MCSE - MICROSOFT CERTIFIED SOLUTIONS EXPERT

1. INTRODUCTION

2. OS TYPES

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4. USES OF SERVER

INTRODUCTION

Microsoft provides various levels of client, server and programming certifications.

Microsoft servers are most commonly used worldwide in comparison with linux servers

OS TYPES

CLIENT OS SERVER 0S CERTIFICATIONS

WINDOWS XP SERVER 2003

WINDOWS 7 SERVER 2008 MCITP(Microsoft Certified IT Professional)

WINDOWS 8 / 10 SERVER 2012/16 MCSE (MICROSOFT CERTIFIED SOLUTIONS EXPERT)

SERVER ORIENTATION

Where can we place our server in LAN

Physical Orientation

Logical Orientation

Logical orientation is recommended for servers and clients can be linked loggicaly to the server,

so that all traffic will be forwarded from clients to server.

USES OF SERVER

1. We can create a domain name for our company (abc.com)

2. Using this we can create domain users - sankar@abc.com

next time we wont be using admin or guest account to login to our comp, instead we use

domain users to login.

3. User profiling - Domain profile, Roaming profile, Mandatory profile

4. Group Policy - to apply configurations for users from server.

5. Configure your own web server - IIS

6. Configure your own FTP server, DHCP Server

7. Install softwares to all clients using SDS

1. ADDS CONFIGURATION

Active Directory Domain Services -

-Active Directory will have list of all users and their configurations stored. -Its the important

configuration of server 2016

-In this configuration we will create a domain name for server.

-All clients will be able to access this server with the help of domain name.

CONFIGURATION STEPS

-Server ip should static. and we have to assign this.

RUN - NCPA.CPL - CHOOSE YOUR ADAPTER - PROPERTIES - IPV4 - PROPERITIES-

1)OBTAIN IP AUTOMATICALLY

2)USE THE FOLLOWING IP

IP ADDRESS

SUBNET MASK

DEFAULT GATEWAY

CMD: IPCONFIG

-In virtual box network configuration needs to be in Bridged Adaptor.

-SERVER MANAGER - ROLES - ADD ROLES - DNS SERVER

Steps

Login to ur server

Run - DCPROMO - New window

SERVER MANAGER - ROLES - ADD ROLES - ACTIVE DIRECTORY DOMAIN SERVICES -NEXT

we will have two options

A. create a new domain in existing forest

B. Create a new domain in new forest

We will choose option B - next - FQDN (Fully Qualified Domain Name)

abc.com - next - next

POP UP ERROR - Server IP error (Static / Dynamic) - next - finish - restart

Verify - My computer - properties - This computer belongs to ABC.COM

2. CLIENT ASSOCIATION (WINDOWS 8)

We need to link or associate or client os (windows 8) with server 2016 - Logical Orientation.

Steps

Login to win 8 (should not be home edition)

My Computer - properties - This comp belongs to WORKGROUP - Rt side Change settings - to rename this computer - Change - DOMAIN / WORKGROUP click Domain - enter our domain name - OK

Error - The active directory domain services could not be contacted

We can rectify this error with IP settings

RUN - NCPA.CPL - CHOOSE YOUR ADAPTER - PROPERTIES - IPV4 - PROPERITIES-

1)OBTAIN IP AUTOMATICALLY

2)USE THE FOLLOWING IP

IP ADDRESS

SUBNET MASK

DEFAULT GATEWAY

DNS SERVER - IP OF YOUR SERVER 2016

CMD: IPCONFIG

After this again give domain name and click ok - It should prompt for username and password(server) - username administrator - ok

password will be our server login password.

Verify

Client - PC (windows 8)

My Computer - properties - This comp belongs to ABC.COM

USER CREATION(server 2016)

We need to create domain users (sankar@abc.com) in server machine

and use it to login client pc

Steps

Server - Start - Administrative tools - Active Directory users and computers - expand abc.com - bottom we will have USERS - rt click users - new - users - New window -

First name - last name - username - password - ok

So now we have created a user

Verify

Login in client - pc

with username sankar@abc.com and password

USER PROFILING

We can configure or profile users under 3 different categories

Domain profile (normal server user)

Roaming profile

Mandatory profile

Roaming Profile

Mainly configured to manage data which is saved in client pc.

Roaming profile users will have their data saved in server machine as well, so they can use their user credentials from any of client pc, and can access their data from server.

Steps

We need 1 server - 2 client pc

Server - My computer - C - ROAM (new folder- with any name) - share with everyone.

Server - Administrative tools - Active Directory users and computers - create a new user (arun@abc.com) - now rt click arun@abc.com - properties - new window will open - go to PROFILE - profile path

\\servername\roaming folder path\username\\ (very important) - google

Ok

Example:

\\win-dsfghk\$roam$\sundar

Verify

Client PC 1

login as arun@abc.com

Change Desktop Background

Create few documents in desktop

Shutdown PC1

Verify

Server

Go to My comp - Roam - a new folder called roam.v2 will be created

Verify

Client PC 2

login as arun@abc.com

Desktop background and files will be present

Mandatory Profile

It’s used for temporary purpose.

Any user configured as a Mandatory profile will lose its data when computer shuts down.

Usually configured for Guest user accounts where data saving is not needed.

ORGANISATIONAL UNIT (OU)

-Like our department in company

-Used to keep active directory organised and controlled.

-Using OU we can organise users under one roof

Ex: Sales OU will have all sales users

HR OU will have all HR users.

-We categorise users under OU because it’s easy for us to apply policies and configurations.

STEPS TO CREATE OU

1. Open Administrative tools - Active Directory Users and Computers - Rt click on domain - new - click organisational unit - give name for OU

TO DO

1. create sales OU and HR OU.

2. Create 2 users for SALES OU - s1@abc.com, s2@abc.com

3. Create 2 users for HR OU - hr1@abc.com, hr2@abc.com

GROUP POLICY

Group policy provides the centralised management and configuration of operating systems, applications and user settings in an active directory environment.

Group policy is an infrastructure that allows us to manage configurations for users and computers through group policy settings and group policy preferences

We have more than 2500 default inbuilt group policies.

Group policy management is one of the most common job profiles for server admins.

Requirements for using group policy

- Computer that we want to manage should be joined to our domain.

- admins should have permissions to edit group policy in domain.

- Ad ds should be installed with at least one role which is running.

Where does this policy apply?

It can be applied to

Computers

Users

Example of group policy

- Common Desktop Wallpaper for sales OU

- Software installation restriction for HR OU

- Disable USB option for HR OU

- Organising timings for Sales OU - 9.00 a.m. to 5.00 p.m.

- Password policy for all users in our domain

Steps to deploy group policy

Common Desktop Wallpaper for sales OU

1. Administrative tools - Group Policy Management Editor - Expand our domain (abc.com) - Sales OU - Rt click - Create a GPO in this domain and link it here - new window - Type any name for our policy (Desktop wallpaper)

2. Under Sales OU - we will have Desktop Wallpaper - rt click - edit - new window - this window will have two options

Computer Configuration

User Configuration

We need to expand user configuration - policies - administrative templates - Desktop - click desktop - rt panel - Desktop wallpaper - double click - new window - Click Enable - Wallpaper Name - Browser our wallpaper - ok

3. Run - cmd - GPUPDATE /Force

Verify

Client - PC2

Login as s1@abc.com

The desktop will have our wallpaper

------------------------------------------------------------------------------------------------

ALLOW LOGON LOCALLY

Our domain is abc.com

Total employees are 200

Server team has 12 members - 1 server admin head and 11 team members

Now server admin will have the rights to login to server with his username and password admin@abc.com/admin@123

One of the server team member sankar@abc.com/sankar@123 tries to login to the server with his user credentials. Will he be able to login?

NO - because not Sankar user will have his own computer to login and he cannot login to server with his user credentials.

In case if he needs to login server admin needs to give him permission to login to the server directly with his user credentials.

THIS PERMISSION IS CALLED "ALLOW LOGON LOCALLY"

Objective - To configure Allow logon locally to user Sankar.

Steps

1. Administrative tools - Group policy management - expand Forest Abc.com - click domains - expand abc.com - expand domain controllers - rt click default domain controller policy - right click edit - new window opens

2. we will have two options in new window

Computer configuration

User configuration

Go to computer configuration - policies - windows setting - security settings - local policies -

- in right panel - allow log on locally - rt click - properties - add user - Sankar - ok

Verify

Restart server - Give user credentials sankar@abc.com/sankar@123.

It will login.

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ALLOW LOGON THROUGH REMOTE DESKTOP SERVICES

Allow logon locally will enable sankar@abc.com to login directly to server machine.

But in actual practice, users will not login directly to server. Users also will not directly or physically interact with server due to security reason.

In case if any user wants to access server, it is done through remote connections. (remote desktop)

So, we need to give permission to sankar@abc.com to access server through remote desktop.

In general, remote desktop connection will be possible through MSTSC

Objective - to grant / configure sankar@abc.com for remote desktop connection to server.

Steps

1. Administrative tools - Group policy management - expand Forest Abc.com - click domains - expand abc.com - expand domain controllers - rt click default domain controller policy - click edit - new window opens

2. we will have two options in new window

Computer configuration

User configuration

Go to comp configuration - policies - windows setting - security settings - local policies - user rights assignment - in right panel -

Allow log on through remote desktop services - click - new window will open - add user - Sankar - ok

Verify

Client - PC

Login as sankar@abc.com

Run - MSTSC - remote desktop connection will open, give server ip - connect - server machine login page will get displayed - give user credentials as sankar@abc.com / sankar@123

Now Sankar user will be logged in to server.

For the server to accept remote desktop connection from Sankar user - allow log on through remote desktop services.

For the server to allow Sankar to login locally in server machine -

allow logon locally.

DELEGATION OF CONTROL

- Delegation is transferring of roles/powers/responsibilities to anyone from a particular OU.

- Delegation can be done in two ways

- To Individuals (Head of any Department/OU)

- To Groups (Group involving Helpdesk employees)

Scenario

Imagine our company ABC.COM has 250 employees

Sales team - 100 employees

Marketing team - 50 employees

HR team - 10 employees

Production - 90 employees

The Issue:

1. If anyone user (S1@abc.com) from SALES department has issue with password, he normally raises a ticket to the server team.

2. Server team will get lot of tickets from all clients like this and sometimes it may be time consuming for server team to resolve queries.

3. To solve this time delay, server team can choose any one employee / head from each department and delegate few roles and responsibilities to them (which may occur frequently but which might be simple)

4. So next time when any issue occurs, it can be resolved inside the department itself rather than raising a ticket

This will reduce the workload of the server team.

Delegation to Individuals

Objective - To choose head of sales department (saleshead@abc.com) user and delegate powers to that particular user which he can execute to only SALES OU.

Steps

1. Assign "ALLOW LOGON LOCALLY" to saleshead@abc.com

2. Assign "ALLOW LOGON THROUGH REMOTE DESKTOP SERVICES" to saleshead@abc.com

3. Administrative tools - Active directory users and computers - expand abc.com - right click on SALES OU - click DELEGATE CONTROL - new window ill open - Click Add user - Select saleshead@abc.com - next - choose the roles which he can execute - next - finish

Verify

Login to Client-PC as saleshead@abc.com

Run - MSTSC - give server ip

In server login screen give sales head user credentials and login.

After logging in server machine

Start - Administrative tools - Active directory users and computers - Right click SALES OU - create new user - we will be able to create new user. but we won’t be able to access any other OU except Sales

Delegation to Groups

Delegate control is given to the help-desk representative.

Objective - To create a group from SALES OU which will have 3 helpdesk representatives and we can combinedly grant them delegation of control permission

Steps

1. Administrative tools - Active directory users and computers - right click on SALES OU - New - Group (SALESHELPDESK) - Add S1@abc.com, S2@abc.com, S3@abc.com- ok

2. Assign "ALLOW LOGON LOCALLY" to SALESHELPDESK GROUP.

3. Assign "ALLOW LOGON THROUGH REMOTE DESKTOP SERVICES" to SALESHELPDESK

GROUP.

4. Administrative tools - Active directory users and computers - expand abc.com - right click on SALES OU - click DELEGATE CONTROL - new window ill open - Click Add group- Select SALESHELPDESK group - next - choose the roles which he can execute - next - finish

Verify

Login to Client-PC as any one of the 3 sales users (S1, S2, S3)

Run - MSTSC - give server ip

In server login screen give sales head user credentials and login.

We will be able to edit only SALES OU and not any other OU.

WEB SERVER

Any website will be in need of a web server

WEB HOSTING

-It is the process of designing a web page and uploading it in server.

-Designing can be done in any language (html, xml, php etc)

-Layouts of our website will be designed as individual pages

Home.html

Aboutus.html

Services.html

Contactus.html

Ex: www.abc.com/home.html

-After designing all these pages, we can upload it to our server.

- Designing job profile doesn’t come under server administration.

- Server team will get the design templates and upload to server.

TYPES OF WEBHOSTING

We can host our website in any of the following methods

- Use third party paid web server

- Use third party free web server

- Use our own web server (server 2008)

Any of the above process involves the following steps

1. Buy Domain Name

2. Buy Server hosting space

3. Web hosting

Use third party paid web server

- Websites - www.godaddy.com, www.net4india.com, www.bigrock.in

- we can choose any website and first buy domain name.

- Buy hosting space - Consider Linux/windows, server space and free email id's

- In case if it’s an ecommerce website, where it involves payment transactions, we need to buy digital certificates, ssl etc

- we can also purchase additional security options like codeguard, sitelock etc

After buying we will get an email with CPANEL login details (URL, username and password)

https://abc.com/cpanel/login.php

We need to login and upload design templates and once this is done, our site will be up.

Use third party free web server

-There are lots of free webhosting providers which we can use for either permanent or temporary purpose.

-Problem with free hosting is we can’t choose our preferred domain name.

Ex:

http://abc.freedomainhosting.cc.net

https://abc.000webhostapp.com

-Mostly its used by hackers for hosting their malicious websites.

- One such website is 000webhost.com

Use our own web server (server 2016)

We can configure our server 2016 to host our own website using IIS (internet information system)

Steps

1. Server Roles - Check Box, Webserver (IIS) - Next - Next - Checkbox, ASP Dot net (under Application Development) - Popup, Click Add Required Role services - Checkbox, CGI - Under Security Option - Checkbox, Basic Authentication, Windows Authentication - next - Install - Close.

Verify

Now we have installed basic webserver, to check

Open Browser - in URL type 'localhost' - 'Default webpage' will open

The 'default directory' of this 'default webpage' will be in

C/inetpub/wwwroot/

we will have

iisstart.html - default webpage &

welcome.png - default image which opened

Open Administrative Tools - IIS Manager - Expand ABC.COM - Under sites - Click 'Default Web Site' - In Right Panel, Open Default document

(It will have the priority of files to be opened - we have .html,.asp,

.htm, .aspx extension files in order), if our website uses .php then we have to include that at the top of the list.

FTP

File Transfer Protocol

Protocol used for transferring/downloading files.

Port Number - 20,21

Note - In case if IIS is already running in our server, we have to stop that and run FTP.

Steps to configure FTP

Objective - To allow users from a particular group called FTP able to access FTP services

- Configure FTP Roles

- Create FTP Group

- Configure FTP Server

- Configure Firewall options

1. Go to Server Roles - Add roles - Next - Web Server (IIS) - next - Select FTP server - Finish

2. Administrative tools - Active Directory Users and computers - Create a new group called FTP\_SALES and add a user(sankar@abc.com) to that group.

3. Administrative tools - Internet information system manager - expand our domain - Rt click on SITES - Click Add FTP Site - New window will open, give the following

FTP Site name - Give any name

Physical Path - Select entire C directory - Next

IP address - All Unassigned, let port number be 21 - Next

Authentication - Basic (if we select anonymous, anyone can login)

Allow access to - Select Specific roles or user groups - give FTP\_SALES

Permissions - Select Read and write - Finish

4. Go to Server Manager - Choose Configuration - Select Firewall - Click Inbound rules - new window opens - right panel - click new rule -

new window opens - select PORT - next - give port number 21 - next - Select allow the connection - Next - Give any name to this rule - Finish

Verify

We can verify it using CMD or Browser

In server

Open CMD / Windows PowerShell

C:\> ftp localhost

User name: sankar@abc.com

Password: sankar@123

FTP>

TO DO

C:/inetpub>ftproot>create a new folder or file>save.

Open browser

URL - localhost:21

serverip:21

DHCP

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1.INTRODUCTION

Dynamic Host Configuration Protocol

-It's an internet engineering task force [IETF] standard designed to

reduce the administration burden and complexity of configuring hosts on a TCP/IP protocol-based network such as private intranet.

- When we deploy DHCP servers on our n/w, we can automatically provide client computers and other TCP/IP based n/w devices with valid IP address.

-In simple words, used to assign Private ip to computers automatically.

2.BENEFITS OF DHCP

- Reliable IP address configuration

- Centralised and Automated TCP/IP configuration

3.DHCP TERMINLOGIES

A. DHCP SCOPE - It’s a grouping or range of ip address to include or exclude for DHCP services.

Ex: DHCP Scope can be like the following

192.168.1.\_ - 192.168.1.\_

B. DHCP RESERVATIONS

- Reservations are permanent lease assignments that are used to ensure that a specified client on a subnet can always use same IP address.

- Computers which used DHCP services will have IP changed over the period of time. We can’t have the same IP for any computer.

- But for computers that require constant / static ip address

like server machines, we can configure in DHCP reservations, so that the assigned IP address will not change.

- These kinds of reservations are made to DNS servers, Firewalls, Routers, etc

- DHCP servers store DHCP lease and reservation information in database files, by default they are stored in

%SYSTEMROOT%\SYSTEM32\DHCP\DIRECTORY

C. DHCP LEASE TIME

- It is the amount of time in minutes or seconds a network device can use an IP Address in a network.

- The IP Address is reserved for that device until the reservation expires.

Ex: When a computer gets an IP (192.168.1.10) from DHCP server, the IP will be assigned only for a period of time (hours or days), after that the IP will be changed to something else.

The time period for which the IP is assigned to a computer is called LEASE TIME.

Recommended LEASE TIME

For Wired Devices - Lease time will be for 8 days

For Wireless Devices - 24 hours

For Guest Users - Hotspots will be for an hour and office guest users will have lease time of 8 hours

D. DHCP CLIENT TABLE

- It allows you to check the devices that are connected to your network.

- It will have the following information

Client Name / Computer Name

Connected Interface (LAN / WIFI)

IP address

MAC address

Lease Expiry Time

4.STEPS TO CONFIGURE DHCP

A. INSTALLING DHCP SERVER

- Server Manager - Roles - Add Roles - Next - Checkbox, DHCP server, Next - 'Network Connection Bindings' Tab will appear, your IP will be selected, leave it by default - Next - 'IPV4 DNS Settings' Tab, Leave Parent Domain unchanged and in 'Preferred DNS server IPV4 address' give server ip- Next - Next - 'DHCP Scope ‘tab, Click ADD - New pop Up window and give the following details

Scope Name - Give any name

Starting IP Address - 192.168.1.1

Ending IP address - 192.168.1.49

Subnet Type - Choose lease time "wired 8 days"

Click OK - Next - 'DHCPv6 Stateless Mode' tab, click 'Disable DHCPv6 Stateless mode for this server' (because we have not configured IPV6 for this server - Next - Next - Install - Close - Restart Server

B. CONFIGURING DHCP SERVER

We will configure the following for DHCP Server

- Configuring IP Exclusion Range

- Configuring Specific IP for Router

- Server Manager - Roles - Expand Roles - Expand DHCP Server - Expand Your Domain - Expand IPV4(X) (This will have two options - SCOPE(Y) & FILTERS(Z)) - Expand Scope (Y)

When we expand SCOPE, we can see the following

Address Pool

Address Leases

Reservations

Scope Options

B1. Configuring IP Exclusion Range

- (Y)Select Address Pool (We can see the IP range which we have configured) - Right click Address Pool - Choose New Exclusion Range - New pop up - Enter the following

Start IP Address - 192.168.1.1

End IP Address - 192.168.1.10

Click ADD

The above IP range of 10 IP address will not be assigned to any computers since it is in exclusion range.

- Address Leases (will show you the list of client IP address assigned and their lease time),

-Reservations (This assigns a specific IP address to a device by providing the device MAC address)

B2. Configuring Specific IP for Router

This configuration allows us to assign a specific IP to router which will not change or assigned to any other devices in the network.

- (Y)Scope Options- Right Click 'Scope Options' - Click 'Configure Options' - Checkbox, click '003 Router' - Enter IP Address '192.168.1.1 - Click ADD - OK

Verify

Login to CLIENT - PC

Go to Command Prompt

C:/IPCONFIG /ALL

We can see the IP (192.168.1.11) which is assigned by the server, which will not be from 192.168.1.1 to 192.168.1.10(exclusion range) - Client IP address will get assigned from 192.168.1.11

We can also see the DHCP server IP & DNS server IP

Go Back to Server

(Y) Scope - here go to Address leases - right click and refresh - now on right panel we can see the IP of our client PC which we have logged in along with its lease time.

B3. Configuring MAC Filtering

(Y) SCOPE - Click Address Leases - Right Panel - Right Click 192.168.1.11 (CLIENT-PC) - Add to Filter - Deny

Click (X) IPV4 - Right Click IPV4 - Properties - Popup, click 'Filters'- Checkbox, click 'Enable Allow List' & 'Enable Deny List' - Apply - OK

Go to (Z) FILTERS - Expand Filters - Click Deny - Right Panel - we can see a 'Red Cross Mark' over our CLIENT-PC

Verify

Login to CLIENT-PC

Open Command Prompt

C:> ipconfig /release

C:> ipconfig /renew

We will not have IP configured.

SOFTWARE DEPLOYMENT SERVICE (SDS)

-SDS will help in installing software’s in client machine.

.exe will not be accepted only .msi formats will be accepted for installation (MSI - Microsoft Installer package)

-It’s done using group policy management

OBJECTIVE

-Install Mozilla Firefox to Sales OU users.

STEPS

-Download firefox.msi

-Create a folder in C - SDS (or with any name) - Share it with everyone and move firefox.msi to this folder.

-Administrative tools - Group policy Management - Expand abc.com - right click on SALES OU - Click 'create and link gpo here' - Give any name for policy(Ex:Firefox) - Right click on 'Firefox' and click edit - New window will open - Expand 'computer configuration' - Policies - software settings - software installation - right click - new - package -browser & choose firefox.msi - click 'Assigned' - go to command prompt - give 'gpupdate /force'

VERIFY

Login to CLIENT-PC

Login with any of sales users

and we will have Firefox installed in that PC