

# **LOMBA KOMPETENSI SISWA**

## **SEKOLAH MENENGAH KEJURUAN**

### **TINGKAT NASIONAL XXVI 2018**



#### **MODUL B**

#### **WINDOWS & CISCO ENVIRONMENT**

## **IT NETWORK SYSTEMS**

## **ADMINISTRATION**

[LKSN2018\\_ITNSA\\_MODUL\\_B](#)

**Please save your configuration regularly! To avoid electrical problem.**

## **CONTENTS**

This Test Project proposal consists of the following document/file:  
LKS NASIONAL 2018\_ITNSA\_MODULB.pdf

## **INTRODUCTION**

The competition has a fixed start and finish time. You must decide how to best divide your time.

Please **carefully** read the following instructions!

When the competition time ends, please leave your station in a running state.

## **PHYSICAL MACHINE (HOST)**

### **FOLDER PATHS**

Virtual Machines: D:\KOMPETISI\VM

ISO Images: D:\KOMPETISI\ISO

Password for OS Pre-Install: Skills39

Please save your configuration regularly! To avoid electrical problem.

## PART I

### WORK TASK INSTALLATION (JKT-DC1, JKT-DC2)

Note: Please use the default configuration if you are not given details.

#### WORK TASK SERVER JKT-DC1

Configure the server with the hostname, domain and IP specified in the appendix

- **Install/Configure**
  - Modify the default firewall rules to allow ICMP (ping) traffic
- **Active Directory**
  - Configure this server as the initial domain controller for jakarta.net
  - Configure an ONE -WAY (Forest) trust between the domains jakarta.net and mataram.net
    - Users from jakarta.net must have access to resources from mataram.net but not vice versa
- **Users/Groups**
  - Create OUs named “**Helpdesk**”, “**Technician**”, “**Manager**” and “**Visitor**”
  - Create the following AD groups:
    - Users\_Helpdesk
    - Users\_Technician
    - Users\_Manager
    - Users\_Visitor
    - Project\_Budget-R
    - Project\_Budget-W
    - Project\_Intranet-R
    - Project\_Intranet-W
    - Project\_Logistics-R
    - Project\_Logistics-W

**NOTE: This is a required list of groups and OUs that have to be created in the domain. If you believe that you should create additional groups to perform the task you can create them.**

- Create the users from the excel sheet JKT-Users.xlsx on USB Drive
  - Fill up all fields in the Active Directory user object and add the users to the corresponding Users\_xx groups, Project\_xx groups and OUs.
- Create for every user a home drive in JKT-DC2 D:\shares\users
- Connect the home drive automatically to drive U:  
\\JKT-DC2.jakarta.net\users\$\%username%

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**NOTE: if you are unable to do import all the users from the Excel file, create at least the following users manually**

| Username/Login  | Password      | Groups  |
|-----------------|---------------|---|
| Test_Helpdesk   | InaSkills2018 | Users_Helpdesk; Users_Project; Users_Budget-R     |
| Test_Technician | InaSkills2018 | Users_Technician; Users_Project; Users_Intranet-W |
| Test_Manager    | InaSkills2018 | Users_Managers; Users_Project; Users_Logistics    |
| Test_Visitor    | InaSkills2018 | Users_Visitors                                    |

- **GPO**
  - Disable “first sign in Animation” on all Windows 10 Clients
  - Set the power settings to “never sleep” for all Windows 10 clients.
  - Members of the “Users\_Technician” group must be members of the local admin group on all Windows 10 computers in the domain
  - www.jakarta.net must be the default homepage in IE Explorer for all domain users and domain administrators.
  - Disable open network connections for all domain user, except Users\_Technician group.
  - Redirect (Folder Redirection) only for users in the Helpdesk group “My Documents” and the “Desktop” to JKT-DC2 -> D:\shares\redirected
    - Share path \\JKT-DC2.jakarta.net\redirected\%username%
  - Create a fine grained password policy required 7 characters non-complex password for regular users, 8 character complex password for member of the Users\_Helpdesk group
    - Disable “enforce minimum password age”
- **DNS**
  - Configure DNS for jakarta.net
  - Create a reverse zone for the 10.10.10.0/24 and 10.30.30.30/24 networks
  - Add static records for all JKT-DC servers
  - RDS.jakarta.net should point to the correct IP address to the RemoteApp website.
- **DHCP**
  - Install and configure DHCP for the clients
  - Mode: Load balance
  - Partner Server: JKT-DC2
  - State Switchover: 5 minutes
  - Range vlan Voice : 10.30.30.100 – 10.30.30.150
  - Range vlan Client : 10.20.20.100 – 10.20.20.150
  - Set the appropriate scope options for both DNS Servers and default gateway
- **CA**
  - Install AD CS Services
  - Configure Enterprise Root CA – Use default key length, hash, etc. if not specified
  - Name: JAKARTA Root CA
  - Lifetime: 10 years
  - Configure a template for all clients called “Skills39\_JKTclients”
    - Set the “subject name format” to Common name
    - Auto enroll this template only to all Windows 10 clients.
  - Create the necessary certificates for the two websites on MTR-IIS

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- **VPN Server (RRAS)**
  - Setup and configure the VPN service (RRAS)
  - use the following IP Range for the VPN Clients: 10.10.10.120 – 10.10.10.130
  - With a VPN connection the user should be able to access the shares on JKT-DC2 and access web on MTR-IIS
  - Only users in the “Users\_Technician” group should be able to connect to the VPN server
  - Remote Clients should be able to access the VPN server via the IP address 200.151.15.11

## **WORK TASK SERVER JKT-DC2**

Configure the server with the hostname, domain and IP specified in the appendix

- **Install/Configure**
  - Modify the default firewall rules to allow ICMP (ping) traffic
- **Active Directory**
  - Join to jakarta.net domain
  - Promote this server as a DC for jakarta.net (but not a GC)
  - Create the following two users in OU “Users”. They are necessary for the following work tasks.
    - RDS\_user1
    - RDS\_user2
- **DFS**
  - Create a Namespace with the name “dfs”
  - Add JKT-DC1 as the second server for this Namespace
  - Create DFS links for the department shares (Helpdesk, Technician, Managers)
  - Create DFS Replication to implement a backup of the department shares on JKT-DC1. The shares should be replicated like this:
    - JKT-DC2: D:\shares\departments\Helpdesk -> JKT-DC1: C:\backup\Helpdesk
    - JKT-DC2: D:\shares\departments\Technician -> JKT-DC1: C:\backup\Technician
    - JKT-DC2: D:\shares\departments\Manager -> JKT-DC1: C:\backup\Manager
  - Map the department shares depending on the corresponding group (Users\_Helpdesk, Users\_Technician, Users\_Manager) to drive G: using the DFS Namespace
- **Quota/Screening**
  - Set the quota to every home drives to 15MB
  - ALLOW ONLY files with the extensions .txt and .msi on the home drives. All other file extensions are prohibited.
- **DHCP**
  - Install and configure DHCP for the clients
  - Mode: Load balance
  - Partner Server: JKT-DC1
  - State Switchover: 5 minutes

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- **Remote Desktop Services**

- Install Remote Desktop Services
  - Do not install RD Licensing component
- Configure web-access for terminal services
- The RDS login page should be accessible by entering the url <https://rds.jakarta.net>
- Make sure only users RDS\_user1 and RDS\_user2 are able to login via RDP
- Publish Wordpad on the web-portal of RemoteApp for the domain user "RDS\_user1"
- Publish Calculator on the web-portal of RemoteApp for the domain users "RDS\_user2"

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## **PART II**

### **WORK TASK INSTALLATION (MTR-DC, MTR-IIS)**

Note: Please use the default configuration if you are not given details.

#### **WORK TASK SERVER MTR-DC**

Configure the server with the hostname, domain and IP specified in the appendix

- **Install/Configure**
  - Modify the default Firewall rules to allow ICMP (ping) traffic
- **Active Directory**
  - Already pre-configured
- **DNS**
  - DNS records should point to the correct IP addresses for both [www.mataram.net](http://www.mataram.net) and [www.jakarta.net](http://www.jakarta.net)

#### **WORK TASK SERVER MTR-IIS**

Configure the server with the hostname, domain and IP specified in the appendix

- **Install Windows Server 2016 (no GUI)**
  - Install Windows Server 2016 (no GUI) from ISO (D:\KOMPETISI\ISO)
- **Install and configure IIS**
  - Create website [www.mataram.net](http://www.mataram.net), should display the following contain:
    - *"Welcome to www. mataram.net"*
  - Create website [www.jakarta.net](http://www.jakarta.net), should display the following contain:
    - *"Welcome to www.jakarta.net"*
  - Both of these sites should use HTTPS using certificate approved in [jakarta.net](http://jakarta.net)

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## PART III

### WORK TASK INSTALLATION (GARUDA-RTR, GARUDA-SW)

Note: Please use the default configuration if you are not given details.

#### WORK TASK ROUTER (GARUDA-RTR) & SWITCH (GARUDA-SW)

- Use the **InaSkills2018** as secret password
- Line console must login with the password **InaSkills2018**
- Create username **admin** and password **InaSkills2018**
- Encrypt all clear text password
- Configure banner MOTD "Authorized Access Only!"
- Configure VLAN and IP addresses

| Device     | Interface                | VLAN ID               | Description | IP Address      |
|------------|--------------------------|-----------------------|-------------|-----------------|
| GARUDA-RTR | FastEthernet 0/0         | -                     | -           | 200.151.15.1/25 |
|            | FastEthernet 0/1.10      | 10                    | HQ-SRV      | 10.10.10.1/24   |
|            | FastEthernet 0/1.11      | 11                    | BR-SRV      | 10.11.11.1/24   |
|            | FastEthernet 0/1.20      | 20                    | Client      | 10.20.20.1/24   |
|            | FastEthernet 0/1.30      | 30                    | Voice       | 10.30.30.1/24   |
|            | FastEthernet 0/1.99      | 99                    | Management  | 10.99.99.1/24   |
| GARUDA-SW  | FastEthernet*0/1 – 0/5   | 10                    | HQ-SRV      |                 |
|            | FastEthernet*0/6 – 0/10  | 11                    | BR-SRV      |                 |
|            | FastEthernet*0/11 – 0/15 | Data: 20<br>Voice: 30 | Client      |                 |
|            | FastEthernet*0/16 – 0/20 | 99                    | Management  | 10.99.99.100/24 |

Note: asterisk (\*) means any prefix. Example: FastEthernet1/0/1

#### WORK TASK GARUDA-RTR

- Configure the router with the hostname GARUDA-RTR
- Enable SSHv2 for remote management
  - Permit only 3 concurrent virtual terminal sessions
  - Prevent non-SSH connections for remote management
  - Set domain to jakarta.net
  - Only allow SSH from VLAN 20 (Client)
  - After successful login should be landed to maximum privilege level.
- Configure DHCP Relay for VLAN "Client" and VLAN "Voice" to JKT-DC1
- Configure NAT / PAT
  - Configure Static NAT
    - Static NAT to JKT-DC1 with IP address 200.151.15.11
  - Configure NAT overload for VLAN client network to external interface of GARUDA-RTR.
- Telephony Service
  - Configure max 5 ephone and max 10 ephone-dn
  - Number 888 is used for paging all phones of the company
  - Configure button 2 on IP Phone to call directly to paging extension



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- Access Control List (ACL)
  - Deny ICMP request from outside to GARUDA-RTR external IP address

### **WORK TASK GARUDA-SW**

- Configure the switch with the hostname GARUDA-SW
- Configure port interface vlan 99 with the IP address 10.99.99.100/24
- Configure port interface
  - Port Fa0/24 trunk mode to GARUDA-RTR
  - Port Fa0/1 to JKT-DC1 and DC2
  - Port Fa0/11 to JKT-CLIENT
  - Port Fa0/6 to MTR-DC and MTR-IIS
  - Port Fa0/14 to IP Phone
- Configure port security maximum 3 mac address with violation shutdown for ports to JKT-CLIENT
- In case of violation of the port security the port of the switch must recovery automatic in 30 seconds

## **PART IV**

### **WORK TASK INSTALLATION (JKT-CLIENT, MTR-REMOTE, IP PHONE)**

Note: Please use the default configuration if you are not given details.

#### **WORK TASK CLIENT JKT-CLIENT**

Configure the client with the hostname, domain and IP specified in the appendix

- Modify the default Firewall rules to allow ICMP (ping) traffic
- Join the client to the jakarta.net domain
- Use this client for all tests in the jakarta.net domain
- Use this client for testing the GPO settings
- Install and configure Cisco IP Communicator

#### **WORK TASK CLIENT MTR-REMOTE**

Configure the client with the hostname, domain and IP specified in the appendix

- Modify the default Firewall rules to allow ICMP (ping) traffic
- Connect to VPN using external IP of GARUDA-RTR

#### **WORK TASK IP PHONE**

Note: Please use the default configuration if you are not given details.

- Connect LAN cables and configure IP addresses
- Configure with number 1004
- Make sure the VoIP is using VLAN 30 for its VoIP traffic
- The traffic of the connected computer (if any) shall use VLAN 20

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## APPENDIX

### SPECIFICATION

#### JKT-DC1

|                        |                                    |
|------------------------|------------------------------------|
| Operating System:      | Windows Server 2016 ( <b>GUI</b> ) |
| Computer name:         | JKT-DC1                            |
| Domain                 | jakarta.net                        |
| Administrator password | InaSkills2018                      |
| User Name:             | Batik                              |
| User Password:         | InaSkills2018                      |
| IP Address:            | 10.10.10.100/24                    |

#### MTR-DC

|                        |                                    |
|------------------------|------------------------------------|
| Operating System:      | Windows Server 2016 ( <b>GUI</b> ) |
| Computer name:         | MTR-DC                             |
| Domain                 | mataram.net                        |
| Administrator password | InaSkills2018                      |
| User Name:             | Batik                              |
| User Password:         | InaSkills2018                      |
| IP Address:            | 10.11.11.100/24                    |

#### JKT-DC2

|                        |                                    |
|------------------------|------------------------------------|
| Operating System:      | Windows Server 2016 ( <b>GUI</b> ) |
| Computer name:         | JKT-DC2                            |
| Domain                 | jakarta.net                        |
| Administrator password | InaSkills2018                      |
| User Name:             | Batik                              |
| User Password:         | InaSkills2018                      |
| IP Address:            | 10.10.10.200/24                    |

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#### **MTR-IIS**

|                        |                              |
|------------------------|------------------------------|
| Operating System:      | Windows Server 2016 (no GUI) |
| Computer name:         | MTR-IIS                      |
| Domain                 | mataram.net                  |
| Administrator password | InaSkills2018                |
| User Name:             | Batik                        |
| User Password:         | InaSkills2018                |
| IP Address:            | 10.11.11.200/24              |

#### **JKT-CLIENT**

|                        |               |
|------------------------|---------------|
| Operating System       | Windows 10    |
| Computer name:         | JKT-CLIENT    |
| Domain                 | jakarta.net   |
| Administrator password | InaSkills2018 |
| User Name:             | Batik         |
| User Password:         | InaSkills2018 |
| IP Address:            | DHCP          |

#### **MTR-REMOTE**

|                        |                  |
|------------------------|------------------|
| Operating System       | Windows 10       |
| Computer name:         | MTR-REMOTE       |
| Administrator password | InaSkills2018    |
| User Name:             | Batik            |
| User Password:         | InaSkills2018    |
| IP Address:            | 200.151.15.10/25 |

#### **NETWORK SPECIFICATION**

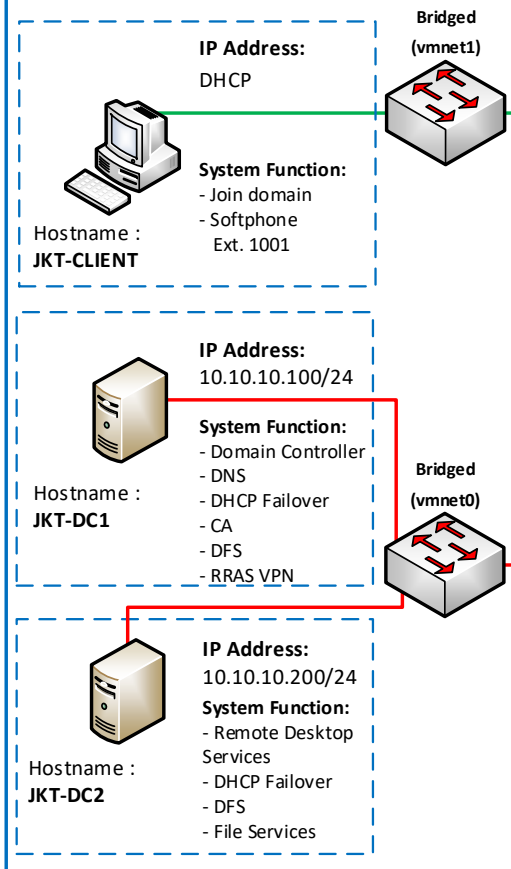
| <b>VLANs</b>    | <b>Networks</b> |
|-----------------|-----------------|
| HQ-SRV (ID: 10) | 10.10.10.0/24   |
| BR-SRV (ID: 11) | 10.11.11.0/24   |
| Client (ID: 20) | 10.20.20.0/24   |
| Voice (ID: 30)  | 10.30.30.0/24   |

# NETWORK SPECIFICATION (PHYSICAL VIEW)

## Physical View

### Windows Hostmachine (PC1)

Windows 10  
VMWare Workstation 12 installed



Name : **GARUDA-RTR**  
IP-Address:  
External :200.151.15.1/25  
Fa0/1.10: 10.10.10.1/24  
Fa0/1.11: 10.11.11.1/24  
Fa0/1.20: 10.20.20.1/24  
Fa0/1.30: 10.30.30.1/24  
Fa0/1.99: 10.99.99.1/24  
System Function:

- Routing
- NAT
- ACL
- Telephony Service
- DHCP Relay



Name : **GARUDA-SW**  
VLANs:  
VLAN 10: HQ-SRV (10.10.10.0/24)  
VLAN 11: BR-SRV (10.11.11.0/24)  
VLAN 20: Client (10.20.20.0/24)  
VLAN 30: Voice (10.30.30.0/24)  
VLAN 99: Management (10.99.99.0/24)  
System Function:

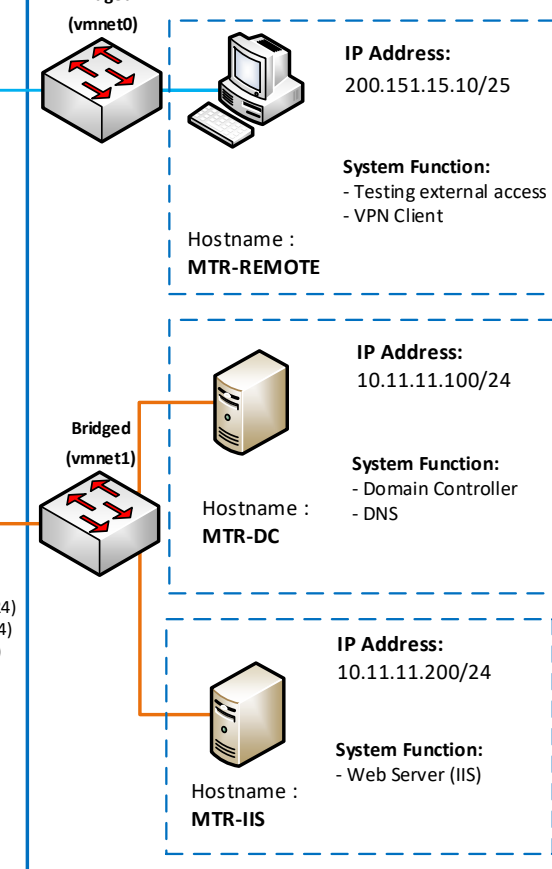
- VLAN
- SSH
- Port Security



**IP Phone**  
Ext 1004

### Windows Hostmachine (PC2)

Windows 10  
VMWare Workstation 12 installed



Please save your configuration regularly! To avoid electrical problem.

## NETWORK SPECIFICATION (LOGICAL VIEW)

