WorldSkills Germany Test Project

IT Network Systems Administration (39)
Module B – Windows Environment

Submitted by:

Steffen Weißmann (Computacenter AG & Co. oHG)
Pascal Böhler (Computacenter AG & Co. oHG)

Introduction to Test Project

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This Test Project proposal consists of the following documentations/files:

1. WSG2025_TP_39_Module_B.docx

Introduction

You are a system engineer hired by Weilburg Power Corporation to setup their newly opened office in Weilburg and to make sure that the legacy connection to the old Rathaus Network is still functioning as expected. Being a company relevant for Germany KRITIS sector, the entire infrastructure must be run on premises and is not connected to the internet. It is your responsibility to configure and setup the following project to ensure smooth operations of the Weilburg Power Corporations network and Windows Environment.

Description of project and tasks

This project is designed to include tasks that are common in Windows Environments including the following:

- Basic configuration
- Active Directory Services
- Domain Name Services
- DHCP
- File Services
- Web Services

Some tasks are pretty simple and straight, some may be tricky. You may see that some technologies are expected to work on top of other technologies. It is important to understand that if you cannot come up with any solution in the middle of such technology stack it doesn't mean that the rest of your work will not be graded at all.

Instructions to the Competitor

- Read all tasks in each section before proceeding with any configuration. The completion of any item may require the completion of any previous or later item.
- Before starting the test project, confirm that all devices in your topology are in working order. During the test project, if any device is locked or inaccessible for any reason, you must recover it. When you complete this test project, ensure that all devices are accessible to the grading Experts. A device that is not accessible for grading cannot be marked and may cause you to lose substantial points.
- Knowledge of implementation and troubleshooting techniques is part of the skills being tested in the configuration section of the Test Project.
- Points are awarded for working configurations only. Test the functionality of all the requirements before you complete this test project. As you configure one part, you may break a previous requirement or configuration.
- Save your configurations frequently.

- Use alpha-numeric characters only in any variable name (access-list, prefix-list, route-map, etc); that is, do not use any punctuation or special characters (.,;:'/|\?!_-(){}*&^%$#@).
- Whenever you are required to configure a password, use password Skill39@Weilburg if otherwise is not stated.
- All virtual machines are pre-installed. Use Administrator\Skill39LF credentials to access windows virtual machines and root\ Skill39LF to access linux virtual machines.
- The Test project did not need a default gateway. If any step can only done if a default gateway is set use the first host address in the subnet.
- You have **3 hours** to complete the test project.

Equipment, machinery, installations and materials required

- The Proxmox VE Hypervisor System has been preconfigured. You should not modify the configuration as it may interfere with the implementation of the project.
- All virtual machines have been created and some software has been installed and configured. You can accept that configuration or change it as you see fit.
- It is possible, although it was not intentional, that you will find something misconfigured, either in the virtual machines, the Proxmox VE infrastructure, or in both. If you do find something misconfigured, it is up to you to correct it.
- All stations are identical and therefore the playing field is equal to everyone.

Test Project

Basic Configuration

Check the configuration of all clients on the network and configure the following where necessary:

- Configure all IP addresses as listed in Table 1
- Set the DNS Server to the corresponding DNS Server for the Domain
- Join DC2, FSRV, WEBSRV and both clients to the weilburg-power.local domain
- On all systems, set the time zone to Berlin time and the keyboard layout to German (QWERTZ)
- Enable SSH on all Windows Server Systems

Active Directory Domain weilburg-power.local

Adapt the already preconfigured domain **weilburg-power.local** and add the following items to the domain:

1. Add DC2 to the **weilburg-power.local** Domain as a secondary Domain Controller with the following requirements
    a. The DC should run without a global catalog
    b. The DC should not be read only
2. Add the following OUs:
    a. 00 Mitarbeiter Intern
        i. IT
        ii. Management
        iii. Sales
        iv. Verkauf
    b. 01 Mitarbeiter Extern
        i. Techniker
        ii. Freelancer
        iii. Baugewerbe
    c. 02 Computer
        i. Desktops
        ii. Servers
        iii. Domain Controllers
3. Move all the clients and servers to their corresponding OU under **02 Computer**. There should not be any system left in the default **Computers** OU
4. Add the users and groups as described in **Table 2 (Users and Groups)** to the domain
    a. Set the password to **Skill39LF**
    b. The username should follow the following schema: First 4 letters of the last name extended with the first to letters of the first name (e.g. **muelsi**).

DNS Server weilburg-power.local

To ensure proper name resolution and domain functionality inside the Weilburg Power company network, setup the DNS Server function on DC1 & DC2 to support the following functions:

- All devices inside the network should have their corresponding A records setup on the DNS server
- Configure the necessary reverse lookup zones to enable IPv4 reverse lookup for the network
- Configure the forwarder to forward all unknown DNS Queries to Googles DNS Server (8.8.8.8)
- Add the necessary **CNAME** records required for the completion of the task

Active Directory Domain Trust rathaus.org

Configure a trust between the weilburg-power.local domain and the rathaus.org domain. Ensure that the following requirements are met:

- All users of the rathaus.org domain should be able to login to weilburg-power.local devices
- No user of the weilburg-power.local domain should be able to login to the rathaus.org systems
- Use the default password of this task for the trust password

GPO

Create five GPOs with the names GPO-1, GPO-2, GPO-3, GPO-4 and GPO-5 with the following settings. If other tasks needed GPOs, continue the name scheme.

- GPO-1: No user should have a recycle bin on the desktop
- GPO-2: Remove the “Task Manager” Entry from the “Ctrl-Alt-Del” Menu for Marketing Users
- GPO-3: For Employees of the IT Department, Microsoft Edge should automatically open on logon
- GPO-4: The Windows Defender Firewall should be in state off for domain networks and on for other networks
- GPO-5: The Server Manager should not automatically start on logon on server systems

DHCP

Install a redundant DHCP server solution on DC1 and DC2.

- The scope, named “Weilburg Power Clients”, should have an Address Pool of 50 IPs, starting at 172.16.0.50 and the following details
    - Netmask: 255.255.255.0
    - Router: 172.16.0.1
    - DNS Server: DC1, DC2
    - Lease Time: 1 Day
- The failover should be configured in “Load Balance” Mode without Authentication for the messages
- The DHCP services should be authorized

File Server

FSRV should provide all file services for users and systems in the weilburg-power.local domain. The server is equipped with 6 drives. The first drive (32 GB) is already used for the OS.

- Create a 4 Gigabyte RAID5 Volume with the name “FSRV-DATA” and mount it as Drive Z. Use NTFS as Filesystem
- Create a folder and share named “employees” on Z:.
    - Mount the share to H: for all domain users in weilburg-power.local, using GPO.
    - It is not allowed to store executables on this share.
    - The employees share should have a 100 MB limit.

        - If 85% and 100% of this limit is reached, there should be a log entry. Do not send mails when reaching a limit

- Create a folder and share named “IT” on Z:.
    - Mount the share to I: for all IT employees in weilburg-power.local, using GPO.
    - The IT users are allowed to store all file types but should only use 2 gigabytes of the storage. There should be an option to store more than 2 gigabytes if needed, but the explorer must show the share as full
    - The share only shown to IT employees.
- Create a folder and share named “marketing” on Z:.
    - Mount the share to M: for all IT and marketing employees in weilburg-power.local, using GPO.
    - Only .MP4 and .JPG are allowed on this share.
    - The marketing share should have a 100 MB limit.
        - If 95% and 100% of this limit is reached, there should be a log entry. Do not send mails when reaching a limit.

Webserver

WEBSRV should hosts multiple websites for Weilburg Power. Because the certification services are not part of your project there is no need to show the access to the website as “secure” in the browser. But the webserver will only support an encrypted access method, even the protocol is not specified by the user.

- The IIS should be management from the FSRV. FSRV (and all other systems) should not have a Webserver installed.
- The webserver should be accessible by intranet.weilburg-power.local and www.weilburg-power.local.
    - Show an individual created page with the information “Unknown hostname on Weilburg Power Webserver” if any other name is used to access the webserver.
- The intranet page should show only the text “Weilburg Power Intranet”.
- Use the index.html file on C:\temp\extranet as extranet/www page.

Appendix

Table 1: IP Addresses & Hostnames

Hostname	IP Address	Operating System	Services
DC1	172.16.0.10/24	Windows Server 2025 GUI	ADDS, DNS, GPO, DHCP
DC2	172.16.0.11/24	Windows Server 2025 GUI	ADDS, DNS, GPO, DHCP
FSRV	172.16.0.12/24	Windows Server 2025 GUI	File Server
WEBSRV	172.16.0.13/24	Windows Server 2025 CORE	IIS
WINCLT	DHCP	Windows 11 Enterprise	Domain Member
LINCLT	DHCP	Debian 12 Gnome	Domain Member
DCX	172.16.0.222/24	Windows Server 2025 GUI	Preconfigured (ADDS for rathaus.org)

Table 2: Active Directory Users & Groups

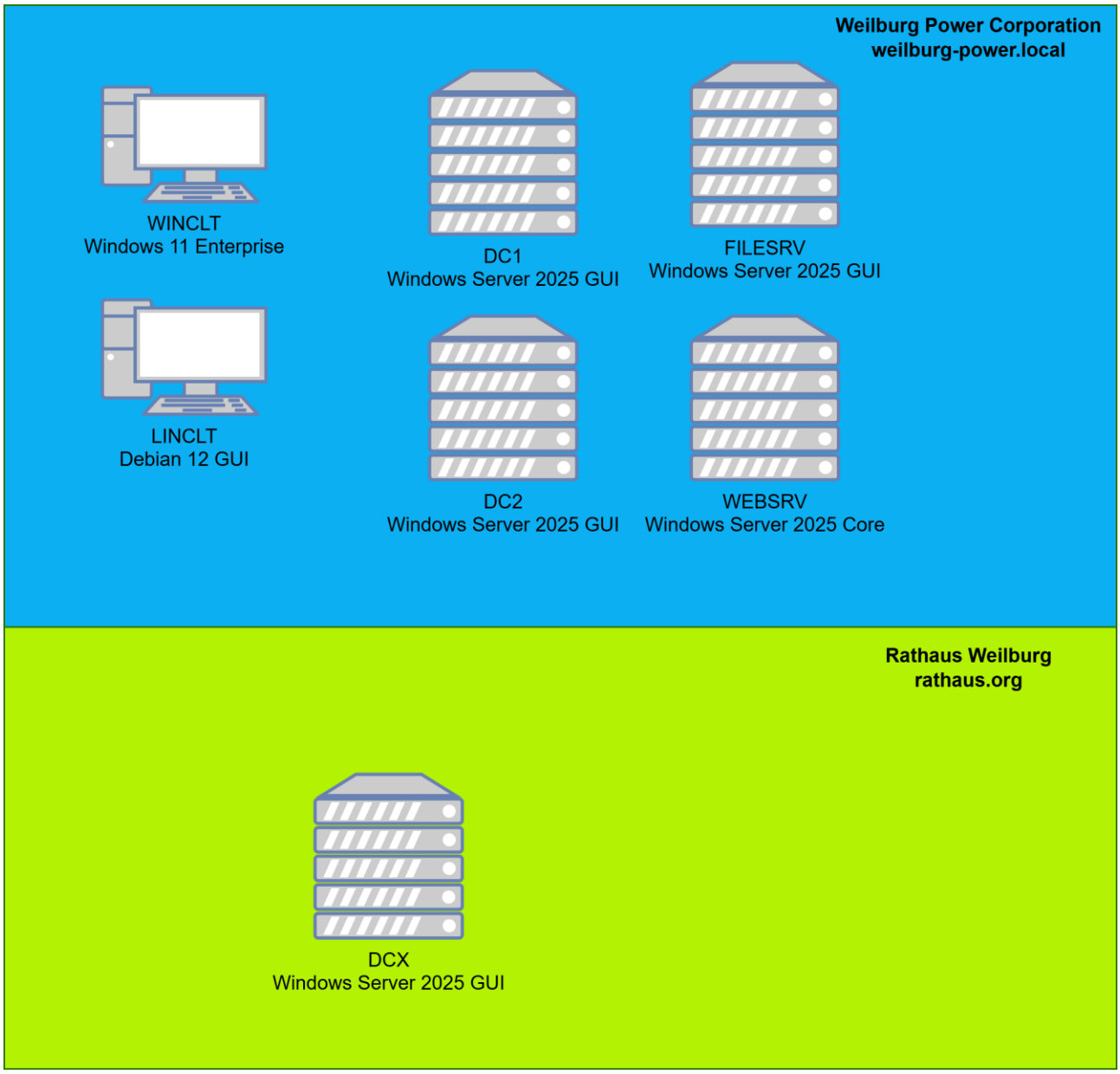
Users:

Organizational Unit	Group membership	First name	Last name
IT	GG-IT, GG-LocalAdmin	Heins	Geiger
IT	GG-IT	Ina	Mueller
Sales	GG-Sales	Erna	Dieter
Marketing	GG-Marketing	Hildegard	Bauer
Management	GG-Management	Dieter	Juergens
Techniker	GG-Techniker, GG-OnSite	Emilio	Tertino
Freelancer	GG-External, GG-Marketing	Sara	Westernhagen
Freelancer	GG-External, GG-Sales	Bertram	Niemand
Baugewerbe	GG-Bau, GG-OnSite	Bob	Baumeister

Groups:

Organizational Unit	Group Name	Group Scope	Group Type
IT	GG-IT	Global	Security
IT	GG-LocalAdmin	Global	Security
Sales	GG-Sales	Global	Security
Marketing	GG-Marketing	Global	Security
Management	GG-Management	Global	Security
Techniker	GG-Techniker	Global	Security
Techniker	GG-OnSite	Global	Security
Freelancer	GG-External	Global	Security
Baugewerbe	GG-Bau	Global	Security
Server	DIST-Mail	Domain Local	Distribution

Topology


Weilburg Power Corporation
weilburg-power.local
WINCLT
Windows 11 Enterprise
DC1
Windows Server 2025 GUI
FILESRV
Windows Server 2025 GUI
LINCLT
Debian 12 GUI
DC2
Windows Server 2025 GUI
WEBSRV
Windows Server 2025 Core
Rathaus Weilburg
rathaus.org
DCX
Windows Server 2025 GUI