

Lab 5: Enterprise Windows Server Administration – Part II

CNIT 24200-006

Group 22

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Executive Summary

In order to complete this lab successfully, there were six major phases to work on. First, the implementation of the DFS across the two domain controllers were made to implement DFS domain namespace and DFS replication to copy data files across domain controllers. Second, the creation of the Windows 2012 Server VM template was done on the ESXi Server with more storage to use in future lab objectives. Third, the cloning of the Windows 2012 Server VM template was made and WSUS was implemented on it. Fourth, Powershell was used to connect a remote machine and provide list/stop/start services. Fifth, the implementation of the VMware Thinapp was made while installing Microsoft Visio 2007. Finally, the cloning of the Windows Server 2012 VM template and implementing SCCM on it to gather reports for management were used. All the expectations for this lab were completed in time but there were several unexpected errors during lab testing. Some critical problems that created obstacles during the lab were remote Powershell when the domain controller denied remote access from another machine and when extending the AD Schema, the permission to logon was denied for an unknown reason. The highlighted recommendations for this lab project is to use a universal password for all VMs or PCs due to password confusion and to use IP addresses in chronological order to prevent duplicate IP addresses in the same local network. Another recommendation is to be aware of the network addresses of which ESXi server or vCenter server to use while configuring or implementing services or features. Other sections in this report serve its own purpose, the business scenario section contains a real-life enterprise environment situation where this lab network architecture could be applied to and the procedure lists the steps of the recorded process in this lab to lead people reading this report to a successful lab results meeting all the requirements. Appendix A lists what kind of problems were met during the completion of the lab.

Business Scenario

ServerTech, a network company, has continued the expansion of their network as they have continued to grow recently. ServerTech was proposed by a client company to provide sharing techniques between computers in a large computer network group. Responding to this proposal, ServerTech provided solutions such as DFS, WSUS, Powershell, Thinapp, and SCCM. By implementing DFS in the domain controllers in the client's network it enabled folder redirection and roaming profiles throughout the network. Also, creating a Windows 2012 Server template and cloning them into SCCM and WSUS to implement them across the network through group policies. VMware ThinApp was used to transmit applications such as Microsoft Visio through the shared folder of DFS by prescanning and postscanning the application before transmission. By using these sharing techniques in the client company's network, it enabled the client company's computers to transmit files easily through ThinApp, automatic updates and group controls are allowed by WSUS and SCCM, and by implementing DFS it created a shared folder and roaming profiles across the two domain controllers. The applications used in this lab project are Windows, Windows Server 2016, Windows Server 2012, ThinApp, Server Manager, Microsoft Visio 2007, Visual Paradigm, WSUS, SCCM, DFS, VMware, two server PCs, and one Workstation PC. The IP address assigned to this lab's network was 10.18.72.1 and the DNS address of the network provider was 10.1.2.11 and 10.1.2.12. The logical network diagram of the pre-lab (Figure 1) depicts a similar network architecture but with less sharing applications provided.

Enterprise Windows Server Administration – Part II

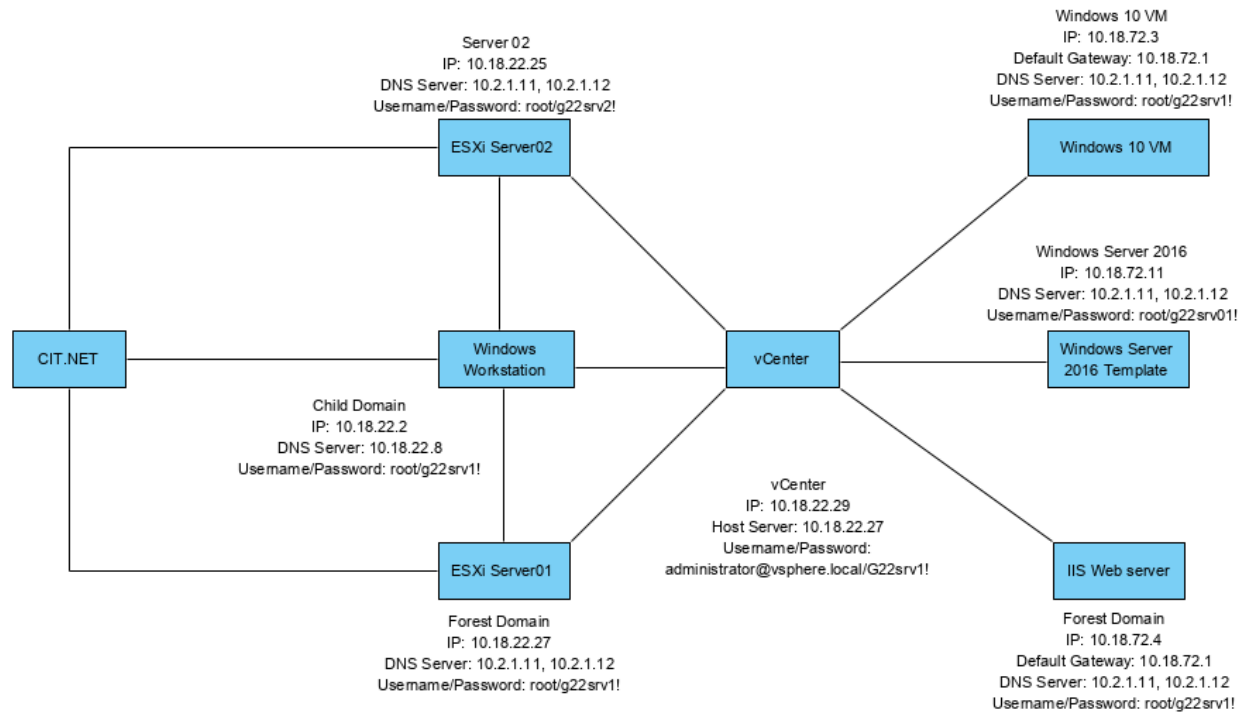


Figure 1: Pre-lab Logical Network Diagram

Procedure

This procedure phase is separated by the list of tasks shown chronologically in the check-off sheet. The format for the procedure is according to: **buttons** are bold, *options* are italicized, text entered into the computer is in Courier New, menu navigation is by the pipe symbol and italic words: *Start / Programs / MS Office / Word*.

Implemented DFS Across Two Domain Controllers

Installing DFS on original Domain Controller

1. Navigated to vCenter 10.18.22.29 in a web browser.
 - a. Logged in using administrator credentials
2. Clicked “Hosts and Clusters.”
3. Clicked virtual machine “G22SRV01” in the left navigational sidebar.
4. Launched Web Console and logged in.
5. Opened Server Manager.
6. In Server Manager, clicked the “Manage” menu, then clicked *Add Roles and Features*.
 - a. In the “Before you begin” menu, clicked **Next**.
 - b. In the “Installation Type” menu, clicked **Next**.
 - c. In the “Server Selection” menu, clicked **Next**.
 - d. In the “Server Roles” menu, navigated to *File and Storage Services / File and iSCSI Services*, clicked the checkbox next to “DFS Namespaces” and the checkbox next to “DFS Replication,” and clicked **Next**.
 - e. In the “Features” menu, clicked **Next**.

- f. In the “DNS Server” menu, clicked **Next**.
- g. In the “AD DS” menu, clicked **Next**.
- h. In the “Confirmation” menu, clicked **Install**.
- i. In the “Results” menu, clicked **Close**.

Created the Namespace

1. From within the Server Manager window, clicked the “Tools” menu and selected *DFS Management*.
2. In the DFS Manager window that opened, clicked “Namespaces” in the left navigational sidebar.
3. In the right-hand sidebar, clicked **New Namespace**
 - a. In the “Namespace Server” menu, entered G22SRV01 and clicked **Next**.
 - b. In the “Namespace Name and Settings” menu, entered g22srv01-dfs as the Name and clicked **Edit Settings**.
 - c. Selected the radio button next to “Administrators have full access; other users have read and write permissions” and clicked **OK** then clicked **Next**.
 - d. In the “Namespace Type” menu, clicked **Next**.
 - e. In the “Review settings and create namespace” menu, clicked **Create**.
 - f. In the “Confirmation” menu, clicked **Close**.

Created folders in File Explorer

1. Clicked the File Explorer icon.
2. In File Explorer, navigated to *C: / DFSRoots / g22srv01-dfs*.
3. Right-clicked inside folder and selected *new / Folder*
 - a. Typed FolderRedirection to rename the new folder and pressed Enter.

4. Right-clicked inside folder and selected *new / Folder*
 - a. Typed `RoamingProfiles` to rename the new folder and pressed Enter.

Added DFS folders within Namespace

1. Opened DFS Management in Server Manager by clicking the “Tools” menu and selecting *DFS Management*.
2. Right-clicked “\\group22.c24200.cit.lcl\g22srv01-dfs” underneath “Namespaces”.
3. Selected *New folder*.
 - a. In the “Name” box, typed `FolderRedirection`.
 - b. Under “Folder targets:”, clicked **Add**.
 - c. Typed `\\G22SRV01\g22srv01-dfs\FolderRedirection` and clicked **Ok** then clicked **Ok**.
4. Right-clicked “\\group22.c24200.cit.lcl\g22srv01-dfs” in the left navigational sidebar.
5. Selected *New folder*.
 - a. In the “Name” box, typed `RoamingProfiles`.
 - b. Next to “Folder targets”, clicked **Add**.
 - c. Typed `\\G22SRV01\g22srv01-dfs\RoamingProfiles` and clicked **Ok** then clicked **Ok**.

Pointed folders to DFS namespace share

1. Opened Server Manager.
2. Clicked “Tools” and selected *Group Policy Management*.

Disabled old GPO

1. In the Group Policy Management window, clicked the “Folder Redirection GPO”.
2. Went to the “Details” tab.

3. Using the dropdown menu next to “GPO Status,” set the status to “All settings disabled.”

Added new GPO

1. In the left navigational sidebar, right-clicked “group22.c24200.cit.lcl.”
2. From the right-click menu, selected *Create a GPO in this domain, and Link it here...*
 - a. Typed the name `RoamingProfilesLab5` and clicked **OK**.
3. In the left navigational sidebar, right-clicked the new “RoamingProfilesLab5” GPO and selected *Edit...* from the right-click menu.
4. Navigated to *Computer Configuration / Policies / Administrative Templates / System / User Profiles*.
5. Right-clicked “Set roaming profile path for all users logging onto this computer.”
 - a. Clicked the radio button next to “Enabled.”
6. In the box “Users logging into this computer should use this roaming profile path:” entered `\\G22SRV01\g22srv01-dfs\RoamingProfiles\%USERNAME%` and clicked **OK**.
7. In the “Scope” tab, under “Security Filtering,” clicked **Add**.
 - a. Typed `G22SRV01` and clicked **OK**.
 - b. Typed `G22DC2` and clicked **OK**.
8. Navigated to *User Configuration / Policies / Windows Settings / Folder Redirection*.
9. Right-clicked folder “Desktop”
 - a. selected *Properties* from the right-click menu.
 - b. Set “Setting” to “Basic - Redirect everyone’s folder to the same location.”
 - c. Set “Target folder location” to “create a folder for each user under the root path.”

- i. Entered \\G22SRV01\g22srv01-dfs\FolderRedirection into the “Root path” box and clicked **OK**.
10. Repeated steps 9 – 13 for folders: “Start Menu”, “Documents”, “Pictures”, “Music”, “Videos”, “Favorites”, “Contacts”, “Downloads”, “Links”.
11. In the left navigational sidebar, right-clicked “RoamingProfilesLab5” and selected *Link Enabled* from the drop-down menu.
12. In the left navigational sidebar, right-clicked “RoamingProfilesLab5” and selected *Enforced* from the drop-down menu.

Implemented DFS replication between the domain controllers

1. In Server Manager, clicked the “Tools” menu, and selected *DFS Management*.
2. In the DFS Management window, right-clicked “Replication” on the left side.
3. Selected *New replication group*.
 - a. In the “Replication Group Type” menu, clicked **Next**.
 - b. In the “Name and Domain” menu then entered Group1 and clicked **Next**.
 - c. In the “Replication Group Members” menu and clicked **Add**.
 - i. Typed G22SRV01 and clicked **Check name**.
 - d. Clicked **Ok** then clicked **Add**.
 - i. Typed G22DC2.group22.c24200.cit.lcl and clicked **Check name** then **Ok**.
 - e. In the “Topology Selection” menu, clicked **Next**.
 - f. In the “Replication Group Schedule and Bandwidth” menu, clicked **Next**.

- g. In the “Primary member” menu, selected “G22SRV01” as the primary member and clicked **Next**.
 - h. In the “Folders to Replicate” menu, clicked **Add** then **Browse**.
 - i. Navigated to `C: / DFSRoots / g22srv01-dfs` and clicked **OK** then clicked **OK** again.
 - i. In the “Local Path of DFSRoots on Other Members” menu, clicked **Edit....**
 - i. Clicked the radio button next to “Enabled.”
 - j. In the “Local Path of folder” box, entered `C : \DFSRoots`.
 - i. Clicked **Next**.
 - k. In the “Local Path of UserFiles on Other Members” menu, clicked **Edit....**
 - i. Clicked the radio button next to “Enabled.”
 - l. In the “Local Path of folder” box, entered `C : \DFSRoots\g22srv01-dfs`.
 - i. Clicked **Next**.
 - m. In the “Review Settings and Create Replication Group” menu, clicked **Create** then clicked **Close**.
4. Clicked “Group1” in the left navigational sidebar then clicked the “Replicated folders” tab.
5. Right-clicked “g22srv01-dfs” and selected *Share and Publish in Namespace...*
- a. In the “Publishing Method” menu, clicked **Next**.
 - b. In the “Share replicated folders” menu, clicked **Next**.
 - c. In the “Namespace path” menu, entered
`\\group22.c24200.cit.lcl\g22srv01-dfs` and clicked **Next**.
 - d. In the “Review Settings and Share Replicated Folder” menu, clicked **Share**.

- e. In the “Confirmation” menu, clicked **Close**

Created Windows 2012 Server VM Template

1. Navigated to vCenter 10.18.22.29 through a browser
 - a. Logged in with the following credentials:
 - i. Username: administrator@vsphere.local
 - ii. Password: G22srv01!
2. In the navigation tab on the left, selected **Hosts and Clusters** and selected **10.18.22.25**
3. Clicked on *Actions / New Virtual Machine*
 - a. In the *Select Creation Type* menu, clicked on **Create a new virtual machine** and clicked **Next**
 - b. In the *Select a name and folder* menu, typed GR22.2012Template for *Virtual machine name* and selected **Group 22** and clicked **Next**
 - c. In the *Select a compute resource* menu, selected **10.18.22.25** from the menu and clicked on **Next**
 - d. In the *Select Storage* menu, selected **Group22SRVDS02-2** from the storage list and clicked **Next**
 - e. In the *Select Compatibility* menu, left it as default and selected **Next**
 - f. In the *Select Guest OS* menu, selected **Windows** on the dropdown menu labeled *Guest OS Family* and selected **Microsoft Windows Server 2012 (64-bit)** on the dropdown menu labeled *Guest OS Version* and clicked **Next**
 - g. In the *Customize Hardware* menu, selected **Data ISO File** by clicking on the dropdown menu labeled *New CD/DVD Drive* and navigated to *RTFM / Windows /*

Server / en_windows_server_2012_r2_x64_dvd_2707946 and clicked **OK** and **Next**

- h. In the *Ready to Complete* menu, clicked **Finish**
4. In the navigation bar, clicked **GR22.2012Template**
 - a. Clicked on *Actions / Power / Power On*
5. Clicked on **Launch Console**
 - a. Left the Language, Time and Currency Format, and Keyboard or input method as default and clicked **Install Now**
 - b. When prompted for Windows Server 2012 product key, navigated to *RTFM / Pub / CNIT24200 / Windows / Server / en_windows_server_2012_r2_x64_dvd_2707946.key*
 - c. Selected **Windows Server 2012 R2 Standard (Server with a GUI)** in Windows Server selection menu
 - d. Checked the checkbox next to *Agree to license terms* and clicked **Next**
 - e. Clicked **Next** when prompted for partition selection due to one option
 - f. When prompted for log on password, typed:
 - i. Password: G22srv01!
6. Navigated to vCenter 10.18.22.29 through a browser
 - a. Logged in with the following credentials:
 - i. Username: administrator@vsphere.local
 - ii. Password: G22srv01!
7. In the navigation tab on the left, selected **Hosts and Clusters** and selected **GR22.2012Template**

8. Clicked **Install VMware Tools** under the Launch Console
 - a. Clicked **Mount** on a pop-up
9. Clicked on **Launch Console**
 - a. Opened **File Explorer** in the Windows taskbar
 - b. Double clicked **VMware Tools** after clicking on **This PC** tab
 - c. Double clicked setup64.exe file
 - d. Clicked the radio button next to **Typical Installation** and clicked **Install**
 - e. Rebooted GR22.2012Template by clicking **Restart** on the **Windows Start Menu**
10. After reboot, right-clicked the **network icon** on the Windows taskbar
 - a. Clicked on **Open Network and sharing center**
 - b. Clicked **Ethernet0** and **Properties**
 - c. Double clicked **IPv4** and clicked the radio button next to **Use the following IP address** and Use the following **DNS server address**
 - d. Entered the following information:

IP Address	10.18.72.30
Subnet mask	255.255.255.0
Default gateway	10.18.72.1
Preferred DNS server	10.2.1.11, 10.2.1.12

- e. Clicked **Ok** three times

Cloned Windows Server 2012 and Implemented WSUS

1. Navigated to vCenter 10.18.22.29 through a browser
 - a. Logged in with the following credentials:
 - i. Username: administrator@vsphere.local
 - ii. Password: G22srv01!
2. In the navigation tab on the left, selected **VMs and Templates** and right-clicked **GR22.2012Template** and selected *New VM from this template*
 - a. In the *Select Name and Folder* menu, named the VM **WSUS Server**
 - i. Clicked **Group22** as target location and clicked **Next**
 - b. In the *Select a compute resource* menu, clicked **10.18.22.27** and clicked **Next**
 - c. In the *Select storage* menu, clicked **Group22SRVDS01-02** and clicked **Next**
 - d. In the *Select clone options* menu, clicked the **checkbox** next to Power on virtual machine after creation and clicked **Next**
 - e. In the *Ready to complete* menu, clicked **Finish**
3. In the navigation tab on the left, selected **VMs and Templates** and clicked **WSUS Server**
 - a. Clicked **Launch console** and logged in with:
 - i. Password: G22srv01!
 - b. Right-clicked the **network icon** on the Windows taskbar
 - i. Clicked on **Open Network and sharing center**
 - ii. Clicked **Ethernet0** and **Properties**
 - iii. Double clicked **IPv4** and clicked the radio button next to **Use the following IP address** and Use the following **DNS server address**

- iv. Entered the following information:

IP Address	10.18.72.10
Subnet mask	255.255.255.0
Default gateway	10.18.72.1
Preferred DNS server	10.2.1.11, 10.2.1.12

- c. Typed **Firewall** in the Windows search bar and pressed **Enter**
- d. Clicked on **Turn Windows Firewall on or off**
- e. Clicked on the **radio button** next to Turn off Windows Firewall (Not Recommended) under Private Network Settings and Public Network Settings
- i. Clicked **Apply** and **Ok**
4. In the navigation tab on the left, selected **VMs and Templates** and right-clicked **WSUS Server**
- a. Clicked on **Edit Settings**
- i. Clicked **Add a new device** and selected **Hard disk** from the drop-down menu
- ii. Expanded tab by clicking on the **arrow** next to *New hard disk*
- iii. Changed disk size from 40 GB to 80 GB
- iv. Beside Disk Provisioning, clicked on **Thin Provision** from the drop-down menu
- v. Clicked **Ok**
5. Clicked **Launch console** and logged in with:
- a. Password: G22srv01!

6. Typed `cmd` on Windows search bar and pressed **Enter**

- a. Entered the following command:

```
diskpart.exe
```

```
san
```

```
san policy=OnlineAll
```

```
list disk
```

```
select disk 1
```

```
attributes disk clear readonly
```

```
online disk
```

7. Typed `Disk` on Windows search bar and clicked on **Create and format hard disk partitions**

- a. Right clicked **Disk 1** and clicked **New simple disk** from the drop-down
 - b. Clicked **Next** three times and left volume size, and drive letter to the default
 - c. In the *Format Partition* menu, entered `WSUS` beside Volume name and clicked **Next**
 - d. Clicked **Finish**

8. In the navigation tab on the left, selected **VMs and Templates** and clicked **WSUS Server**

- a. Clicked **Launch console** and logged in with:

- i. Password: `G22srv01!`

9. Typed `Server Manager` on Windows search bar and pressed **Enter**

- a. After Server Manager loaded, clicked on *Manage / Add Roles and Features*
 - b. In the *Before you begin* menu, selected **Next**

- c. In the *Installation Type* menu, selected **Next**
 - d. In the *Server Selection* menu, selected **Next**
 - e. In the *Server Roles* menu, selected the **checkbox** beside Windows Server Update Services
 - f. In the pop-up menu, clicked **Add Features** and clicked **Next**
 - g. In the *Features* menu, clicked **Next**
 - h. In the *WSUS* menu, clicked **Next**
 - i. In the *Role Services* menu, clicked **Next**
 - j. In the *Content* menu, typed E: and clicked **Next**
 - k. In the *Role Services* menu, clicked **Next**
 - l. In the *Confirmation* menu, clicked **Install**
 - m. After installation, clicked on **Configure settings** under Windows Server Update Services on the *Results* menu
 - n. Waited for configuration to be completed until *Configuration successfully completed* appeared
 - o. Clicked on Close
10. Clicked on the *Tools / Windows Server Update Services* menu in Server Manager
- a. In the Windows Server Update Services wizard, navigated to *Update Services / WIN-1TG33FU4VK3 / Updates / Security Updates*
 - b. Selected all security updates by pressing **Ctrl + A**
 - c. On the right navigation bar, clicked on **Approve...**
 - d. Under the Computer Group, dropdown list clicked **Approved for Install** for All computers and Unassigned computers

- e. Clicked **Ok**
11. In the navigation tab on the left, selected **VMs and Templates** and clicked **G22SRV01.group22.c24200.cit.lcl**
- a. Clicked **Launch console** and logged in with:
 - i. Password: G22srv01!
12. In Server Manager, clicked on *Tools / Group Policy Management*
- a. Right clicked *Domains / group22.c24200.cit.lcl*
 - b. Clicked on **Create a new GPO** and named the newly created GPO as WSUS
 - c. Right-clicked the newly created GPO **WSUS** and clicked **Edit**
 - d. After the pop-up, navigated to *Computer configuration / Policies / Administrative Templates / Windows Components / Windows Updates*
 - e. Double-clicked **Configure Automatic Updates**
 - i. Clicked the **radio button** next to Enabled
 - ii. Clicked the **drop-down menu** next to *Configure automating updating* and selected **4-Auto download and schedule the install**
 - iii. Clicked the **checkbox** next to *Install during automatic maintenance* and *Install updates for other Microsoft products* and clicked **Apply** and **Ok**
 - f. Double-clicked **Specify intranet Microsoft update service location**
 - i. Typed 10.18.72.30 in the *Set the intranet update service for detecting updates* textbox and *Set the intranet statistics server* textbox

Used Powershell to Connect to a Remote Machine

1. Navigated to vCenter 10.18.22.29 in a web browser.

- a. Logged in using administrator credentials
2. Clicked “Hosts and Clusters.”
3. Clicked virtual machine “Win10(A)” in the left navigational sidebar.
4. Launched Web Console and logged in.
5. Typed `powershell` in the search bar
 - a. Right-clicked “Windows PowerShell” and selected *Run as Administrator*
6. On the command line entered `Enable-PSRemoting -Force`
7. On the command line entered `Set-Item`
`wsman:\localhost\client\trustedhosts *`
8. Entered `Y` when prompted to modify the list.
9. Typed `Restart-Service WinRM` then pressed enter.
10. Launched Web Console for virtual machine “G22SRV01” from vCenter and logged in.
11. Repeated steps 5 - 9 on the virtual machine.
12. On the command line for the virtual machine “Win10(A)” entered `Enter-PSRemoting 10.18.22.31 -computername G22SRV01 -credential group22.c24200.cit.lcl\Administrator`
13. Entered Administrator's password for credential given in the pop-up
14. Entered the command `Get-Service xblGameSave`
15. Entered the command `Get-Service Start xblGameSave`
16. Entered the command `Get-Service Stop xblGameSave`

Implemented VMware Thinapp

1. Navigated to vCenter 10.18.22.25 through a browser

- a. Logged in with the following credentials:
 - i. Username: `root`
 - ii. Password: `g22srv2!`
2. In the left navigational bar, clicked **Storage, Datastore browser**, and **Upload**
 - a. Navigated to *rtfm.cit.lcl / ISO / Windows / Client*
en_windows_7_enterprise_with_sp1_x64_dvd_u_677651
 - b. Clicked **Ok**
3. Clicked **Close**
4. Navigated to `vCenter 10.18.22.29` through a browser
 - a. Logged in with the following credentials:
 - i. Username: `administrator@vsphere.local`
 - ii. Password: `G22srv01!`
5. Clicked on **Virtual Machines** in the left navigational bar
 - a. Clicked **Create/Register VM** and clicked **Next**
 - b. For the VM name, entered `G22.ThinApp`
 - c. In the *Compatibility* dropdown list, clicked on **ESXi 6.7 Virtual Machine**
 - d. In the *GuestOS family* dropdown list, clicked on **Windows**
 - e. In the *GuestOS version* dropdown list, clicked on **Microsoft Windows 7 (64bit)**
and clicked **Next**
 - f. In the *Storage* menu, clicked **Group22SRVDS02-1** and clicked **Next**
 - g. In the *Customized Settings* menu, clicked the **dropdown** for CD/DVD Drive 1
and selected **Datastore ISO file** and navigated to the uploaded file
en_windows_7_enterprise_with_sp1_x64_dvd_u_677651 and clicked **Select**

6. Went to *Actions / Power / Power On* to load the VM
7. Window configuration:
 - a. For language, region, and keyboard setting kept defaults and clicked **Next**
 - b. Checked the **checkbox** beside Accept the license terms and clicked **Next**
 - c. Clicked **Install Now**
 - d. Clicked **Custom Installation**
 - e. When prompted for computer username and password, entered:
 - i. Username: ThinApp
 - ii. Password: G22srv01!
 - f. Selected **Home network** when prompted for network type
 - g. Right-clicked the **network icon** on the Windows taskbar
 - i. Clicked on **Open Network and sharing center**
 - ii. Clicked **Local Area Connection** then **Properties**
 - iii. Double clicked **IPv4** and clicked the radio button next to **Use the following IP address** and Use the following **DNS server address**
 - iv. Entered the following information:

IP Address	10.18.72.12
Subnet mask	255.255.255.0
Default gateway	10.18.72.1
Preferred DNS server	10.2.1.11, 10.2.1.12

- v. Clicked **Ok** three times
8. Went to **File Explorer** by clicking it on the Windows taskbar

9. Navigated to *rtfm.cit.lcl / Pub / CNIT24200 / VMWare Thinapp VMware-ThinApp-Enterprise-5.2.4-9964600.exe*
 - a. When prompted if ThinApp installer should be allowed to make changes , clicked **Yes**
 - b. In the *Patent Lists* menu, clicked **Next**
 - c. In the *License Agreement* menu, clicked the **radio button** beside I accept the terms in the license agreement and clicked **Next**
 - d. In the *Enter license key* menu, entered the license key retrieved from VMware ThinApp evaluation license key and clicked **Finish**
10. Opened ThinApp by entering ThinApp Setup Capture in Windows search bar
 - a. Clicked on **Prescan**
 - b. Waited until Prescan was successfully completed and opened **File Explorer** from the taskbar
 - c. Navigated to *rtfm.cit.lcl / ISO / MS Apps / Visio Professional 2007* and right-clicked on the **disk image file** and clicked **Mount**
 - d. After a pop-up of the mounted disk, double clicked on **setup.exe**
 - i. Clicked on the **checkbox** next to I accept the terms of this agreement and clicked **Continue** and **Install Now**
 - ii. Clicked **Close** when the installation was completed
 - e. Opened Visio 2007 by typing Visio 2007 on Windows search bar
 - i. When prompted for the license key, entered the license key retrieved from *rtfm.cit.lcl / ISO / MS Apps / Visio Professional 2007* and clicked **Ok**
 - ii. Rebooted G22.ThinApp

11. Logged in to ThinApp with credentials:

- a. Password: G22srv01!

12. When ThinApp Setup Capture was launched at startup, clicked **Postscan**

- a. Clicked the **checkbox** next to Microsoft Visio 2007 only
- b. In the *Isolation* menu, clicked on **Full write access to non-system directories** and clicked **Next**
- c. In the *Sandbox* menu, clicked on **Custom location or network drive** and clicked **Browse**
 - i. Navigated to *G22SRV01 / Content* and clicked **Ok**
- d. In the *Quality Assurance Statistics*, left it as default and clicked **Next**
- e. In the *Project Settings* menu, left inventory name as default and clicked **Next**
- f. In the *Package Settings* menu, clicked **Save**
- g. In the *Ready to Build* menu, clicked **Build**
- h. In the *Build Project* menu, clicked **Finish** after complete installation

Cloned Windows Server 2012 and Implemented SCCM 2012

1. Used the Workstation to log on to 10.18.22.29 in Firefox

- a. Logged into vSphere using the admin credentials:
 - i. Username: administrator@vsphere.local
 - ii. Password: G22srv01!

2. In the left sidebar, clicked **VMs and Templates**

3. Right-clicked **Server 2012 Template** from the drop-down menu and selected **New VM from this template** from the right-click menu.

- a. In the *Select Name and Folder* menu, named the new VM SCCM
 - b. Clicked **Next** several times until *Ready to complete menu*
 - c. In the *Ready to complete* menu, clicked **Finish**.
4. Used the Workstation to navigate to 10.18.22.25 in a web browser
 - a. Logged in using the root credentials:
 - i. Username: root
 - ii. Password: g22srv2!
5. In the left sidebar, clicked **VMs and Templates** and then **SCCMServer**
 - a. Logged into the VM using Admin credentials:
 - i. Password: G22srv01!
6. Right-clicked the **Network** icon in the Windows taskbar
 - a. Navigated to **Network and Sharing Center**
 - b. Clicked **Change adapter settings**
 - c. Double-clicked **Ethernet0**
 - d. Clicked **Properties**
 - e. In the *IP address* box, changed the IP address to 10.18.22.16
7. Clicked the **Start** button and clicked **Server Manager**
 - a. Clicked on **Local Server**
 - b. Clicked **Domain Name**
 - c. In the *System Properties* dialog box clicked **Change**
 - d. Clicked the **radio button** next to *Domain* and entered:
 - i. group22.c24200.cit.lcl in the Domain box
 - e. Typed SCCM in the *Computer Name* box and clicked **OK**

- f. Clicked **Restart now** to apply changes and become a member of the domain.
8. On the Workstation, navigated to 10.18.22.25.
 - a. Logged in to “G22SRV01” VM with Admin credentials
 1. Password: G22srv01!
9. Within Server Manager, clicked **Tools**
 - a. Selected **ADSI Edit** from the dropdown menu
 - b. In the toolbar clicked **Action**, and from the dropdown menu, clicked **Connect to**
 - c. Entered Group22 in the *Name* box
 - d. Navigated to *GROUP22 / DC=group22* and right-clicked **CN=System**
 - e. In the right-click menu, selected *New | object*
 - f. Selected **Container** and clicked **Next**
 - g. In the Value box, entered *SystemManagement* and clicked **Next**
 - h. Clicked **Finish**
10. Right-clicked **CN=SystemManagement** and selected **Properties** from the right-click menu.
11. Clicked the *Security* tab and clicked **Add**.
 - a. Clicked **Object types...**, selected the **checkbox** next to Computers and clicked **Ok**
 - b. Typed SCCM and clicked **Ok**.
 - c. Checked the **checkbox** next to *Full control*
 - d. Clicked **Advanced**.
 - e. Clicked **SCCM** and clicked **Edit**

- f. Used the dropdown menu to select *This object and all descendant objects* and clicked **Ok**.
12. Opened the file browser and went to `\\rtfm.cit.lcl`
- a. Mounted the SCCM media, and copied the `\SMSSetup\Bin\x64\` folder to documents
 - b. In the newly copied folder, right-clicked the file **Extadsch.exe** and selected **run as administrator**
 - c. In the C: drive, opened the text file *Extadsch* and checked the log for *Successfully extended the Active Directory schema* (Problem 2 in Appendix A)
 - d. Went to `\\rtfm.cit.lcl`, navigated to the SQL Server iso, and mounted it
 - e. Ran the **setup.exe** file
 - f. Selected *new SQL server stand-alone installation or add features to an existing installation*
 - g. Clicked **Next** twice
 - h. Accepted the license terms, and clicked **Next**
 - i. Checked **include SQL server product updates**, and hit **Next**
 - j. Clicked **Next** two more times
 - k. Selected the feature installation, and clicked **Next**
 - l. Selected *management tools* - **Next**
 - m. Hit **Next** 3 more times, and left the account settings as default
 - n. Selected **use Windows authentication** and selected the administrator account, and hit **Next**
 - o. Clicked **Install**

- p. In the *setup.exe* for the SQL server, went to *Installation / Install SQL server management tools*
 - q. Ran the *SSMS-setup* executable, and selected **Install**
13. Went to *\\rtfm.cit.lcl* and mounted the SCCM media
- a. Ran the *splash.hta* file, and clicked *install*
 - b. Hit **Next**, chose to *Install a primary site in this instance*, and clicked **Next**
 - c. Chose to *install the evaluation edition of this product* > **Next**
 - d. Accepted this license agreement and clicked **Next**
 - e. Checked the **Pre-requisite licenses** and clicked **Next**
 - f. Selected **Download required files** and clicked **Next**
 - g. Set the language for the server to be English only and clicked **Next**
 - h. Selected English for the client language requirements and clicked **Next**
 - i. Entered the 3 digit site code as 123, specified the name as SCCM, and checked to **Install the configuration manager console**, and selected **Next**
 - j. Chose to **Install the primary site as a standalone-site** and clicked **Next** and clicked **Yes**
 - k. Accepted the default database configuration and clicked **Next**
 - l. Left settings as default and clicked **Next**
 - m. Selected **Next** and clicked **Configure the communication method on each site system role** and clicked **Next**
 - n. Checked both **Install a management post and install a distribution point**, and chose **Next**

- o. Chose not to join the customer experience improvement program and clicked **Next**
- p. Selected **Next** and clicked **Begin install**
- q. Clicked **Close** when completed, opened the *SCCM configuration management console* to confirm a complete installation

Results

At the conclusion of this project, DFS was successfully implemented across both domain controllers with DFS Replication and a namespace. A Windows Server 2012 image was used to create a VM template in order to make the creation of new servers in the domain a simple task. The template was then cloned twice to create a SCCM server and a WSUS server, both of which were implemented on the domain. VMware Thinapp was implemented to package and deploy Microsoft Visio 2007 to the physical machines. Powershell was also used to connect to a machine and remotely start, stop, and list various services.

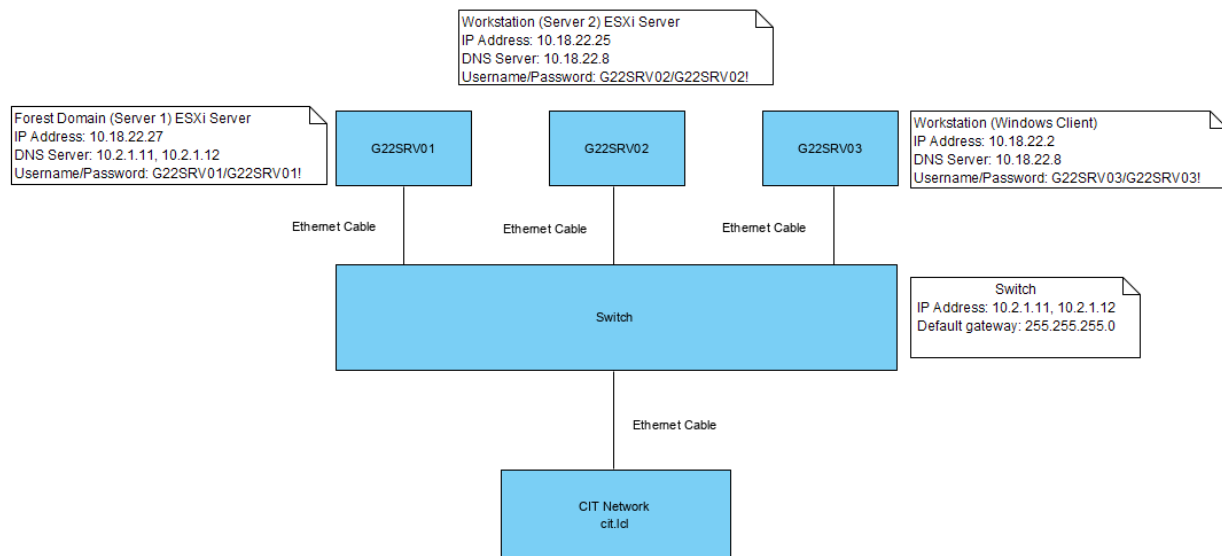


Figure 3: Physical Network Diagram

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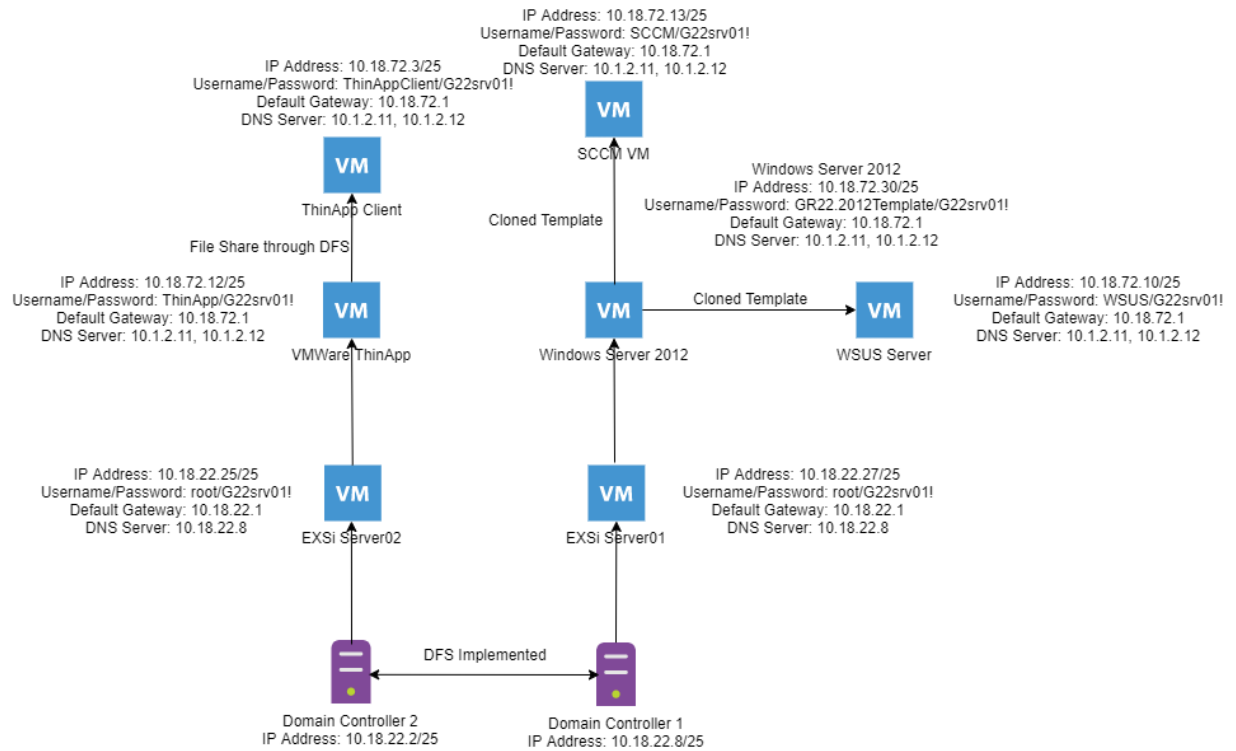


Figure 4: Logical Network Diagram

Conclusions and Recommendations

All the requirements and expectations were met by the based on what ServerTech had wanted to accomplish. ServerTech was able to successfully create a network architecture with DFS on two domain controllers, the ability to remote into another machine utilizing Windows PowerShell, WSUS and SCCM implemented in a Windows Server 2012 and configuring group policies for each VMs to apply automatic Windows updates and allow control of large computer groups in the network. The procedure section in this lab report lists all the steps until completing the expectations mentioned in the business scenario and the results section describes the outcomes made during this current lab.

Recommendations

Recommendation 1: Ensure the Administrator account is able to change the schema and to update group policy before starting the process of extending AD Schema, if the process is started before the Admin account has all the necessary permissions, the Schema Extension will fail.

Recommendation 2: Using the same universal password across the whole network prevents password complications and logon errors or permission errors when authenticating or accessing other machines. By doing this, there is only one single password to remember which eases the work when logging in.

Recommendation 3: To be aware of which IP addresses are used or not by recording the used IP addresses down is critical to this lab when configuring the network of newly created machines. If IP addresses are overlapped in the same network, it can create unknown internet connection issues and it brings confusion to the lab because it is unsure which IP is used or not.

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APPENDIX A: Problem Solving

Problem 1: Powershell Remoting

Problem Description: When attempting to remote into domain controller 1 (G22SRV01) from the other virtual machine (Win(10)A) resulted in error messages that was denying access to remote into the machine. The command used at this time was `Enter-PSRemoting -computername 10.18.22.31 -credentials Group22\Administrator`.

Potential Solutions: The computer being remoted into did not allow remoting, or did not allow a computer that was not a part of the same domain to have remoting privileges so this would require adding the other computer to the trusted hosts list. It's also possible that the input used in the command, the computer name or credentials, was not correct.

Solutions Attempted: A solution attempted was to ensure that the virtual machine being remoted into allowed and authorized the other VM and the given credentials. This was done by first entering the command `Enable-PSRemoting` then entering the command `Set-Item wsman:\localhost\client\trustedhosts *` but the result was not successful.

Final Solution: The solution attempted that was successful was to check if the syntax of the command was correct, which originally it was not. The correct command used was `Enter-PSSession -Computername G22SRV01 -credential group22.c24200.cit.lcl\Administrator`. This resolved the problem because it specified the full domain.

Problem 2: AD Schema Extending Failed

Problem Description: When attempting to extend the AD Schema, an error is given saying the logon doesn't have permission, despite going through the steps to ensure correct permissions were granted before attempting to extend the schema.

Potential Solutions: Make sure administrator account has adequate permissions to extend the schema, ensure correct version of SCCM is mounted, force a Group Policy Update.

Solutions Attempted: Checked AD Users and Groups to make sure Administrator account is a member of Domain Admins, Schema Admins, and Enterprise Admins. Used Schema Console to verify DC as a Schema Operations Master.

Final Solution: The issue was resolved by deleting the Systems Management container that was created before granting permission to the DC to extend the Schema. By recreating the folder with the privileges updated, the schema was able to be extended.

Problem 3: Incorrect Version of SCCM

Problem Description: a version of SCCM on the rtfm servers was mounted on to the forest domain which contained different file contents than the other versions on the rtfm server. This version of SCCM contained no x64 file, which meant no extadsch.exe to extend the AD Schema

Potential Solutions: incorrect version of the SCCM folder was transferred from rtfm server

Solutions Attempted: transfer another version of the SCCM folder from rtfm

Final Solution: Using an alternate version was able to resolve the issue.