Microsoft IT Camp

Hands-On Lab

Windows Server 2012: Storage Spaces and Deduplication

Lab version: 2.0

Last updated: 9/18/2012

This lab assumes that you have completed the prior installation and configuration lab found here:

Lab Guide – Windows 2012 RTM Install and Configure Windows and Hyper-V

Word Version: http://aka.ms/tplabguideword

PDF Version: http://aka.ms/tplabguidepdf

CONTENTS

OVERVIEW **3**
Objectives 3
Prerequisites 3

LAB 1 – STORAGE SPACES **4**

LAB 2 – DEDUPLICATION **7**

MORE INFORMATION **8**

Overview

In Lab 1, you will see how Windows Server 2012 implements a new technology known as Storage Spaces or Storage Pools. A storage pool is a collection of disks that can contain virtual disks and volumes. All disks in a storage pool are monitored and managed as a unit.

In Lab 2, you will see how Windows Server 2012 implements data deduplication. You will implement deduplication on an existing storage pool.

Objectives

In this series of exercises, you will explore the following:

- Creation of a Storage Pool.
- Creation and provisioning of a virtual disk to use a Storage Pool.
- Creation of volumes on a Storage Pool.
- Adding additional physical disks to a Storage Pool.
- Implement data deduplication on an existing Storage Pool.

Prerequisites

- Knowledge of Hyper-V
- Familiarity with Windows PowerShell

Lab 1 – Storage Spaces

Tasks in this lab module

1) Create and Attach Storage
2) Create a Storage Pool
3) Create a virtual disk and provision it to use a Storage Pool
4) Create a volume on a Storage Pool
5) Add additional physical disks to a Storage Pool

1) Create and Attach Storage

1. Log on to Host Server
2. In **Hyper-V Manager**, Create 4 Hard Disks with the following characteristics:
    1. Names: **disk1.vhd**, **disk2.vhd**, **disk3.vhd**, **disk4.vhd**
    2. Default size, Dynamically Expanding
    3. Place these in the **D:\Images\Disks** folder
3. **Right Click** the machine named **Storage** and select **Settings**.
4. Select **SCSI Controller** and click **Add**.
5. Browse to **D:\Images\Disks** and select **disk1.vhd** and click **Apply**.
6. Repeat Steps 3 - 5 to attach **disk2.vhd**, **disk3.vhd** and **disk4.vhd.** Click **OK.**
7. Click **DVD Drive** under **IDE Controller 1**.
8. For Media, select **Image File** and browse to you ISO image of Windows Server 2012.

2) Create a Storage Pool

1. Log on to **Storage** as **Administrator** Account
2. Open **Server Manager.**
3. Click **File and Storage Services**, and then click **Storage Pools**.
4. Under **Storage Pools**, click **Tasks**, and then click **New Storage Pool**.
5. Click **Next**.

6. In Name, type **Pool1**, and then click **Next**.
7. Check **PhyscialDisk1**, **PhyscialDisk2**, **PhysicalDisk3**, and then click **Next**.
8. Click **Create**, and then click **Close**.

3) Create a virtual disk and provision it to use a Storage Pool

1. Click **Pool1**, and then in Virtual Disks, click **Tasks**, and select **New Virtual Disk**.
2. Click **Next**.
3. Click **Next** to accept the selection Pool1.
4. In **Name**, type "**VirtualDisk1-Parity**", and then click **Next**.
5. In **Layout**, select **Parity**, and then click **Next**.
6. In **Provisioning type**, click **Thin**, and then click **Next**.
7. In Size, type **1**, select "**TB**", and then click **Next**.
8. Click **Create**.
9. Click **Close**. The **New Volume Wizard** will appear.

4) Create a volume on a Storage Pool

1. In the **New Volume Wizard**, click **Next**.
2. Select **Disk 5**, and click **Next**.
3. Accept the default size, and click **Next**.
4. Continue clicking **Next**, and click **Create**.
5. Click **Close**.
6. Verify that your new **E:** volume is there
    1. Open **Windows Explorer**
    2. Click on **Computer**, and notice your drive **New Volume E:** of .99TB in size.
    3. Close **Windows Explorer**.

5) Add additional physical disks to a Storage Pool

1. Right-click **Pool1**, and then click **Add Physical Disk**.

2. Check **PhysicalDisk4**, and then click **OK**.

3. Click **Close**.

Lab 2 – Deduplication

Tasks in this lab module

1) Install Deduplication
2) Enable and configure Deduplication on an existing volume
3) Observe the results of Deduplication

<u>IMPORTANT</u>: You must complete Lab 1 prior to performing this lab.

1) Install Deduplication.

1. Log on to **Storage** as **Administrator** account.
2. Open **Windows PowerShell**.
3. Type the following command and press ENTER.

```
Get-WindowsFeature *Deduplication* | Install-WindowsFeature
```

2) Enable and configure Deduplication on an existing volume

1. In Windows PowerShell, type the following commands, pressing ENTER after each.

```
Enable-DedupVolume e:
Get-DedupStatus e:
```

2. Open **Server Manager**.
3. Click **File and Storage Services**.
4. Click **Disks**, and then select **VirtualDisk1-Parity**.
5. In **Volumes**, click **E:**.
6. Right-click **E:**, and then click **Configure Data Deduplication**.
7. In **Deduplicate files other than (in days)**, type **0**.
8. Click **OK**.

3) Observe the results of Deduplication

1. Open **Windows Explorer**.

2. Copy **D:\Sources\Boot.wim** to **E:** and then **create a <u>second</u> copy** of the same file on **E:**, such that there are two identical copies of the file present. (<u>Hint</u>: put one in a new folder on **E:**)

   <u>Note</u>: You are creating two identical files to observe the results of deduplication.

3. Click **Windows PowerShell**.

4. Type **Start-DedupJob -Type Optimization -Volume E:**, and then press **ENTER**.

5. Type **Get-Dedupjob**, and then press **ENTER**. Run this command every few seconds until there are no active jobs.

6. Type **Get-DedupStatus**, and then press **ENTER**.

   <u>Note</u>: This series of commands will initiate a deduplication of the volume, and save you approximately 200 MB, which is the size of one of the Boot.wim files you copied earlier.

7. **Turn off** all Virtual Machines.

Follow Up Guides Can Be Found Here:

Lab Guide – Windows 2012 RTM Continuously Available File Shares

Word Version: http://aka.ms/tplabguide3word

PDF Version: http://aka.ms/tplabguide3pdf

Lab Guide – Windows 2012 RTM Hyper-V Over SMB

Word Version: http://aka.ms/tplabguide4word

PDF Version: http://aka.ms/tplabguide4pdf

More Information

Tommy's Blog

http://virtuallycloud9.com

Windows Server Blogs

http://blogs.technet.com/b/windowsserver/

Windows Server 2012 Product Download

http://aka.ms/ws2012tp

Microsoft Virtual Academy

http://aka.ms/tpva

Windows Server 2012 Virtual Labs

http://technet.microsoft.com/en-us/windowsserver/hh968267.aspx

Windows Azure 90-Day Free Trial Page

http://aka.ms/mshosting