Communication
TCP Port 902	Data Transfer to ESX(i) host

Back to VMware vSphere Requirements

Vembu VMBackup User Guide

Naming Conventions

Any backup and replication job created in Vembu BDR should be named with below mentioned rule:

- Only [a-z][A-Z][0-9][- _] characters are allowed in Backup/Replication Name.

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Also do not use the following reserved names for naming any backup/replication job: CON, PRN, AUX, NUL, COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8, COM9, LPT1, LPT2, LPT3, LPT4, LPT5, LPT6, LPT7, LPT8, and LPT9.

To learn more about file/folder naming restrictions in Microsoft Windows, do read the naming conventions column from below link:
Naming Conventions - Microsoft

Back to VMware vSphere Requirements

Vembu VMBackup User Guide

Target/Source Host Permissions

- Root permissions on the source ESX(i) host.
- Root or equivalent permissions on the Linux backup repository.
- Write permission on the target folder and share.
- If VMware vCenter Server is added to the backup infrastructure, an account that has administrator permissions is required. Instead of granting administrator permissions to the account, you can configure more granular permissions.

Vembu VMBackup User Guide

Hyper-V

- BDR Backup Server
- OffsiteDR Server
- Backup Proxy
- Supported Platform
- Port Configuration
- Naming Conventions

Vembu VMBackup User Guide

Minimum Configuration

BDR Backup Server	
OS	• Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2016 • Linux Ubuntu LTS 12.04 • Linux Ubuntu LTS 14.04

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	• Linux Ubuntu LTS 16.04
Instant Boot Infrastructure	• VMware vSphere • Microsoft Hyper-V • KVM Hypervisor
Memory	8 GB
CPU	Quad Core Xenon Processor
Meta Data Storage	10% of the planned total backup data size
Network Card	1 Gbps & above
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Recommended Configuration

BDR Backup Server	
OS	• Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2016 • Linux Ubuntu LTS 12.04 • Linux Ubuntu LTS 14.04
Instant Boot Infrastructure	• VMware vSphere • Microsoft Hyper-V • KVM Hypervisor
Memory	16 GB
CPU	Octa Core Dual Processor
Meta Data Storage	10% of the planned total backup data size
Network Card	1 Gbps & above
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Back to Hyper-V Requirements

Vembu VMBackup User Guide

Minimum Configuration

OffsiteDR Server

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OS	• Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2016 • Linux Ubuntu LTS 12.04 • Linux Ubuntu LTS 14.04 • Linux Ubuntu LTS 16.04
Instant Boot Infrastructure	• VMware vSphere • Microsoft Hyper-V • KVM Hypervisor
Memory	8 GB
CPU	Quad Core Xenon Processor
Meta Data Storage	10% of the planned total backup data size
Network Card	1 Gbps & above
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Recommended Configuration

OffsiteDR Server	
OS	• Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2016 • Linux Ubuntu LTS 12.04 • Linux Ubuntu LTS 14.04
Instant Boot Infrastructure	• VMware vSphere • Microsoft Hyper-V • KVM Hypervisor
Memory	16 GB
CPU	Octa Core Dual Processor
Meta Data Storage	10% of the planned total backup data size
Network Card	1 Gbps & above
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Back to Hyper-V Requirements

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Minimum Configuration

VMBackup Client	
OS	• Windows Server 2008 R2 • Windows Server 2012 • Windows Server 2012 R2 • Windows Server 2016
Instant Boot Infrastructure	N/A
Memory	8 GB
CPU	Quad Core Xenon Processor
Meta Data Storage	N/A
Network Card	N/A
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Recommended Configuration

VMBackup Client	
OS	• Windows Server 2008 R2 • Windows Server 2012 • Windows Server 2012 R2
Instant Boot Infrastructure	N/A
Memory	16 GB
CPU	Octa Core Dual Processor
Meta Data Storage	N/A
Network Card	N/A
Browser	• IE v11 • Firefox v28 & above • Chrome v34 & above

Back to Hyper-V Requirements

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Supported Plaftorm

- Following are the Virtual infrastructure platforms supported by Vembu VMBackup, with their respective supported versions listed:

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Virtual Infrastructure	Version
Platform	• Microsoft Windows Server 2008 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2012 R2 Core • Microsoft Windows Server 2008 R2 Core • Microsoft Windows Server 2016
Hypervisor	• Microsoft Windows Server Hyper-V 2008 R2 • Microsoft Windows Server Hyper-V 2012 • Microsoft Windows Server Hyper-V 2012 R2 • Microsoft Windows Server Hyper-V 2016

- Following are the specification virtual machine specification and requirement supported by Vembu VMBackup:

VM Specification	Requirement
Virtual Hardware	• Virtual hardware of all types and versions are supported, which includes support to Generation 2 VM hardware. • Pass through virtual disks and shared VHDX that are connected to VMs are automatically skipped while taaking snapshots for backups.
OS	• All Hyper-V supported operating systems. • Application-aware processing support from Microsoft Windows 2003 SP1 and later.
Software	• Microsoft Hyper-V Integration services should be enabled.

Back to Hyper-V Requirements

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Port Configuration

Port	Use
TCP Port 32004	For processing Backup/Restore/Delete/ Replication requests
HTTP Port 6060, 6061	For processing WebService requests
TCP Port 32005	For UI Communication
TCP 42005	For Vembu integration services

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Back to Hyper-V Requirements

Vembu VMBackup User Guide

Naming Conventions

Any backup and replication job created in Vembu BDR should be named with below mentioned rule:

- Only [a-z][A-Z][0-9][- _] characters are allowed in Backup/Replication Name.

Also do not use the following reserved names for naming any backup/replication job: CON, PRN, AUX, NUL, COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8, COM9, LPT1, LPT2, LPT3, LPT4, LPT5, LPT6, LPT7, LPT8, and LPT9.

To learn more about file/folder naming restrictions in Microsoft Windows, do read the naming conventions column from below link:
Naming Conventions - Microsoft

Back to Hyper-V Requirements

Vembu VMBackup User Guide

Scalability and Infrastructure Sizing

The performance parameters are dependent on the following variables:

- BDR Backup Server System Configuration – CPU, RAM etc
- Storage target's throughput and the Network TCP/IP performance
- The data transfer rate from ESXi Hosts & Hyper-V Hosts while performing the VM backup to the BDR Backup Server

In this segment, we will be discussing the recommendation and sizing information of:

1. BDR backup server
2. Database storage
3. Storage Repositories

Vembu BDR Backup Server

The Vembu BDR backup server is a centralized management server and it handles:

- All communications (such as Backup, Replication and Restore) with VMware vCenter Servers, ESXi hosts and Microsoft Hyper-V hosts
- Storage Targets
- Web based GUI to manage backup and all other activities

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- Creating Backup, Replication Jobs and managing them
- Collects Backup and other activity logs to generate comprehensive reports
- Performing restore related use cases

BDR backup server can be installed on a physical or virtual machine. Vembu BDR Installer will install the missing/required packages along with Vembu BDR backup server.

Vembu BDR backup server communicates with the VMware vCenter Server, ESXi host and Hyper-V host to gather the VM data which needs to be backed up.

System Requirements:

OS	Microsoft Windows Server 2016 Microsoft Windows Server 2012 R2 Microsoft Windows Server 2012 Microsoft Windows Server 2008 R2 Linux Ubuntu LTS 12.04 Linux Ubuntu LTS 14.04 Linux Ubuntu LTS 16.04
RAM	8 GB (Minimum) and 16 GB (Recommended)
CPU	4 cores or 4 vCPUs (Minimum) and 8 cores or 8 vCPUs (Recommended)
Network	1 Gbps & above. While replicating the on-site copy over WAN, 1 Mbps & above

The performance of the VMware and Hyper-V backups depends on the RAM & CPU availability of the BDR backup server. Normally, 4 GB RAM will be utilized to run the BDR backup agent and databases services. Then additional memory will be utilized for each backup jobs. If only one backup job is active, then it will use remaining memory (ie., approx. 4 GB RAM). If two concurrent backups are active, then each backup job will use approx. 2 GB RAM. So, the memory utilization will be divided based on active concurrent backup jobs.

We recommend to keep approximately 500 MB RAM for each active backup job. If you want to run 8 concurrent backup jobs in your BDR backup server, you should assign 8 GB RAM (4 GB for BDR backup server and 4 GB to process the backup jobs).

NOTE: *Each backup job can have multiple VMs. For example, if you want to backup a ESXi host or Hyper-V host which have 10 VMs respectively, you can select the entire host as a one backup job. So, during backup VM data will be backed up one by one.*

In order to avoid significant CPU usage during active backup progress, BDR backup server machine should be assigned with enough vCPUs or cores. Normally one vCPU or core is

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enough to handle around 8 concurrent backup job's activity (such as read/write). However, we recommend to assign minimum of 4 cores/vCPUs for hassle free usage.

NOTE: *Above mentioned memory and CPU utilization are same for the BDR backup server (Windows & Ubuntu) deployed in physical and VM environment.*

DataBase Storage

Make sure you have 10% free space available in the DB metadata storage target. For example, if you want to backup VMs with 2TB used data. After storage reduction, approximately 1TB data will be stored at storage targets. In this scenario, approximately 100GB free space would be required to store the metadata files.

Storage Repositories

You can use any NAS, SAN and directly attached storage devices to store the backed up data. There are no limitation with any hardware vendor. So, we never recommend any specific hardware vendor.

Vembu uses it's own filesystem VembuHIVE on storage targets. This file system is a application level file system which works on top of any existing file system. It has inbuilt,

- Compression
- Encryption (AES 256 Bit encryption algorithm)
- Deduplication (Block level deduplication applied in each backup job)
- Version controlling (Advanced forward & reverse incremental)

The performance of the backup job depends on the IOPS. So, you will get better backup performance, if you have higher IOPS.

NOTE: To calculate the required storage space for your environment, use Vembu storage calculator.

Vembu VMBackup Sizing Table

The following tables illustrate how the VMware & Hyper-V backup performance parameters change depending upon the average data transfer rate.

Underlying Assumptions:

- The average data transfer rate is the effective upstream data transfer rate at which the VM data (VMware & Hyper-V backup) is sending data to your onsite BDR backup server.
- Each VM (VMware & Hyper-V) transfers approx. 50 GB of incremental data every day.
- The estimates provided below are not 'stretch estimates'; they are safe estimates and are more pessimistic than optimistic. Typical bottlenecks you should look out for are:

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- Bandwidth bottlenecks
- Slowing down of data transfer due to low performance switches/routers, etc
- Hard disk write speeds at the storage targets
- CPU utilization by other non related processes running on the BDR backup server

Sizing Tables:

BDR Backup Server Configuration

OS	:	Windows 2012 R2 DC (Physical Machine)
RAM	:	16 GB
CPU	:	Intel XEON CPU 2.10 GHz (4 cores)
Network	:	1 Gbps
BDR Version	:	v3.7.0

Backup Environment

Hypervisor	:	VMware vSphere
No of VM	:	1
VM data	:	2 TB

Backup Type	VM Data Size	CPU Utilization	Memory Consumed	Total time taken to complete the backup	Transfer rate
Full Backup	2 TB	22 %	3145 MB	383 Mins	803 Mbps
Incremental	55 GB	16.5 %	401 MB	11 Mins	751 Mbps

Backup Environment

Hypervisor	:	Microsoft Hyper-V
No of VM	:	1
VM data	:	2 TB

Backup Type	VM Data Size	CPU Utilization	Memory Consumed	Total time taken to complete the backup	Transfer rate
Full Backup	2 TB	9 %	3123 MB	565 Mins	544 Mbps
Incremental	37 GB	16.5 %	462 MB	11 Mins	502 Mbps

The above measurements are taken for one backup job with one single VM. So, if multiple concurrent backup jobs are active then it will share the memory and CPU. As stated earlier, approximately each backup job will require 500 MB RAM.

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It is important to note that there are no inherent scalability restrictions for a BDR backup server when it comes to the maximum number simultaneous backups possible. If a larger number of backup jobs are simultaneously configured to a BDR backup server, then the only effect will be that there will be a corresponding degradation of performance in terms of time taken to complete the backup for all the backup jobs.

A larger backup window and/or a lower time per average backup per backup job will obviously translate into a higher "Maximum Number of VMs Supported by a Single BDR backup server". For example, the above illustration assumes that backups are typically scheduled during 'non office hours' (hence the 10 hour window); this is not always the case. Especially, if in case the backups can happen non-intrusively in the background while users do their regular work.

An Important Note On Storage Device Throughput And Concurrent Writes:

Throughput of Storage devices (IDE/SCSI/SAS/NAS/SAN) are normally benchmarked based on maximum throughput achieved while performing sequential writes into the device. But when multiple VM backups are backing up simultaneously to the BDR backup server, then the BDR backup server will be concurrently writing the different files for different VMs onto the Storage device.

Hence for a given configuration (CPU, RAM, bandwidth), BDR backup server's performance will ultimately depend upon the BDR backup server's throughput of the Storage device when concurrent writes are being done from multiple threads.

The reason Storage devices do not perform well when multiple threads are writing to it concurrently is that the I/O seek that has to be done between writes from different threads can slow down the performance significantly. Hence it is imperative that the Storage device used to backup the data is of the highest quality and has the ability to scale and perform well when 100s of different threads write to the storage device concurrently.

Vembu VMBackup User Guide

Deployment Scenrios

There are two types of deployment scenarios recommended for Vembu BDR suite for VMware setup:

- On-Premise Deployment
- Hybrid Deployment
    - Vembu OffsiteDR
    - Vembu CloudDR

Vembu VMBackup User Guide

On-Premise Deployment

In this deployment setup, businesses can have their DR site setup in local environment;

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With VMBackup installed on client machines, backups of virtual machines, physical machines and application servers can be carried out via LAN connections and stored in local storage repositories.

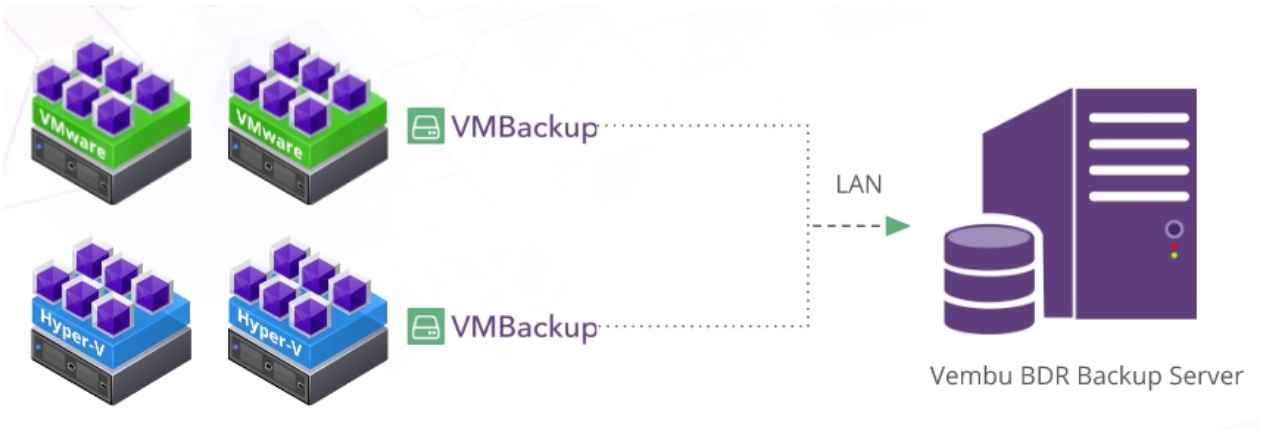
And if required, a copy of backup data can be stored in Vembu Cloud via WAN connection. Users can get access to Vembu cloud by signing up to Vembu CloudDR service.

Back to Deployment Scenarios

Vembu VMBackup User Guide

Simple Deployment

In simple deployment model, The Vembu BDR backup server will act as both backup proxy and server instances. It can be deployed in both physical and virtual machines.



Vembu BDR server will act as a centralized management tool where user can perform the below listed functions using web console:

- Configure, manage and restore backup and replication jobs for both VMware and Hyper-V environments.
- Backup schedule coordination and management can be done with the detailed reports and other administrative options available in BDR backup console.

Note: For easy and cost effective deployment, a user can opt for Vembu virtual appliances which have Linux backup server pre-configured with DR setup for both VMware and Hyper-V environments.

By Deploying virtual appliance in VMware environment, customer can avail LAN-free data transfer for VMware backup jobs.

The simple deployment scenario is not recommended for medium and large scale environments and it will best suit for backup & replicating small number of VMs with less simultaneous backup traffic and for VMBackup evaluation.

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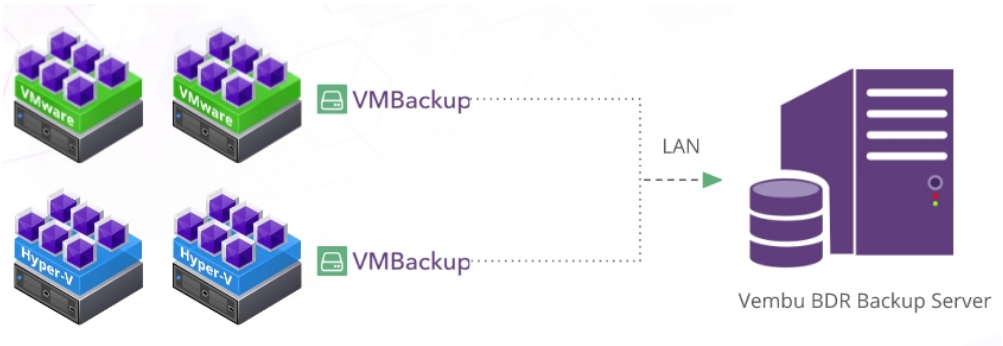
Back to Deployment Scenarios

Vembu VMBackup User Guide

Distributed Deployment

In distributed deployment scenario, the backup proxy will be deployed separately in physical/virtual machines to handle the load in large scale virtual environments. The backup server will act as a manager for storage repository and backed up VM data. The backup infrastructure can be expanded horizontally based on current and future backup need by installing new Vembu VMBackup backup proxies in data center. To regulate backup load you can specify the maximum concurrent backup and replication schedules. Also we can set up throttling rules to limit proxy bandwidth.



We can add multiple backup proxy in the backup infrastructure and transfer data simultaneously to the BDR backup server. The VM backup load can be dynamically distributed in backup infrastructure using Round robin cluster load balancing mechanism by deploying multiple BDR backup server in the data center. The High availability of VM jobs is ensured by auto allocating BDR server for Virtual Machines based on simultaneous proxy connection.

Back to Deployment Scenarios

Vembu VMBackup User Guide

Hybrid Deployment - Vembu OffsiteDR

This deployment model is a hybridized version of on-premise model where businesses will have their DR site setup in local environment and manage backup transactions over LAN from backup proxy installed machines (VMBackup installed on each machine). In addition, businesses having their own offline data center can make a backup copy with OffsiteDR server via LAN/WAN based on OffsiteDR location.

This model not only ensures instant access to data whenever required but also with DR requirements, backup data will be made instantly available. Also, businesses can sign up for Vembu cloudDR service and have OffsiteDR configured to make a cloud copy of its data.

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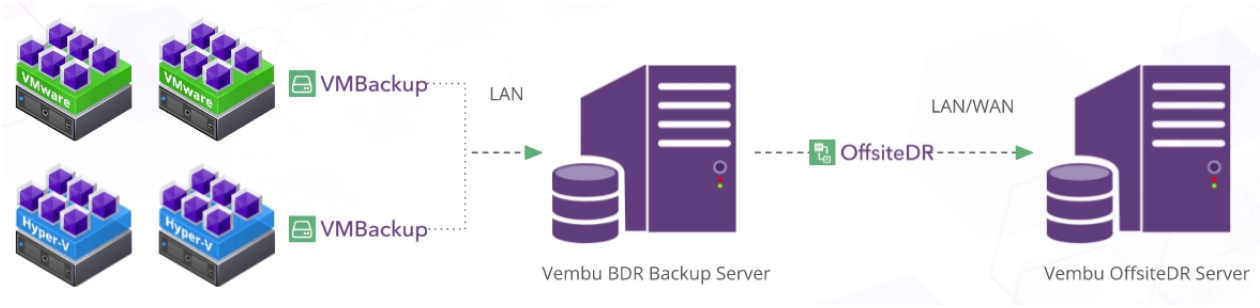


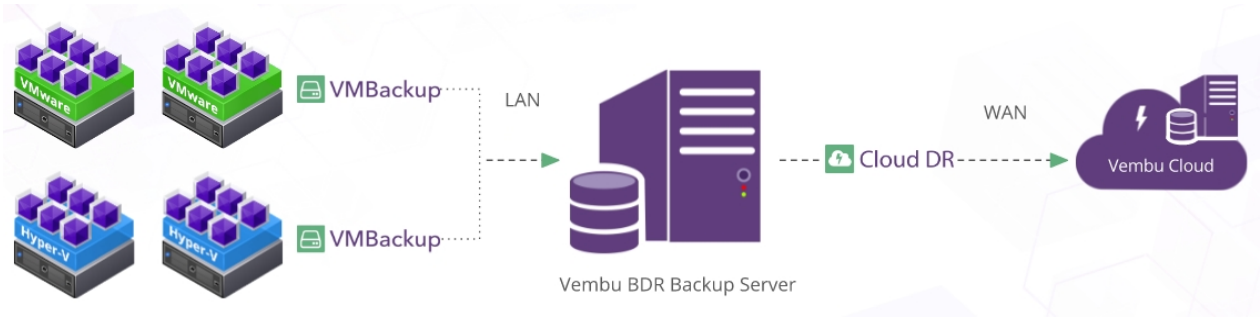
Back to Deployment Scenarios

Vembu VMBackup User Guide

Hybrid Deployment - Vembu CloudDR

This deployment model is a hybridized version of on-premise model where businesses will have their DR site setup in local environment and manage backup transactions over LAN from backup proxy machines (VMBackup client will be installed on each machine). In addition, a copy of backup data can be stored in Vembu cloud via WAN connection. Users can access Vembu cloud by signing up for Vembu CloudDR service.

This hybrid deployment model will let businesses have instant access to backup data whenever required while the cloud copy will come in handy in case of a emergency DR requirement.



Back to Deployment Scenarios

Vembu VMBackup User Guide

Installation

- BDR Backup server
- OffsiteDR server
- Backup Proxy
- Vembu Universal Explorer
- Uninstallation Guide for Vembu BDR/Vembu OffsiteDR

Vembu VMBackup User Guide

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BDR Backup Server

- Windows
- Ubuntu
- VMware Virtual Appliance
- Hyper-V Virtual Appliance

Vembu VMBackup User Guide

BDR Backup server - Windows

Vembu BDR Server is currently supported for below versions of windows machines (Please make sure that you are using any one of the below versions).

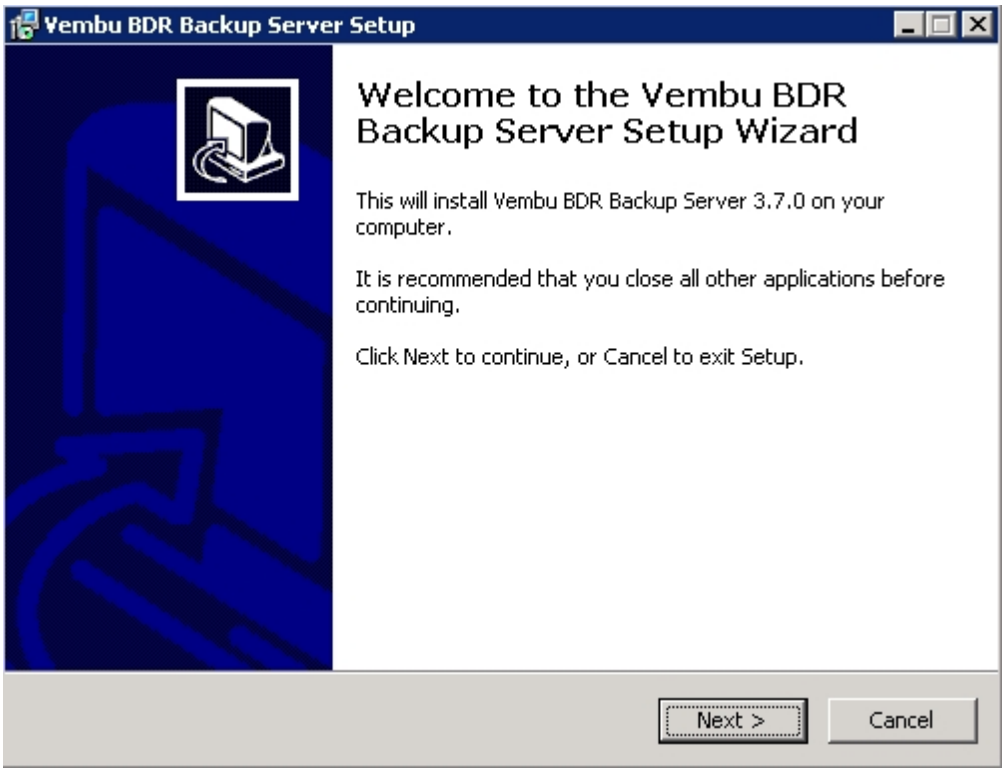
- Windows Server 2012 R2 (64 Bit)
- Windows Server 2008 R2 (64 Bit)
- Windows Server 2012
- Windows Server 2016

Download build:

- Download the Windows Installer for Vembu BDR server.

Steps to Installation:

- Run the downloaded installer with administrator privilege and installation process begins with the below wizard. Click Next to proceed with installing the setup.



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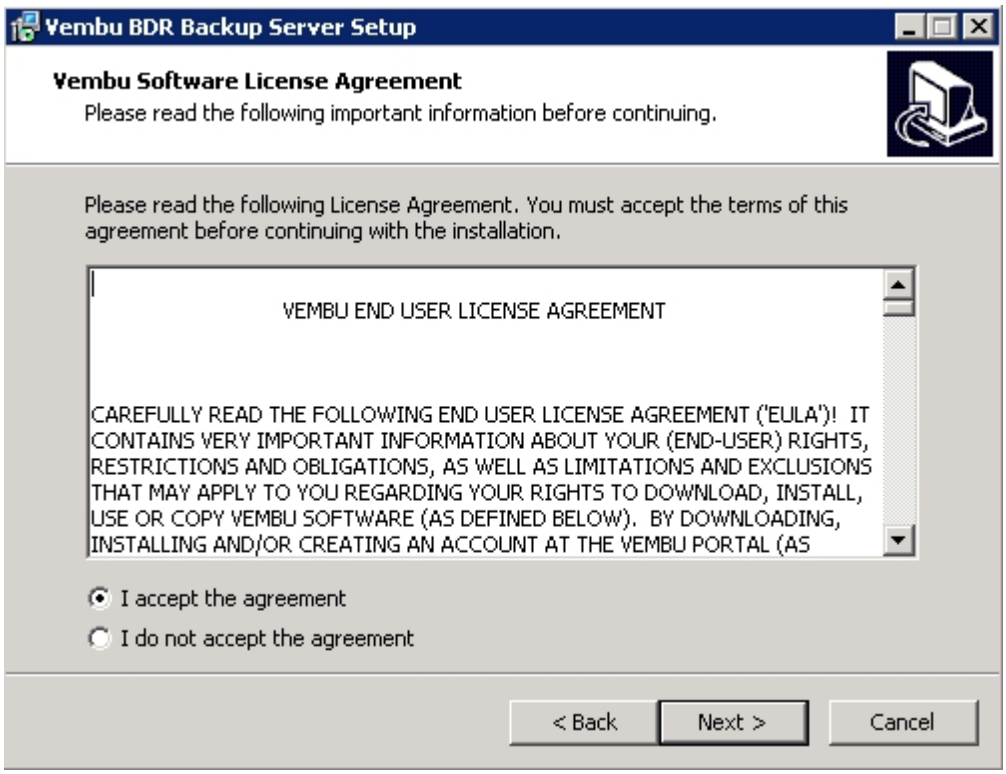
- 'Vembu BDR License agreement' is the next step in setup installation, read the agreement carefully and choose 'I accept the agreement' option.
  Note: Opting to 'I do not accept the agreement' will block you from proceeding with setup installation.
- Click Next



- Next step in wizard will have default settings chosen, you can either:
  - Click Install to proceed installation with default chosen settings.

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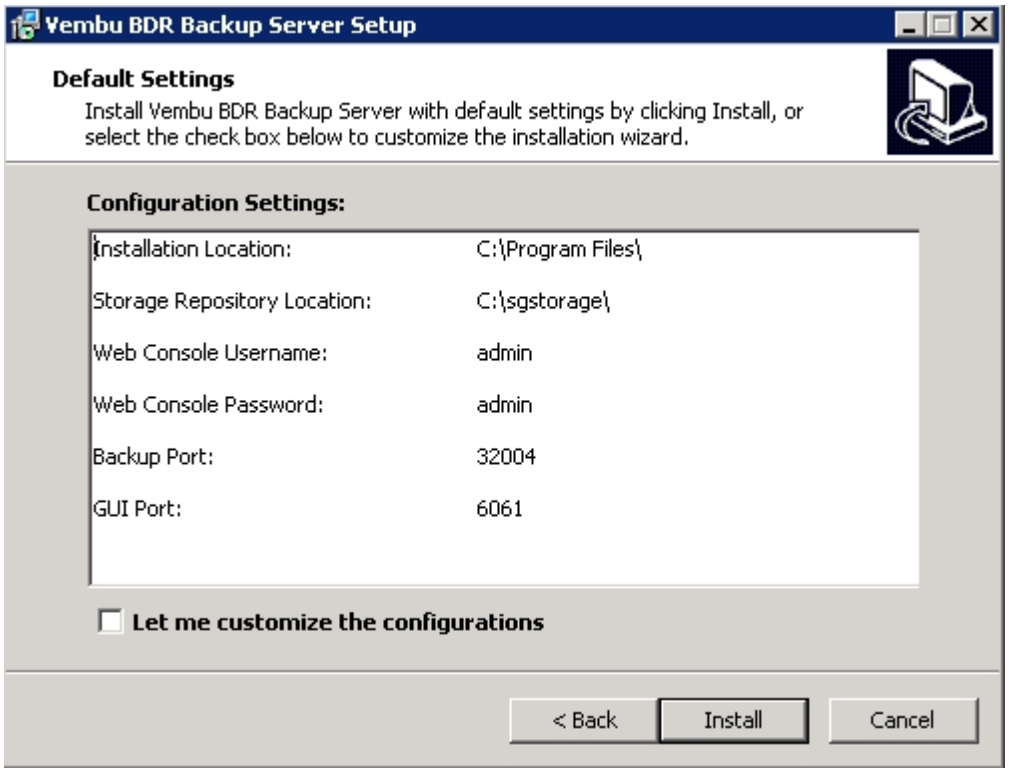
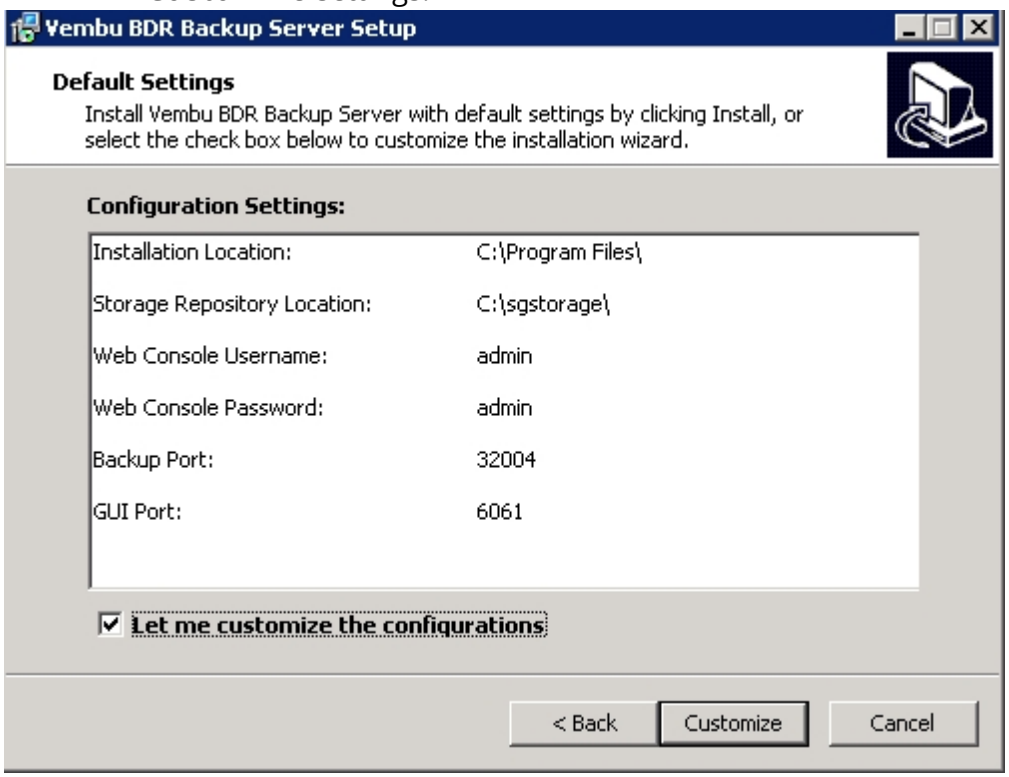


- Or can check 'Let me customize the configurations' option and opt to Customize settings.



- Choosing Customize option will let you customize PostGreSQL Server Configurations in next step: 'Installation location' and 'Database Storage Location'.
- Once done choosing location, click Next.

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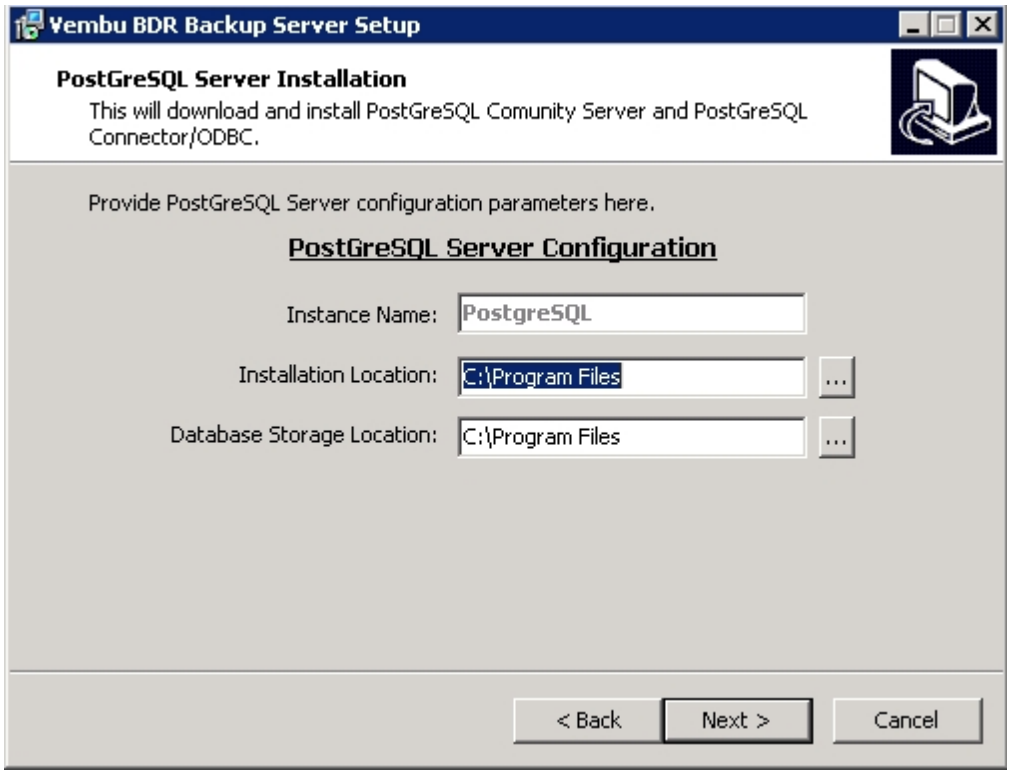
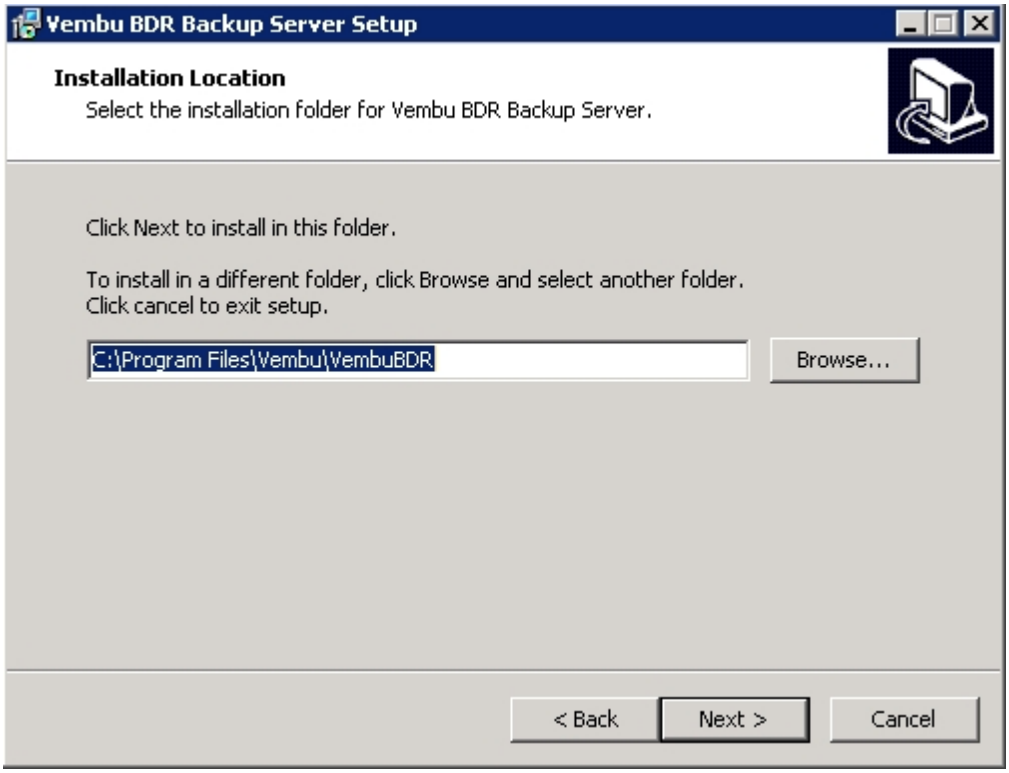


- Next step in wizard will allow you to customize installation location of Vembu BDR.
- Once done choosing location, click Next.



- Next step in wizard is 'Storage Repository Configuration', you can either choose:
    - A local drive as your storage repository

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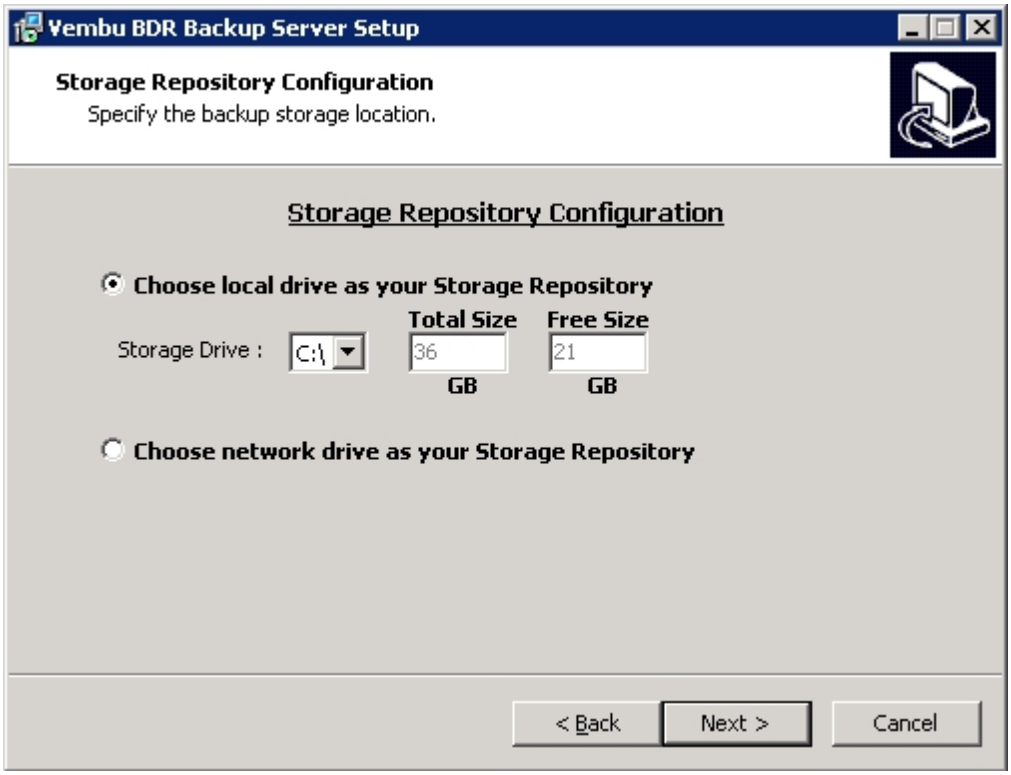
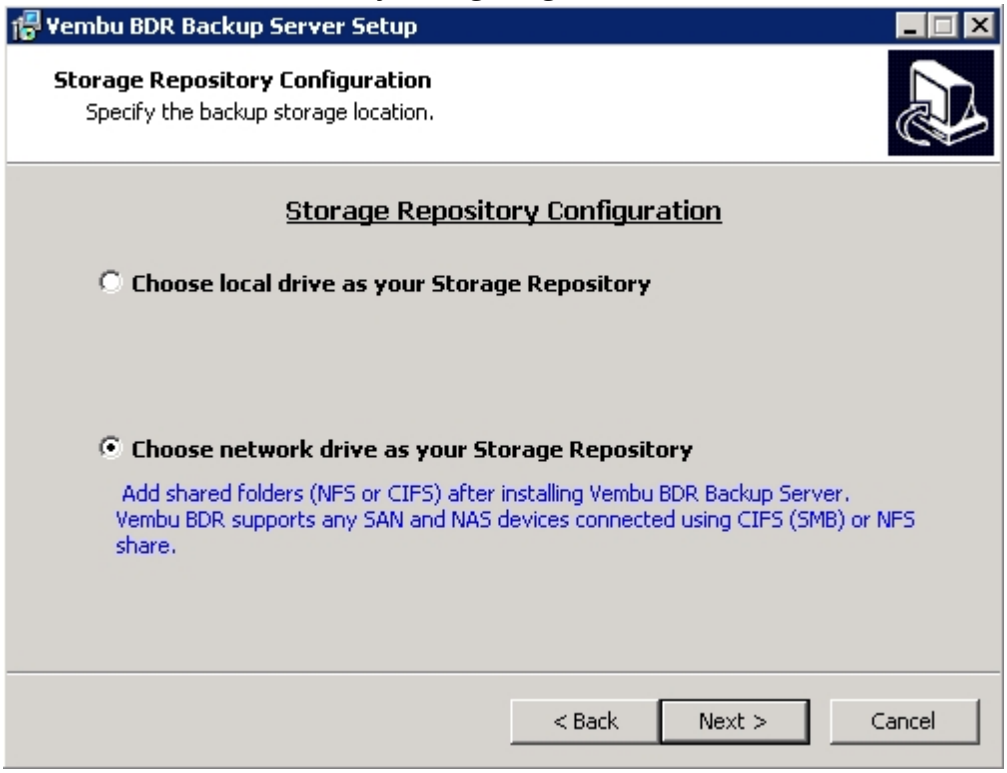


- Or choose a network drive as your storage repository
- Once done with Vembu BDR server installation, you can add shared folders as network drives by configuring them via Vembu BDR server web console.



- Click Next.

- Next step in wizard will allow you to configure:
  - User credentials for WebConsole (Default user name: admin and password:

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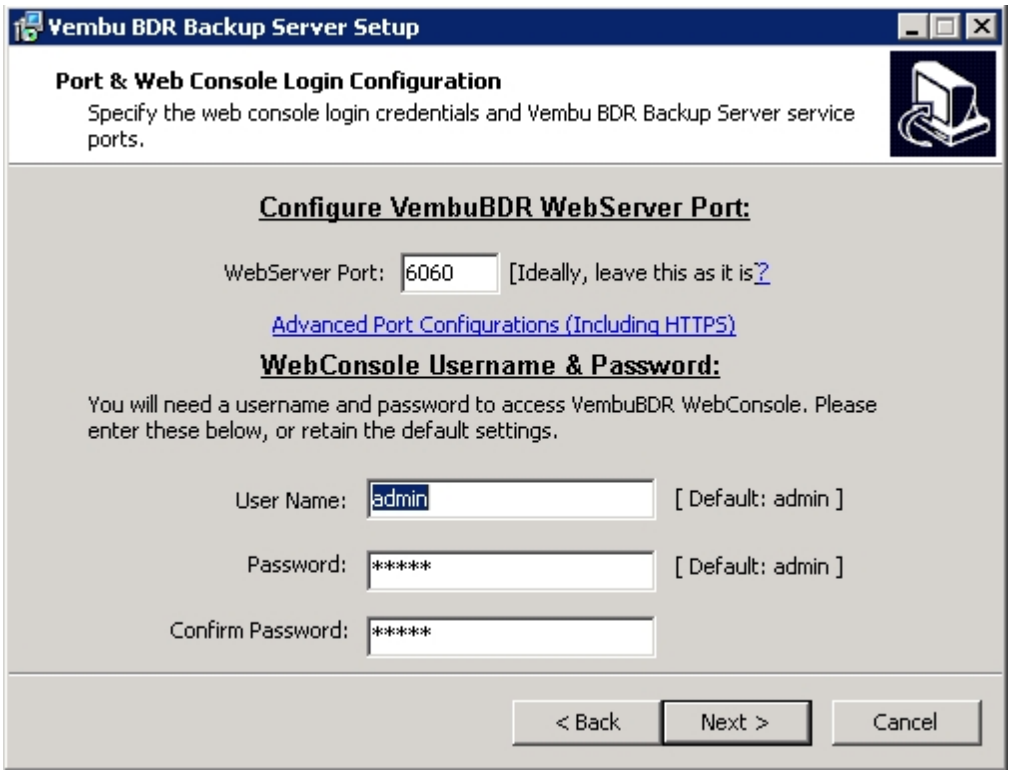
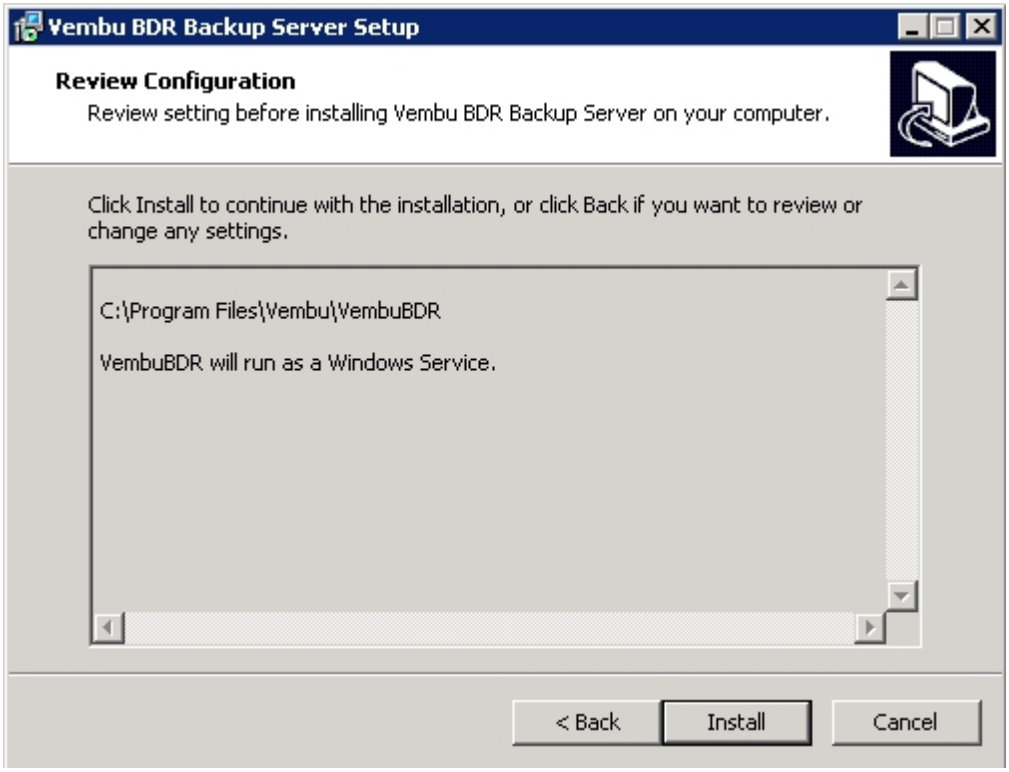
admin)

- WebServer port (Default port chosen will be 6060 and it is recommended not to change it unless you are advanced user)

- Once done, Click Next.



- Next step of Wizard will allow you to review the chosen configuration, review the settings and proceed to click Install.



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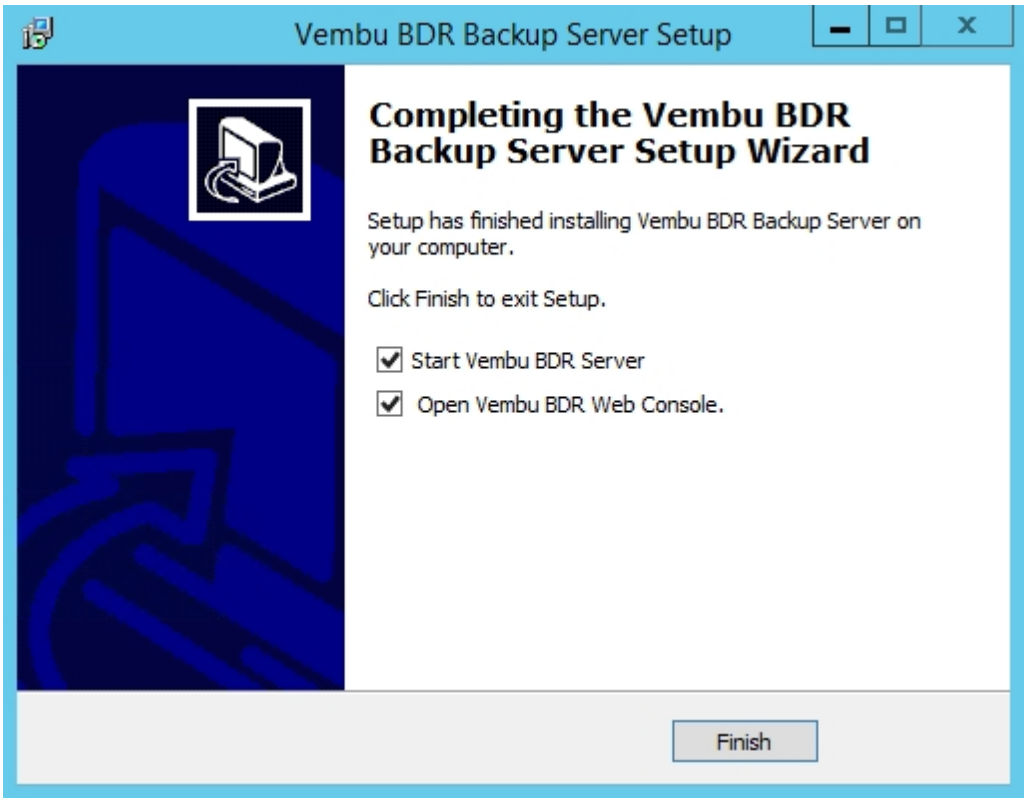
- Final step of wizard after installation will ask you whether to:
  - Start Vembu BDR server and
  - Open Vembu BDR Web Console.
- You can either leave the options selected and click Finish. Or chose to UnCheck them and start later.



Note: VembuBDR is installed as a service and can be found on Services.msc, if user chose to start later.

Vembu VMBackup User Guide

BDR Backup server - Linux

Vembu BDR server is currently supported for below versions of Linux OSes (Please make sure that you are using any one of the below Linux architecture).

- Ubuntu 16.04 LTS (64 Bit)
- Ubuntu 14.04 LTS (64 Bit)
- Ubuntu 12.04 LTS (64 Bit)

To install Vembu BDR Backup Server on Linux environment follow the steps given below:

Copy the download link from the following link: Click here and download the installer file using wget command and make sure you are a root user (use “sudo su” command to be as an root user). Or you can download the installer to any Windows machine and move the installer to Linux machine by using FTP/WinSCP.

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- Once you execute wget command you will have “VembuBDRSetup.sh” in the download location.

- Run installer by using “sh” command. For ex: #sh VembuBDRSetup.sh

```
root@vembu-virtual-machine:/home/vembu# sh VembuBDRSetup.sh
```

- After initiating the installer, it will check for dependent packages and request for a confirmation from your side. You can enter “y” to proceed further.

Please find the packages to be downloaded by Vembu BDR application here:

  - PostGreSQL RDMS (9.6)
  - PostGreSQL Connector (9.5.02)
  - ODBC Driver (2.3.4)
  - Vembu BDR Server (3.x.x)

```
                ############################################################
                     WELCOME TO THE VEMBUBDR  SERVER INSTALLATION
                ############################################################

This installer will download and install,

 1. PostGreSQL RDBMS (9.6)
 2. PostGreSQL Connector (9.5.02)
 3. ODBC driver (2.3.4)
 4. VembuBDR Server (3.7.0)

################################################################################
##

Do you want to proceed [y/n]:
```

- Here you need to specify the location where you want to store PostGreSQL files. Vembu BDR will basically require 10% of the backup data storage for the internal meta data store. Hence please assess and configure a storage medium appropriate to the storage requirements. Besides please ensure your drives have higher I/O performance. Kindly specify the path and click Enter. We recommend you to use dedicated drive for this location instead of root volume. (Important STEP)l2

```
Vembu BDR will basically require 10% of the backup data storage for the internal meta-data store. Hence please ass
ess and configure a storage medium appropriate to the storage requirements. Besides please ensure your drives have
 higher I/O performance.

********************************************************************************
Default storage location for PostgreSQL : '/var/lib/postgresql/9.6/main'
********************************************************************************
Do you want to change the default storage location for the PostgreSQL [y/n] : y


Please specify the path :
/home/vembubdrserver
```

- Then installer will proceed to install Unix ODBC and PostGreSQL driver.
- Click "yes" to proceed installing dependecy packages of PostGreSQL.

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```
************************************************************************************************************************
Installing Unix ODBC and Postgresql driver please wait##############################

************************************************************
 Test Connectivity between "ODBC-driver" and \PostGreSQL-Server"
************************************************************
************************************************************************************************************************
############################Installing_unixodbc  finished##############################
******************************************************
####################Installing postgresql database please wait##############################
************************************************************************************************************************
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  postgresql-client-9.6 postgresql-client-common postgresql-common
Suggested packages:
  locales-all postgresql-doc-9.6 libdbd-pg-perl
The following NEW packages will be installed:
  postgresql-9.6 postgresql-client-9.6 postgresql-client-common
  postgresql-common postgresql-contrib-9.6
0 upgraded, 5 newly installed, 0 to remove and 636 not upgraded.
Need to get 0 B/6,125 kB of archives.
After this operation, 27.8 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

- Once done installing PostGreSQL, databases will be created and PostGreSQL will be restarted automatically.

```
 * Restarting PostgreSQL 9.6 database server                                    [ OK ]

ALTER ROLE
CREATE DATABASE


 * Restarting PostgreSQL 9.6 database server                                    [ OK ]
```

- In the Next step installer will install PostGreSql connector ODBC and will be successfully connected to PostGreSQL server.

```
 SUCCESS : ODBC driver is successfully connected to PostgreSQL server

************************************************************
ODBC Driver Configuration Details :
DatasourceName     : PostGreDBConnection
DatabaseName       : SGDatabase
HostName           : localhost
UserID             : postgres
Password           : admin
Debian version 64 bit storegrid is called
```

- User will then be asked to proceed with Vembu BDR backup server installation, Enter “y”.

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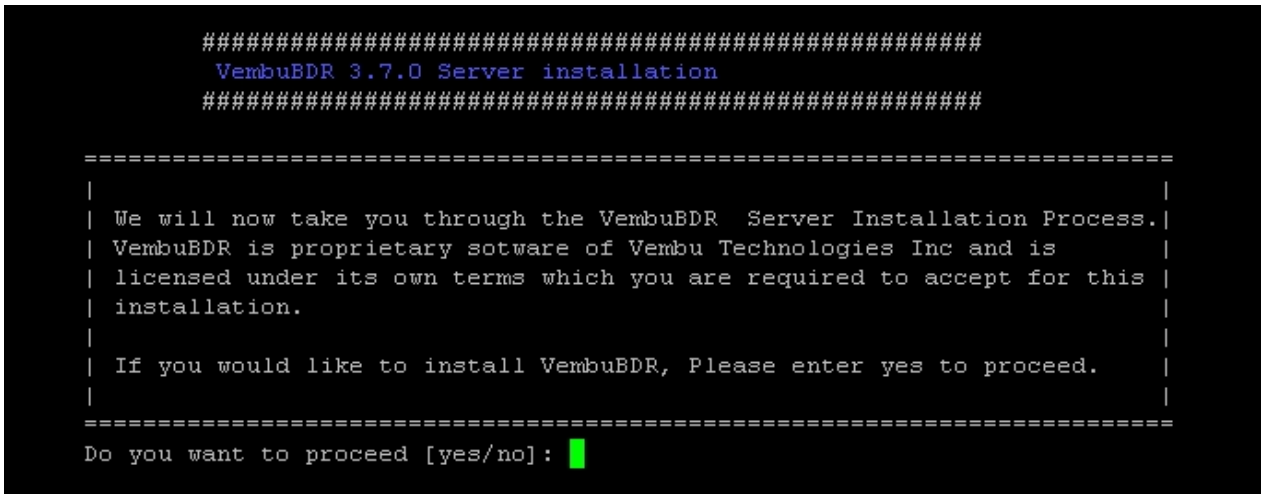
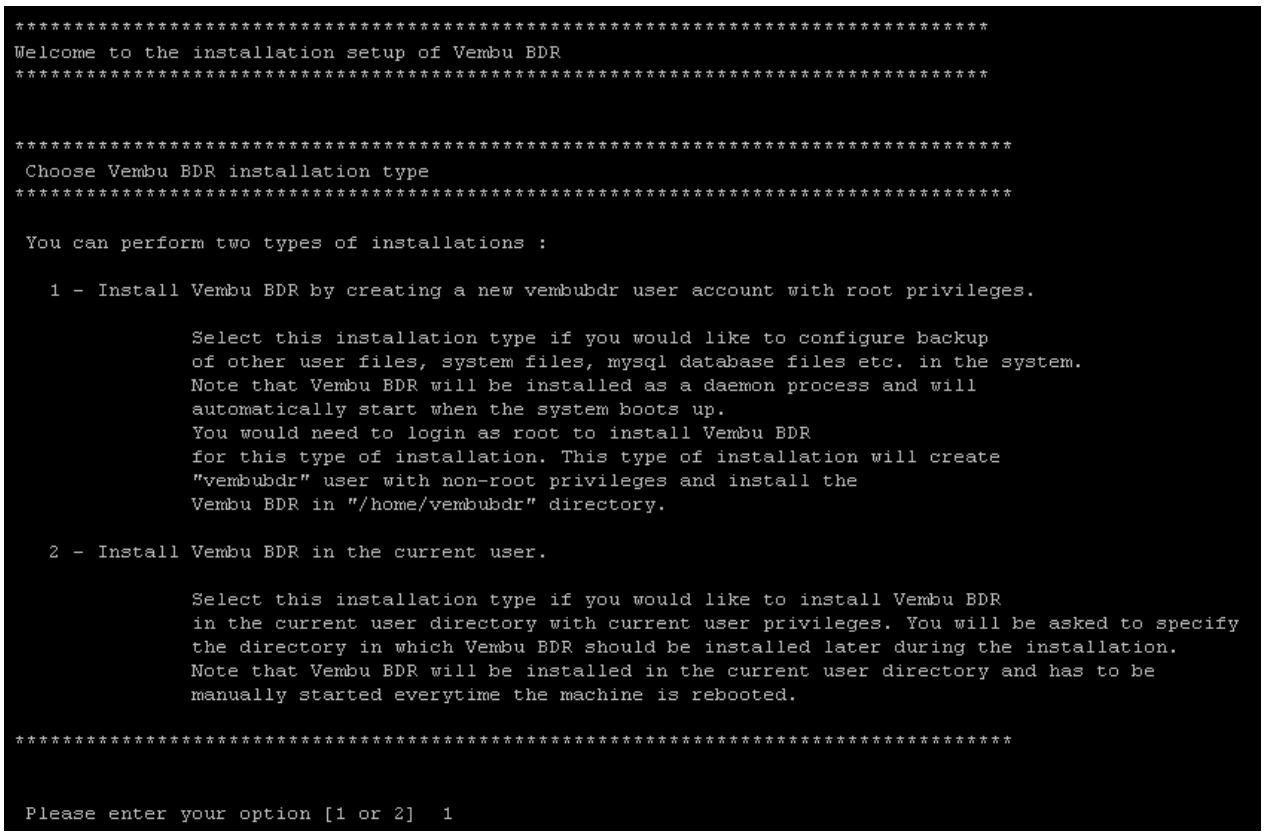


- Enter “yes” to start downloading Vembu BDR backup server application.

- Once download is completed. The Vembu BDR Backup server build installation starts automatically and asks to choose type of installation. “Option 1” is to Install Vembu BDR by creating a new Vembu BDR user account with root privileges or “Option 2” to install Vembu BDR in the current user and proceed with the installation. By default we recommend to choose Option1.



- If you have selected “Option 1” installer will create new Vembu BDR user. Enter Password so that Vembu BDR user will be created as shown below.

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```
 Please enter your option [1 or 2]  1
********************************************************************************
Creating vembubdr user ...

 Enter Password for the vembubdr user
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully

 vembubdr User Created Successfully
********************************************************************************
```

- Once user is created, the installer shows the License, kindly go through the License Terms carefully. If you agree enter “y” to proceed. Then it will ask to create directory for the installation path. Enter “y” to proceed.

```
 Do you agree to the above license terms? [y / n]     y



 /home/vembubdr directory does not exists. Create it now?
                        Please type yes(y) or no(n)  [y / n]
```

- Installer asks your permission to create repository. Enter “y” to create repository now or Enter “n” to create it later, after installing the backup server. If you want to create now press “y” and click Enter.

```
  ###############################################################################
  |                        Welcome to Repository Creation!!                     |
  |          Repository will be the storage for your agent's backup data.       |
  |  Repository is created by grouping multiple partitions so as to scale       |
  |             your volumes.  Option chosen here will be set as                |
  |                    the primary volume of Default Repository.                |
  |                                                                             |
  |       You can configure the repository settings now or later.               |
  |       If you choose the option 'n', then You need to configure the          |
  |               repository settings once you logged into your                 |
  |               Backup Server / Replication Server webconsole.                |
  ###############################################################################


  Would you like to create Repository Now ? [y/n]:
```

- Once you press enter, installer will show the list of volumes present in your machine. Kindly choose one volume by entering corresponding number. Click number and press Enter to continue (Example : Enter 1)

```
 Volumes with free space of 5GB or more

        Mounted On              Total Space     Available Space
1       /                       49G             41G
2       /dev                    7.9G            7.9G
3       /run/shm                        7.9G            7.9G
df: `/run/user/1000/gvfs': Permission denied

Please choose any one of volume
```


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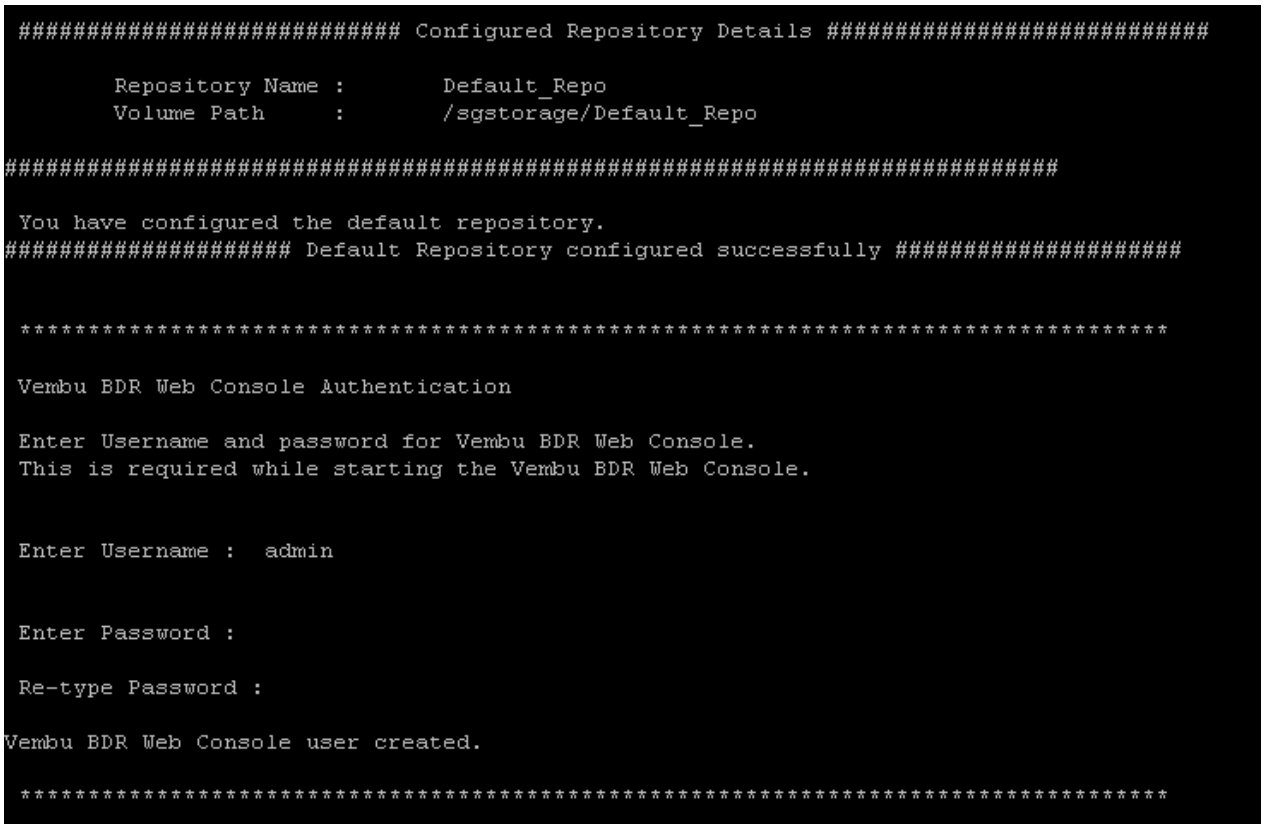
- Once you click Enter, the repository created successfully and the installer asks for Vembu BDR Web Console Authentication as shown below. Kindly give username and password through which you can access your Server Web Console. By default we recommend username and password as “admin”. Now press Enter to continue. Once you click Enter, Vembu BDR Web console user will be created successfully.



- Now installer asks you to change ports from default value. If you want to change click “y” else “n”. By default we recommend to click “n” and continue. Kindly go through the usage of individual ports mentioned below.
    - Backup Server Port is the port through which the installed Vembu VMBackup client will backup the data to the backup server. The default value is 32004.
    - UI Communication Port is the port through which Vembu BDR Apache/PHP modules communicate with Vembu BDR to serve UI requests from the Vembu BDR Web Console. The default value is 32005.
    - HTTPS Port is the port used to access the Vembu BDR Web console in a secured manner through HTTPS protocol. Default value is 6061.
    - Enable HTTPS: HTTPS Port is the secure web console port through which you can access the Vembu BDR web console in secure manner. You should enable “Enable HTTPS” option to edit this value. If you have enabled HTTPS option, then you can access the Vembu BDR web console through https://localhost:6061

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```
*****************************************************************
Backup Server Port is used by Vembu BDR to connect the server. UI Communication Port
is used for communication between Vembu BDR Web console and Vembu BDR Application.
You can configure these ports manually.
By default the value of
  1. Backup Server Port is 32004
  2. UI Communication Port is 32005.
*****************************************************************

Do you want to change these ports from default value [y/n]
```

- Once the installation is complete you will be asked to start the Vembu server as Daemon process. If you have not started Vembu BDR as daemon process you can start Vembu BDR using “sh startVembuBDR.sh” command and “sh stopVembuBDR” to stop Vembu BDR from the Vembu BDR installation location. Or else if you want to start the Vembu BDR immediately, enter “y” to proceed as shown below.

```
Vembu BDR has been successfully installed!
*******************************************************************************

Installation Details:
*********************

Installation Directory                  : /home/vembubdr
Apache Port                             : 6060

Default Repository Configuration
Repository Name                         : Default_Repo
Storage Path                            : /sgstorage/Default_Repo

Script to start Vembu BDR       : /home/vembubdr/Vembu/VembuBDR/startVembuBDR.sh
Script to stop Vembu BDR        : /home/vembubdr/Vembu/VembuBDR/stopVembuBDR.sh
Vembu BDR Web Console URL    : https://vembu-virtual-machine:6061


System start/stop links for /etc/init.d/vembubdr already exist.
Vembu BDR installed as daemon process in /etc/init.d/vembubdr
Do you want to start Vembu BDR as daemon process now ? Please type Yes(y) or No(n): [ y / n ]
```

Vembu VMBackup User Guide

VMware Virtual Appliance

A VMware virtual appliance is a template that creates virtual machines instantly on VMware virtual environment without manual VM creation or separate installation of operating system or Vembu BDR server.

Download VMware virtual appliance from following link: Click here to Download VMware virtual appliance.

The downloaded file will be in zip format. Unzipping the file will have following:

- Vembu VMBackup Client build
- Virtual appliance template file (OVF)
- User Guide on How to deploy VMware Virtual Appliance
- Read Me file

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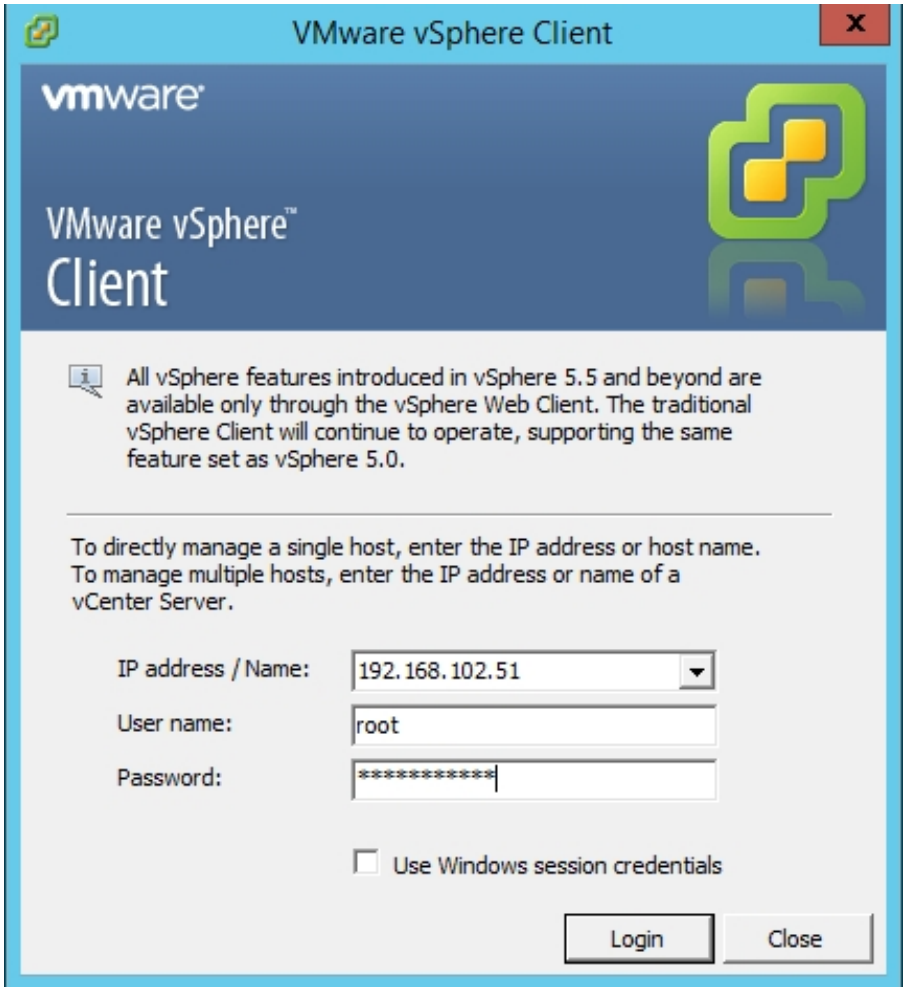
Supported Versions: VMware VSphere 5.5 and 6.0

Steps to Deploy Virtual appliance on VMware ESXi server:

- Logon to an ESXi Server through VMware vSphere client.



- Navigate to File → Deploy OVF Template.

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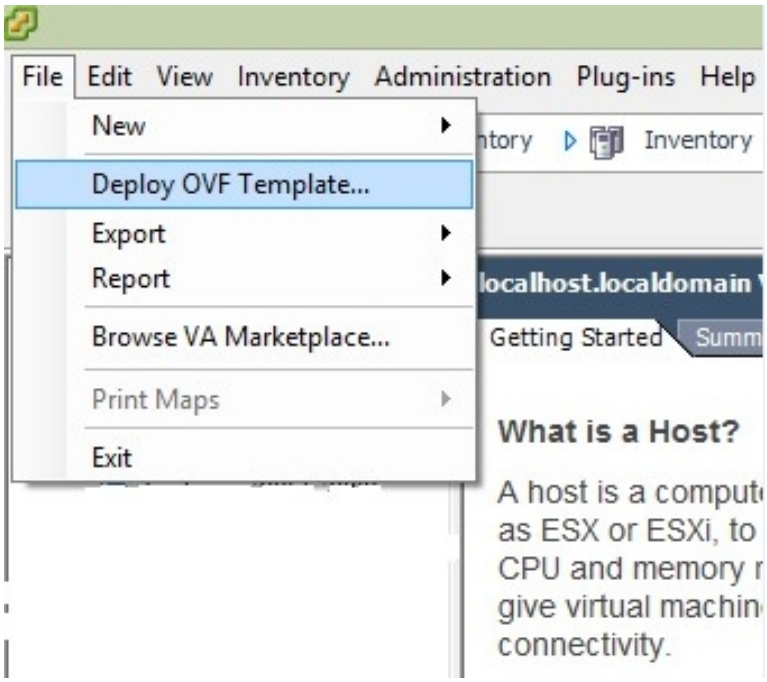
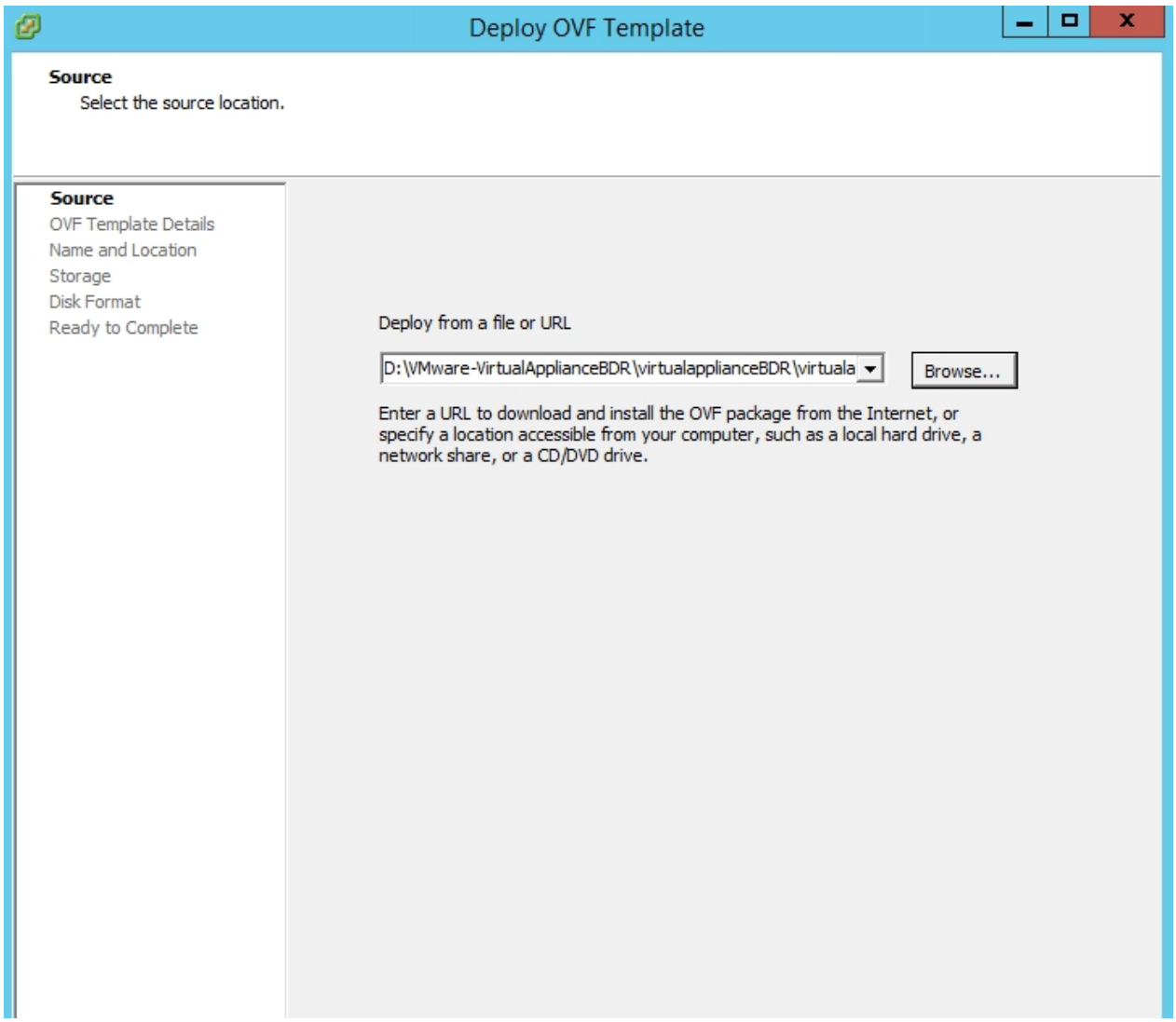


- Browse and choose the .ovf file from the unzipped location.



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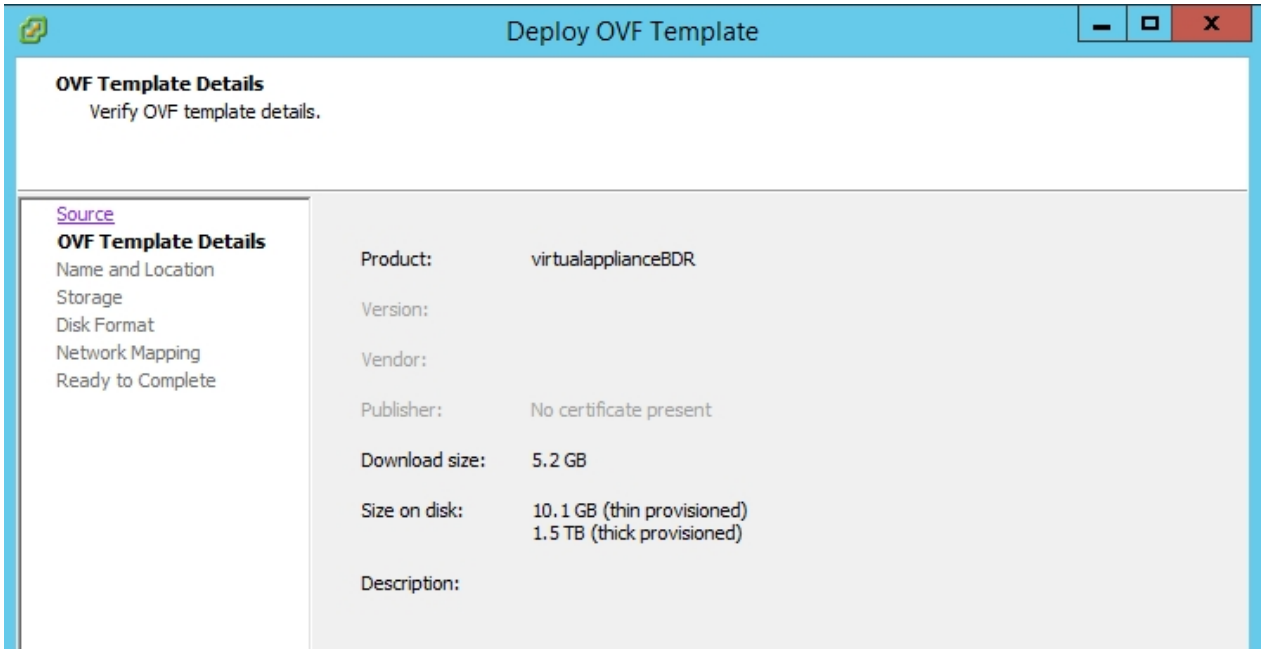
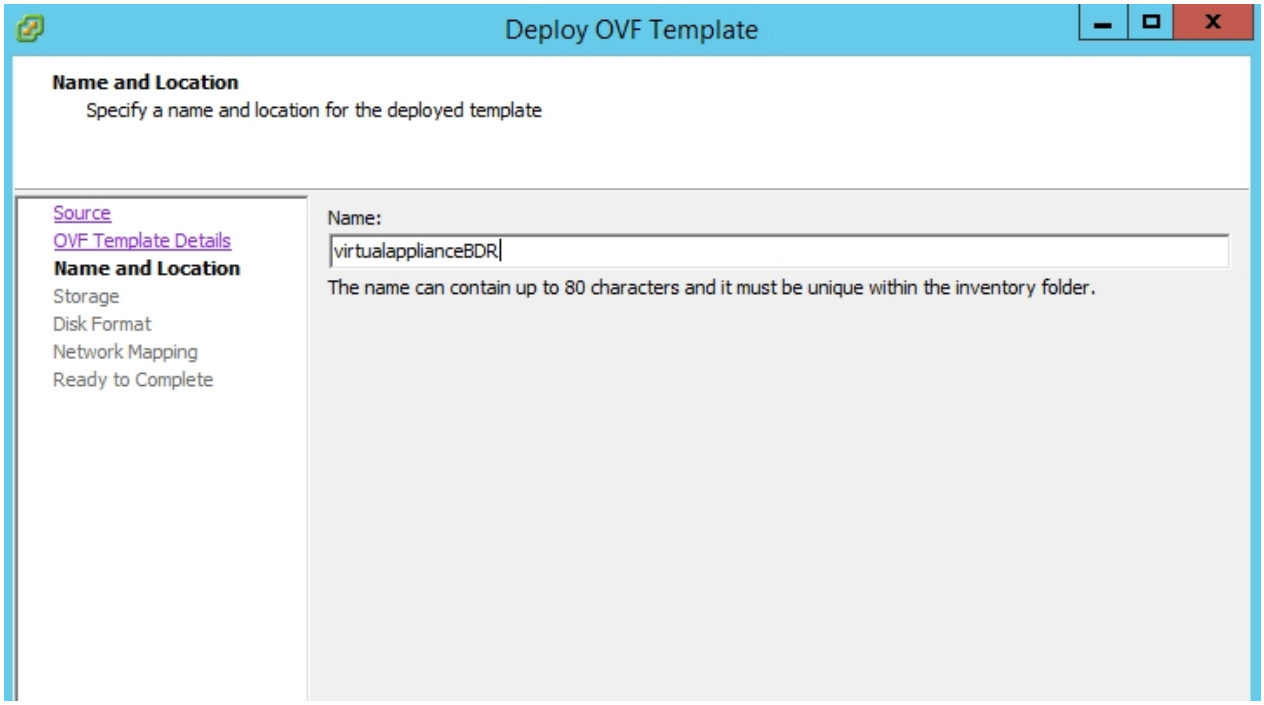
- The ovf configuration details can be viewed in next page like below.



- Name the Deploying Virtual Machine.



- Configure storage location for the deploying machine.

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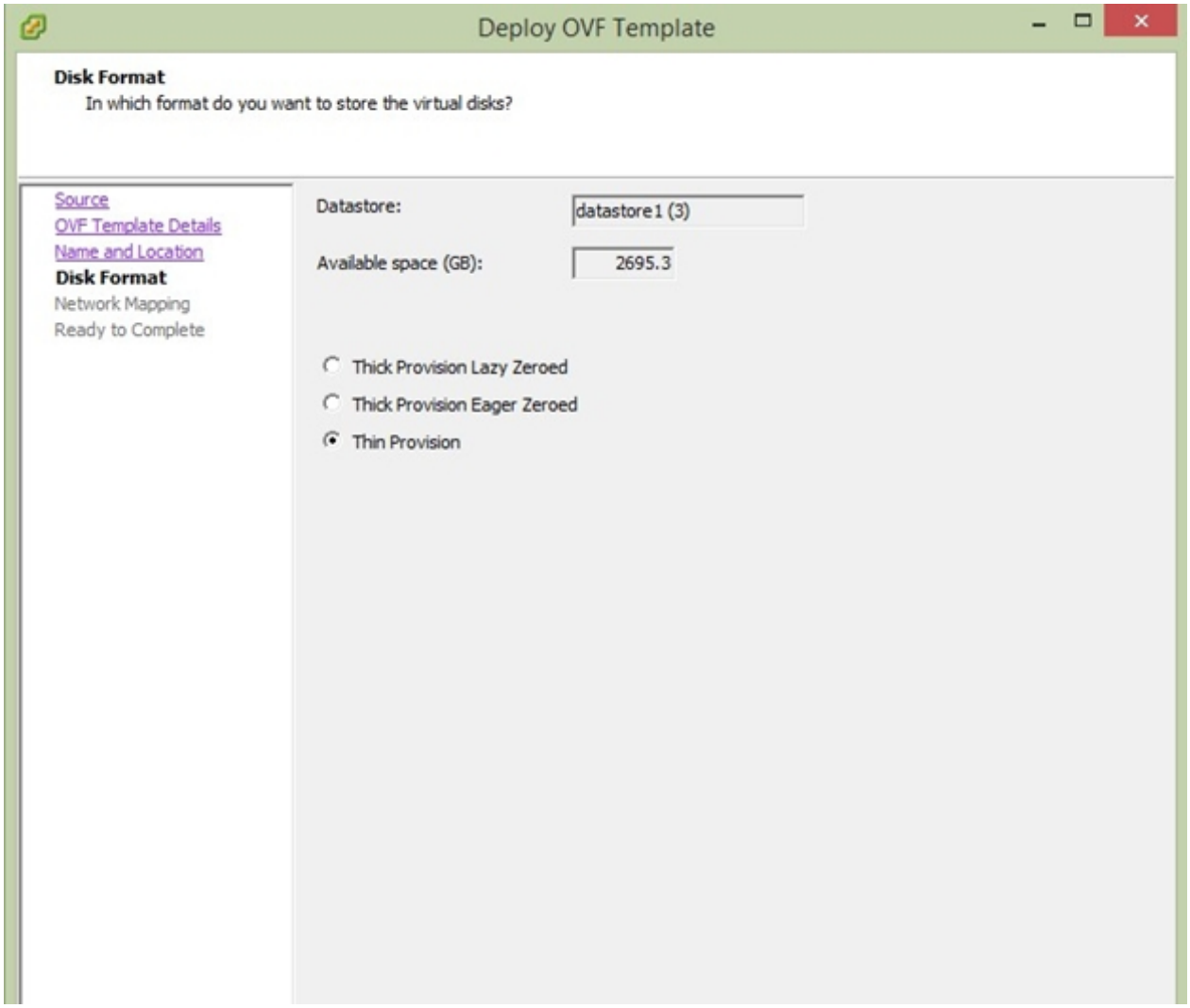

- Select the network for the virtual machine and click on next.

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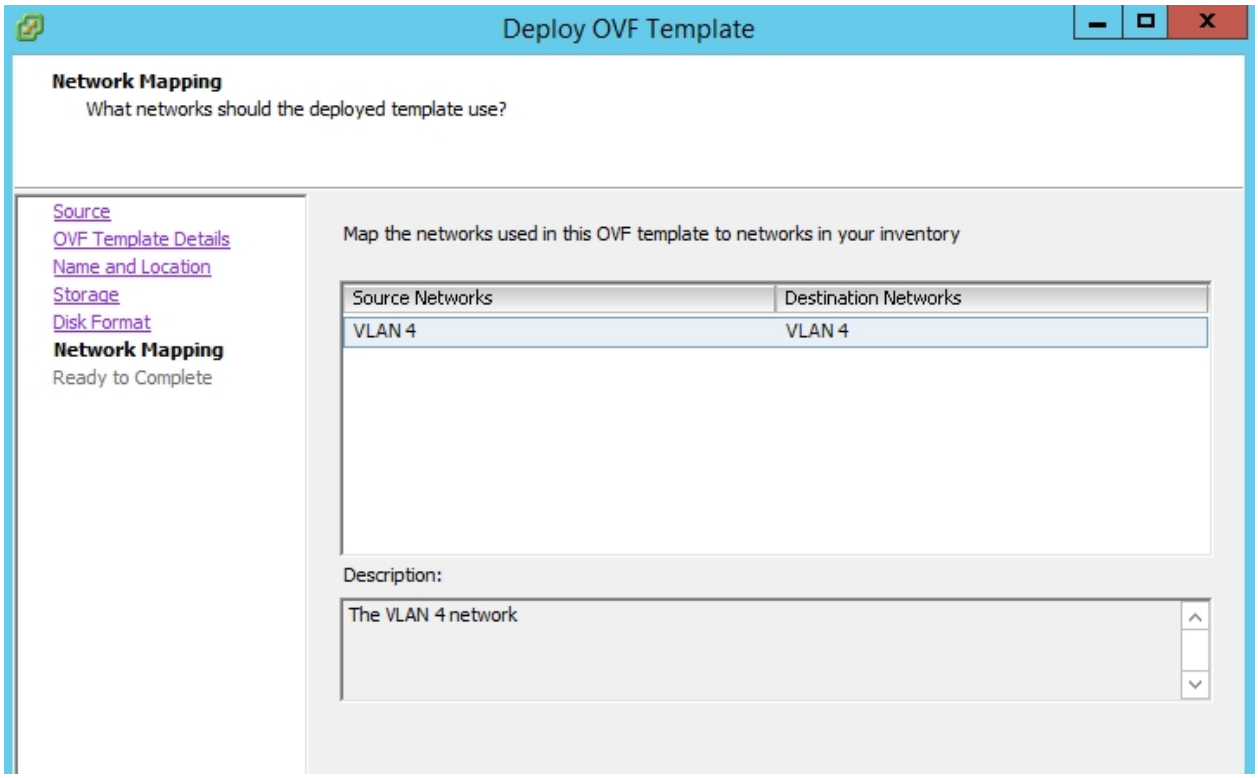
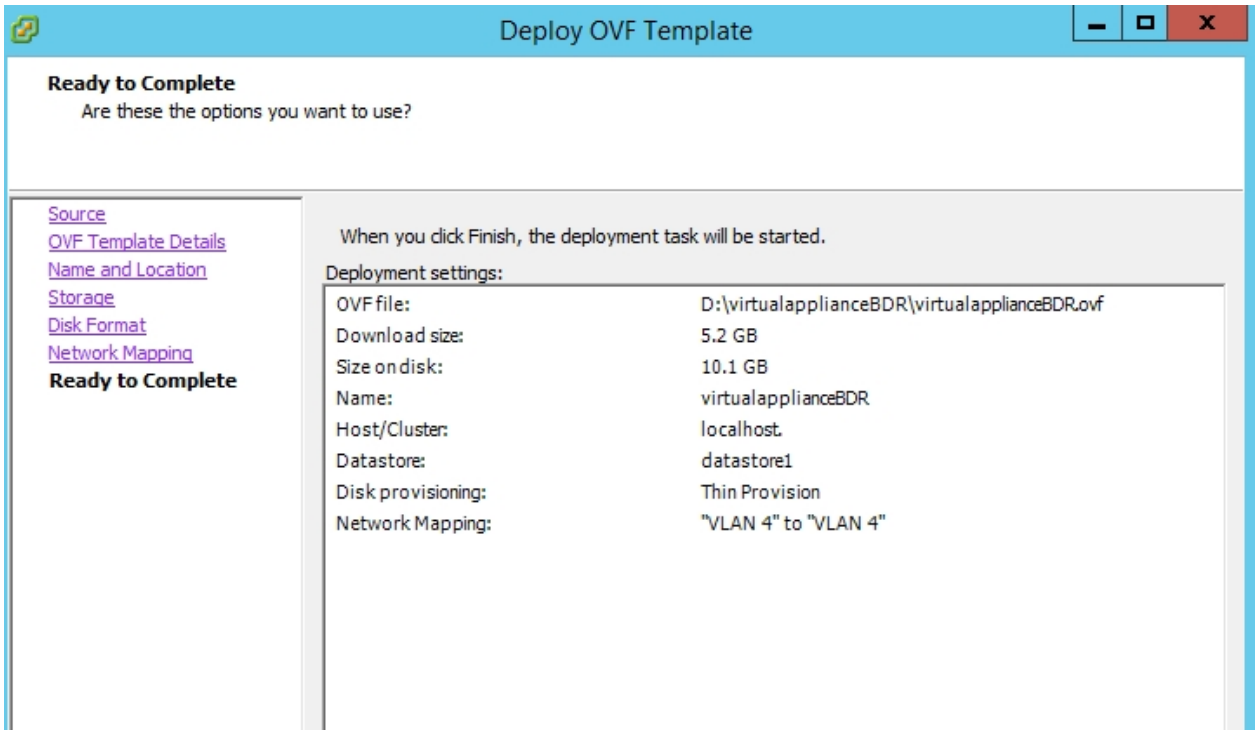


- Verify all the configuration chosen for Virtual Appliance and click on finish.



- Once virtual appliance is deployed, you will be notified with a success message.

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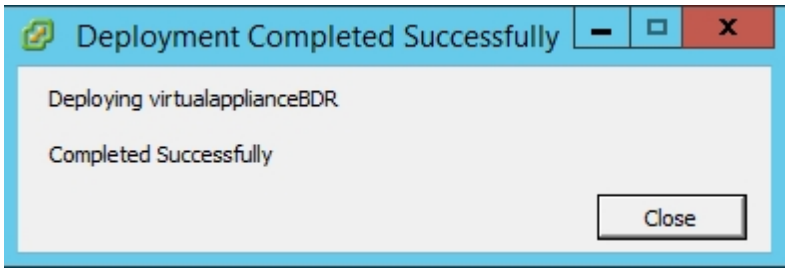
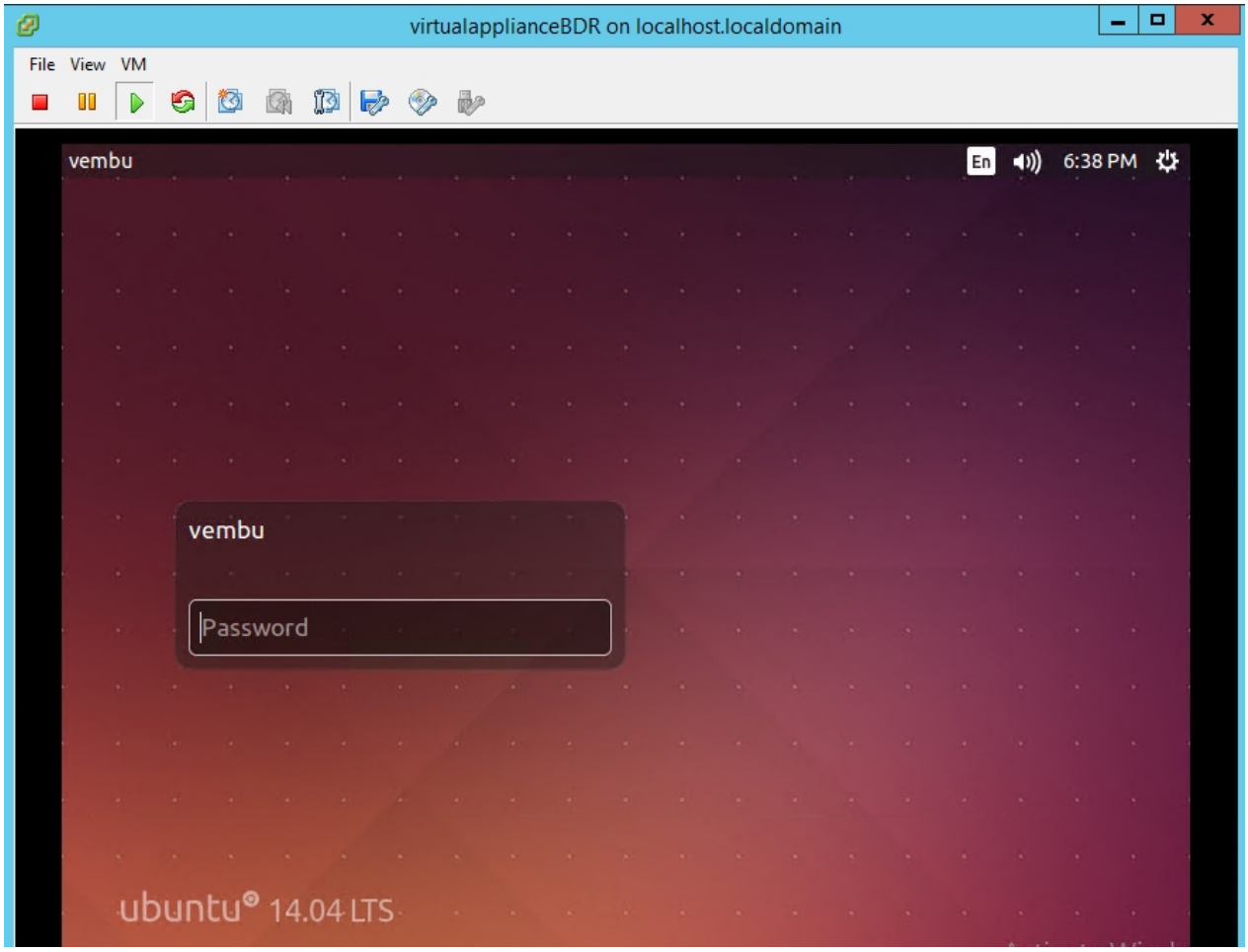


- By default, once machine is booted it logs in automatically. If locked use below credentials:

  Default User details:
  Username: vembu
  Password: password
  Root password: password (sudo -s)



- Open terminal and verify whether the PostGreSQL and Vembu BDR services are started.

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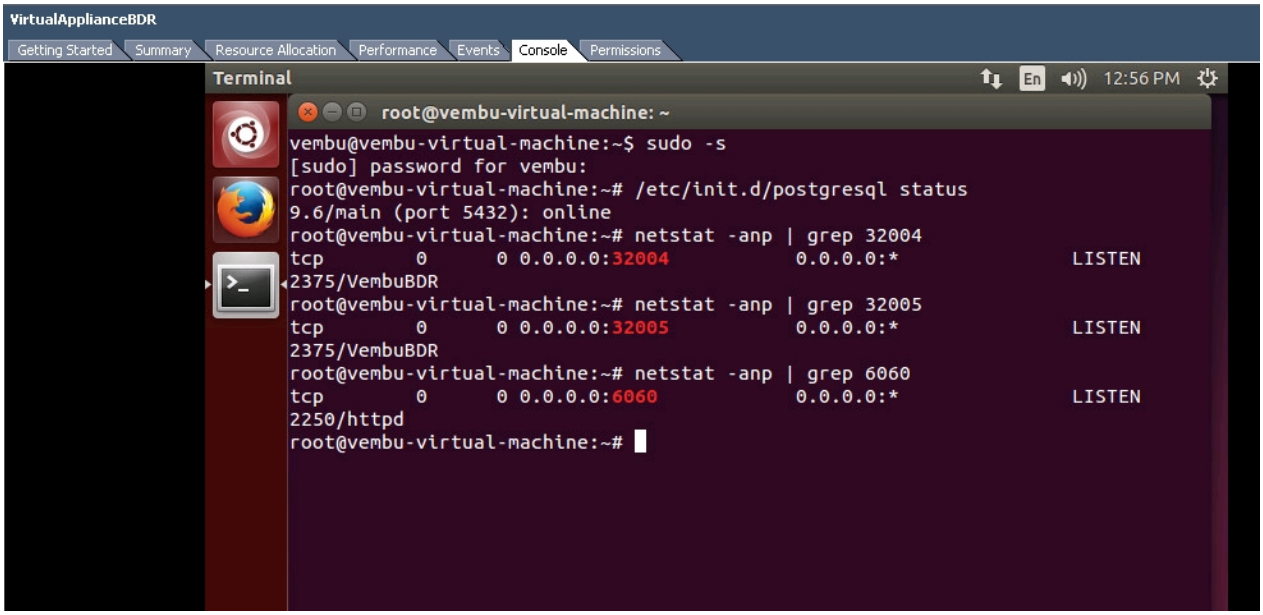
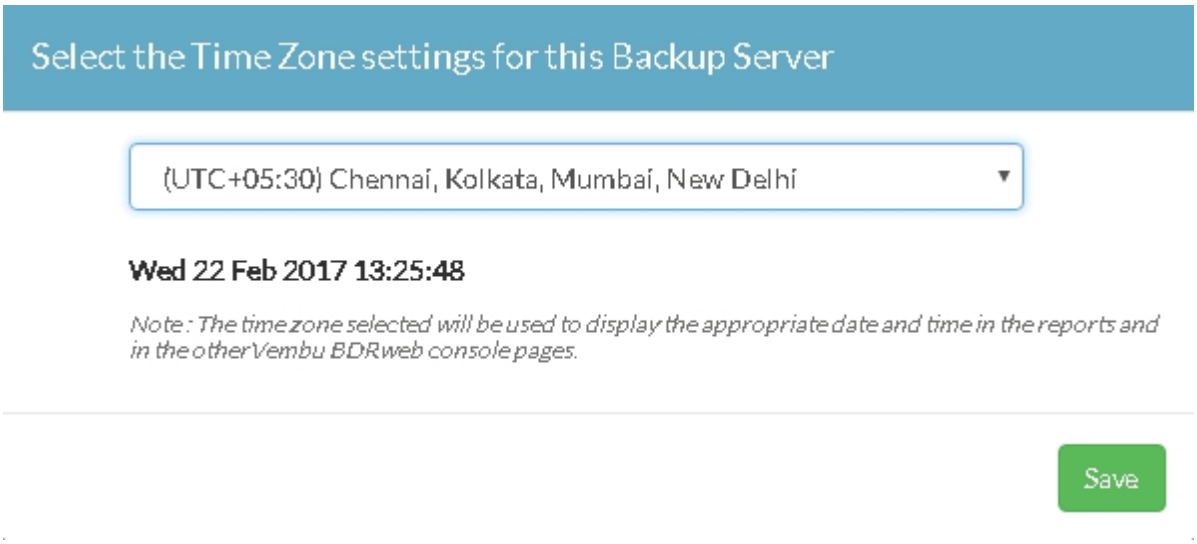


- Then open any web browser (FireFox or Chrome) and enter https://localhost:6061 to open Vembu BDR web console and login with username password as admin / admin.

- Select your required time zone setting for the machine and click yes to proceed.



- Give an unique Vembu BDR ID, by default it takes the hostname and machine name as

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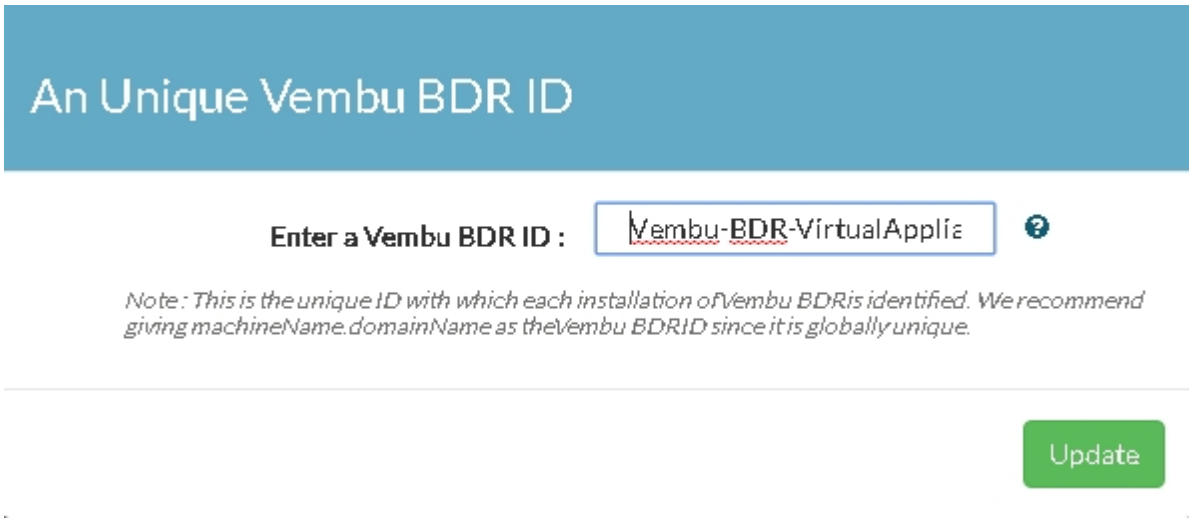
ID.
Note: The following characters are permitted as part of the Vembu BDR Server ID: [A-Z][a-z][0-9][- _ .] Your ID must not start or end with special characters and it must be between 1-50 characters in length.



- Once Vembu BDR server ID configuration is updated successfully, you will be prompted to configure the repository details to store the backup data, Choose the volume and Click Update. Deployment of Vembu BDR server on your VMware ESXi server is now successfully completed.

Vembu VMBackup User Guide

Hyper-V Virtual Appliance

A Hyper-V virtual appliance is a template that creates virtual machines instantly on Hyper-V virtual environment without manual VM creation or separate installation of operating system or Vembu BDR server.

Download Hyper-V virtual appliance from following link: Click here to Download Hyper-V virtual appliance.

The downloaded file will be in zip format. Unzipping the file will have following:

- Vembu VMBackup Client build
- Virtual appliance template file (VHD)
- User Guide on How to deploy Hyper-V Virtual Appliance
- ReadMe file

Steps to Deploy Virtual appliance on Hypervisor:

- Open the Hyper-V Manager console.

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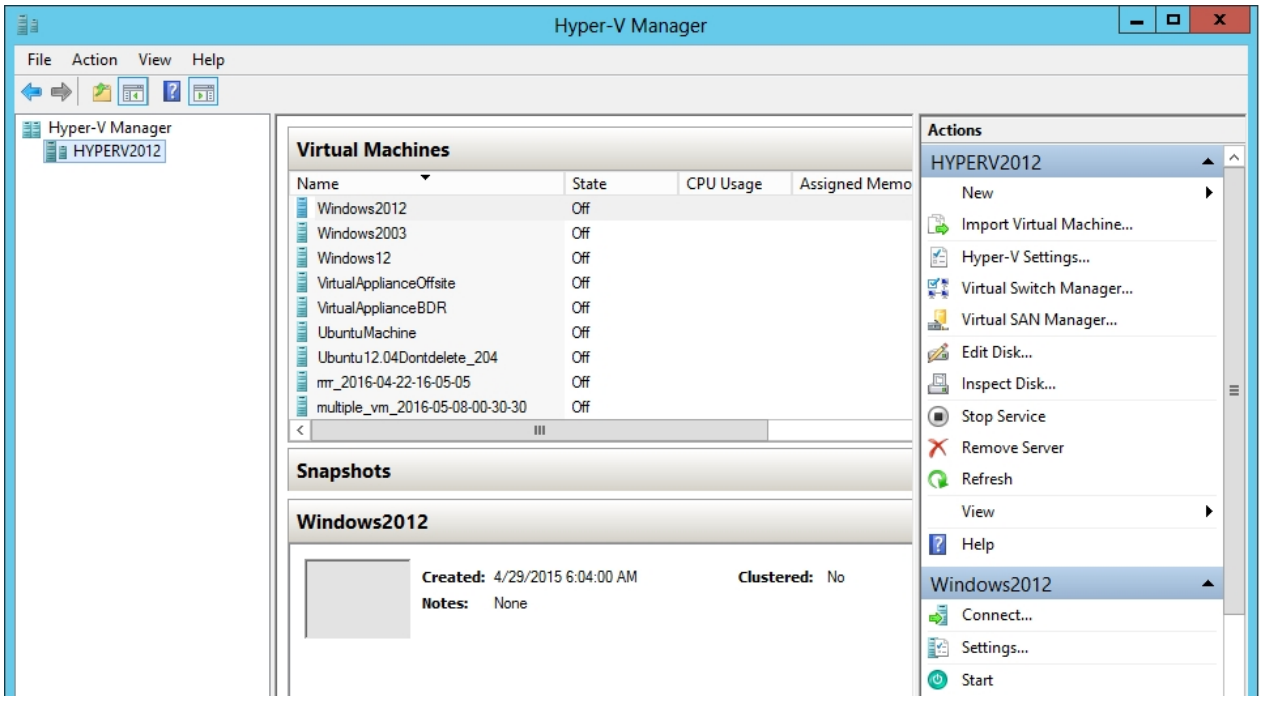
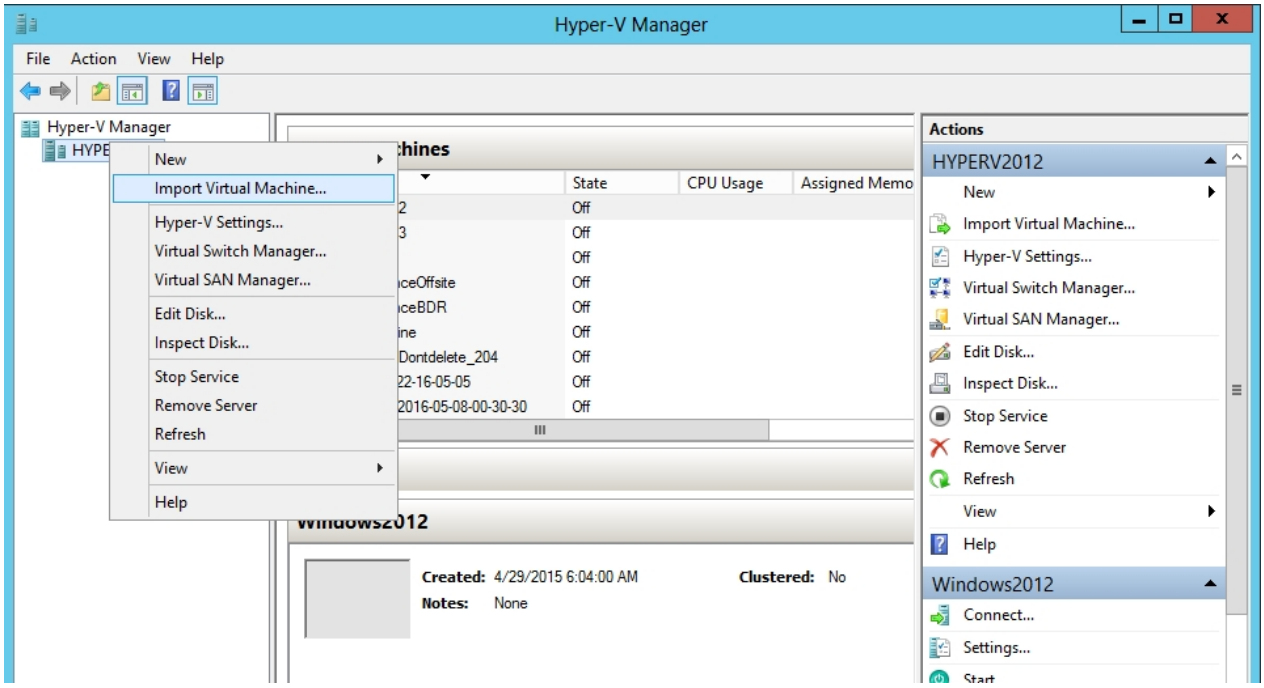


- Right click on the corresponding server under Hyper-V Manager.



- Check whether VirtualApplianceBDR folder contains the 3 folders shown in the screen shot below.

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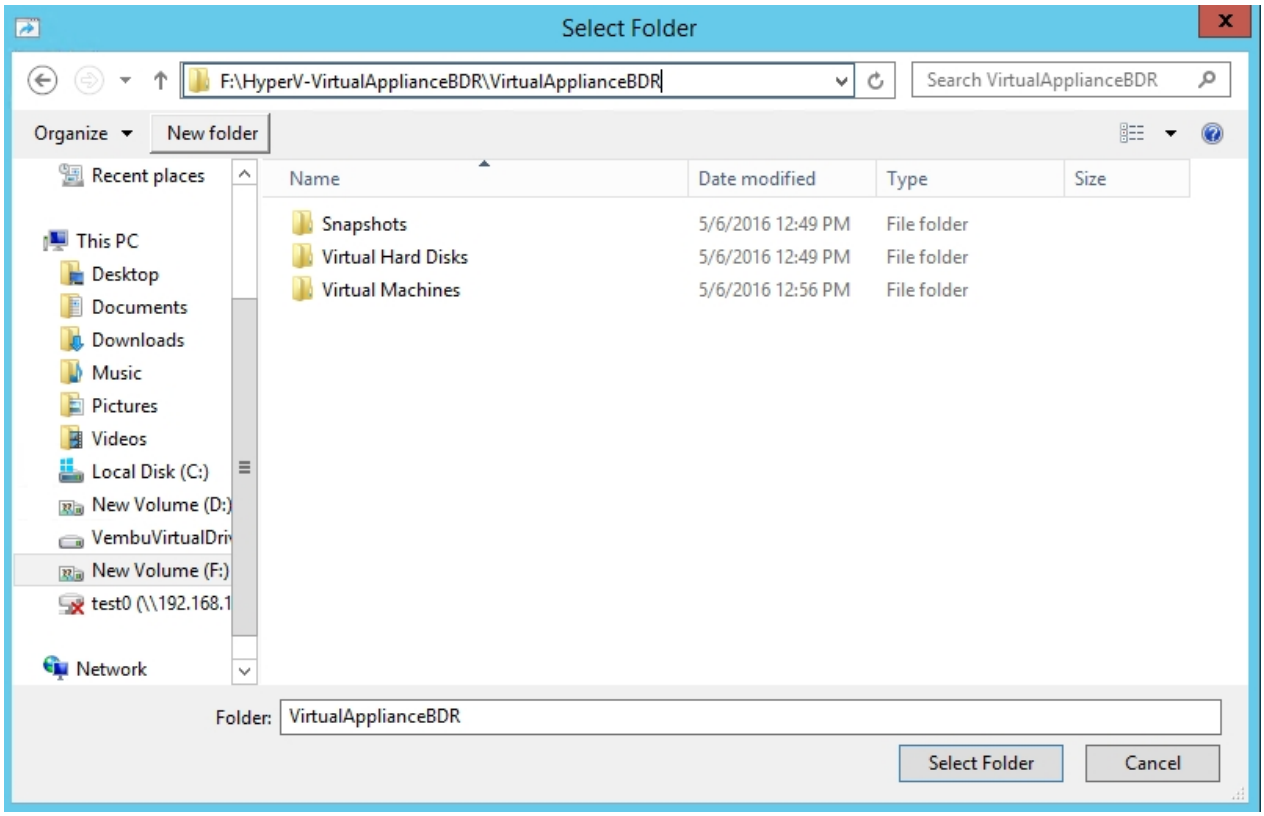
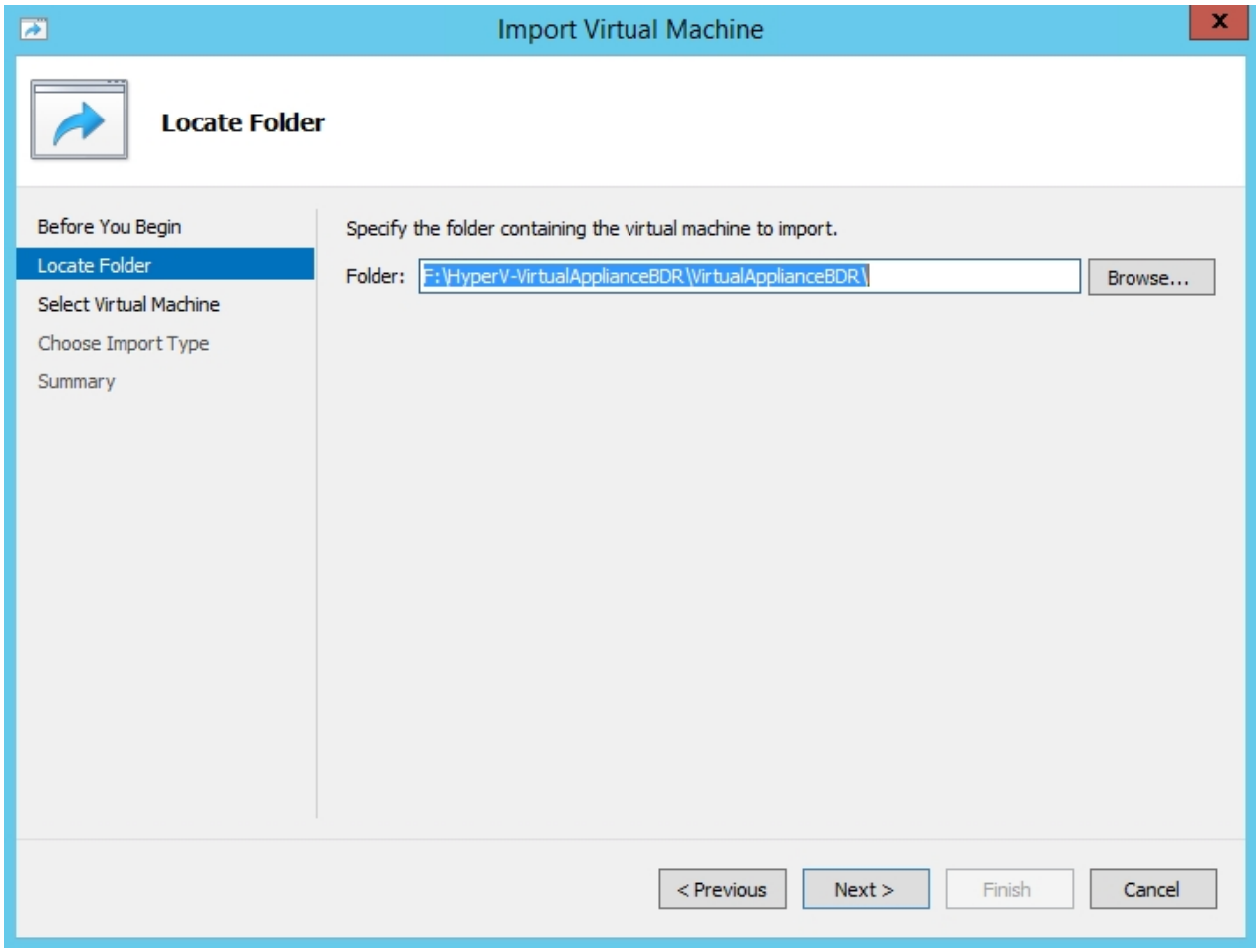


- Right click over Hyper-V host → select Import Virtual machine.
- Select the folder containing VHD and XML files.



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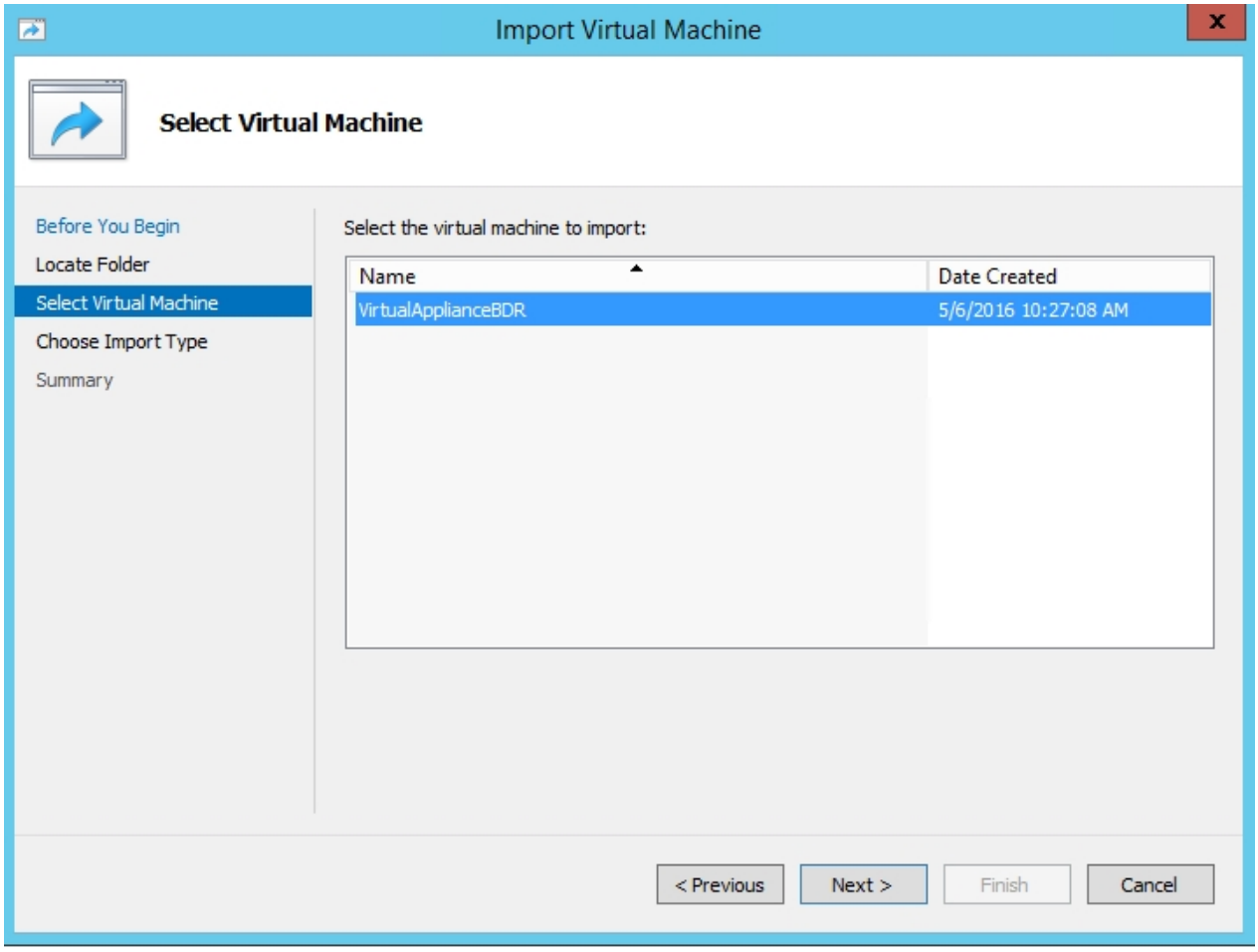
- Select the VM 'VirtualApplianceBDR' to import and click next.



- Choose import type as appropriate.

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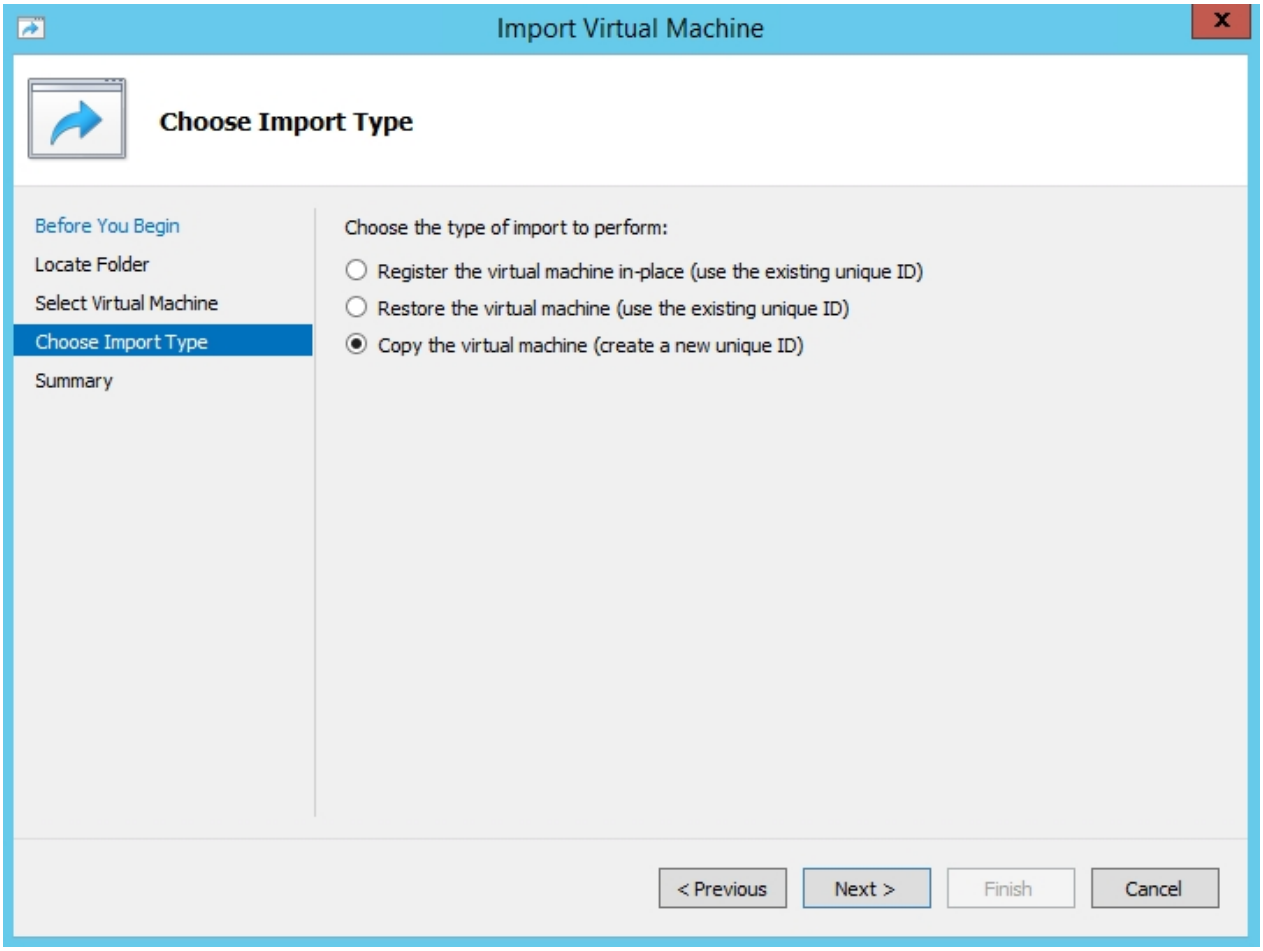

- Select location of configuration files for the VM and proceed with Next.

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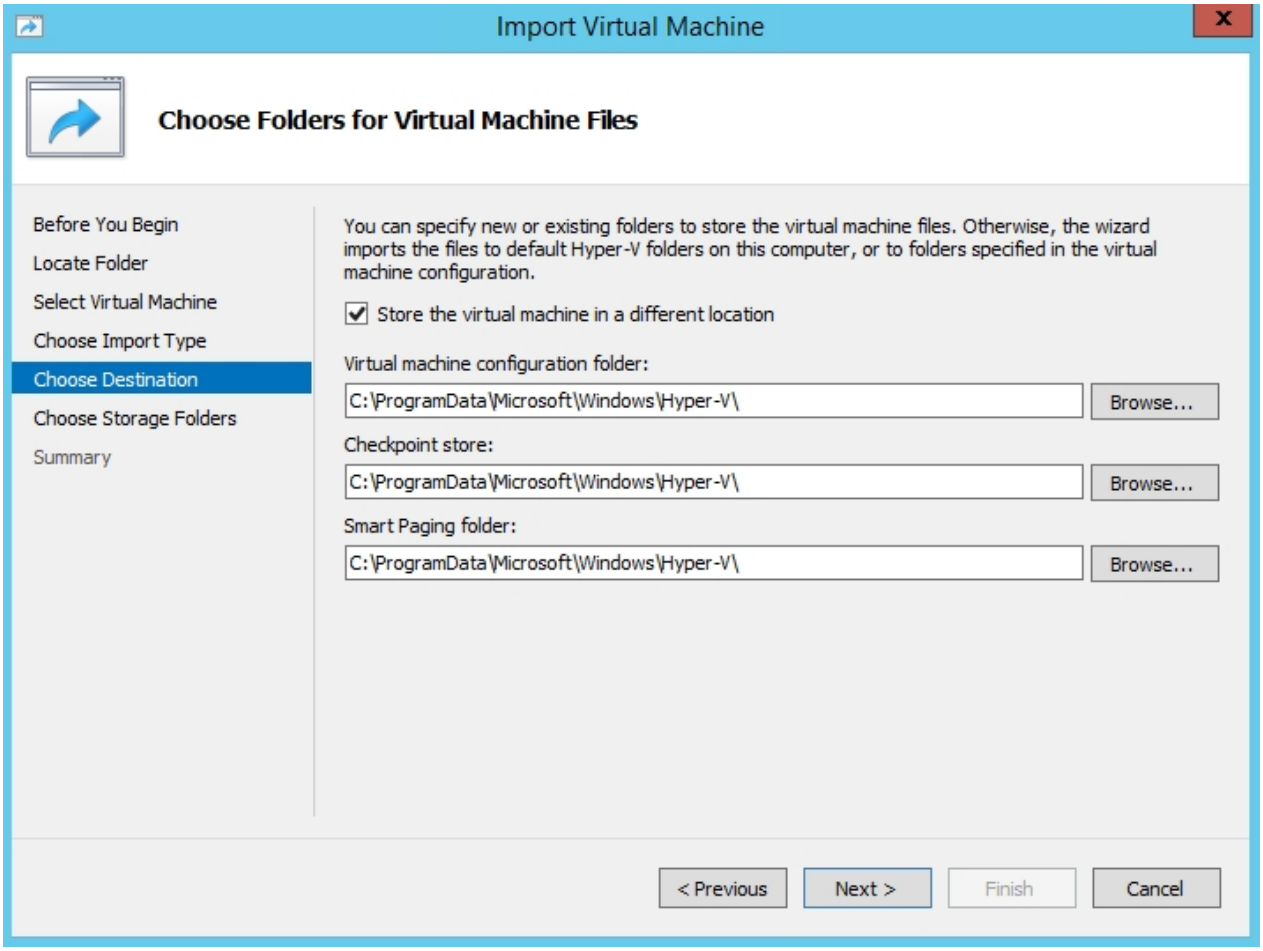

- Select storage location of the VHD files and click Next.

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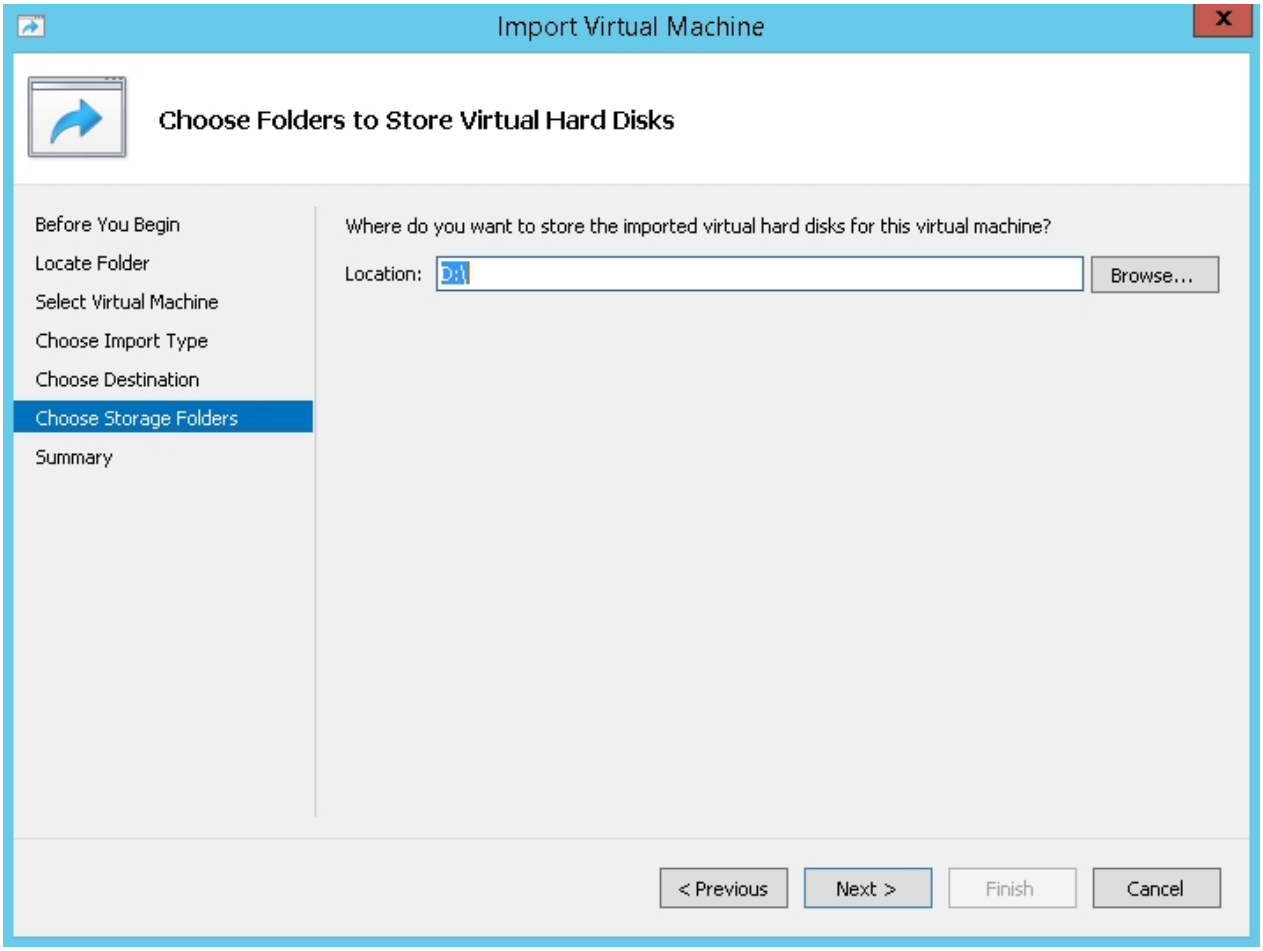

- Verify the configurations provided via summary and click finish to create VM.

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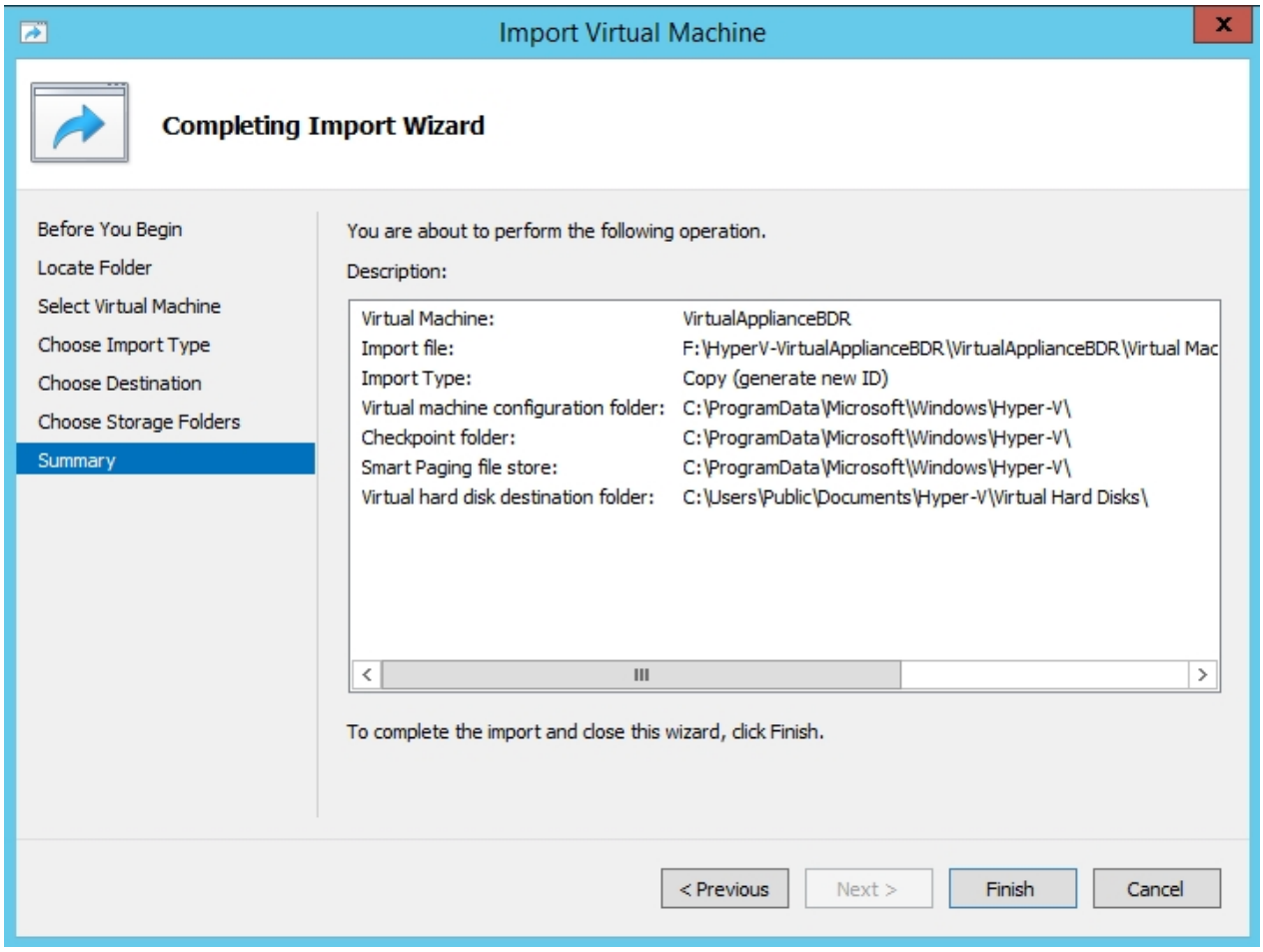
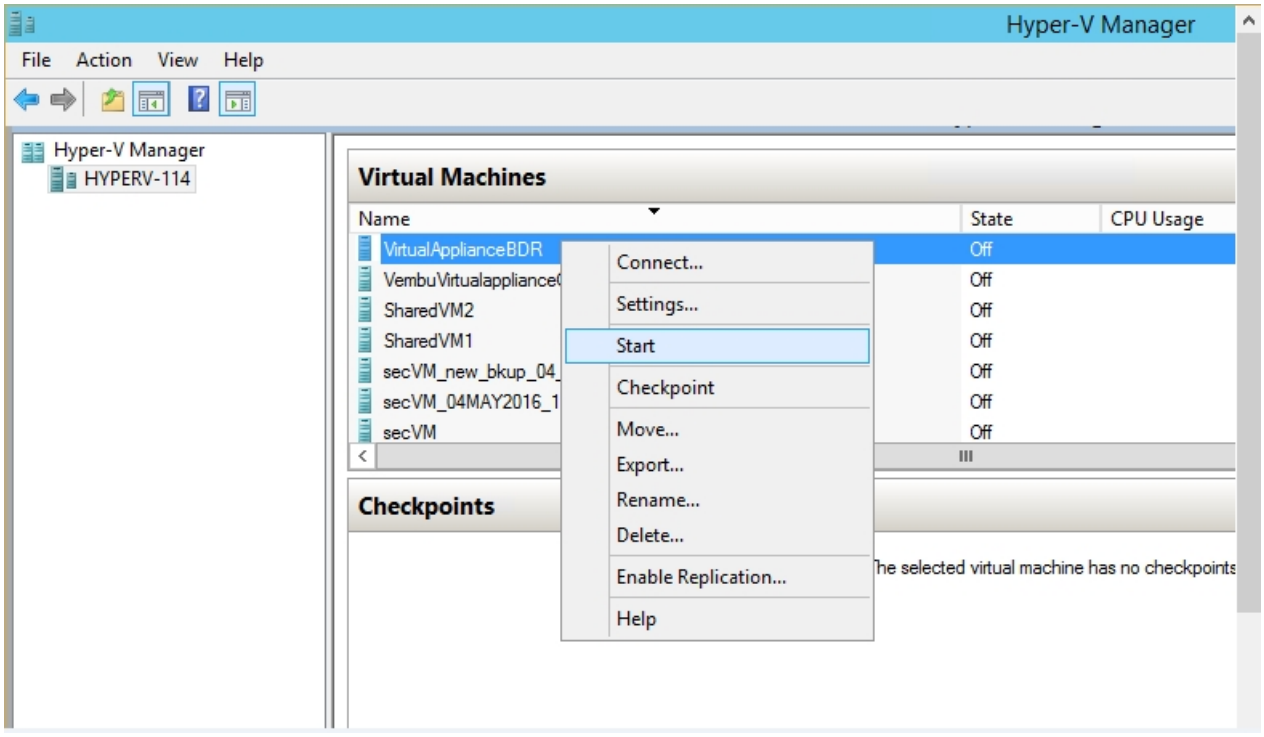


- Once deployment is completed successfully, start the created virtual machine.



- By default, once machine is booted it logs in automatically. If locked use below credentials:

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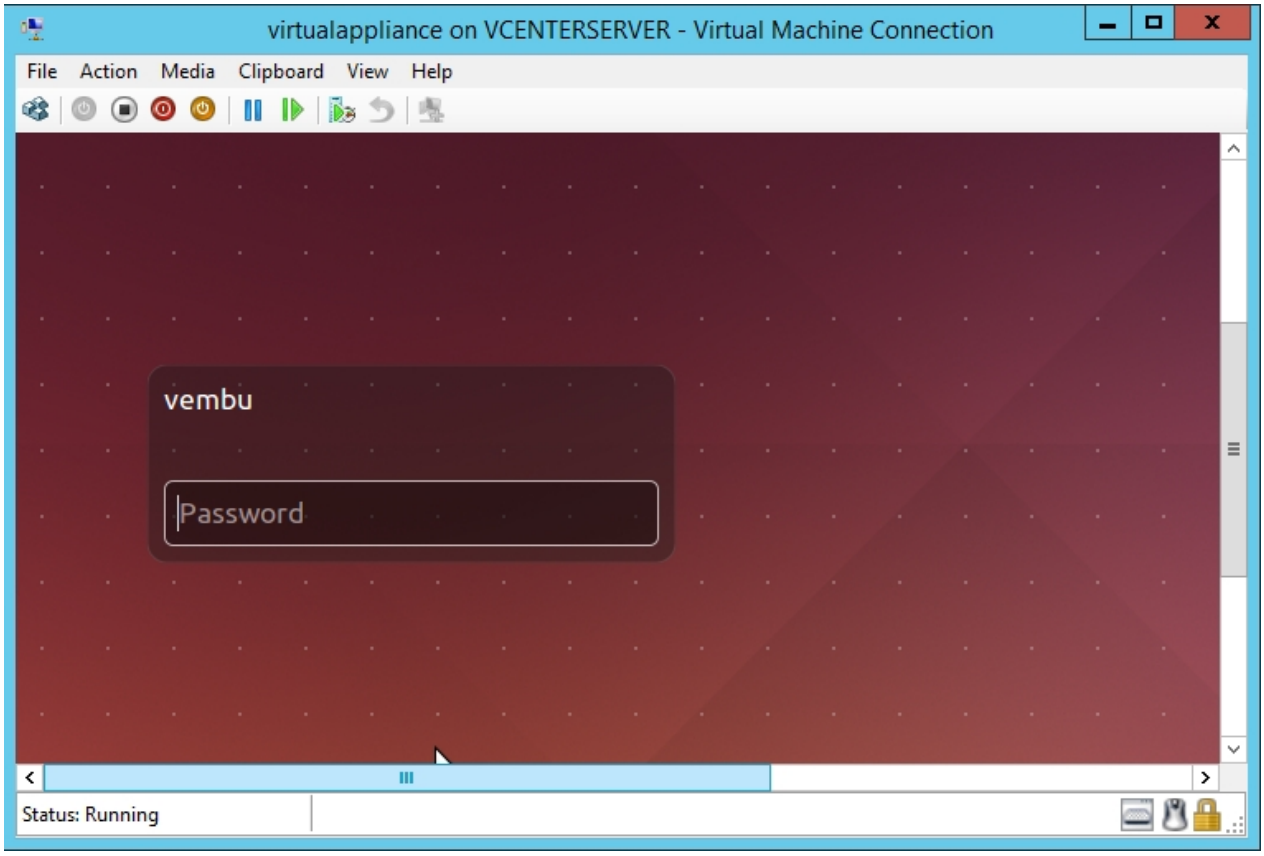
Default User details:
Username: vembu
Password: password
Root password: password (sudo -s)



- Open terminal and verify whether the PostGreSQL and Vembu BDR services are started.

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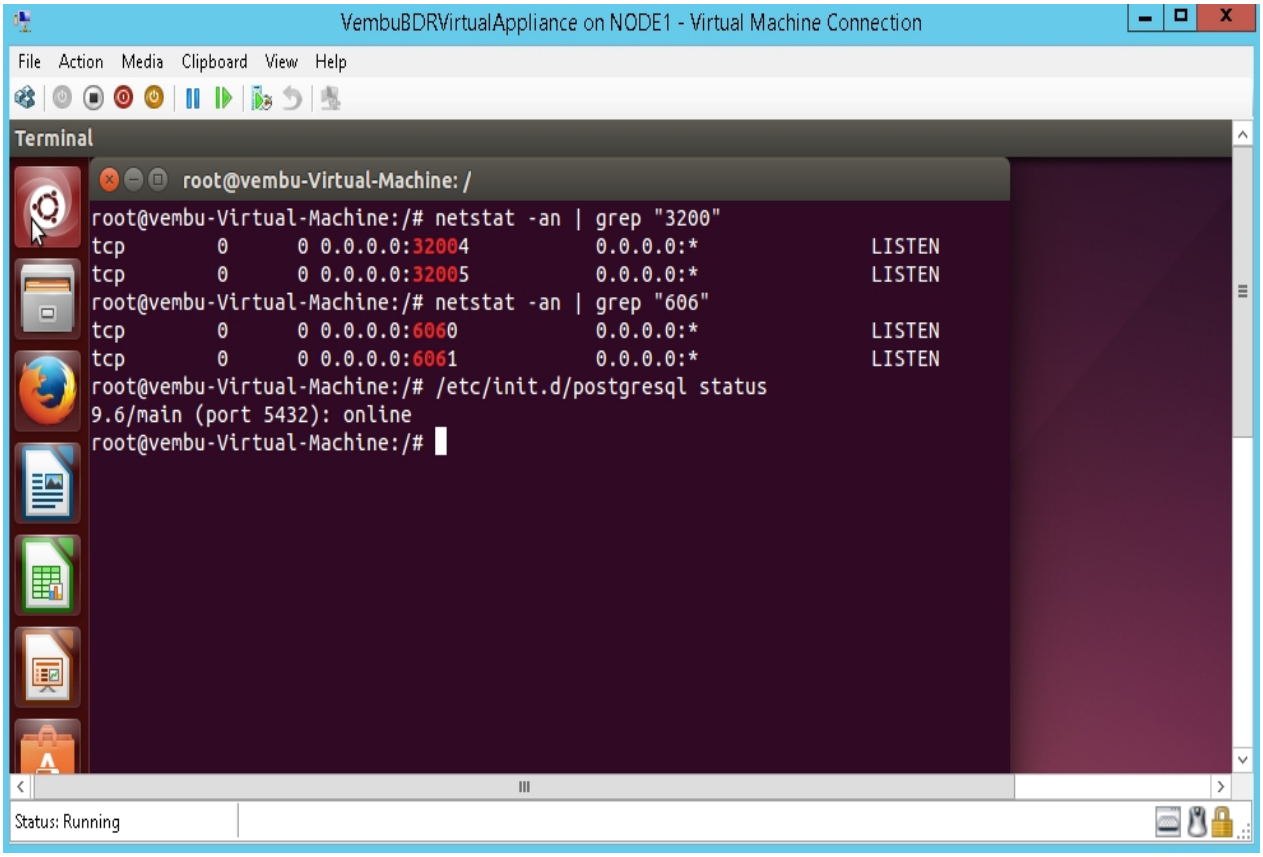
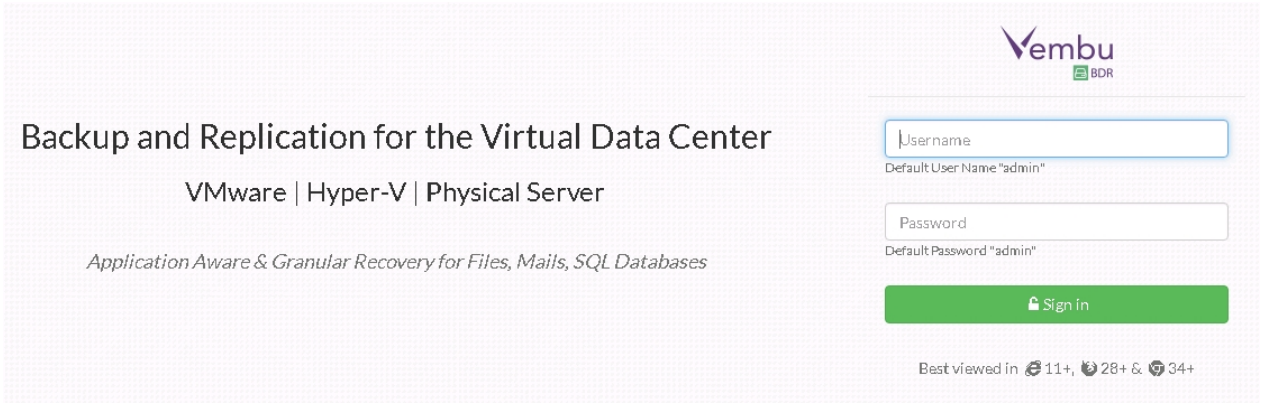


- Then open any web browser(FireFox or Chrome) and enter https://localhost:6061 to open Vembu BDR web console and login with username password as admin / admin.



- Select your required time zone setting for the machine and click yes to proceed.

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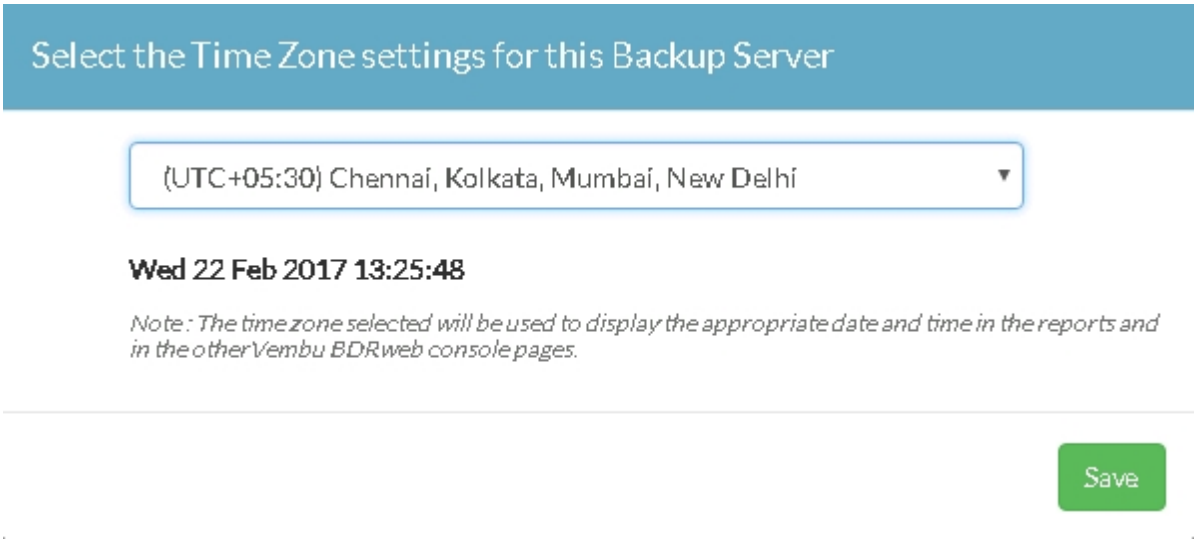
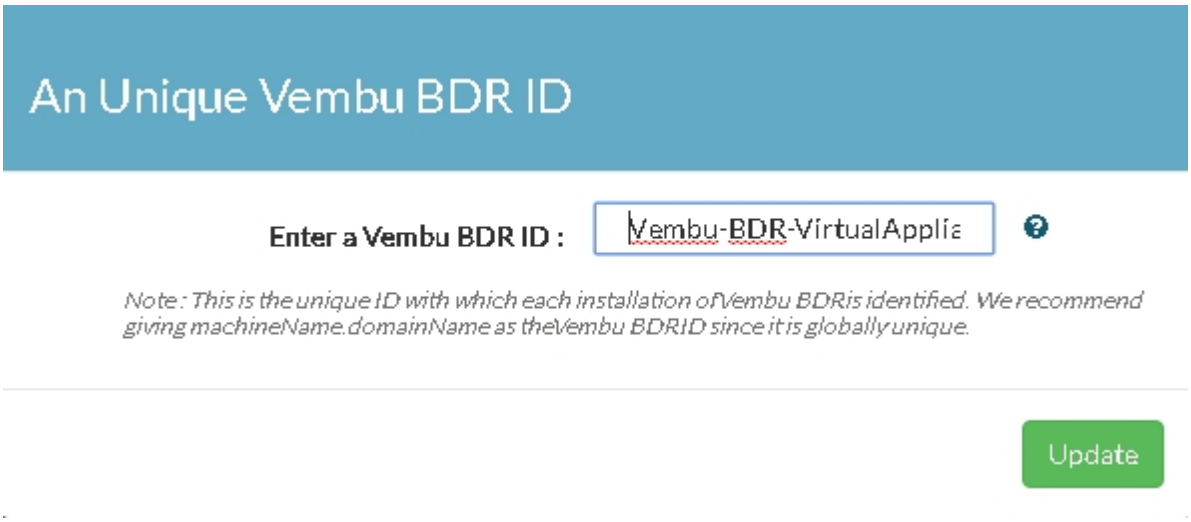


- Give an unique Vembu BDR ID, by default it takes the hostname and machine name as ID.
  Note: The following characters are permitted as part of the Vembu BDR Server ID: [A-Z][a-z][0-9][- _ .] Your ID must not start or end with special characters and it must be between 1-50 characters in length.



- Once Vembu BDR server ID configuration is updated successfully, you will be prompted to configure the repository details to store the backup data, Choose the volume and Click Update. Deployment of Vembu BDR server on your Hyper-V server is now successfully completed.

Limitations:

- KVM installation has some permission issues.
- Instant Boot is not supported.
- Virtual Appliance does not have network adapter in default, user needs to manually attach the network adapter/switch.

Vembu VMBackup User Guide

OffsiteDR Server

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- Windows
- Ubuntu
- VMware Virtual Appliance
- Hyper-V Virtual Appliance

Vembu VMBackup User Guide

Vembu OffsiteDR Server - Windows

Vembu OffsiteDR Server is currently supported for below versions of windows machines (Please make sure that you are using any one of the below versions).

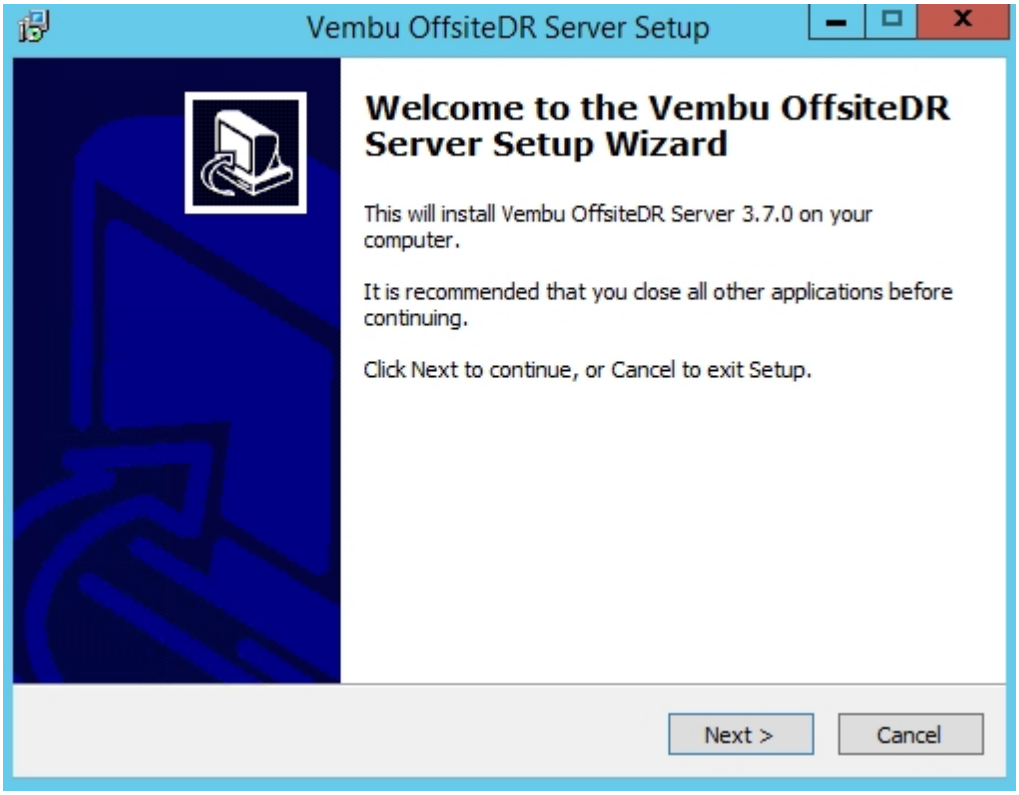
- Windows Server 2012 R2 (64 Bit)
- Windows Server 2008 R2 (64 Bit)
- Windows Server 2012
- Windows Server 2016

Download build:

- Download the Windows Installer for Vembu OffsiteDR server.

Steps to Installation:

- Run the downloaded installer with administrator privilege and installation process begins with the below wizard. Click Next to proceed with installing the setup.



- 'Vembu OffsiteDR License agreement' is the next step in setup installation, read the

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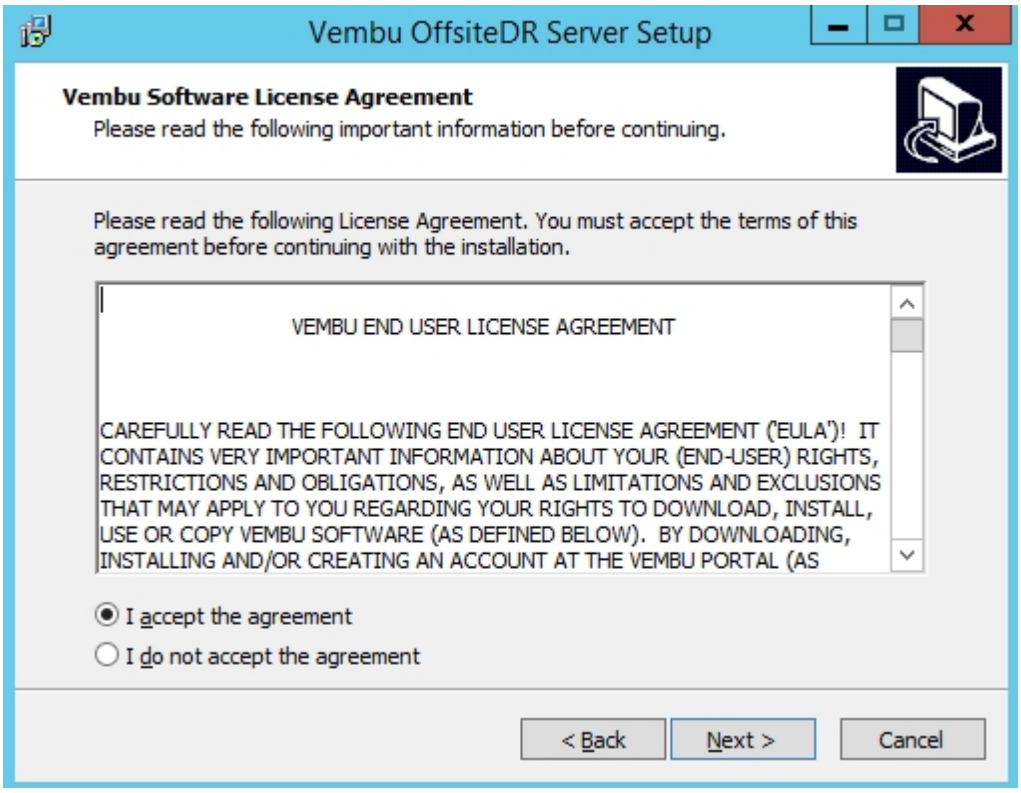
agreement carefully and choose 'I accept the agreement' option.
Note: Opting to 'I do not accept the agreement' will block you from proceeding with setup installation.

- Click Next



- Next step in wizard will have default settings chosen, you can either:
    - Click Install to proceed installation with default chosen settings.

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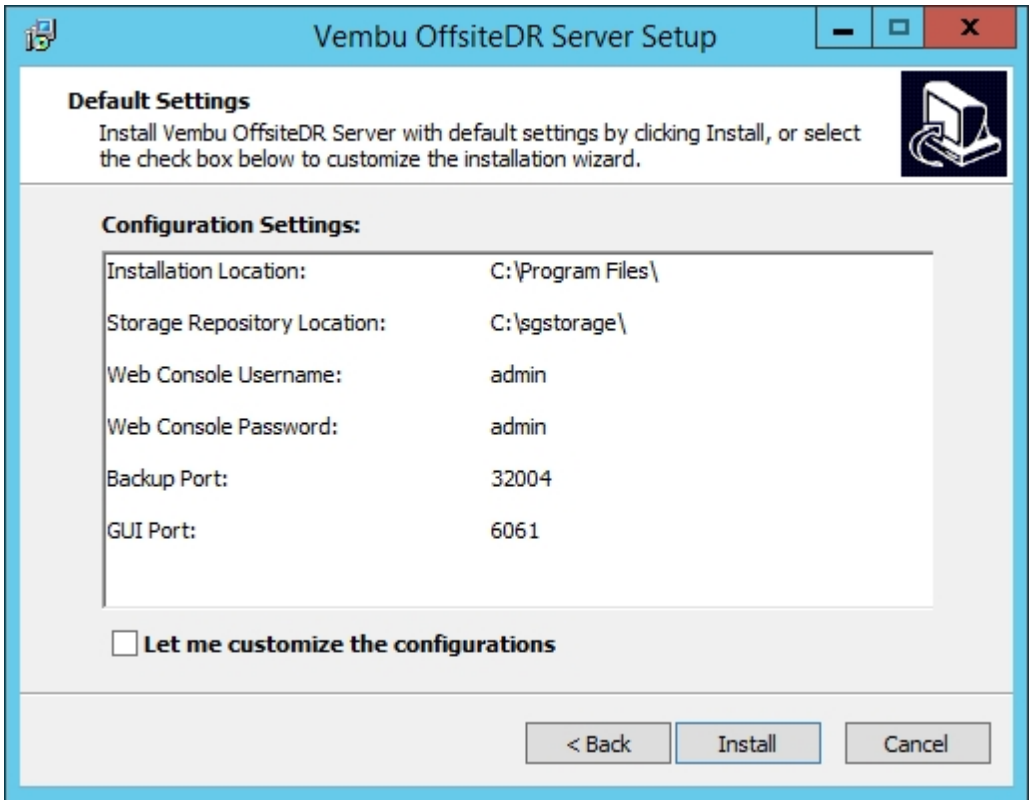
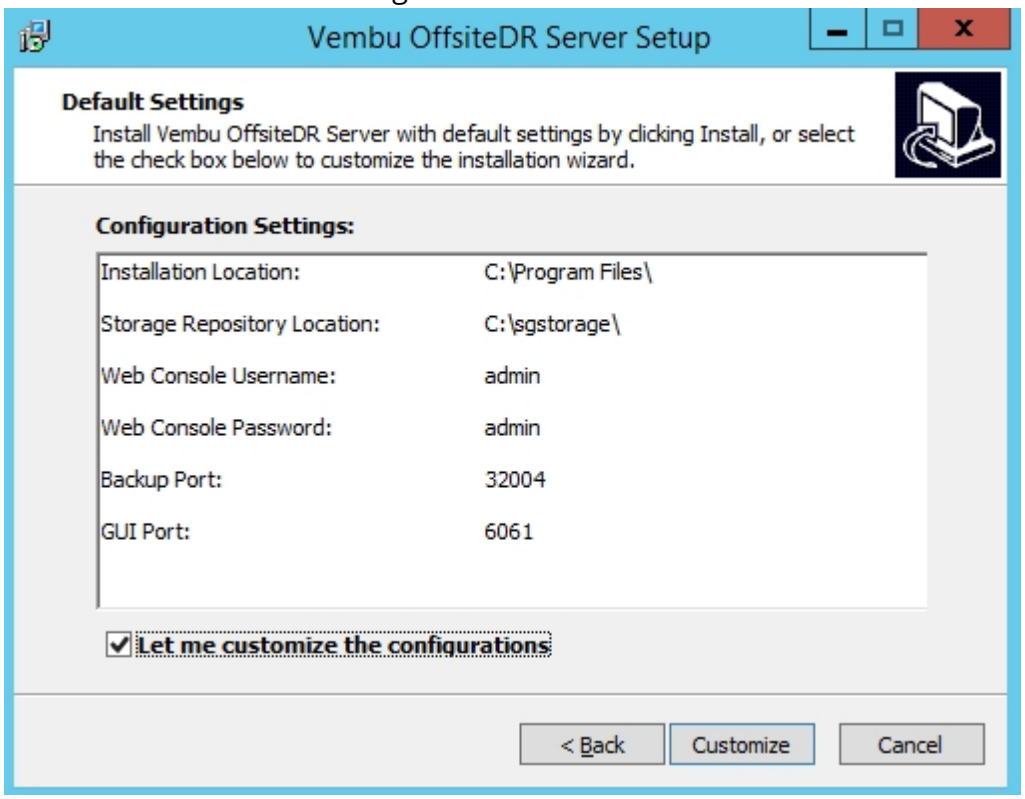


- Or can check 'Let me customize the configurations' option and opt to Customize settings.



- Choosing Customize option will let you customize PostGreSQL Server Configurations in next step: 'Installation location' and 'Database Storage Location'.
- Once done choosing location, click Next.

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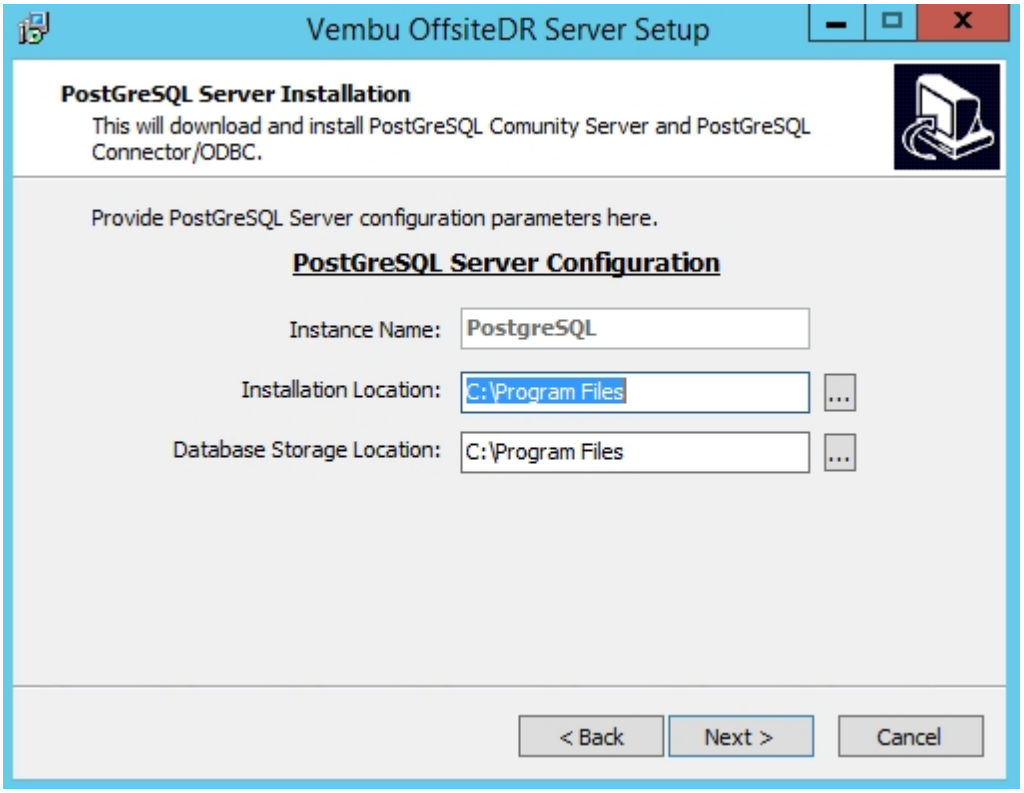
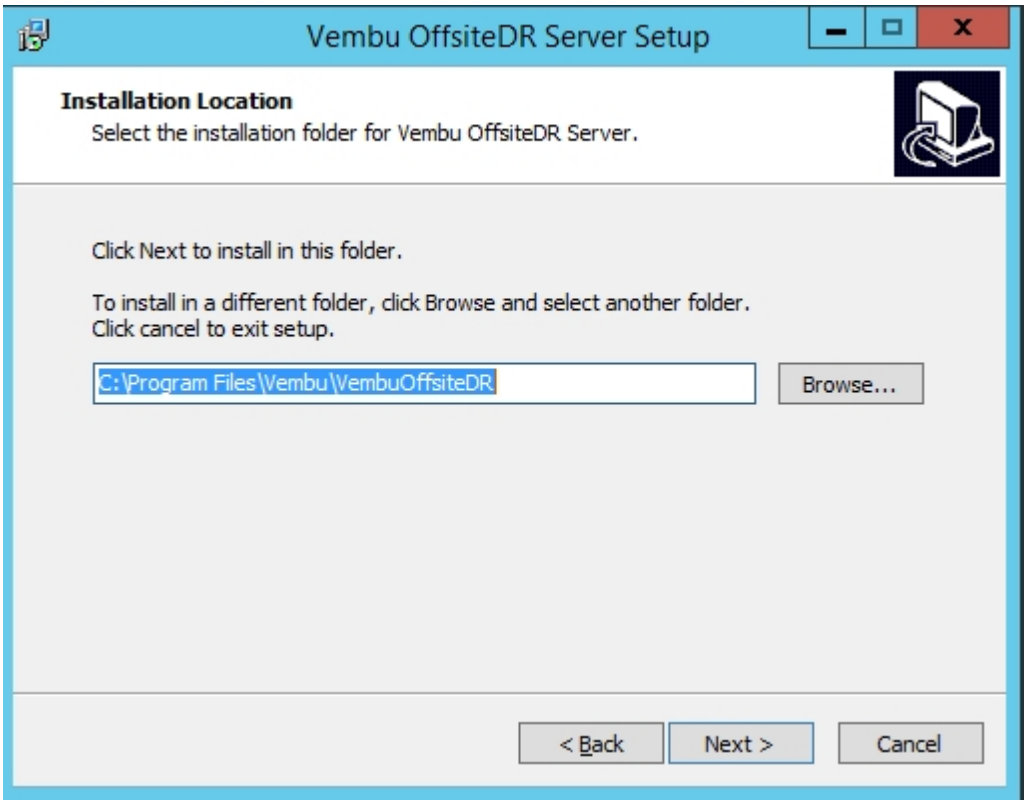


- Next step in wizard will allow you to customize installation location of Vembu OffsiteDR.
- Once done choosing location, click Next.



- Next step in wizard is 'Storage Repository Configuration', you can either choose:

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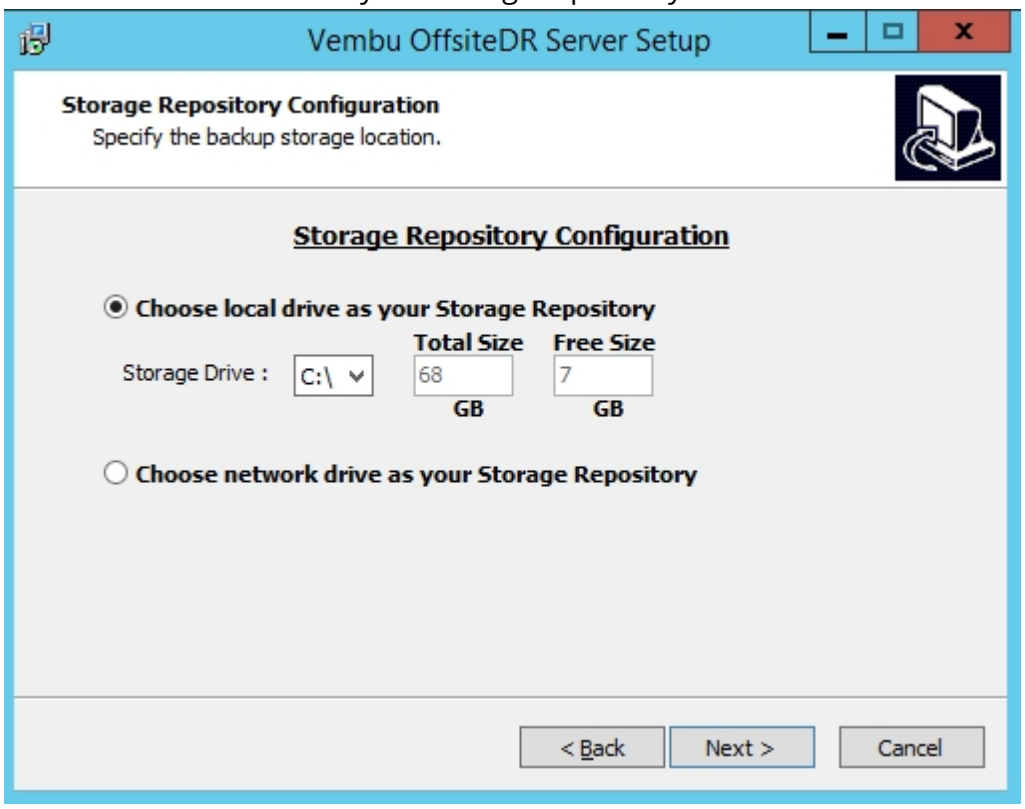
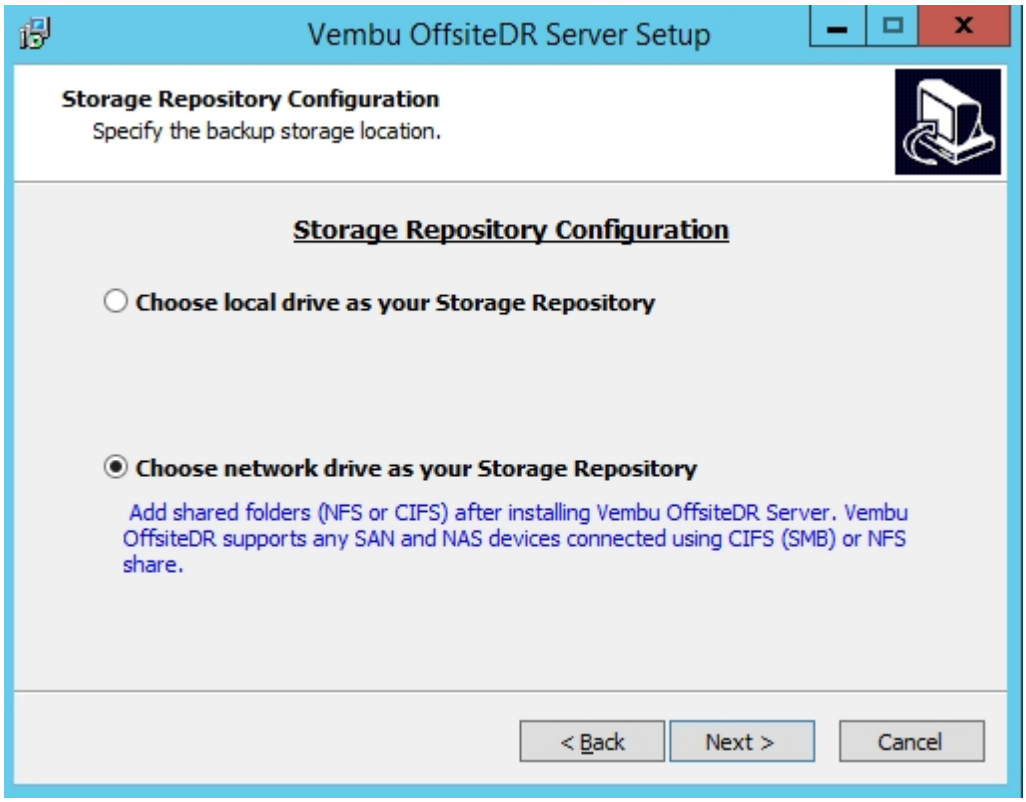
- A local drive as your storage repository



- Or choose a network drive as your storage repository
- Once done with Vembu OffsiteDR server installation, you can add shared folders as network drives by configuring them via Vembu OffsiteDR server web console.



- Click Next.

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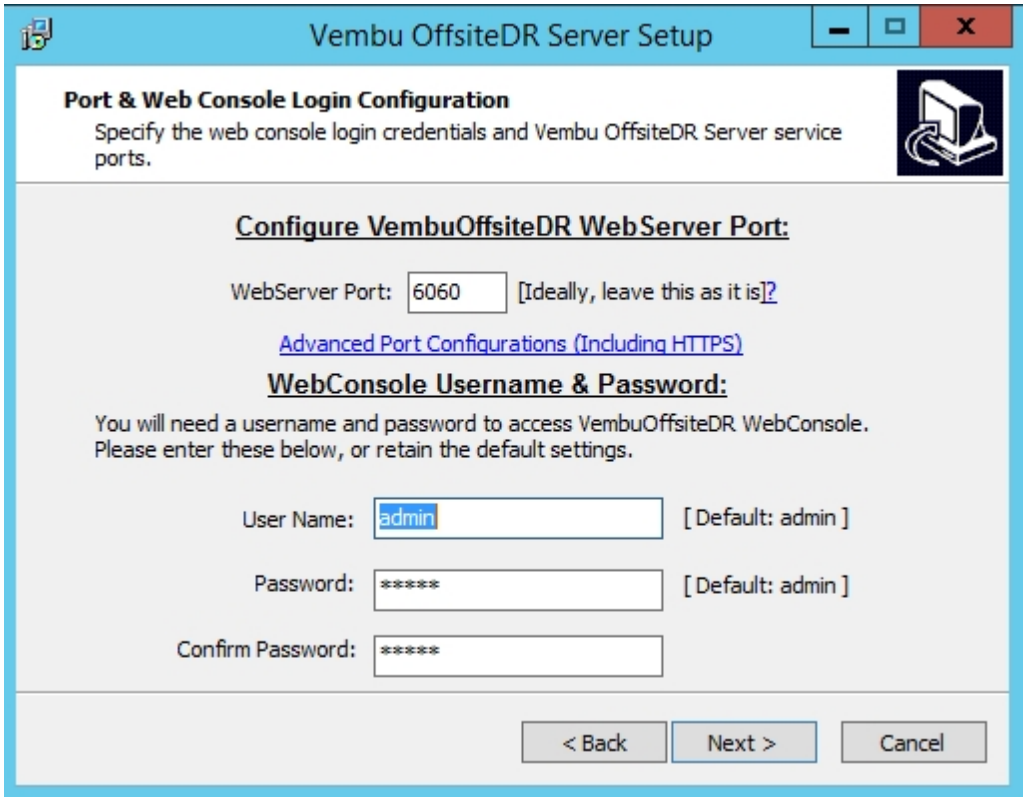
- Next step in wizard will allow you to configure:
  - User credentials for WebConsole (Default user name: admin and password: admin)
  - WebServer port (Default port chosen will be 6060 and it is recommended not to change it unless you are advanced user)
- Once done, Click Next.



- Next step of Wizard will allow you to review the chosen configuration, review the settings and proceed to click Install.

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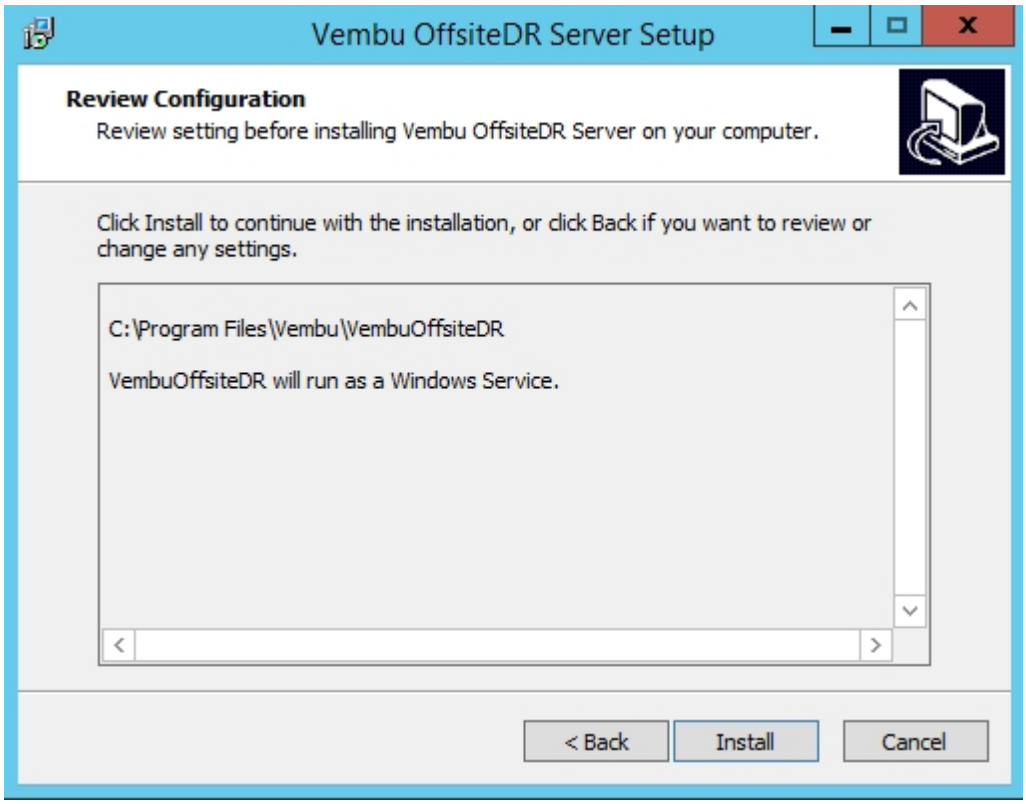
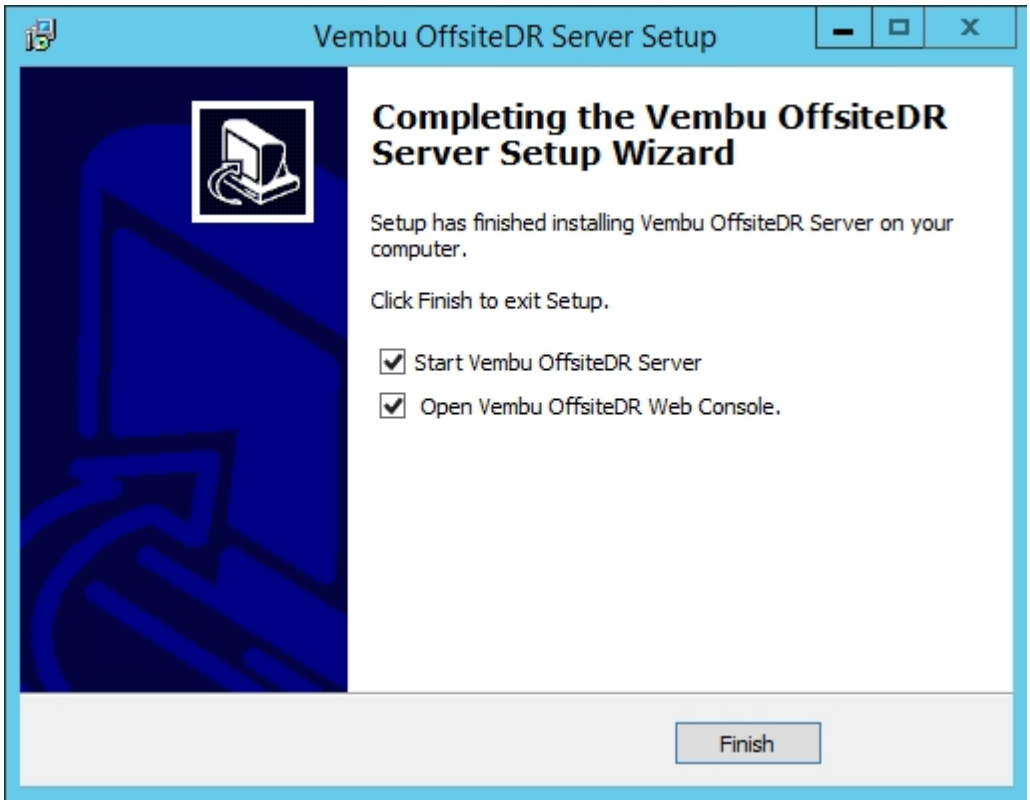


- Final step of wizard after installation will ask you whether to:
  - Start Vembu OffsiteDR server and
  - Open Vembu OffsiteDR Web Console.
- You can either leave the options selected and click Finish. Or chose to UnCheck them and start later.



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Note: VembOffsiteDR is installed as a service and can be found on Services.msc, if user chose to start later.

Vembu VMBackup User Guide

Vembu OffsiteDR server - Linux

Vembu OffsiteDR server is currently supported for below versions of Linux OSes (Please make sure that you are using any one of the below Linux architecture).

- Ubuntu 16.04 LTS (64 Bit)
- Ubuntu 14.04 LTS (64 Bit)
- Ubuntu 12.04 LTS (64 Bit)

To install Vembu OffsiteDR Backup Server on Linux environment follow the steps given below:

Copy the download link from the following link: Click here and download the installer file using wget command and make sure you are a root user (use “sudo su” command to be as an root user). Or you can download the installer to any Windows machine and move the installer to Linux machine by using FTP/WinSCP.

- Once you execute wget command you will have “VembuOffsiteDRSetup.sh” in the download location.

- Run installer by using “sh” command. For ex: #sh VembuOffsiteDRSetup.sh

```
root@vembu-virtual-machine:/home/vembu/Downloads# sh VembuOffsiteDRSetup.sh
```

- After initiating the installer, it will check for dependent packages and request for a confirmation from your side. You can enter “y” to proceed further.

Please find the packages to be downloaded by Vembu OffsiteDR application here,

  - PostGreSQL RDMS (9.6)
  - PostGreSQL Connector (9.5.02)
  - ODBC Driver (2.3.4)
  - VembuOffsiteDR Server (3.x.x)

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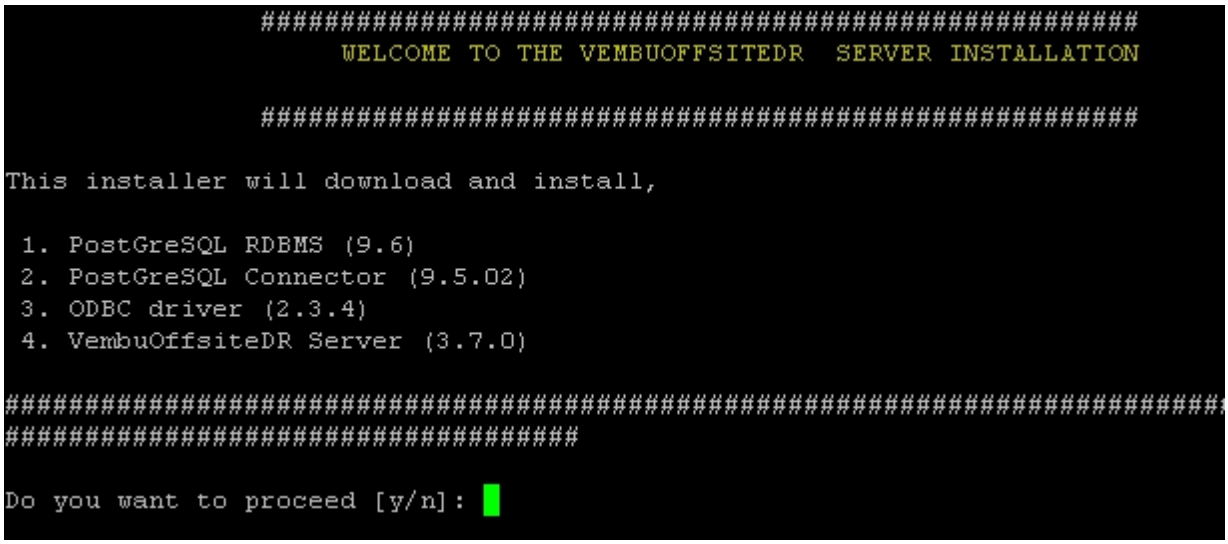
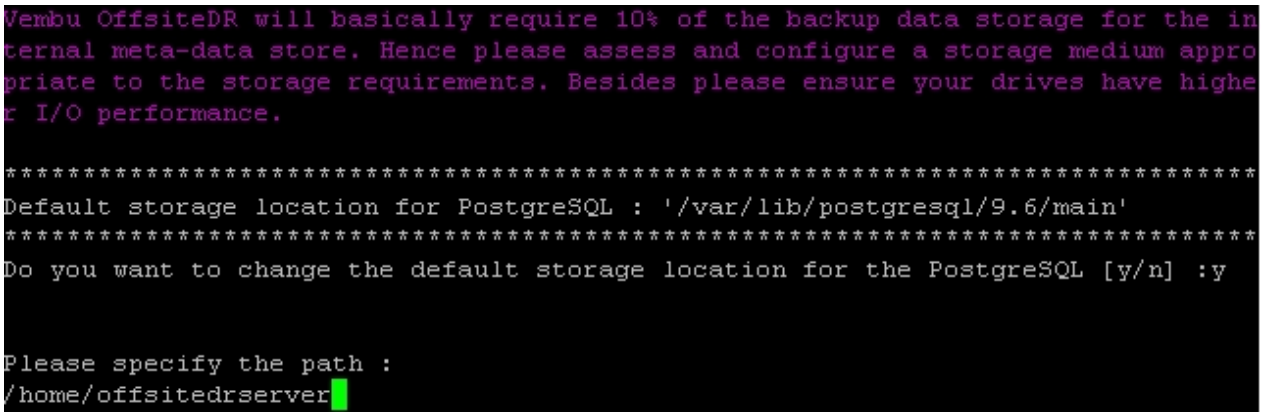


- Here you need to specify the location where you want to store PostGreSQL files. Vembu OffsiteDR will basically require 10% of the backup data storage for the internal meta data store. Hence please assess and configure a storage medium appropriate to the storage requirements. Besides please ensure your drives have higher I/O performance. Kindly specify the path and click Enter. We recommend you to use dedicated drive for this location instead of root volume. (Important STEP)



- Then installer will proceed to install Unix ODBC and PostGreSQL driver.
- Click "yes" to proceed installing dependecy packages of PostGreSQL.

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```
##########################Installing_unixodbc  finished#########################
######
************************************************************
####################Installing postgresql database please wait#################
#############
*******************************************************************************
************************
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libodbc1 odbcinst odbcinst1debian2
Use 'apt-get autoremove' to remove them.
The following extra packages will be installed:
  libpq5 postgresql-client-9.6 postgresql-client-common postgresql-common
Suggested packages:
  locales-all postgresql-doc-9.6 libdbd-pg-perl
The following NEW packages will be installed:
  postgresql-9.6 postgresql-client-9.6 postgresql-client-common
  postgresql-common postgresql-contrib-9.6
The following packages will be upgraded:
  libpq5
1 upgraded, 5 newly installed, 0 to remove and 642 not upgraded.
Need to get 6,253 kB of archives.
After this operation, 27.8 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

- Once done installing PostGreSQL, databases will be created and PostGreSQL will be restarted automatically.

```
 * Restarting PostgreSQL 9.6 database server                              [ OK ]

ALTER ROLE
CREATE DATABASE


 * Restarting PostgreSQL 9.6 database server                              [ OK ]
```

- In the Next step installer will install PostGreSql connector ODBC and will be successfully connected to PostGreSQL server.

```
 SUCCESS : ODBC driver is successfully connected to PostgreSQL server

************************************************************
ODBC Driver Configuration Details :
DatasourceName     : PostGreDBConnection
DatabaseName       : SGDatabase
HostName           : localhost
UserID             : postgres
Password           : admin
Debian version 64 bit storegrid is called
```

- User will then be asked to proceed with Vembu OffsiteDR backup server installation, Enter “y”.

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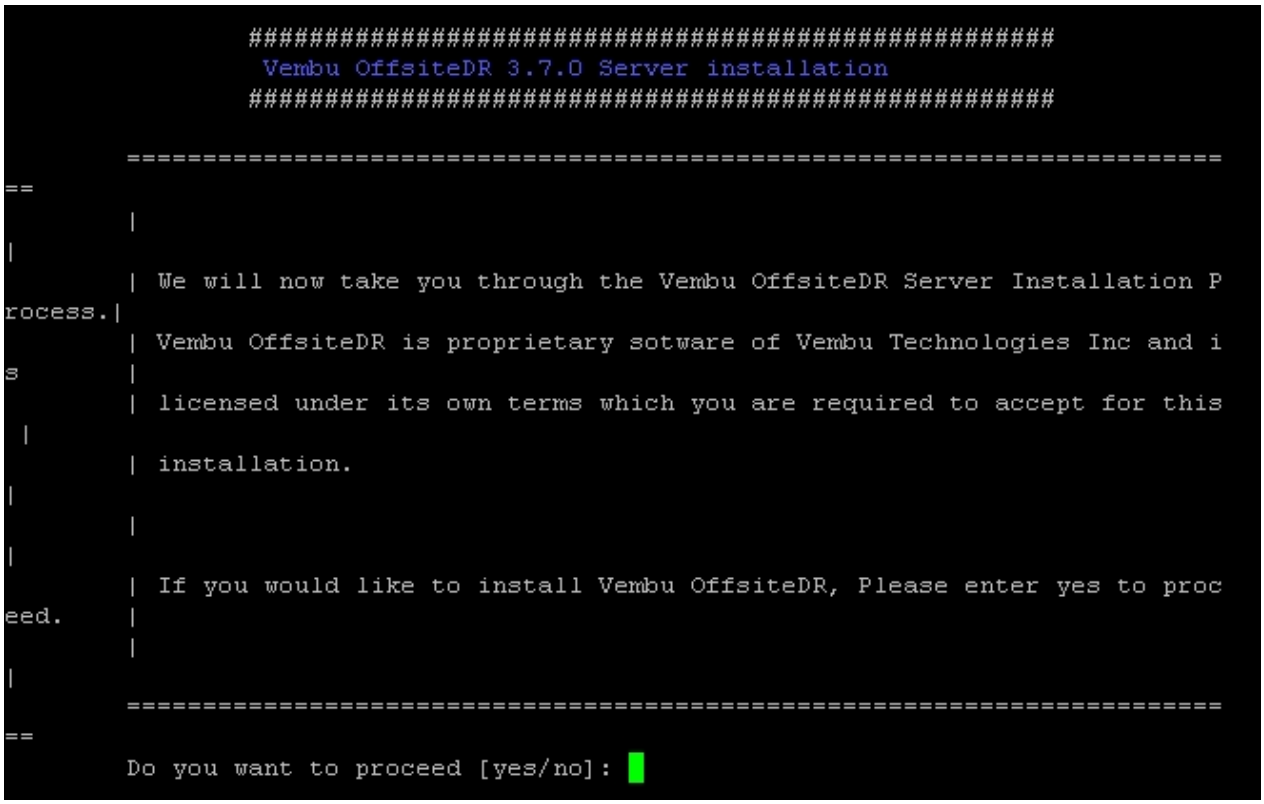

- Enter “yes” to start downloading Vembu OffsiteDR backup server application.

- Once download is completed. The Vembu OffsiteDR Backup server build installation starts automatically and asks to choose type of installation. “Option 1” is to Install Vembu OffsiteDR by creating a new Vembu OffsiteDR user account with root privileges or “Option 2” to install Vembu OffsiteDR in the current user and proceed with the installation. By default we recommend to choose Option1.

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```
*******************************************************************************
Welcome to the installation setup of Vembu OffsiteDR
*******************************************************************************


*******************************************************************************
 Choose Vembu OffsiteDR installation type
*******************************************************************************

 You can perform two types of installations :

   1 - Install Vembu OffsiteDR by creating a new vembuoffsitedr user account with root privileges.

               Select this installation type if you would like to configure backup
               of other user files, system files, mysql database files etc. in the system.
               Note that Vembu OffsiteDR will be installed as a daemon process and will
               automatically start when the system boots up.
               You would need to login as root to install Vembu OffsiteDR
               for this type of installation. This type of installation will create
               "vembuoffsitedr" user with non-root privileges and install the
               Vembu OffsiteDR in "/home/vembuoffsitedr" directory.

   2 - Install Vembu OffsiteDR in the current user.

               Select this installation type if you would like to install Vembu OffsiteDR
               in the current user directory with current user privileges. You will be asked to specify
               the directory in which Vembu OffsiteDR should be installed later during the installation.
               Note that Vembu OffsiteDR will be installed in the current user directory and has to be
               manually started everytime the machine is rebooted.

*******************************************************************************


 Please enter your option [1 or 2]
```

- If you have selected “Option 1” installer will create new Vembu OffsiteDR user. Enter Password so that Vembu OffsiteDR user will be created as shown below.

```
 ********************************************************************************************
 Creating vembuoffsitedr user ...

 Enter Password for the vembuoffsitedr user
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully

 vembuoffsitedr User Created Successfully
 ********************************************************************************************
```

- Once user is created, the installer shows the License, kindly go through the License Terms carefully. If you agree enter “y” to proceed. Then it will ask to create directory for the installation path. Enter “y” to proceed.

```
 Do you agree to the above license terms? [y / n]    y



 /home/vembuoffsitedr directory does not exists. Create it now?
                        Please type yes(y) or no(n) [y / n]   y
```

- Installer asks your permission to create repository. Enter “y” to create repository now or Enter “n” to create it later, after installing the backup server. If you want to create now press “y” and click Enter.

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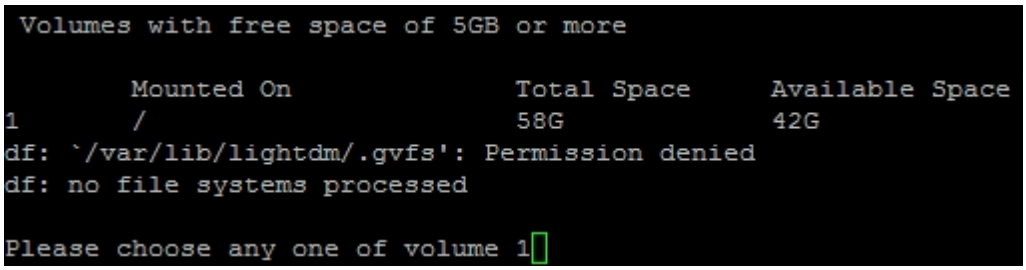
- Once you press enter, installer will show the list of volumes present in your machine. Kindly choose one volume by entering corresponding number. Click number and press Enter to continue (Example : Enter 1)



- Once you click Enter, the repository created successfully and the installer asks for Vembu OffsiteDR Web Console Authentication as shown below. Kindly give username and password through which you can access your Server Web Console. By default we recommend username and password as “admin”. Now press Enter to continue. Once you click Enter, Vembu OffsiteDR Web console user will be created successfully.

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```
############################ Configured Repository Details ############################

       Repository Name :       Default_Repo
       Volume Path     :       /sgstorage/Default_Repo

#####################################################################################

 You have configured the default repository.
#################### Default Repository configured successfully ####################


 ***********************************************************************************

 Vembu OffsiteDR Web Console Authentication

 Enter Username and password for Vembu OffsiteDR Web Console.
 This is required while starting the Vembu OffsiteDR Web Console.


 Enter Username :  admin


 Enter Password :

 Re-type Password :

Vembu OffsiteDR Web Console user created.

 ***********************************************************************************
```

- Now installer asks you to change ports from default value. If you want to change click “y” else “n”. By default we recommend to click “n” and continue. Kindly go through the usage of individual ports mentioned below.
    - Backup Server Port is the port through which the installed Vembu VMBackup client will backup the data to the backup server. The default value is 32004.
    - UI Communication Port is the port through which Vembu OffsiteDR Apache/PHP modules communicate with Vembu OffsiteDR to serve UI requests from the Vembu OffsiteDR Web Console. The default value is 32005.
    - HTTPS Port is the port used to access the Vembu OffsiteDR Web console in a secured manner through HTTPS protocol. Default value is 6061.
    - Enable HTTPS: HTTPS Port is the secure web console port through which you can access the Vembu OffsiteDR web console in secure manner. You should enable “Enable HTTPS” option to edit this value. If you have enabled HTTPS option, then you can access the Vembu OffsiteDR web console through https://localhost:6061

```
 ********************************************************************
 Backup Server Port is used by Vembu OffsiteDR to connect the server. UI Communication Port
 is used for communication between Vembu OffsiteDR Web console and Vembu OffsiteDR Application.
 You can configure these ports manually.
 By default the value of
   1. Backup Server Port is 32004
   2. UI Communication Port is 32005.
 ********************************************************************

 Do you want to change these ports from default value [y/n]
n
```

- Once the installation is complete you will be asked to start the Vembu server as

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Daemon process. If you have not started Vembu OffsiteDR as daemon process you can start Vembu OffsiteDR using “sh startVembuOffsiteDR.sh” command and “sh stopVembuOffsiteDR” to stop Vembu OffsiteDR from the Vembu OffsiteDR installation location. Or else if you want to start the Vembu OffsiteDR immediately, enter “y” to proceed as shown below.

Vembu VMBackup User Guide

VMware Virtual Appliance

A VMware virtual appliance is a template that creates virtual machines instantly on VMware virtual environment without manual VM creation or separate installation of operating system or Vembu OffsiteDR server.

Download VMware virtual appliance from following link: Click here to Download VMware virtual appliance.

The downloaded file will be in zip format. Unzipping the file will have following:

- Virtual appliance template file (OVF)
- User Guide on How to deploy VMware Virtual Appliance
- Read Me file

Supported Versions: VMware VSphere 5.5 and 6.0

Steps to Deploy Virtual appliance on VMware ESXi server:

- Logon to an ESXi Server through VMware vSphere client.

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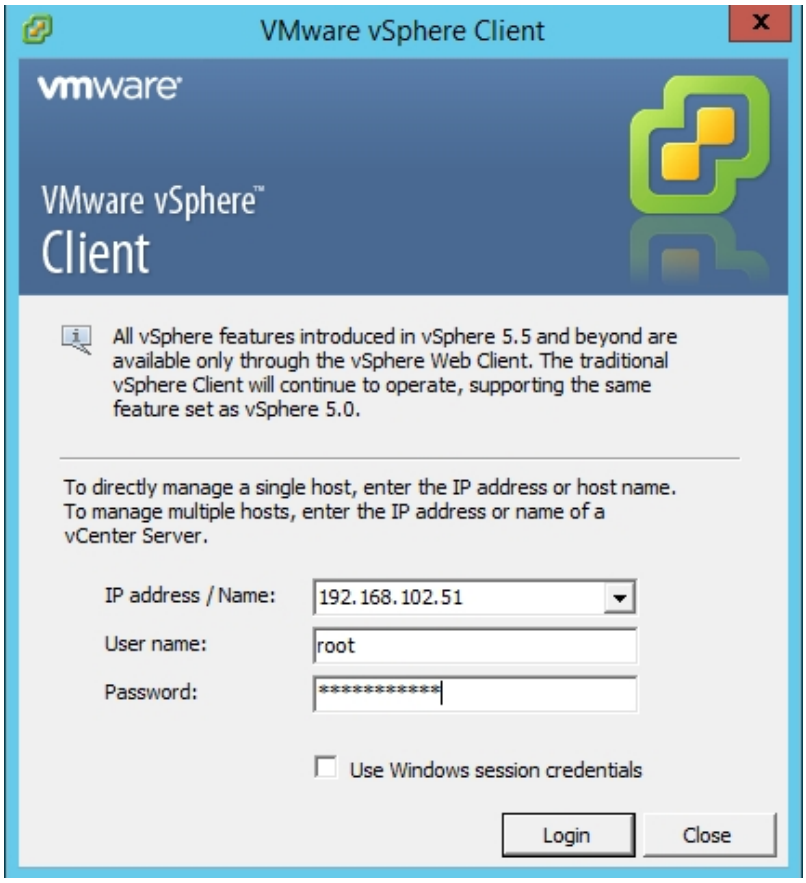
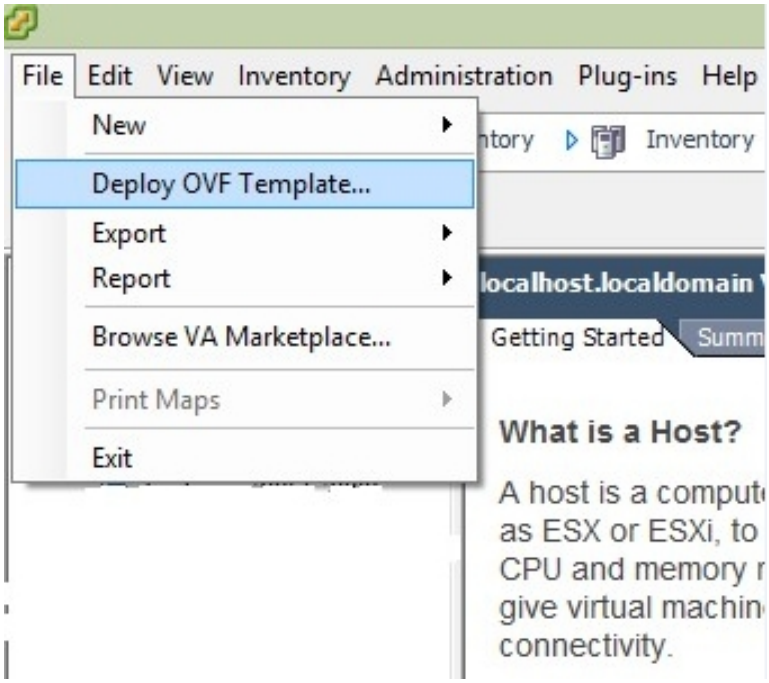


- Navigate to File → Deploy OVF Template.



- Browse and choose the .ovf file from the unzipped location.

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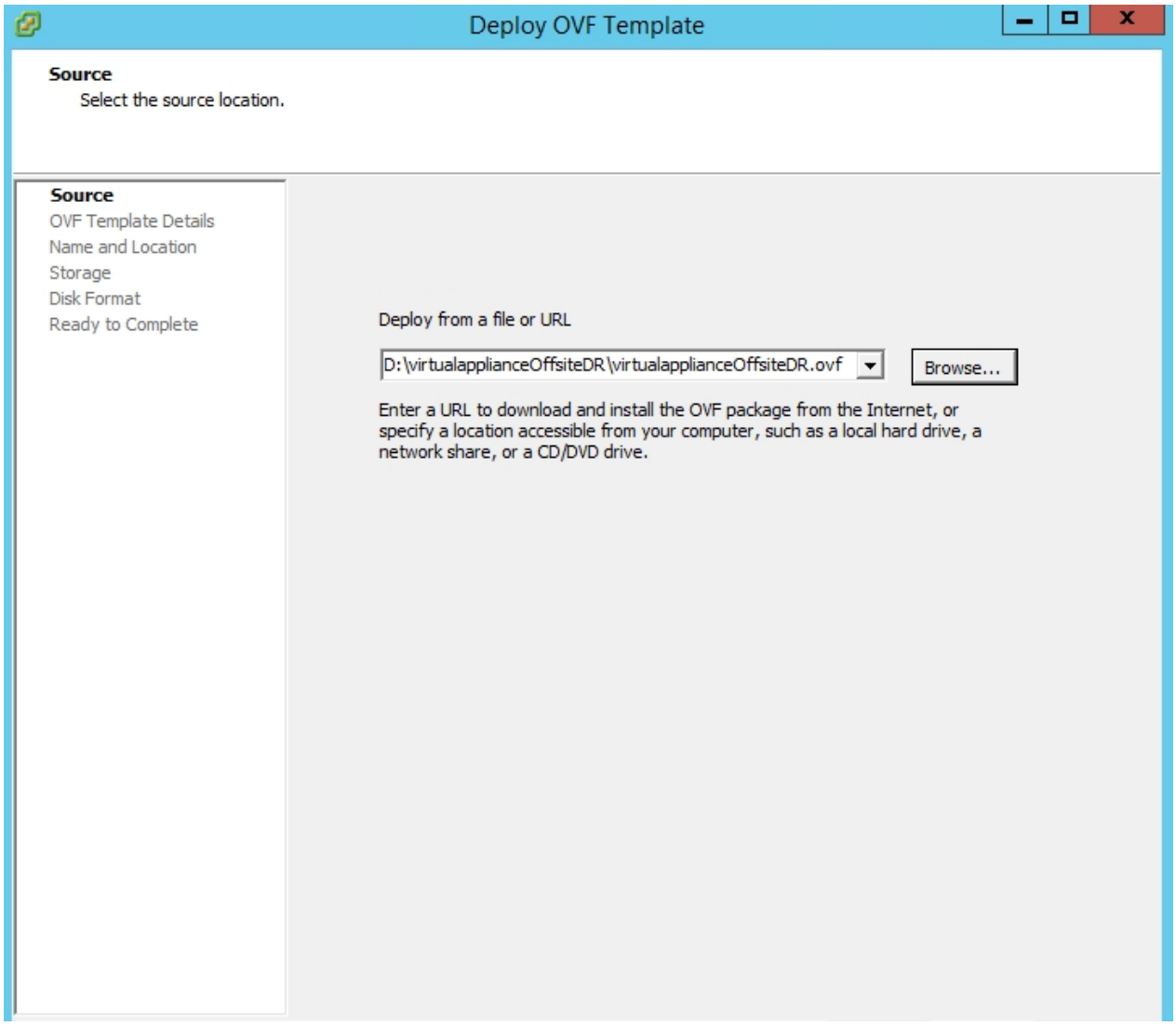

- The ovf configuration details can be viewed in next page like below.

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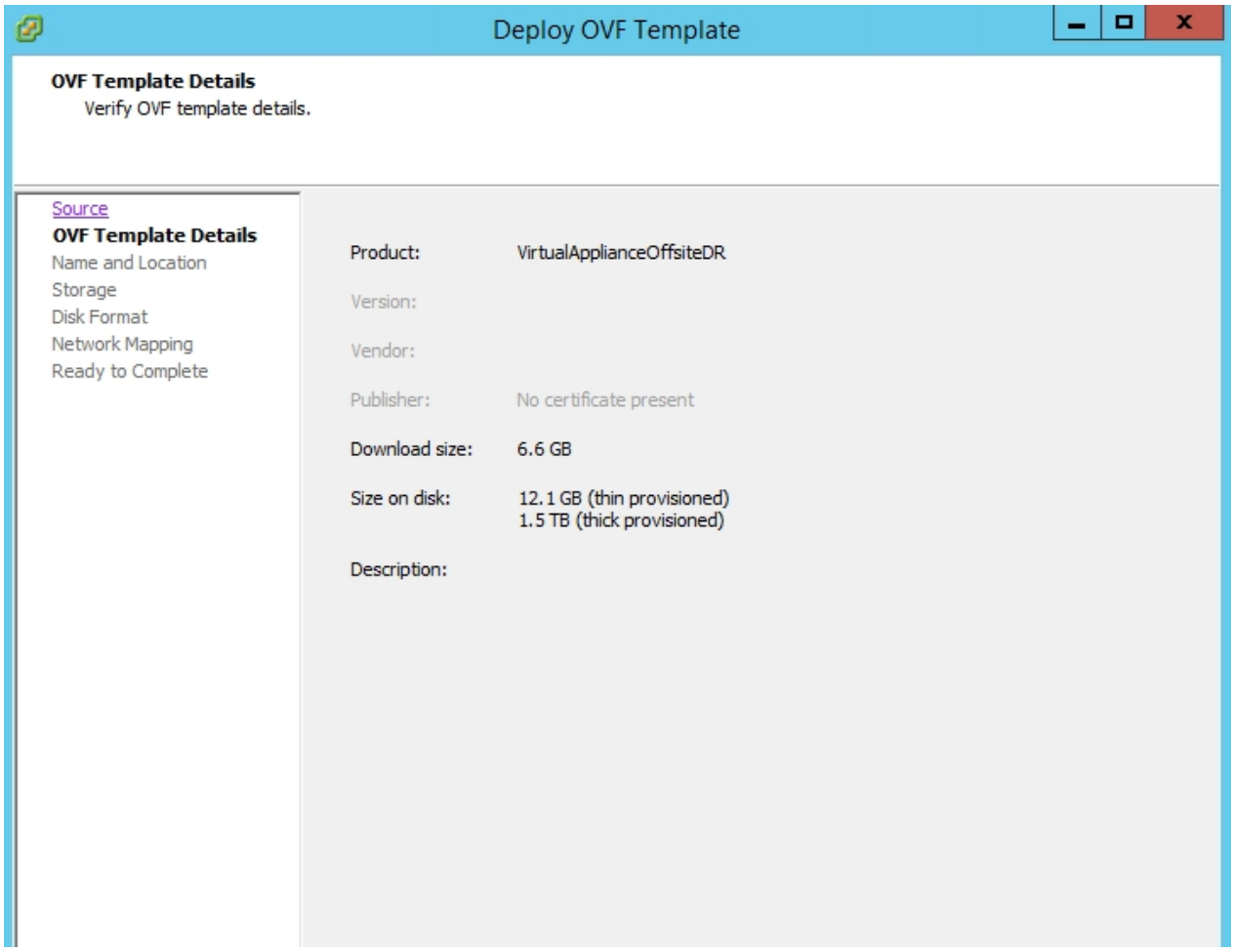

- Name the Deploying Virtual Machine.

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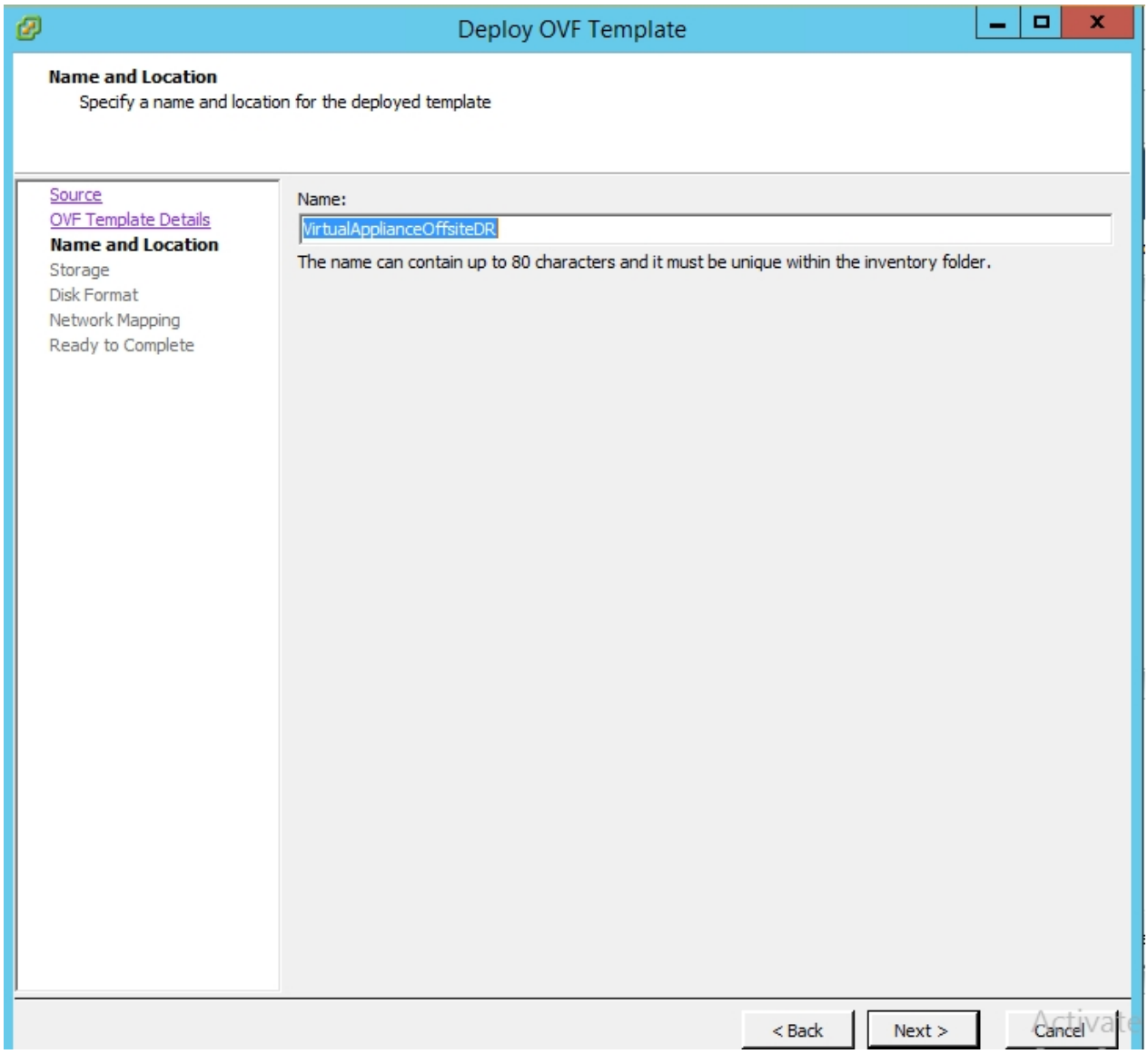

- Configure storage location for the deploying machine.

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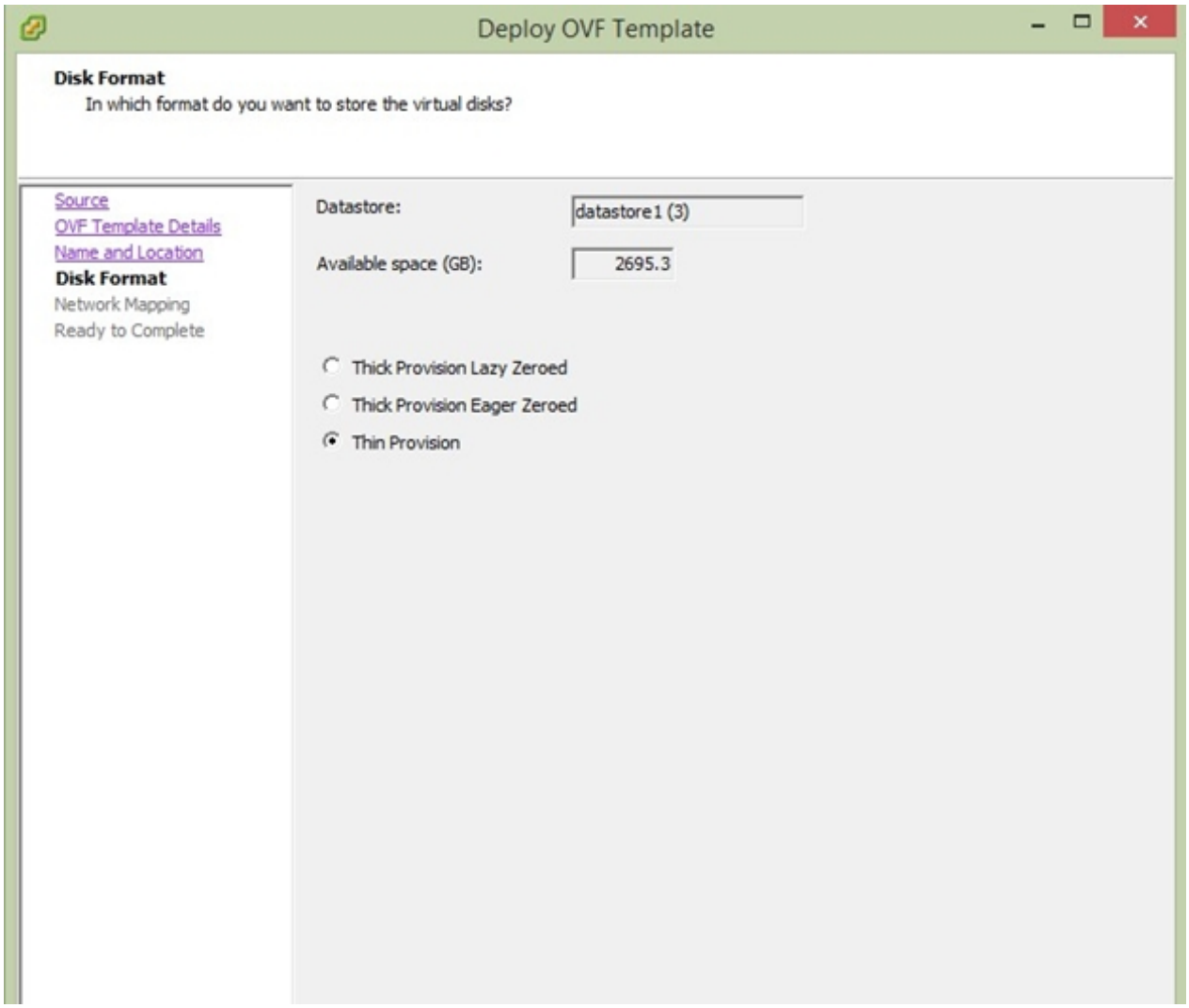

- Select the network for the virtual machine and click on next.

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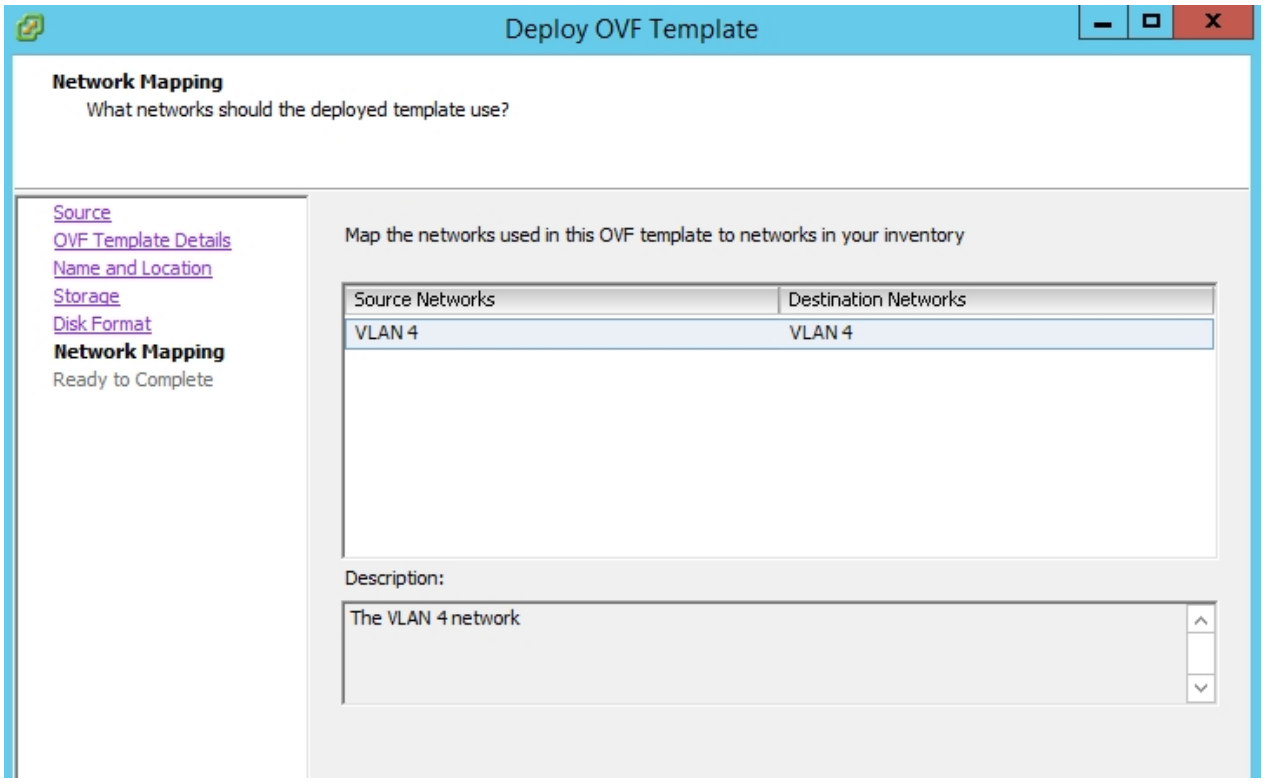

- Verify all the configuration chosen for Virtual Appliance and click on finish.

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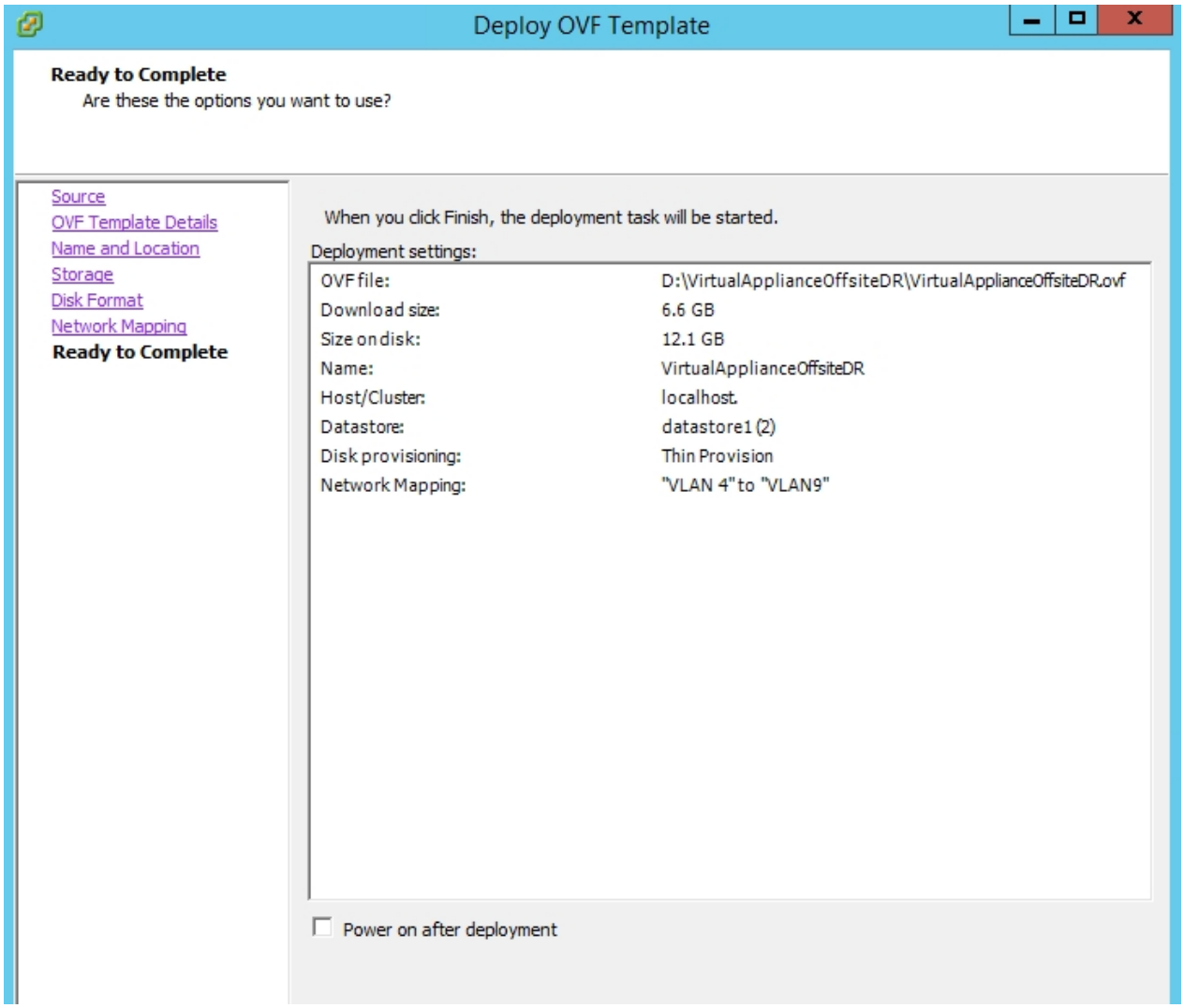
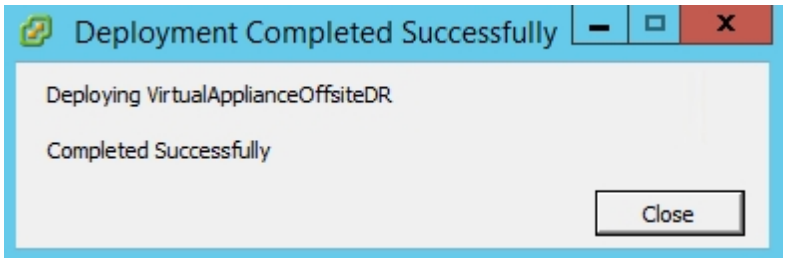


- Once virtual appliance is deployed, you will be notified with a success message.



- By default, once machine is booted it logs in automatically. If locked use below credentials:

Default User details:
Username: vembu
Password: password
Root password: password (sudo -s)

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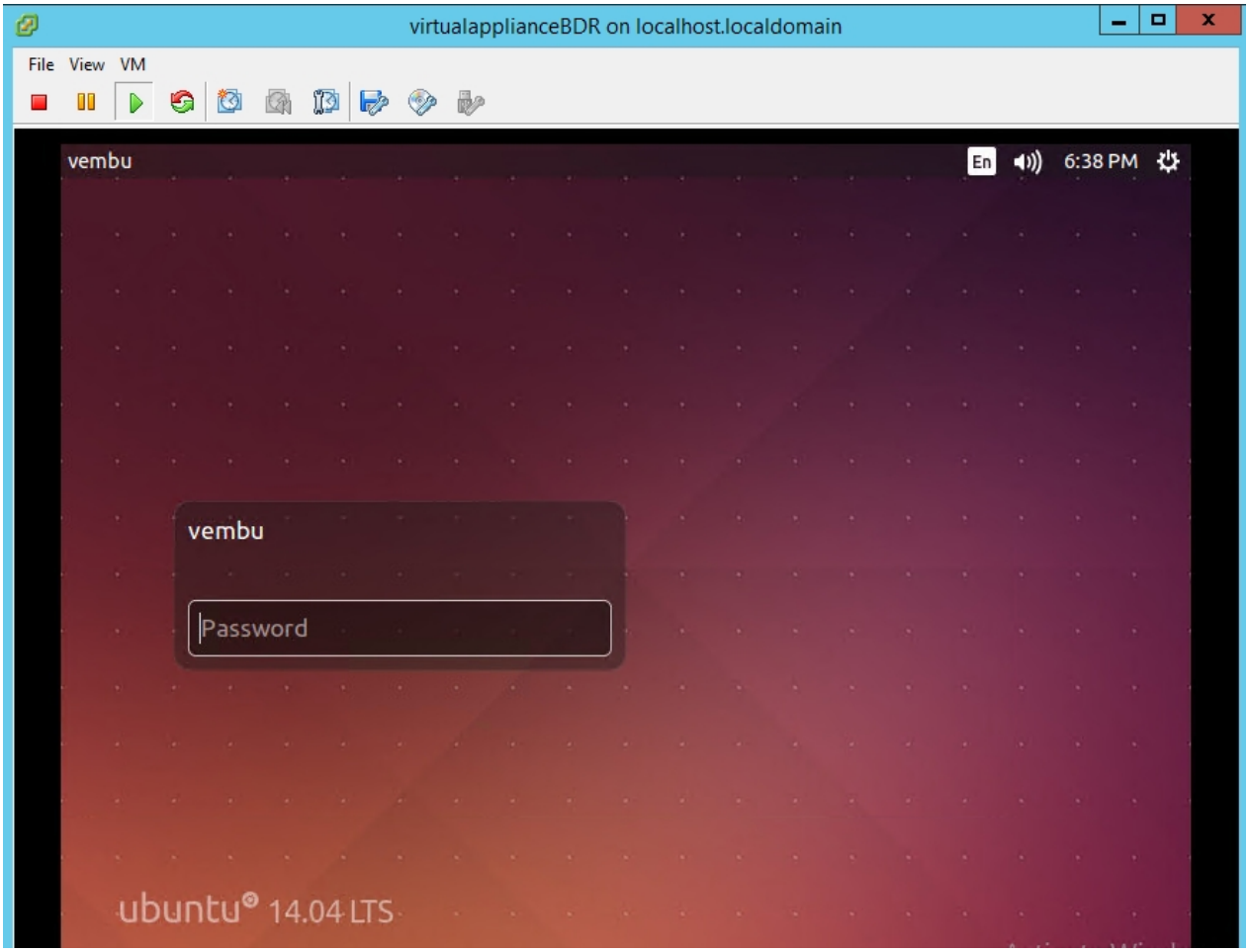
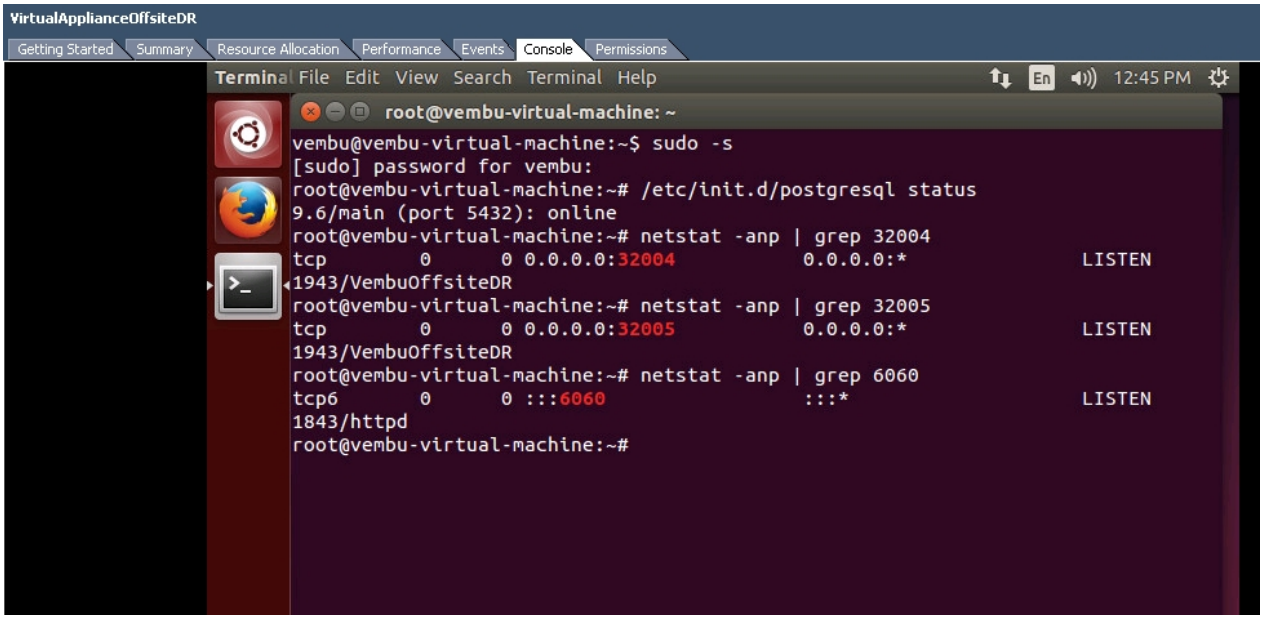


- Open terminal and verify whether the PostGreSQL and Vembu OffsiteDR services are started.



- Then open any web browser (FireFox or Chrome) and enter https://localhost:6061 to open Vembu OffsiteDR web console and login with username password as admin / admin.

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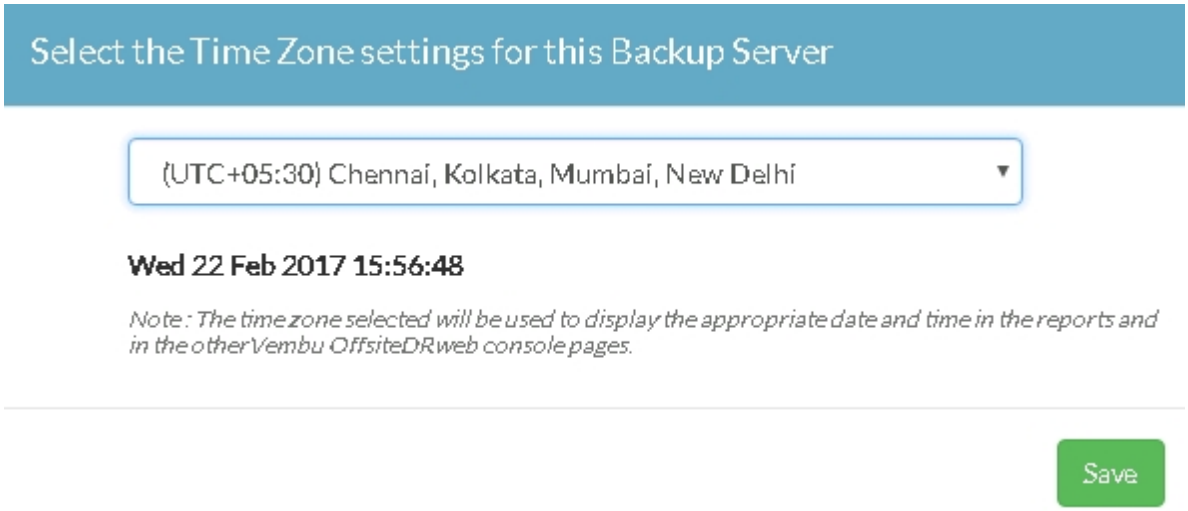
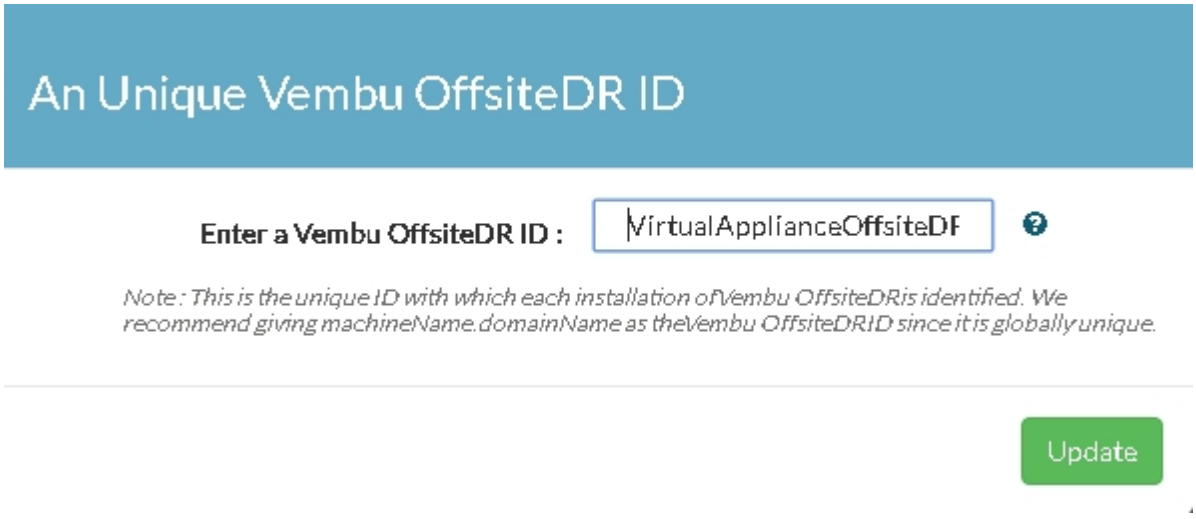
- Select your required time zone setting for the machine and click yes to proceed.



- Give an unique Vembu OffsiteDR ID, by default it takes the hostname and machine name as ID.
  Note: The following characters are permitted as part of the Vembu OffsiteDR Server ID: [A-Z][a-z][0-9][- _ .] Your ID must not start or end with special characters and it must be between 1-50 characters in length.



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- Once Vembu OffsiteDR server ID configuration is updated successfully, you will be prompted to configure the repository details to store the backup data, Choose the volume and Click Update. Deployment of Vembu OffsiteDR server on your VMware ESXi server is now successfully completed.

Vembu VMBackup User Guide

Hyper-V Virtual Appliance

A Hyper-V virtual appliance is a template that creates virtual machines instantly on Hyper-V virtual environment without manual VM creation or separate installation of operating system or Vembu OffsiteDR server.

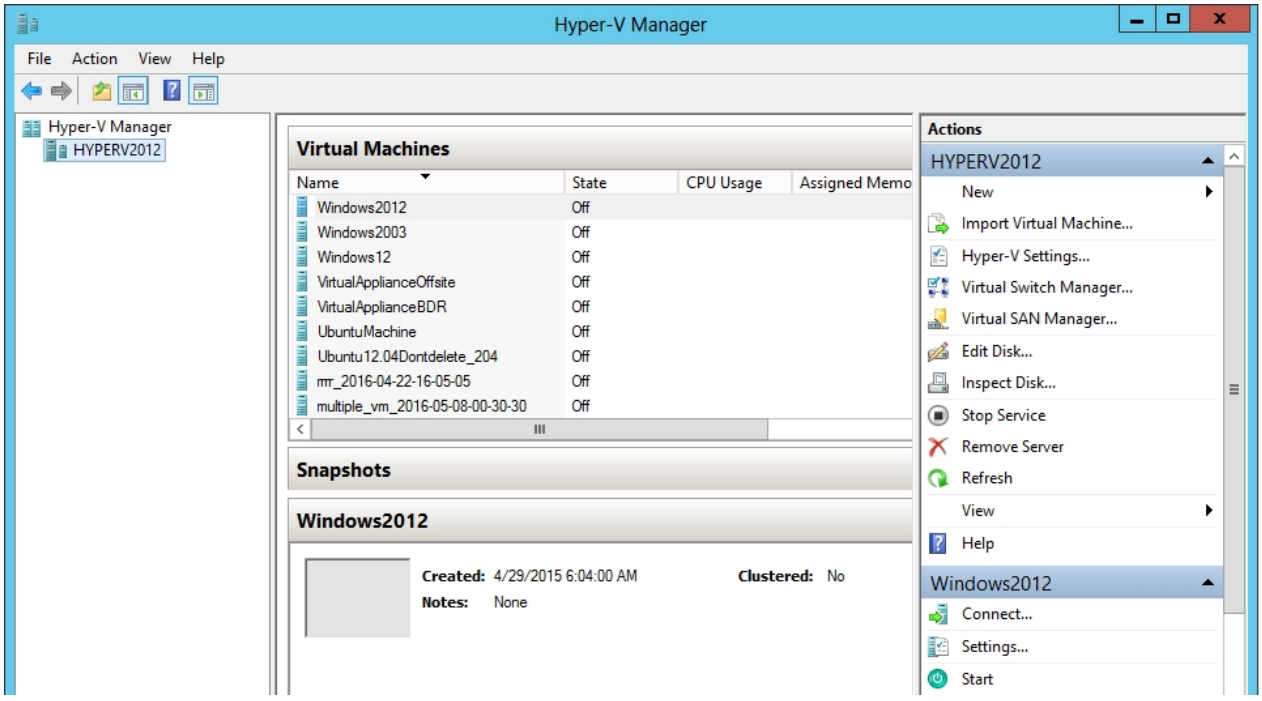
Download Hyper-V virtual appliance from following link: Click here to Download Hyper-V virtual appliance.

The downloaded file will be in zip format. Unzipping the file will have following:

- Virtual appliance template file (VHD) for Hyper-V
- User Guide on How to deploy Hyper-V Virtual Appliance
- ReadMe file

Steps to Deploy Virtual appliance on Hypervisor:

- Open the Hyper-V Manager console.



- Right click on the corresponding server under Hyper-V Manager.

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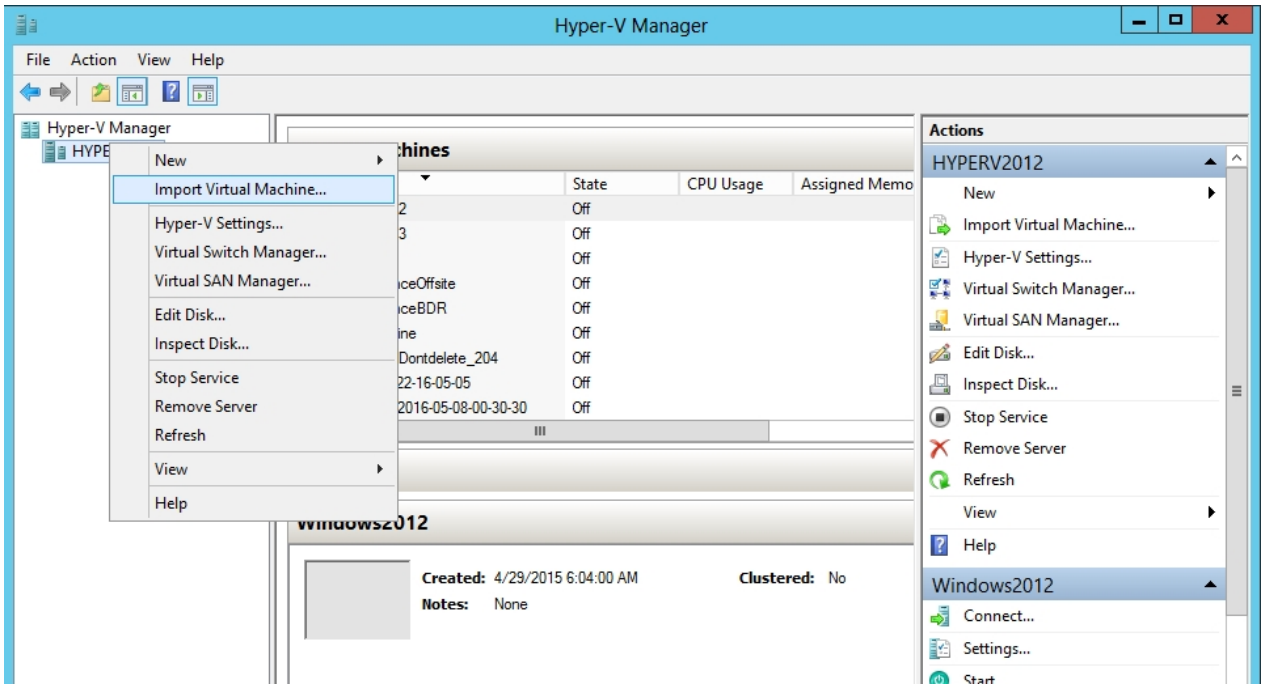
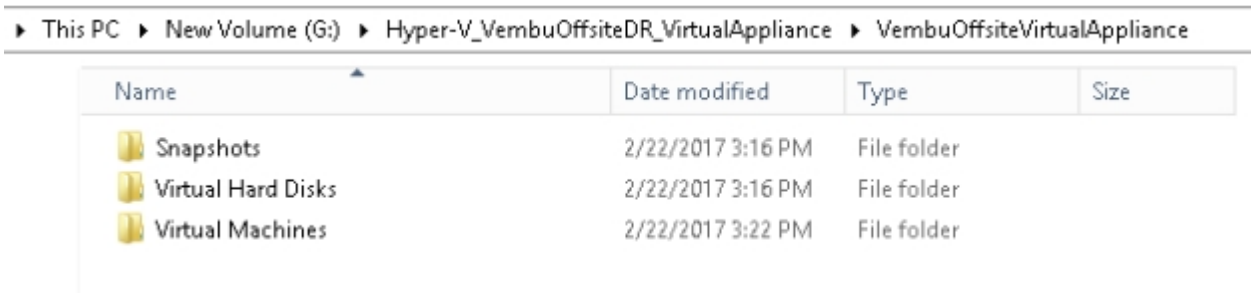


- Check whether VirtualApplianceOffsite folder contains the 3 folders shown in the screen shot below.



- Right click over Hyper-V host → select Import Virtual machine.
- Select the folder containing VHD and XML files.

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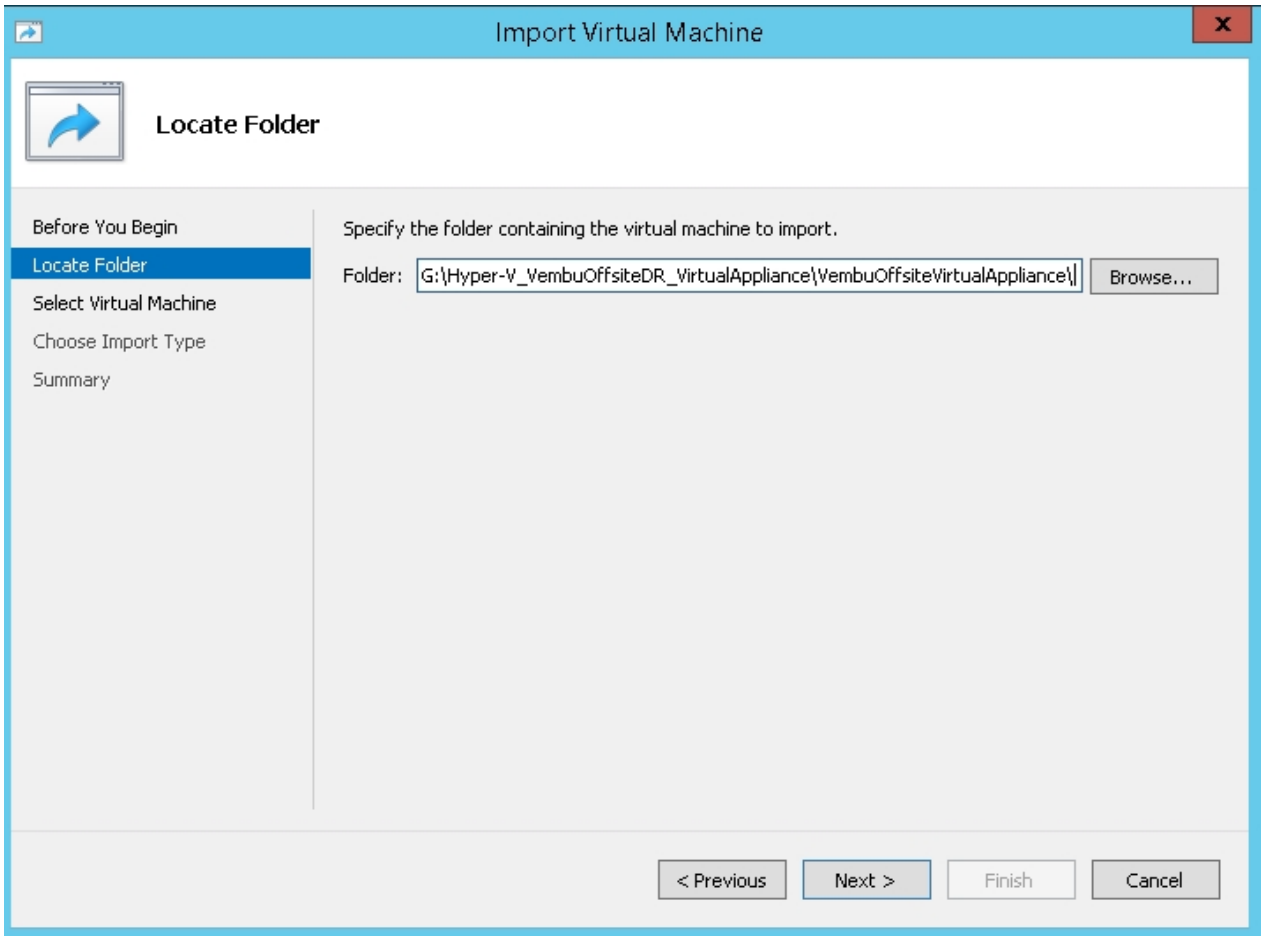

- Select the VM 'VirtualApplianceOffsite' to import and click next.

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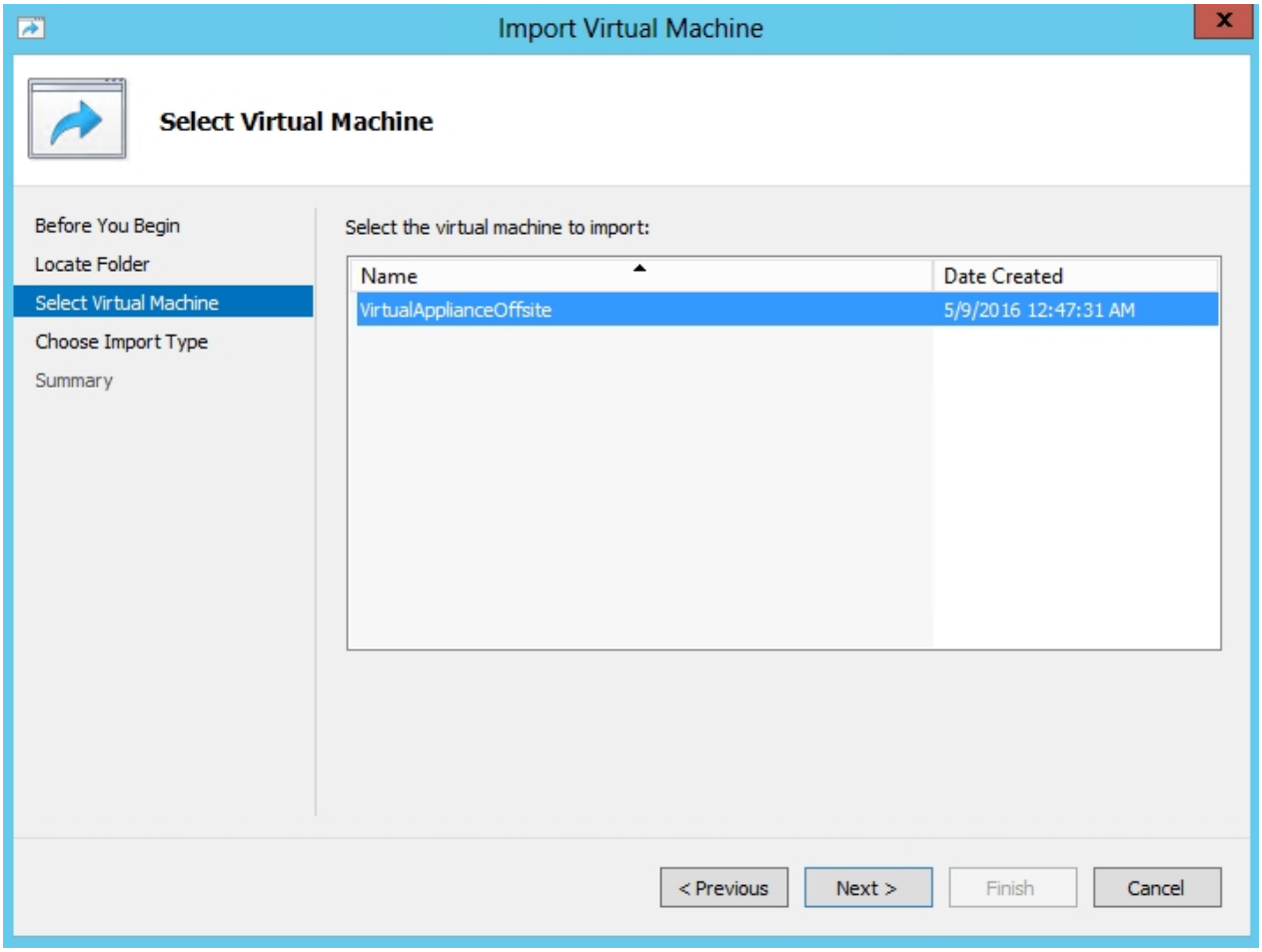

- Choose import type as appropriate.

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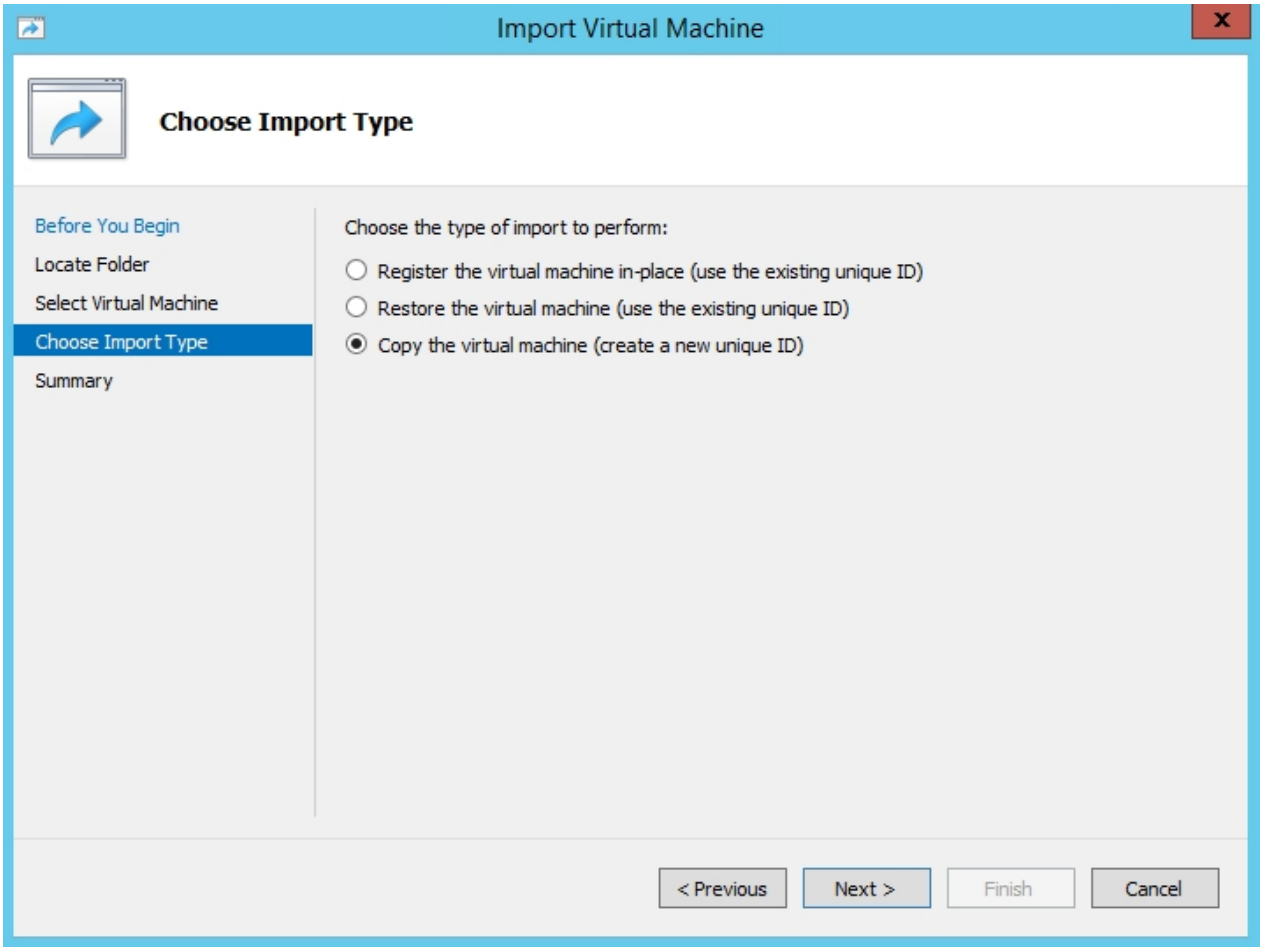

- Select location of configuration files for the VM and proceed with Next.

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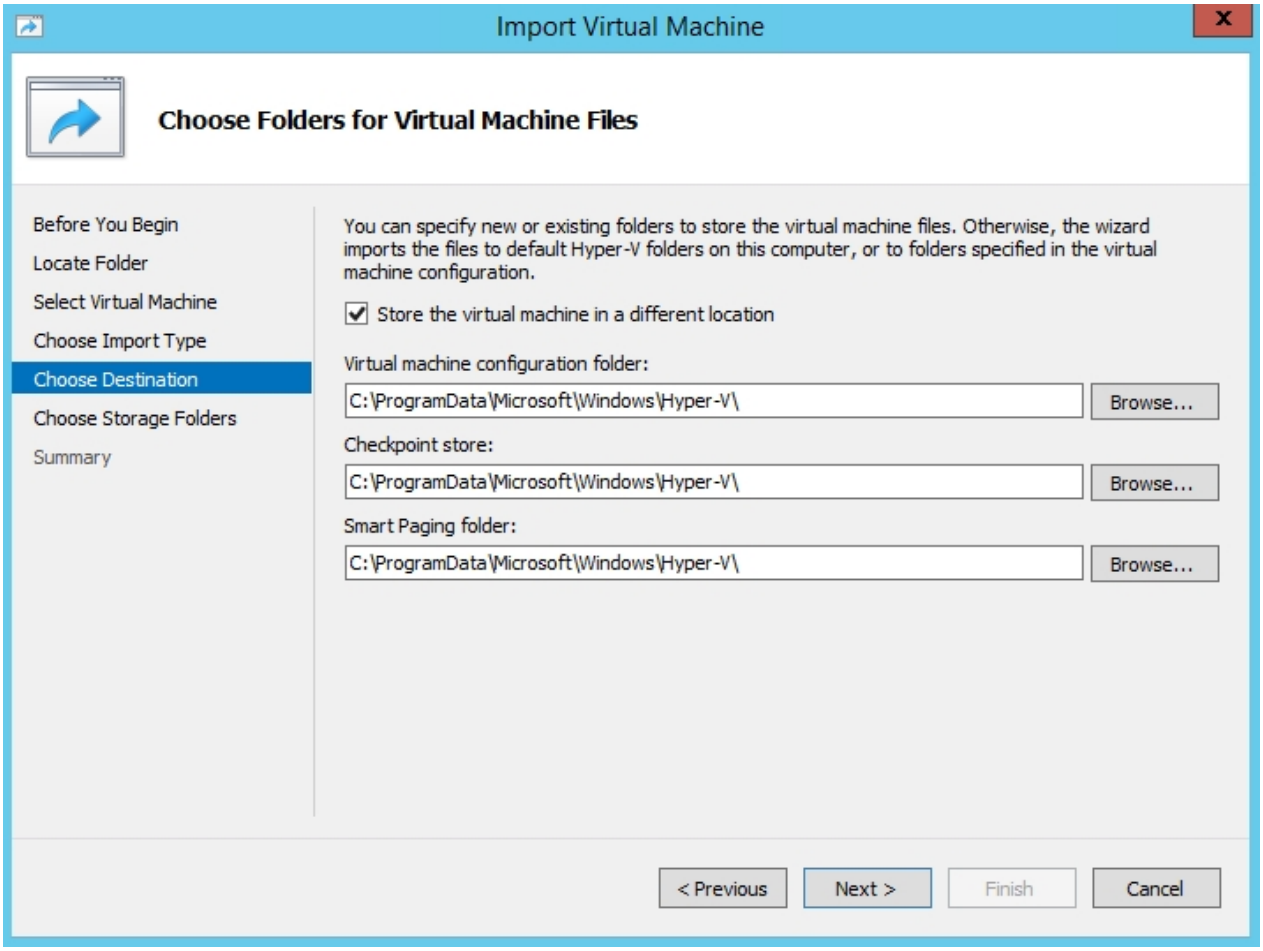

- Select storage location of the VHD files and click Next.

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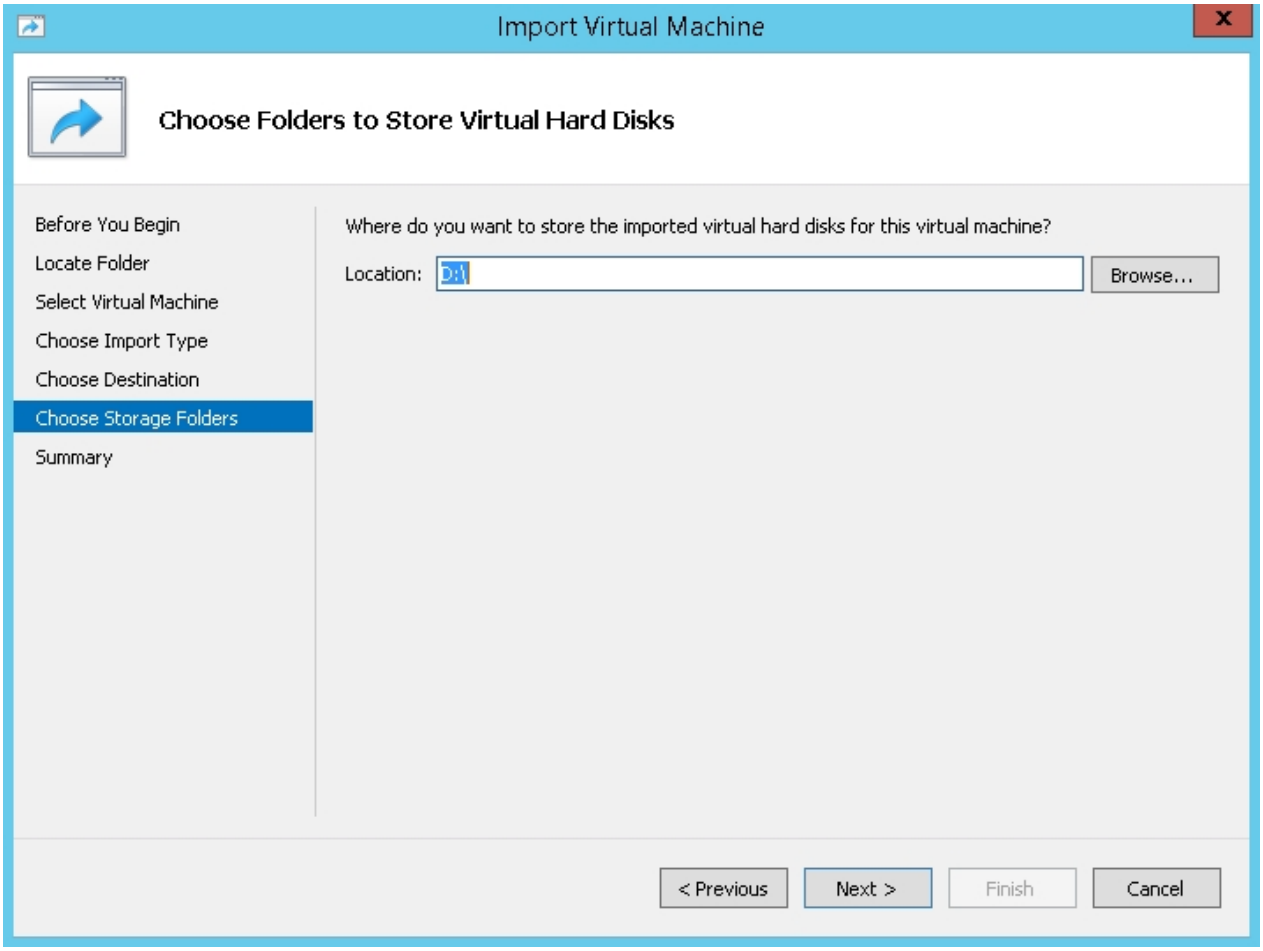

- Verify the configurations provided via summary and click finish to create VM.

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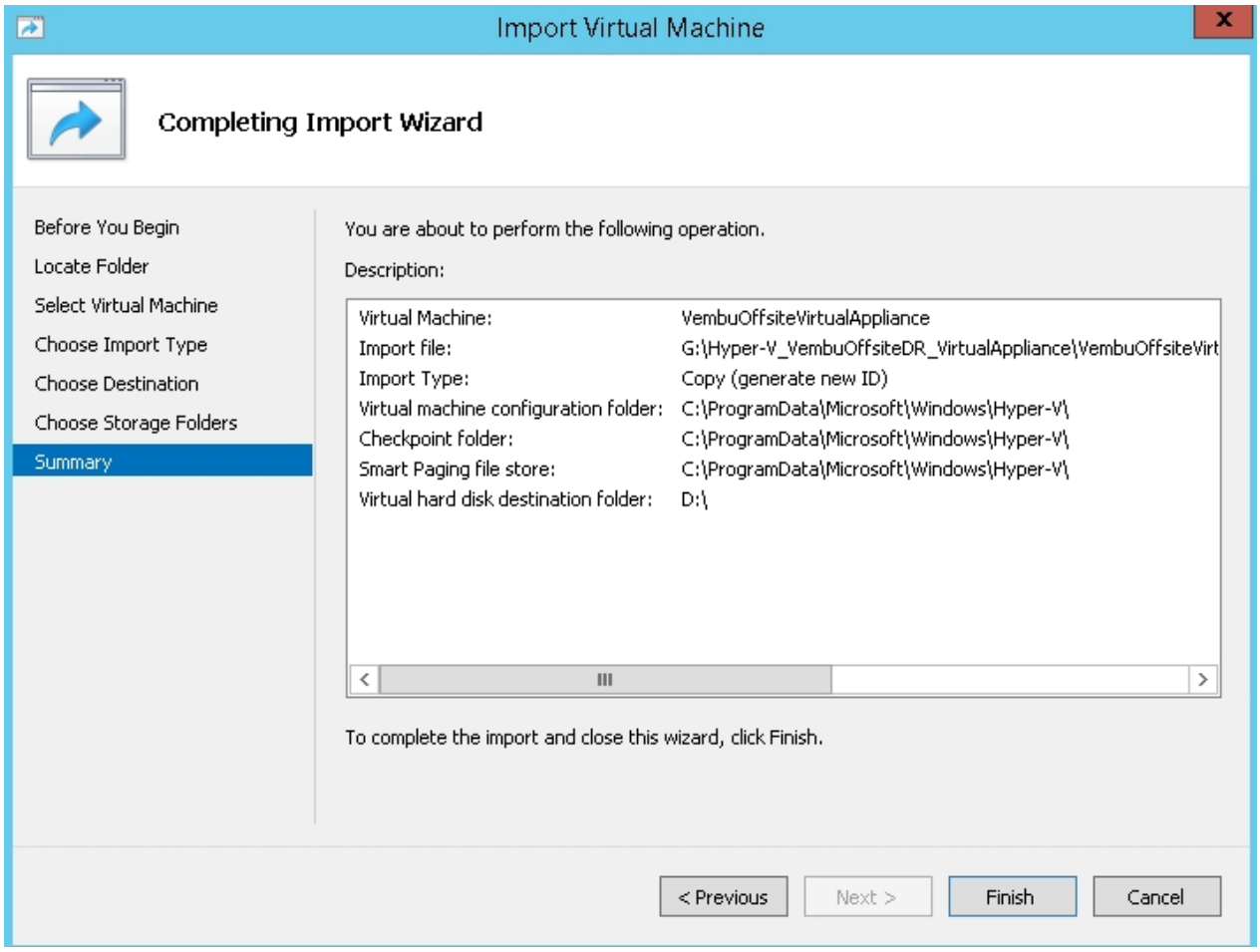
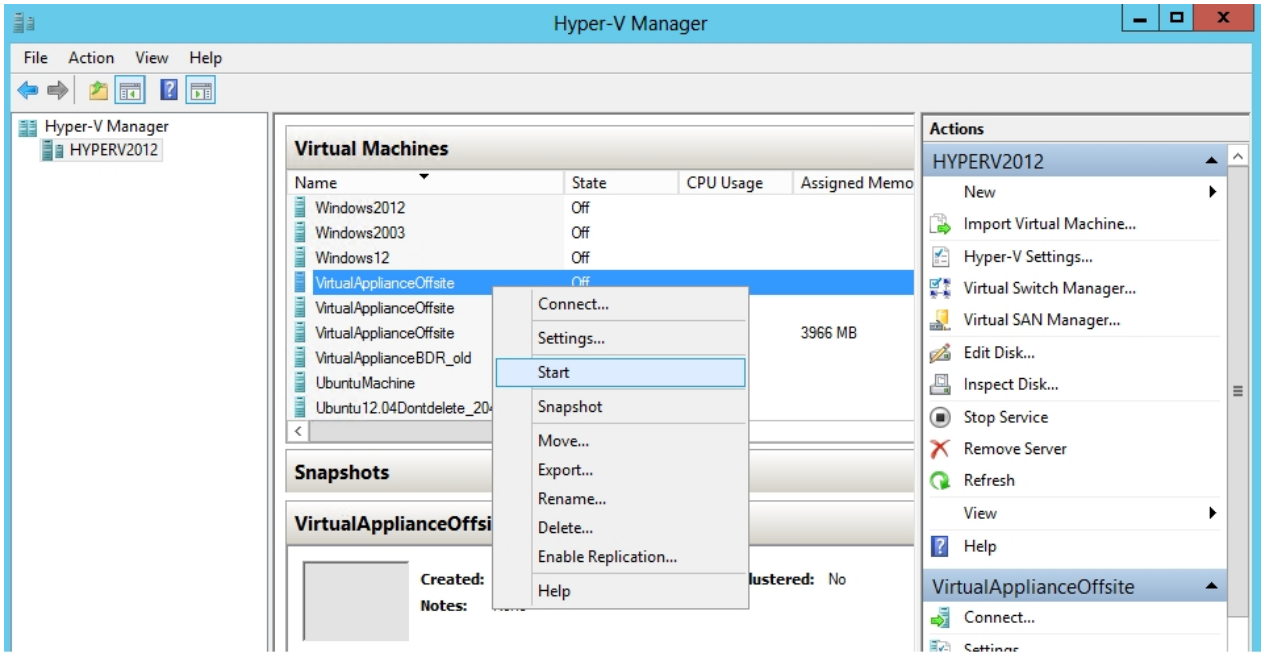


- Once deployment is completed successfully, start the created virtual machine.



- By default, once machine is booted it logs in automatically. If locked use below credentials:

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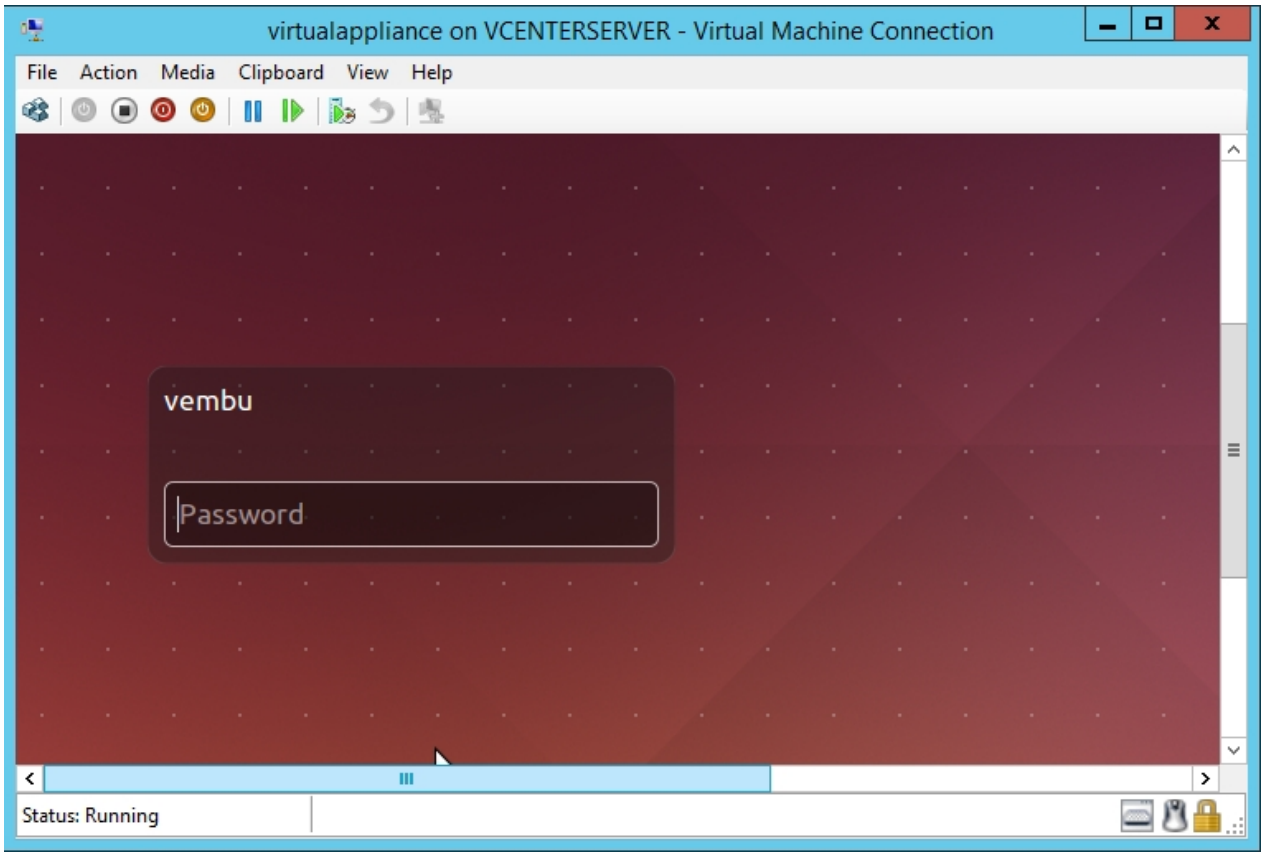
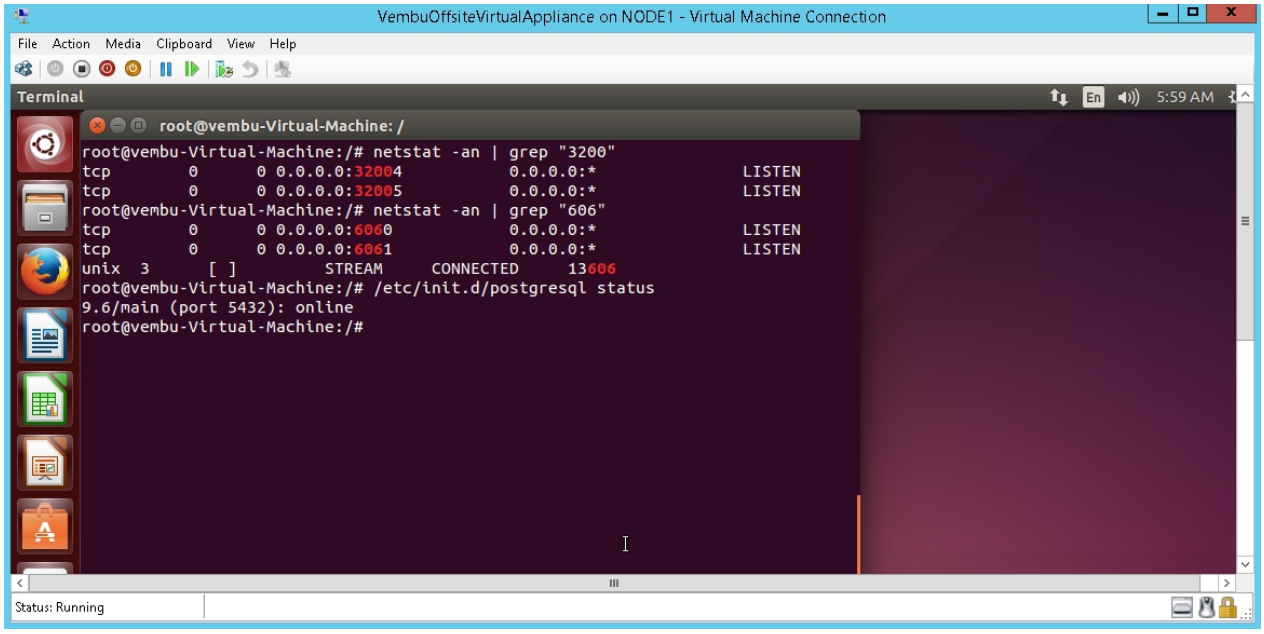
Default User details:
Username: vembu
Password: password
Root password: password (sudo -s)



- Open terminal and verify whether the MySQL, Mongo and Vembu OffsiteDR services are started.



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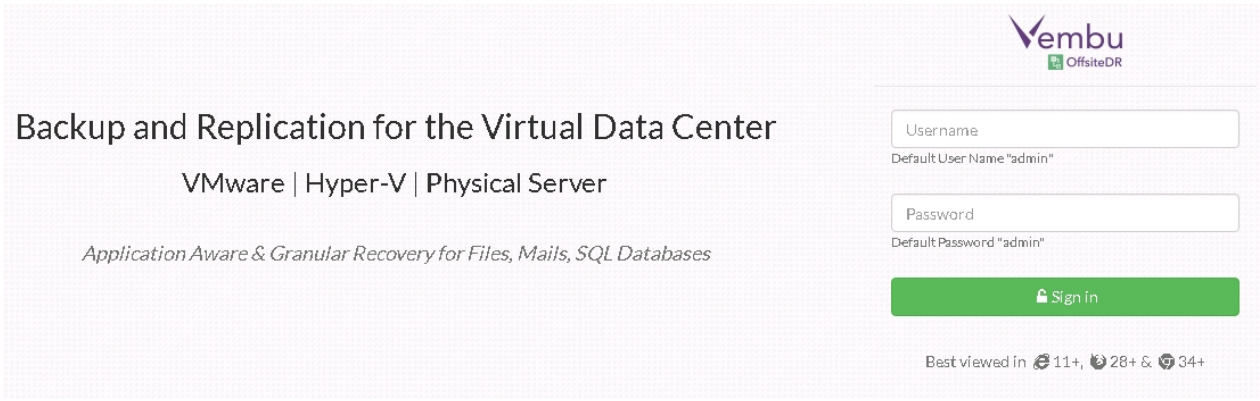
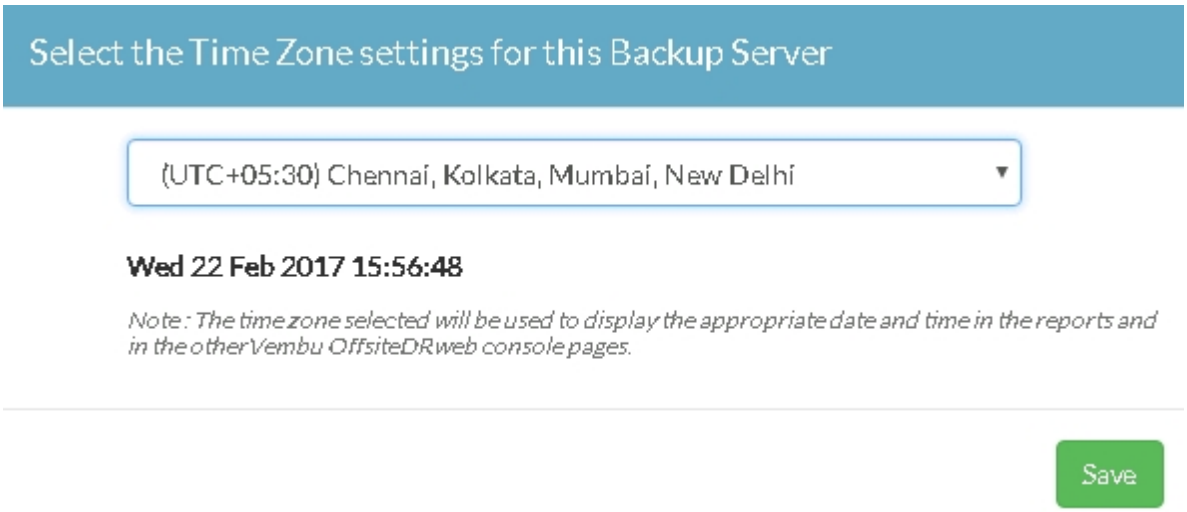
- Then open any web browser(FireFox or Chrome) and enter https://localhost:6061 to open Vembu OffsiteDR web console and login with username password as admin / admin.



- Select your required time zone setting for the machine and click yes to proceed.



- Give an unique Vembu OffsiteDR ID, by default it takes the hostname and machine name as ID.
  Note: The following characters are permitted as part of the Vembu OffsiteDR Server ID: [A-Z][a-z][0-9][- _ .] Your ID must not start or end with special characters and it must be between 1-50 characters in length.

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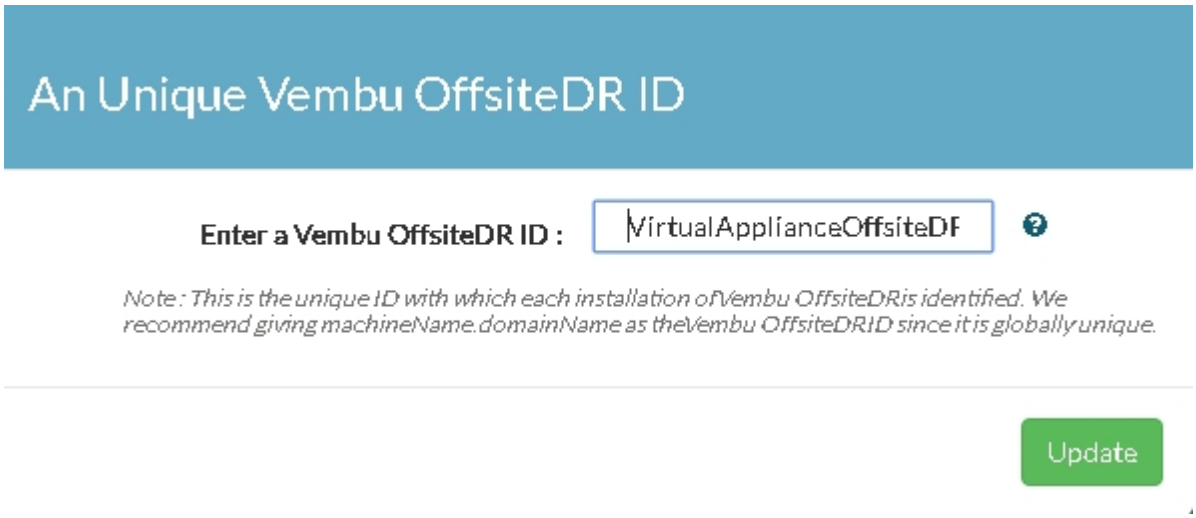

- Once Vembu OffsiteDR server ID configuration is updated successfully, you will be prompted to configure the repository details to store the backup data, Choose the volume and Click Update. Deployment of Vembu OffsiteDR server on your Hyper-V server is now successfully completed.

Limitations:

- KVM installation has some permission issues.
- Instant Boot is not supported.
- Virtual Appliance does not have network adapter in default, user needs to manually attach the network adapter/switch.

Vembu VMBackup User Guide

Backup Proxy

- Go to Downloads and choose the tab 'Vembu VMBackup'.
- Download the Windows Client installer.

- Run the downloaded installer and click next on the Welcome window.

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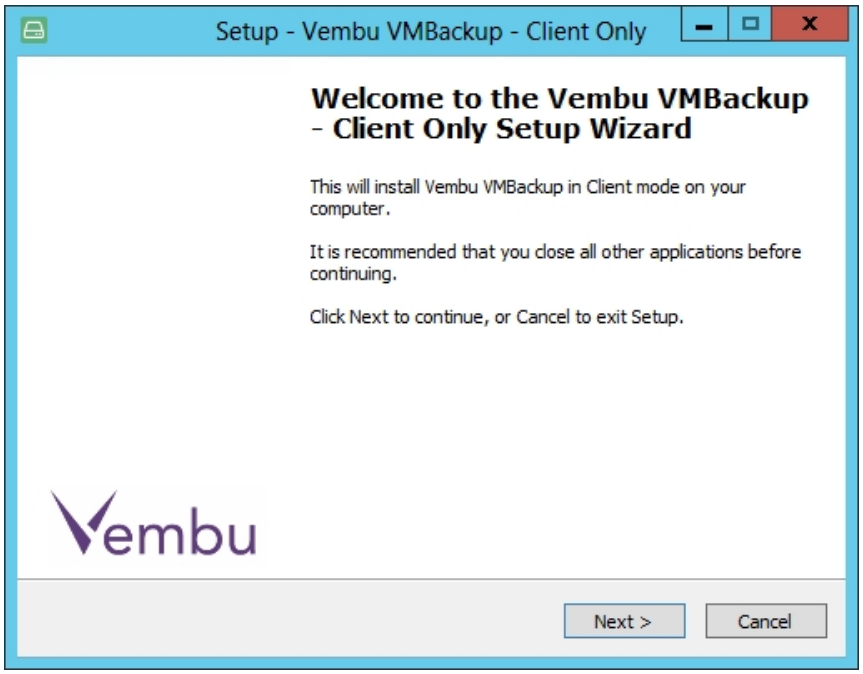
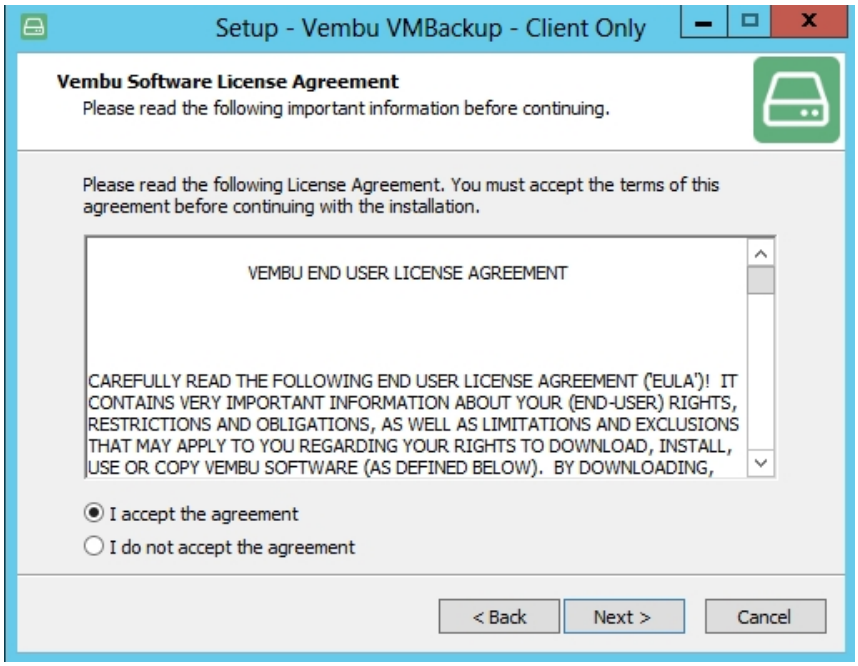


- Read and agree to Vembu Software license agreement and click Next.



- The installation wizard will ask to enter Vembu VMBackup ID. By default it will be your system name but it is recommended that you give your email ID, since it is globally unique. Click next.

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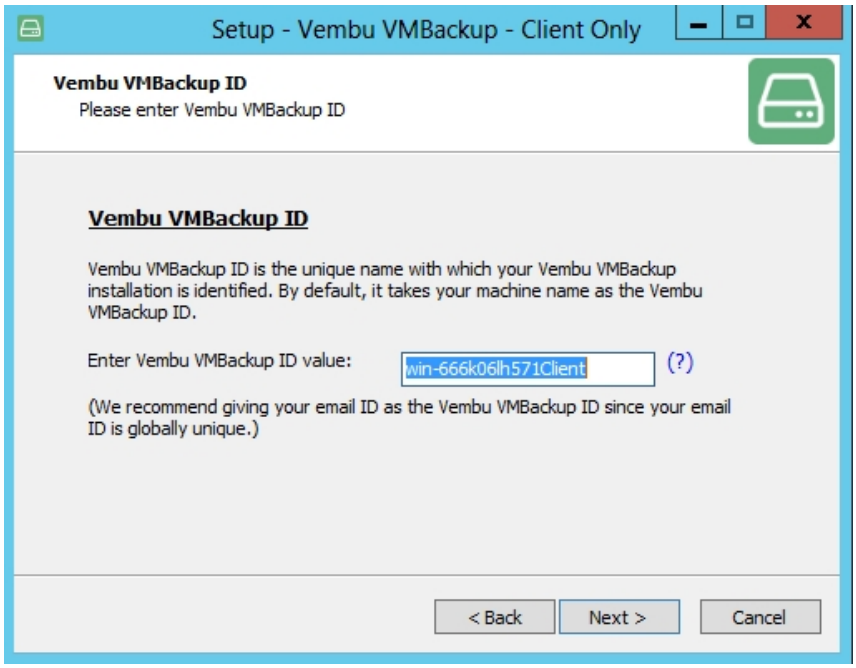
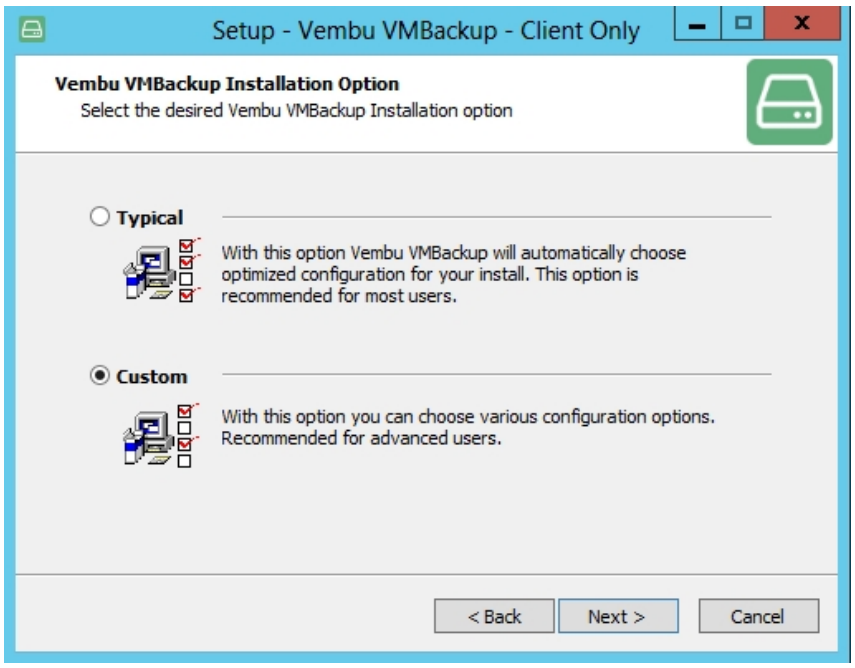


- Choose the installation option you want to proceed with.
- Opting for Typical will automatically choose an optimized configuration for your install. Proceed with Custom if you want to change the default values. Click on next when done.
  Note: It is recommended to choose custom installation.



- Proceeding with custom installation, will lead to choose installation type. This will allow you to install Vembu VMBackup:
  - As a Windows application
  - As a Windows service
- By default, install as a Windows service will be selected.

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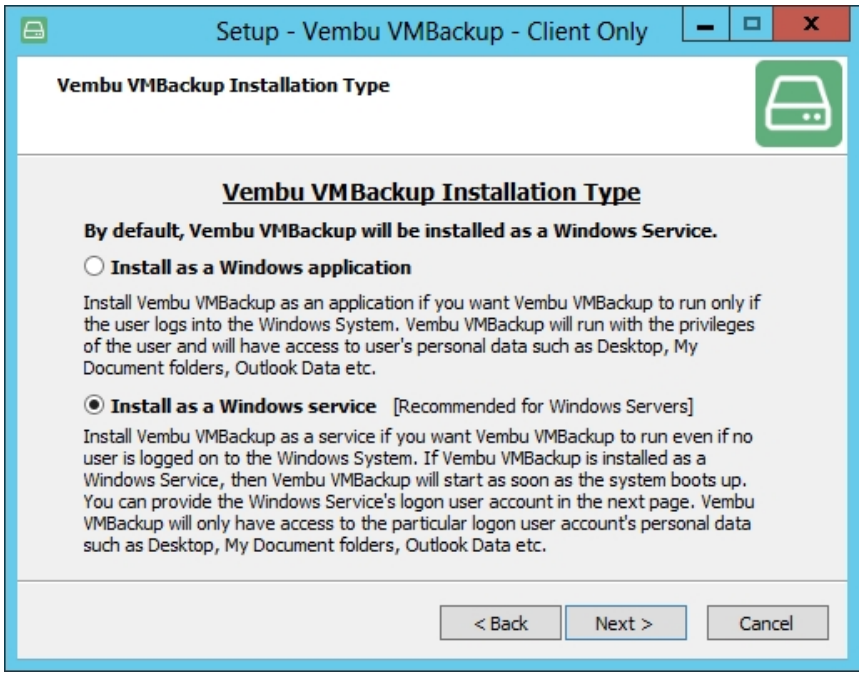
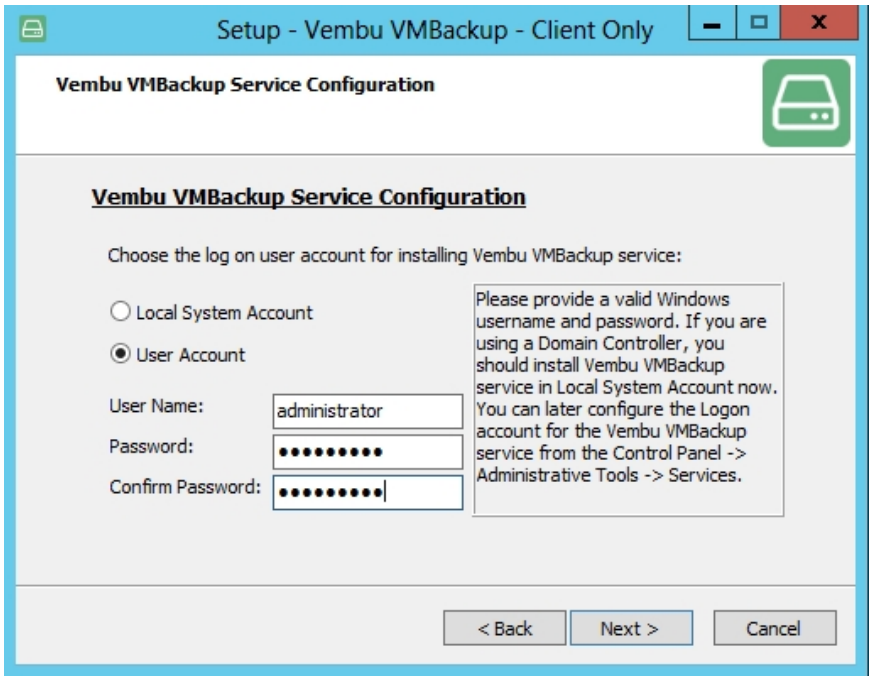


- Proceeding Next will let user configure log on account for Windows service. You can either:
    - Log-on in Local system account or
    - Log-on as a specific user (usually a user with administrator privileges).



- Proceed to choose installation location. Which is by default, set as '<OS installed drive> \Program files'.

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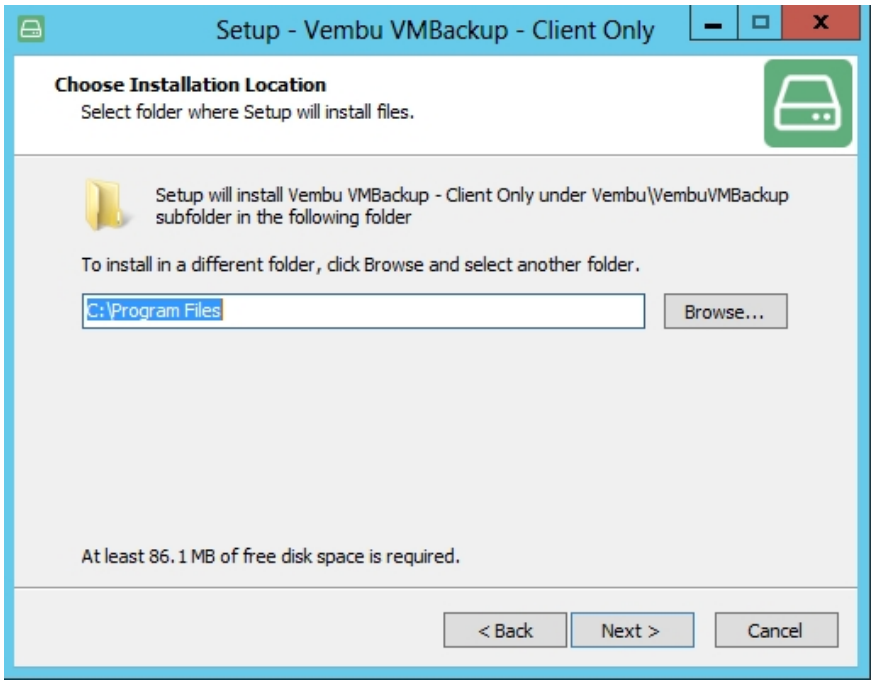
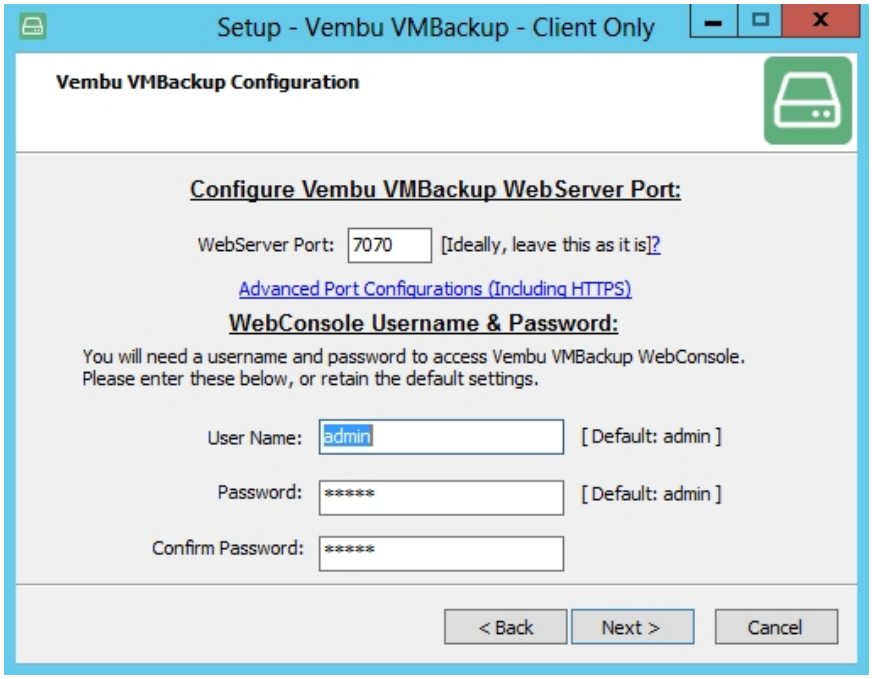


- Proceed to provide the login credentials for Webconsole access which by default set as user name: 'admin' and password: 'admin'. User can also modify webserver port, but it is recommended to leave it with the default choice unless the port is assigned for some other process already.



- Proceed to choose Program folder and then choose shortcut icons if required. Once done choosing all, verify the details provided in final window shown and proceed with installation.

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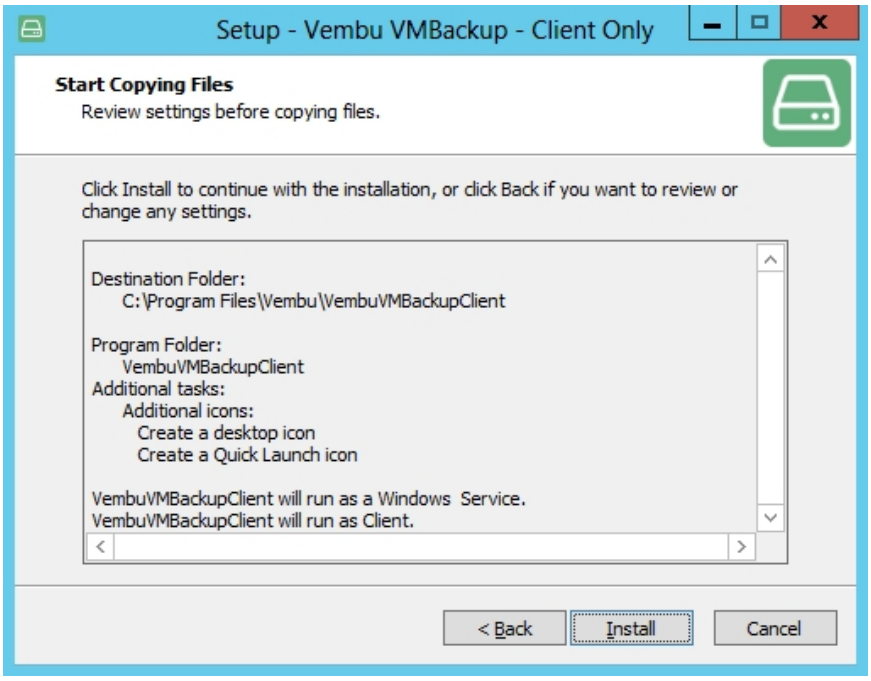
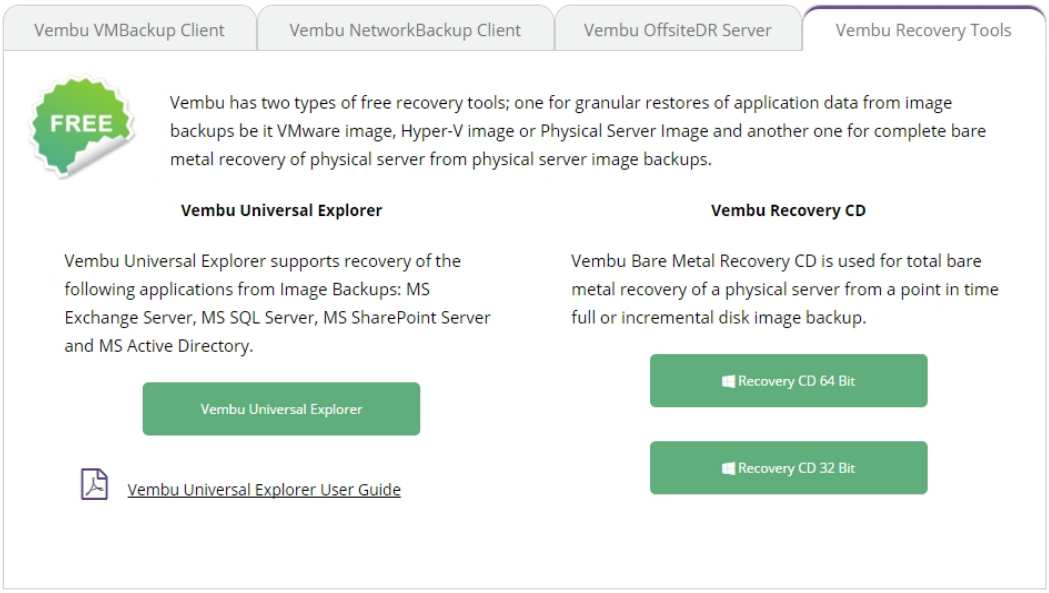


Vembu VMBackup User Guide

Vembu Universal Explorer



Download build:

Download the installer file for Vembu Universal explorer.

Steps to Installation:

- Run the downloaded installer with administrator privilege and installation process begins with the wizard below. Click next.

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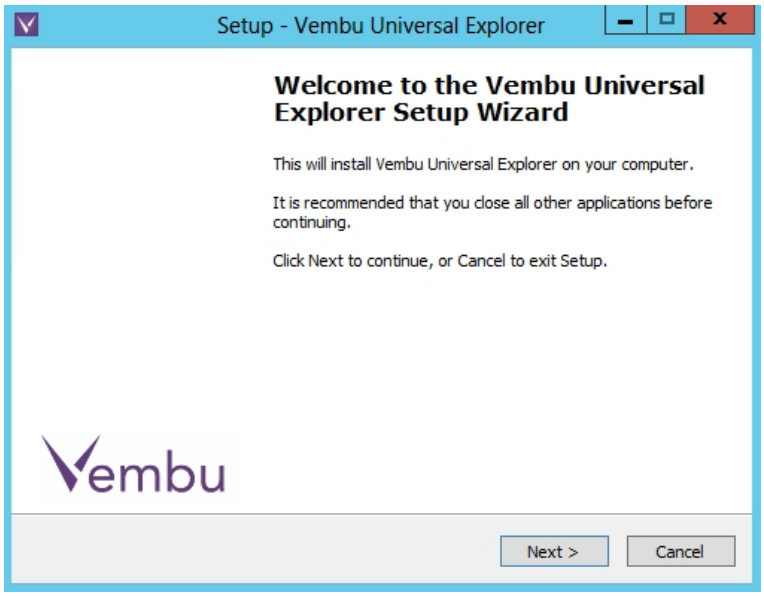
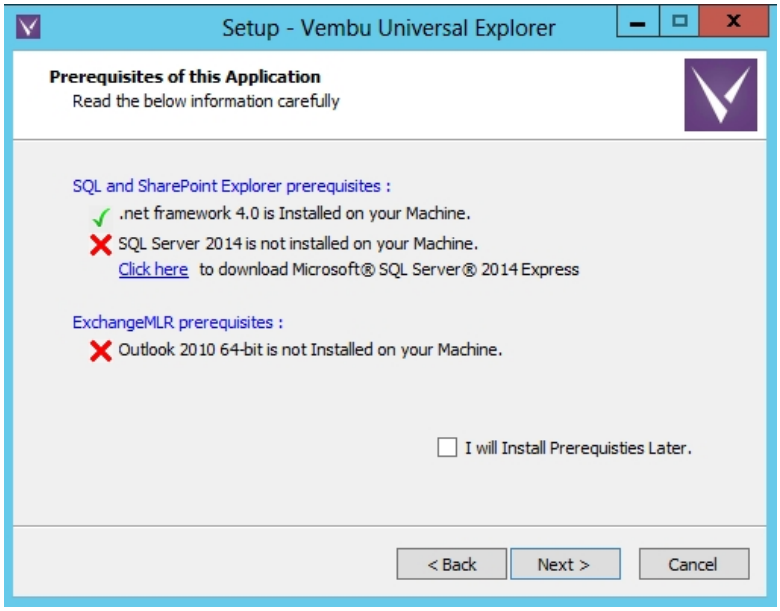


- The next window will check for the pre-requisites installation in your machine and lists them along with download link for applications that are uninstalled.
- You can either download them right away, or check the 'I will install prerequisites later' checkbox for installing them later.



- Read and agree to Vembu Software license agreement and click Next.

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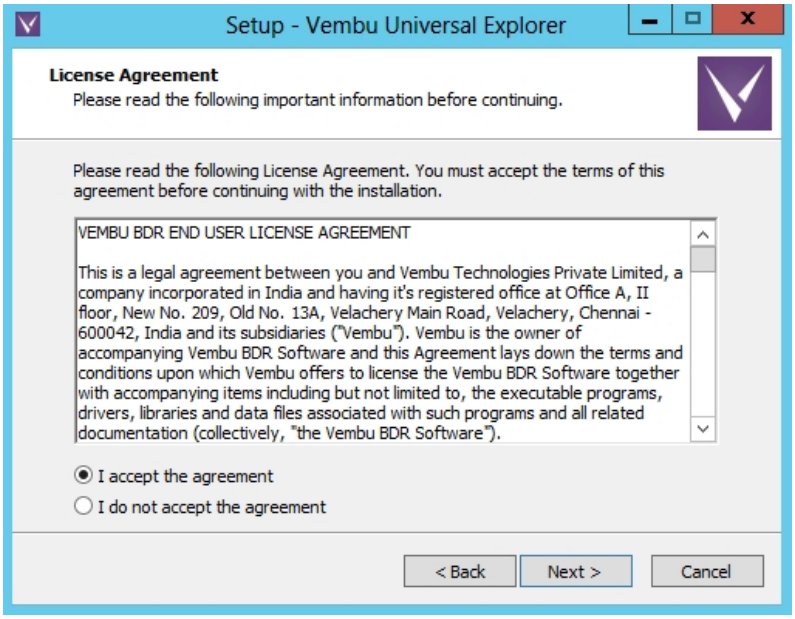
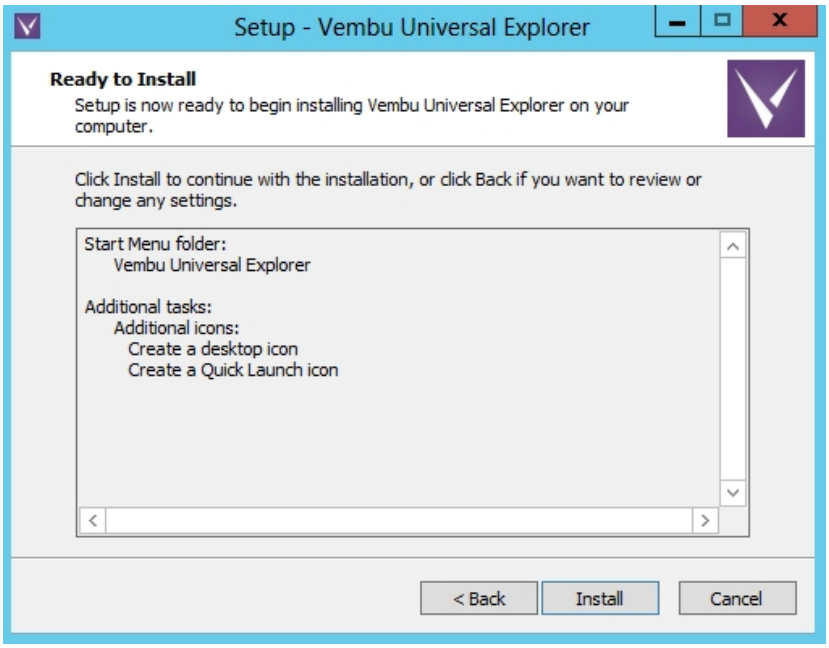


- Following wizard will ask for folder name under which setup will add program icons to the folder. In the next page, choose whether you need shortcut and quick launch icons for the program and proceed.
- Next wizard will give a summary of provided details, review it and proceed with installing Vembu Universal Explorer.



Vembu VMBackup User Guide

Uninstalling Vembu BDR/Vembu OffsiteDR - Windows

For clean uninstallation of Vembu BDR server in Windows machines, follow the below steps:

- Run the downloaded installer file for Vembu BDR and click Next in the below wizard to

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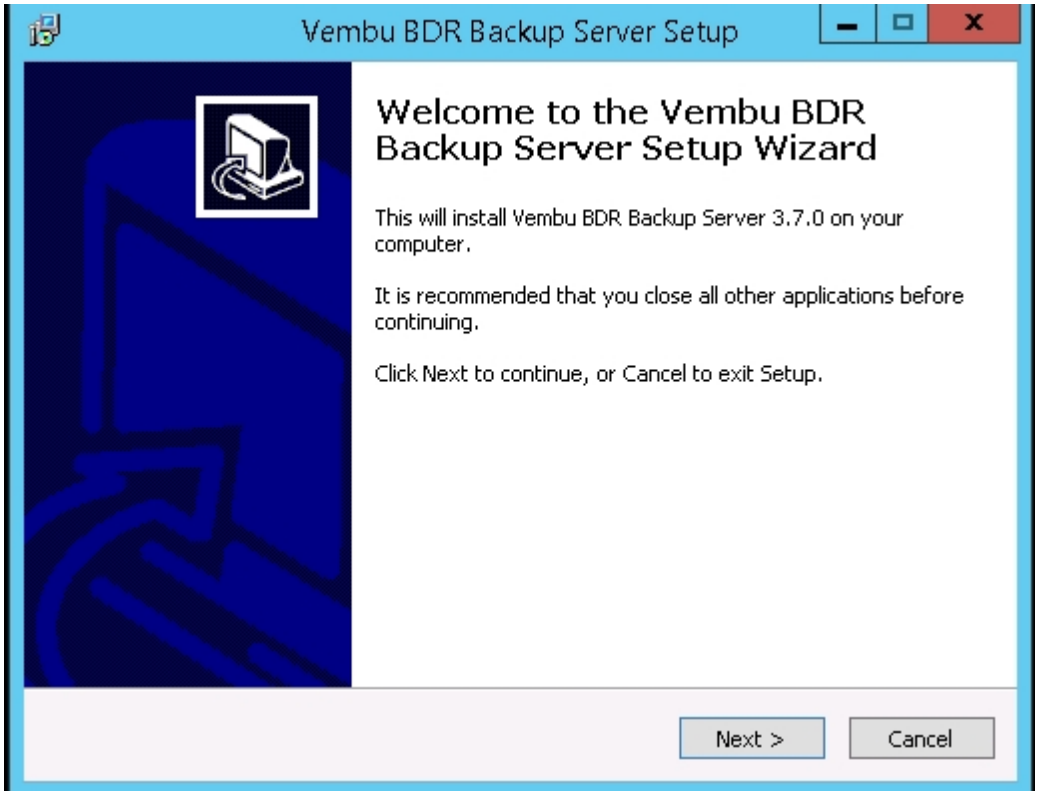
proceed with clean uninstallation process.
Note: uninstallation process will happen only if Vembu BDR is already installed. If not the installer file will proceed with installing Vembu BDR and its prerequisites.



- 'Vembu BDR License agreement' is the next step, read the agreement carefully and choose 'I accept the agreement' option.
  Note: Opting to 'I do not accept the agreement' will block you from proceeding with uninstallation.
- Click Next

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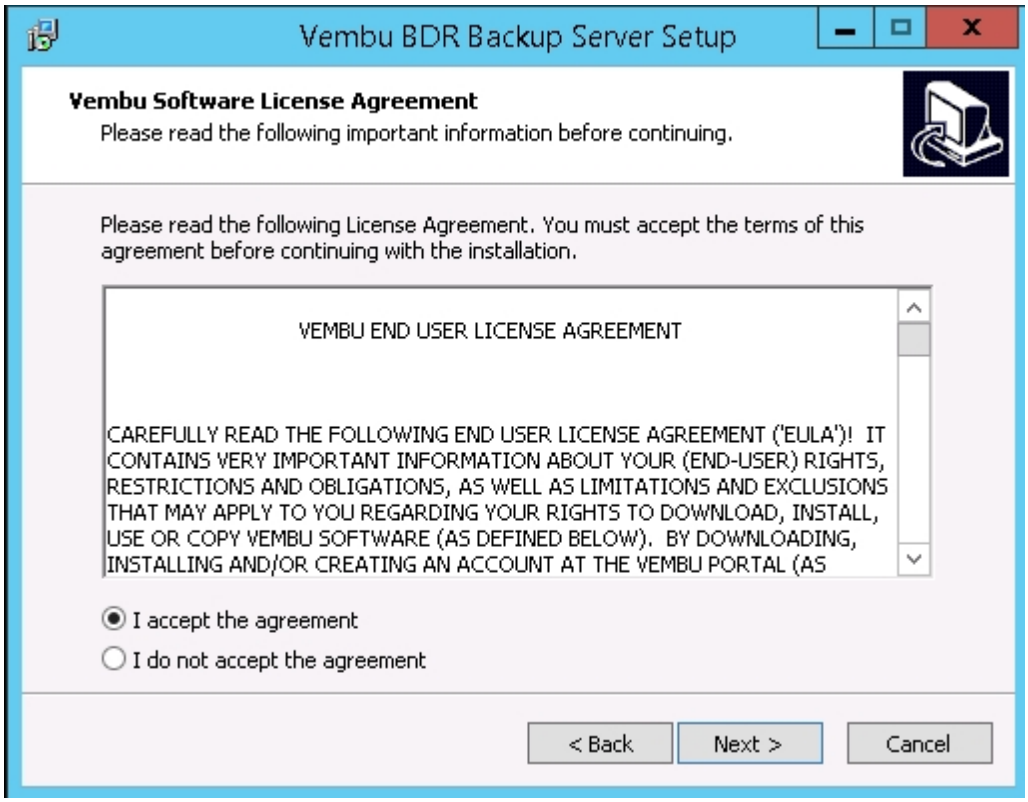
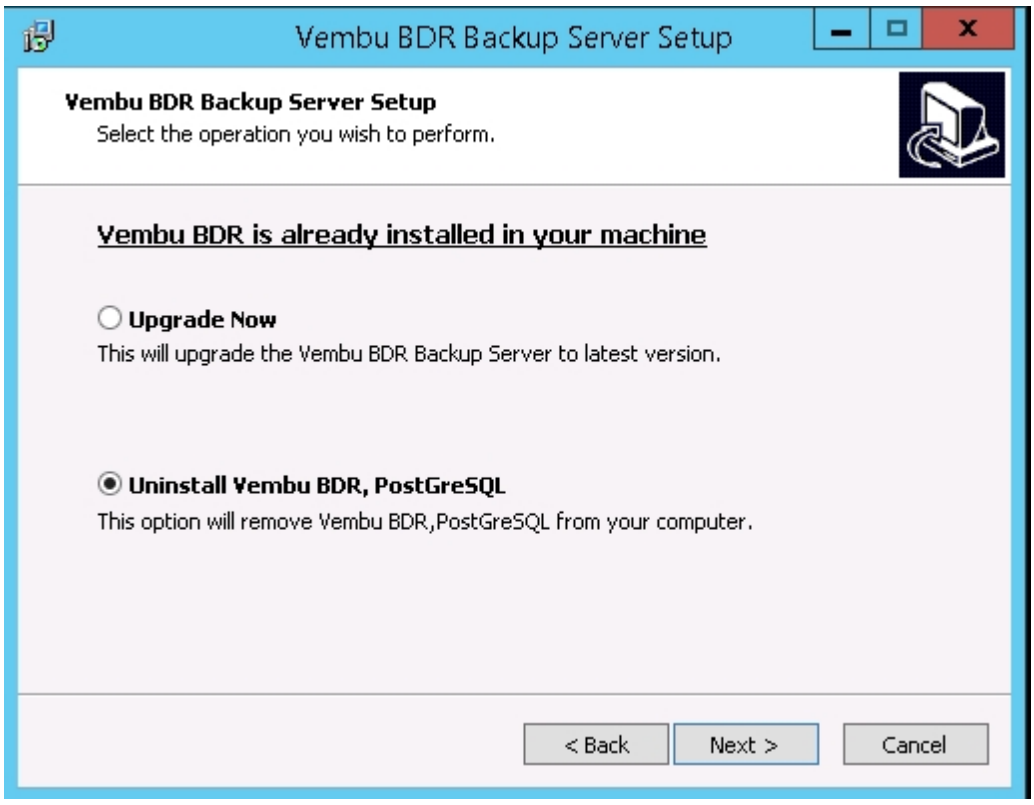


- The next step in wizard will ask you to choose between 'Upgrade Now' and 'Uninstall Vembu BDR, PostGreSQL'.
- To proceed with uninstallation choose the latter option: 'Uninstall Vembu BDR, PostGreSQL' and click Next.



- A pop-up with a alert message will show up, click 'Yes' to proceed.

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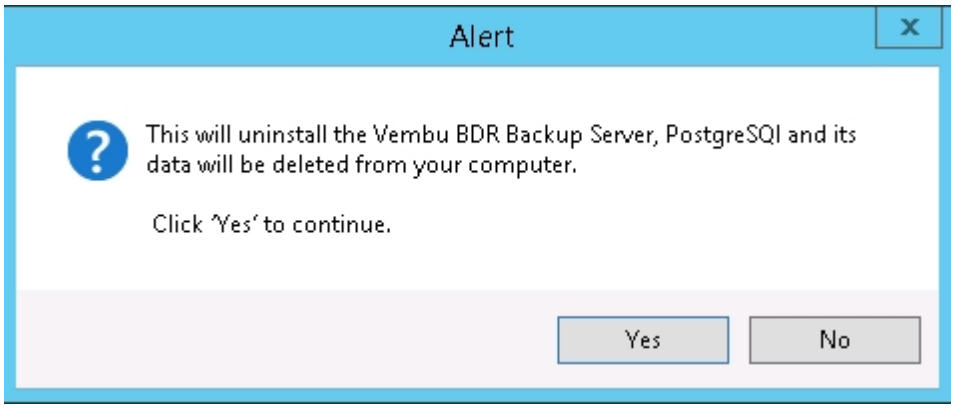
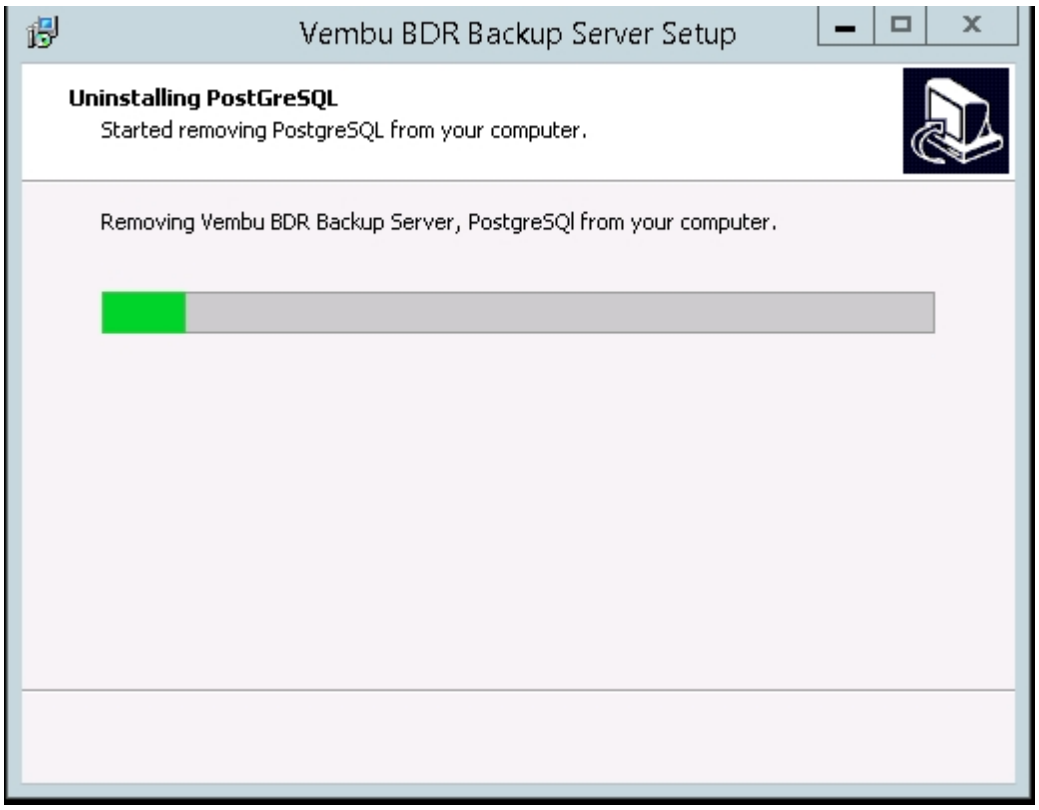


- Uninstaling Vembu BDR and its requisite softwares(PostGreSQL) will begin.



- Once Vembu BDR and its prerequisites are removed, you will be requested to restart the machine to complete the uninstallation process. Choose 'Yes' to restart immediately or 'No' to manually restart later.

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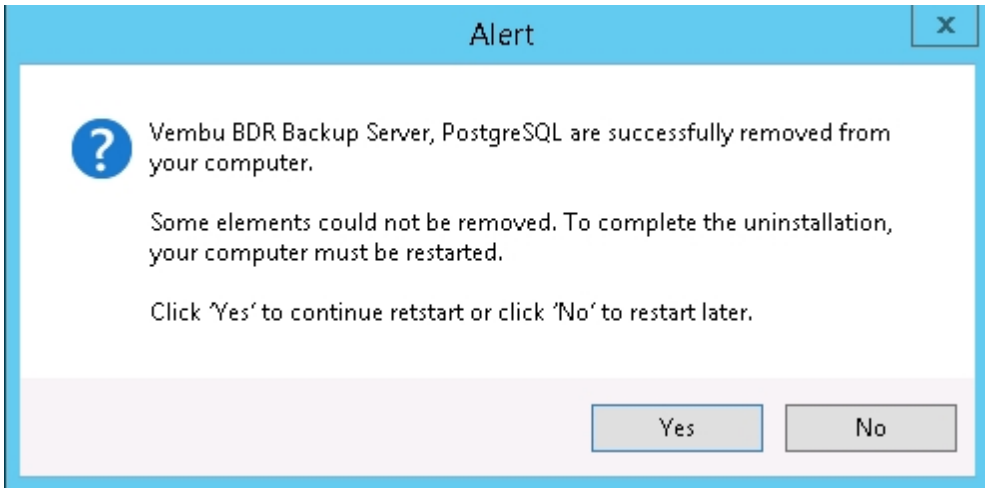

Uninstalling Vembu BDR/Vembu OffsiteDR - Linux

For clean uninstallation of Vembu BDR server in Linux machines, follow the below steps:

- Login to Linux machine with root privilege.
- Change the directory path to Vembu BDR installation location.
- Run following command to proceed uninstallation: sh uninstall.sh

```
root@vembu-virtual-machine:/home/vembubdr/Vembu/VembuBDR# sh uninstall.sh
```

- Running the above command will provide two options to choose between:
    - Uninstall BDR server or
    - Perform clean uninstallation(Vembu BDR and PostGreSQL)

```
|=============================================================================================================

|      1. Uninstall and Remove VembuBDR                                                                      |

|      2.Uninstall and Remove all the existing VembuBDR, PostgreSQL services [Clean Uninstallation]   |

|=============================================================================================================
```

- Proceeding with option 1 will delete and uninstall existing VembuBDR instances. If you wish to continue, click yes.

```
Enter your choice[ 1 / 2 ] :1
This will uninstall and delete existing VembuBDR instances Would you like to continue anyway ? Click Yes
to continue. Or Click No to use the existing setup[y/n]:
```

- Proceeding with option 2 will uninstall and delete all existing VembuBDR, PostGreSQL services and its data. If you wish to continue, click yes.

```
Enter your choice[ 1 / 2 ] :2
This will uninstall and delete all the existing VembuBDR, PosgreSQL services and its data. Click Yes to continue.
Or Click No to use the existing setup.[y/n]:
```


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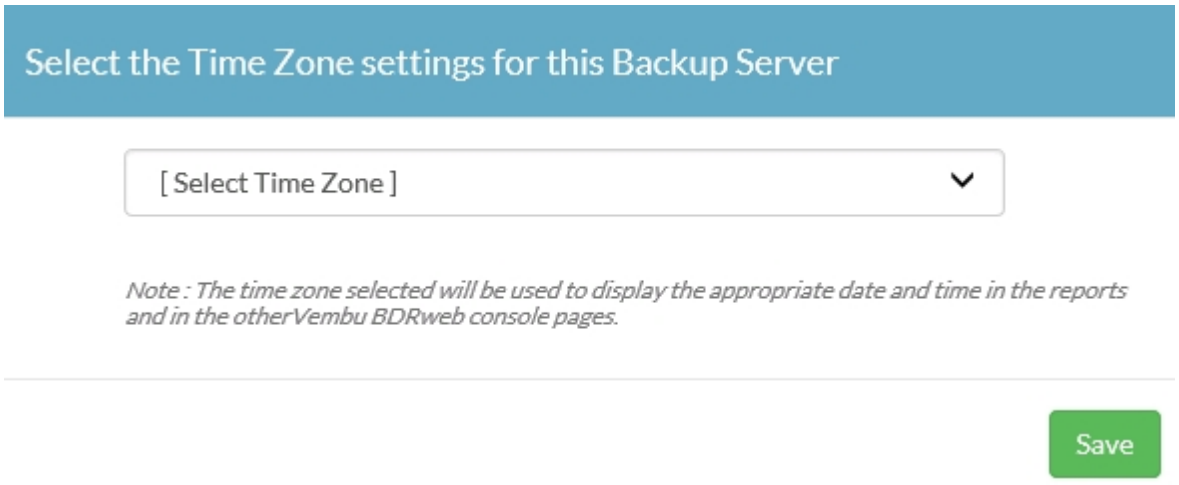
- VembuBDR will be installed successfully.

Vembu VMBackup User Guide

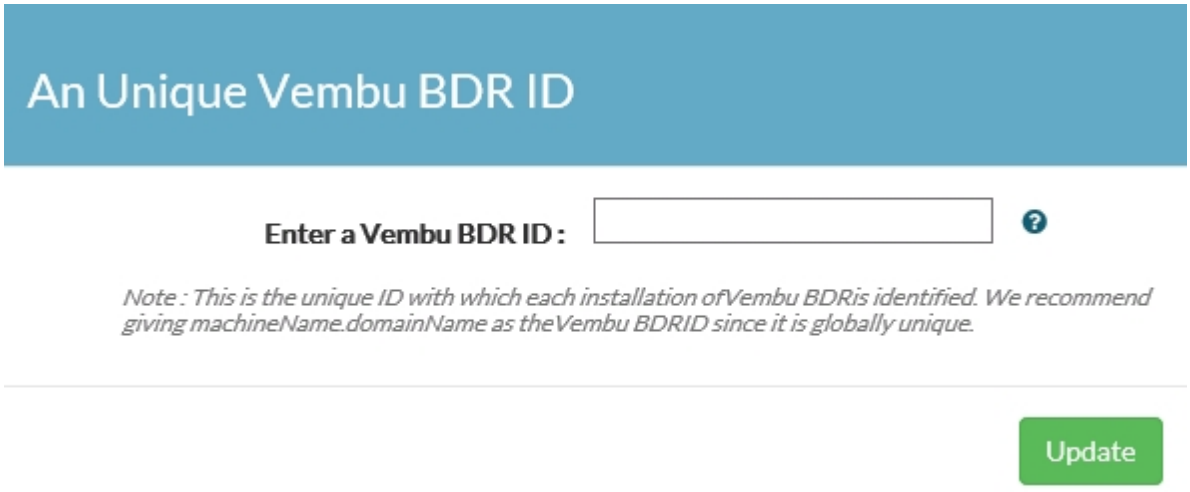
Login to Web GUI - Vembu BDR

- User can login to Vembu BDR web UI via following options:
  - By typing the following URL: https://localhost:6061 (or)https://<Ip_Address_of_Machine>:6061 in browser.
  - Via shortcut created on desktop.
  - Via Vembu BDR server web console option in tray icon.

- Users who login after a fresh installation will be required to choose the time zone in which they want their backup/replication reports to be generated.



- Once done choosing time zone, you will be required to provide Vembu BDR ID which should be globally unique.
  Note: We recommend users to give machineName.domainName as Vembu BDR ID since it is globally unique.



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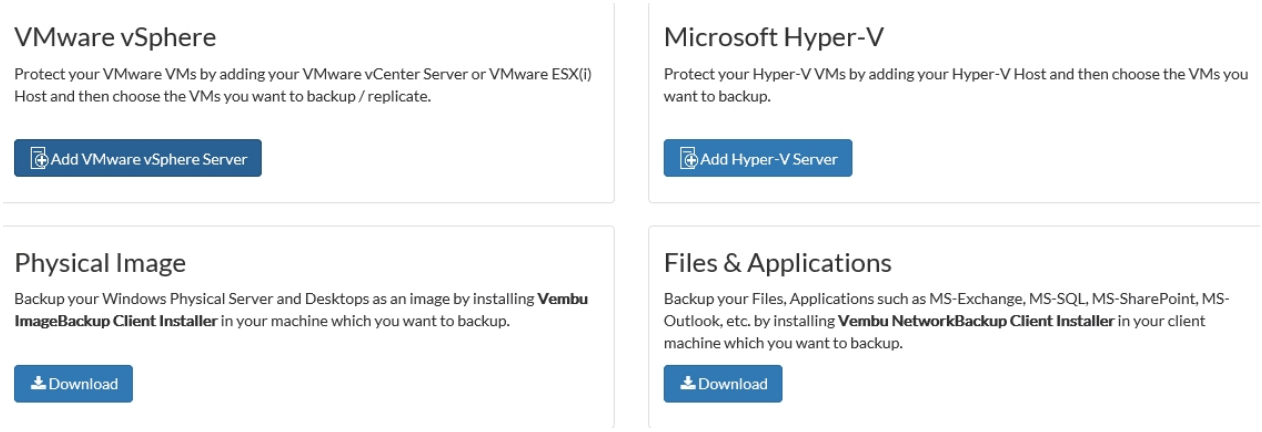
- Once done assigning ID for Vembu BDR, you will be directed to job listing page.

Since it is a fresh installation with nil backup/replication jobs configured, the page will look like picture below:



- To configure VMware backup- Follow the instructions given in below link:
  VMware Backup Configuration

- To configure Hyper-V backup- Follow the instructions given in below link:
  Hyper-V Backup Configuration

Troubleshooting:

- If there seems to be any issue existing in accessing web GUI, check whether VembuBDR service is running in Services.
- Also check whether VembuBDR WebServer service is running.

Vembu VMBackup User Guide

Storage Repository Setup

Storage management page lets user manage and configure drives for storing backup data. Vembu BDR have a new file system that halts backup for nothing and once a storage drive gets filled, user can extend storage by edit option where he can add new drives.

Note: Vembu BDR repository management has a hybrid volume manager that supports scalable and extendable backup storage of different storage media such as Local drives, NAS(NFS and CiFS) and SAN(iSCSI and FC).

- Go to 'Management → Storage Management'

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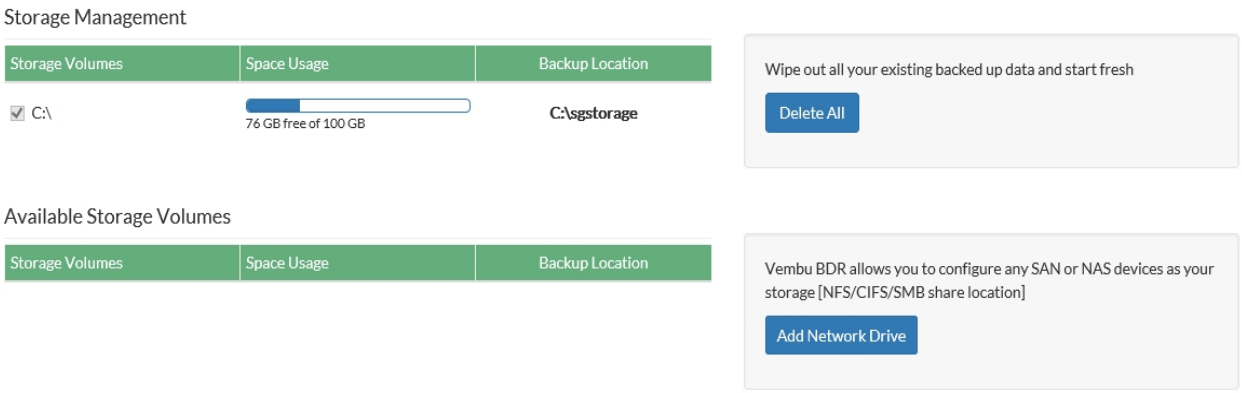

- Users can also add network drives using 'Manage network drives' option in settings.
    - Click here to go to Add Network Drives page.

- Click here to Calculate your Storage Space Requirements.
- Click here for steps to Reset Vembu BDR to Fresh Installation state.

Vembu VMBackup User Guide

Add/Manage Network Drives

This option lets users add, delete network drives which will then be listed in list of storage volumes with a separate drive letter and can be configured for storing backups.
Note: Mapped network drives are not supported when Vembu BDR server runs in local logon account. Change logon user with administrator privileged user in service management console and then proceed configuring Network drive.

To add a network drive, one must provide following attribute details:

- **Drive Name**- Provide a drive letter/name for network drive to be added.
  Note: Drive name must be single alpha character: A-Z or a-z
- **Drive Path**- Network path of drive to be added.
- **Ex:** \\<MACHINE_NAME OR IP_ADDRESS>\<SHARE_NAME>
- **Username & Password**- If network drive requires login authentication provide the username and password to authenticate drive addition.
- A user can add 'n' number of network drives and can manage it via 'Manage network drives' page.
- Once done providing details, click save to add network drive.

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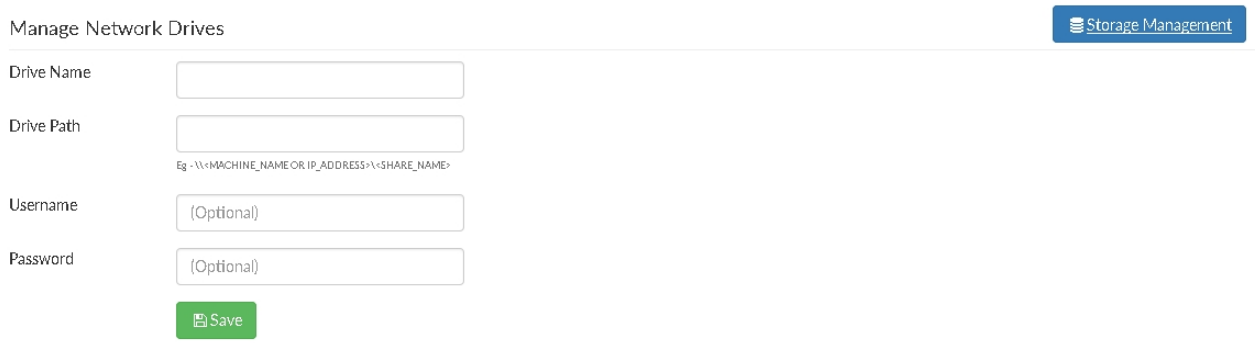


- The added drives will be listed as shown in pic above, which can also be deleted using 'delete' option if no longer required.

Vembu VMBackup User Guide

Storage Calculator

users with large data centers and high data traffic can now calculate their storage space requirements with Vembu Storage calculator. The calculation will be made based on the type of job a user opts for along with recovery points and the average data traffic ratio. We implement a custom compression method that reduces storage space to a vast ratio difference compared to source data size.

Click below to calculate your storage space requirements:

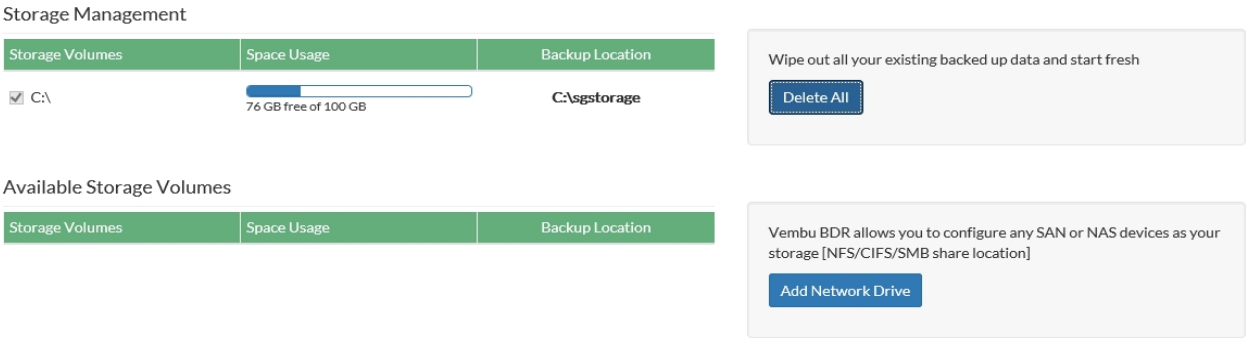
Vembu Storage Calculator

Vembu VMBackup User Guide

Delete All Data

This option lets user to completely wipeout their server data and reset Vembu BDR to fresh installation state.

- Go to 'Management → Storage Management → Delete All'



- The 'Delete All Data' window will open as shown below.

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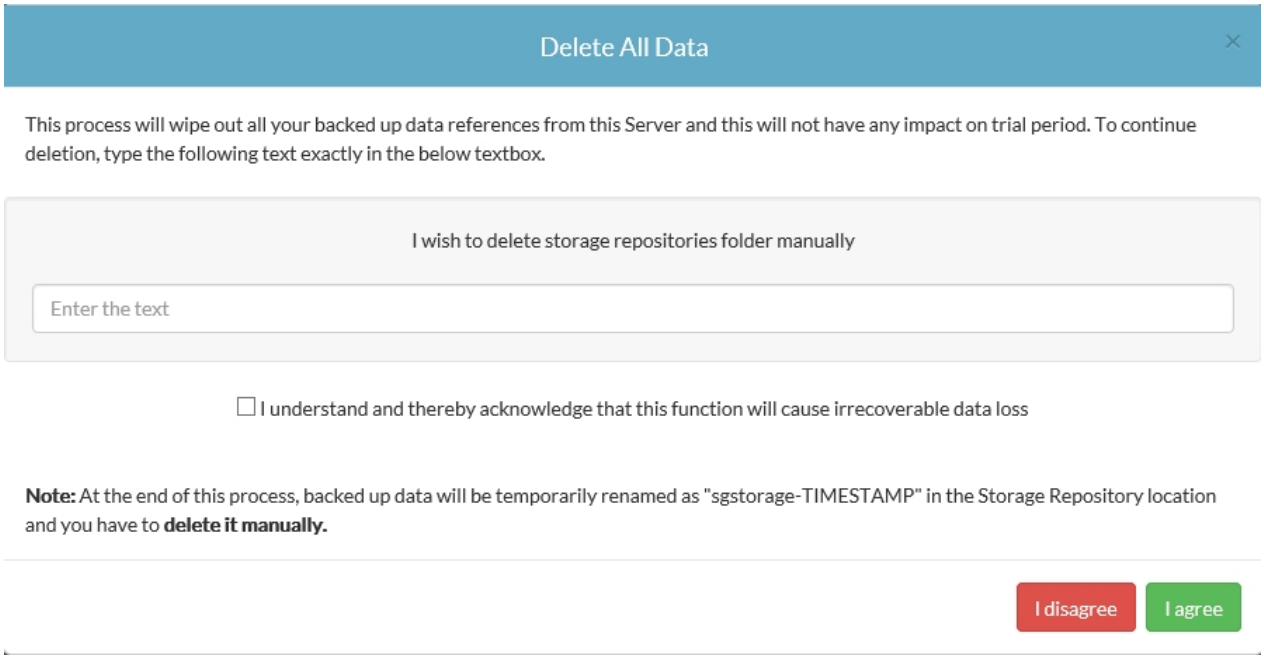
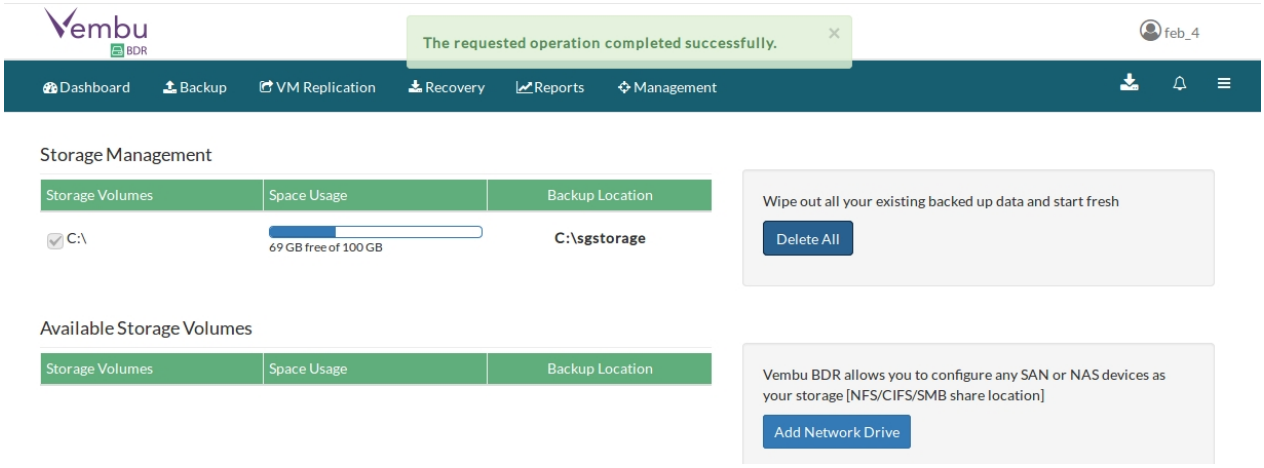


- In order to proceed with the deletion process the user must type the phrase " I wish to delete storage repositories folder manually" as mentioned in the window. Please note that the command is case-sensitive and the phrase should be typed as given.
- Select the check box to acknowledge the deletion and Click Submit.



- On proceeding with the Submit will wipe all data and reset Vembu BDR to fresh installation state.

Note: Proceeding with the delete option will not auto-delete the backed up data, but will rename the sgstorage folder with the timestamp of deletion period in configured storage location. Once the delete process is notified with a success note, you have to manually delete the folder.

Vembu VMBackup User Guide

Managing VMware vSphere

- VMware Backup

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- VMware Replication
- Disaster Recovery

Vembu VMBackup User Guide

VMware Backup

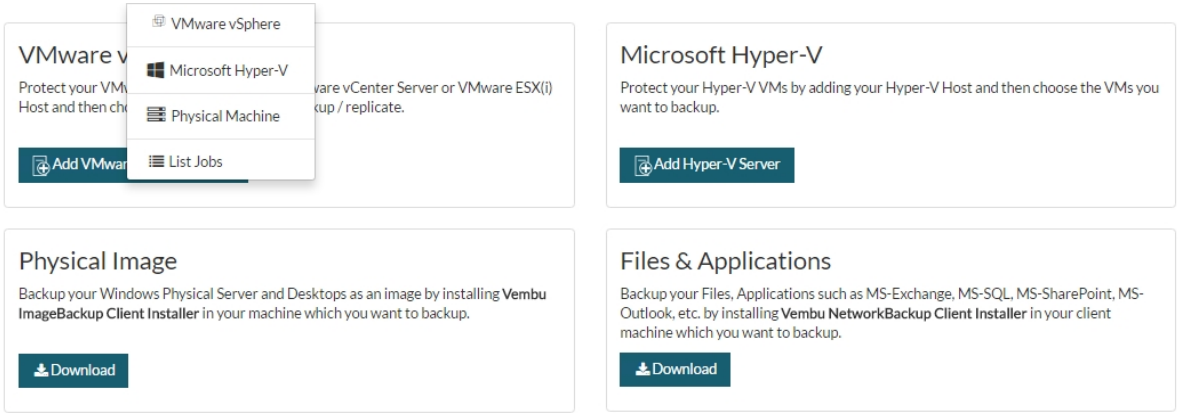
- Setup Backup Job
- Manage Backup Job

Vembu VMBackup User Guide

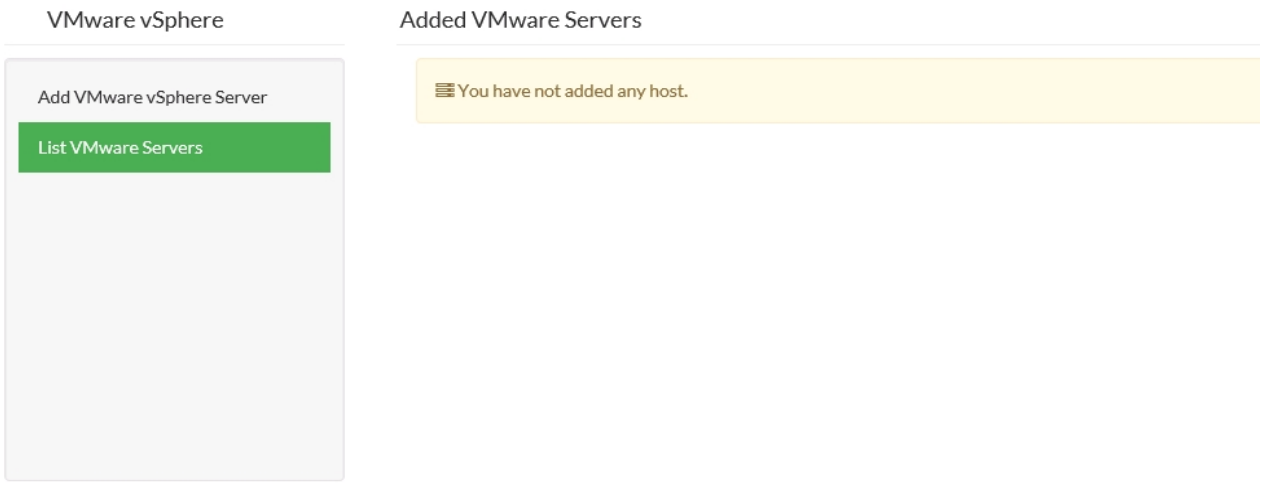
Setup Backup Job

Adding VMware server:

- Go to Backup → VMware vSphere



- If it's a fresh installation, click on 'Add VMware Server' option.



- Add VMware ESXi/vCenter servers by providing host-name and login credentials.
- Click Save.

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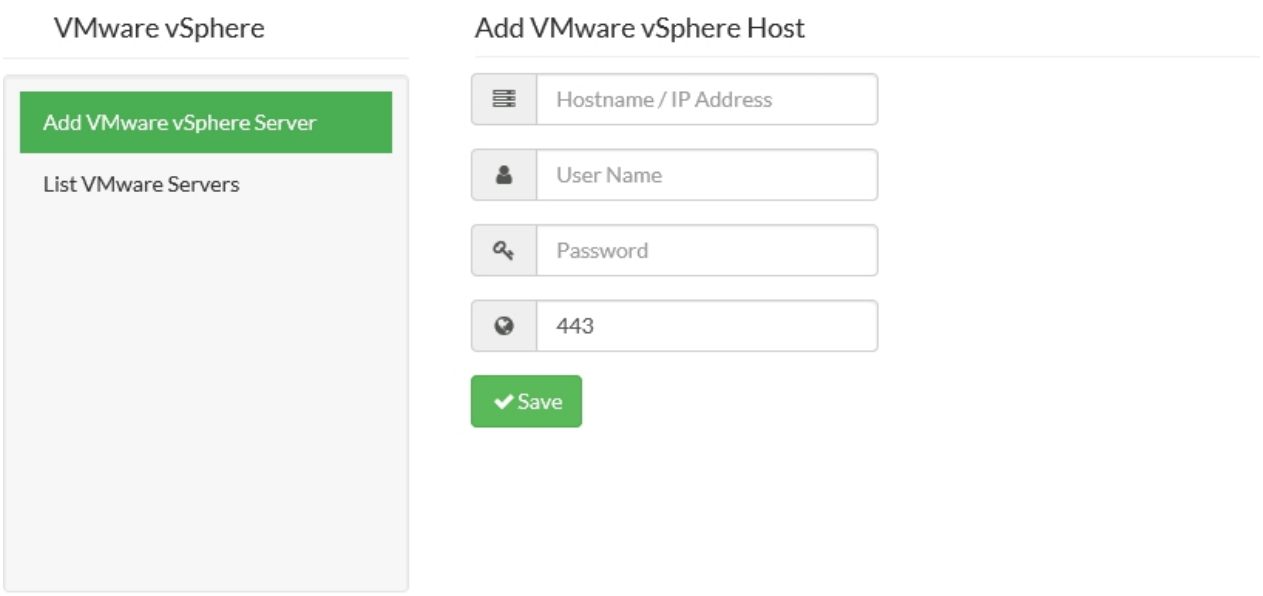
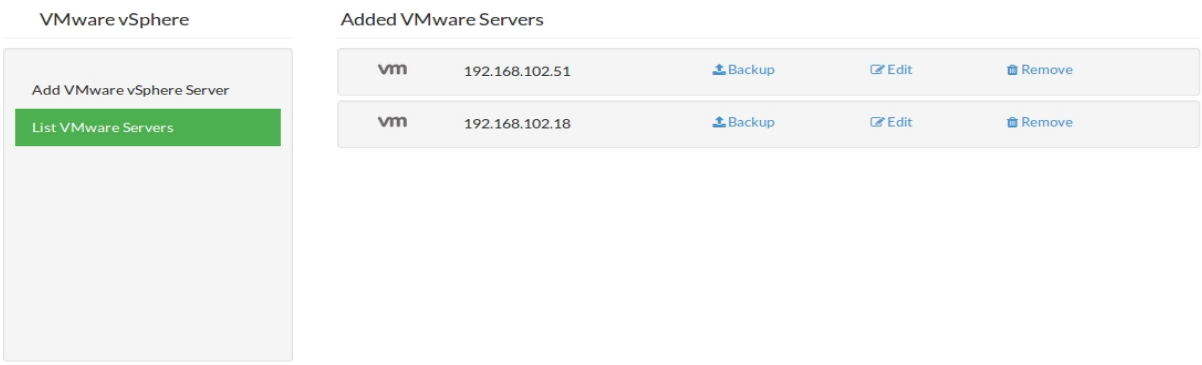


Create VMware vSphere Backup:

- Once done adding, go to Backup → VMware vSphere. The list of ESXi/vCenter servers added will be shown.



- From the list of VMware servers added, Click Backup Now option in the ESXi/vCenter server to backup VM's from specific servers.

Choose Virtual Machine(s):

- Choose list of VMs you wish to backup and proceed.
- You can configure either host level backup job or can select any specific set of VMs to be backed up.

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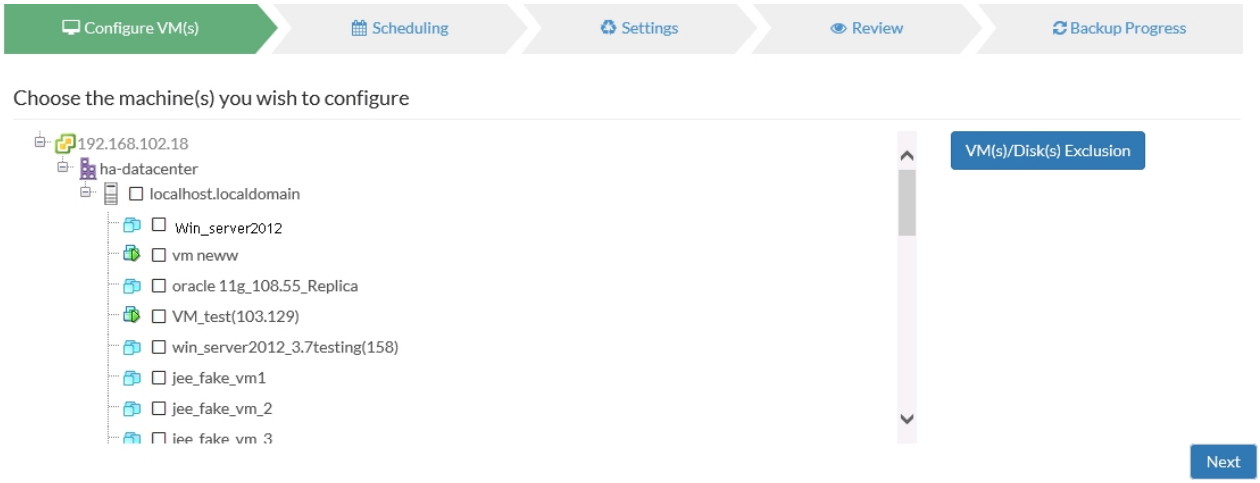
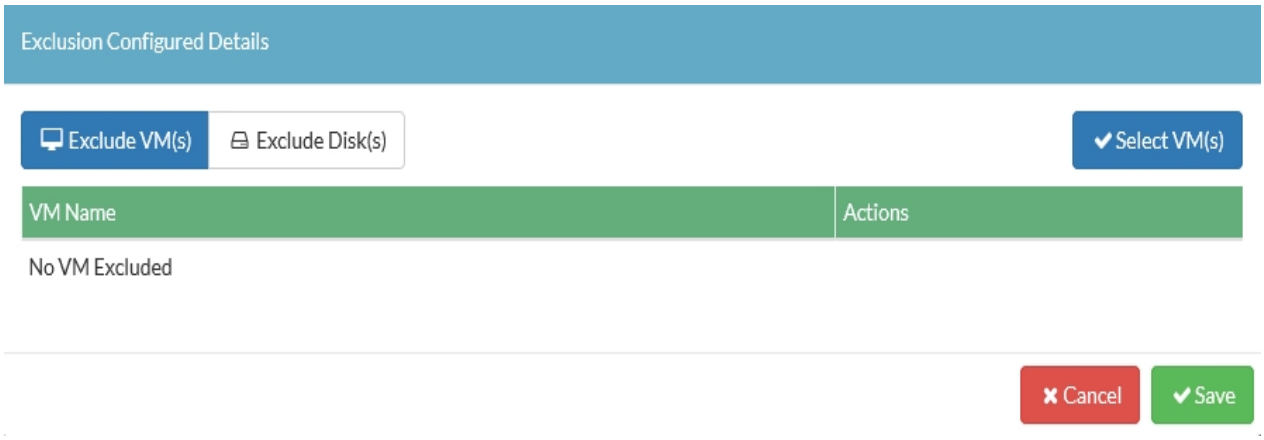


VM(s)/Disk(s) Exclusion

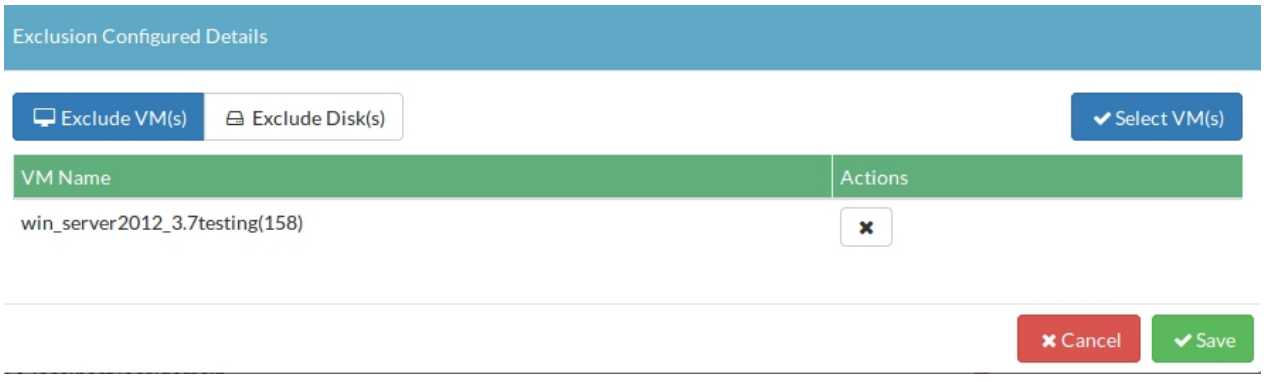
- On selecting Host level backup, you might wish to exclude some specific set of VMs from getting backed up. Such VMs can be excluded using VM(s)/Disk(s) exclusion option.

VM Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.



- Choose 'VM(s)' tab.
- To exclude a virtual machine from a configured host level backup, click 'select VM' and choose the VMs to be excluded and click 'Exclude'.
- Once added, save the exclusion settings.



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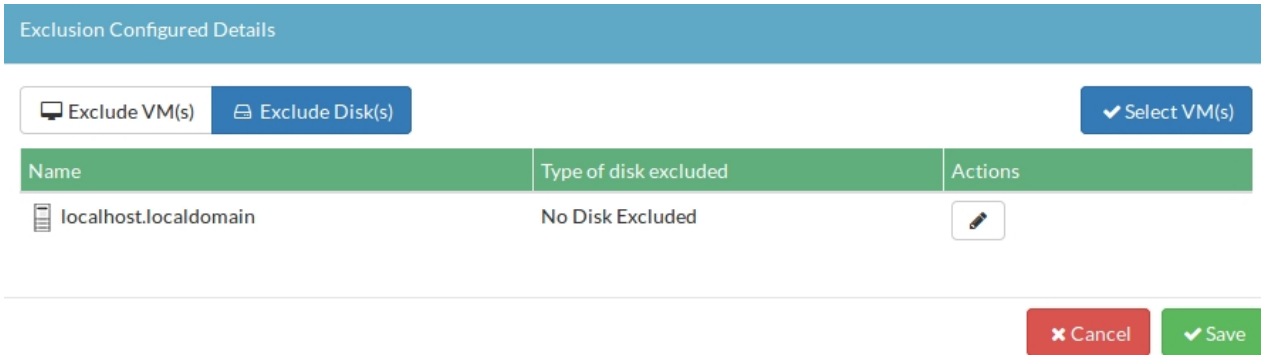
- You can also add/delete a VM to/from exclusion list, whenever required by editing the backup job.
  Note: Changes made in VM exclusion settings will be taken into effect immediately with next incremental schedule.

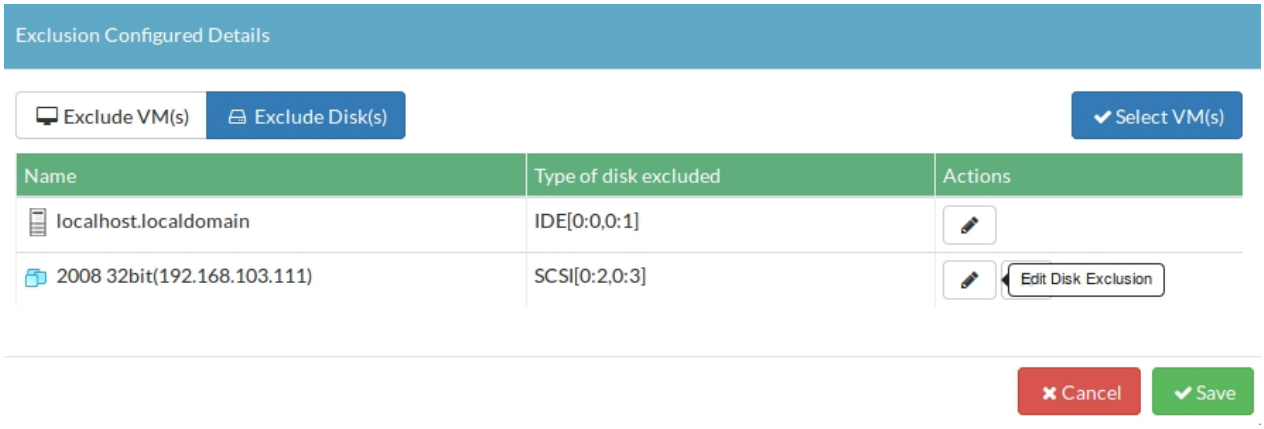
Disk Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.



- Choose 'Exclude Disk(s)' tab.
- Disk exclusion can be either enabled at host level or can be configured at VM level.

  Host level Disk Exclusion- This exclusion type is possible when you opt to configure host level backup job. Under 'Exclude Disk(s)' tab, you will find the configured host(s) listed.



- You can choose 'Edit Disk Exclusion' option, to assign global disk exclusion rule for VMs under a chosen host. Edit Disk exclusion tab will have following exclusion rules:
  - No disks Excluded
  - Include only System Disks for Backup. Exclude Others (typically 0:0)
  - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.

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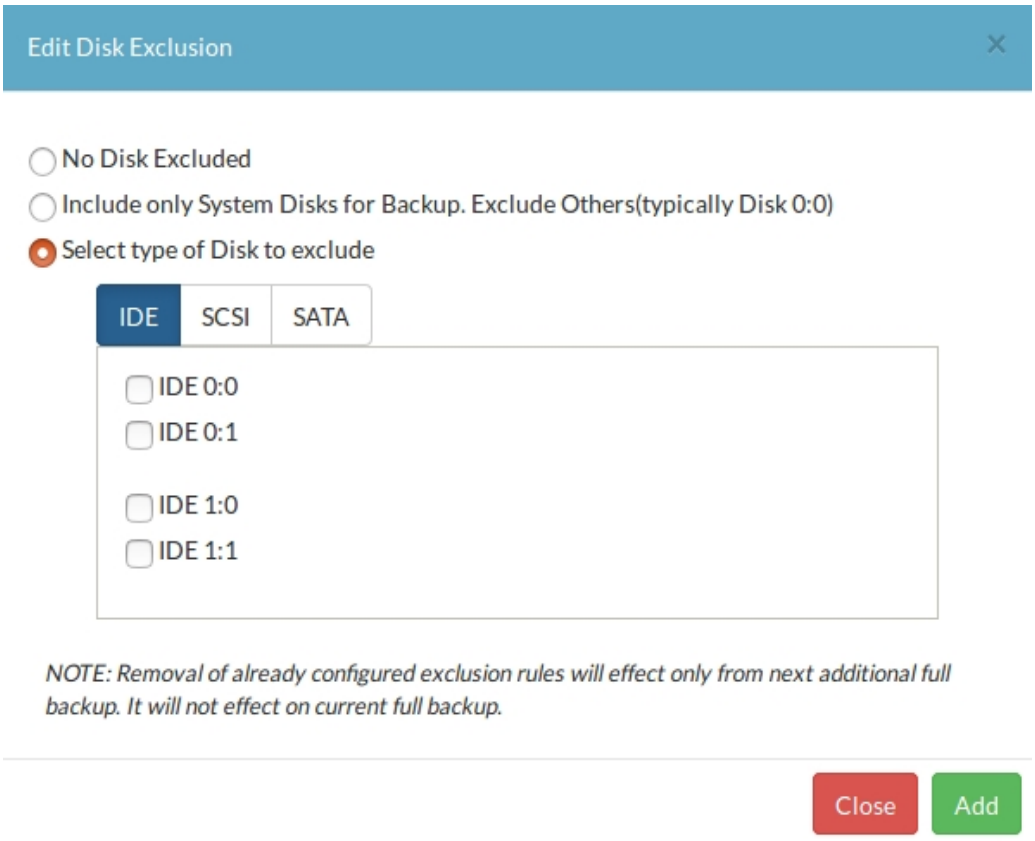
- Opting for the third option of selecting disk type will list all available disk types for VMs in VMware.
- User can choose the disk(s) to be excluded in each disk type.



- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.

  VM level Disk Exclusion- This exclusion type can be configured in both host level and VM level backup job. Under 'Exclude Disk(s)' tab, you will find the list of configured VM(s).

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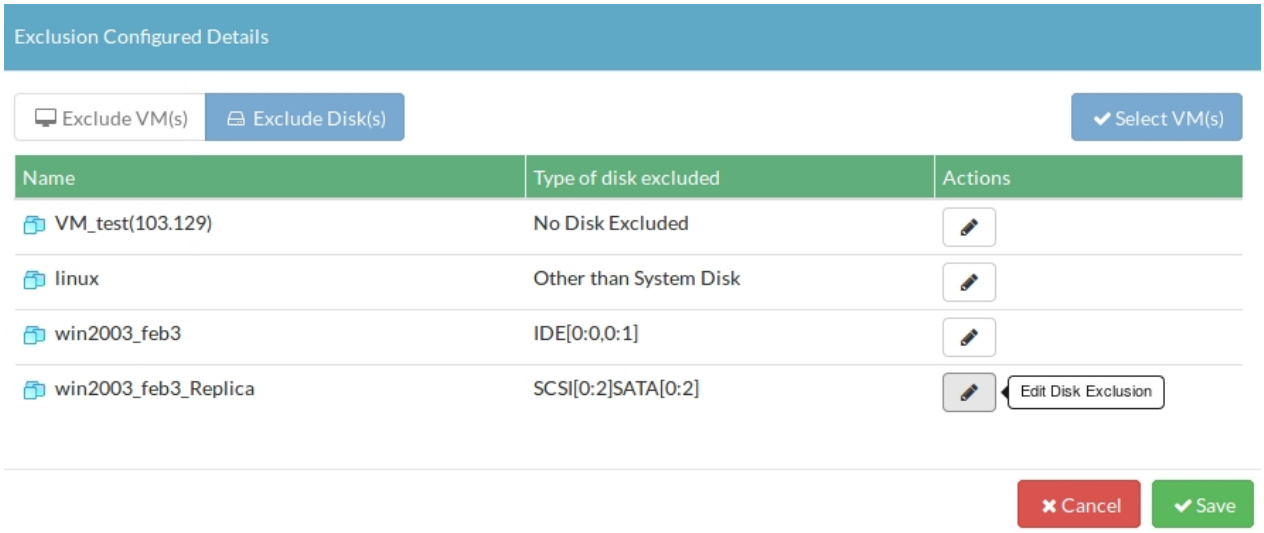
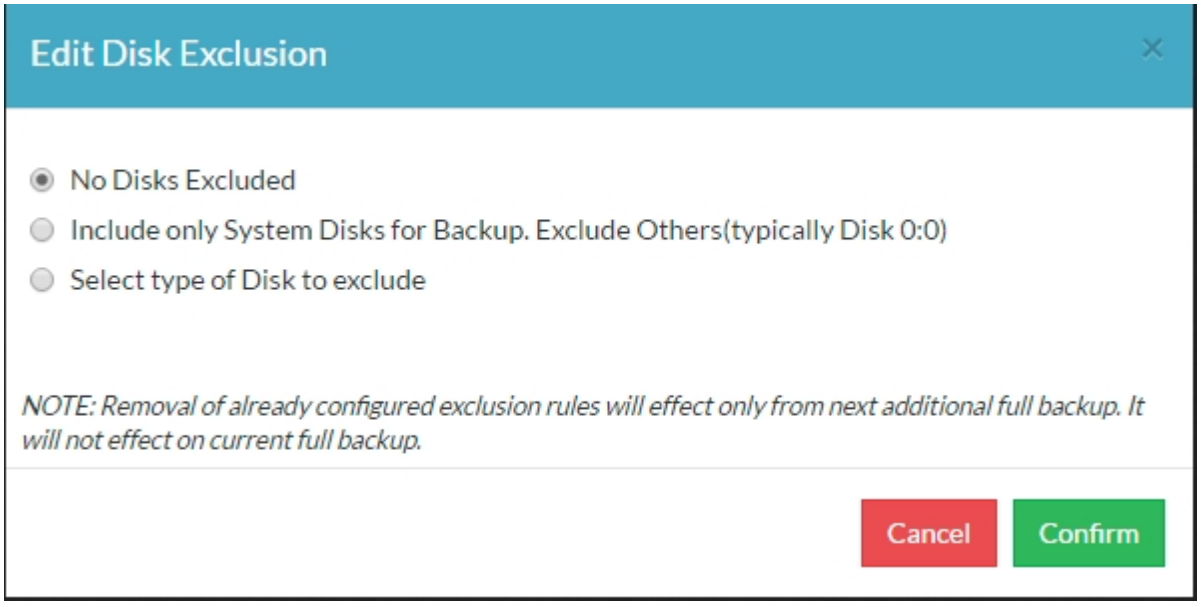
If it's a host level backup job, you can assign both host level exclusion rule as well as assign exclusion rule for individual VMs by adding VMs to be configured using Select VM(s) option.



- Choose 'Edit Disk Exclusion' option alongside a VM to configure disk exclusion rule for the selected VM. Edit Disk exclusion tab will have following exclusion rules:
    - No disks Excluded
    - Include only System Disks for Backup. Exclude Others (typically 0:0)
    - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.



- Opting for the third option of selecting disk type will list all available disk types for VMs in VMware.
- User can choose the disk(s) to be excluded in each disk type.
- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.

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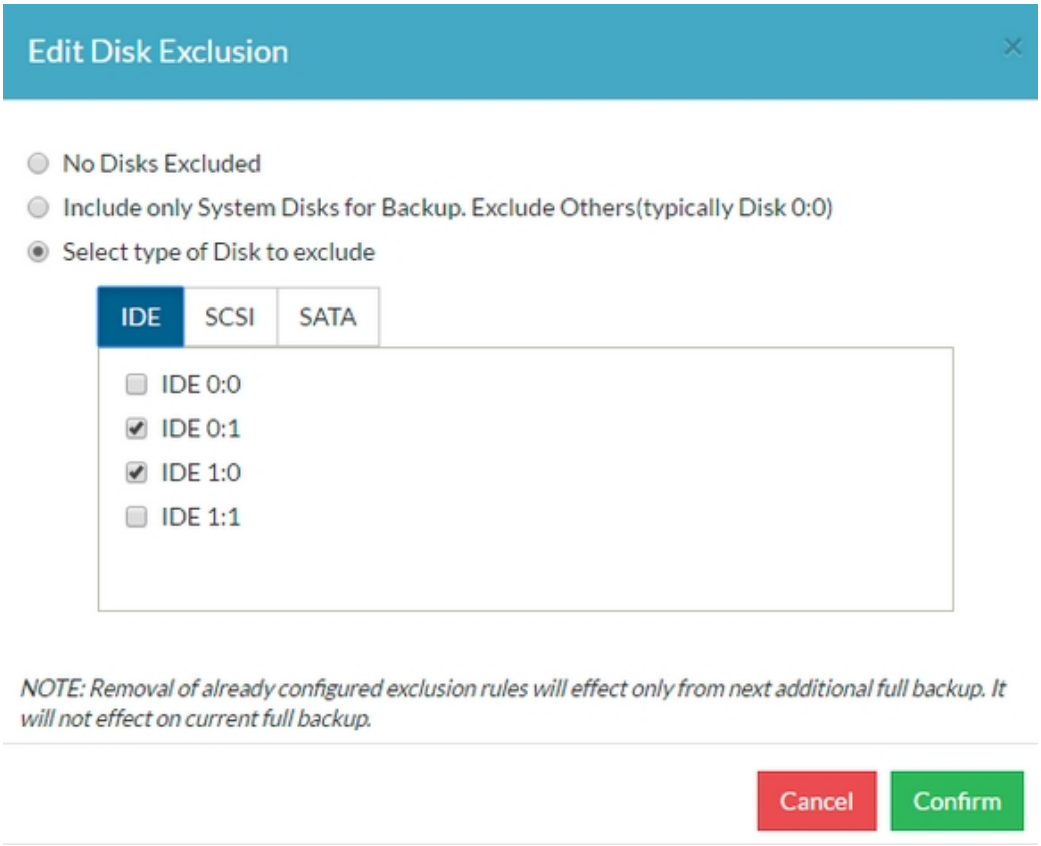
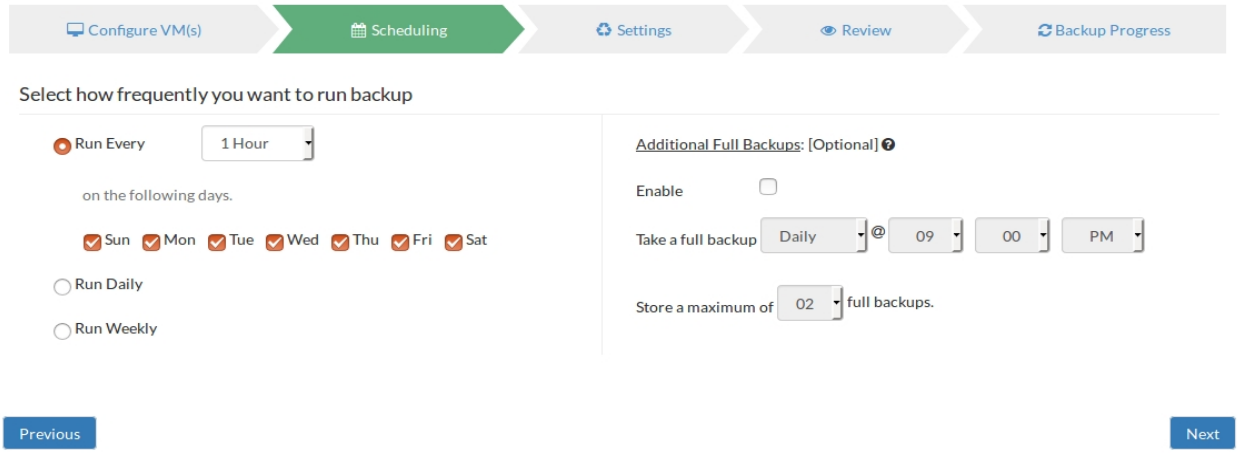


- You can also add/delete a disk to/from exclusion list, whenever required by editing the backup job.
  Note: Changes made in disk exclusion settings will be applied only when a additional full backup is scheduled.

Configure Scheduling:

- Users can configure their backup schedules flexibly based on their requirement. They can choose from Hourly/Daily/Weekly options for backup schedules.



Additional Full Backups:

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In an enterprise environment, configuring a backup job with one full backup and forever incremental is not a recommended practice. Users from such environment will tend to configure additional full backups periodically and that can be automated with our additional backup option.

Additional Full Backups can be configured in following order of scheduling:

- For Continuous and Run every few hours schedules- Configuring daily/weekly/monthly additional full backup is possible.
- For Run Daily schedule- Configuring weekly/monthly additional full backup are the possible options.
- For Run Weekly schedule- 'Monthly full backup' is the only possible additional full backup.
- For Run Once schedule- You cannot configure additional full backup.

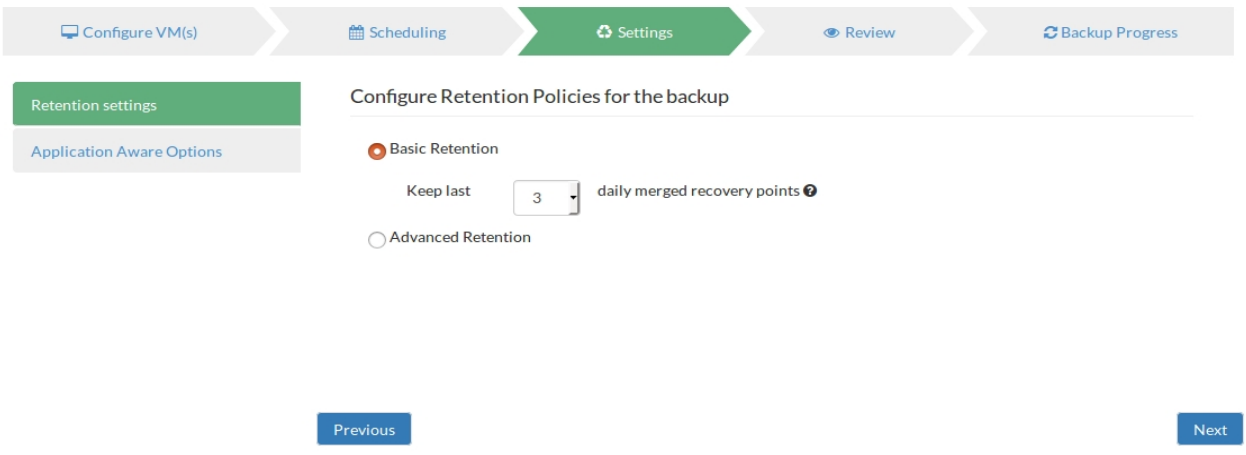
Note: Users can also limit the number of full backups to be retained with 'Store a maximum of' option. With this option, users can share the unwanted storage data occupied based for a time period. For example, a user needing no more than 6 months of data retainment can configure 6 monthly full backups where the 1st additional full backup will be deleted on the 7th month when a new full backup completes successfully.

Configure Retention Policy:

- Users will be given 2 options for choosing retention policy:
    - Basic retention and
    - Advanced retention (GFS)

Basic:

- Vembu VMBackup provides forever incremental backups, where user can have 'n' number of incrementals. They also do have options to limit incremental count, which when retention count reaches incremental count, older incrementals will be purged while latest incremental will be retained as per configuration.



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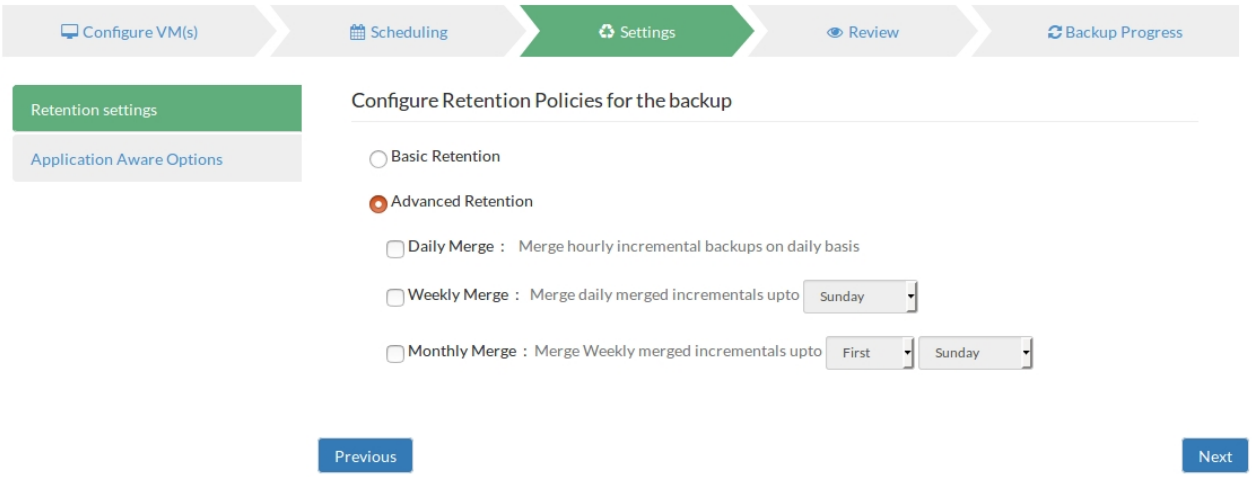
Advanced (GFS Retention):

- The Multilevel GFS retention reduces the time taken to restore backed up machines and most importantly reduce the size of image files in storage location. It also help avoid long chains of incrementals, ensuring safety of backup data and allow you to meet the requirements of your retention policy.

GFS retention merge incrementals on a daily, weekly and monthly basis:

- **Daily** - Daily merge will merge hourly incrementals on the third day's first successful incremental backup.
- **Weekly** - Weekly merge will commence based on user scheduled day's first successful incremental backup. It will merge all daily merged incrementals into a single weekly merged file.
- **Monthly** - Monthly merge is much similar as weekly merge where user need to schedule particular day in a month(For example: Third Wednesday) and the merge will get initiated at first successful incremental of the day. It merges all weekly merged files as a single monthly file.



Application-Aware VMware Backups:

VMware backups using VMware APIs, utilize application-specific VSS writers (SQL Server, Exchange) to take application-consistent backups and truncate exchange log files to free up the space.

- **Enabling application aware process, gives users two choices to choose:**
  - **Require successful application processing:** Choosing this option lets Vembu BDR track application consistency and triggers backup process, only when all the VSS writers in the VM are in stable state.
  - **Ignore application processing failures:** This option, lets Vembu BDR trigger backup jobs whenever the job is scheduled, despite the success/failure of application processed.

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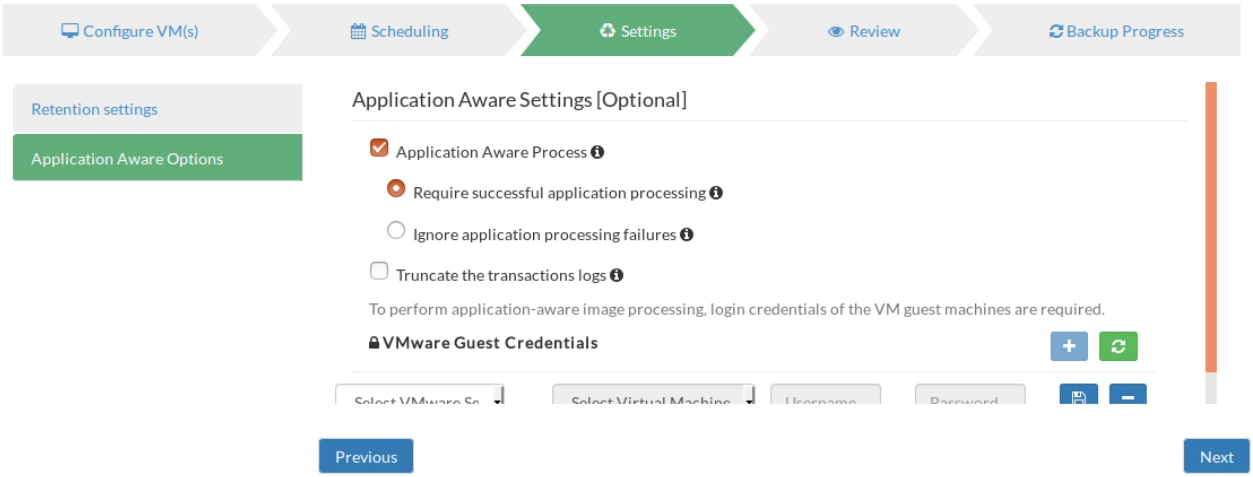
Truncate the transaction logs:

- Enabling this option lets Vembu BDR truncate the exchange server logs before initiating backup process. It purges and commits log files along with the .edb files and reduce storage space consumed.

Application Aware Image Process Prerequisites:

- Backup jobs enabled with application-aware image process option requires that your guest OS has latest VMware Tools, all the latest packages and patches installed.
- To perform application-aware image processing, you must provide guest OS login credentials for the selected VM(s) running MS Exchange server, MS SQL Server, MS SharePoint Server, MS Active Directory.



VMware Guest Credentials:

- To perform application-aware image processing, login credentials of VM guest machines are required. Such Guest OS login details can be provided using this option.
    - Select the desired VMware server and select the virtual machine to which you wish to enable application aware backups.
    - Provide the login credentials of the Virtual machine and save it.
    - Now scheduling VMware backup for particular VM will have application-aware options enabled.

Review Configurations:

- User will be required to provide a name for backup scheduled.
- And can verify the configurations one final time, before hitting ‘run the backup'.

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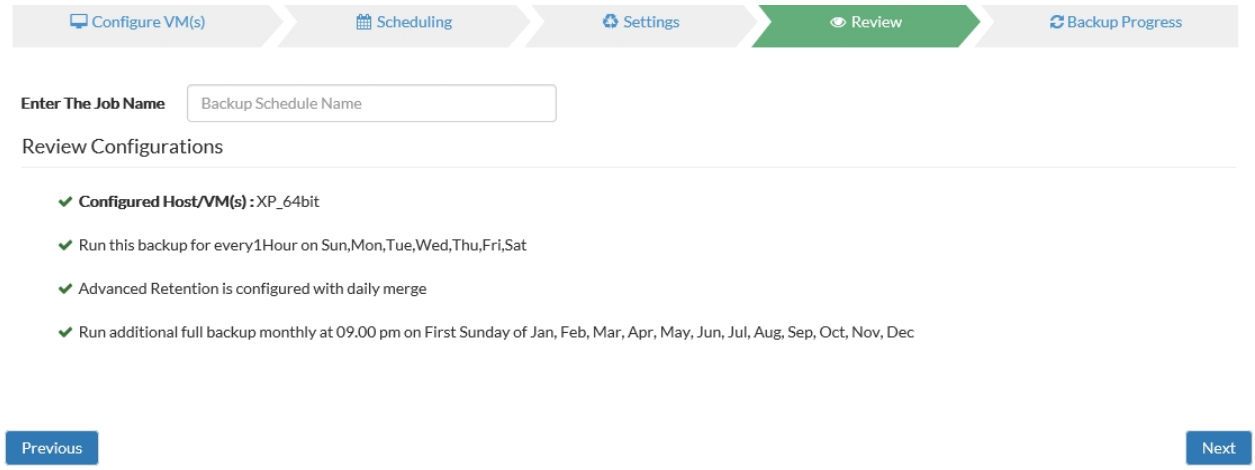
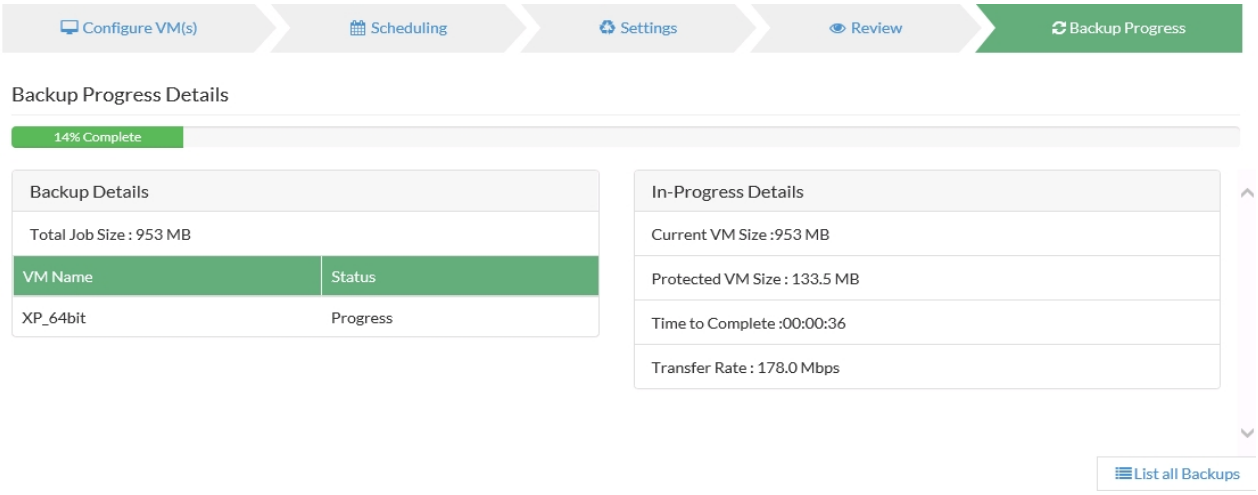


Progress Details:

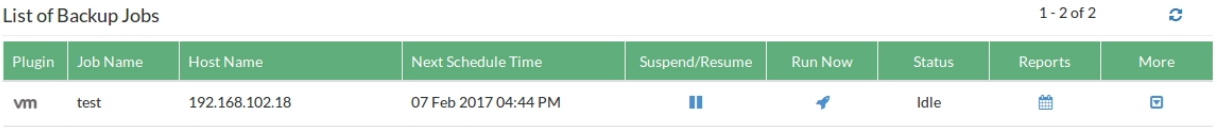
- Thus, backup progress is witnessed and can be verified once it completes successfully.



Vembu VMBackup User Guide

Manage Backup Job

- Go to ' Backup → List Jobs'.
- The list of backup jobs configured from that particular client machine will be listed along with options to edit, suspend/resume, run/abort, delete the backup job.
- Users can also view the plugin type and historical report of a particular backup job.



Suspend/Resume:

- This option lets a user to suspend and resume a configured backup job, if required.
- A suspended backup job will not run schedules as per its configuration, until/unless it is resumed.

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Run Now:

- This option is used to immediate schedule a backup job, once clicked.
- If run now is triggered in midst of scheduled interval, then the next schedule interval will be calculated from the time of recent backup job.
  Note: If a backup job is triggered in midst of scheduled interval with run now, then the next backup schedule will be triggered

Abort:

- This option is used to abort a backup job that is currently in progress, if required.

View:

- This option allow user to view the saved configuration of any specific backup job.

Edit:

- This option allow user to edit the configuration of an already scheduled backup job.
- Edit option allow user to completely reconfigure the backup job being edited. (i.e) User can:
  - Add/remove VMs.
  - Reconfigure the schedule frequency, retention policies, additional backups and application aware options of backup job.
- Once done, review the edited configuration and save it.

Delete:

- This option is used to delete the backup job, if no longer required.
- Proceeding with this option, will ask for deletion confirmation and once confirmed the backup job will be deleted.

Vembu VMBackup User Guide

VMware Replication

VM replication page allow users to replicate VMs from a source ESXi/vCenter server to a target ESXi/vCenter server in DR location without disrupting routine tasks of the primary ESXi/vCenter server(Source). Please note that, virtual machines that are active/running can also be replicated without any disruption in their performance.

- VM replication is recommended for business critical processes, where business critical VMs can be replicated in regular periodic interval so that disasters are less harmful.
- Vembu powered VM replication clubbed with features such as: Failover, Failback and Network & IP remapping, simplifies disaster recovery ensuring an effective replication process.

Setup Replication Job

Manage Replication Job

Vembu VMBackup User Guide

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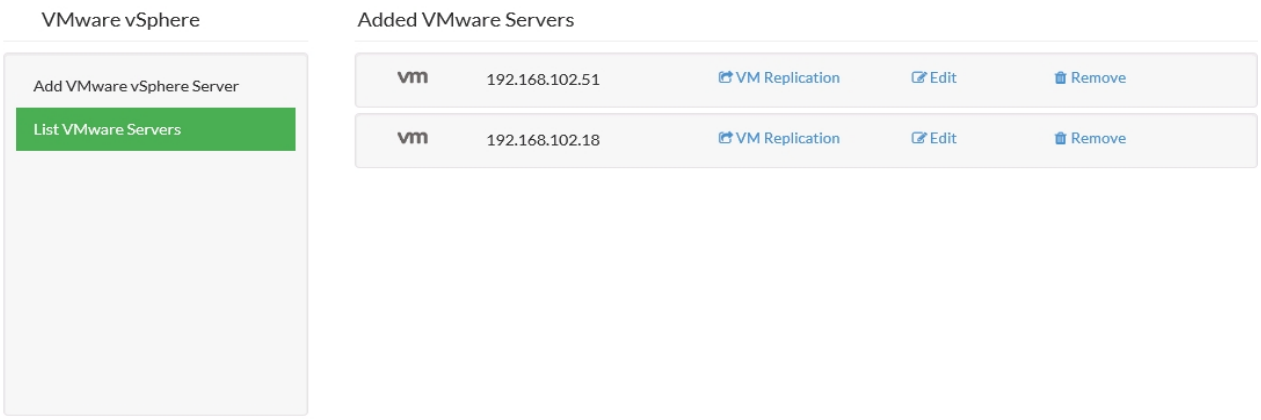
Setup Replication Job

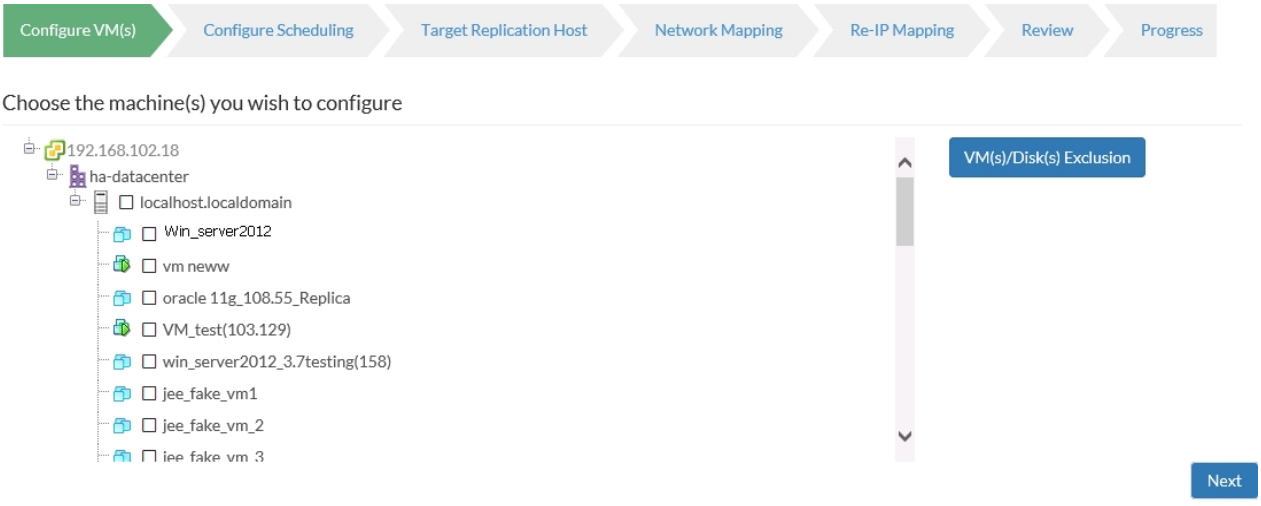
Configuring VMware vSphere Replication:

- Go to VM Replication → VMware vSphere.
- You will have list of ESXi/vCenter servers added. Click on Replicate Now to begin configuring replication.



Choose Virtual Machine(s):

- Choose list of VMs you wish to replicate and proceed.
- You can configure either host level replication job or can select any specific set of VMs to be replicated.



VM(s)/Disk(s) Exclusion

- On selecting Host level replication, you might wish to exclude some specific set of VMs from getting replicated. Such VMs can be excluded using VM(s)/Disk(s) exclusion option.

VM Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.

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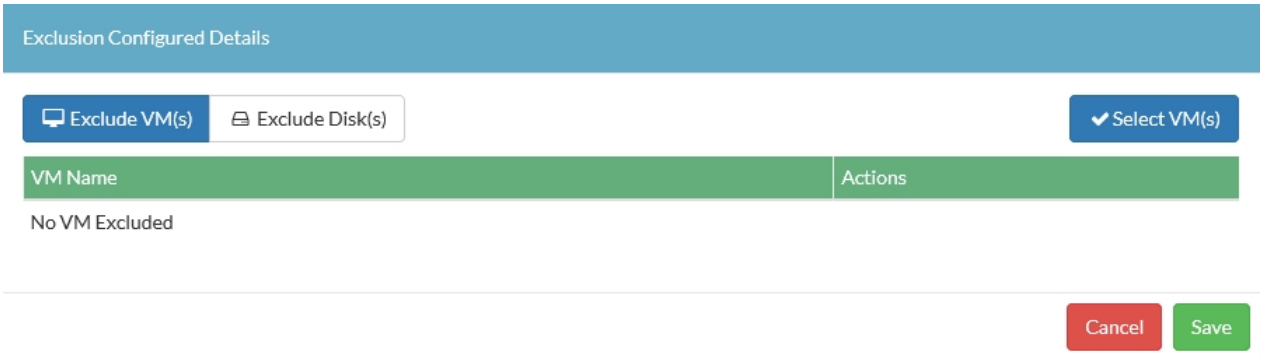
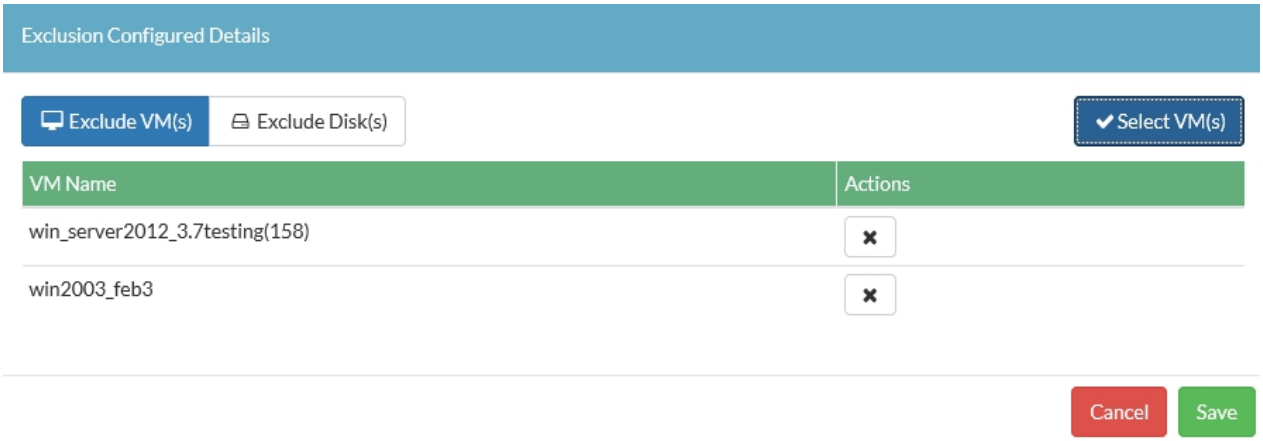


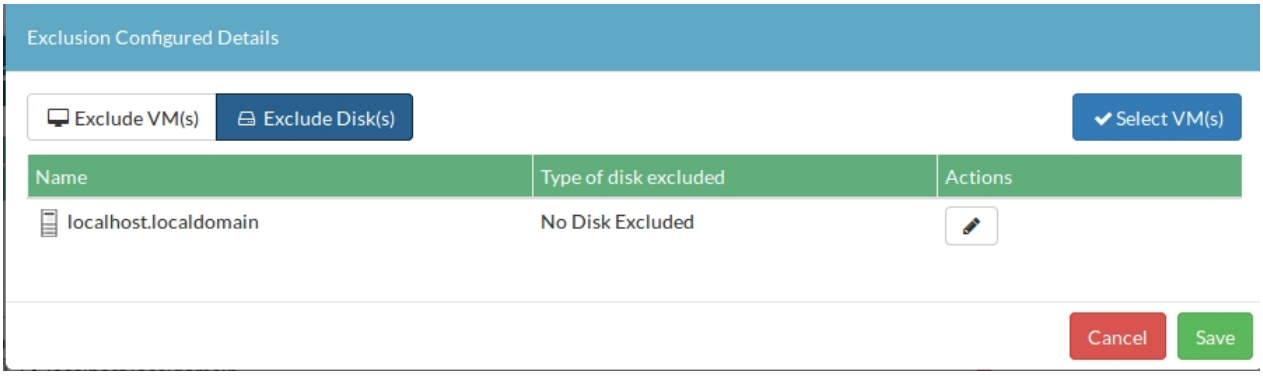
- Choose 'Exclude Disk(s)' tab.
- To exclude a virtual machine from a configured host level replication, click 'select VM' and choose the VMs to be excluded and click 'Exclude'.
- Once added, save the exclusion settings.



- You can also add/delete a VM to/from exclusion list, whenever required by editing the replication job.
  Note: Changes made in VM exclusion settings will be taken into effect immediately with next replication schedule.

Disk Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.



- Choose 'Exclude Disk(s)' tab.
- Disk exclusion can be either enabled at host level or can be configured at VM level.

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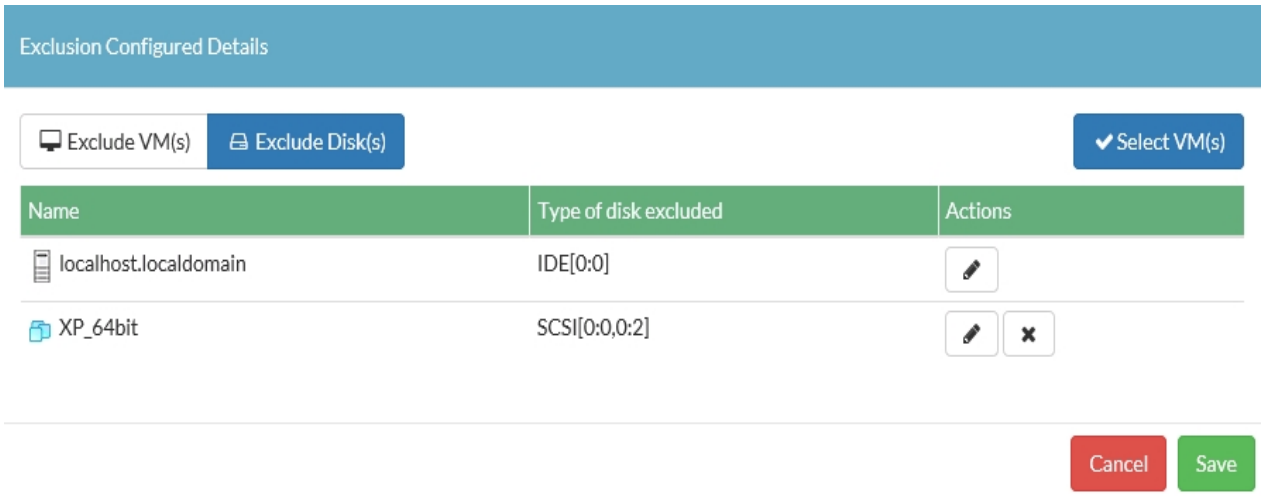
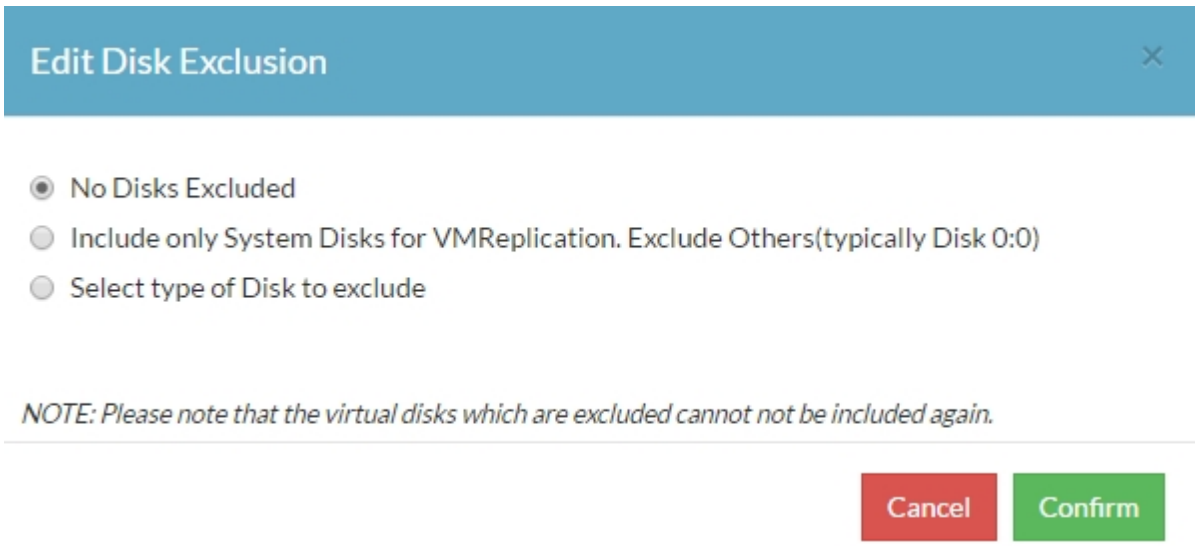
Host level Disk Exclusion- This exclusion type is possible when you opt to configure host level replication job. Under 'Exclude Disk(s)' tab, you will find the configured host(s) listed.



- You can choose 'Edit Disk Exclusion' option, to assign global disk exclusion rule for VMs under a chosen host. Edit Disk exclusion tab will have following exclusion rules:
    - No disks Excluded
    - Include only System Disks for VM replication. Exclude Others (typically 0:0)
    - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.



- Opting for the third option of selecting disk type will list all available disk types for VMs in VMware.
- User can choose the disk(s) to be excluded in each disk type.

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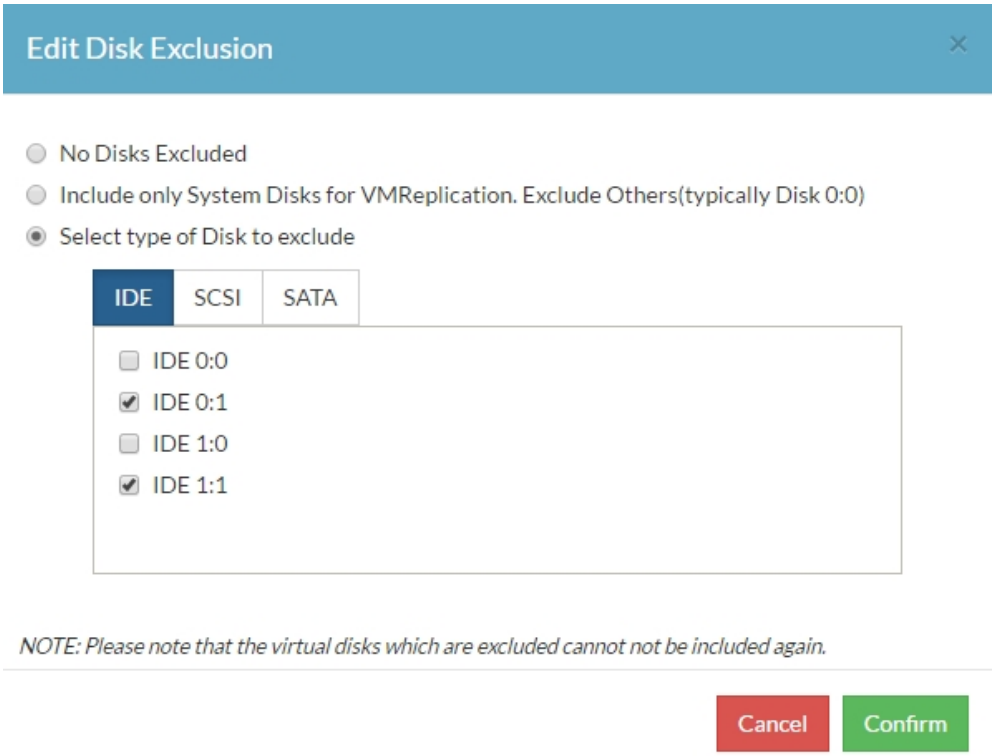
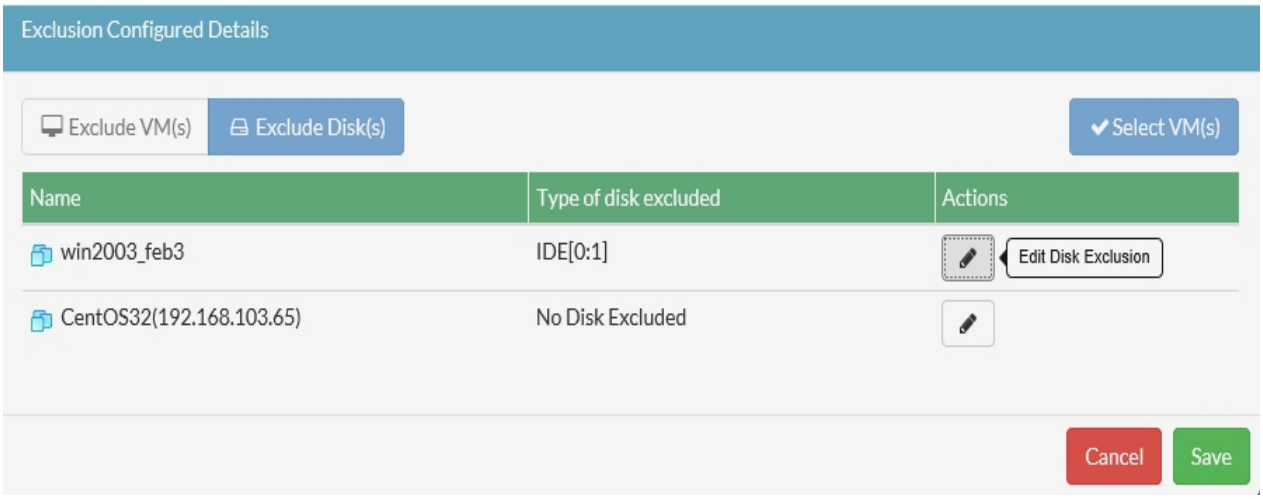


- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.

  VM level Disk Exclusion- This exclusion type can be configured in both host level and VM level replication job. Under 'Exclude Disk(s)' tab, you will find the list of configured VM(s).

  If it's a host level replication job, you can assign both host level exclusion rule as well as assign exclusion rule for individual VMs by adding VMs to be configured using Select VM(s) option.



- Choose 'Edit Disk Exclusion' option alongside a VM to configure disk exclusion rule for the selected VM. Edit Disk exclusion tab will have following exclusion rules:
  - No disks Excluded

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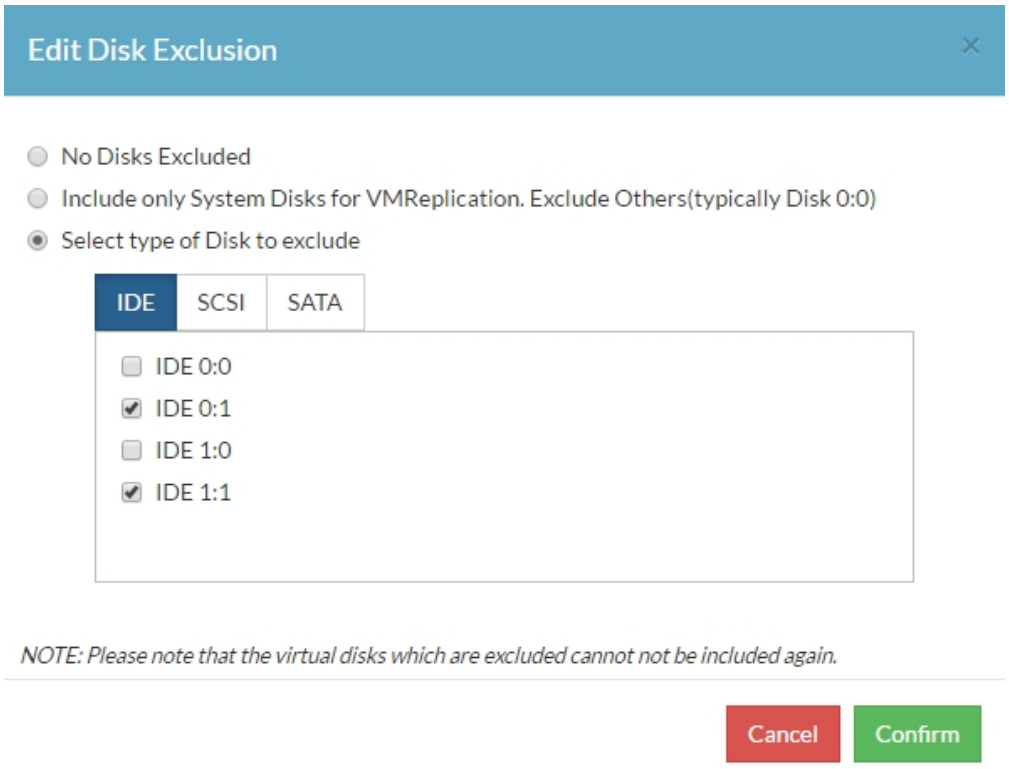
- Include only System Disks for VM replication. Exclude Others (typically 0:0)
- Select type of Disk to exclude

Note: By default No disks excluded option will be selected.

- Opting for the third option of selecting disk type will list all available disk types for VMs in VMware.
- User can choose the disk(s) to be excluded in each disk type.
- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.



- Disks once excluded cannot be included back in already configured replication job.

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Configure Scheduling:

- Now users can configure replication schedules flexibly based on requirement. They can choose between Hourly/Daily/Weekly options for replication schedules.

Application-Aware Options for VMware Replication:

VMware replication using VMware APIs, utilize application-specific VSS writers (SQL Server, Exchange) to take application-consistent replication and truncate exchange log files to free up the space.

Enabling application aware process, gives users two choices to choose:

- **Require successful application processing:** Choosing this option lets Vembu BDR track application consistency and triggers replication process, only when all the VSS writers in the VM are in stable state.
- **Ignore application processing failures:** This option, lets Vembu BDR trigger replication jobs whenever the job is scheduled, despite the success/failure of application processed.

Truncate the transaction logs:

- Enabling this option lets Vembu BDR truncate the exchange server logs before initiating replication process. It purges and commits log files along with the .edb files and reduce storage space consumed.

Application Aware Image Process Prerequisites:

- Replication jobs enabled with application-aware image process option requires that your guest OS has latest VMware Tools, all the latest packages and patches installed.
- To perform application-aware image processing, you must provide guest OS login credentials for the selected VM(s) running MS Exchange server, MS SQL Server, MS SharePoint Server, MS Active Directory.

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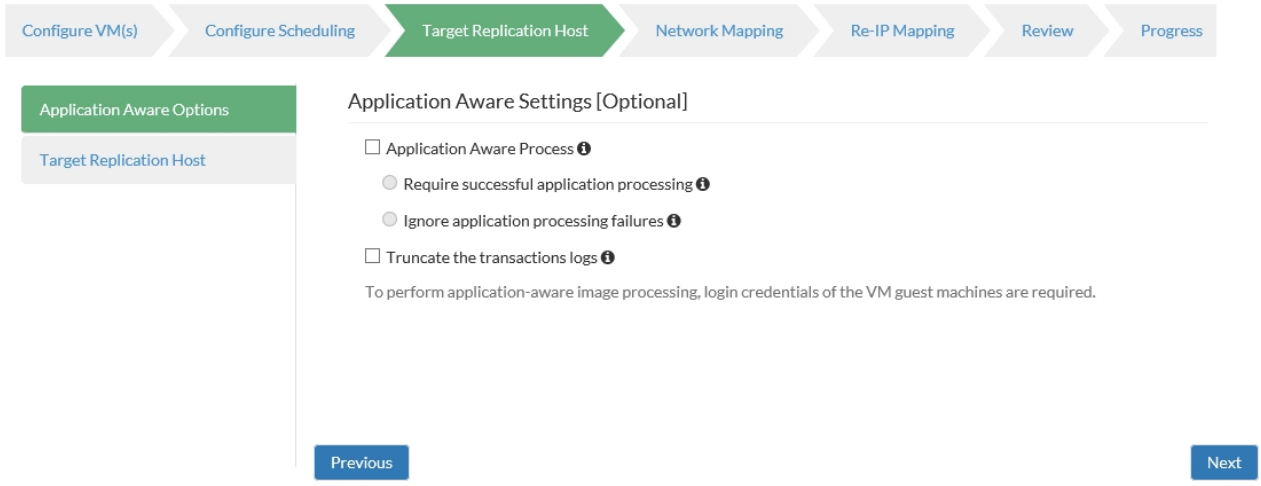


VMware Guest Credentials:

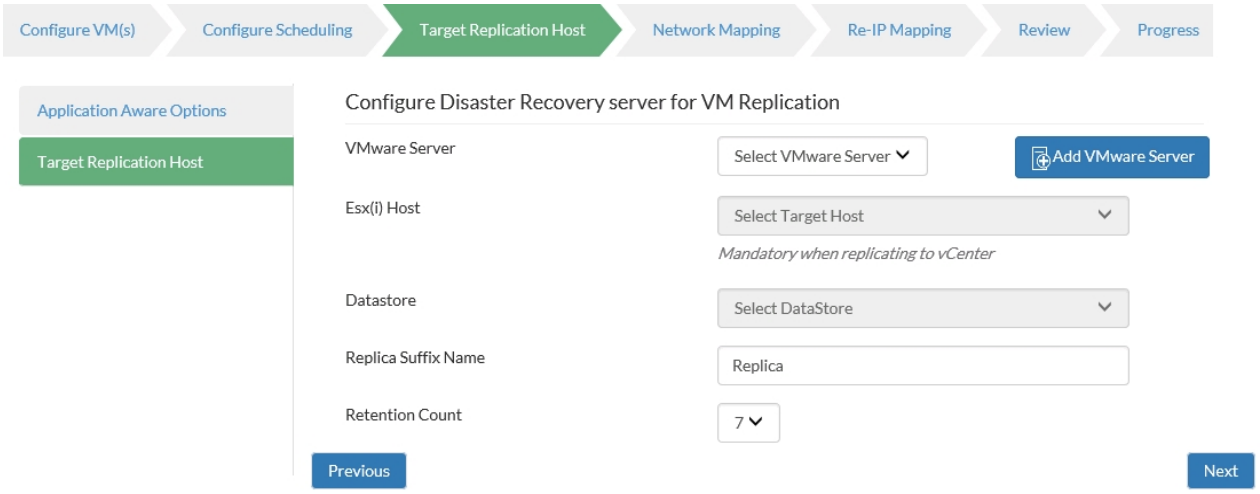
To perform application-aware image processing, login credentials of VM guest machines are required. Such Guest OS login details can be provided using this option.

- Select the desired VMware server and select the virtual machine to which you wish to enable application aware replication.
- Provide the login credentials of the Virtual machine and save it.
- Now scheduling VMware replication for particular VM will have application-aware options enabled.

Configuring Disaster Recovery Server for Power Replication™:

- Choose a Target VMware server/vCenter → Select a target host from the available list(Mandatory for vCenter replication) → Select a Datastore from the available list.
- By default, target VM replica will be given a suffix name as 'Replica', which can also be edited.
- Select retention count for replicated data, which is by default set at maximum count.

- Once done with all the above options, proceed with Next.



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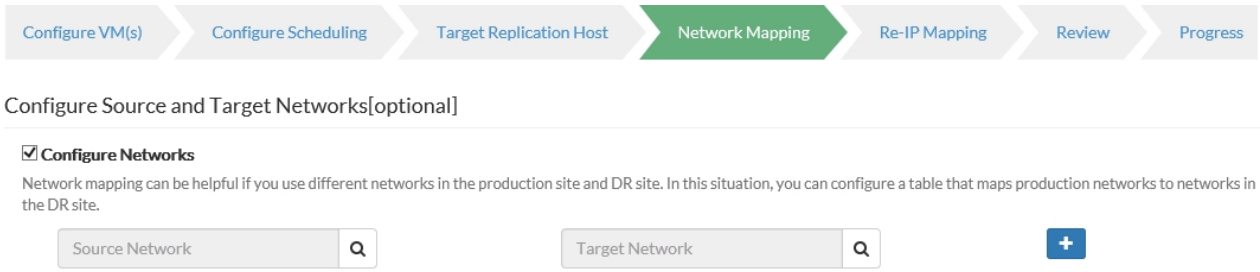
Network Mapping:

Network mapping can be helpful if you use different networks in the production site and DR site. In this situation, you can configure a table that maps production networks to networks in the DR site.

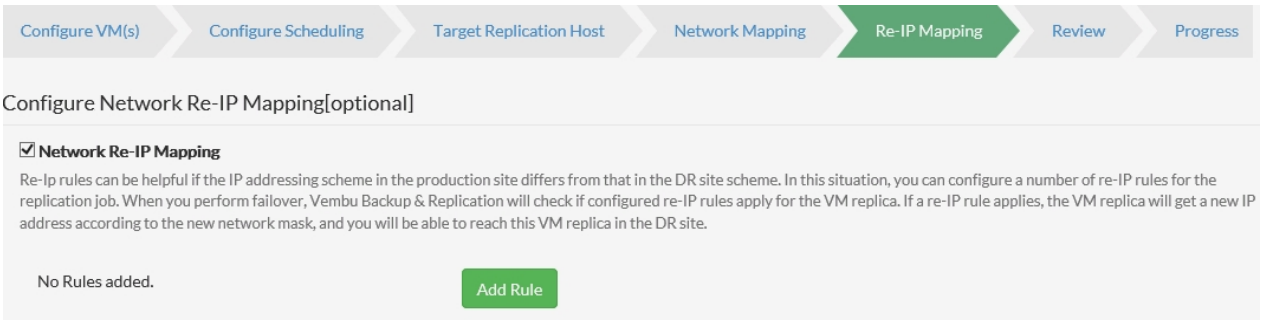
- If you wish to configure Network Mapping, do enable the 'Configure Networks' checkbox.
- Click on 'Add Network Mapping' to add and map more networks.
- Once done mapping networks, proceed with Next.



Configure Re-IP Mapping:

Re-Ip rules can be helpful if the IP addressing scheme in the production site differs from that in the DR site scheme. In this situation, you can configure 'n' number of re-IP rules for the replication job.

- Re-IP Mapping rule will be applied during FailOver. When FailOver, the replica will be power on with the configured Re-IP Mapping rules.
- If you wish to configure Network Re-IP Mapping, do enable the Network Re-IP Mapping checkbox.



- A dialog box, to add Re-IP rule will popup. Do fill all required details and save the rule.
- You can also add more rules, with Add Rule option.

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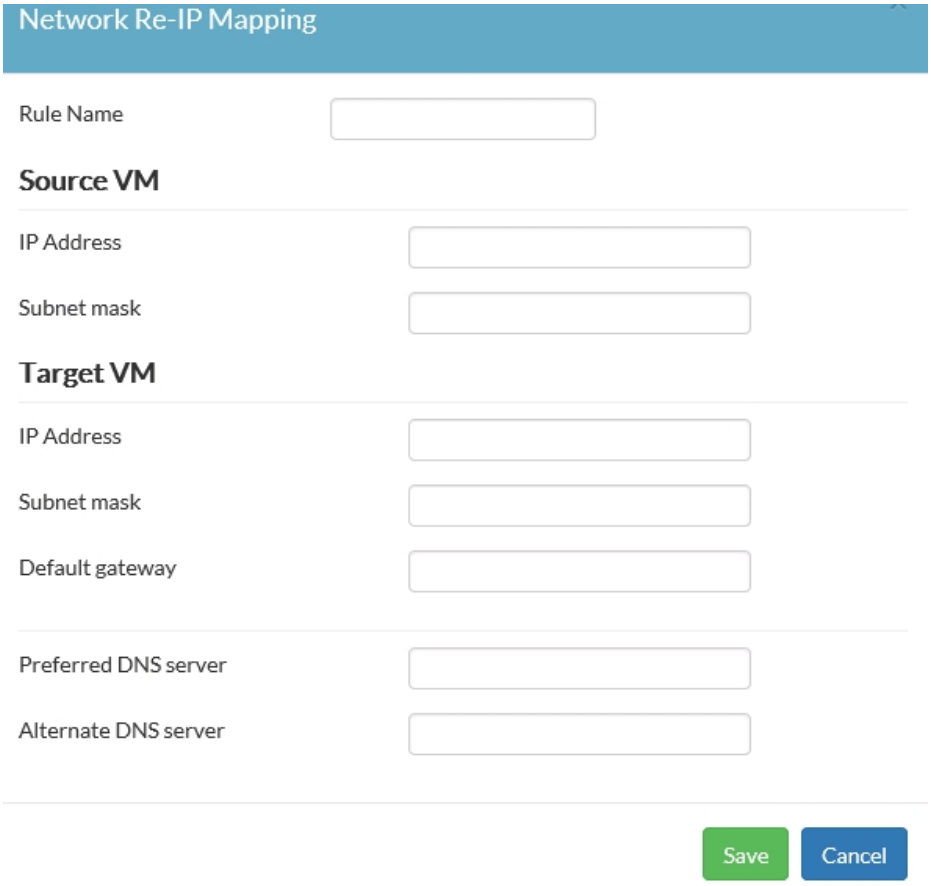
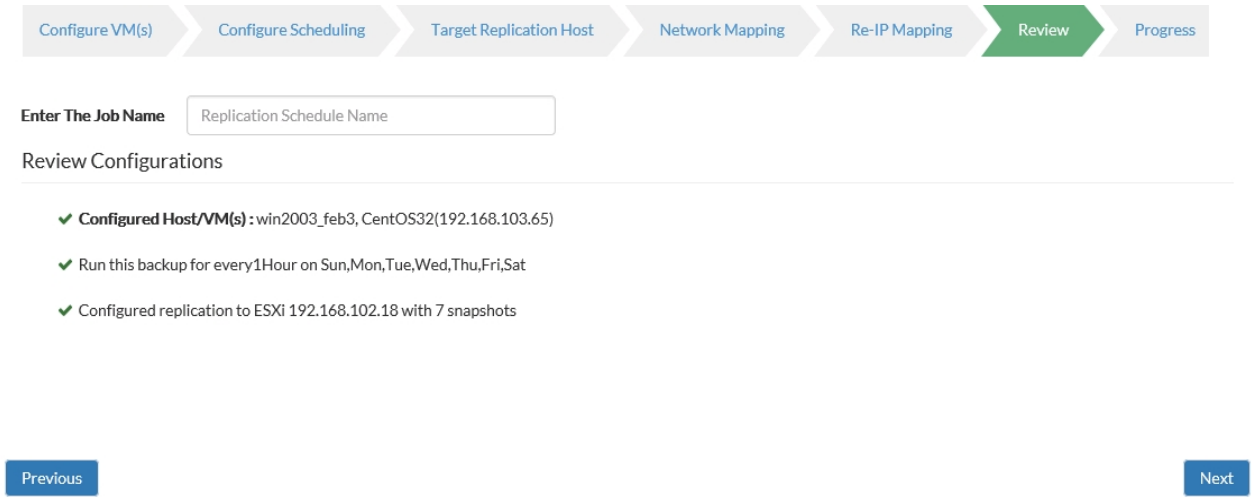


- Now proceed to Review the configurations entered and once done reviewing, provide a name for replication job and trigger start the replication.



- Monitor the replication progress and ensure it completes successfully.

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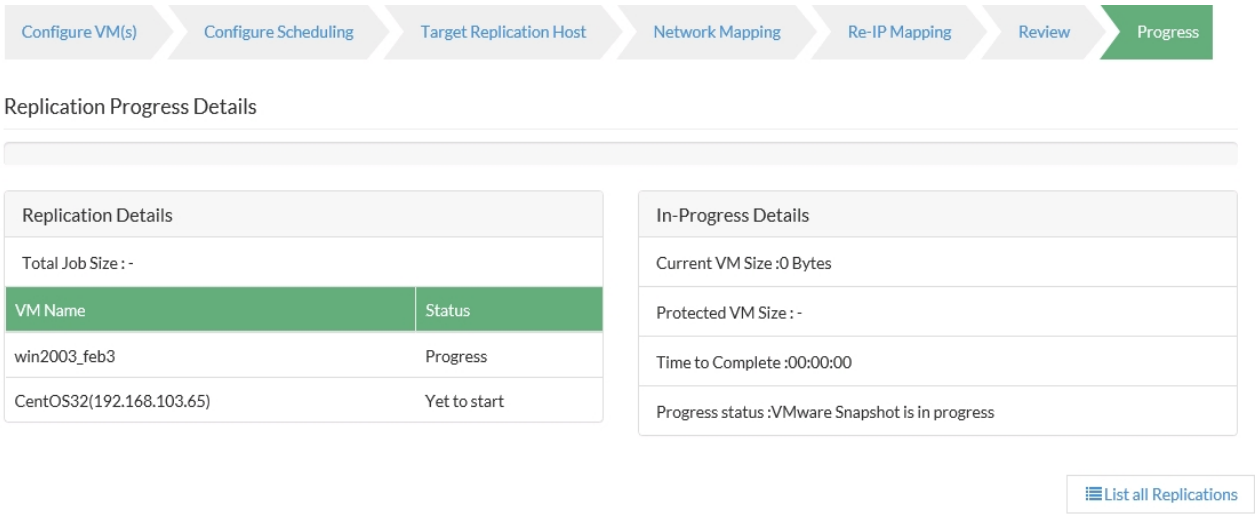
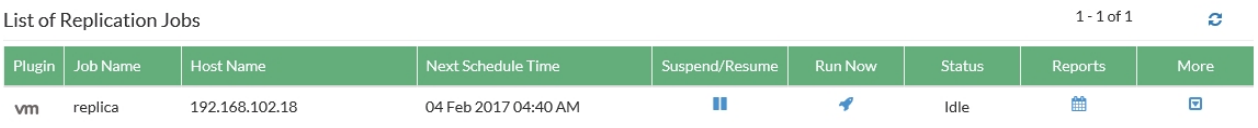


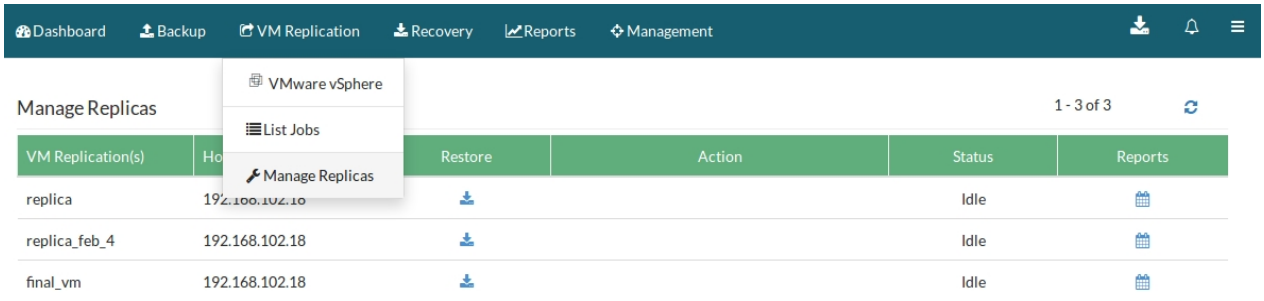
Vembu VMBackup User Guide

Manage Replication Job

- Go to VM Replication → List Jobs.
- This page lets users to view, run, suspend, delete and edit the replication jobs configured. Users can also view historical report of individual replication job.



- Go to VM Replication → Manage Replicas.



- You will be directed to page with the list of replication jobs configured from Vembu BDR server.

- This page lets you to perform FailOver & FailBack processes for the replicated VMs.

Visit the following page for steps to restore replicated VMs: Click Here

Vembu VMBackup User Guide

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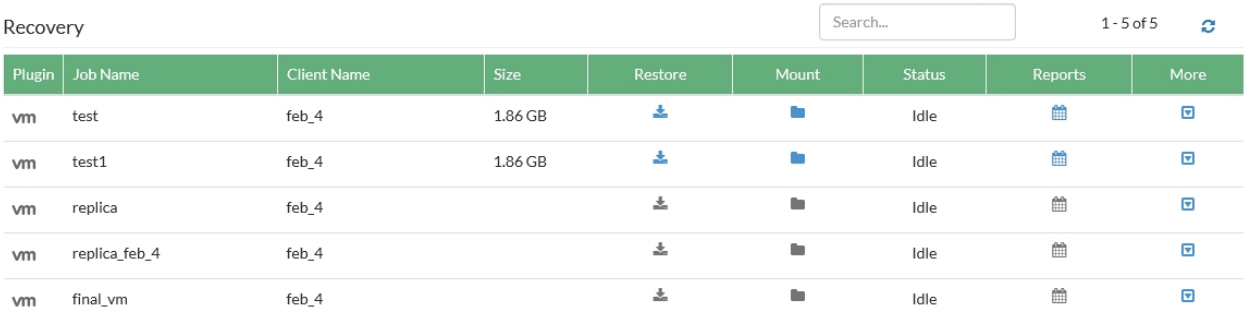
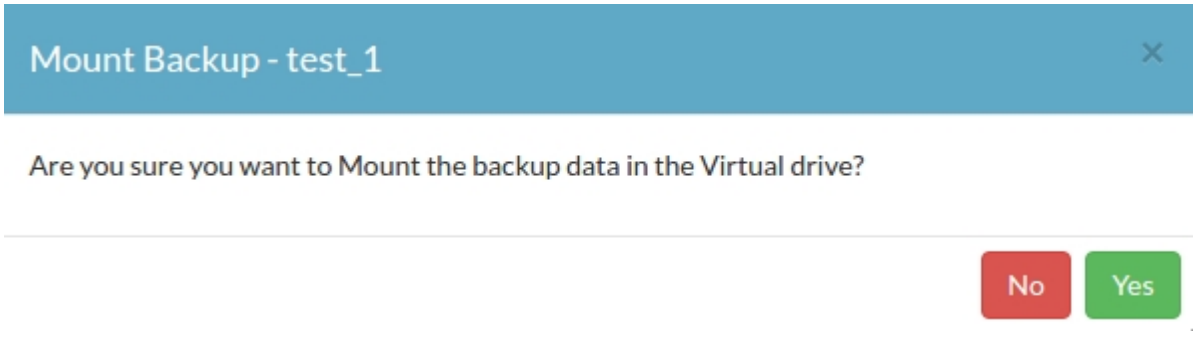
Disaster Recovery

- Go to Recovery tab.
- Backups configured from various client machines to the server, will be listed for recovery, along with below listed options:
    - Restore
    - Virtual mount
    - Proceed to Persistent Instant Boot version delete
    - Delete
    - Replication actions
    - Status
    - Reports



Virtual mount:

- This option lets you instant mount backup data virtually where users can access backup in different file formats such as: IMG, VHD, VHDX, VMDK.



- Users can either take a copy of this mounted data or boot respective files if needed on KVM(IMG file in Linux), VMware vSphere(VMDK) or Hyper-V(VHD, VHDX).
- Once done with requirement, unmount backup data. This will resume backup job, so that incrementals will run as per schedule.

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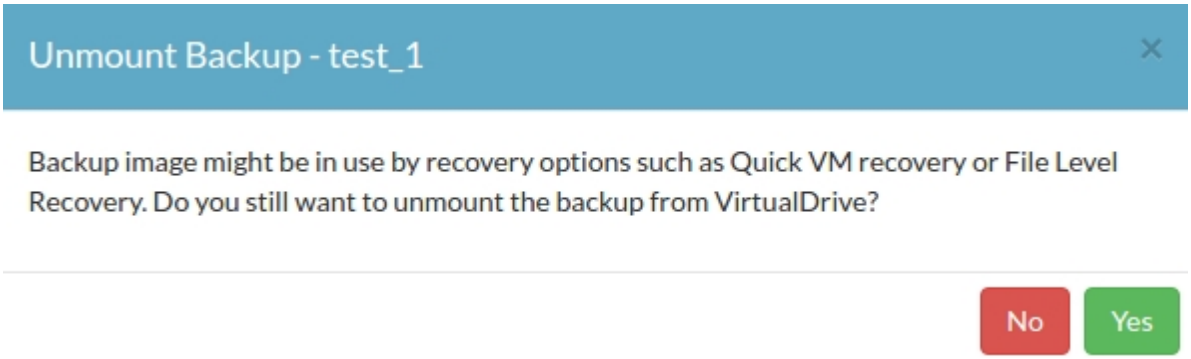
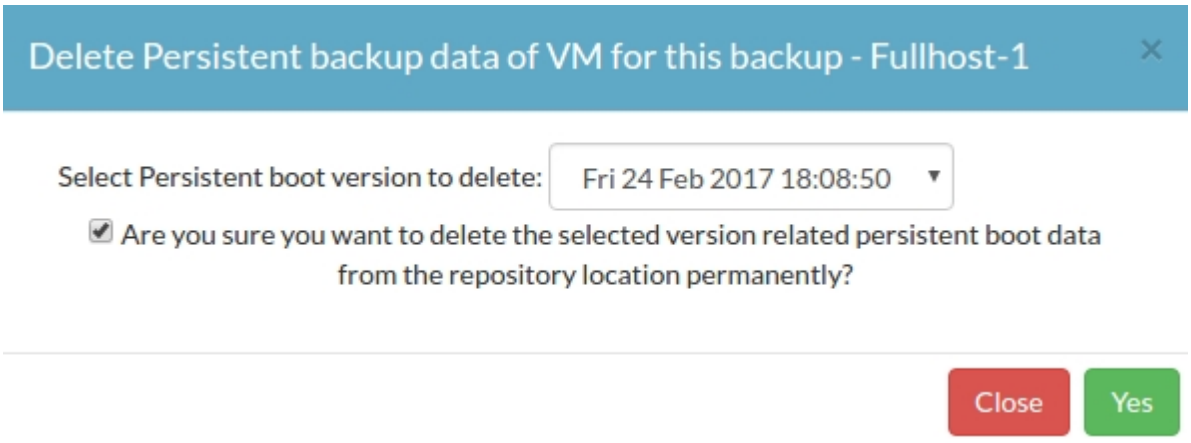


Proceed to Persistent Instant Boot version delete:

- During each instant boot and instant file recovery session, a change in backup data will take place which then is saved as persistent Instant boot data.
- Persistent data can be restored using restore options, if needed.
- Persistent data will be listed with a (+p) sign alongside timestamps of backup versions.
- Such persistent data can also be deleted if not required, using the 'Proceed to Persistent Instant Boot version delete' option.
- The option let user choose the timestamp of persistent data to be deleted.
- User will also be required to confirm deletion by selecting the checkbox 'Are you sure you want to delete the selected version related persistent boot data from the repository location permanently?' to proceed with deletion process.



Restore:

- Proceeding with restore option will list below restore options to choose from:
  - Quick VM Recovery
  - Live Recovery to ESX(i) server
  - File Level Recovery
  - Disk Level Recovery
  - Download

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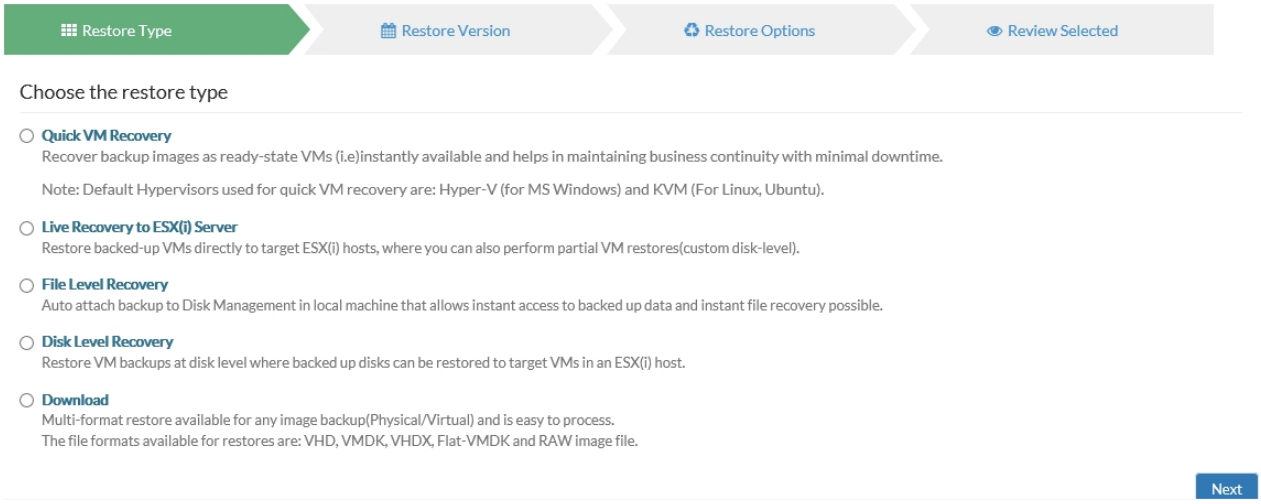


Vembu VMBackup User Guide

Quick VM Recovery

Quick VM recovery option allow user to quick access backup images as ready state VMs. (i.e) Minimal downtime and business continuity secured by making VMs instantly available. Quick VM recovery gives 3 choices of instant boot software to users:

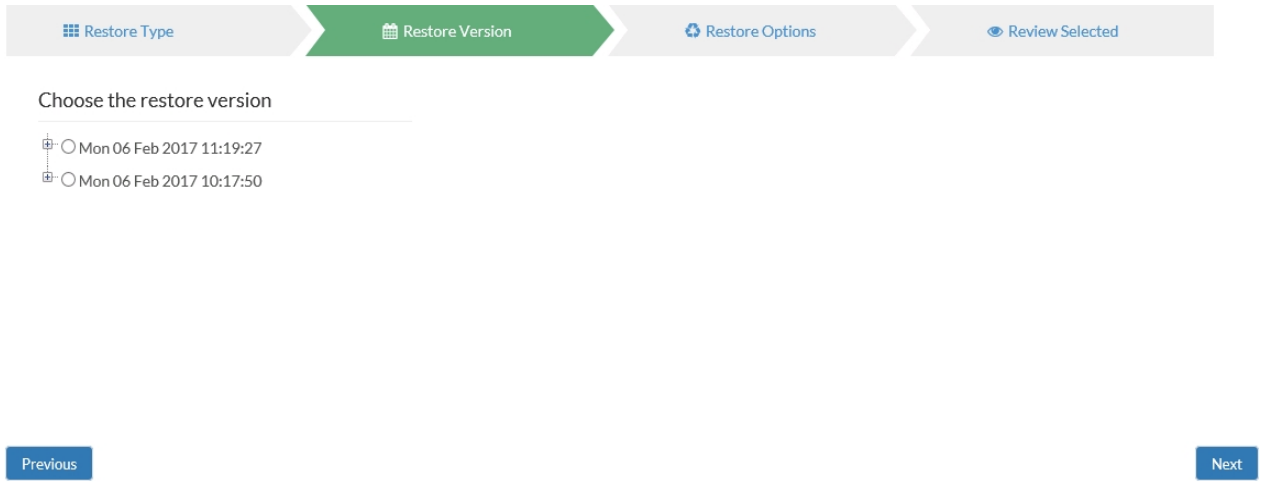
- VMware (Available in both Windows and Linux servers as an alternate software for instant boot)
- Hyper-V (Default chosen software for Windows and available only on Windows servers)
- KVM (Default chosen software for Linux and available only on Linux servers)

Vembu VMBackup User Guide

VMware

Login to Vembu BDR server installed in a Windows/Linux environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.



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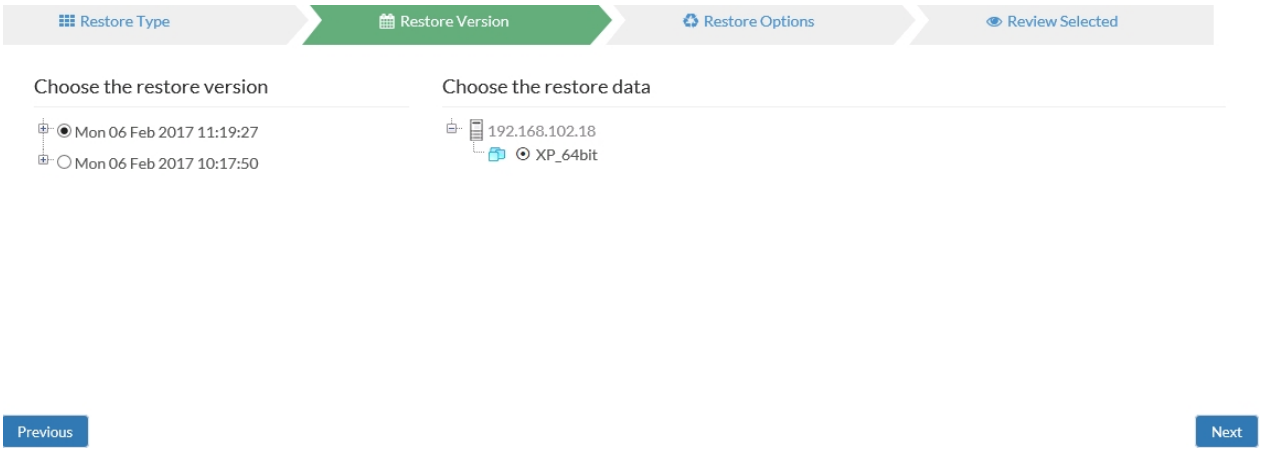
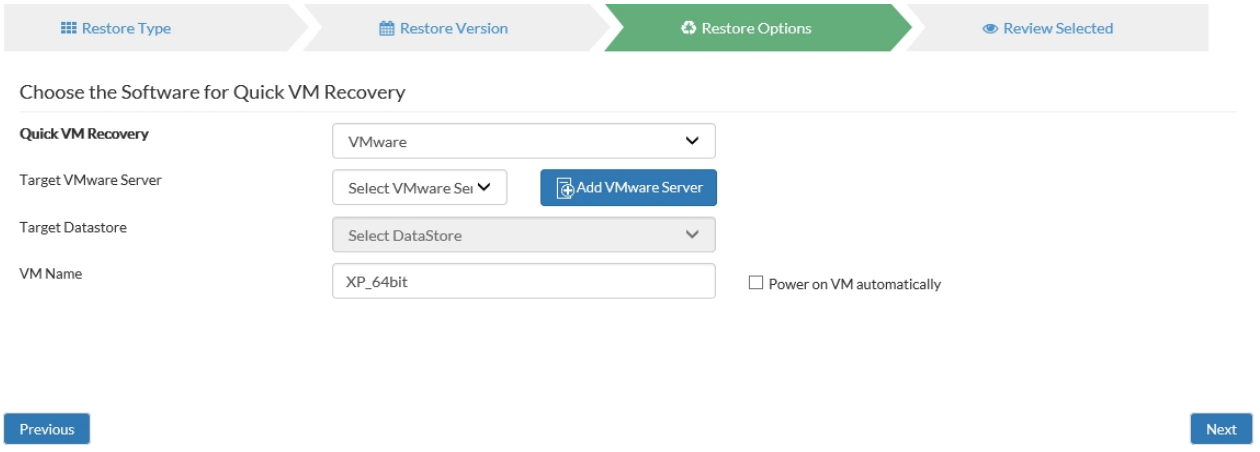
- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to configure in which VMware server to boot.



- User can choose VMware as software for instant boot (In both Windows and Linux servers) and need to enter the necessary details to instant boot in VMware environment.
- In order to proceed with instant boot via ESXi/vCenter server, user have to choose: target VMware server and target datastore. User will also be requested to provide a VM name(which by default takes name of VM to be restored).
- User can also specify whether the VM should be powered ON automatically.



- Once done configuring VMware server details, proceed to review configuration.

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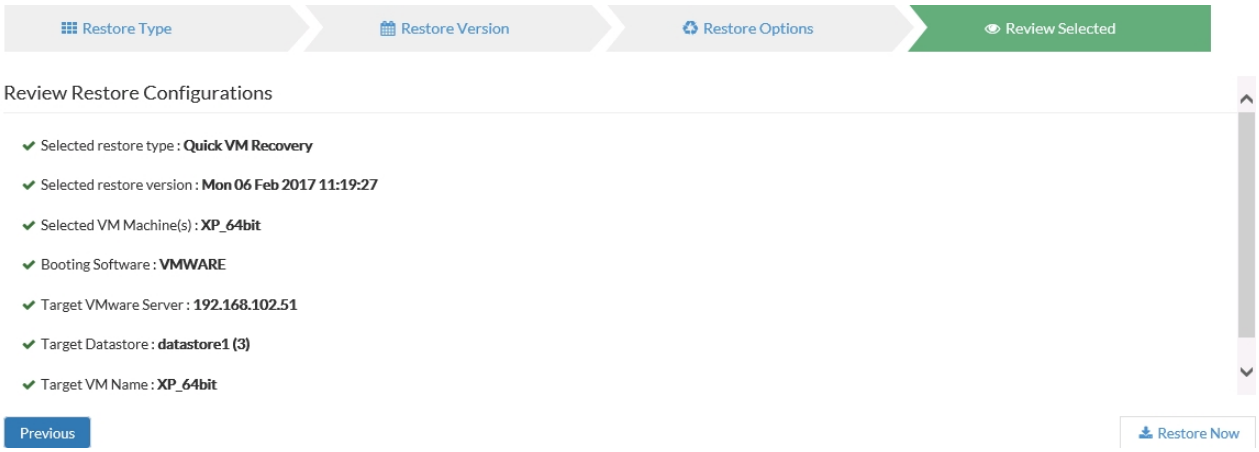
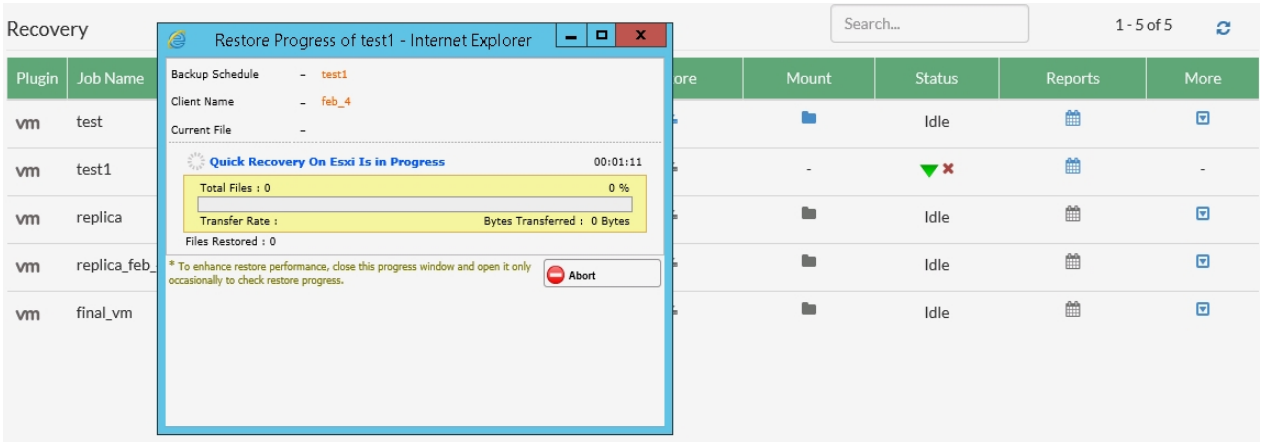


- Once done reviewing, click Next to proceed with Instant Booting the VM.



- VM will get automatically created in VMware server VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

Vembu VMBackup User Guide

Hyper-V

Login to Vembu BDR server installed in a Windows environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.

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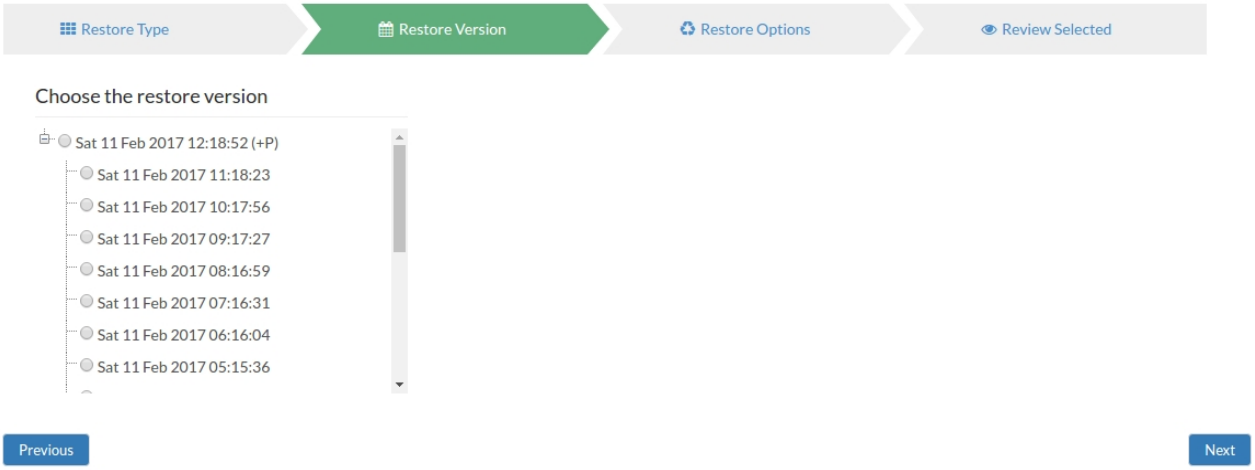
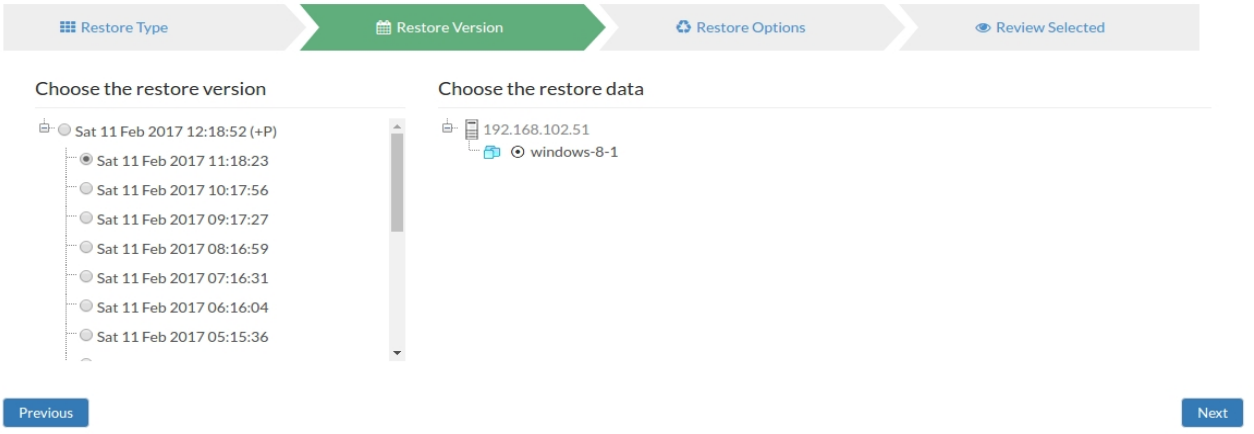
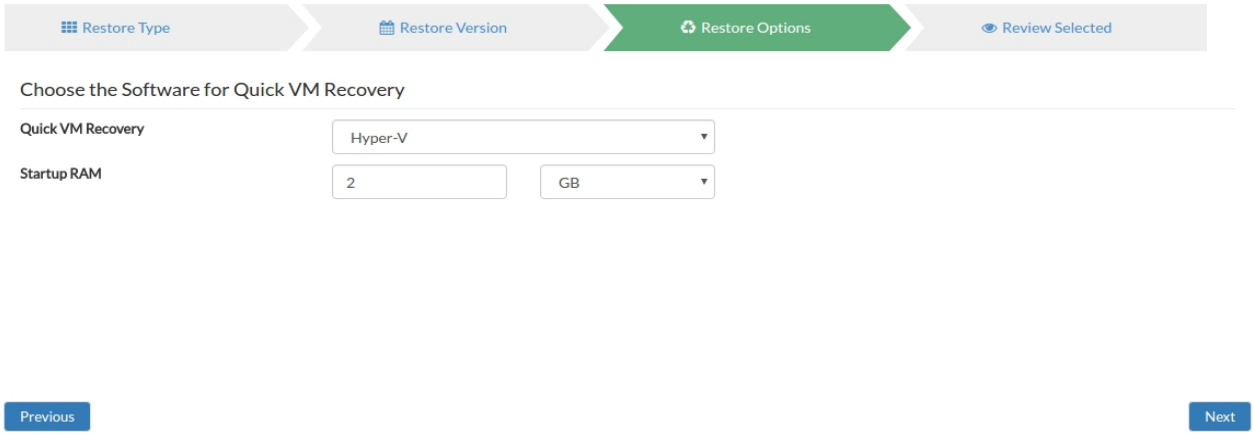


- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to allocate RAM for Instant boot.



- The software used to instant boot is Hyper-V (For Windows servers) and the default RAM size chosen is 2 GB which can be modified based on user requirement.



- Once done configuring restore options, proceed to review configuration.

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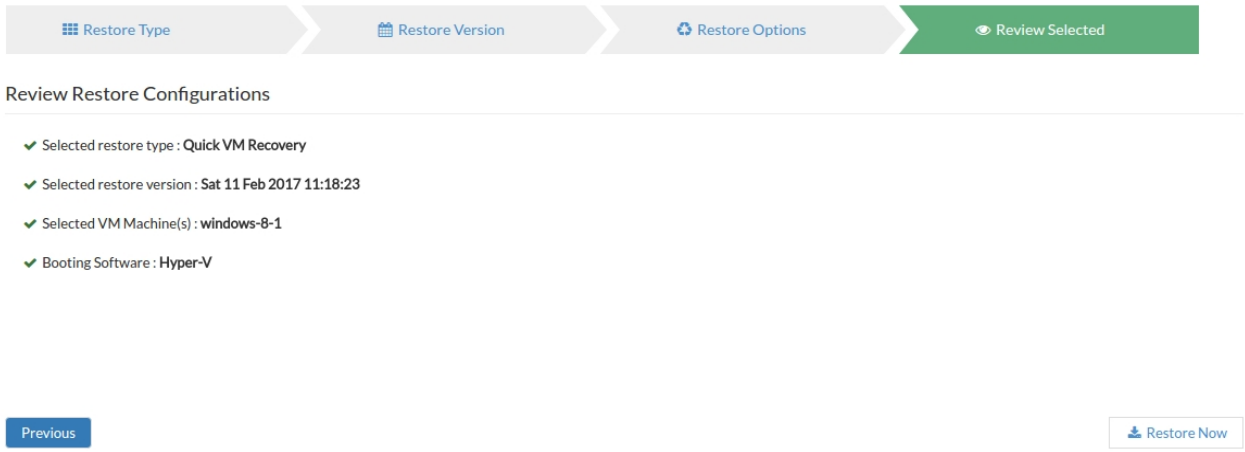
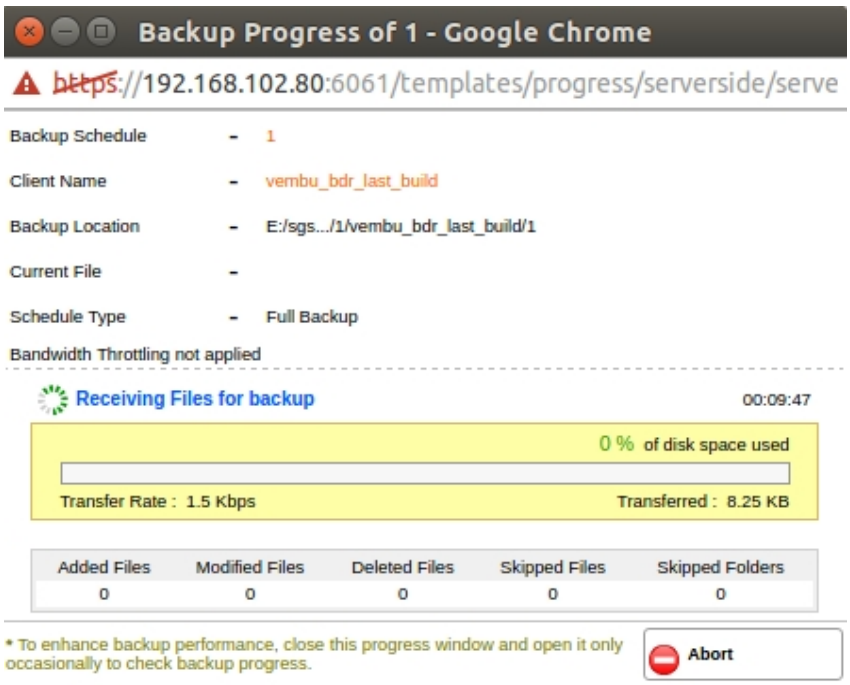


- Once done reviewing, click Next to proceed with Instant Booting the VM.



- VM will get automatically created in Hyper-V VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

Vembu VMBackup User Guide

KVM

Login to Vembu BDR server installed in a Linux environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.

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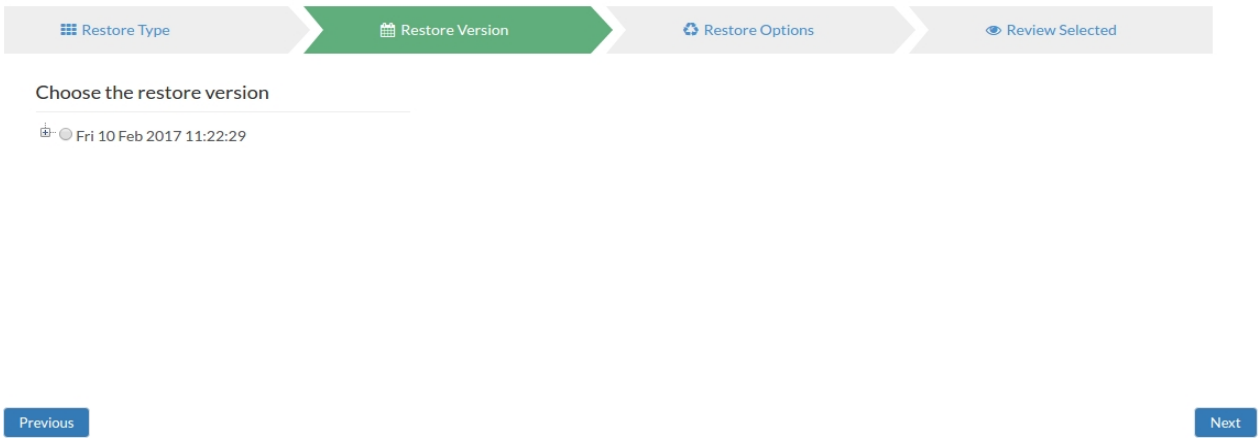
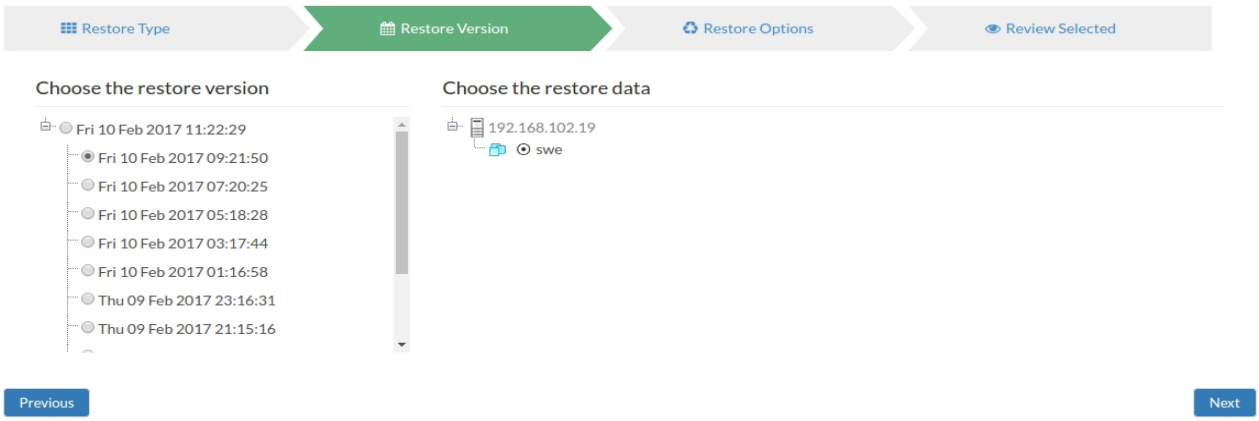
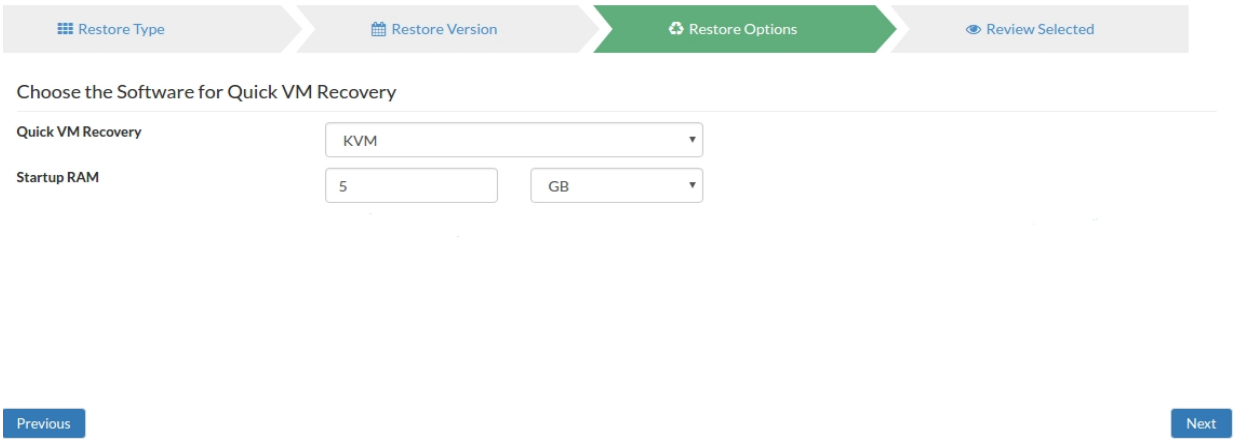


- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to allocate RAM for Instant boot.



- The software used to instant boot is KVM (For Linux servers) and the default RAM size chosen is 2 GB which can be modified based on user requirement.



- Once done allocating RAM size, proceed to review configuration.

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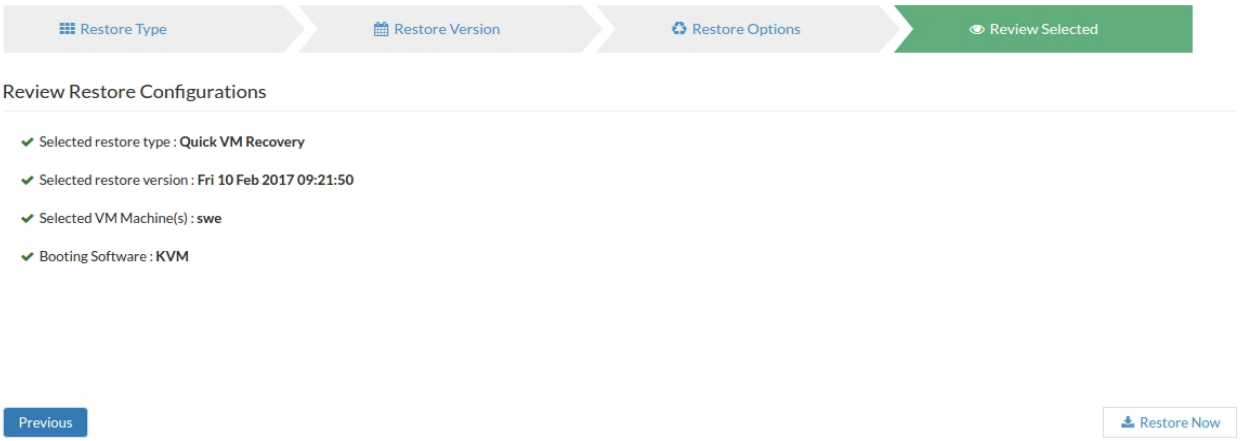
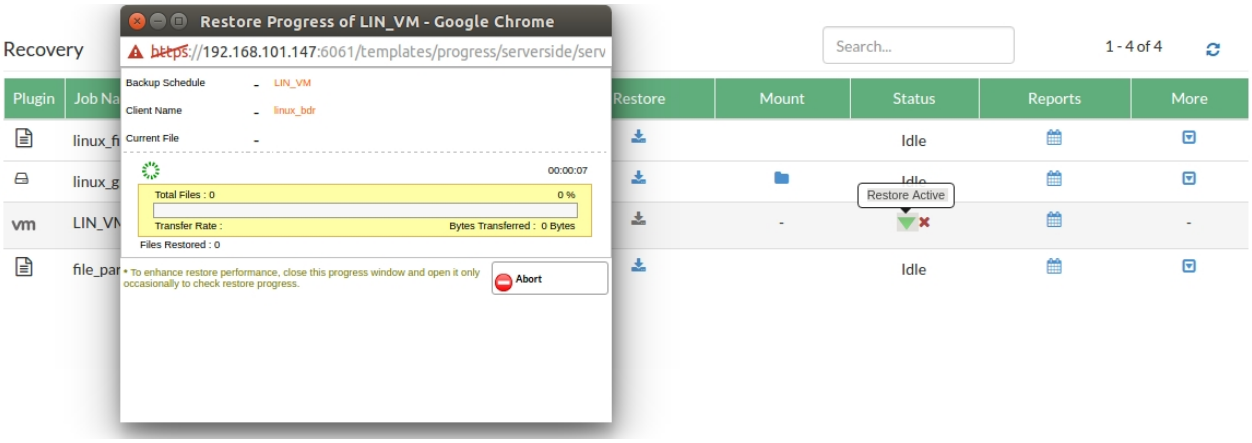


- Once done reviewing, click Next to proceed with Instant Booting the VM.



- VM will get automatically created in KVM VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

Vembu VMBackup User Guide

Instant File Recovery

This option lets you instantly attach backup data to disk management as a VHD/VHDX file and proceed with file level restore.

- The VHD/VHDX file is created by virtual mounting backup data.
- Users can access backup data via disks attached on disk management.
- Once done with requirement, unmount backup data. This will resume backup job, so that incrementals will run as per schedule.

- Select the timestamp version for file level recovery and proceed

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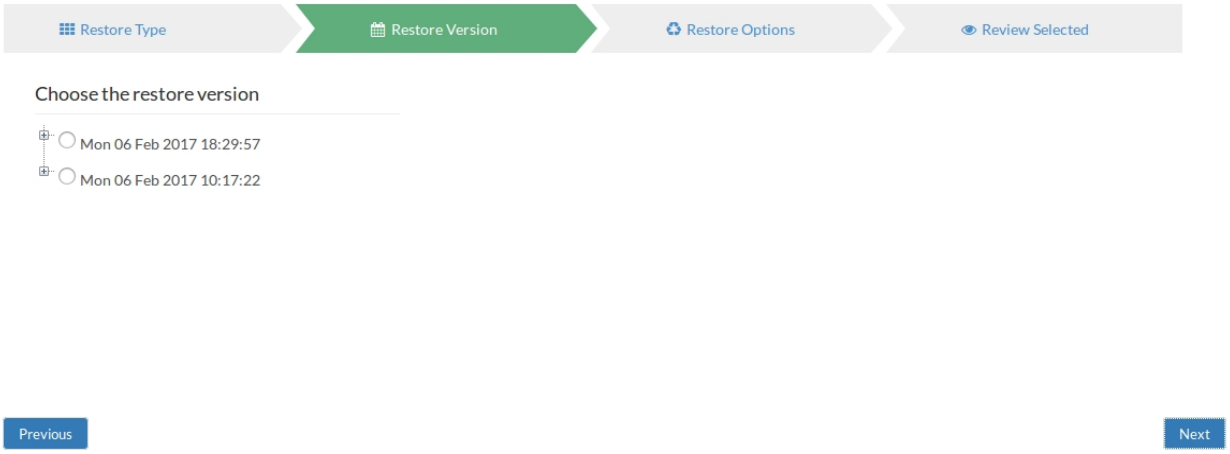
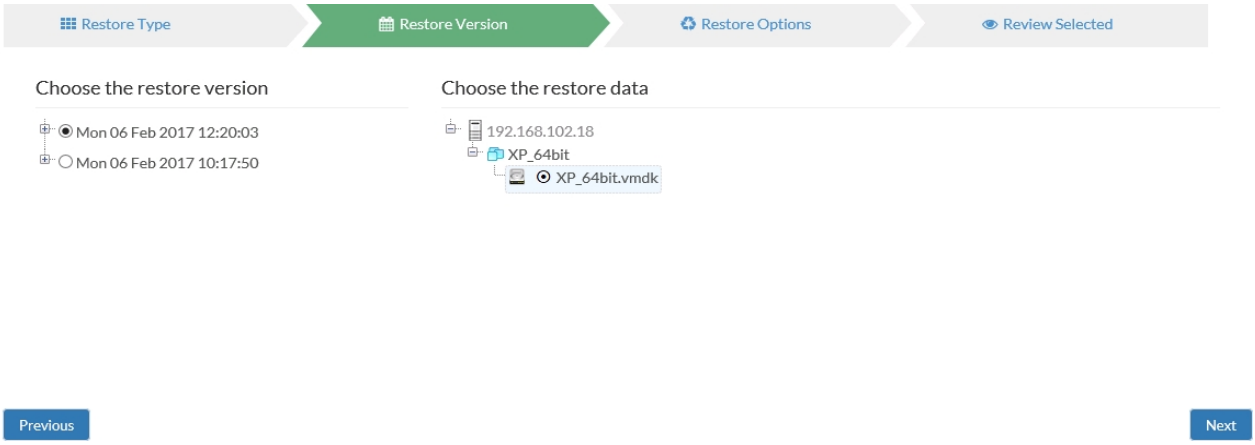
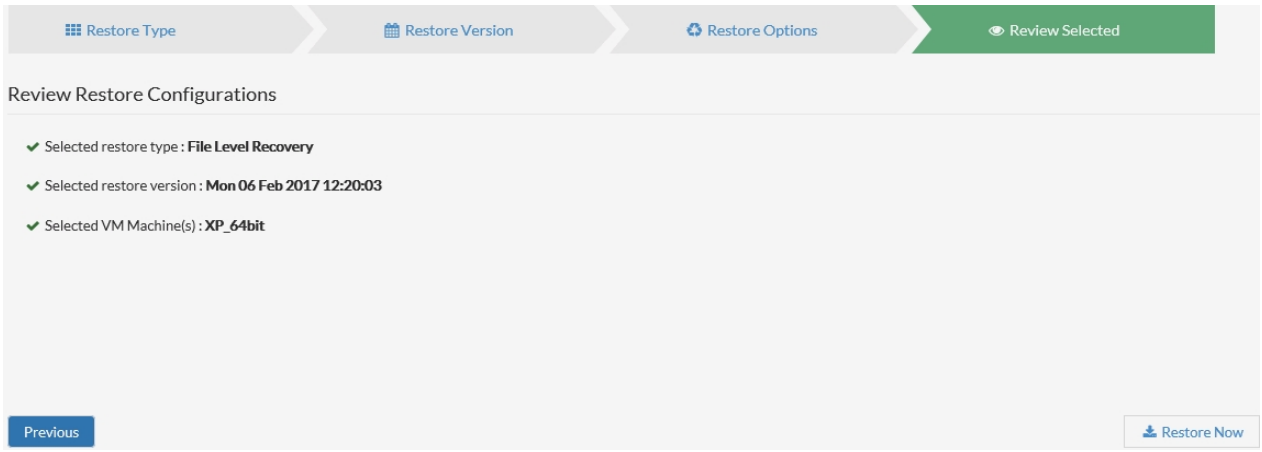


- Select the backup data to be mounted in disk management for file level restore.



- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with File Level Recovery.

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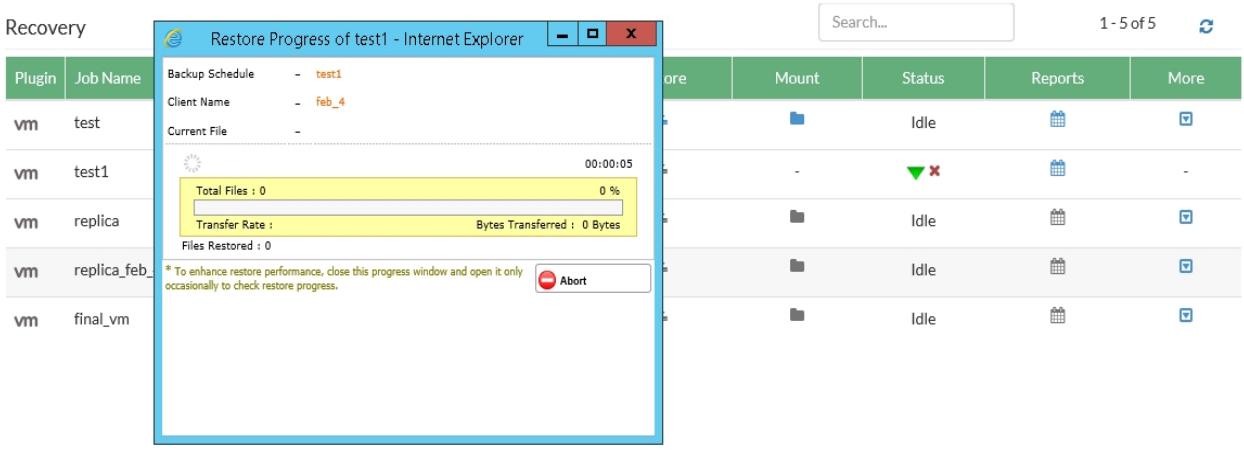
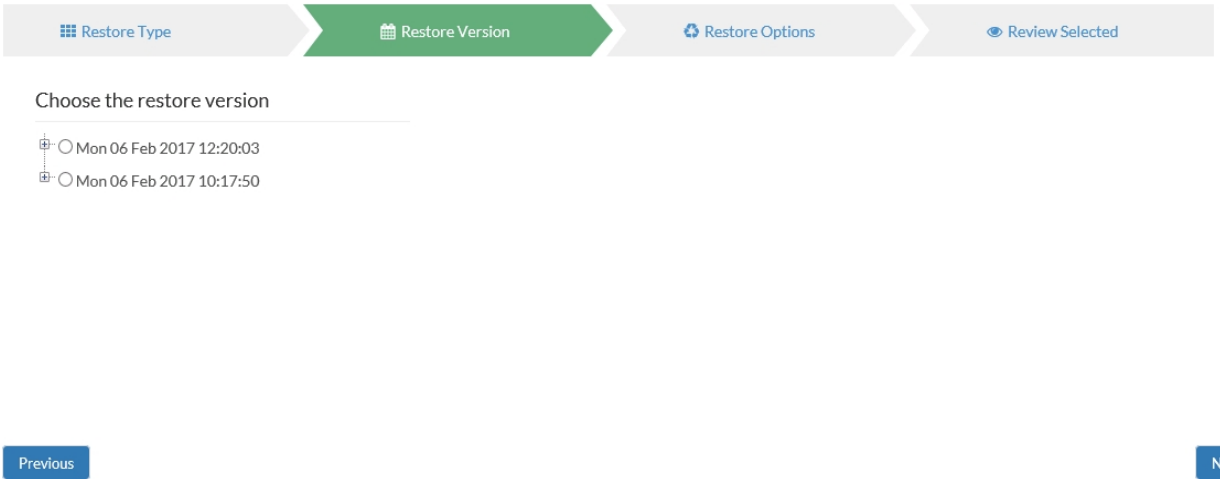


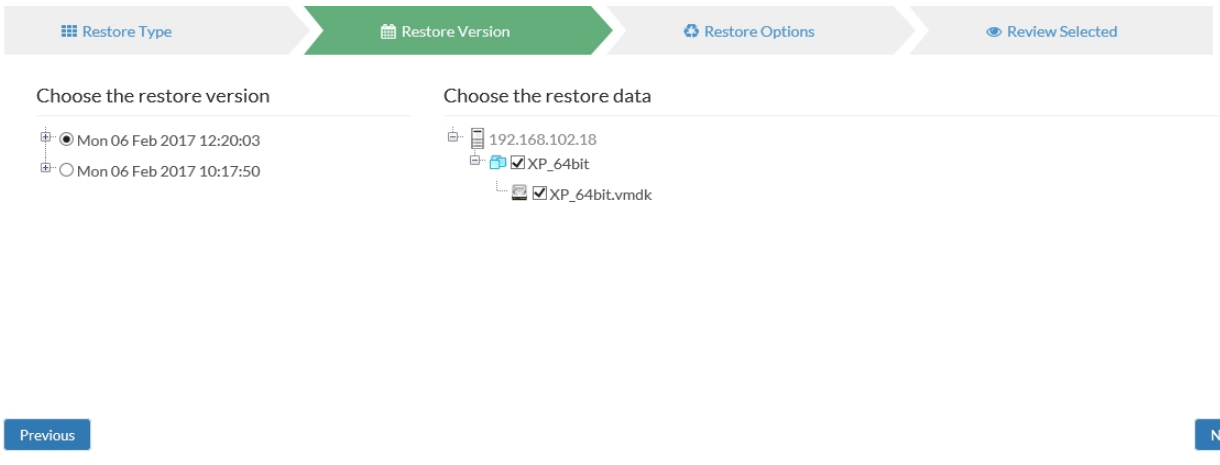
Vembu VMBackup User Guide

Full VM Recovery to ESXi Host or vCenter Server

- Proceeding with 'Live Recovery to ESX(i) Server' option will let you select Version for Live ESXi Server restore, where you have VMware backup with several timestamps.
- Choose your required timestamp version and proceed to select VM.



- If you have backed up more than one VM in a backup and need to restore a particular VM/set of VMs, among all other VMs- Select your desired VM(s) and hit proceed to provide target ESXi details.



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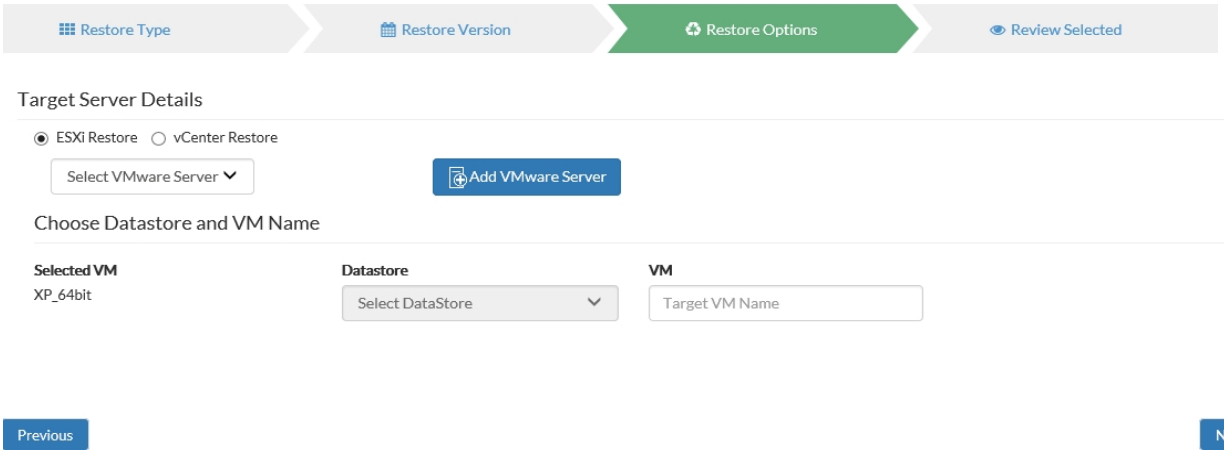
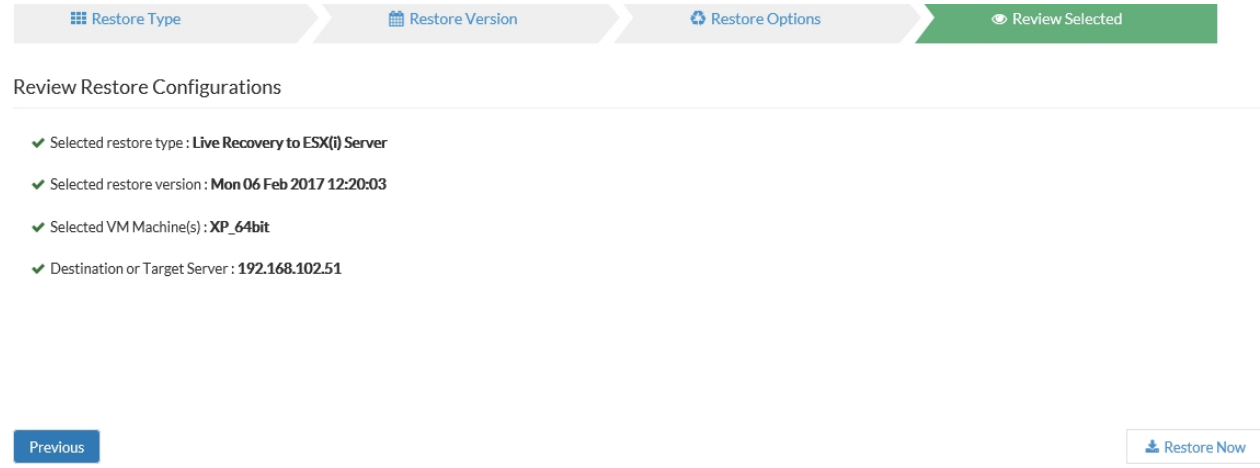
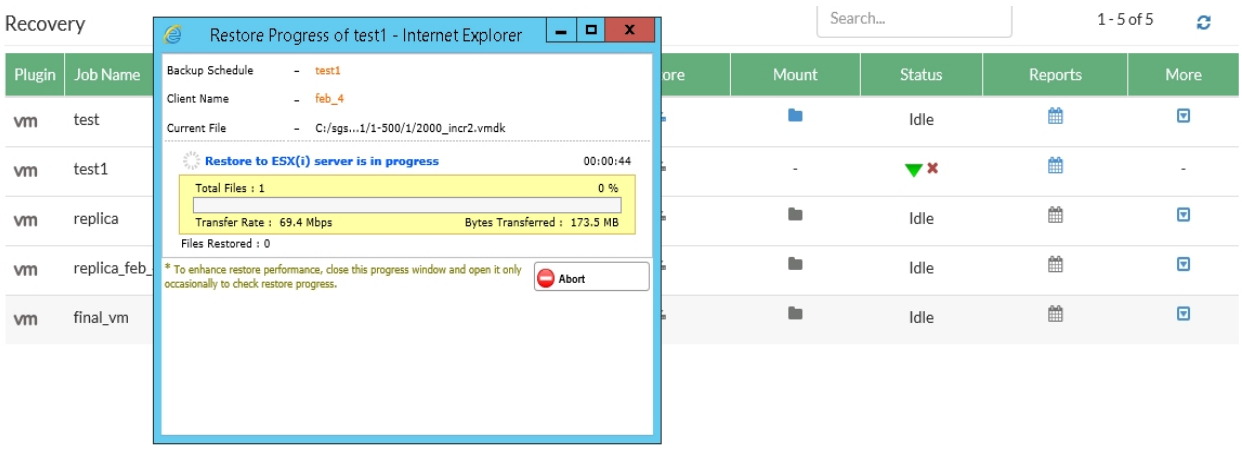
- Choose the target server(ESXi/vCenter) for VM restore from the dropbox(if already registered in manage VMware vSphere server page). If not registered, add the server details using 'Add VMware Server' option.
- Choose target host(if restoring to vCenter) and target datastore details.
- Provide a name for the target VM to be created.



- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with Live Recovery to ESX(i) Server.



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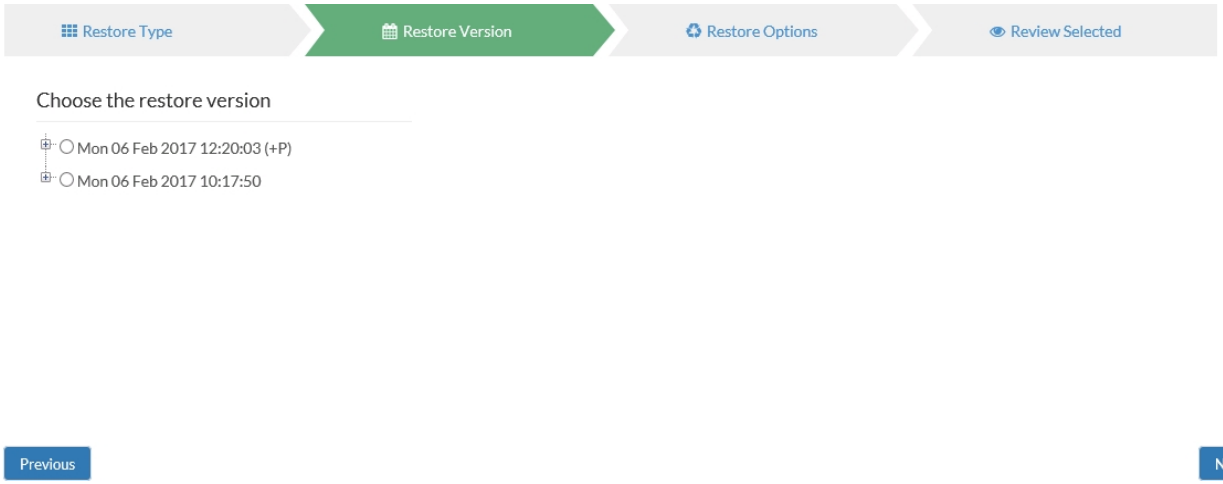
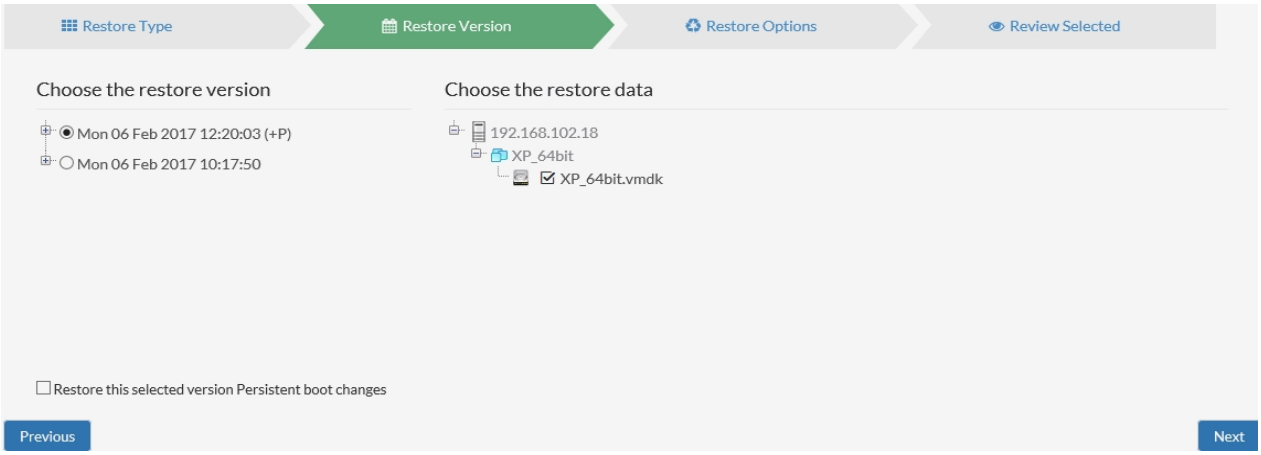
Vembu VMBackup User Guide

Disk Level Recovery

- This option lets users restore specific disk from existing VM backup to a target virtual machine. So that the disk can be attached and accessed by that target VM.
- Proceeding with the option VM disk restore, requests user to select time-stamp version for VM disk restore. Once done selecting, click proceed to select virtual machine(s).



- Select the required disks of VM(s) you want to restore and click proceed to provide target ESXi details.



- Choose the target server(ESXi/vCenter) for VM restore from the dropbox(if already registered in manage VMware vSphere server page). If not registered, add the server details using 'Add VMware Server' option.
- Choose target host(if restoring to vCenter) and target datastore details.
- Choose the target VM to which you wish to restore disk.

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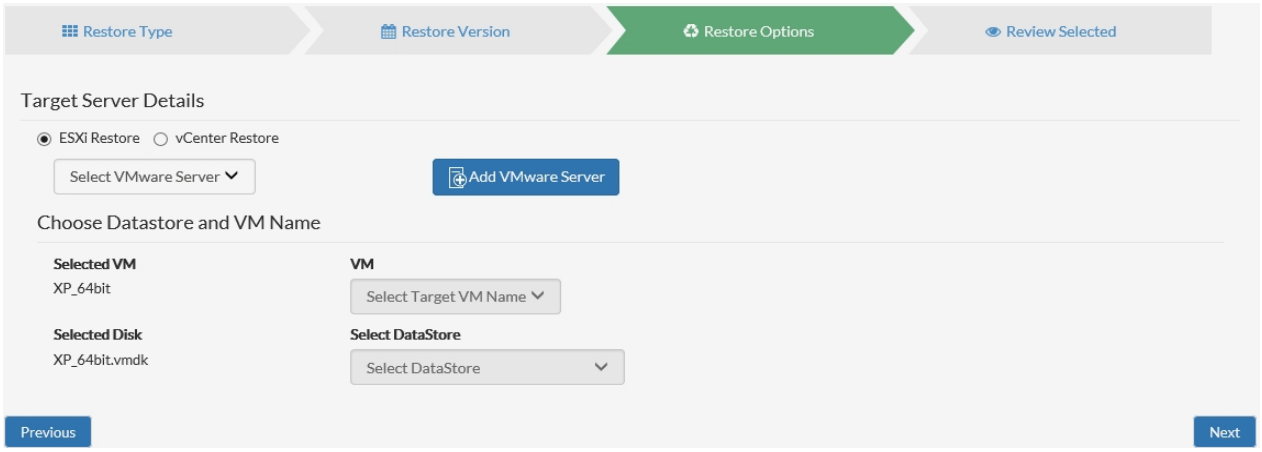
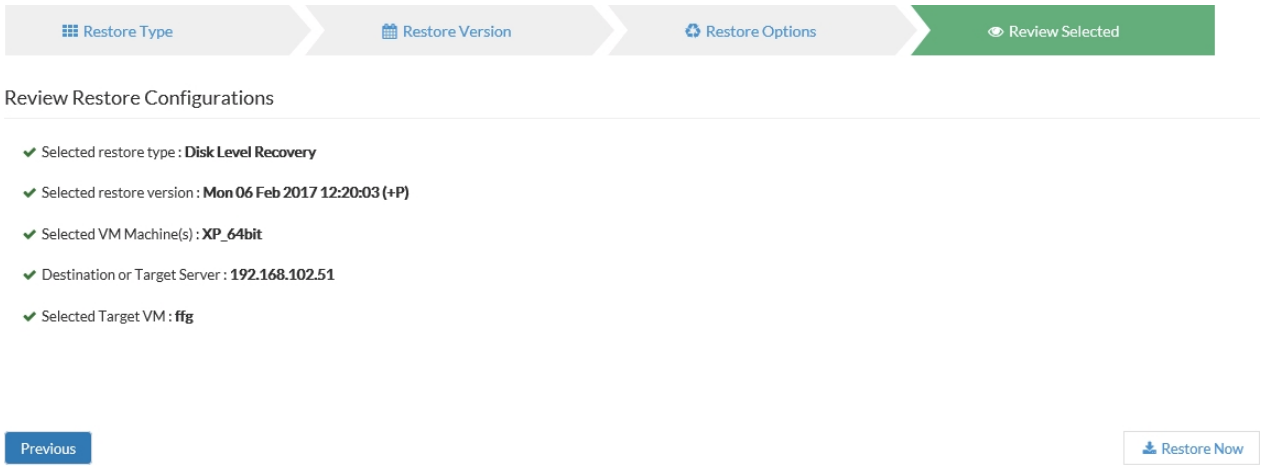
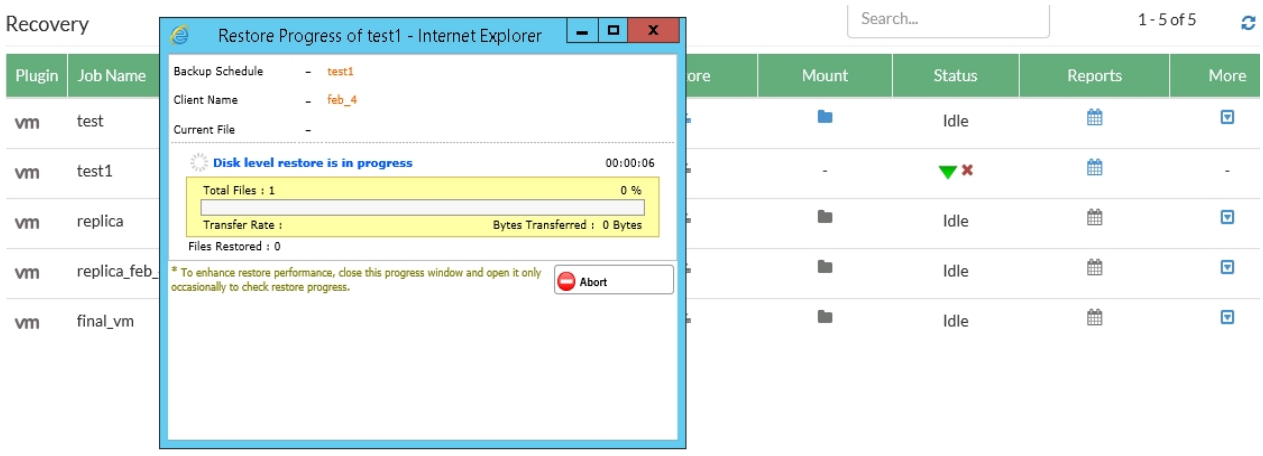


- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with Disk Level Recovery.



Note: While performing Disk Level restore, target VM will be turned off

Vembu VMBackup User Guide

Download VM Files

- Download option allows users to download backup data as an offsite copy of their

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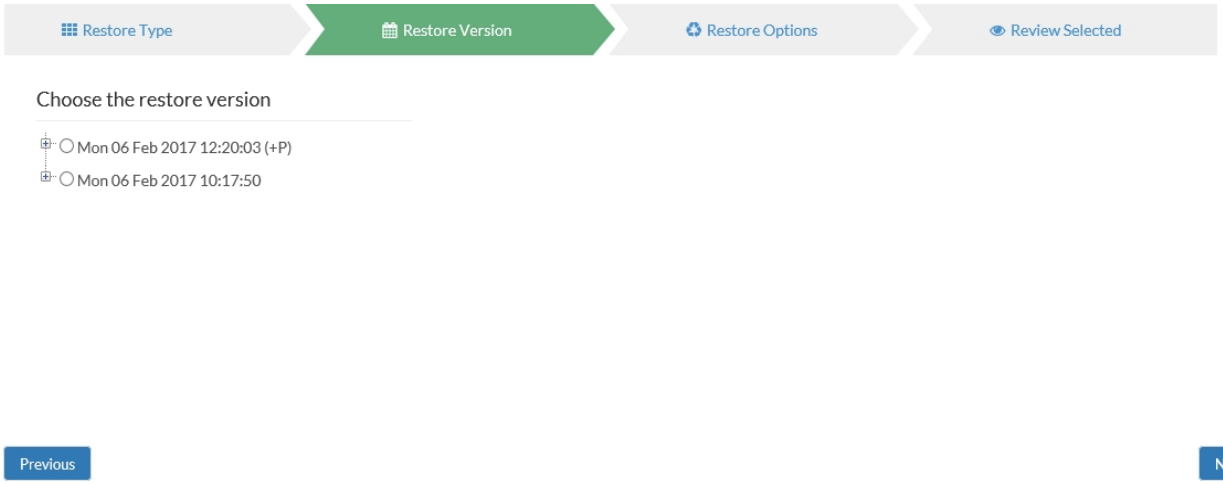
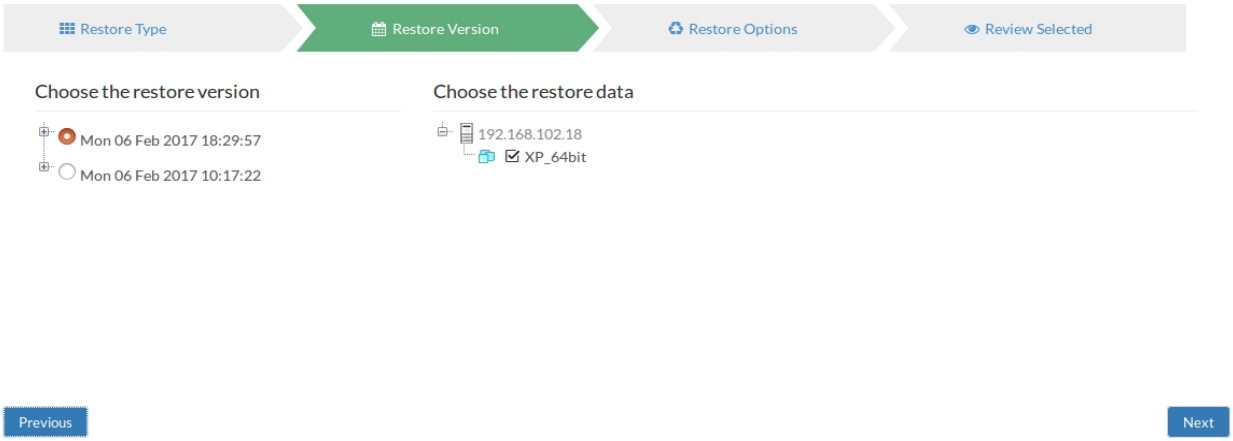
preferred file format.

- Proceeding with restore, lets users go with the regular routine of selecting time-stamp version they want to restore and click proceed.



- Now select VM(s) to restore and proceed to select restore location.



- Restoring location can either be a local drive on backup server or if users have managed to add a network shared drive, the restore can be directed to the network shared location.
- Users can download backup data in multiple file formats such as: VHD, VMDK, VHDX, VMDK-Flat and RAW.

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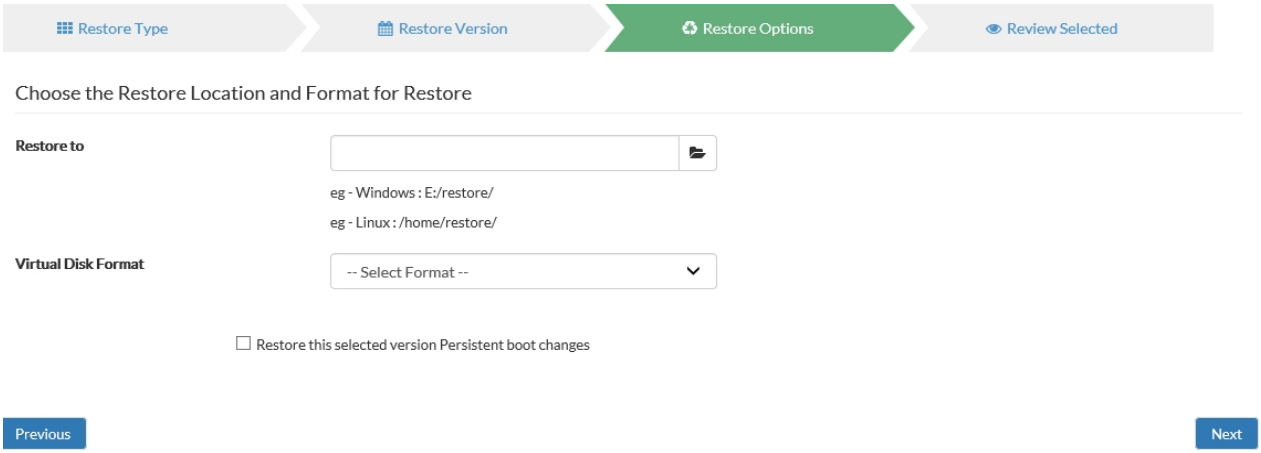
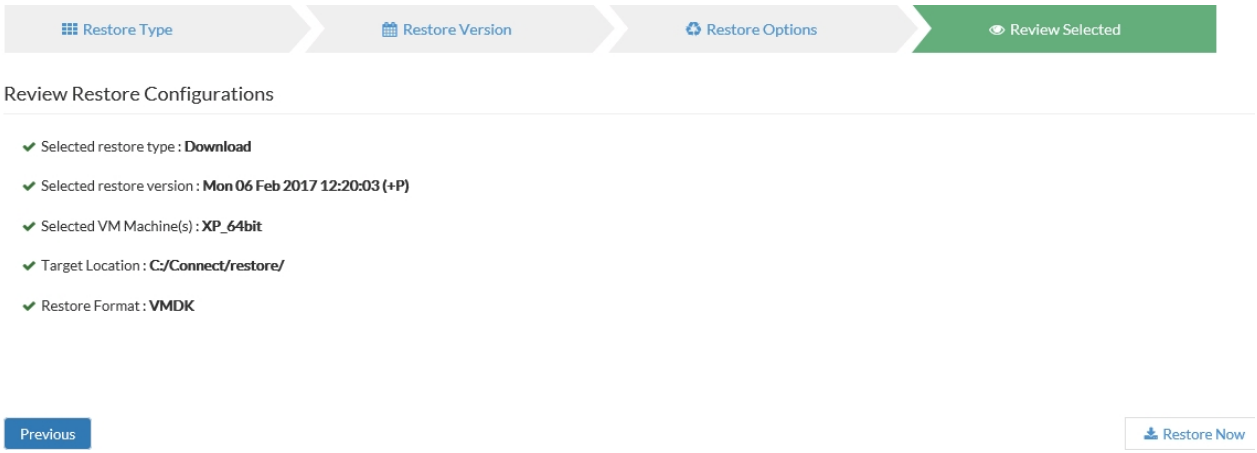
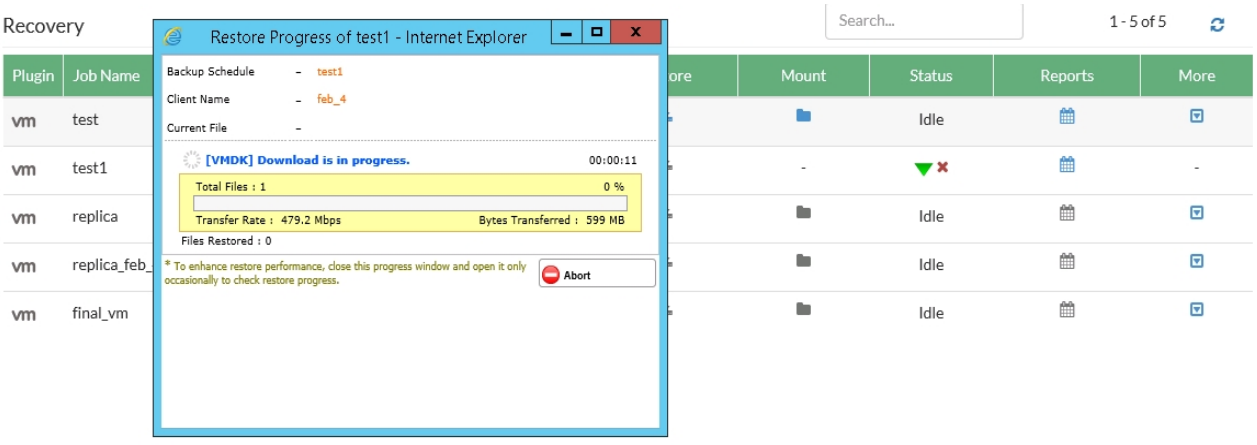


- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with Download.



- Taking offsite copies in various format allow users to boot backup data across various virtual and physical environments such as Oracle Box, KVM, Hyper-V, VMware vSphere, VMware player etc.,
- Also reconstruction of physical servers is also possible with this offline backup copies.

Vembu VMBackup User Guide

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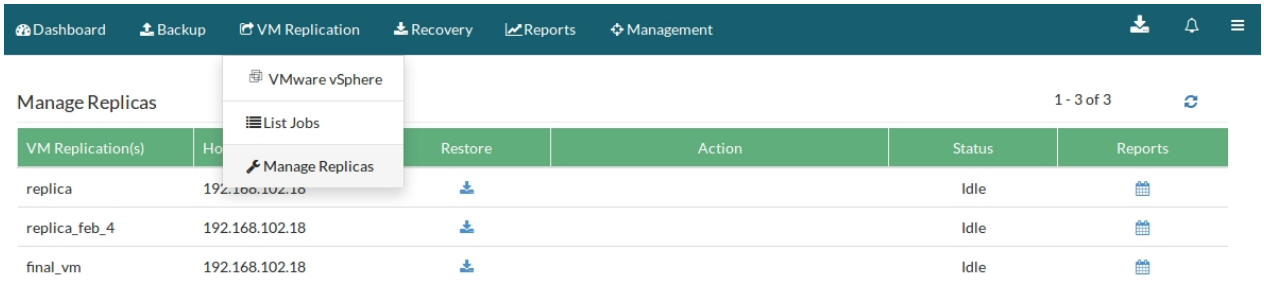
Restore type- Failover and Failback

User can perform Failover and Failback as a recovery process for replications.

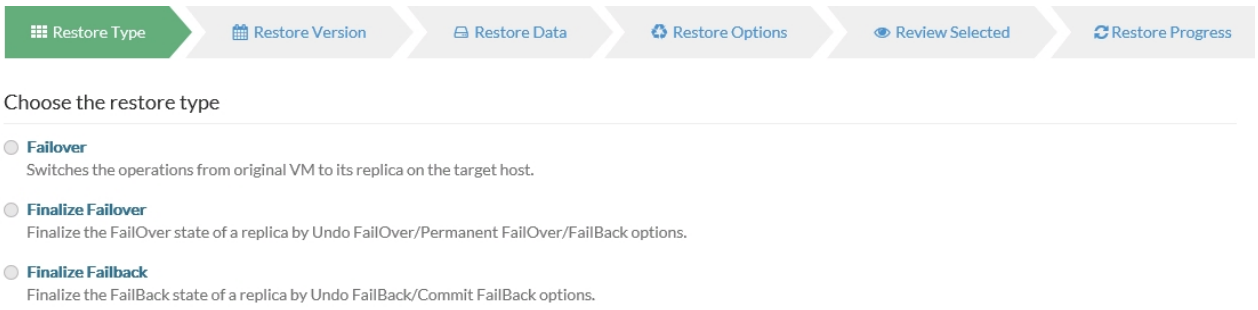
Failover and Failback processes have three phases in which each phase is dependant on the other, where you can initially start with Failovering VMs followed by Finalizing FailOver with finaling types like: Undo FailOver, Permanent FailOver and FailBack which is then followed by Finalize FailBack process (if user have chosen FailBack as finalizing type during Finalize FailOver phase).

- Go to VM Replication → Manage Replicas.



- You will be directed to page with the list of replication jobs configured from Vembu BDR server.

- Proceeding with Restore option will give you three types of restores to choose from:
  - Failover
  - Finalize Failover
  - Finalize Failback



Failover:

Failover is a process that switches business operations from original VM to its replicated VM on target host, at times of a disaster or based on some other requirement. Follow below steps to Failover virtual machines:

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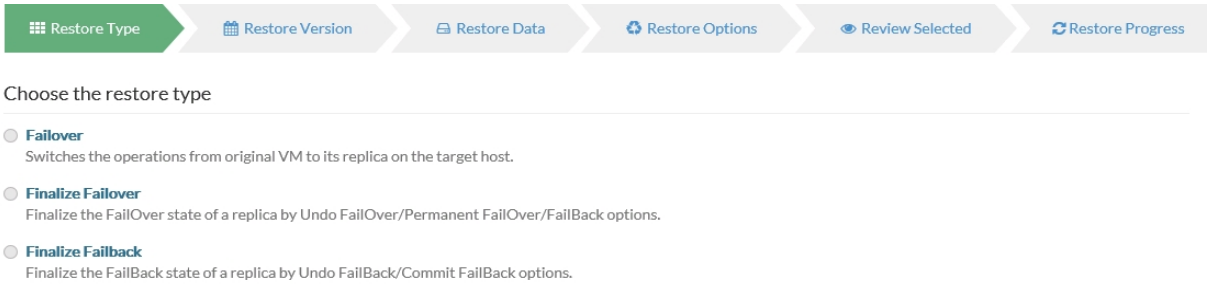
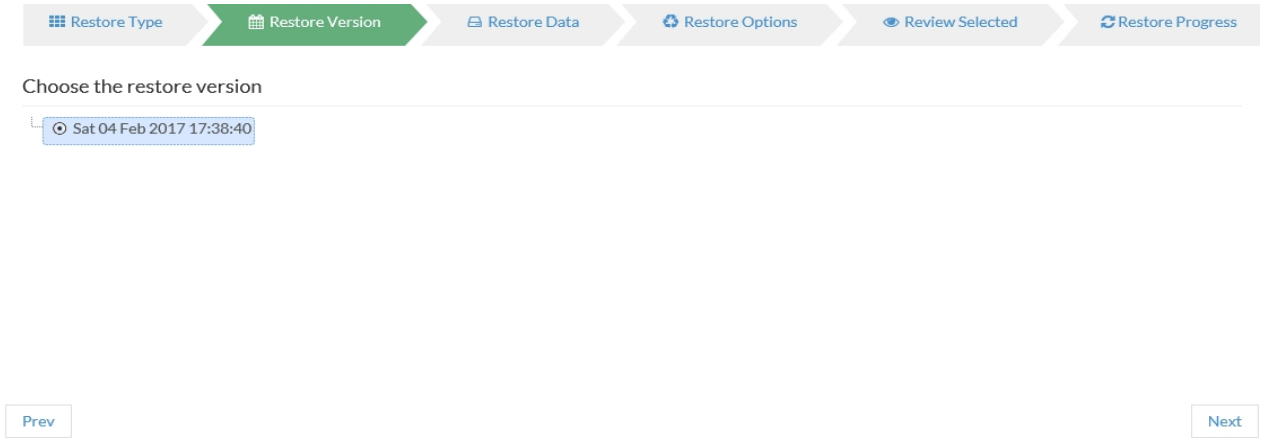
- Proceed with restore type: Failover.



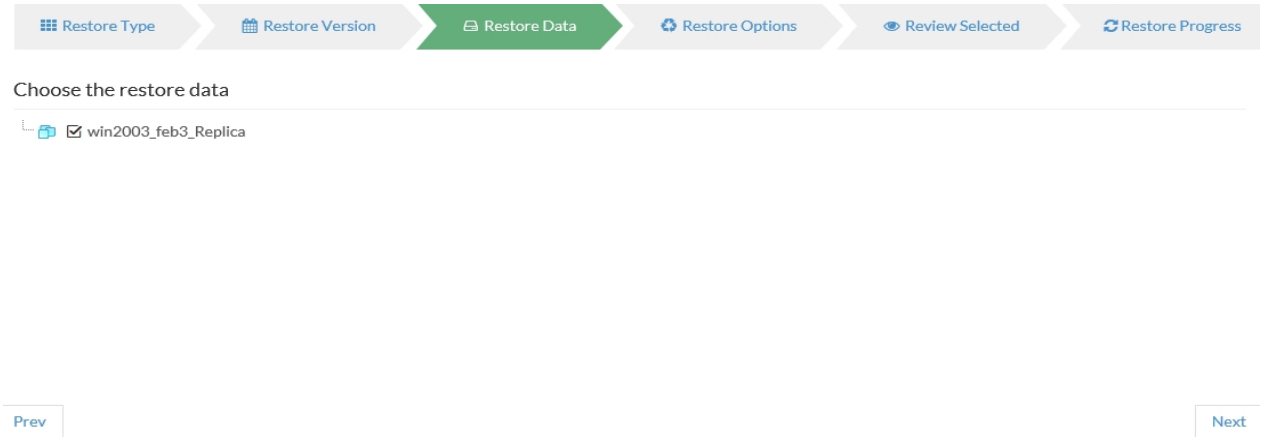
Restore Version:

- Choose a restore version from the list of available timestamps and proceed.



Restore Data:

- From the list of replicated VMs, select the virtual machines you wish to restore for Failover and proceed.



Review:

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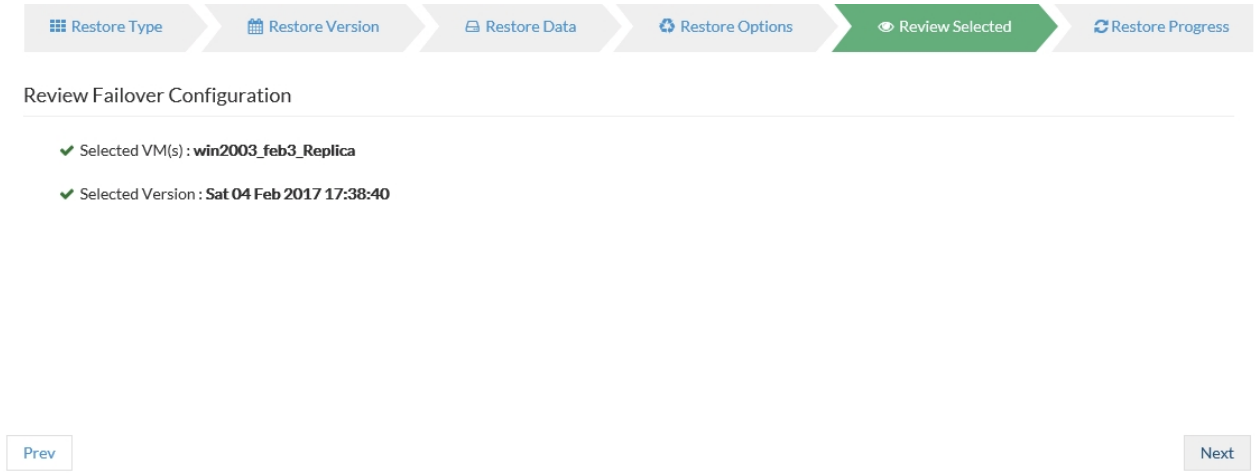
- Review the provided options and click on 'Failover Now'.



- Once failover completes successfully, the replicated VM in target machine will be active and running.

Finalize Failover:

Once done with the requirement of virtual machine that is failovered, users can decide on finalizing failover operation by choosing between following operations:

- Undo Failover
- Permanent failover or
- Failback

Follow below steps to finalize failover of virtual machines:

- Proceed with restore type: Finalize Failover.

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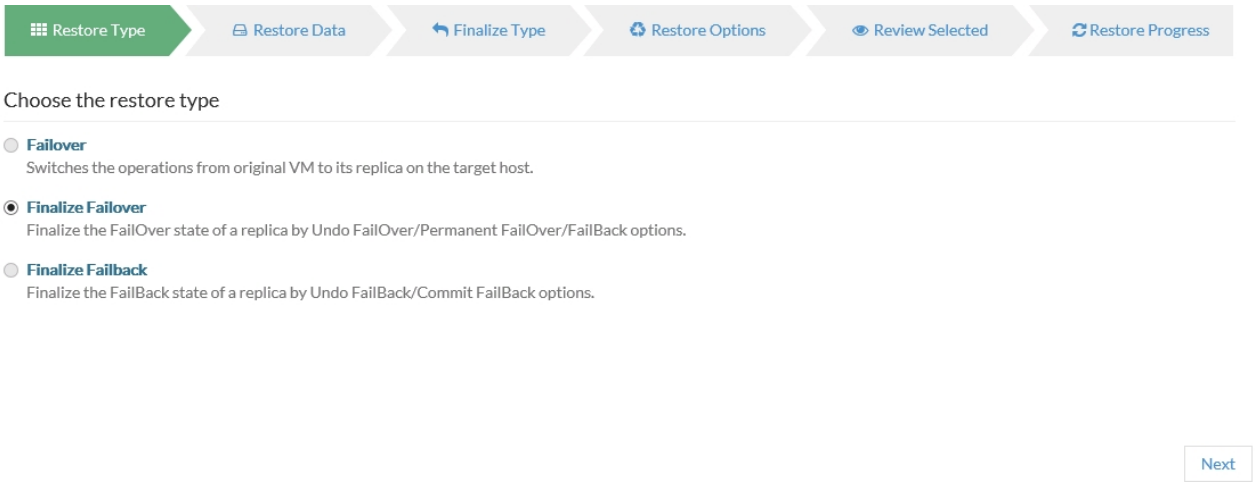
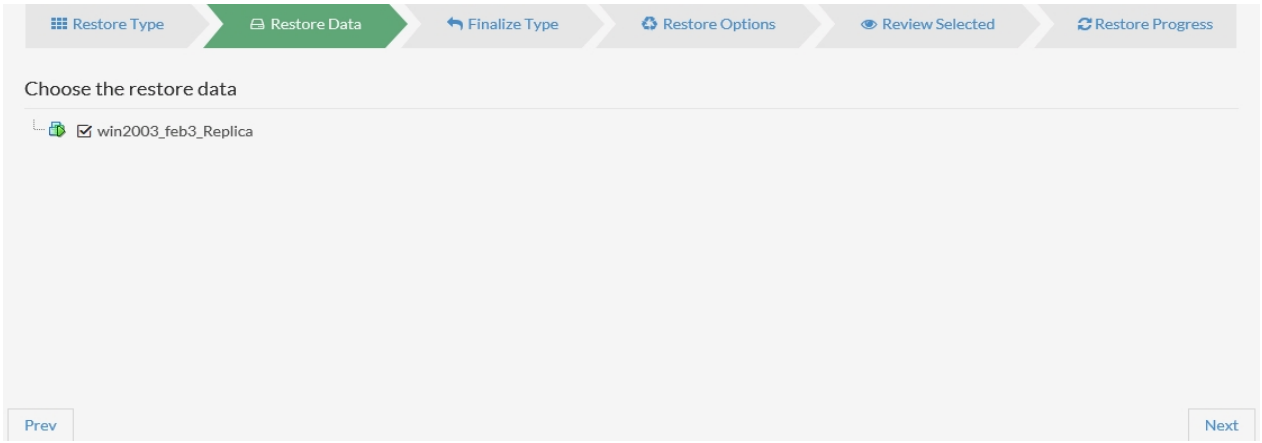


Restore Data:

- Select the VMs to be restored and proceed.



Finalize Type:

Users will have 3 finalize types to choose from:

- **Undo Failover-** This option deletes the changes done in replicated VM during failover session and reverts back to its original state before failover.
  Note: Usually this option is preferred, when the source virtual machine is restored and activated successfully.

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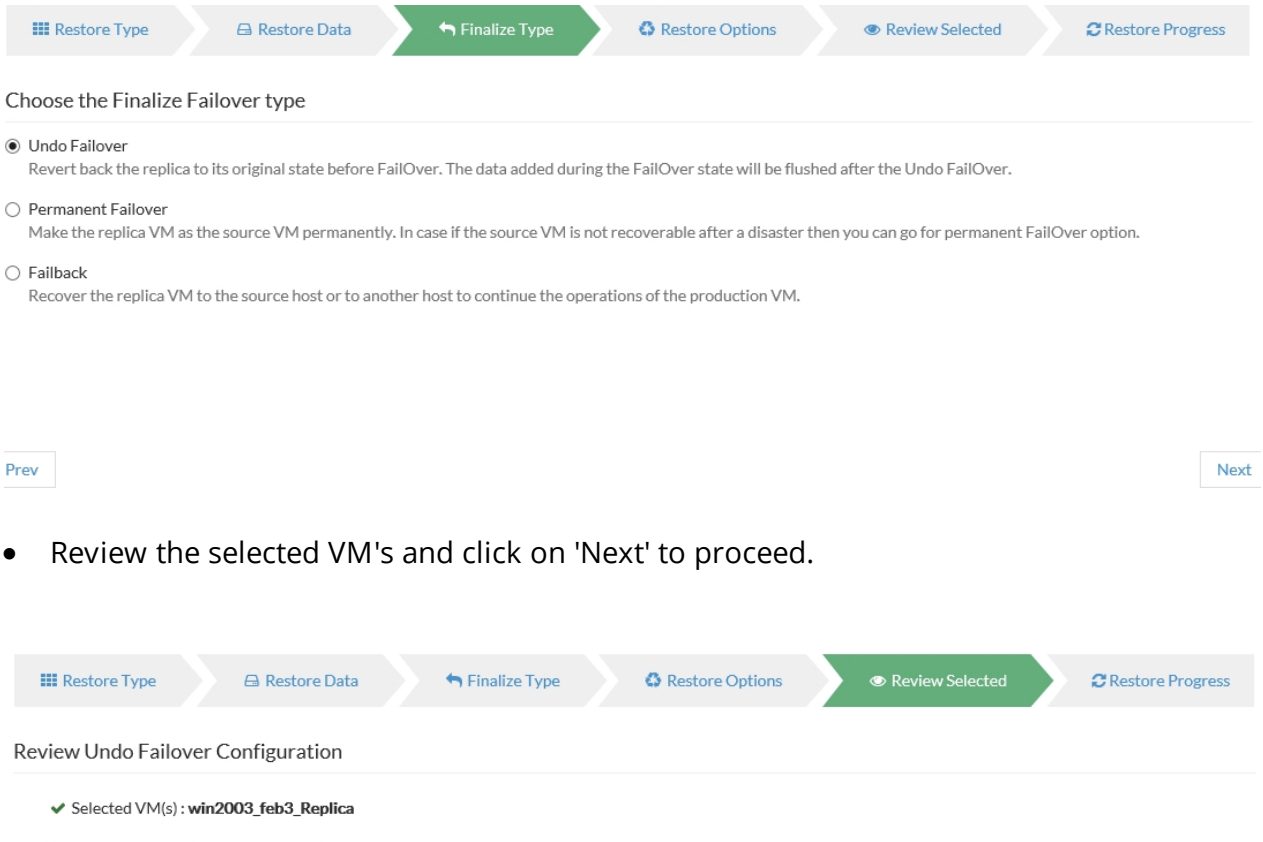
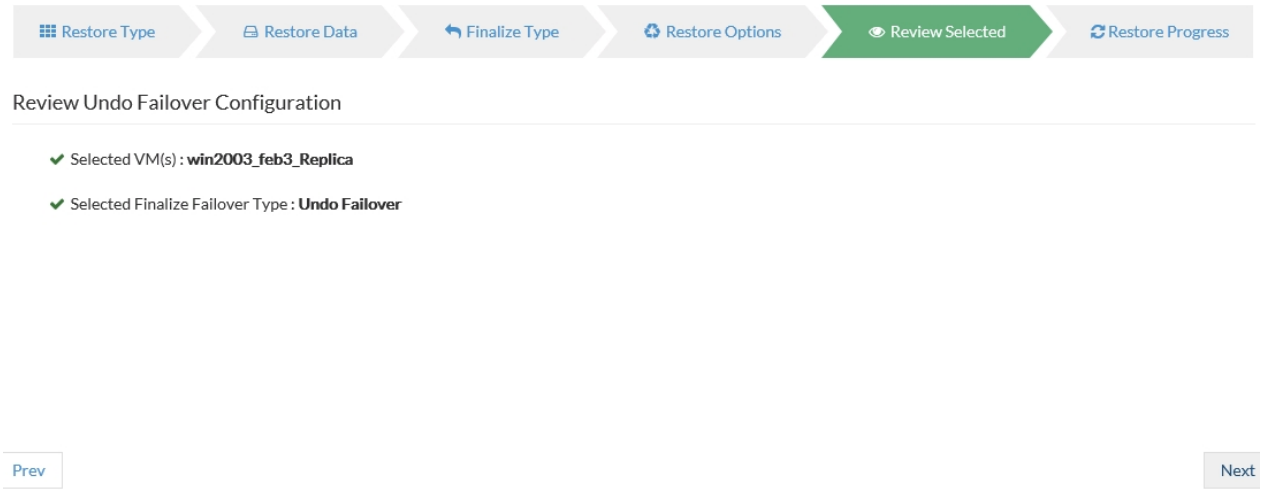
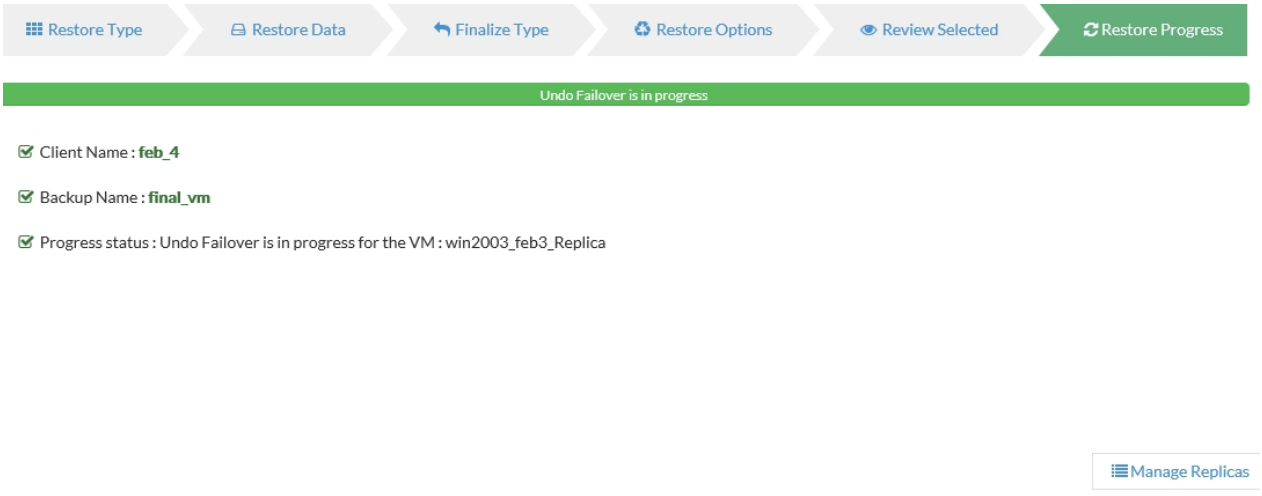


- Review the selected VM's and click on 'Next' to proceed.



- Once the "Undo Failover" progress is completed the machine is reverted back to its original state before failover.



- **Permanent Failover-** This option makes the replicated VM as the source VM

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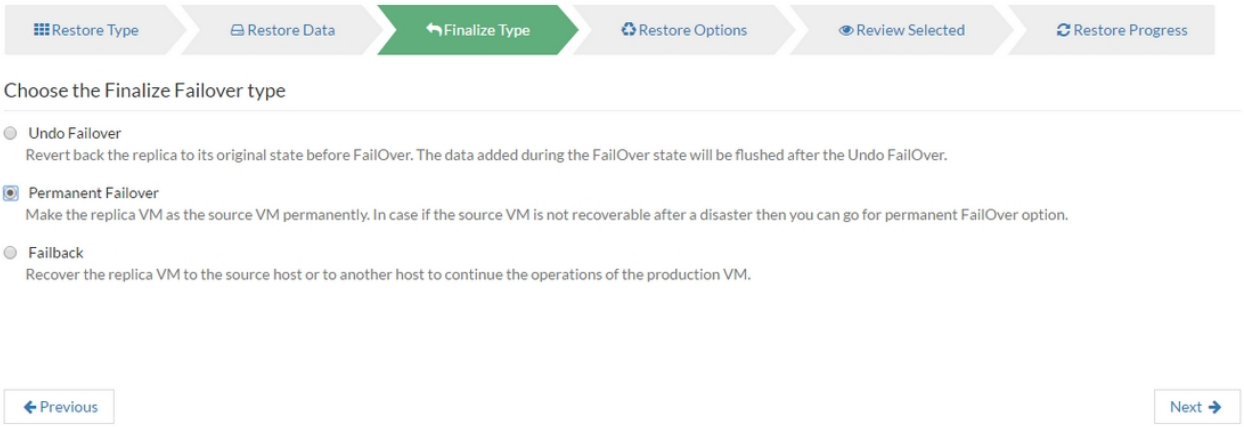
permanently.
Note: This option is usually preferred when the actual source VM is no longer recoverable after a disaster.



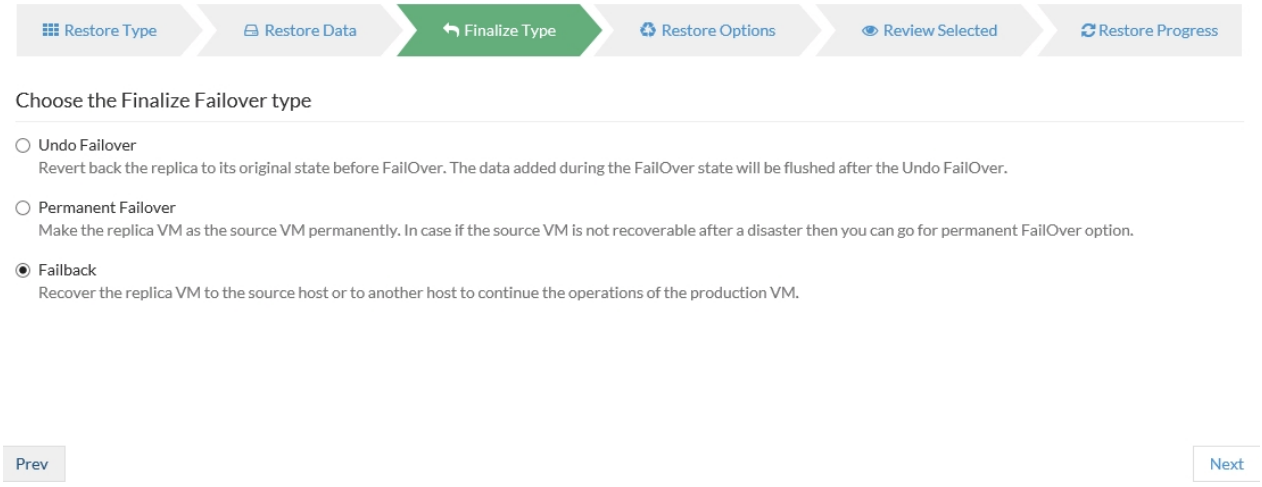
Review configurations:

- Review the configuration provided for selected restore option and click Finalize Now.
- **Failback-** Go to Next Page

Vembu VMBackup User Guide

Failback

- **Failback**- This option let users recover the replicated VM along with failover data to the source host or another host to resume its ongoing operations as a production machine.



  - Failback has an additional step to configure unlike the other two options: undo failover and permanent failover.

Restore Options:

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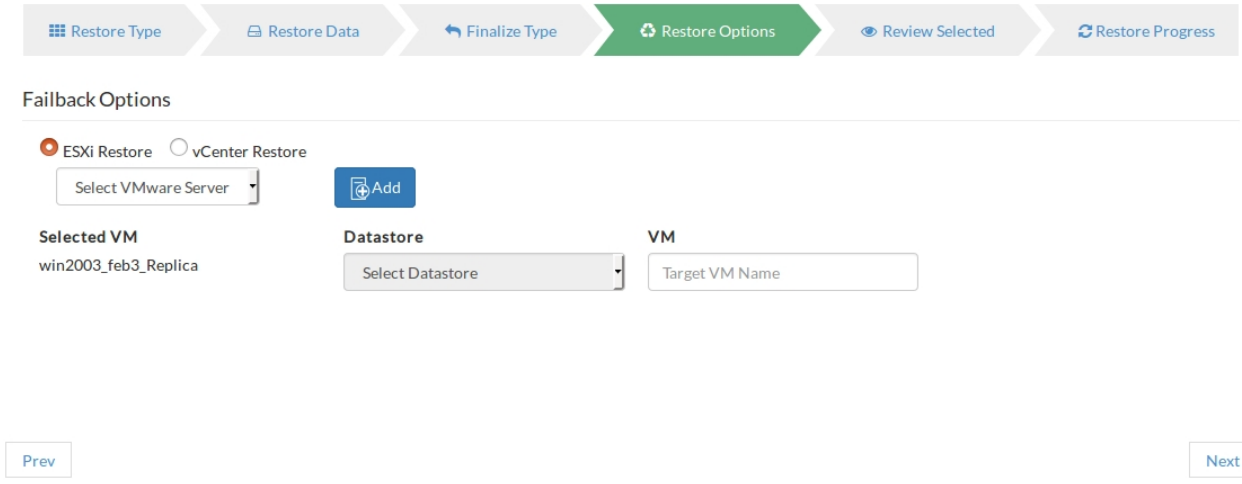
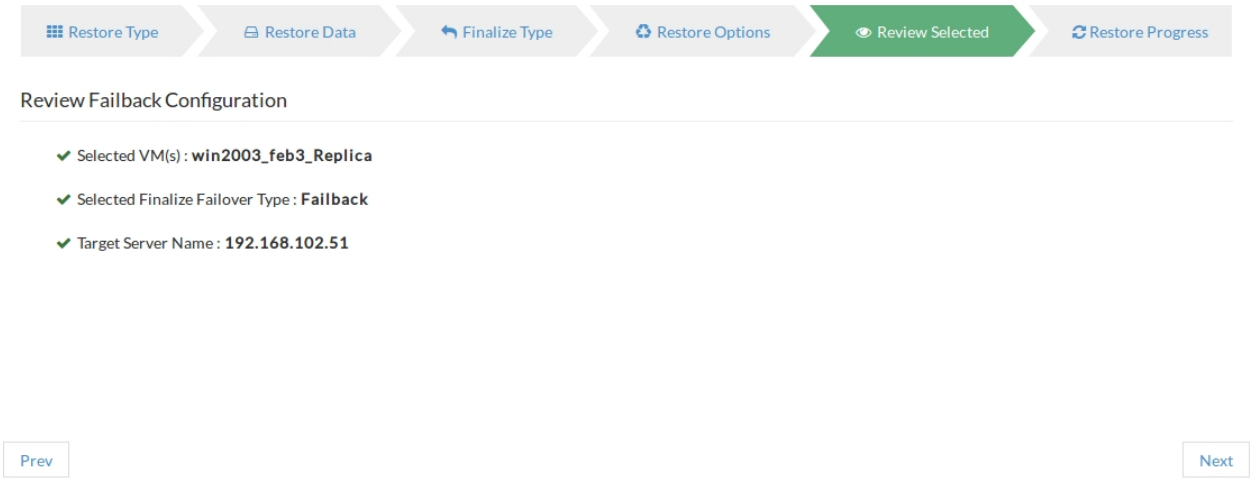
- Users will be directed to restore options page, where they are required to select target server details such as:
    - Choose between ESXi restore or vCenter Restore and select the VMware server from the added list. If not, do add a target server with 'Add Target Server' option.
    - Now select the respective target host and then the datastore to which the selected VMs are to be recovered.
    - Provide the names for VMs to be restored.
    - Once done, proceed with Next.



Review configurations:

- Review the configuration provided for selected restore option and click Finalize Now.



- Once done reviewing click Next to proceed with Failback.

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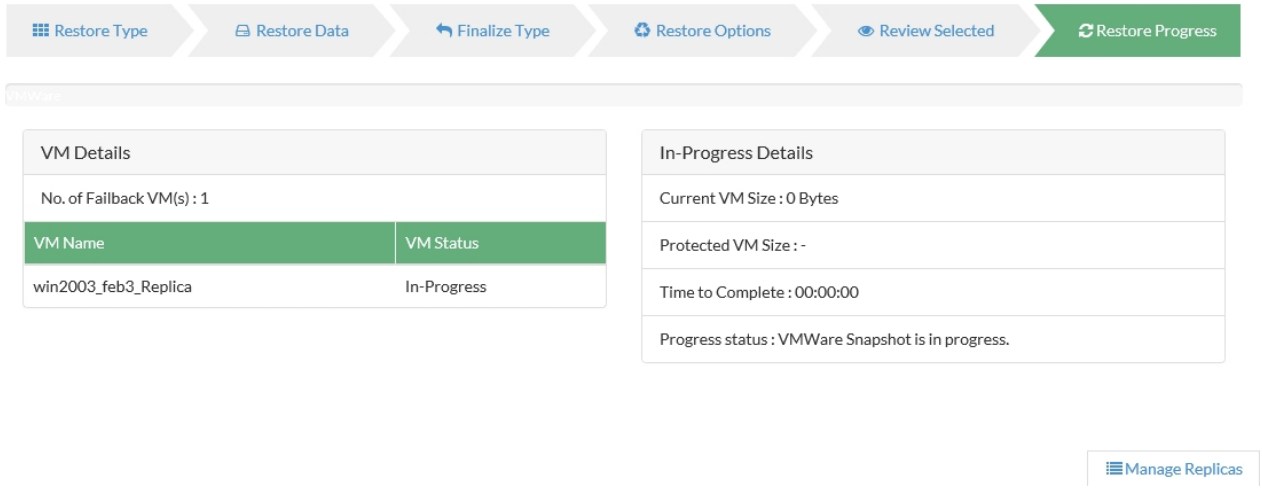
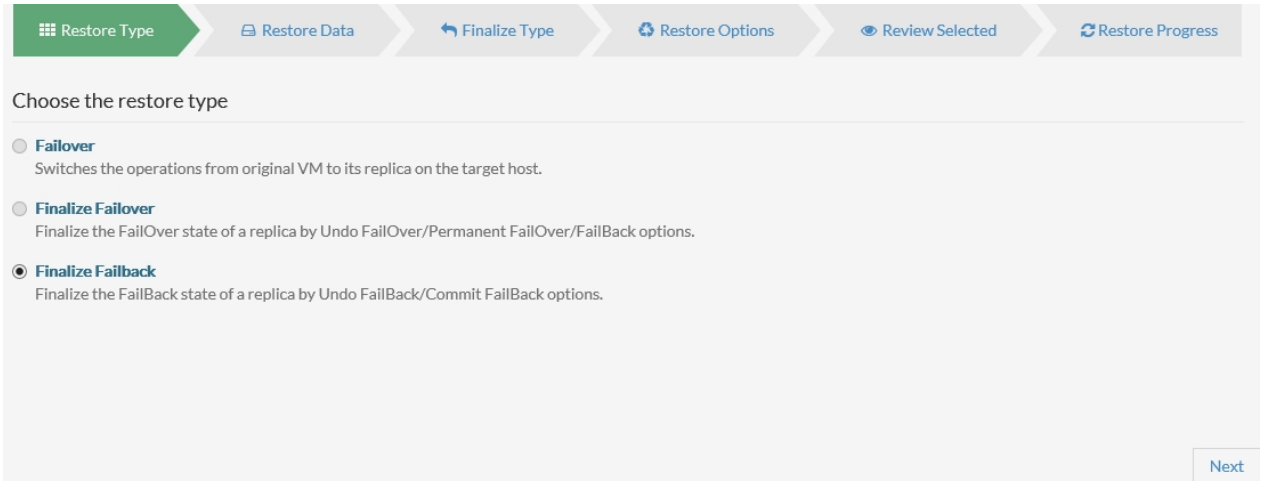


Finalize Failback:

This restore option is enabled, only after when user opts for Failback as Finalize type in Finalize Failover(Restore type).

- Proceed with restore type: Finalize Failback.



Restore Data:

- Select the VMs to be restored and proceed.

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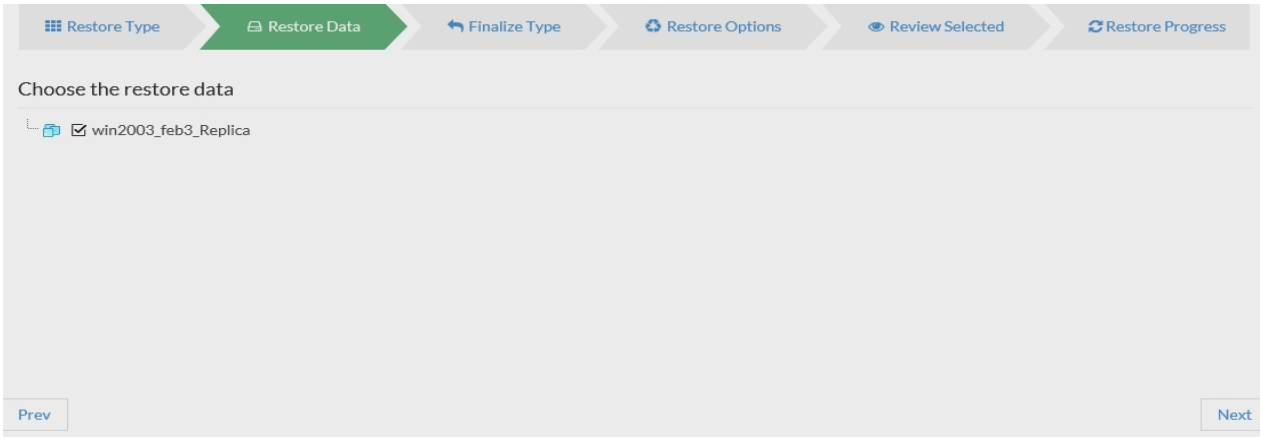
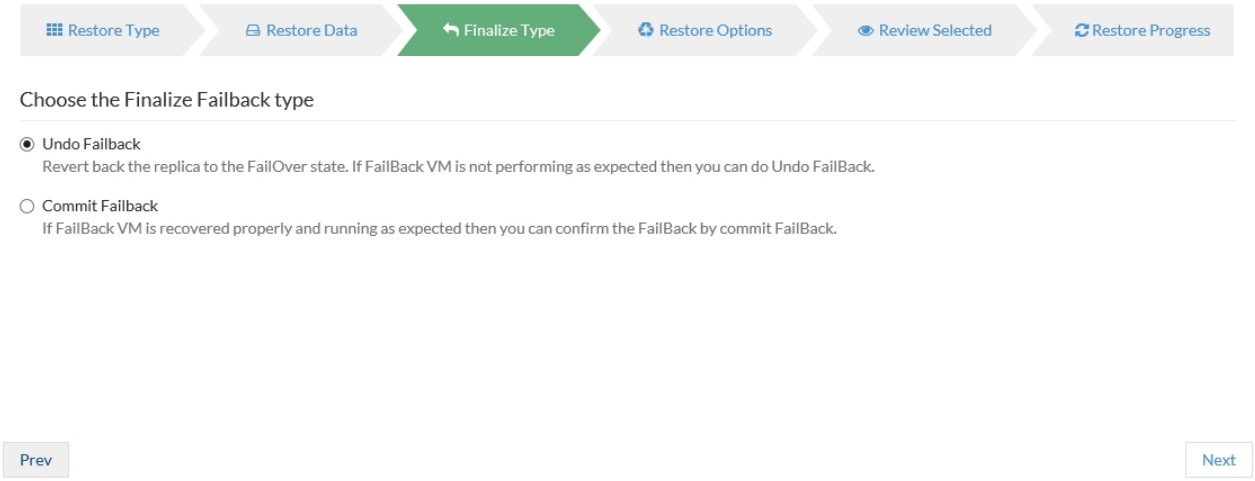


Finalize Type:

Users will have 2 finalize types to choose between:

- **Undo Failback-** When a VM recovered via Failback option does not function properly or if the restore fails due to any reason, then this option is chosen to revert back the replica to resume the Failover state.



Review configurations:

- Review the configuration provided for selected restore option and click Finalize Now.

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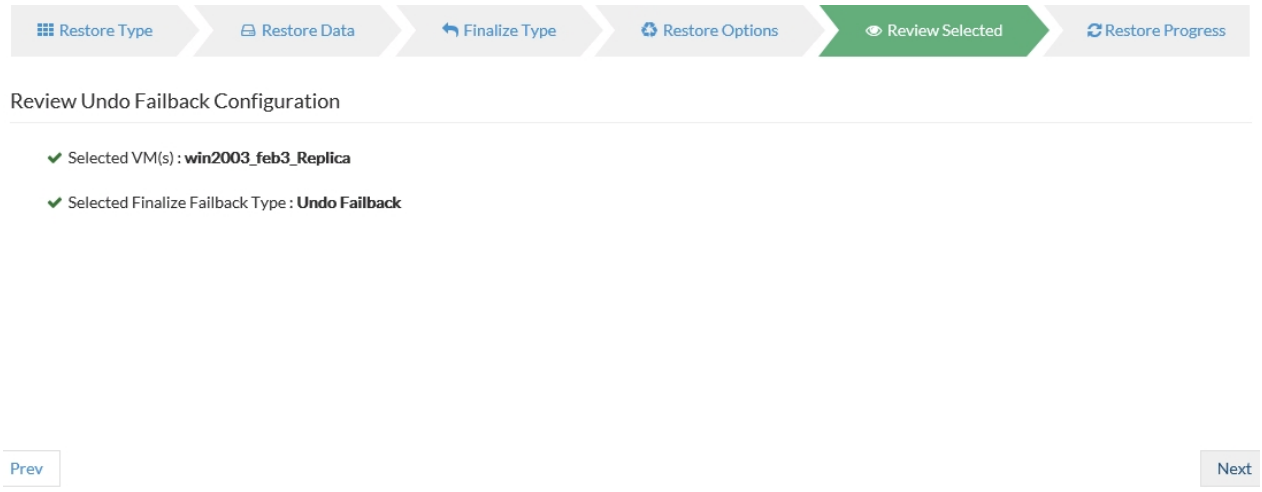
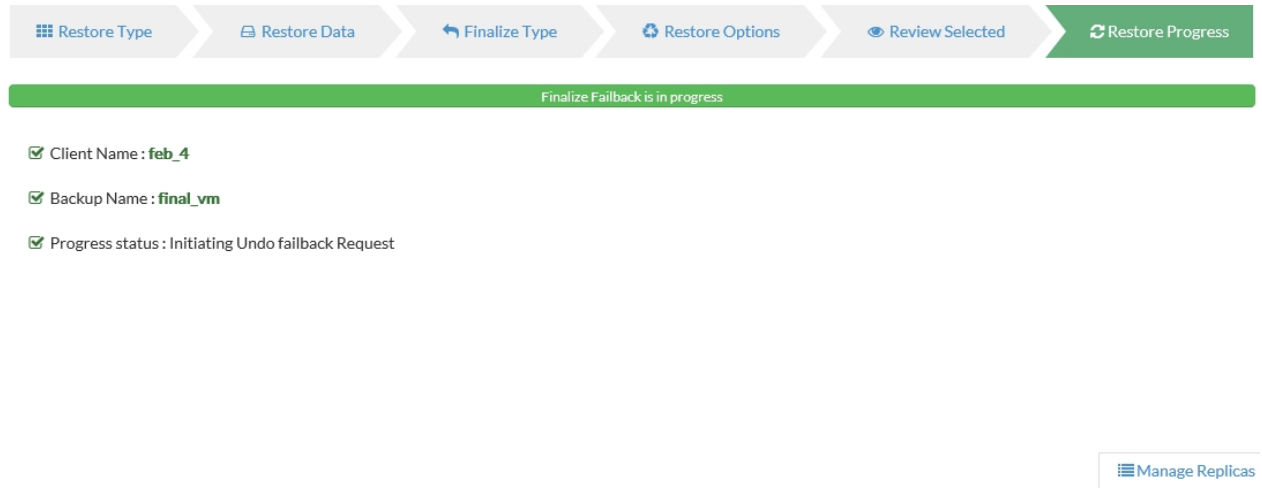
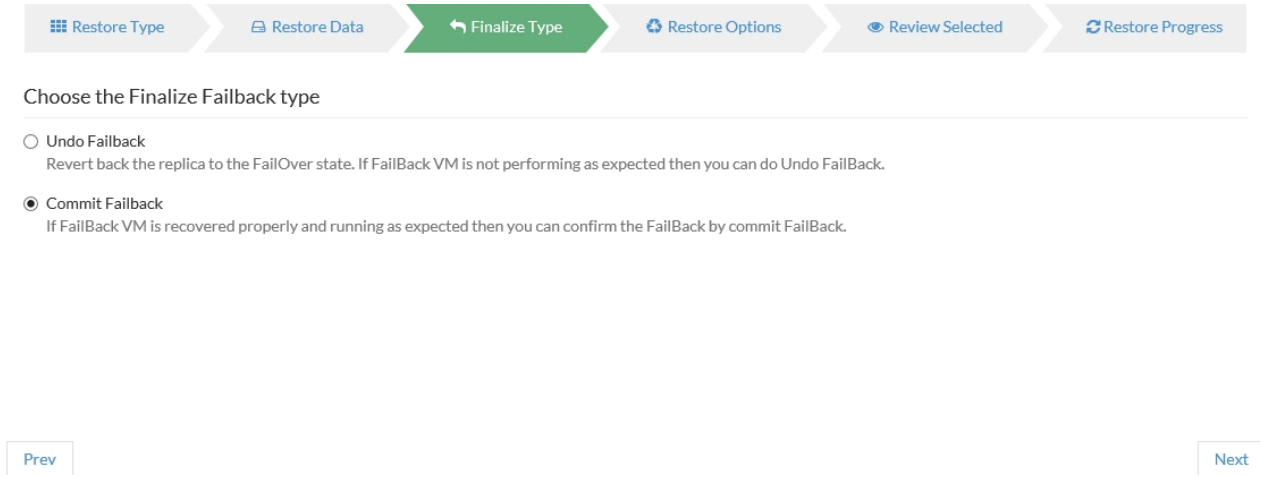


- Once done reviewing click Next to proceed with Undo Failback.



- **Commit Failback-** When a VM recovered via Failback performs as expected, then this option is chosen to confirm commiting Failback. This means that the failbacked VM will now be selected as production VM and will get excluded from replication jobs.



Vembu VMBackup User Guide

Bare-metal Recovery

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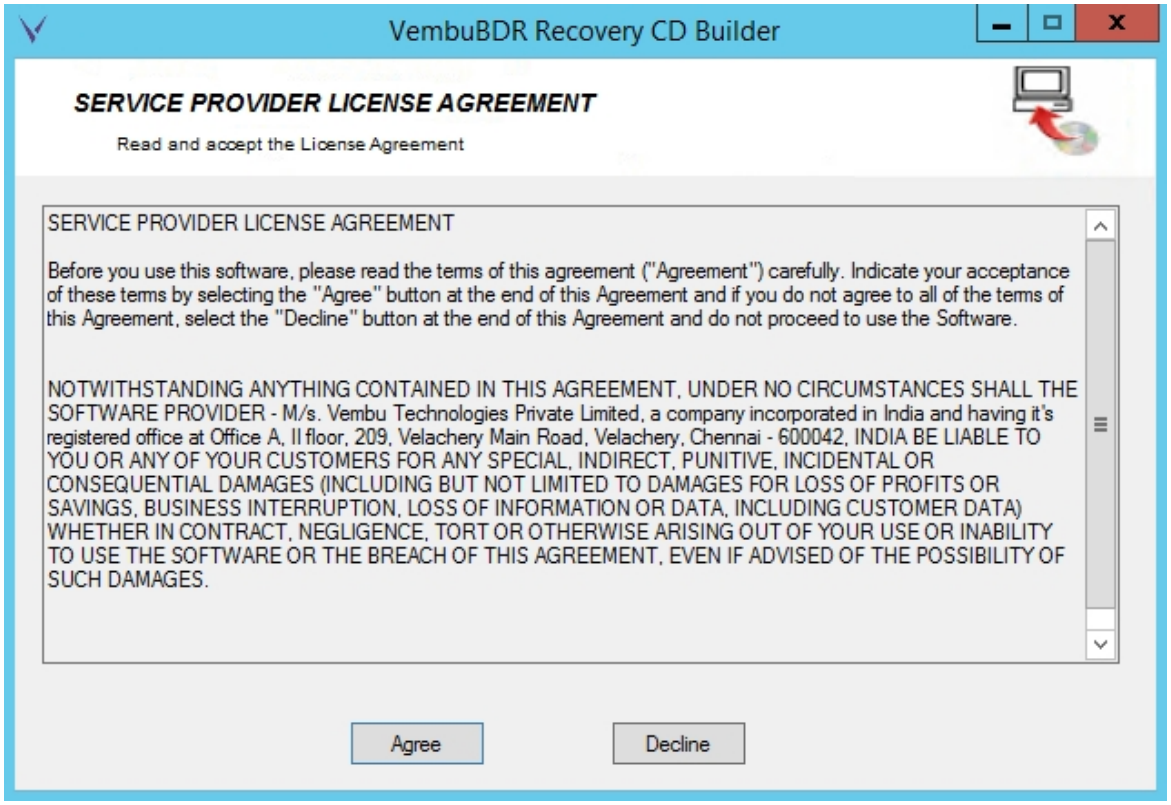
Follow below steps to perform Physical Recovery for Image backups using Recovery CD:

- To do bare-metal recovery using Vembu Recovery CD first we need to download and install WAIK. Click on below link, to download WAIK: http://www.microsoft.com/enus/download/confirmation.aspx?id=5753

- Once WAIK is installed, download Vembu Recovery CD: Click Here to Download
- You will have Vembu Recovery CD in both 32-bit and 64-bit zip formats, download accordingly based on requirement. Now unzip the downloaded file and run RecoverCDBuilder with administrator privileges. You will get a window opened as shown below.



- Read the service provider license agreement carefully and click agree. You will be proceeded to VembuBDR Recovery CD builder window as shown below.
  Note: When you have RAID and additional drivers to be setup in the machine to be recovered, such drivers can be bundled with Vembu Recovery CD using 'Additional Driver' option.

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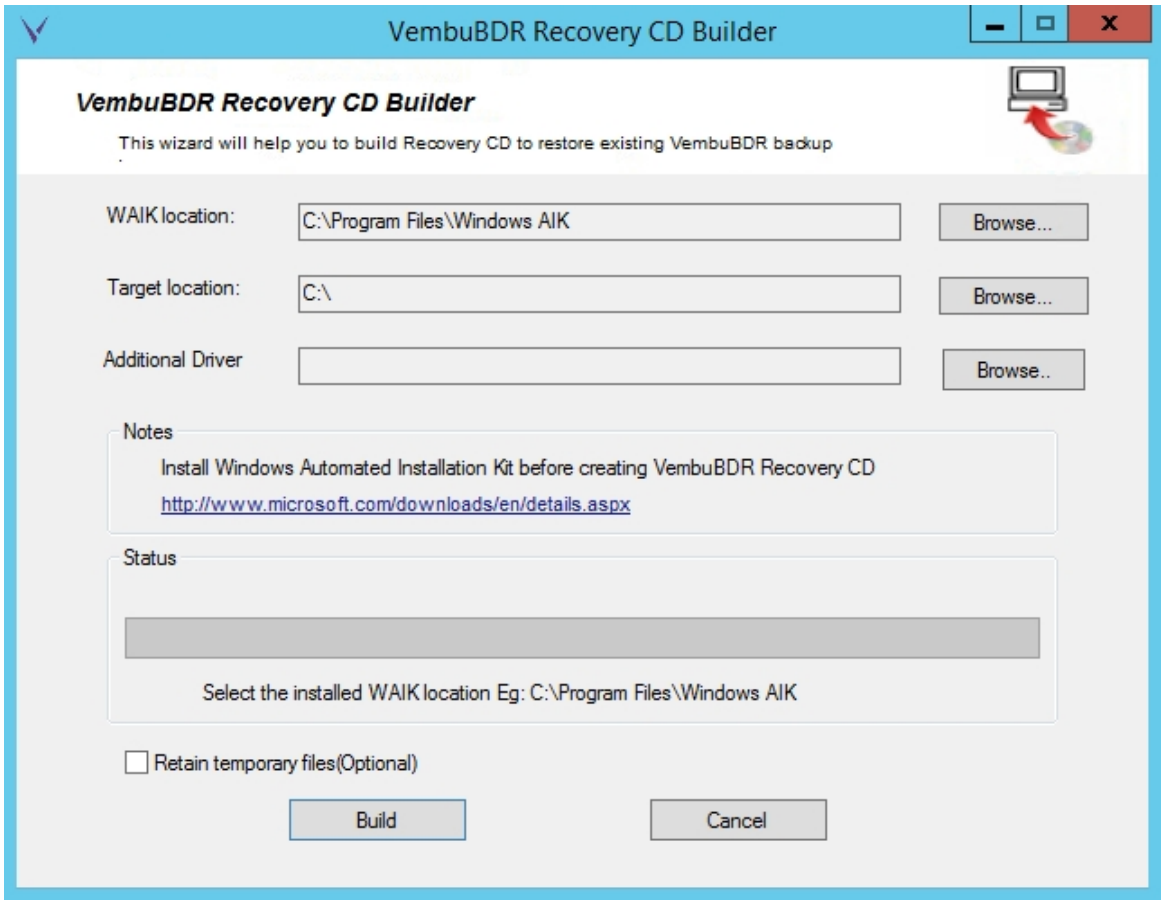

- In this window, WAIK location will be auto-filled, target location is the location where you want to store ISO. Now click Build to start creating ISO file. You can also monitor the progress of ISO creation.

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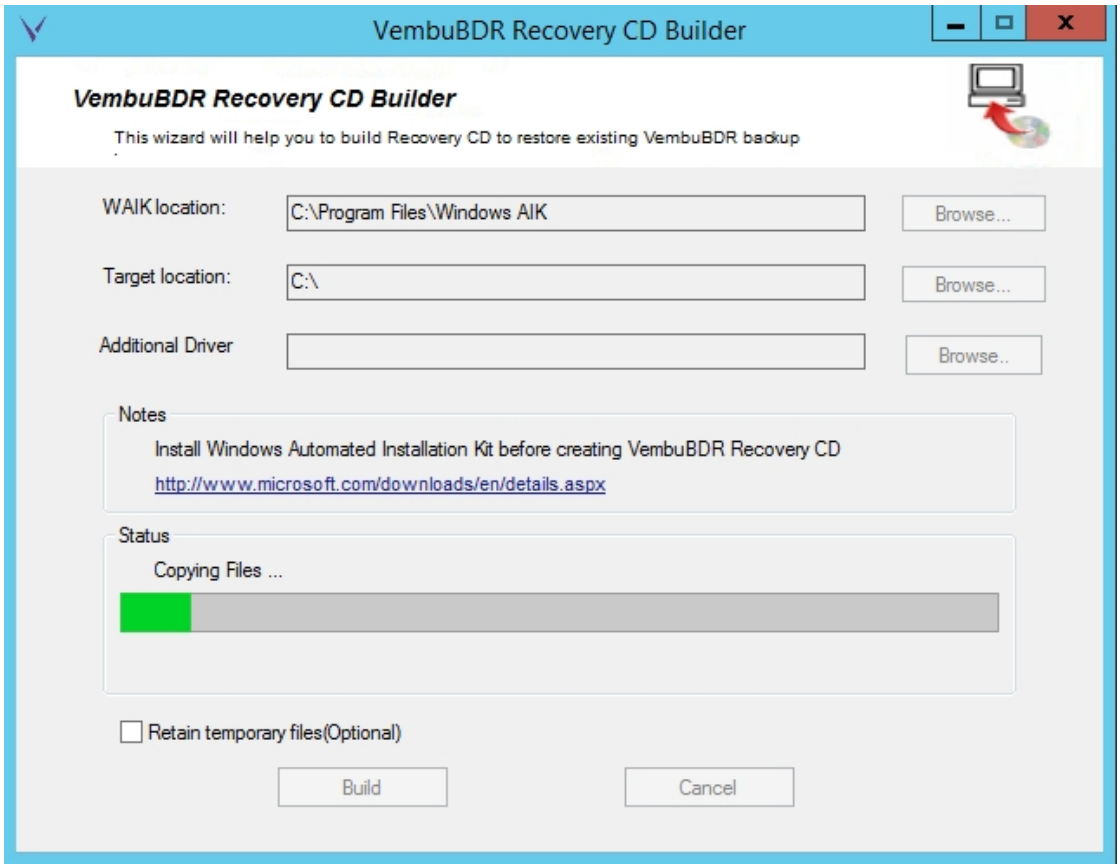
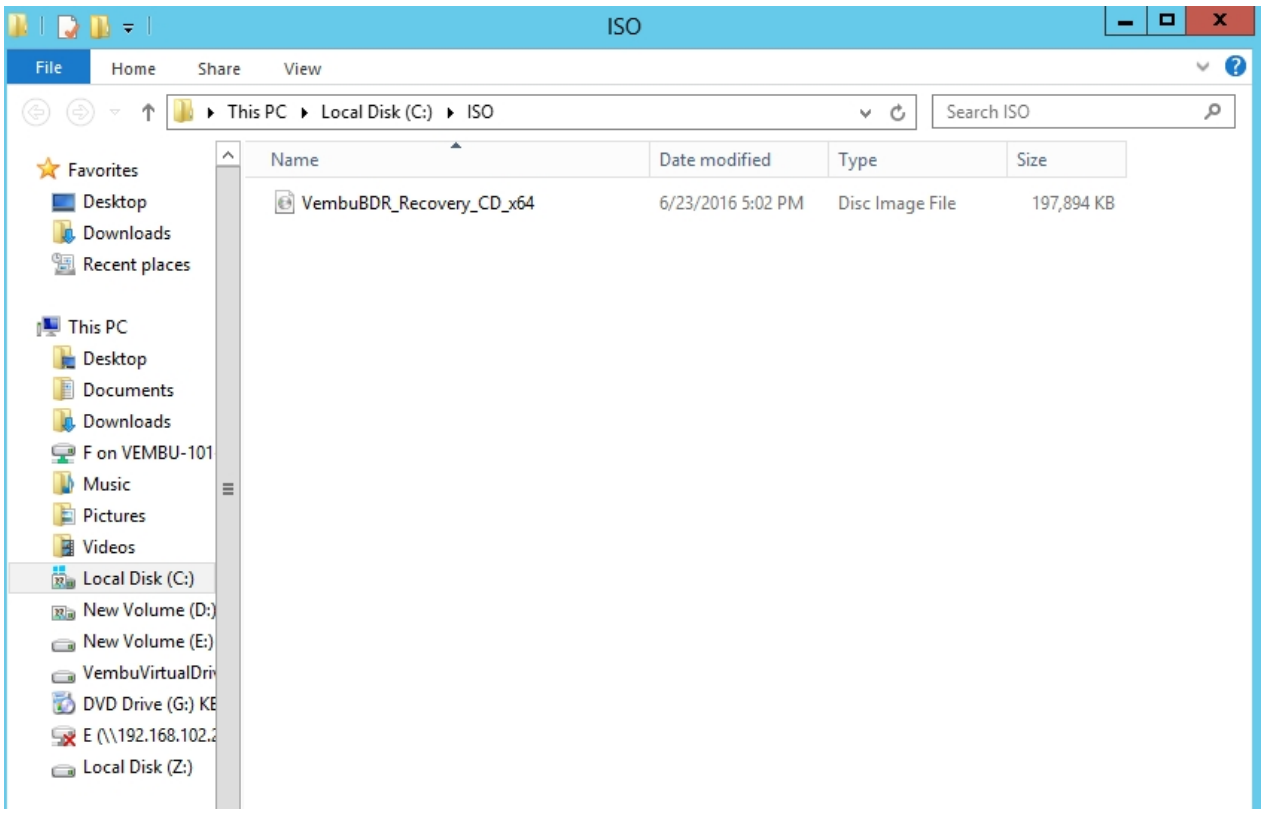


- Once done, the ISO file will be available in the Target location you have entered.



- Insert a blank CD in CD/DVD drive and burn the created ISO file in CD by right-clicking over ISO file and choosing the option 'Burn Disk Image'. Windows Disk Image Burner

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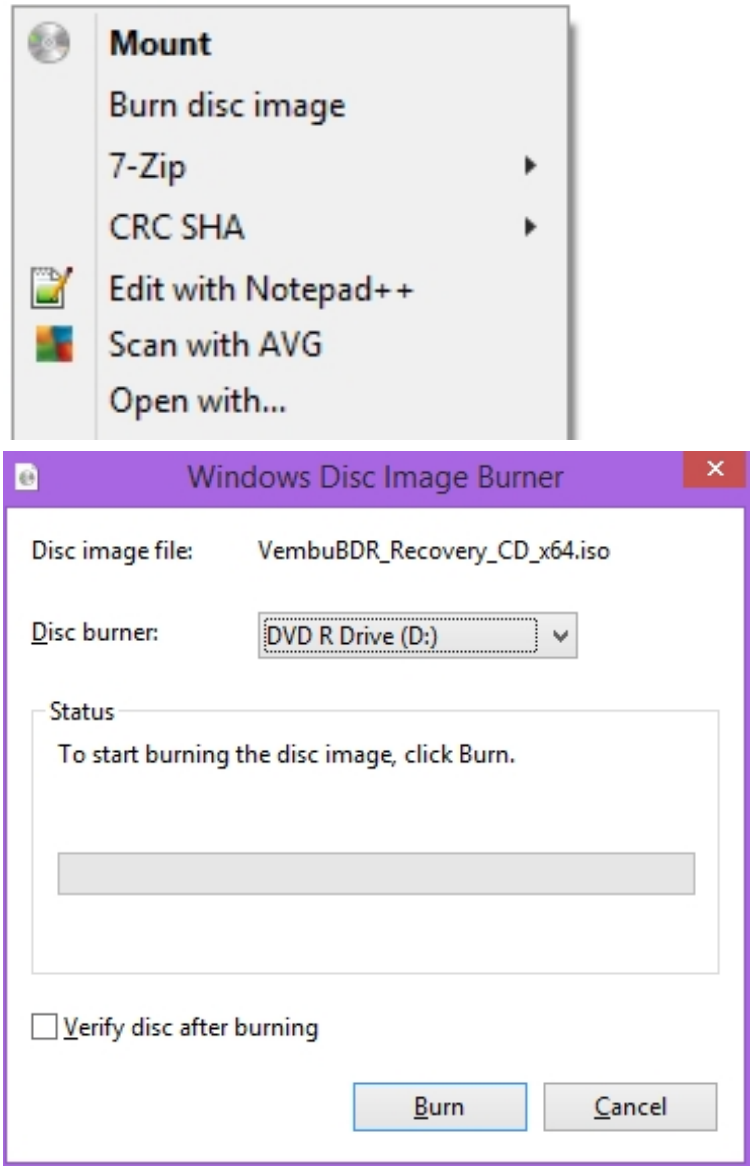
will open, choose the CD/DVD drive and click burn to start burning process.



- You can also monitor the progress of burning process.
- Once the burn process completes, CD will be auto ejected. Reinsert CD and reboot machine to BIOS settings. Change the boot priority and set CD/DVD as primary boot device and click Save and Exit. VembuBDR recovery console will be opened as shown below. Click Next to continue.

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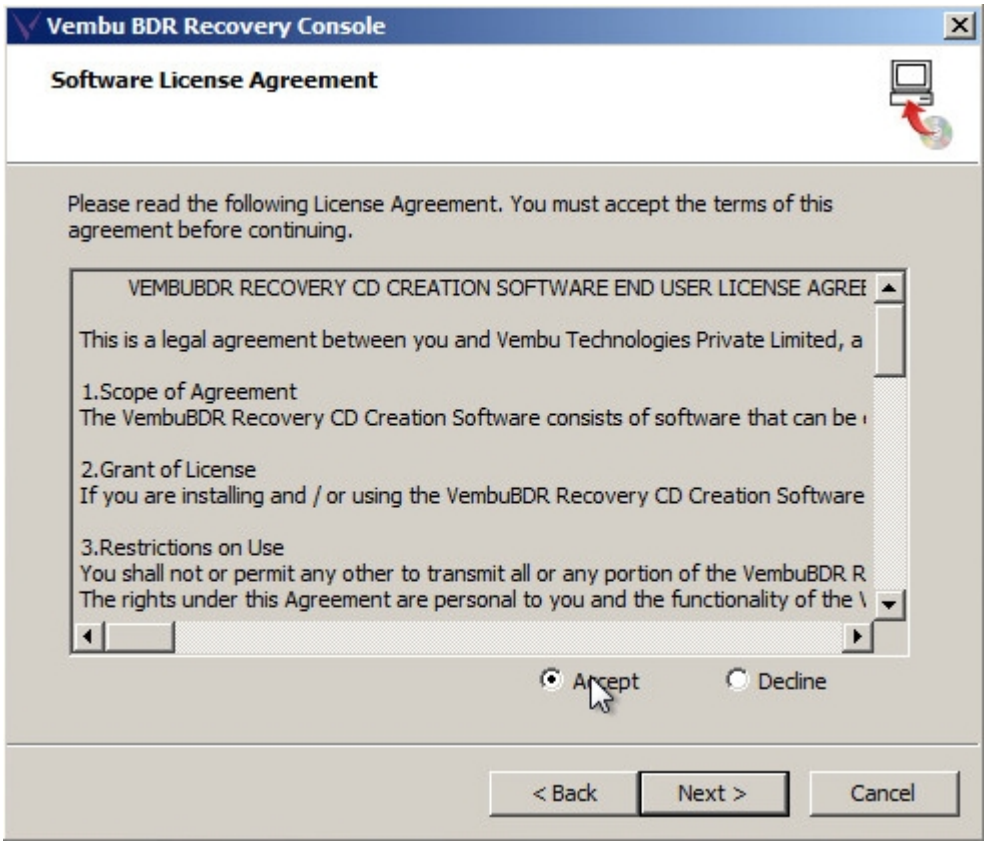
- Read the Software License Agreement carefully, click Accept and proceed with Next.



- You will have option to select a task from the below list:
    - Recover entire disk or partition

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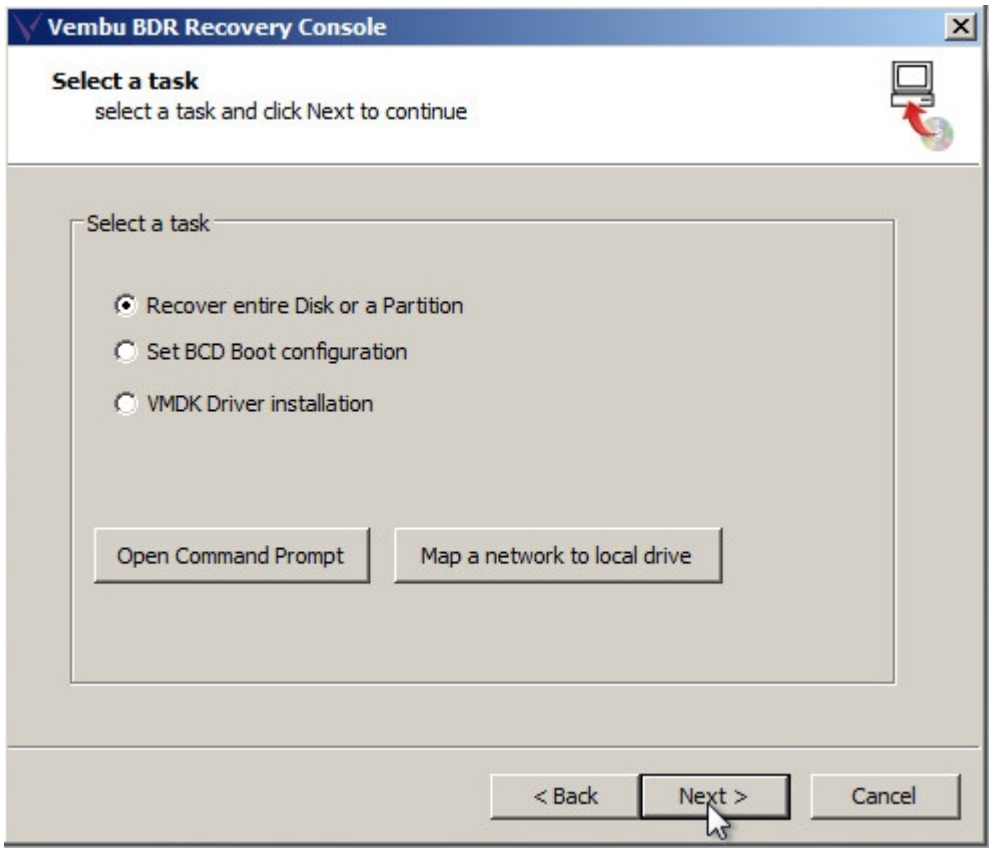
- Set BCD boot configuration
- VMware driver installation

Since we have to do physical recovery, we'll proceed with 'Recover entire disk or partition' option and click Next.



- You will be directed to recovery page, where you will be required to provide details for following options:
  - Browse and select the file which you need to recover.
  - Browse and select the backup configuration file.
  - Select the disk/drive you wish to restore from the following list.

  Once done choosing respective requirements, click Next to proceed.

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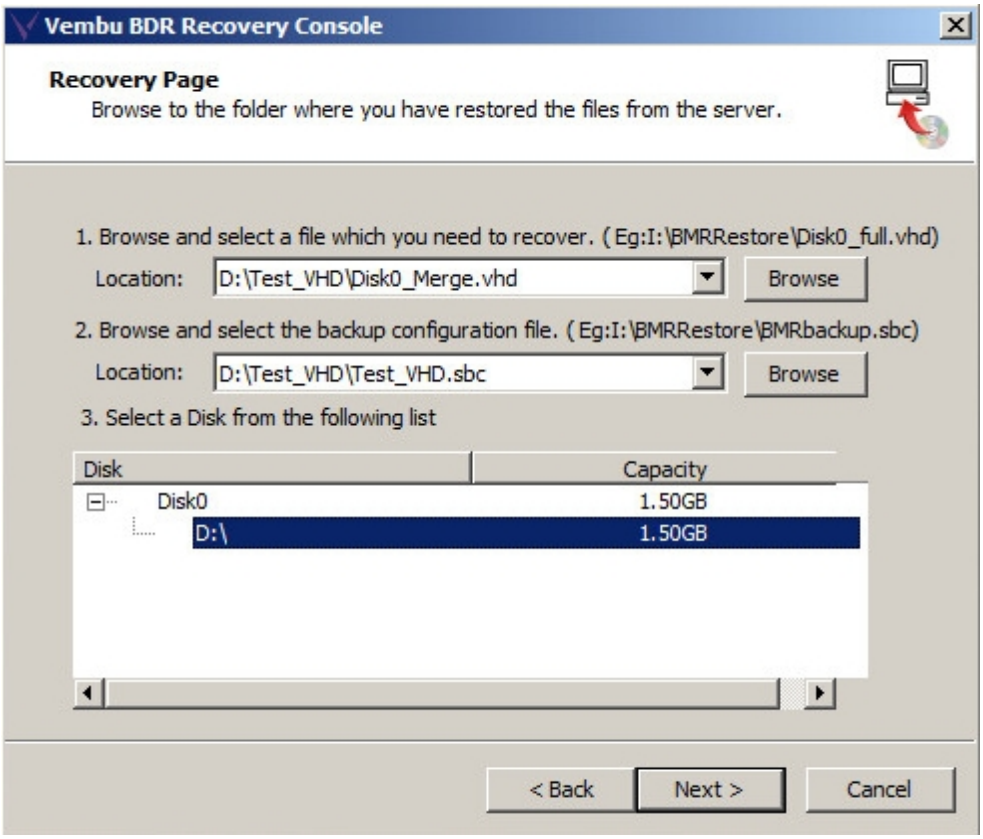
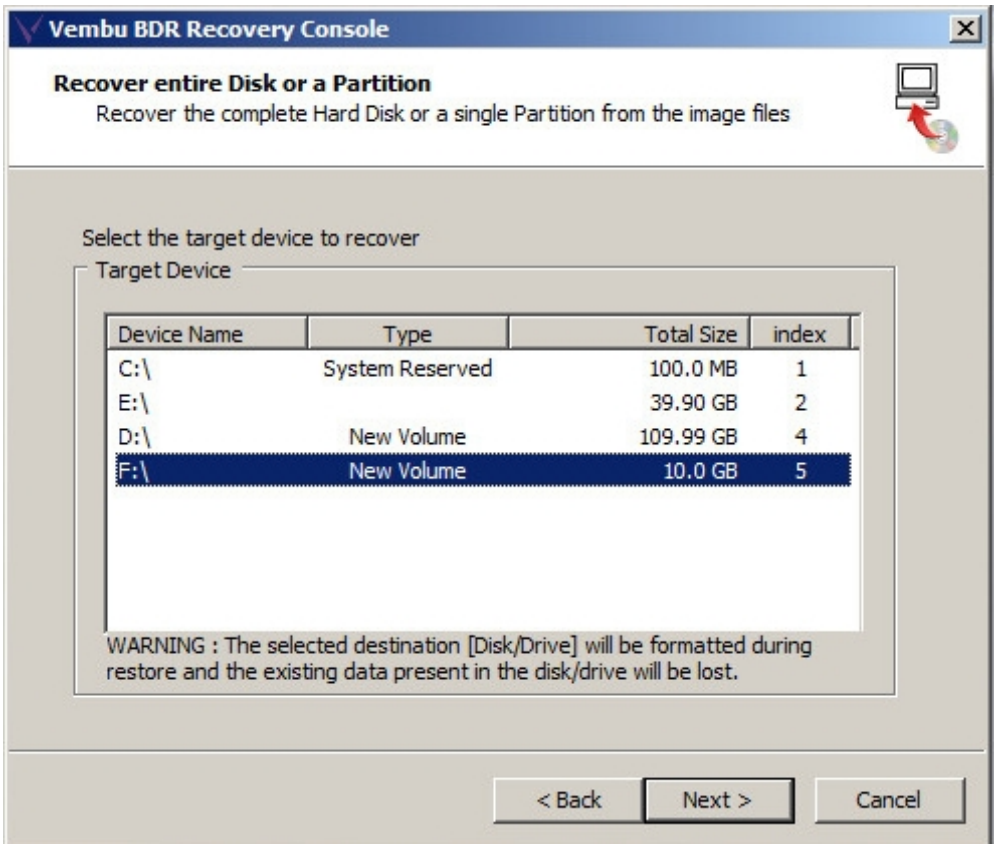


- In next window, you will be required to select target disk/drive to which recovery will be performed. Once done selecting the target, click Next.
  Note: the selected disk/drive will be formatted and only recovered data will be available. So make sure you don't have any important data on target disk/drive.



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- Proceeding will initiate the recovery process and once it's done. You can find your recovered data in target disk/drive selected.

Vembu VMBackup User Guide

Vembu Virtual Drive

Vembu Virtual Drive is an exclusive feature of VembuBDR server, that allows user to instant access backup data. With the help of VembuHIVE file system, Vembu Virtual Drive virtual mount backup data and allow instant access for users.

Vembu Virtual Drive will make following file format types available for any image based backups mounted in it:

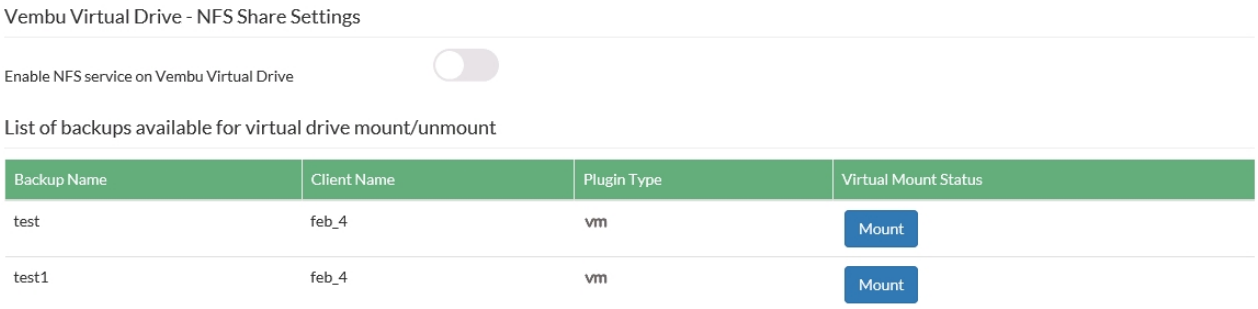
- VHD
- VMDK
- VHDX
- VMDK-Flat
- RAW image files

These files can be used based on user requirements. For example, a VHD file can be mounted in Hyper-V or a VMDK file can be mounted in a ESXi server or a RAW image file can be mounted in KVM to create a virtual machine. VHD file can also be mounted in disk management to access file level backup data.

Manage Vembu Virtual Drive (NFS Share)

- Go to Management → Server Management → Manage Virtual Drive

This page lists all image backups stored in backup server and user can virtual mount any backup data he wish to instant access.



- To virtual mount a backup data, user have to click 'Mount' option alongside specific backup job to be accessed and click Yes in confirmation dialog.

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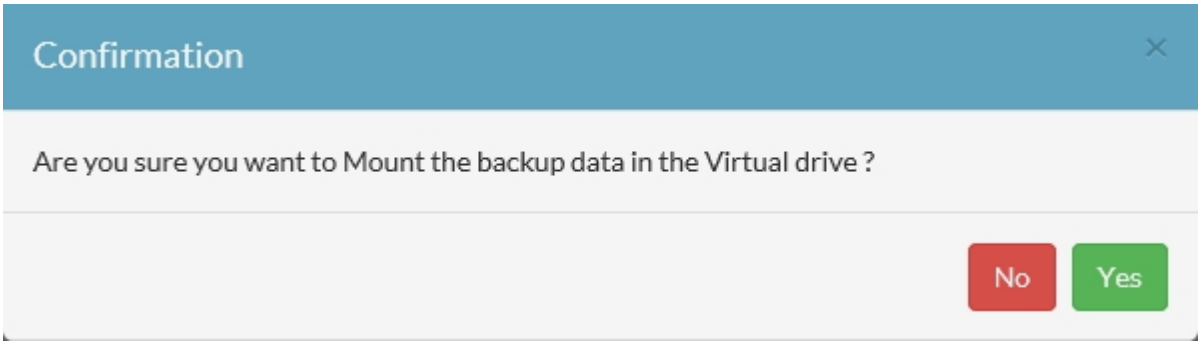
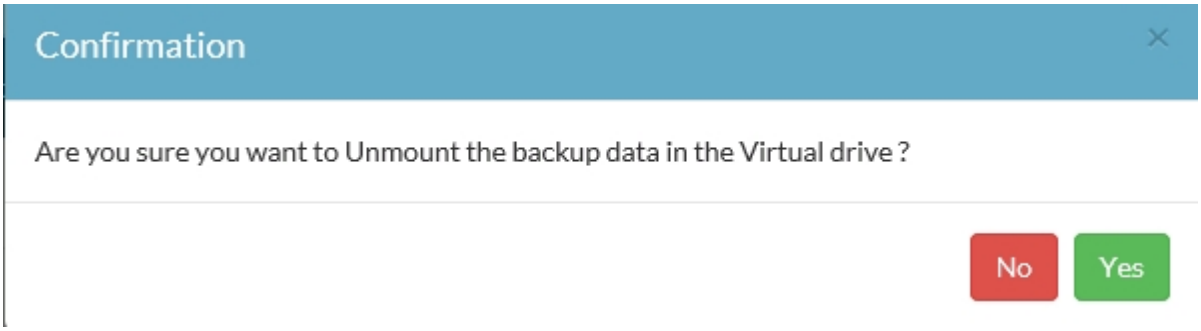


- User can now have access to backup data by viewing VembuVirtualDrive displayed in My Computer.
- Once done with requirement, user can unmount data by clicking on Unmount option and confirming with a Yes in confirmation dialog.

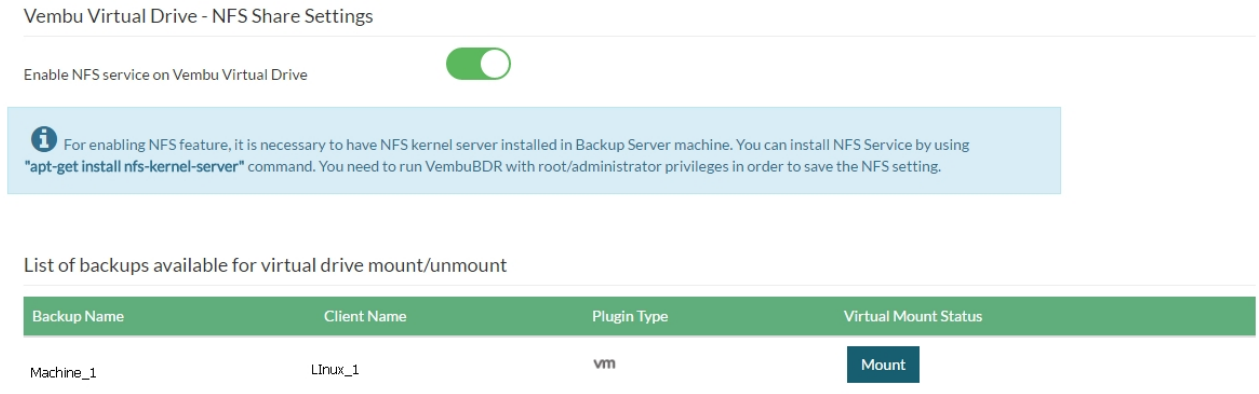


Enable NFS Service on Vembu Virtual Drive

- Vembu Virtual Drive can be shared within a network area by enabling NFS service on Vembu Virtual Drive.
- NFS service for Vembu Virtual Drive is available on both Linux and Windows servers.

Note: For enabling NFS feature in Linux servers, it is necessary to have NFS kernel server installed in Backup Server machine. You can install NFS Service by using "apt-get install nfs-kernel-server" command. You need to run VembuBDR with root/ administrator privileges in order to save NFS settings.

Enable NFS Service on Linux Screenshot:



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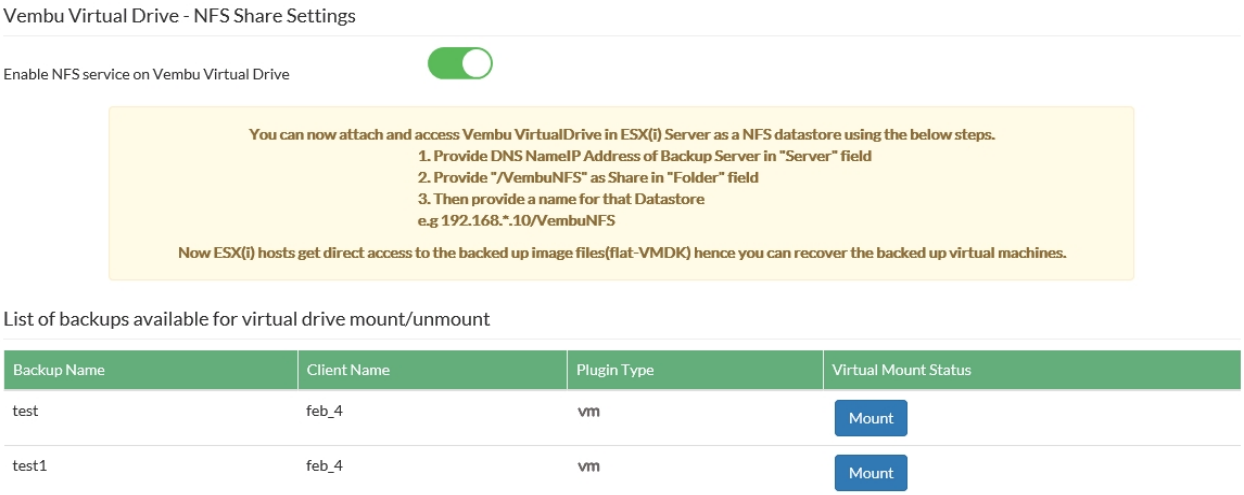
Enable NFS Service on Windows Screenshot:



- NFS share service allows user to add VembuVirtualDrive as a NFS datastore in ESXi servers.

Note: Before enabling NFS service on Vembu Virtual Drive, please make sure Microsoft or any other third party NFS services is disabled to ensure uninterrupted service.

Vembu VMBackup User Guide

Managing Microsoft Hyper-V

- Hyper-V Backup
- Disaster Recovery

Vembu VMBackup User Guide

Hyper-V Backup

- Setup Backup Job
- Manage Backup Job

Vembu VMBackup User Guide

Setup Backup Job

- Go to Backup → Microsoft Hyper-V

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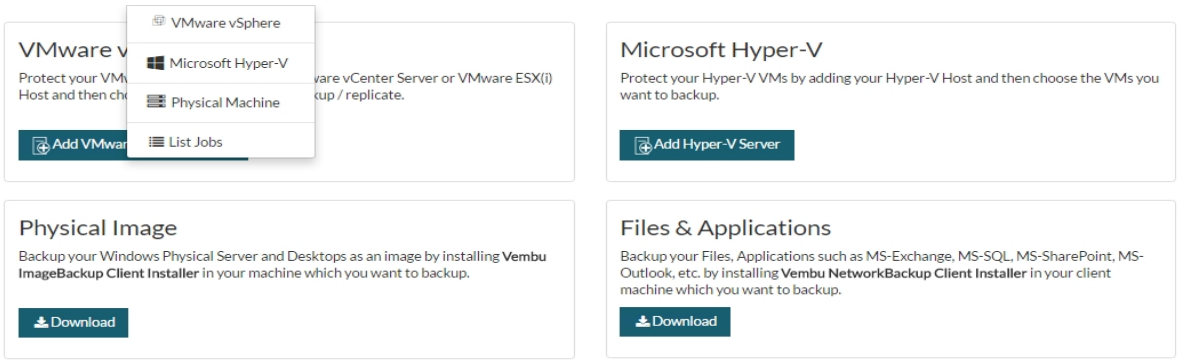
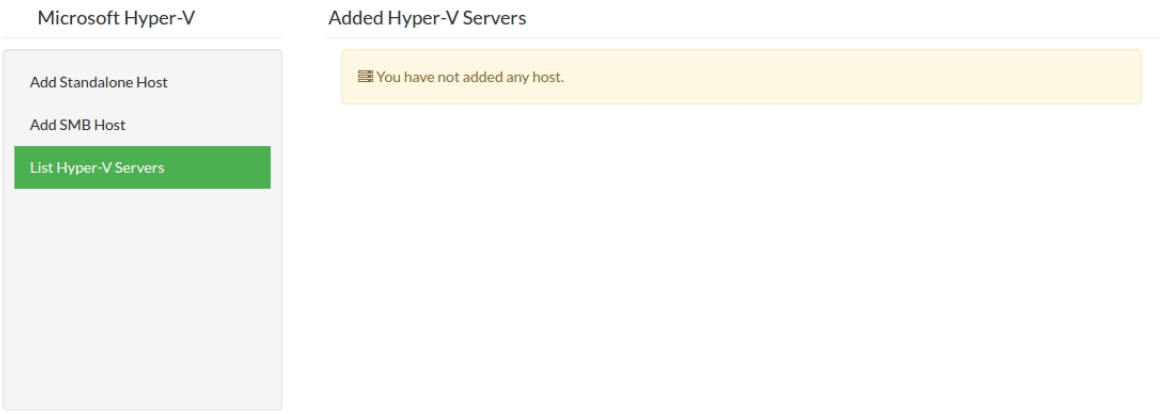
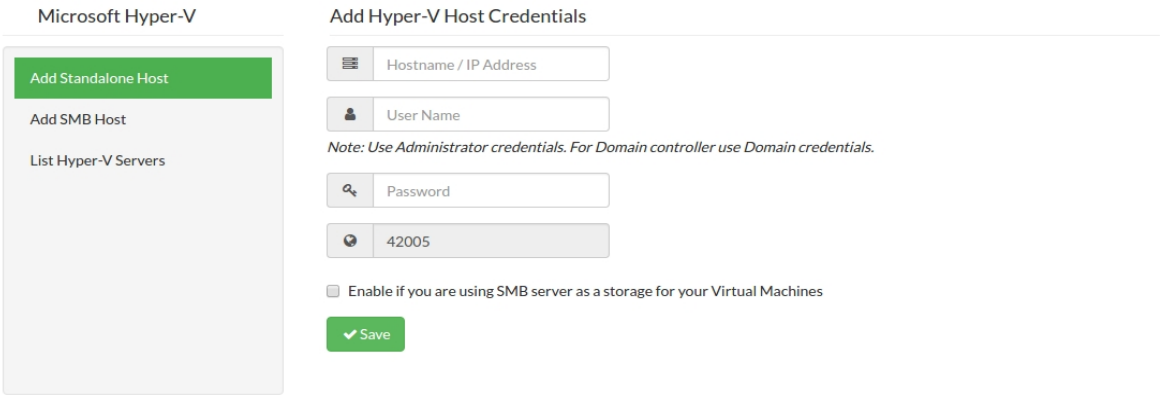


Add Hyper-V server:

- If it's a fresh installation, click on 'Add Hyper-V Server' option.



- You can either choose the 'Standalone Hyper-V Host' or 'SMB Host' as server type.
- Choosing Standalone Hyper-V Host will ask user to provide login Hyper-V credentials, it also asks user to confirm if they are using SMB server as storage for VMs.
    - If 'No' - Server addition will be completed with Saving the credentials.
    - If 'Yes' - Users will be redirected to the next page to provide SMB credentials.



- Choosing SMB Host will direct user to Apply SMB credentials page, where they will be required to provide SMB Host credential. Once done providing it, hit save to add Hyper-V server.

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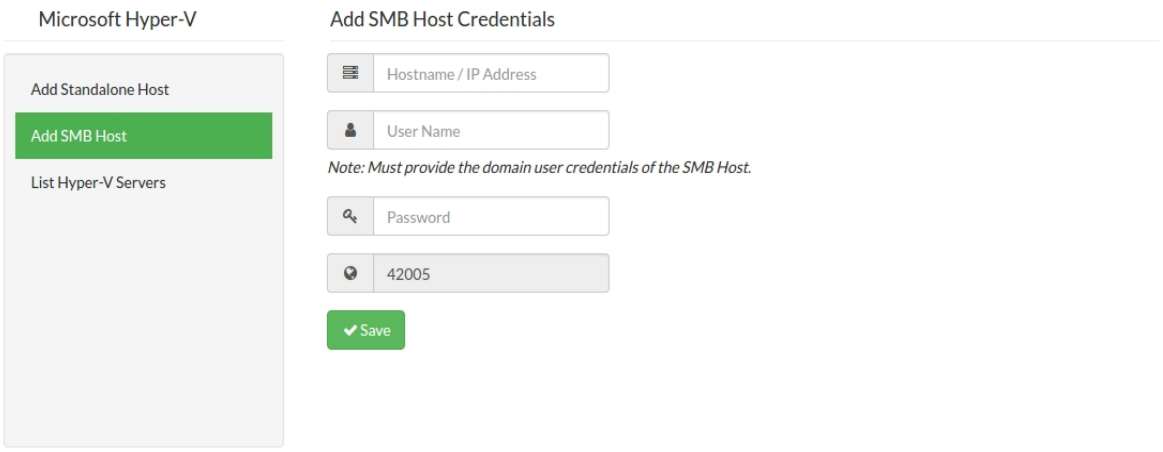
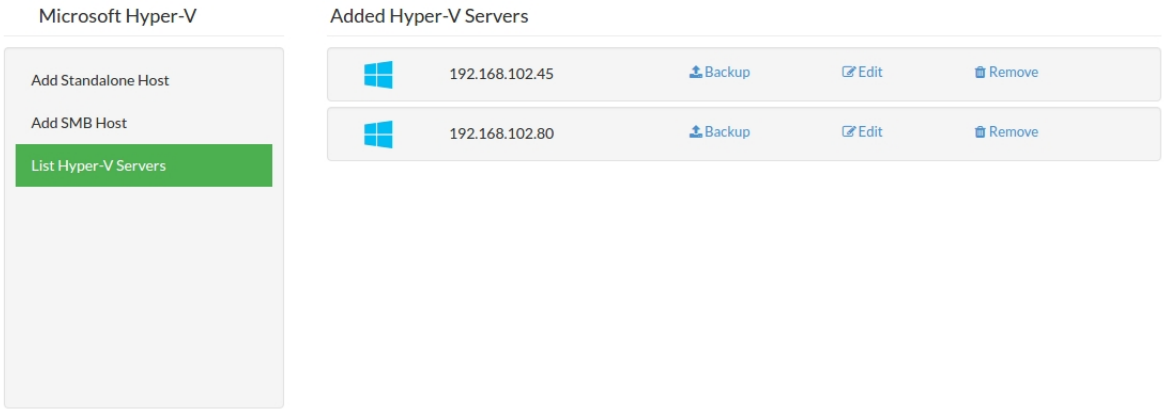


Create Hyper-V Backup:

- Once done adding, go to Backup → Microsoft Hyper-V. The list of Hyper-V servers added will be shown.



- From the list of servers added, Click Backup Now option in the Hyper-V server to be backed up.

Choose Virtual Machine(s):

- Choose list of VMs you wish to get backed up and proceed.
- You can configure either host level backup job or can select any specific set of VMs to be backed up.

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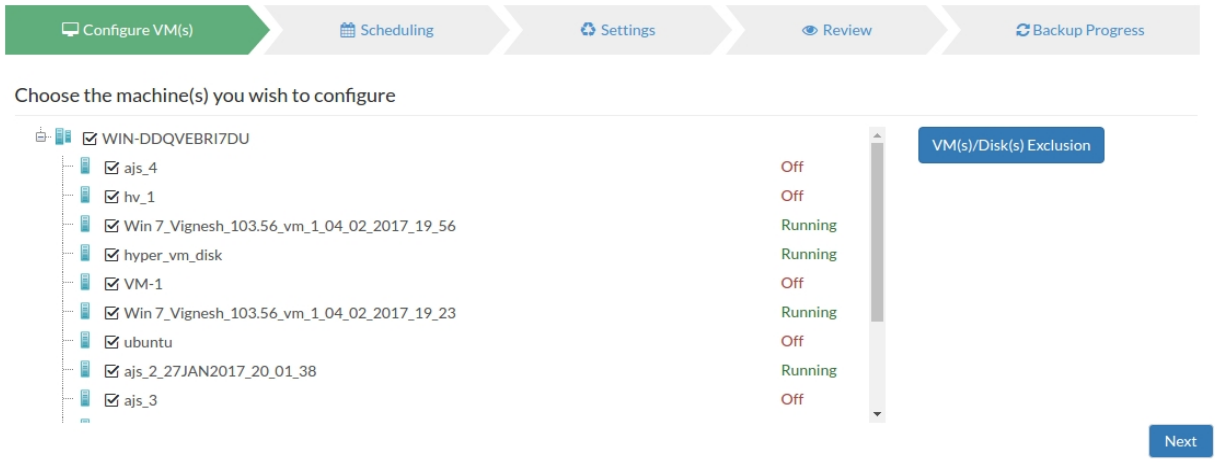
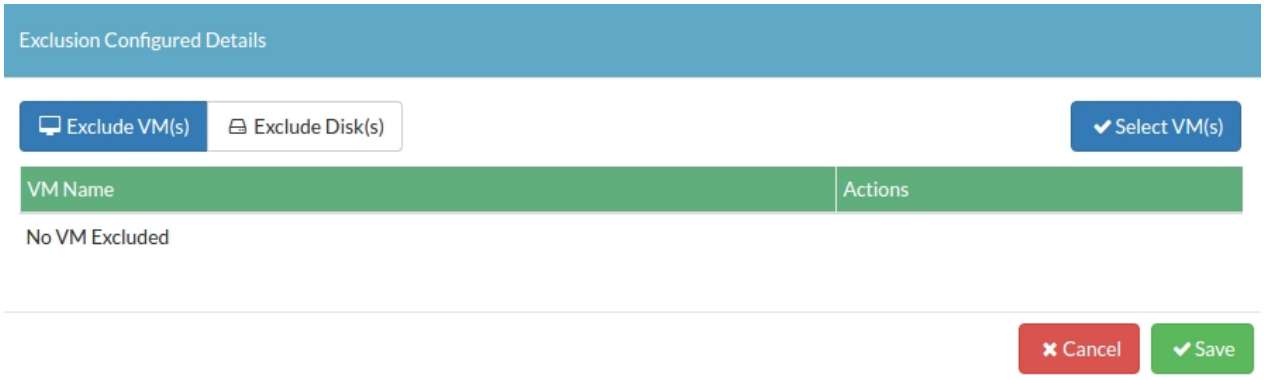


VM(s)/Disk(s) Exclusion

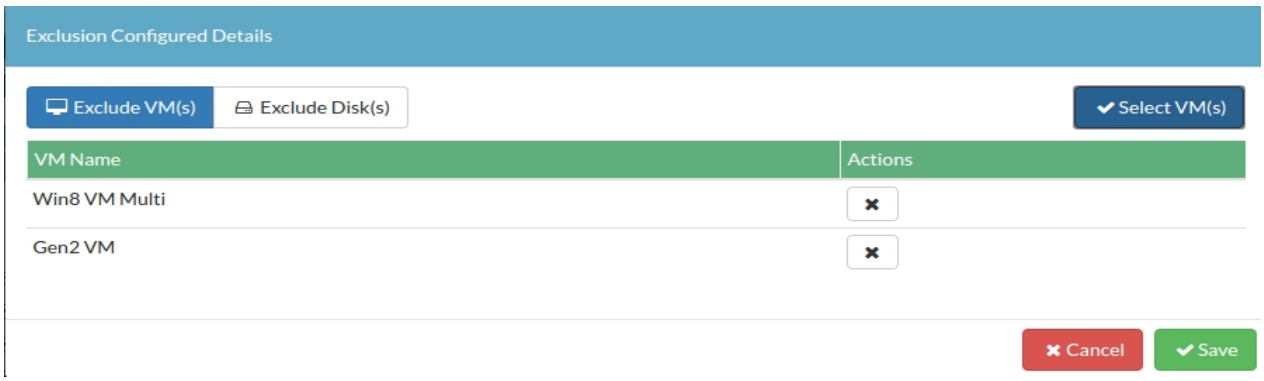
- On selecting Host level backup, you might wish to exclude some specific set of VMs from getting backed up. Such VMs can be excluded using VM(s)/Disk(s) exclusion option.

VM Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.



- Choose 'Exclude VM(s)' tab.
- To exclude a virtual machine from a configured host level backup, click 'select VM' and choose the VMs to be excluded and click 'Exclude'.
- Once added, save the exclusion settings.



- You can also add/delete a VM to/from exclusion list, whenever required by editing the

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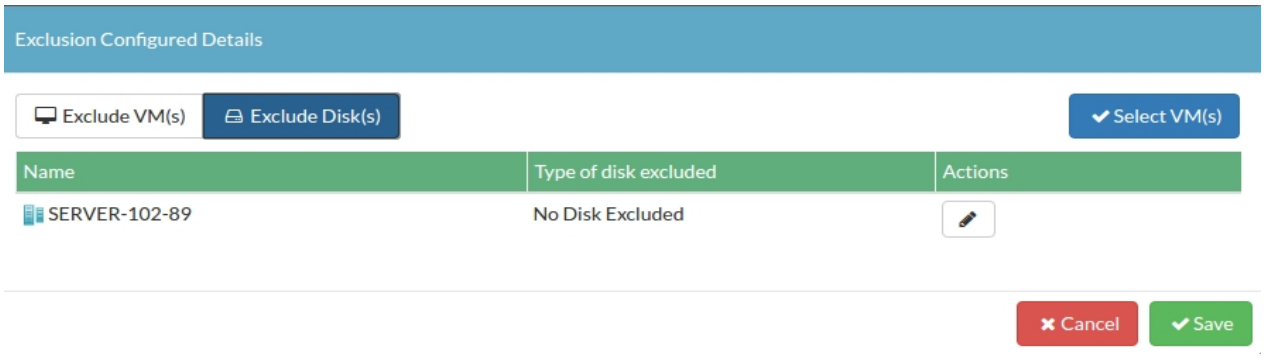
backup job.
Note: Changes made in VM exclusion settings will be taken into effect immediately with next schedule.

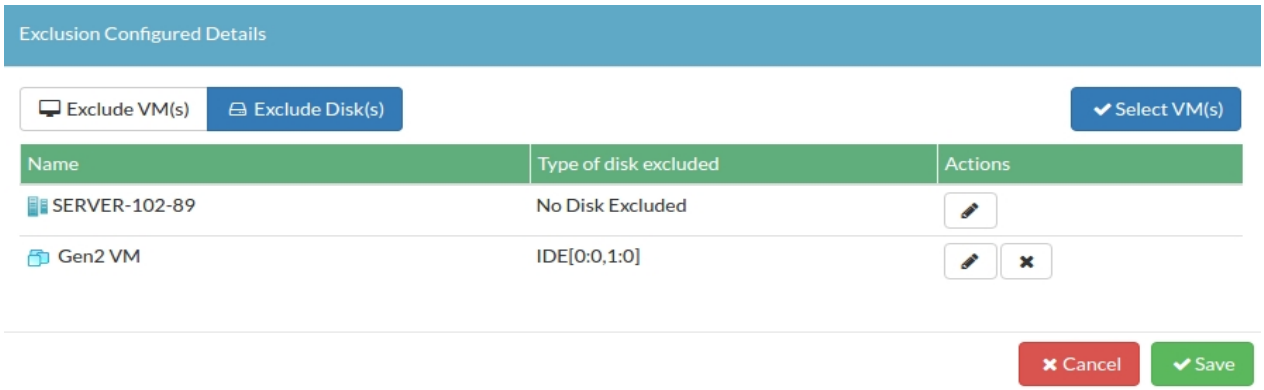
Disk Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.



- Choose 'Exclude Disk(s)' tab.
- Disk exclusion can be either enabled at host level or can be configured at VM level.

  Host level Disk Exclusion- This exclusion type is possible when you opt to configure host level backup job. Under 'Exclude Disk(s)' tab, you will find the configured host(s) listed.



- You can choose 'Edit Disk Exclusion' option, to assign global disk exclusion rule for VMs under a chosen host. Edit Disk exclusion tab will have following exclusion rules:
  - No disks Excluded
  - Include only System Disks for Backup. Exclude Others (typically 0:0)
  - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.

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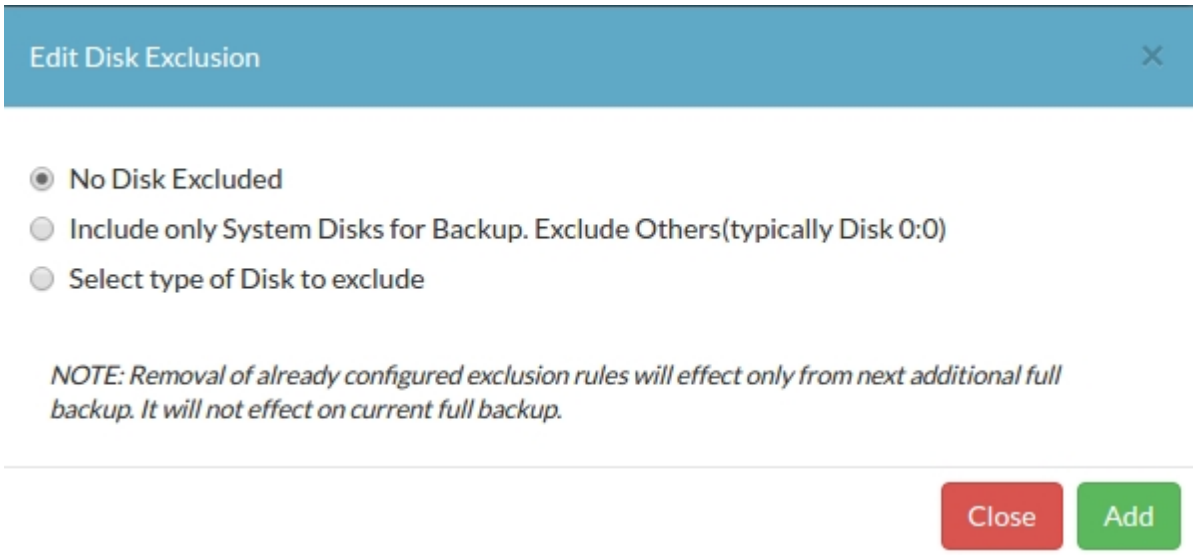
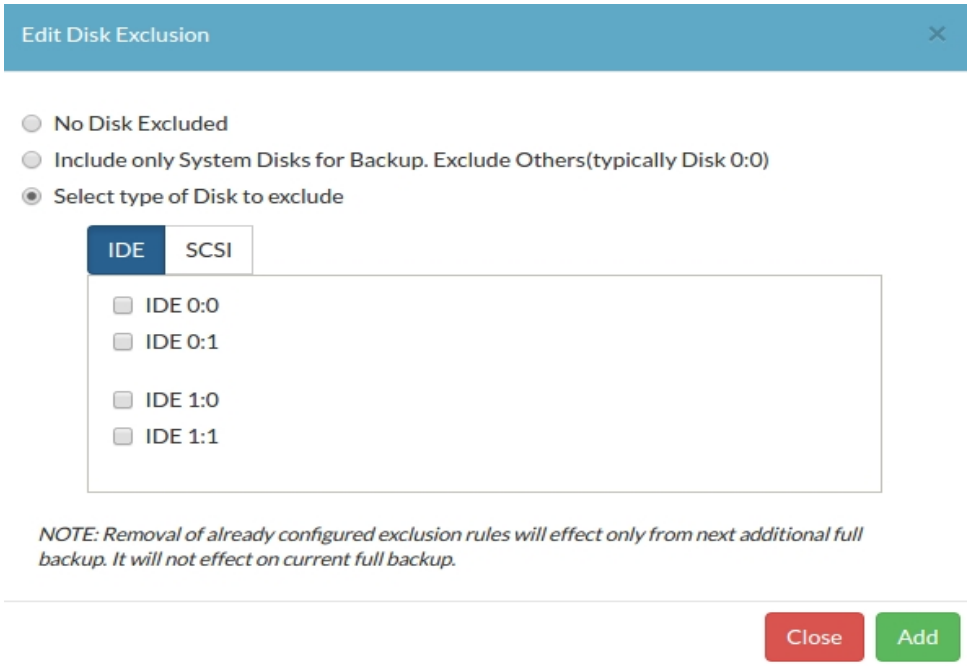


- Opting for the third option of selecting disk type will list all available disk types for VMs in Hyper-V.
- User can choose the disk(s) to be excluded in each disk type.



- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.

  VM level Disk Exclusion- This exclusion type can be configured in both host level and VM level backup job. Under 'Exclude Disk(s)' tab, you will find the list of configured VM(s).

  If it's a host level backup job, you can assign both host level exclusion rule as well as assign exclusion rule for individual VMs by adding VMs to be configured using Select VM(s) option.

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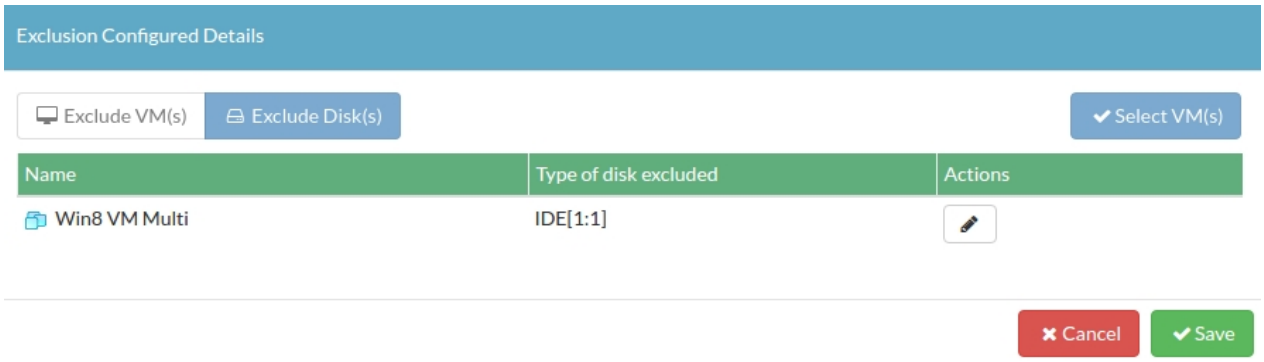
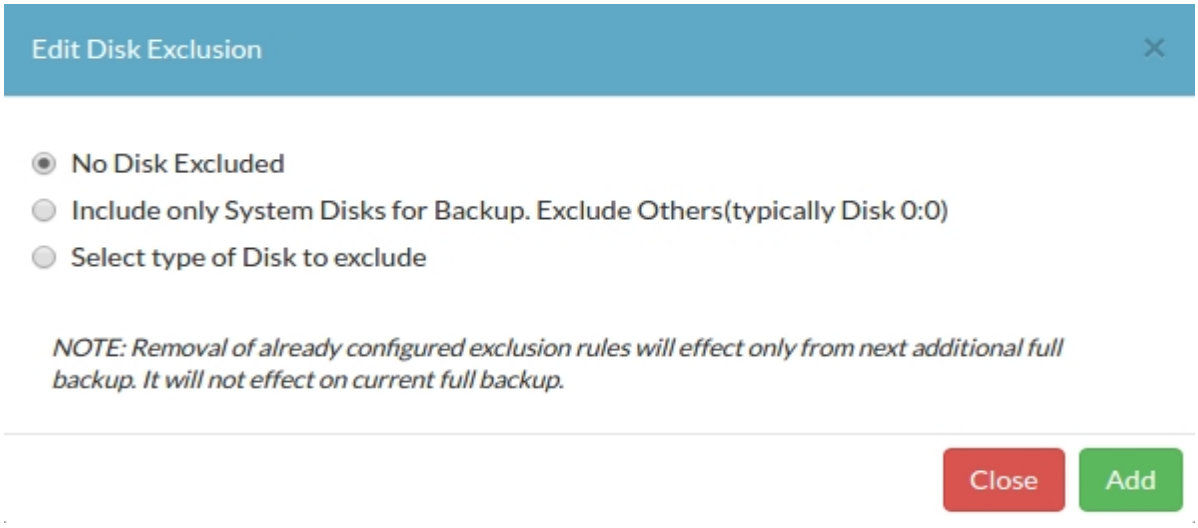


- Choose 'Edit Disk Exclusion' option alongside a VM to configure disk exclusion rule for the selected VM. Edit Disk exclusion tab will have following exclusion rules:
    - No disks Excluded
    - Include only System Disks for Backup. Exclude Others (typically 0:0)
    - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.



- Opting for the third option of selecting disk type will list all available disk types for VMs in Hyper-V.
- User can choose the disk(s) to be excluded in each disk type.
- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.

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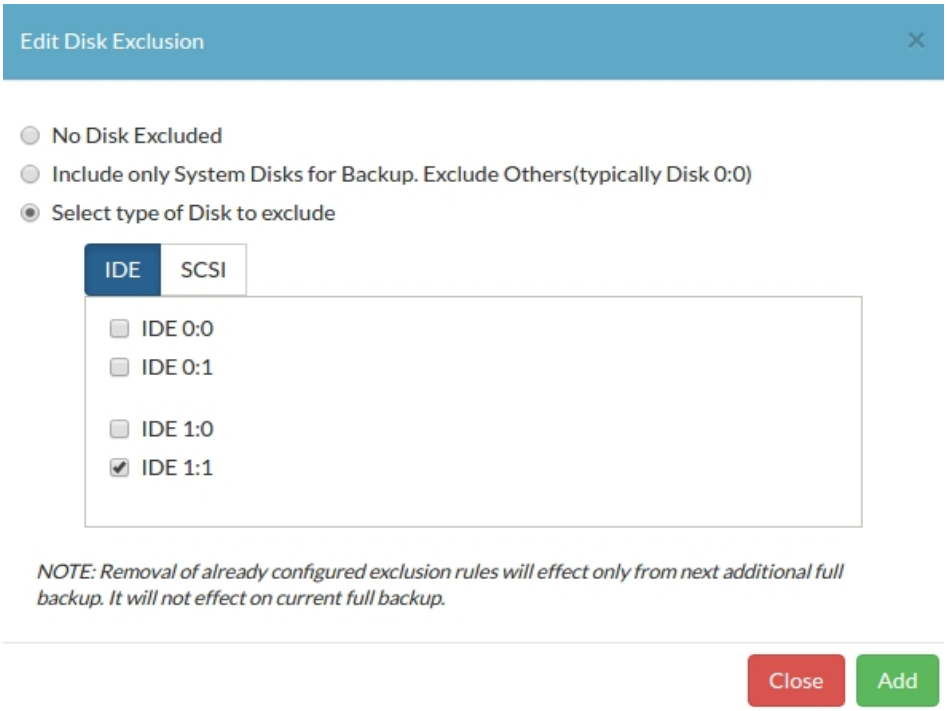
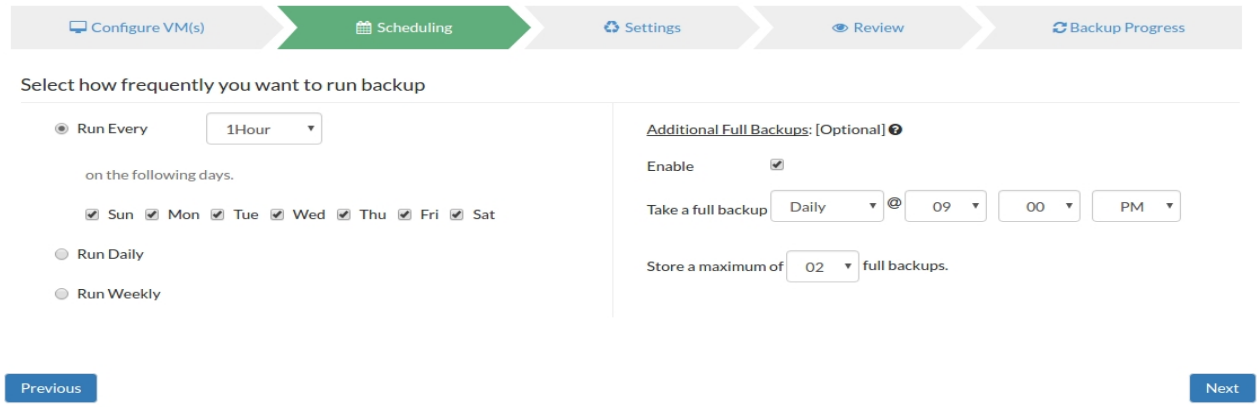


- You can also add/delete a disk to/from exclusion list, whenever required by editing the backup job.
  Note: Changes made in disk exclusion settings will be applied only when a additional full backup is scheduled.

Configure Scheduling:

- Users can configure their backup schedules flexibly based on their requirement. They can choose from Hourly/Daily/Weekly options for backup schedules.



Additional Full Backups:

In an enterprise environment, configuring a backup job with one full backup and forever incremental is not a recommended practice. Users from such environment will tend to configure additional full backups periodically and that can be automated with our additional backup option.

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Additional Full Backups can be configured in following order of scheduling:

- For Continuous and Run every few hours schedules- Configuring daily/weekly/monthly additional full backup is possible.
- For Run Daily schedule- Configuring weekly/monthly additional full backup are the possible options.
- For Run Weekly schedule- 'Monthly full backup' is the only possible additional full backup.
- For Run Once schedule- You cannot configure additional full backup.

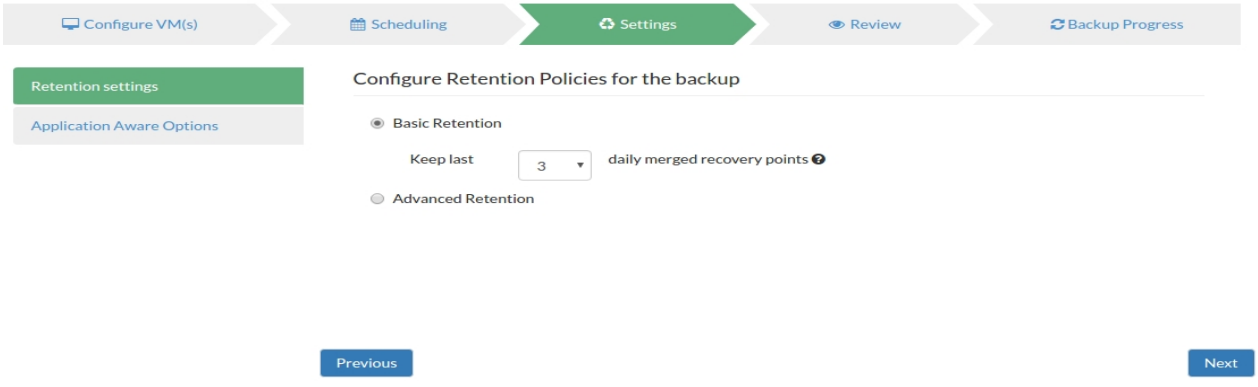
Note: Users can also limit the number of full backups to be retained with 'Store a maximum of' option. With this option, users can share the unwanted storage data occupied based for a time period. For example, a user needing no more than 6 months of data retainment can configure 6 monthly full backups where the 1st additional full backup will be deleted on the 7th month when a new full backup completes successfully.

Configure Retention Policy:

- Users will be given 2 options for choosing retention policy:
    - Basic retention and
    - Advanced retention (GFS)

Basic:

- Vembu VMBackup provides forever incremental backups, where user can have 'n' number of incrementals. They also do have options to limit incremental count, which when retention count reaches incremental count, older incrementals will be purged while latest incremental will be retained as per configuration.



Advanced (GFS Retention):

- The Multilevel GFS retention reduces the time taken to restore backed up machines and most importantly reduce the size of image files in storage location. It also help avoid long chains of incrementals, ensuring safety of backup data and allow you to meet the requirements of your retention policy.

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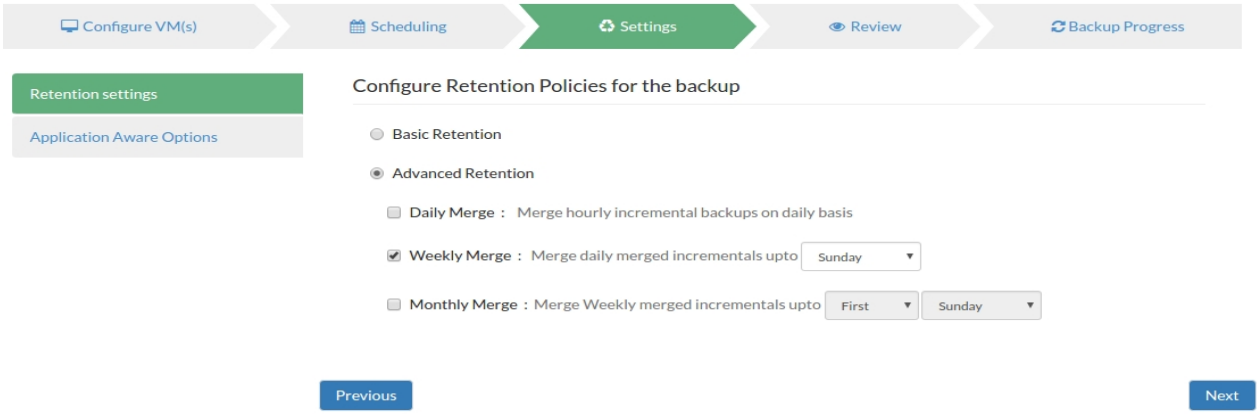
GFS retention merge incrementals on a daily, weekly and monthly basis:

- **Daily -** Daily merge will merge hourly incrementals on the third day's first successful incremental backup.
- **Weekly -** Weekly merge will commence based on user scheduled day's first successful incremental backup. It will merge all daily merged incrementals into a single weekly merged file.
- **Monthly -** Monthly merge is much similar as weekly merge where user need to schedule particular day in a month(For example: Third Wednesday) and the merge will get initiated at first successful incremental of the day. It merges all weekly merged files as a single monthly file.



Application-Aware Hyper-V Backups:

Hyper-V backups utilize Microsoft VSS writers to take application-consistent backups(MS SQL, MS Exchange) and truncate exchange log files to free up the space.

Enabling application aware process - Truncate logs immediately:

- Enabling this option lets Vembu BDR truncate the exchange server logs before initiating backup process. It purges and commits log files along with the .edb files and reduce storage space consumed.

Application Aware Image Process Prerequisites:

- To perform application-aware image processing, the Guest Machine (running MS Exchange server, MS SQL Server, MS SharePoint Server, MS Active Directory) should be installed with latest Hyper-V integration services.

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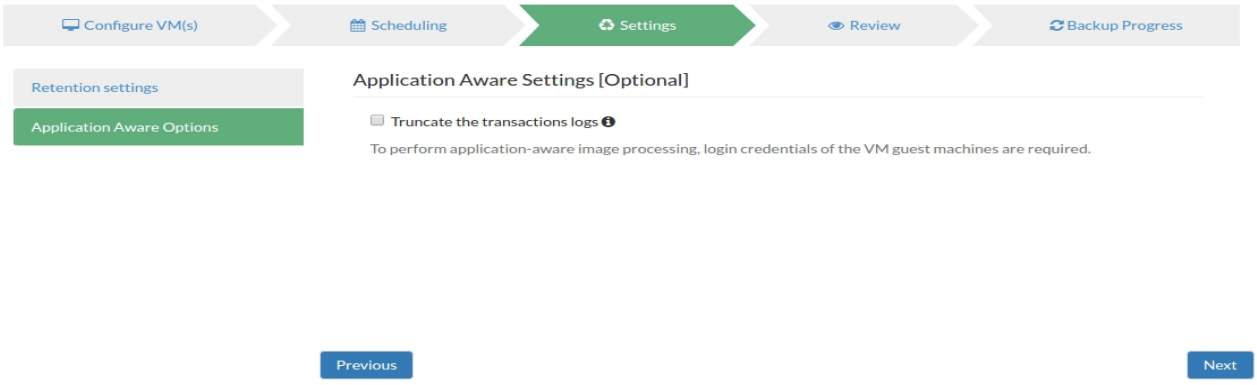
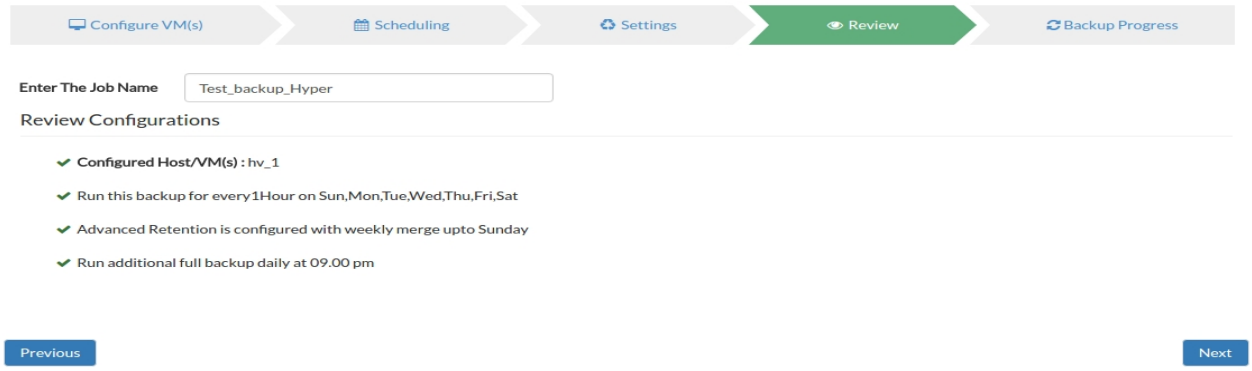


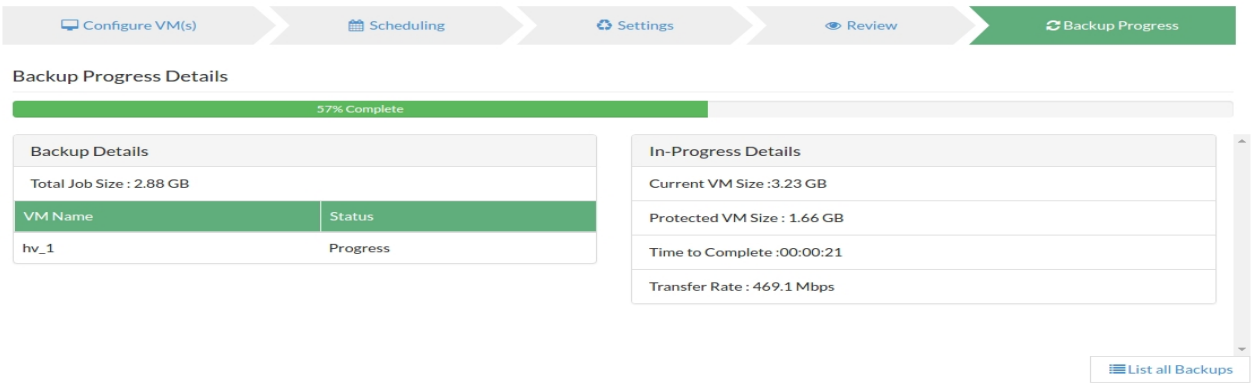
Review Configurations:

- User will be required to provide a name for backup scheduled.
- And can verify the configurations one final time, before hitting 'run the backup'.



Progress Details:

- Thus, backup progress is witnessed and can be verified once it completes successfully.



Vembu VMBackup User Guide

Manage Backup Job

- Go to ' Backup → List Jobs'.
- The list of backup jobs configured from that particular client machine will be listed

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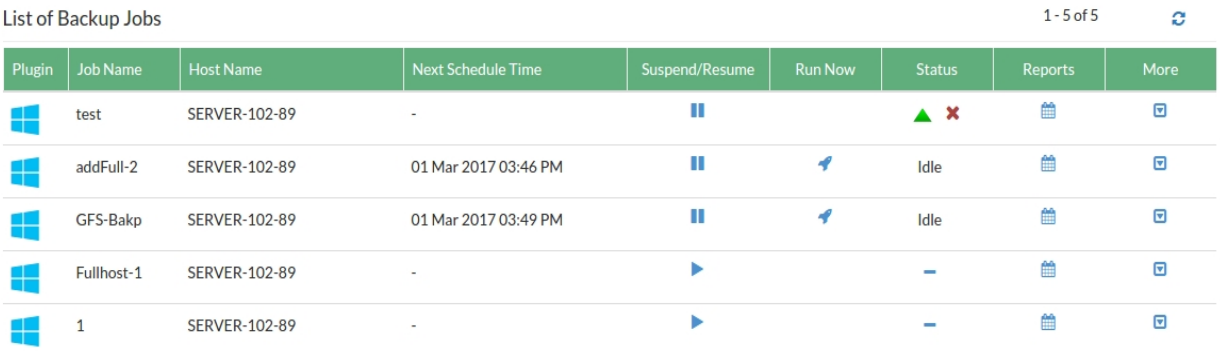
along with options to edit, suspend/resume, run/abort, delete the backup job.

- Users can also view the plugin type and historical report of a particular backup job.



Suspend/Resume:

- This option lets a user to suspend and resume a configured backup job, if required.
- A suspended backup job will not run schedules as per its configuration, until/unless it is resumed.

Run Now:

- This option is used to immediate schedule a backup job, once clicked.
- If run now is triggered in midst of scheduled interval, then the next schedule interval will be calculated from the time of recent backup job.
  Note: If a backup job is triggered in midst of scheduled interval with run now, then the next backup schedule will be triggered

Abort:

- This option is used to abort a backup job that is currently in progress, if required.

View:

- This option allow user to view the saved configuration of any specific backup job.

Edit:

- This option allow user to edit the configuration of an already scheduled backup job.
- Edit option allow user to completely reconfigure the backup job being edited. (i.e) User can:
  - Add/remove VMs.
  - Reconfigure the schedule frequency, retention policies, additional backups and application aware options of backup job.
- Once done, review the edited configuration and save it.

Delete:

- This option is used to delete the backup job, if no longer required.
- Proceeding with this option, will ask for deletion confirmation and once confirmed the backup job will be deleted.

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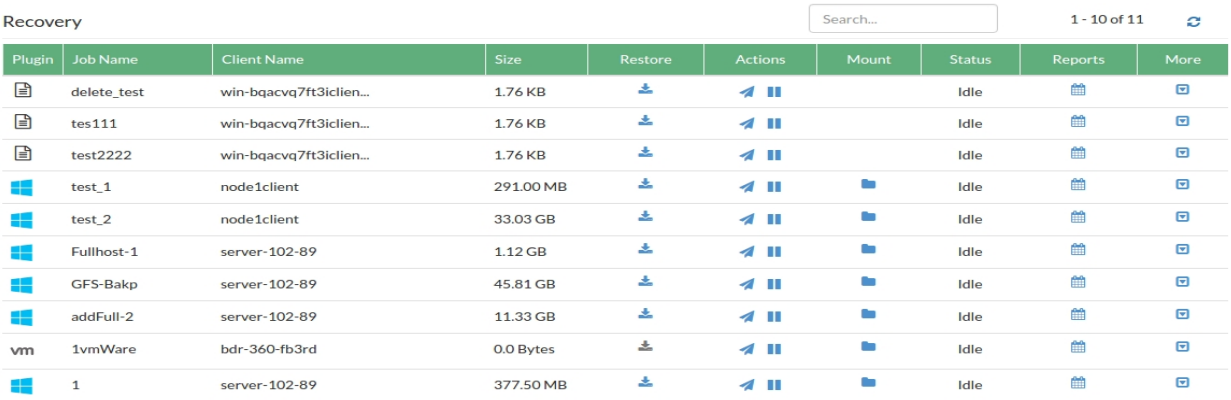
Disaster Recovery

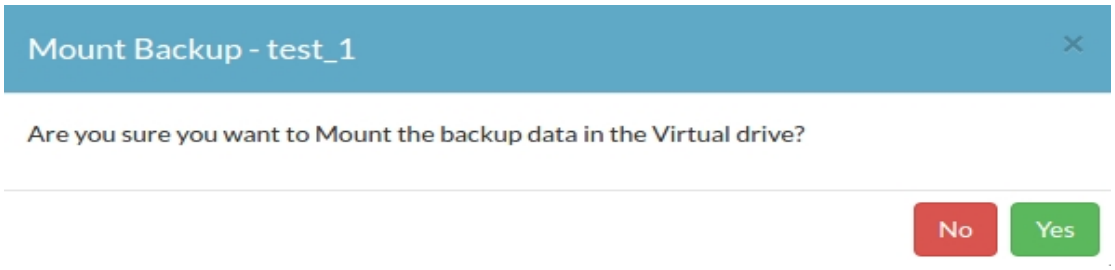
- Go to Recovery tab.
- Backups configured from various client machines to the server, will be listed for recovery, along with below listed options:
    - Restore
    - Virtual mount
    - Proceed to Persistent Instant Boot version delete
    - Delete
    - Replication actions
    - Status
    - Reports



Plugin	Job Name	Client Name	Size	Restore	Actions	Mount	Status	Reports	More
	delete_test	win-bqacvq7ft3iclien...	1.76 KB				Idle		
	tes111	win-bqacvq7ft3iclien...	1.76 KB				Idle		
	test2222	win-bqacvq7ft3iclien...	1.76 KB				Idle		
	test_1	node1client	291.00 MB				Idle		
	test_2	node1client	33.03 GB				Idle		
	Fullhost-1	server-102-89	1.12 GB				Idle		
	GFS-Bakp	server-102-89	45.81 GB				Idle		
	addFull-2	server-102-89	11.33 GB				Idle		
vm	1vmWare	bdr-360-fb3rd	0.0 Bytes				Idle		
	1	server-102-89	377.50 MB				Idle		

Virtual mount:

- This option lets you instant mount backup data virtually where users can access backup in different file formats such as: IMG, VHD, VHDX, VMDK.



- Users can either take a copy of this mounted data or boot respective files if needed on KVM(IMG file in Linux), VMware vSphere(VMDK) or Hyper-V(VHD, VHDX).
- Once done with requirement, unmount backup data. This will resume backup job, so that incrementals will run as per schedule.

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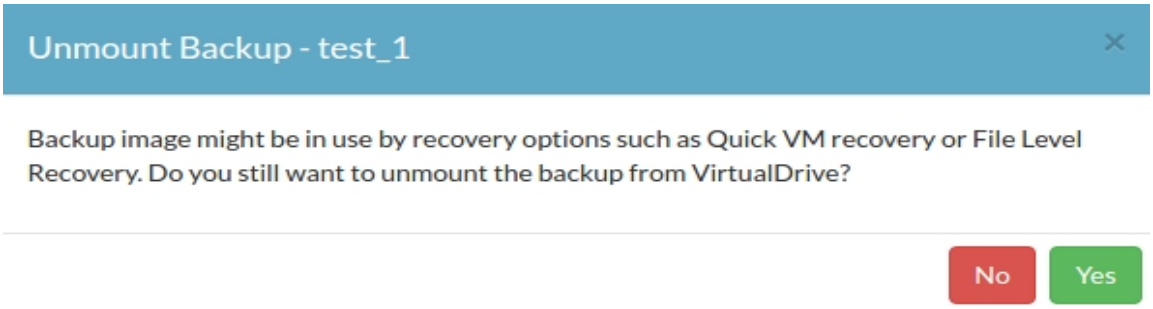
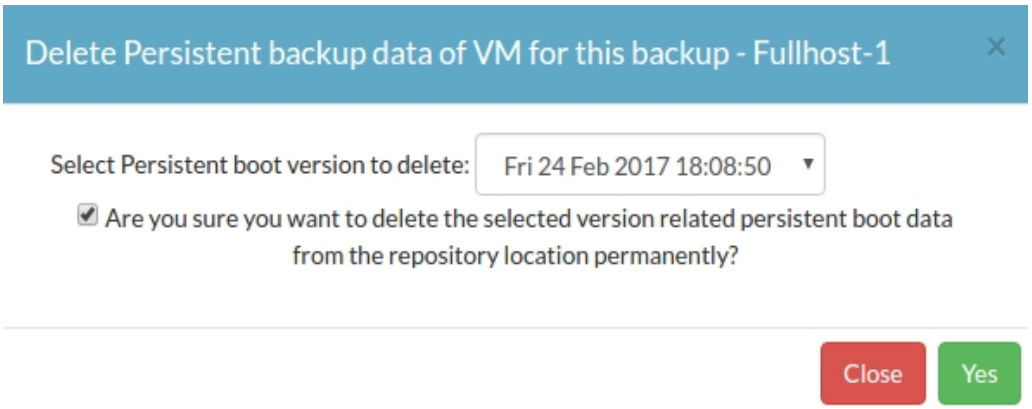


Proceed to Persistent Instant Boot version delete:

- During each instant boot and instant file recovery session, a change in backup data will take place which then is saved as persistent Instant boot data.
- Persistent data can be restored using restore options, if needed.
- Persistent data will be listed with a (+p) sign alongside timestamps of backup versions.
- Such persistent data can also be deleted if not required, using the 'Proceed to Persistent Instant Boot version delete' option.
- The option let user choose the timestamp of persistent data to be deleted.
- User will also be required to confirm deletion by selecting the checkbox 'Are you sure you want to delete the selected version related persistent boot data from the repository location permanently?' to proceed with deletion process.



Restore:

- Proceeding with restore option will list below restore options to choose from:
  - Quick VM Recovery
  - Live Recovery to Hyper-V server
  - File Level Recovery
  - Download

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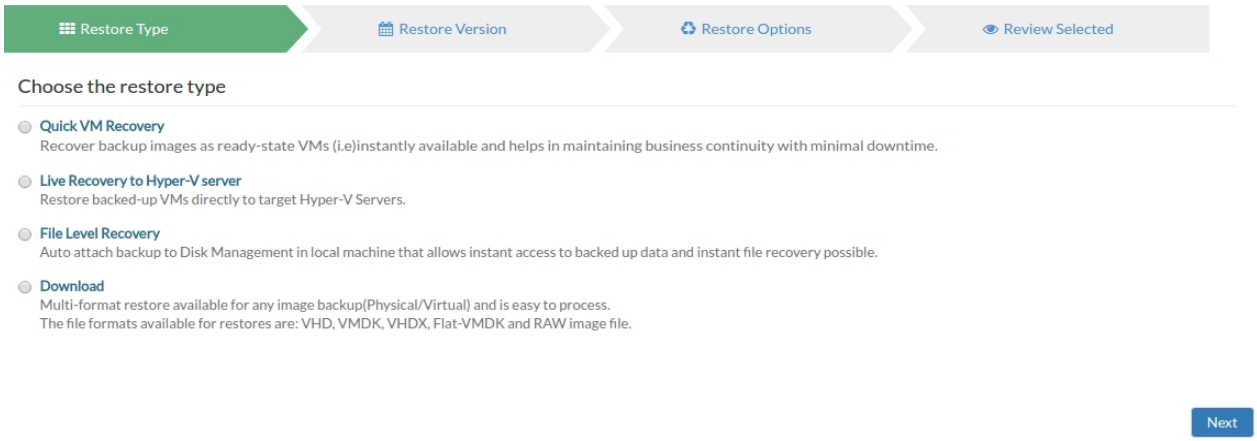


Vembu VMBackup User Guide

Quick VM Recovery

Quick VM recovery option allow user to quick access backup images as ready state VMs. (i.e) Minimal downtime and business continuity secured by making VMs instantly available. Quick VM recovery gives 2 choices of instant boot software to users:

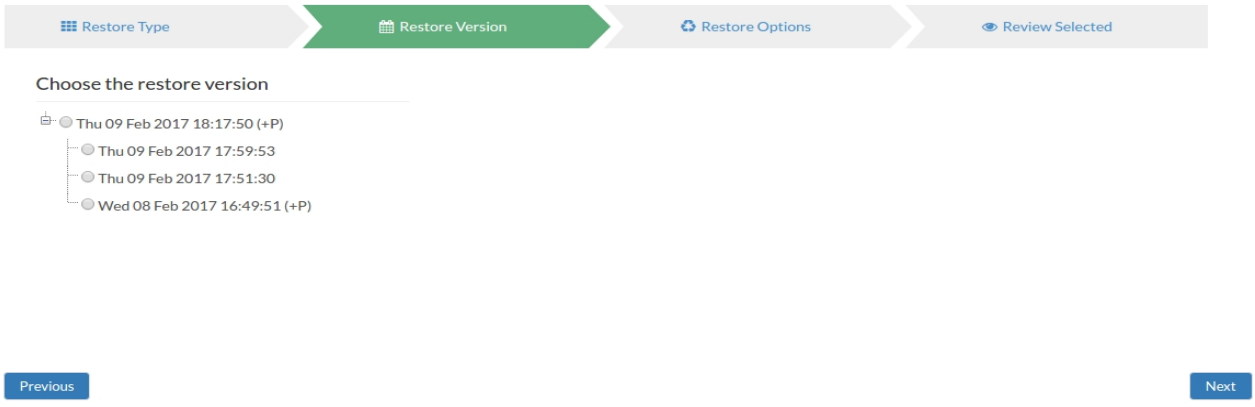
- Hyper-V (Default chosen software for Windows and available only on Windows servers)
- KVM (Default chosen software for Linux and available only on Linux servers)

Vembu VMBackup User Guide

Hyper-V

Login to Vembu BDR server installed in a Windows environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.



- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to allocate RAM for

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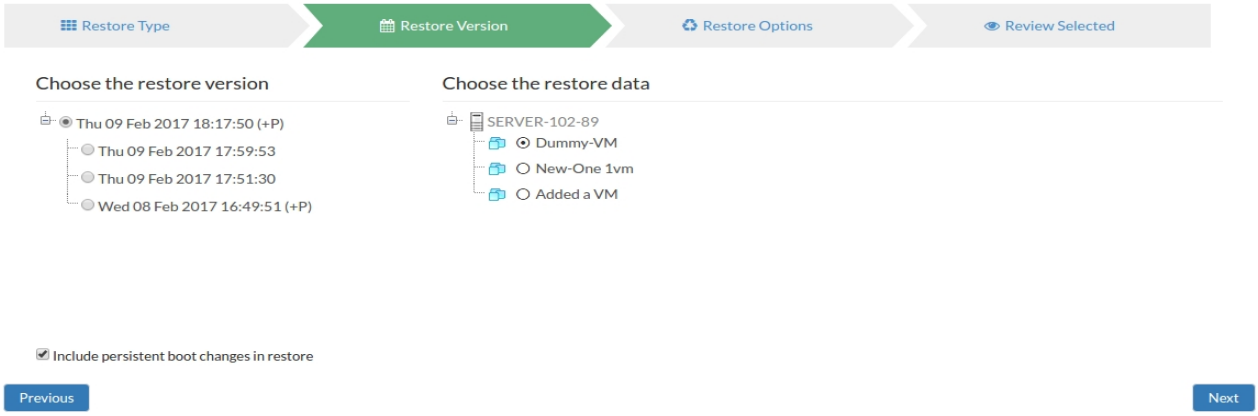
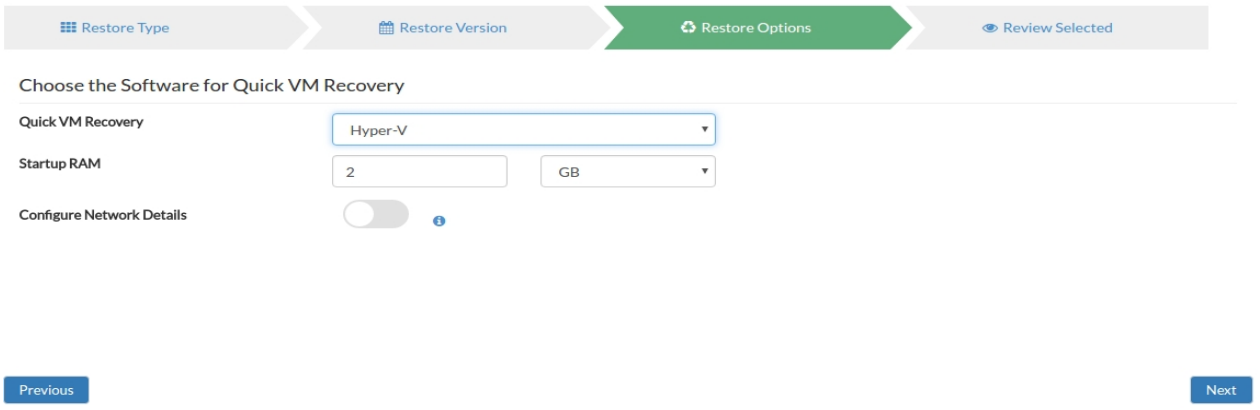
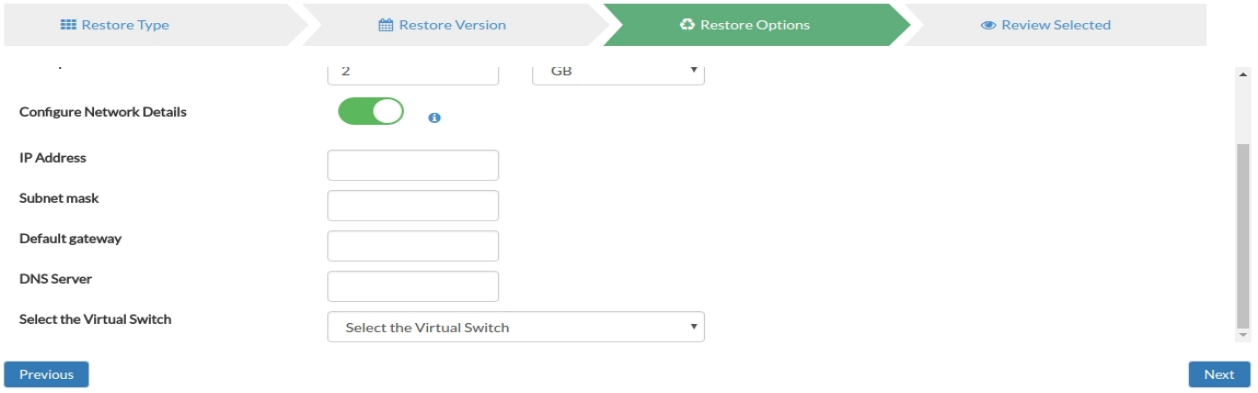
Instant boot.



- The software used to instant boot is Hyper-V (For Windows servers) and the default RAM size chosen is 2 GB which can be modified based on user requirement.



- You can also configure network details by enabling 'Configure Network Details' option. You will required to provide the IP address, Subnet mask, default gateway and DNS server details for the VM to be booted.
- Select virtual switch from the list of available virtual switches.



- Once done configuring restore options, proceed to review configuration.

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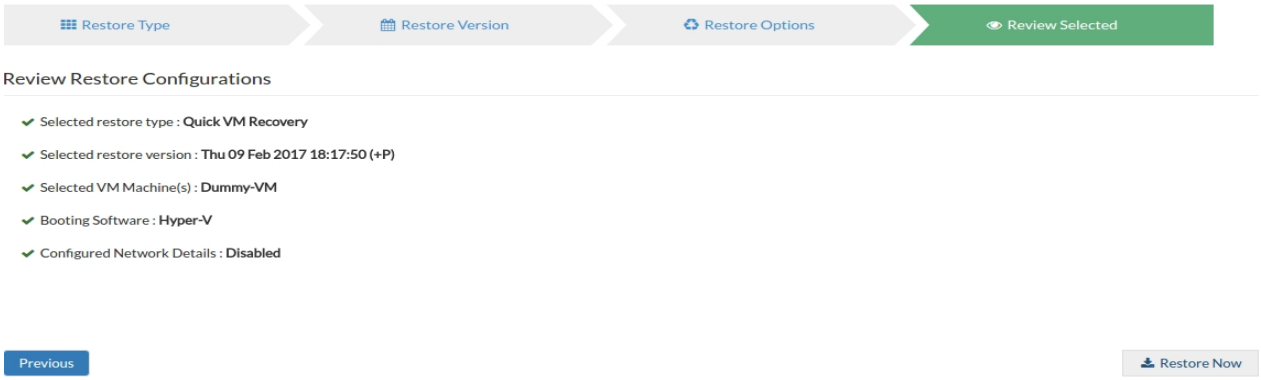
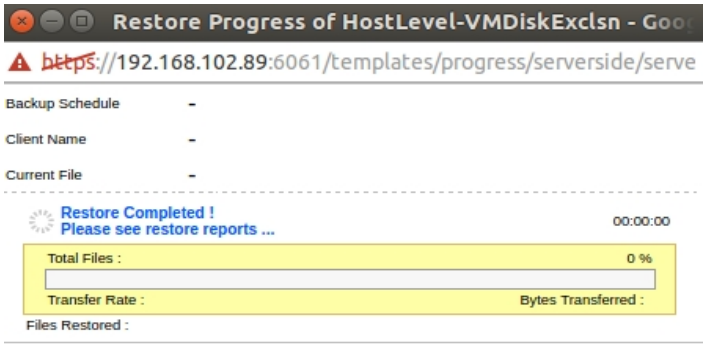


- Once done reviewing, click Next to proceed with Instant Booting the VM.



- VM will get automatically created in Hyper-V VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

Vembu VMBackup User Guide

KVM

Login to Vembu BDR server installed in a Linux environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.

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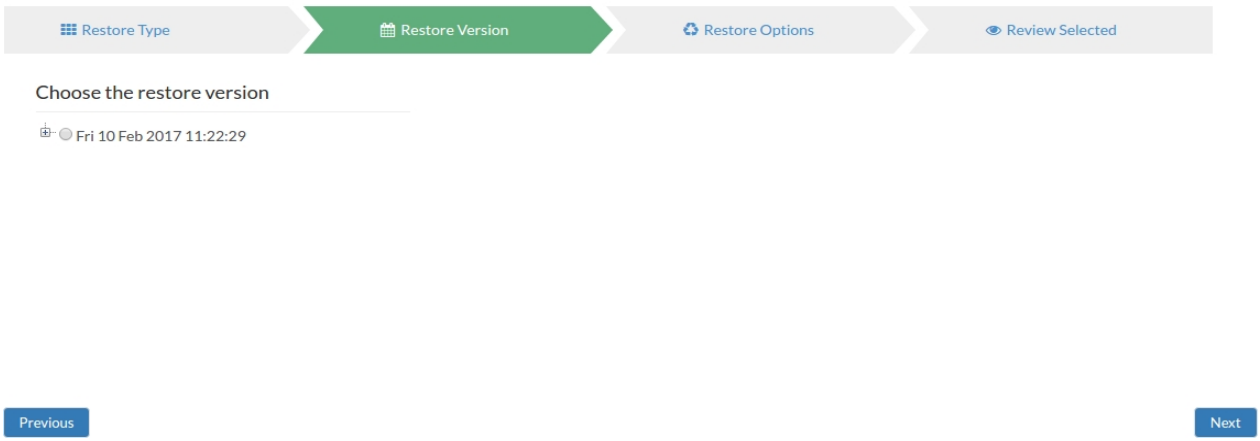
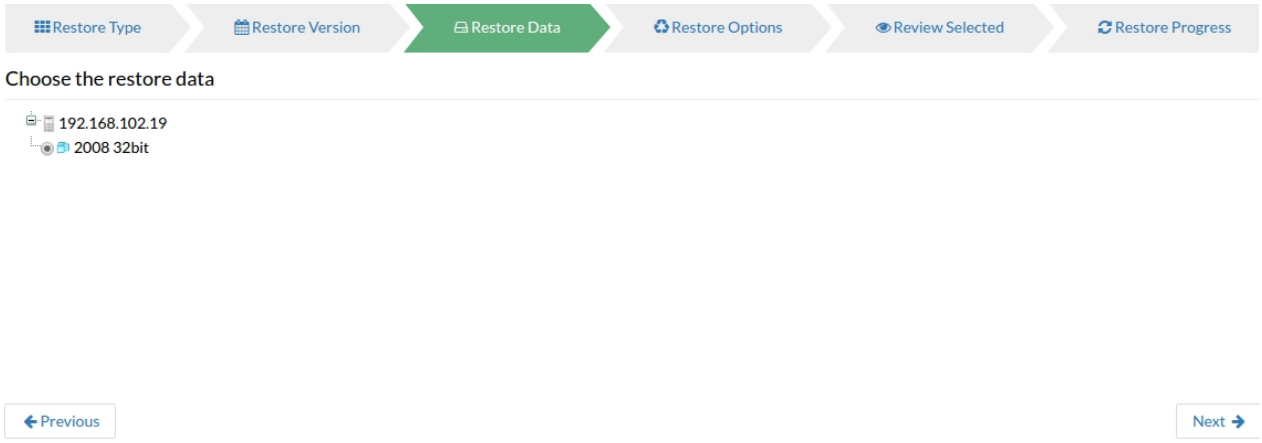
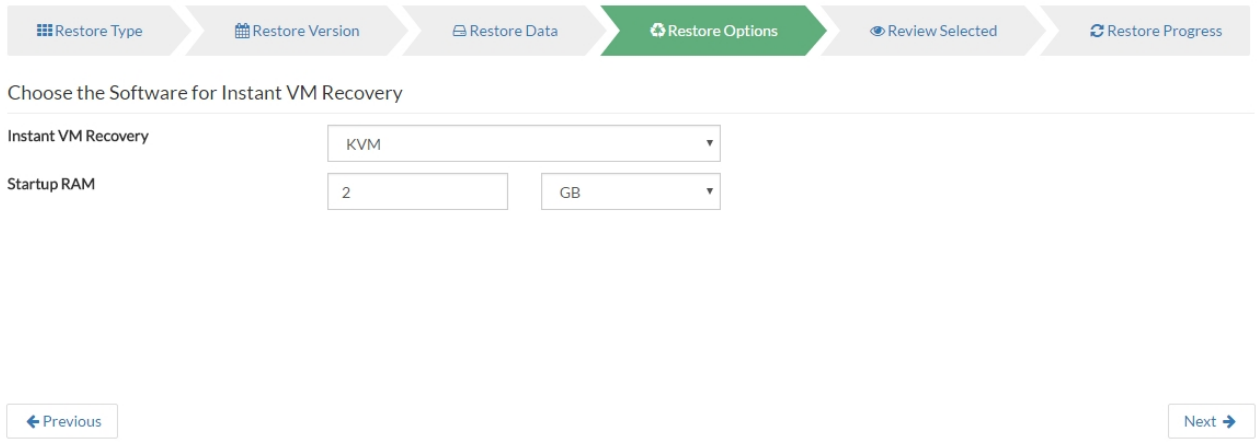


- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to allocate RAM for Instant boot.



- The software used to instant boot is KVM (For Linux servers) and the default RAM size chosen is 2 GB which can be modified based on user requirement.



- Once done allocating RAM size, proceed to review configuration.

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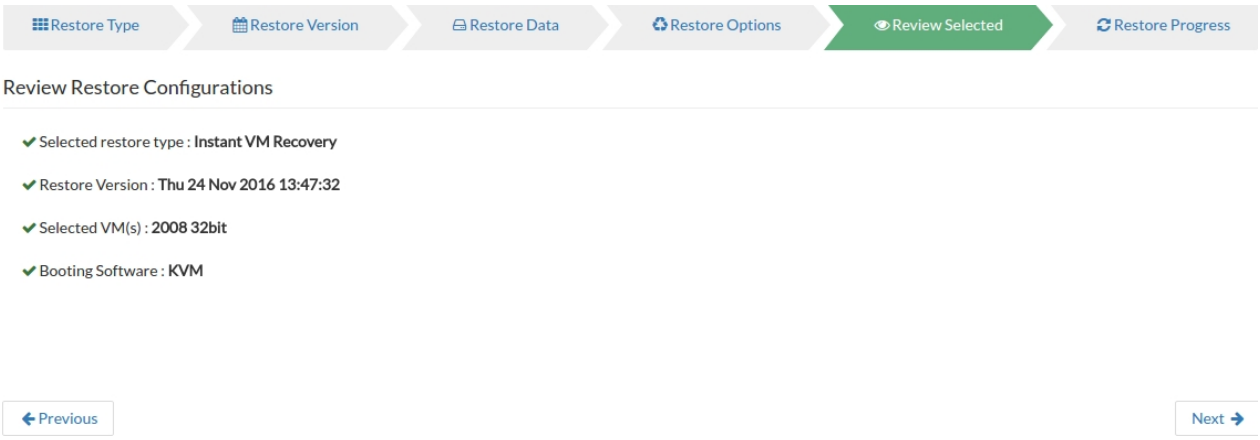
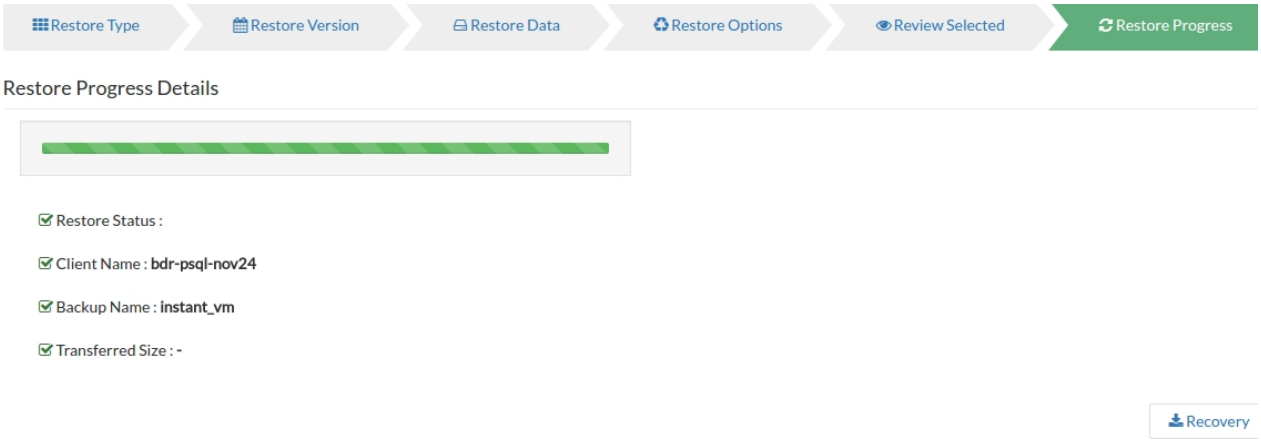


- Once done reviewing, click Next to proceed with Instant Booting the VM.



- VM will get automatically created in KVM VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

Vembu VMBackup User Guide

Instant File Recovery

This option lets you instantly attach backup data to disk management as a VHD/VHDX file and proceed with file level restore.

- The VHD/VHDX file is created by virtual mounting backup data.
- Users can access backup data via disks attached on disk management.
- Once done with requirement, unmount backup data. This will resume backup job, so that incrementals will run as per schedule.

- Select the timestamp version for file level recovery and proceed

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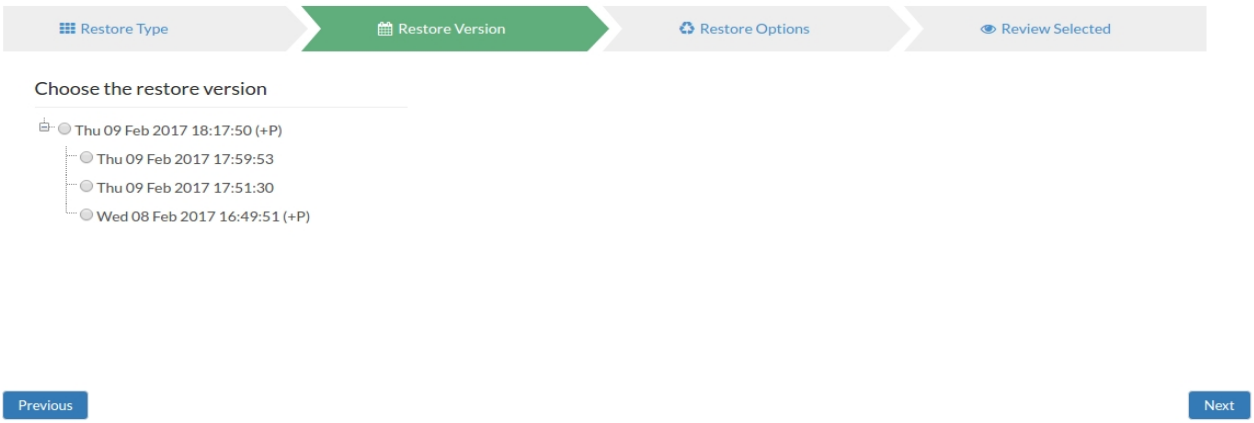
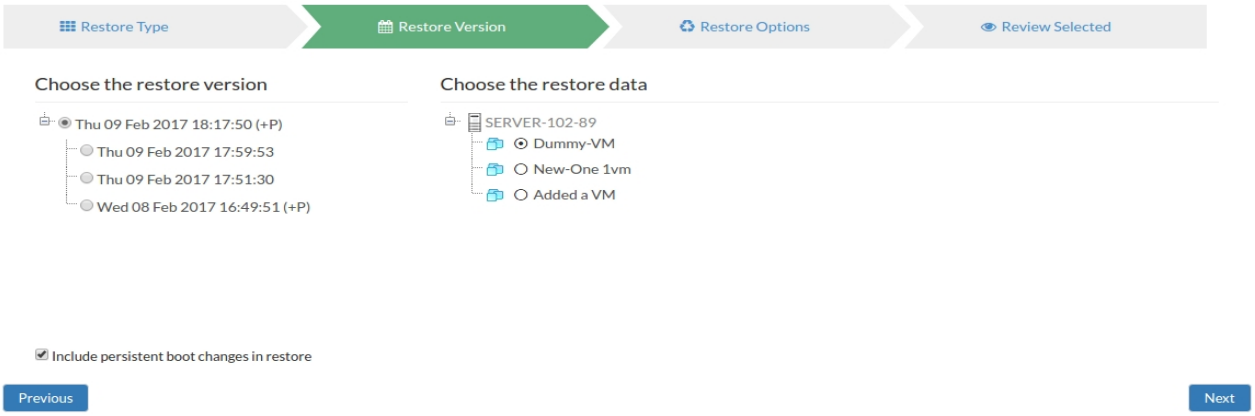
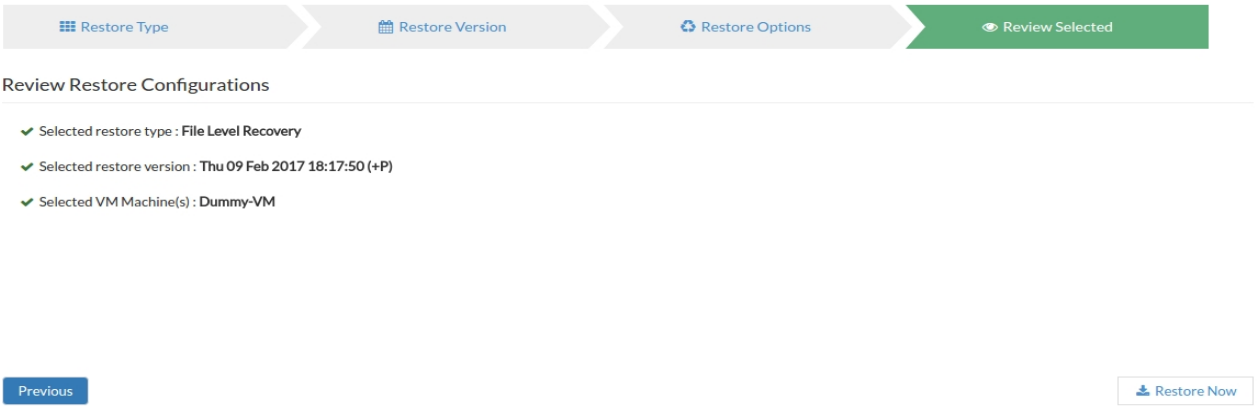


- Select the backup data to be mounted in disk management for file level restore.



- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with File Level Recovery.

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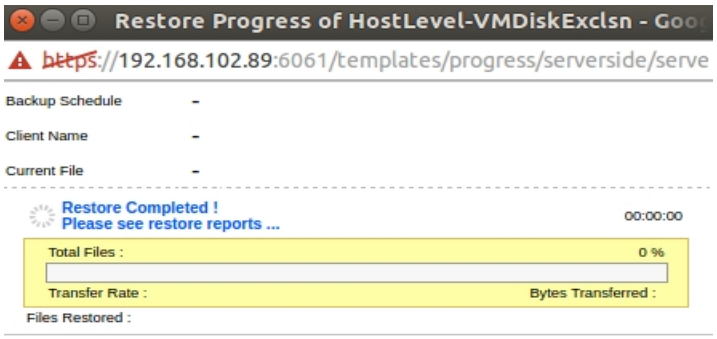
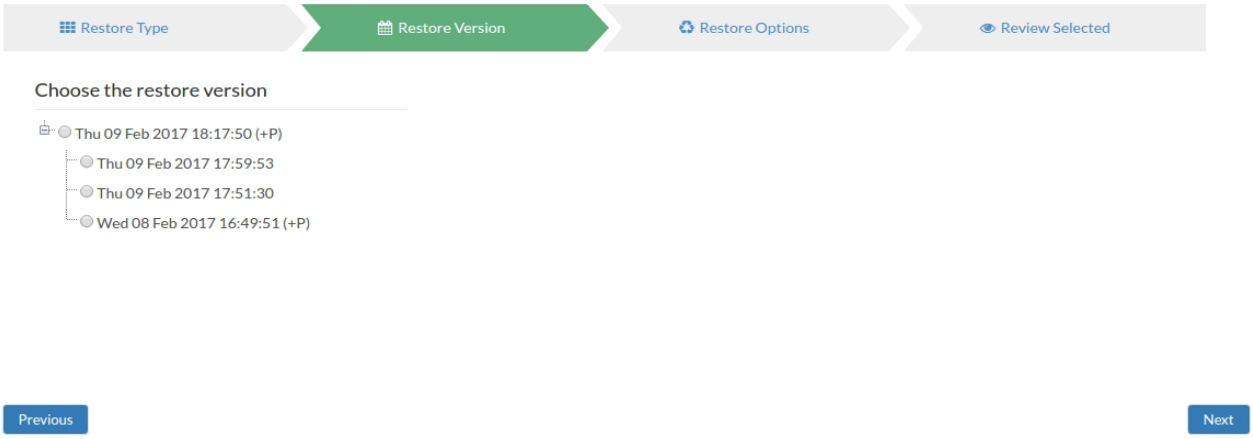


Vembu VMBackup User Guide

Full VM Recovery to Hyper-V Server

- Proceeding with 'Live recovery to Hyper-V server' option will let you 'Select restore version', where you have Hyper-V backup with several timestamps.
- Choose your required timestamp version and proceed to select VM.



- If you have backed up more than one VM in a backup and need to restore a particular VM/set of VMs, among all other VMs- Select your desired VM(s) and hit proceed to provide target Host details.

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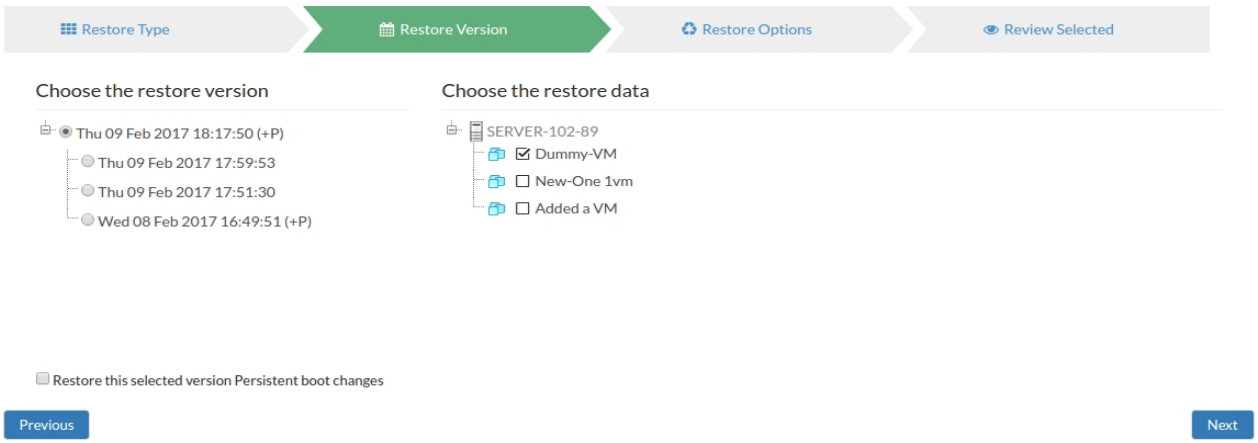
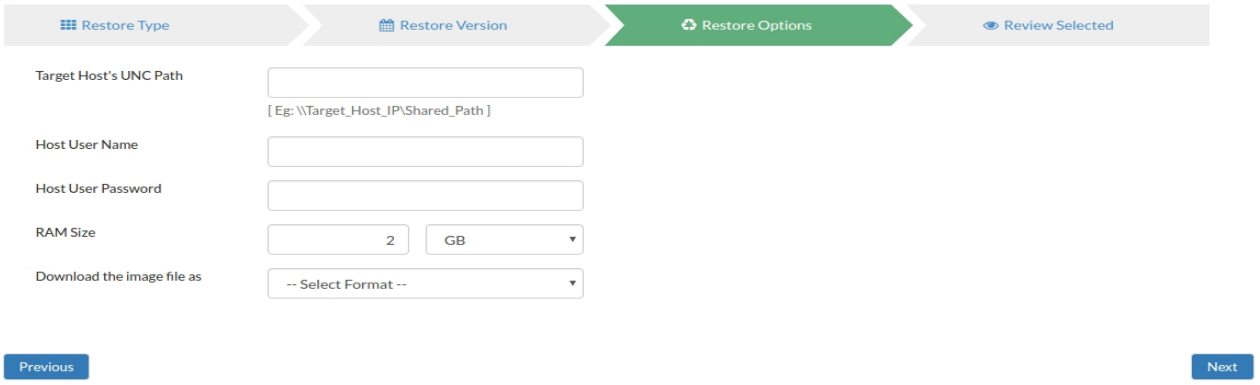
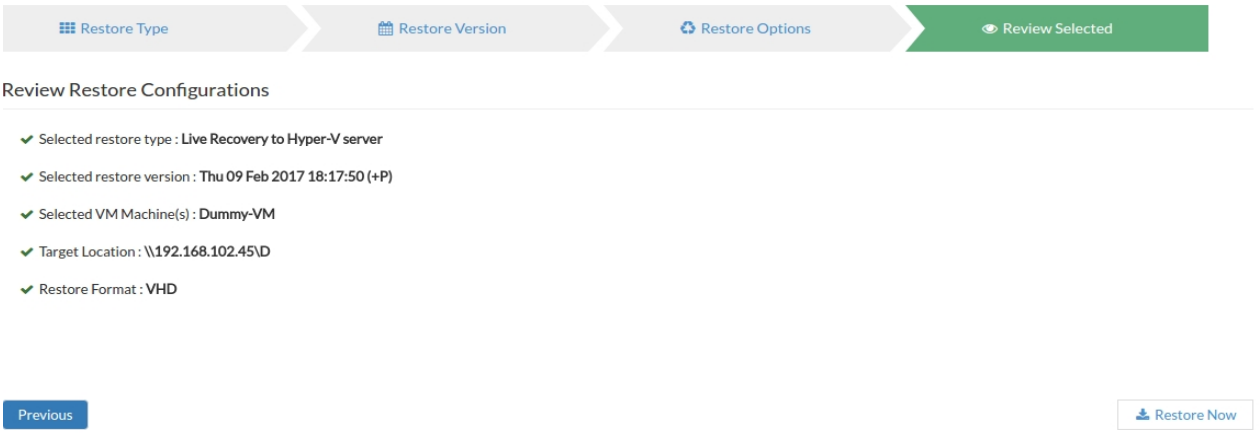


- Provide the target host details for VM recovery- Target Host's UNC path and Host user credentials.
- User will also be required to choose RAM size for the VM to created(By default, set to 2 GB).
- User will also be allowed to choose the image format to be downloaded as- VHD or VHDX.



- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with Live recovery to Hyper-V server.

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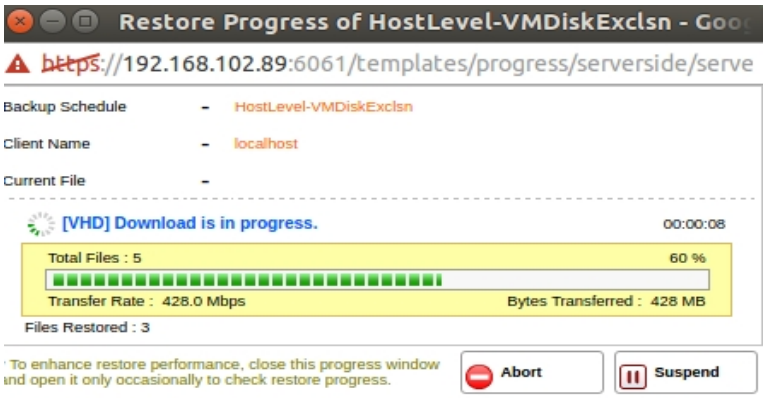
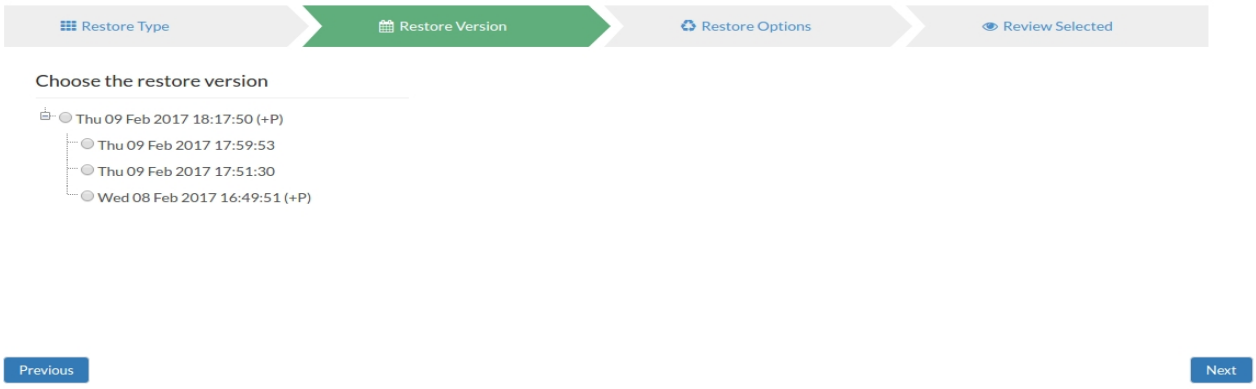


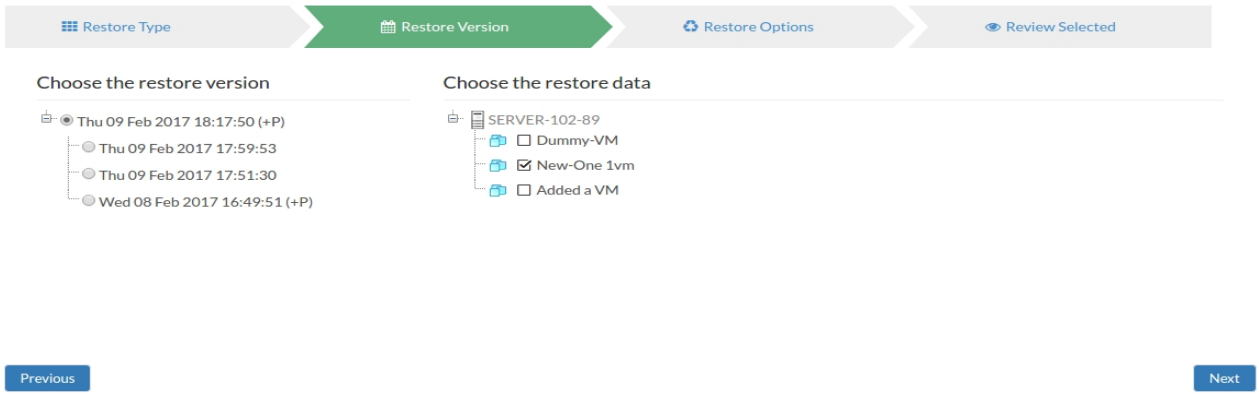
Vembu VMBackup User Guide

Download VM Files

- Download option allows users to download backup data as an offsite copy of their preferred file format.
- Proceeding with restore, lets users go with the regular routine of selecting time-stamp version they want to restore and click proceed.



- Now select VM(s) to restore and proceed to select restore location.



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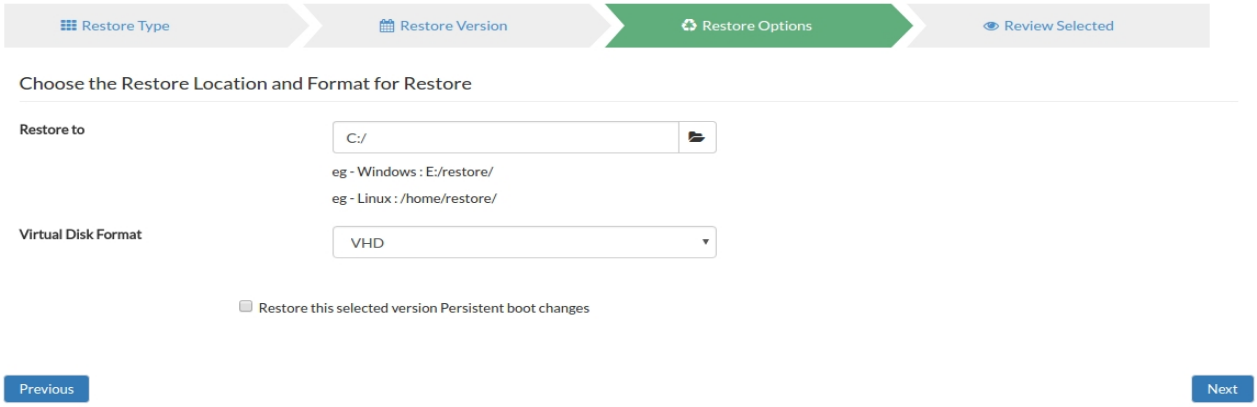
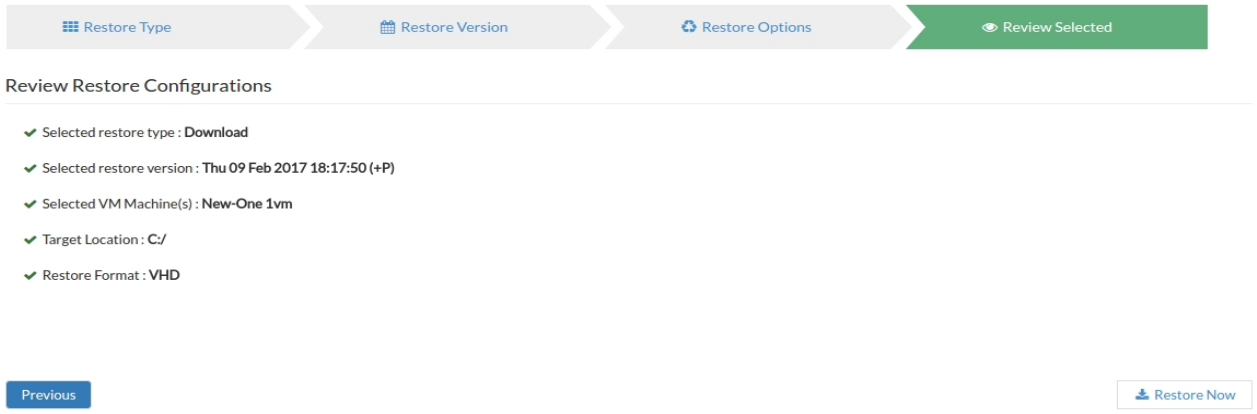
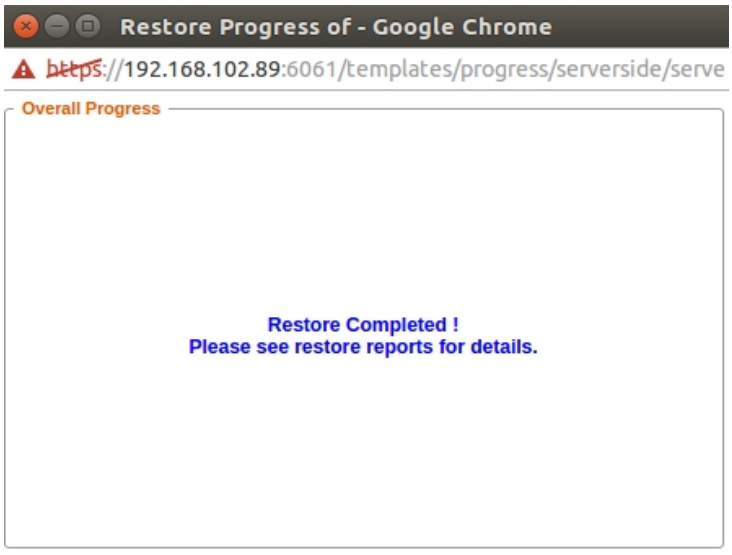
- Restoring location can either be a local drive on backup server or if users have managed to add a network shared drive, the restore can be directed to the network shared location.
- Users can download backup data in multiple file formats such as: VHD, VMDK, VHDX, VMDK-Flat and RAW.



- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with Download.



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- Taking offsite copies in various format allow users to boot backup data across various virtual and physical environments such as Oracle Box, KVM, Hyper-V, VMware vSphere, VMware player etc.,
- Also reconstruction of physical servers is also possible with this offline backup copies.

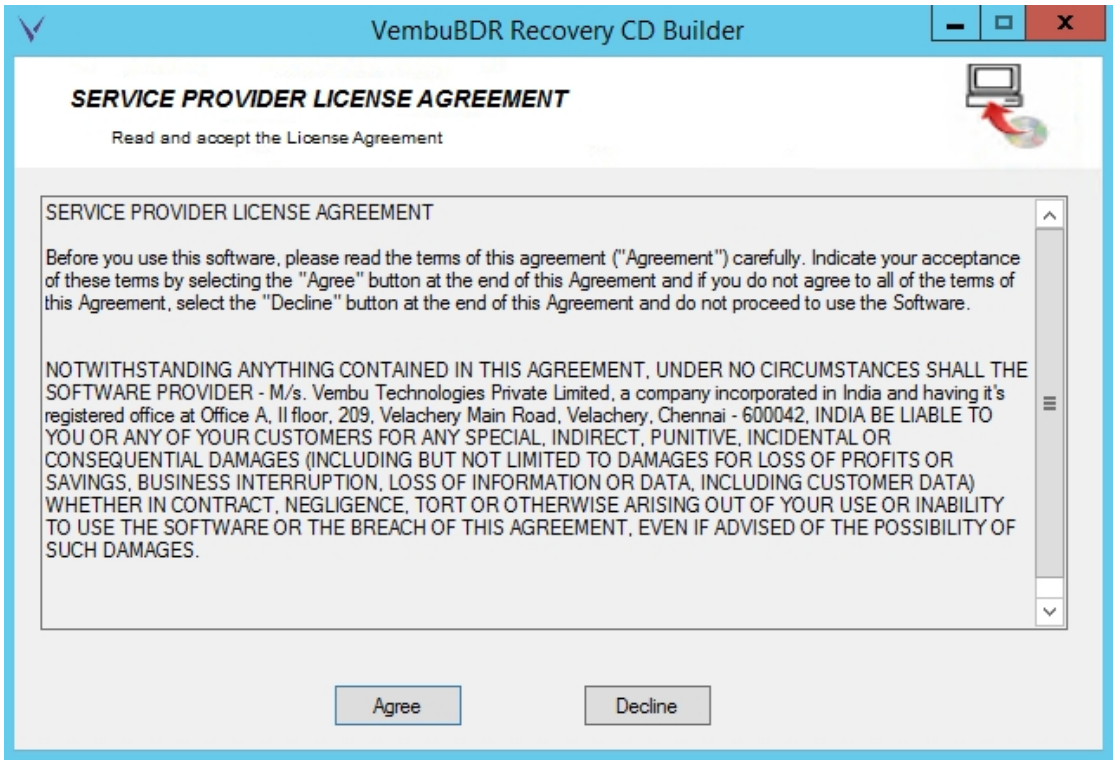
Vembu VMBackup User Guide

Bare-metal Recovery

Follow below steps to perform Physical Recovery for Image backups using Recovery CD:

- To do bare-metal recovery using Vembu Recovery CD first we need to download and install WAIK. Click on below link, to download WAIK: http://www.microsoft.com/enus/download/confirmation.aspx?id=5753

- Once WAIK is installed, download Vembu Recovery CD: Click Here to Download
- You will have Vembu Recovery CD in both 32-bit and 64-bit zip formats, download accordingly based on requirement. Now unzip the downloaded file and run RecoverCDBuilder with administrator privileges. You will get a window opened as shown below.



- Read the service provider license agreement carefully and click agree. You will be proceeded to VembuBDR Recovery CD builder window as shown below.
  Note: When you have RAID and additional drivers to be setup in the machine to be recovered, such drivers can be bundled with Vembu Recovery CD using 'Additional Driver' option.

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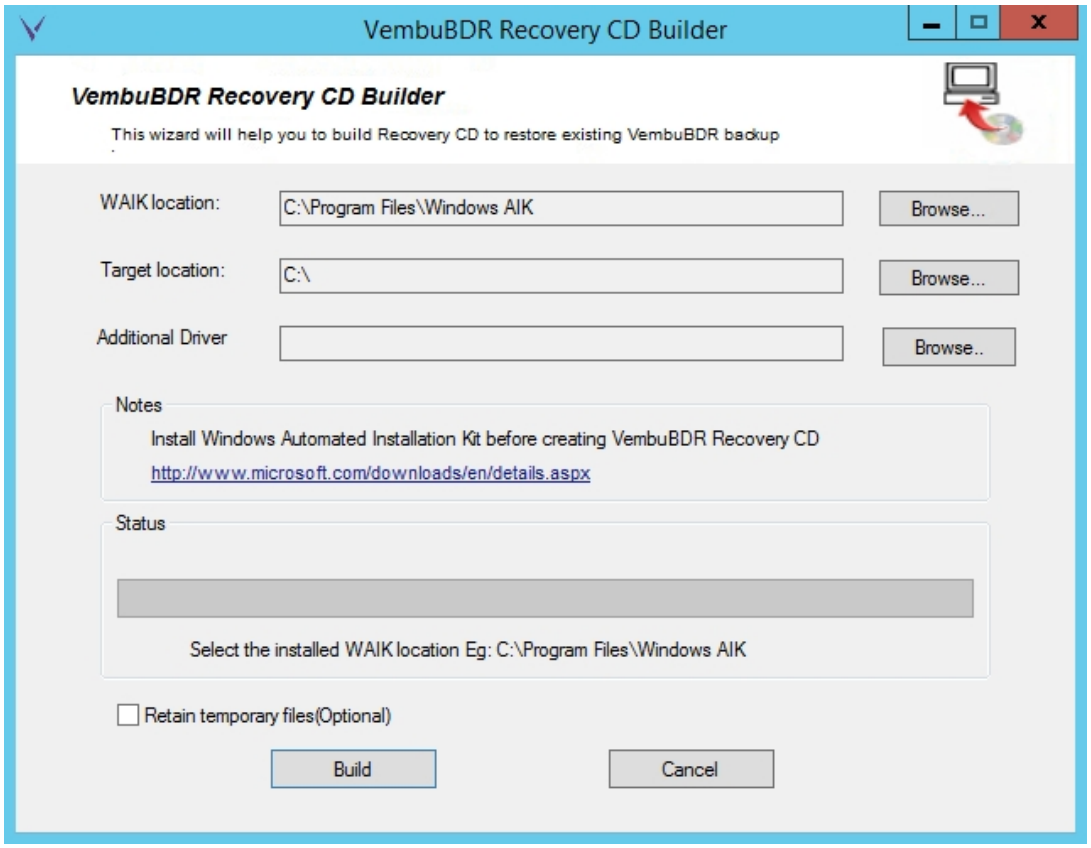

- In this window, WAIK location will be auto-filled, target location is the location where you want to store ISO. Now click Build to start creating ISO file. You can also monitor the progress of ISO creation.

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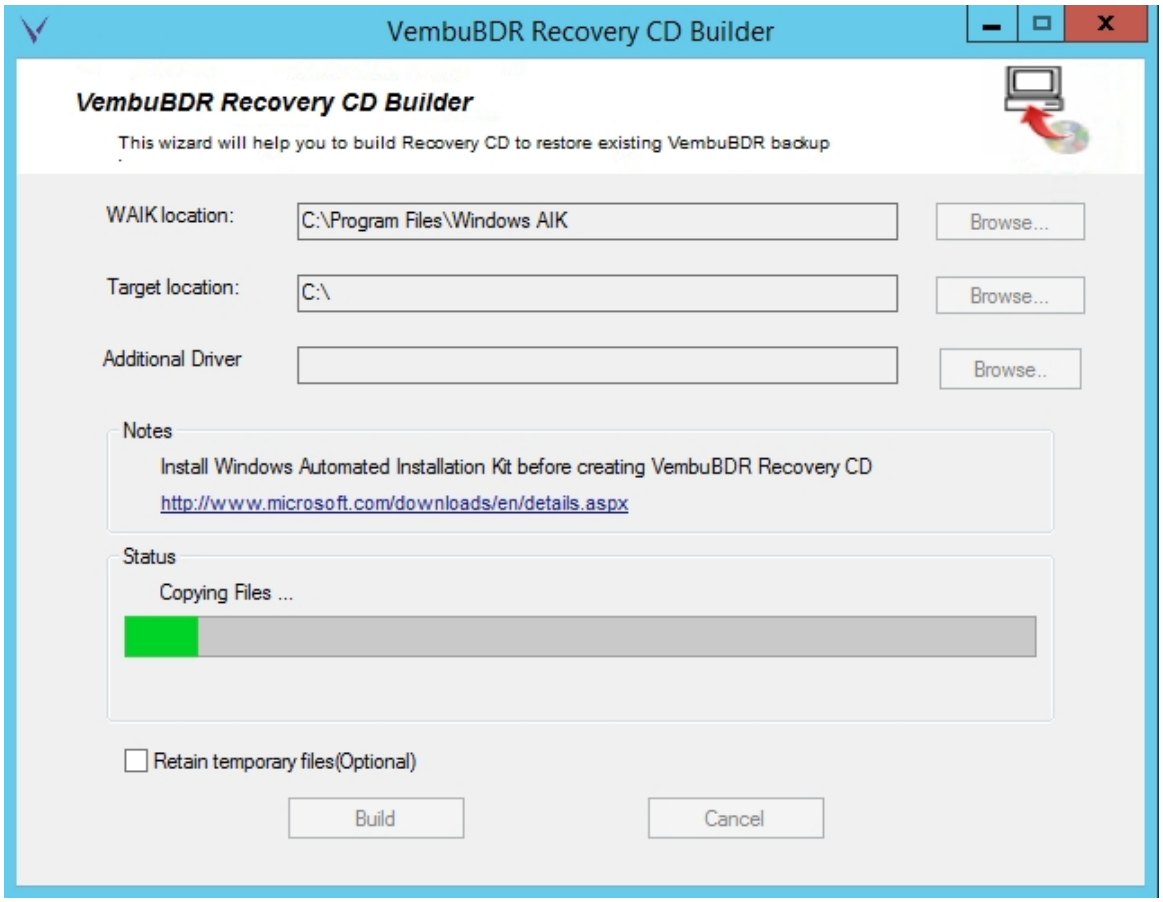
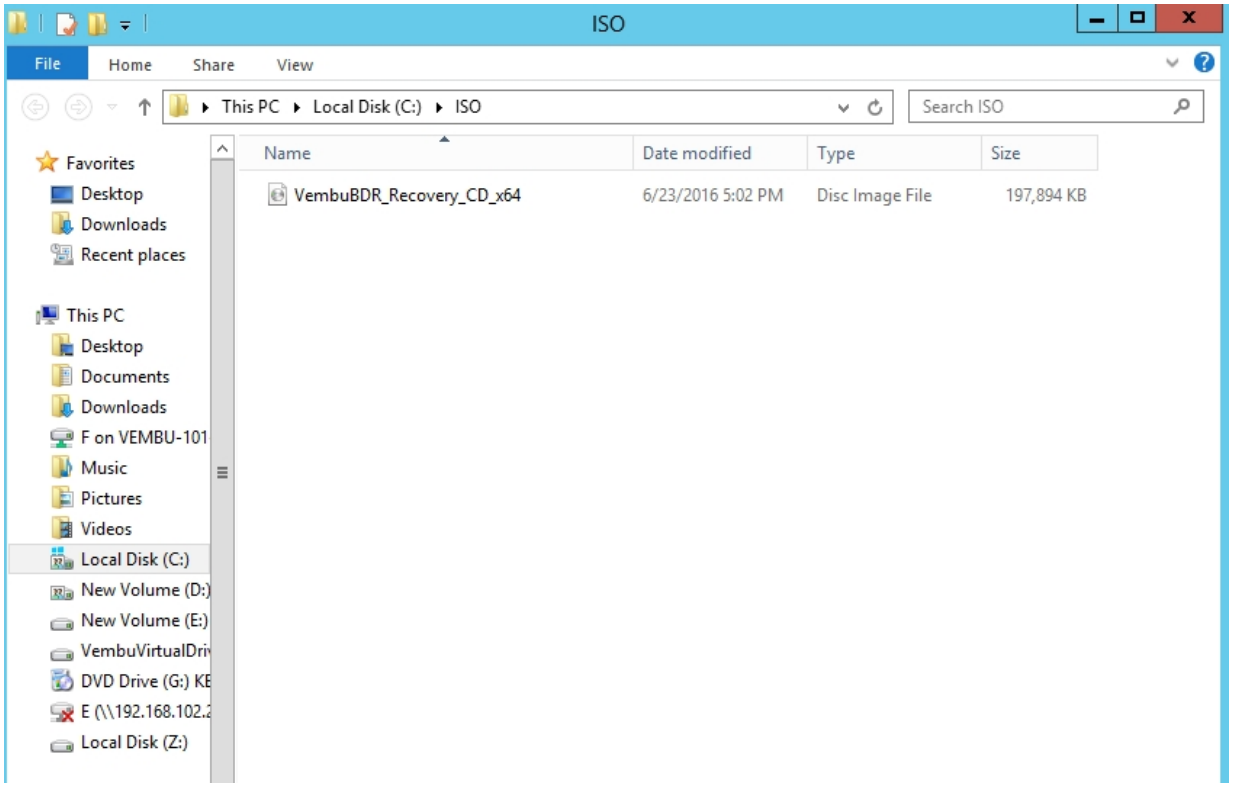


- Once done, the ISO file will be available in the Target location you have entered.



- Insert a blank CD in CD/DVD drive and burn the created ISO file in CD by right-clicking over ISO file and choosing the option 'Burn Disk Image'. Windows Disk Image Burner

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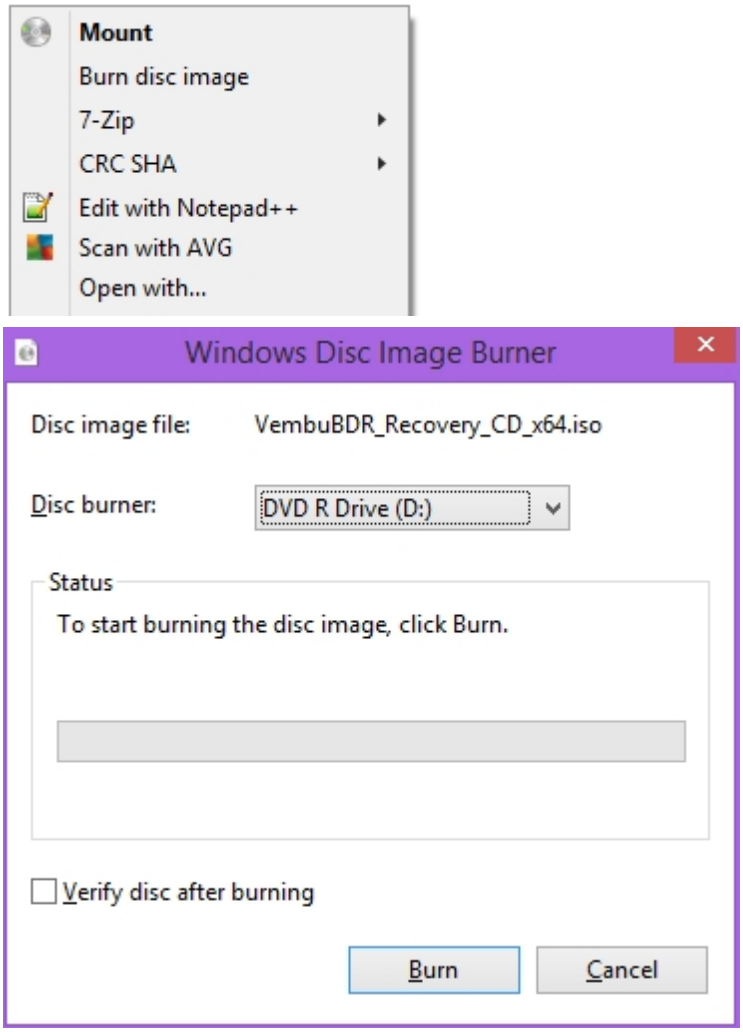
will open, choose the CD/DVD drive and click burn to start burning process.



- You can also monitor the progress of burning process.
- Once the burn process completes, CD will be auto ejected. Reinsert CD and reboot machine to BIOS settings. Change the boot priority and set CD/DVD as primary boot device and click Save and Exit. VembuBDR recovery console will be opened as shown below. Click Next to continue.

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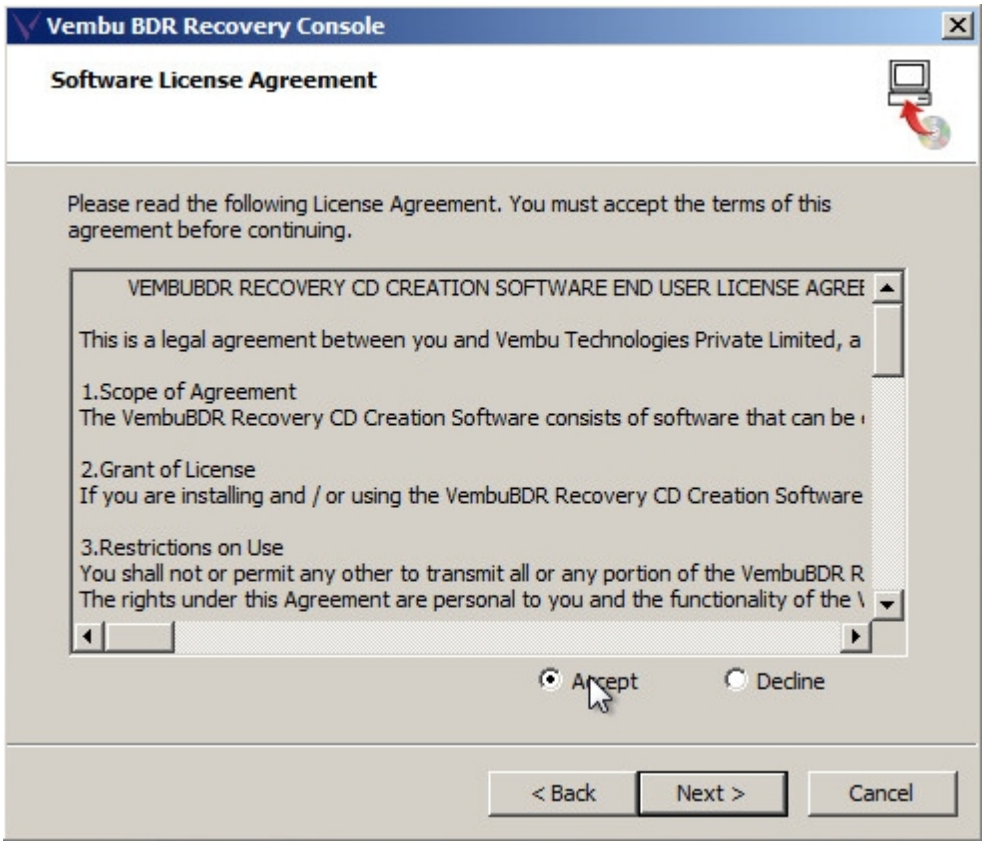
- Read the Software License Agreement carefully, click Accept and proceed with Next.



- You will have option to select a task from the below list:
    - Recover entire disk or partition

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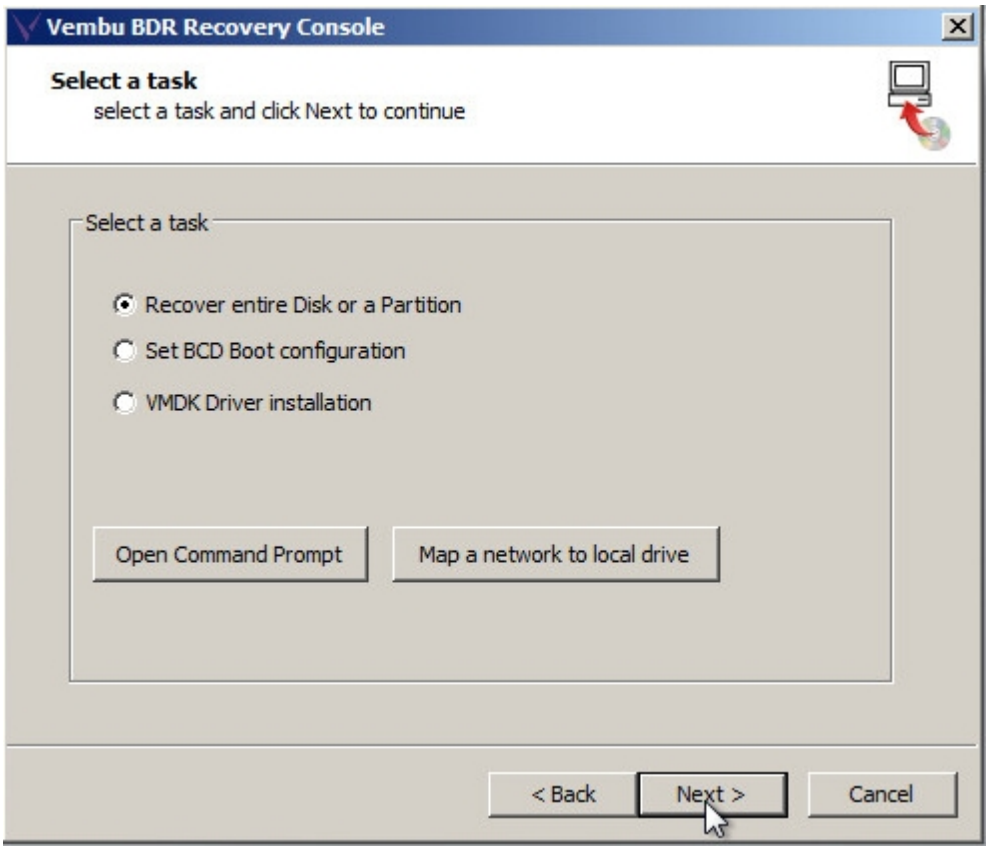
- Set BCD boot configuration
- VMware driver installation

Since we have to do physical recovery, we'll proceed with 'Recover entire disk or partition' option and click Next.



- You will be directed to recovery page, where you will be required to provide details for following options:
  - Browse and select the file which you need to recover.
  - Browse and select the backup configuration file.
  - Select the disk/drive you wish to restore from the following list.

  Once done choosing respective requirements, click Next to proceed.

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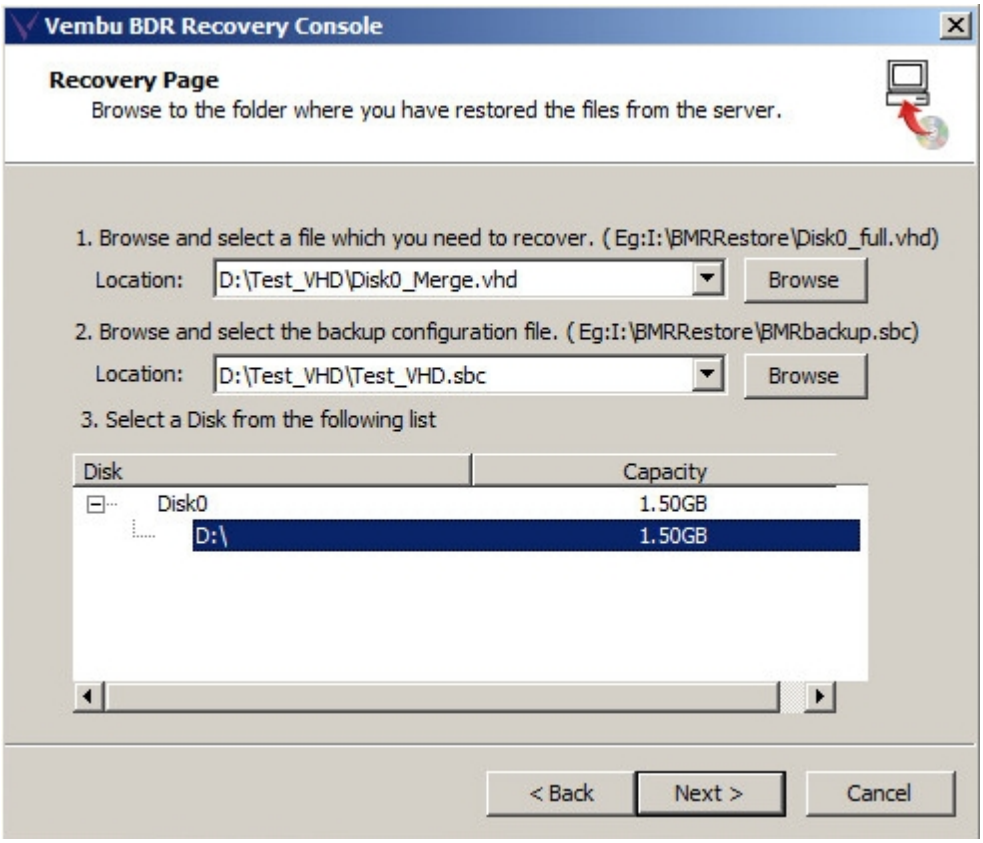
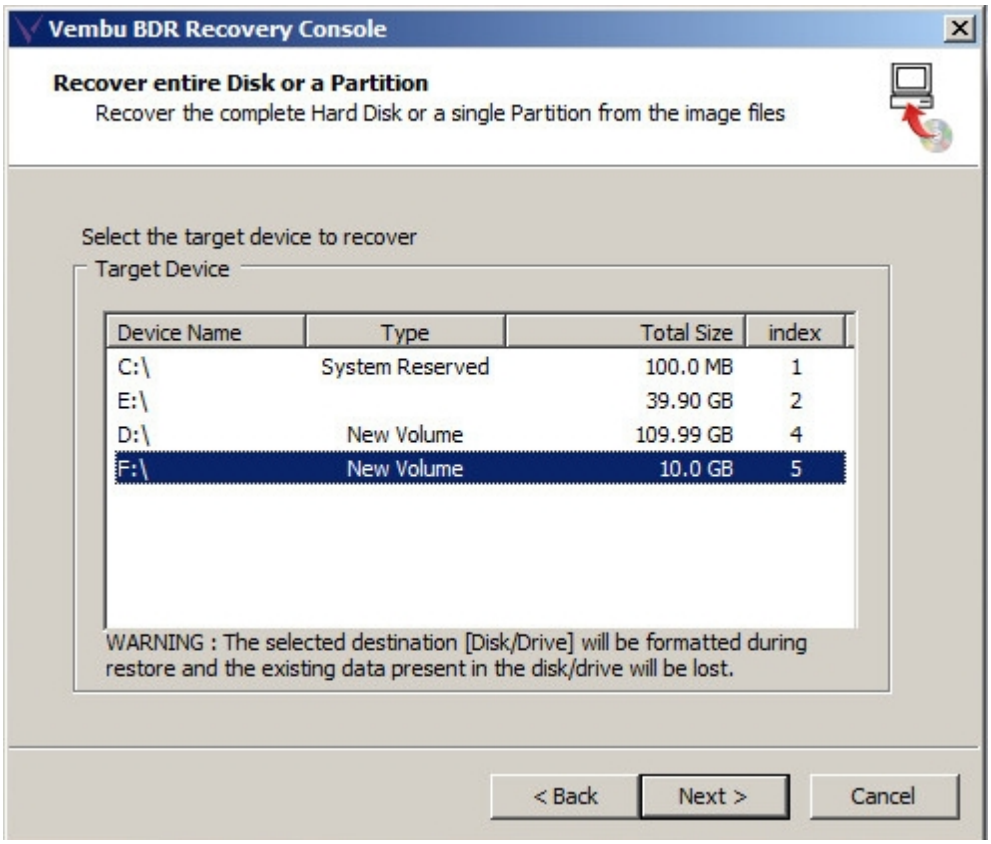


- In next window, you will be required to select target disk/drive to which recovery will be performed. Once done selecting the target, click Next.
  Note: the selected disk/drive will be formatted and only recovered data will be available. So make sure you don't have any important data on target disk/drive.



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- Proceeding will initiate the recovery process and once it's done. You can find your recovered data in target disk/drive selected.

Vembu VMBackup User Guide

Vembu Virtual Drive

Vembu Virtual Drive is an exclusive feature of VembuBDR server, that allows user to instant access backup data. With the help of VembuHIVE file system, Vembu Virtual Drive virtual mount backup data and allow instant access for users.

Vembu Virtual Drive will make following file format types available for any image based backups mounted in it:

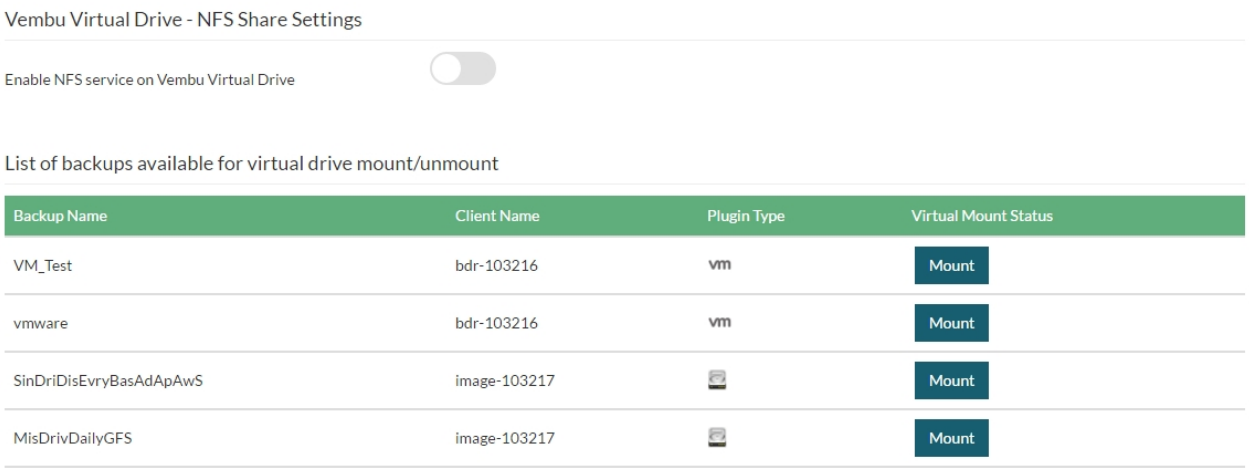
- VHD
- VMDK
- VHDX
- VMDK-Flat
- RAW image files

These files can be used based on user requirements. For example, a VHD file can be mounted in Hyper-V or a VMDK file can be mounted in a ESXi server or a RAW image file can be mounted in KVM to create a virtual machine. VHD file can also be mounted in disk management to access file level backup data.

Manage Vembu Virtual Drive (NFS Share)

- Go to Management → Server Management → Manage Virtual Drive

This page lists all image backups stored in backup server and user can virtual mount any backup data he wish to instant access.



- To virtual mount a backup data, user have to click 'Mount' option alongside specific backup job to be accessed and click Yes in confirmation dialog.

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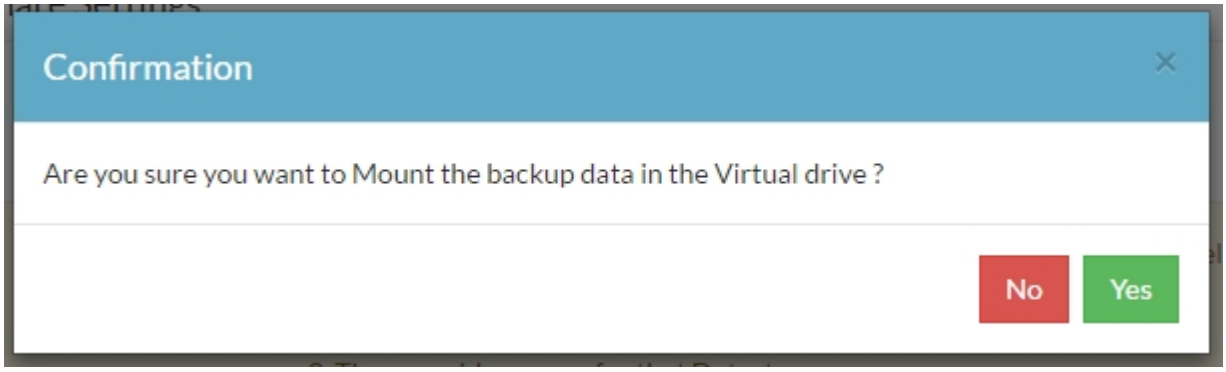
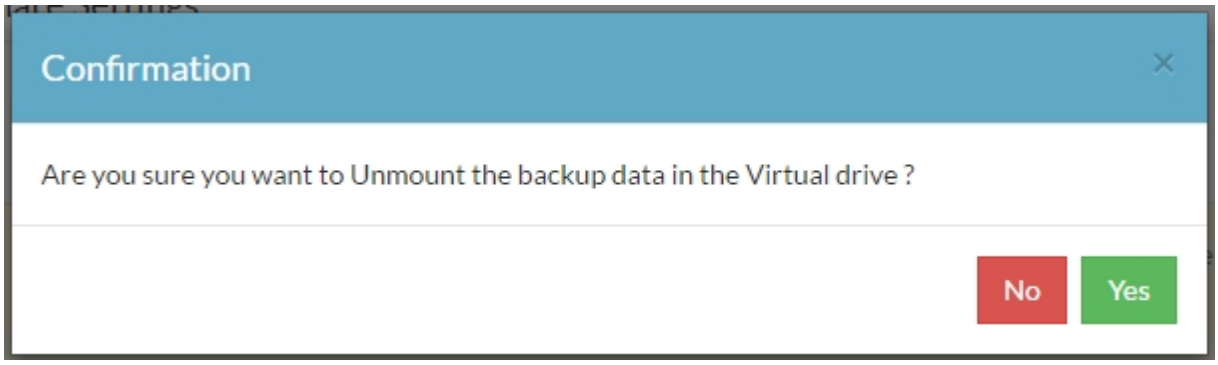


- User can now have access to backup data by viewing VembuVirtualDrive displayed in My Computer.
- Once done with requirement, user can unmount data by clicking on Unmount option and confirming with a Yes in confirmation dialog.



Enable NFS Service on Vembu Virtual Drive

- Vembu Virtual Drive can be shared within a network area by enabling NFS service on Vembu Virtual Drive.
- NFS service for Vembu Virtual Drive is available on both Linux and Windows servers.

  Note: For enabling NFS feature in Linux servers, it is necessary to have NFS kernel server installed in Backup Server machine. You can install NFS Service by using "apt-get install nfs-kernel-server" command. You need to run VembuBDR with root/ administrator privileges in order to save NFS settings.

Enable NFS Service on Linux Screenshot:

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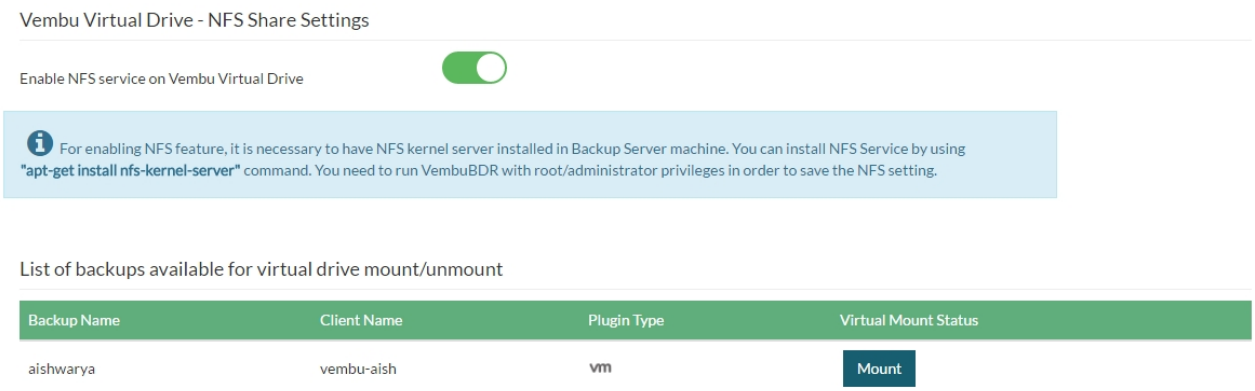
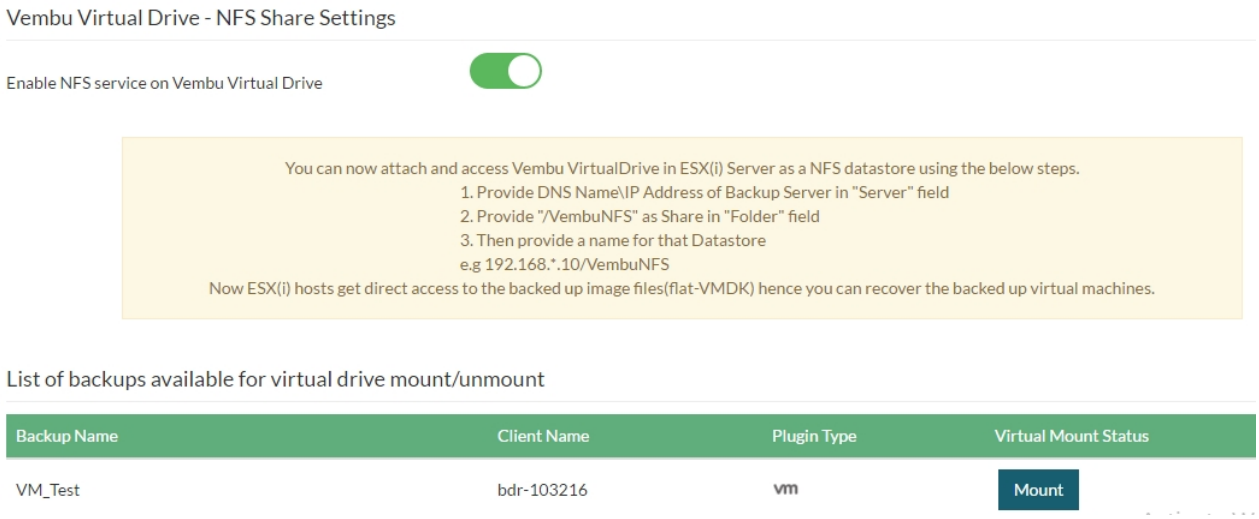


Enable NFS Service on Windows Screenshot:



- NFS share service allows user to add VembuVirtualDrive as a NFS datastore in ESXi servers.

Note: Before enabling NFS service on Vembu Virtual Drive, please make sure Microsoft or any other third party NFS services is disabled to ensure uninterrupted service.

Vembu VMBackup User Guide

Offsite Copy Management

Users can have an offsite copy of backup server data which can be used as a safe precaution in securing user data. These offsite copies will help in handy, in case of backup server disaster.

- Go to 'Management → Offsite Copy Management'
- By default, Offsite copy settings is set disabled.
  Note: Before enabling Offsite copy, user need to register Vembu BDR server to their Vembu Portal account.

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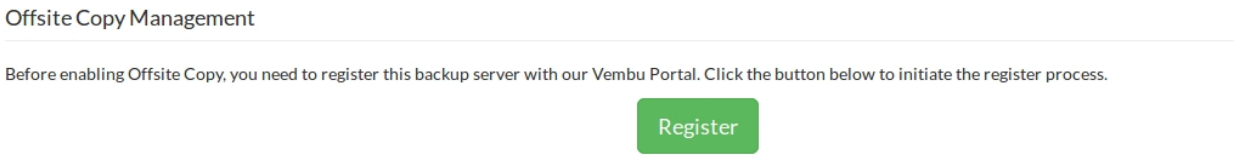
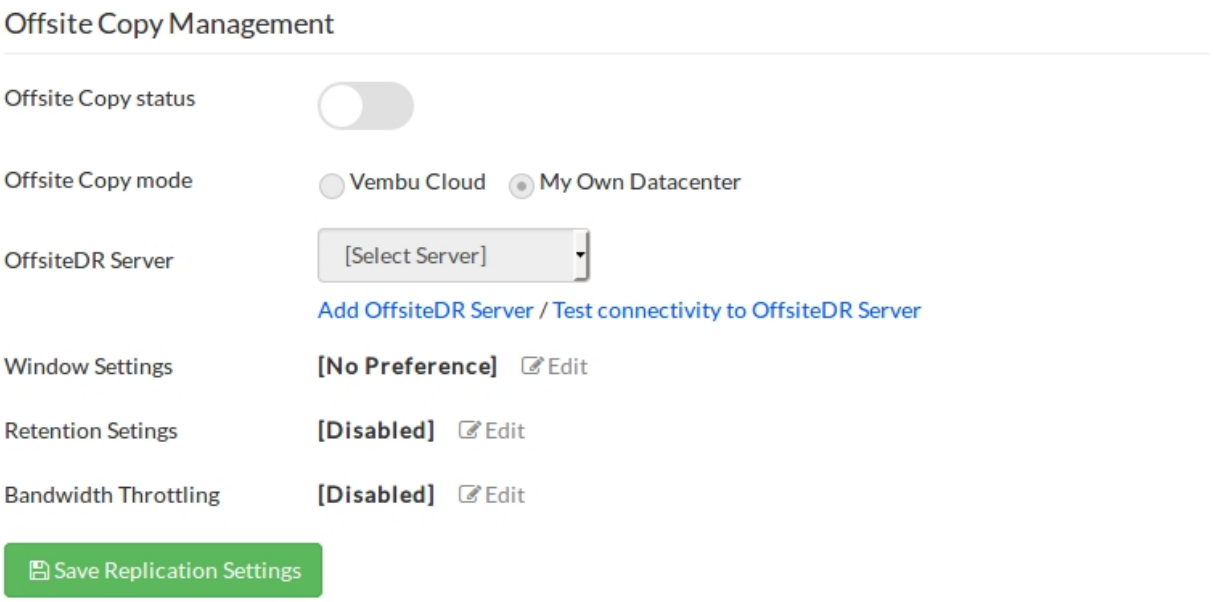


- Once registered, you will get the below window with Offsite copy status disabled:



- Offsite Copy management offers two option to choose from:
  - Vembu Cloud
  - My own data center

Vembu VMBackup User Guide

OffsiteDR

- Choosing this option, will let users to replicate backup data to their personal data center and user can enable schedule window here as well or replicate with no preference.
- Enabling schedule window let users to choose the start and end time, during when replication will be performed.

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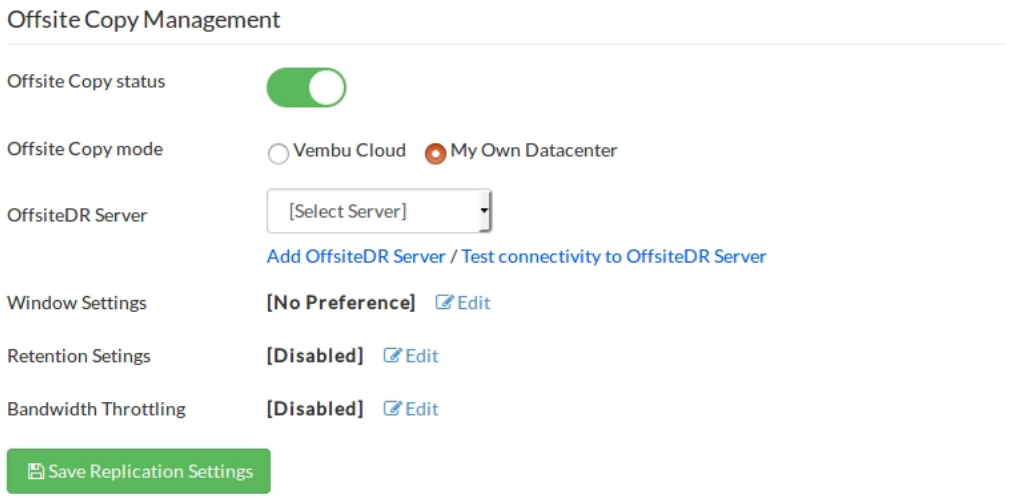
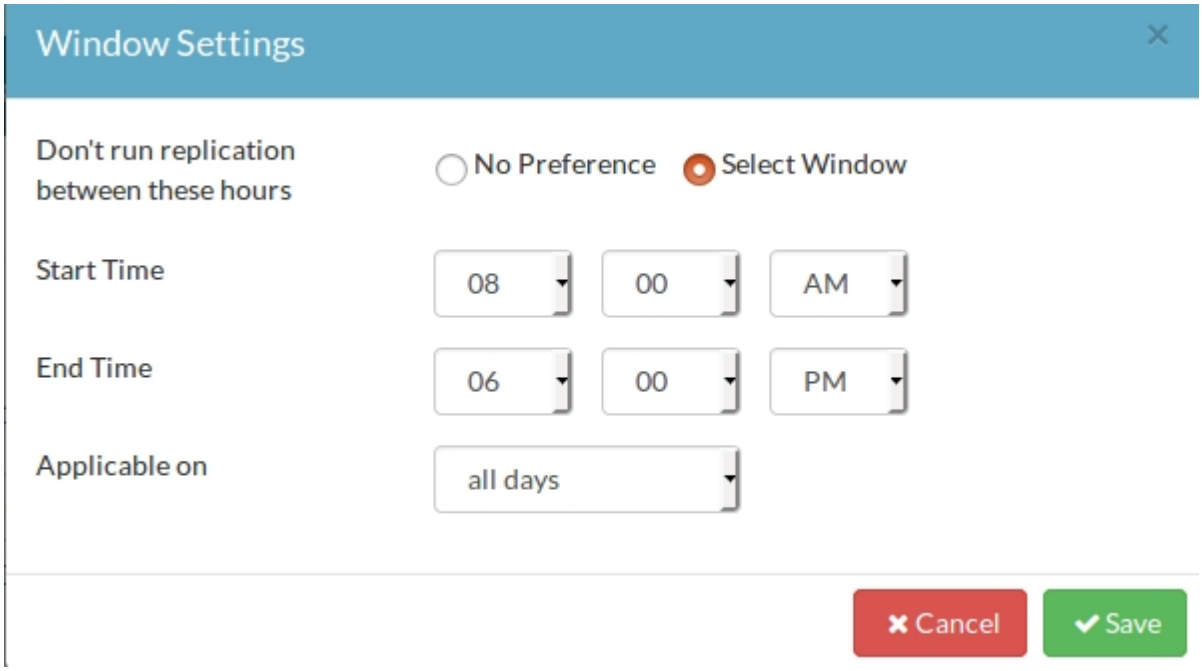


- Additionally, user can also define the days to be backed up- All days or only on weekdays.



- Once done choosing Offsite copy type, save and proceed to configure retention.
  Note: Offsite copy type once saved cannot be changed. So make sure, you choose the right option.

Retention:

- Users can configure retention for offsite copies of backup data.
- By default, retention will be enabled which can also be disabled if not in need.
- User can also define count for daily restore point and additional full backups to be retained.

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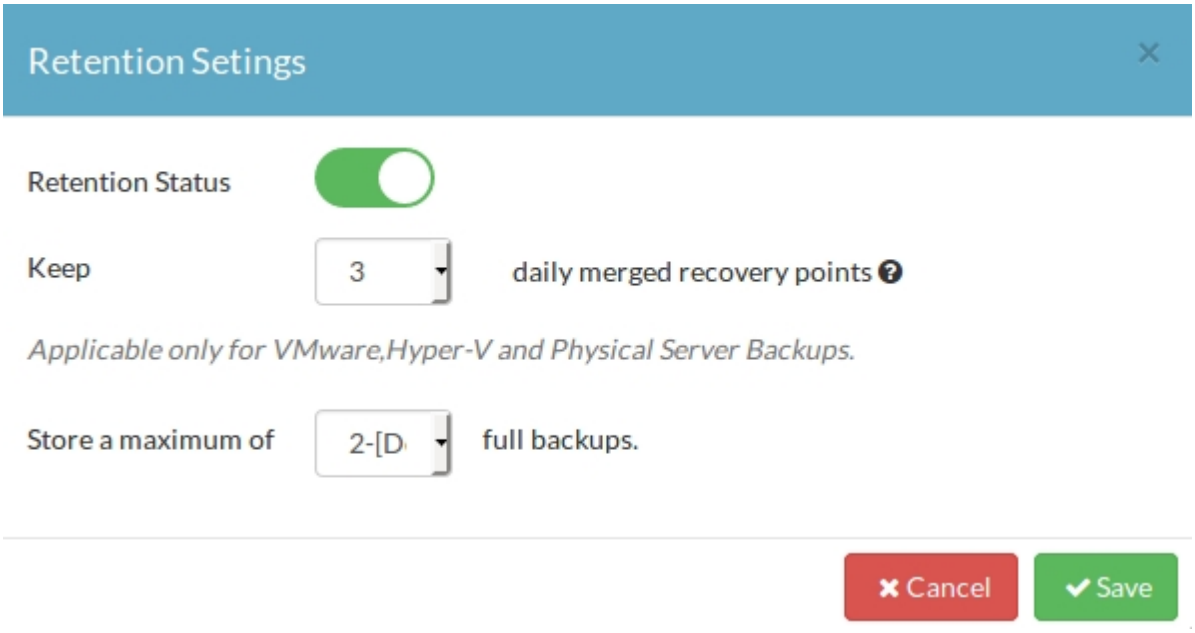
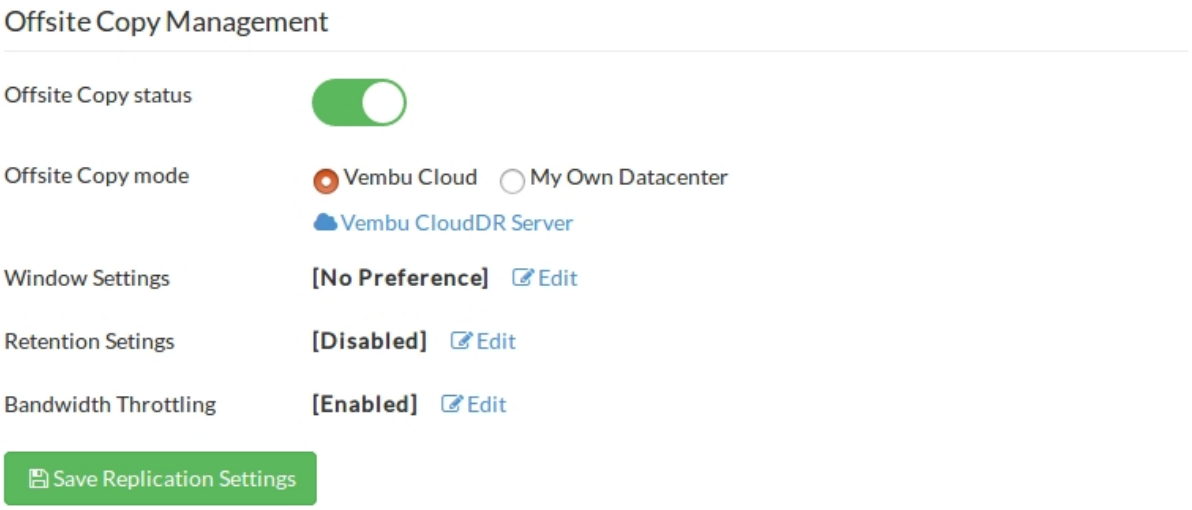


- Once done choosing retention, hit save.

Vembu VMBackup User Guide

CloudDR

- Setting up an Offsite copy can be done either with schedule window enabled or with no preference.
- Enabling schedule window let users to choose the start and end time, during when replication will be performed.



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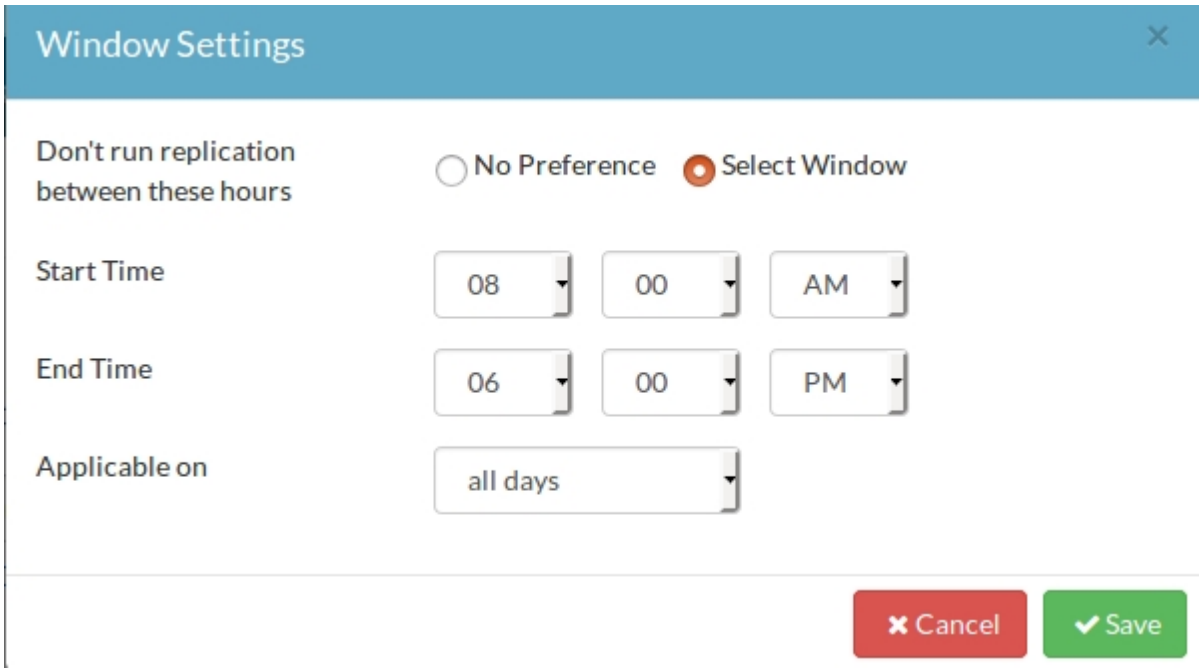
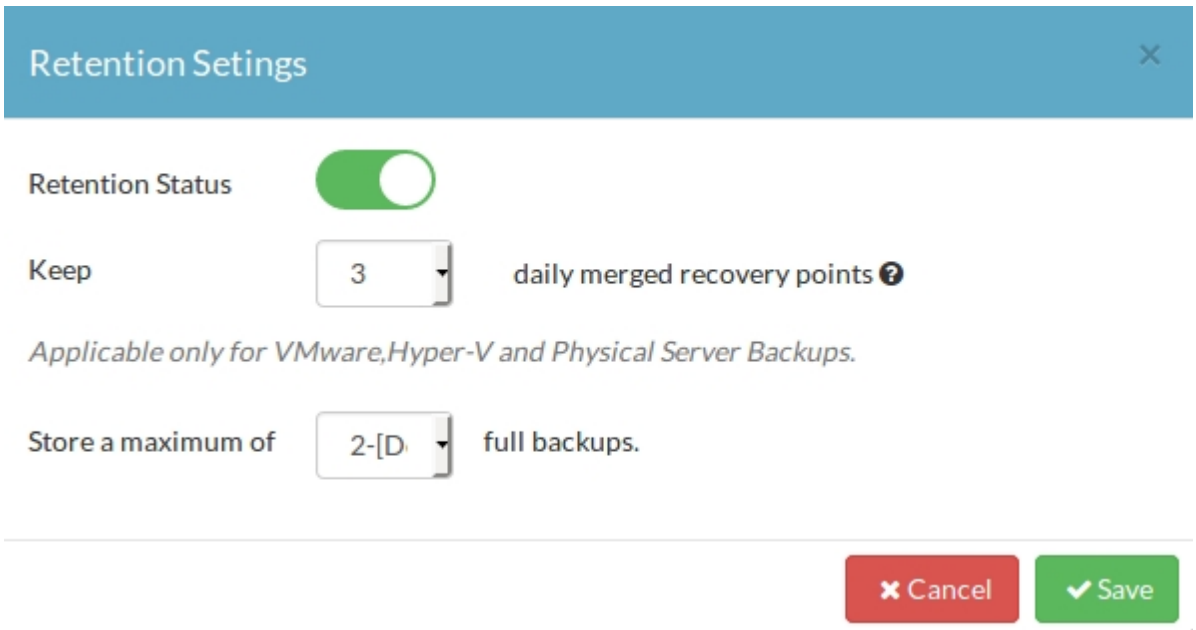


- Additionally, user can also define the days to be backed up- All days or only on weekdays.

Retention:

- Users can configure retention for offsite copies of backup data.
- By default, retention will be enabled which can also be disabled if not in need.
- User can also define count for daily restore point and additional full backups to be retained.



- Once done choosing retention, hit save.

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Bandwidth Throttling

Bandwidth throttling option enables user to limit network bandwidth used by backup jobs. This helps in a balanced network usage in a work environment.

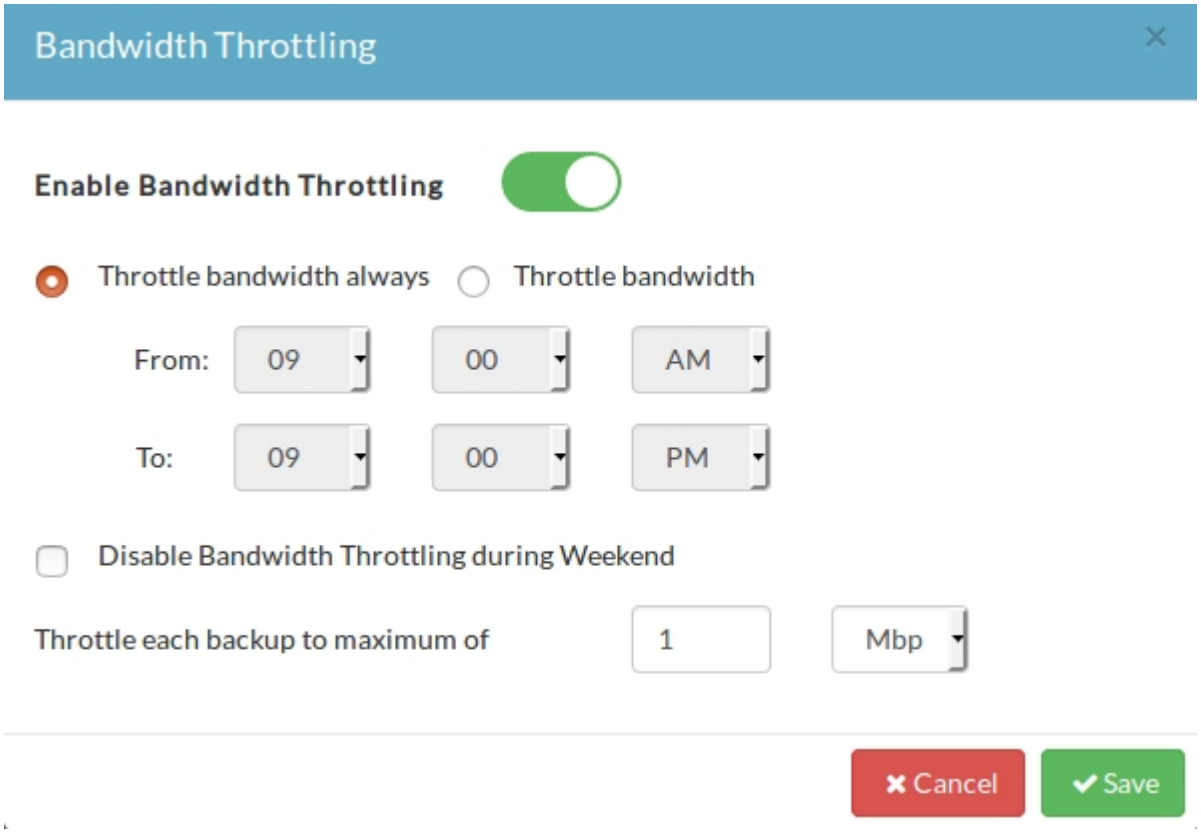
- Go to 'Settings → Bandwidth Throttling'

Options to Bandwidth Throttle:

- When a user enables bandwidth throttling on server end, he will have two options to choose from:
  - Throttle bandwidth always
  - Throttle bandwidth 'From' - 'To'

Throttle bandwidth always- This option will keep the applied bandwidth limit always active.
Throttle bandwidth 'From' - 'To'- This option allow user to specify a time frame during when the applied throttling will be active.

- Users will also be asked to specify the maximum throttle limit on client machines that ranges in: Kbps, Mbps, Gbps.
- In addition, a checkbox to disable throttling during weekends is provided; Which can be enabled when required.



- Once done with selecting required configuration, click save.

Vembu VMBackup User Guide

Group Management

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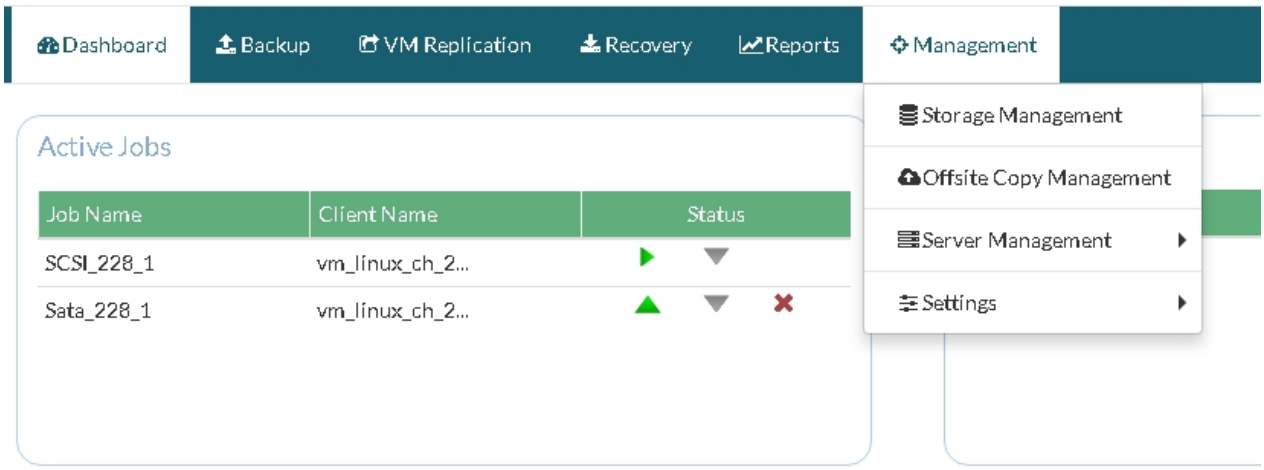
This feature is designed specifically for service providers who can group their customers under individual groups for easy management. They can also provide web UI access for customers to manage their backup jobs.

- Group management option will be listed under 'Management' tab which by default will be set disabled.



Note: Note: By default, group management feature will be disabled in both Vembu BDR and Vembu OffsiteDR. To enable this feature service providers are requested to register Vembu BDR/OffsiteDR server to Vembu Portal account.

Steps to Enable Group Management:

- Service providers should register Vembu BDR/OffsiteDR server to Vembu Portal account.
- Once done registering, login to portal.vembu.com and click Server Info tab.
- You will see the list of servers managed under your portal account with the option to enable group management(SP feature) if disabled.

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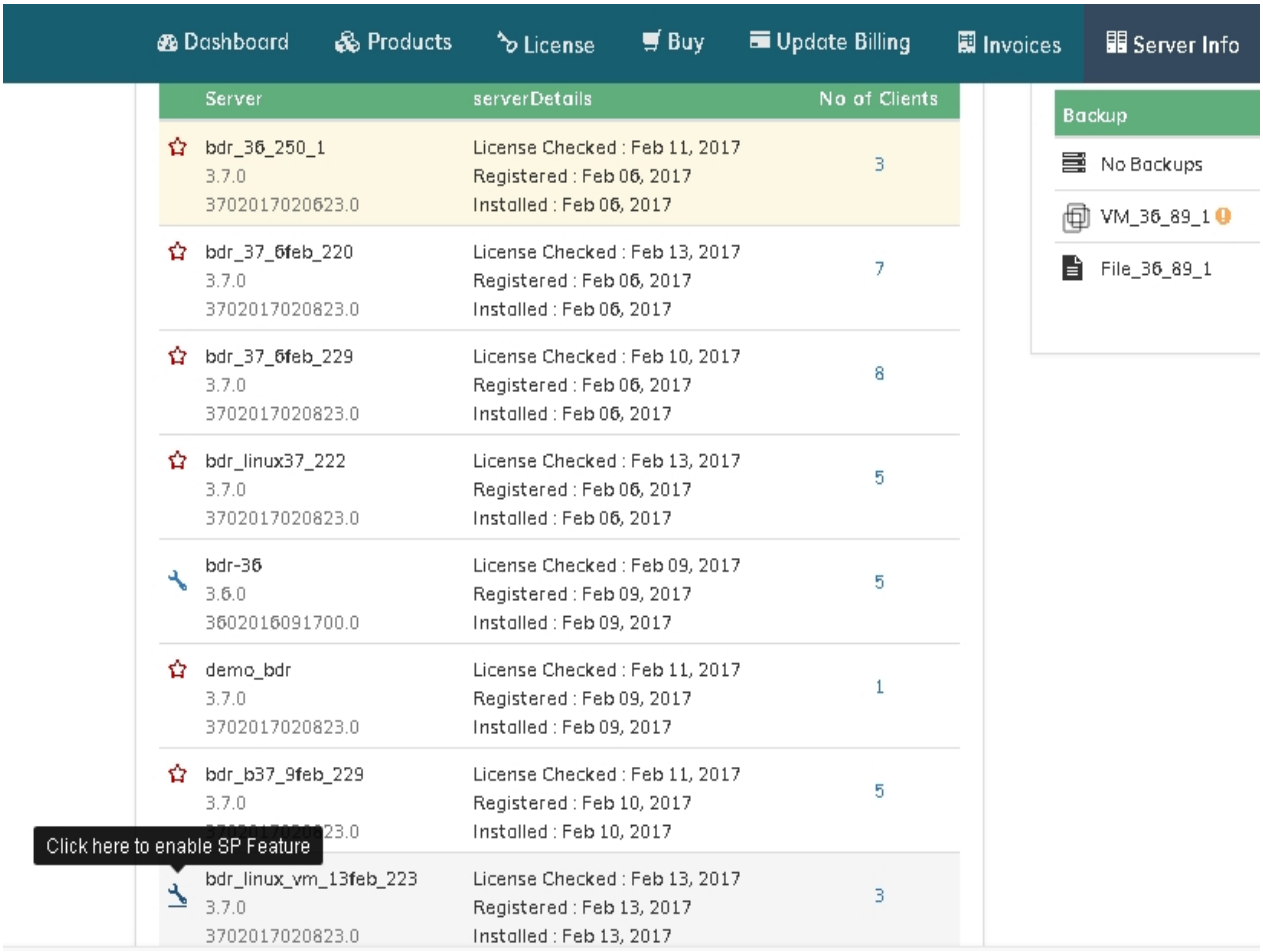
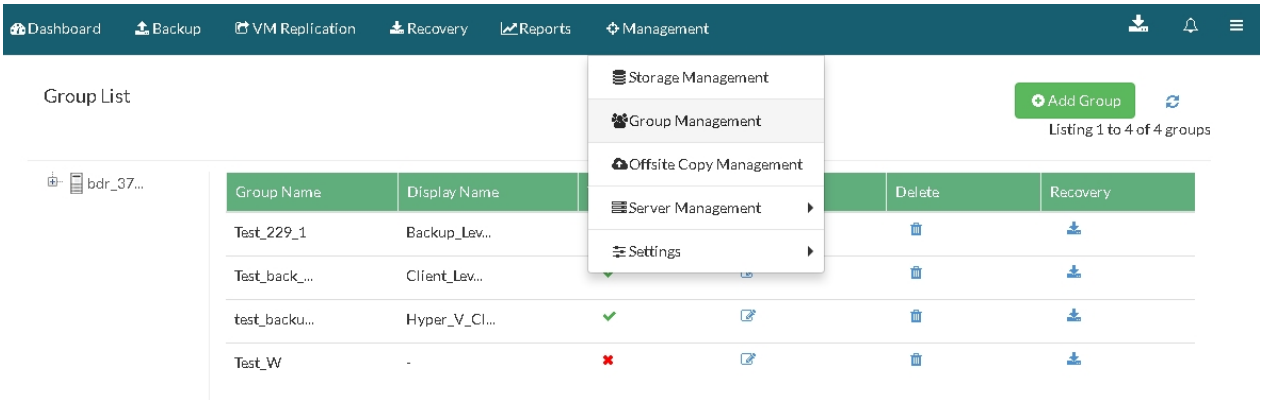


- Click the wrench icon to enable SP feature.
- Once enabled run license check from Vembu BDR/OffsiteDR server to fetch SP feature status.
- Now logout and login to server web console. You will see 'Group Management' option listed under 'Management' tab.



Vembu VMBackup User Guide

Create New Group

- To create a new group click 'Group Management' option under Management Tab.
- You will see a page as shown below, click on Add Group button to proceed with group

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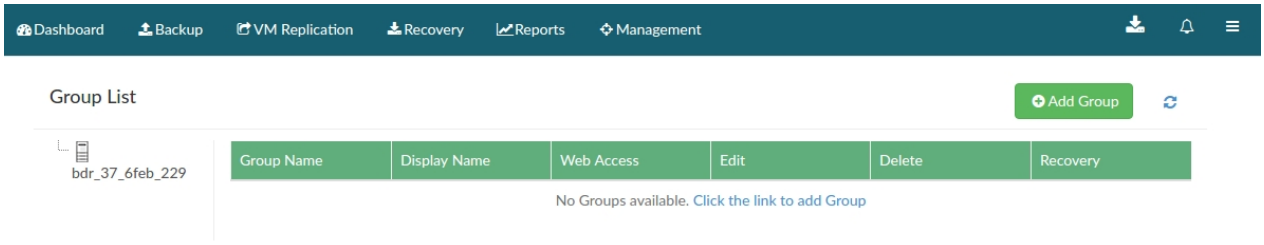
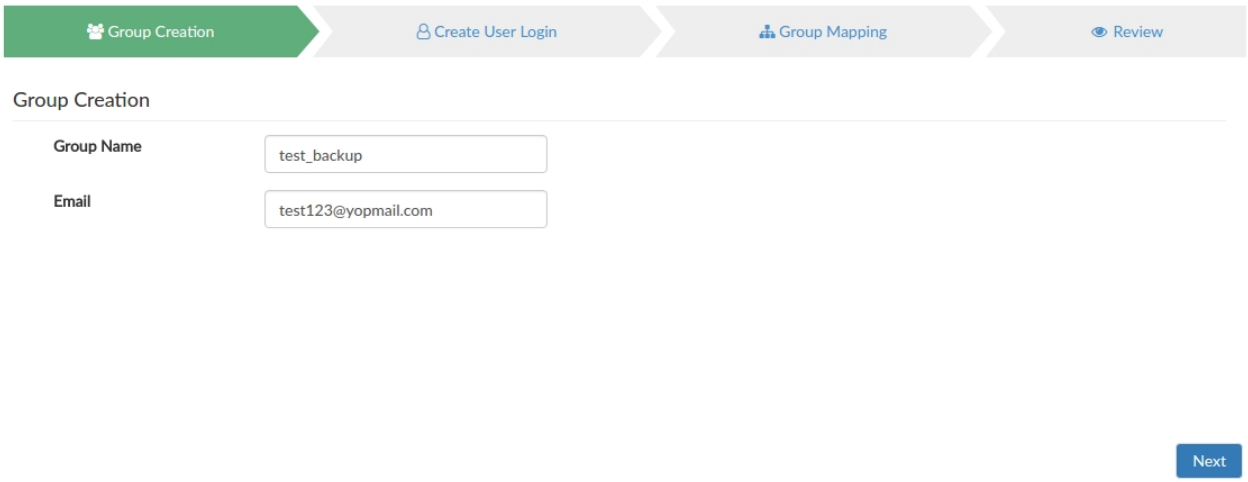
creation.



Group Creation:

- Enter a unique group name you can identify along with a associative Email ID and proceed with Next.



Create User Login:

- Next page will let you create web access for the group created which can be shared with customers to be added under that particular group.
- The option let you choose a display name along with login password and allow you to set the level of access privilege to be provided. User name will be auto generated.
- Once done configuring, proceed with Next.

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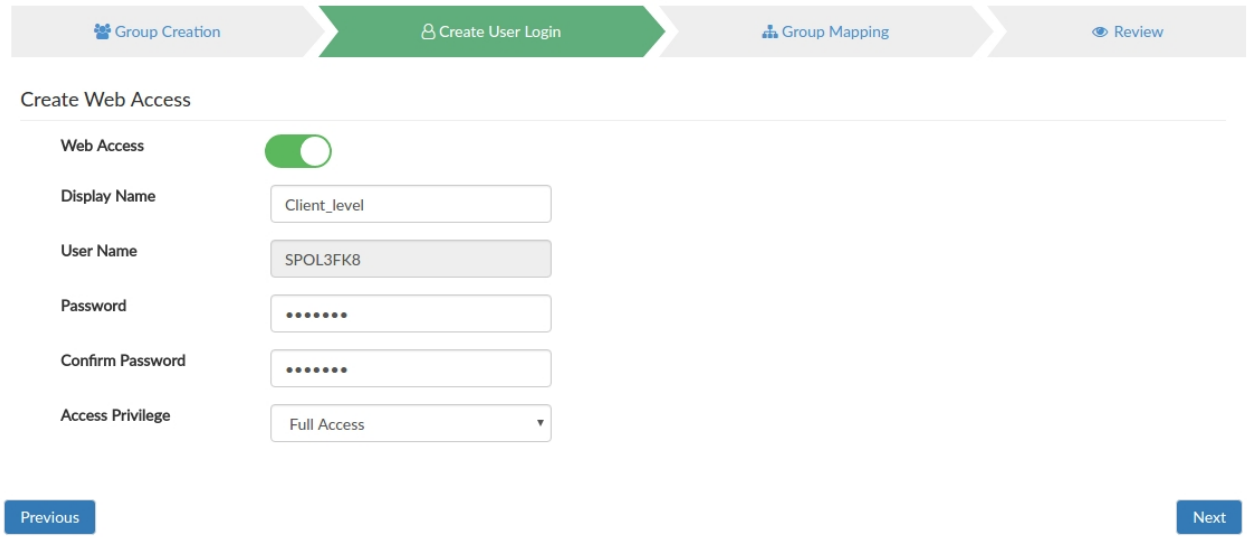
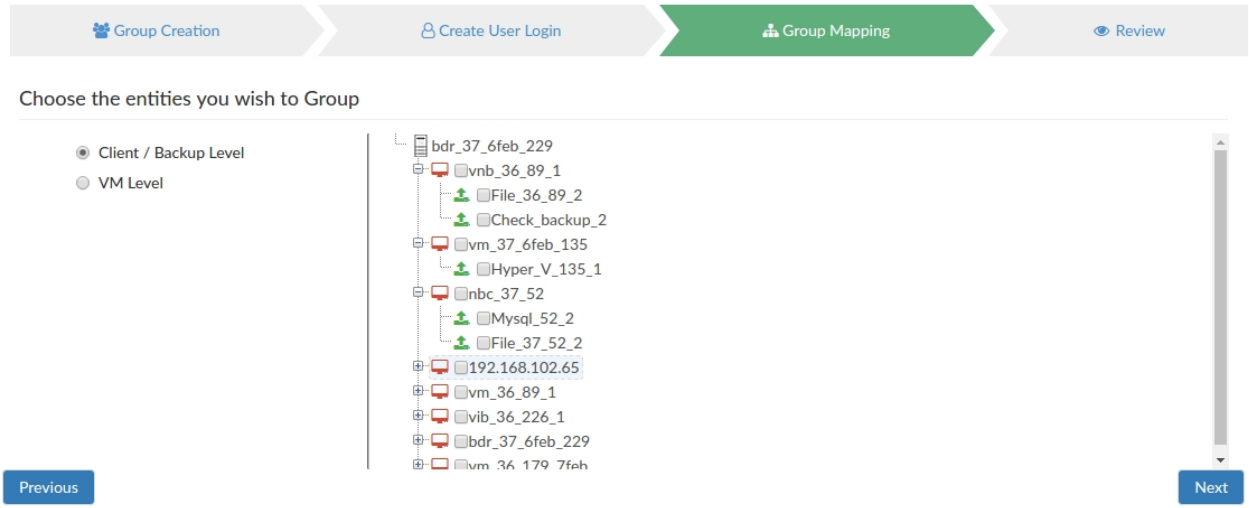


Group Mapping:

- Group mapping option allow service providers to add clients, backups and VMs to the group created. They can either add client/backup level or VM level grouping.

- In client/backup level grouping, the tree structure will list all clients added under the particular server listing clients as parent nodes and the backups under each client as sub nodes under each client. You can add any number of clients and backups under a particular group to be created.



- In VM level grouping, the parent node will be the ESXi host or Hyper-V server added under the particular BDR server account. any number of VMs from different hosts can be clubbed under a single group.

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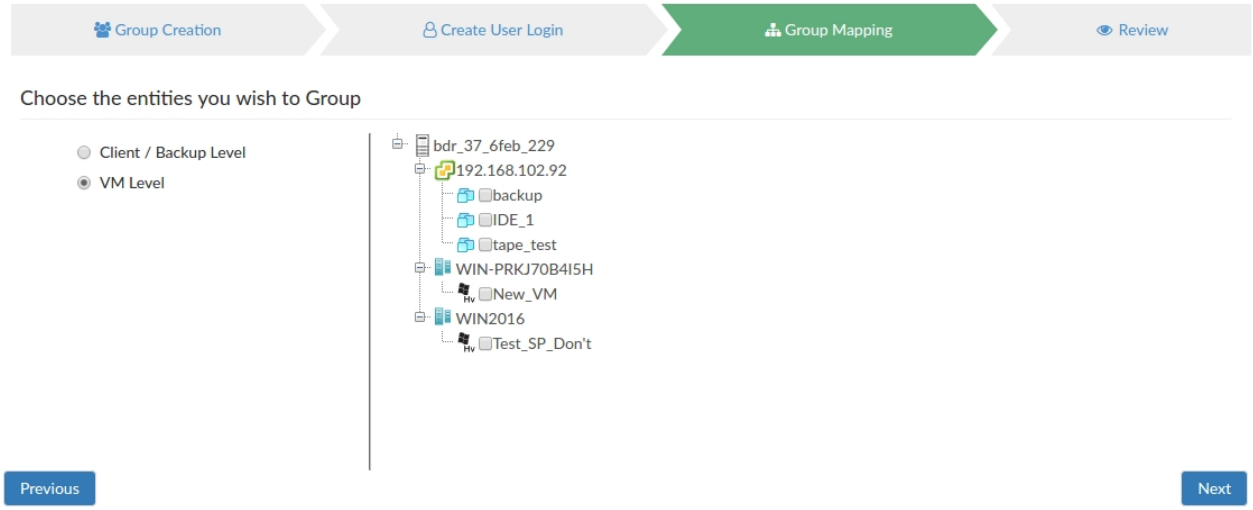


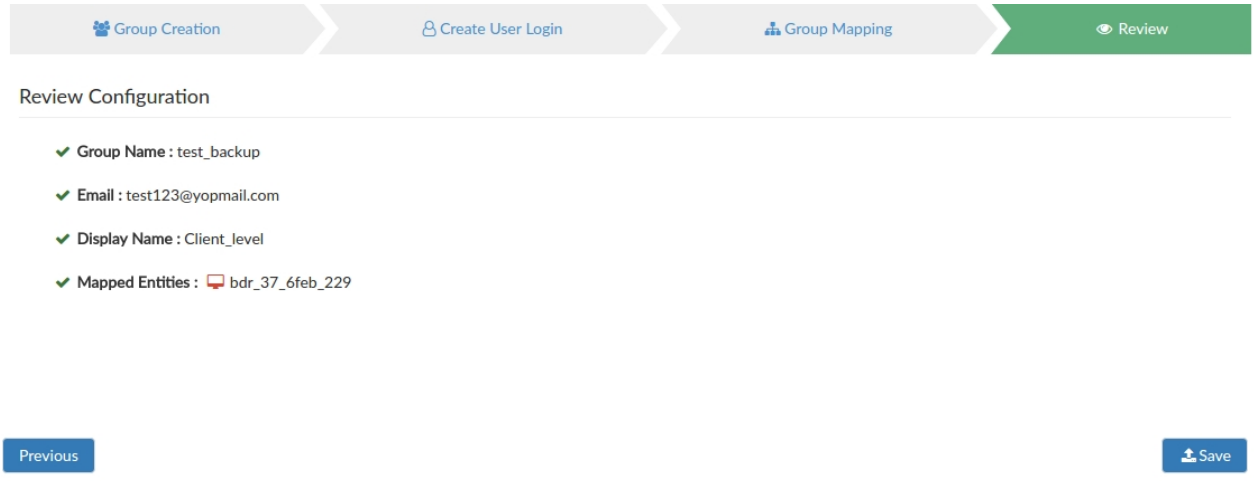
- Once done adding entities proceed with Next.

Note:

- Users can also proceed with empty group creation where entities can be added later using edit option.
- In OffsiteDR, server level grouping is available where multiple servers can be clubbed under a single group.

Review:

- Review the group configurations provided and click save if no more modifications required.



- Once added the group will be listed as shown below, along with the list of already created groups.

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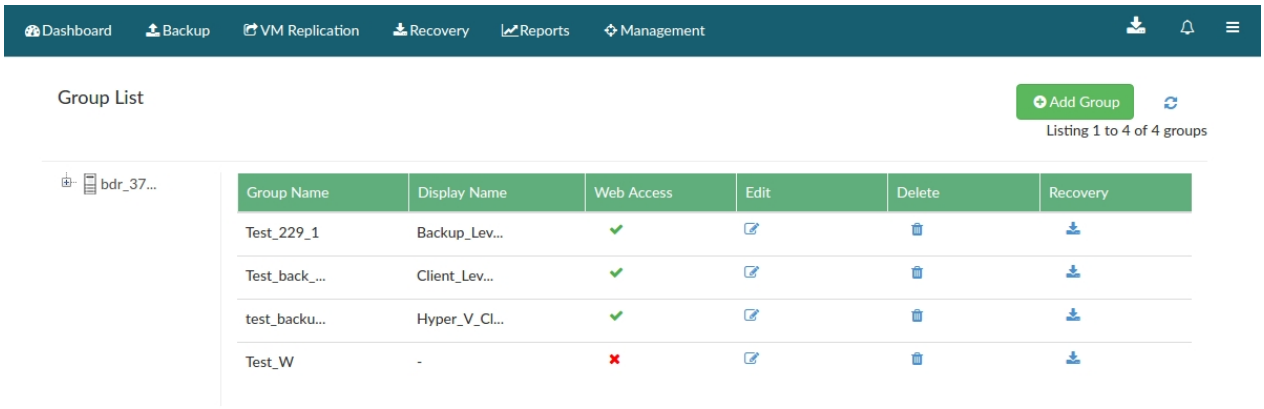


Vembu VMBackup User Guide

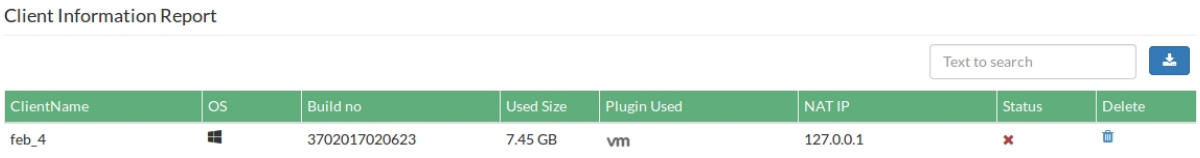
Server Management

- Client Management
- User Management
- Time Zone Settings
- Software Update Process

Vembu VMBackup User Guide

Client Management

- This page shows the list of clients that are registered with the backup server along with their machine details such as: OS, Build number of Vembu VMBackup client installed, Used size, Plugin used(Based on backups configured) and NAT IP.
- Users can also deactivate/activate clients if required and can also delete the clients if no longer required.



- Users can also download a offsite copy of client management report using 'Download Report' option.

Vembu VMBackup User Guide

User Management

This feature allow users to create and manage multiple user profiles for different roles to access web-console.

- Go to 'Management → User Management'

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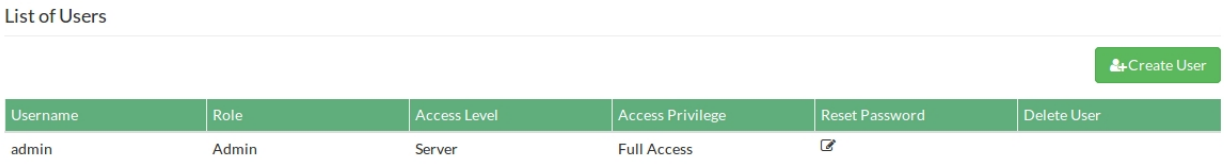
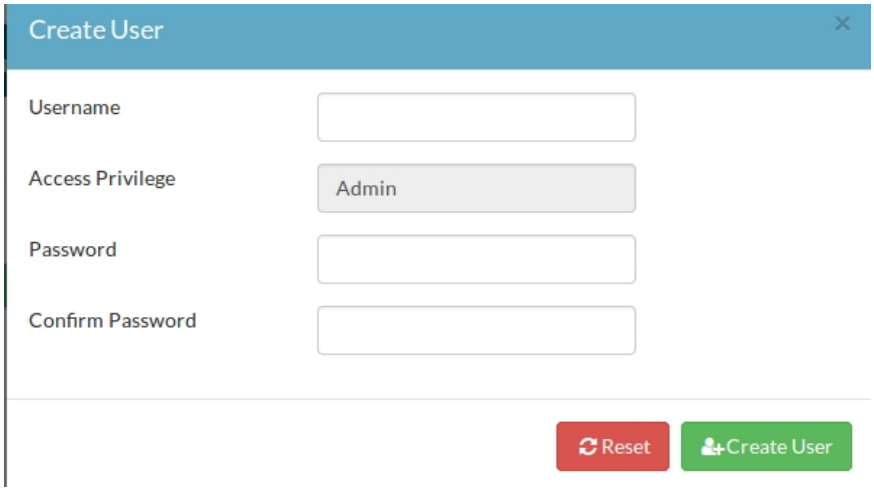
List of Users:

- This page lists all users created with the following attributes detailed:
  User name, Role, Accessed By, Access Privilege, Change Password and Delete User



User Creation:

- Click 'Create User'.



- A pop-up box will be displayed with following options:
  - **User name-** Provide user name to be created.
  - **Access privilege-** By default, this is selected as Admin.
  - **Password-** Password for user login
  - **Confirm Password-** Confirm password provided

- Once done providing details, click Create User.

  Note: Users can also delete a created user, but will be required to provide the appropriate user password assigned.

Vembu VMBackup User Guide

Time Zone Settings

This option lets user choose the time zone at which client backup reports are to be maintained.

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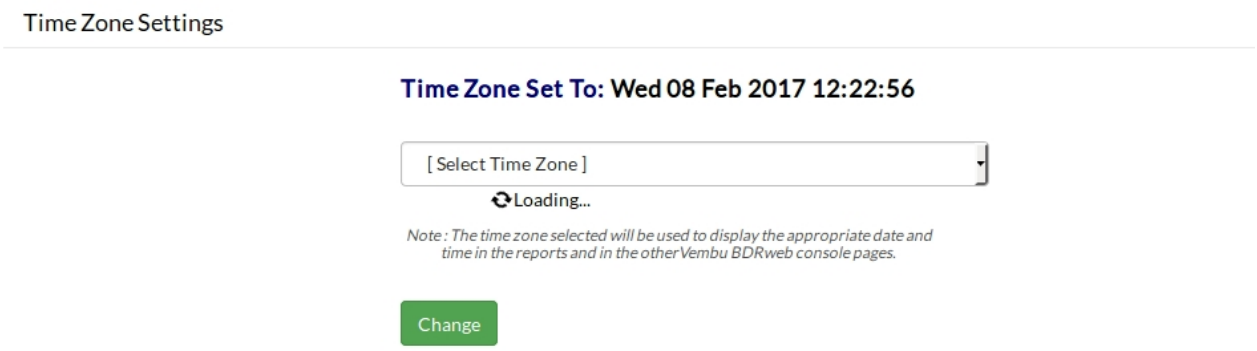
Note: By default, when a user logins for the first time after a fresh client installation, the time zone settings will be
asked which can then be changed via this option if required.

- Go to 'Management → Settings → Time Zone Settings'

Choose time Zone:

- Choose your appropriate time zone, in the 'Select time zone' drop down box and change it.



Vembu VMBackup User Guide

Software Update Process

Software Update Configuration in Vembu ImageBackup:

This option let users configure auto update settings of client machine, which is enabled by default and downloads update from backup servers.
Note: By default, Vembu ImageBackup checks backup server every hour for update.

- Go to 'Settings → 'Software Update Configuration'

Configuration:

- Configuring Automatic software update in client machines will have following options to provide:
    - **Select server to download updates from:** Choose a backup server from the list of servers added.
    - **Location to store downloaded update:** Choose a folder location to which client updates will be downloaded. By default, the following location will be chosen: <OS partition>/Program Files/Vembu/VembuImageBackup/ downloadedUpdates/

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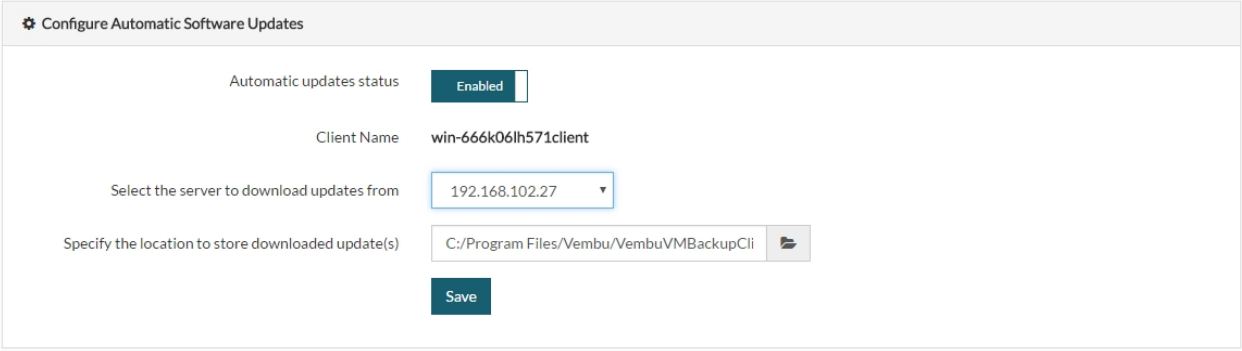

- Once done providing details, click save.
  Note: Users can also disable auto update and can manually update clients if required.

Software Update in Vembu BDR:

Software updates in general are defined to Integrate newly added features and enhance existing features to an installed application. This process of upgrading applications can be done either manually or can be automated.

Server Update:

- Upgradation of Vembu BDR backup server is a manual process as of now, where users will be notified periodically via Emails to registered Email ID about the updates available. Which can then be downloaded from Vembu downloads page.
- Downloaded server update can be installed on top of existing installation.
- Make sure there is no ongoing/active process (backup, restore or delete) before proceeding with installation process. If so wait for the process to complete.
- Once upgrade completes successfully, Vembu BDR backup service is restarted and the backup schedules are resumed as per schedule.
- Users can click on help icon and verify the build version to confirm successful updation of backup server.

Client Update:

- Upgrading client machines can be done in two way:
  - Manual upgrade.
  - Auto upgrade.

Manual upgrade:

- Manual upgrade process is similar to that of server update, where users can download client builds from downloads option in Vembu BDR backup server.
- Once the builds are downloaded, it can be installed on top of existing installation.
- Users can click on help icon and verify the build version to confirm successful updation of client machine.

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Auto upgrade:

- In order to proceed with auto upgrade, users are requested to download the latest client build along with its xml file for Windows/Debian/RedHat and proceed with the steps mentioned in below link:

  Vembu BDR suite- Automatic Software update guide

Vembu VMBackup User Guide

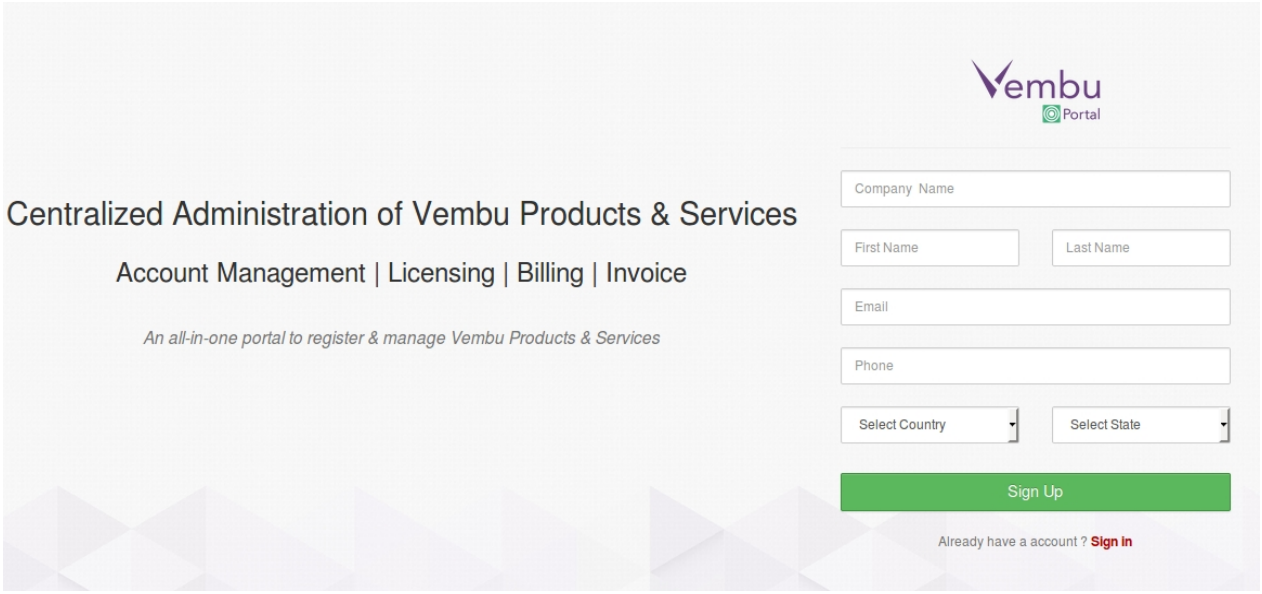
Portal Registration

User should create a Vembu portal account, in order to get backup server registered with Vembu portal, where a user can manage all his/her Vembu products and services.

Creating a Vembu Portal Account:

Vembu portal is an all-in-one hub spot for managing your registered Vembu products and services where you can get started. To register in Vembu portal, follow the steps given below:

- Go to portal.vembu.com and click on Signup.
- You will be required to provide the following details in order to create your account:
  - Company Name
  - First Name and Last Name
  - Email ID
  - Contact Number
  - Country and State



- Once done providing the requested details click Sign up to register.
- A verification Email will be sent to the registered Email ID. Kindly check your

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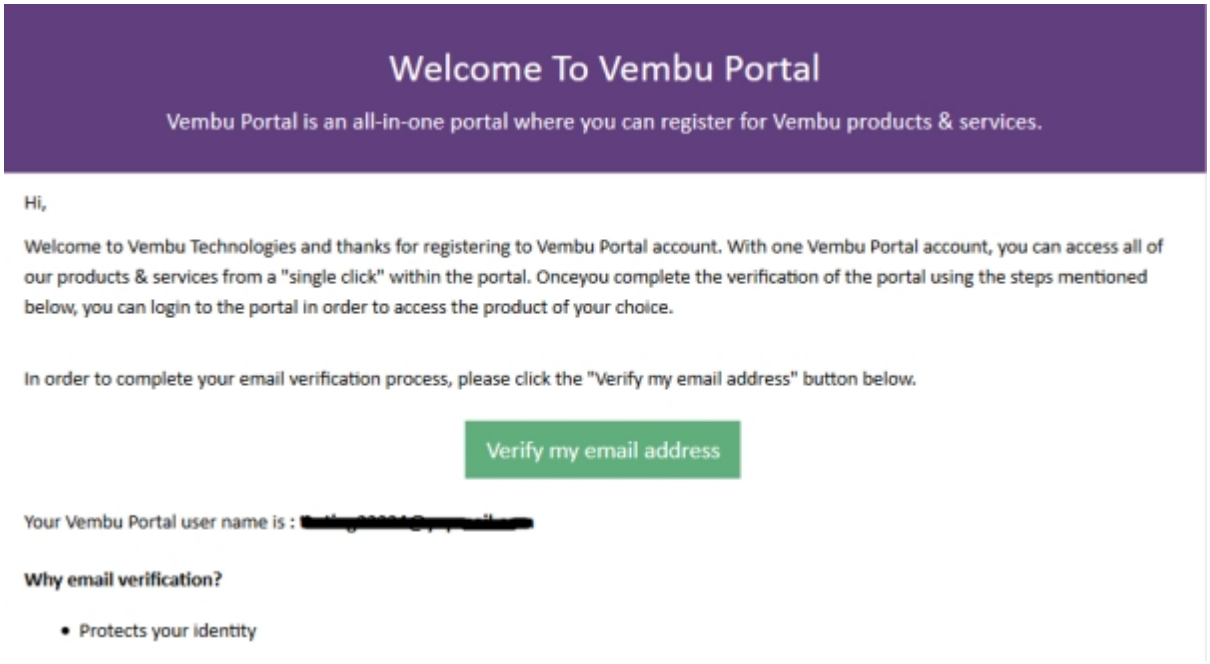
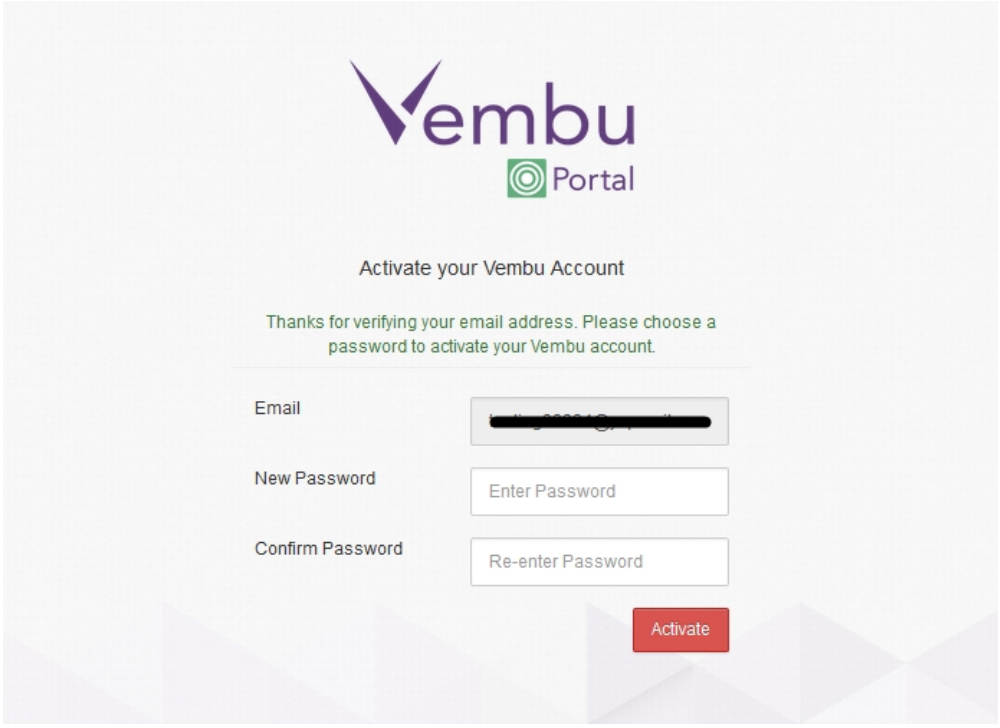
Inbox(Spam folder, if not found in Inbox) for verification email and click on 'Verify my email address'. If the button doesn't work copy-paste the link given below the 'Verify' button in your browser.



- You will be directed to a page with the registered email ID and you will be requested to create a password for your account. Once done providing password, click Activate.



- Vembu portal account is now created successfully and you will be redirected to Vembu Portal login page. Login to Vembu portal account with the registered email id and password.

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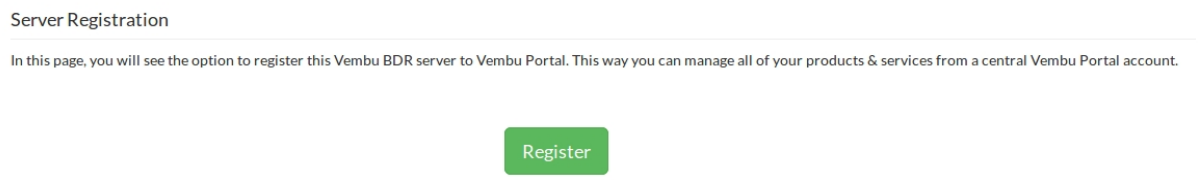
Server Registration:

Once Vembu portal account is created:

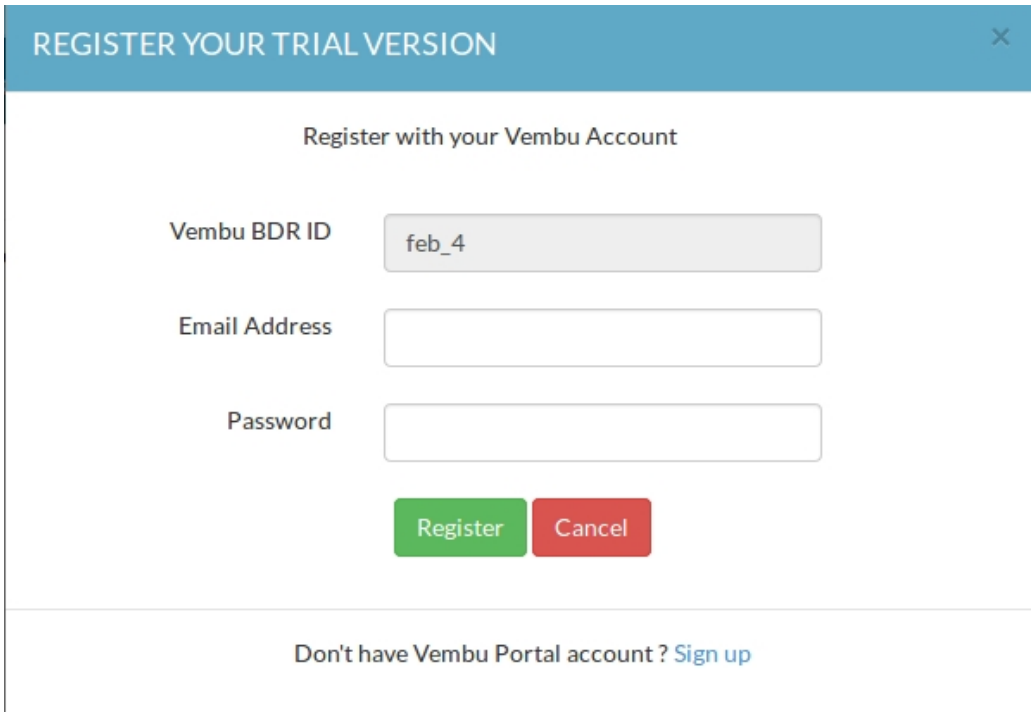
- Login to Vembu BDR web console.
- Go to 'Management → Server Management → Server Registration'

Steps to Register

- Click Register.



- Provide Vembu account credentials in the pop-up shown and register the trial.



- Once registered, a user can check server registration by running a license check to success.

Vembu VMBackup User Guide

Licensing

VMware Image Backup

- Vembu charges for VMware backup based on no. of CPU Sockets
- If a VMware Server is deployed on a machine which has two CPU-Sockets, you need to

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buy two “VMware Image Backup” licenses and backup unlimited VMs
- The licenses have to be renewed every year
- License cost includes unlimited product upgrade and 24/7 email & telephone support

Hyper-V Image Backup

- Vembu charges for Hyper-V backup based on no. of CPU Sockets
- If a Hyper-V Server is deployed on a machine which has two CPU-Sockets, you need to buy two “Hyper-V Image Backup” licenses and backup unlimited VMs
- The licenses have to be renewed every year
- License cost includes unlimited product upgrade and 24/7 email & telephone support

Vembu VMBackup User Guide

Reports

- Backup Job Report
- Backup Status Report
- Image Verification Report
- Email Alert Configuration

Vembu VMBackup User Guide

Backup Job Report

- Go to Recovery.
- This page lists all the backup jobs configured to server where you can see a report option alongside every backup job.
- Click on Reports.

- In this page, users can view historical reports of the specific backup chosen where following reports will be listed:
    - Backup report
    - Restore report
    - Merge report
    - Deleted backup report
    - Offsite Copy report

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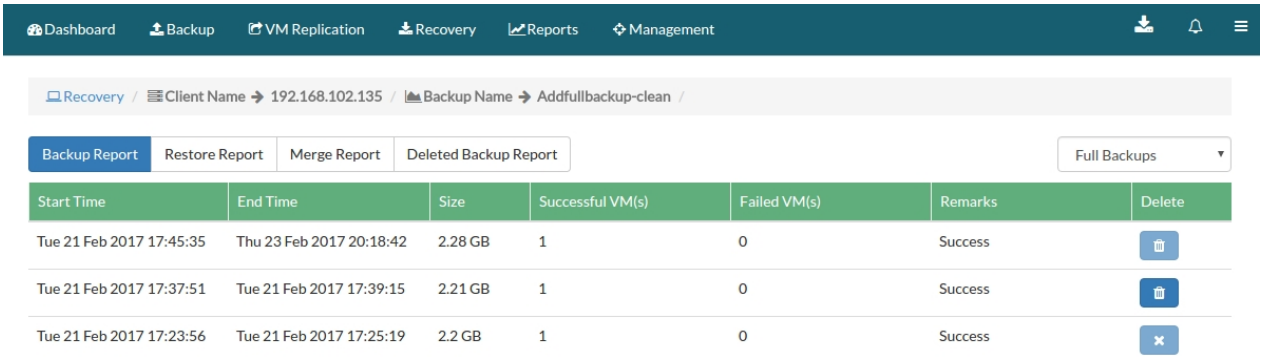
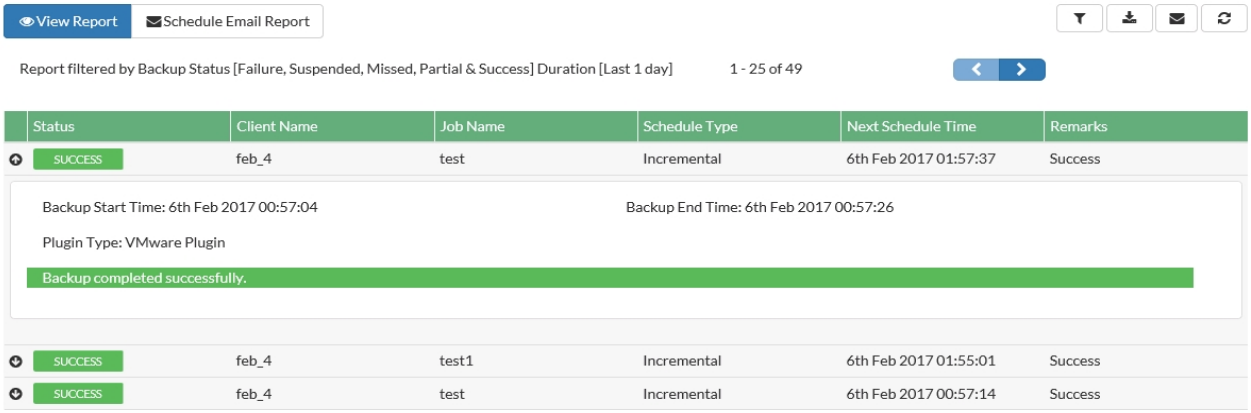


- Users can also filter the reports to view status of full backups alone(excluding incrementals).

Vembu VMBackup User Guide

Backup Status Report

- Go to 'Reports → Backup Status Report'
- A page where user can view, filter and download overall backup status report will be displayed. Backup status includes: Failure, Suspended, Missed, Partial & Success.



Filter report:

- Filter option let users add custom filters where they can apply filter of their choice for ease of view.
- Backup filter includes following statuses to choose from: Missed, suspended, failed, successfully completed, partially completed and all.
- Filters can also be applied based on duration where users can provide their custom data range, apart from ranging between last 1-30 days.

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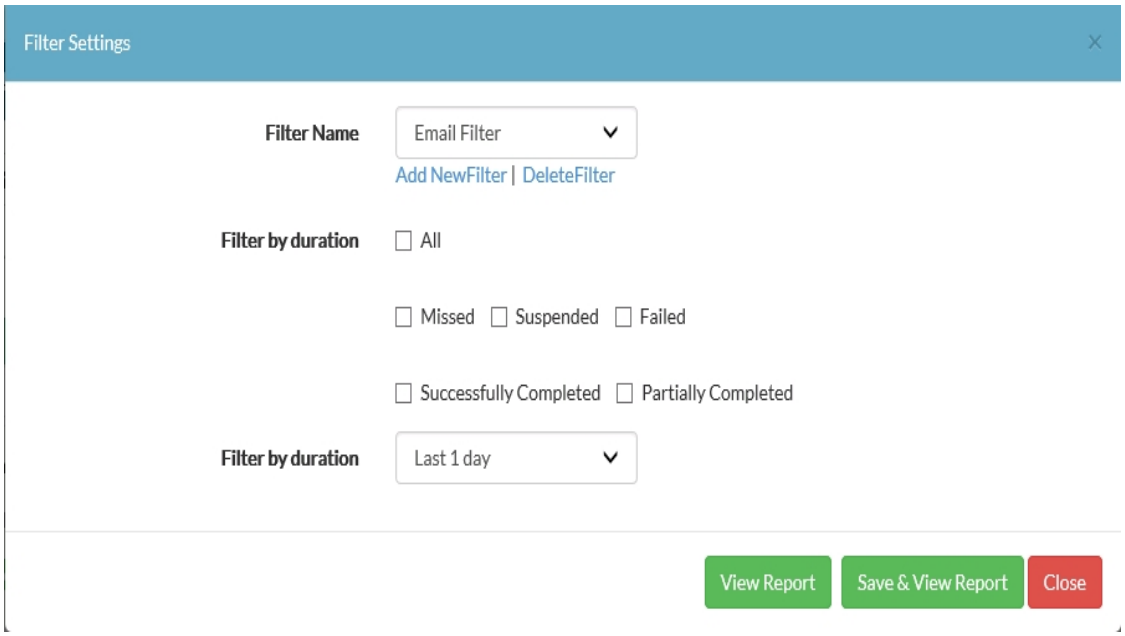
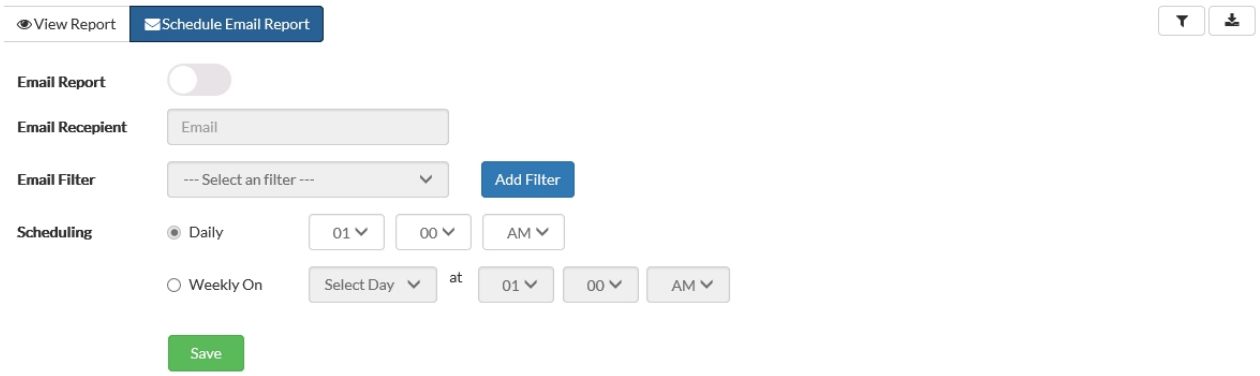


Schedule Email report:

- Users can also send custom filtered reports by providing a sender Email address.
- And can choose a custom filter saved or add a new filter based on requirement.
- And choose schedules when to send:
    - Daily by specifying a time period.
    - Or choose weekly and specify a weekday and time period.



Note: Users can also download reports as csv files.

Vembu VMBackup User Guide

Image Verification Report

- Go to 'Reports → Image Verification Report'
- This page lists every image backups configured to Vembu BDR server along with the backup details such as: backup name, plugin, client name, host name, machine name, disk name and scheduled time(Most recent backup time).
- It also confirms if the backup data is mountable and provides boot image of most recent backup(This ensures that the backup is in readily-bootable state).

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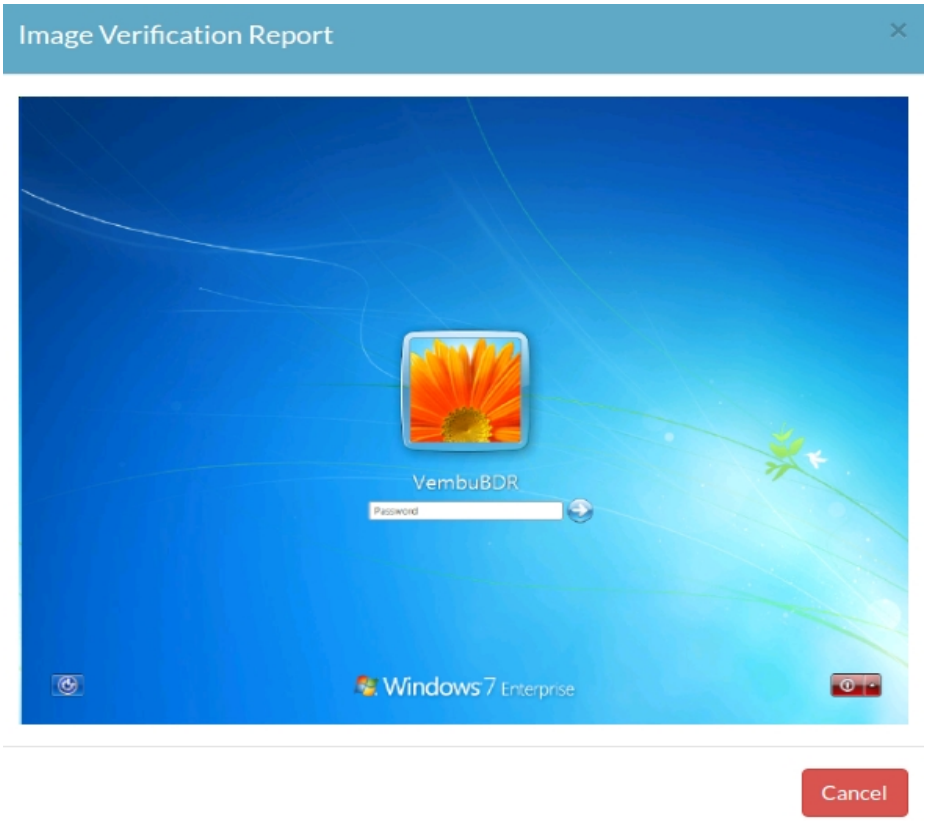
Image Verification Report

Report filtered by [Client: All, Backup: All, Integrity Status: Success & Failure] Reset

Listing 1 to 2 of 2 reports

Plugin	Client Name	Backup Name	Host Name	Machine Name	Disk Name	Scheduled Time	Mount	Boot
vm	feb_4	test1	192.168.102.18	XP_64bit	XP_64bit...	Sun 05 Feb 2017	✔	NA
vm	feb_4	test	192.168.102.18	XP_64bit	XP_64bit...	Sun 05 Feb 2017	✔	NA

- An example of boot image is given below:



Vembu VMBackup User Guide

Email Alert Configuration

This option let users set SMTP server and configure email address to which backup reports can be mailed periodically. Options to configure sending various reports to different email addresses is also available.

- Go to 'Management → Settings → Email Settings → Email Configuration'
  By default, Email Configuration will be disabled. Enable it.

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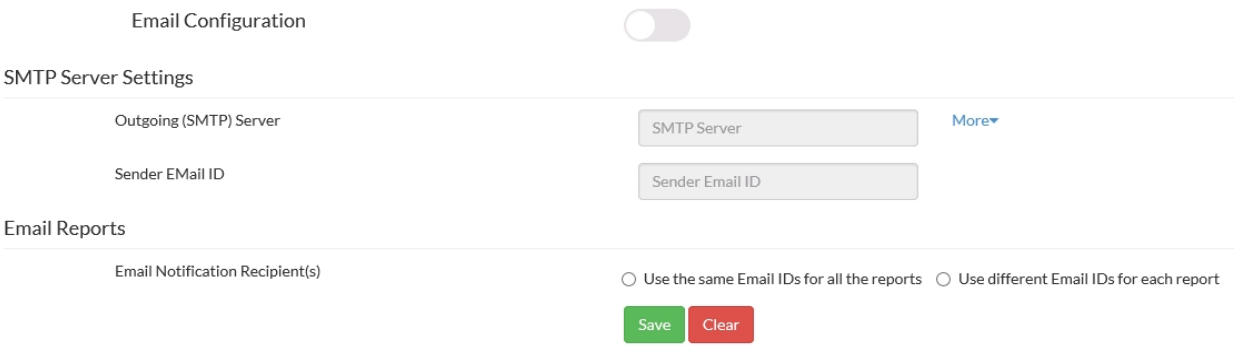
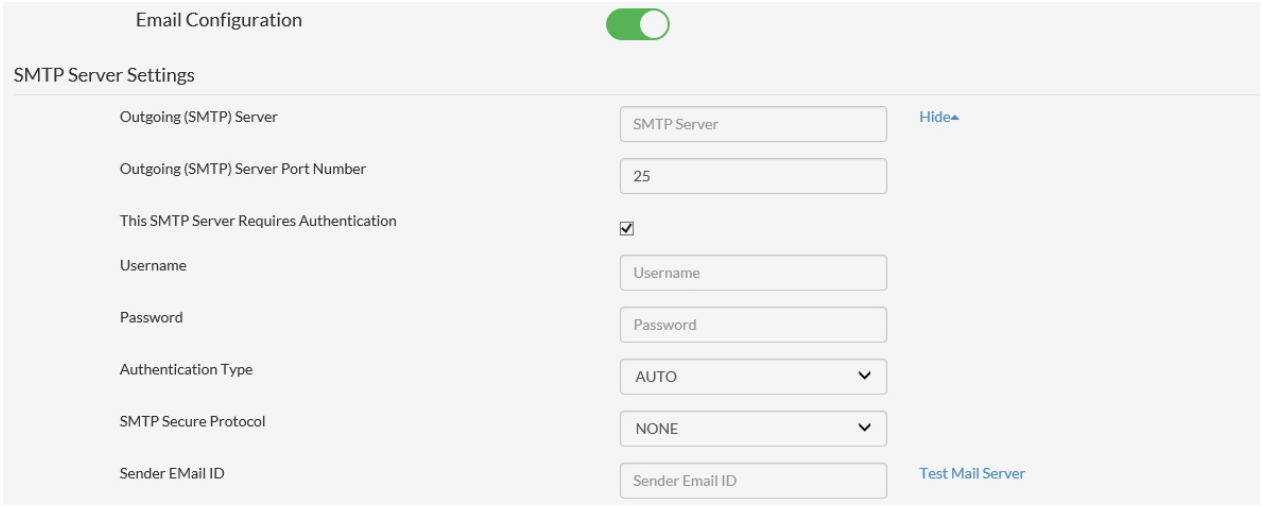


Configure SMTP server:

- Provide SMTP server details and if required provide outgoing server port number.
- Also do provide authentication credentials, if SMTP server requires one.
- You also do have options to choose authentication type and SMTP secure protocol.



- Once done providing SMTP server details, user can test by sending a test mail and verify it is working successfully.

Email reports:

- Users can configure:
  - A single Email ID to receive all success/failure reports from server.
  - Or enable different Email IDs for each success/failure report generated (Server backup/restore/delete reports).

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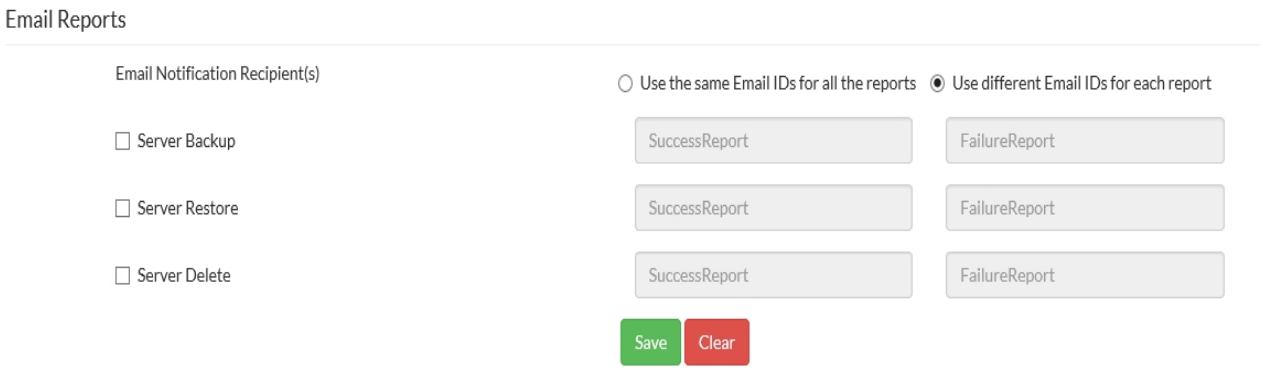


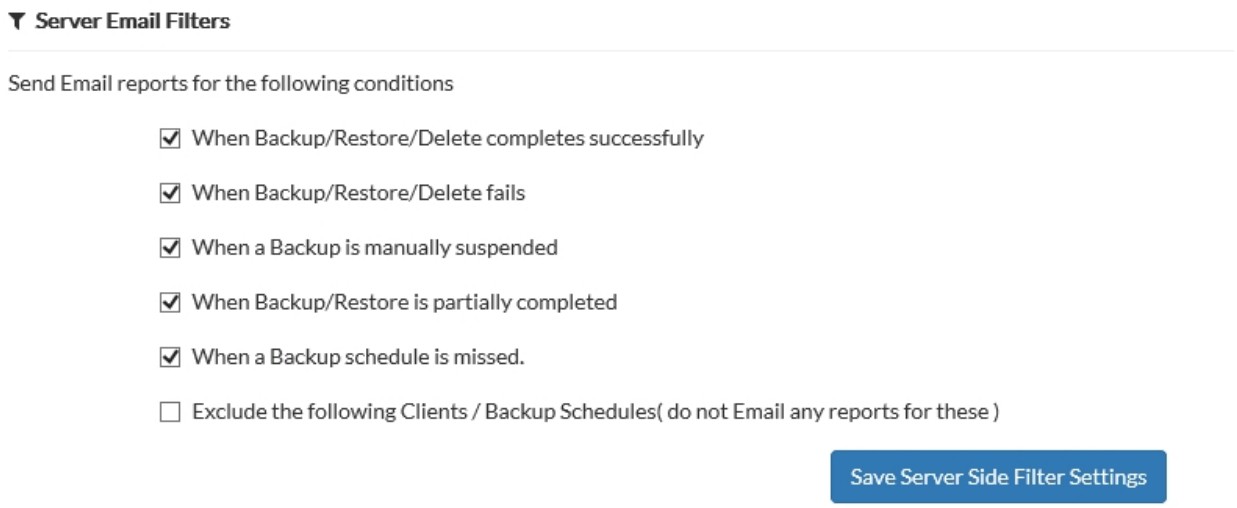
- Click save to save email settings provided.

Email Settings - Email Filters:

- Go to ' 'Management → Settings → Email settings → Email Filters'
- Users have following filter conditions available, which can be enabled and disabled based on requirement.

- **Filter conditions:**
  - When Backup/Restore/Delete/Replication completes successfully.
  - When Backup/Restore/Delete/Replication fails.
  - When there are no new or modified files for replication.
  - When a Backup is manually suspended.
  - When Backup/Restore is partially completed.
  - When a Backup schedule is missed.

- Once done choosing filters, save it.



Note: By default, all filters are enabled.

Exclude Client/Backup from Reports:

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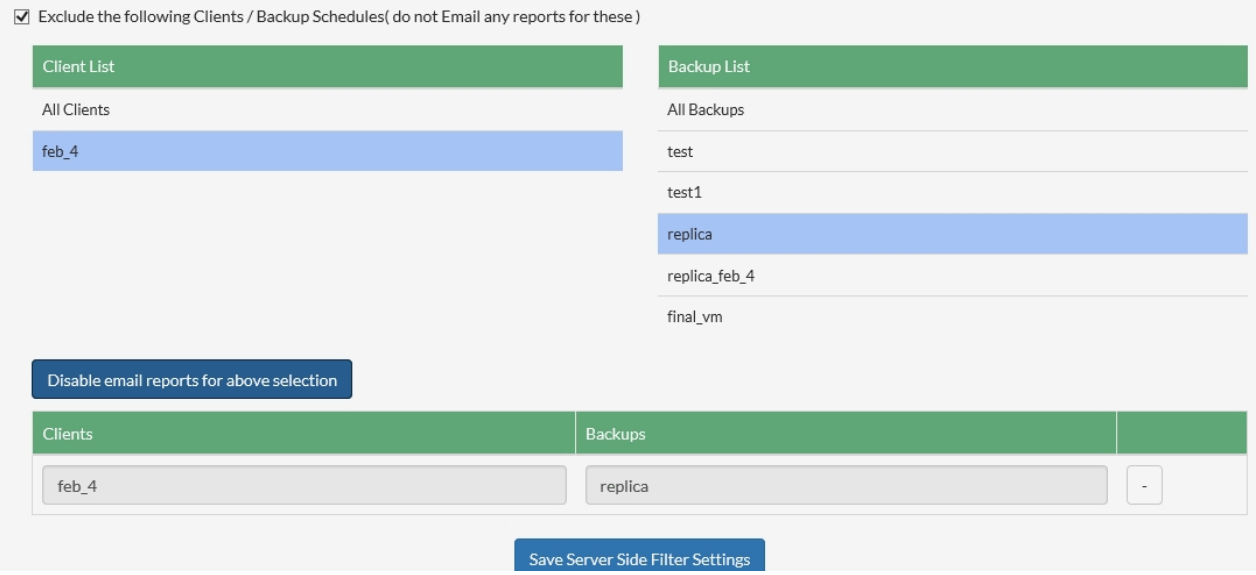
Users also have an option to exclude specific set of Clients / Backup Schedules from receiving Email reports. This can be done by enabling following condition:

- Exclude the following Clients / Backup Schedules (do not Email any reports for these)

- Once enabled, the list of clients along with the list of backups will be listed. User can either select:
    - All clients to exclusion list.
    - Or choose specific backup from a client and add it to exclusion list.

- A client/backup can be excluded by selecting 'Disable Email reports for above selection'.



Note: Excluded backups can also be reverted.

Vembu VMBackup User Guide

Distributed Deployment

- Installing Backup Agent/Proxy
- Login to Backup Agent/Proxy GUI
- Test Connectivity to Backup Server
- Managing VMware Backup and Recovery
- Managing Hyper-V Backup and Recovery
- Backup Agent/Proxy Settings
- Reports

Vembu VMBackup User Guide

Installing Backup Agent/Proxy

- Go to Downloads and choose the tab 'Vembu VMBackup'.
- Download the Windows Client installer.

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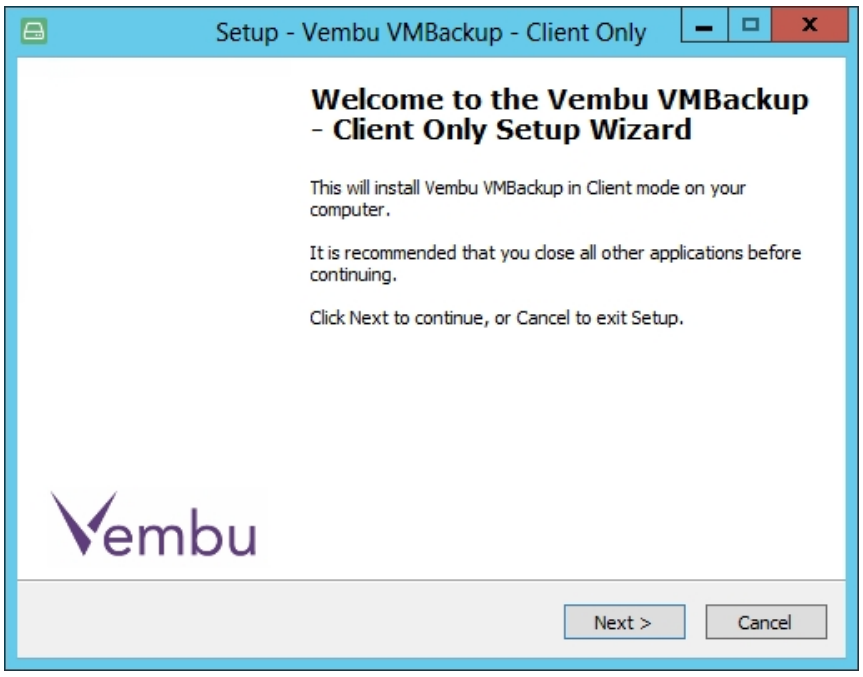
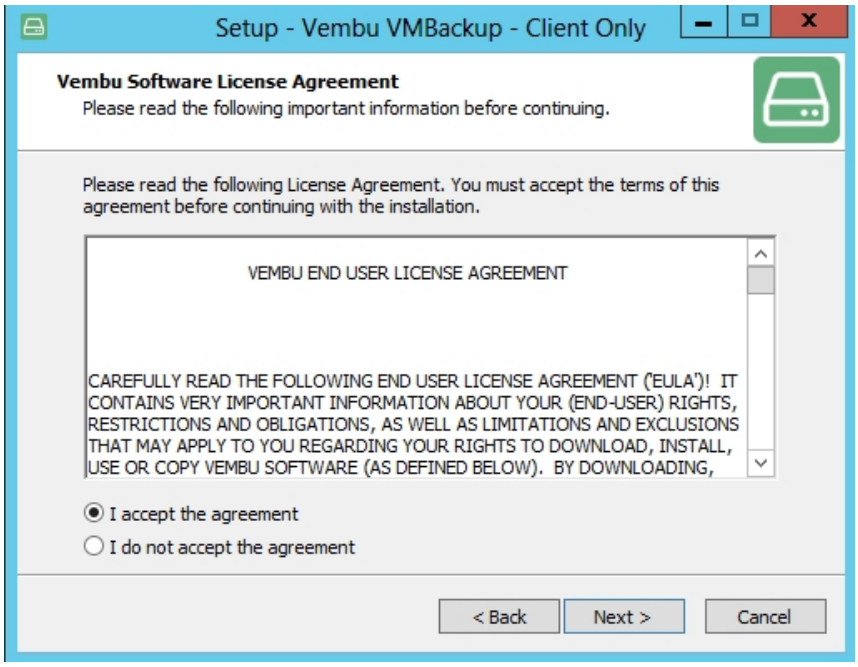
- Run the downloaded installer and click next on the Welcome window.



- Read and agree to Vembu Software license agreement and click Next.



- The installation wizard will ask to enter Vembu VMBackup ID. By default it will be your system name but it is recommended that you give your email ID, since it is globally unique. Click next.

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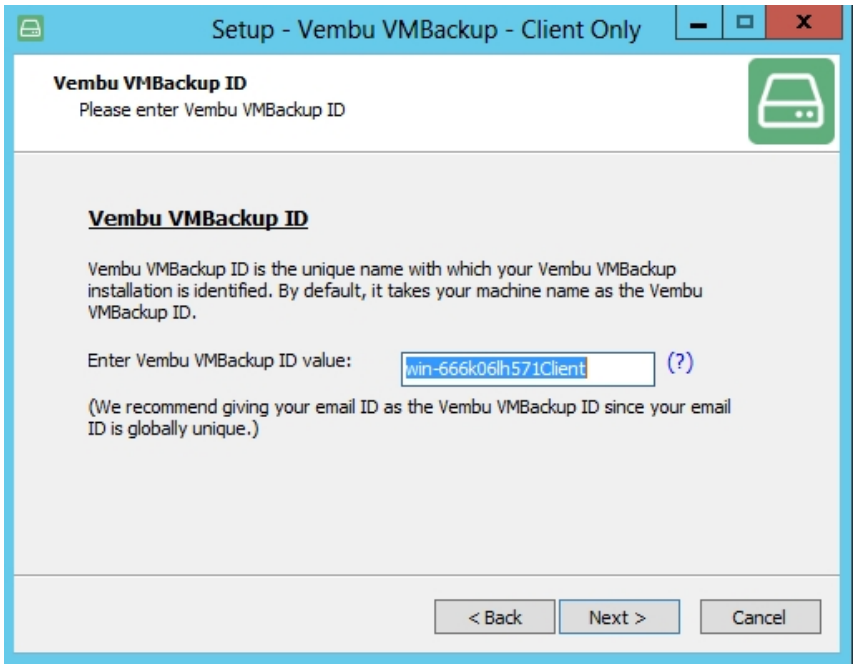
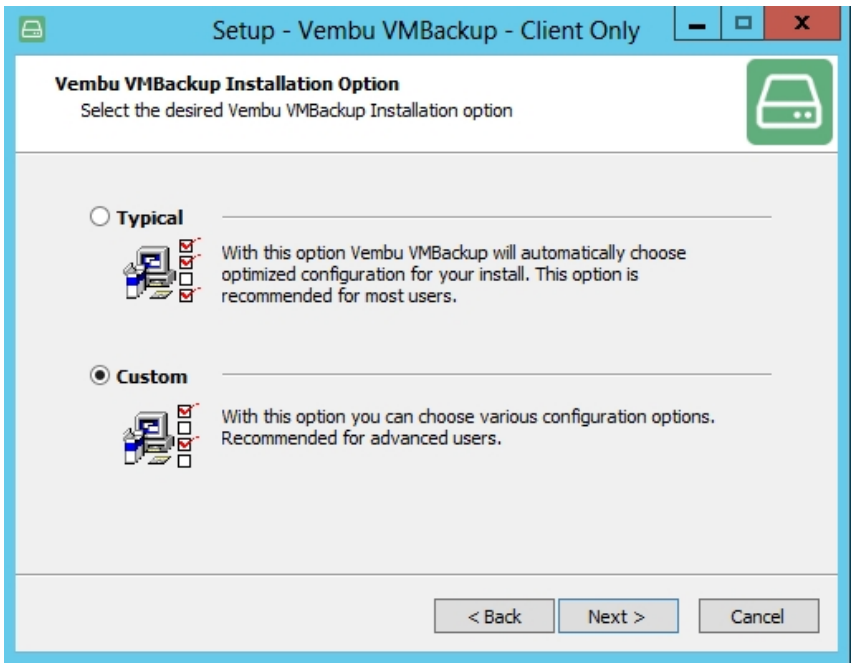


- Choose the installation option you want to proceed with.
- Opting for Typical will automatically choose an optimized configuration for your install. Proceed with Custom if you want to change the default values. Click on next when done.
  Note: It is recommended to choose custom installation.



- Proceeding with custom installation, will lead to choose installation type. This will allow you to install Vembu VMBackup:
  - As a Windows application
  - As a Windows service
- By default, install as a Windows service will be selected.

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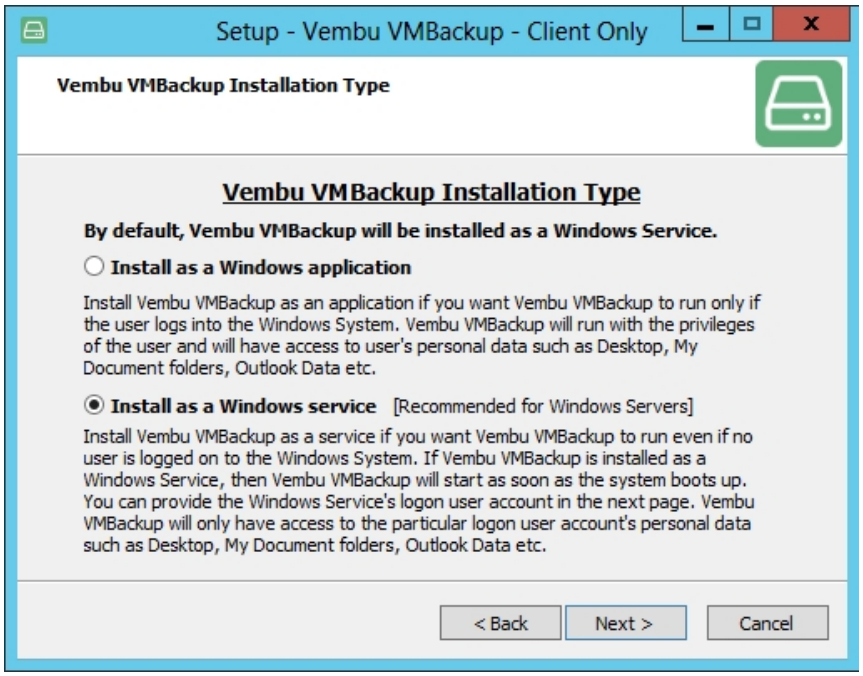
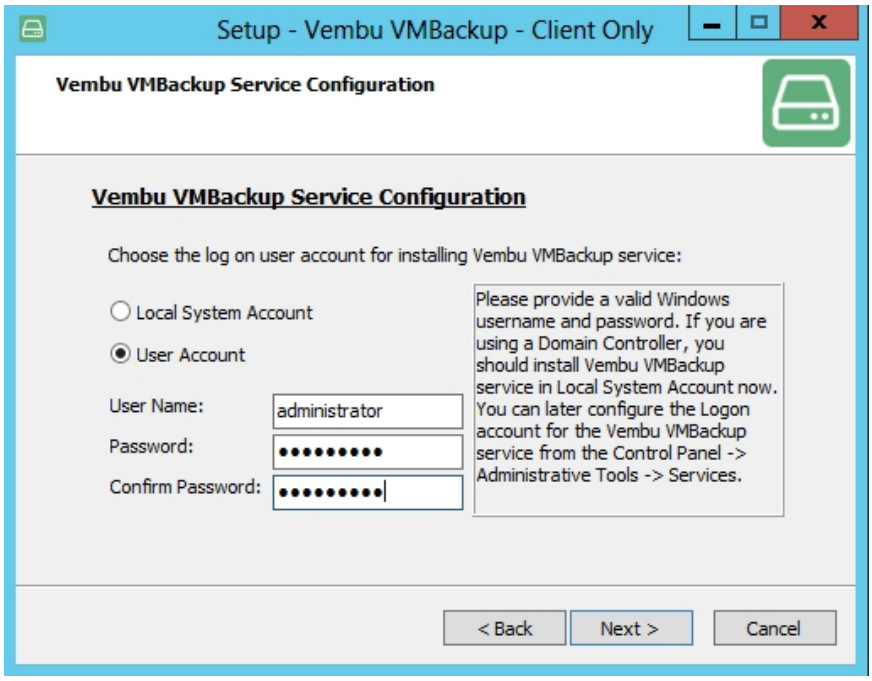


- Proceeding Next will let user configure log on account for Windows service. You can either:
- Log-on in Local system account or
- Log-on as a specific user (usually a user with administrator privileges).



- Proceed to choose installation location. Which is by default, set as '<OS installed drive> \Program files'.

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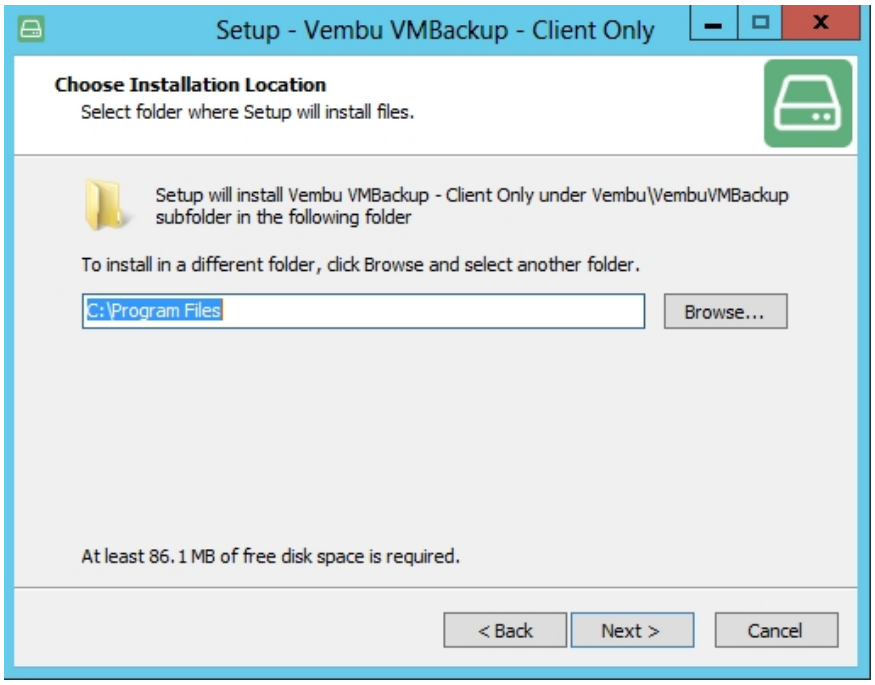
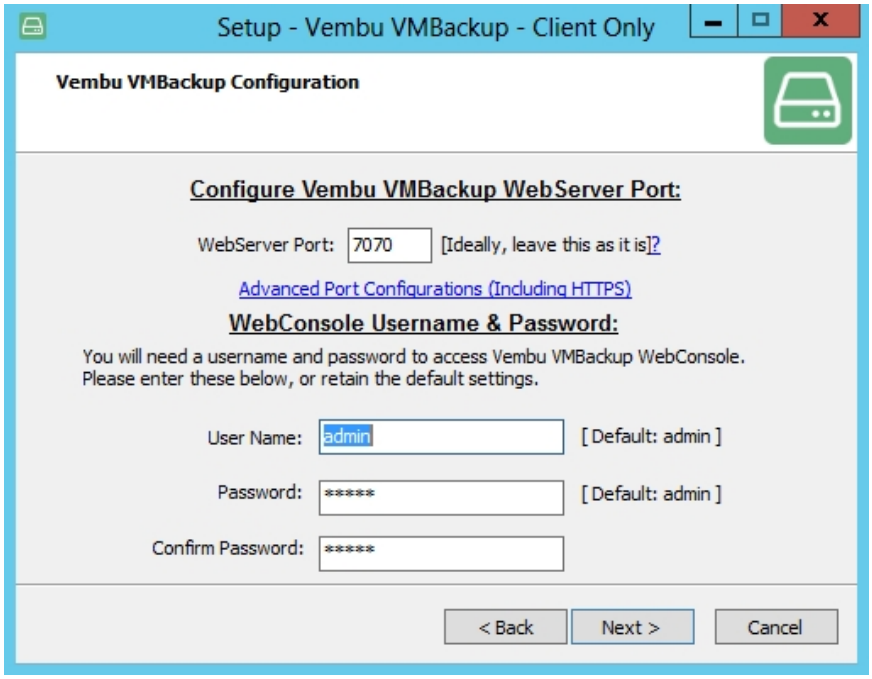


- Proceed to provide the login credentials for Webconsole access which by default set as user name: 'admin' and password: 'admin'. User can also modify webserver port, but it is recommended to leave it with the default choice unless the port is assigned for some other process already.



- Proceed to choose Program folder and then choose shortcut icons if required. Once done choosing all, verify the details provided in final window shown and proceed with installation.

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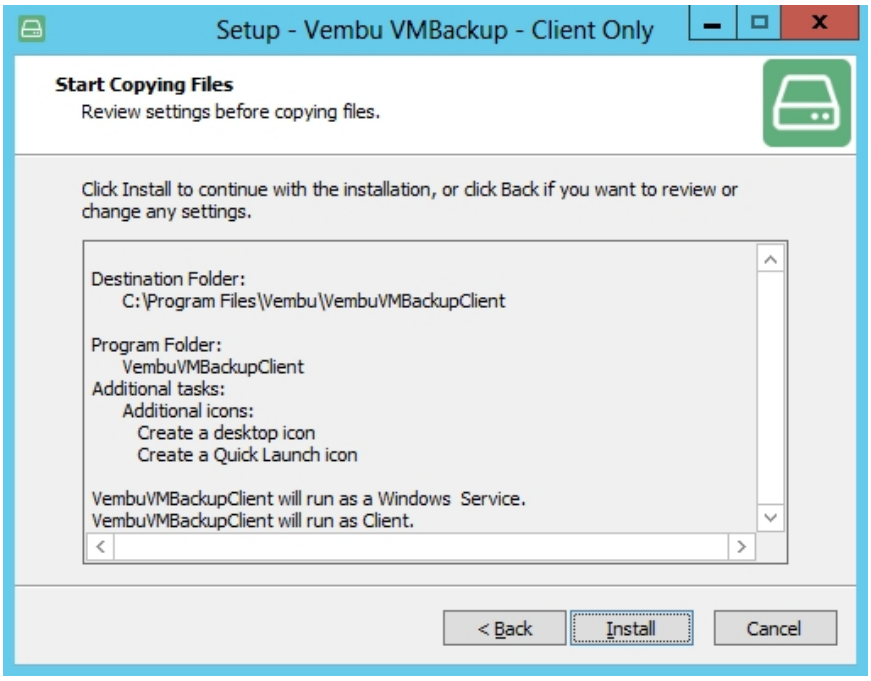
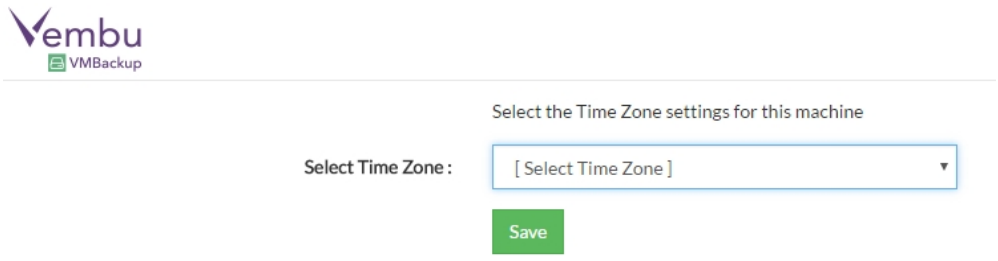


Vembu VMBackup User Guide

Login to Backup Agent/Proxy GUI

- User can login to Vembu VMBackup web UI via following options:
  - By typing default URL: http://localhost:6060 (or)http://<Ip_Address_of_Machine>:6060 in browser (If it's a client on server installation, the URL is: http://localhost:7070)
  - Via shortcut created on desktop.
  - Via Vembu VMBackup client web console option in tray icon.
- Users who login after a fresh installation will be required to choose the time zone in which they want their backup/replication reports to be generated.



- Once done choosing timezone, users will be requested to provide backup server details, to which backup tasks from client machine will be carried out.

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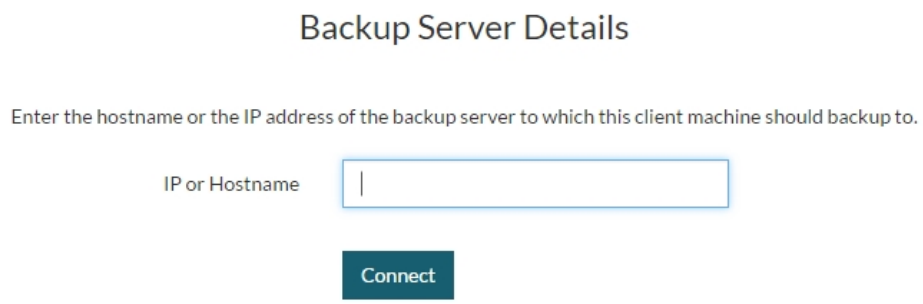
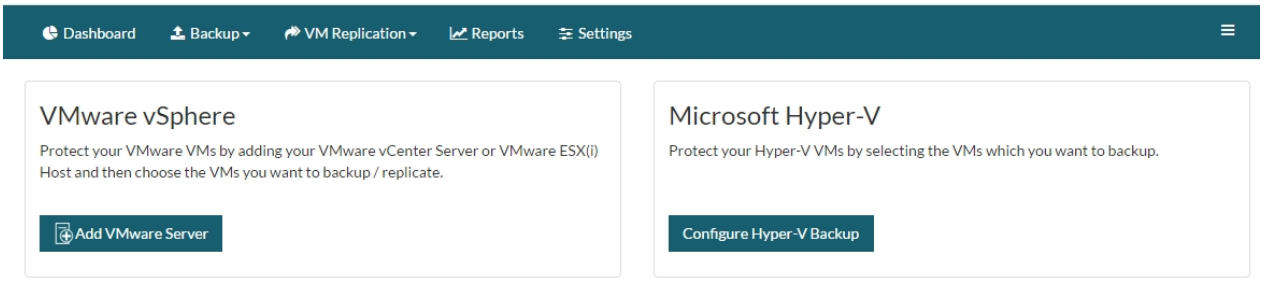


- Once done, you will be redirected to job listing page. Since it is a fresh installation with nil backup/replication jobs configured, the page will look as like in picture below:



Troubleshooting:

- If there seems to be any issue existing in accessing web GUI, check if the server/client service is running in Services.
- In case of Vembu BDR server and Vembu OffsiteDR, additionally check if the VembuBDR/ VembuOffsiteDR WebServer service is running.

Vembu VMBackup User Guide

Test Connectivity to Backup server

- This feature allows client machine to verify connectivity with backup servers along with other requirements for a successful backup.
- Go to 'Settings → Test Connectivity to Backup Server'

Procedure:

- You will have two options to choose servers:
  - You can either select a backup server in drop-down box from the list of servers pre-configured.
  - Or provide a hostname or IP address of backup server.
- Once done selecting server detail, hit 'Test connection'. The result will have following details checked:
  - **DNS Lookup**- Checks if client details are already present in backup server.
  - **Connectivity**- Checks connectivity status of client with backup server.
  - **Compatibility**- Checks the version compatibility of both machines(client and server).
    Note: Backup server version should be equivalent or higher than that of client

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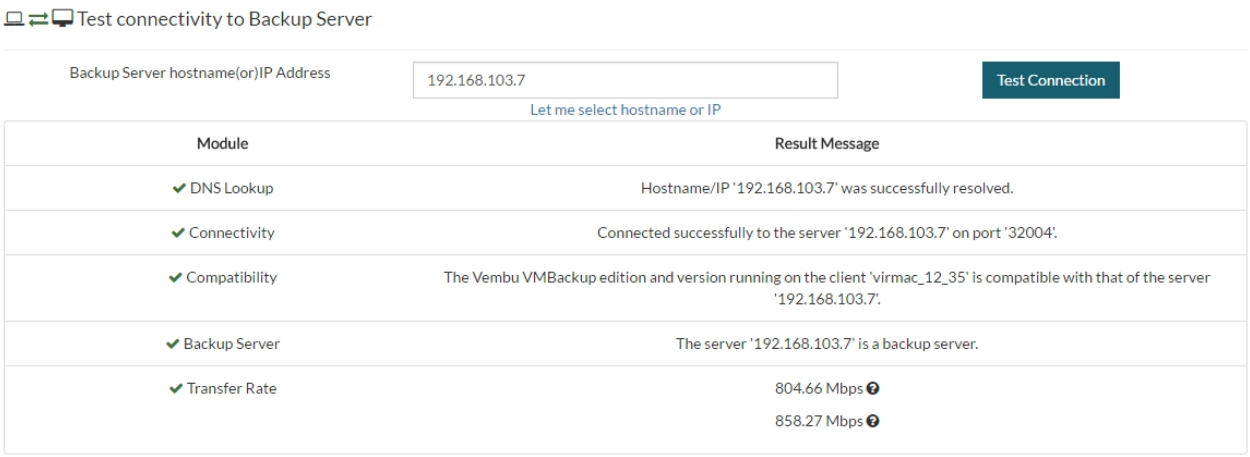
for successful backup.

- **Backup server**- Checks the status of IP address/Hostname provided. (i.e) If it's a backup server, DR server or another client machine.
- **Transfer Rate**- Checks and displays the average transfer rate between server and client machine.

Example for Successful connection:



Example for Failed connection:

Vembu VMBackup User Guide

Managing VMware Backup and Recovery

- VMware Backup
- VMware Replication
- Disaster Recovery

Vembu VMBackup User Guide

VMware Backup

- Setup Backup Job
- Manage Backup Job

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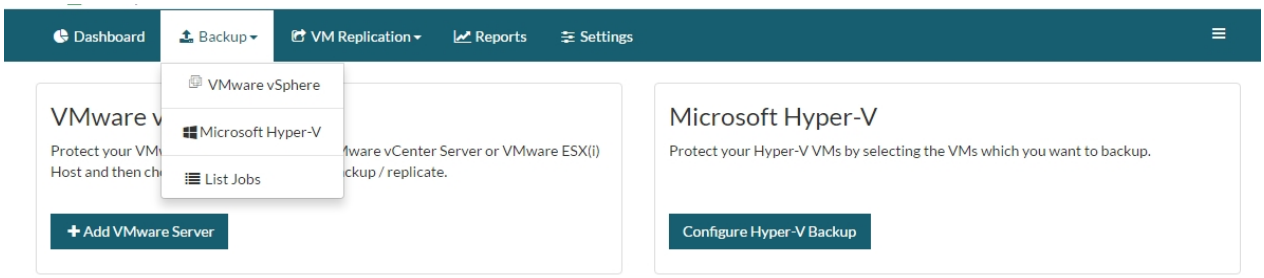
Vembu VMBackup User Guide

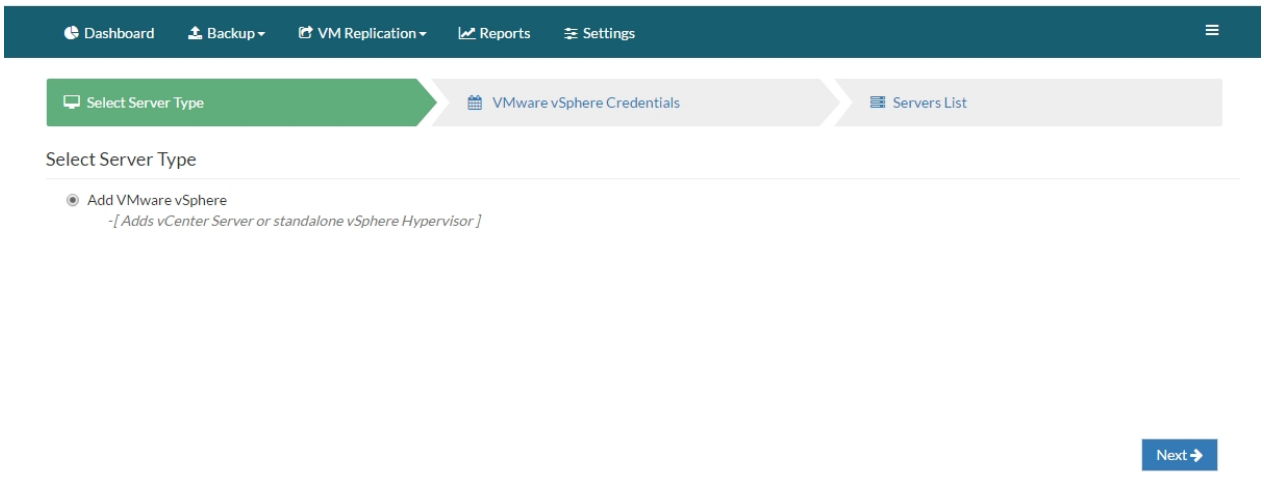
Setup Backup Job

Adding VMware server:

- Login to Vembu VMBackup web UI. Default URL will be http://localhost:6060 (If it's a client on server installation, the URL is: http://localhost:7070)
- Go to Backup → VMware vSphere



- If it's a fresh installation, click on 'Add VMware Server' option and add VMware ESXi/ vCenter servers by providing host-name and login credentials



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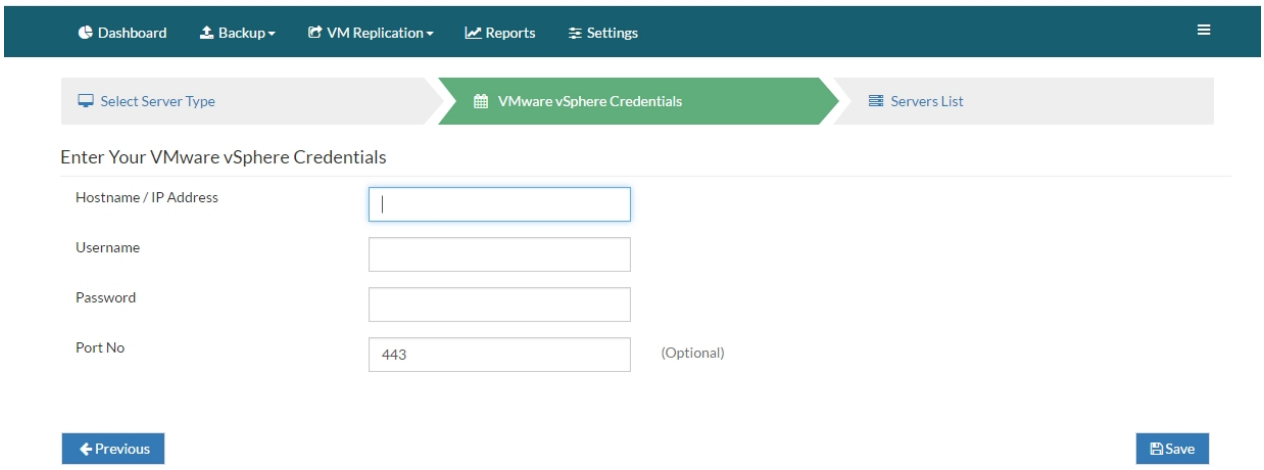
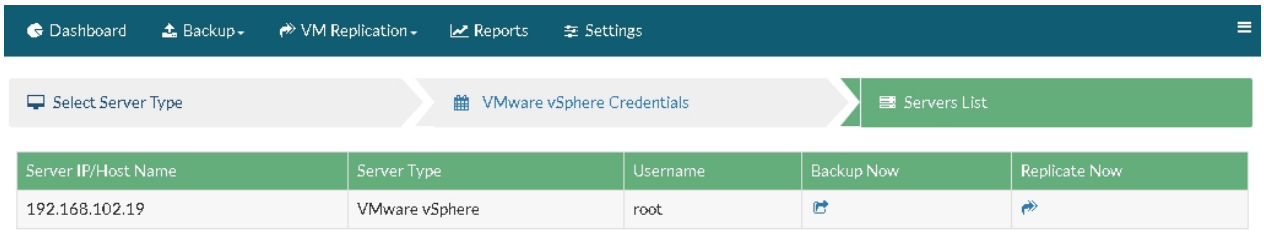
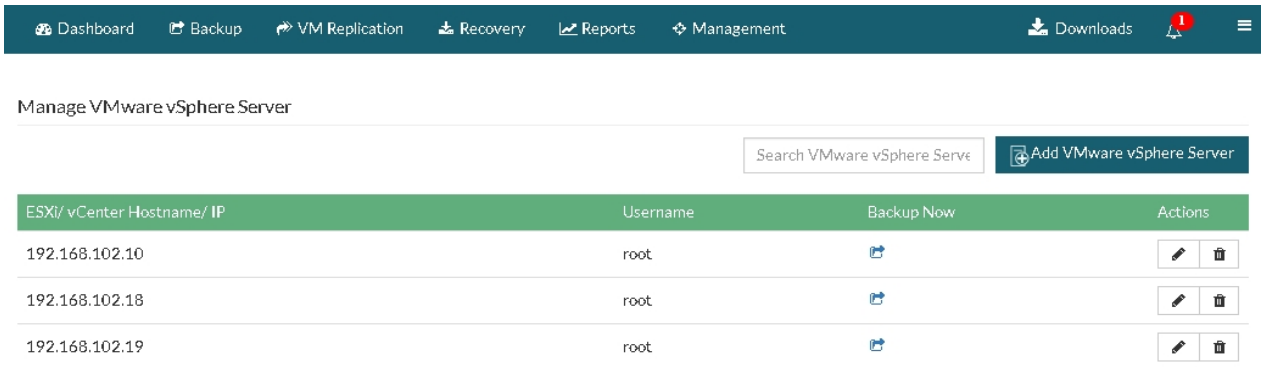




Create VMware vSphere Backup:

- Once done adding, go to Backup → VMware vSphere. The list of ESXi/vCenter servers added will be shown.



- From the list of VMware servers added, Click Backup Now option in the ESXi/vCenter server to backup VM's from specific servers.

Choose Virtual Machine(s):

- Choose list of VMs you wish to get backed up and proceed.

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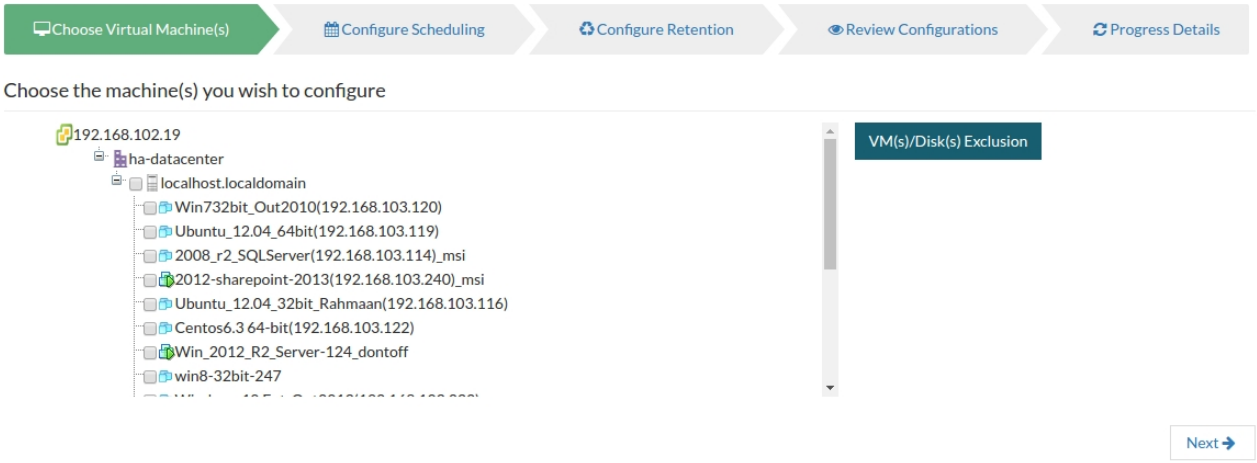
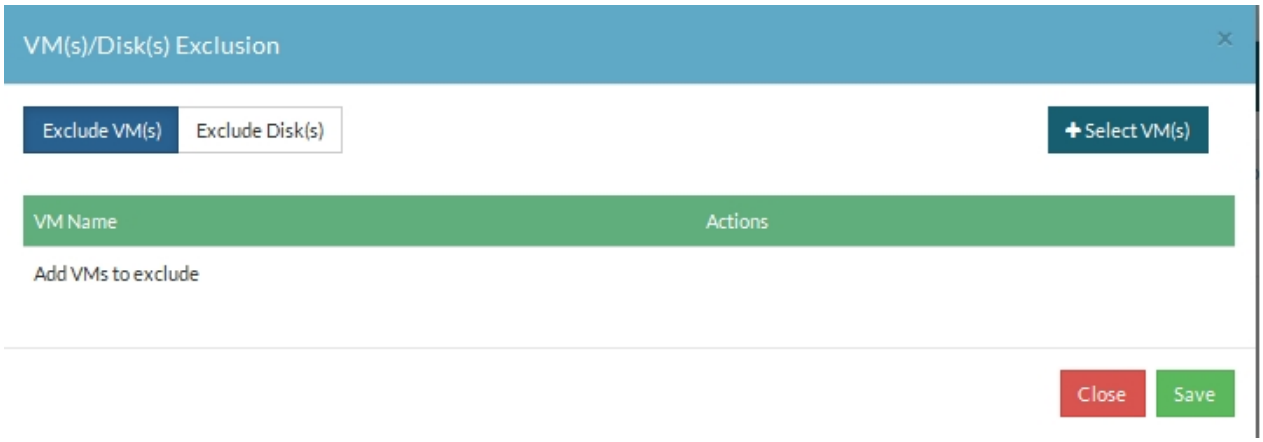


VM(s)/Disk(s) Exclusion

- On selecting Host level backup, you might wish to exclude some specific set of VMs from getting backed up. Such VMs can be excluded using VM(s)/Disk(s) exclusion option.

VM Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.



- Choose 'Exclude VM(s)' tab.
- To exclude a virtual machine from a configured host level backup, click 'select VM' and choose the VMs to be excluded and click 'Exclude'.
- Once added, save the exclusion settings.

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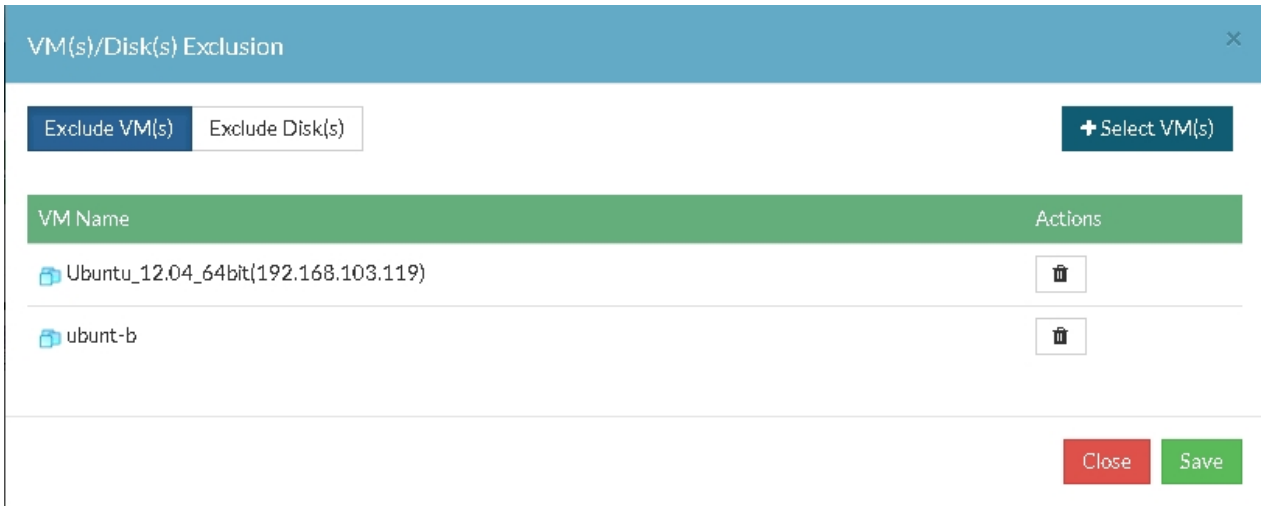
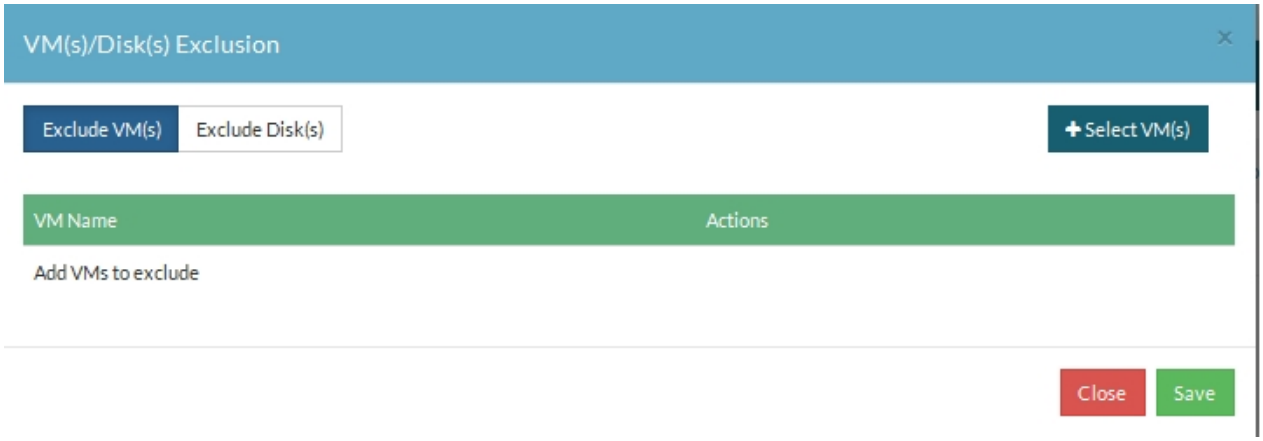


- You can also add/delete a VM to/from exclusion list, whenever required by editing the backup job.
  Note: Changes made in VM exclusion settings will be taken into effect immediately with next incremental schedule.

Disk Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.



- Choose 'Exclude Disk(s)' tab.
- Disk exclusion can be either enabled at host level or can be configured at VM level.

  Host level Disk Exclusion- This exclusion type is possible when you opt to configure host level backup job. Under 'Exclude Disk(s)' tab, you will find the configured host(s) listed.

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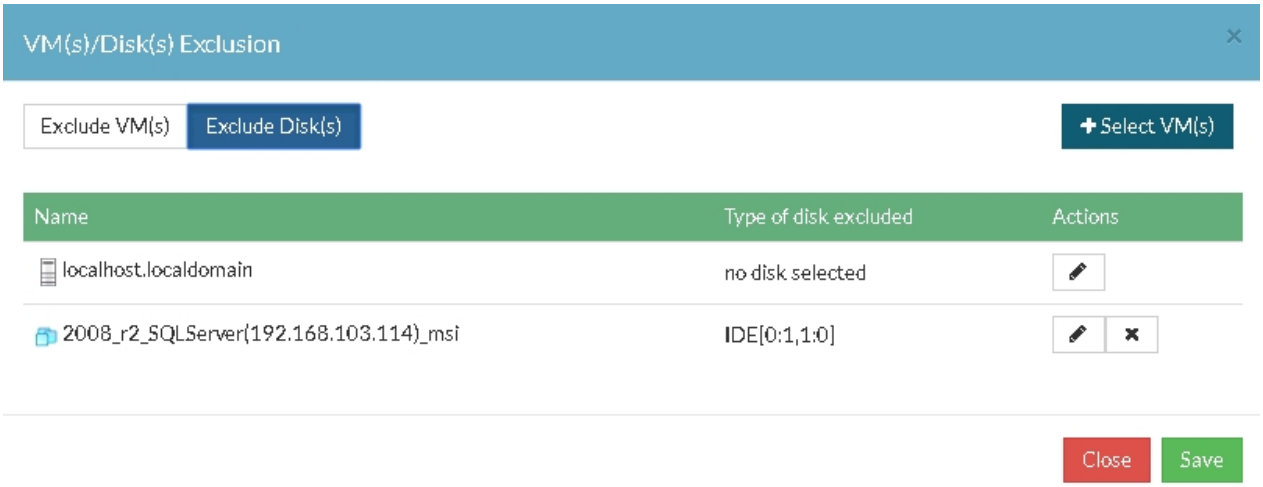
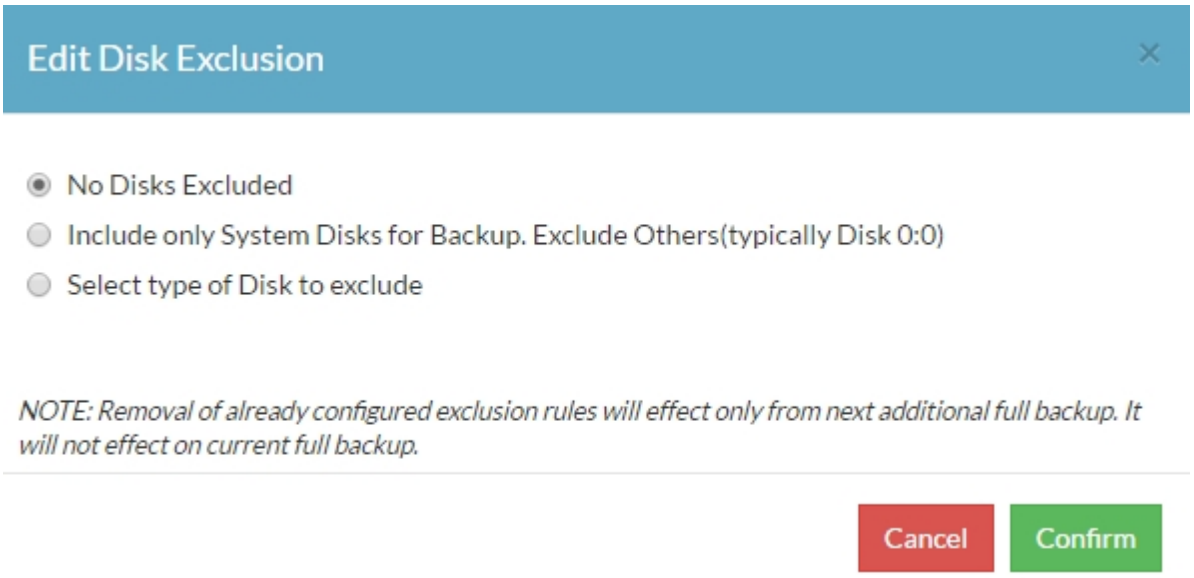


- You can choose 'Edit Disk Exclusion' option, to assign global disk exclusion rule for VMs under a chosen host. Edit Disk exclusion tab will have following exclusion rules:
  - No disks Excluded
  - Include only System Disks for Backup. Exclude Others (typically 0:0)
  - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.



- Opting for the third option of selecting disk type will list all available disk types for VMs in VMware.
- User can choose the disk(s) to be excluded in each disk type.

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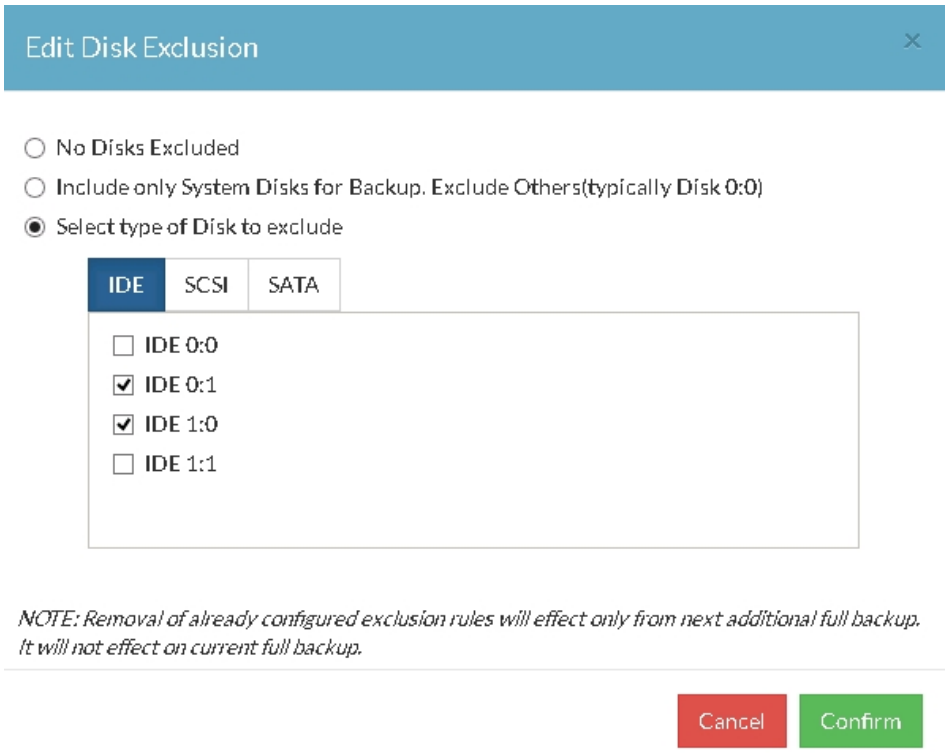
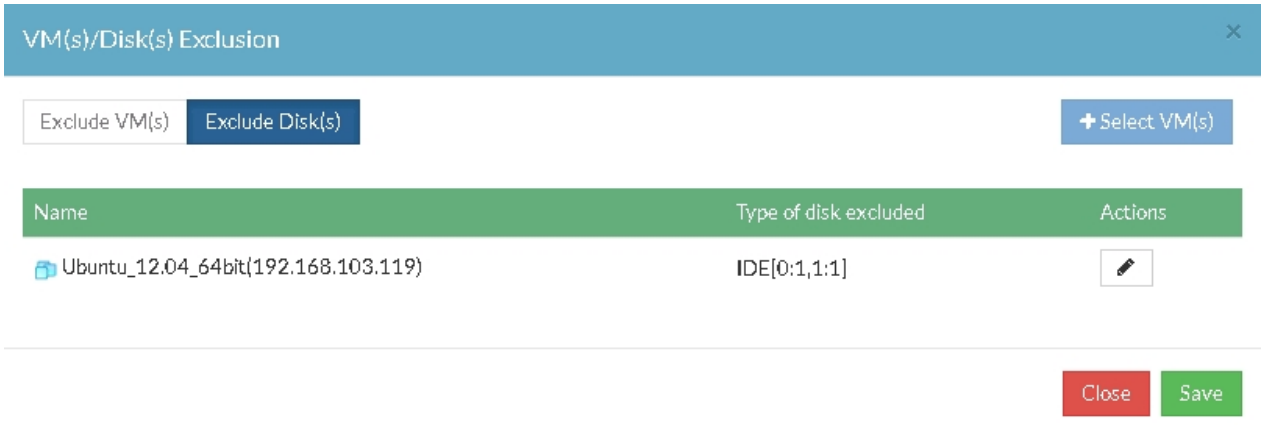


- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.

  VM level Disk Exclusion- This exclusion type can be configured in both host level and VM level backup job. Under 'Exclude Disk(s)' tab, you will find the list of configured VM(s).

  If it's a host level backup job, you can assign both host level exclusion rule as well as assign exclusion rule for individual VMs by adding VMs to be configured using Select VM(s) option.



- Choose 'Edit Disk Exclusion' option alongside a VM to configure disk exclusion rule for the selected VM. Edit Disk exclusion tab will have following exclusion rules:
  - No disks Excluded
  - Include only System Disks for Backup. Exclude Others (typically 0:0)
  - Select type of Disk to exclude

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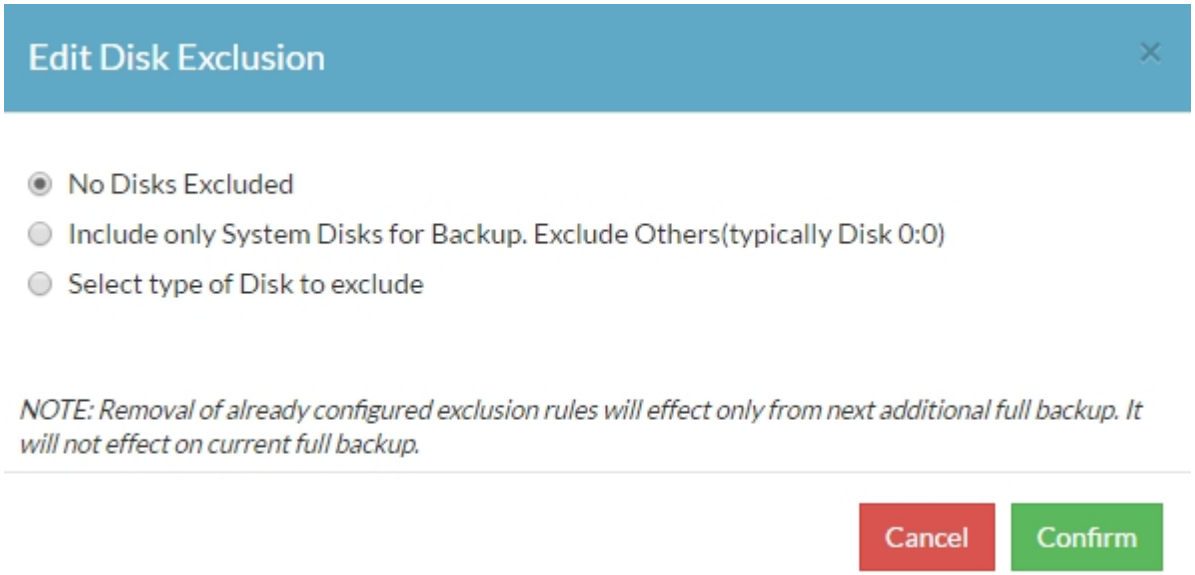
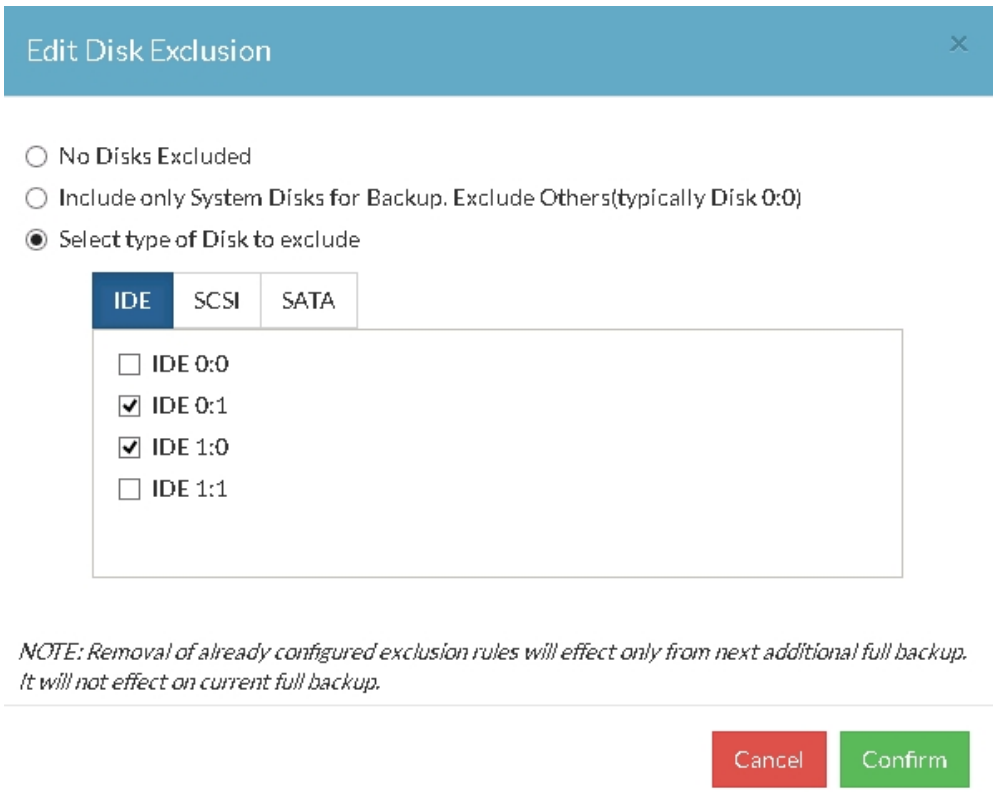
Note: By default No disks excluded option will be selected.



- Opting for the third option of selecting disk type will list all available disk types for VMs in VMware.
- User can choose the disk(s) to be excluded in each disk type.
- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.



- You can also add/delete a disk to/from exclusion list, whenever required by editing the backup job.

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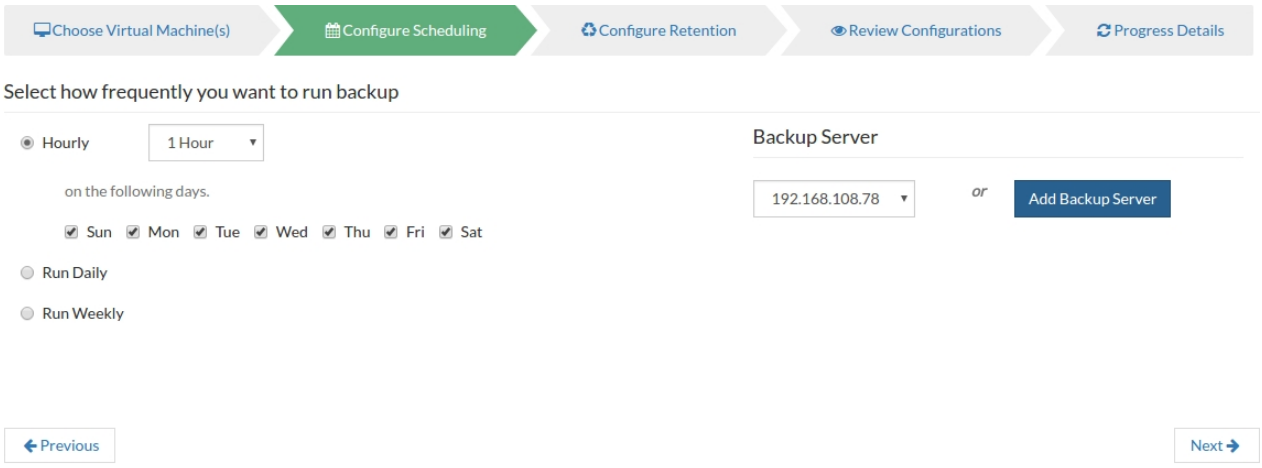
Note: Changes made in disk exclusion settings will be applied only when a additional full backup is scheduled.

Configure Scheduling:

- Users can configure their backup schedules flexibly based on their requirement. They can choose from Hourly/Daily/Weekly options for backup schedules.

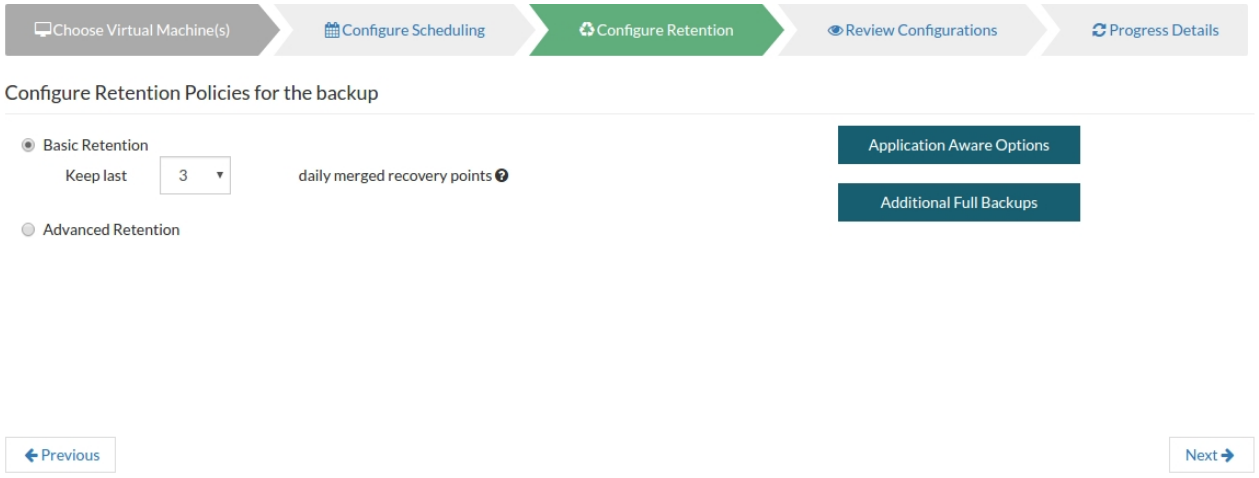


Configure Retention Policy:

- Users will be given 2 options for choosing retention policy:
  - Basic retention and
  - Advanced retention (GFS)

Basic:

- Vembu VMBackup provides forever incremental backups, where user can have 'n' number of incrementals. They also do have options to limit incremental count, which when retention count reaches incremental count, older incrementals will be purged while latest incremental will be retained as per configuration.



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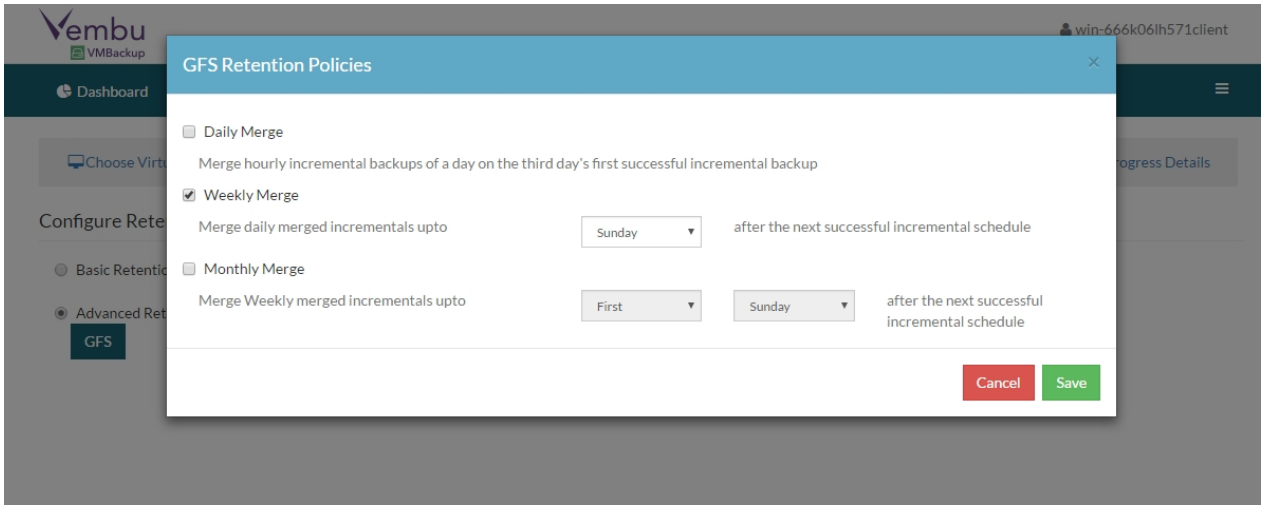
Advanced (GFS Retention):

- The Multilevel GFS retention reduces the time taken to restore backed up machines and most importantly reduce the size of image files in storage location. It also help avoid long chains of incrementals, ensuring safety of backup data and allow you to meet the requirements of your retention policy.

GFS retention merge incrementals on a daily, weekly and monthly basis:

- **Daily** - Daily merge will merge hourly incrementals on the third day's first successful incremental backup.
- **Weekly** - Weekly merge will commence based on user scheduled day's first successful incremental backup. It will merge all daily merged incrementals into a single weekly merged file.
- **Monthly** - Monthly merge is much similar as weekly merge where user need to schedule particular day in a month(For example: Third Wednesday) and the merge will get initiated at first successful incremental of the day. It merges all weekly merged files as a single monthly file.



Application-Aware VMware Backups:

VMware backups using VMware APIs, utilize application-specific VSS writers (SQL Server, Exchange) to take application-consistent backups and truncate exchange log files to free up the space.

- **Enabling application aware process, gives users two choices to choose:**
  - **Require successful application processing:** Choosing this option lets Vembu BDR track application consistency and triggers backup process, only when all the VSS writers in the VM are in stable state.
  - **Ignore application processing failures:** This option, lets Vembu BDR trigger backup jobs whenever the job is scheduled, despite the success/failure of application processed.

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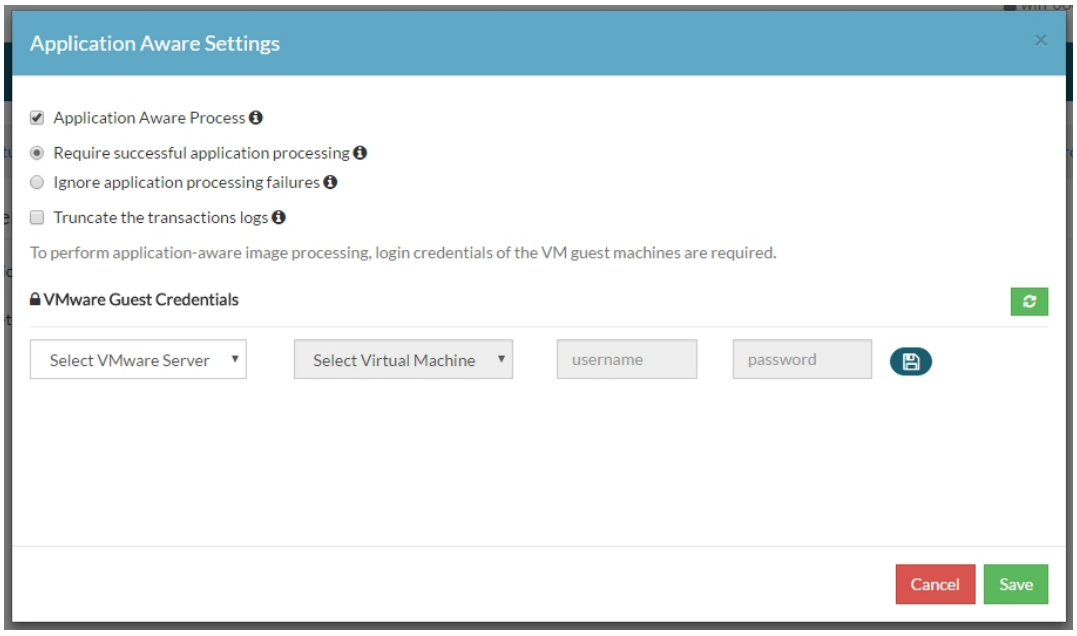
Truncate the transaction logs:

- Enabling this option lets Vembu BDR truncate the exchange server logs before initiating backup process. It purges and commits log files along with the .edb files and reduce storage space consumed.

Application Aware Image Process Prerequisites:

- Backup jobs enabled with application-aware image process option requires that your guest OS has latest VMware Tools, all the latest packages and patches installed.
- To perform application-aware image processing, you must provide guest OS login credentials for the selected VM(s) running MS Exchange server, MS SQL Server, MS SharePoint Server, MS Active Directory.



VMware Guest Credentials:

- To perform application-aware image processing, login credentials of VM guest machines are required. Such Guest OS login details can be provided using this option.

    - Select the desired VMware server and select the virtual machine to which you wish to enable application aware backups.
    - Provide the login credentials of the Virtual machine and save it.
    - Now scheduling VMware backup for particular VM will have application-aware options enabled.

Additional Full Backups:

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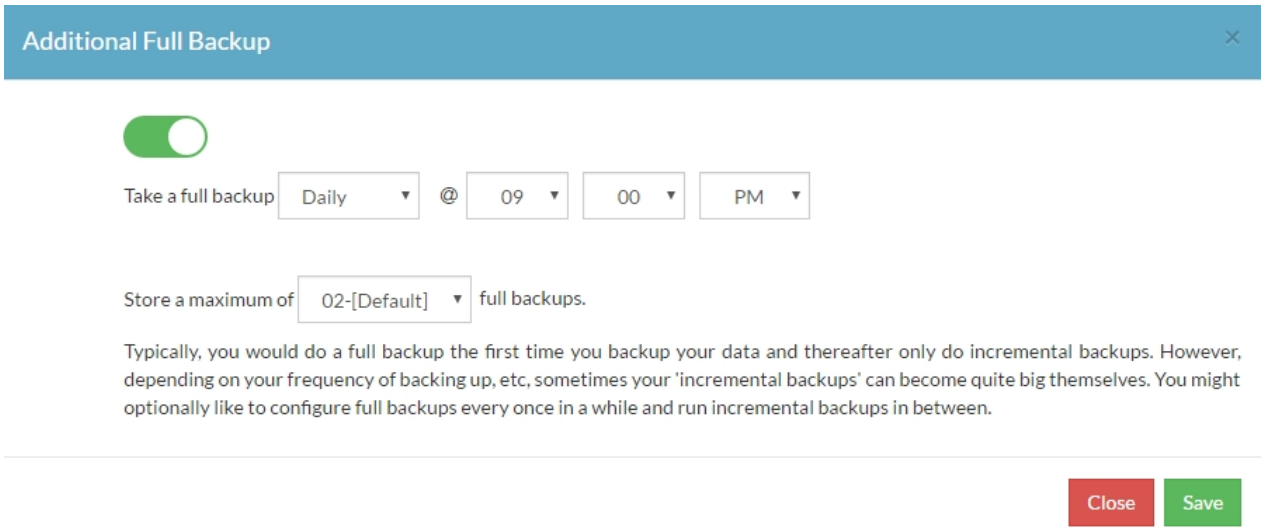

In an enterprise environment, configuring a backup job with one full backup and forever incremental is not a recommended practice. Users from such environment will tend to configure additional full backups periodically and that can be automated with our additional backup option.

Additional Full Backups can be configured in following order of scheduling:

- For Continuous and Run every few hours schedules- Configuring daily/weekly/monthly additional full backup is possible.
- For Run Daily schedule- Configuring weekly/monthly additional full backup are the possible options.
- For Run Weekly schedule- 'Monthly full backup' is the only possible additional full backup.
- For Run Once schedule- You cannot configure additional full backup.

Note: Users can also limit the number of full backups to be retained with 'Store a maximum of' option. With this option, users can share the unwanted storage data occupied based for a time period. For example, a user needing no more than 6 months of data retainment can configure 6 monthly full backups where the 1st additional full backup will be deleted on the 7th month when a new full backup completes successfully.

Review Configurations:

- User will be required to provide a name for backup scheduled.
- And can verify the configurations one final time, before hitting ‘run the backup'.

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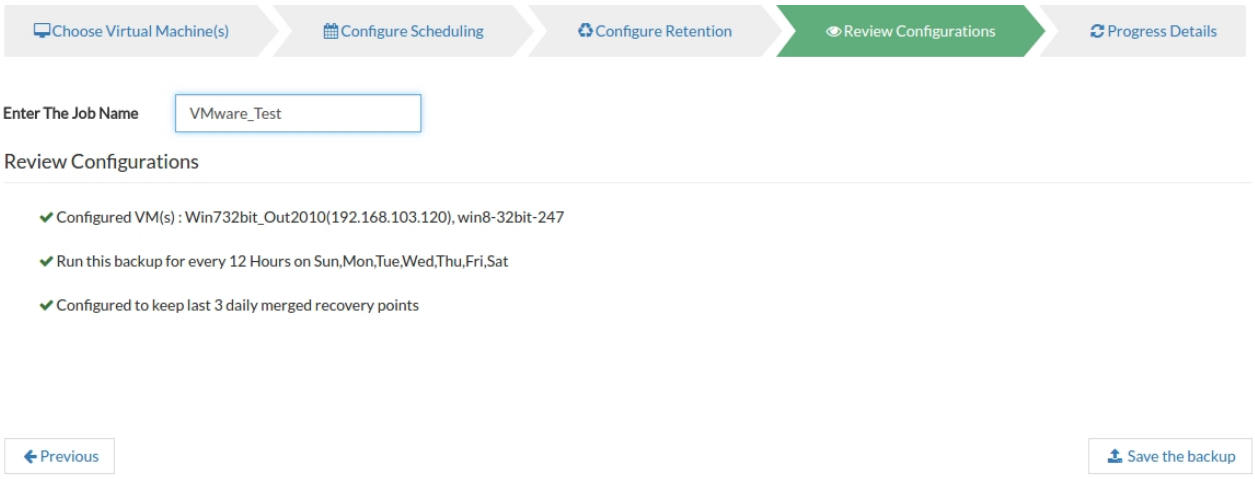
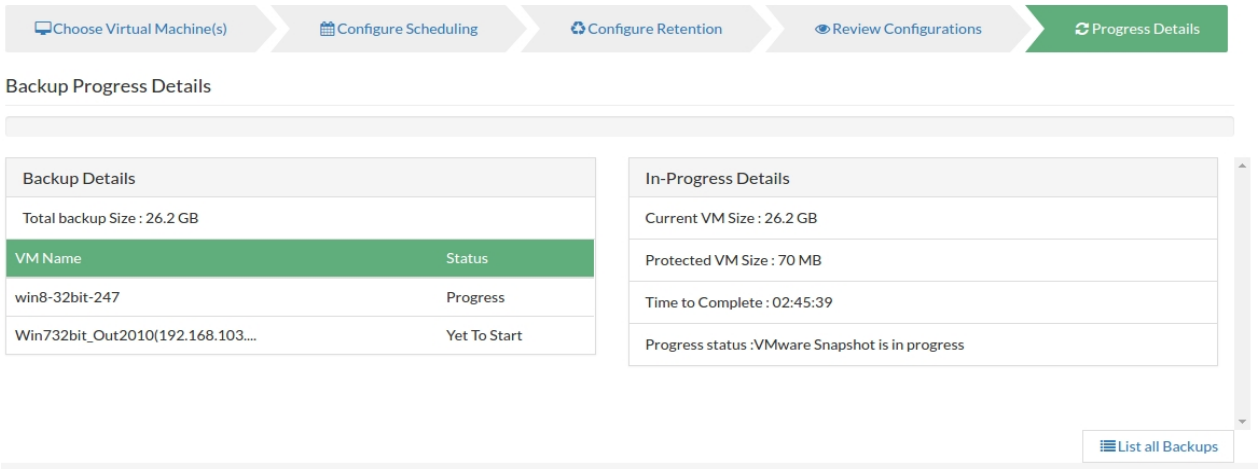


Progress Details:

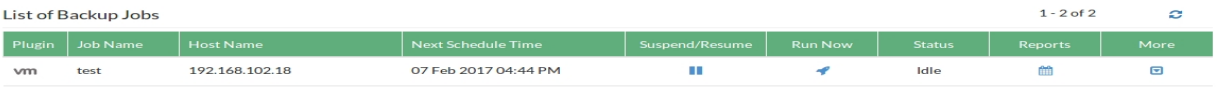
- Thus, backup progress is witnessed and can be verified once it completes successfully.



Vembu VMBackup User Guide

Manage Backup Job

- Login to Vembu VMBackup and go to ' Backup → List Jobs'.
- The list of backup jobs configured from that particular client machine will be listed along with options to edit, suspend/resume, run/abort, delete the backup job.
- Users can also view the plugin type and historical report of a particular backup job.



Suspend/Resume:

- This option lets a user to suspend and resume a configured backup job, if required.
- A suspended backup job will not run schedules as per its configuration, until/unless it is resumed.

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Run Now:

- This option is used to immediate schedule a backup job, once clicked.
- If run now is triggered in midst of scheduled interval, then the next schedule interval will be calculated from the time of recent backup job.
  Note: If a backup job is triggered in midst of scheduled interval with run now, then the next backup schedule will be triggered

Abort:

- This option is used to abort a backup job that is currently in progress, if required.

View:

- This option allow user to view thesaved configuration of any specific backup job.

Edit:

- This option allow user to edit the configuration of an already scheduled backup job.
- Edit option allow user to completely reconfigure the backup job being edited. (i.e) User can:
  - Add/remove VMs.
  - Reconfigure the schedule frequency, retention policies, additional backups and application aware options of backup job.
- Once done, review the edited configuration and save it.

Delete:

- This option is used to delete the backup job, if no longer required.
- Proceeding with this option, will ask for deletion confirmation and once confirmed the backup job will be deleted in client.
- If server is up and listening, the respective backup data of particular job will also be deleted in server end.

Vembu VMBackup User Guide

VMware Replication

VM replication page allow users to replicate VMs from a source ESXi/vCenter server to a target ESXi/vCenter server in DR location without disrupting routine tasks of the primary ESXi/vCenter server(Source). Please note that, virtual machines that are active/running can also be replicated without any disruption in their performance.

- VM replication is recommended for business critical processes, where business critical VMs can be replicated in regular periodic interval so that disasters are less harmful.
- Vembu powered VM replication clubbed with features such as: Failover, Failback and Network & IP remapping, simplifies disaster recovery ensuring an effective replication process.

Setup Replication Jobs

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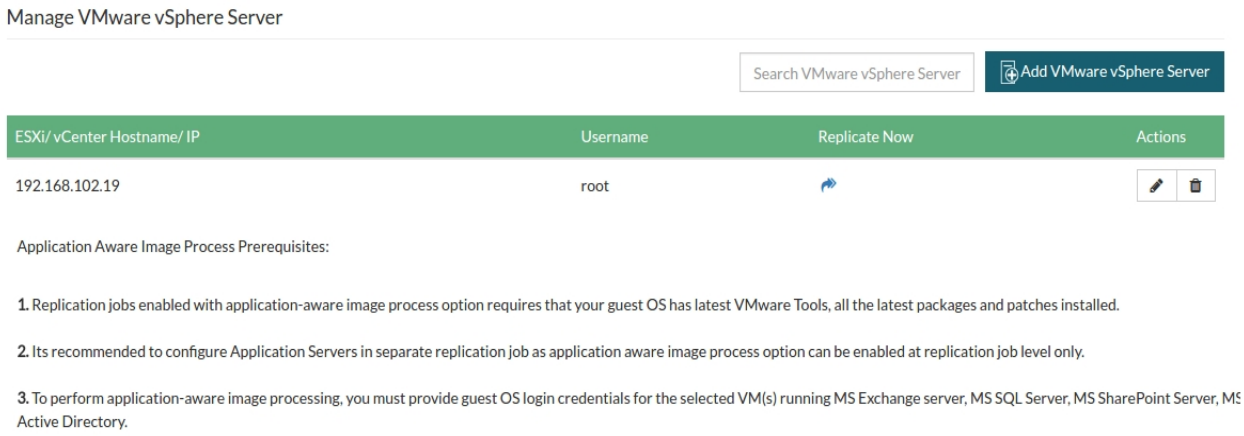
[Manage Replication Jobs]

Vembu VMBackup User Guide

Setup Replication Job

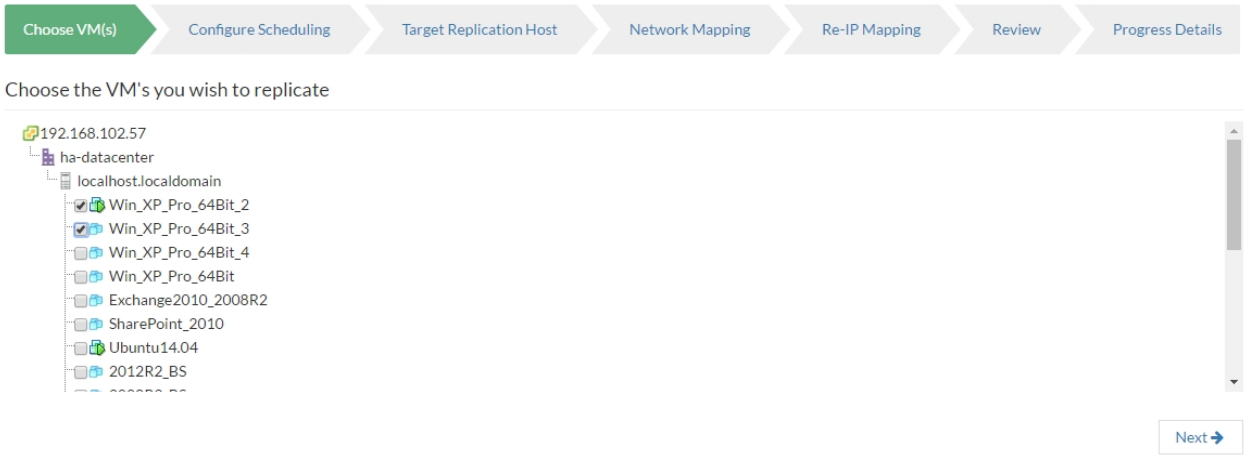
Configuring VMware vSphere Replication:

- Go to VM Replication → VMware vSphere.
- You will have list of ESXi/vCenter servers added. Click on Replicate Now to begin configuring replica-tion.



Choose Virtual Machine(s):

- Choose list of VMs you wish to replicate and proceed.



VM(s)/Disk(s) Exclusion

- On selecting Host level replication, you might wish to exclude some specific set of VMs from getting replicated. Such VMs can be excluded using VM(s)/Disk(s) exclusion option.

VM Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.

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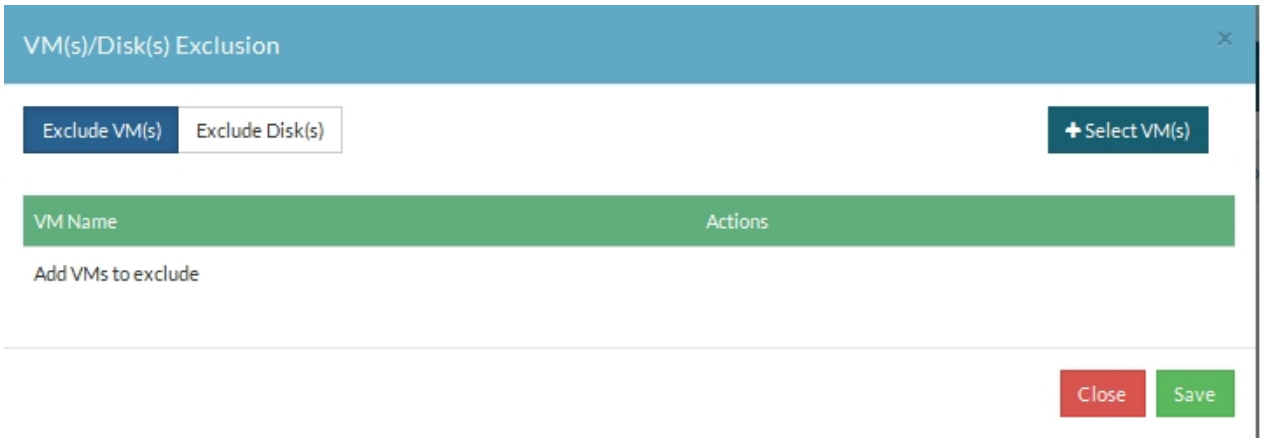
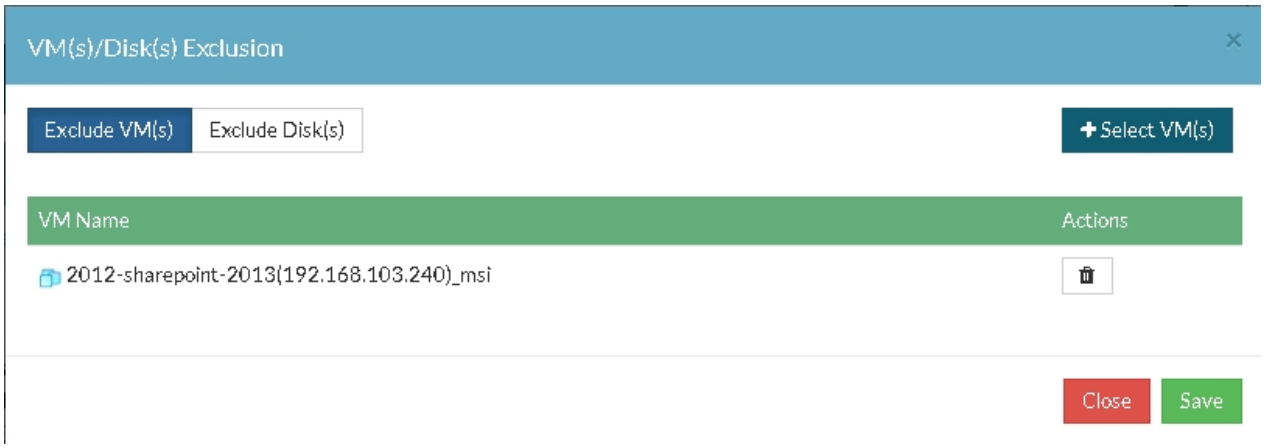


- Choose 'Exclude Disk(s)' tab.
- To exclude a virtual machine from a configured host level replication, click 'select VM' and choose the VMs to be excluded and click 'Exclude'.
- Once added, save the exclusion settings.



- You can also add/delete a VM to/from exclusion list, whenever required by editing the replication job.
  Note: Changes made in VM exclusion settings will be taken into effect immediately with next replication schedule.

Disk Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.

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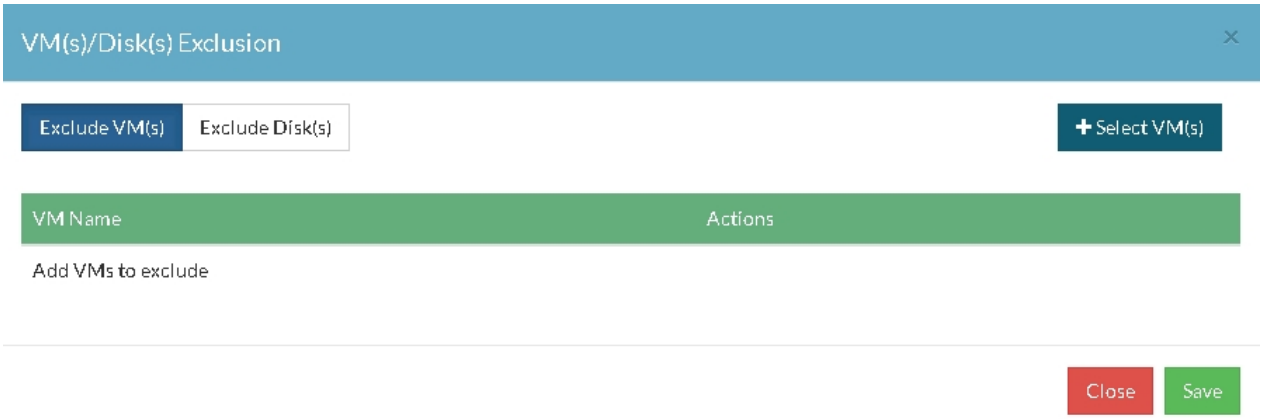
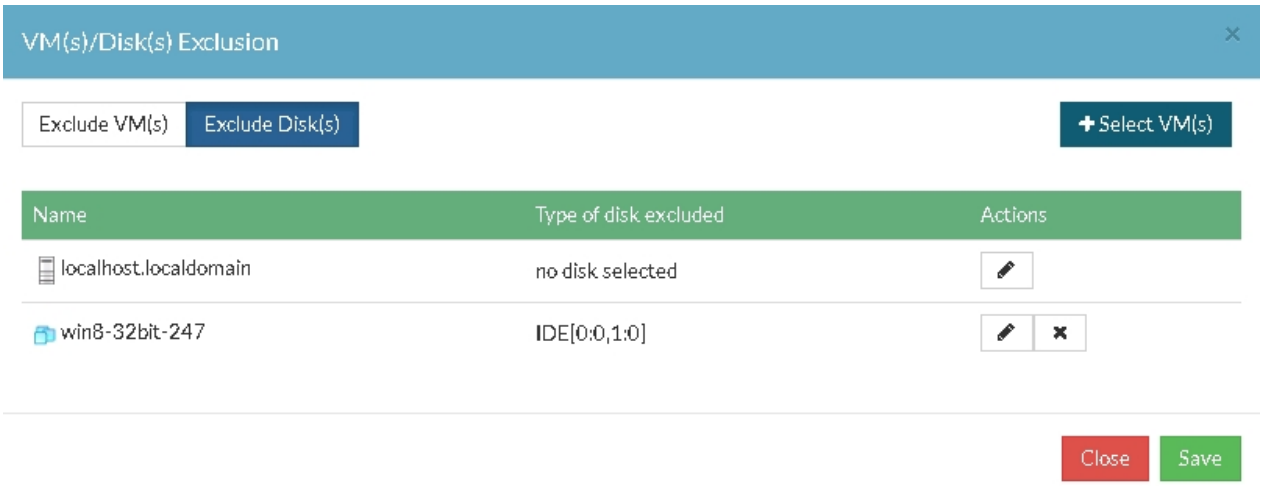


- Choose 'Exclude Disk(s)' tab.
- Disk exclusion can be either enabled at host level or can be configured at VM level.

  Host level Disk Exclusion- This exclusion type is possible when you opt to configure host level replication job. Under 'Exclude Disk(s)' tab, you will find the configured host(s) listed.



- You can choose 'Edit Disk Exclusion' option, to assign global disk exclusion rule for VMs under a chosen host. Edit Disk exclusion tab will have following exclusion rules:
  - No disks Excluded
  - Include only System Disks for VM replication. Exclude Others (typically 0:0)
  - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.

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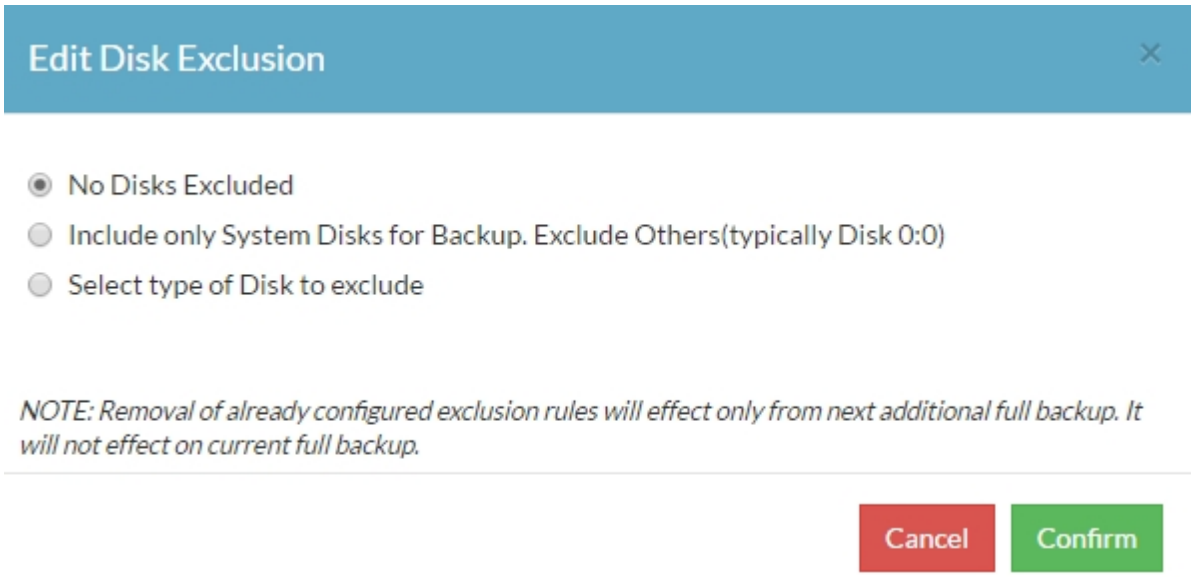
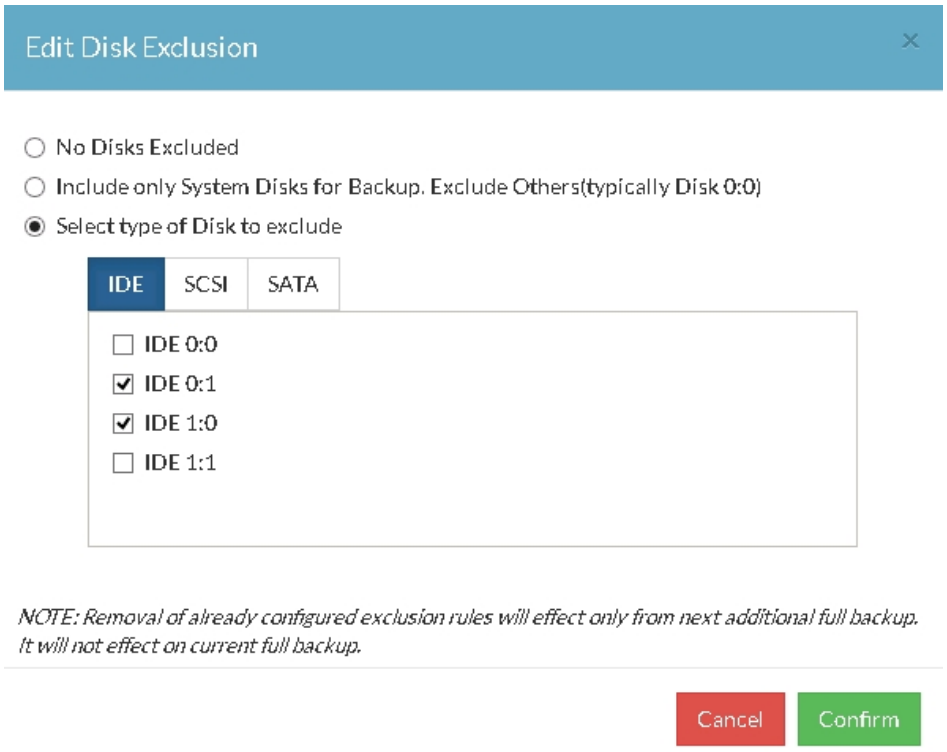


- Opting for the third option of selecting disk type will list all available disk types for VMs in VMware.
- User can choose the disk(s) to be excluded in each disk type.



- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.

  VM level Disk Exclusion- This exclusion type can be configured in both host level and VM level replication job. Under 'Exclude Disk(s)' tab, you will find the list of configured VM(s).

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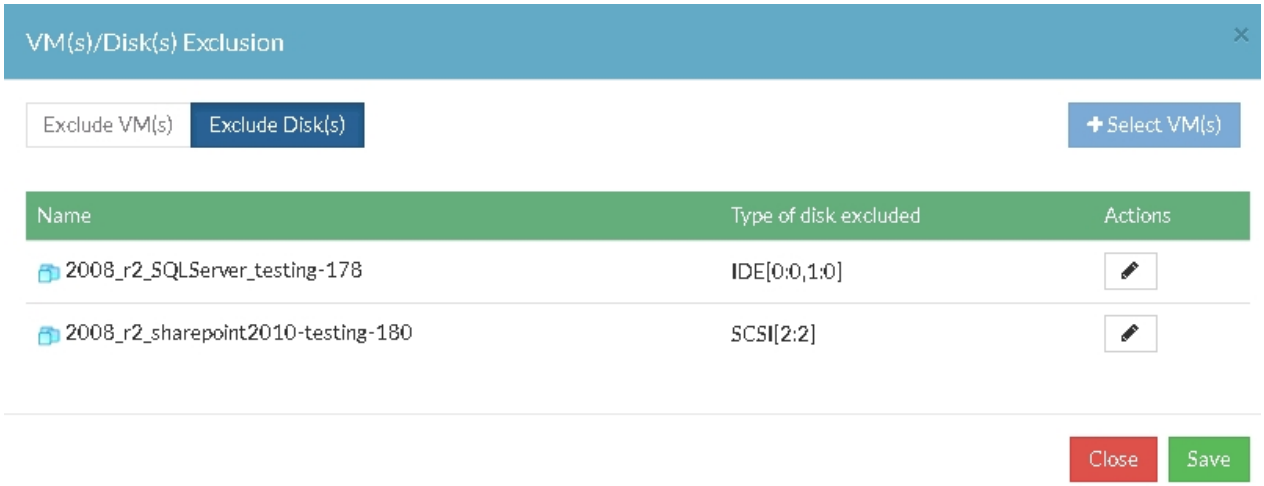
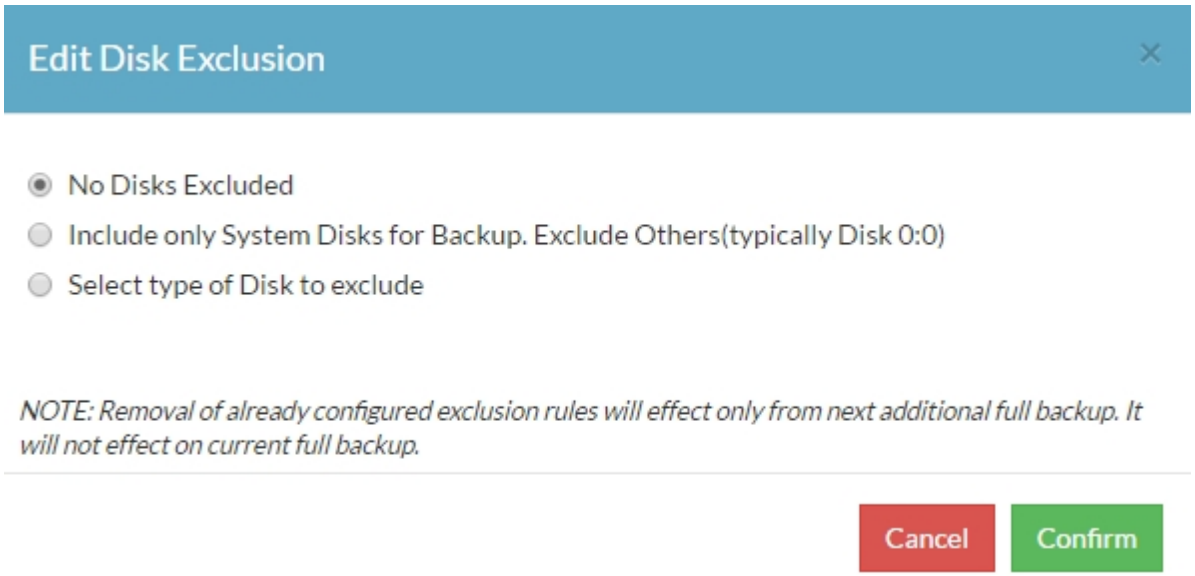
If it's a host level replication job, you can assign both host level exclusion rule as well as assign exclusion rule for individual VMs by adding VMs to be configured using Select VM(s) option.



- Choose 'Edit Disk Exclusion' option alongside a VM to configure disk exclusion rule for the selected VM. Edit Disk exclusion tab will have following exclusion rules:
    - No disks Excluded
    - Include only System Disks for VM replication. Exclude Others (typically 0:0)
    - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.



- Opting for the third option of selecting disk type will list all available disk types for VMs in VMware.
- User can choose the disk(s) to be excluded in each disk type.
- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.

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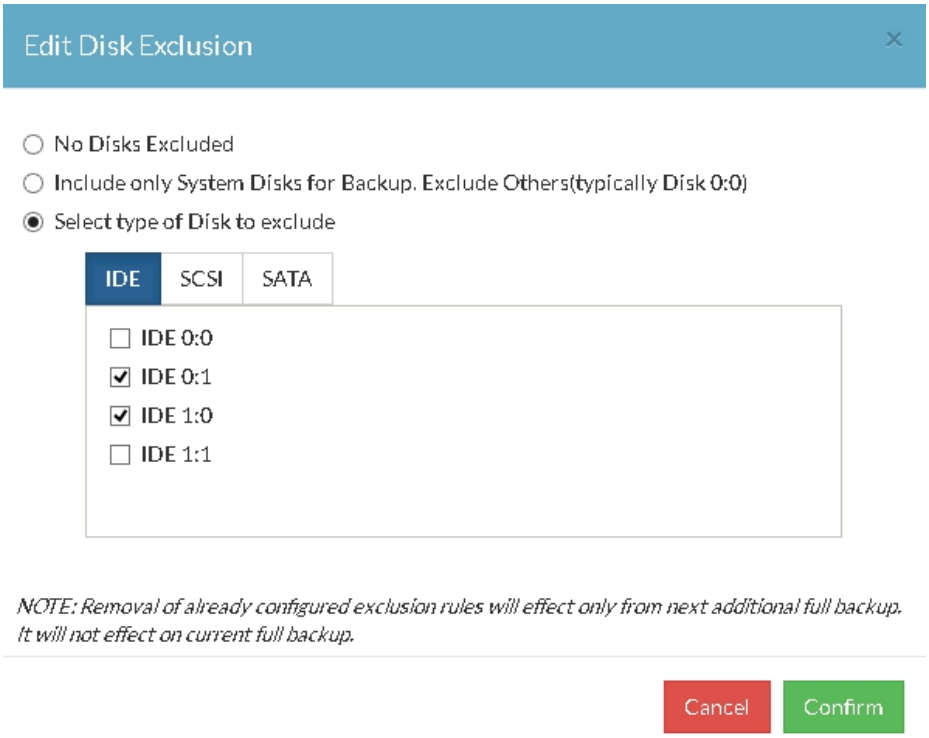
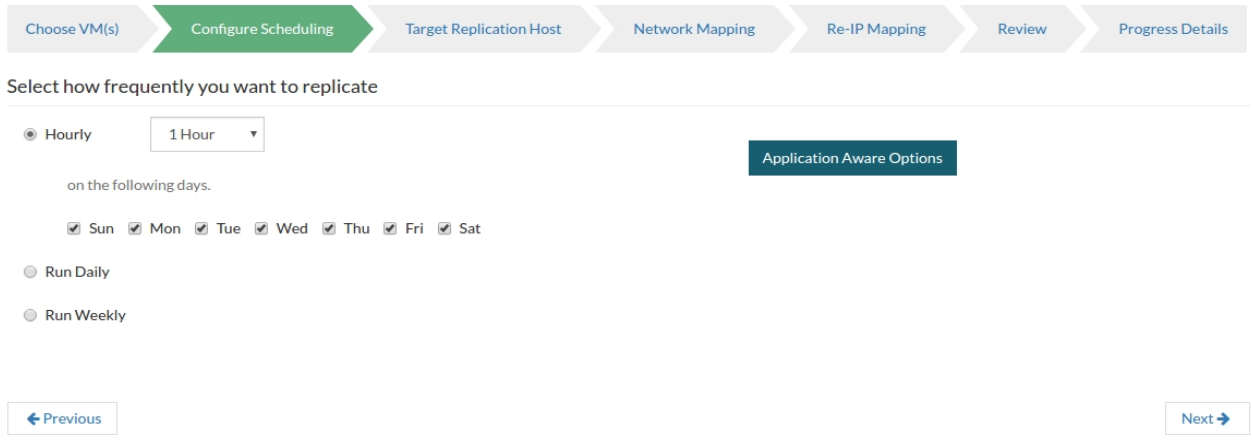


- Disks once excluded cannot be included back in an already configured replication job.

Configure Scheduling:

- Now users can configure replication schedules flexibly based on requirement. They can choose between Hourly/Daily/Weekly options for replication schedules.



Application-Aware Options for VMware Replication:

VMware replication using VMware APIs, utilize application-specific VSS writers (SQL Server, Exchange) to take application-consistent replication and truncate exchange log files to free up the space.

- **Enabling application aware process, gives users two choices to choose:**
  - **Require successful application processing:** Choosing this option lets Vembu BDR track

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application consistency and triggers replication process, only when all the VSS writers in the VM are in stable state.

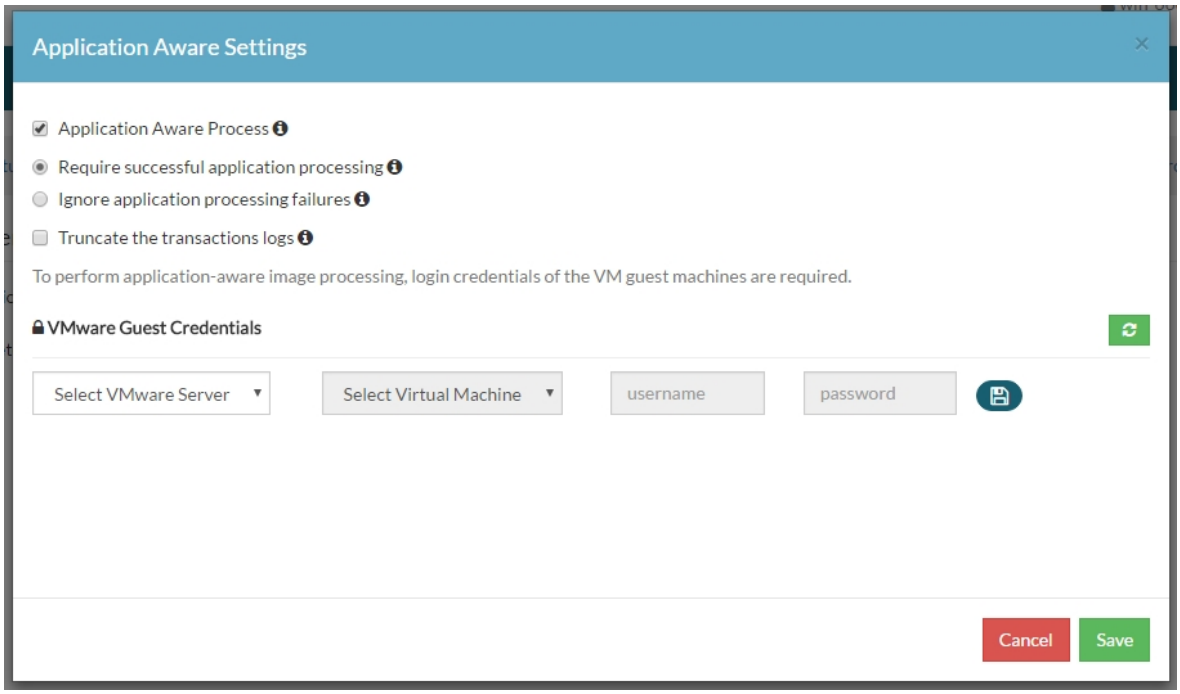
- **Ignore application processing failures:** This option, lets Vembu BDR trigger replication jobs whenever the job is scheduled, despite the success/failure of application processed.

Truncate the transaction logs:

- Enabling this option lets Vembu BDR truncate the exchange server logs before initiating replication process. It purges and commits log files along with the .edb files and reduce storage space consumed.

Application Aware Image Process Prerequisites:

- Replication jobs enabled with application-aware image process option requires that your guest OS has latest VMware Tools, all the latest packages and patches installed.
- To perform application-aware image processing, you must provide guest OS login credentials for the selected VM(s) running MS Exchange server, MS SQL Server, MS SharePoint Server, MS Active Directory.



VMware Guest Credentials:

To perform application-aware image processing, login credentials of VM guest machines are required. Such Guest OS login details can be provided using this option.

- Select the desired VMware server and select the virtual machine to which you wish to enable application aware replication.
- Provide the login credentials of the Virtual machine and save it.
- Now scheduling VMware replication for particular VM will have application-aware options enabled.

Configuring Disaster Recovery Server for Power Replication™:

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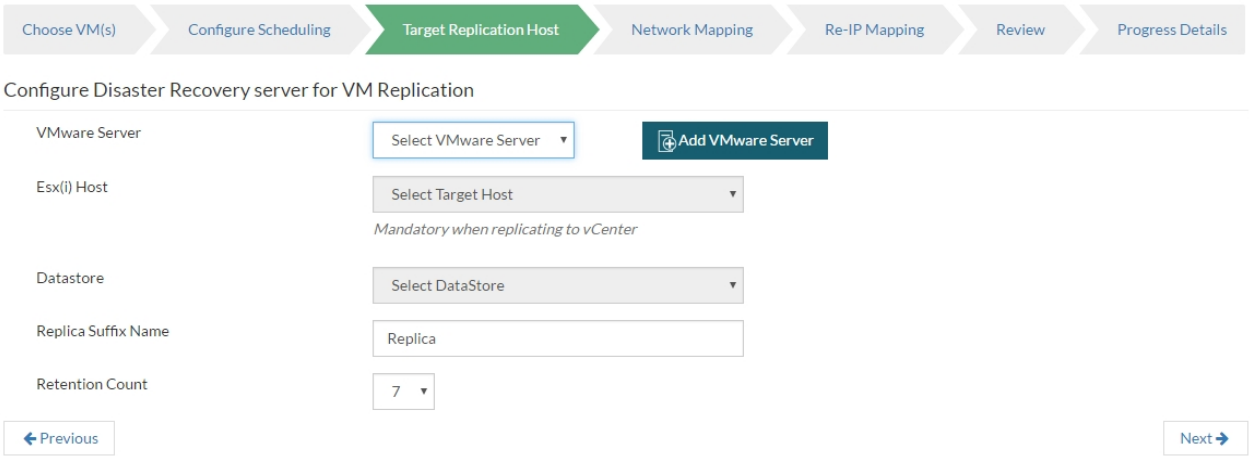
- Choose a Target VMware server/vCenter → Select a target host from the available list(Mandatory for vCenter replication) → Select a Datastore from the available list.
- By default, target VM replica will be given a suffix name as 'Replica', which can also be edited.
- Select retention count for replicated data, which is by default set at maximum count.

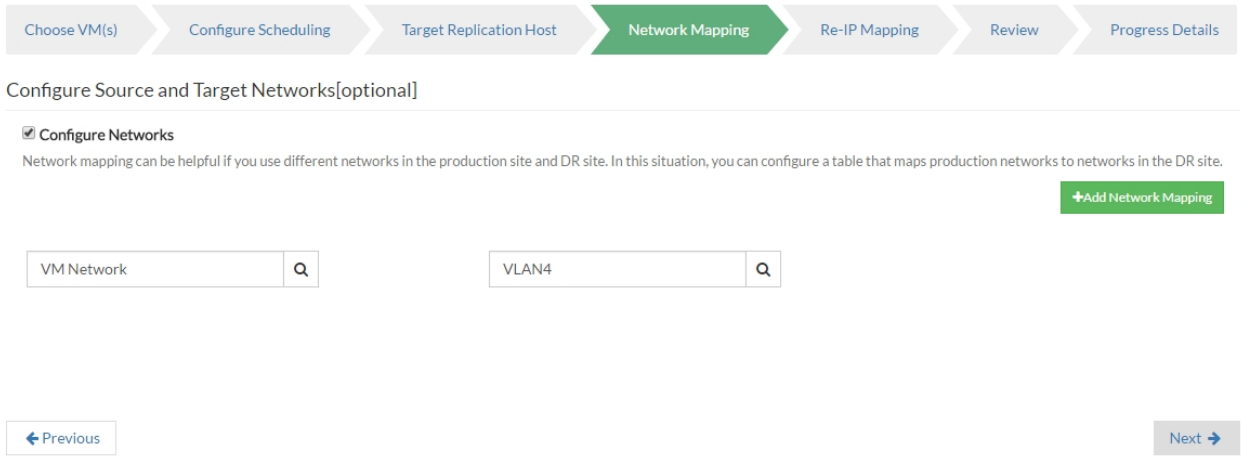
- Once done with all the above options, proceed with Next.



Network Mapping:

Network mapping can be helpful if you use different networks in the production site and DR site. In this situation, you can configure a table that maps production networks to networks in the DR site.

- If you wish to configure Network Mapping, do enable the 'Configure Networks' checkbox.
- Click on 'Add Network Mapping' to add and map more networks.
- Once done mapping networks, proceed with Next.



Configure Re-IP Mapping:

Re-Ip rules can be helpful if the IP addressing scheme in the production site differs from

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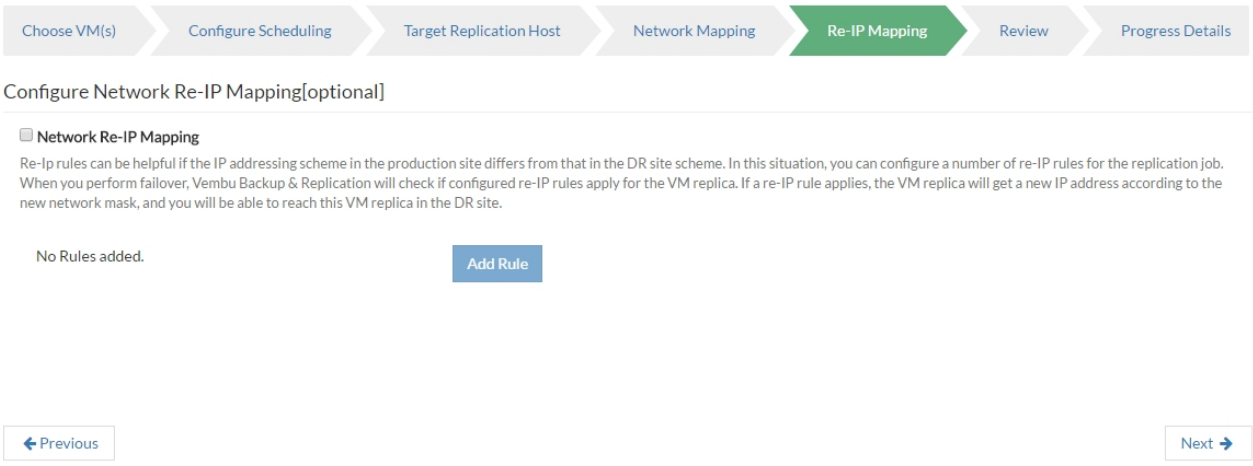
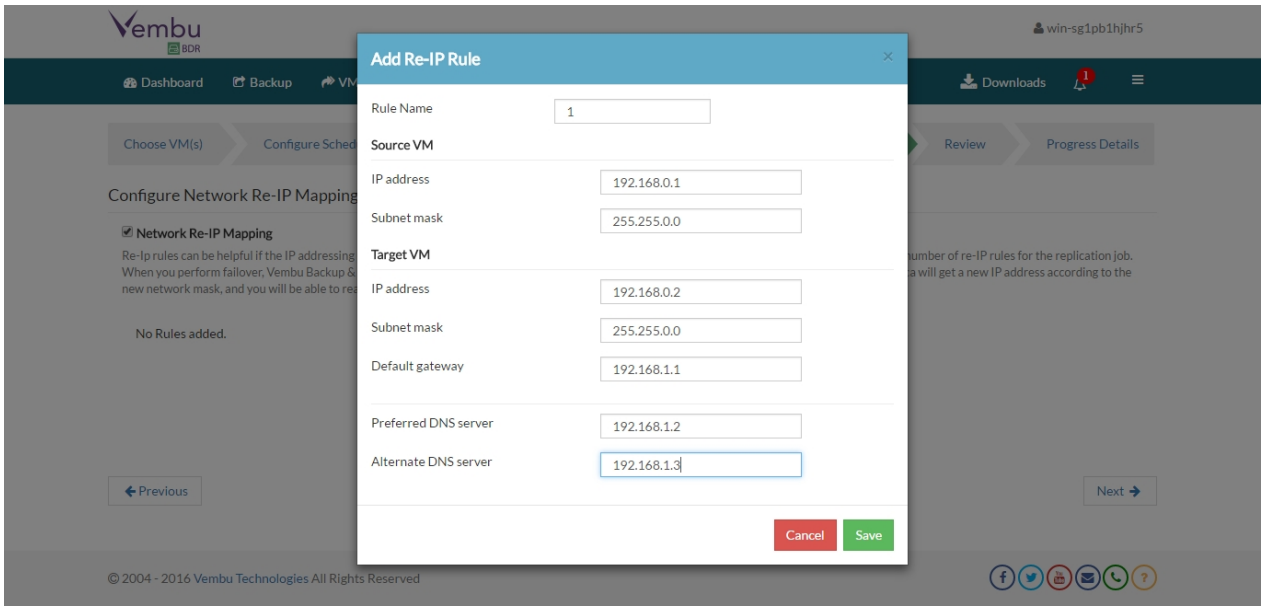
that in the DR site scheme. In this situation, you can configure 'n' number of re-IP rules for the replication job.

- Re-IP Mapping rule will be applied during FailOver. When FailOver, the replica will be power on with the configured Re-IP Mapping rules.
- If you wish to configure Network Re-IP Mapping, do enable the Network Re-IP Mapping checkbox.



- A dialog box, to add Re-IP rule will popup. Do fill all required details and save the rule.
- You can also add more rules, with Add Rule option.



- Now proceed to Review the configurations entered and once done reviewing provide a name for replication job and trigger start the replication.

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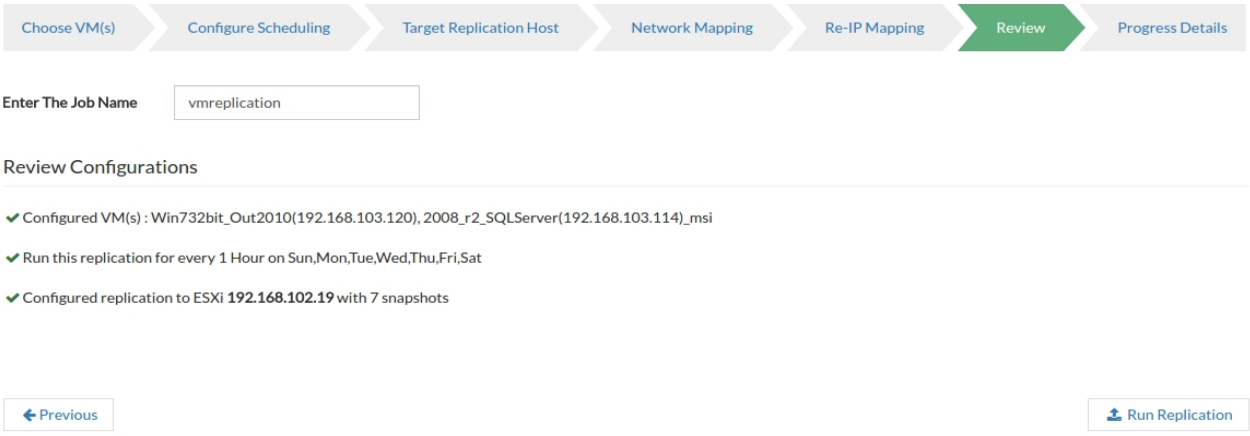


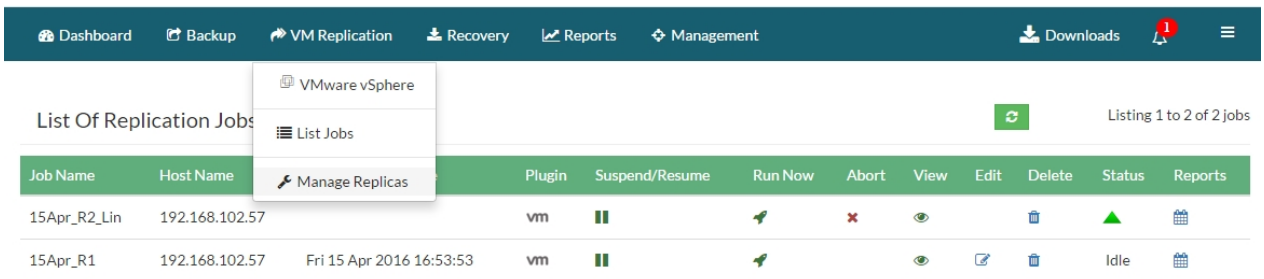
- Monitor the replication progress and ensure it completes successfully.

Vembu VMBackup User Guide

Manage Replication Job

- Go to VM Replication → List Jobs.
- This page lets users to view, run, suspend, delete and edit the replication jobs configured. Users can also view historical report of individual replication job.

- Go to VM Replication → Manage Replicas.



- You will be directed to page with the list of replication jobs configured from Vembu BDR server.

- This page lets you to perform FailOver & FailBack processes for the replicated VMs.

Visit the following page for steps to restore replicated VMs: Click Here

Vembu VMBackup User Guide

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Disaster Recovery

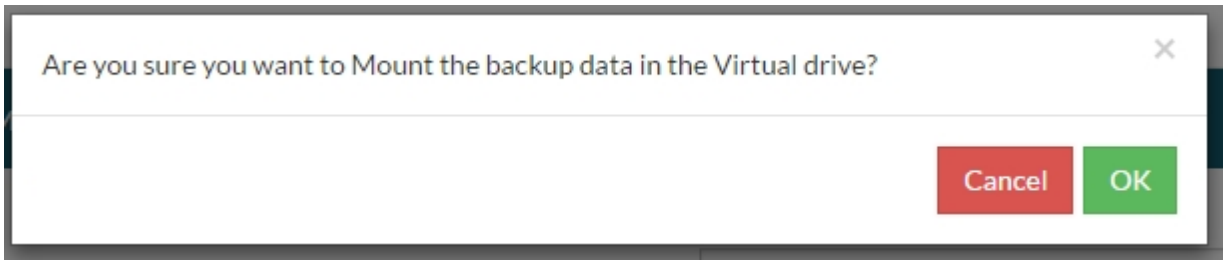
- Login to Vembu BDR backup server web console via any one of following options:
  - By typing default URL: http://localhost:6060 (or)http://<Ip_Address_of_Machine>:6060 in browser
  - Via shortcut created on desktop.
  - Via Vembu VMBackup client web console option in tray icon.

- Go to Recovery tab.
- Backups configured from various client machines to the server, will be listed for recovery, along with below listed options:
  - Restore
  - Virtual mount
  - Proceed to Persistent Instant Boot version delete
  - Delete
  - Replication actions
  - Status
  - Reports

Job Name	Client Name	Size	Restore	Mount	Persistent	Delete	Actions	Status	Reports
3vms_test	11_vm_35	182.06 GB						Idle	
4vms_test	virmac_12_35	188.26 GB						Idle	
sql_app_hyperv	192.168.102.27	76.91 GB						Idle	
vm_test_62	virmac_5_35	34.1 GB							
vm_test_19	win2007_2_35	34.64 GB						Idle	
vm_test_66	virmac_23_35	19.4 GB						Idle	
vm_test_34	virmac_3_35	32.31 GB						Idle	
vm_test_23	12_vm_35	63.94 GB						Idle	

Virtual mount:

- This option lets you instant mount backup data virtually where users can access backup in different file formats such as: IMG, VHD, VHDX, VMDK.



- Users can either take a copy of this mounted data or boot respective files if needed on KVM(IMG file in Linux), VMware vSphere(VMDK) or Hyper-V(VHD, VHDX).
- Once done with requirement, unmount backup data. This will resume backup job, so that incrementals will run as per schedule.

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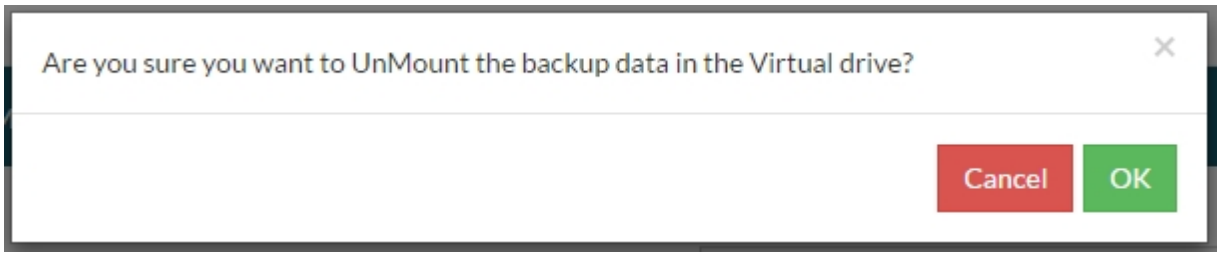
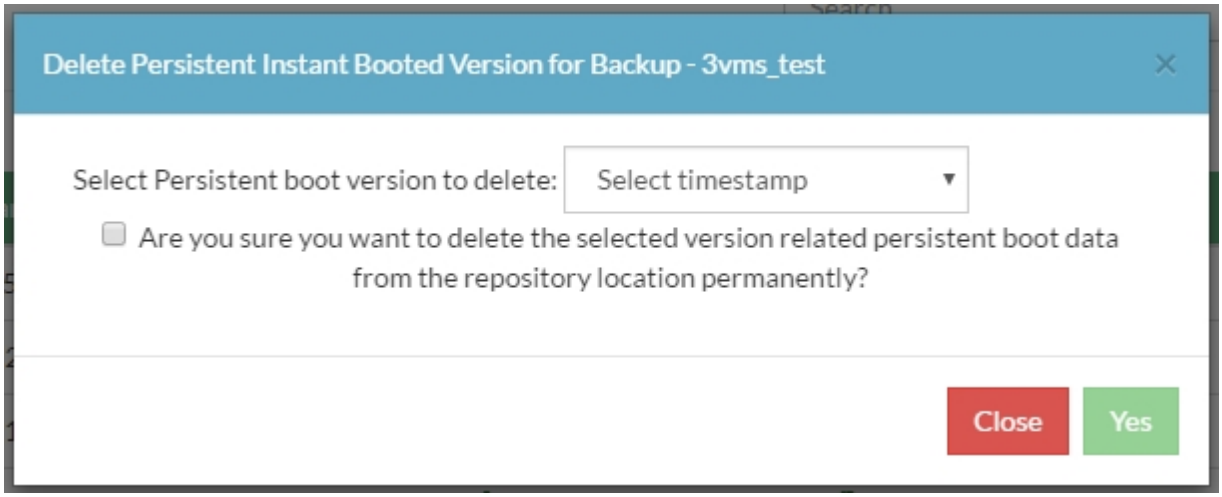


Proceed to Persistent Instant Boot version delete:

- During each instant boot and instant file recovery session, a change in backup data will take place which then is saved as persistent Instant boot data.
- Persistent data can be restored using restore options, if needed.
- Persistent data will be listed with a (+p) sign alongside timestamps of backup versions.
- Such persistent data can also be deleted if not required, using the 'Proceed to Persistent Instant Boot version delete' option.
- The option let user choose the timestamp of persistent data to be deleted.
- User will also be required to confirm deletion by selecting the checkbox 'Are you sure you want to delete the selected version related persistent boot data from the repository location permanently?' to proceed with deletion process.



Restore:

- Proceeding with restore option will list below restore options to choose from:
  - Quick VM Recovery
  - Live Recovery to ESX(i) server
  - File Level Recovery
  - Disk Level Recovery
  - Download

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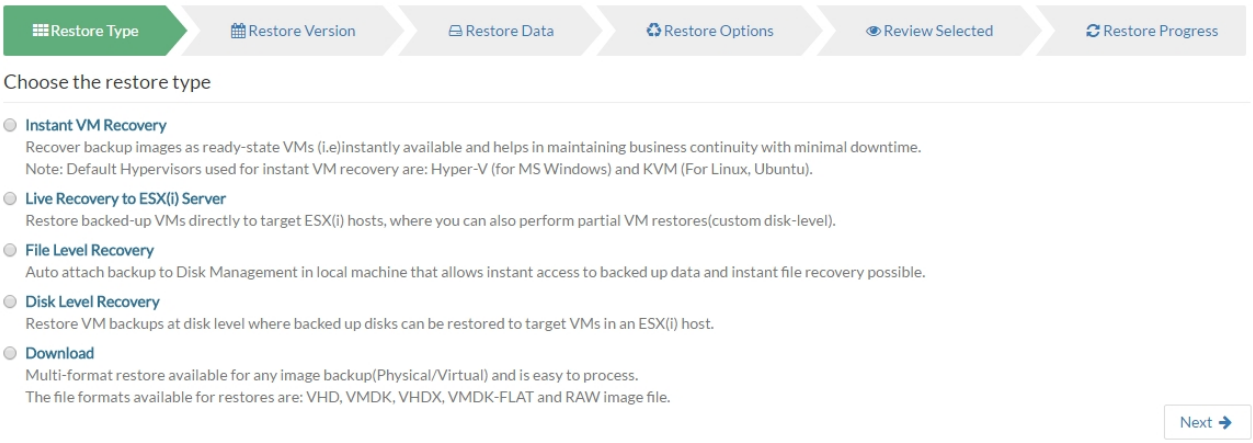


Vembu VMBackup User Guide

Quick VM Recovery

Quick VM recovery option allow user to quick access backup images as ready state VMs. (i.e) Minimal downtime and business continuity secured by making VMs instantly available. Quick VM recovery gives 3 choices of instant boot software to users:

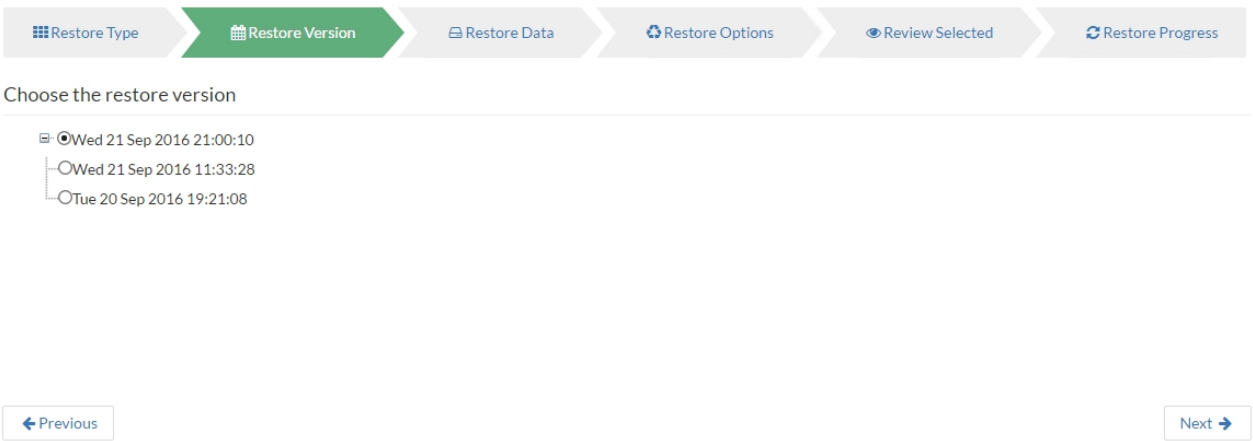
- VMware (Available in both Windows and Linux servers as an alternate software for instant boot)
- Hyper-V (Default chosen software for Windows and available only on Windows servers)
- KVM (Default chosen software for Linux and available only on Linux servers)

Vembu VMBackup User Guide

VMware

Login to Vembu BDR server installed in a Windows/Linux environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.



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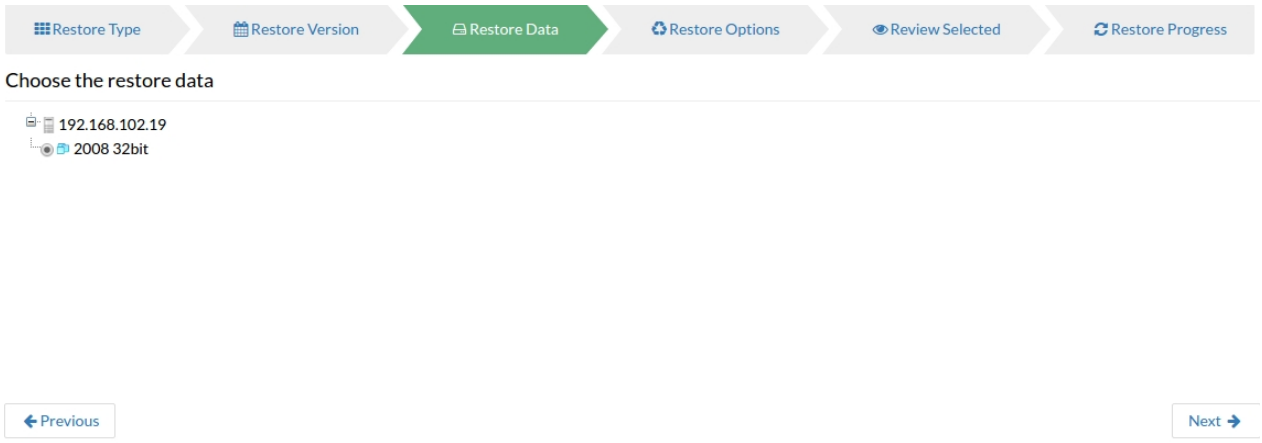
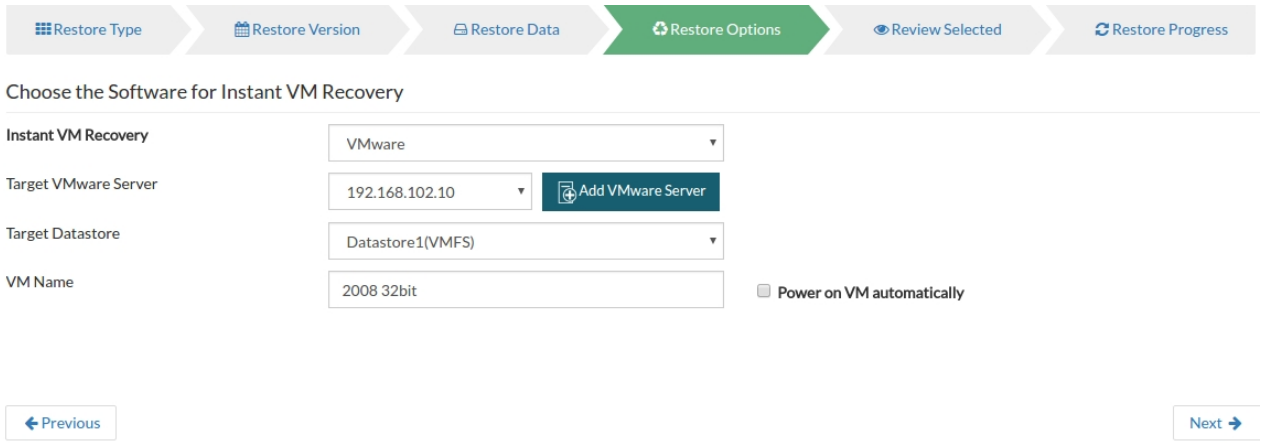
- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to configure in which VMware server to boot.



- User can choose VMware as software for instant boot (In both Windows and Linux servers) and need to enter the necessary details to instant boot in VMware environment.
- In order to proceed with instant boot via ESXi/vCenter server, user have to choose: target VMware server and target datastore. User will also be requested to provide a VM name(which by default takes name of VM to be restored).
- User can also specify whether the VM should be powered ON automatically.



- Once done configuring VMware server details, proceed to review configuration.

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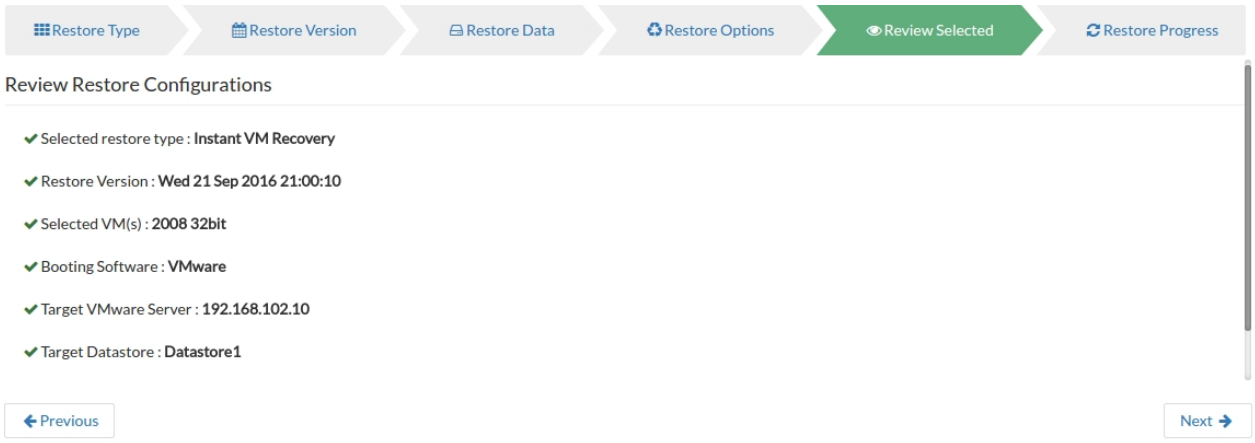
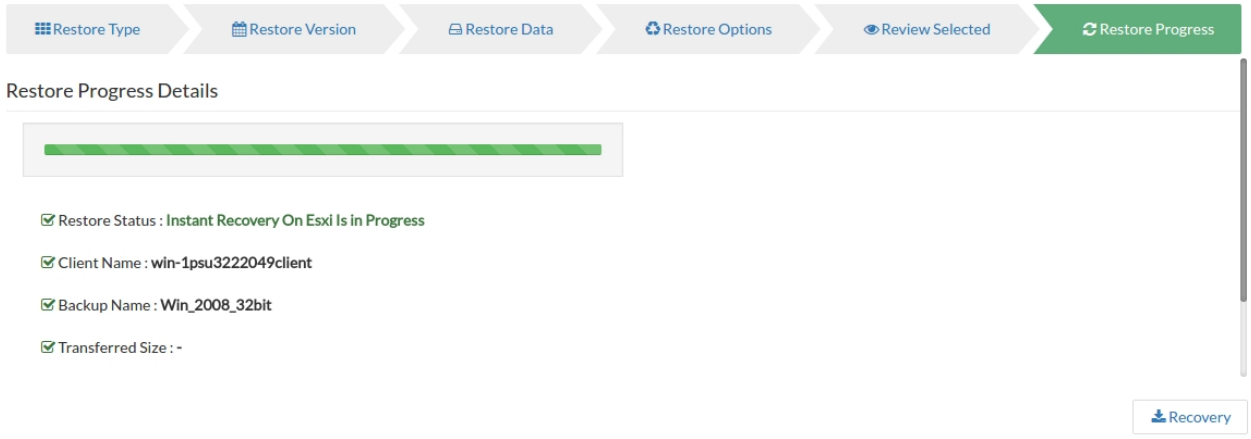


- Once done reviewing, click Next to proceed with Instant Booting the VM.



- VM will get automatically created in VMware server VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

Vembu VMBackup User Guide

Hyper-V

Login to Vembu BDR server installed in a Windows environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.

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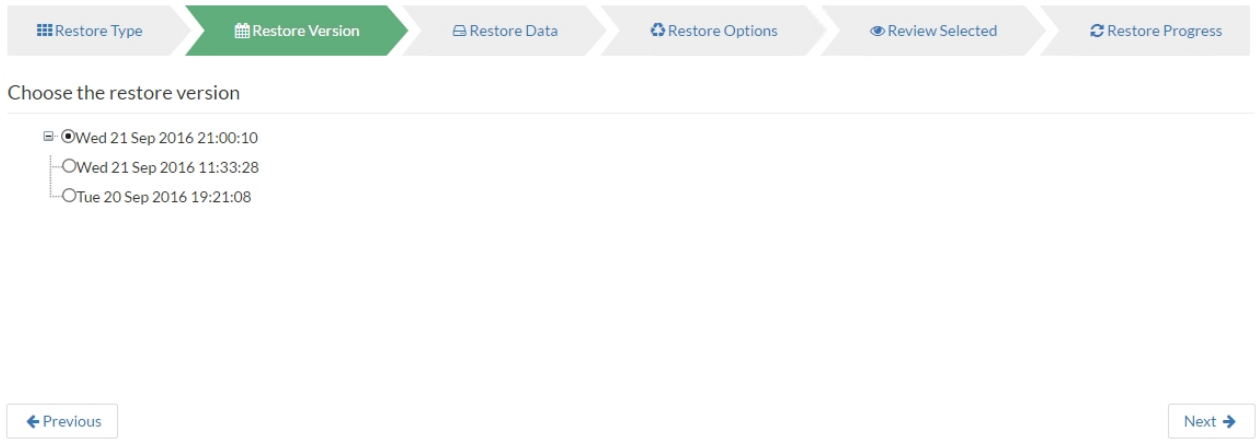
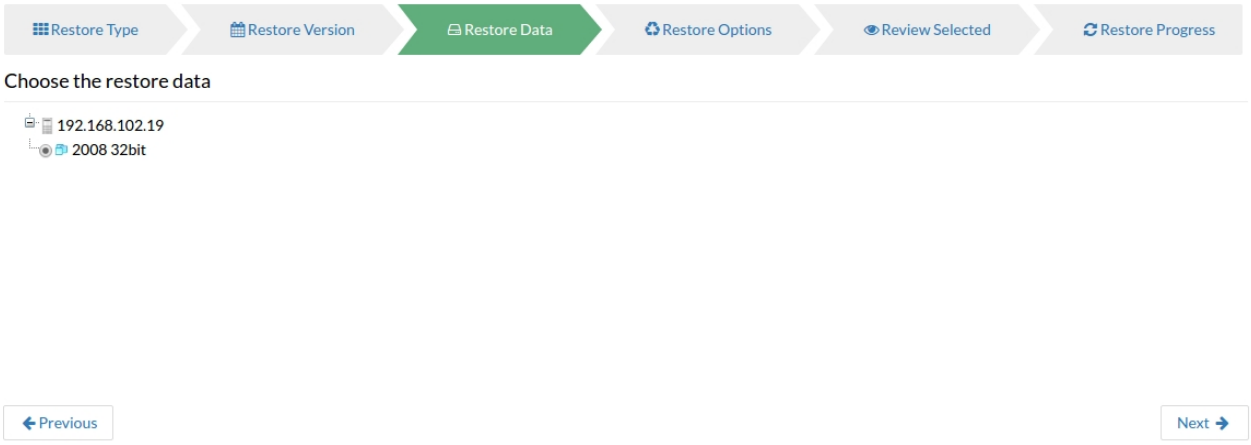
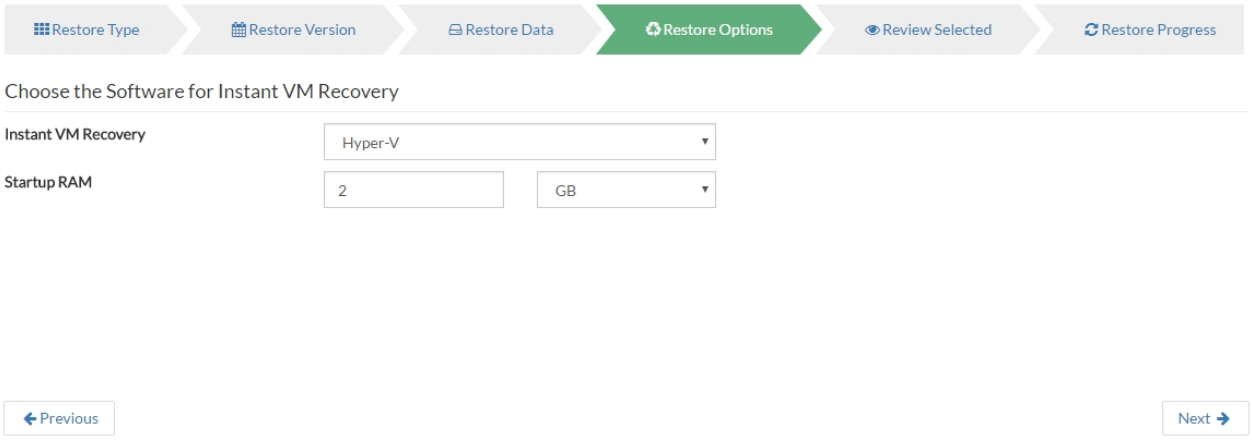


- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to allocate RAM for Instant boot.



- The software used to instant boot is Hyper-V (For Windows servers) and the default RAM size chosen is 2 GB which can be modified based on user requirement.



- Once done allocating RAM size, proceed to review configuration.

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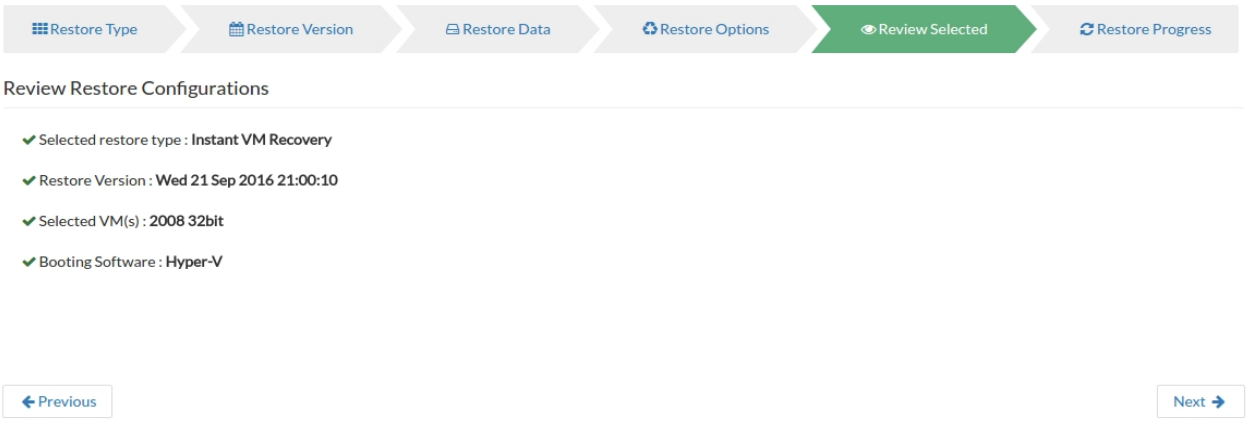
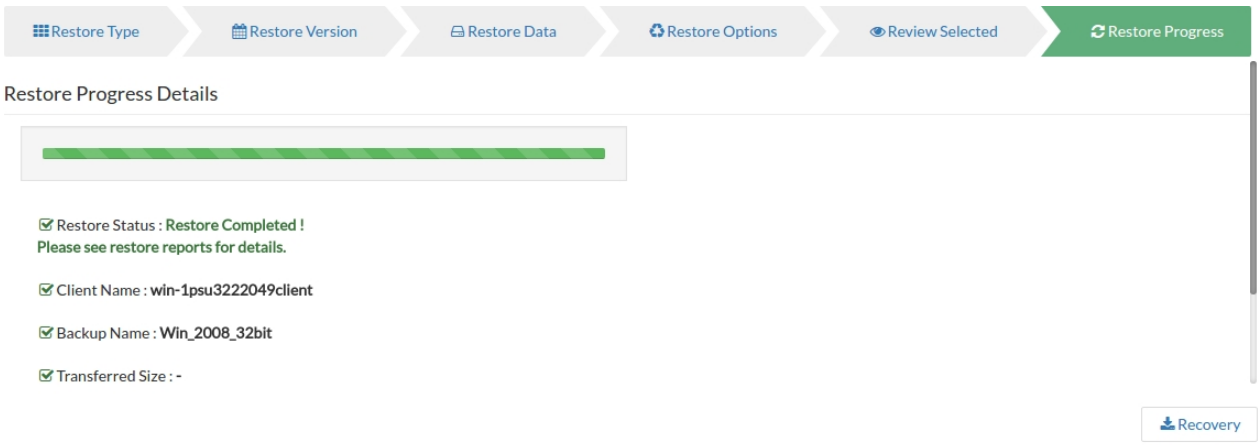


- Once done reviewing, click Next to proceed with Instant Booting the VM.



- VM will get automatically created in Hyper-V VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

Vembu VMBackup User Guide

KVM

Login to Vembu BDR server installed in a Linux environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.

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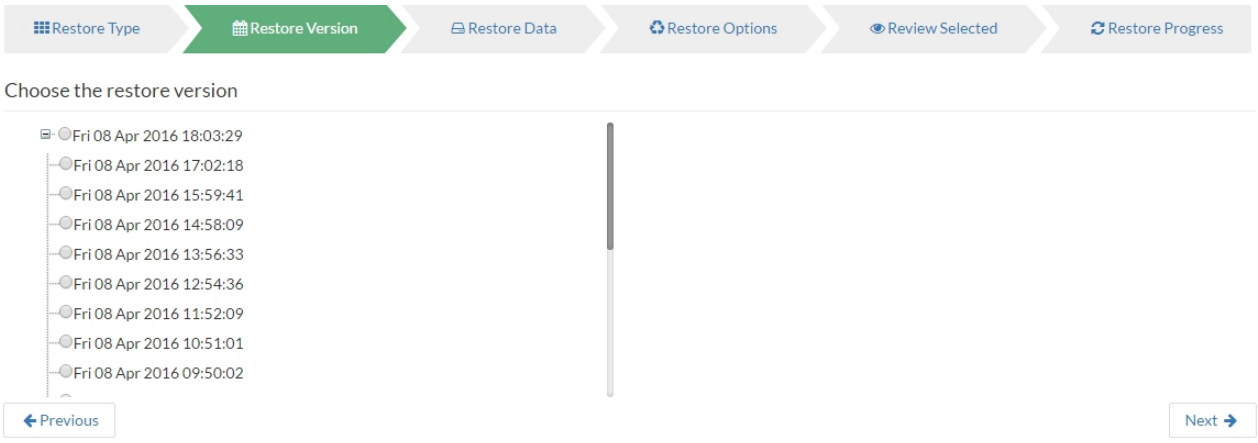
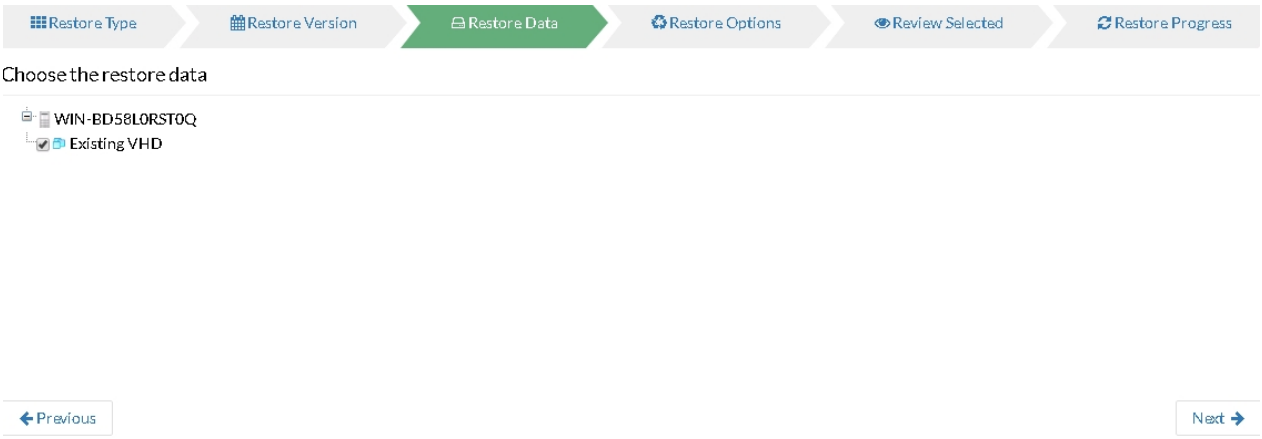
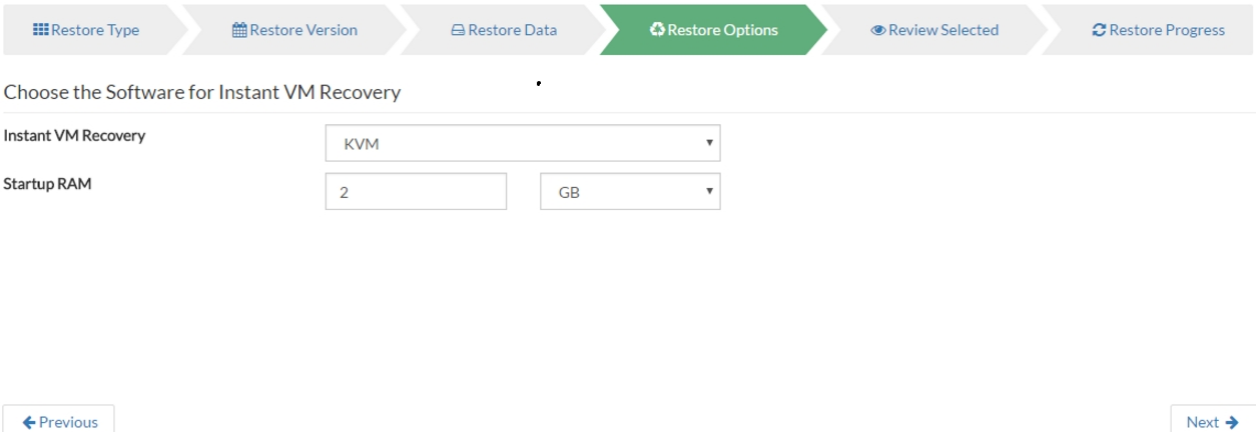


- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to allocate RAM for Instant boot.



- The software used to instant boot is KVM (For Linux servers) and the default RAM size chosen is 2 GB which can be modified based on user requirement.



- Once done allocating RAM size, proceed to review configuration.

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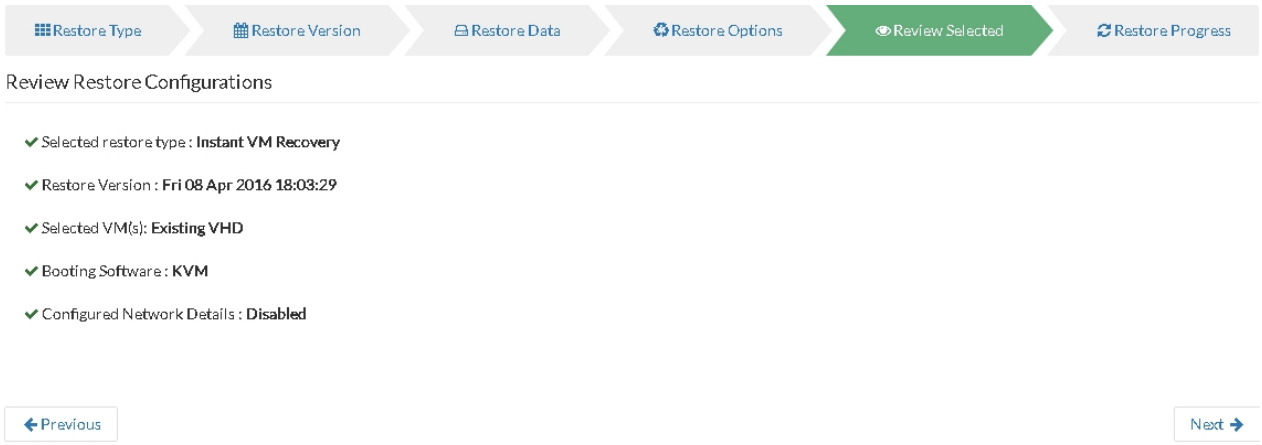
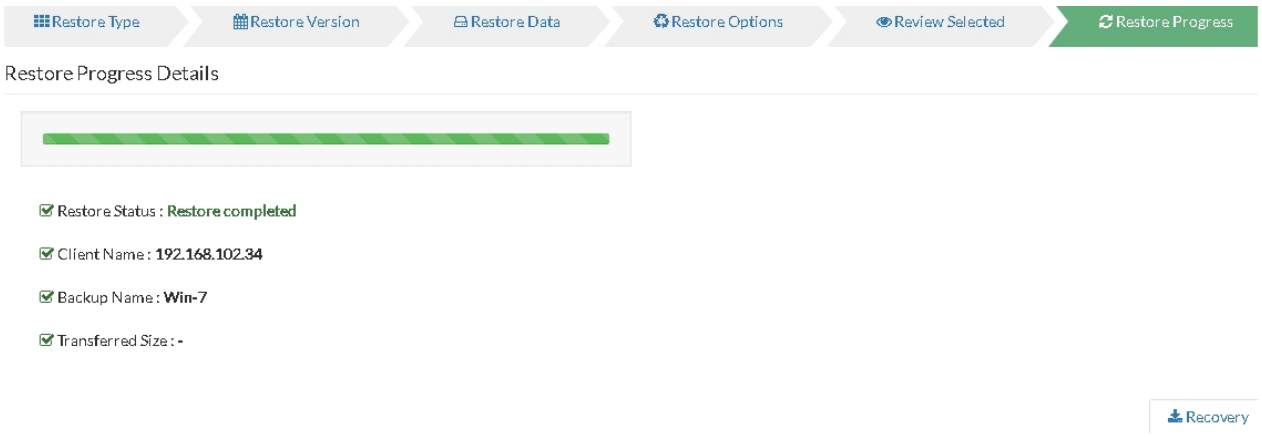


- Once done reviewing, click Next to proceed with Instant Booting the VM.



- VM will get automatically created in KVM VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

Vembu VMBackup User Guide

Instant File Recovery

This option lets you instantly attach backup data to disk management as a VHD/VHDX file and proceed with file level restore.

- The VHD/VHDX file is created by virtual mounting backup data.
- Users can access backup data via disks attached on disk management.
- Once done with requirement, unmount backup data. This will resume backup job, so that incrementals will run as per schedule.

- Select the timestamp version for file level recovery and proceed

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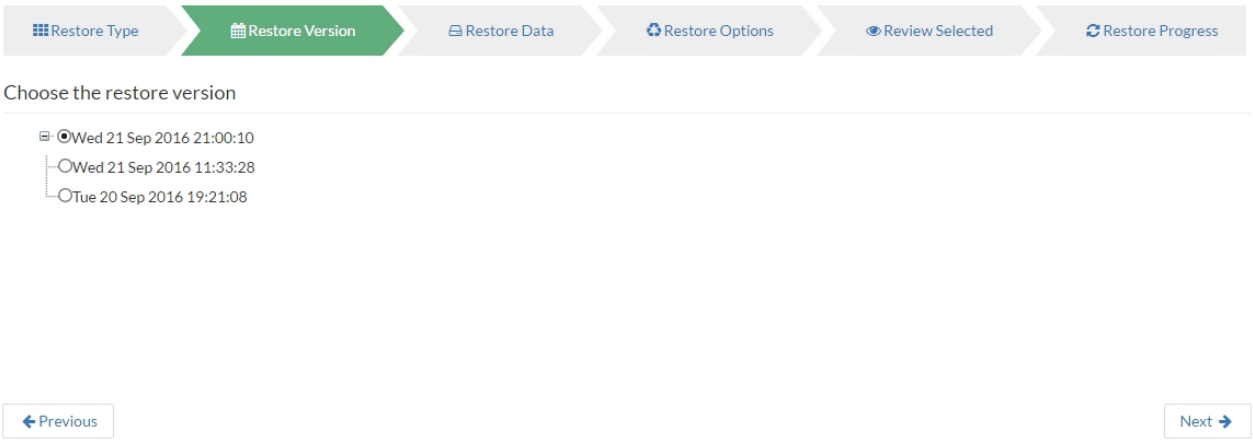
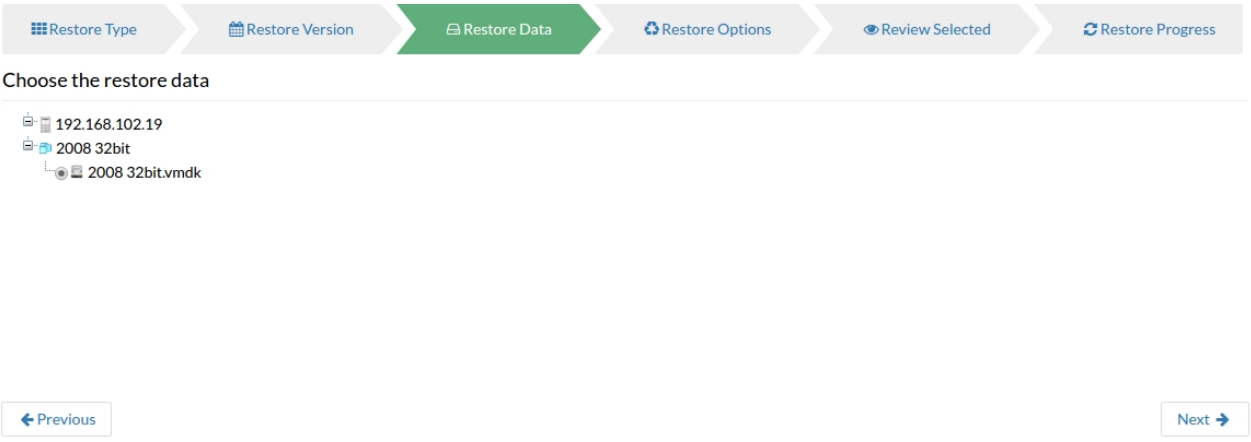
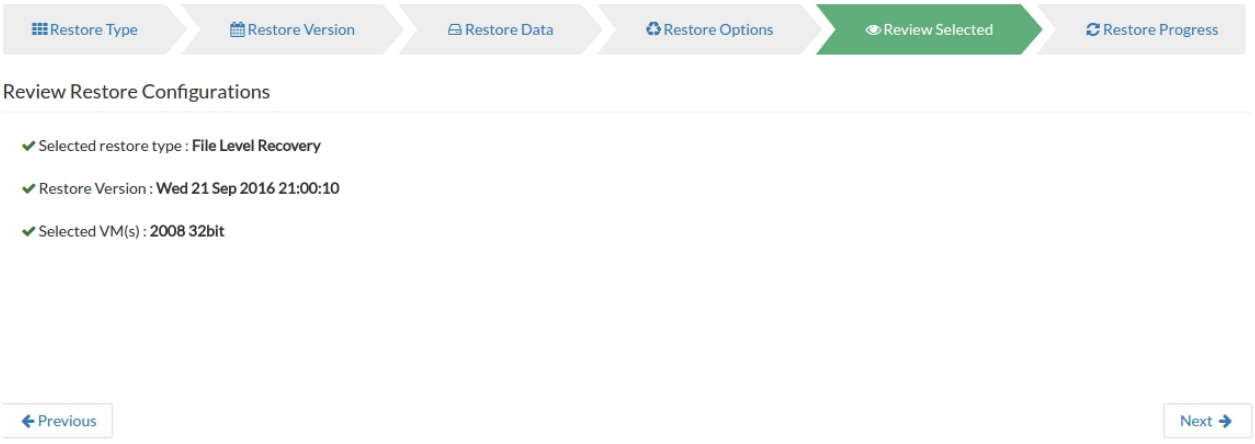


- Select the backup data to be mounted in disk management for file level restore.



- Once done choosing, proceed to review configuration.



- Once done reviewing, click Next to proceed with File Level Recovery.

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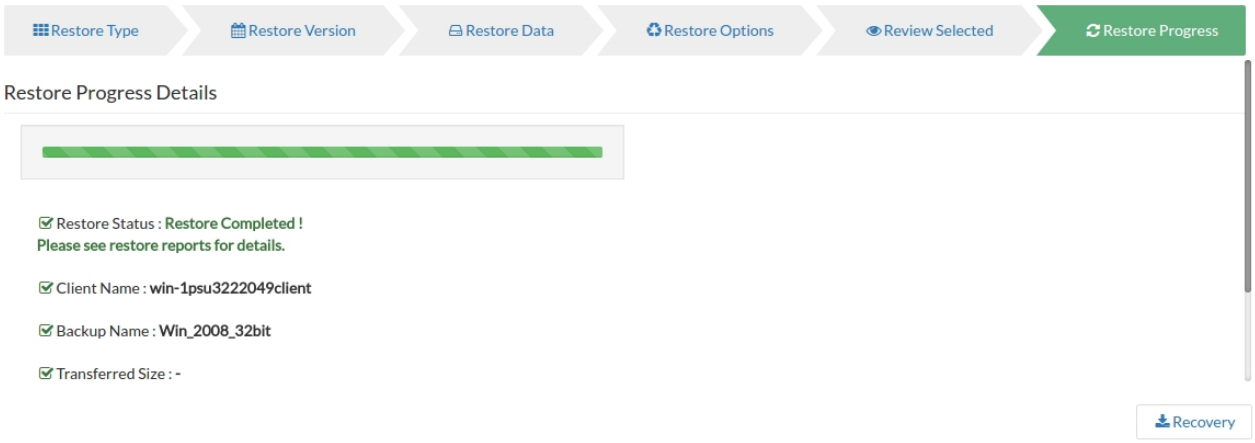
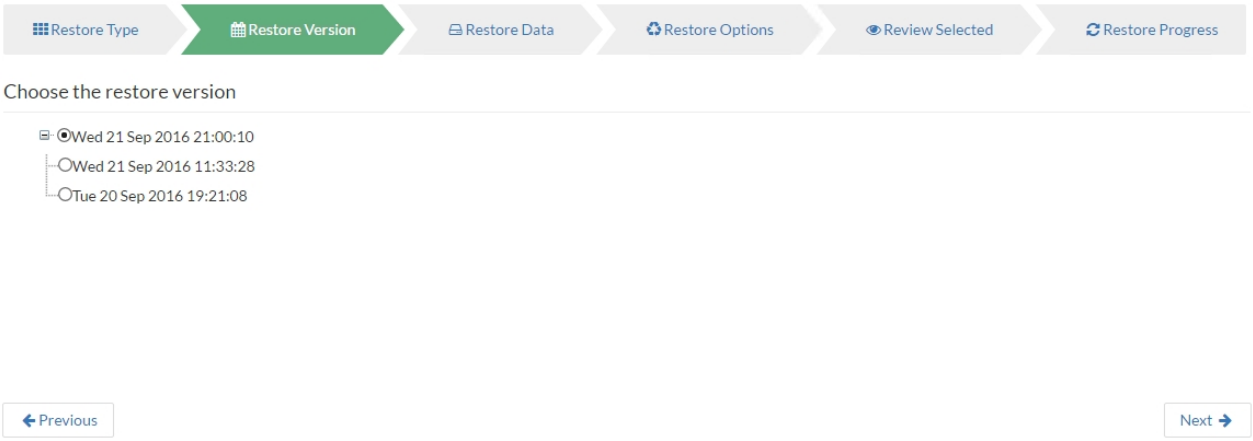


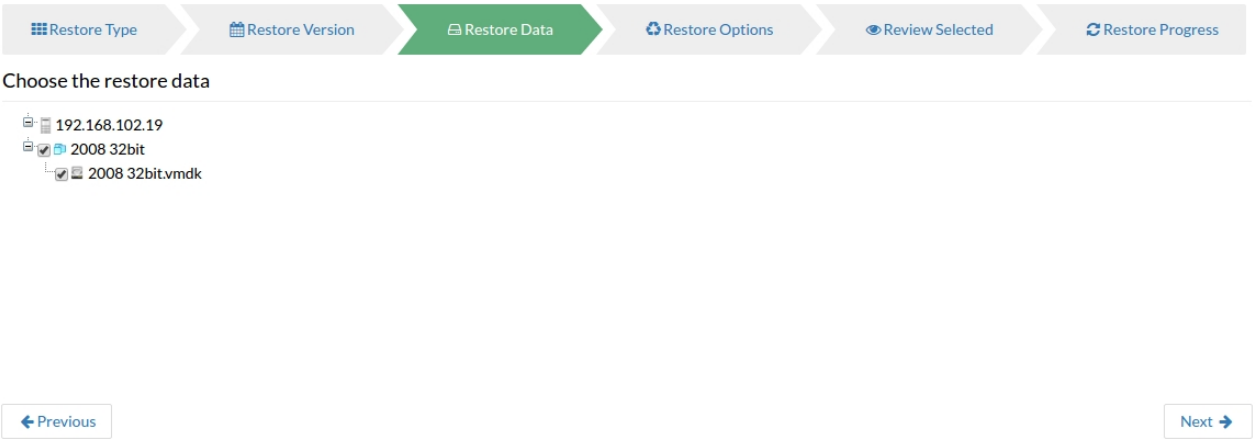
Vembu VMBackup User Guide

Full VM Recovery to ESXi Host or vCenter Server

- Proceeding with 'Live Recovery to ESX(i) Server' option will let you select Version for Live ESXi Server restore, where you have VMware backup with several timestamps.
- Choose your required timestamp version and proceed to select VM.



- If you have backed up more than one VM in a backup and need to restore a particular VM/set of VMs, among all other VMs- Select your desired VM(s) and hit proceed to provide target ESXi details.



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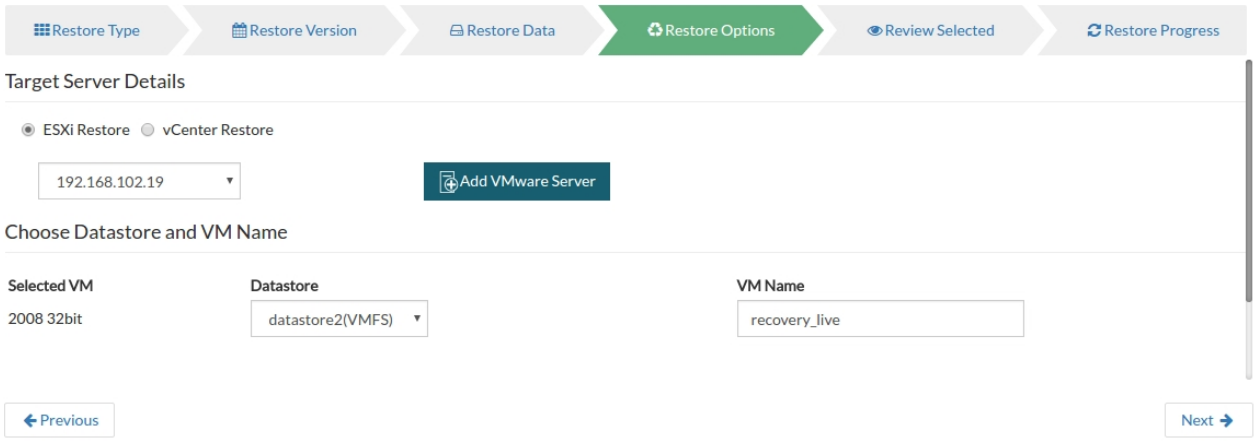
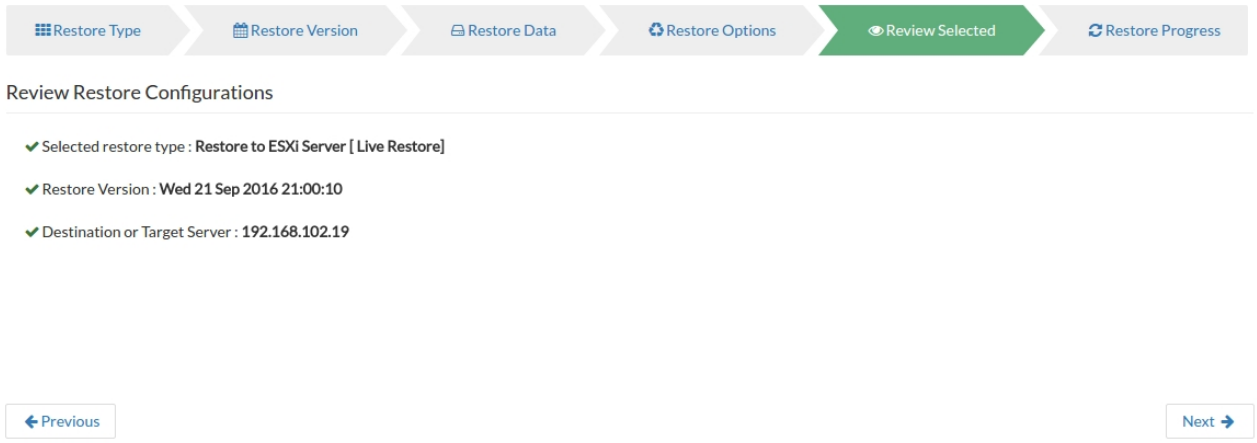
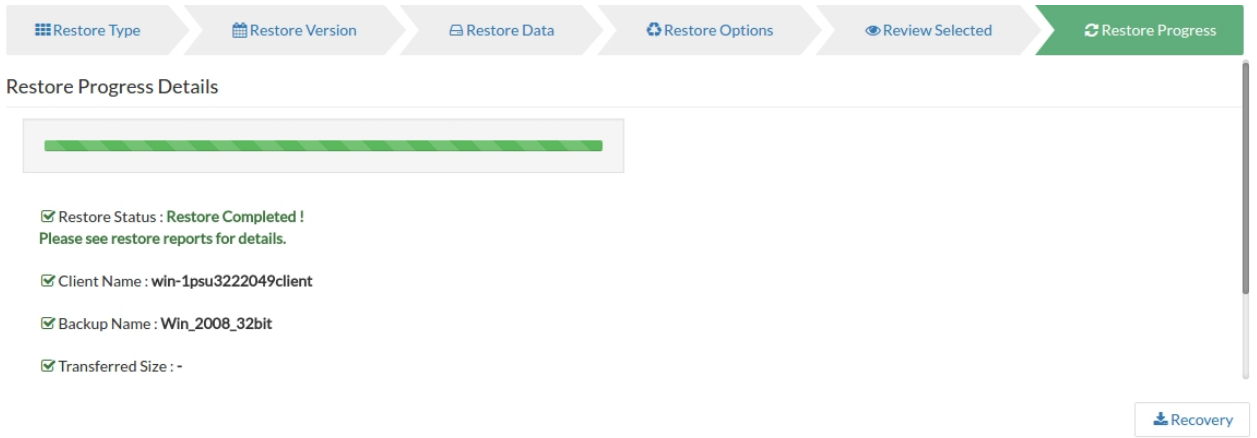
- Provide the target server details(ESXi/vCenter) for VM restore- ESXi server name, user credentials, target datastore and name for target VM to be created.



- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with Live Recovery to ESX(i) Server.



Vembu VMBackup User Guide

Disk Level Recovery

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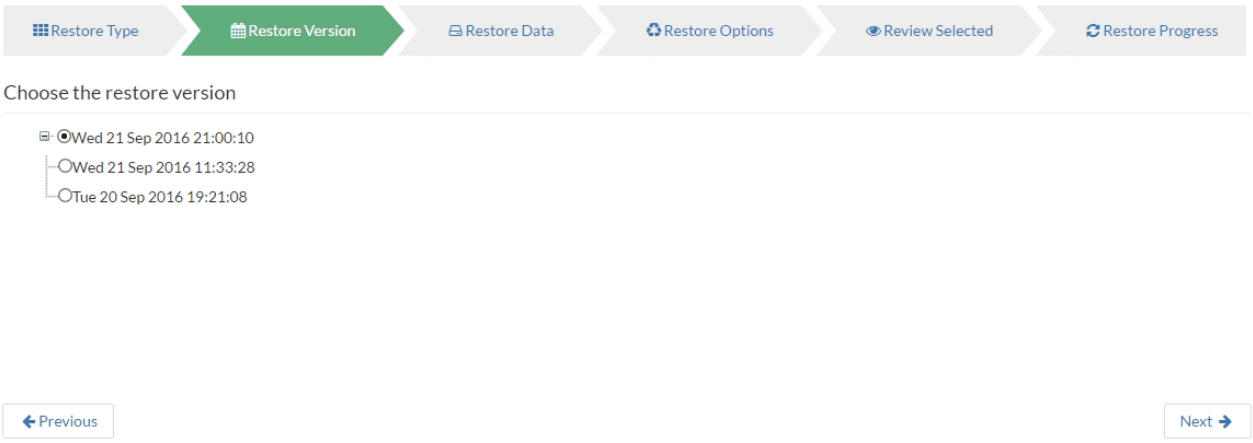
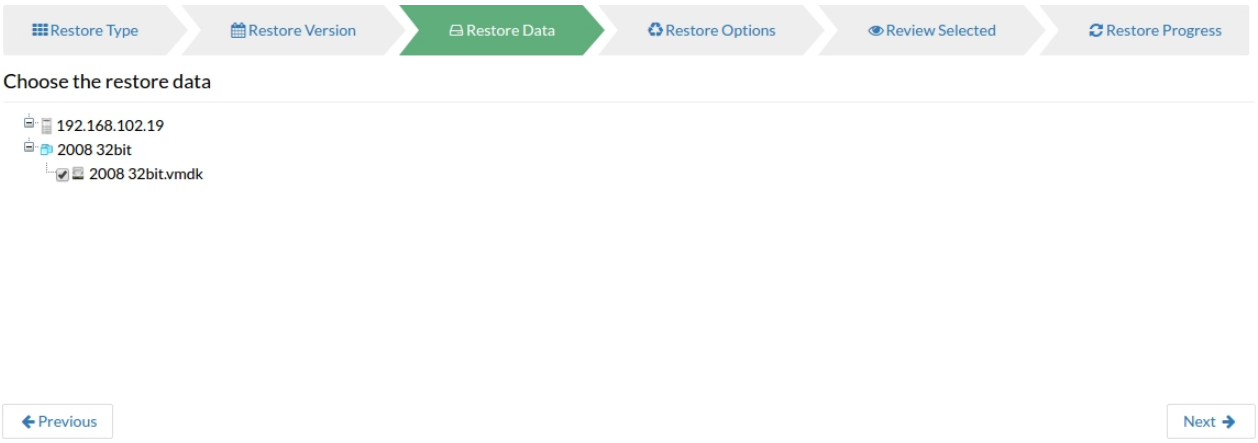
- This option lets users restore specific disk from existing VM backup to a target virtual machine. So that the disk can be attached and accessed by that target VM.
- Proceeding with the option VM disk restore, requests user to select time-stamp version for VM disk restore. Once done selecting, click proceed to select virtual machine(s).



- Select the required disks of VM(s) you want to restore and click proceed to provide target ESXi details.



- Provide target server details(ESXi/vCenter) for disk restore- ESXi server name, user credentials, target data-store and the name of target VM to which you wish to restore disk.

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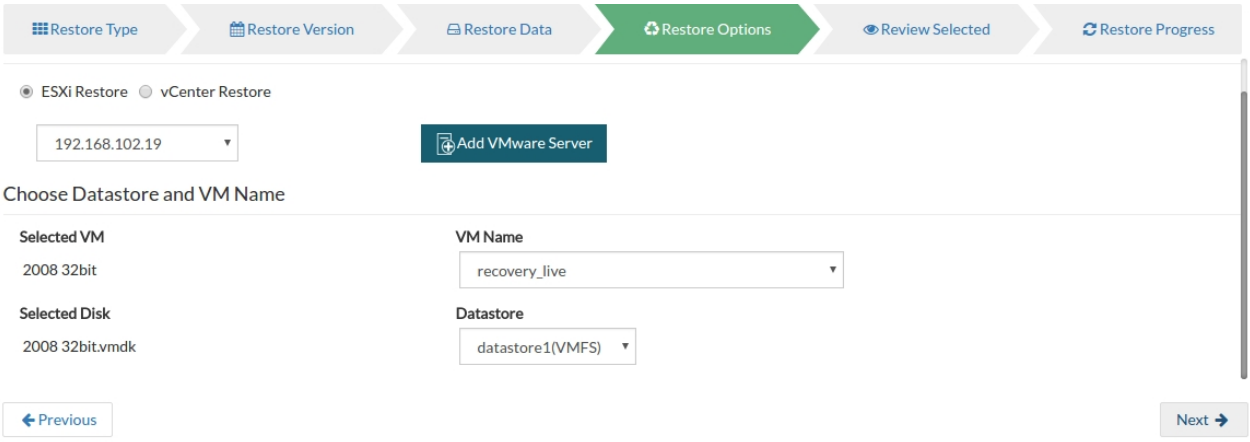
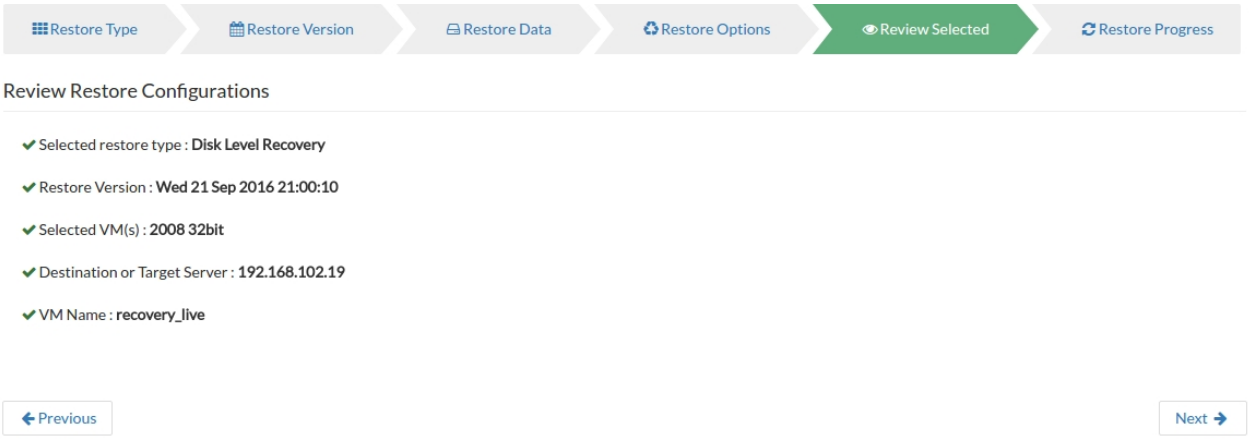
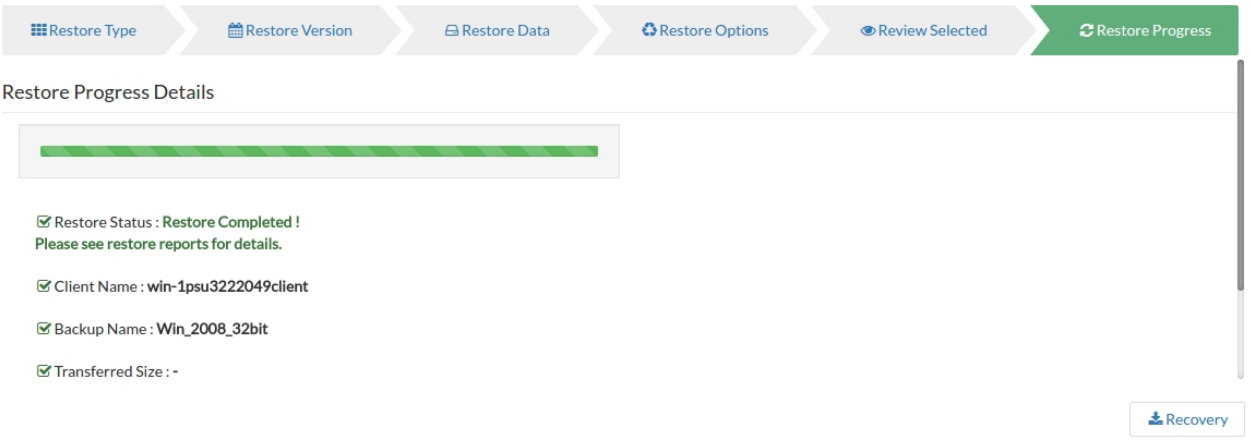


- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with Disk Level Recovery.



Note: While performing Disk Level restore, target VM will be turned off

Vembu VMBackup User Guide

Download VM Files

- Download option allows users to download backup data as an offsite copy of their

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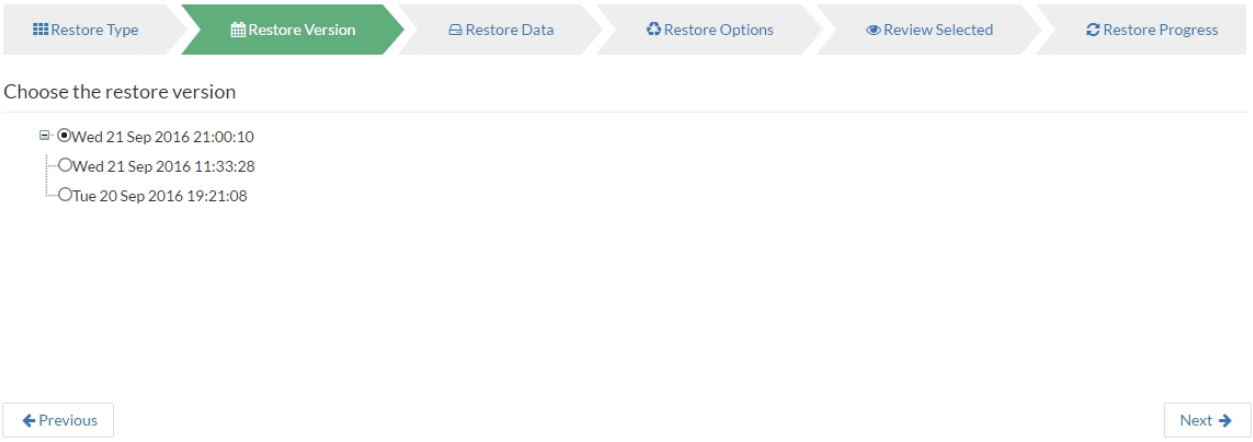
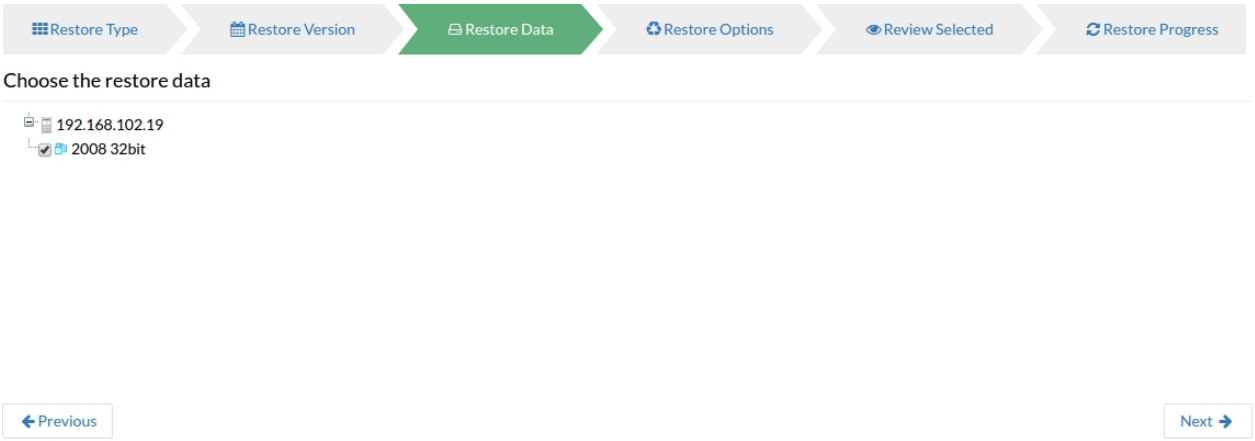
preferred file format.

- Proceeding with restore, lets users go with the regular routine of selecting time-stamp version they want to restore and click proceed.



- Now select VM(s) to restore and proceed to select restore location.



- Restoring location can either be a local drive on backup server or if users have managed to add a network shared drive, the restore can be directed to the network shared location.
- Users can download backup data in multiple file formats such as: VHD, VMDK, VHDX, VMDK-Flat and RAW.

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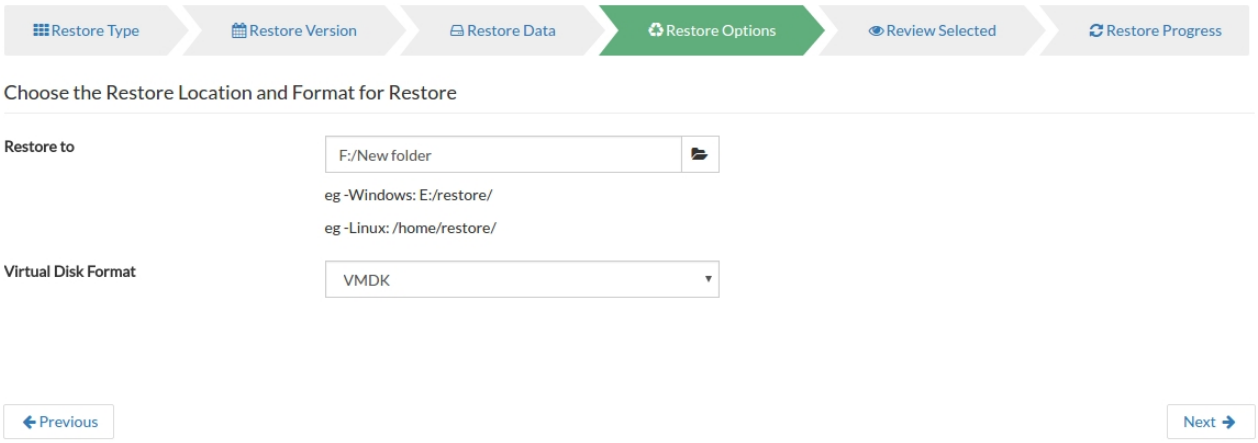
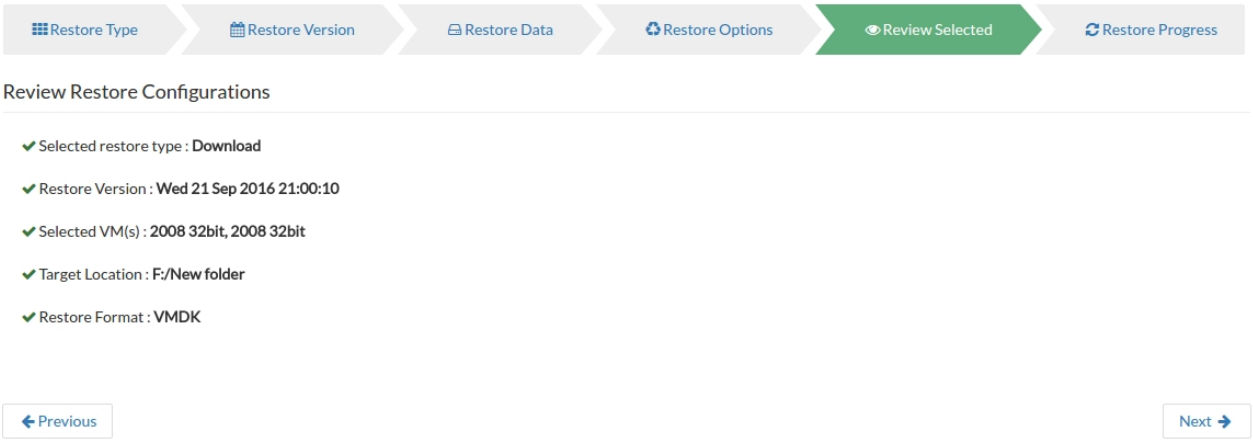
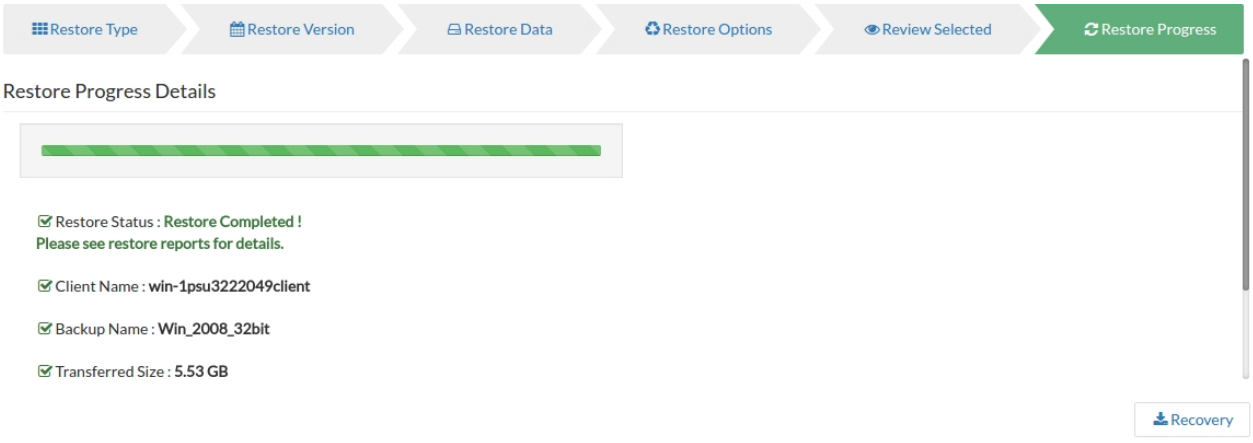


- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with Download.



- Taking offsite copies in various format allow users to boot backup data across various virtual and physical environments such as Oracle Box, KVM, Hyper-V, VMware vSphere, VMware player etc.,
- Also reconstruction of physical servers is also possible with this offline backup copies.

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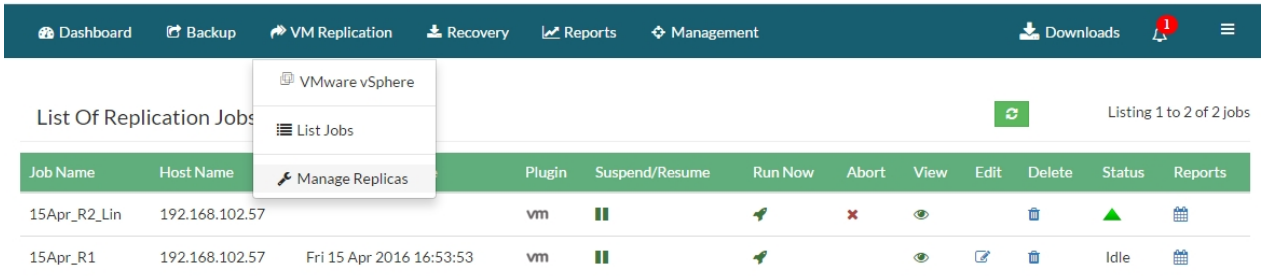
Vembu VMBackup User Guide

Restore type- Failover and Failback:

User can perform Failover and Failback as a recovery process for replications.

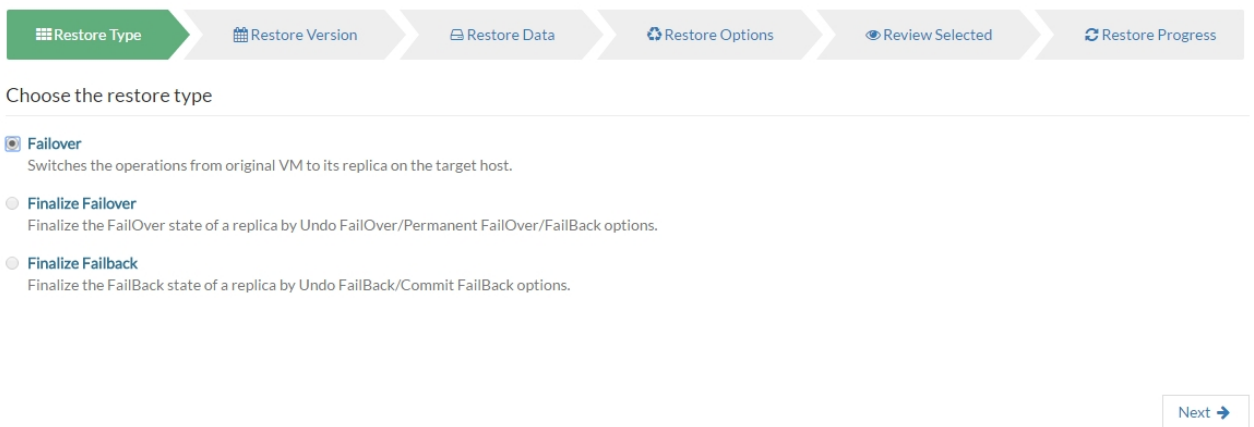
Failover and Failback processes have three phases in which each phase is dependant on the other, where you can initially start with Failovering VMs followed by Finalizing FailOver with finaling types like: Undo FailOver, Permanent FailOver and FailBack which is then followed by Finalize FailBack process (if user have chosen FailBack as finalizing type during Finalize FailOver phase).

- Go to VM Replication → Manage Replicas.



- You will be directed to page with the list of replication jobs configured from Vembu BDR server.

- Proceeding with Restore option will give you three types of restores to choose from:
  - Failover
  - Finalize Failover
  - Finalize Failback



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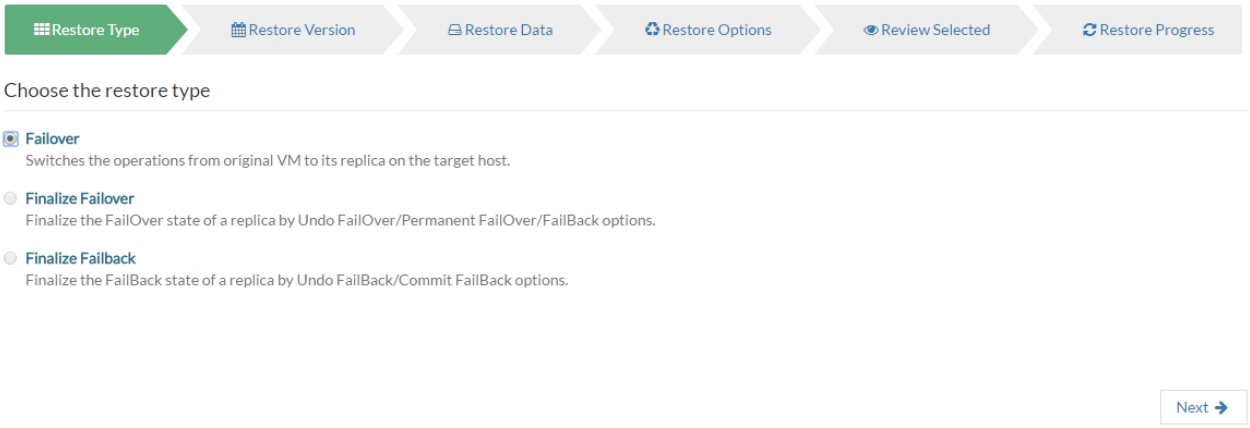
Failover:

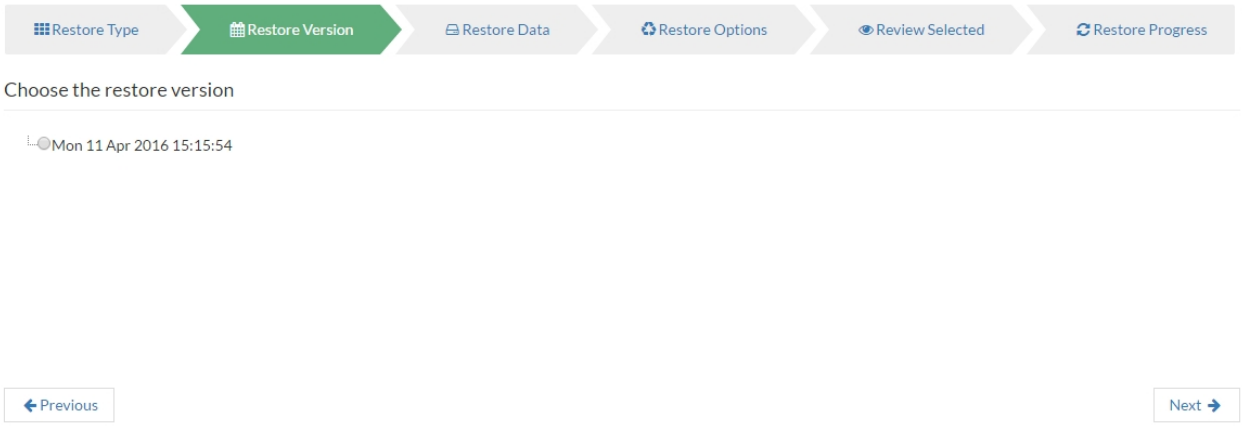
Failover is a process that switches business operations from original VM to its replicated VM on target host, at times of a disaster or based on some other requirement. Follow below steps to Failover virtual machines:

- Proceed with restore type: Failover.



Restore Version:

- Choose a restore version from the list of available timestamps and proceed.



Restore Data:

- From the list of replicated VMs, select the virtual machines you wish to restore for Failover and proceed.

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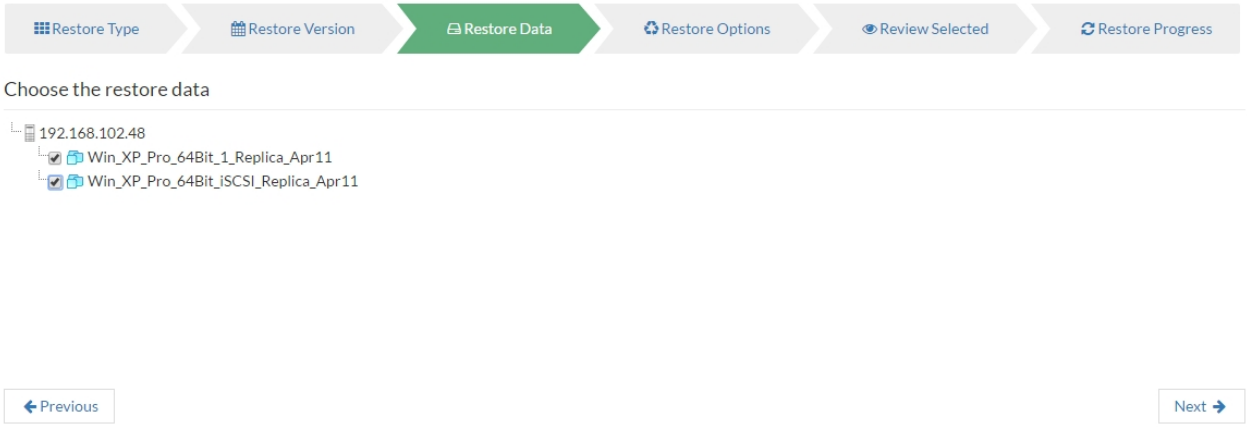
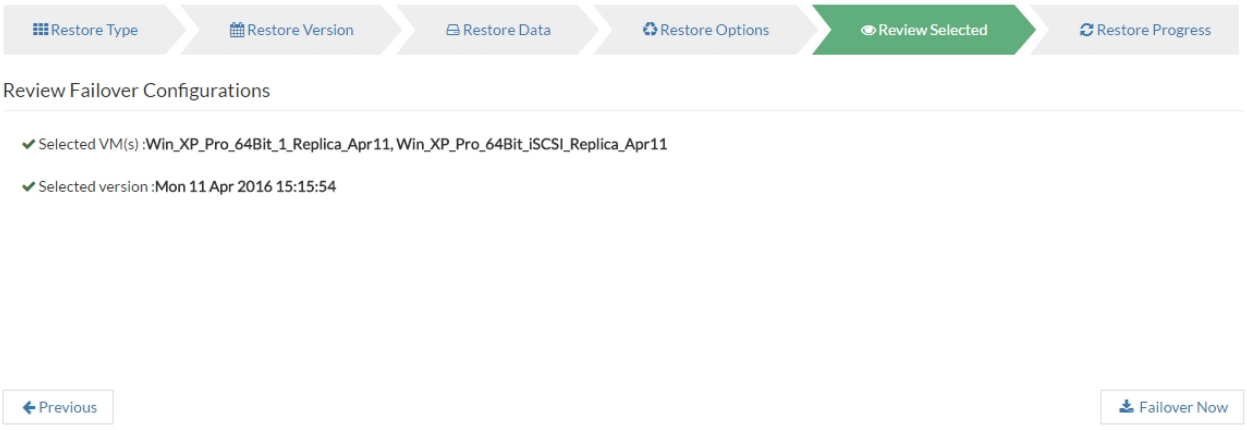


Review:

- Review the provided options and click on 'Failover Now'.



- Once failover completes successfully, the replicated VM in target machine will be active and running.

Finalize Failover:

Once done with the requirement of virtual machine that is failovered, users can decide on finalizing failover operation by choosing between following operations:

- Undo Failover
- Permanent failover or
- Failback

Follow below steps to finalize failover of virtual machines:

- Proceed with restore type: Finalize Failover.

Restore Data:

- Select the VMs to be restored and proceed.

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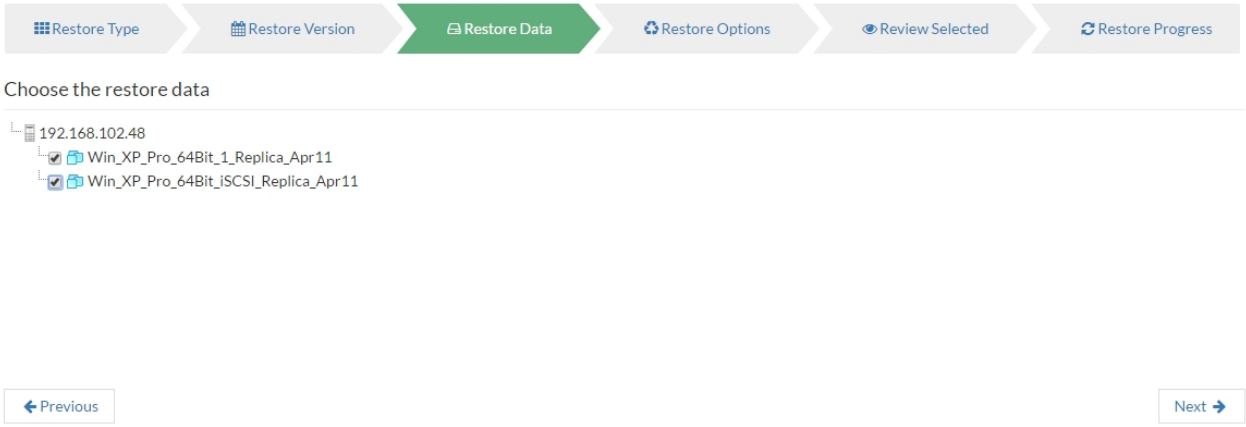
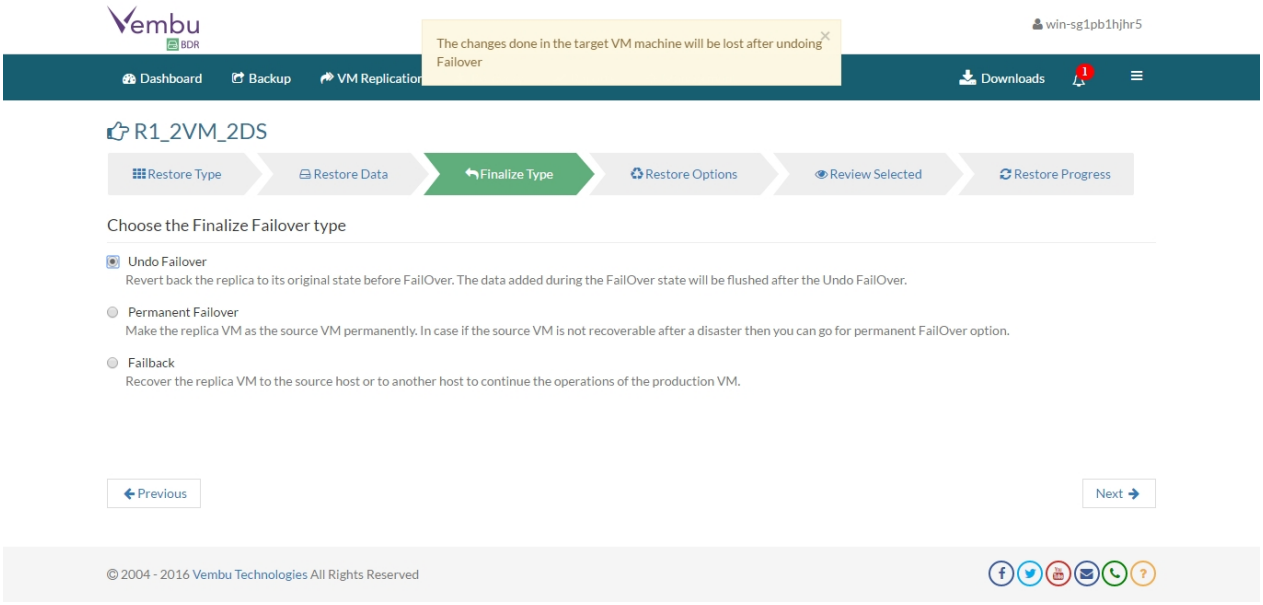


Finalize Type:

Users will have 3 finalize types to choose from:

- **Undo Failover-** This option deletes the changes done in replicated VM during failover session and reverts back to its original state before failover.
  Note: Usually this option is preferred, when the source virtual machine is restored and activated successfully.



Review configurations:

- Review the configuration provided for selected restore option and click Finalize Now.

- **Permanent Failover-** This option makes the replicated VM as the source VM permanently.
  Note: This option is usually preferred when the actual source VM is no longer recoverable after a disaster.

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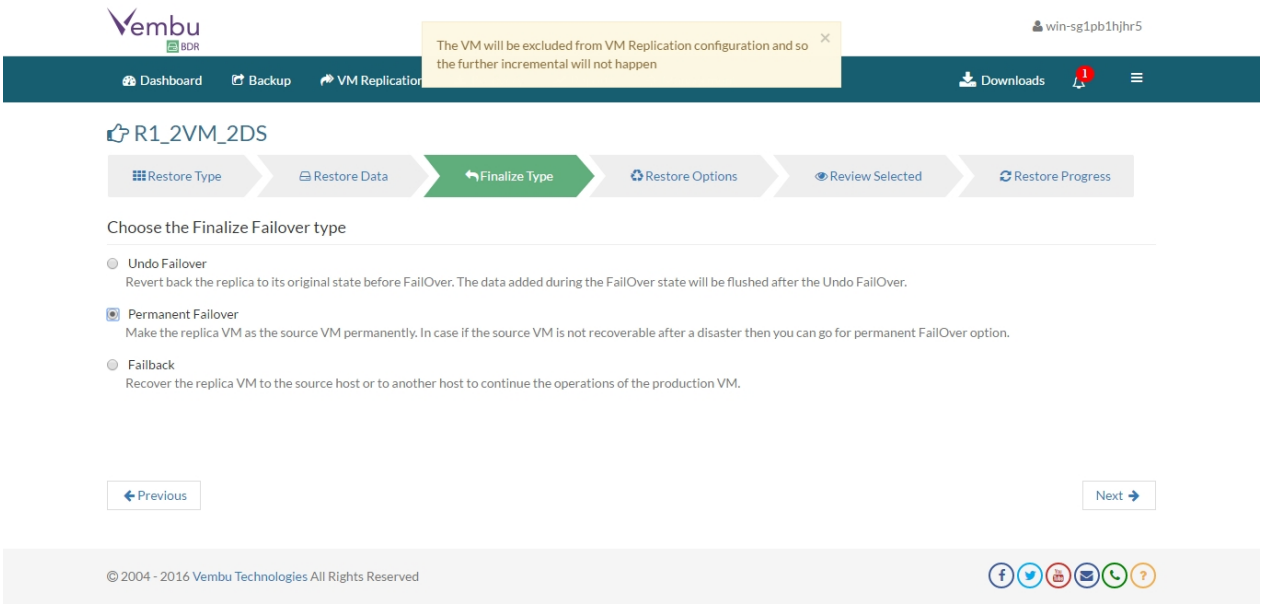


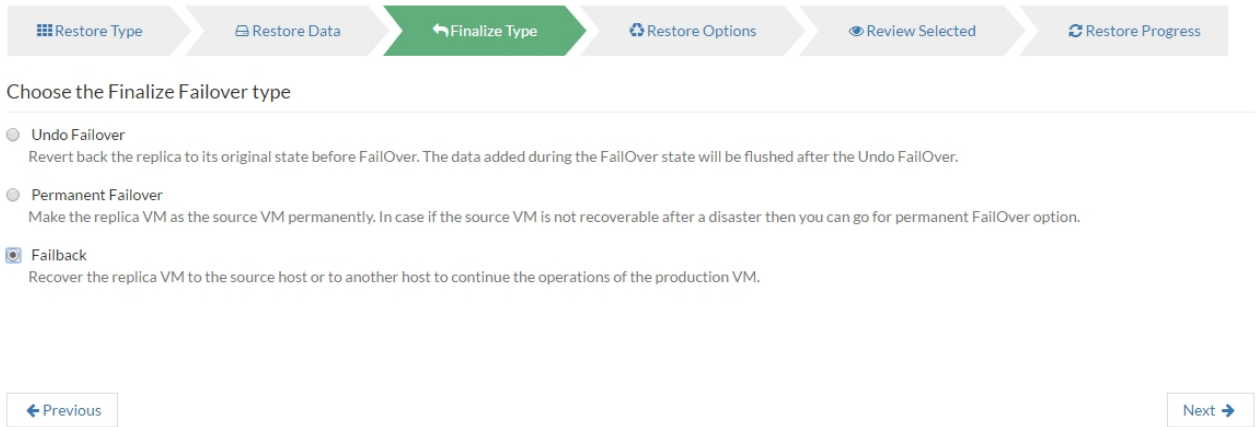
Review configurations:

- Review the configuration provided for selected restore option and click Finalize Now.
- **Failback-** Go to Next Page

Vembu VMBackup User Guide

Failback

- **Failback**- This option let users recover the replicated VM along with failover data to the source host or another host to resume its ongoing operations as a production machine.



  - Failback has an additional step to configure unlike the other two options: undo failover and permanent failover.

Restore Options:

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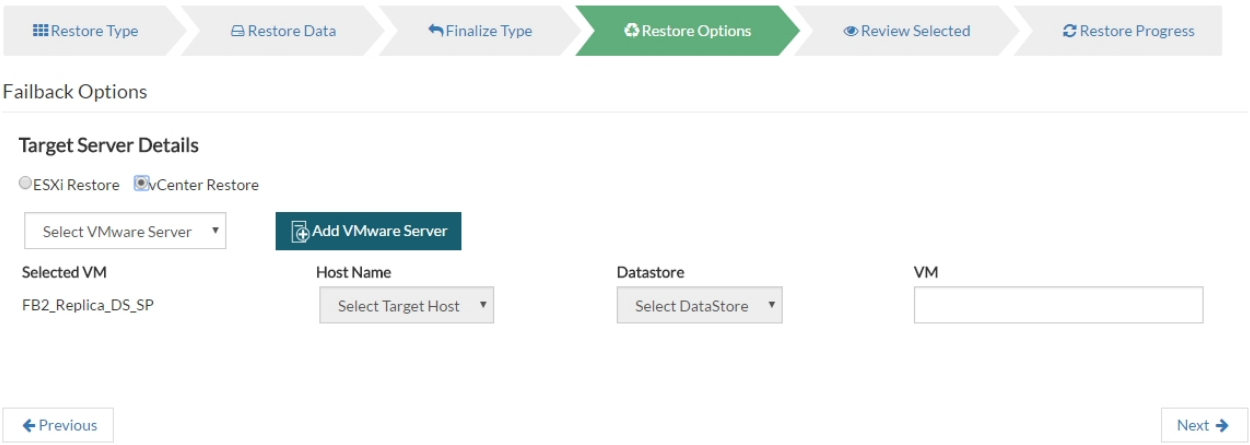
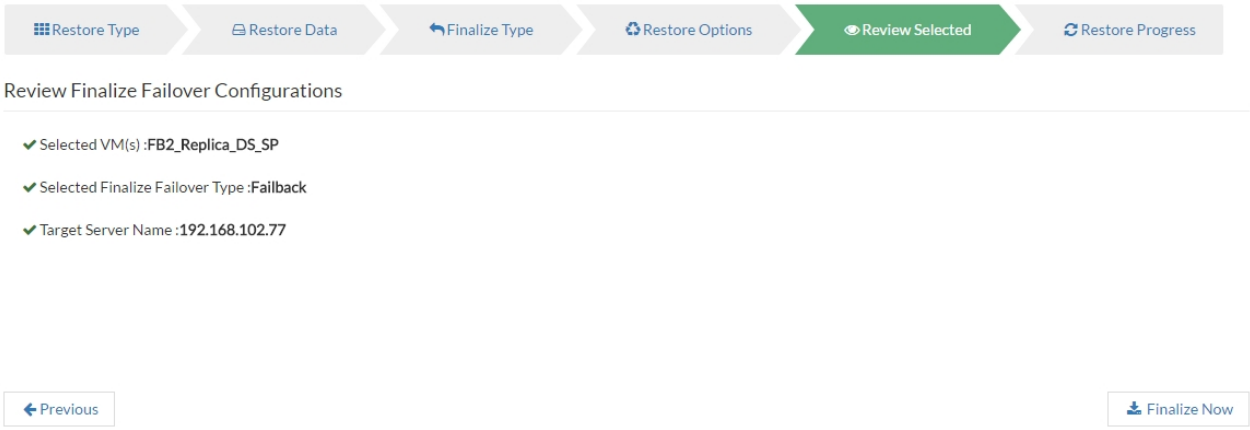
1. Users will be directed to restore options page, where they are required to select target server details such as:
    - Choose between ESXi restore or vCenter Restore and select the VMware server from the added list. If not, do add a target server with 'Add Target Server' option.
    - Now select the respective target host and then the datastore to which the selected VMs are to be recovered.
    - Provide the names for VMs to be restored.
    - Once done, proceed with Next.



Review configurations:

- Review the configuration provided for selected restore option and click Finalize Now.



Finalize Failback:

This restore option is enabled, only after when user opts for Failback as Finalize type in Finalize Failover(Restore type).

- Proceed with restore type: Finalize Failback.

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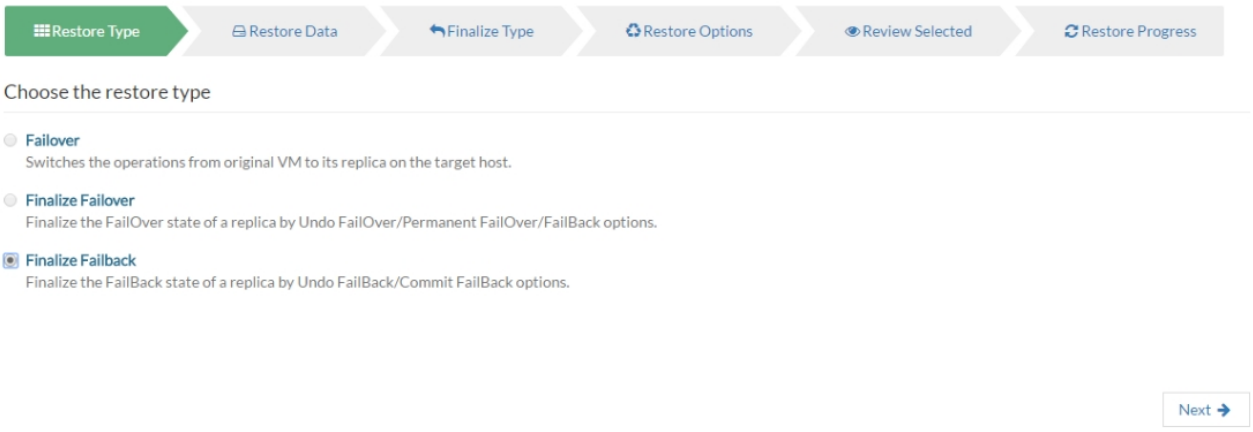
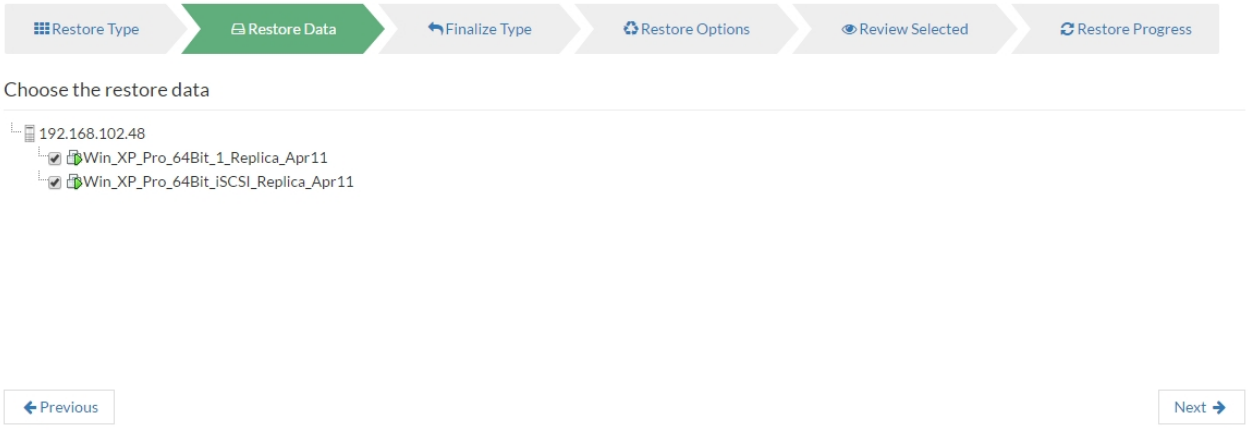


Restore Data:

- Select the VMs to be restored and proceed.



Finalize Type:

Users will have 2 finalize types to choose between:

- **Undo Failback-** When a VM recovered via Failback option does not function properly or if the restore fails due to any reason, then this option is chosen to revert back the replica to resume the Failover state.
- **Permanent Failback-** When a VM recovered via Failback performs as expected, then this option is chosen to confirm commiting Failback. This means that the failbacked VM will now be selected as production VM and will get excluded from replication jobs.

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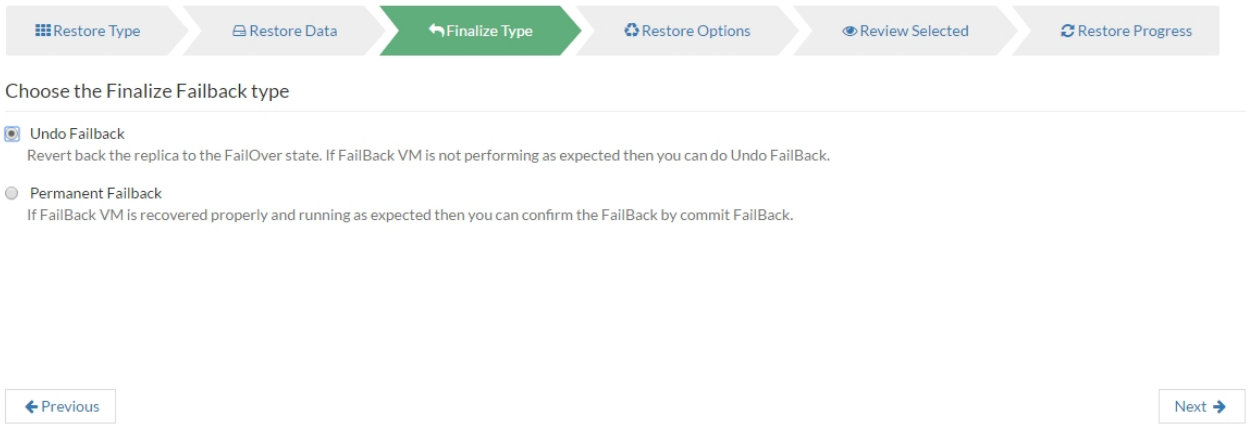

Review configurations:

- Review the configuration provided for selected restore option and click Finalize Now.

Vembu VMBackup User Guide

Bare-metal Recovery

Follow below steps to perform Physical Recovery for Image backups using Recovery CD:

- To do bare-metal recovery using Vembu Recovery CD first we need to download and install WAIK. Click on below link, to download WAIK: http://www.microsoft.com/enus/download/confirmation.aspx?id=5753

- Once WAIK is installed, download Vembu Recovery CD: Click Here to Download
- You will have Vembu Recovery CD in both 32-bit and 64-bit zip formats, download accordingly based on requirement. Now unzip the downloaded file and run RecoverCDBuilder with administrator privileges. You will get a window opened as shown below.

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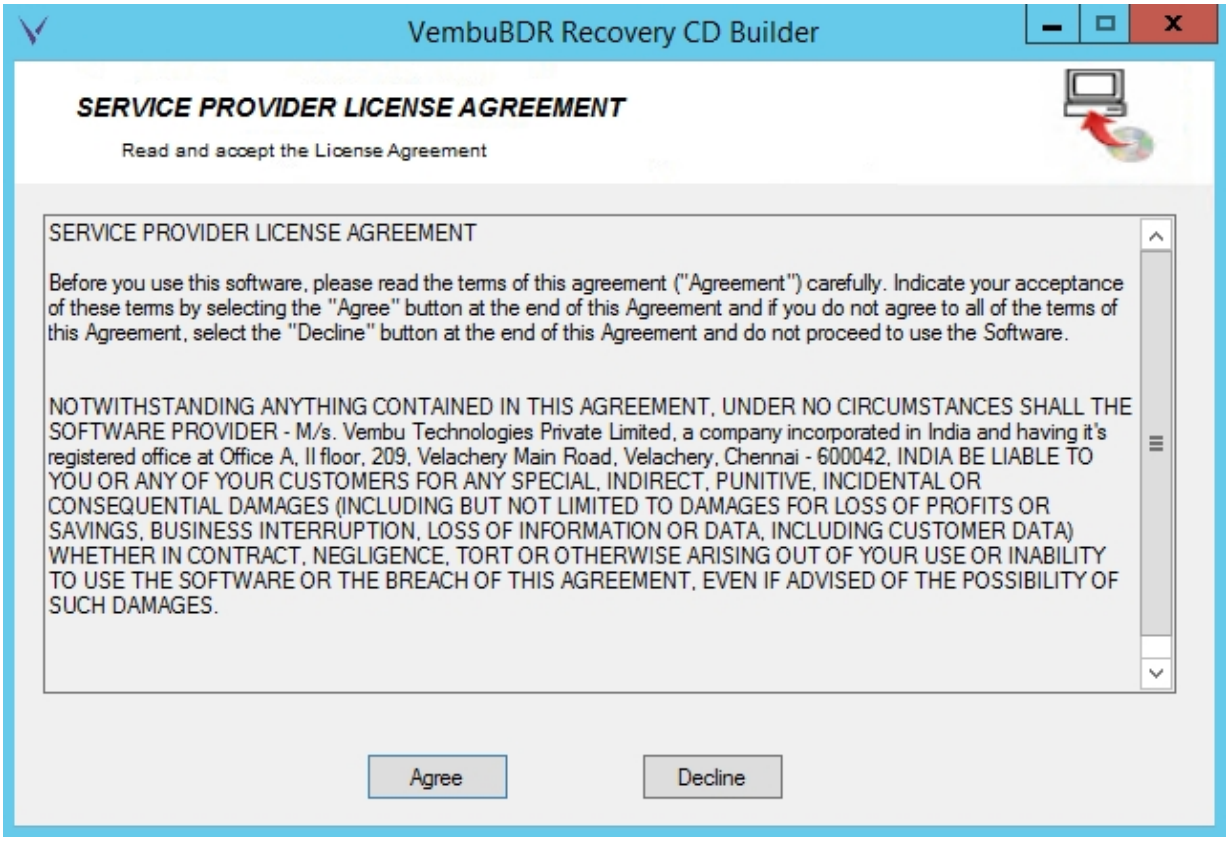

- Read the service provider license agreement carefully and click agree. You will be proceeded to VembuBDR Recovery CD builder window as shown below.
  Note: When you have RAID and additional drivers to be setup in the machine to be recovered, such drivers can be bundled with Vembu Recovery CD using 'Additional Driver' option.

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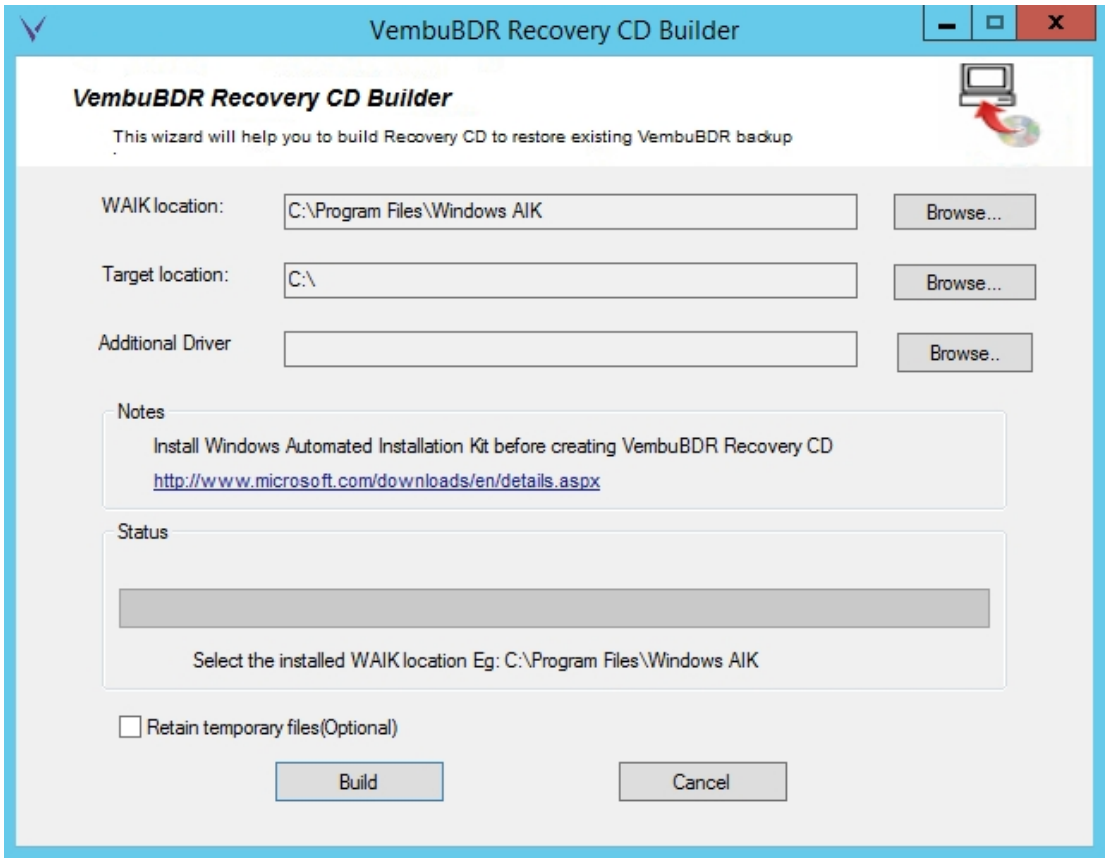
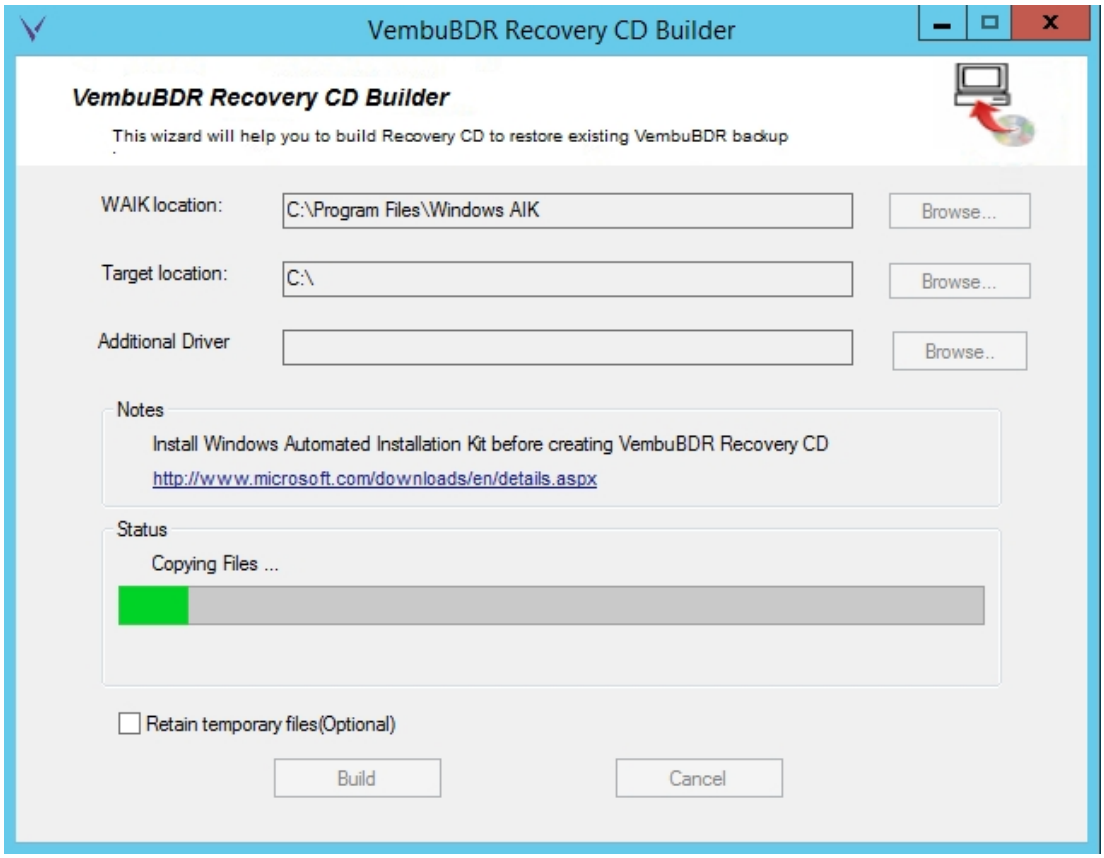


- In this window, WAIK location will be auto-filled, target location is the location where you want to store ISO. Now click Build to start creating ISO file. You can also monitor the progress of ISO creation.



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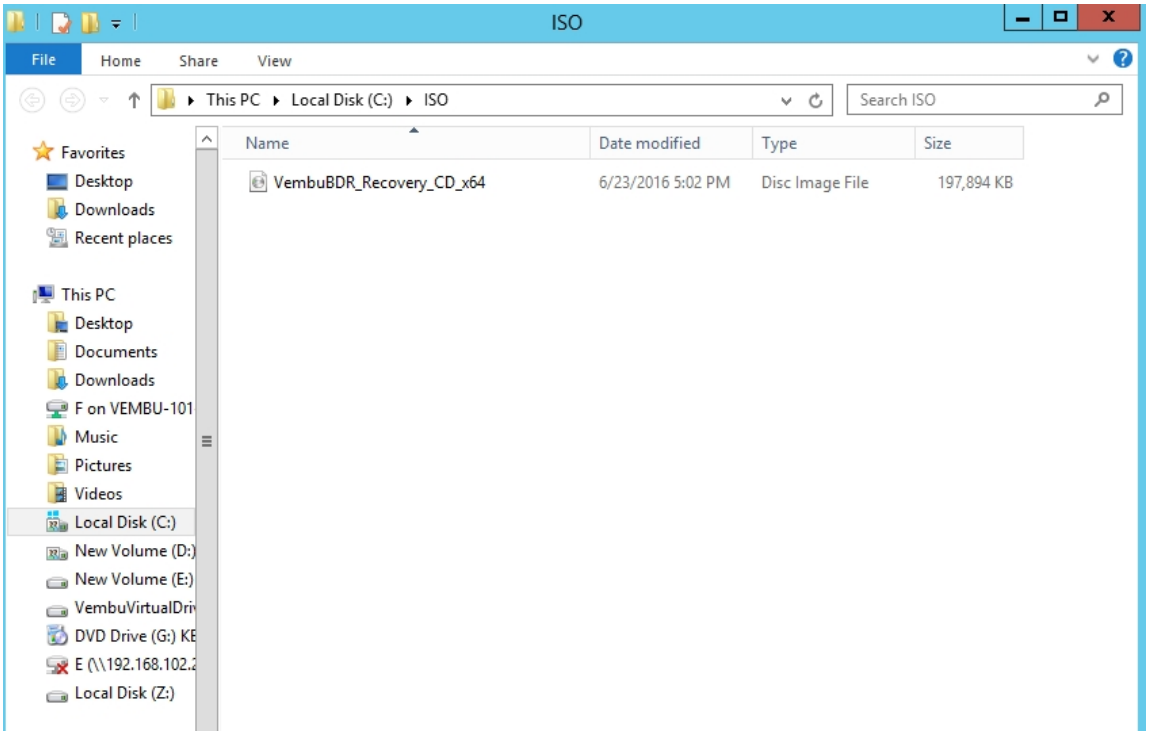
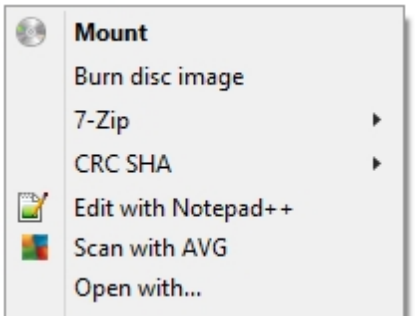
- Once done, the ISO file will be available in the Target location you have entered.



- Insert a blank CD in CD/DVD drive and burn the created ISO file in CD by right-clicking over ISO file and choosing the option 'Burn Disk Image'. Windows Disk Image Burner will open, choose the CD/DVD drive and click burn to start burning process.



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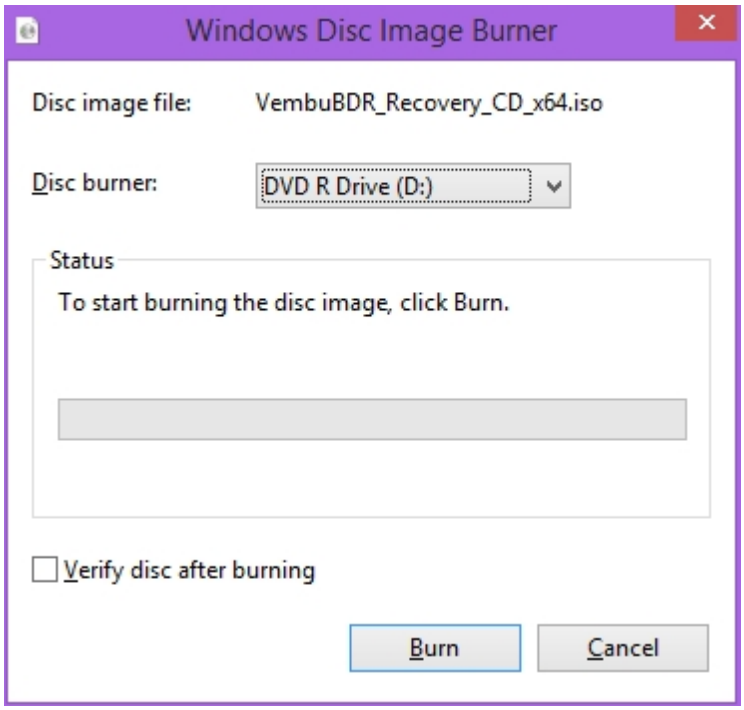

- You can also monitor the progress of burning process.
- Once the burn process completes, CD will be auto ejected. Reinsert CD and reboot machine to BIOS settings. Change the boot priority and set CD/DVD as primary boot device and click Save and Exit. VembuBDR recovery console will be opened as shown below. Click Next to continue.

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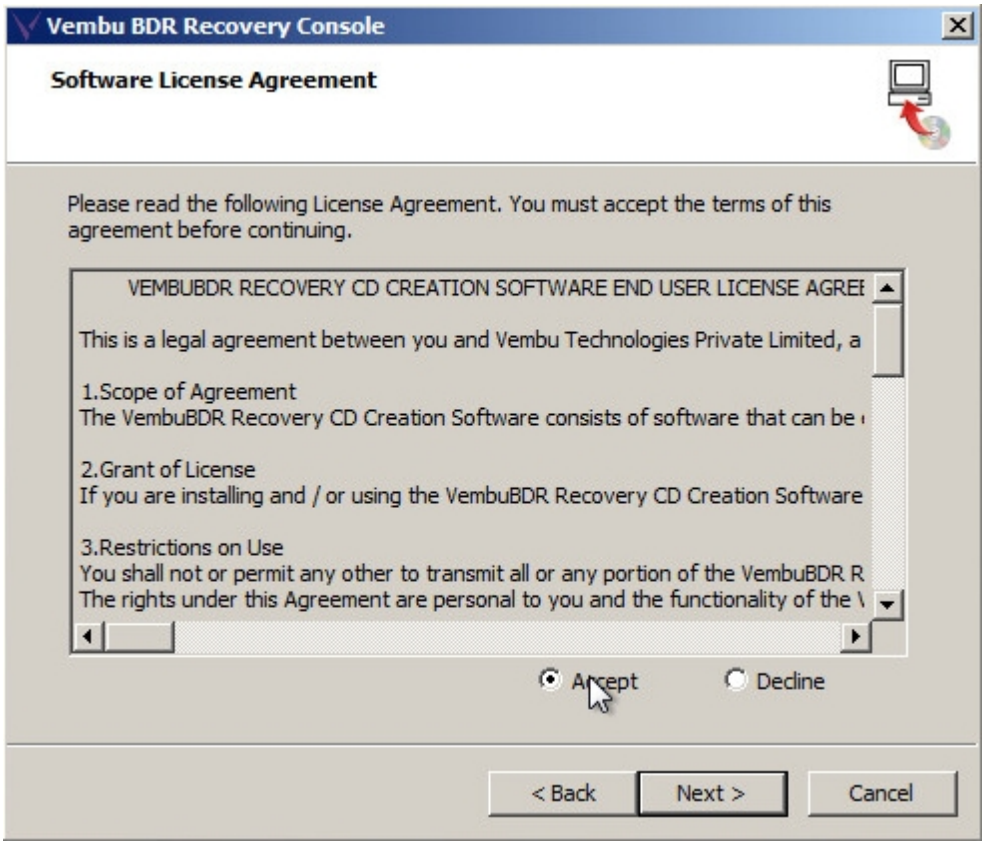
- Read the Software License Agreement carefully, click Accept and proceed with Next.



- You will have option to select a task from the below list:
    - Recover entire disk or partition
    - Set BCD boot configuration
    - VMware driver installation

  Since we have to do physical recovery, we'll proceed with 'Recover entire disk or partition' option and click Next.

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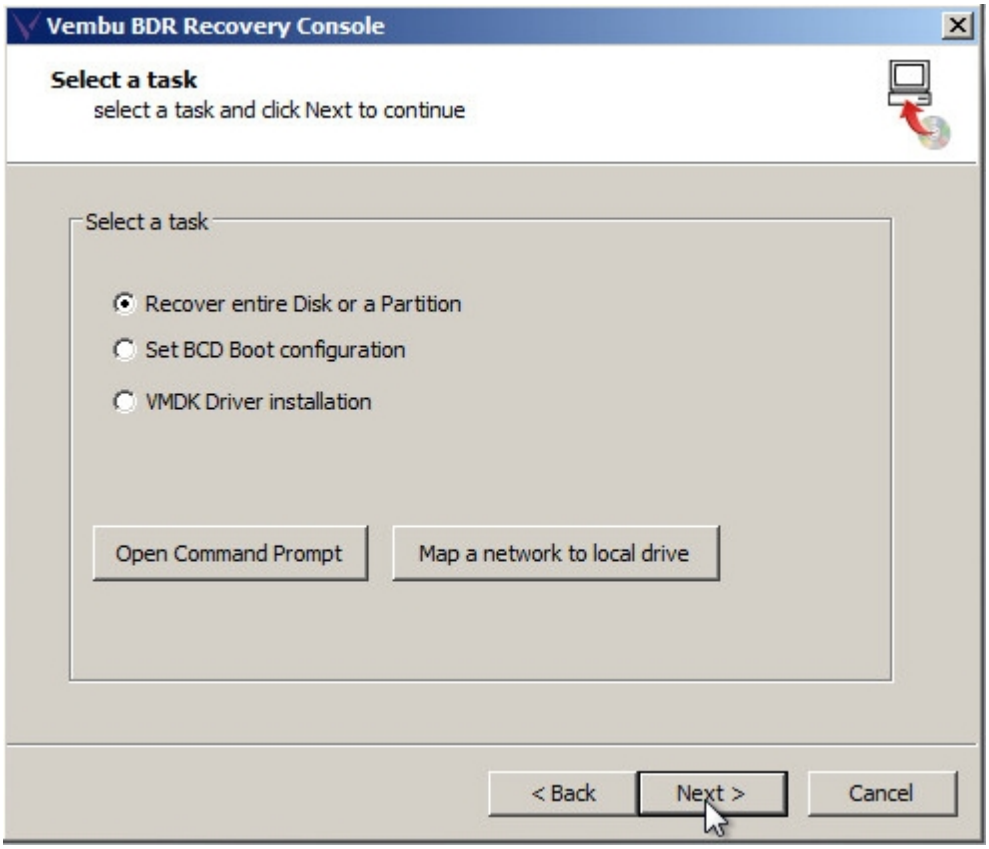

- You will be directed to recovery page, where you will be required to provide details for following options:
    - Browse and select the file which you need to recover.
    - Browse and select the backup configuration file.
    - Select the disk/drive you wish to restore from the following list.

  Once done choosing respective requirements, click Next to proceed.

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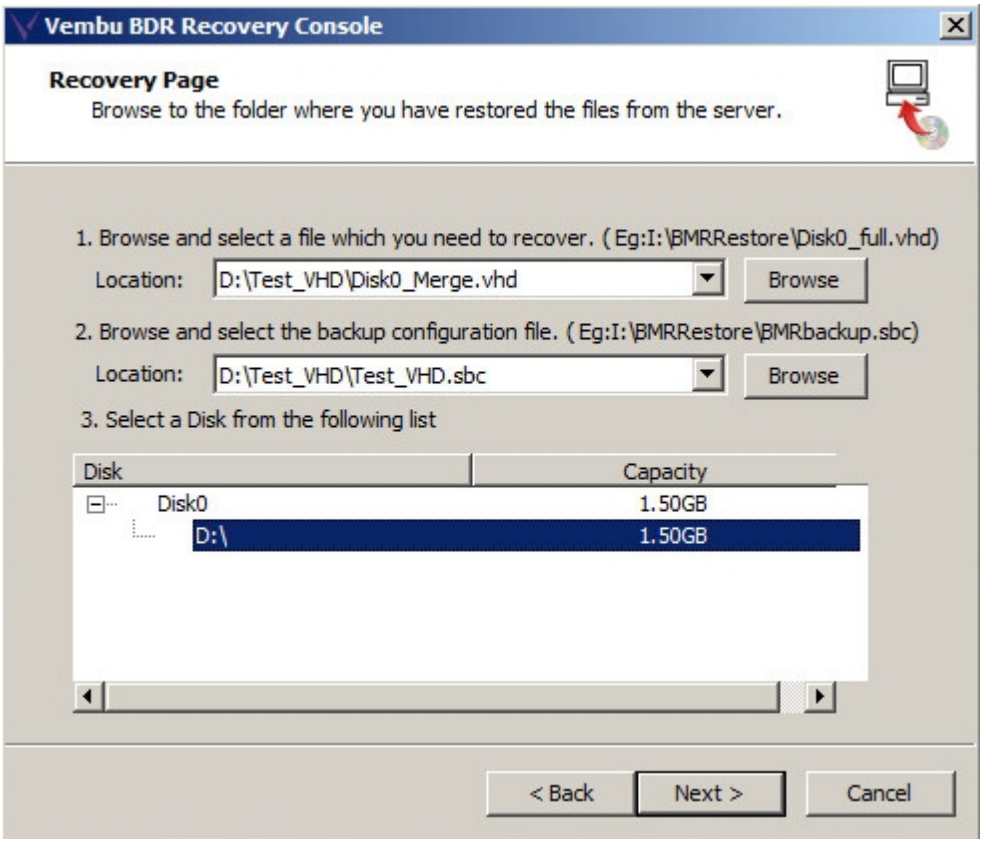
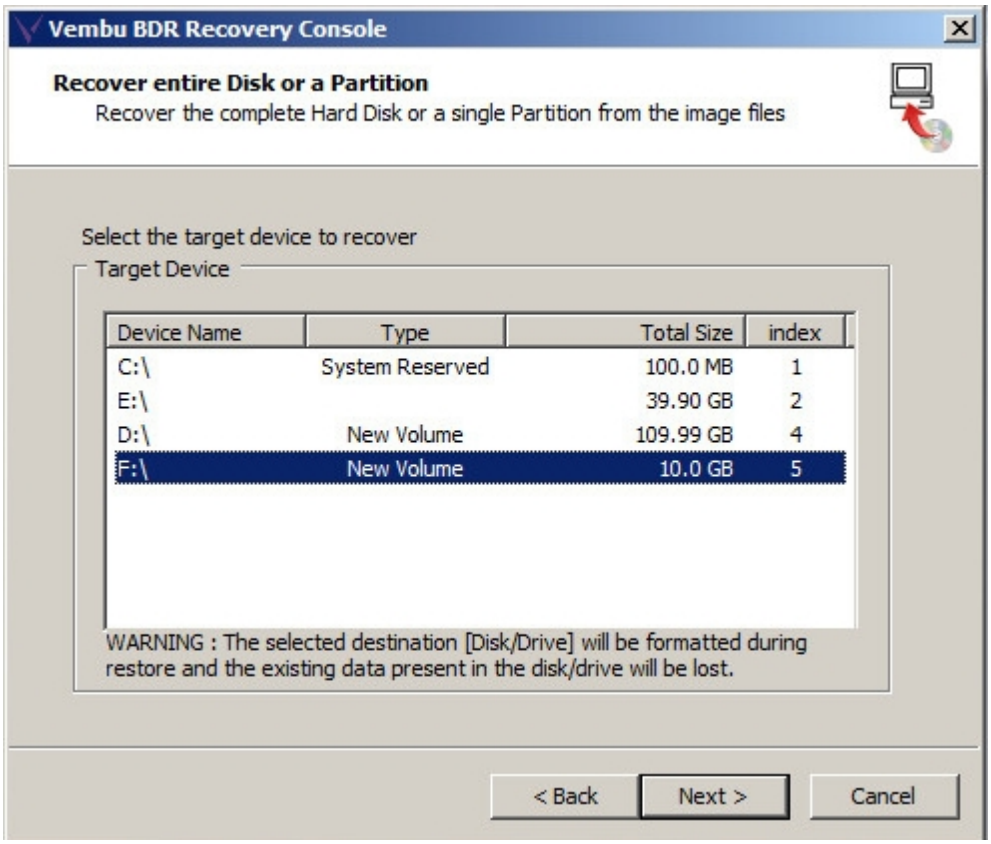


- In next window, you will be required to select target disk/drive to which recovery will be performed. Once done selecting the target, click Next.
  Note: the selected disk/drive will be formatted and only recovered data will be available. So make sure you don't have any important data on target disk/drive.



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- Proceeding will initiate the recovery process and once it's done. You can find your recovered data in target disk/drive selected.

Vembu VMBackup User Guide

Vembu Virtual Drive

Vembu Virtual Drive is an exclusive feature of VembuBDR server, that allows user to instant access backup data. With the help of VembuHIVE file system, Vembu Virtual Drive virtual mount backup data and allow instant access for users.

Vembu Virtual Drive will make following file format types available for any image based backups mounted in it:

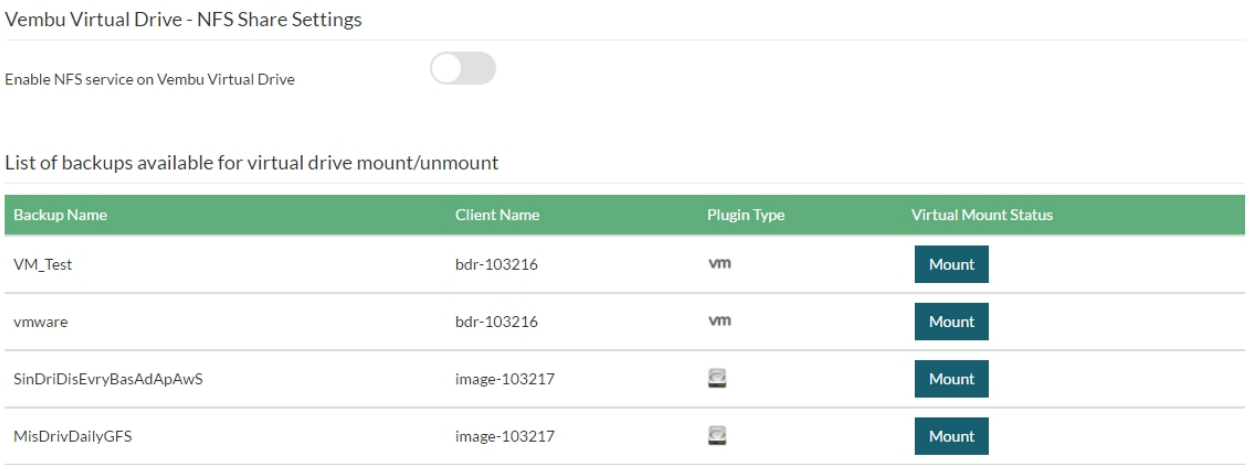
- VHD
- VMDK
- VHDX
- VMDK-Flat
- RAW image files

These files can be used based on user requirements. For example, a VHD file can be mounted in Hyper-V or a VMDK file can be mounted in a ESXi server or a RAW image file can be mounted in KVM to create a virtual machine. VHD file can also be mounted in disk management to access file level backup data.

Manage Vembu Virtual Drive (NFS Share)

- Go to Management → Server Management → Manage Virtual Drive

This page lists all image backups stored in backup server and user can virtual mount any backup data he wish to instant access.



- To virtual mount a backup data, user have to click 'Mount' option alongside specific backup job to be accessed and click Yes in confirmation dialog.

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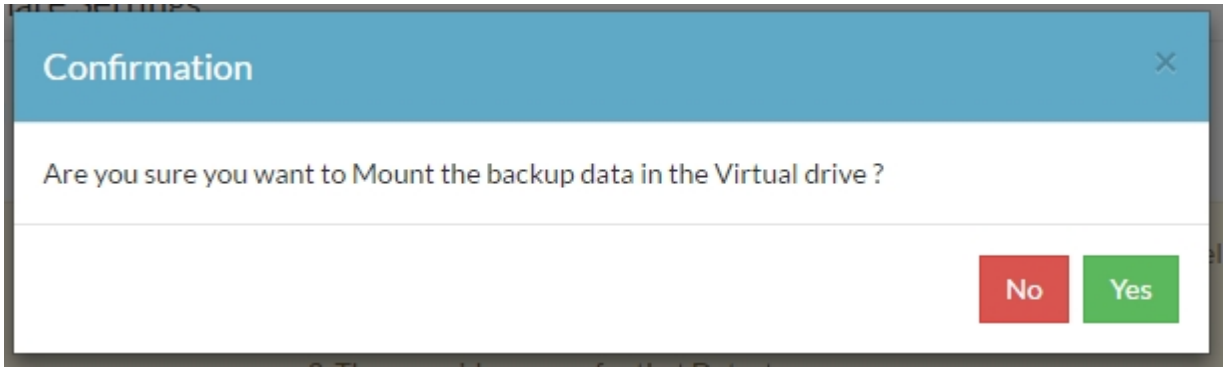
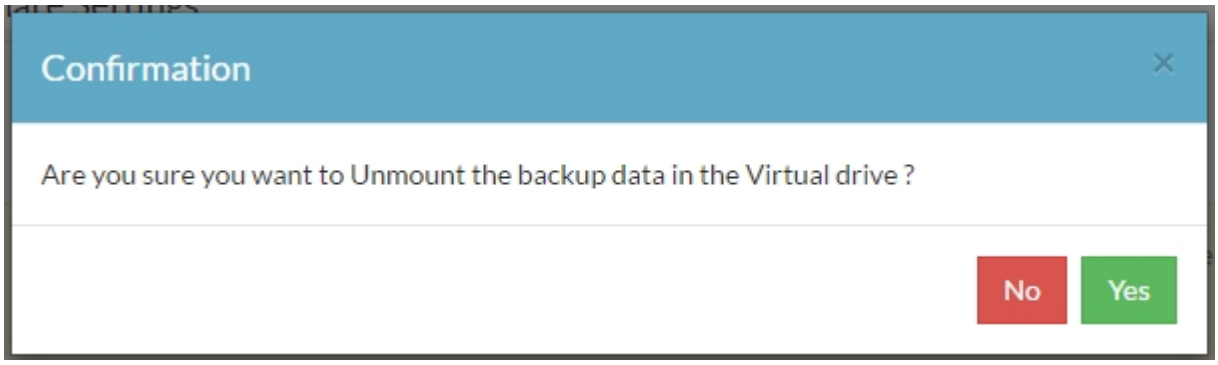


- User can now have access to backup data by viewing VembuVirtualDrive displayed in My Computer.
- Once done with requirement, user can unmount data by clicking on Unmount option and confirming with a Yes in confirmation dialog.



Enable NFS Service on Vembu Virtual Drive

- Vembu Virtual Drive can be shared within a network area by enabling NFS service on Vembu Virtual Drive.
- NFS service for Vembu Virtual Drive is available on both Linux and Windows servers.

  Note: For enabling NFS feature in Linux servers, it is necessary to have NFS kernel server installed in Backup Server machine. You can install NFS Service by using "apt-get install nfs-kernel-server" command. You need to run VembuBDR with root/ administrator privileges in order to save NFS settings.

Enable NFS Service on Linux Screenshot:

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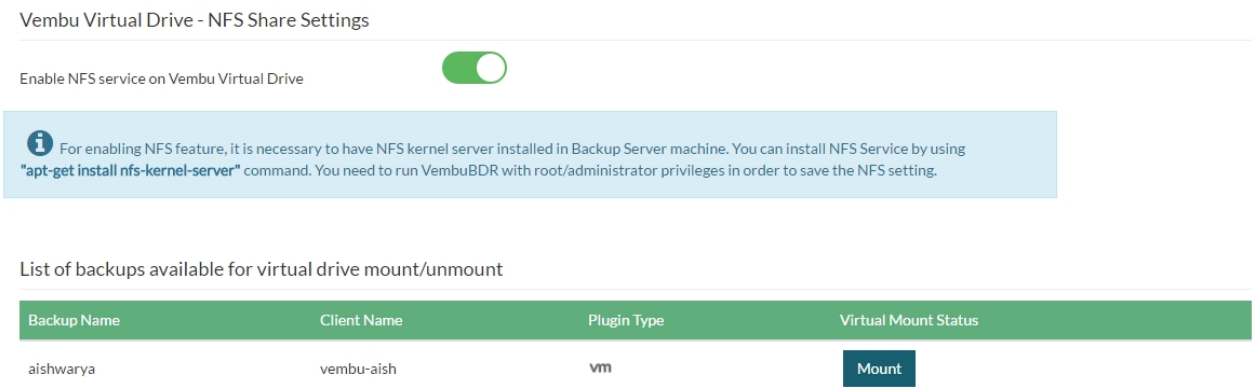
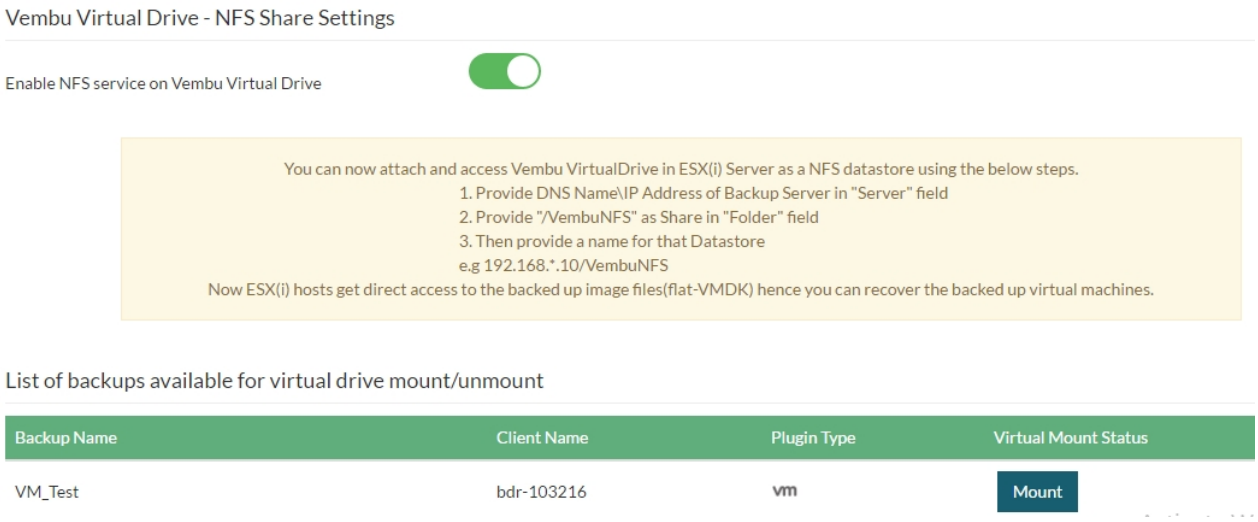


Enable NFS Service on Windows Screenshot:



- NFS share service allows user to add VembuVirtualDrive as a NFS datastore in ESXi servers.

Note: Before enabling NFS service on Vembu Virtual Drive, please make sure Microsoft or any other third party NFS services is disabled to ensure uninterrupted service.

Vembu VMBackup User Guide

Managing Hyper-V Backup and Recovery

- Hyper-V Backup
- Disaster Recovery

Hyper-V Backup

Hyper-V Backup

- Setup Backup Job
- Manage Backup Job

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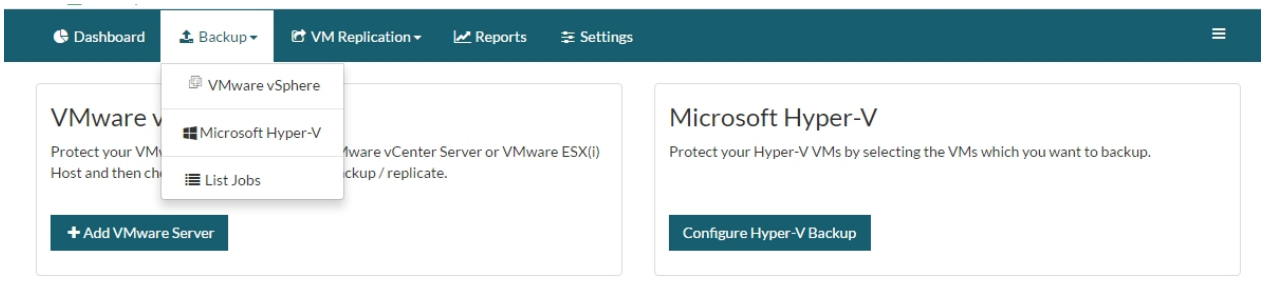
Setup Backup Job

- Go to Backup → Microsoft Hyper-V



Create Hyper-V Backup:

Choose Virtual Machine(s):

- Choose list of VMs you wish to get backed up and proceed.

VM(s)/Disk(s) Exclusion

- On selecting Host level backup, you might wish to exclude some specific set of VMs from getting backed up. Such VMs can be excluded using VM(s)/Disk(s) exclusion option.

VM Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.

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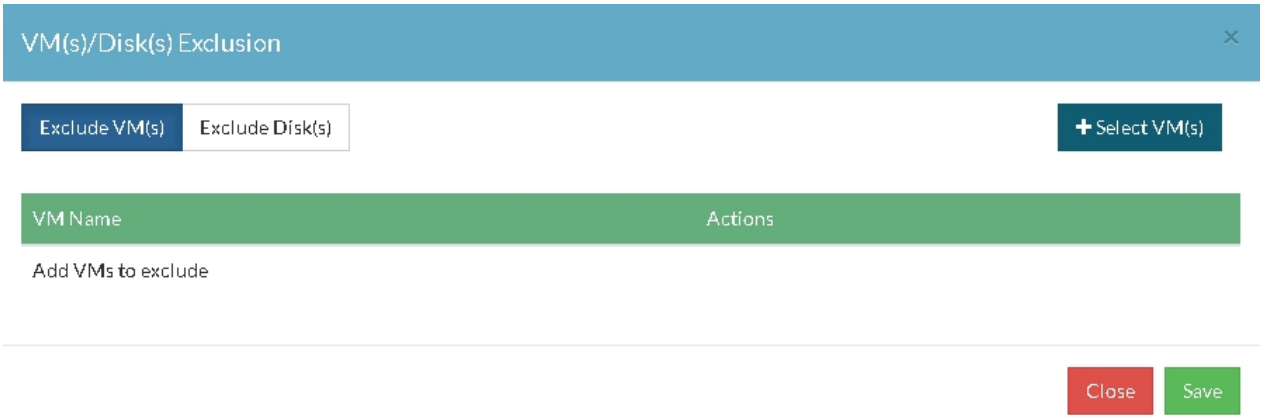
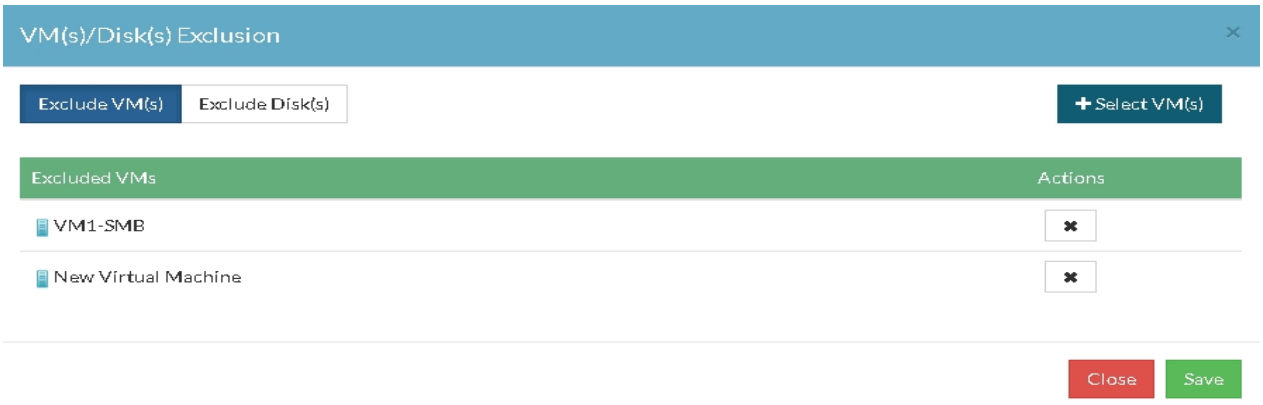


- Choose 'Exclude VM(s)' tab.
- To exclude a virtual machine from a configured host level backup, click 'select VM' and choose the VMs to be excluded and click 'Exclude'.
- Once added, save the exclusion settings.



- You can also add/delete a VM to/from exclusion list, whenever required by editing the backup job.
  Note: Changes made in VM exclusion settings will be taken into effect immediately with next schedule.

Disk Exclusion

- Click 'VM(s)/Disk(s) Exclusion' option, you will get a popup as shown below.

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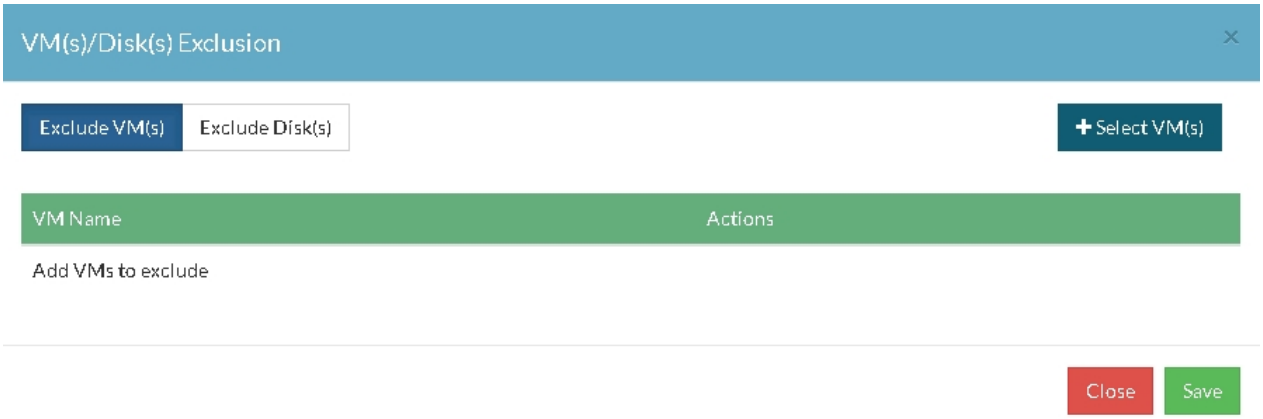
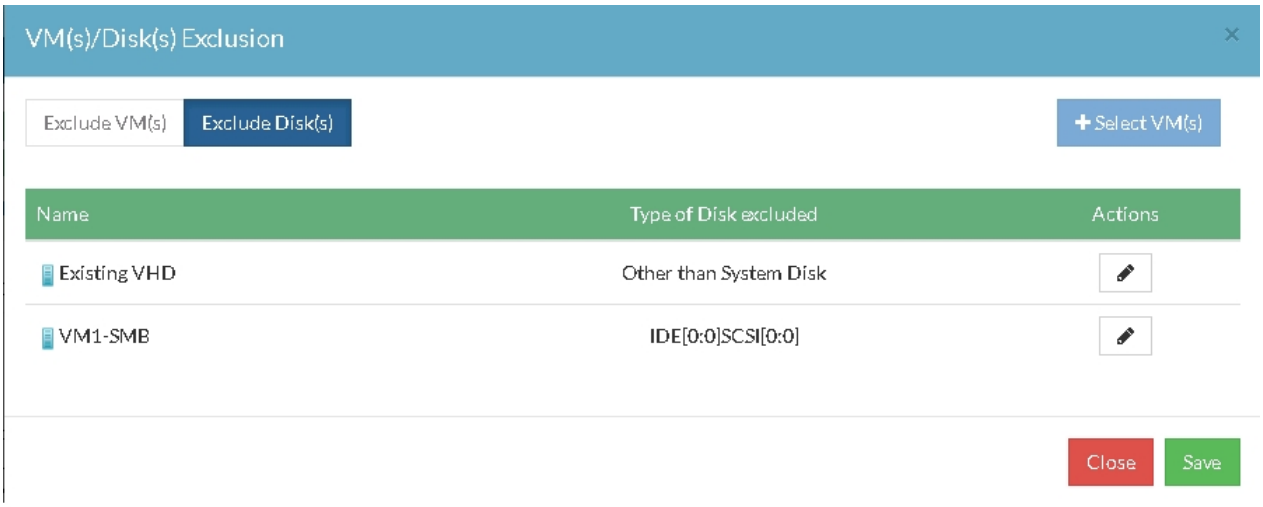


- Choose 'Exclude Disk(s)' tab.
- Disk exclusion can be either enabled at host level or can be configured at VM level.

  Host level Disk Exclusion- This exclusion type is possible when you opt to configure host level backup job. Under 'Exclude Disk(s)' tab, you will find the configured host(s) listed.



- You can choose 'Edit Disk Exclusion' option, to assign global disk exclusion rule for VMs under a chosen host. Edit Disk exclusion tab will have following exclusion rules:
  - No disks Excluded
  - Include only System Disks for Backup. Exclude Others (typically 0:0)
  - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.

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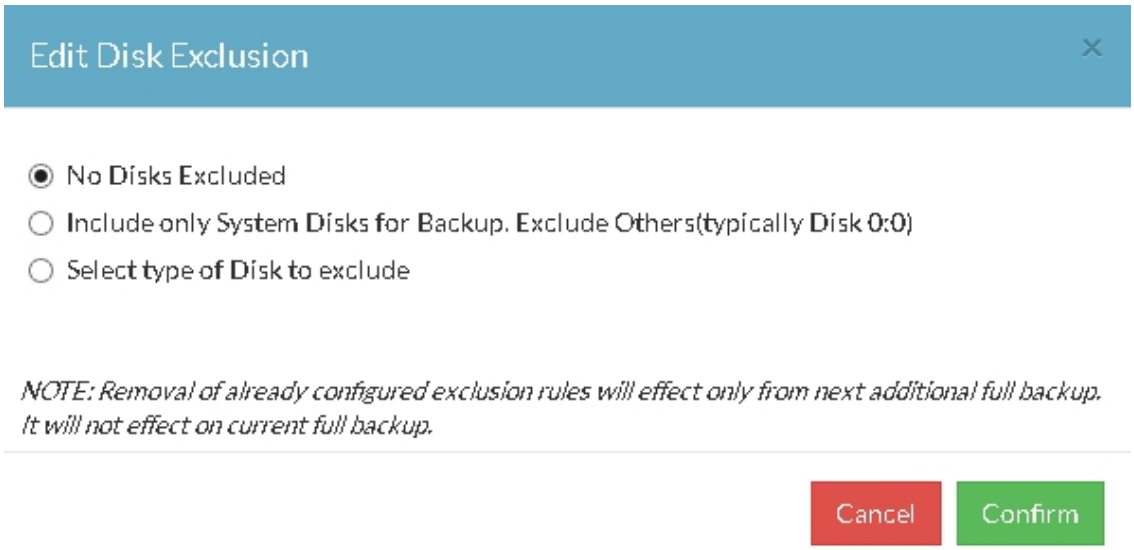
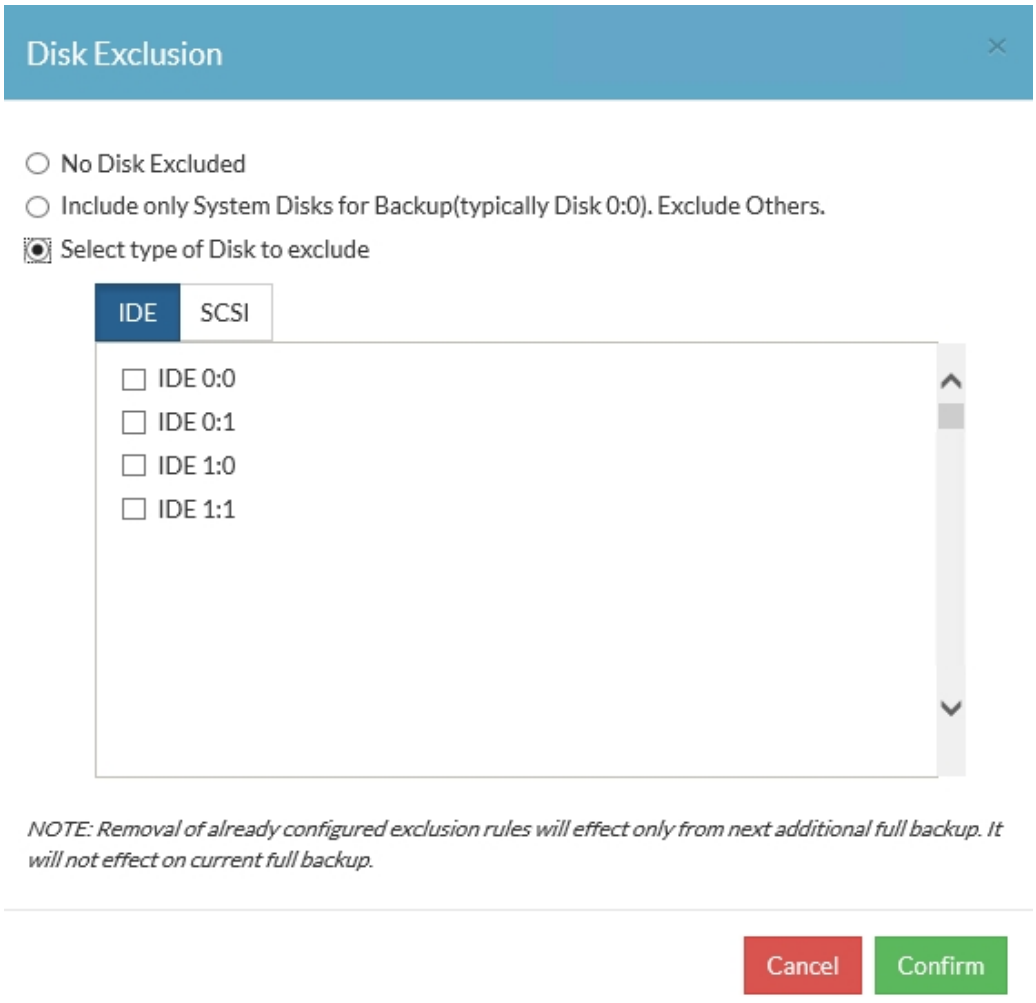


- Opting for the third option of selecting disk type will list all available disk types for VMs in Hyper-V.
- User can choose the disk(s) to be excluded in each disk type.



- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.

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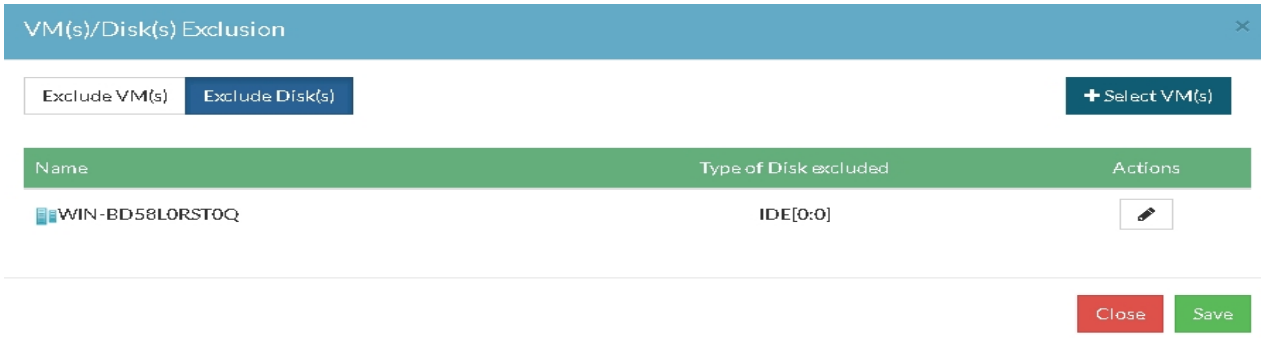
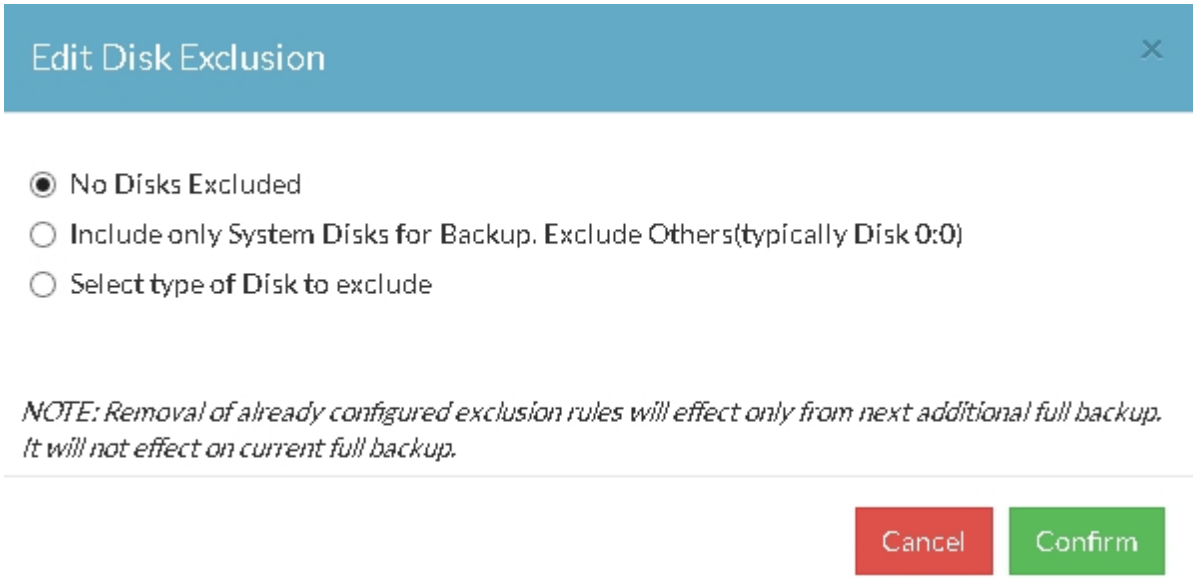
VM level Disk Exclusion- This exclusion type can be configured in both host level and VM level backup job. Under 'Exclude Disk(s)' tab, you will find the list of configured VM(s).

If it's a host level backup job, you can assign both host level exclusion rule as well as assign exclusion rule for individual VMs by adding VMs to be configured using Select VM(s) option.



- Choose 'Edit Disk Exclusion' option alongside a VM to configure disk exclusion rule for the selected VM. Edit Disk exclusion tab will have following exclusion rules:
    - No disks Excluded
    - Include only System Disks for Backup. Exclude Others (typically 0:0)
    - Select type of Disk to exclude

  Note: By default No disks excluded option will be selected.



- Opting for the third option of selecting disk type will list all available disk types for VMs in Hyper-V.

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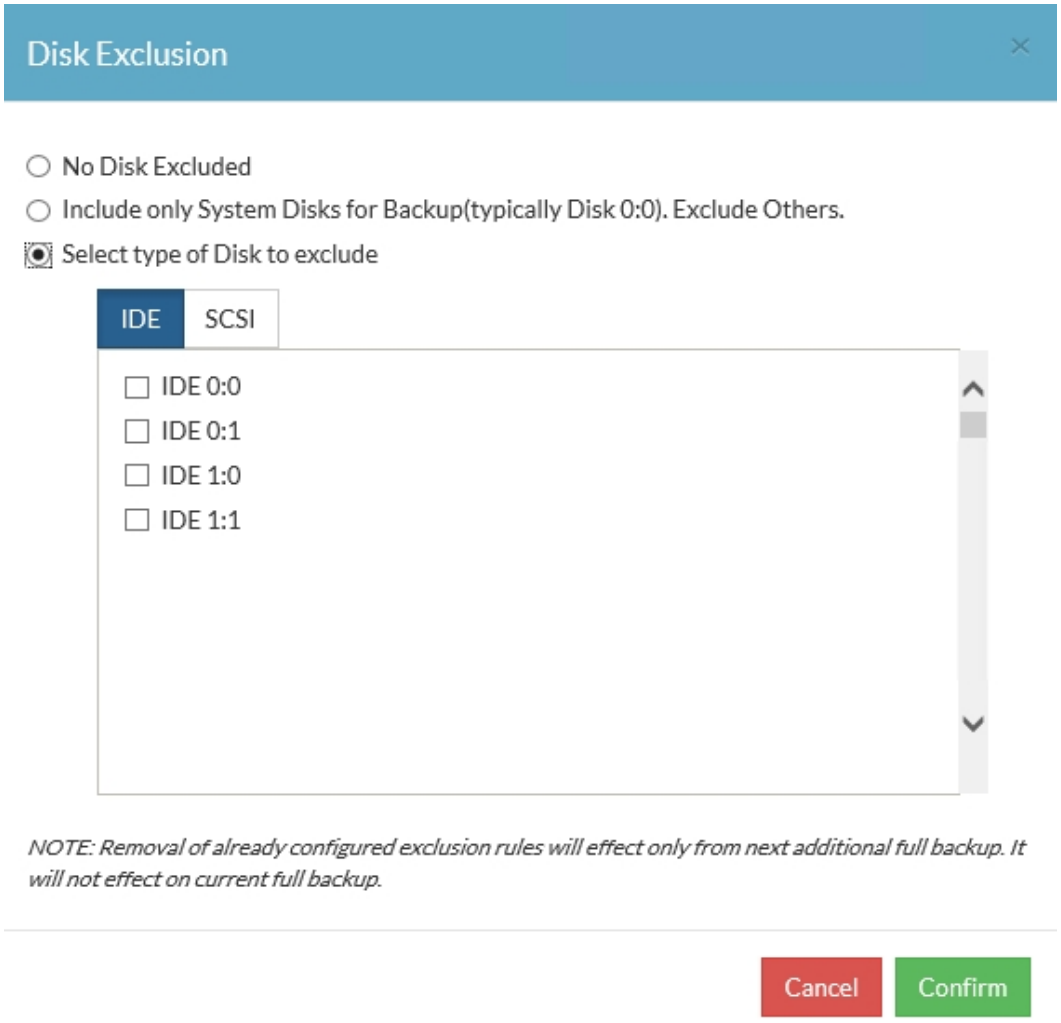
- User can choose the disk(s) to be excluded in each disk type.
- Once done assigning disk exclusion rule, click 'Confirm' and save the exclusion settings.



- You can also add/delete a disk to/from exclusion list, whenever required by editing the backup job.
  Note: Changes made in disk exclusion settings will be applied only when a additional full backup is scheduled.

Configure Scheduling:

- Users can configure their backup schedules flexibly based on their requirement. They can choose from Hourly/Daily/Weekly options for backup schedules.

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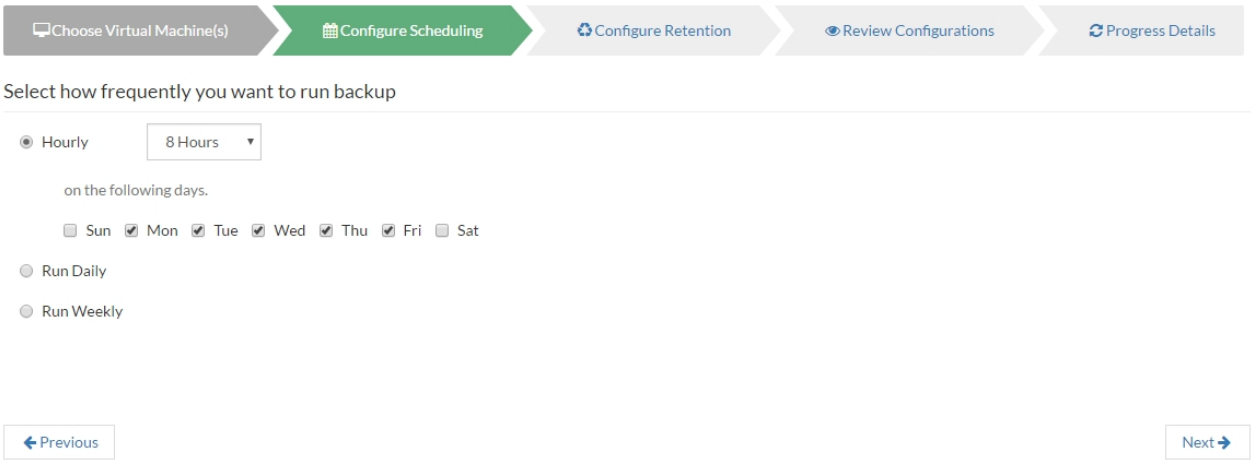
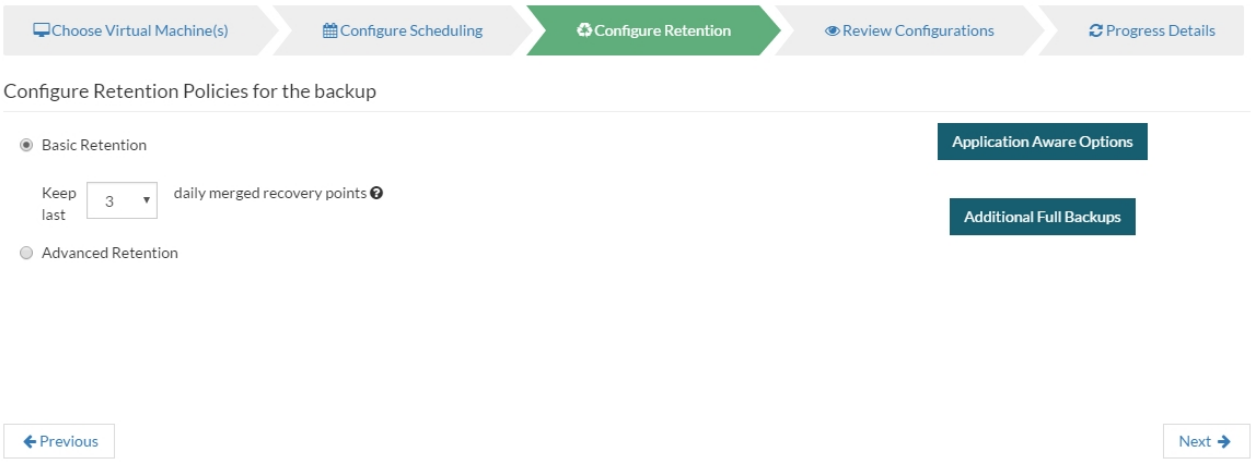


Configure Retention Policy:

- Users will be given 2 options for choosing retention policy:
    - Basic retention and
    - Advanced retention (GFS)

Basic:

- Vembu VMBackup provides forever incremental backups, where user can have ‘n' number of incrementals. They also do have options to limit incremental count, which when retention count reaches incremental count, older incrementals will be purged while latest incremental will be retained as per configuration.



Advanced (GFS Retention):

- The Multilevel GFS retention reduces the time taken to restore backed up machines and most importantly reduce the size of image files in storage location. It also help avoid long chains of incrementals, ensuring safety of backup data and allow you to meet the requirements of your retention policy.

GFS retention merge incrementals on a daily, weekly and monthly basis:

- **Daily** - Daily merge will merge hourly incrementals on the third day's first successful incremental backup.

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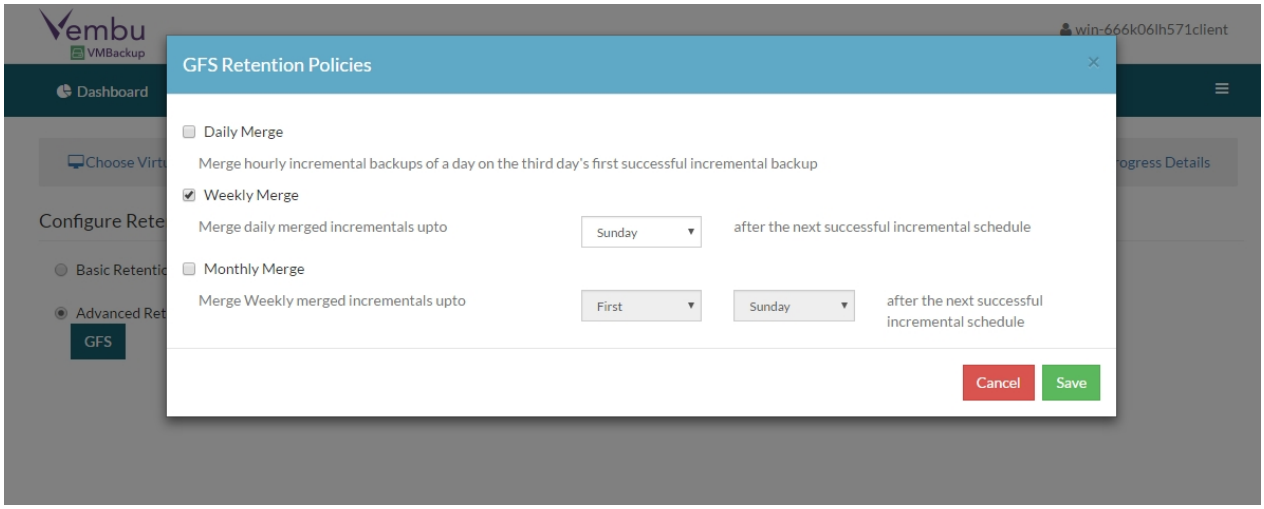
- **Weekly** - Weekly merge will commence based on user scheduled day's first successful incremental backup. It will merge all daily merged incrementals into a single weekly merged file.
- **Monthly** - Monthly merge is much similar as weekly merge where user need to schedule particular day in a month(For example: Third Wednesday) and the merge will get initiated at first successful incremental of the day. It merges all weekly merged files as a single monthly file.



Application-Aware Hyper-V Backups:

Hyper-V backups utilize Microsoft VSS writers to take application-consistent backups(MS SQL, MS Exchange) and truncate exchange log files to free up the space.

Enabling application aware process - Truncate logs immediately:

- Enabling this option lets Vembu BDR truncate the exchange server logs before initiating backup process. It purges and commits log files along with the .edb files and reduce storage space consumed.

Application Aware Image Process Prerequisites:

- To perform application-aware image processing, the Guest Machine (running MS Exchange server, MS SQL Server, MS SharePoint Server, MS Active Directory) should be installed with latest Hyper-V integration services.

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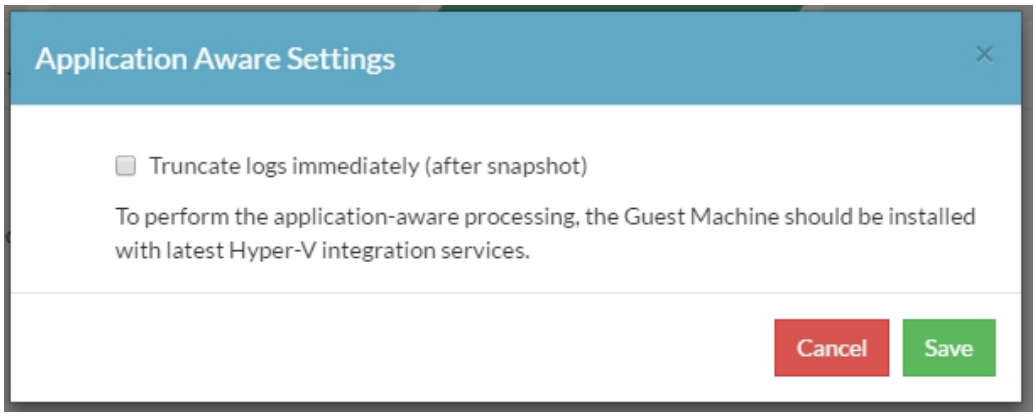
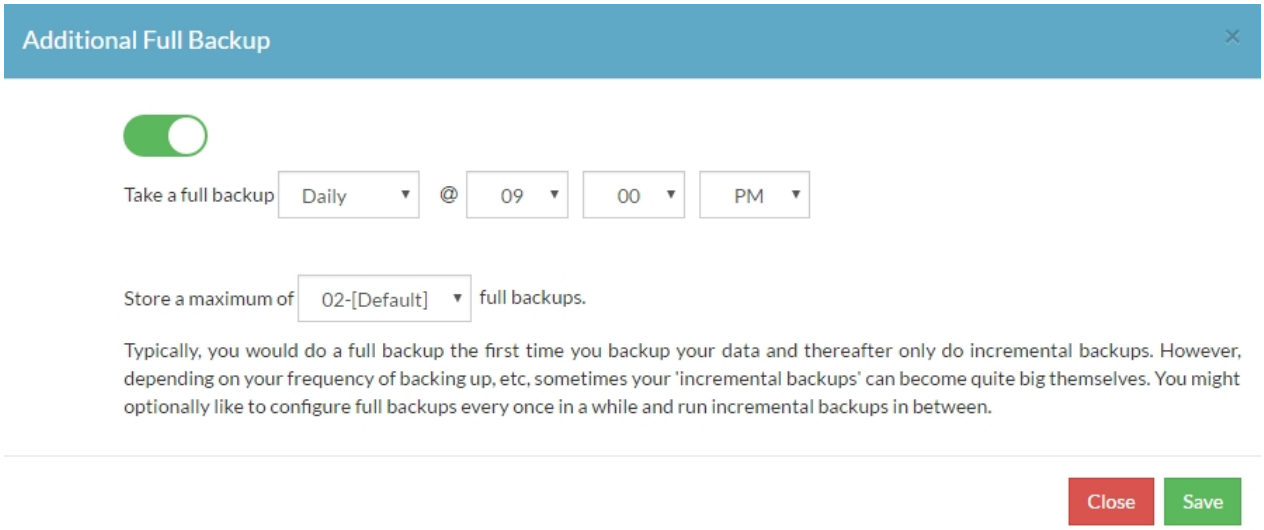


Additional Full Backups:



In an enterprise environment, configuring a backup job with one full backup and forever incremental is not a recommended practice. Users from such environment will tend to configure additional full backups periodically and that can be automated with our additional backup option.

Additional Full Backups can be configured in following order of scheduling:

- For Continuous and Run every few hours schedules- Configuring daily/weekly/monthly additional full backup is possible.
- For Run Daily schedule- Configuring weekly/monthly additional full backup are the possible options.
- For Run Weekly schedule- 'Monthly full backup' is the only possible additional full backup.
- For Run Once schedule- You cannot configure additional full backup.

Note: Users can also limit the number of full backups to be retained with 'Store a maximum of' option. With this option, users can share the unwanted storage data occupied based for a time period. For example, a user needing no more than 6 months of data retainment can configure 6 monthly full backups where the 1st additional full backup will be deleted on the 7th month when a new full backup completes successfully.

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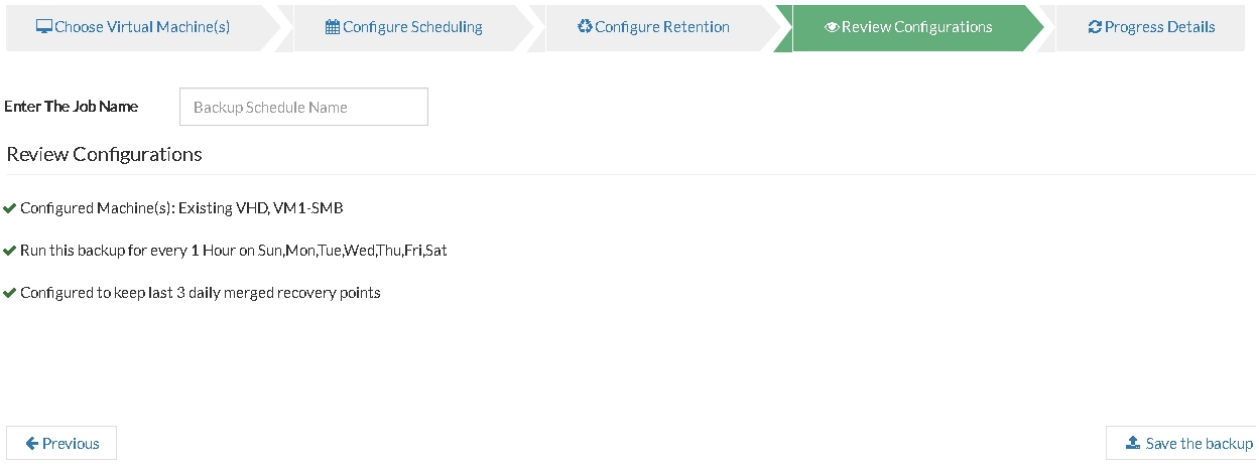
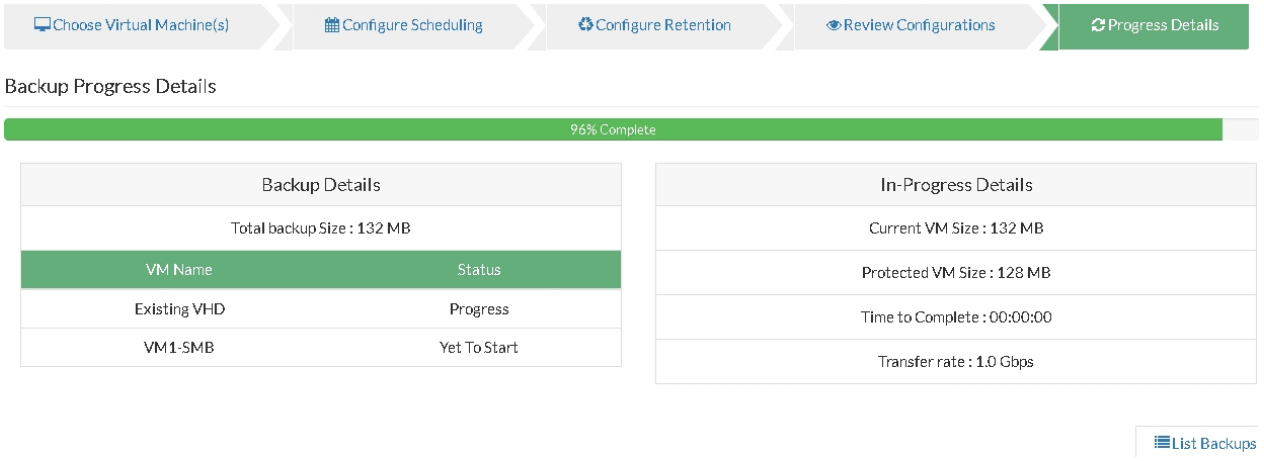
Review Configurations:

- User will be required to provide a name for backup scheduled.
- And can verify the configurations one final time, before hitting ‘run the backup'.



Progress Details:

- Thus, backup progress is witnessed and can be verified once it completes successfully.



Manage Backup Job

Client Side- Vembu VMBackup:

- Login to Vembu VMBackup and go to ' Backup → List Jobs'.
- The list of backup jobs configured from that particular client machine will be listed along with options to edit, suspend/resume, run/abort, delete the backup job.
- Users can also view the plugin type and historical report of a particular backup job.

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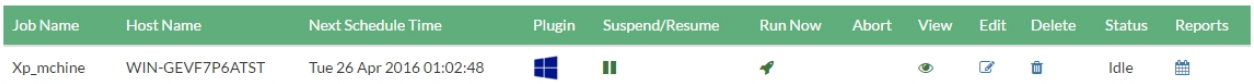

Suspend/Resume:

- This option lets a user to suspend and resume a configured backup job, if required.
- A suspended backup job will not run schedules as per its configuration, until/unless it is resumed.

Run Now:

- This option is used to immediate schedule a backup job, once clicked.
- If run now is triggered in midst of scheduled interval, then the next schedule interval will be calculated from the time of recent backup job.
  Note: If a backup job is triggered in midst of scheduled interval with run now, then the next backup schedule will be triggered

Abort:

- This option is used to abort a backup job that is currently in progress, if required.

View:

- This option allow user to view thesaved configuration of any specific backup job.

Edit:

- This option allow user to edit the configuration of an already scheduled backup job.
- Edit option allow user to completely reconfigure the backup job being edited. (i.e) User can:
  - Add/remove VMs.
  - Reconfigure the schedule frequency, retention policies, additional backups and application aware options of backup job.
- Once done, review the edited configuration and save it.

Delete:

- This option is used to delete the backup job, if no longer required.
- Proceeding with this option, will ask for deletion confirmation and once confirmed the backup job will be deleted in client.
- If server is up and listening, the respective backup data of particular job will also be deleted in server end.

Vembu VMBackup User Guide

Disaster Recovery

- Login to Vembu BDR backup server web console via any one of following options:
  - By typing default URL: http://localhost:6060 (or)http://<Ip_Address_of_Machine>:6060 in browser
  - Via shortcut created on desktop.

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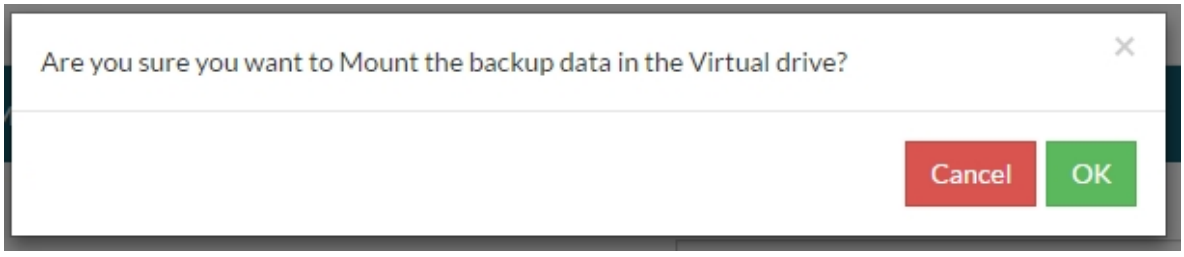
- Via Vembu VMBackup client web console option in tray icon.

- Go to Recovery tab.
- Backups configured from various client machines to the server, will be listed for recovery, along with below listed options:
  - Restore
  - Virtual mount
  - Proceed to Persistent Instant Boot version delete
  - Delete
  - Replication actions
  - Status
  - Reports

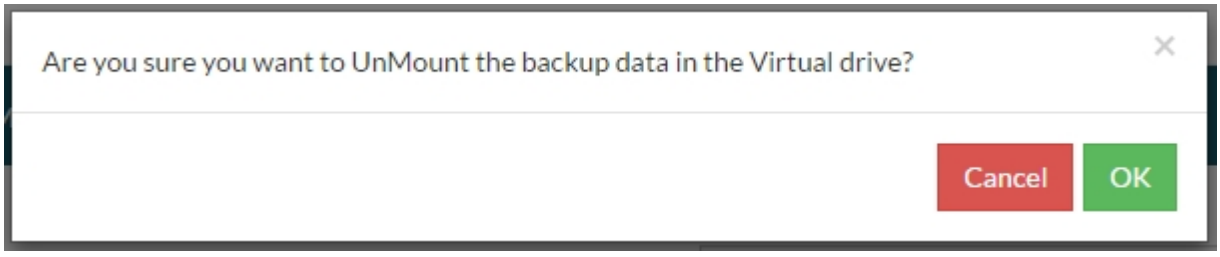
Job Name	Client Name	Size	Restore	Mount	Persistent	Delete	Actions	Status	Reports
3vms_test	11_vm_35	182.06 GB						Idle	
4vms_test	virmac_12_35	188.26 GB						Idle	
sql_app_hyperv	192.168.102.27	76.91 GB						Idle	
vm_test_62	virmac_5_35	34.1 GB							
vm_test_19	win2007_2_35	34.64 GB						Idle	
vm_test_66	virmac_23_35	19.4 GB						Idle	
vm_test_34	virmac_3_35	32.31 GB						Idle	
vm_test_23	12_vm_35	63.94 GB						Idle	

Virtual mount:

- This option lets you instant mount backup data virtually where users can access backup in different file formats such as: IMG, VHD, VHDX, VMDK.



- Users can either take a copy of this mounted data or boot respective files if needed on KVM(IMG file in Linux), VMware vSphere(VMDK) or Hyper-V(VHD, VHDX).
- Once done with requirement, unmount backup data. This will resume backup job, so that incrementals will run as per schedule.



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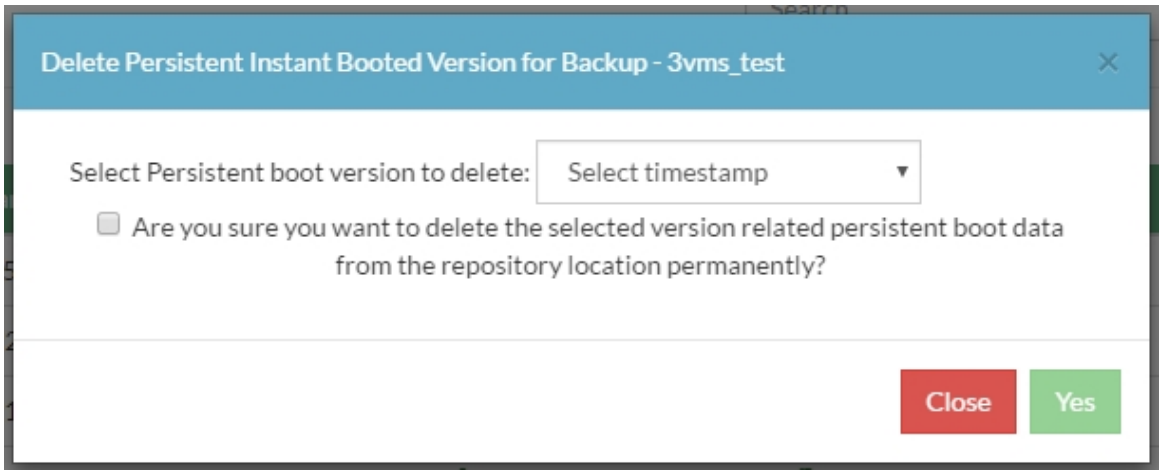
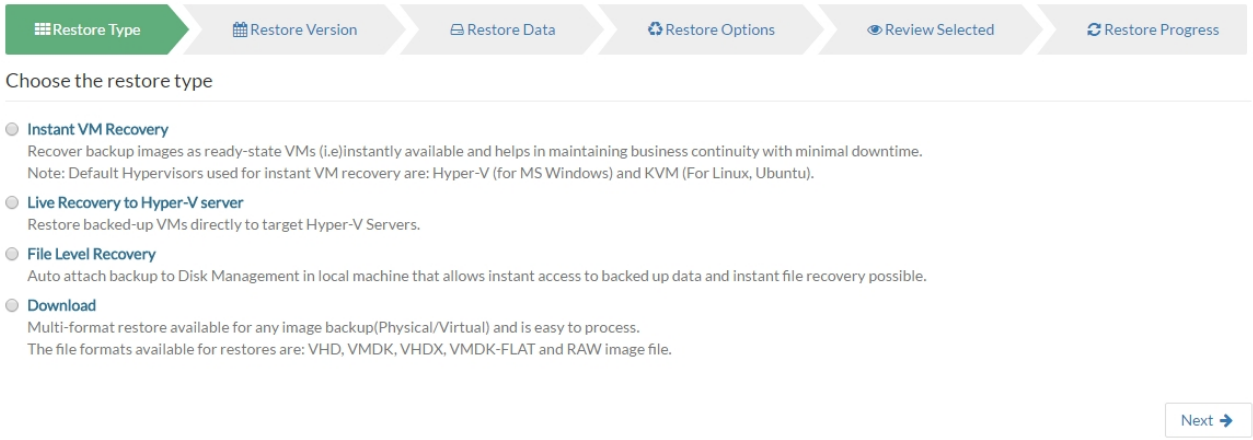
Proceed to Persistent Instant Boot version delete:

- During each instant boot and instant file recovery session, a change in backup data will take place which then is saved as persistent Instant boot data.
- Persistent data can be restored using restore options, if needed.
- Persistent data will be listed with a (+p) sign alongside timestamps of backup versions.
- Such persistent data can also be deleted if not required, using the 'Proceed to Persistent Instant Boot version delete' option.
- The option let user choose the timestamp of persistent data to be deleted.
- User will also be required to confirm deletion by selecting the checkbox 'Are you sure you want to delete the selected version related persistent boot data from the repository location permanently?' to proceed with deletion process.



Restore:

- Proceeding with restore option will list below restore options to choose from:
  - Quick VM Recovery
  - Live Recovery to Hyper-V server
  - File Level Recovery
  - Download



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Vembu VMBackup User Guide

Quick VM Recovery

Quick VM recovery option allow user to quick access backup images as ready state VMs. (i.e) Minimal downtime and business continuity secured by making VMs instantly available. Quick VM recovery gives 2 choices of instant boot software to users:

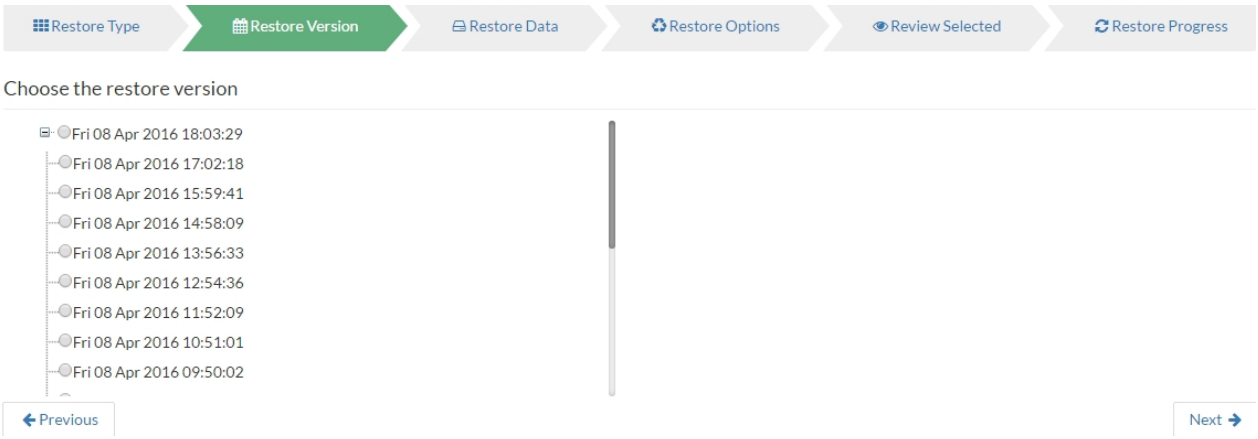
- Hyper-V (Default chosen software for Windows and available only on Windows servers)
- KVM (Default chosen software for Linux and available only on Linux servers)

Vembu VMBackup User Guide

Hyper-V

Login to Vembu BDR server installed in a Windows environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.



- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to allocate RAM for Instant boot.

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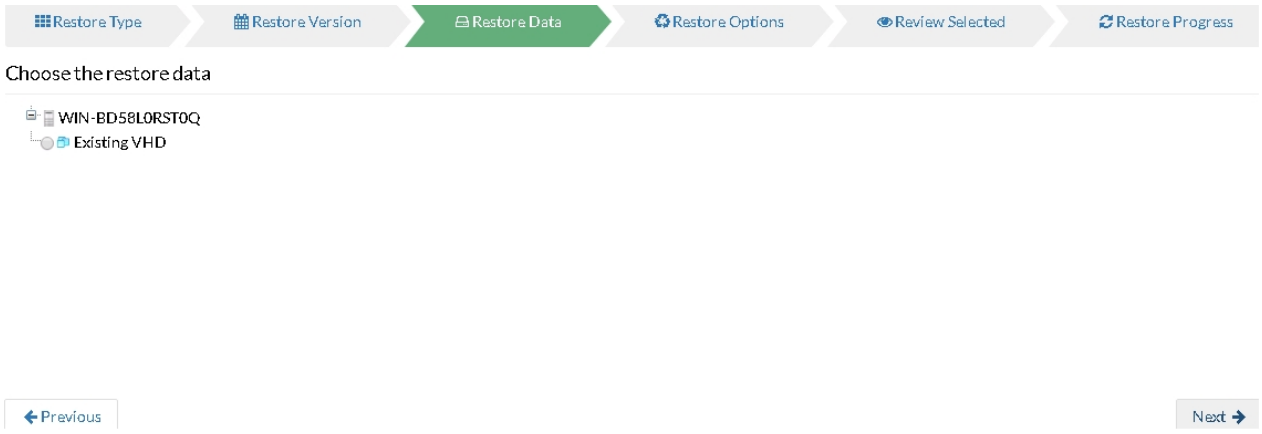
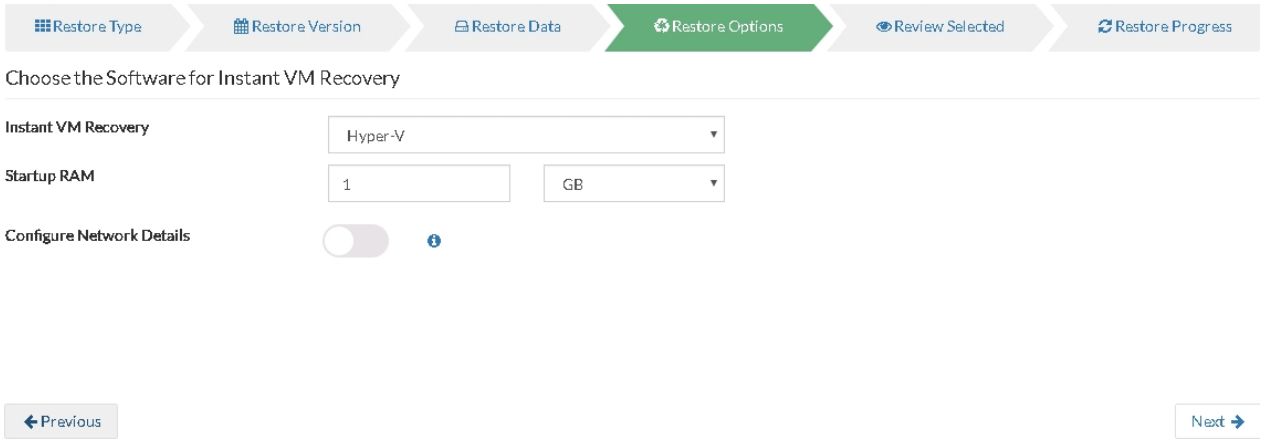
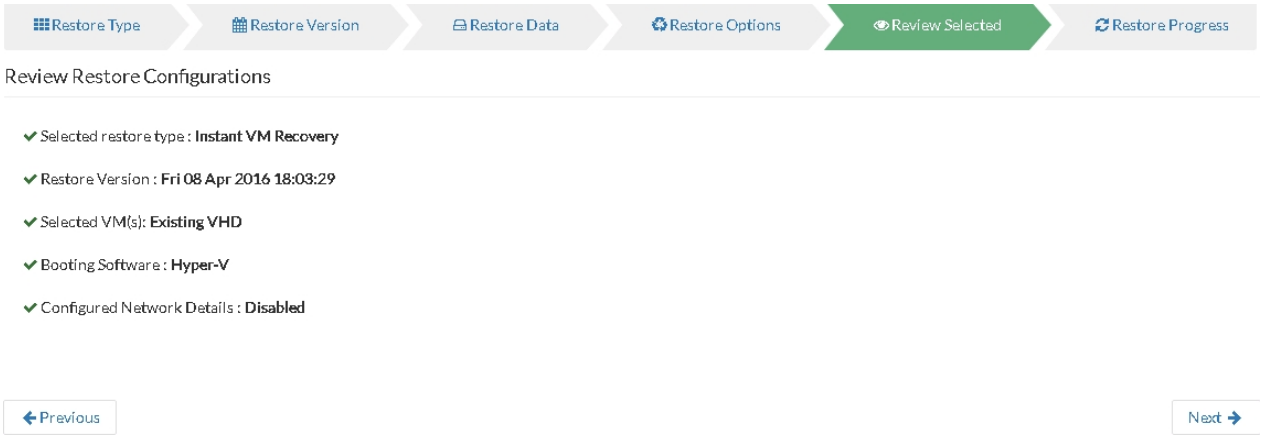


- The software used to instant boot is Hyper-V (For Windows servers) and the default RAM size chosen is 2 GB which can be modified based on user requirement.



- Once done allocating RAM size, proceed to review configuration.



- Once done reviewing, click Next to proceed with Instant Booting the VM.

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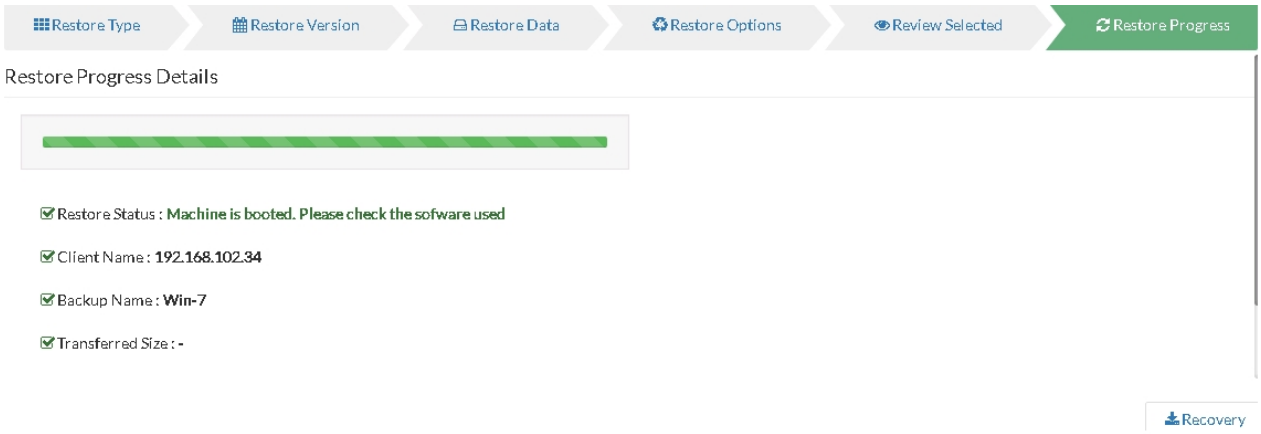


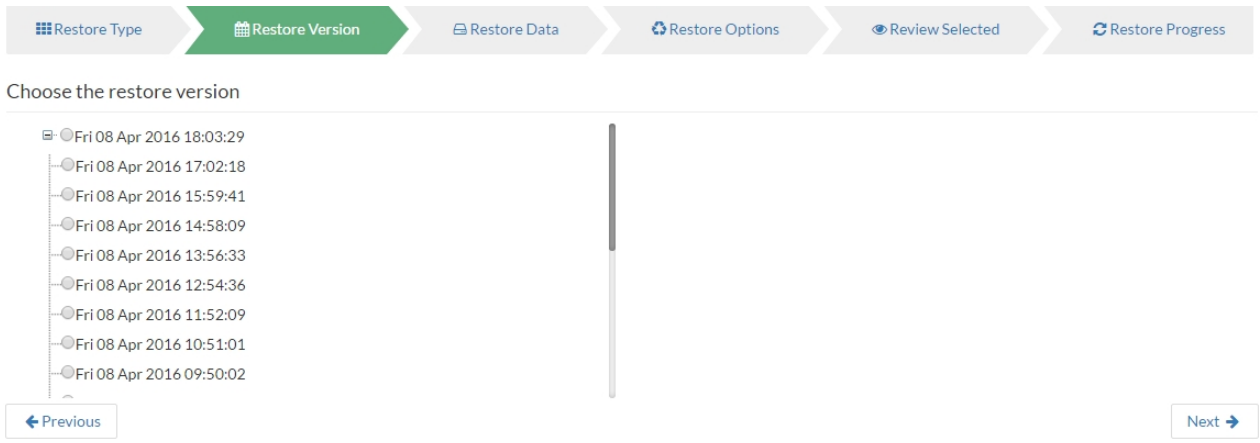
- VM will get automatically created in Hyper-V VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

Vembu VMBackup User Guide

KVM

Login to Vembu BDR server installed in a Linux environment and go with 'Quick VM Recovery' among recovery options.

- Proceeding with Quick VM recovery option will let you select version for Instant Boot.



- Once done choosing required timestamp, proceed to select the virtual machine to boot.
- From the list of VM(s) select the VM to instant boot and proceed to allocate RAM for Instant boot.

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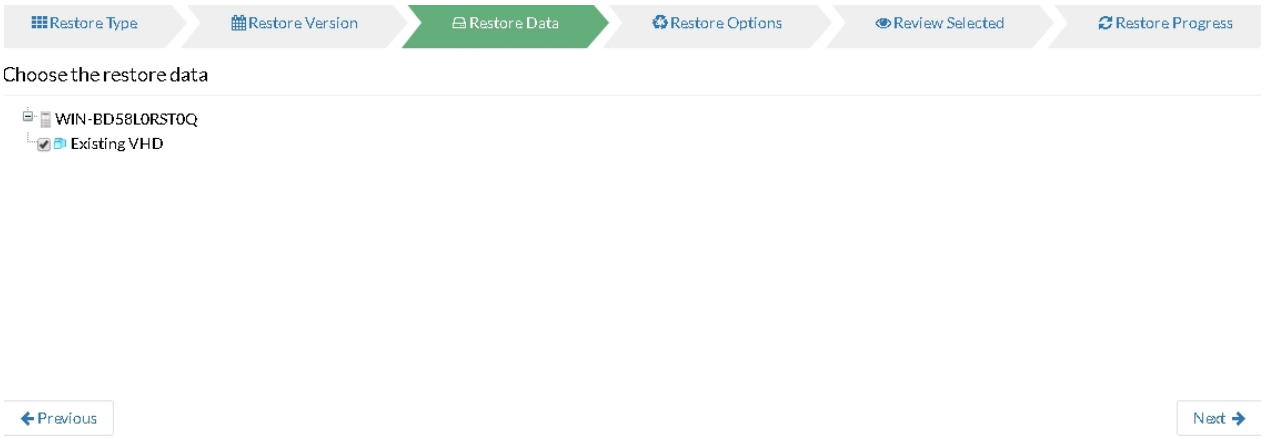
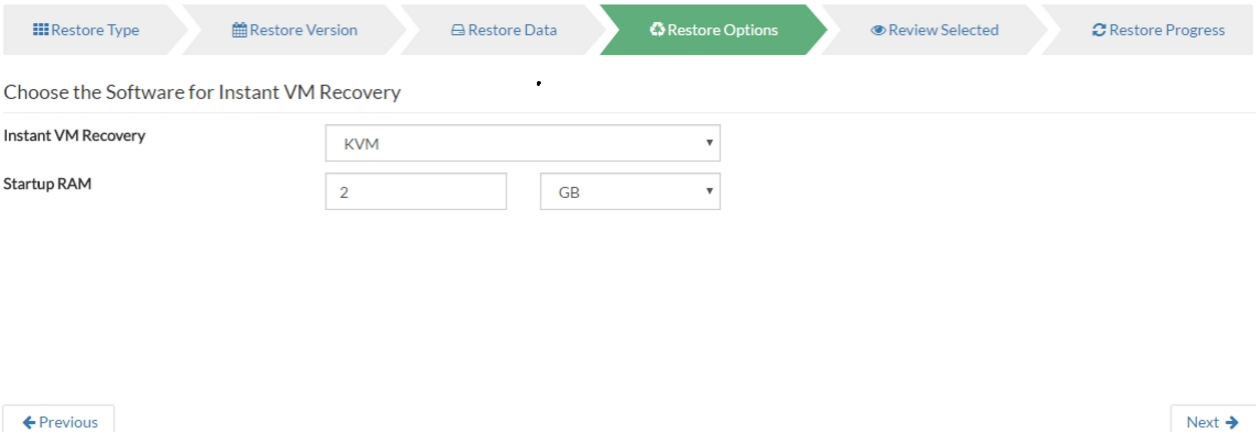
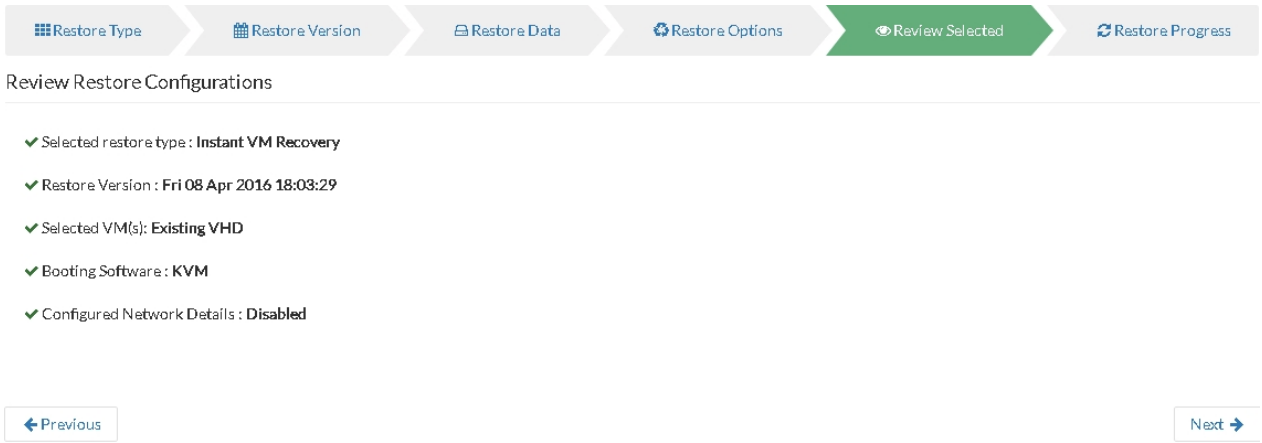


- The software used to instant boot is KVM (For Linux servers) and the default RAM size chosen is 2 GB which can be modified based on user requirement.



- Once done allocating RAM size, proceed to review configuration.



- Once done reviewing, click Next to proceed with Instant Booting the VM.

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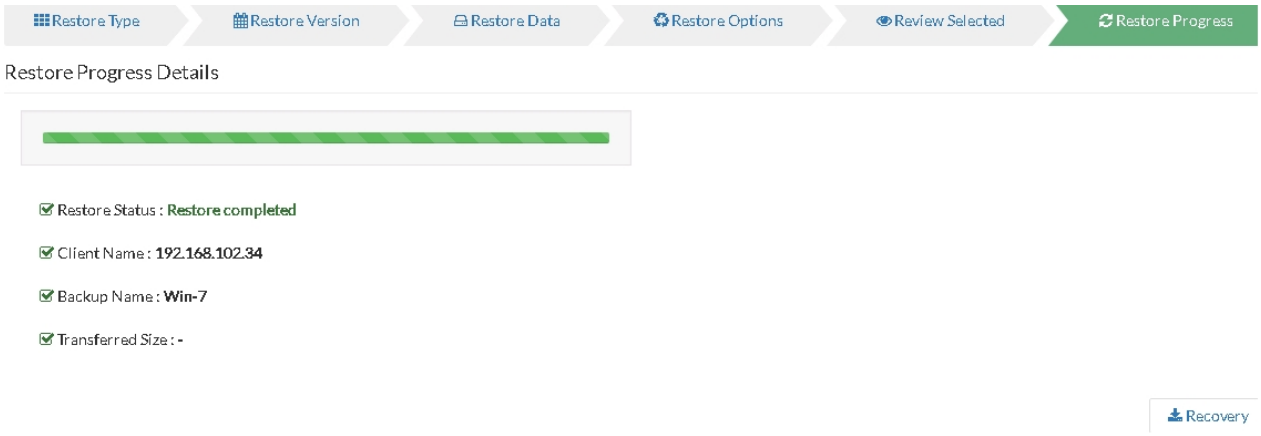


- VM will get automatically created in KVM VMs list.
  Note: Once done with requirement, shutdown and turn off VM before unmounting backup data. This will resume backup job, so that incrementals will run as per schedule.

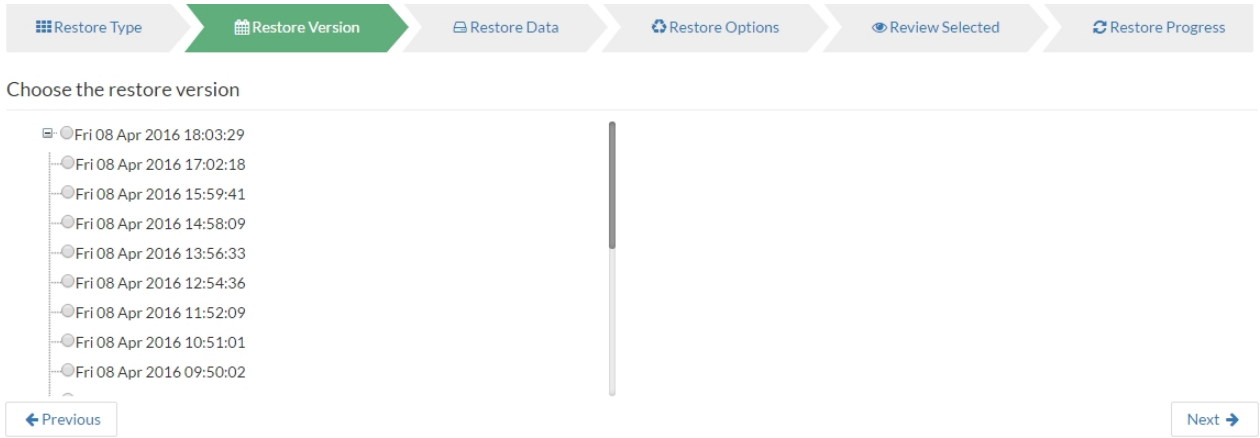
Vembu VMBackup User Guide

Instant File Recovery

This option lets you instantly attach backup data to disk management as a VHD/VHDX file and proceed with file level restore.

- The VHD/VHDX file is created by virtual mounting backup data.
- Users can access backup data via disks attached on disk management.
- Once done with requirement, unmount backup data. This will resume backup job, so that incrementals will run as per schedule.

- Select the timestamp version for file level recovery and proceed



- Select the backup data to be mounted in disk management for file level restore.

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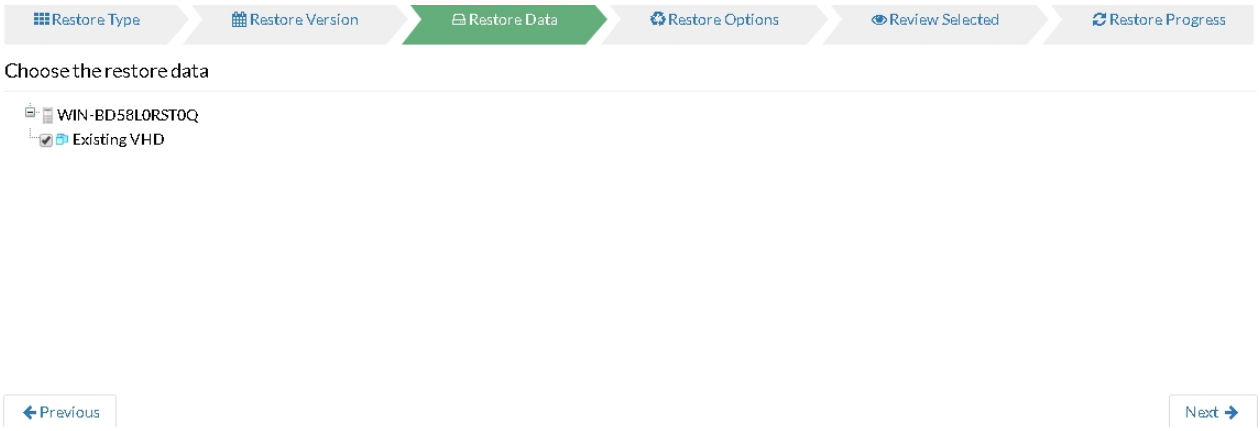
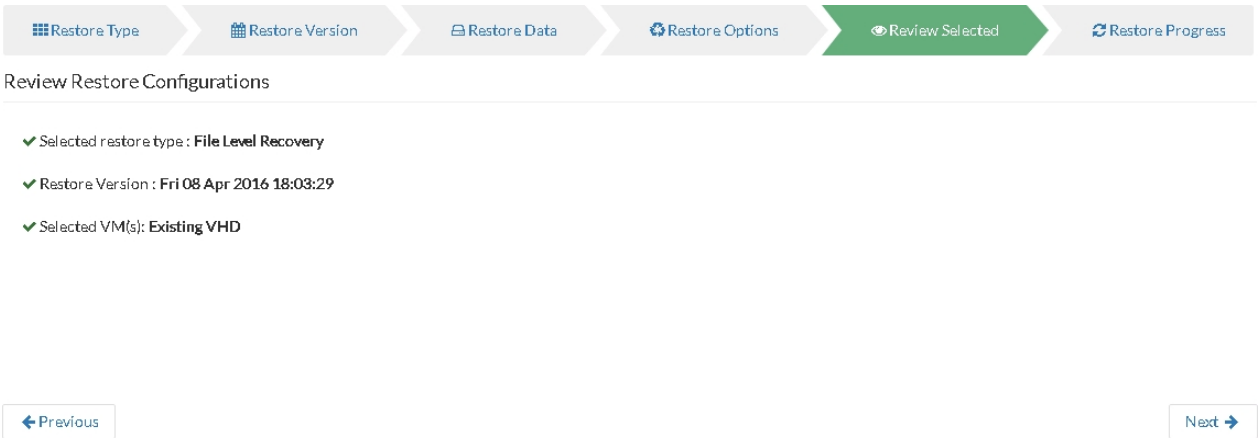
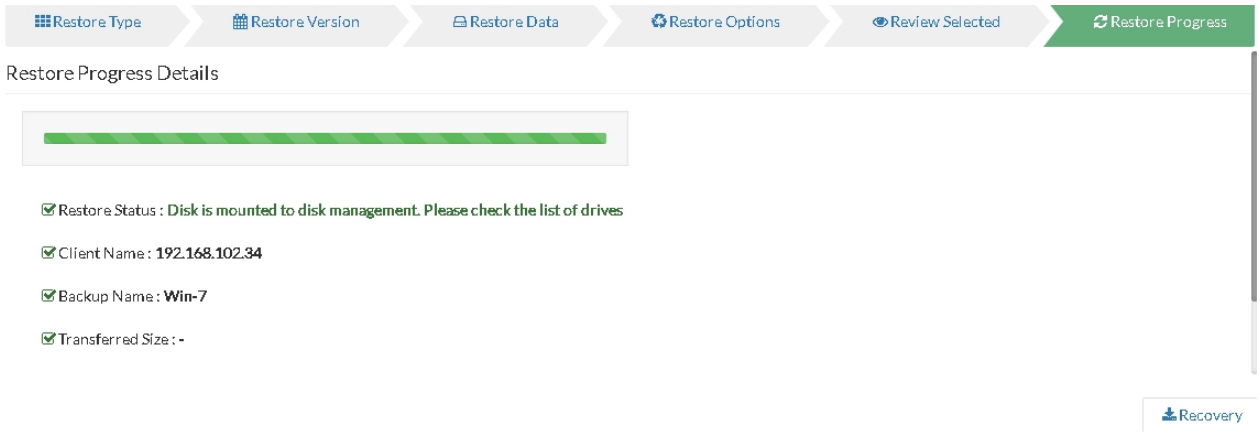


- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with File Level Recovery.



Vembu VMBackup User Guide

Full VM Recovery to Hyper-V Server

- Proceeding with 'Live recovery to Hyper-V server' option will let you 'Select restore version', where you have Hyper-V backup with several timestamps.
- Choose your required timestamp version and proceed to select VM.

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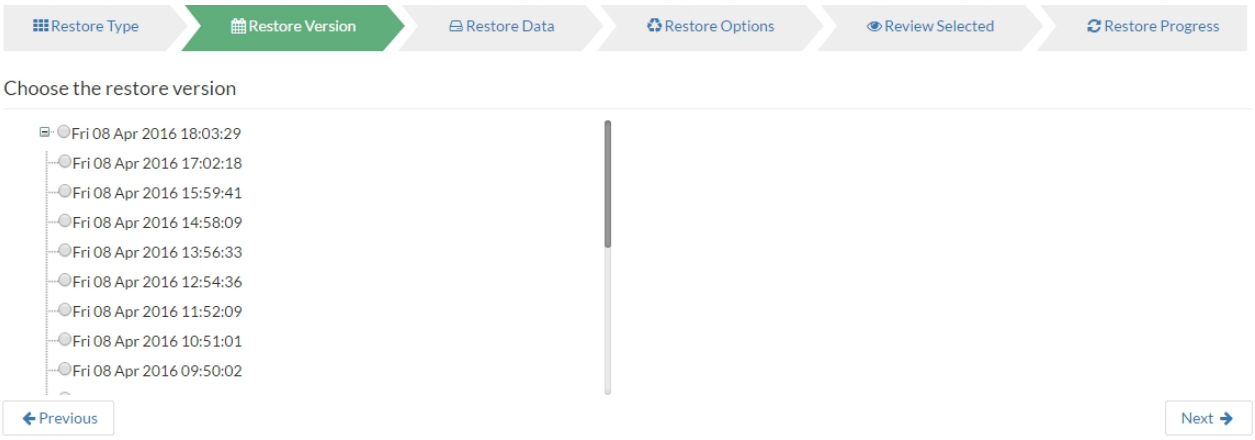
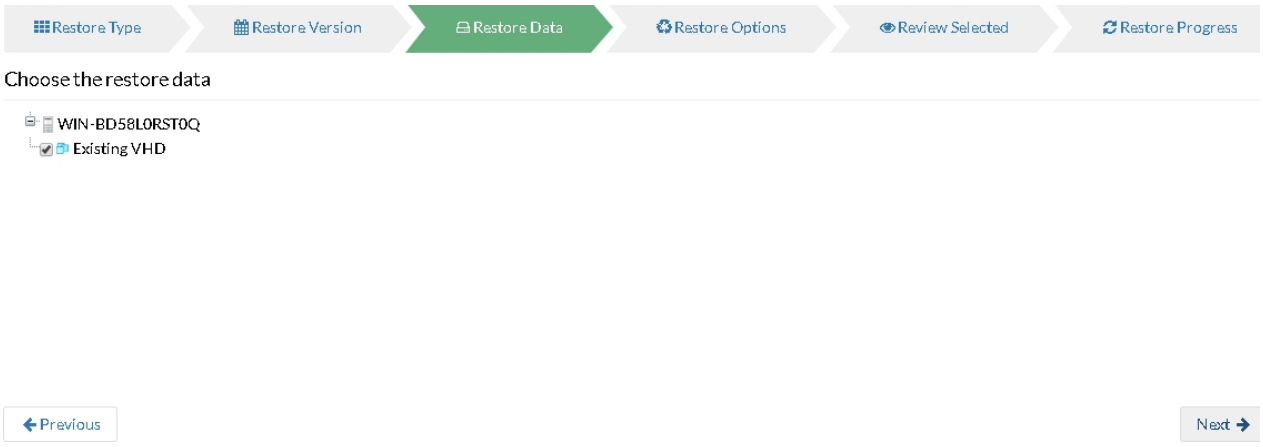
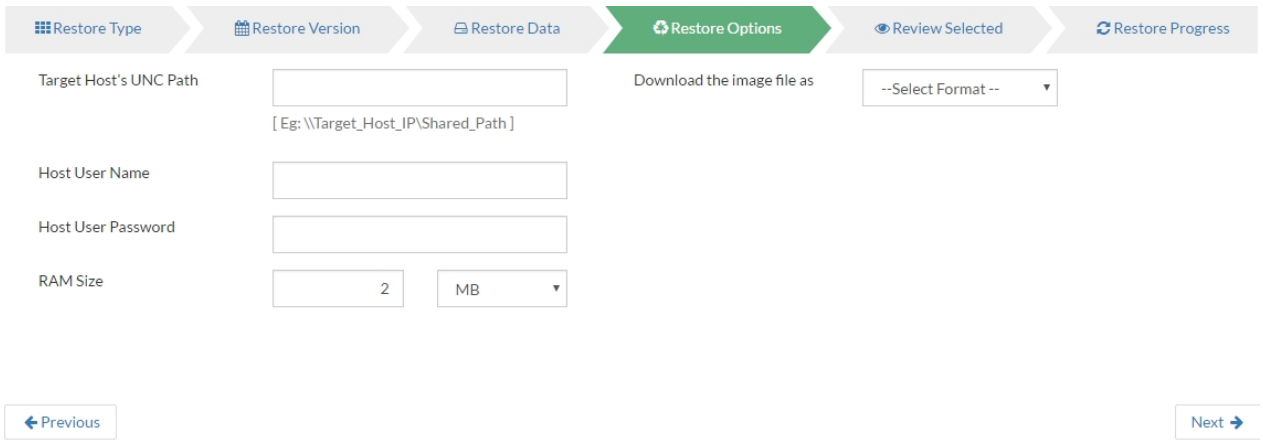


- If you have backed up more than one VM in a backup and need to restore a particular VM/set of VMs, among all other VMs- Select your desired VM(s) and hit proceed to provide target Host details.



- Provide the target host details for VM recovery- Target Host's UNC path and Host user credentials.
- User will also be required to choose RAM size for the VM to created(By default, set to 2 GB).
- User will also be allowed to choose the image format to be downloaded as- VHD or VHDX.



- Once done configuring restore options, proceed to review configuration.

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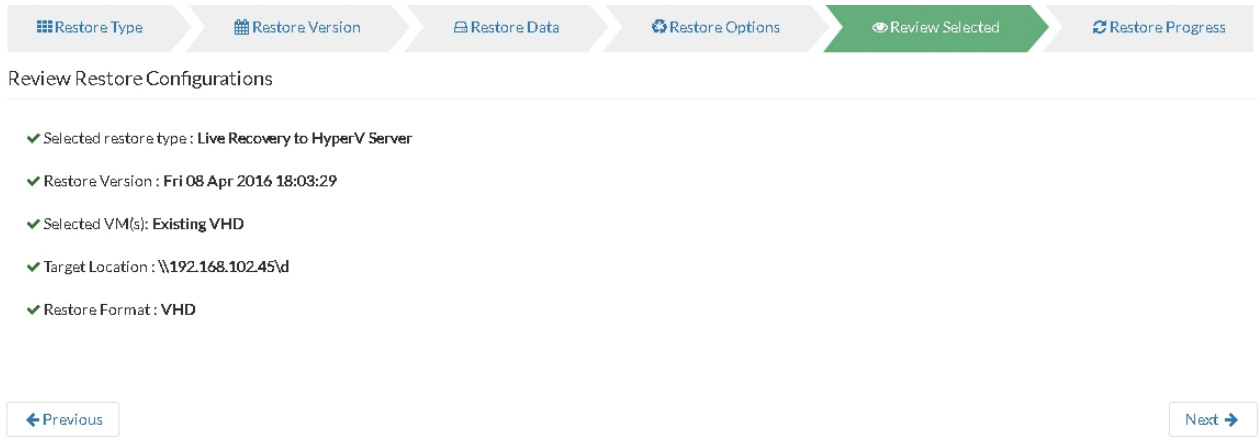
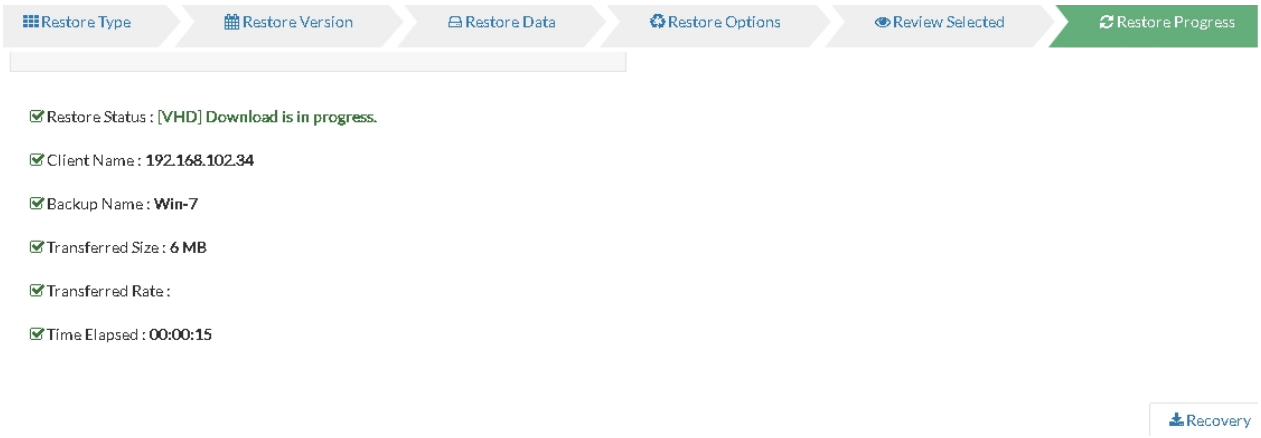


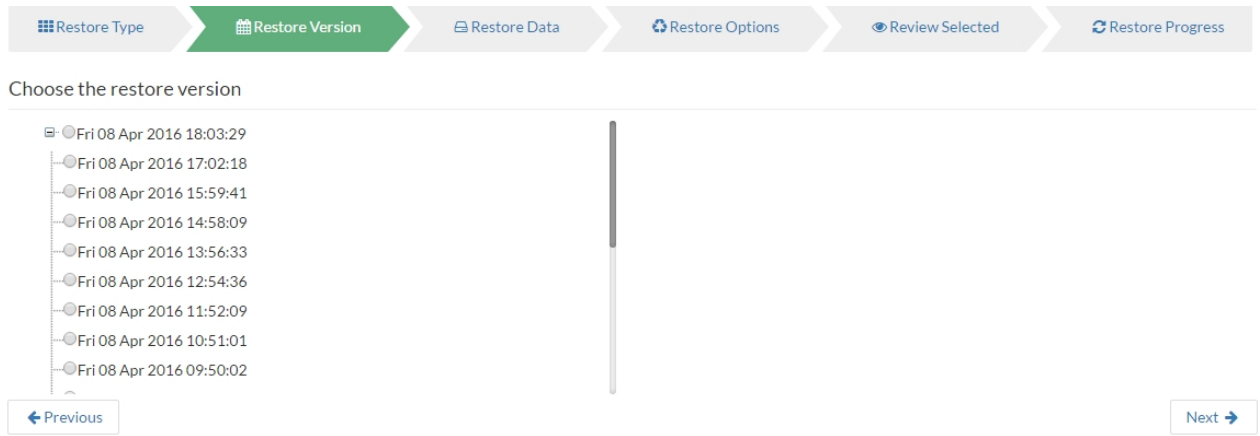
- Once done reviewing, click Next to proceed with Live recovery to Hyper-V server.



Vembu VMBackup User Guide

Download VM Files

- Download option allows users to download backup data as an offsite copy of their preferred file format.
- Proceeding with restore, lets users go with the regular routine of selecting time-stamp version they want to restore and click proceed.



- Now select VM(s) to restore and proceed to select restore location.

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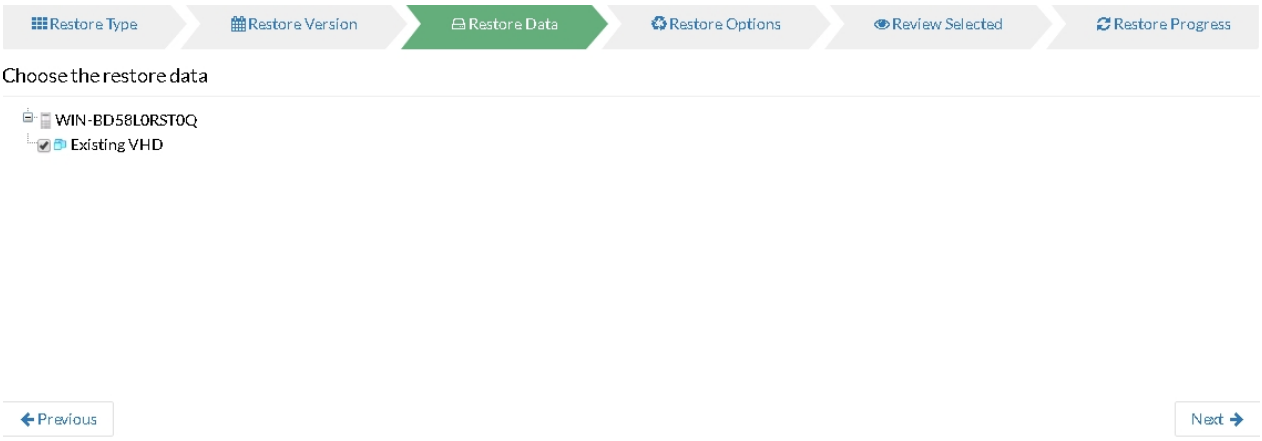
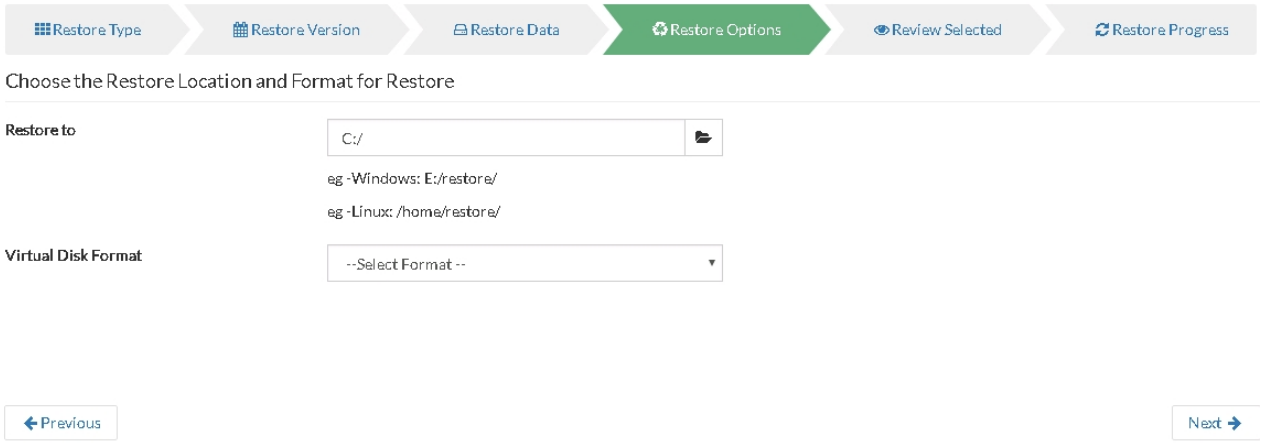
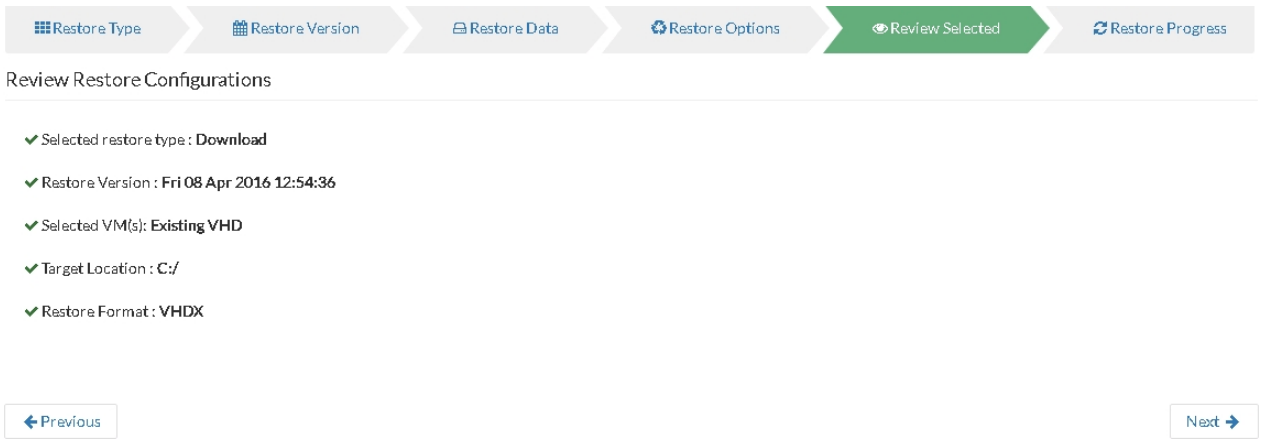


- Restoring location can either be a local drive on backup server or if users have managed to add a network shared drive, the restore can be directed to the network shared location.
- Users can download backup data in multiple file formats such as: VHD, VMDK, VHDX, VMDK-Flat and RAW.



- Once done configuring restore options, proceed to review configuration.



- Once done reviewing, click Next to proceed with Download.

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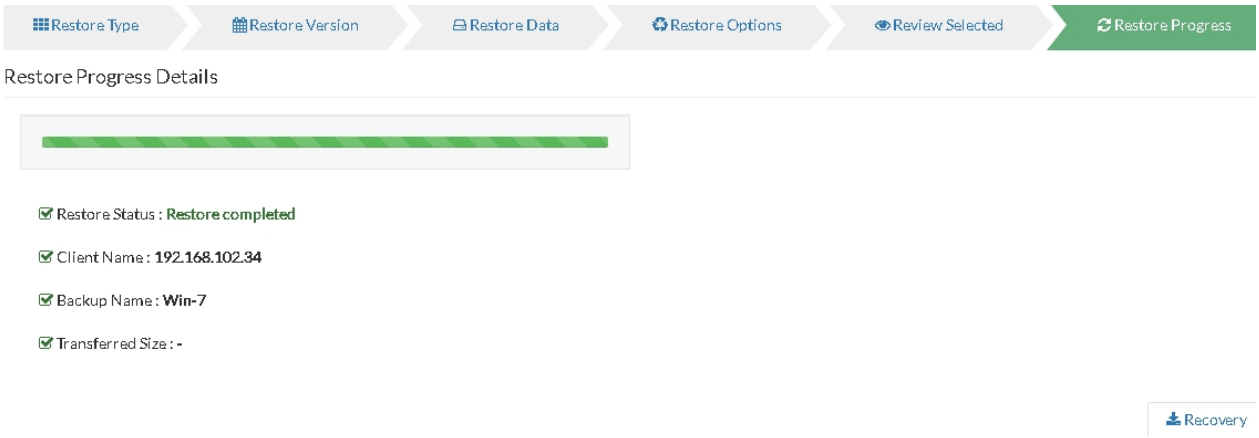

- Taking offsite copies in various format allow users to boot backup data across various virtual and physical environments such as Oracle Box, KVM, Hyper-V, VMware vSphere, VMware player etc.,
- Also reconstruction of physical servers is also possible with this offline backup copies.

Vembu VMBackup User Guide

Bare-metal Recovery

Follow below steps to perform Physical Recovery for Image backups using Recovery CD:

- To do bare-metal recovery using Vembu Recovery CD first we need to download and install WAIK. Click on below link, to download WAIK: http://www.microsoft.com/enus/download/confirmation.aspx?id=5753

- Once WAIK is installed, download Vembu Recovery CD: Click Here to Download
- You will have Vembu Recovery CD in both 32-bit and 64-bit zip formats, download accordingly based on requirement. Now unzip the downloaded file and run RecoverCDBuilder with administrator privileges. You will get a window opened as shown below.

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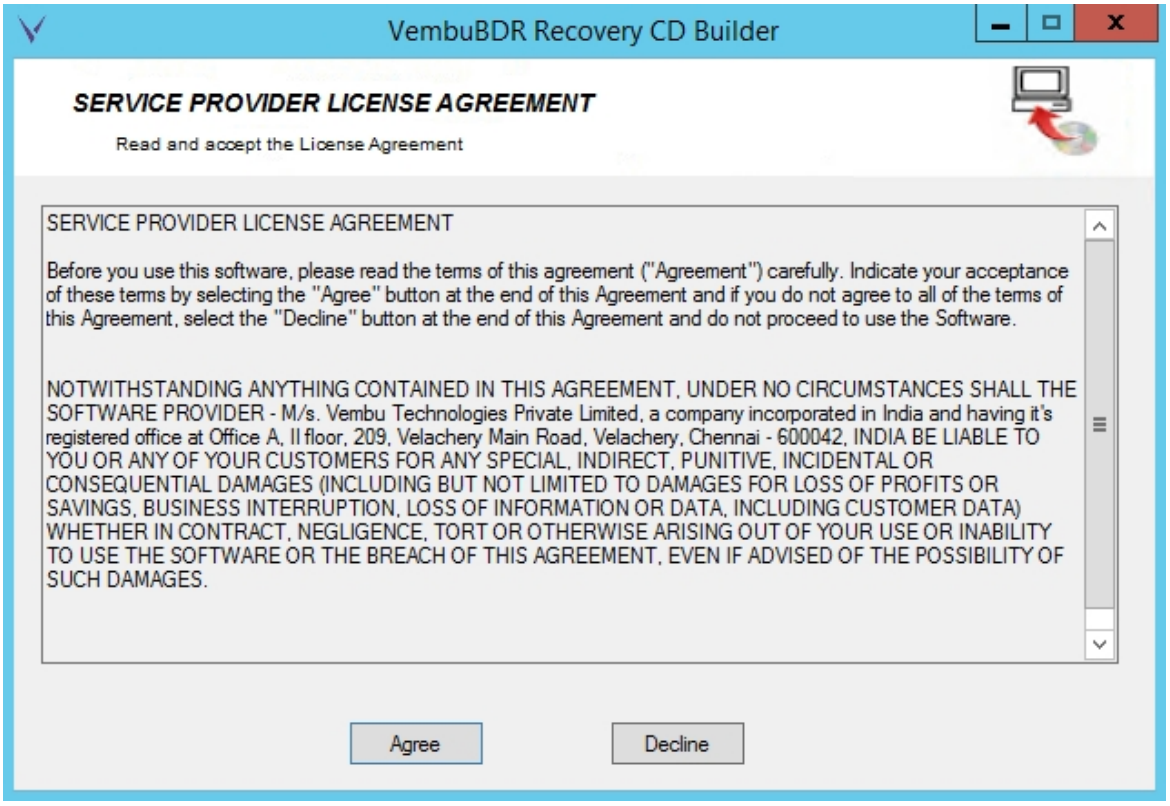

- Read the service provider license agreement carefully and click agree. You will be proceeded to VembuBDR Recovery CD builder window as shown below.
  Note: When you have RAID and additional drivers to be setup in the machine to be recovered, such drivers can be bundled with Vembu Recovery CD using 'Additional Driver' option.

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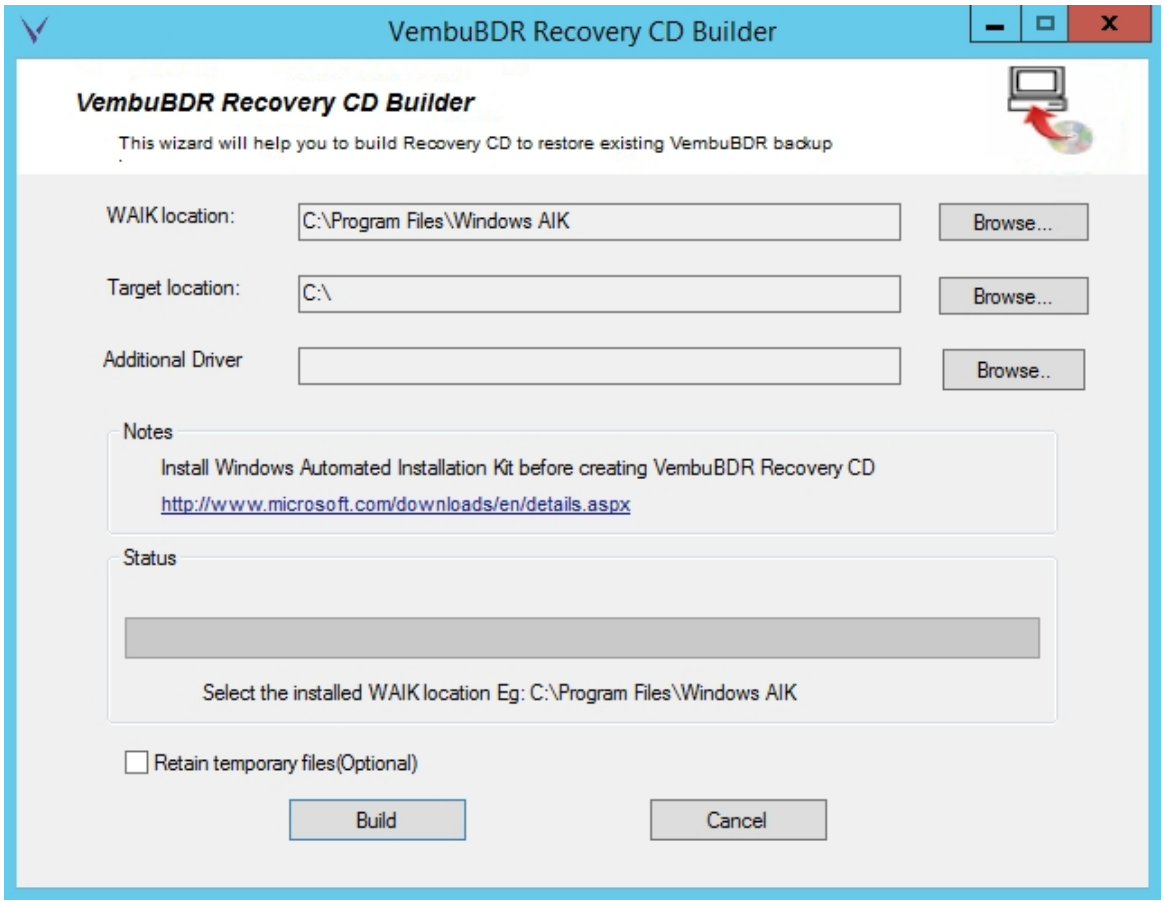

- In this window, WAIK location will be auto-filled, target location is the location where you want to store ISO. Now click Build to start creating ISO file. You can also monitor the progress of ISO creation.

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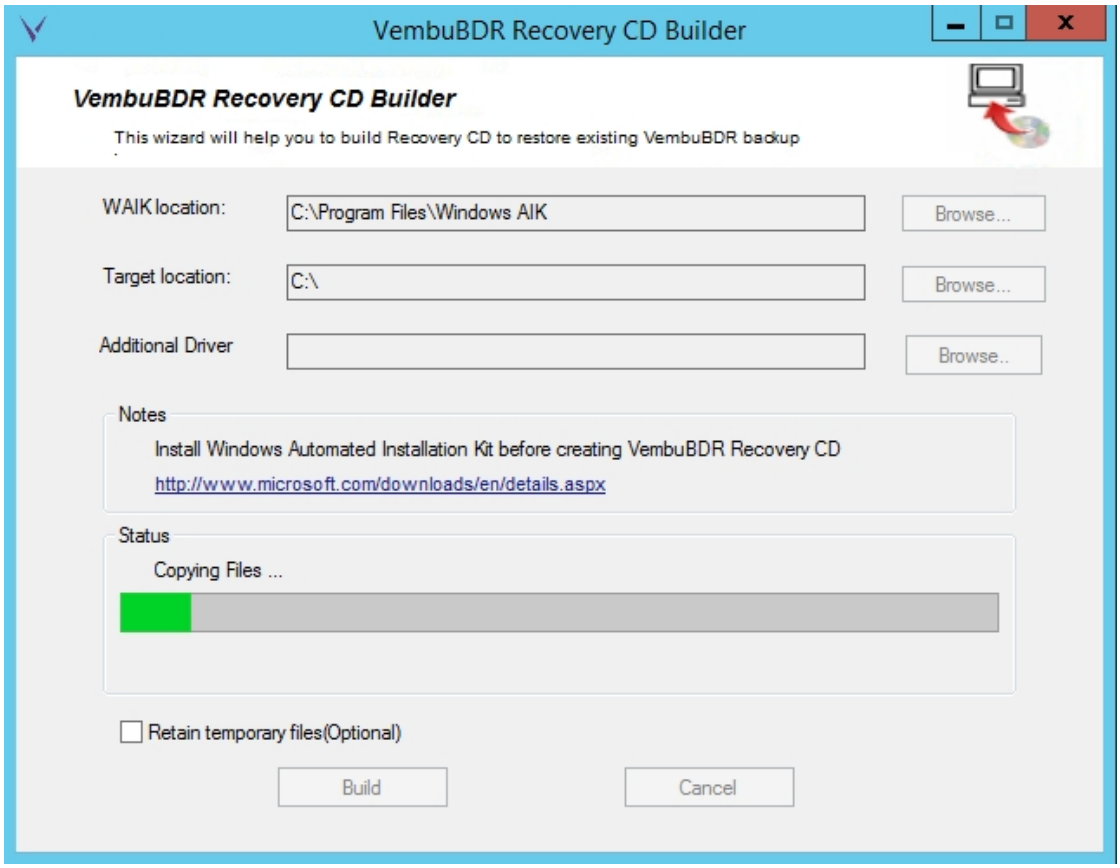
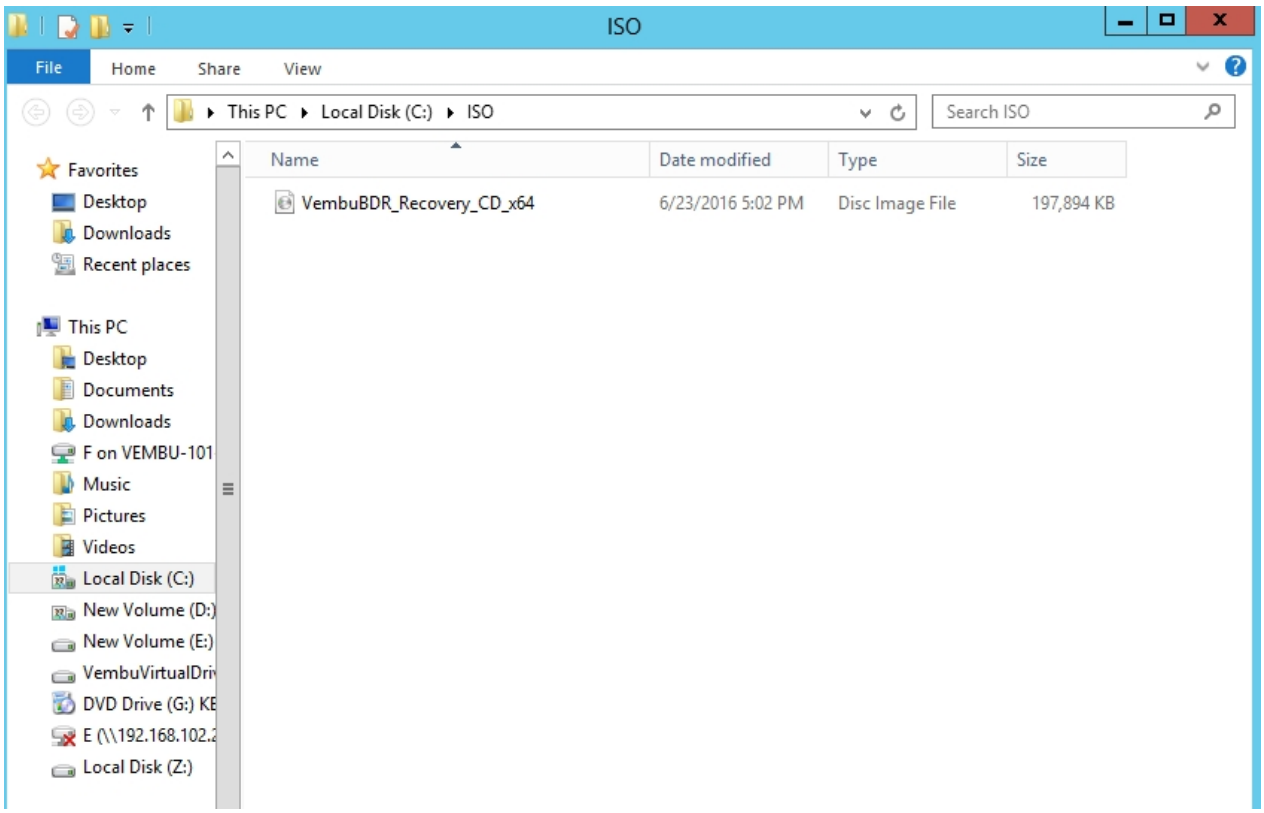


- Once done, the ISO file will be available in the Target location you have entered.



- Insert a blank CD in CD/DVD drive and burn the created ISO file in CD by right-clicking over ISO file and choosing the option 'Burn Disk Image'. Windows Disk Image Burner

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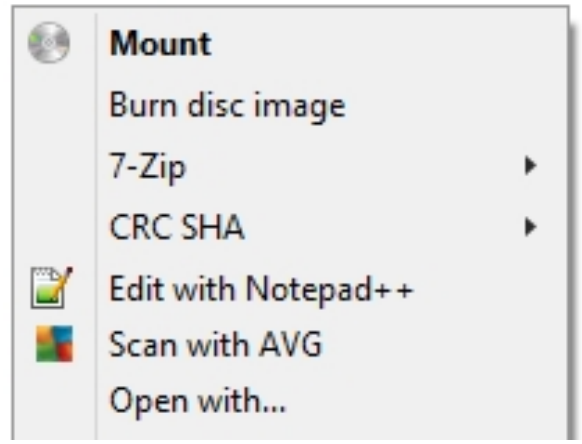
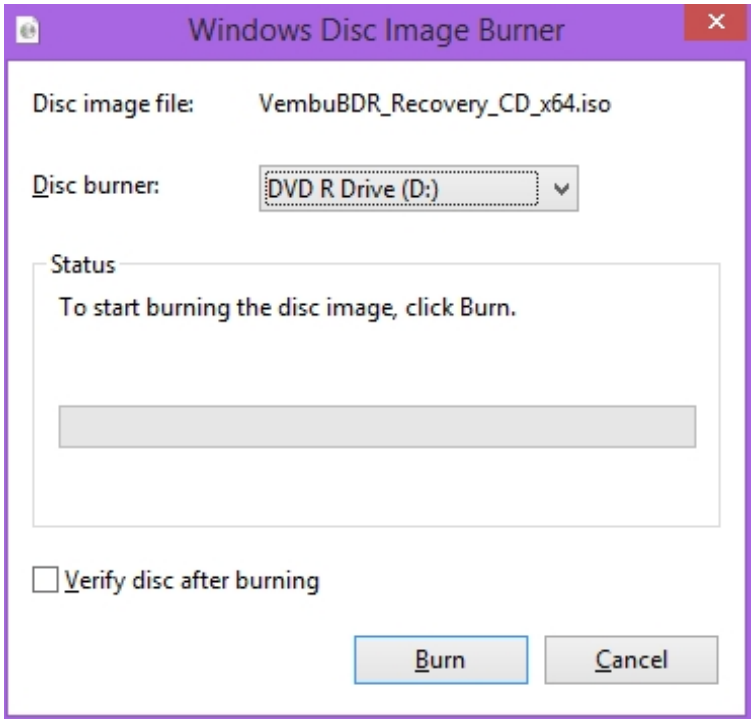
will open, choose the CD/DVD drive and click burn to start burning process.





- You can also monitor the progress of burning process.
- Once the burn process completes, CD will be auto ejected. Reinsert CD and reboot machine to BIOS settings. Change the boot priority and set CD/DVD as primary boot device and click Save and Exit. VembuBDR recovery console will be opened as shown below. Click Next to continue.

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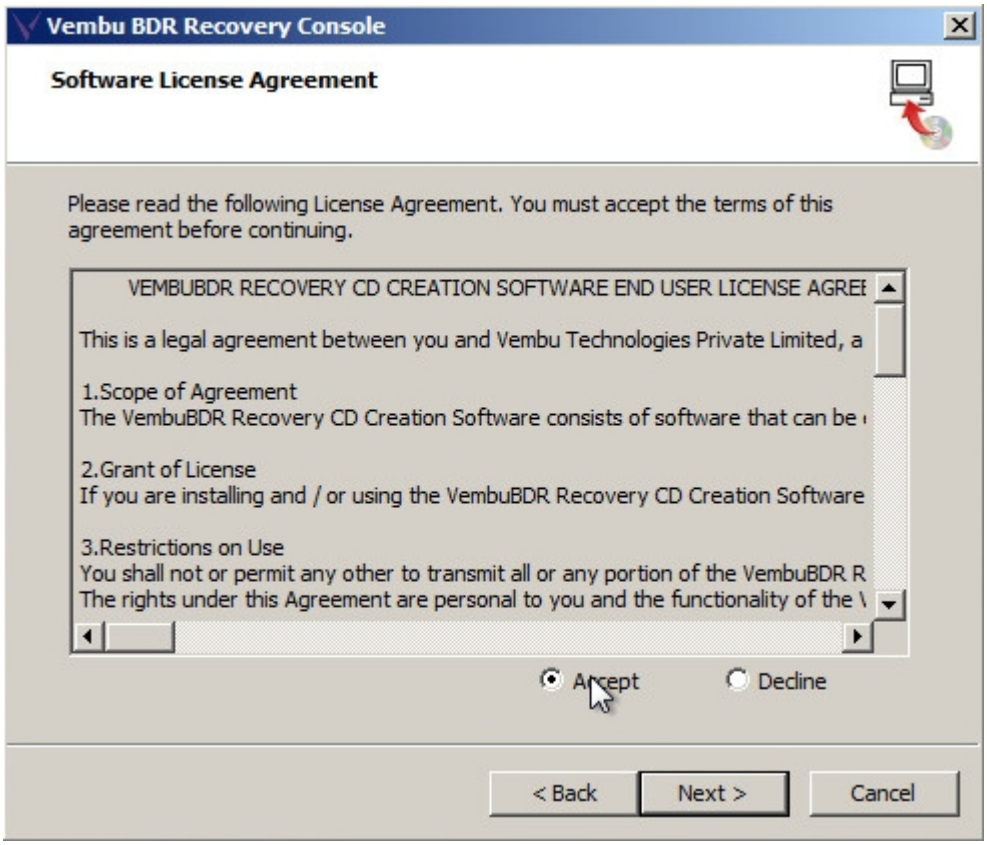
- Read the Software License Agreement carefully, click Accept and proceed with Next.



- You will have option to select a task from the below list:
    - Recover entire disk or partition

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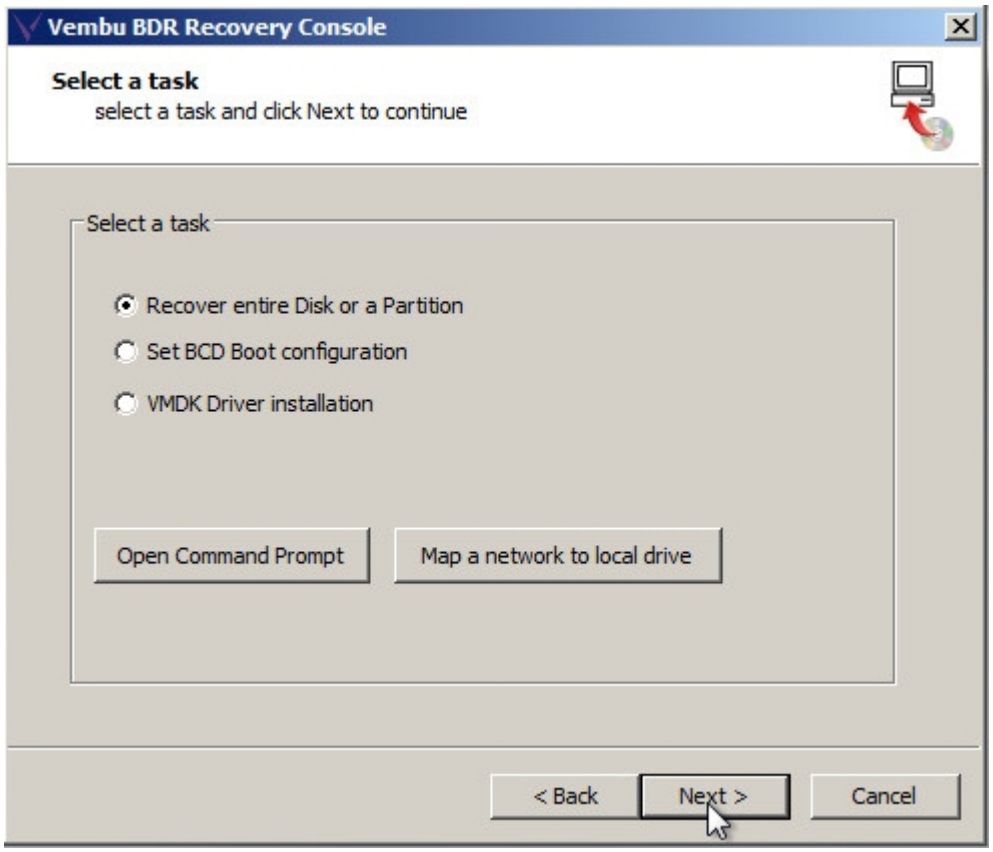
- Set BCD boot configuration
- VMware driver installation

Since we have to do physical recovery, we'll proceed with 'Recover entire disk or partition' option and click Next.



- You will be directed to recovery page, where you will be required to provide details for following options:
  - Browse and select the file which you need to recover.
  - Browse and select the backup configuration file.
  - Select the disk/drive you wish to restore from the following list.

  Once done choosing respective requirements, click Next to proceed.

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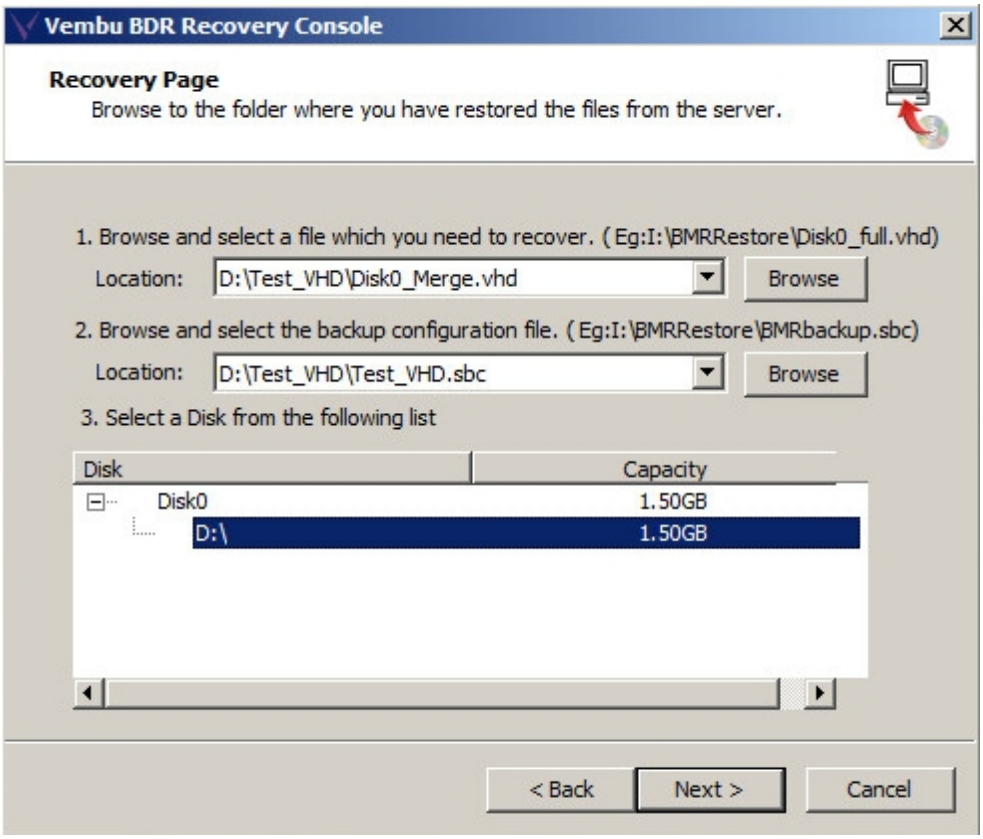
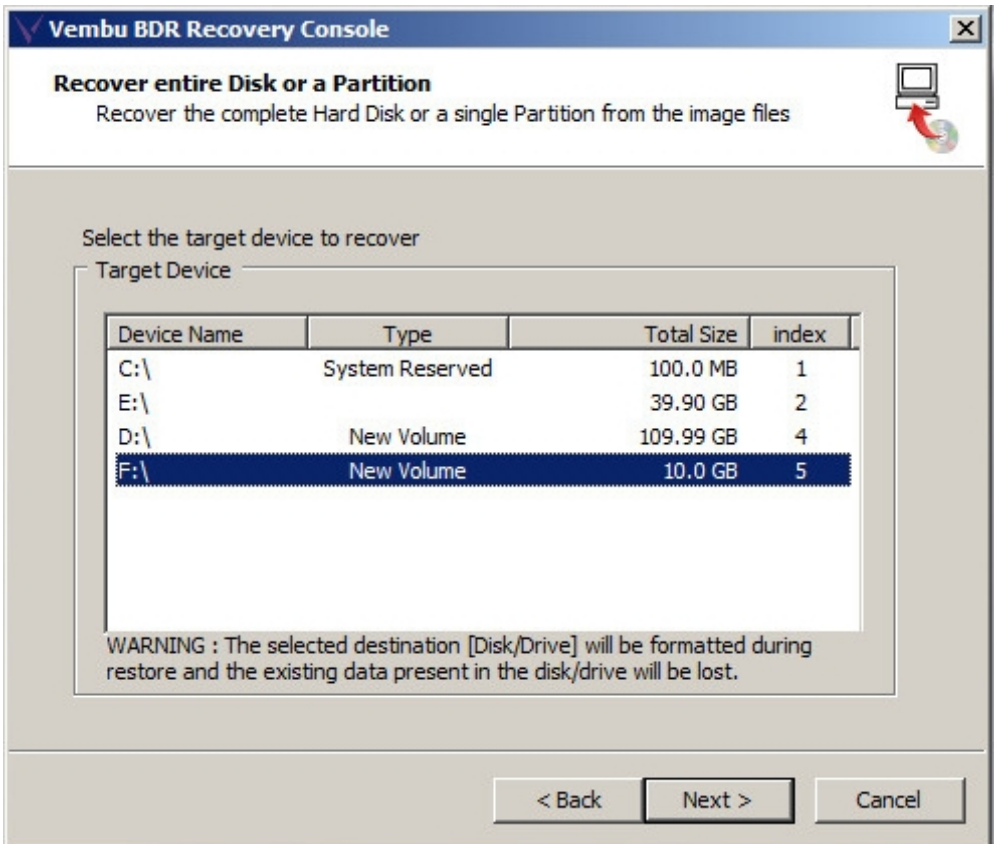


- In next window, you will be required to select target disk/drive to which recovery will be performed. Once done selecting the target, click Next.
  Note: the selected disk/drive will be formatted and only recovered data will be available. So make sure you don't have any important data on target disk/drive.



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- Proceeding will initiate the recovery process and once it's done. You can find your recovered data in target disk/drive selected.

Vembu VMBackup User Guide

Vembu Virtual Drive

Vembu Virtual Drive is an exclusive feature of VembuBDR server, that allows user to instant access backup data. With the help of VembuHIVE file system, Vembu Virtual Drive virtual mount backup data and allow instant access for users.

Vembu Virtual Drive will make following file format types available for any image based backups mounted in it:

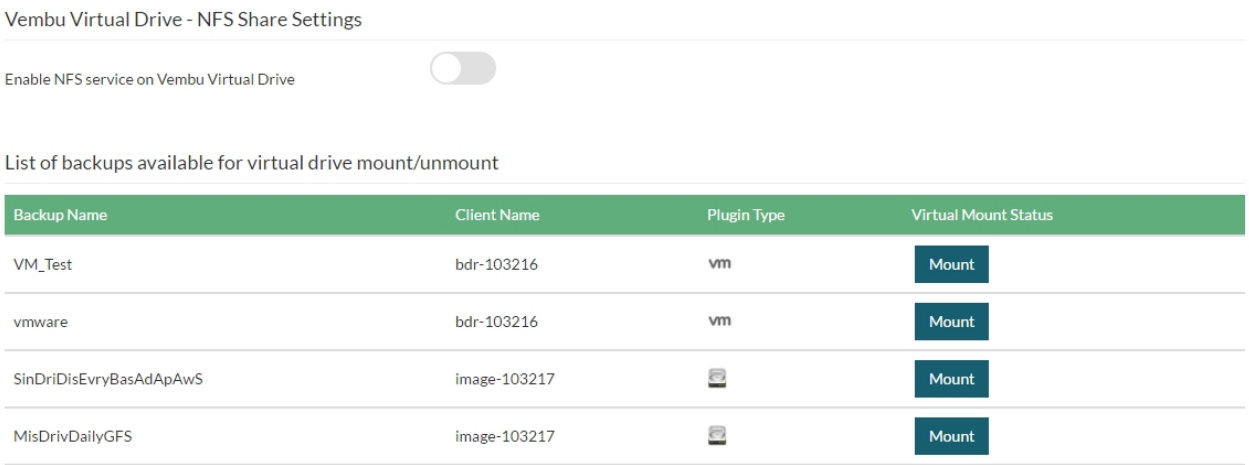
- VHD
- VMDK
- VHDX
- VMDK-Flat
- RAW image files

These files can be used based on user requirements. For example, a VHD file can be mounted in Hyper-V or a VMDK file can be mounted in a ESXi server or a RAW image file can be mounted in KVM to create a virtual machine. VHD file can also be mounted in disk management to access file level backup data.

Manage Vembu Virtual Drive (NFS Share)

- Go to Management → Server Management → Manage Virtual Drive

This page lists all image backups stored in backup server and user can virtual mount any backup data he wish to instant access.



- To virtual mount a backup data, user have to click 'Mount' option alongside specific backup job to be accessed and click Yes in confirmation dialog.

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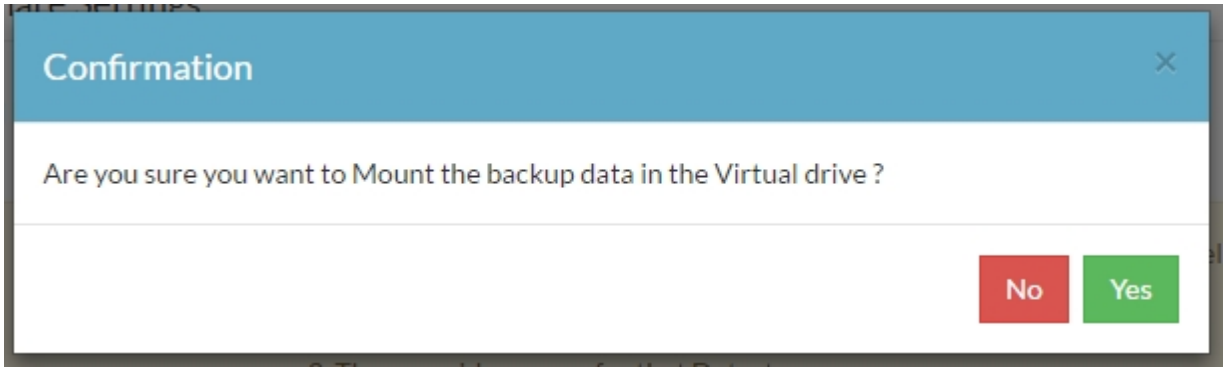
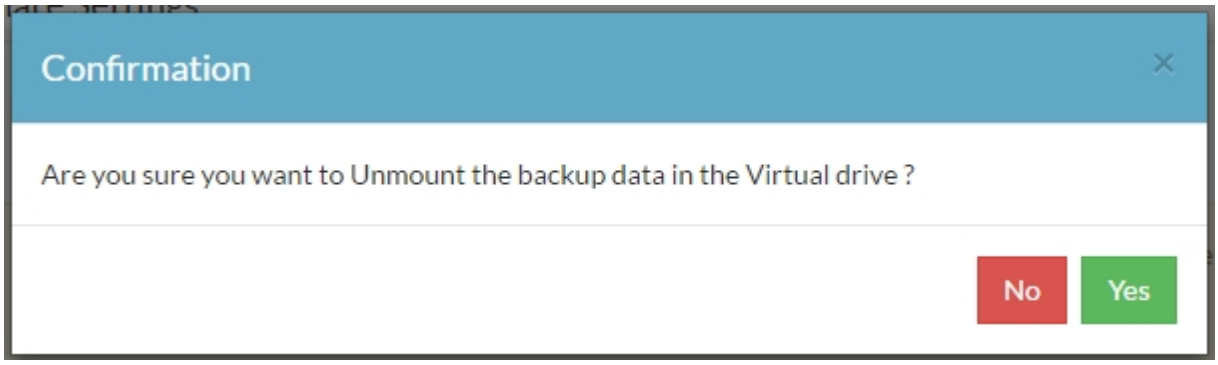


- User can now have access to backup data by viewing VembuVirtualDrive displayed in My Computer.
- Once done with requirement, user can unmount data by clicking on Unmount option and confirming with a Yes in confirmation dialog.



Enable NFS Service on Vembu Virtual Drive

- Vembu Virtual Drive can be shared within a network area by enabling NFS service on Vembu Virtual Drive.
- NFS service for Vembu Virtual Drive is available on both Linux and Windows servers.

  Note: For enabling NFS feature in Linux servers, it is necessary to have NFS kernel server installed in Backup Server machine. You can install NFS Service by using "apt-get install nfs-kernel-server" command. You need to run VembuBDR with root/ administrator privileges in order to save NFS settings.

Enable NFS Service on Linux Screenshot:

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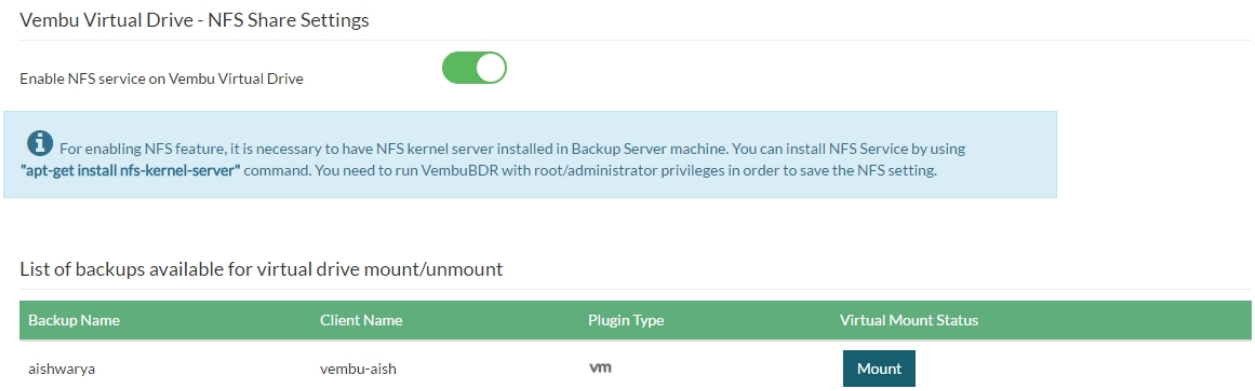
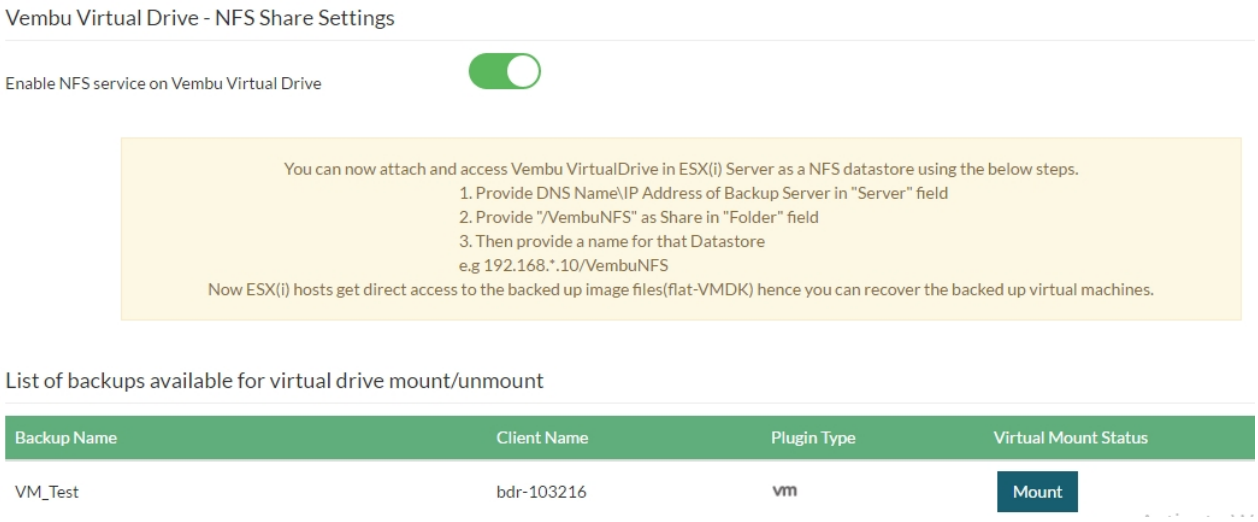


Enable NFS Service on Windows Screenshot:



- NFS share service allows user to add VembuVirtualDrive as a NFS datastore in ESXi servers.

Note: Before enabling NFS service on Vembu Virtual Drive, please make sure Microsoft or any other third party NFS services is disabled to ensure uninterrupted service.

Vembu VMBackup User Guide

Backup Agent/Proxy Settings

- Backup Schedule Window
- Bandwidth Throttling
- User Management
- Time Zone Settings

Vembu VMBackup User Guide

Backup Schedule Window

'Backup schedule window' is a option that lets business users choose a time frame of their choice during when backup jobs are paused and will resume once the time frame ends. Users can also schedule if backup jobs can be scheduled to run on weekends or not.

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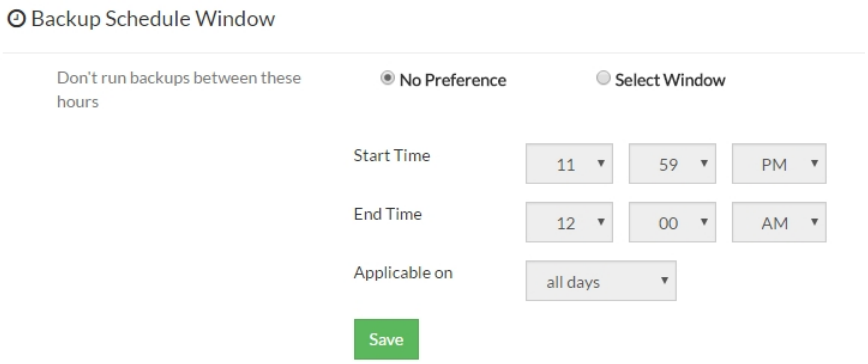
- Go to 'Settings → Backup Schedule Window'

Schedule:

- Provide the start and end time of window when backup jobs will not run and click save.
- By default, No Preference will be selected which can be changed when required.



Vembu VMBackup User Guide

Bandwidth Throttling

Bandwidth throttling option enables user to limit network bandwidth used by backup jobs. This helps in a balanced network usage in a work environment.
Note: If bandwidth throttling is configured in both client and backup server, then the bandwidth throttling setting of backup server will be active over client settings for backup jobs.

- Go to 'Settings → Bandwidth Throttling'

Options to Bandwidth Throttle:

- When a user enables bandwidth throttling on client end, he will have two options to choose from:
    - Throttle bandwidth always
    - Throttle bandwidth 'From' - 'To'

Throttle bandwidth always- This option will keep the applied bandwidth limit always active.
Throttle bandwidth 'From' - 'To'- This option allow user to specify a time frame during when the applied throttling will be active.

- Users will also be asked to specify the maximum throttle limit on client machines that ranges in: Kbps, Mbps, Gbps.
- In addition, a checkbox to disable throttling during weekends is provided; Which can be enabled when required.

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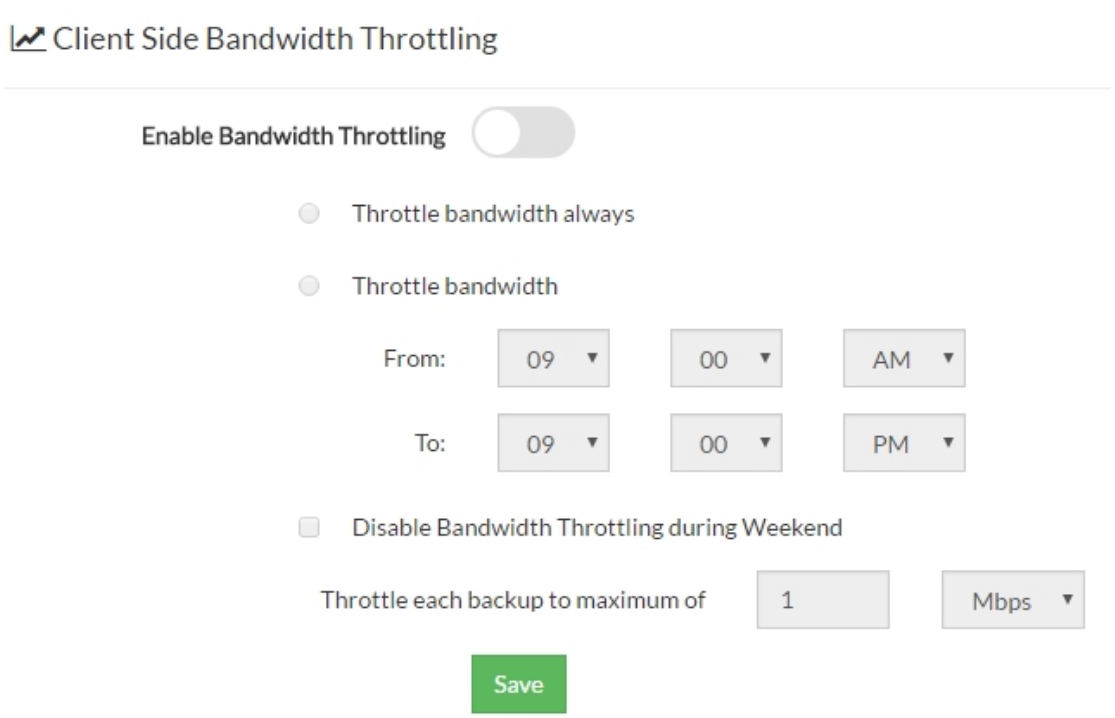


- Once done with selecting required configuration, click save.

Vembu VMBackup User Guide

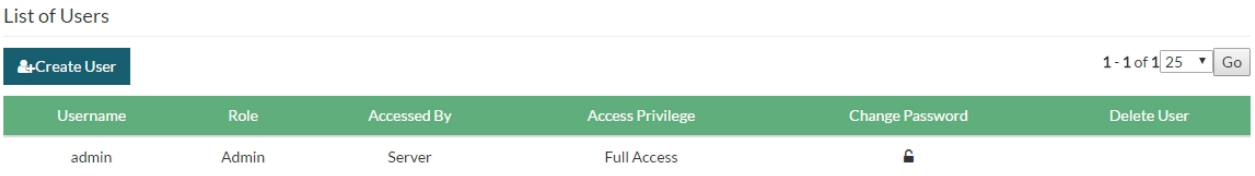
User Management

This feature allow users to create and manage multiple user profiles for different roles to access web-console.

- Go to 'Settings → User Management'

List of Users:

- This page lists all users created with the following attributes detailed:
  User name, Role, Accessed By, Access Privilege, Change Password and Delete User



User Creation:

- Click 'Create User'.

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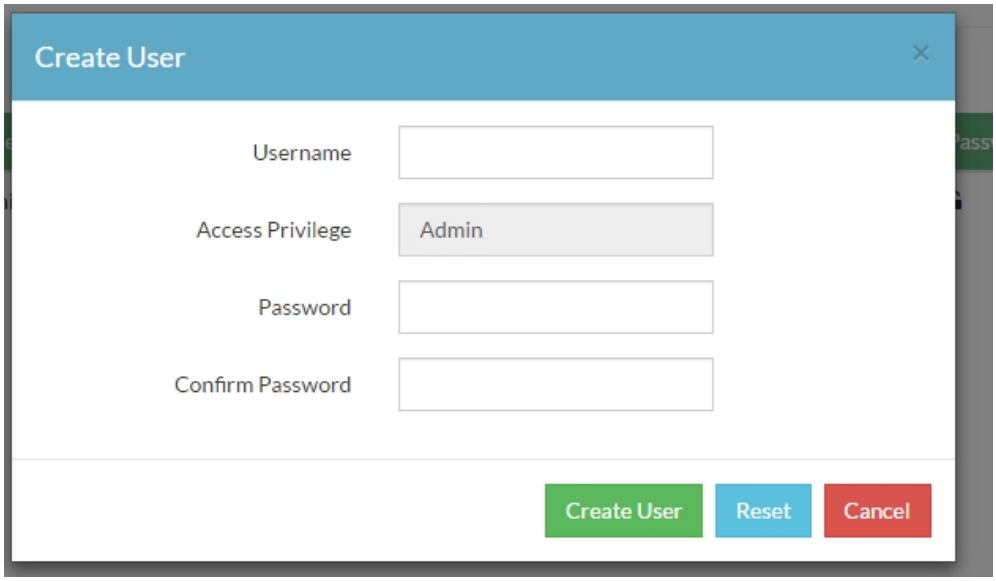

A pop-up box will be displayed with following options:

- **User name**- Provide user name to be created.
- **Access privilege**- By default, this is selected as Admin.
- **Password**- Password for user login
- **Confirm Password**- Confirm password provided

Once done providing details, click Create User.

Note: Users can also delete a created user, but will be required to provide the appropriate user password assigned.

Vembu VMBackup User Guide

Time Zone Settings

This option lets user choose the time zone at which client backup reports are to be maintained.
Note: By default, when a user logins for the first time after a fresh client installation, the time zone settings will be asked which can then be changed via this option if required.

- Go to 'Settings → Time Zone Settings'

Choose time Zone:

- Choose your appropriate time zone, in the 'Select time zone' drop down box and change it.

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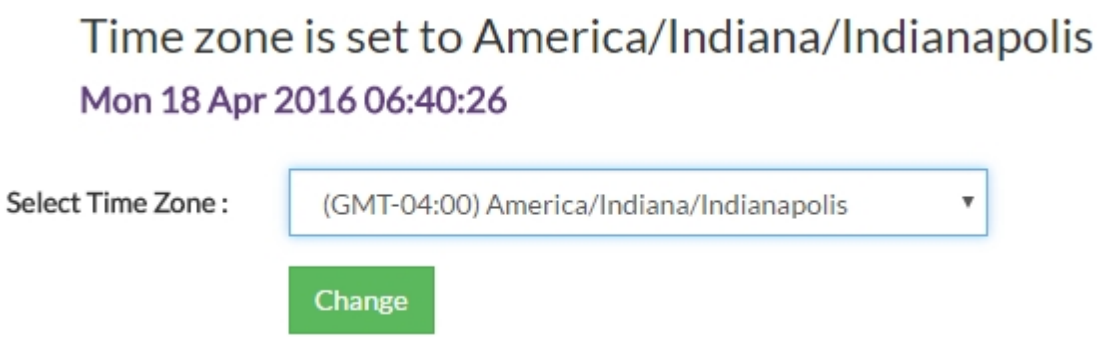


Vembu VMBackup User Guide

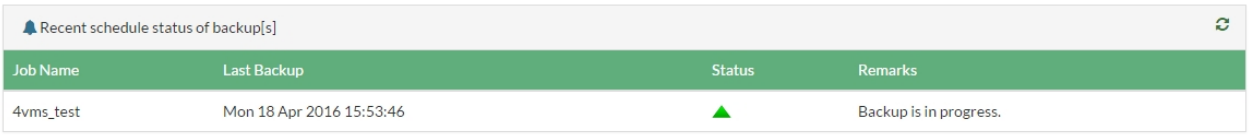
Reports

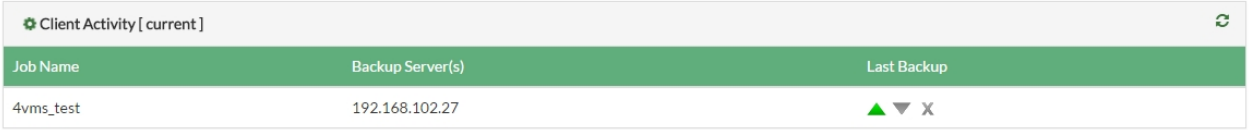
- Dashboard
- Backup Job Report
- Deleted Report
- Software Update Report

Vembu VMBackup User Guide

Dashboard

- This page lists recent schedule status of backup jobs and current client activities.





- You can also monitor backup/restore activities that are carried out in dashboard.

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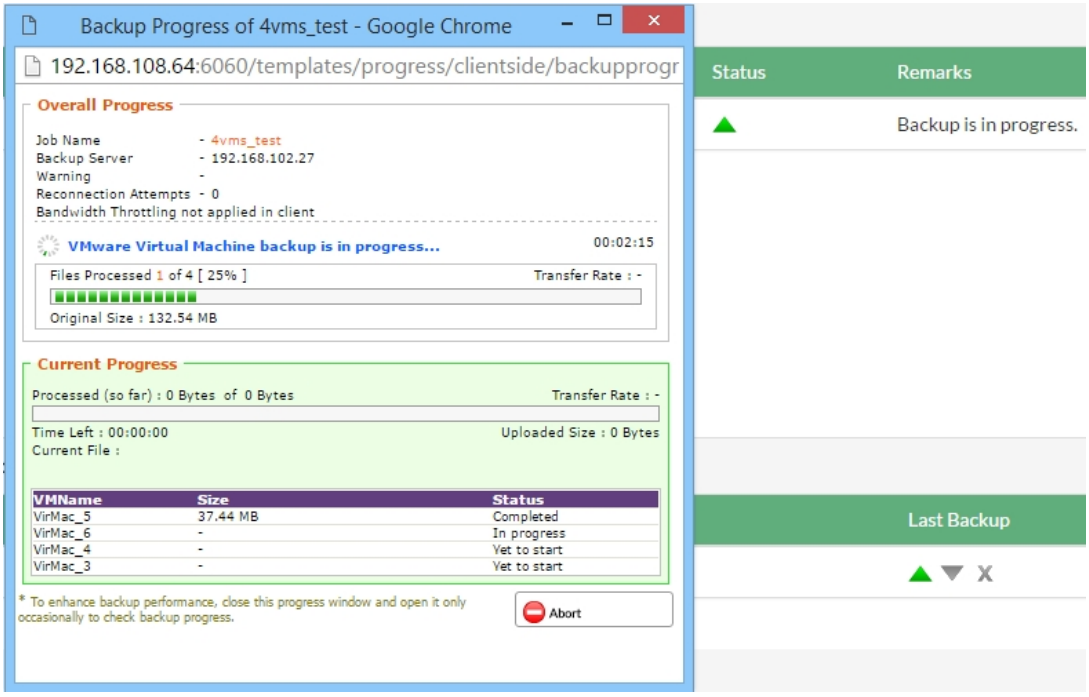

Vembu VMBackup User Guide

Backup Job Report

- Go to 'Reports → Backup reports'
- The page lists every backup scheduled in client machine along with remarks for last backup schedule.

Summary of Last Backup Reports

Job Name Click for details	Backup Server(s)	Last Backup	Plugin Type	Remarks
4vms_test	192.168.102.27	Mon 18 Apr 2016 06:29:22	VMware Plugin	Backup completed successfully.

- Selecting a specific backup job will list a detailed history of backup report of the specified backup job.

Backup Reports

List All Backup Reports / Backup Name → 4vms_test / Listing 1 to 25 of 238 jobs

Start Time	Time Taken	Size	Successfull VMs	Failed VMs	Remarks
Mon 18 Apr 2016 06:23:46	5 minutes	309.1 MB	4	0	Backup completed successfully.

Hostname	Virtual Machine	Incremental Number	Size	Status	Result Messages
192.168.102.24	VirMac_5	125	132.54 MB	Success	Backup Completed Successfully
192.168.102.24	VirMac_6	125	56.52 MB	Success	Backup Completed Successfully
192.168.102.24	VirMac_4	124	30.51 MB	Success	Backup Completed Successfully
192.168.102.24	VirMac_3	124	89.53 MB	Success	Backup Completed Successfully

Mon 18 Apr 2016 04:22:56	5 minutes	276.59 MB	4	0	Backup completed successfully.
Mon 18 Apr 2016 02:16:29	6 minutes	272.08 MB	4	0	Backup completed successfully.

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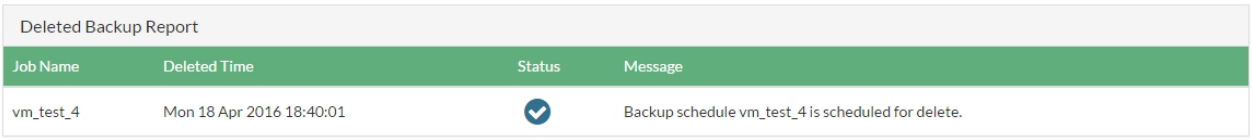
Vembu VMBackup User Guide

Deleted Report

- Go to ‘Reports → Deleted Backups'
- A report listing backup jobs that are deleted, specifying the backup name, deleted name and delete status will be displayed.



Deleted Backup Report

Job Name	Deleted Time	Status	Message
vm_test_4	Mon 18 Apr 2016 18:40:01	✓	Backup schedule vm_test_4 is scheduled for delete.

Vembu VMBackup User Guide

Software Update Report

- Go to 'Reports → Updates Downloaded '
- This page will list the update builds downloaded so far in client machine, specifying the build name, version, build number, build type, OS type and file size.

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