Microsoft

AZ-801

Configuring Windows Server Hybrid Advanced Services

4 Disaster Recovery on Prem

AZ-801 Course Outline

1   Windows Server Security on Prem
2   Windows Server Security Cloud
3   Failover Cluster
4   Disaster Recovery on Prem
5   Disaster Recovery Cloud

LP 3

6   Windows Server Upgrade and Migrate
7   Migrate Windows Server to Cloud
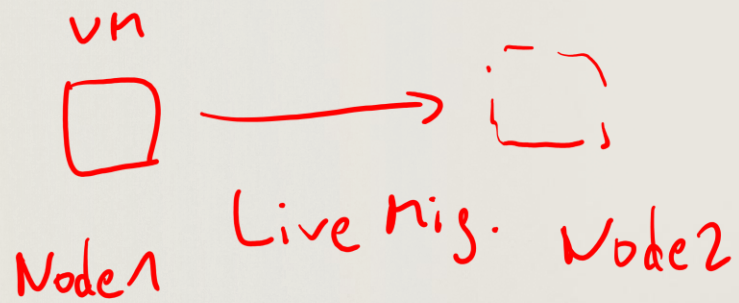8   Windows Server Monitoring
9   Monitoring in the Cloud

Implement Disaster Recovery in Windows Server on-premises and Hybrid Environments
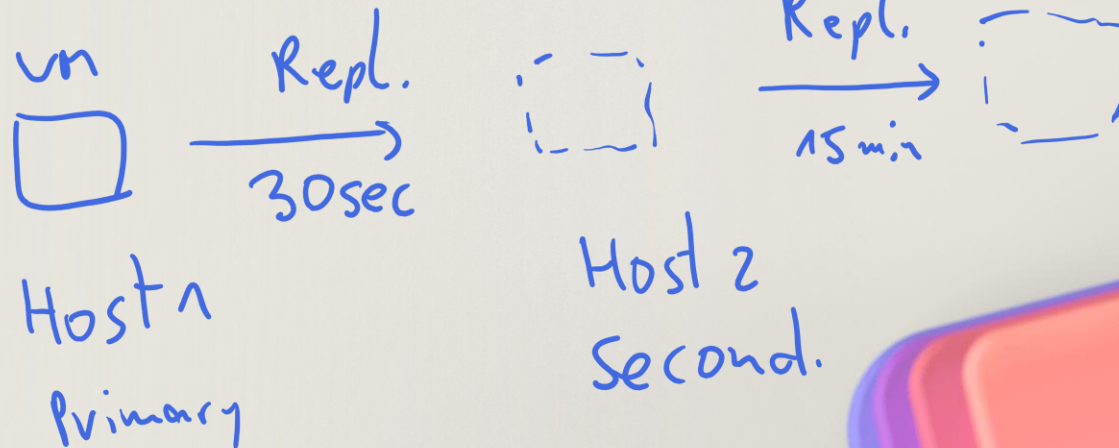## *(Disaster Recovery in Windows Server)*

- [Implement Hyper-V Replica](#)

- [Protect your on-premises infrastructure from disasters with Azure Site Recovery](#)

- [Lab 04 – Implementing Hyper-V Replica and Windows Server Backup](#)

Implement Hyper-V Replica

Failover Cluster

vm

Node1   Live Mig.   Node2

VSS Volume Shadow Copy

vm

Repl.
30sec

Host1

Primary

Repl.
15min

Host 2

Second.

ASR

Define Hyper-V Replica

Overview

- Hyper-V failover clusters are used to make VMs highly available

- Typically limited to a single location

- Multi-site clusters usually depend on specialized hardware and can be complicated and expensive to implement

- One possible solution is to periodically copy the VM manually

Usage scenarios:

- Hyper-V Replica can protect against data loss from site outage by copying a live VM as a replica VM from one location to another

- If necessary, you can use Hyper-V Replica to extend replication of the offline copy to a third location

- If your organization only has a single location available, you can still use Hyper-V Replica to replicate VMs to:
  - A partner organization in another location
  - To a hosting provider
  - To Microsoft Azure *Recovery Service Vault*

Define Hyper-V Replica

Hyper-V Replica can have the following two instances of a single VM residing on different Hyper-V hosts:

- The main, actively running VM, which is called a primary VM

- An offline copy of the primary VM, which is called a replica VM

If failure occurs at the primary server site, you can use Hyper-V Replica to perform a failover of the VM(s) to the replica server at a secondary server site
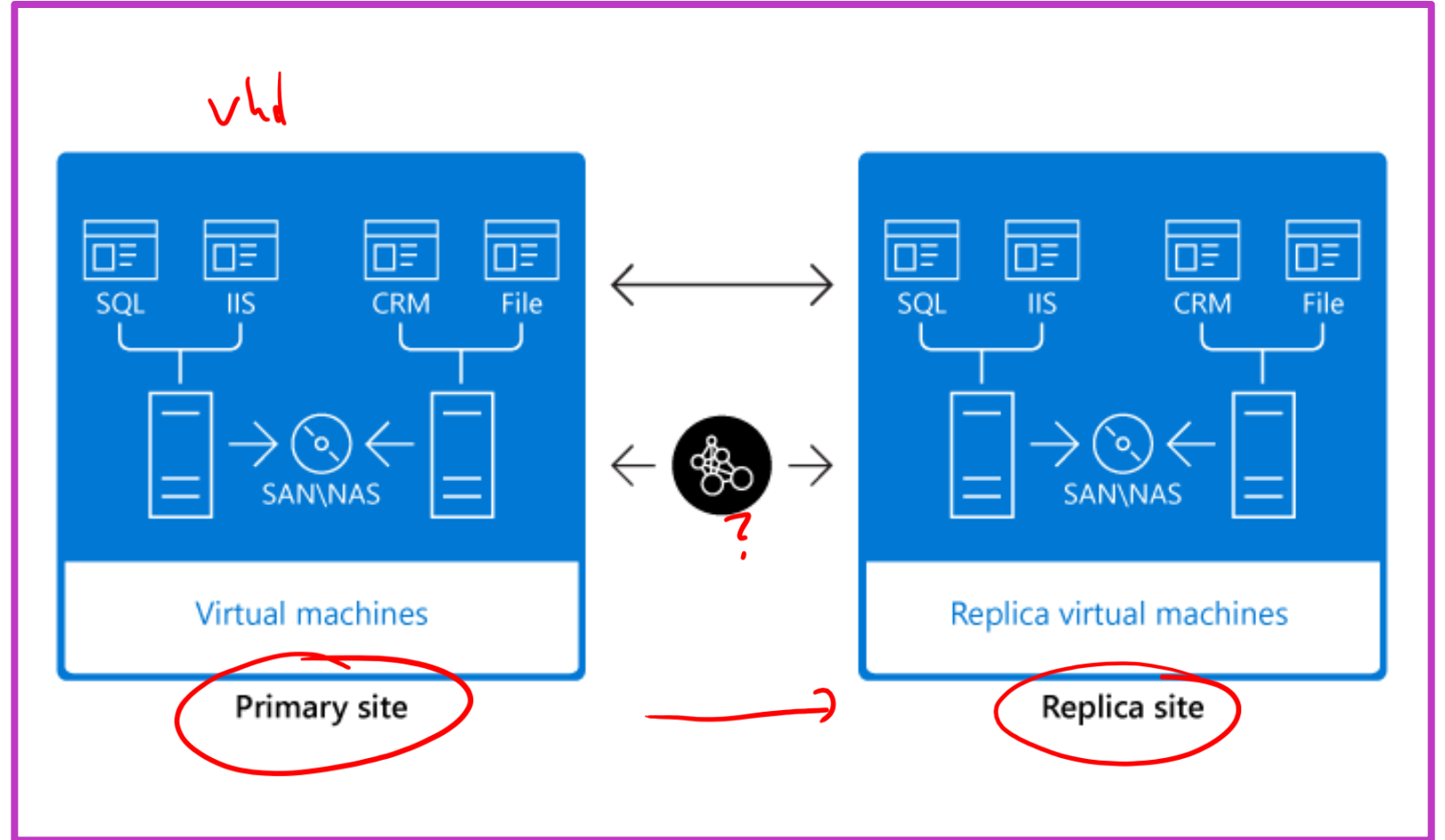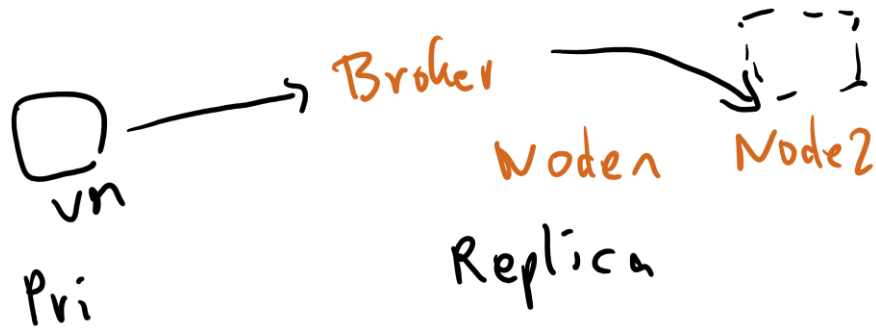
Define Hyper-V Replica

Prerequisites for Hyper-V Replica implementation:

- A supported version of Windows Server with the Hyper-V role installed at both the primary and replica locations

- Sufficient storage on both the primary and replica Hyper-V hosts to store and run all VMs

- Sufficient storage for the log files that contain the changes at the primary location

- Network connectivity between the locations that are hosting the primary and the replica Hyper-V hosts

- Firewall rules to allow replication between the primary and replica sites   : 443

- Authentication certification or AD DS infrastructure requirements, depending on which type of authentication you plan to use

Define Hyper-V Replica

Hyper-V Replica consists of the following components:

- Replication engine

- Change tracking module

- Network module

- Hyper-V Replica Broker

- Management tools

Hyper-V replica can help protect all kinds of workloads, including:

- Microsoft SharePoint Server

- Microsoft Exchange Server

- Microsoft Dynamics CRM

- Microsoft SQL Server

- AD DS

- Internet Information Services

- Third-party applications

Configure and Implement Hyper-V Replica

To enable Hyper-V Replica, you must complete the following two high-level steps:

1. Enable a Hyper-V host to act as a replica server.

2. Enable replication on each VM that needs to be replicated on the primary Hyper-V host.

| **Manage Hyper-V Replica by using Windows PowerShell**	**Failover TCP/IP**	**Replication health monitoring**	**Failover options**
You can also manage Hyper-V Replica by using Windows PowerShell	A feature that you can use to control the static IP address and other TCP/IP network settings that a VM uses when started as part of a failover	When you enable replication for a VM, changes in the primary VM write to a log file that periodically transfers to the replica server	Test Failover ←
			Planned Failover ←
			Failover DR

Define Extended Replication

Extended replication:

- Supports replication to a third server to provide additional disaster recovery protection in case of failure of both primary and replica sites
- Enables you to replicate a running VM to two independent servers which could be in different geographic locations, providing additional options for recovering a failed VM

Limits of extended replication configuration:

- Replication frequency can be 5 minutes or 15 minutes only
- Replication frequency can't be lower than the initial replication
- You can't change the authentication type

Define Extended Replication
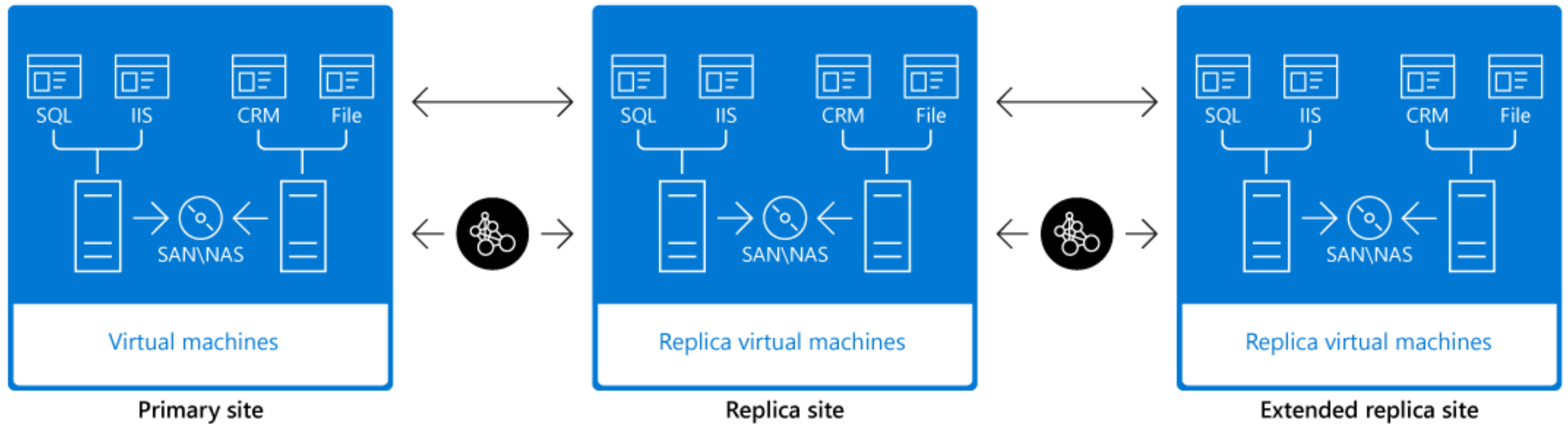
Define Extended Replication

To create an extended replica in Hyper-V Manager:

- Select the replica VM

- Select **Replication > Extend Replication**

- In the **Extend replication for <VMName>** wizard, select the following:
  a. Select the replica server that will act as the extended replica server
  b. Select whether to compress the data that's transmitted over the network
  c. Select the frequency at which changes are sent to the extended replica server
  d. Select the option to maintain only the latest recovery points or create additional hourly recovery points
  e. Select an initial replication method and schedule

Define Azure Site Recovery

On Prem ⟶ On Prem
On Prem ⟶ Azure
(OnPrem VMware ⟶ Azure) ⟶ VMWare On Azure
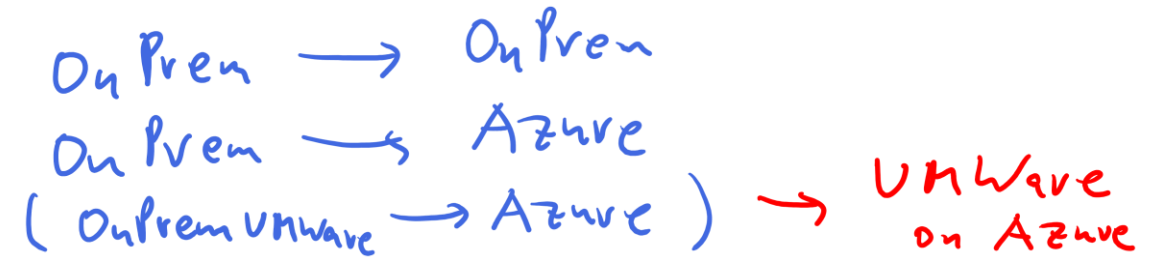
Azure Site Recovery (Site Recovery) is a BCDR solution that can replicate VMs (on-premises or cloud based) and physical servers to Microsoft Azure or to a second site.

- When an outage occurs at your primary site, workloads on a primary site can failover to secondary location and access apps from that site

- After the primary site is running again, you can failover back to the primary VM in the primary site, and resume accessing apps from the primary site

The secondary site can be:

On-premises in the same datacenter	In a geographically separate private datacenter	In Azure

Define Azure Site Recovery

Benefits of using Site Recovery:

Site Recovery provides many benefits, including:

- It's workload and application agnostic
- It has near-synchronous replication   **30 sec**
- It provides testing without disruption
- It has *Recovery plans* that enable you to customize and sequence the failover and recovery of apps running on multiple VMs
- It integrates and leverages other Azure services and other BCDR technologies

Site Recovery supports the following failover types:

- Test failover
- Planned failover
- Unplanned failover

Implement Site Recovery from on-premises Site to Azure

## Types of machines or servers with which Site Recovery can replicate:

- Physical Windows Server or Linux servers

- Hyper-V VM

- Azure VMs

- Azure Stack VMs

- VMWare VM ✗

- Amazon Web Services (AWS) Windows VMs ?

Deployment scenarios:

- On-premises Hyper-V Replication to Azure (without VMM)

- On-premises Hyper-V Replication to a secondary on-premises Hyper-V site (with VMM)

System Center

Implement Site Recovery from on-premises Site to Azure
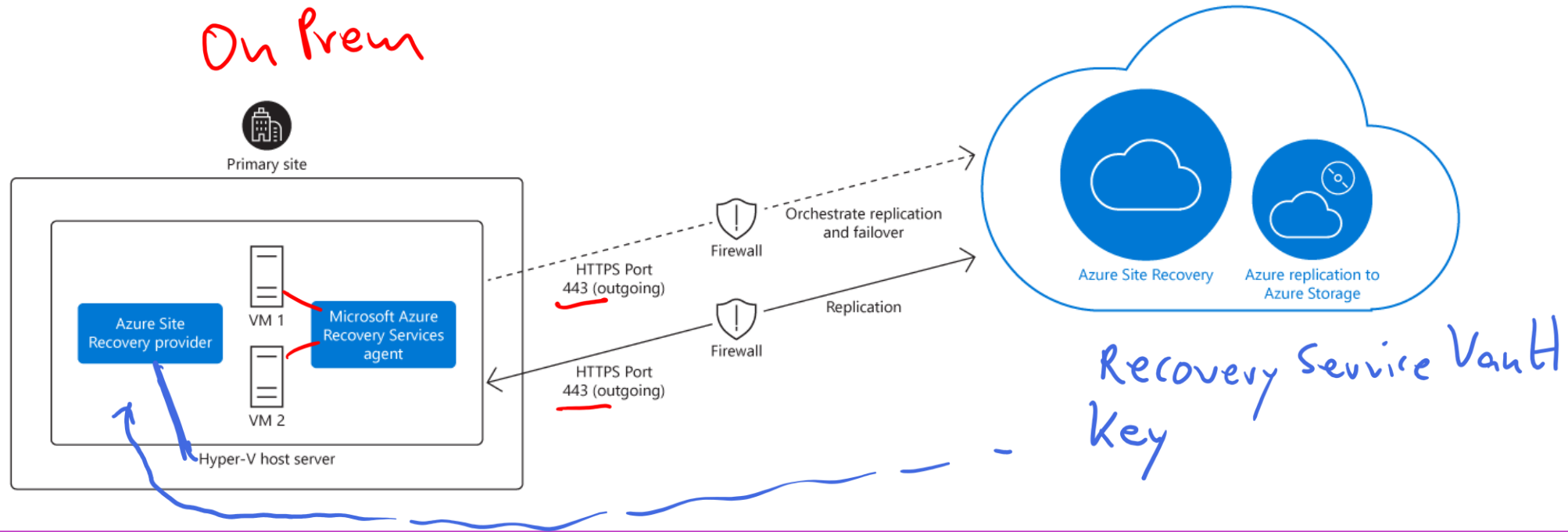
On-premises Hyper-V Replication to Azure (without VMM)

The on-premises site has a Hyper-V server host with the Site Recovery Provider and Microsoft Azure Recovery Services Agent installed. There is replication traffic over HTTPS port 443 to Site Recovery, which in turn has Azure Storage present for storing replicated VMs.

Implement Site Recovery from on-premises Site to Azure

Task 1: Complete Deployment planning

Task 2: Create Azure resources

Task 3: Configure Hyper-V hosts

Task 4: Prepare infrastructure

Task 5: Enable replication

Task 6: Run a disaster recovery drill to Azure

Implement Site Recovery from on-premises Site to on-premises site

On-premises Hyper-V Replication to a secondary on-premises Hyper-V site (with VMM):

- The graphic illustrates two on-premises environments, a primary site and an identical replica site, both with VMM private cloud environments with Hyper-V host servers running six VMs

- Azure Site Recovery orchestrates the replication and failover between the two sites but not VM data replicates to Azure
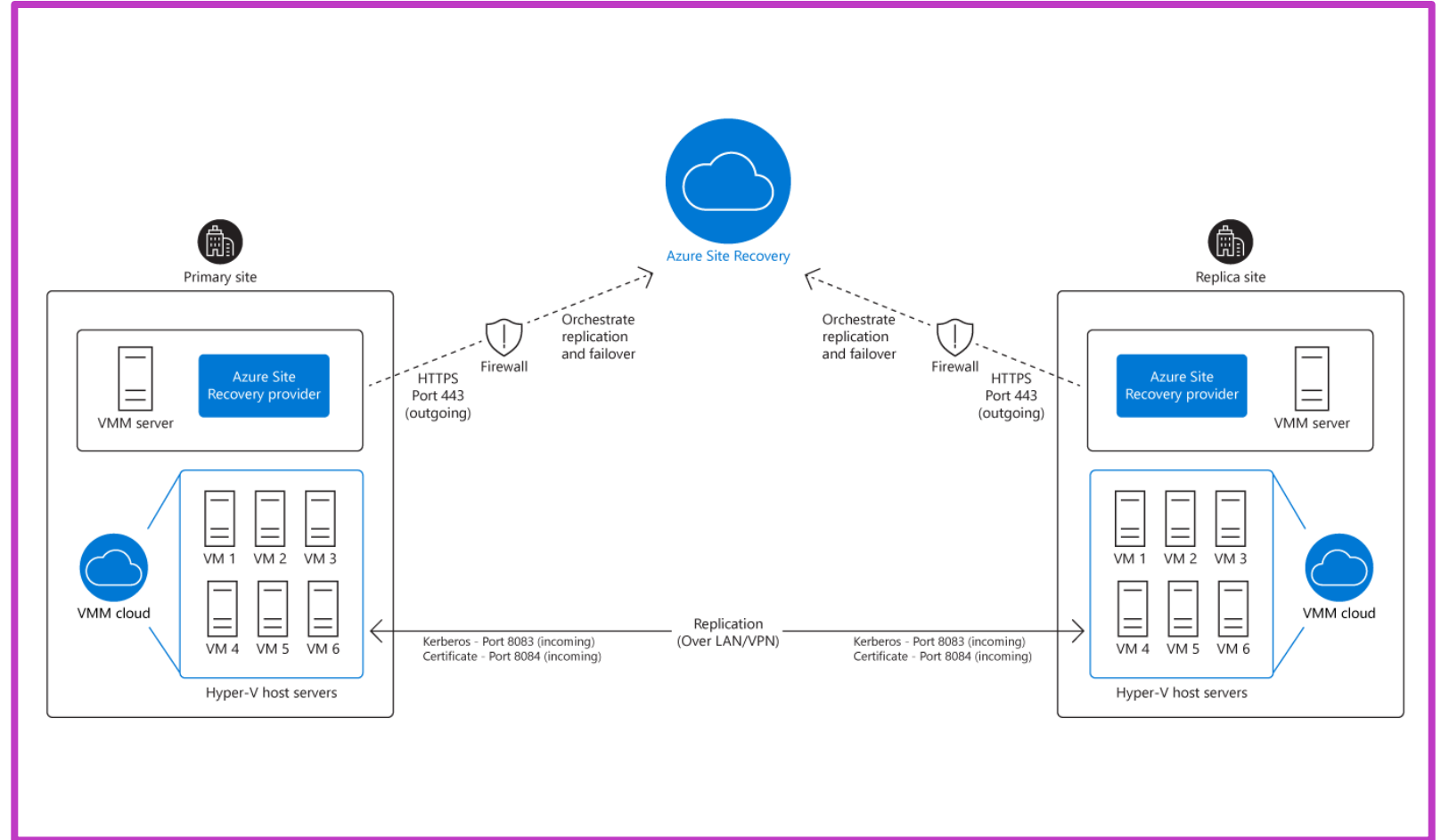
Lab 04: Implementing Hyper-V Replica and Windows Server Backup

Lab 04 – Implementing Hyper-V Replica and Windows Server Backup

Lab scenario

You're working as an administrator at Contoso, Ltd. Contoso wants to assess and configure new disaster recovery and backup features and technologies. As the system administrator, you have been tasked with performing that assessment and implementation. You decided to evaluate Hyper-V Replica and Windows Server Backup.

Objectives

- Configure and implement Hyper-V Replica
- Configure and implement backup with Windows Server Backup

End of presentation