

Island A – Test project – Linux Environments

WSC2013_TP39_ISLAND_A_EN

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OVERVIEW

MODULE - ISLAND A.....	3
CONTENTS.....	3
INTRODUCTION.....	3
DESCRIPTION OF PROJECT AND TASKS	3
PART 1	4
PART 2.....	6
PART 3.....	7
APPENDIX.....	8
SPECIFICATIONS	8
INSTRUCTIONS	11
INSTRUCTIONS TO THE COMPETITOR	11
EQUIPMENT, MACHINERY, INSTALLATIONS AND MATERIALS REQUIRED	11

MODULE - ISLAND A

CONTENTS

This Test Project proposal consists of the following document/file:

1. WSC2013_TP39_ISLAND_A_actual_EN

INTRODUCTION

Warning: SAVE ALL YOUR CONFIGURATIONS!!! Every device will be rebooted before marking.

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

Please **carefully** read the following instructions!

Due to the problem of VMWare freezing, please do not connect the DVD drives (.iso) when they are not in use.

DESCRIPTION OF PROJECT AND TASKS

You are working for a book and movie library in Leipzig.

As the library is growing, a relocation was planned. You have been assigned with building the network infrastructure at the new location.

For the employees, you have to setup a server for file sharing as well as ensure access through VPN by road warriors.

The visitor area is equipped with a few guest computers for browsing local and internet webpages. For speeding up internet access, a proxy should be used.

You are also responsible for setting up the webserver, which hosts internal as well as external web sites.

Please consult the diagrams and other additional information is provided in the appendix.

PART 1

Work Task Installation (Inxrtr1, Inxsrv1, Inxsrv2, Inxrootrecovery)

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

The base Debian OS has been set up on Inxrtr1, Inxsrv1, Inxsrv2 and Inxrootrecovery.

Work Task Server Inxrtr1

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

- Configure the server with the hostname, domain and IP specified in the appendix
- Install the services:
 - Routing
 - Enable routing
 - Use rtr1 as default gateway
 - Firewall (iptables)
 - Prohibit access from External to neither Guest nor Internal VLAN
 - Prohibit access ping from the whole Guest VLAN (VLAN 20) to any network
 - Forward all HTTP traffic from Guest VLAN to local proxy
 - Proxy (squid)
 - Configure in transparent mode
 - You are testing the blocking function of Squid, so as a test you decided to block HTTP access to all hosts in the sub.library-leipzig.de domain. You will test it on Inxclt2.
 - You need to perform necessary configuration on either the DNS server or Inxclt2 so that www.sub.library-leipzig.de and m.sub.library-leipzig.de resolve to IP addresses not on the inside network (Internal, Guest). Please keep in mind that the IP addresses do not have to really exist as the proxy will block access to them anyway.
 - VPN (OpenVPN)
 - Configure VPN access to Internal VLAN. External clients should connect to 81.6.63.115 which has been already mapped to Inxrtr1's VLAN 10 IP address on rtr1.
 - Make sure that VPN clients can only access server Inxsrv2
 - For login create a user "vpn" with password "Skills39"
 - Use address range 172.17.118.200 to 172.17.118.255 for VPN clients
 - Either the built-in CA or preshared key can be used
 - DHCP
 - Scope for Guest VLAN:
 - Range: 192.168.20.10 – 192.168.20.254
 - Netmask: /24
 - Gateway: 192.168.20.1
 - DNS: 192.168.10.10
 - Scope for Internal VLAN:
 - Range: 172.17.117.0 – 172.17.117.255
 - Netmask: /22
 - Gateway: 172.17.116.1
 - DNS: 192.168.10.10
 - DNS-Suffix: library-leipzig.local

Work Task Server Inxsr1

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

- Configure the server with the hostname, domain and IP specified in the diagrams shown in appendix
- Install the services
 - Webserver (Apache2)
 - Install apache2 including php5
 - Enable both HTTP and HTTPS
 - Use a certificate signed by Inxsr2
 - Make sure no certificate warning is shown
 - Create websites “library-leipzig.de” and “intranet.library-leipzig.de”
 - For “library-leipzig.de”, HTTP access should be redirected to HTTPS automatically
 - Make sure “intranet.library-leipzig.de” is protected by authentication
 - No authentication is needed from Internal VLAN
 - Use user “library” with password “Skills39”
 - Show on both websites the website name (the fully qualified domain name) and the current date and time
 - As a basic security measure, make sure Apache2 provides minimum information in the response regarding the OS and its version.
 - DNS (bind)
 - Make sure both websites are resolvable to 81.6.63.114 from the Internet, which has been already mapped to Inxsr1’s VLAN 10 IP address on rtr1.
 - Requests from internal networks (Guest, Internal) for both websites should be resolvable to the internal IP address of Inxsr1
 - Avoid the DNS server from being used as resolver from the Internet for any Internet domain name except for its own. For example, if a client on the Internet queries for the IP of, say, www.google.com, the DNS server will not perform the query for it, but it will for www.library-leipzig.de.
 - For queries from the Internal clients, it will perform regardless of the domain name.
 - FTP (vsftpd)
 - Create a FTP user account for each website of the webserver
 - User “library-leipzig” with password “Skills39”
 - User “intranet” with password “Skills39”
 - Make sure the users are jailed in their respective website document root directories
 - Configure SSH service
 - If the user “user1” on Inxclt2 tries to login as the user “intranet” on Inxsr1, it must be done using public key authentication and the passphrase must be set to “Skills39”
 - Root access is prohibited
 - It has to listen on port 2222

Work Task Server Inxsrv2

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

- Configure the server with the hostname, domain and IP specified in the appendix
- Configure the disk and partitions
 - Create two virtual disks: Disk 1 & 2 of suitable size as required below
 - From the two virtual disks create a 10GB software RAID1 (mirrored)
 - Mount it as /data
- Install the services
 - File sharing (Samba)
 - Share “internal”
 - Path is /data/internal
 - Give access only to user “library” with password “Skills39”
 - Make sure the share is not shown in the network browser of the clients
 - Share “public”
 - Path is /data/public
 - Enable read-only access to everyone
 - Monitoring (Cacti)
 - Create an admin-user “master” with password “Skills39”
 - Create a graph showing the traffic statistics of the interfaces of the switch using SNMP v2c (refer to part 2 for details)
 - CA (openssl)
 - Configure as CA
 - CA attributes should be set as follows
 - Country code is set to DE
 - Organization is set to WorldSkills International
 - Create a root CA certificate
- Create a backup script named backup.sh located in root’s home directory which will use tar with gzip compression to back up the files located inside /etc (including /etc itself and its sub-directories). The backup file is named using the pattern “backup-YYYY-MM-DD-hh-mm-ss.tar.gz” and should be put into the /backup directory.
 - Schedule crontab to run it every 5 minutes

Work Task Server Inxrootrecovery

- The root password has been lost. You need to reset it to “Skills39”.

PART 2

Work Task Network switch swi1

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

- Connect LAN cables and configure hostname and IP addresses according to the network diagram in the appendix
 - All other ports should be configured for clients of Guest VLAN
- Enable snmp v2c with “WSI” as the read-only community string

Work Task Network router rtr1

- Connect the LAN cables according to the network diagram in the appendix
- Load the configuration file provided to you, which configures the following items according to the network diagram in the appendix
 - IP addresses
 - Routing to reach all networks.
 - PAT (overload) for internet access
 - Static NAT mappings
 - 192.168.10.2 <=> 81.6.63.115
 - 192.168.10.10 <=> 81.6.63.114
- Save the configuration

PART 3

Work Task Installation (Inxclt1, Inxclt2)

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

- Install a GUI (graphical user interface) of your choice

Work Task Inxclt1

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

- Configure the client with the hostname, domain and IP specified in the appendix
- Make sure the client can connect to Inxsr2 (via Inxr1) through VPN
- Make sure the root CA certificate of Inxsr2 is trusted
- Install FileZilla FTP client
- Make sure to access the Samba server.

Work Task Inxclt2

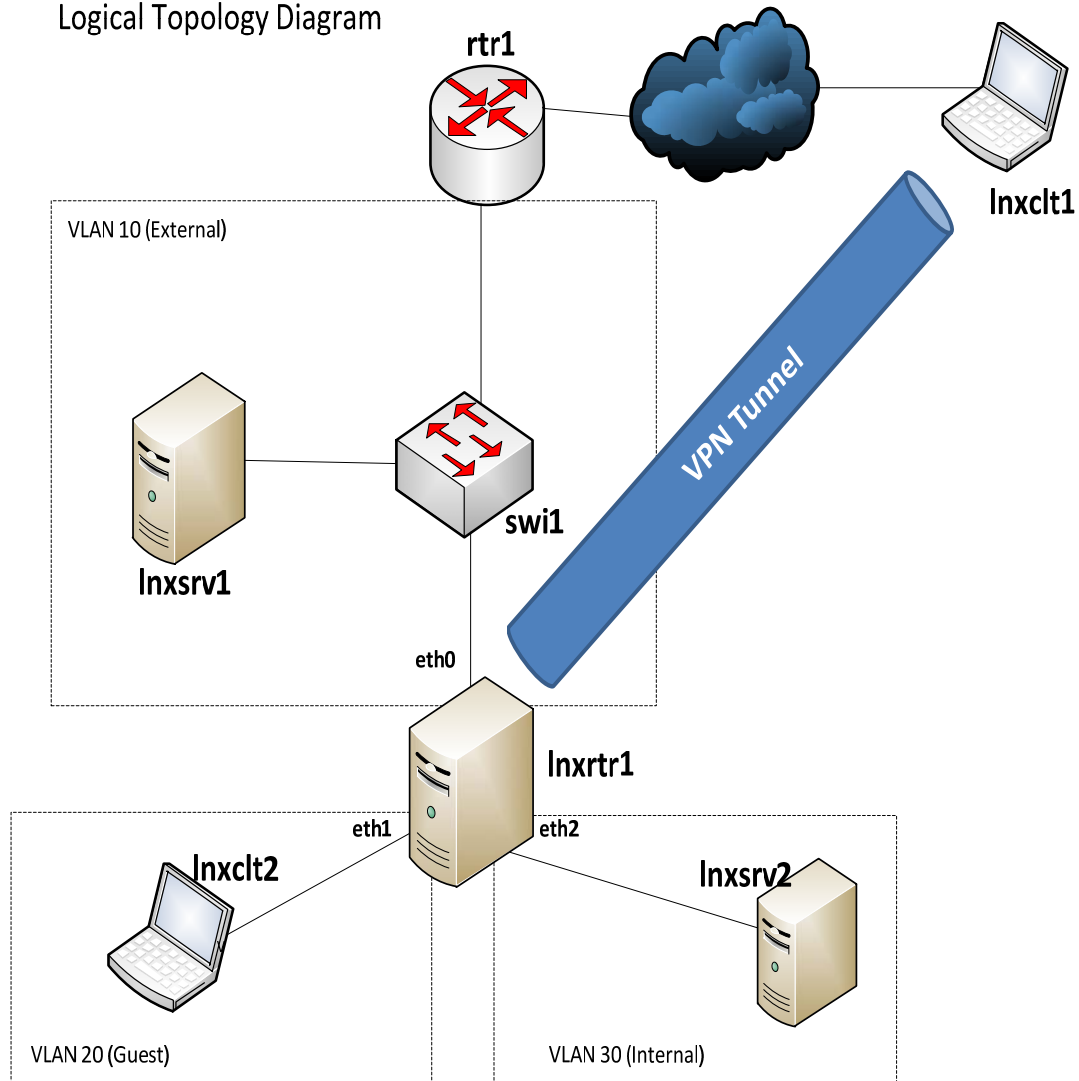
Note: Please use the default configuration if you are not given the details.

- Configure the client with the hostname, domain and IP specified in the appendix
- Make sure the share "internal" on Inxsr2 is being mounted to /mnt/share at startup
- Make sure the root CA certificate of Inxsr2 is trusted
- Create a user named "user1" with password "Skills39"

APPENDIX

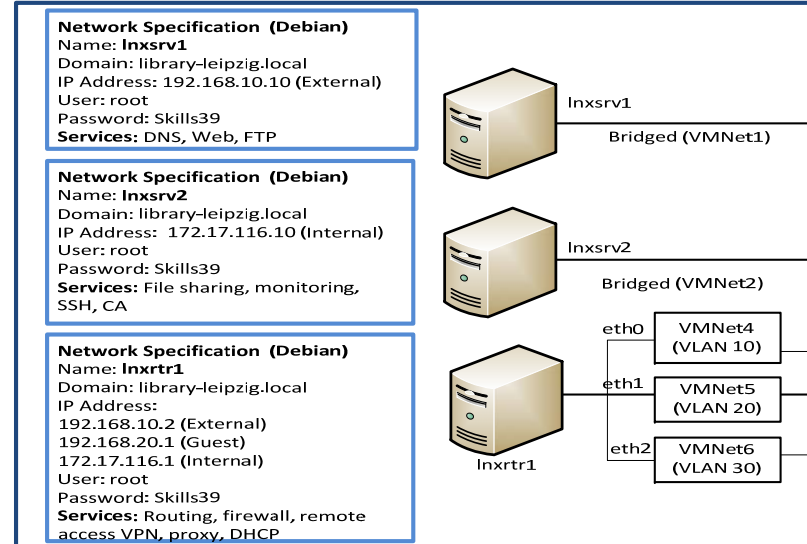
SPECIFICATIONS

Logical Topology Diagram

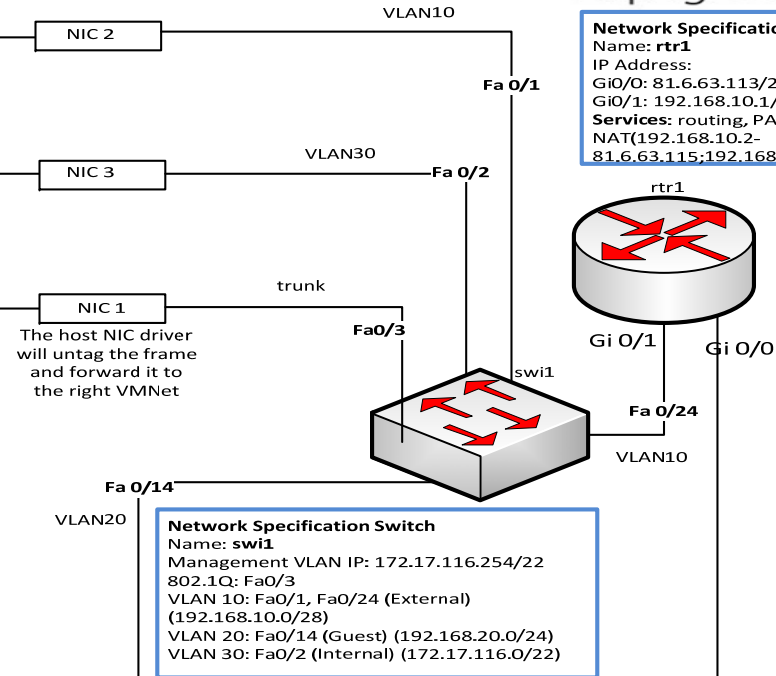
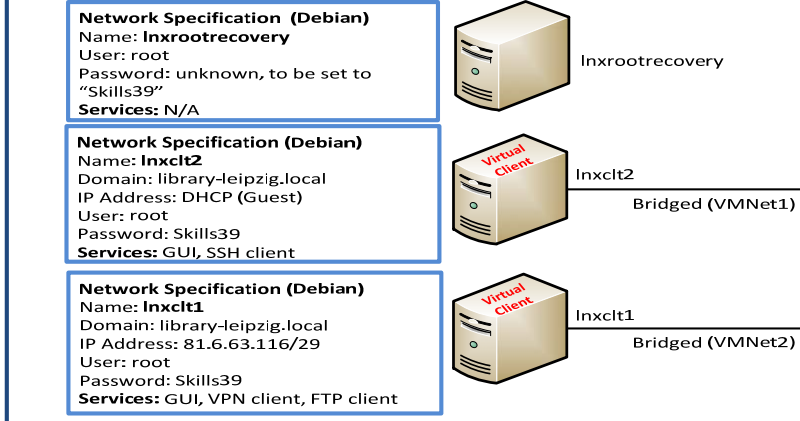


Physical and Network Diagram

Performance PC 1(HOST1)



Performance PC 2(HOST2)



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INSTRUCTIONS

INSTRUCTIONS TO THE COMPETITOR

- **Warning: SAVE ALL YOUR CONFIGURATIONS!!!** Every device will be rebooted before marking.
- Do not bring any materials with you to the competition.
- Mobile phones and any electric devices are prohibited.
- Do not disclose any competition material / information to any person during each day's competition.
- Read the whole competition script prior to starting your work.
- Be aware of different tasks attract a percentage of the overall mark. Plan your time carefully.

EQUIPMENT, MACHINERY, INSTALLATIONS AND MATERIALS REQUIRED

PowerPC 1:

- Performance PC with 16GB memory with 3 network cards (one is onboard)
- VMware Workstation preinstalled
- VMs are preconfigured

PowerPC 2:

- Performance PC with 16GB memory with 2 network cards
- VMware Workstation preinstalled
- VMs are preconfigured

Network:

- 1x Switch Cisco 2960
- 1x Router Cisco 1941 - SEC/K9 (IOS UNIVERSAL - S190UK9-15104M)

Additional software:

- Operating System (Debian 6) (DVD1-8 as .iso files available on D: drive)
- Drivers for peripherals

Additional equipment:

- None