CONESTOGA
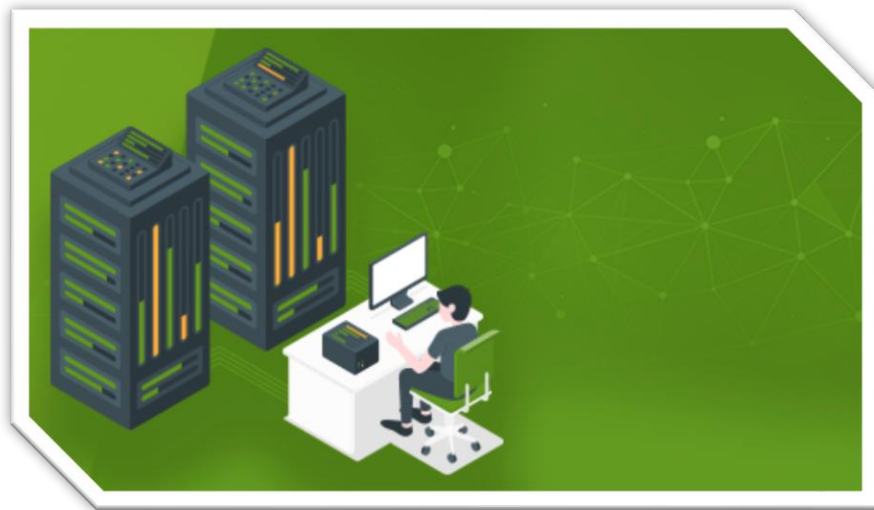Connect Life and Learning

Group 7: Project 1

Applied Networks Infrastructure and System Administration

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NTWK8041 – Section 3

Prof. Zazi Okoli

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Project Details

Project Name

SoftTech Solutions Acquisition Project

Due Dates

To ensure the successful and timely delivery of the Multi-Forest Environment Implementation project, the following milestones have been established within a 4-month timeframe.

Milestone	Due Date	Description
Project Kickoff	September 1, 2024	Initial meeting to discuss project scope and timeline.
Infrastructure Design Completion	September 15, 2024	Finalize the detailed design using Microsoft Visio.
Hardware Procurement	September 22, 2024	Purchase and receive all necessary hardware.
Software Licensing Acquisition	September 29, 2024	Obtain all required software licenses.
Initial Setup and Configuration	October 10, 2024	Setup and configure domain controllers and DNS servers.
Trust Relationships Configuration	October 24, 2024	Establish and test two-way trust relationships.
Group Policies Implementation	November 7, 2024	Design and apply necessary Group Policies.
Training Sessions	November 14, 2024	Conduct training for IT staff on the new environment.
Testing and Validation	November 21, 2024	Comprehensive testing of the multi-forest setup.
Project Completion and Review	November 30, 2024	Final review and project sign-off.

Project Lead Name

Christopher Genao (Softtech HQ)

Members

Harshul Shukla

Harveer Singh

Sandeep Kaur

Project Description and Benefits

Current Situation

The organization currently is composed of one single site / headquarter and they purchased 3 different companies that operate independently as separate domains that are not integrated, leading to challenges in resource sharing, authentication, and overall IT management.

Proposed Solution

Implement a multi-forest environment with a primary domain (cgenao.local) and additional forests (hsingh.local, hshukla.local, skaur.local) with two-way trust relationships between branch and the main headquarter.

Benefits

- Enhanced resource sharing and collaboration across domains.
- Centralized authentication and management for better security and efficiency.
- Improved scalability and flexibility for future growth.
- Increased operational efficiency by reducing redundancy and streamlining processes.

Project Objectives

The following objectives will outline some key goals that we settled for our Implementation project. This objective aims to achieve what could be the challenges that the organization might face and leverage the proposed solution to enhance the efficiency security and scalability.
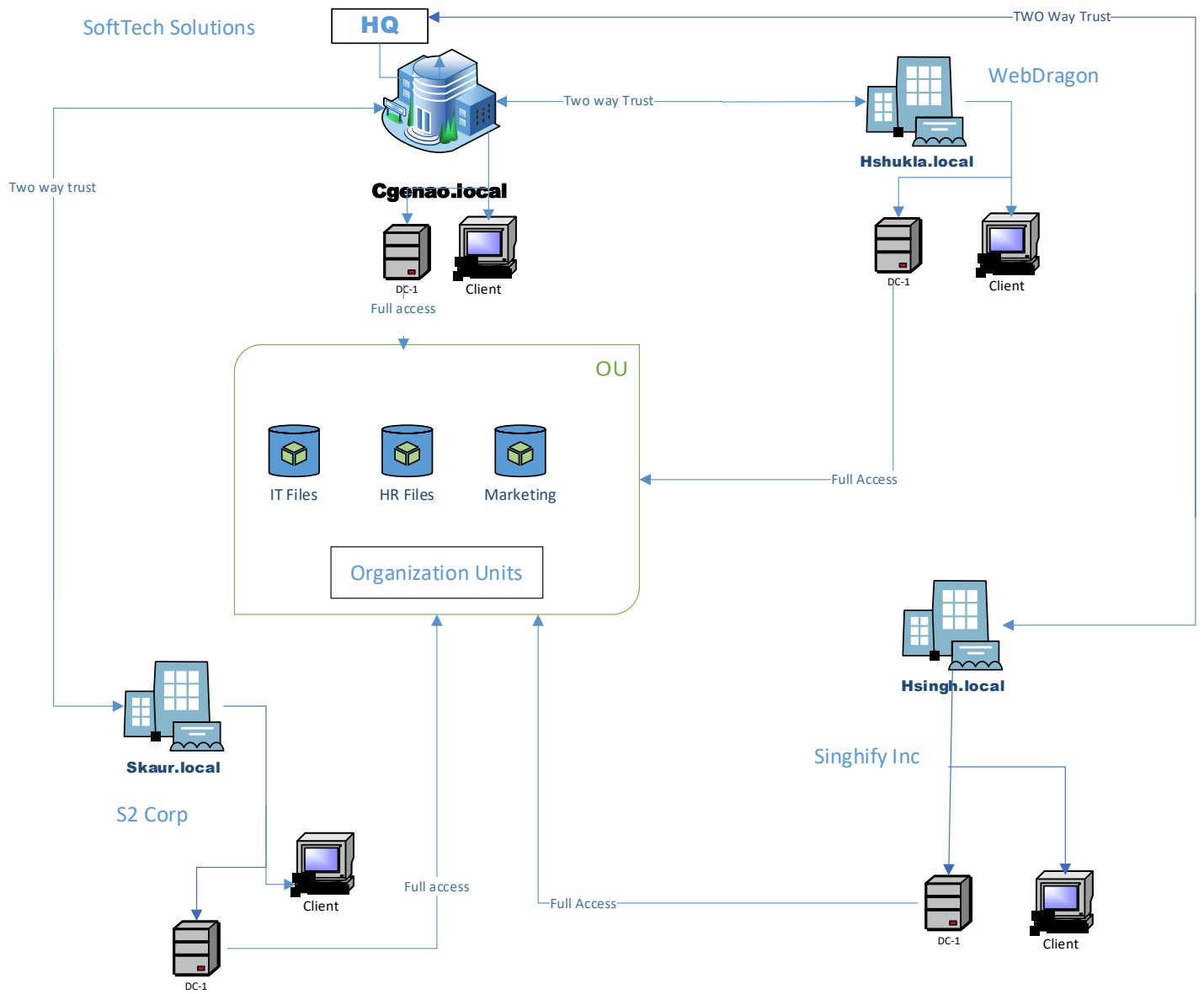
Objective	Task
Objective 1	Establish a robust and scalable DNS infrastructure to support the multi-forest environment.
Objective 2	Configure two-way trust relationships between cgenao.local and each of the additional forests.
Objective 3	Ensure secure and isolated trust relationships to maintain autonomy and security for each domain.
Objective 4	Define and delegate administrative roles and permissions for efficient management of resources across domains.
Objective 5	Implement best practices for DNS and domain management to ensure reliability and performance.
Objective 6	Implement and manage Group Policies to enforce security settings, software deployment, and configuration management across domains.

Project Cost

Outlines the estimated costs to successfully deliver the project on time and within budget. All costs are presented in Canadian Dollars (CAD). The estimates have in mind infrastructure design, hardware, software licensing, labor, and additional expenses necessary.

| Category	Item	Estimated Cost	Description
Infrastructure Design	Microsoft Visio License	$300	Software for detailed infrastructure design and visualization.
Hardware Costs	Domain Controllers	$8,000	4 high-performance servers @ $2,000 each.
	DNS Servers	$4,000	2 dedicated DNS servers @ $2,000 each.
	Network Equipment	$5,000	Switches, routers and other networking hardware
Software Licensing	Windows Server Licenses	$10,000	Licenses for 10 servers @ $1,000 each.
	DNS Software Licensing	$3,000	Licensing for DNS management software.
Resources / Labor	IT Staff	$30,000	Project planning, implementation, and testing (500 hours @ $60/hour).
	Consultants	$15,000	External consultancy services for specialized tasks.
	Training	$5,000	Training IT staff on managing multi-forest environments.
Additional Costs	Maintenance & Support Contracts	$7,000	Ongoing management and troubleshooting.
	Miscellaneous Expenses	$3,000	Unforeseen costs and contingencies.
Total Estimated Cost		$90,300	

Topology

SoftTech Solutions

HQ

TWO Way Trust

WebDragon

Two way Trust

Hshukla.local

Cgenao.local

Two way trust

DC-1 Client

DC-1 Client

Full access

OU

IT Files HR Files Marketing

Full Access

Organization Units

Hsingh.local

Singhify Inc

Skaur.local

S2 Corp

Client

Full access

Full Access

DC-1 Client

DC-1

Domain Name	IP ADDRESS
Cgenao.local	172.22.17.4
Hshukla.local	172.22.77.100
Skaur.local	172.22.63.10
Hsingh.local	172.22.82.4

Appendix

Before starting, we have 4 companies that are already stablished and that have their domain stablished, Active Directory populated, resources assigned, and their own group policies already configured.

Step One: Stablishing Communication
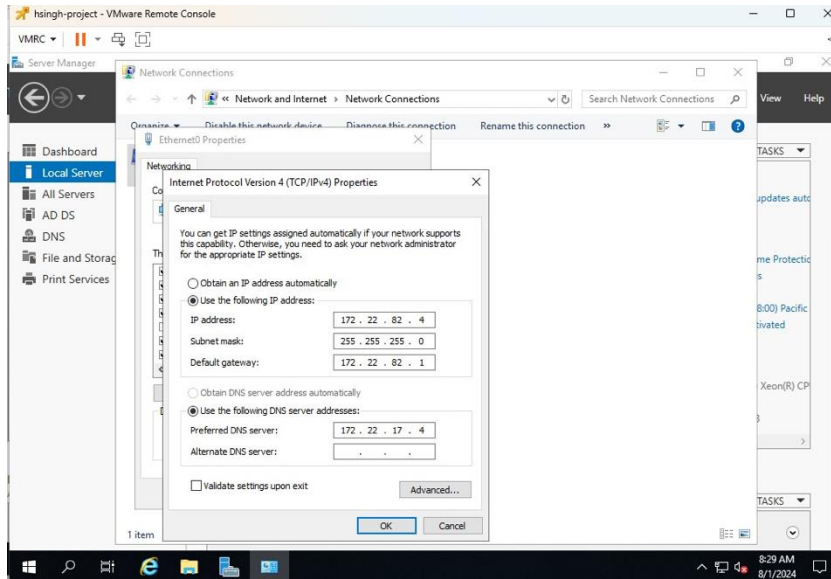
We need to stablish communication from all the Sites (hsingh.local, hshukla.local and skaur.local) to the Headquarter (cgenao.local) so that they talk to each other over the network.

To achieve this, we need to configure the IP Addressing on each of the Sites, what this means is that we need that our DNS Server (that can be our Domain Controller or an external DNS Server) to point to the Headquarter's DNS Sever.

A step-by-step guide:

1- In the **site** (hsingh.local, hshukla.local and skaur.local) go to the **Network and Settings.**

2- Click **Change Adapters Options.**

3- Right-click your **Main Network Adapter** and click on **Properties**

4- Double-click **Internet Protocol Version 4 (TCP/IPv4)**

5- Click **Use the following DNS server addresses**.

6- In the **Preferred DNS Server**, add the **ip address** of the **headquarter (cgenao.local)**

7- Make sure that **communication** is **stablished,** communicate to the other via **cmd (command prompt)** and **ping the ip address** of the **headquarter DNS Server.**

Step Two: DNS Records

As of right now, they can communicate to the **Headquarter's IP Address**, but we need to communicate to the domain, to achieve we need to be able to replicate the **DNS Records** from each site to the headquarter and vice versa. We can do this with the **DNS Forwarders,** to setup those we need to go into all the **DNS Servers** (including the HQ) and configure it.

A step-by-step guide:

1- In all sites go to **Server Manager.**

2- Click on **tools** (top-right corner), click on **DNS.**

3- Expand the option **Forward Lookup Zone.**

4- Expand the **domain name** option.

5- Right-click on the **expanded domain name** and select **properties**.

6- On the new window, click **Zone Transfers** and **allow transferring to the ip addresses** of the Sites (if in the sites, allow to transfer to the HQ).

7- Right-click on **Forward Lookup Zone** and click **New Zone.**

8- Select **Secondary Zone** enter the **zone name (domain name)** and then add the **IP Address** of the **Site/HQ.**

Step Three: Stablishing Trust
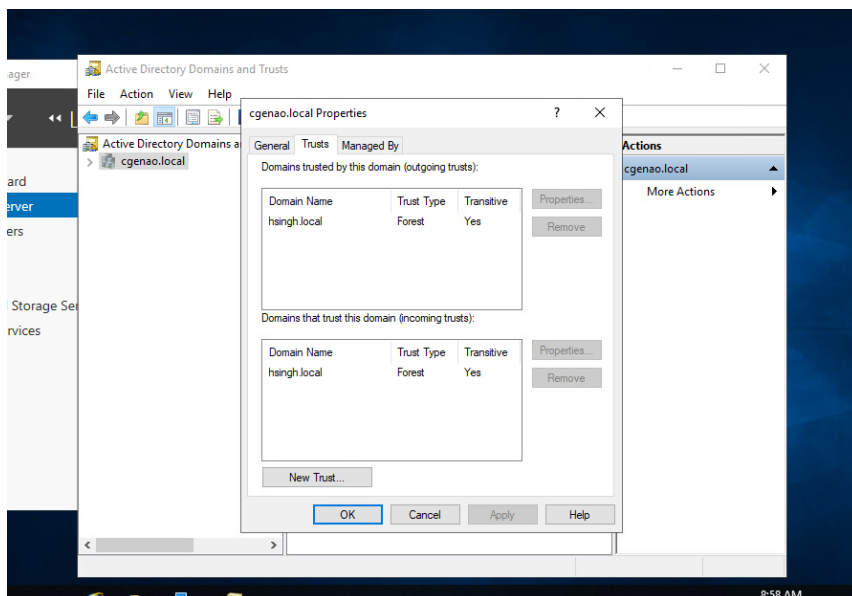
Right now, our servers can communicate between each other by IP Address but also by the DNS, but if need to get any information from another server I will not be able, because they can see each other but they don't **trust** each other, to fix that we need to stablish trust between our Domains. This can be done on all the computers or in the HQ.

A step-by-step guide:

1- In all sites go to **Server Manager.**

2- Click on **tools** (top-right corner), click on **Active Directory Domains and Trusts.**

3- In the MMC**,** we will be able to see the **domain name, right-click** it and hit **Properties.**

4- There is a **Trust tab**, click on it.

5- Here you will see the list of **the domains you trust** and the **domain that trust you.**

6- Let's create a **New Trust** (repeat this for all the sites).

7- In the first text box, we need to add the **Domain Name** that we are going to trust.

8- **Next,** we pick **Forest Trust** (for domain trust).

9- Next, we pick **Two-way Trust** (we want them to trust them, and they trust us).

10- In this next step is that we will stablish the trust in our domain, and the site domain (that way we don't have to configure on both).

11- We now use **a Username and Password** from the other domain.

12- Select **Forest-wide authentication.**

13- Click **yes** on **configure incoming**, and **yes** on **configure outgoing**.

Step Four: Domain Delegation

Next step is to delegate all the domain's Active Directory permissions to the HQ domain Admin Group, that way the HQ can create/remove and administer the Domain and their resources.

A step-by-step guide:

1- In all sites go to **Server Manager.**

2- Click on **tools** (top-right corner), click on **Active Directory Users and Computers.**

3- Right-click the **domain name** and click **delegate control.**

4- In the **select users and groups,** you must add the **group/user** that you want to delegate control to**,** here we can use the **Domain Admins.**

5- In the **task list,** we will **check all of them.**

6- Click **finish.**

7- Repeat this with all sites.

Step Five: Resources Sharing

The purpose of this project is to complete the merge of users, resources all into one big domain, and as we do that, we need to start sharing the resources so other sites can see and use our resources, to do that we need to first start setting printers.

1- For sharing the folder on different machine, we must have **FSS role** which is already installed on the system.

2- Go to **FSS i**n the **SMD** and select **shares** and **click task** to make **new share**.

3- Select the **type of share** and **destination of machine** where the share is made.

4- Keep the **name** for the **share** and **assign sharing permission**.

5- Once the share is **created deploy** it with **Group Policy Management**.

6- Go to the **Group Policy Management** from the **Server Manager Dashboard**.

7- Make and new **Group policy object** so we can **link** that directly to **domain** or to OU.

8- Click on the **domain** and right click on the **Group Policy object** to select **new policy option**.

9- Go to the **User Configuration** and select **User** -> **Policy** -> **Drive Maps**

10-In the Drive Map tab Right-click and **map a new network drive**.

11-Check the **location** and enter the **path** in the **network map tab**.

12-Select the **letter** and **label** for **allocating** through **GPO**.

13-Make sure to select **create action from** the **top of the tab**.

Just like the driving map we must map printers to share over the network, since those printers are already installed in the server, we will omit those steps and just stick to the configuration for sharing.

1- Go to **manage** then **printer properties** and in the **sharing attribute,** click the **option** for **sharing** into the **directory list.**

2- As the **printer** is **being shared**, go to **Print Management role** and in all printers **right click** on **the new added printer** to deploy.

3- Select the option **deploy the printer by GPO**.

4- Make a **new GPO** for the **printer mapping**.

5- Select the **GPO** in the **print management** and choose it for deploy **for user or machine.**

6- The printer should be visible by the other **team members** from the file explorer network.

Step Six: Group Policy

Group Policy are a specific rule that will be enforced in a computer or a user in your organization to follow a specific pattern, to allow or block a specific action within your environment.

As we are going to configure our Topology Headquarter should be the one deploying these policies to the other sites, and in other to do that, all the Sites' domain Admins need to provide delegation to our Headquarter for them to create or modify any policy that they already have installed. In our case we need to stablish 3 policies, in specific, but we will concentrate to stablish only one.

A step-by-step guide:

1- In the other sites go to **Server Message Dashboard**, go to **Group Policies Management.**

2- In your forest**,** expand it**,** expand **Domains,** expand your **domain.**

3- Click on **the domain name** and click the **Delegation tab,** and here click **Add…**

4- Change to the **domain** that you are trying to ad and add the **group/user** that you want to **delegate control** to.

5- After you have added the user, it will ask you the **permissions**, select **Container and all child members**.

6- After adding, select the **user/group** and click **advanced**.

7- In the **security tab**, select the **user/group** and select **advanced** once again.

8- Look at the **user/group** if it's **added**, if not **add** it.

9- After the **user/group** has been added, edit the **permissions** and set **Full control**.

10- After you **save all these configurations**, the **Domain Admins** from the **HQ** will be able to **manage the Site's GPO**.

11- Configure the **required GPOs** : Home Page , Lan Properties

12- Test them.