Implementing Storage Spaces/ Implementing Data Deduplication

Eli Chang

MSSA Cohort #2

Diagram Exercise 4

1/19/2020

Implementing Storage Spaces/ Implementing Data Deduplication

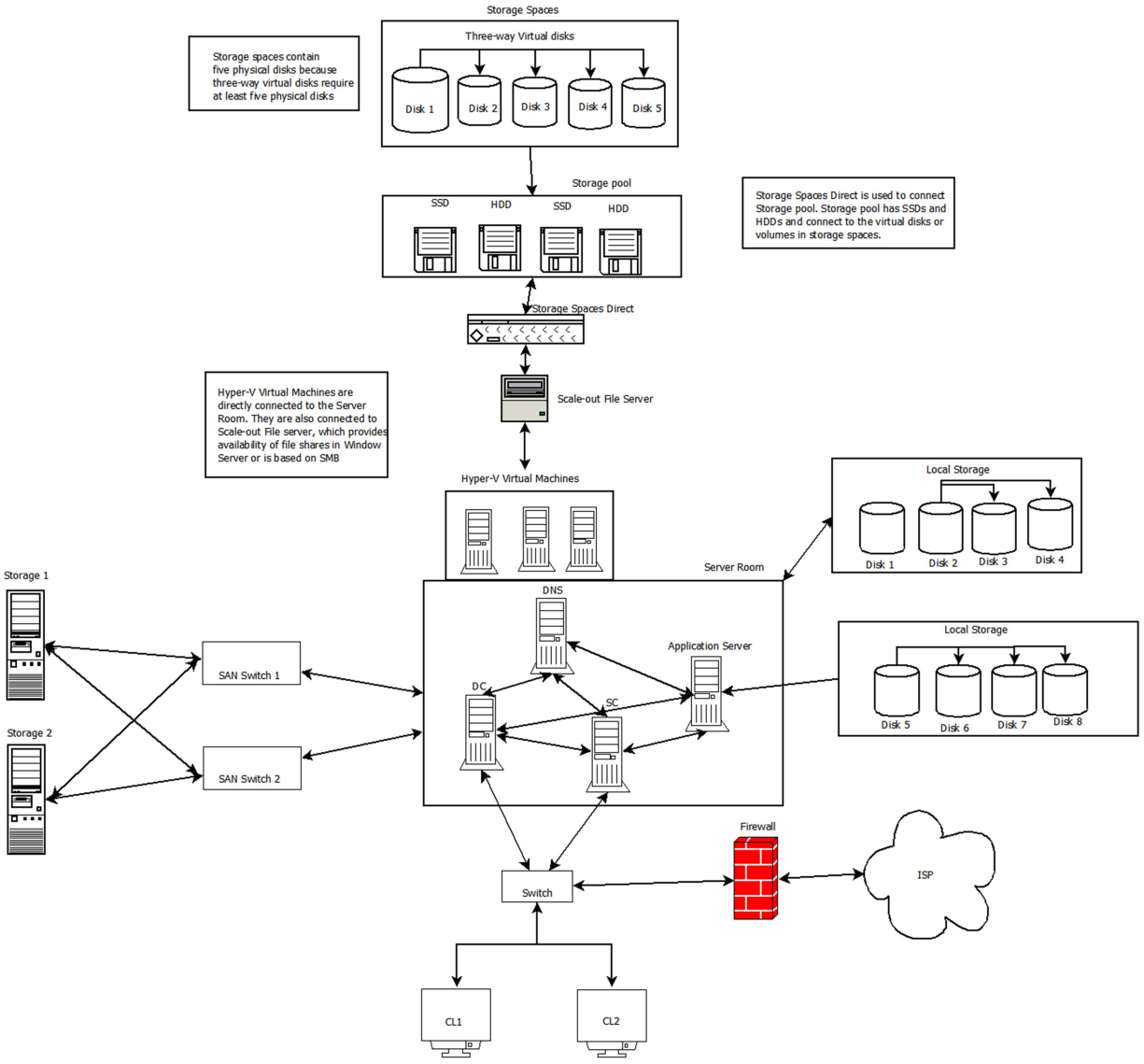
The first task of the lab is to start the Hyper-V module. The Hyper-V virtual machines can make the physical disks as one virtual disk so that the administrator does not have to manage each physical disk one by one. The Hyper-V virtual machines are directly attached to the server room, which makes the host server could manage the virtual machines. The group of virtual machines is connected to the Scale-Out File Server, which is based on SMG 3.0 or higher to provide file share availability.

The Scale-Out File Server is connected to Storage Space Direct. The Storage Space Direct is one of the Windows Server 2016 features that has the concept of Storage Spaces but is a more advanced version. It has excellent performance and simple networking. It is connected to the storage pool.

The storage pool contains a number of SSDs and HDDs. The SSDs only could make higher performance but less capacity with a limited budget. Likewise, the HDDs only provide higher capacity with the lower performance so that both drives are used to meet the business needs. The mixed SSDs and HDDs could keep performance high with high capacity. The storage pool is connected to the Storage Space, which contains all the virtual disks or volume.

In the Storage Spaces, five physical disks are used to implement a three-way virtual disk. The three-way virtual disk should have at least five physical disks because it saves three copies of the data. Even though two disks are failing, the other disk will have all the data so that they can be recovered from it.

Grammarly processed


Storage Spaces
Three-way Virtual disks
Disk 1
Disk 2
Disk 3
Disk 4
Disk 5
Storage spaces contain five physical disks because three-way virtual disks require at least five physical disks
Storage pool
SSD
HDD
SSD
HDD
Storage Spaces Direct is used to connect Storage pool. Storage pool has SSDs and HDDs and connect to the virtual disks or volumes in storage spaces.
Storage Spaces Direct
Scale-out File Server
Hyper-V Virtual Machines are directly connected to the Server Room. They are also connected to Scale-out File server, which provides availability of file shares in Window Server or is based on SMB
Hyper-V Virtual Machines
Local Storage
Disk 1
Disk 2
Disk 3
Disk 4
Server Room
Storage 1
Storage 2
DNS
Application Server
DC
SC
SAN Switch 1
SAN Switch 2
Local Storage
Disk 5
Disk 6
Disk 7
Disk 8
Firewall
Switch
ISP
CL1
CL2