**Client/Server Environment Setup for Fitter Snacker**

**Objectives**

**Upon successful completion of this term project, the student will have:**

* Installed and configured Oracle’s VirtualBox hypervisor to create and run virtual machines (VMs).
* Designed and created a private **Host-Only** network using VirtualBox.
* Designed, built, and configured a Windows 10 client VM and two WS 2016 server VMs.
* Added, configured, and successfully demonstrated the **AD DS** server role on **server VM#1.**
* Added, configured, and successfully demonstrated the **DNS** server role on **server VM#1.**
* Added, configured, and successfully demonstrated the **DHCP** server role on **server VM#2.**
* Created and configured **organizational units (OUs).**
* Created and configured domain users, global security groups, and domain local groups.
* Created, configured, and successfully demonstrated **Group Policy’s (GPOs).**
* Added, configured, and successfully demonstrated the **File Server role** on server VM#1 and server VM#2.
* Added, configured, and successfully demonstrated the **Print Server** role on server VM#2.
* Added, configured, and successfully demonstrated the **Web Server (IIS) server role** on server VM#1.

**Introduction**

Fitter Snacker is a small BC-based company that makes healthy snack bars. The company currently operates using individual independent workstations and paper. Although they have enjoyed success, competition is growing in this sector, and they have realized that in order to remain competitive, they need to invest in Information Technology. Fitter Snacker does not even have a website! They have come to you to help design and implement a client/server environment that will modernize the business and allow them to invest in information systems to make their business processes more efficient.

**Background**

Fitter Snacker manufactures and sells two types of nutritious snack bars: **NRG-A** and **NRG-B.**

* The **NRG-A bar** provides **"advanced energy".**
* The **NRG-B bar** provides **"body-building proteins".**

**Functional Groups:**

**The company is located in the lower mainland and consists of six main functional groups:**

1. Marketing (MKT)
2. Sales (SD)
3. Supply Chain Management (SCM)
4. Accounting and Finance (A/F)
5. Human Resources (HR)
6. Information Technology (IT)

**Executive Positions:**

At the executive level, there are four executive positions:

1. **Chief Executive Officer (CEO):** Arnold Terminator is responsible for overall operations and resources of the company. All senior executives report to Arnold.
2. **Chief Financial Officer (CFO):** Donald Dollars manages all financial activities and oversees the A/F and HR functional groups.
3. **Chief Information Officer (CIO):** Norman Geekly manages and implements the company’s information and computer technologies, overseeing the IT and SCM functional groups.
4. **Chief Marketing Officer (CMO):** Joe Smoothie plans and implements the business’s marketing strategy, overseeing the MKT and SD functional groups.

**Requirements**

**Implementation Environment:**

* Utilize Oracle’s VirtualBox hypervisor as the main platform for this project.

**Host-Only Network:**

* Set up a Host-Only Network in VirtualBox with an IPV4 network address of 192.168.1.1/24 and an IPV4 network mask of 255.255.255.0.
* Ensure the VirtualBox DHCP server is disabled, as the DHCP role will be installed on one of the servers VMs.

**Domain:**

* Registered domain: fittersnacker.com
* Environment domain: corp.fittersnacker.com
* NetBIOS domain name: FITTER

**Servers:**

1. **Server VM#1:**
   * **Name:** fsserver1
   * **Operating System:** Windows Server 2016, Desktop Experience
   * **Memory:** 1536 MB (minimum 1024 MB)
   * **Disk:** 30 GB
   * **Static IP Address:** 192.168.1.5
   * **Roles:**
     + Directory Server (AD DS)
     + DNS Server
     + File Server
     + Web Server
2. **Server VM#2:**
   * **Name:** fsserver2
   * **Operating System:** Windows Server 2016, Desktop Experience
   * **Memory:** 1536 MB (minimum 1024 MB)
   * **Disk:** 30 GB
   * **Static IP Address:** 192.168.1.6
   * **Roles:**
     + DHCP Server
     + File Server
     + Print Server

**Clients:**

Although Fitter Snacker will have many client computers, you will implement one virtual client from scratch using Windows 10 32-bit with the following specifications:

* **Name:** fsclient1
* **Operating System:** Windows 10 32-bit
* **Memory**: 768 MB (minimum 512 MB)
* **Disk:** 20 GB
* **IP Address:** Automatically assigned by DHCP Server

**Implementation Steps**

Below is the detailed implementation process for setting up the client/server environment for Fitter Snacker, including key actions, configurations, and Screenshots for validation.

**1. Set Up the Host-Only Network on VirtualBox**

* **Action Steps:**
  1. Configure the Host-Only Network in VirtualBox with the network address 192.168.1.1/24.
  2. Disable the VirtualBox DHCP Server as the DHCP role will be installed on Server VM#2.
* **Validation:**
  1. Screenshot showing your Host-Only Network settings with DHCP disabled in VirtualBox.

**2. Build Server VM#1**

* **Action Steps:**
  1. Create a new virtual machine in VirtualBox and install Windows Server 2016 (Desktop Experience).
  2. Configure the hardware settings (Memory: 1536 MB, Disk: 30 GB) and assign the static IP address 192.168.1.5.
  3. Install and configure the following roles:
     + File Server
     + Active Directory Domain Services (AD DS) with DNS
  4. Set the domain to corp.fittersnacker.com and NetBIOS name to FITTER.
  5. Configure IPv4 settings to use 192.168.1.5 as the preferred DNS server.
* **Validation:**
  1. Screenshot showing the hardware settings of Server VM#1 in VirtualBox.
  2. Screenshot of the login screen showing FITTER\Administrator and the password prompt.

**3. Build Server VM#2**

* **Action Steps:**
  1. Create a new virtual machine in VirtualBox and install Windows Server 2016 (Desktop Experience).
  2. Configure the hardware settings (Memory: 1536 MB, Disk: 30 GB) and assign the static IP address 192.168.1.6.
  3. Configure IPv4 settings to use Server VM#1 (192.168.1.5) as the preferred DNS server.
  4. Install and configure the following roles:
     + File Server
     + DHCP Server
* **Validation:**
  1. Screenshot showing the successful ping between Server VM#1 and Server VM#2.
  2. Verify visibility of both servers in File Explorer > Network.
  3. Screenshot showing successful pings and visibility in File Explorer.

**4. Join Server VM#2 to the Domain**

* **Action Steps:**
  1. From Server VM#2, join the domain corp.fittersnacker.com.
  2. Restart the server and verify the domain join.
* **Validation:**
  1. Screenshot of the login screen showing FITTER\Administrator and the password prompt.

**5. Install and Configure DHCP on Server VM#2**

* **Action Steps:**
  1. Add Server VM#2 to the list of servers managed by Server VM#1 in Server Manager.
  2. Install the DHCP Server role on Server VM#2 from Server VM#1.
  3. Configure the DHCP scope on Server VM#2:
     + Host ID Range: 192.168.1.180 to 192.168.1.200
  4. Verify the configuration using the DHCP console on both Server VM#1 and Server VM#2.
* **Validation:**
  1. Screenshot showing the DHCP scope configuration on Server VM#1.
  2. Screenshot showing the DHCP scope configuration on Server VM#2.

**6. Build Client VM**

* **Action Steps:**
  1. Create a new virtual machine in VirtualBox and install Windows 10 32-bit.
  2. Set the IPv4 settings to obtain an IP address automatically via DHCP.
  3. Join the domain corp.fittersnacker.com.
* **Validation:**
  1. Screenshot of the Command Prompt showing the output of ipconfig /all, confirming:
     + IP Address: Within 192.168.1.180 to 192.168.1.200.
     + Domain: corp.fittersnacker.com.
     + DNS Server: 192.168.1.5.

**7. Configure DNS**

* **Action Steps:**
  1. Configure forward and reverse lookup zones on Server VM#1.
  2. Verify DNS functionality using nslookup from Server VM#2.
* **Validation:**
  1. Screenshot showing the nslookup output on Server VM#2, confirming successful forward and reverse lookups for all devices.

**8. Create Domain Users**

* **Action Steps:**
  1. On Server VM#1, create all 37 domain users using the Active Directory Users and Computers tool.
  2. Assign users to their respective organizational units and groups as per the company structure.
* **Validation:**
  1. Take Screenshots showing all created users in Active Directory.
  2. Screenshot of the Domain Admins security group showing IT users added as members.

**9. Create Organizational Units (OUs)**

* **Action Steps:**
  1. Create the root OU Worldwide and sub-OUs for North America, Canada, and functional groups.
* **Validation:**
  1. Take Screenshots showing the complete OU structure in Active Directory Users and Computers.

**10. Create Security Groups**

* **Action Steps:**
  1. Create Global and Domain Local security groups prefixed with fs\_.
  2. Assign members to each group as per their roles.
* **Validation:**
  1. Screenshot showing all created security groups.
  2. Screenshot showing members of fs\_Manufacturing and fs\_SDAccess groups.

**11. Create Shares**

* **Action Steps:**
  1. Create shared folders for each functional group on Server VM#2.
  2. Configure access permissions using the security groups.
* **Validation:**
  1. Take Screenshots from the client VM showing access to appropriate shared folders for different users.

**12. Create and Apply Group Policy Objects (GPOs)**

* **Action Steps:**
  1. Create a GPO to restrict Task Manager access for fs\_Executive users.
  2. Apply the GPO to the domain with security filtering.
* **Validation:**
  1. Take Screenshots showing the GPO configuration and application.
  2. From the client VM, demonstrate Task Manager access for executives (denied) and IT managers (granted).

**13. Configure Print Server**

* **Action Steps:**
  1. Add the Print Server role to Server VM#2.
  2. Create and verify printers for Executives, A/F, and general use.
* **Validation:**
  1. Screenshot of the Print Management console showing all configured printers on Server VM#2.

**14. Configure and Test the Web Server**

* **Action Steps:**
  1. Add the Web Server (IIS) role to Server VM#1.
  2. Create a website www.fittersnacker.com with a custom homepage.
  3. Test the website from Server VM#2 using Internet Explorer.
* **Validation:**
  1. Screenshot showing the Fitter Snacker homepage accessed from Server VM#2.