WorldSkills 2026 – IT Network Systems Administration

National Semi-final

Module B

22nd March 2025

Huānyíng!

We are delighted to have you here! We are a small company based in China called JadeNet Inc. We have a few offices all around China and now, we require your help in expanding!

Your task today will be to configure our server infrastructure in Shanghai! We have already laid down the foundations, installed the servers and made the necessary connections but we haven't configured them.

All necessary information abour our infrastructure, as well as some good advice are listed below!

We wish you have a productive day here!

Information about the infrastructure

Here are the IP addresses of the servers:

Name	IP	OS	Pre-installed packages
SHA-DC-1	192.168.26.11	Windows Server 2022 (Datacenter)	Active Directory Domain Services
SHA-ROOT-1	192.168.26.12	Windows Server 2022 (Datacenter)	Active Directory Certificate Service
SHA-SRV-1	192.168.26.21	Debian 12.10	isc-dhcp-server, bind9, nftables
SHA-SRV-2	192.168.26.22	Debian 12.10	apache2, nftables
SHA-CLT-1	DHCP	Windows 10	Mozilla Firefox, WinSCP, PuTTY

Below is the topology for today:

Shanghai: 192.168.26.0/24
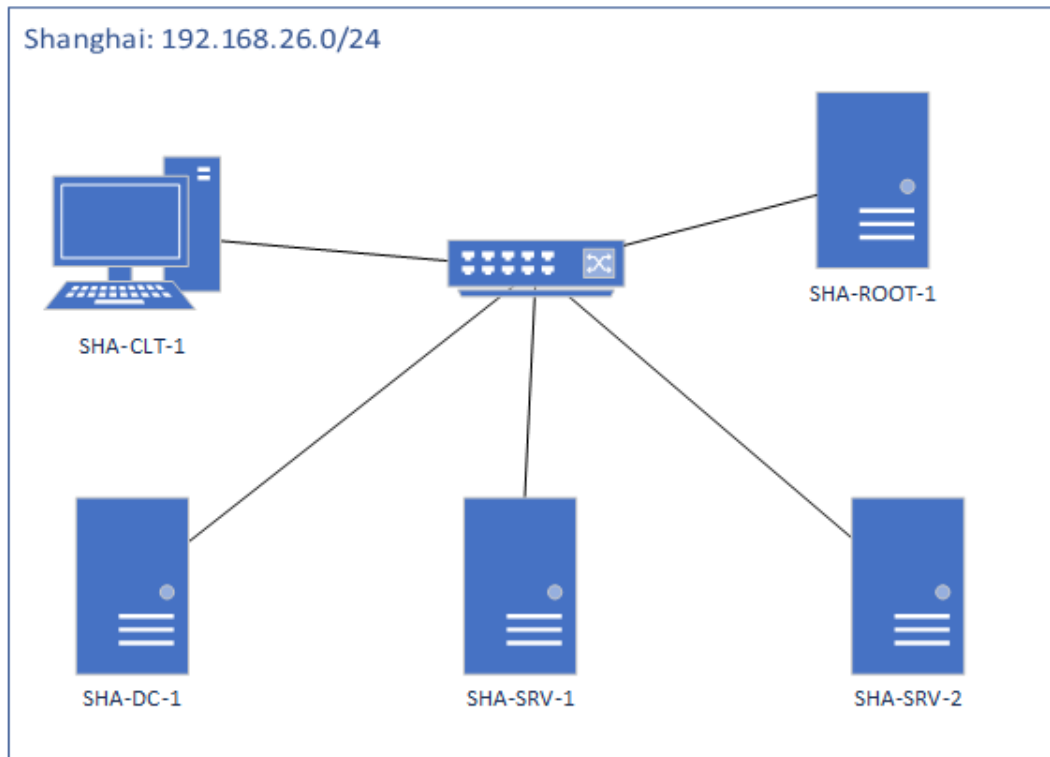
Users:

Name	Username	Position	Groups
Huang Yiran	h.yira	HR	grp_hr
Han Chaohui	h.chao	IT Administrator	grp_it, grp_sec
He Chunxiu	h.chun	Accounting	grp_account, grp_team1
He Lexin	h.lexi	Accounting	grp_account, grp_team1
Huang Liangzhe	h.lian	Team Leader	grp_leader, grp_team1

Notable information:

- The name of the domain is **shanghai.net**
- The address of the gateway is the last available address of the subnet.
- Allow only the required connections to the servers!
- The usage of snapshots is allowed, use it as you may require!
- Test every change you make!
- At the end of the allocated time, leave every server as they are!
- If not specified, use the following password: **Sh@ngh@i2026!!**

Tasks

1. There are several discrepancies compared to the given user list. Correct them!
2. Configure the following group permissions:
    a. Everyone in the **grp_it** should have **Local Administrator** rights.
    b. The users in **grp_hr** should be able to manage Active Directory users.
    c. Users whom are in the **grp_leader** groups need to create new users in their respective teams.
3. We have a server that already serve as a root certificate authority. We now need to create an intermediary certificate authority on SHA-DC-1. The requirements:
    a. Key length should be 2048
    b. The common name must be the server's name.
    c. Configure AIA and CDP. For that, we require that you set up these with IIS.
4. Create the following directories. Ensure that nobody else can access the directories other than the groups specified:
    a. C:\Fileserver\HR -> Only the members of **grp_hr** are allowed to read and write here.
    b. C:\Fileserver\IT -> Only the members of **grp_hr** are allowed to read and write here.
    c. C:\Fileserver\Team1\Members -> Every member of **grp_team1** should be able to read the files here, the members of **grp_leader** are also allowed to write the files.
    d. C:\Fileserver\Team1\Leader -> Members of **grp_leader** are allowed to read and write here.
    e. Make sure to share the Fileserver folder.
5. Create the following group policies:
    a. Automatically mount these directories:
        i.   C:\Fileserver\HR -> Members of the **grp_hr**
        ii. C:\Fileserver\IT -> Members of the **grp_it**
        iii. C:\Team1 -> Members of the **grp_team1**
    b. Use a wallpaper on every Windows device, which you can find under C:\Wallpapers
    c. Allow domain users to log on to the SHA-DC-1
6. Configure the DHCP on SHA-SRV-1 based on the following criteria:
    a. The first 100 addresses should not be leased out.
    b. Add the SHA-SRV-1 server as DNS server.
    c. Lease time should be 1 hour.
    d. Add domain name.
7. Configure the DNS service on SHA-SRV-1 as required:
    a. Every required A records should be added.
    b. Dynamically create and remove A records based on DHCP leases.
    c. Create a reverse lookup zone for our Shanghai zone.
8. Configure Apache2 according to the instructions below:
    a. Use HTTPS only!
    b. Certificate, if possible, should come from AD CS, and the browsers on the client machine should not give a warning.

       c.   Content of the website is: **Studying is like climbing a mountain.**

9.   Install Hyper-V on the SHA-DC-1 server and configure it for later use:

       a.   Create two virtual networks for internal usage and one for external use.

           i.   Internal networks:

                1.   DEVNET-LAB: VLAN ID: 301

                2.   GenAI-LAB: VLAN ID: 302

          ii.   External network:

                1.   INTERNET: VLAN ID: N/A

Congratulations, you have reached the end of the project!