

World Skills Competition

Trade 39:

IT PC and Network Support

Day 3 Competition

- Wide Area Network –

Competitor Name: _____

Country Code: _____

CONTENTS

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

1. TP39_38FI_Day3_EN.doc

INTRODUCTION

The Company Bergmann & Co. is going to open a new shop in Berlin. The head office is in Hamburg. As a result, the IT infrastructure has to grow. The boss has asked you to set up the new connection between Hamburg and Berlin. Mr. Bergmann wants a new platform to communicate. A new server should be set up in Berlin for e-mail & intranet. The Internet link should be run via the head office in Hamburg. To save bandwidth, it should be cached through a proxy server in Berlin. The domain Bergmann.de should be used in Berlin.

DESCRIPTION OF PROJECT AND TASKS

INSTRUCTIONS TO THE COMPETITOR

NOTE: ALL HARDWARE WILL BE REBOOTED BEFORE MARKING

Switches configuration

- Configure the two switches in Hamburg & Berlin
- Setup hostnames according to the network diagram
- All telnet connections are authenticated with username **root** and password **SKILLS** for Cisco equipment.
- Set the enable password for all Cisco switches to "SKILLS"
- Don't use the zero subnet
- Set the IP address of 2950-HAM switch to the 2nd address of the management network
- Set the IP address of 2950-BER to the 2nd address of the network

- Set all ports to spanning tree quick mode except for those connected to Routers (Cisco or Linux)
- The VLANs must be setup according to the network diagram
 - VLAN1: management-VLAN Hamburg fa0/1 and fa0/24
 - VLAN10: Client-VLAN Hamburg fa0/9 - fa0/23
 - VLAN30: Server-VLAN Hamburg fa0/2 - fa0/5
 - VLAN50: DMZ Hamburg fa0/6 - fa0/8

Routers configuration

- Configure a frame-relay network between 2621-HAM and 2621-BER using the s0/0 interfaces at 2Mbps. Circuit number must be 150. The virtual WAN modem must be located on 2621-BER. The link has IP addresses as on the diagram.
- Set the hostnames of the routers according to the network diagram.
- All telnet connections are authenticated with username **root** and password **SKILLS** for Cisco equipment.
- Set the enable password for all Cisco routers to "SKILLS"
- Set the enable secret for all Cisco routers to "2005"
- The 2621-HAM router has to be configured for internal VLAN routing (IEEE 802.1q trunking).
- Use the fa0/24 port between the 2621-HAM router and the 2950-HAM switch.
- The Hamburg router should have one virtual interface in each connected VLAN. Set the virtual interface to the first available IP address in the VLAN.

Linux router configuration

- Connect Linux-BER to 2621-BER with a cross cable (supplied) and enforce the link to 10Mbps Half Duplex on both sides of the link.
- Use fa0/24 between Linux-BER and 2950-BER switch.
- Setup external IP address according to the network diagram
- Set root password to "SKILLS"
- Create a user called "daily" with "work" as password
- The interface IP address must be set to the first available address.

Communication Platform

You must install Debian Linux on the communication platform (Linux server).

- Set the server hostname according to the network diagram
- Use the last available IP address
- Set the root password to "SKILLS"
- Add a second user "pop3" with password "checkmymail"
- Add a third user "imap4" with password "ivegotmail"
- Recompile the same version of the kernel so that it will not have sound support and will have the NIC driver built-in (instead of a module)
- The server should supply IP addresses, DNS, and routing information using the second half of the IP address range for Berlin clients
- Configure the server as a Postfix mail server accepting requests either in pop3 or imap4
- Install Squid as a proxy server in Berlin with a cache size of 500MB using port 3939
 - The Squid proxy can only be used by Berlin clients (filters to be created on the proxy server and Linux-BER router)
- A local DNS server in Berlin is responsible for the bergmann.de zone

- Replace inetd by xinetd.
 - All disallowed communication must be logged with source IP address
 - You must accept telnet connections only from all bergmann's networks and you must log the source IP address of the Telnet request.
- Setup Apache 1.3. Configure Apache to be able to execute cgi-scripts in /home/cgi-bin with URL starting with <http://linux-ber.bergmann.de/cgi-bin/> .
- Apache default locale is *de_DE@euro ISO-8859-15*, all other options are default.
- Install and setup mysql password for root to "blabla" allowing only connections coming from localhost.
- Install phpMyAdmin. URL for the phpMyAdmin server must be <http://phpadmin.bergmann.de> . User **root** is the only user having the right to connect to this server.
- Use XP workstation for your tests
- Each day, at 2:00 in the morning, a backup of /etc should be generated and named as /var/backup/etcYYYYMMDD.tar.bz2 . The backup script should be named as /usr/bin/MyBackup.sh. The backup procedure must erase backups older than 4 days. The backup file is a bzip compressed tar file, where
 - YYYY is the Year of the previous day of the backup
 - MM is the month of the previous day of the backup
 - DD is the day of the month (for previous day)
 - Example : If backup occurs on 28th of May 2005, the file will be called etc20050527.tar.bz2

Network settings

- Make sure that all communication equipment (Switches, CISCO Routers, Linux Server and Linux Router) display the following warning when people remotely connect (before login):
Warning. This is private Bergmann communication equipment. Only authorized people are allowed to connect. All intruders will be prosecuted to the maximum extend.
- Use RIPv2 as the routing protocol
- You must be able to use remote management for all clients in Berlin (TCP/3389) Don't test it.
- The direct Internet connection and internal DNS requests to the head office in Hamburg have to be denied for the Berlin client.
- The Internet connection should go through Hamburg Internet gateway (this router is not physically available during the competition, but has the last usable address in DMZ VLAN)
- Configure the XP workstation using the on-board NIC when in Hamburg with a static IP address of 172.16.6.8
- Configure the same XP workstation by installing a 2nd NIC for Berlin office. The client gets an IP address assigned by the server when using this network connection.
- Connect the printer to the workstation in Berlin and print out configurations for all Cisco hardware
- Configure ACLs:
 - Allow only the needed traffic according to the above script (all disallowed traffic has to be stopped in 2621-HAM in Hamburg and linux-BER in Berlin)

plus the following:

- Berlin clients have to use the Proxy for http, https, and ftp. Meaning that linux-BER must prevent Berlin clients from accessing these protocols over the WAN link.
 - SMTP is only allowed locally, and between any other possible SMTP servers. Linux-BER must prevent Berlin clients from accessing other SMTP Servers.
 - POP3 is only local, while IMAP4 can be from anywhere. Linux-BER must prevent Berlin clients from accessing other POP3 Servers.
 - Server and routers management can only be done from the Management network. Linux-BER and 2621-HAM must filter traffic allowing RDP for the management network. Allow SSH for the whole network.
 - Ping is allowed between all equipment in the two sites.
 - Traceroute can only work over TCP using port 800. Configure the necessary ACLs on 2621-HAM, 2621-BER and Linux-BER to allow this including the ICMP protocols involved.
- To access the debian apt-proxy server (10.2.1.10) during install, you can use the IP address 10.3.XX.2/24 with default gateway of 10.3.XX.1 and connect your network card to one of the green plugs in the patch panel. XX is your workstation number.

EQUIPMENT, MACHINERY, INSTALLATIONS AND MATERIALS REQUIRED

MARKS

Switch configuration	3,90
Router configuration	5,90
Linux Router configuration	2,85
Communication Platform	9,75
Network settings	2,60
Total	25,00

OTHER

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|      RACK      |
|+-----+|
||    2621-HAM   ||
|+-----+|
||    2950-HAM   ||
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||    2621-BER   ||
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