LOMBA KOMPETENSI SISWA
SEKOLAH MENENGAH KEJURUAN
TINGKAT KAB. TASIKMALAYA
TAHUN TAHUN 2022

NASKAH SOAL
NETWORK SYSTEM (LINUX)

Bidang Lomba
IT NETWORK SYSTEMS ADMINISTRATION

PEMERINTAH DAERAH KABUPATEN TASIKMALAYA

DINAS PENDIDIKAN

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Introduction to Test Project

Introduction

A small startup company's production environment contains numerous services within multiple Operating Systems. We will ask you to install, configure, and integrate the different services. Attached below is the topology design and appendix of all our servers and network devices.

Day 1 - Linux Environment

fw.indonesia.com

DHCP

- Configure DHCP-service for the indonesia network.
- Add all the necessary options to make all services work.
- Make sure that pod1.indonesia.com are always assigned the same address.

IPTABLES

- All traffic through the firewall should be blocked by default.
- Traffic originating from the indonesia network is always allowed.
- Traffic originating from the indonesia network should be translated to the external ip-address when visiting the internet.
- Add all necessary rules for the services to work as intended.

LOAD BALANCER

- Install nginx and create HTTPS load balancer for “www.indonesia.com” and “public.indonesia.com”, which is hosted by pod1.indonesia.com and pod2.indonesia.com.
- Connect to backends by using HTTP
- To external users the websites should only be accessible securely. Use a self-signed certificate and make sure that no certificate warnings are shown when browsing from budi-pc (user budi) using Firefox.

pod1.indonesia.com

Samba

- Create directory /data
- Share the folder /data/public-files with pod2.indonesia.com.
- Make the access read-only and that no other hosts can access the folder

NFS

- Create a shared folder /data/documents called documents that all authenticated users can access with both read and write permissions.

DNS

- Configure the DNS zone for indonesia.com and add all necessary entries.
- Lookups to all other zones should be forwarded to indonesia.com
- Configure reverse lookup zone for the indonesia network subnets.

pod2.indonesia.com

DNS

- Setup the DNS-server to be a secondary server for the zone indonesia.com.
- When adding entries to the primary server, they should automatically synchronize.
- Encrypt slave-master zone updates using DNSSec key – Transaction Signature.

SAMBA

- Mount /data/public-files on pod1.indonesia.com to the local directory /data/public-files.

CA

- Configure as CA using OpenSSL.
  - Use /ca as the CA root directory
    - Private key should have minimal permission
  - CA attributes should be set as follows:
    - Country code is set to ID
    - Organization is set to Jabar
    - The common name is set to “Jabar CA”
  - Create a root CA certificate.
  - All certificates required in the test project should be published by CA.

WEBSERVER - apache

The marking will be done on either of the two servers. Which one will be decided prior to the making starts by the assessment team. So you have to configure both servers!

- Configure apache2
- Configure a HTTP-only website for “www.indonesia.com” domain and “localhost” on directory /var/www/html
- The website page should display the following message:
  - “Welcome to the LKSN 2021 cloud on [HOSTNAME]”.
  - Add the hostname dynamically with php
- Add the HTTP header “X-Server-By” with the server hostname as the value.
- Make sure that PHP scripts can be run
  - Index.php should be first priority for index files
- Create a password protected (basic authentication) subfolder “internal”
  - Use user skill39 with password Skill39 to authenticate
- When visiting public.indonesia.com a directory listing of /data/public-files should be displayed.

Budi-pc

- User GNOME as the desktop environment.
- Create a local user budi with password Skills39! and login
- The shared folder “documents” should be mounted for all office users in /mnt/documents. Each user should have access to their home share using NFS
- Create a script /usr/local/bin/startup.sh that is automatically run through systemd at startup. Name the service loglastboot. The script should touch /last-boot. We will test this by restarting the service.

APPENDIX

Configuration Table

Hostname	Operating System	Domain	Preinstalled
fw.indonesia.com	Debian 10 Server	indonesia.com	No
pod1.indonesia.com	Debian 10 Server	indonesia.com	No
pod2.indonesia.com	Debian 10 Server	indonesia.com	No
budi-pc	Debian 10 Client	indonesia.com	No

IP Address

Hostname	IP Address	networks
fw.indonesia.com	172.16.20.254	172.16.20.0/24
	222.165.228.254	222.165.228.0/24
pod1.indonesia.com	172.16.20.10 (DHCP)	172.16.20.0/24
pod2.indonesia.com	172.16.20.20	172.16.20.0/24
budi-pc	222.165.228.100	222.165.228.0/24

Topology