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# Create a Management VM:

Install Windows 10 Virtual Machine.

Attach both Management and LAN Network Adapters.

Install RSAT Tools.

# Creating NAT Firewall/Router:

Download and install pfSense.

Configure network interfaces.

Create firewall aliases.

Create firewall rules.

Verify that the configuration is working.

# Configure Virtual Networking:

Plan the virtual network.

Plan out any IP addresses for devices on the network.

Determine any needed virtual switches.

# Create a Primary Domain Controller:

Install Windows Server using a differencing disk.

Perform post installation tasks.

Attach a secondary disk for the database storage.

Install the Active Directory Domain Services role.

Promote DC1 to a domain controller.

Create users and computer objects.

Verify your configuration is working as planned.

# Create an OU Structure in ADUC:

Plan out domain organizational unit structure.

Create the organizational units and security groups.

Use AGDLP structure for secure for security groups and file permissions.

Create a security groups.

# Create and configure a CentOS DHCP Server:

Download and install CentOS7 ISO.

Create VM using CentOS install ISO.

Install realmd to join cap.tsp domain.

Configure sudo permissions for your security groups.

Install and configure DHCP server.

Configure a DHCP IP range.

Create your DHCP reservations for all virtual machines on the network.

Verify that your DHCP is working.

# Configure Domain Name System:

Create a record on 485-DC1 that point to all servers in the network.

Verify a records work by pinging each alias.

# Create SAN with RAID6 Array and iSCSI Target:

Install Windows Server using a differencing disk or an ISO.

Perform post installation tasks.

Attach 6x 45GB disks for RAID6 array.

Install the iSCSI Target role.

Enable jumbo frames on the iSCSI network adapter.

Create a storage pool called production.

Create virtual RAID6 disk on production pool named VirtualDisk.

Create two iSCSI Virtual Disks:

Quorum.

VMStorage.

Create iSCSI targets for each disk.

# Create Server Core Nested Hyper-V Hosts:

Install Windows Server on two VMs using differencing disks.

Attach network adapters.

LAN.

iSCSI.

HB.

LM.

Perform post installation tasks.

Enable jumbo frames on the iSCSI Adapter.

Enable the MSiSCSI service and connect to both iSCSI Targets on the SAN.

Initialize and create a volume on the iSCSI disks.

Search enable nested virtualization from host machine for HV1/HV2.

Install Hyper-V and Failover Clustering roles.

# Configure a Hyper-V Failover Cluster:

Cluster HV1 and HV2 together into a cluster named HVCluster.

Configure all networks in the cluster.

Copy over parent disk/ISO from host machine to shared cluster storage.

Create 3 nested virtual machines using the windows server core parent disk. Perform the standard post installation tasks on all 3.

DC2.

FS1.

FS2.

# Create 2 File Servers in a Failover Cluster with a VHD Set:

Create a VHD set disk for the file server VMs.

Attach the VHD set as a shared disk to each of the file server VMs.

Cluster the file server VM’s together in a cluster named FSCluster.

Create a file share called company data.

# Configure Company Share with AGDLP permissions:

Create 3 folders on the company data share.

IT Management.

IT Service Desk.

FIN Management.

Set appropriate permissions for each folder on the share.

# Create and apply a Folder Redirection GPO:

Create a group policy object that redirects the desktop and documents folders to a folder on the company share.

Test the GPO up by running “gpupdate /force” on all domain computers.

# Test share and folder NTFS permissions through a group policy-mapped drive:

Create a group policy object that adds a mapped network drive to each domain user.

Test the GPO by running “gpupdate /force” on all domain computers.

# Create a secondary Server Domain Controller (core):

Using the DC2 nested VM, install active directory domain services and promote it to a domain controller.

# Test redundancy:

Test SAN Redundancy by removing 2 of the 6 disks and verifying that both the Hyper-V and File Server clusters are still operational.