



information technology institute  
Cloud Architecture

# Windows Server Project

## Team members

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## Supervised BY

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## Project Description

This project focuses on building and managing a Windows Server-based network infrastructure with multiple domain controllers, child domains, group policies, DNS zones, web servers, and automated application deployments. The setup involves virtualization, networking, and role-specific configurations across several devices, simulating a real-world enterprise environment.

### Key Components and Setup:

#### 1. Network Infrastructure:

- Created a custom network with six physical devices and virtual machines connected via bridge networking.
- Implemented switches and a hotspot for seamless connectivity.
- Configured a **DHCP server** to dynamically assign IP addresses and manage network settings efficiently.

#### 2. Domain Controllers (DCs):

- **DC1:** Primary Domain Controller (iti.local) hosting DNS, Active Directory, and DHCP services.
- **DC2:** Child Domain Controller (alex.iti.local) linked to the parent domain, facilitating domain hierarchy.
- **DC3:** Read-Only Domain Controller (RODC) for iti.local with restricted user access, ensuring enhanced security in specific scenarios.
- **Additional Domain Controller** configured for iti.local to bolster security and redundancy.

### 3. Users and Permissions:

- Defined domain-specific users (e.g., user1, user2, user3) with permissions tailored to tasks like logging into specific machines or remotely accessing the domain controllers.
- Enforced access policies without granting administrative privileges, ensuring a principle of least privilege.

### 4. Group Policies:

- Configured policies for user management, including:
  - Automatic application deployment (e.g., installing 7zip.msi on login for specific users).
  - Custom wallpapers and password policies.
  - Remote access permissions for designated users.

### 5. Web Servers:

- Set up two web servers:
  - **Web1:** Hosted using HTTP with real templates, accessible as <http://web1.com>.
  - **Web2:** Secured with HTTPS and real templates, accessible as <https://web2.com>.

### 6. DNS Zones:

- Configured a secondary DNS zone for redundancy, ensuring smooth domain resolution.

## **7. Automation and User-Specific Configurations:**

- Developed scripts and policies to automate software installations, remote desktop access, and user-specific configurations.
- Enabled **user7** to access DC1 remotely using group policies without administrative rights.

## **Practical Applications:**

- Designed a fully functional infrastructure simulating real-world enterprise scenarios.
- Leveraged bridge networking, virtualization, and DHCP for a flexible, scalable environment.
- Demonstrated proficiency in managing Windows Server roles, domain hierarchies, and group policies while emphasizing automation, security, and user-specific configurations tailored to organizational needs.

This project showcases the team's expertise in planning, implementing, and managing a robust Windows Server environment, focusing on automation, security, and efficient resource management.

Child DC - VMware Workstation

File Edit View VM Tabs Help

Library

Type here to sea...

Child DC x SC DNS x PC2 x PC3 x

Server Manager

My Computer

- vm1
- vm2
- vm3
- Child DC
- SC DNS
- PC2
- PC3

Server Manager > Local Server

Dashboard

Local Server

All Servers

AD DS

DNS

File and Storage Services >

PROPERTIES

For child

Computer name	child	Last installed updates	Never
Domain	alex.it.local	Windows Update	Download updates only, using Windows Update
		Last checked for updates	Never
Microsoft Defender Firewall	Domain: Off	Microsoft Defender Antivirus	Real-Time Protection: On
Remote management	Enabled	Feedback & Diagnostics	Settings
Remote Desktop	Disabled	IE Enhanced Security Configuration	On
NIC Teaming	Disabled	Time zone	(UTC+02:00) Cairo
Ethernet0	10.10.10.3	Product ID	00455-50000-00001-AA804 (activated)
Operating system version	Microsoft Windows Server 2022 Datacenter Evaluation	Processors	Intel(R) Core(TM) i7-8550U CPU @ 1.80GHz, Intel(R) Core(TM) i7-8550U CPU
Hardware information	VMware, Inc. VMware20,1	Installed memory (RAM)	2 GB
		Total disk space	29.37 GB

EVENTS

All events | 82 total

Filter

Server Name	ID	Severity	Source	Log	Date and Time
CHILD	14550	Error	Microsoft Windows Defender Security Center		12/5/2024 4:21:50 PM

Type here to search

To direct input to this VM, click inside or press Ctrl+G.

Search

5:00 PM 12/5/2024

Child DC - VMware Workstation

File Edit View VM Tabs Help

Library

Type here to sea...

Child DC x SC DNS x PC2 x PC3 x

DNS Manager

My Computer

- vm1
- vm2
- vm3
- Child DC
- SC DNS
- PC2
- PC3

DNS

- CHILD
  - Forward Lookup Zones
    - \_msdcs.alex.it.local
    - alex.it.local
    - web2.com
  - Reverse Lookup Zones
  - Trust Points
  - Conditional Forwarders

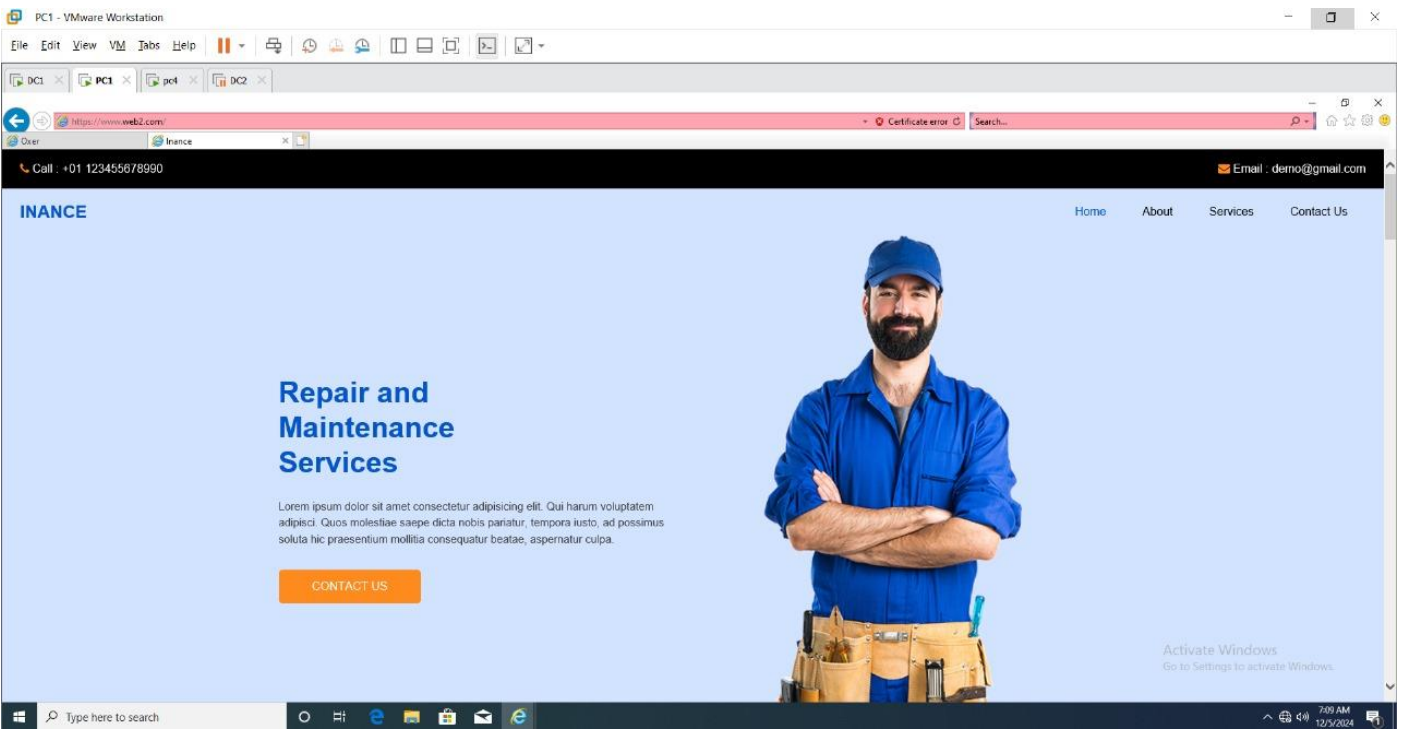
Name	Type	Data	Timestamp
(same as parent folder)	Start of Authority (SOA)	[2].dc.alex.it.local, hostmaster...	static
(same as parent folder)	Name Server (NS)	dc.alex.it.local	static
www	Host (A)	10.10.10.100	static

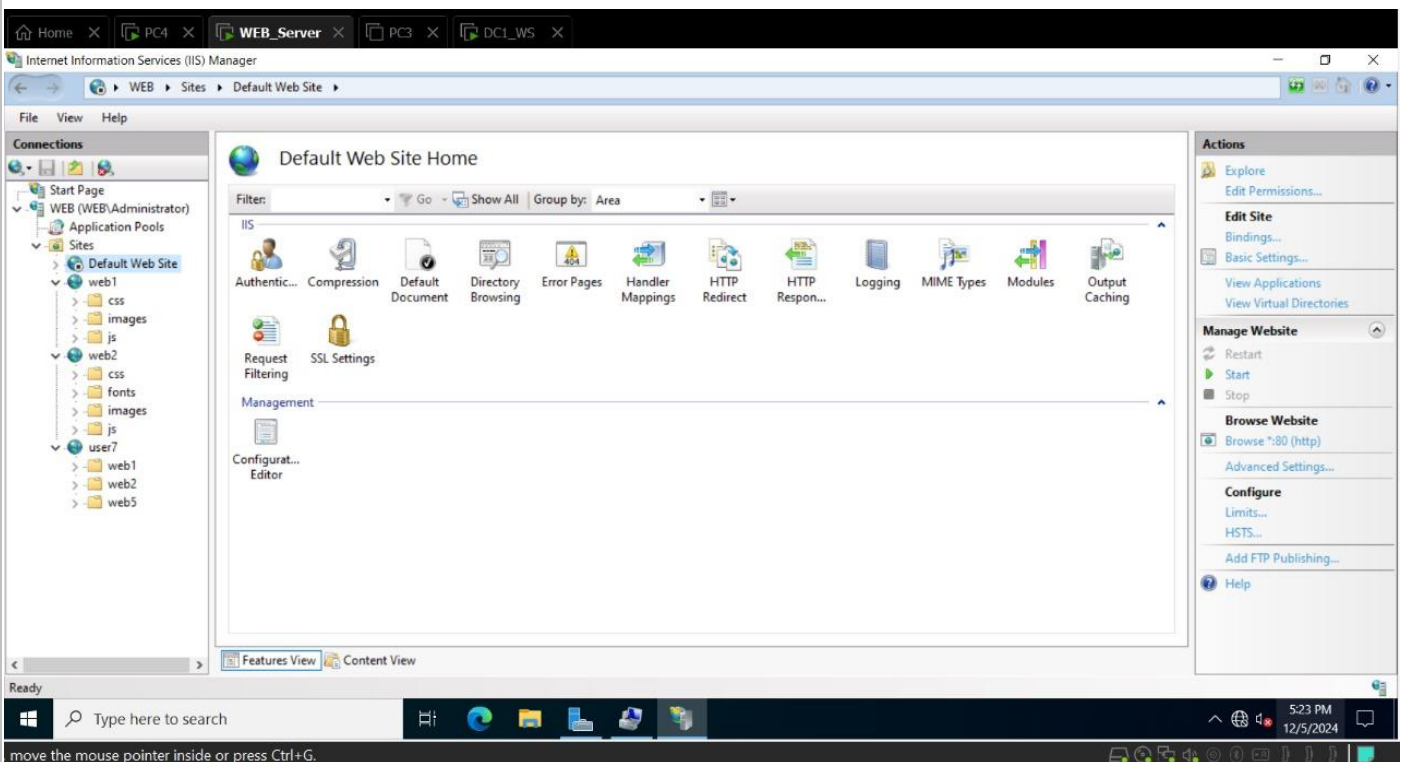
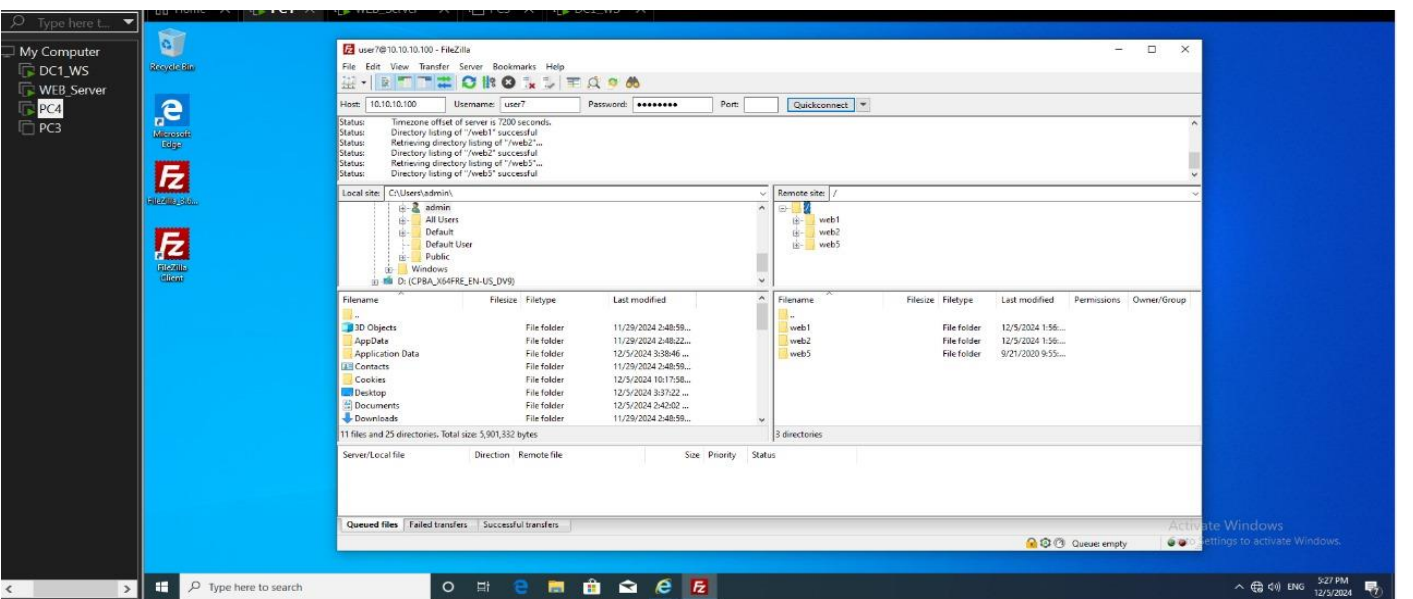
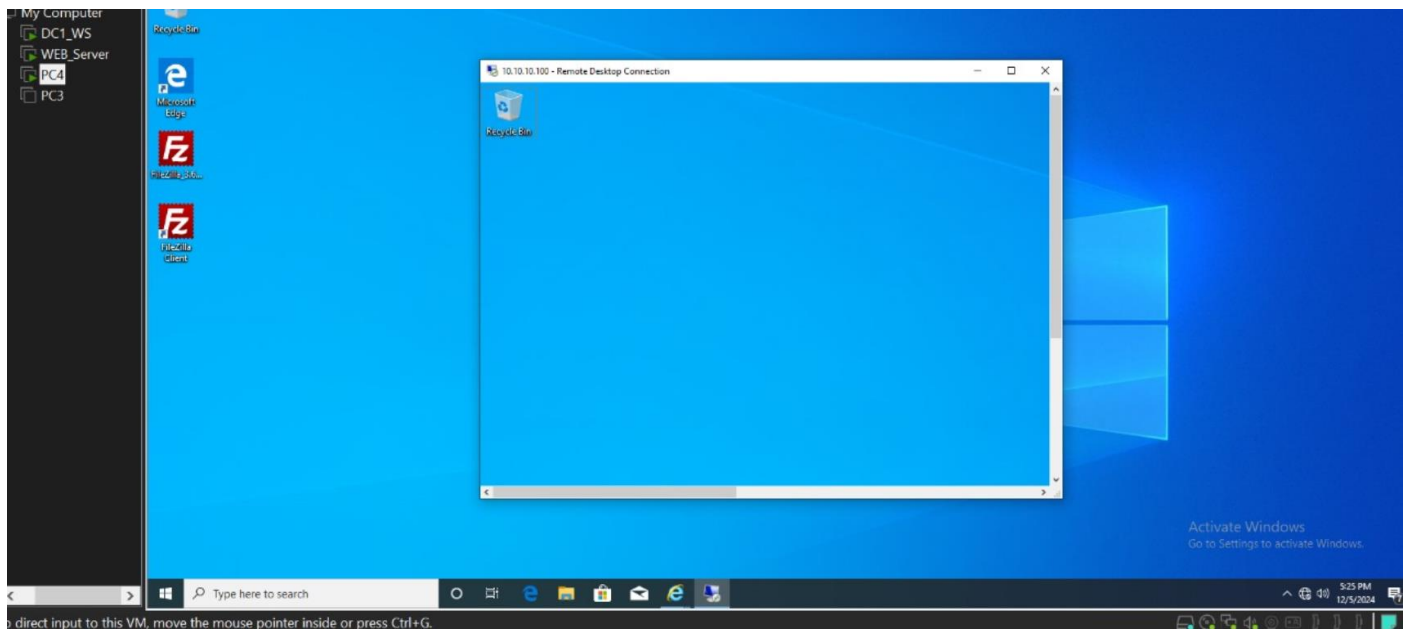
Type here to search

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Search

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DNS - VMware Workstation

File Edit View VM Tabs Help

Library

Type here to search

My Computer

- RHEL8
- RODC
- DNS
- PC3

Server Manager

Server Manager Local Server

Dashboard

- Local Server
- All Servers
- DNS
- File and Storage Services

PROPERTIES For DNS

DNS Manager

Computer name: File Action View Help

Workgroup:

Microsoft Defender Remote manager Remote Desktop NIC Teaming Ethernet0

Operating system Hardware information

EVENTS All events | 94 total

Filter

Server Name

Name	Type	Data	Timestamp
(same as parent folder)	Start of Authority (SOA)	[2] dcit.local, hostmaster.l...	static
(same as parent folder)	Name Server (NS)	dcit.local.	static
www	Host (A)	10.10.10.100	static

Windows Update

2.20GHz, Intel(R) Core

5:51 PM 12/5/2024

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RODC - VMware Workstation

File Edit View VM Tabs Help

Library

Type here to search

My Computer

- RHEL8
- RODC
- DNS
- PC3

Server Manager

Server Manager Dashboard

Dashboard

Active Directory Users and Computers

START

Windows Server

- Server Manager
- Windows PowerShell
- Windows PowerShell ISE
- Windows Administrative Tools
- Task Manager
- Control Panel
- Remote Desktop...
- Event Viewer
- File Explorer

Change account settings

Lock

Sign out

user8

Documents

Pictures

Settings

Power

Type here to search

server 1

ability

Services

Performance BPA results

12/5/2024 4:50 PM

All Servers 1

Manageability

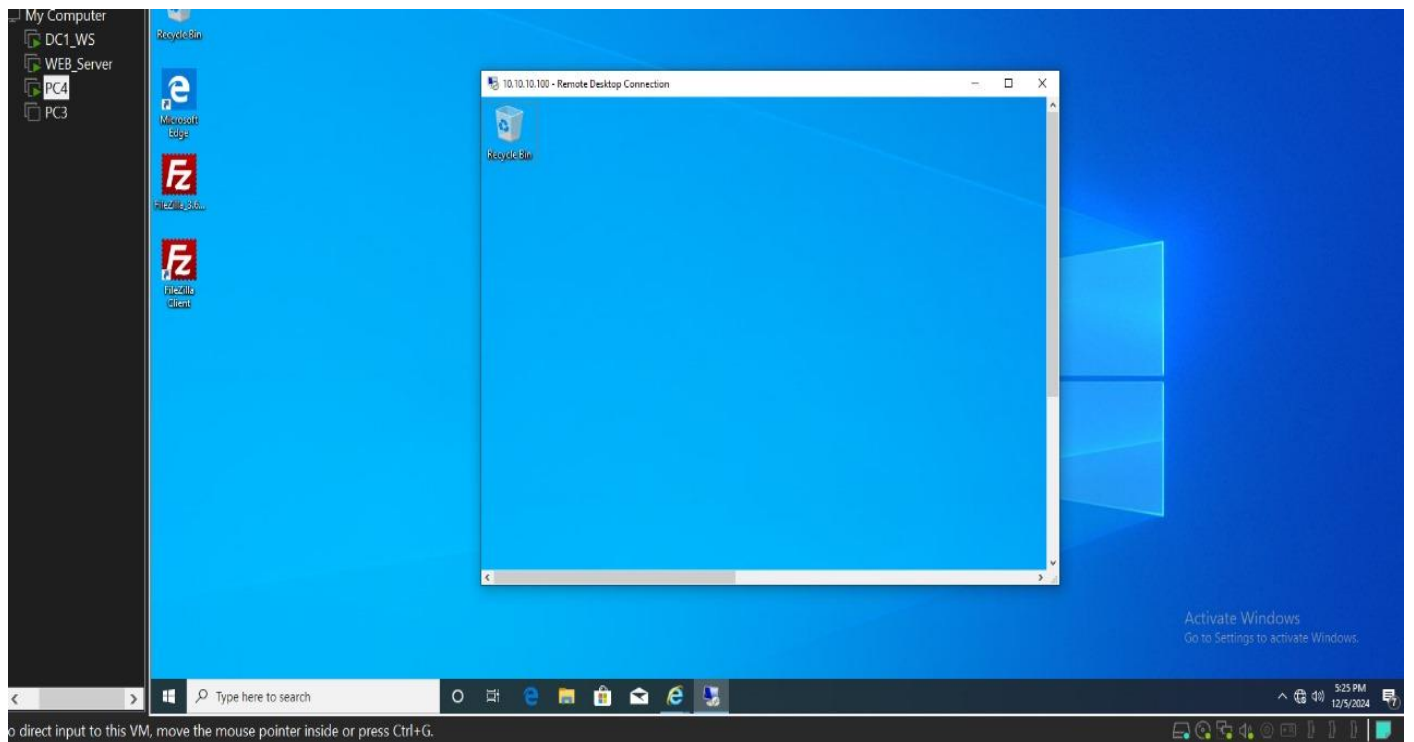
- Events
- Services
- Performance BPA results

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