



PROJEKT DOKUMENTÁCIÓ

2025

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PUFF. KFT

Tartalomjegyzék

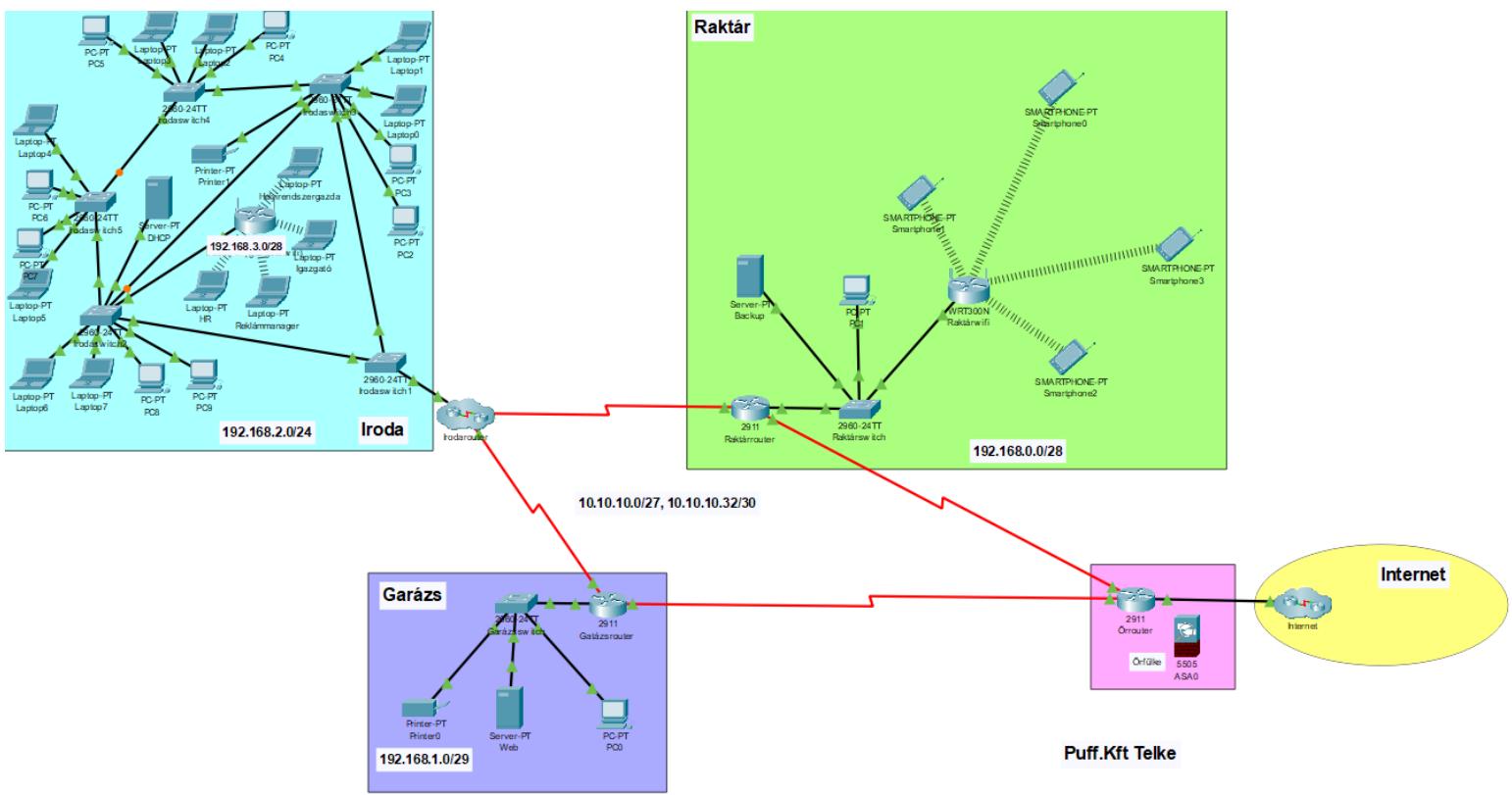
VIDEO LINK	HIBA! A KÖNYVJELZŐ NEM LÉTEZIK.
TOPOLÓGIA	- 3 -
TÖRTÉNET	- 3 -
HÁLÓZAT FELÉPÍTÉS:	- 3 -
SZERVEREK FELÉPÍTÉSE:	- 6 -
FELADATFELOSZTÁS EGYMÁS KÖZÖTT:	- 6 -
MIKROTIK ROUTER	- 7 -
SZERVEREK	- 7 -
WINDOWS PDC SZERVER:	- 8 -
PDC	- 8 -
VLAN10	- 9 -
VLAN20	- 10 -
VLAN30	- 11 -
VLAN40	- 12 -
VLAN99	- 13 -
DNS	- 14 -
DNS	- 15 -
ACTIVE DIRECTORY	- 16 -
ACTIVE DIRECTORY	- 17 -
CERTIFICATE	- 18 -
BIZTONSÁGIMENTÉS	- 19 -
WINDOWS BDC SZERVER:	- 20 -
BDC:	- 20 -
DHCP FAILOVER	- 21 -
DHCP FAILOVER	- 22 -
DEBIAN12, KEZDETI KONFIGURÁCIÓ	- 23 -
LINUX SZERVER:	- 23 -
DEBIAN12, KEZDETI KONFIGURÁCIÓ	- 24 -
.....	- 25 -
DEBIAN12, KEZDETI KONFIGURÁCIÓ	- 25 -
.....	- 25 -
.....	- 26 -
DEBIAN12, KEZDETI KONFIGURÁCIÓ	- 26 -
.....	- 26 -
.....	- 26 -
.....	- 27 -
DEBIAN12, KEZDETI KONFIGURÁCIÓ	- 27 -
WIN10 KLIENS	- 28 -
.....	- 28 -
WINDOWS CLIENT	- 28 -
.....	- 29 -
WIN10 KLIENS	- 29 -
HIBÁK:	- 30 -
HIBÁK, AMIKBE ÜTKÖZTÜNK	- 30 -
.....	- 31 -
.....	- 32 -
.....	- 33 -

PACKET TRACER	- 33 -
TESZTELÉSEK	- 33 -
MELLÉKLETEK.....	- 38 -
KONFIGURÁCIÓS ÁLLOMÁNYOK.....	- 38 -
IRODASWITCH1	- 38 -
IRODASWITCH2	- 41 -
IRODASWITCH3	- 45 -
IRODASWITCH4	- 49 -
IRODASWITCH5	- 53 -
IRODAROUTER1.....	- 57 -
IRODAROUTER2.....	- 60 -
IRODAROUTER3.....	- 64 -
IRODAROUTER4.....	- 68 -
RAKTÁRROUTER	- 73 -
RAKTÁRSWITCH	- 78 -
GARAZSROUTER	- 81 -
GARAZSSWITCH	- 86 -
ÖRROUTER	- 89 -
ASA.....	- 93 -
ISP1	- 93 -
ISP2	- 96 -

Videó



Topológia



Történet

A Puff.kft csomag szállító cég három telephelyből áll.

A három telephely az alábbiak szerint van felosztva:

- az irodában, ami egy különálló épület húsz dolgozó van, 1 fönök, 1 hr, 1 reklám menedzser, 1 pénzügyi szakértő, 1 könyvelő, 1 ügyvéd, 1 logisztikai mérnök és 4 segítője, az ügyfélszolgálati résznél jelenleg 6 dolgozó van és 3 informatikus. Az itt tervezett hálózatunk 20 vagy több dolgozót képes kiszolgálni.
- a raktárban, ami ugyanúgy különálló épület több dolgozó is van (raktárosok), de szerepel egy gép, amin több ember is befogathatja meg nézheti a különböző rendeléseket, üzeneteket stb...
- a garázs szintén különálló épület és ott pedig 2 dolgozó van, akik menedzselik, hogy melyik járműben milyen típusú csomag kerül be és ki.

Hálózat felépítés:

A hálózat három telephelyet foglal magában, amelyek egyazon telken helyezkednek el. A három telephely a Raktár, a Garázs és az Iroda. A biztonság érdekében már a belső hálózaton is NAT-olást alkalmazunk. A telephelyek közötti kommunikáció VPN-en keresztül történik, míg a forgalomirányításhoz OSPF protokollt használunk.

Raktár: A Raktárban egy Windows alapú Backup szerver kerül elhelyezésre. A helyi hálózat az alábbi eszközökből áll:

- (1) BDC Windows szerver
- (1) Számítógép
- (1) WRT300N Wifi-Router
- (4) SMARTPHONE-PT okostelefon
- (1) Cisco 2960 Switch
- 1db, 2911 Cisco router (A kiosztott IP-címek tartománya: **192.168.0.0/29**. A Wi-Fi router címe a **192.168.0.32/29** tartományból kerül kiosztásra.)

Garázs: A Garázsban egy Linux szerver kap helyet. A hálózat az alábbi eszközöket tartalmazza:

- (1) Linux szerver
- (1) Számítógép
- (1) Nyomtató
- (1) Cisco 2960 Switch
- (1) 2911 Cisco router (Az IP-címek kiosztása: **192.168.1.0/29**.)

Iroda: Az Irodában egy Windows szerver található, amely a hálózat központi eleme. A hálózatban az alábbi eszközök kapnak helyet:

- (1) PDC Windows szerver
- (8) Számítógép
- (12) Laptop
- (1) WRT300N Wifi-Router
- (1) Nyomtató
- (5) Switch (2. rétegbeli redundanciát biztosítva)
- (4) 2911 Cisco router (3. rétegbeli redundanciát biztosítva)

Az iroda hálózatában az alábbi IP-címek kerülnek kiosztásra:

- **192.168.2.0/24** az általános irodai hálózat számára
- **192.168.3.0/29** a Wi-Fi router számára

A hálózat VLAN szegmensei az alábbiak:

- V10: **192.168.2.0/27 / IPv6: FC10::0/64**
- V20: **192.168.2.32/27 / IPv6: FC20::0/64**
- V30: **192.168.2.64/27 / IPv6: FC30::0/64**
- V40: **192.168.2.96/27 / IPv6: FC40::0/64**

- V99: 192.168.2.128/29 / IPv6: FC99::0/64

A routerek közötti címek:

- R4,1 - R4,2: 192.168.2.136/30
- R4,1 - R4,3: 192.168.2.140/30
- R4,2 - R4,4: 192.168.2.144/30
- R4,3 - R4,4: 192.168.2.148/30

A **V99 VLAN** az igazgatósági jogokkal rendelkező felhasználók számára van fenntartva, ide tartozik:

- Az igazgató
- A HR részleg
- A marketing menedzser
- A helyi rendszergazda Ebben a VLAN-ban található a szerver és a Wi-Fi router, amelyet kizárolag az említett személyek használhatnak. A többi VLAN az általános irodai dolgozók számára lett kiosztva.

Külső hálózat: A belső hálózat külső kapcsolata az alábbi eszközökből áll:

- Belső hálózati routerek
- Egy külső router
- Egy ASA tűzfal az internetkapcsolathoz

A külső hálózati címkiosztás:

- Internet - R1: 10.10.10.0/30
- R1 - R2: 10.10.10.4/30
- R1 - R3: 10.10.10.8/30
- R2 - R4,1: 10.10.10.16/30
- R3 - R4,1: 10.10.10.12/30

Eszközök megnevezése:

- **Iroda:**
 - Switch-ek: **S1, S2, S3, S4, S5**
 - Routerek: **R4,1, R4,2, R4,3, R4,4**
 - Igazgatói Wi-Fi: **wifi**
- **Raktár:**
 - Switch: **Sw1**

- Router: **R2**
- Wi-Fi: **wifi**
- **Garázs:**
 - Switch: **Sw2**
 - Router: **R3**

Szerverek felépítése:

- **Irodai szerver (Windows Server):**

Az irodai szerver felelős az IPv4 és IPv6 címek DHCP kiosztásáért (lásd az előző fejezetben). Az Active Directory segítségével tárolja és kezeli az iroda hálózatán belüli összes felhasználót. Emellett ez a szerver végzi az automatikus adatmentéseket is.

- **Raktári szerver (Windows Server):**

A raktárban található szerver egyetlen célja, hogy az irodai szerver meghibásodása esetén átvegye annak feladatait, biztosítva a rendszer zavartalan működését.

- **Garázs szerver (Linux Server):**

A garázsban elhelyezett szerver biztosítja a vállalat weboldalának működését, valamint a fájl- és nyomtatómegosztást az iroda és a garázs hálózatában. Emellett FTP-szolgáltatást is nyújt.

- **Weblap:**

A weboldal reszponzív kialakítású, azaz különböző eszközökön megfelelően jelenik meg.

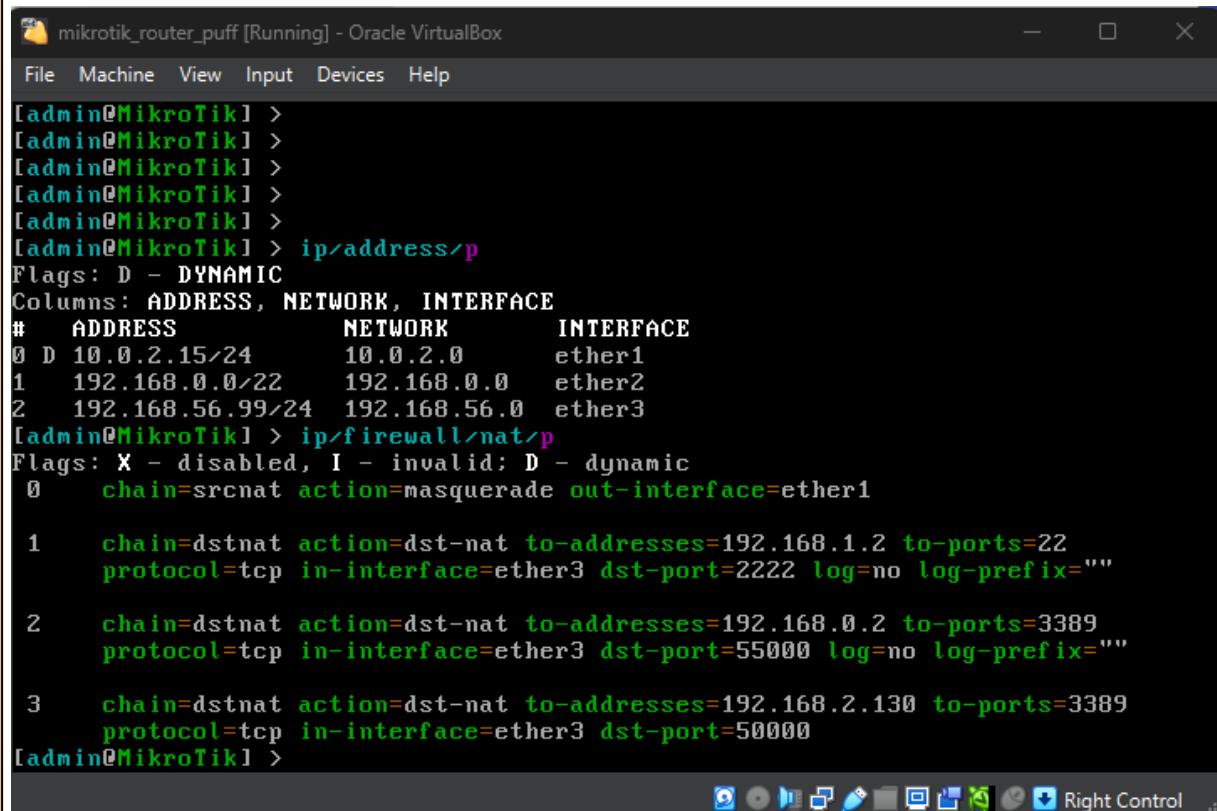
Feladatfelosztás egymás között:

Mikrotik router

A szerverek megvalósításához a VirtualBox virtualizációs szoftvert használtuk.

Elsősorban egy Mikrotik routert használtunk virtuális routerként. →

Szerverek



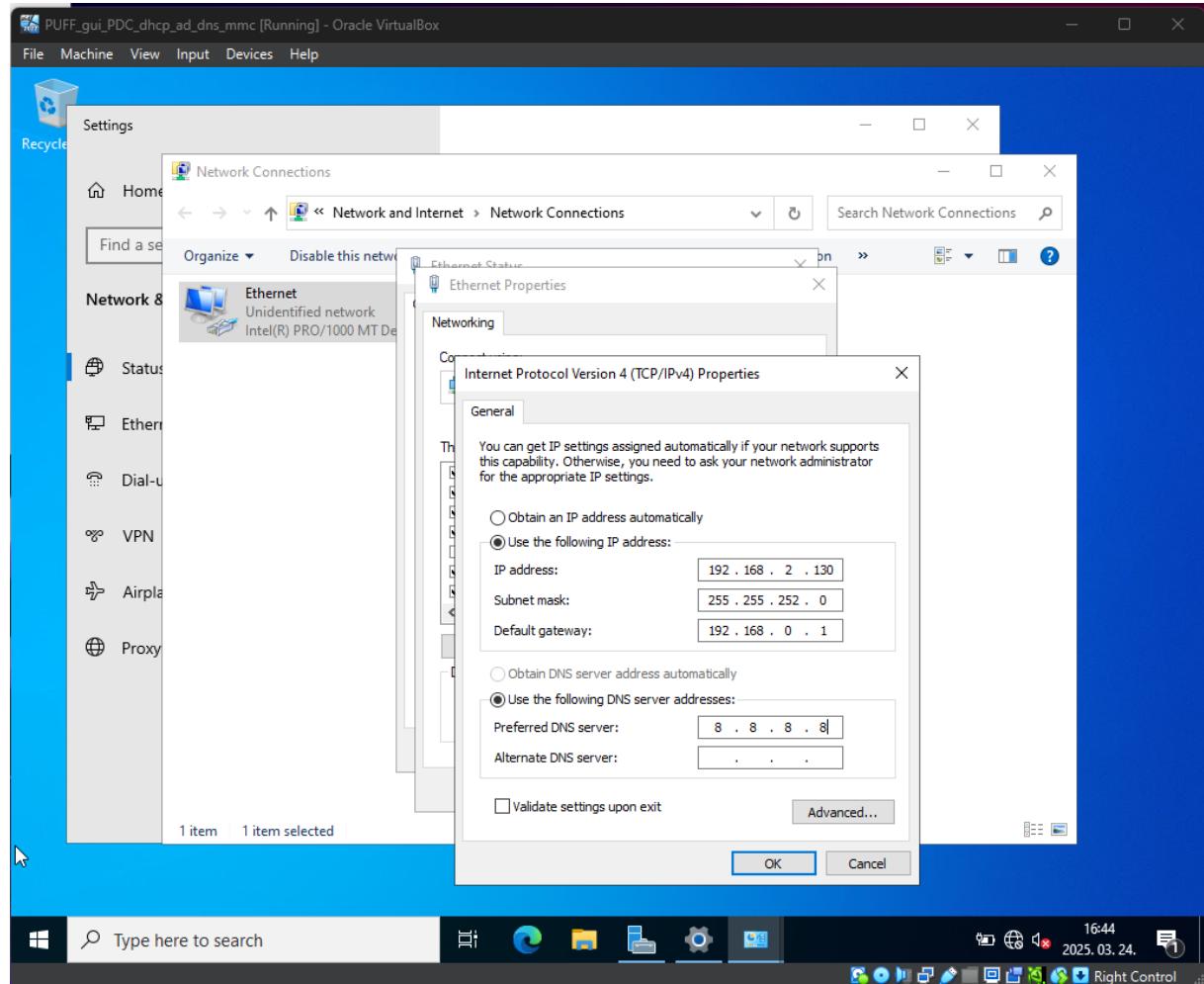
The screenshot shows a window titled "mikrotik_router_puff [Running] - Oracle VirtualBox". The menu bar includes File, Machine, View, Input, Devices, and Help. The main terminal window displays MikroTik CLI commands:

```
[admin@mikroTik] >
[admin@mikroTik] >
[admin@mikroTik] >
[admin@mikroTik] >
[admin@mikroTik] > ip/address/p
Flags: D - DYNAMIC
Columns: ADDRESS, NETWORK, INTERFACE
#  ADDRESS          NETWORK        INTERFACE
0  D 10.0.2.15/24   10.0.2.0    ether1
1  192.168.0.0/22  192.168.0.0  ether2
2  192.168.56.99/24 192.168.56.0 ether3
[admin@mikroTik] > ip/firewall/nat<p>
Flags: X - disabled, I - invalid; D - dynamic
  0  chain=srcnat action=masquerade out-interface=ether1
  1  chain=dstnat action=dst-nat to-addresses=192.168.1.2 to-ports=22
      protocol=tcp in-interface=ether3 dst-port=2222 log=no log-prefix=""
  2  chain=dstnat action=dst-nat to-addresses=192.168.0.2 to-ports=3389
      protocol=tcp in-interface=ether3 dst-port=55000 log=no log-prefix=""
  3  chain=dstnat action=dst-nat to-addresses=192.168.2.130 to-ports=3389
      protocol=tcp in-interface=ether3 dst-port=50000
[admin@mikroTik] >
```

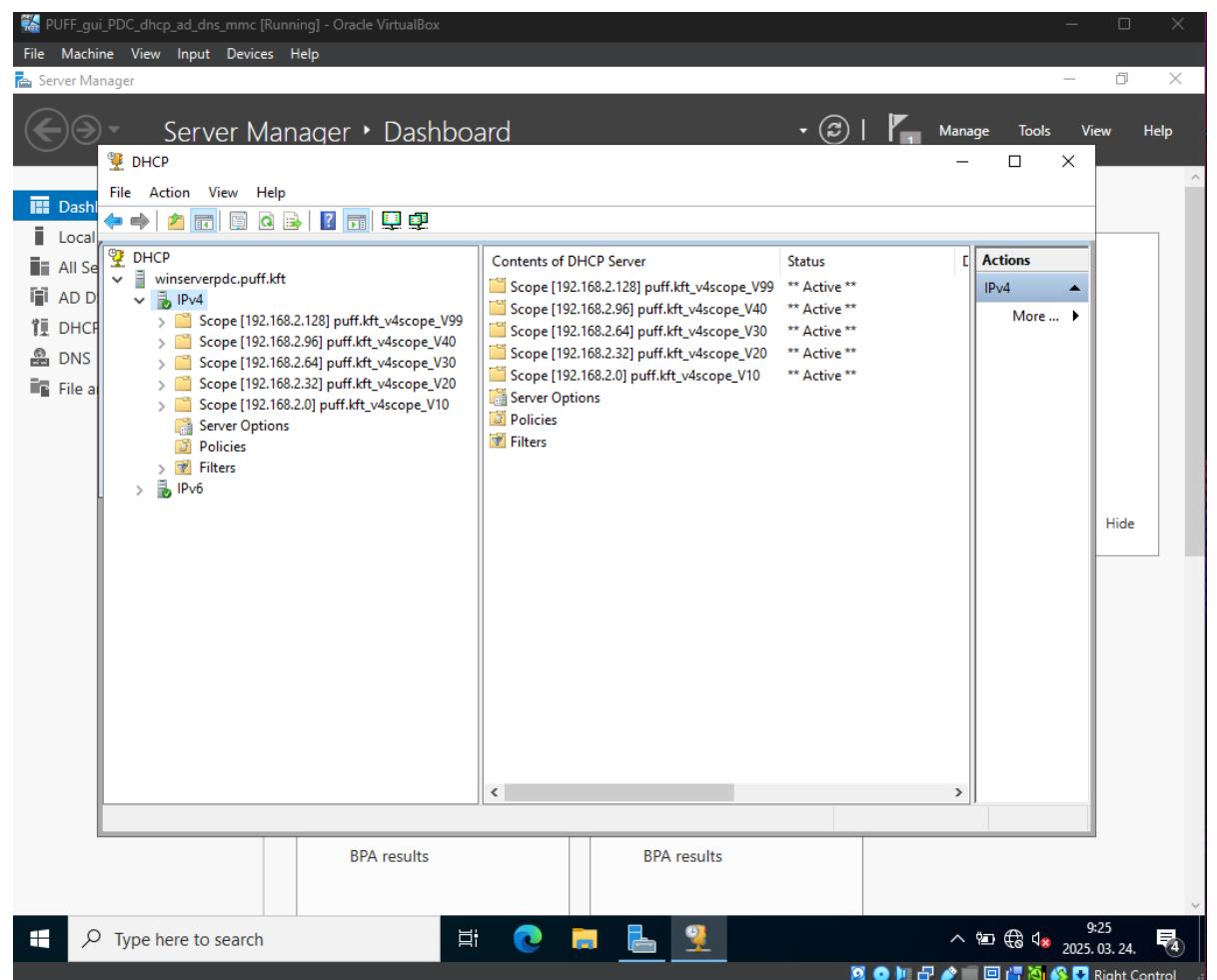
Windows PDC szerver:

PDC

Statikusan
hozzáadjuk az
IPv4-es címet. →



Scope options →



Vlan10

Address pool →

The screenshot shows the Windows DHCP Management Console interface. On the left, a tree view displays the DHCP configuration for a server named 'winserverpdc.puff.kft'. Under 'IPv4', several scopes are listed: 'Scope [192.168.2.32] puff.kft_v4scope_V20', 'Scope [192.168.2.64] puff.kft_v4scope_V30', 'Scope [192.168.2.96] puff.kft_v4scope_V40', 'Scope [192.168.2.128] puff.kft_v4scope_V99', and 'Scope [192.168.2.0] puff.kft_v4scope_V10'. Each scope has sub-nodes for 'Address Pool', 'Address Leases', 'Reservations', 'Scope Options', and 'Policies'. A table on the right lists the 'Start IP Address' (192.168.2.2) and 'End IP Address' (192.168.2.30) for the first scope, with a description 'Address range for distribution'. The top menu bar includes 'File', 'Machine', 'View', 'Input', 'Devices', 'Help', and 'Actions' (with 'Address Pool' selected). The bottom taskbar shows the Windows Start button, a search bar, and various pinned icons.

Scope options →

The screenshot shows the Windows DHCP Management Console interface. On the left, the same DHCP configuration tree is visible. Under 'IPv4', the 'Scope [192.168.2.32] puff.kft_v4scope_V20' node is expanded, showing its sub-nodes. To the right, a table displays specific scope options: '003 Router' (Value: 192.168.2.1), '006 DNS Servers' (Value: 192.168.2.130, 192.168.0.2), and '015 DNS Domain Name' (Value: puff.kft). The 'Actions' column indicates that none of these options have a policy assigned. The top menu bar includes 'File', 'Machine', 'View', 'Input', 'Devices', 'Help', and 'Actions' (with 'Scope Options' selected). The bottom taskbar is identical to the previous screenshot.

Vlan20

Address pool →

The screenshot shows the Windows Management Console (MMC) interface for the PUFF_gui application, specifically the DHCP management console. The left pane displays a tree view of DHCP configurations under 'winserverpdc.puff.kft'. The 'IPv4' node is expanded, showing several scopes: 'Scope [192.168.2.32] puff.kft_v4scope_V20', 'Scope [192.168.2.64] puff.kft_v4scope_V30', 'Scope [192.168.2.96] puff.kft_v4scope_V40', 'Scope [192.168.2.128] puff.kft_v4scope_V99', and 'Scope [192.168.2.0] puff.kft_v4scope_V10'. Each scope has sub-nodes for 'Address Pool', 'Address Leases', 'Reservations', 'Scope Options', and 'Policies'. The right pane lists the 'Actions' for the selected 'Address Pool' node, with 'Start IP Address' set to 192.168.2.34 and 'End IP Address' set to 192.168.2.62. The 'Description' is 'Address range for distribution'. The bottom of the screen shows the Windows taskbar with the date 2025.03.24 and time 9:43.

Scope options →

The screenshot shows the Windows Management Console (MMC) interface for the PUFF_gui application, specifically the DHCP management console. The left pane displays a tree view of DHCP configurations under 'winserverpdc.puff.kft'. The 'IPv4' node is expanded, showing several scopes: 'Scope [192.168.2.32] puff.kft_v4scope_V2', 'Scope [192.168.2.64] puff.kft_v4scope_V3', 'Scope [192.168.2.96] puff.kft_v4scope_V4', 'Scope [192.168.2.128] puff.kft_v4scope_V9', and 'Scope [192.168.2.0] puff.kft_v4scope_V10'. Each scope has sub-nodes for 'Address Pool', 'Address Leases', 'Reservations', 'Scope Options', and 'Policies'. The right pane lists the 'Actions' for the selected 'Scope Options' node, showing three entries: '003 Router' (Value: 192.168.2.33), '006 DNS Servers' (Value: 192.168.2.130, 192.168.0.2), and '015 DNS Domain Name' (Value: puff.kft). The bottom of the screen shows the Windows taskbar with the date 2025.03.24 and time 9:40.

Vlan30

Address pool →

The screenshot shows the Windows DHCP Management Console. The left pane displays a tree view of DHCP scopes under a server named 'winserverpdcpuff.kft'. The 'IPv4' node is expanded, showing several scopes: 'Scope [192.168.2.32] puff.kft_v4scope_V2', 'Scope [192.168.2.64] puff.kft_v4scope_V3', 'Scope [192.168.2.96] puff.kft_v4scope_V4', 'Scope [192.168.2.128] puff.kft_v4scope_V5', and 'Scope [192.168.2.0] puff.kft_v4scope_V10'. Each scope has sub-nodes for 'Address Pool', 'Address Leases', 'Reservations', 'Scope Options', and 'Policies'. The right pane shows a table for 'Address Pool' with columns: Start IP Address, End IP Address, Description, and Actions. One entry is visible: '192.168.2.66' to '192.168.2.94' with the description 'Address range for distribution'. The bottom of the window shows the Windows taskbar with the date '2025.03.24'.

Scope options →

The screenshot shows the Windows DHCP Management Console. The left pane displays a tree view of DHCP scopes under 'winserverpdcpuff.kft'. The 'IPv4' node is expanded, showing scopes: 'Scope [192.168.2.32] puff.kft_v4scope_V20', 'Scope [192.168.2.64] puff.kft_v4scope_V30', 'Scope [192.168.2.96] puff.kft_v4scope_V40', 'Scope [192.168.2.128] puff.kft_v4scope_V99', and 'Scope [192.168.2.0] puff.kft_v4scope_V10'. The 'Scope Options' node is selected for the first scope. The right pane shows a table for 'Scope Options' with columns: Option Name, Vendor, Value, and Policy Name. Three entries are listed: '003 Router' (Value: 192.168.2.65, Policy Name: None), '006 DNS Servers' (Value: 192.168.2.130, 192.168.0.2, Policy Name: None), and '015 DNS Domain Name' (Value: Standard, Policy Name: puff.kft). The bottom of the window shows the Windows taskbar with the date '2025.03.24'.

Vlan40

Address pool →

The screenshot shows the 'Address pool' section of the PUFF_gui DHCP interface. On the left is a tree view under 'winserverpdc.puff.kft'. Under 'IPv4', several scopes are listed: 'Scope [192.168.2.32] puff.kft_v4scope_V20', 'Scope [192.168.2.64] puff.kft_v4scope_V30', 'Scope [192.168.2.96] puff.kft_v4scope_V40', 'Scope [192.168.2.128] puff.kft_v4scope_V99', and 'Scope [192.168.2.0] puff.kft_v4scope_V10'. Each scope has sub-options like 'Address Pool', 'Address Leases', 'Reservations', 'Scope Options', and 'Policies'. On the right, a table lists the 'Start IP Address' (e.g., 192.168.2.98) and 'End IP Address' (e.g., 192.168.2.126) for each scope, along with a 'Description' column ('Address range for distribution') and an 'Actions' column with a 'More Act...' button.

Scope options →

The screenshot shows the 'Scope options' section of the PUFF_gui DHCP interface. On the left is the same tree view of scopes. Under 'Scope Options' for each scope, there are entries for '003 Router', '006 DNS Servers', and '015 DNS Domain Name'. These entries show values like '192.168.2.97' for the router and '192.168.2.130, 192.168.0.2' for DNS servers. On the right, a table lists these options with columns for 'Option Name', 'Vendor', 'Value', 'Policy Name', and an 'Actions' column with a 'More Act...' button.

Option Name	Vendor	Value	Policy Name	Actions
003 Router	Standard	192.168.2.97	None	Scope Options
006 DNS Servers	Standard	192.168.2.130, 192.168.0.2	None	More Act...
015 DNS Domain Name	Standard	puff.kft	None	

Vlan99

Address pool →

The screenshot shows the Windows DHCP Management Console. The left pane displays a tree view of DHCP configurations under 'winserverpdc.puff.kft'. Under 'IPv4', several scopes are listed: 'Scope [192.168.2.128] puff.kft_v4scope_V99', 'Scope [192.168.2.96] puff.kft_v4scope_V40', 'Scope [192.168.2.64] puff.kft_v4scope_V30', 'Scope [192.168.2.32] puff.kft_v4scope_V20', and 'Scope [192.168.2.0] puff.kft_v4scope_V10'. Each scope node contains sub-nodes for 'Address Pool', 'Address Leases', 'Reservations', 'Scope Options', and 'Policies'. The right pane shows a table for 'Scope Options' with one entry:

Action	Address P...	More ...			
Start IP Address	192.168.2.131	End IP Address	192.168.2.134	Description	Address range for distribution

Scope options →

The screenshot shows the Windows DHCP Management Console. The left pane displays the same tree view of DHCP configurations as the previous screenshot. The right pane shows a detailed view of 'Scope Options' for the 'Scope [192.168.2.32] puff.kft_v4scope_V20' configuration. The table lists three options:

Option Name	Vendor	Value	Policy Name
003 Router	Standard	192.168.2.129	None
006 DNS Servers	Standard	192.168.2.130, 192.168.0.2	None
015 DNS Domain Name	Standard	puff.kft	None

DNS

Forward Lookup Zone →

Name	Type	Status	DNSSEC Status	Key Master
_msdcs.puff.kft	Active Directory-Integrated Pr...	Running	Not Signed	Not Signed
puff.kft	Active Directory-Integrated Pr...	Running	Not Signed	Not Signed

Reverse Lookup Zone →

Name	Type	Status	DNSSEC Status	Key Master
2.168.192.in-addr.arpa	Active Directory-Integrated Pr...	Running	Not Signed	Not Signed
1.168.192.in-addr.arpa	Active Directory-Integrated Pr...	Running	Not Signed	Not Signed
0.168.192.in-addr.arpa	Active Directory-Integrated Pr...	Running	Not Signed	Not Signed

DNS

AAA, PTR →

The screenshot shows the Windows Server Management Console (MMC) running the DNS Manager snap-in. The left pane displays a tree view of DNS zones under 'WINSERVERPDC'. The 'Forward Lookup Zones' section is expanded, showing sub-zones like '_msdcsl', '_sites', '_tcp', '_udp', 'DomainDnsZones', and 'ForestDnsZones'. The 'Reverse Lookup Zones' section lists IP addresses with their corresponding FQDNs. The right pane is a table listing DNS records:

Name	Type	Data	Timestamp
_msdcsl	Start of Authority (SOA)	[69], winserverpdc.puff.kft...	static
_sites	Name Server (NS)	winserverpdc.puff.kft.	static
_tcp	Name Server (NS)	winverbdc.puff.kft.	static
_udp	(same as parent folder)	192.168.2.130	2025. 03. 24. 11:00:00
DomainDnsZones	(same as parent folder)	192.168.0.2	2025. 03. 24. 11:00:00
ForestDnsZones	(same as parent folder)	192.168.2.2	2025. 03. 28. 5:00:00
winclient	Host (A)	192.168.0.2	static
winverbdc	Host (A)	192.168.2.130	static
winserverpdc	Host (A)	192.168.1.2	static
www	Host (A)	192.168.1.2	
ftp	Host (A)	192.168.1.2	

MMC →

The screenshot shows the Windows Server Management Console (MMC) running the 'puff_admin_mmc_console - [Console Root]' snap-in. The left pane displays a tree view of management tools: Active Directory Users and Computers, Computer Management (Local), Device Manager, DHCP, Disk Management(Local), DNS, Group Policy Management, Task Scheduler (Local), and Windows Server Backup. The right pane shows a list of these tools with their names and icons. The bottom of the screen shows the Windows taskbar with the Start button, search bar, and various pinned icons.

Active Directory

Raktár
felhasználók →

The screenshot shows the Windows Server Management Console (MMC) with the "Active Directory Users and Computers" snap-in running. The left pane displays the organizational structure under "Active Directory Users and Computers". The "Raktár" security group is expanded, showing its members: Iroda, Raktár, and Garázs. The right pane lists the users under the "Raktár" group, including Mészáros József, Demeter Éva, Nagy Benjámin, Jakab Beáta, Csóka András, and the group itself. The taskbar at the bottom shows the date as 2025.03.28.

Iroda
felhasználók →

The screenshot shows the Windows Server Management Console (MMC) with the "Active Directory Users and Computers" snap-in running. The left pane displays the organizational structure under "Active Directory Users and Computers". The "Iroda" security group is expanded, showing its members: Raktár, Garázs, and Iroda. The right pane lists the users under the "Iroda" group, including Nagy István, Kiss Mária, Szabó János, Kovács Péter, Tóth Anna, Fodor Károly, Balázsz Edit, Veres Norbert, Szekeres Dóra, Molnár Tamás, Horváth Zsolt, Lakatos René, Juhász Márton, Papi Boglárka, Vass Zoltán, Halász Róbert, Barta Mihály, Simon Krisztian, Farkas Gergő, Bogdán Eszter, and the group itself. The taskbar at the bottom shows the date as 2025.03.28.

Active Directory

Garázs
felhasználók →

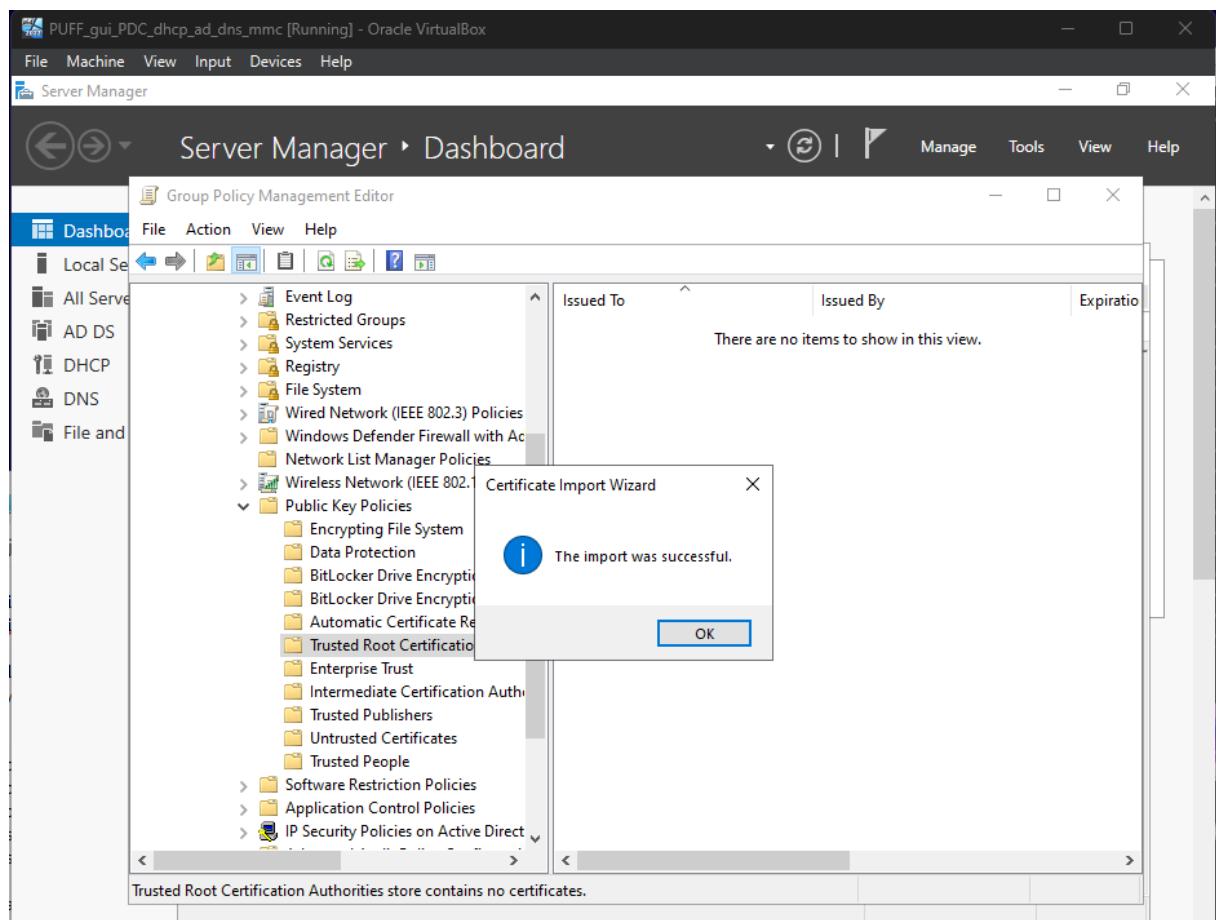
The screenshot shows the Windows Server Management Console (MMC) running under the title 'PUFF_gui_PDC_dhcp_ad_dns_mmc [Running] - Oracle VirtualBox'. The main window is 'Active Directory Users and Computers'. The left pane shows a tree view of the directory structure under 'puff.kft'. The right pane displays a table with columns 'Name', 'Type', and 'Description'. There are two entries: 'Baráth Nikolett' (User) and 'Garázs' (Security Group). The 'Garázs' entry is highlighted.

Időkorlát egy
felhasználónak→

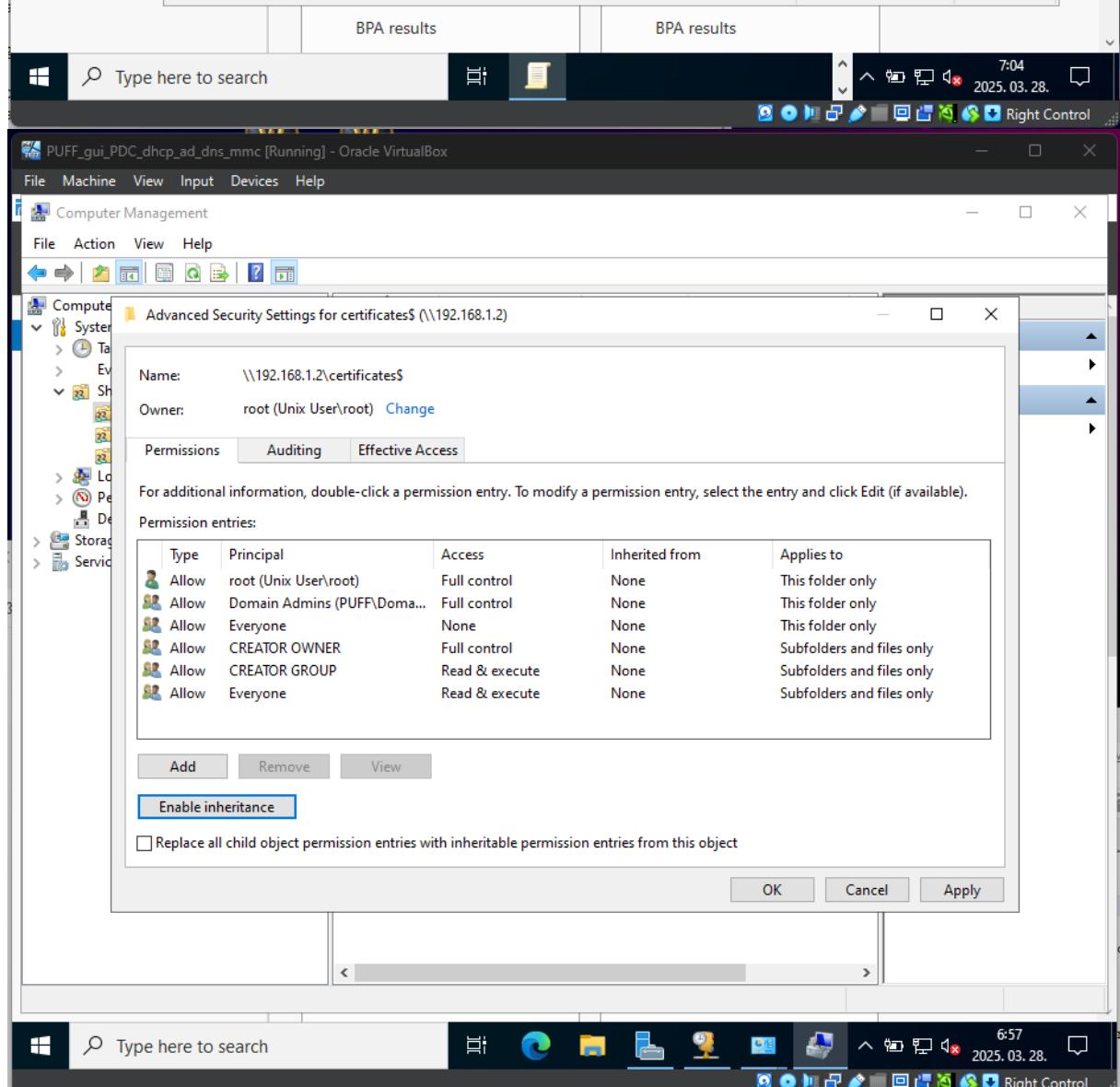
The screenshot shows the Windows Server Management Console (MMC) running under the title 'PUFF_gui_PDC_dhcp_ad_dns_mmc [Running] - Oracle VirtualBox'. The main window is 'Server Manager > Dashboard'. On the left, the navigation pane shows 'AD DS' expanded, with 'puff.kft' selected. A 'Logon Hours for Baráth Nikolett' dialog box is open in the center. It displays a grid representing logon hours for each day of the week. The grid shows that logons are permitted from 8:00 to 19:00 on weekdays (Monday through Friday), but denied on weekends (Saturday and Sunday). The 'OK' button is visible at the bottom right of the dialog.

Certificate

Sikeres
tanúsítvány be
importálása. →



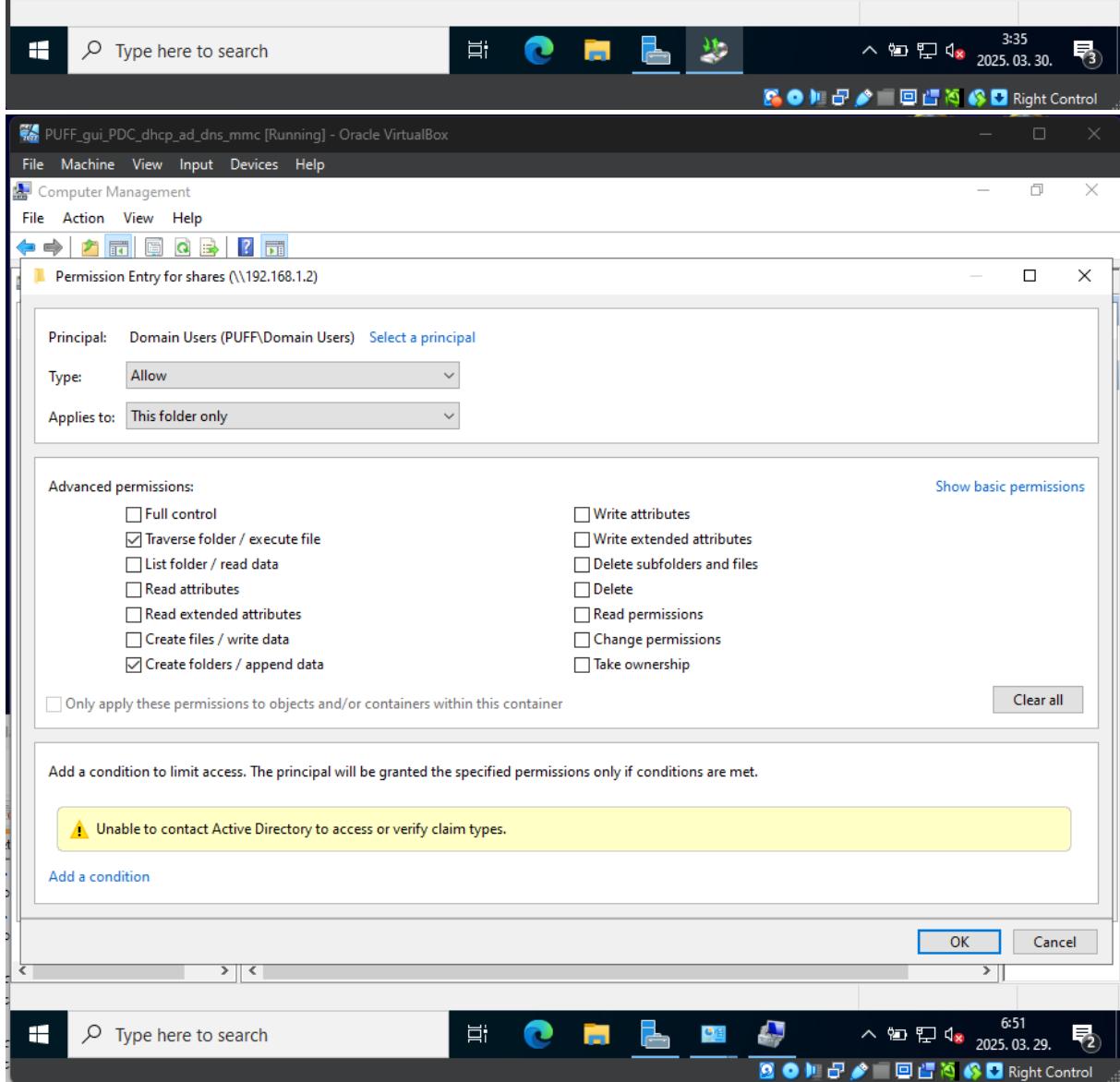
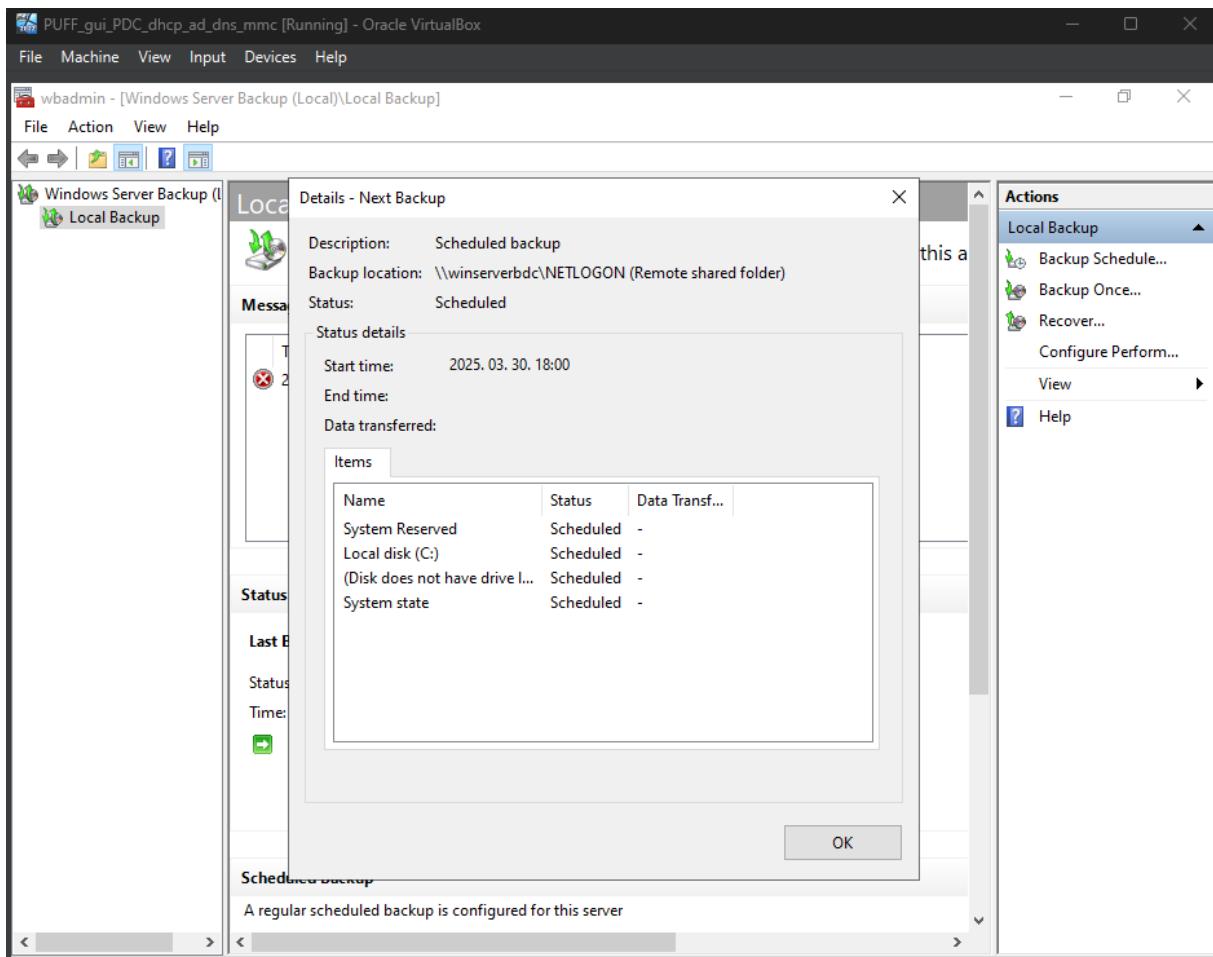
Öröklődés
kikapcsolása. →



Biztonságímentés és

Automatizált
mentés a BDC
szerverre. →

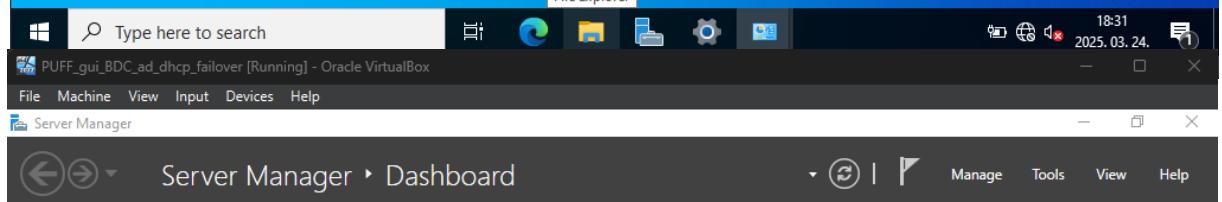
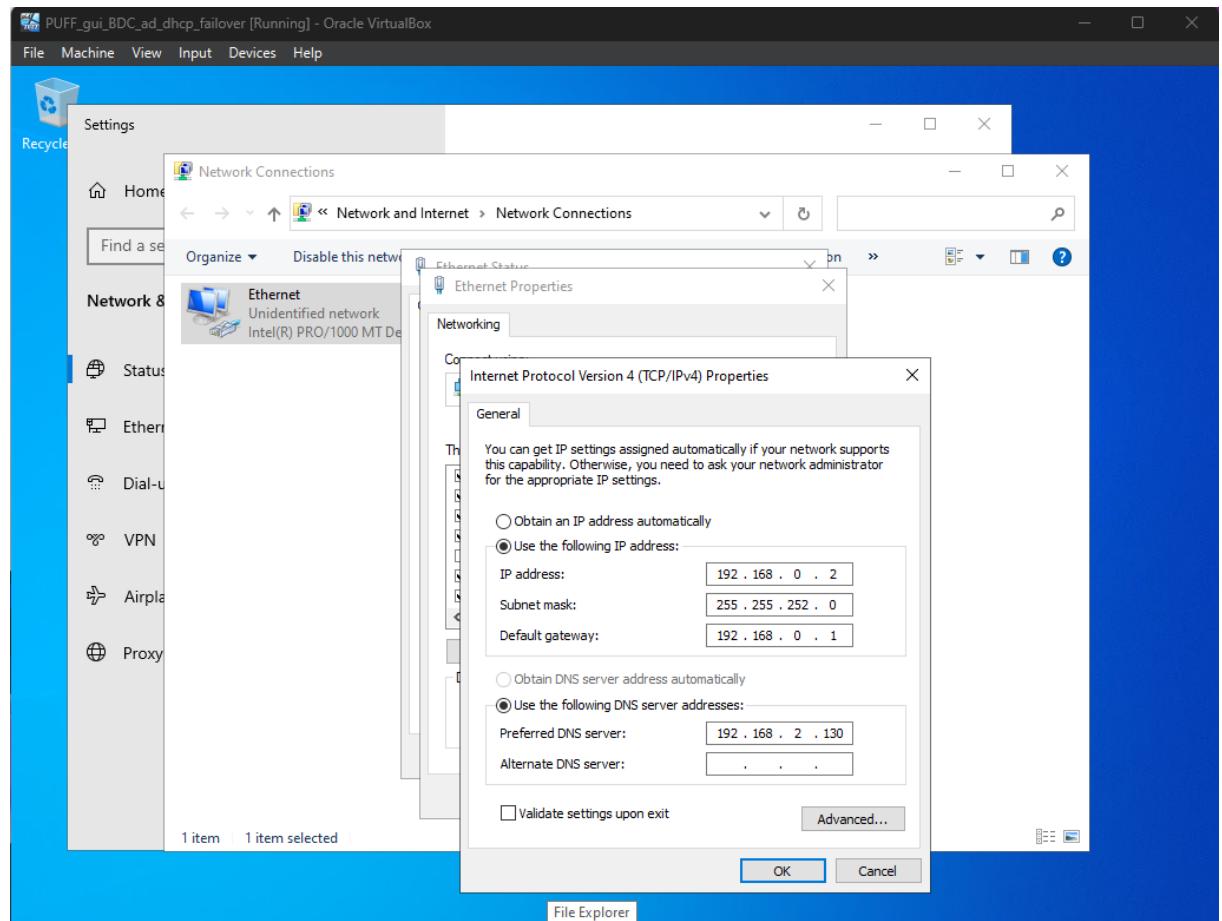
Shares mappa
engedélyei. →



Windows BDC szerver:

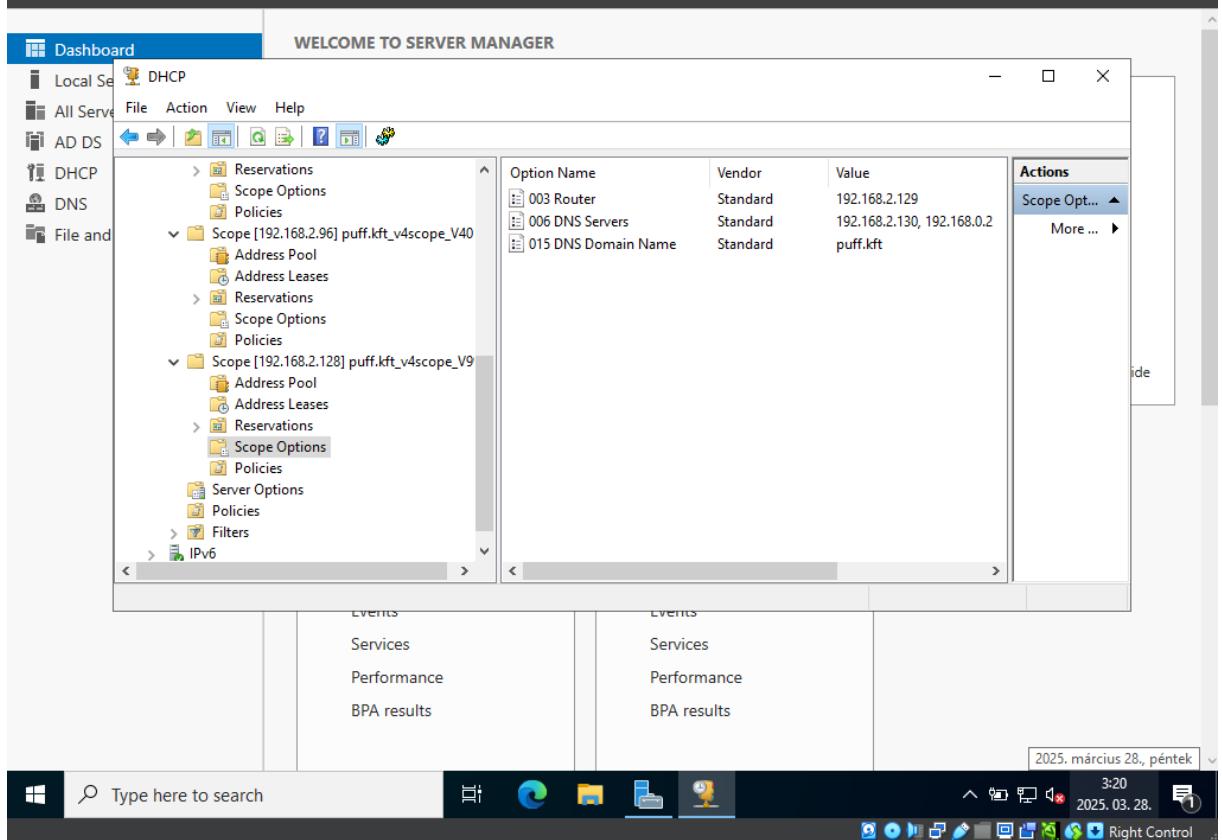
BDC:

Statikusan
állítjuk be itt is az
IP címet. →



DHCP failover

Vlan99 →



DHCP failover

Vlan10 →

The screenshot shows the Windows Server Manager interface for a server named PUFF_gui_BDC_ad_dhcp_failover [Running] - Oracle VirtualBox. The left navigation pane shows Local Server, All Servers, AD DS, and File and Services. The main area is titled "WELCOME TO SERVER MANAGER" and has a "DHCP" tab selected. The tree view under DHCP shows "winserverbdc.puff.kft" and "IPv4". Under IPv4, there are three scopes: "Scope [192.168.2.0] puff.kft_v4scope_V10", "Scope [192.168.2.32] puff.kft_v4scope_V20", and "Scope [192.168.2.64] puff.kft_v4scope_V30". Each scope has sub-options like Address Pool, Address Leases, Reservations, Scope Options, and Policies. A table on the right lists DHCP options for the first scope:

Option Name	Vendor	Value
003 Router	Standard	192.168.2.1
006 DNS Servers	Standard	192.168.2.130, 192.168.0.2
015 DNS Domain Name	Standard	puff.kft

The status bar at the bottom shows the date and time as 3:16 2025.03.28.

Vlan20 →

The screenshot shows the Windows Server Manager interface for the same server. The left navigation pane and main title are identical. The tree view under DHCP shows "winserverbdc.puff.kft" and "IPv4". Under IPv4, there are three scopes: "Scope [192.168.2.0] puff.kft_v4scope_V10", "Scope [192.168.2.32] puff.kft_v4scope_V20", and "Scope [192.168.2.64] puff.kft_v4scope_V30". The table on the right lists DHCP options for the first scope, showing slight differences from the Vlan10 configuration:

Option Name	Vendor	Value
003 Router	Standard	192.168.2.33
006 DNS Servers	Standard	192.168.2.130, 192.168.0.2
015 DNS Domain Name	Standard	puff.kft

The status bar at the bottom shows the date and time as 3:18 2025.03.28.

DHCP failover

Vlan30 →

The screenshot shows the Windows Server Manager interface. The left navigation pane is collapsed, and the main area displays the 'WELCOME TO SERVER MANAGER' dashboard. The 'DHCP' service is selected. The left pane shows a tree view of DHCP components: Local Server, All Servers, AD DS, DHCP, DNS, File and. Under 'DHCP', 'Reservations', 'Scope Options', and 'Policies' are listed. Below them, three scopes are expanded: 'Scope [192.168.2.32] puff.kft_v4scope_V20', 'Scope [192.168.2.64] puff.kft_v4scope_V30', and 'Scope [192.168.2.96] puff.kft_v4scope_V40'. Each scope contains 'Address Pool', 'Address Leases', 'Reservations', 'Scope Options', and 'Policies'. The right pane displays a table of DHCP options:

Option Name	Vendor	Value
003 Router	Standard	192.168.2.65
006 DNS Servers	Standard	192.168.2.130, 192.168.0.2
015 DNS Domain Name	Standard	puff.kft

Actions: Scope Opt... More ...

Vlan40 →

The screenshot shows the Windows Server Manager interface. The left navigation pane is collapsed, and the main area displays the 'WELCOME TO SERVER MANAGER' dashboard. The 'DHCP' service is selected. The left pane shows a tree view of DHCP components: Local Server, All Servers, AD DS, DHCP, DNS, File and. Under 'DHCP', 'Reservations', 'Scope Options', and 'Policies' are listed. Below them, two scopes are expanded: 'Scope [192.168.2.96] puff.kft_v4scope_V40' and 'Scope [192.168.2.128] puff.kft_v4scope_V9'. Each scope contains 'Address Pool', 'Address Leases', 'Reservations', 'Scope Options', 'Policies', 'Server Options', 'Policies', 'Filters', and 'IPv6'. The right pane displays a table of DHCP options:

Option Name	Vendor	Value
003 Router	Standard	192.168.2.97
006 DNS Servers	Standard	192.168.2.130, 192.168.0.2
015 DNS Domain Name	Standard	puff.kft

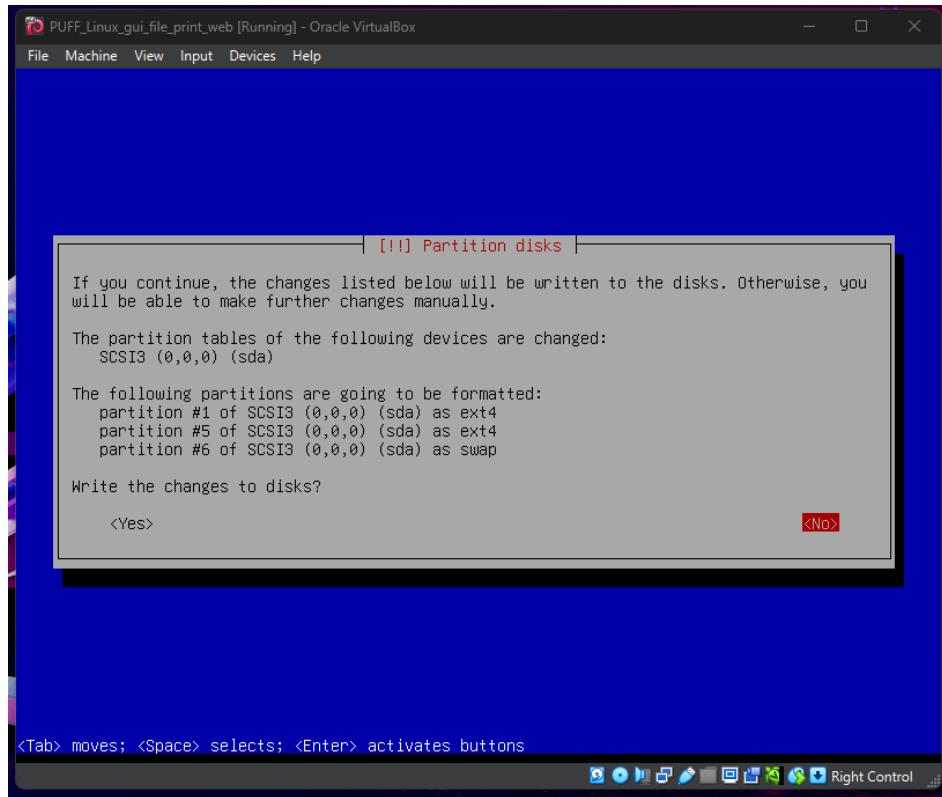
Actions: Scope Opt... More ...

Debian12, kezdeti konfiguráció

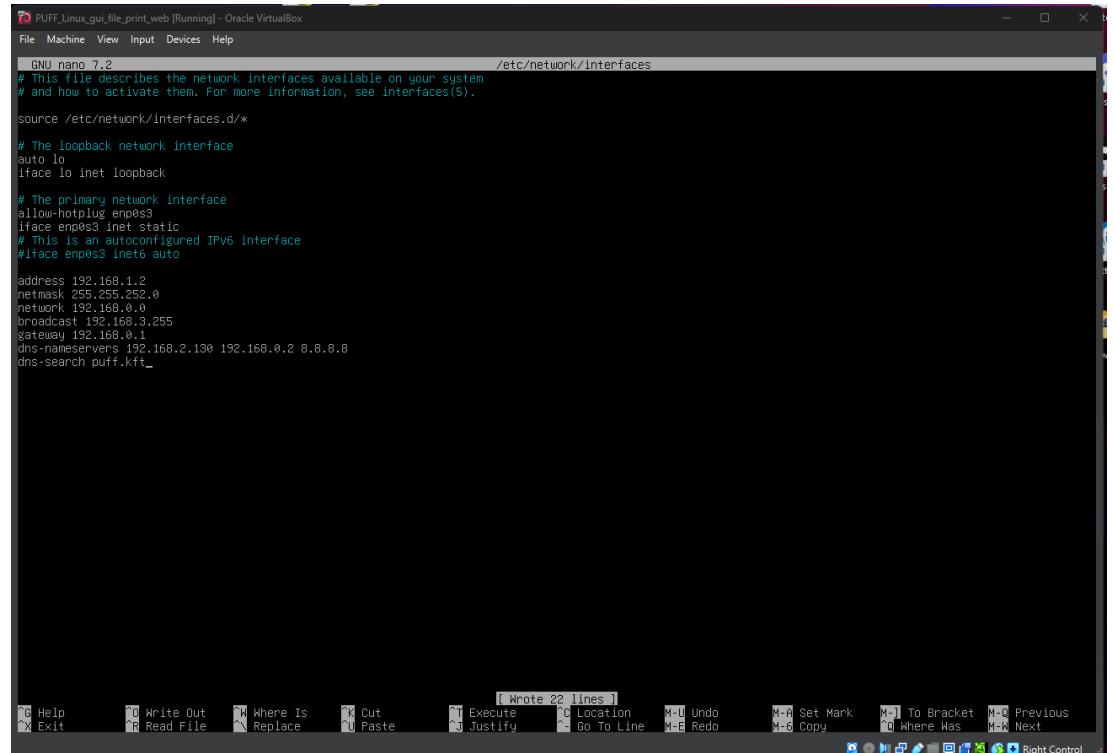
Disk partícionálás



Linux szerver:

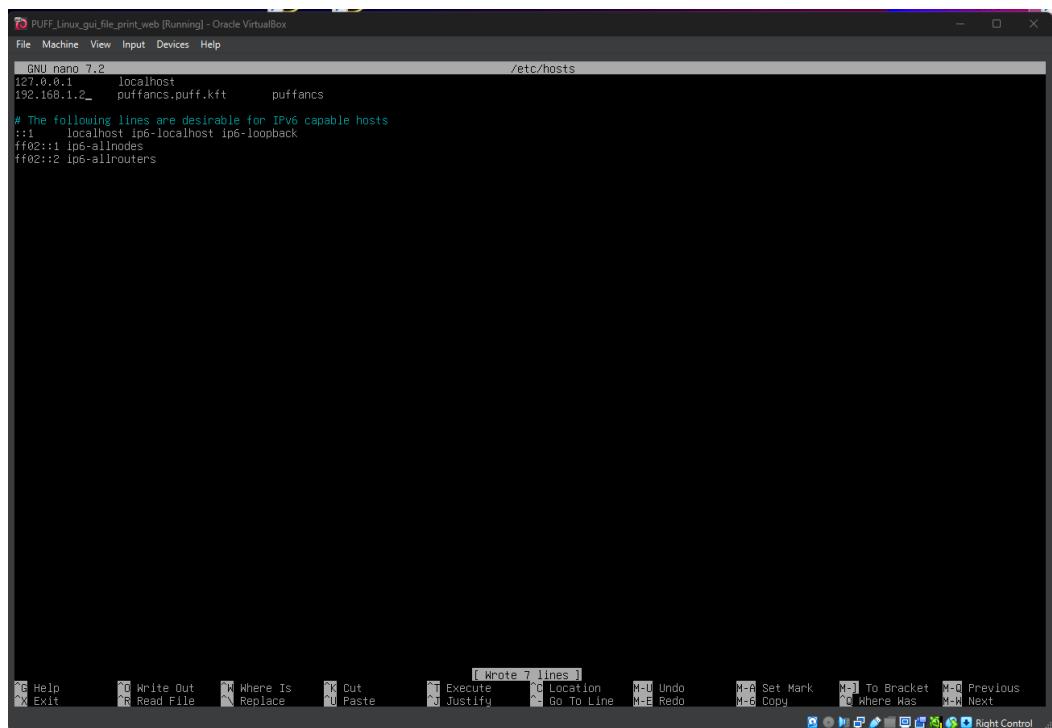


Network/interface beállítás →



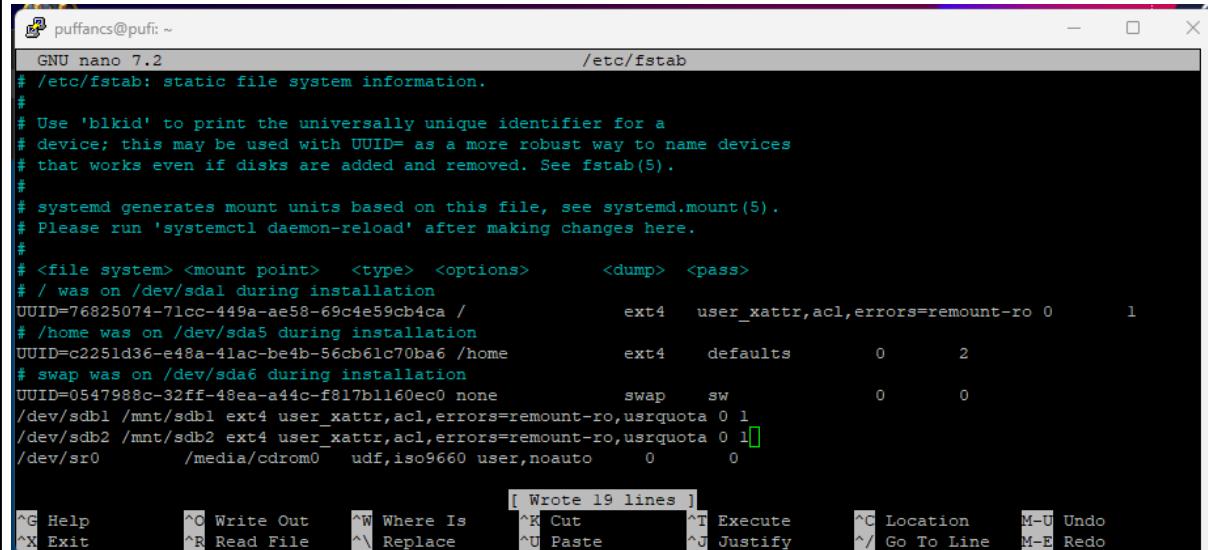
Debian12, kezdeti konfiguráció

Hosts →



```
GNU nano 7.2 /etc/hosts
127.0.0.1 localhost
192.168.1.2 puffancs.puff.kft puffancs
# The following lines are desirable for IPv6 capable hosts
::1 localhost ip6-localhost ip6-loopback
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

Fstab →

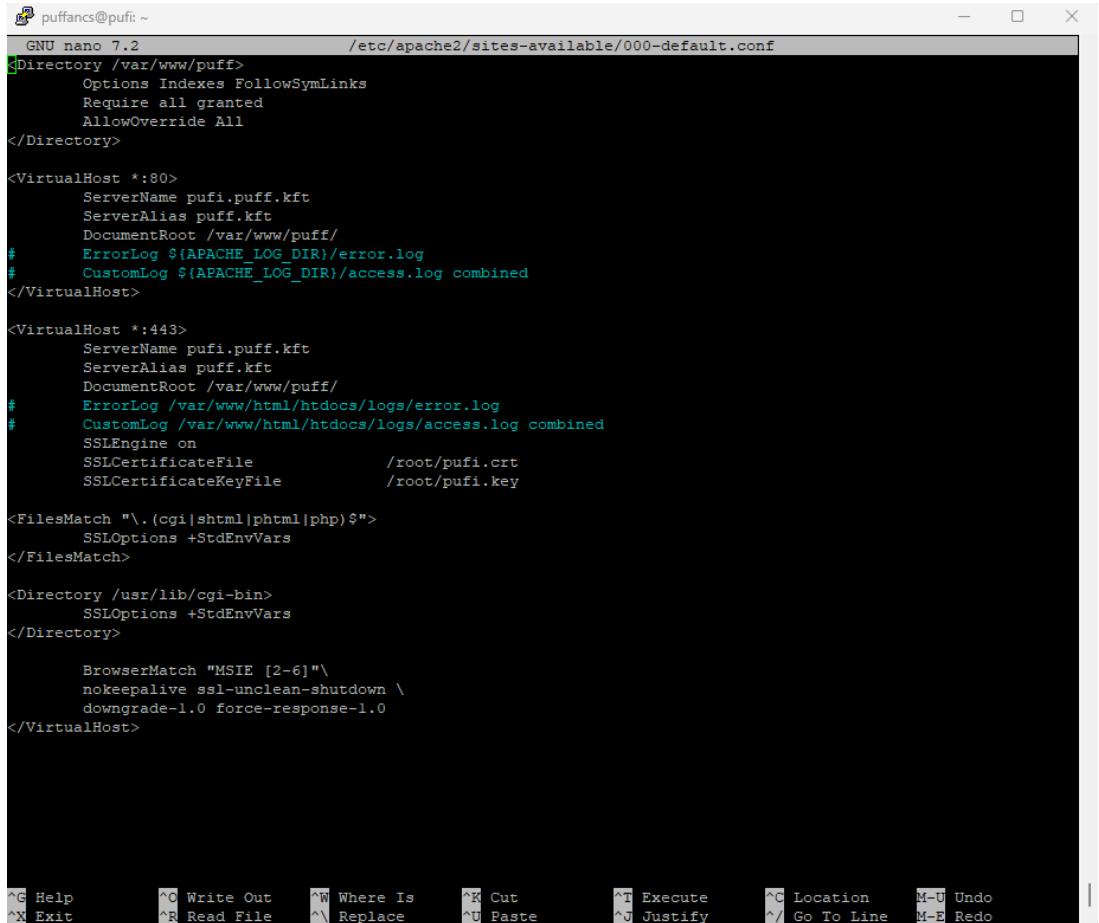


```
puffancs@pufi: ~
GNU nano 7.2 /etc/fstab
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# systemd generates mount units based on this file, see systemd.mount(5).
# Please run 'systemctl daemon-reload' after making changes here.
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/sdal during installation
UUID=76825074-71cc-449a-ae58-69c4e59cb4ca / ext4 user_xattr,acl,errors=remount-ro 0 1
# /home was on /dev/sda5 during installation
UUID=c2251d36-e48a-4lac-be4b-56cb61c70ba6 /home ext4 defaults 0 2
# swap was on /dev/sda6 during installation
UUID=0547988c-32ff-48ea-a44c-f817b1160ec0 none swap sw 0 0
/dev/sdbl /mnt/sdbl ext4 user_xattr,acl,errors=remount-ro,usrquota 0 1
/dev/sdb2 /mnt/sdb2 ext4 user_xattr,acl,errors=remount-ro,usrquota 0 1
/dev/sr0 /media/cdrom0 udf,iso9660 user,noauto 0 0

[ Wrote 19 lines ]
```

Debian12, kezdeti konfiguráció

Apache2 default.conf →



```
GNU nano 7.2 /etc/apache2/sites-available/000-default.conf
<Directory /var/www/puff>
    Options Indexes FollowSymLinks
    Require all granted
    AllowOverride All
</Directory>

<VirtualHost *:80>
    ServerName pufi.puff.kft
    ServerAlias puff.kft
    DocumentRoot /var/www/puff/
    # ErrorLog ${APACHE_LOG_DIR}/error.log
    # CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>

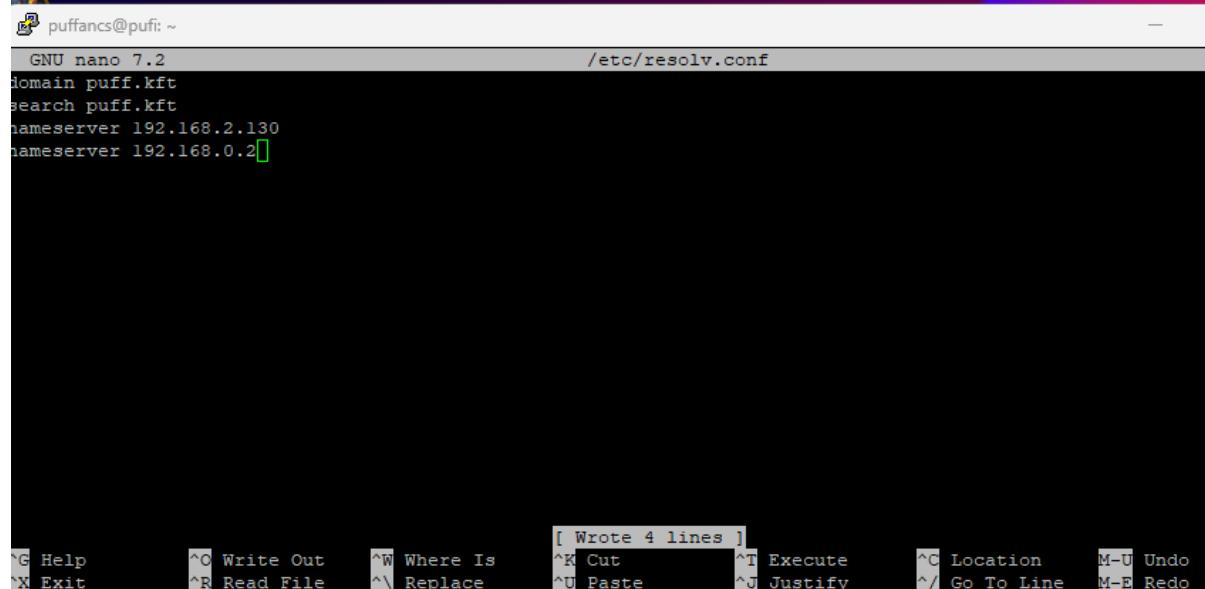
<VirtualHost *:443>
    ServerName pufi.puff.kft
    ServerAlias puff.kft
    DocumentRoot /var/www/puff/
    # ErrorLog /var/www/html/htdocs/logs/error.log
    # CustomLog /var/www/html/htdocs/logs/access.log combined
    SSLEngine on
    SSLCertificateFile      /root/pufi.crt
    SSLCertificateKeyFile   /root/pufi.key

    <FilesMatch "\.(cgi|shtml|phtml|php)$">
        SSLOptions +StdEnvVars
    </FilesMatch>

    <Directory /usr/lib/cgi-bin>
        SSLOptions +StdEnvVars
    </Directory>

    BrowserMatch "MSIE [2-6]" \
        nokeepalive ssl-unclean-shutdown \
        downgrade-1.0 force-response-1.0
</VirtualHost>
```

DNS beállítás resolv.conf →



```
GNU nano 7.2 /etc/resolv.conf
domain puff.kft
search puff.kft
nameserver 192.168.2.130
nameserver 192.168.0.2
```

Debian12, kezdeti konfiguráció

Samba smb.conf →

```
puffancs@pufi: ~
GNU nano 7.2                               /etc/samba/smb.conf
[global]

workgroup = PUFF
password server = winserverpdc.puff.kft winserverbdc.puff.kft
realm = PUFF.KFT
security =ads
idmap config * : range = 16777216-33554431
template homedir = /home/%U
template shell = bin/bash
winbind use default domain = true
winbind offline logon = false
vfs objects = acl_xattr
map acl inherit = yes
store dos attributes = yes

[certificates$]
comment = certificates
path = /mnt/sdbl/certificates$/
read only = no

[shares]
comment = shares
path = /mnt/sdbl/shares/
read only = no

[common folder]
comment = common folder
path = /mnt/sdb2/common_folder
read only = no

^G Help      ^O Write Out   ^W Where Is    ^K Cut        ^T Execute     ^C Location   M-U Undo
^X Exit      ^R Read File   ^\ Replace     ^U Paste      ^J Justify     ^/ Go To Line M-E Redo
```

```
puffancs@pufi: ~
GNU nano 7.2                               pufi.v3.ext
authorityKeyIdentifier=keyid,issuer
basicConstraints=CA:FALSE
keyUsage = digitalSignature, nonRepudiation, keyEncipherment, dataEncipherment
subjectAltName = @alt_names

[alt_names]
DNS.1 = puff.kft
DNS.2 = www.puff.kft
IP.1 = 192.168.1.2

[Wrote 9 lines]
^G Help      ^O Write Out   ^W Where Is    ^K Cut        ^T Execute     ^C Location   M-U Undo
^X Exit      ^R Read File   ^\ Replace     ^U Paste      ^J Justify     ^/ Go To Line M-E Redo
```

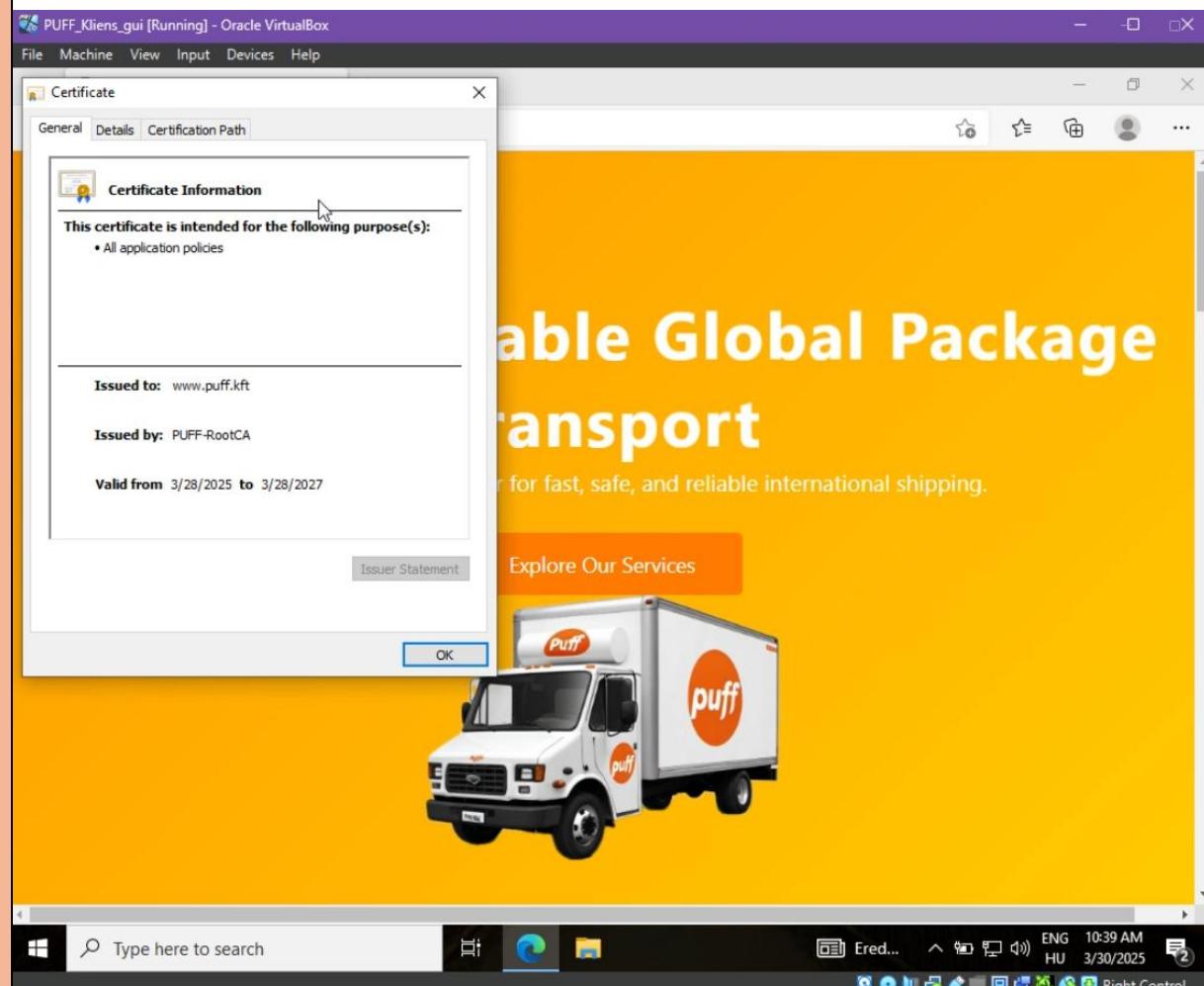
Debian12, kezdeti konfiguráció

CUPS →

```
puffancs@pufi: ~
colord.service is a disabled or a static unit, not starting it.
root@pufi:/mnt/sdb2# systemctl restart cups
root@pufi:/mnt/sdb2# ufw allow 631/tcp
Rule added
Rule added (v6)
root@pufi:/mnt/sdb2# ufw allow 5353/udp
Rule added
Rule added (v6)
root@pufi:/mnt/sdb2# systemctl status cups
● cups.service - CUPS Scheduler
    Loaded: loaded (/lib/systemd/system/cups.service; enabled; preset: enabled)
      Active: active (running) since Sat 2025-03-29 15:18:36 CET; 1min 34s ago
 TriggeredBy: ● cups.path
               ● cups.socket
        Docs: man:cupsd(8)
   Main PID: 3872 (cupsd)
     Status: "Scheduler is running..."
       Tasks: 2 (limit: 2304)
      Memory: 2.1M
        CPU: 13ms
      CGroup: /system.slice/cups.service
              └─3872 /usr/sbin/cupsd -l

Mar 29 15:18:16 pufi systemd[1]: Starting cups.service - CUPS Scheduler...
Mar 29 15:18:36 pufi systemd[1]: Started cups.service - CUPS Scheduler.
root@pufi:/mnt/sdb2#
```

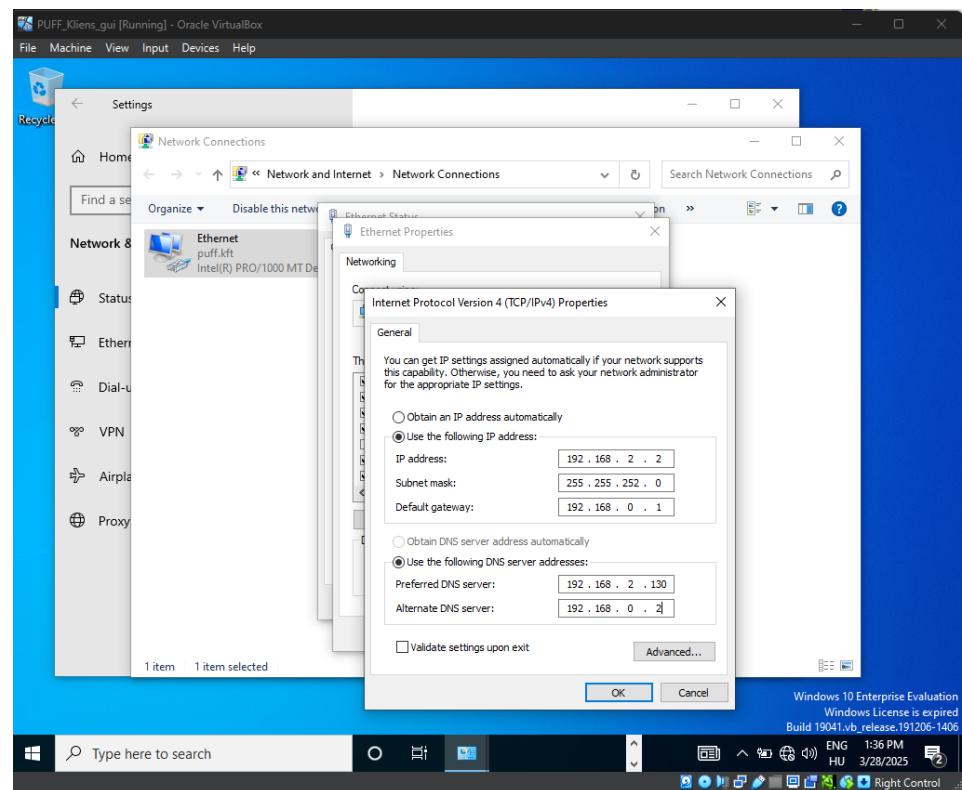
Weboldal →



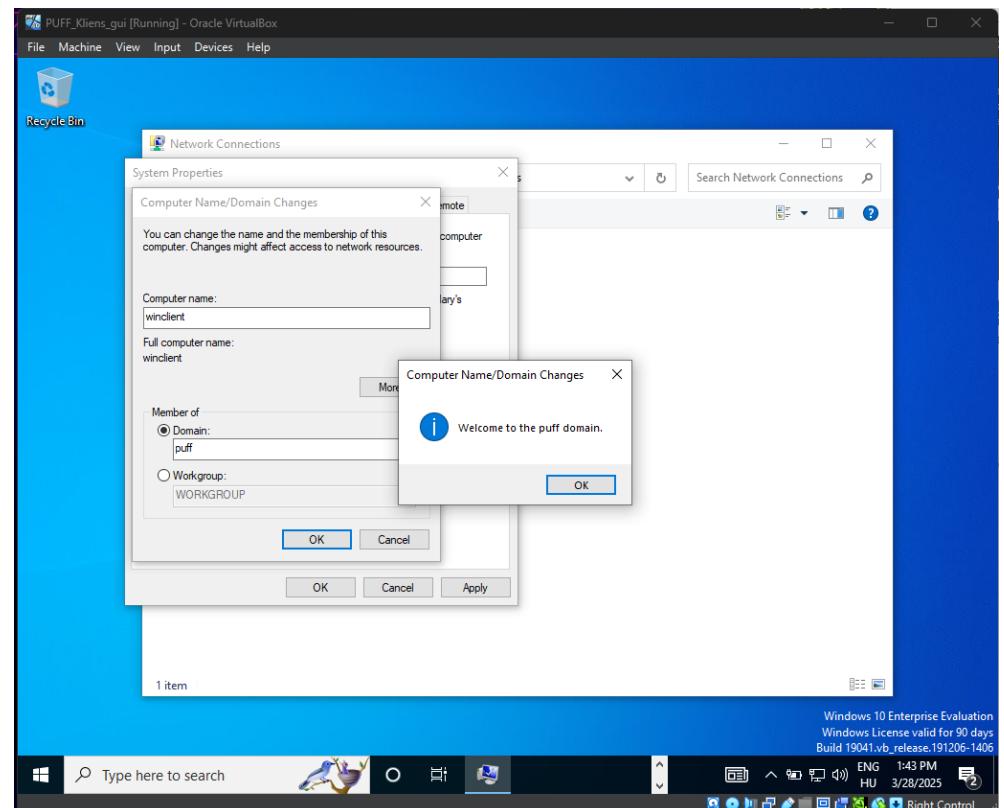
Win10 Kliens

IP cím beállítása
kézileg →

Windows Client



Sikeres
tartományba
léptetés →



Win10 Kliens

ipconfig /all →

```
PUFF_Kliens_gui [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Command Prompt

C:\Users\winadmin>ipconfig /all

Windows IP Configuration

Host Name . . . . . : winclient
Primary Dns Suffix . . . . . : puff.kft
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : puff.kft

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . . .
Description . . . . . : Intel(R) PRO/1000 MT Desktop Adapter
Physical Address. . . . . : 08-00-27-F1-75-C9
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::d979:6e3d:3640:91a0%4(PREFERRED)
IPv4 Address. . . . . : 192.168.2.2(Preferred)
Subnet Mask . . . . . : 255.255.252.0
Default Gateway . . . . . : 192.168.0.1
DHCPv6 IAID . . . . . : 101187623
DHCPv6 Client DUID. . . . . : 00-01-00-01-2F-78-38-49-08-00-27-F1-75-C9
DNS Servers . . . . . : 192.168.2.130
192.168.0.2
NetBIOS over Tcpip. . . . . : Enabled

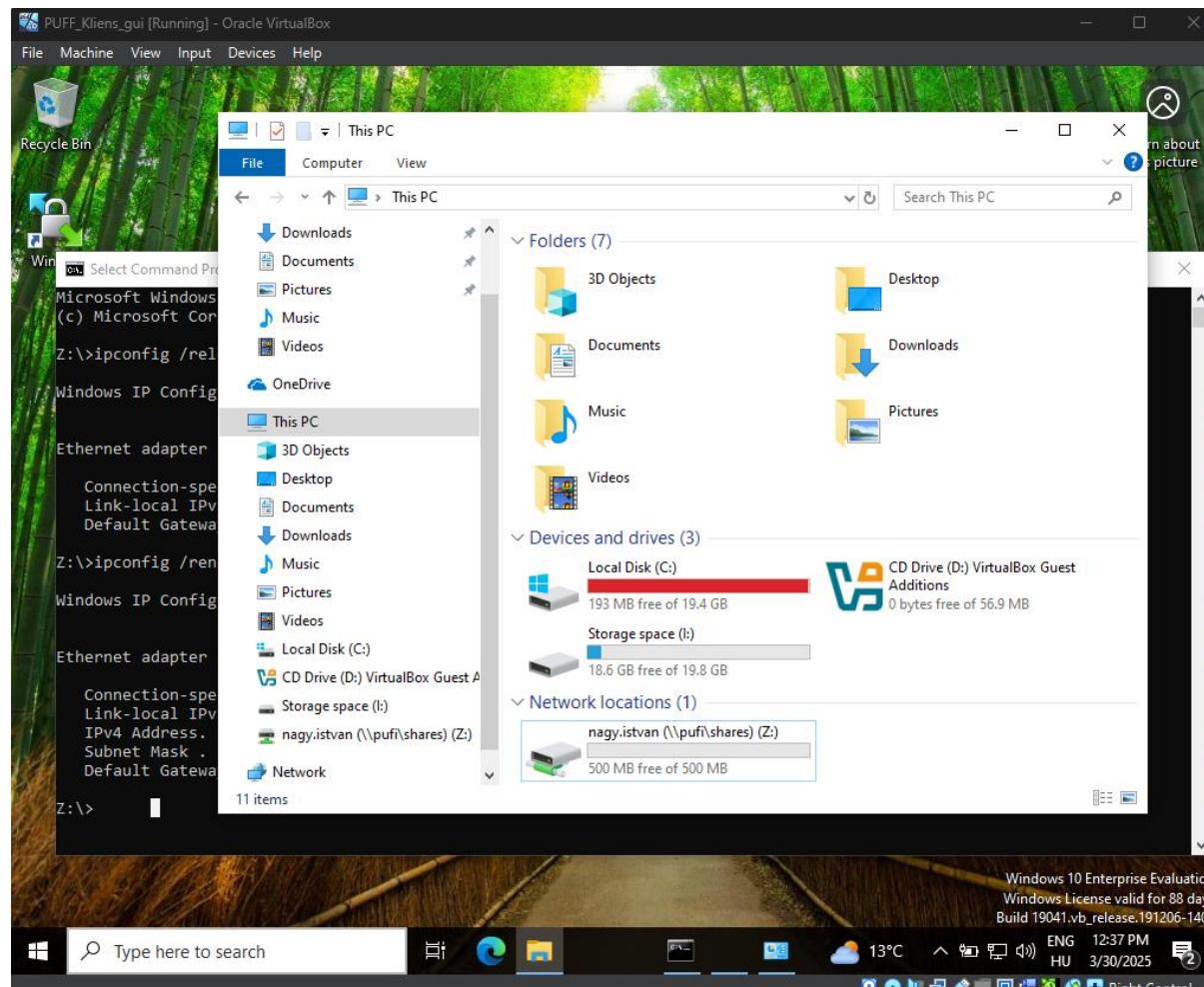
C:\Users\winadmin>ping cisco.com

Pinging cisco.com [72.163.4.185] with 32 bytes of data:
Reply from 72.163.4.185: bytes=32 time=169ms TTL=254
Reply from 72.163.4.185: bytes=32 time=174ms TTL=254
Reply from 72.163.4.185: bytes=32 time=229ms TTL=254
Reply from 72.163.4.185: bytes=32 time=162ms TTL=254

Ping statistics for 72.163.4.185:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 162ms, Maximum = 229ms, Average = 183ms

C:\Users\winadmin>
```

Saját meghajtó egy felhasználónak →



Hibák:

Hibák, amikbe
ütközünk

PDC →

```
PS C:\Users\Administrator.WINSERVERPDC> Get-ObjectResult
ComputerObjectDN : CN=WINSERVERPDC,OU=Domain Controllers,DC=puff,DC=kft
DefaultPartition : DC=puff,DC=kft
Domain           : puff.kft
Enabled          : True
Forest           : puff.kft
HostName         : winserverpdc.puff.kft
InvocationId     : ce871867-67e6-4d5e-92b7-43769ebc5d11
IPv4Address      : 192.168.2.130
IPv6Address      :
IsGlobalCatalog  :
IsReadOnly        : False
LdapPort          : 389
Name              : WINSERVERPDC
NTDSSettingsObjectDN : CN=NTDS Settings,CN=WINSERVERPDC,CN=Servers,CN=Default-First-Site-Name,CN=Sites,CN=Configuration,DC=puff,DC=kft
OperatingSystem   : Windows Server 2022 Standard Evaluation
OperatingSystemHotfix :
OperatingSystemServicePack :
OperatingSystemVersion : 10.0 (20348)
OperationMasterRoles : {SchemaMaster, DomainNamingMaster, PDCEmulator, RIDMaster...}
Partitions        : {ForestDnsZones,DC=puff,DC=kft, DC=DomainDnsZones,DC=puff,DC=kft, CN=Schema,CN=Configuration,DC=puff,DC=kft...}
ServerObjectDN    : CN=WINSERVERPDC,CN=Servers,CN=Default-First-Site-Name,CN=Sites,CN=Configuration,DC=puff,DC=kft
ServerObjectGuid  : de3262cb-7a26-4723-aaf2-ad60bc5fada4
Site              : Default-First-Site-Name
SslPort           : 636

PS C:\Users\Administrator.WINSERVERPDC> netdom resetpwd /server:winserverpdc.puff.kft /userd:DOMAIN\Administrator /passwordd:*
Type the password associated with the domain user:
The machine account password for the local machine has been successfully reset.

The command completed successfully.

PS C:\Users\Administrator.WINSERVERPDC> Get-WindowsFeature | Where-Object { $_.Name -like "DHCP*" }
Get-WindowsFeature : The term 'Get-WindowsFeature' is not recognized as the name of a cmdlet, function, script file, or operable program. Check the spelling of the name, or if a path was included, verify that the path is correct and try again.
At line:1 char:1
+ Get-WindowsFeature | Where-Object { $_.Name -like "DHCP*" }
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (Get-WindowsFeature:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException

PS C:\Users\Administrator.WINSERVERPDC>
```

Takeown hiba
(acces denied) →

```
File Machine View Input Devices Help
Computer Management
File Action View Help
Compute Advanced Security Settings for shares (\\\192.168.1.2)
Administrator: Command Prompt
Microsoft Windows [Version 10.0.20348.587]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Administrator.WINSERVERPDC>takeown /F \\192.168.1.2\shares /r /d y
ERROR: Access is denied.

C:\Users\Administrator.WINSERVERPDC>icacls \\192.168.1.2\shares /grant Administrators:F /t
\\192.168.1.2\shares: Access is denied.
Successfully processed 0 files; Failed processing 1 files

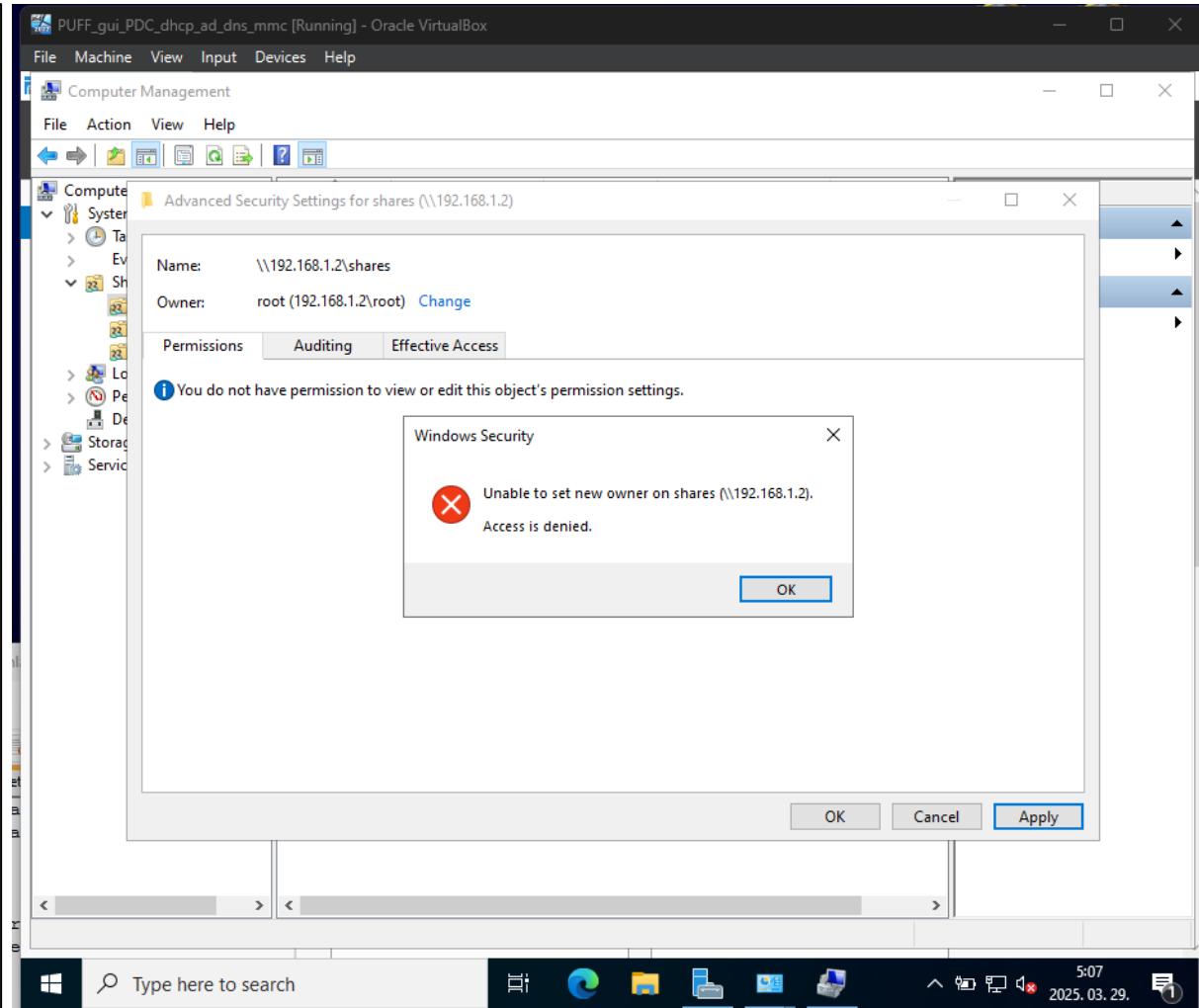
C:\Users\Administrator.WINSERVERPDC>
```

Hibák, amikbe

ütközünk

Shares mappa root

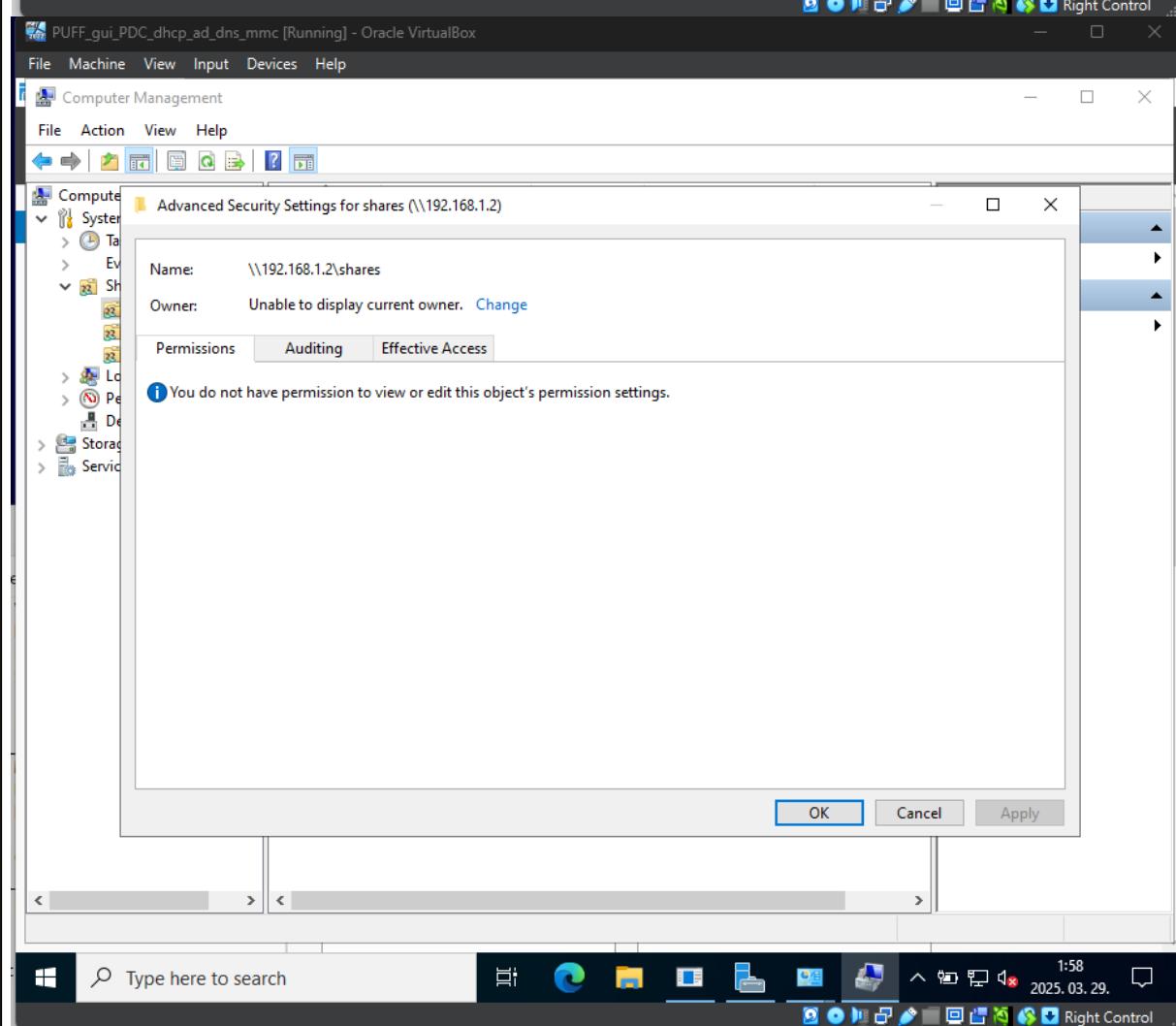
acces denied→



Shares mappa

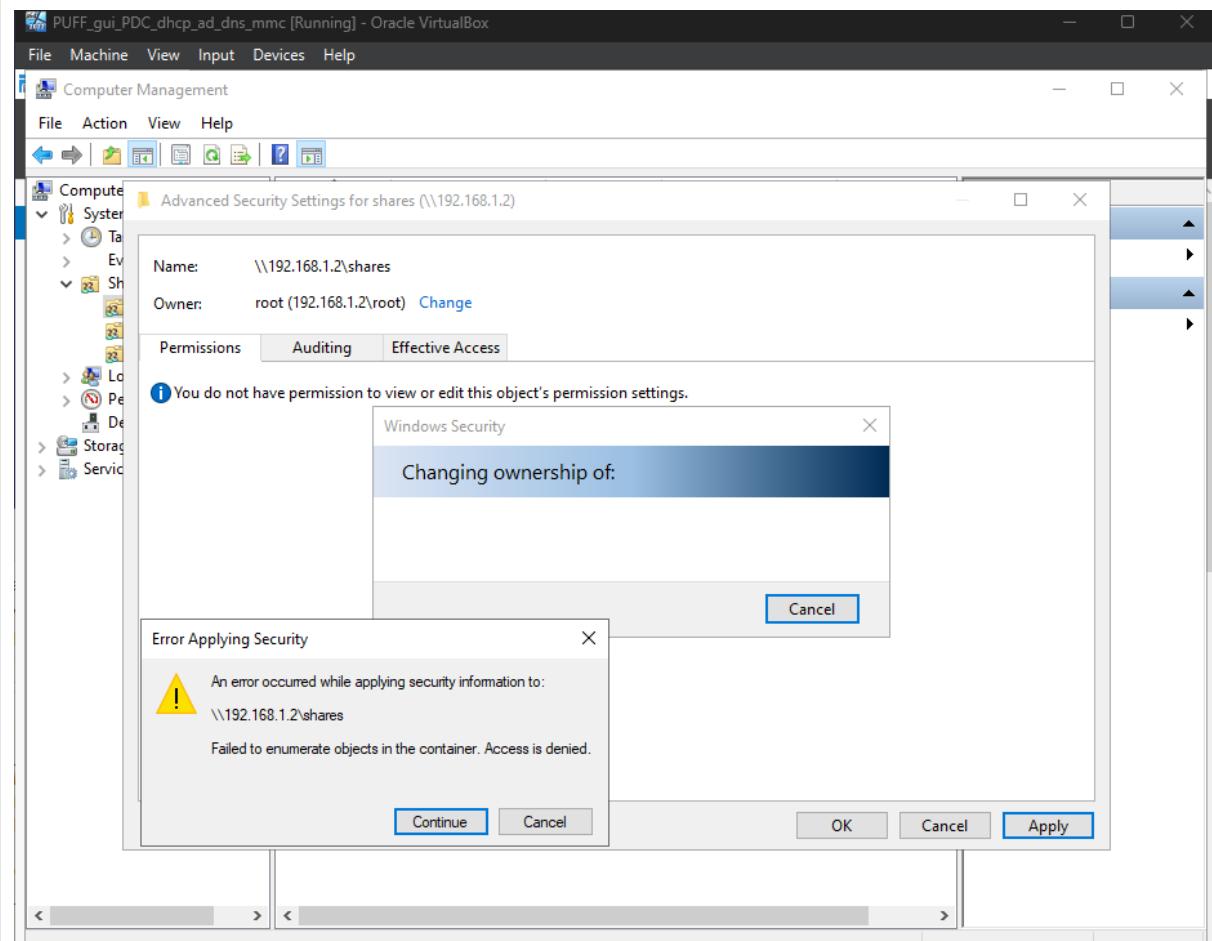
(permission

denied)→

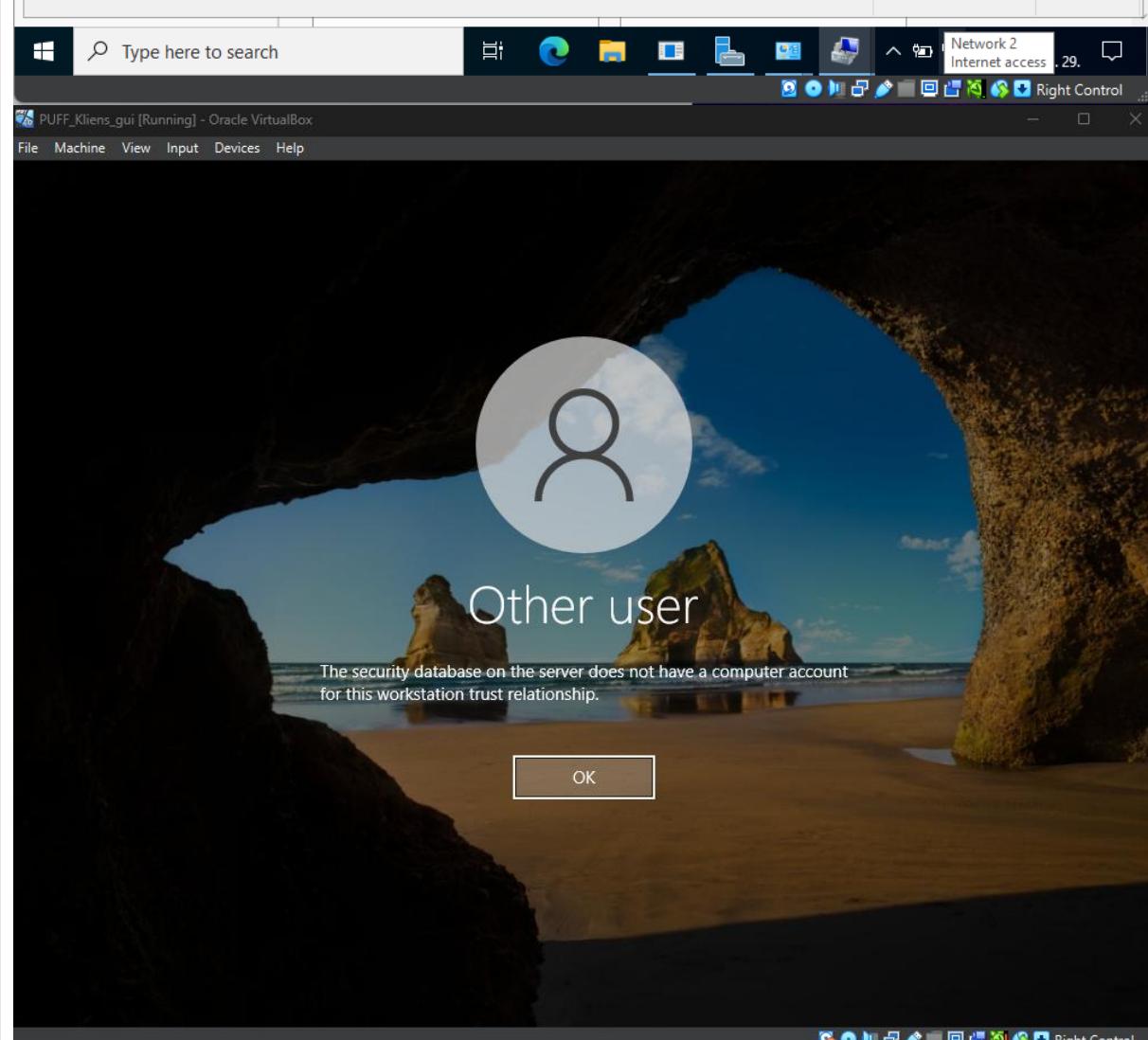


Hibák, amikbe
ütközünk

Shares mappa
ownership change
(acces denied) →



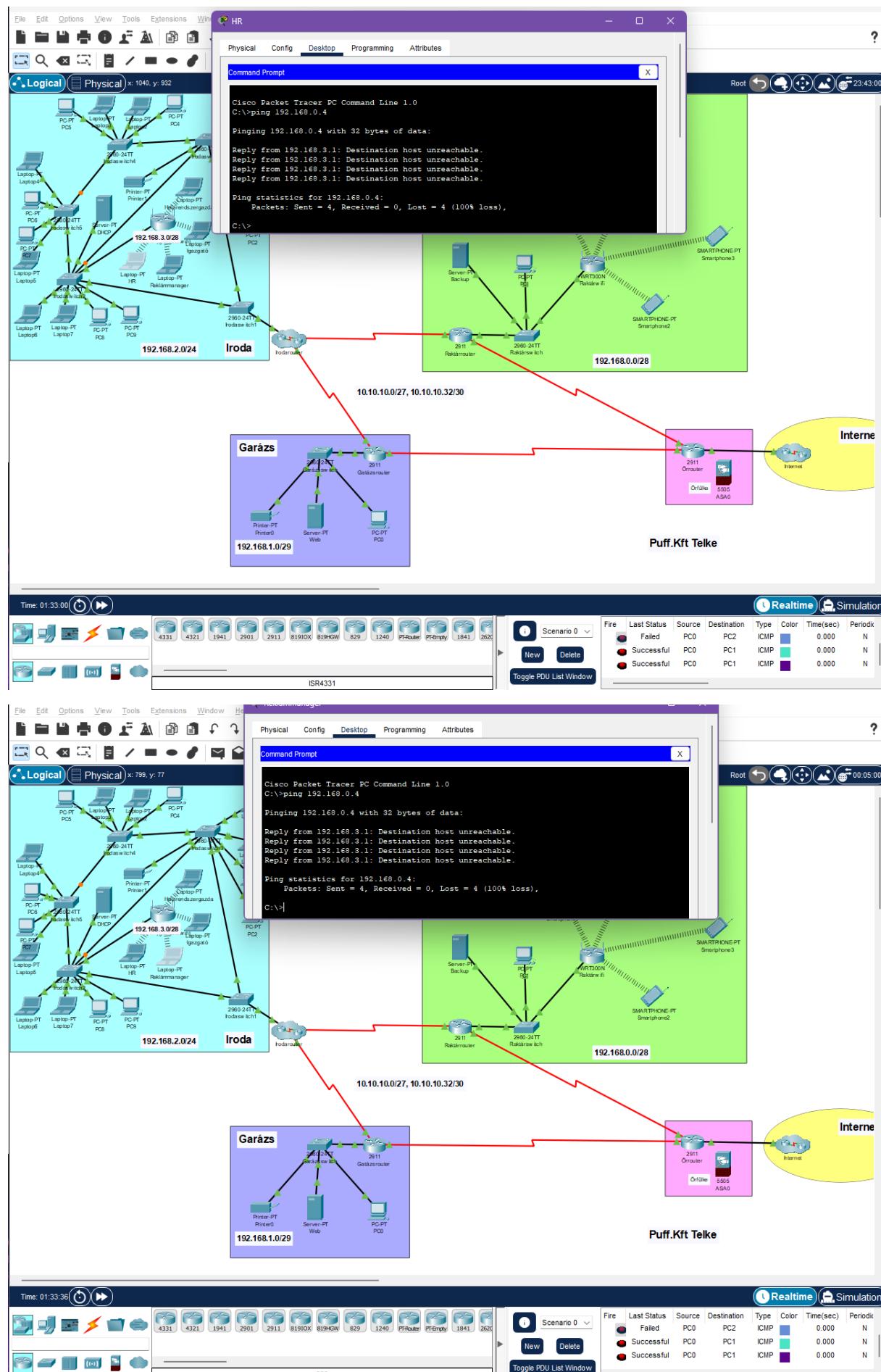
Kliens felhasználó
bejelentkezési
hiba →



Tesztelések

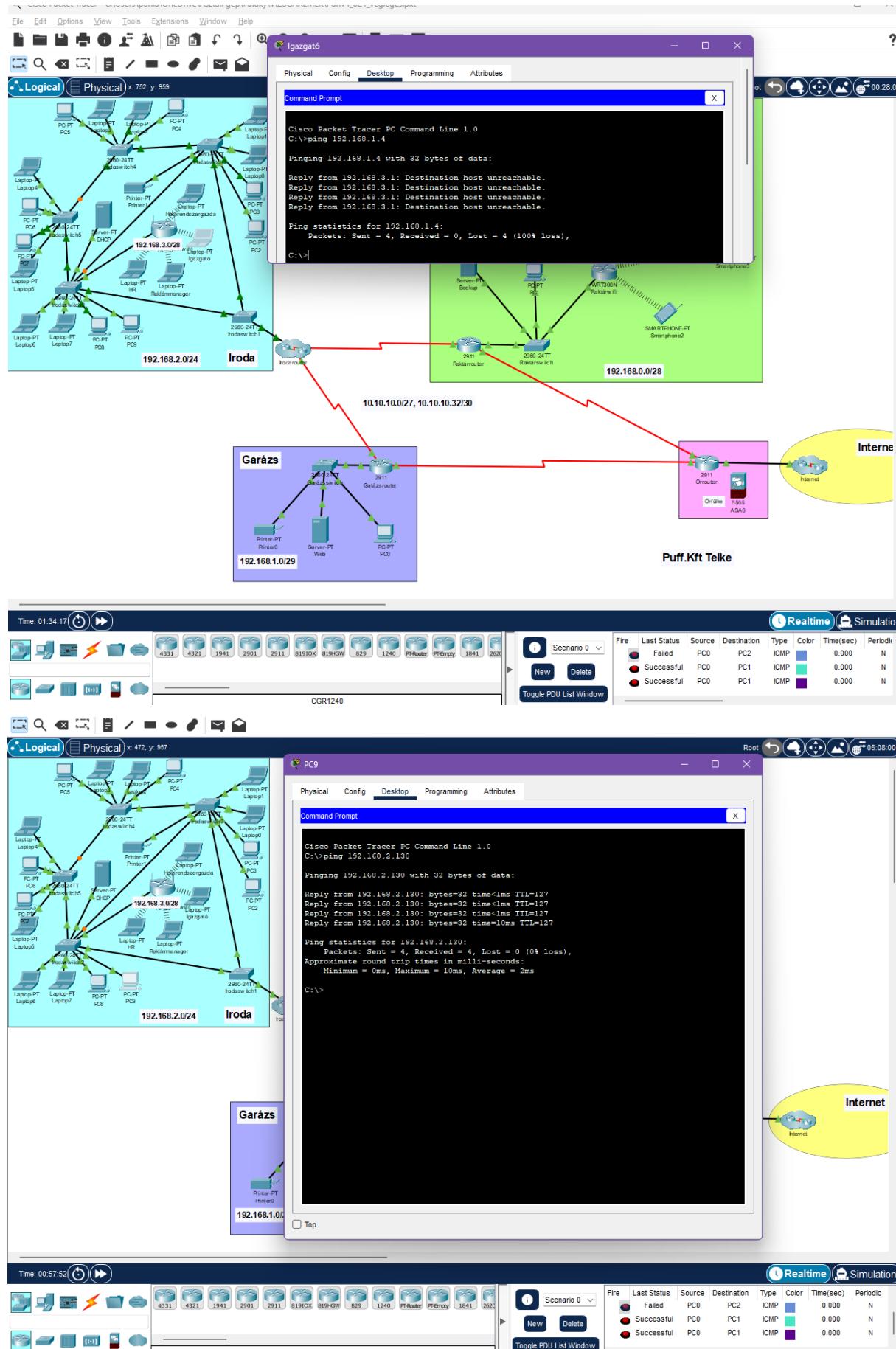
Packet Tracer

A „Reklámmanger” laptopról pingeltük meg a 192.168.0.0 hálózatot és nem érték egymást el a beállított ACL szabályok miatt. →



Packet Tracer

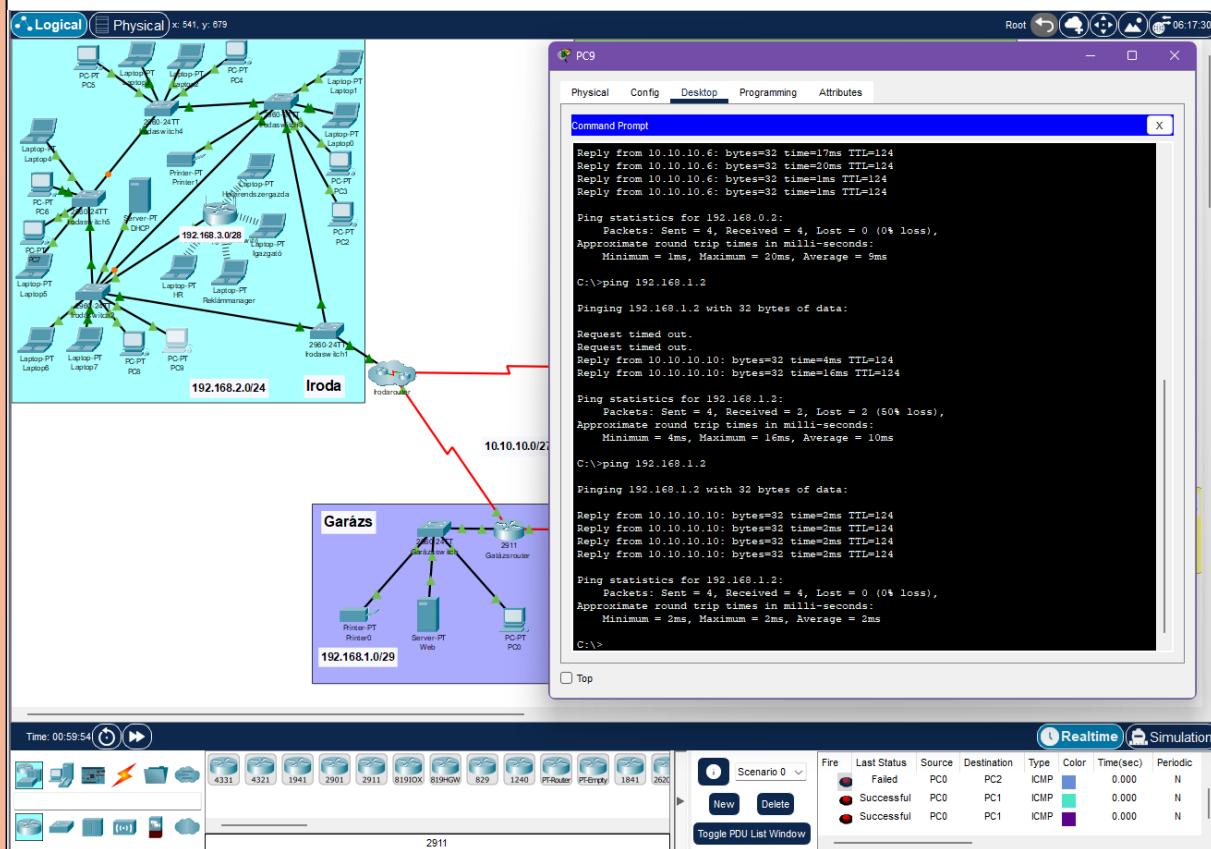
Az „igazgató” laptopról pingeltük meg a 192.168.0.0 hálózatot és nem érték egymást el a beállított ACL szabályok miatt. →



A kliens gép eléri a DHCP szervet az irodában. →

Packet Tracer

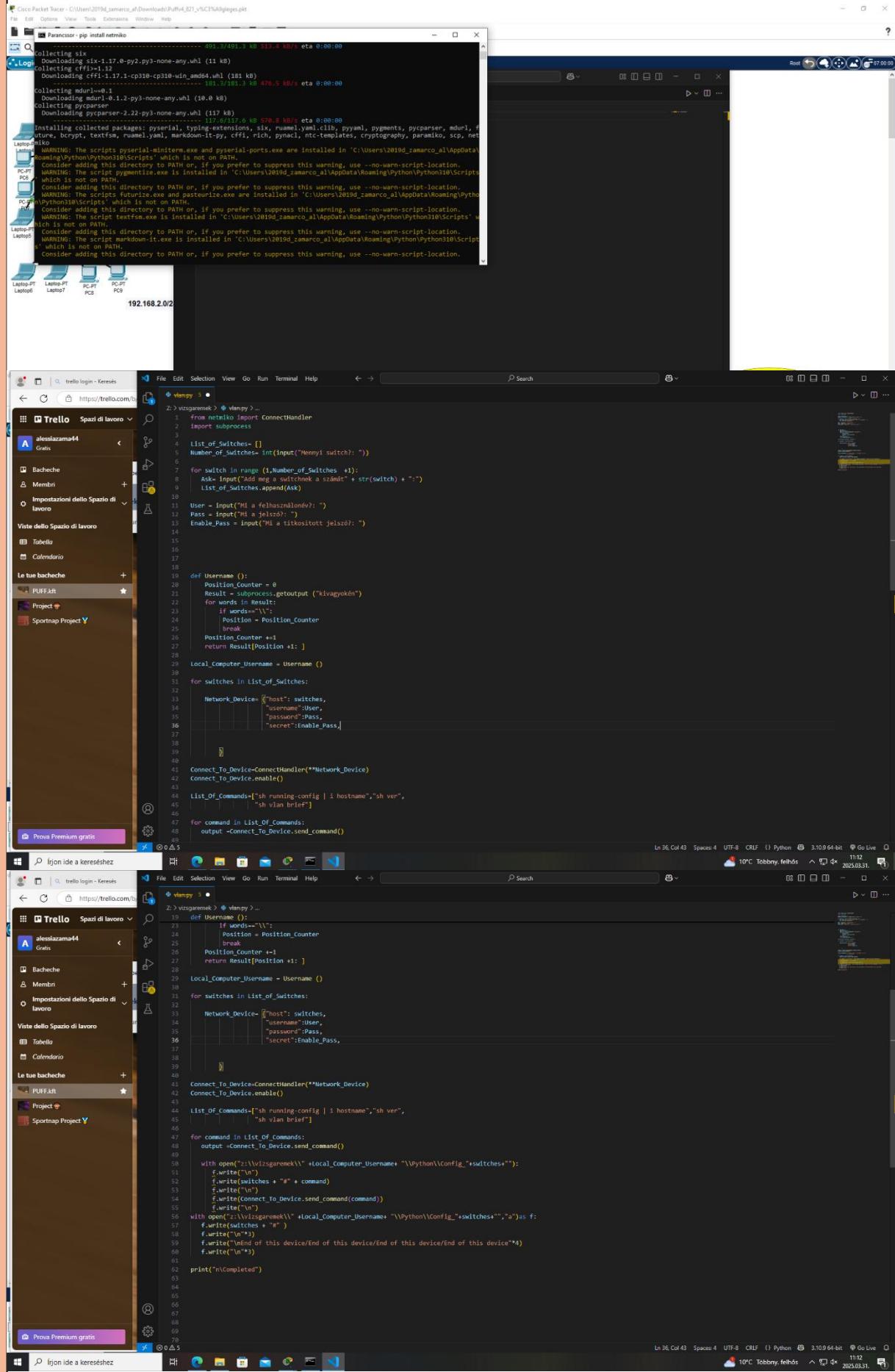
A kliens gép eléri a BDC szervert a raktárban. →



Python

Programozott hálózatkonfiguráció

Netmiko telepítése a python-hoz. →



Mellékletek

Konfigurációs állományok

Irodaswitch1

Current configuration : 1439 bytes

!

version 15.0

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname S1

!

enable secret 5 \$1\$mERr\$Dfi8gB9UD51VK9d5.1FWi/

!

!

!

ip domain-name Puff_kft

!

username Puff_kft privilege 1 password 0 Puffancs

!

!

!

spanning-tree mode pvst

spanning-tree extend system-id

spanning-tree vlan 1,10,20,30,40,99 priority 24576

!

interface FastEthernet0/1

switchport mode trunk

!

```
interface FastEthernet0/2
  switchport mode trunk
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
```

```
interface FastEthernet0/18
```

```
!
```

```
interface FastEthernet0/19
```

```
!
```

```
interface FastEthernet0/20
```

```
!
```

```
interface FastEthernet0/21
```

```
!
```

```
interface FastEthernet0/22
```

```
!
```

```
interface FastEthernet0/23
```

```
!
```

```
interface FastEthernet0/24
```

```
!
```

```
interface GigabitEthernet0/1
```

```
switchport mode trunk
```

```
!
```

```
interface GigabitEthernet0/2
```

```
!
```

```
interface Vlan1
```

```
no ip address
```

```
shutdown
```

```
!
```

```
!
```

```
!
```

```
line con 0
```

```
password Puffancs
```

```
login
```

```
!
```

```
line vty 0 4
```

password Puffancs

login local

transport input ssh

line vty 5 15

password Puffancs

login local

transport input ssh

!

!

!

!

end

Irodaswitch2

Current configuration : 2406 bytes

!

version 15.0

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname S2

!

enable secret 5 \$1\$mERr\$Dfi8gB9UD51VK9d5.1FWi/

!

!

!

ip domain-name Puff_kft

!

username Puff_kft privilege 1 password 0 Puffancs

!

!

!

```
spanning-tree mode pvst

spanning-tree extend system-id

!

interface FastEthernet0/1

switchport mode trunk

!

interface FastEthernet0/2

switchport mode trunk

!

interface FastEthernet0/3

!

interface FastEthernet0/4

!

interface FastEthernet0/5

!

interface FastEthernet0/6

!

interface FastEthernet0/7

!

interface FastEthernet0/8

!

interface FastEthernet0/9

!

interface FastEthernet0/10

switchport access vlan 10

switchport mode access

switchport port-security

switchport port-security mac-address sticky

switchport port-security violation restrict

switchport port-security mac-address sticky 0003.E45B.D4E9

!

interface FastEthernet0/11
```

```
switchport access vlan 20
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 00E0.F7B7.57D9
!
interface FastEthernet0/12
switchport access vlan 30
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 000C.CF81.105D
!
interface FastEthernet0/13
switchport access vlan 40
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 0001.97B9.8AA4
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
```

```
!
```

```
interface FastEthernet0/19
```

```
!
```

```
interface FastEthernet0/20
```

```
!
```

```
interface FastEthernet0/21
```

```
!
```

```
interface FastEthernet0/22
```

```
!
```

```
interface FastEthernet0/23
```

```
switchport access vlan 99
```

```
switchport mode access
```

```
!
```

```
interface FastEthernet0/24
```

```
switchport access vlan 99
```

```
switchport mode access
```

```
!
```

```
interface GigabitEthernet0/1
```

```
!
```

```
interface GigabitEthernet0/2
```

```
switchport mode trunk
```

```
!
```

```
interface Vlan1
```

```
no ip address
```

```
shutdown
```

```
!
```

```
!
```

```
!
```

```
!
```

```
line con 0
```

```
password Puffancs
```

```
login
```

line vty 0 4

password Puffancs

login local

transport input ssh

line vty 5 15

password Puffancs

login local

transport input ssh

!

!

!

!

end

Irodaswitch3

Current configuration : 2355 bytes

!

version 15.0

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname S3

!

enable secret 5 \$1\$mERr\$Dfi8gB9UD51VK9d5.1FWi/

!

!

!

ip domain-name Puff_kft

!

username Puff_kft privilege 1 password 0 Puffancs

!

```
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
switchport mode trunk
!
interface FastEthernet0/2
switchport mode trunk
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
switchport access vlan 10
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 0010.110E.B965
```

```
!
interface FastEthernet0/11
switchport access vlan 20
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 00D0.BC37.5A03
!
interface FastEthernet0/12
switchport access vlan 30
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 00E0.A3B8.1B80
!
interface FastEthernet0/13
switchport access vlan 40
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 0001.C9E2.5764
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
```

```
!
```

```
interface FastEthernet0/18
```

```
!
```

```
interface FastEthernet0/19
```

```
!
```

```
interface FastEthernet0/20
```

```
!
```

```
interface FastEthernet0/21
```

```
!
```

```
interface FastEthernet0/22
```

```
!
```

```
interface FastEthernet0/23
```

```
!
```

```
interface FastEthernet0/24
```

```
switchport access vlan 99
```

```
switchport mode access
```

```
!
```

```
interface GigabitEthernet0/1
```

```
switchport mode trunk
```

```
!
```

```
interface GigabitEthernet0/2
```

```
!
```

```
interface Vlan1
```

```
no ip address
```

```
shutdown
```

```
!
```

```
!
```

```
!
```

```
!
```

```
line con 0
```

```
password Puffancs
```

```
login
```

line vty 0 4

password Puffancs

login local

transport input ssh

line vty 5 15

password Puffancs

login local

transport input ssh

!

!

!

!

end

Irodaswitch4

Current configuration : 2281 bytes

!

version 15.0

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname S4

!

enable secret 5 \$1\$mERr\$Dfi8gB9UD51VK9d5.1FWi/

!

!

!

ip domain-name Puff_kft

!

username Puff_kft privilege 1 password 0 Puffancs

!

```
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
switchport mode trunk
!
interface FastEthernet0/2
switchport mode trunk
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
switchport access vlan 10
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 0060.70B8.0C75
```

```
!
interface FastEthernet0/11
switchport access vlan 20
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 0001.9661.3A98
!
interface FastEthernet0/12
switchport access vlan 30
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 0001.C764.0852
!
interface FastEthernet0/13
switchport access vlan 40
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 0007.ECB0.0481
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
```

interface FastEthernet0/18

!

interface FastEthernet0/19

!

interface FastEthernet0/20

!

interface FastEthernet0/21

!

interface FastEthernet0/22

!

interface FastEthernet0/23

!

interface FastEthernet0/24

!

interface GigabitEthernet0/1

!

interface GigabitEthernet0/2

!

interface Vlan1

no ip address

shutdown

!

!

!

line con 0

password Puffancs

login

!

line vty 0 4

password Puffancs

```
login local  
transport input ssh  
line vty 5 15  
password Puffancs  
login local  
transport input ssh  
!  
!  
!  
!  
end
```

Irodaswitch5

```
Current configuration : 2281 bytes  
!  
version 15.0  
no service timestamps log datetime msec  
no service timestamps debug datetime msec  
no service password-encryption  
!  
hostname S5  
!  
enable secret 5 $1$mERr$Dfi8gB9UD51VK9d5.1FWi/  
!  
!  
!  
ip domain-name Puff_kft  
!  
username Puff_kft privilege 1 password 0 Puffancs  
!  
!
```

```
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
switchport mode trunk
!
interface FastEthernet0/2
switchport mode trunk
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
switchport access vlan 10
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 0060.7068.0E82
!
interface FastEthernet0/11
```

```
switchport access vlan 20
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 0030.F2CB.74A3
!
interface FastEthernet0/12
switchport access vlan 30
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 00E0.8F26.429D
!
interface FastEthernet0/13
switchport access vlan 40
switchport mode access
switchport port-security
switchport port-security mac-address sticky
switchport port-security violation restrict
switchport port-security mac-address sticky 000C.8555.737D
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
```

```
interface FastEthernet0/19
```

```
!
```

```
interface FastEthernet0/20
```

```
!
```

```
interface FastEthernet0/21
```

```
!
```

```
interface FastEthernet0/22
```

```
!
```

```
interface FastEthernet0/23
```

```
!
```

```
interface FastEthernet0/24
```

```
!
```

```
interface GigabitEthernet0/1
```

```
!
```

```
interface GigabitEthernet0/2
```

```
!
```

```
interface Vlan1
```

```
no ip address
```

```
shutdown
```

```
!
```

```
!
```

```
!
```

```
line con 0
```

```
password Puffancs
```

```
login
```

```
!
```

```
line vty 0 4
```

```
password Puffancs
```

```
login local
```

```
transport input ssh
```

line vty 5 15

password Puffancs

login local

transport input ssh

!

!

!

!

end

Irodarouter1

Current configuration : 1376 bytes

!

version 15.1

no service timestamps log datetime msec

no service timestamps debug datetime msec

no service password-encryption

!

hostname R4

!

!

!

enable secret 5 \$1\$mERr\$Dfi8gB9UD51VK9d5.1FWi/

!

!

!

!

!

no ip cef

no ipv6 cef

!

!

```
!
username Puff_kft password 0 Puffancs
!
!
license udi pid CISCO2911/K9 sn FTX1524ZN7G-
!
!
!
!
!
!
!
!
!
ip domain-name Puff_kft
!
!
spanning-tree mode pvst
!
!
!
!
!
```

interface GigabitEthernet0/0

```
no ip address
duplex auto
speed auto
shutdown
!
```

interface GigabitEthernet0/1

```
ip address 10.10.10.21 255.255.255.252
```

```
duplex auto
speed auto
!
interface GigabitEthernet0/2
ip address 10.10.10.25 255.255.255.252
duplex auto
speed auto
!
interface Serial0/0/0
ip address 10.10.10.14 255.255.255.252
!
interface Serial0/0/1
ip address 10.10.10.18 255.255.255.252
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
router-id 1.1.1.4
log-adjacency-changes
network 10.10.10.12 0.0.0.3 area 0
network 10.10.10.16 0.0.0.3 area 0
network 10.10.10.20 0.0.0.3 area 0
network 10.10.10.24 0.0.0.3 area 0
!
ip classless
ip route 0.0.0.0 0.0.0.0 10.10.10.17
ip route 0.0.0.0 0.0.0.0 10.10.10.13
!
ip flow-export version 9
!
```

```
!
!
!
!
!
line con 0
password Puffancs
login
!
line aux 0
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
```

end

Irodarouter2

Current configuration : 1976 bytes

```
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
```

hostname R4

!

!

!

enable secret 5 \$1\$mERr\$Dfi8gB9UD51VK9d5.1FWi/

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

username Puff_kft password 0 Puffancs

!

!

license udi pid CISCO2911/K9 sn FTX1524VTJ0-

license boot module c2900 technology-package securityk9

!

!

!

crypto isakmp policy 1

encr 3des

authentication pre-share

group 2

!

crypto isakmp key KULCS2 address 10.10.10.17

!

!

```
!
crypto ipsec transform-set R2TSET esp-aes 128 esp-md5-hmac
!
crypto map R2CMAP 1 ipsec-isakmp
    set peer 10.10.10.17
    set transform-set R2TSET
    match address VPN2
!
!
!
!
ip domain-name Puff_kft
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
    no ip address
    duplex auto
    speed auto
    shutdown
!
interface GigabitEthernet0/1
    ip address 10.10.10.22 255.255.255.252
    ip nat outside
    duplex auto
    speed auto
```

```
crypto map R2CMAP
```

```
!
```

```
interface GigabitEthernet0/2
```

```
ip address 192.168.2.137 255.255.255.252
```

```
ip nat inside
```

```
duplex auto
```

```
speed auto
```

```
!
```

```
interface Vlan1
```

```
no ip address
```

```
shutdown
```

```
!
```

```
router ospf 1
```

```
router-id 1.1.2.4
```

```
log-adjacency-changes
```

```
network 192.168.2.136 0.0.0.3 area 1
```

```
network 10.10.10.20 0.0.0.3 area 0
```

```
default-information originate
```

```
!
```

```
ip nat inside source list 101 interface GigabitEthernet0/1 overload
```

```
ip classless
```

```
ip route 192.168.2.0 255.255.255.0 192.168.2.138
```

```
ip route 10.10.10.17 255.255.255.255 10.10.10.21
```

```
ip route 192.168.0.0 255.255.255.248 10.10.10.21
```

```
ip route 0.0.0.0 0.0.0.0 10.10.10.21
```

```
!
```

```
ip flow-export version 9
```

```
!
```

```
!
```

```
ip access-list extended VPN2
```

```
permit ip 192.168.2.0 0.0.0.255 192.168.0.0 0.0.0.7
```

```
access-list 101 deny ip 192.168.2.0 0.0.0.255 192.168.0.0 0.0.0.7
```

```
access-list 101 permit ip 192.168.2.0 0.0.0.255 any
!
!
!
!
!
line con 0
password Puffancs
login
!
line aux 0
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
```

end

Irodarouter3

Current configuration : 1976 bytes

```
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
```

hostname R4

!

!

!

enable secret 5 \$1\$mERr\$Dfi8gB9UD51VK9d5.1FWi/

!

!

!

!

!

ip cef

no ipv6 cef

!

!

!

username Puff_kft password 0 Puffancs

!

!

license udi pid CISCO2911/K9 sn FTX1524H1EH-

license boot module c2900 technology-package securityk9

!

!

!

crypto isakmp policy 1

encr 3des

authentication pre-share

group 2

!

crypto isakmp key KULCS3 address 10.10.10.13

!

!

```
!
crypto ipsec transform-set R3TSET esp-aes 128 esp-md5-hmac
!
crypto map R3CMAP 1 ipsec-isakmp
    set peer 10.10.10.13
    set transform-set R3TSET
    match address VPN3
!
!
!
!
ip domain-name Puff_kft
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
    no ip address
    duplex auto
    speed auto
    shutdown
!
interface GigabitEthernet0/1
    ip address 192.168.2.141 255.255.255.252
    ip nat inside
    duplex auto
    speed auto
```

```
!
interface GigabitEthernet0/2
ip address 10.10.10.26 255.255.255.252
ip nat outside
duplex auto
speed auto
crypto map R3CMAP
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
router-id 1.1.3.4
log-adjacency-changes
network 192.168.2.140 0.0.0.3 area 1
network 10.10.10.24 0.0.0.3 area 0
default-information originate
!
ip nat inside source list 101 interface GigabitEthernet0/2 overload
ip classless
ip route 192.168.2.0 255.255.255.0 192.168.2.142
ip route 10.10.10.13 255.255.255.255 10.10.10.25
ip route 192.168.1.0 255.255.255.248 10.10.10.25
ip route 0.0.0.0 0.0.0.0 10.10.10.25
!
ip flow-export version 9
!
!
ip access-list extended VPN3
permit ip 192.168.2.0 0.0.0.255 192.168.1.0 0.0.0.7
access-list 101 deny ip 192.168.2.0 0.0.0.255 192.168.1.0 0.0.0.7
```

```
access-list 101 permit ip 192.168.2.0 0.0.0.255 any
!
!
!
!
!
line con 0
password Puffancs
login
!
line aux 0
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
```

end

Irodarouter4

Current configuration : 3213 bytes

```
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
```

hostname R4

!

!

!

enable secret 5 \$1\$mERr\$Dfi8gB9UD51VK9d5.1FWi/

!

!

!

!

!

!

!

ip cef

ipv6 unicast-routing

!

no ipv6 cef

!

!

!

!

username Puff_kft password 0 Puffancs

!

!

license udi pid CISCO2911/K9 sn FTX1524T311-

!

!

!

!

!

!

!

!

!

!

!

ip domain-name Puff_kft

```
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
no ip address
duplex auto
speed auto
!
interface GigabitEthernet0/0.10
encapsulation dot1Q 10
ip address 192.168.2.1 255.255.255.224
ip helper-address 192.168.2.130
ipv6 address FE80::10 link-local
ipv6 address FC10::1/64
!
interface GigabitEthernet0/0.20
encapsulation dot1Q 20
ip address 192.168.2.33 255.255.255.224
ip helper-address 192.168.2.130
ipv6 address FE80::20 link-local
ipv6 address FC20::1/64
!
interface GigabitEthernet0/0.30
encapsulation dot1Q 30
ip address 192.168.2.65 255.255.255.224
ip helper-address 192.168.2.130
```

```
ipv6 address FE80::30 link-local
ipv6 address FC30::1/64
!
interface GigabitEthernet0/0.40
    encapsulation dot1Q 40
    ip address 192.168.2.97 255.255.255.224
    ip helper-address 192.168.2.130
    ipv6 address FE80::40 link-local
    ipv6 address FC40::1/64
!
interface GigabitEthernet0/0.99
    encapsulation dot1Q 99
    ip address 192.168.2.129 255.255.255.248
    ipv6 address FE80::99 link-local
    ipv6 address FC99::1/64
!
interface GigabitEthernet0/1
    ip address 192.168.2.142 255.255.255.252
    duplex auto
    speed auto
!
interface GigabitEthernet0/2
    ip address 192.168.2.138 255.255.255.252
    duplex auto
    speed auto
!
interface Vlan1
    no ip address
    shutdown
!
router ospf 1
    router-id 1.1.4.4
```

```
log-adjacency-changes

passive-interface GigabitEthernet0/0

network 192.168.2.0 0.0.0.31 area 1

network 192.168.2.32 0.0.0.31 area 1

network 192.168.2.64 0.0.0.31 area 1

network 192.168.2.96 0.0.0.31 area 1

network 192.168.2.128 0.0.0.7 area 1

network 192.168.2.136 0.0.0.3 area 1

network 192.168.2.140 0.0.0.3 area 1

!

ip classless

ip route 192.168.0.0 255.255.255.248 192.168.2.137

ip route 192.168.1.0 255.255.255.248 192.168.2.141

ip route 0.0.0.0 0.0.0.0 192.168.2.137

ip route 0.0.0.0 0.0.0.0 192.168.2.141

!

ip flow-export version 9

!

!

access-list 130 permit ip host 192.168.2.130 192.168.2.0 0.0.0.31

access-list 130 permit ip host 192.168.2.130 192.168.2.32 0.0.0.31

access-list 130 permit ip host 192.168.2.130 192.168.2.64 0.0.0.31

access-list 130 permit ip host 192.168.2.130 192.168.2.96 0.0.0.31

access-list 130 permit ip host 192.168.2.130 192.168.2.128 0.0.0.7

access-list 130 permit ip host 192.168.2.132 192.168.2.0 0.0.0.31

access-list 130 permit ip host 192.168.2.132 192.168.2.32 0.0.0.31

access-list 130 permit ip host 192.168.2.132 192.168.2.64 0.0.0.31

access-list 130 permit ip host 192.168.2.132 192.168.2.96 0.0.0.31

access-list 130 permit ip host 192.168.2.132 192.168.2.128 0.0.0.7

access-list 130 permit ip host 192.168.2.130 host 192.168.0.2

access-list 130 deny ip any any

!
```

```
!
!
!
!
line con 0
password Puffancs
login
!
line aux 0
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
end
```

Raktárrouter

```
Current configuration : 2949 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R2
!
```

enable secret 5 \$1\$**mERr\$Dfi8gB9UD51VK9d5.1FWi/**

!

!

!

!

!

no ip cef

no ipv6 cef

!

!

!

username Puff_kft password 0 Puffancs

!

!

license udi pid CISCO2911/K9 sn FTX15241GI6-

license boot module c2900 technology-package securityk9

!

!

!

crypto isakmp policy 1

encr 3des

authentication pre-share

group 2

!

crypto isakmp key KULCS address 10.10.10.10

crypto isakmp key KULCS address 10.10.10.13

crypto isakmp key KULCS2 address 10.10.10.22

!

!

```
!
crypto ipsec transform-set R1TSET esp-aes 128 esp-md5-hmac
crypto ipsec transform-set R2TSET esp-aes 128 esp-md5-hmac
!
crypto map R1CMAP 1 ipsec-isakmp
  set peer 10.10.10.10
  set peer 10.10.10.13
  set transform-set R1TSET
  match address VPN
!
!
crypto map R2CMAP 1 ipsec-isakmp
  set peer 10.10.10.22
  set transform-set R2TSET
  match address VPN2
!
!
!
!
ip domain-name Puff_kft
!
!
spanning-tree mode pvst
!
!
!
!
!
```

```
interface GigabitEthernet0/0
  ip address 192.168.0.1 255.255.255.248
  ip nat inside
```

```
duplex auto
speed auto
!
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface GigabitEthernet0/2
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/0/0
ip address 10.10.10.6 255.255.255.252
ip nat outside
crypto map R1CMAP
!
interface Serial0/0/1
ip address 10.10.10.17 255.255.255.252
ip nat outside
clock rate 2000000
crypto map R2CMAP
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
router-id 1.1.1.2
```

```
log-adjacency-changes

passive-interface GigabitEthernet0/0

network 10.10.10.4 0.0.0.3 area 0

network 10.10.10.16 0.0.0.3 area 0

network 10.10.10.20 0.0.0.3 area 0

network 192.168.0.0 0.0.0.7 area 1

!

ip nat inside source list 101 interface Serial0/0/1 overload

ip nat inside source list 102 interface Serial0/0/0 overload

ip classless

ip route 10.10.10.10 255.255.255.255 10.10.10.5

ip route 10.10.10.13 255.255.255.255 10.10.10.18

ip route 10.10.10.22 255.255.255.255 10.10.10.18

ip route 192.168.1.0 255.255.255.248 10.10.10.5

ip route 192.168.1.0 255.255.255.248 10.10.10.18

ip route 192.168.2.0 255.255.255.0 10.10.10.18

ip route 0.0.0.0 0.0.0.0 10.10.10.5

!

ip flow-export version 9

!

!

ip access-list extended VPN

permit ip 192.168.0.0 0.0.0.7 192.168.1.0 0.0.0.7

ip access-list extended VPN2

permit ip 192.168.0.0 0.0.0.7 192.168.2.0 0.0.0.255

access-list 101 deny ip 192.168.0.0 0.0.0.7 192.168.1.0 0.0.0.7

access-list 101 deny ip 192.168.0.0 0.0.0.7 192.168.2.0 0.0.0.255

access-list 101 permit ip 192.168.0.0 0.0.0.7 any

access-list 102 deny ip 192.168.0.0 0.0.0.7 192.168.1.0 0.0.0.7

access-list 102 permit ip 192.168.0.0 0.0.0.7 any

!

!
```

```
!
!
!
line con 0
password Puffancs
login
!
line aux 0
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
end
```

Raktárswitch

```
Current configuration : 1329 bytes
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Raktarswitch
!
enable secret 5 $1$mERr$Dfi8gB9UD51VK9d5.1FWi/
```

```
!
!
!
ip domain-name Puff_kft
!
username Puff_kft privilege 1 password 0 Puffancs
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
interface FastEthernet0/3
!
interface FastEthernet0/4
!
interface FastEthernet0/5
!
interface FastEthernet0/6
!
interface FastEthernet0/7
!
interface FastEthernet0/8
!
interface FastEthernet0/9
!
interface FastEthernet0/10
!
```

```
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
interface GigabitEthernet0/2
!
```

```
interface Vlan1
    no ip address
    shutdown
!
!
!
!
line con 0
password Puffancs
login
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
!
```

end

Garazsrouter

```
Current configuration : 2947 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
```

hostname R3

!

!

!

enable secret 5 \$1\$mERr\$Dfi8gB9UD51VK9d5.1FWi/

!

!

!

!

!

!

no ip cef

no ipv6 cef

!

!

!

username Puff_kft password 0 Puffancs

!

!

license udi pid CISCO2911/K9 sn FTX1524SO9F-

license boot module c2900 technology-package securityk9

!

!

!

crypto isakmp policy 1

encr 3des

authentication pre-share

group 2

!

crypto isakmp key KULCS address 10.10.10.6

crypto isakmp key KULCS address 10.10.10.17

crypto isakmp key KULCS3 address 10.10.10.26

```
!
!
!
crypto ipsec transform-set R1TSET esp-aes 128 esp-md5-hmac
crypto ipsec transform-set R3TSET esp-aes 128 esp-md5-hmac
!
crypto map R1CMAP 1 ipsec-isakmp
  set peer 10.10.10.6
  set peer 10.10.10.17
  set transform-set R1TSET
  match address VPN
!
!
crypto map R3CMAP 1 ipsec-isakmp
  set peer 10.10.10.26
  set transform-set R3TSET
  match address VPN3
!
!
!
!
ip domain-name Puff_kft
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
```

```
ip address 192.168.1.1 255.255.255.248
```

```
ip nat inside
```

```
duplex auto
```

```
speed auto
```

```
!
```

```
interface GigabitEthernet0/1
```

```
no ip address
```

```
duplex auto
```

```
speed auto
```

```
shutdown
```

```
!
```

```
interface GigabitEthernet0/2
```

```
no ip address
```

```
duplex auto
```

```
speed auto
```

```
shutdown
```

```
!
```

```
interface Serial0/0/0
```

```
ip address 10.10.10.13 255.255.255.252
```

```
ip nat outside
```

```
clock rate 2000000
```

```
crypto map R3CMAP
```

```
!
```

```
interface Serial0/0/1
```

```
ip address 10.10.10.10 255.255.255.252
```

```
ip nat outside
```

```
crypto map R1CMAP
```

```
!
```

```
interface Vlan1
```

```
no ip address
```

```
shutdown
```

```
!
```

```
router ospf 1
  router-id 1.1.1.3
  log adjacency-changes
  passive-interface GigabitEthernet0/0
  network 10.10.10.8 0.0.0.3 area 0
  network 10.10.10.12 0.0.0.3 area 0
  network 10.10.10.20 0.0.0.3 area 0
  network 192.168.1.0 0.0.0.7 area 1
!
ip nat inside source list 101 interface Serial0/0/0 overload
ip nat inside source list 102 interface Serial0/0/1 overload
ip classless
ip route 10.10.10.6 255.255.255.255 10.10.10.9
ip route 10.10.10.17 255.255.255.255 10.10.10.14
ip route 10.10.10.26 255.255.255.255 10.10.10.14
ip route 192.168.0.0 255.255.255.248 10.10.10.9
ip route 192.168.0.0 255.255.255.248 10.10.10.14
ip route 192.168.2.0 255.255.255.0 10.10.10.14
ip route 0.0.0.0 0.0.0.0 10.10.10.9
!
ip flow-export version 9
!
!
ip access-list extended VPN
permit ip 192.168.1.0 0.0.0.7 192.168.0.0 0.0.0.7
ip access-list extended VPN3
permit ip 192.168.1.0 0.0.0.7 192.168.2.0 0.0.0.255
access-list 101 deny ip 192.168.1.0 0.0.0.7 192.168.0.0 0.0.0.7
access-list 101 deny ip 192.168.1.0 0.0.0.7 192.168.2.0 0.0.0.255
access-list 101 permit ip 192.168.1.0 0.0.0.7 any
access-list 102 deny ip 192.168.1.0 0.0.0.7 192.168.0.0 0.0.0.7
access-list 102 permit ip 192.168.1.0 0.0.0.7 any
```

```
!
!
!
!
!
line con 0
password Puffancs
login
!
line aux 0
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
```

end

Garazswitch

Current configuration : 1329 bytes

```
!
version 15.0
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Garazswitch
```

```
enable secret 5 $1$mERr$Dfi8gB9UD51VK9d5.1FWi/
```

```
!
```

```
!
```

```
!
```

```
ip domain-name Puff_kft
```

```
!
```

```
username Puff_kft privilege 1 password 0 Puffancs
```

```
!
```

```
!
```

```
!
```

```
spanning-tree mode pvst
```

```
spanning-tree extend system-id
```

```
!
```

```
interface FastEthernet0/1
```

```
!
```

```
interface FastEthernet0/2
```

```
!
```

```
interface FastEthernet0/3
```

```
!
```

```
interface FastEthernet0/4
```

```
!
```

```
interface FastEthernet0/5
```

```
!
```

```
interface FastEthernet0/6
```

```
!
```

```
interface FastEthernet0/7
```

```
!
```

```
interface FastEthernet0/8
```

```
!
```

```
interface FastEthernet0/9
```

```
!
```

```
interface FastEthernet0/10
!
interface FastEthernet0/11
!
interface FastEthernet0/12
!
interface FastEthernet0/13
!
interface FastEthernet0/14
!
interface FastEthernet0/15
!
interface FastEthernet0/16
!
interface FastEthernet0/17
!
interface FastEthernet0/18
!
interface FastEthernet0/19
!
interface FastEthernet0/20
!
interface FastEthernet0/21
!
interface FastEthernet0/22
!
interface FastEthernet0/23
!
interface FastEthernet0/24
!
interface GigabitEthernet0/1
!
```

```
interface GigabitEthernet0/2
!
interface Vlan1
    no ip address
    shutdown
!
!
!
!
line con 0
password Puffancs
login
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
!
!
end
örrouter
Current configuration : 1320 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
```

```
no service password-encryption
!
hostname R1
!
!
!
enable secret 5 $1$mERr$Dfi8gB9UD51VK9d5.1FWi/
!
!
!
!
!
!
no ip cef
no ipv6 cef
!
!
!
!
username Puff_kft password 0 Puffancs
!
!
license udi pid CISCO2911/K9 sn FTX1524UYQ2-
!
!
!
!
!
!
```

ip domain-name Puff_kft

```
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
ip address 10.10.10.2 255.255.255.252
duplex auto
speed auto
!
interface GigabitEthernet0/1
no ip address
duplex auto
speed auto
shutdown
!
interface GigabitEthernet0/2
no ip address
duplex auto
speed auto
shutdown
!
interface Serial0/0/0
ip address 10.10.10.5 255.255.255.252
clock rate 2000000
!
interface Serial0/0/1
ip address 10.10.10.9 255.255.255.252
```

clock rate 2000000

!

interface Vlan1

no ip address

shutdown

!

router ospf 1

router-id 1.1.1.1

log-adjacency-changes

network 10.10.10.0 0.0.0.3 area 0

network 10.10.10.4 0.0.0.3 area 0

network 10.10.10.8 0.0.0.3 area 0

!

ip classless

ip route 0.0.0.0 0.0.0.0 10.10.10.1

!

ip flow-export version 9

!

!

!

!

!

!

line con 0

password Puffancs

login

!

line aux 0

!

line vty 0 4

password Puffancs

```
login local  
transport input ssh  
line vty 5 15  
password Puffancs  
login local  
transport input ssh  
!  
!  
!  
end
```

ASA

ISP1

```
Current configuration : 1161 bytes  
!  
version 15.1  
no service timestamps log datetime msec  
no service timestamps debug datetime msec  
no service password-encryption  
!  
hostname ISP1  
!  
!  
!  
enable secret 5 $1$mERr$Dfi8gB9UD51VK9d5.1FWi/  
!  
!  
!  
!  
!
```

```
ip cef
no ipv6 cef
!
!
!
username Puff_kft password 0 Puffancs
!
!
license udi pid CISCO2911/K9 sn FTX1524S53G-
!
!
!
!
!
!
!
!
!
!
ip domain-name Puff_kft
!
!
spanning-tree mode pvst
!
!
!
!
!
!
```

```
interface GigabitEthernet0/0
ip address 100.10.1.2 255.255.255.252
duplex auto
speed auto
```

```
!
interface GigabitEthernet0/1
ip address 10.10.10.1 255.255.255.252
duplex auto
speed auto
!
interface GigabitEthernet0/2
no ip address
duplex auto
speed auto
shutdown
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
log-adjacency-changes
network 10.10.10.0 0.0.0.3 area 0
network 100.10.1.0 0.0.0.3 area 1
!
ip classless
ip route 10.10.10.0 255.255.255.224 10.10.10.2
ip route 0.0.0.0 0.0.0.0 10.10.10.2
!
ip flow-export version 9
!
!
!
!
```

```
!
line con 0
password Puffancs
login
!
line aux 0
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
end
```

ISP2

```
Current configuration : 1161 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname ISP2
!
!
!
```

```
enable secret 5 $1$mERr$Dfi8gB9UD51VK9d5.1FWi/
```

!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
username Puff_kft password 0 Puffancs
!
!
license udi pid CISCO2911/K9 sn FTX15247333-
!
!
!
!
!
!
!
!
!
ip domain-name Puff_kft
!
!
spanning-tree mode pvst
!
!
!

```
!
!
interface GigabitEthernet0/0
ip address 100.10.2.1 255.255.255.252
duplex auto
speed auto
!
interface GigabitEthernet0/1
ip address 100.10.1.1 255.255.255.252
duplex auto
speed auto
!
interface GigabitEthernet0/2
no ip address
duplex auto
speed auto
shutdown
!
interface Vlan1
no ip address
shutdown
!
router ospf 1
log-adjacency-changes
network 100.10.2.0 0.0.0.3 area 1
network 100.10.1.0 0.0.0.3 area 1
!
ip classless
ip route 10.10.10.0 255.255.255.224 100.10.1.2
ip route 0.0.0.0 0.0.0.0 100.10.1.2
!
ip flow-export version 9
```

!
!
!
!
!
!
!
line con 0
password Puffancs
login
!
line aux 0
!
line vty 0 4
password Puffancs
login local
transport input ssh
line vty 5 15
password Puffancs
login local
transport input ssh
!
!
!
end