VISOKO UČILIŠTE ALGEBRA

PROJEKTNI ZADATAK

Operacijski sustavi: mrežna infrastruktura i servisi

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1. Sažetak

Za potrebe rješavanja zadataka koji su navedeni u projektu koristit će se računala: DC, S1, S2 i CLI. Kao prijedlog projektnog zadatka odabrana je prva točka u kojem će se povezati dvije lokacije korištenjem L2TP(Layer 2 Tunneling Protocol) tunela. Postaviti DFS(Distributed File System) kako bi obje lokacije imale pristup dijeljenim podacima. Pri završetku prve točke zadatka slijedi implementacija IPAM-a(IP Address Management), gdje je u AD potrebno dodati 30 "Computer" objekata, u DNS-u im pridodati IP adrese koje su razbacane po *subnetima* i podići DHCP server za oba sajta. Struktura rješenja infrastrukture, popis instaliranih uloga, IP adresa te ostalih karakteristika svakog računala može se pronaći u poglavlju "Opis infrastrukture".

2. Opis infrastrukture



Slika 1: opis infrastrukture

3. Topologija infrastrukture



4. Razrada projekta – projektno rješenje

4.1. Postavljanje domene

Prije uspostave L2TP tunela i DFS-a potrebno je dodati S2 računalo u domenu kao "Domain Controller". Kad smo dodali S2 DC u domenu potrebno je uspostaviti L2TP tunel (više u "Uspostava L2TP tunela"). Nakon uspostave tunela potrebno je konfigurirati mrežne kartice, nazive računala, "AD Sites and Services" na DC računalu. Na kraju kad je sve uspješno postavljeno dodati CL11 računalo u domenu.

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Slika 3: osnovna konfiguracija DC i S1 računala



Slika 4: osnovna konfiguracija S2 i CLI1 računala

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Sli	ika 5: prikaz ko	nfiguracije "A	D Sites and Services	" na SERVERD	C rd	ačun	alu							



Slika 6: prikaz konfiguracije "AD Sites and Services" na SERVER2 računalu

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Slika 7: prikaz DNS konfiguracije na SERVERDC računalu

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Slika 8: prikaz DNS konfiguracije na SERVER2 računalu

4.2. Uspostava L2TP tunela

Povezati SERVER1 i SERVER2 računala L2TP tunelom kako bi povezali dvije lokacije DC | S1 i S2 | CLI. Kako bi to bilo ostvarivo potrebno je konfigurirati mrežne kartice, uključiti WAN mrežnu karticu i podignuti RRAS(Remote Access) ulogu na SERVER1 i SERVER2 računalu.

Instalirati RRAS(Direct Access and VPN + routing) ulogu na SERVER1 i SERVER2 računalu i nakon instalacije dovršiti čarobnjak uz odabir VPN deploy.



Slika 9: prikaz instalirane uloge na SERVER1 i SERVER2 računalu

Završenom instalacijom RRAS konzole pokrenuti konfiguraciju: "Custom Configuration", "VPN Access i "Demand-dial Connections" na SERVER1 i SERVER2.

Podesiti sigurnost i IPV4 postavke na oba računala.

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OK Cancel Apply	OK Cancel Apply	OK Cancel Apply	OK. Cancel Apply

Slika 10: prikaz podešenih sigurnosnih i IPV4 postavka na oba računala

Dial-in se postavlja na SERVERDC računalu.

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Slika 11: omogućen Dial-in za SERVER1 računalo



Slika 12: omogućen Dial-in za korisnika administrator

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Slika 13: omogućen group policy za RRAS konekcije na SERVER1 i SERVER2 računalu

4.2.1. Kreiranje Demand-dial interface-a

Nužno je napraviti novi Deamnd-dial interface imena L2TPvpn na SERVER1 i SERVER2 računalo kako bi se uspostavio tunel. Pritom paziti na adresu destinacije 89.89.89.0/24.

VPN -> L2TPvpn Remote public 89.89.89.0/24 adresa SERVER2 računala -> Dodavanje novog korisnika za Dial-In -> dodavanje statičke rute za remote lokaciju 172.16.101.0/24, metric 10 -> Pa\$\$w0rd -> Dial-out korisnički podaci: L2TP, Pa\$\$w0rd



Slika 14: konfiguracija statičke rute



Slika 15: omogućavanje autentifikacije za L2TPvpn Demand-Dial interface

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Slika 16: Prikaz uspješne konekcije između SERVER1 i SERVER2 računala L2TPvpn tunelom



Slika 17: testiranje konekcije između SERVER1 i SERVER2 koristeći tracert naredbom

4.3. Instalacija DFS-a

Kad je L2TP tunel uspostavljen potrebno je instalirati DFS uloge na SERVER1 i SERVER2 računalo. Nužno je instalirati "DFS Namespaces" i "DFS Replication".



Slika 18: instalacija DFS uloge na SERVER1 i SERVER2



Slika 19: konfiguracija DFS replikacijske grupe

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Slika 20: konfiguracija "Share Replicated" foldera

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Slika 21: uspješno konfigurirana replikacija

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Slika 22: testiranje pristupa podataka sa putanje \\janach.local\Public\REPO (DC i S1)

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Slika 23: testiranje pristupa podataka sa putanje \\janach.local\Public\REPO (S2 i CLI)

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Slika 24: testni pristup podataka sa putanje \\janach.local\Public\REPO



Slika 25: na site1 strani odgovoran je SERVER1



Slika 26: na site2 stranice odgovoran je SERVER2

4.4. IPAM

IPAM infrastruktura za ovaj zadatak: S1 – instalirana IPAM rola, S2 – instalirana DHCP rola. Nakon instaliranih rola i uspješne konfiguracije IPAM-a potrebno je dodati 30 "computer objekata" i za svaki taj objekt dodijeliti IP adresu u DNS-u. Za kraj sve provjeriti NSlookup naredbom i IPAM-om.

Instalirana DHCP uloga na SERVER2 računalu. Instalirana IPAM uloga na SERVER1 računalu.



Slika 27: prikaz DHCP i IPAM uloge na SERVER1 računalu

Zatim pokrenuti PowerShell komandu "Invoke-IpamGpoProvisioning".

Gpupdate /force na svim računalima.

Na SERVER1 gdje je instalirana IPAM uloga potrebno je pokrenuti "Provisioning Wizard". Konfigurirati SERVERDC i SERVER2 tako da SERVERDC bude type: DC i DNS, a SERVER2 bude type: DC, DNS i DHCP.

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Unmanaged S +	Server Yearner MARCE-DC Doman Name Januard-Dcal PH-4 Addresser Server: 320-146-11 PH-4 Addresser Server: 320-520-520 Constant Committing System Worksing Server: 2019 Standard Server: 510 Server: 510 Server: 510		IRAM Access Status Recommended Action: Denter DHCP AppC Access Status DHCP Audit Share Access Status DHCP Audit Share Access Status DHS APC Access Status	Unbiooked IPAbl Access Unblocked Not applicable Not applicable Unbiooked Unbiooked		

Slika 28: prikaz uspješne konfiguracije

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OVERVEW SERVER INVENTORY PADDRESS SPACE PAddress floads PAddress PAddress	Port Port	Incoper Name Server Name Server Availability Fallower Ro E. List DHCP Songe Edit scope DHS Updates + Options + Summary + Summary + Event Address Event Address Eve	Integer Integer Integer <
# 2 # 6 = 5 <u>5</u>			OK Cencel Apply ^ T_2 d_# HWV 1255 * T_2 d_# HWV 1255

Pomoću IPAM-a kreirati "Scope" kako bi CLI računalo dobilo IP adresu DHCP-om.

Slika 29: uspješno kreiran "Scope"

Konfiguracija na IPAM-u uspješno je prenesena na DHCP server računalo(SERVER2).



Slika 30: prijenost konfiguracije na DHCP SERVER2 računalo



Slika 31: CLI računalu uspješno je dodijeljena IP adresa DHCP-om



Slika 32: prikaz dodanih 30 "Computer" objekata u AD Users and Computers

Svakome dodanome objektu pridodati IP adresu. npr. Za svakih 10 računala dodijeliti IP adrese iz jednog range-a subneta, pa za drugih 10 iz drugog range-a subneta. Zatim provjeriti da li su se DNS zapisi replicirali na S2 DC.



Slika 33: prikaz dodanih 30 "Computer" objekata



Slika 34: Test NSlookup naredbom sa SERVER1 i CLI računala

Ovime završava projektni zadatak.

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6. Reference

- [1.] https://www.serverworld.info/en/note?os=Windows_Server_2019&p=active_directory&f=1
- [2.] https://www.snel.com/support/how-to-set-up-an-l2tp-ipsec-vpn-on-windows-server-2019/
- [3.] https://winintro.ru/rras.en/html/45270da0-2712-41d6-91f4-940982abe023.htm
- [4.] https://mizitechinfo.wordpress.com/2013/08/21/step-by-step-deploy-dfs-in-windowsserver-2012-r2/
- [5.] https://mizitechinfo.wordpress.com/2014/12/02/step-by-step-implementing-configuringipam-in-windows-server-2012-r2/