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## *Kerio Firewall*

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**Amaç:** Amacımız Sanal Cihazlar kullanarak Kerio Firewall ile internet ağıımız için güvenli bir alan oluşturmak, gelen protokol isteklerini cihaz veya cihazlara yönlendirmek, belirli web sitelerine erişimi engellemek, misafir ağı oluşturmak ve farklı networkler arası bağlantı kurmak için VPN oluşturmak.

- 1-) Firewall Konfigürasyonu
- 2-) Trafik Yönetme
- 3-) Misafir Ağı
- 4-) Web Sitesi Erişimi Engelleme
- 5-) 2 Taraflı VPN Oluşturma
- 6-) 3 Taraflı VPN Oluşturma
- 7-) Client VPN

## 1-) Firewall Konfigürasyonu

Konfigürasyona başlamadan önce Keiro cihazımızın 3 farklı network adaptör kartı olmalıdır:

İlki internete çıkan kartımız,

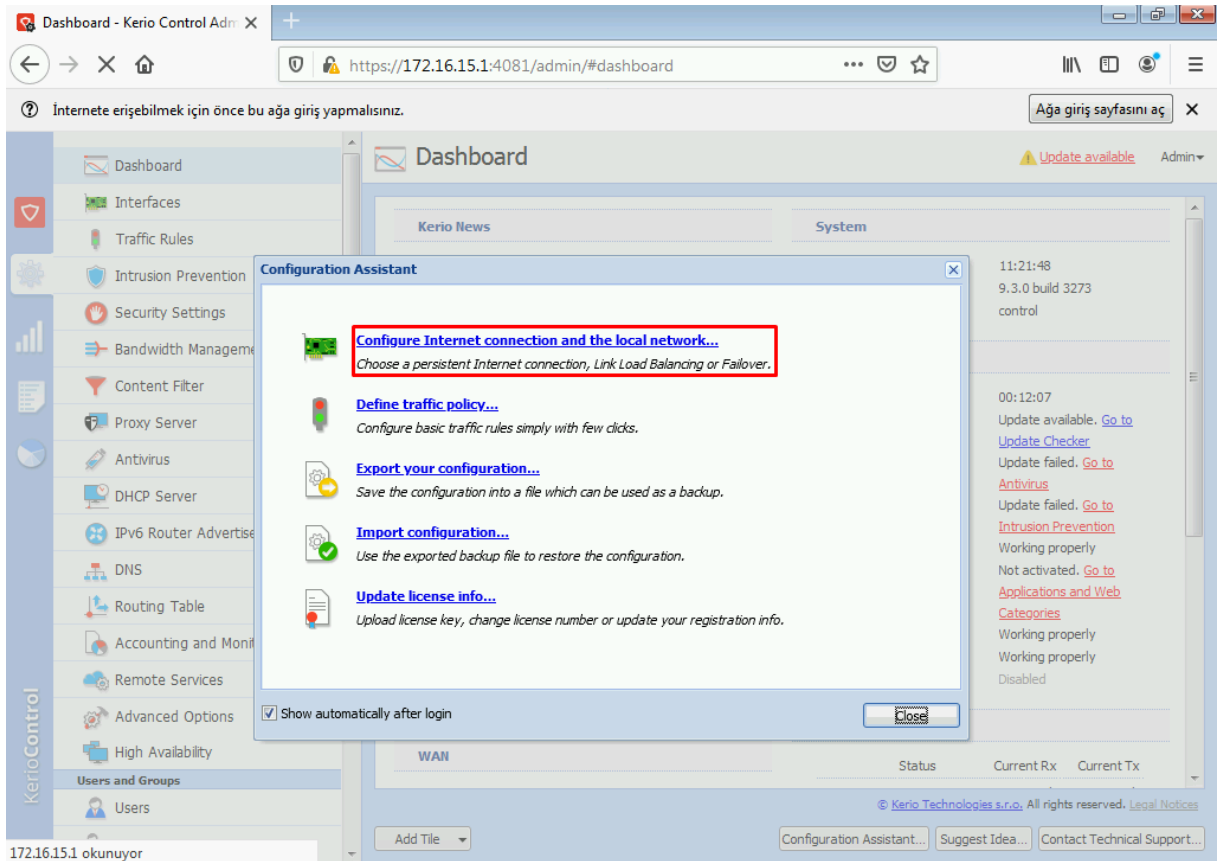
İkincisi Local ağımızın kartı,

Üçüncüsü ise Misafir ağımız için.

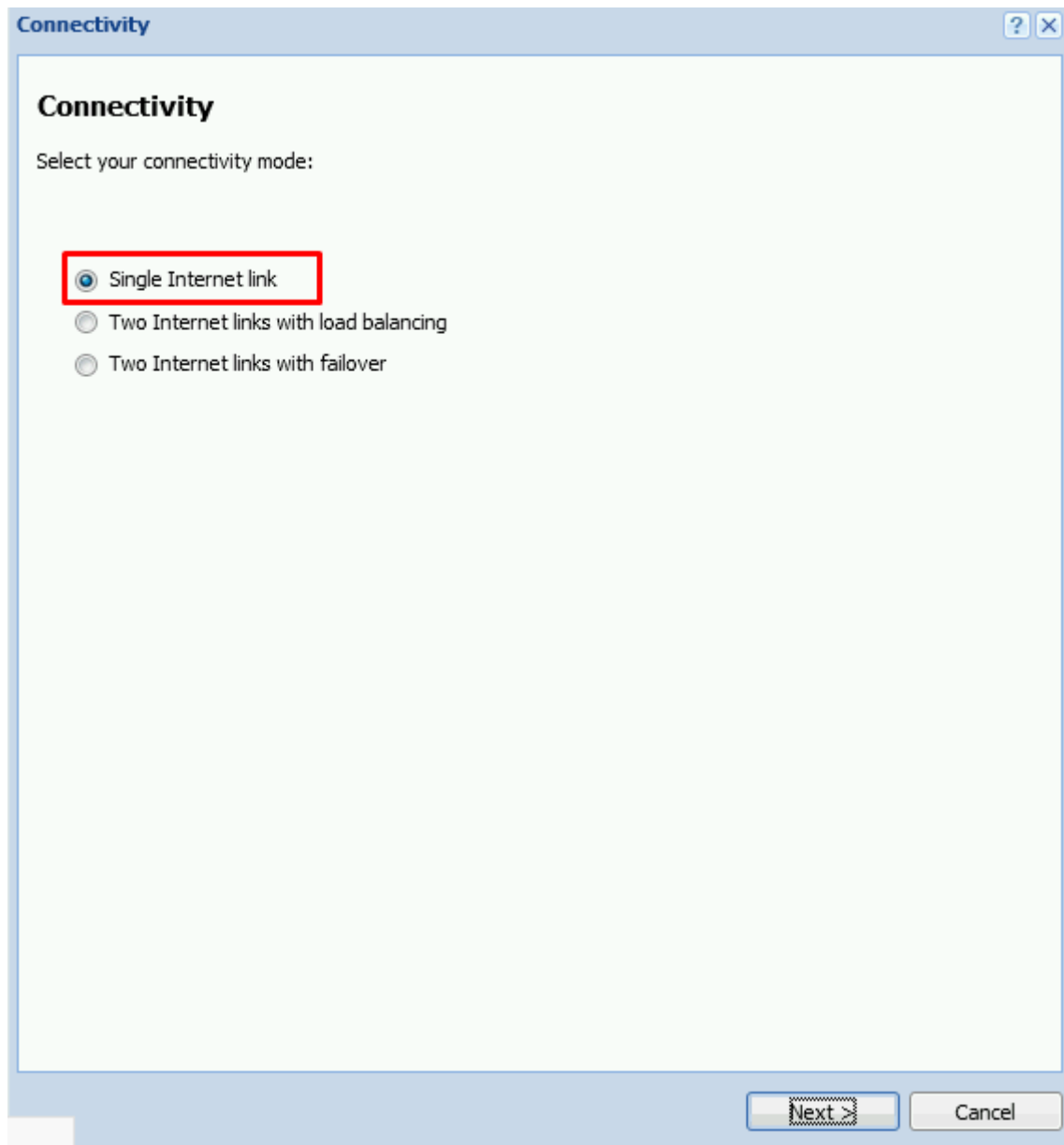
Kartlar ekli değilse eklenir ve konfigürasyona başlanır.

- Local ağımıza Kerio cihazının gösterdiği URL ile giriş yaparız

“https://172.16.15.1:4081/admin” ile. Ardından çıkan ekrandan en üstte bulunan “Configure Internet connection”a tıklarız.



- "Single Internet link" işaretlenip ilerlenir.



The image shows a Windows-style dialog box titled "Connectivity". It has a light blue header bar with a question mark icon and a close button (X) on the right. The main area has a light green background. The title "Connectivity" is in bold. Below it, the text "Select your connectivity mode:" is displayed. There are three radio button options: "Single Internet link" (which is selected and highlighted with a red rectangle), "Two Internet links with load balancing", and "Two Internet links with failover". At the bottom right, there are two buttons: "Next >" and "Cancel".

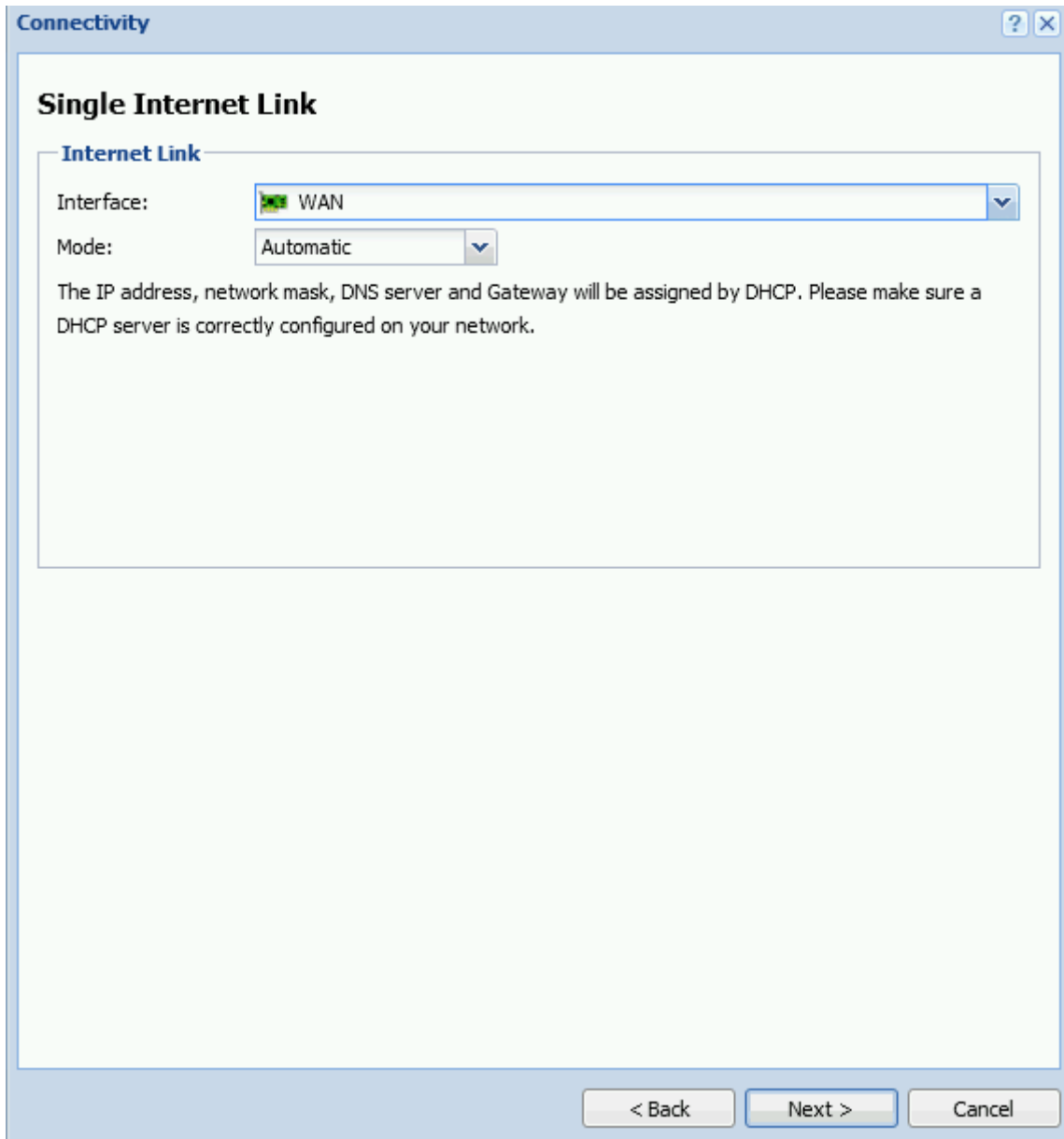
**Connectivity**

Select your connectivity mode:

- ☒ Single Internet link
- ☐ Two Internet links with load balancing
- ☐ Two Internet links with failover

Next > Cancel

- İnternete çıkan adaptör seçilir. (Otomatik geliyor)



The image shows a Windows XP-style 'Connectivity' window. The title bar is light blue with the text 'Connectivity' and standard window controls. The main area has a light green background. At the top, the text 'Single Internet Link' is displayed in bold. Below this, a section titled 'Internet Link' contains two dropdown menus. The first is labeled 'Interface:' and shows 'WAN' with a small icon. The second is labeled 'Mode:' and shows 'Automatic'. Below these, a paragraph of text states: 'The IP address, network mask, DNS server and Gateway will be assigned by DHCP. Please make sure a DHCP server is correctly configured on your network.' At the bottom of the window, there are three buttons: '< Back', 'Next >', and 'Cancel'.

**Connectivity**

**Single Internet Link**

**Internet Link**

Interface: WAN

Mode: Automatic

The IP address, network mask, DNS server and Gateway will be assigned by DHCP. Please make sure a DHCP server is correctly configured on your network.


< Back   Next >   Cancel

- Local ağımız seçilir. (Otomatik geliyor)

**Connectivity** [?] [X]

### Local network

**LAN**

Interface:  Ethernet ▼

IP Address: 172.16.15.1

Mask: 255.255.255.0

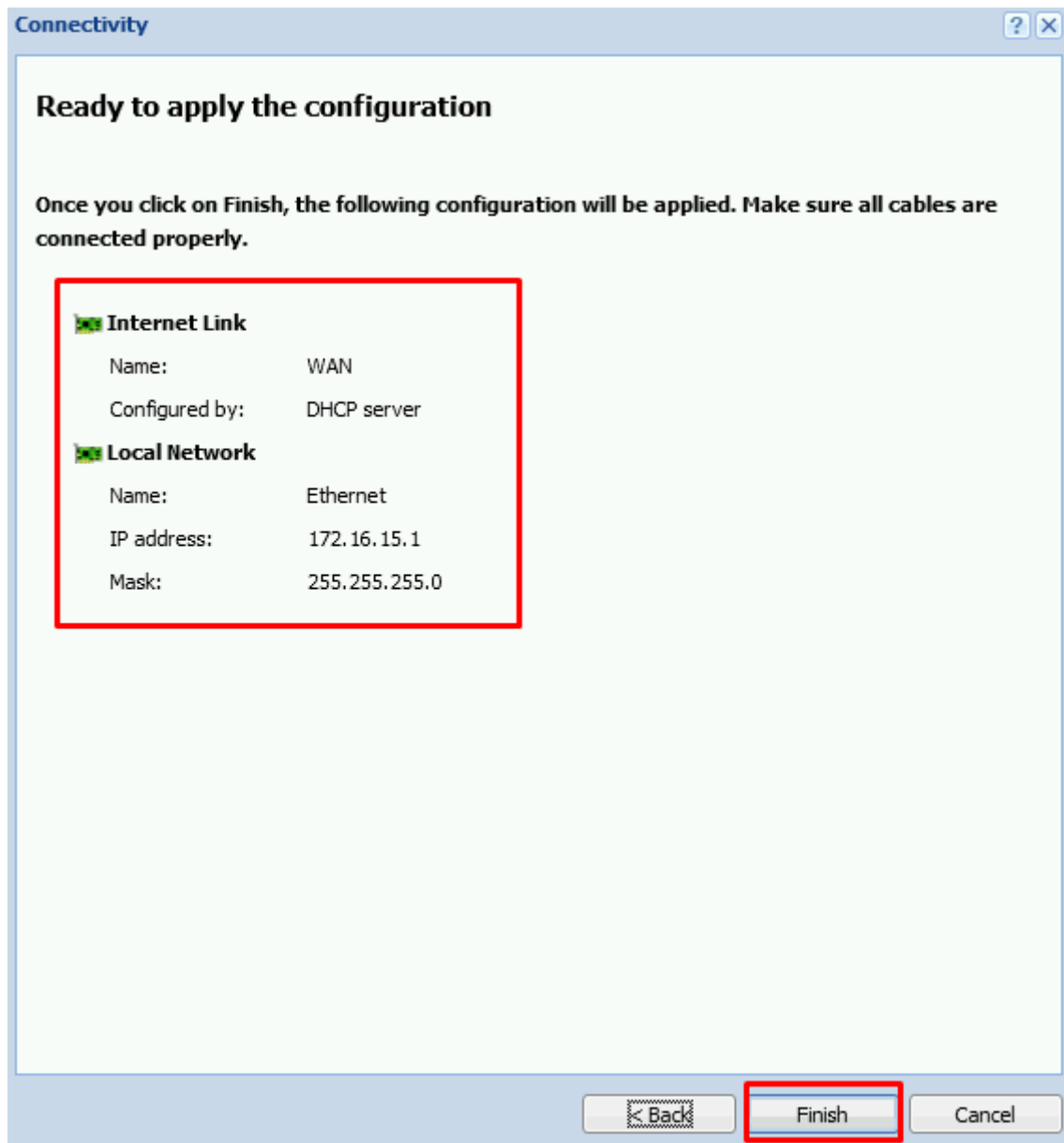
☐ Use DHCP for clients

All interfaces listed below will be moved into the Other Interfaces group

Name ▲	IP Address	Mask
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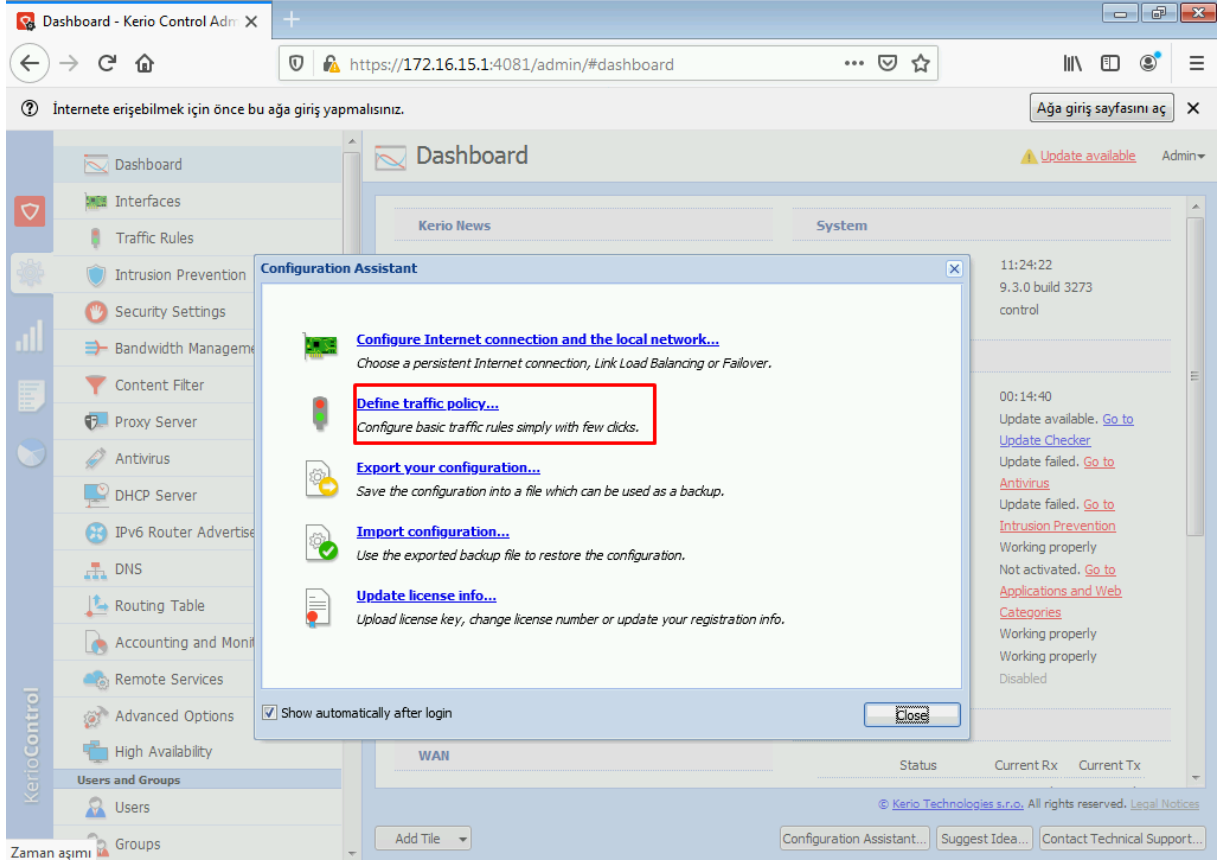
< Back   Next >   Cancel

- Ayarların doğruluğu kontrol edilir ve Finish denir.

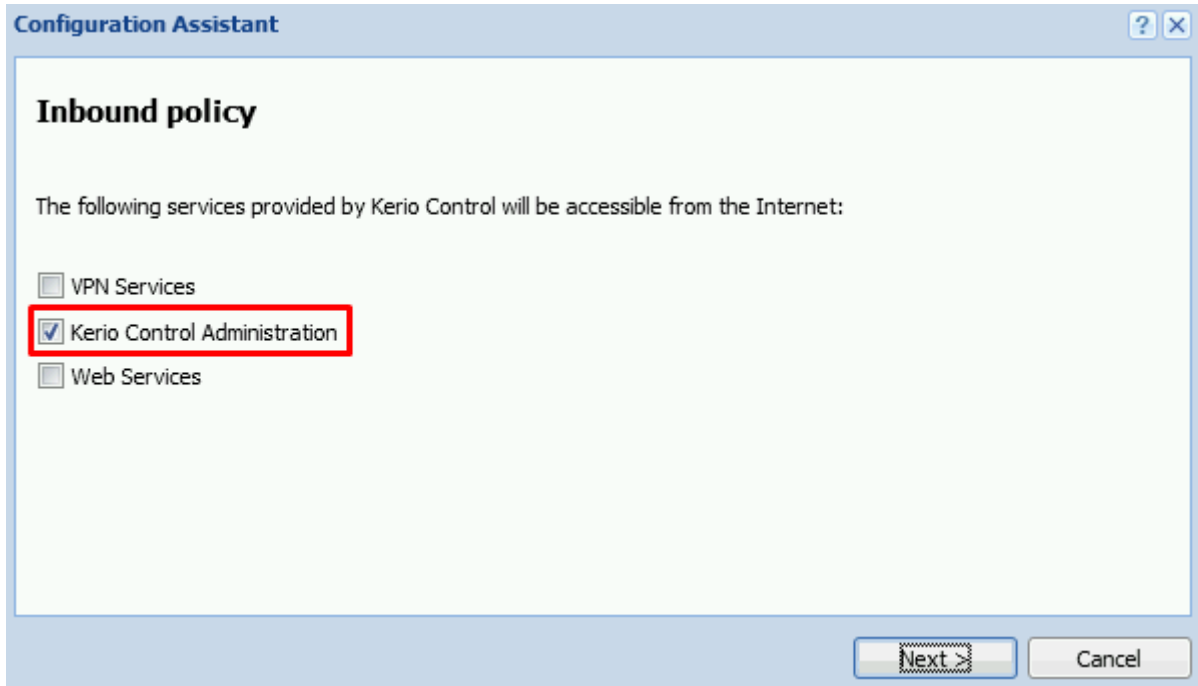


## 2-) Trafik Yönetme

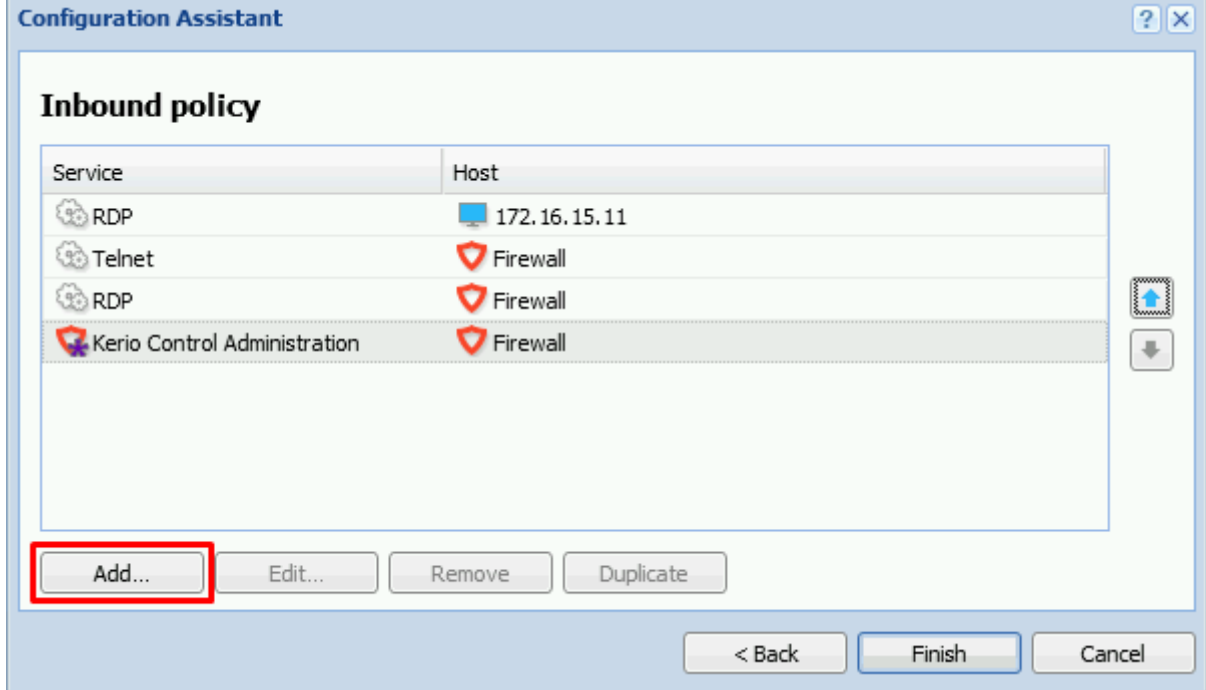
- Konfigürasyonun ardından “Define traffic policy” seçilir.



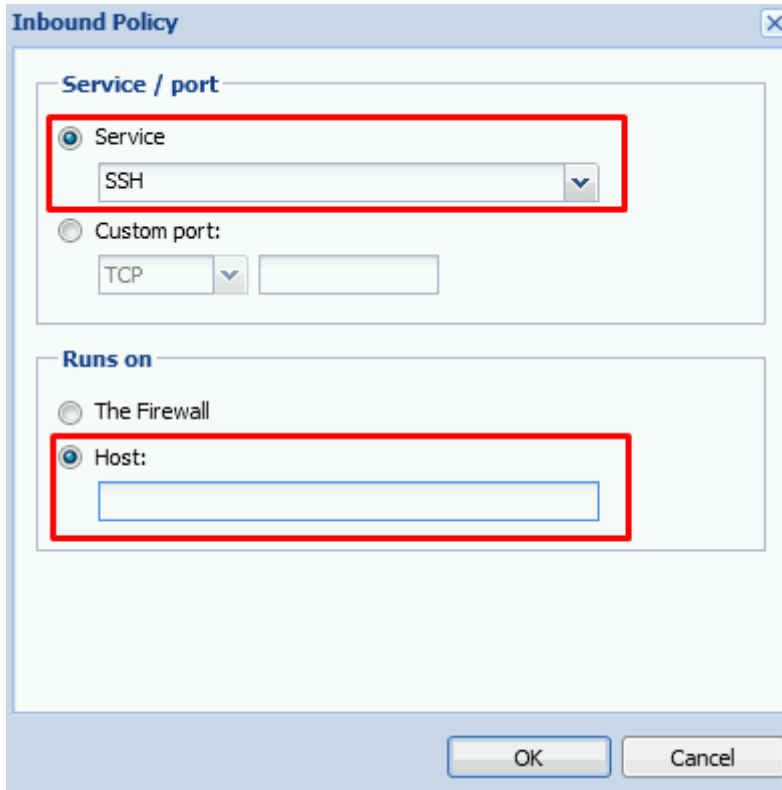
- “Kerio Control Administration” seçilir.



- Eklemek istediğim başka kural varsa ekleriz, biz burda SSH servisini ekleyeceğiz

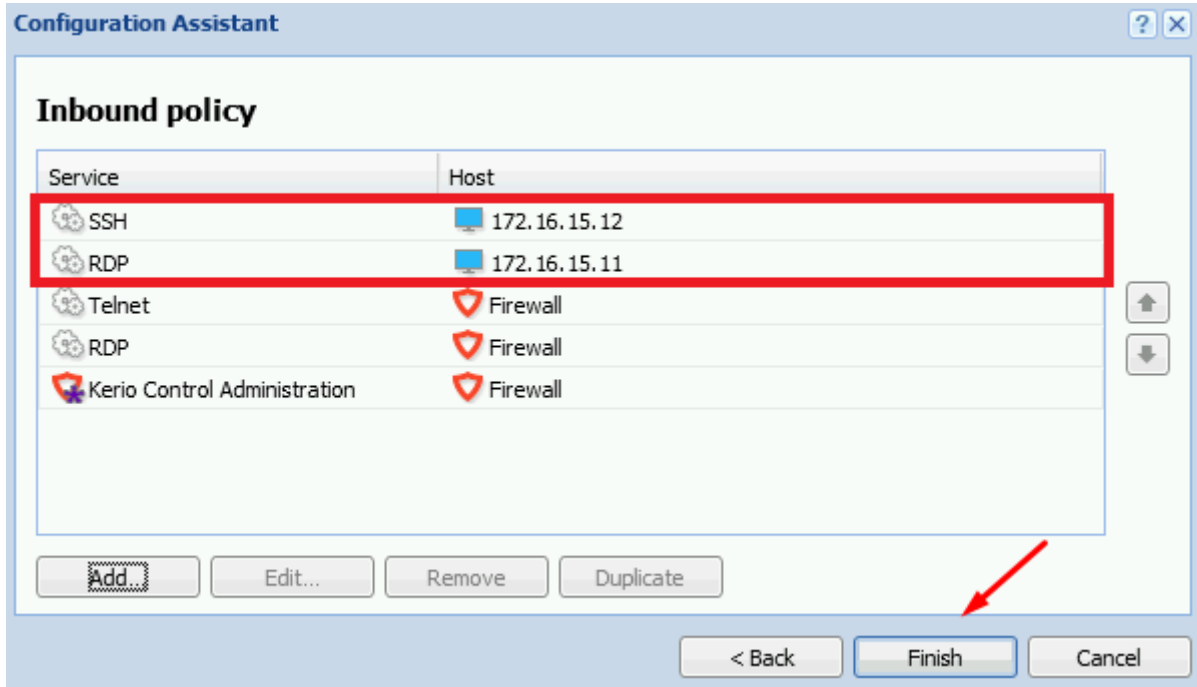


- SSH bağlantısının gideceği cihazın IP'si girilir.

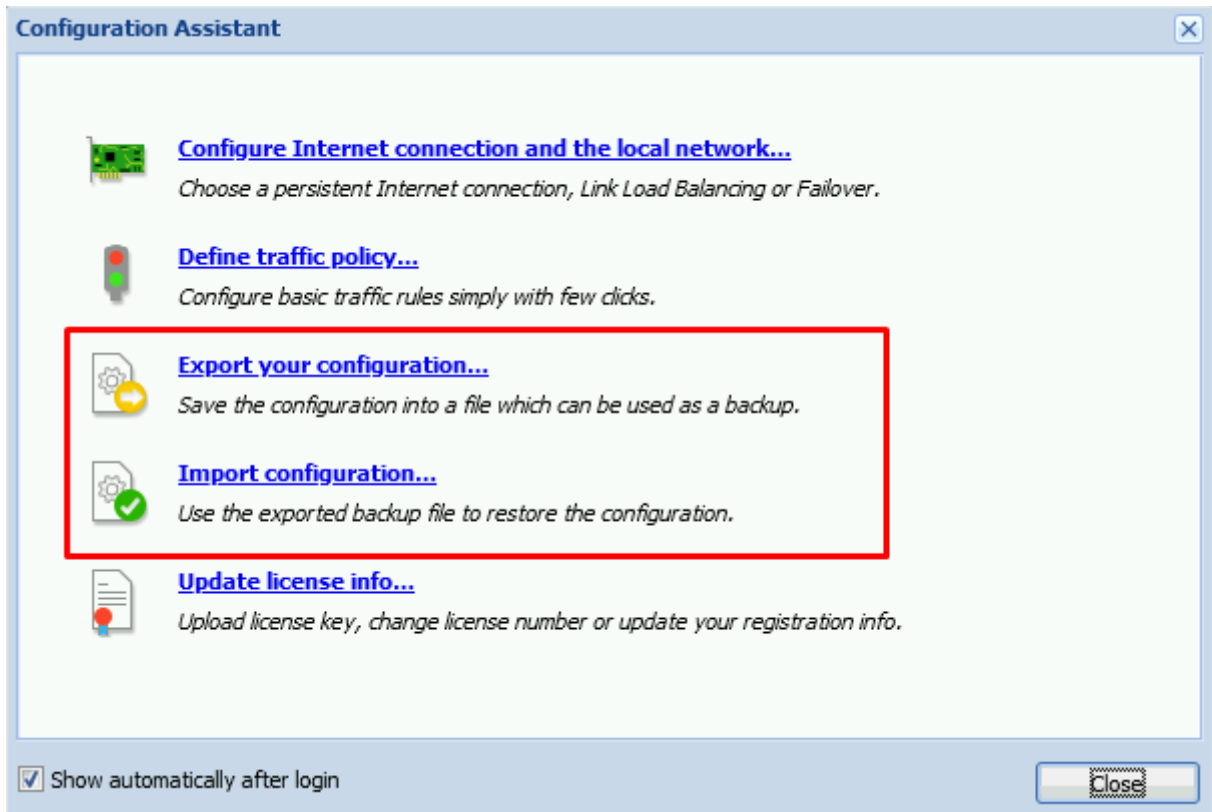




- Finish denerek bitirilir.



- Export ve Import işlemleri, ayarları kaydedip tekrardan backup etmek için kullanılır. Bunlar ile şu anlık ilgilenmeyeceğiz.



- “Traffic Rules” kısmına geldiğimizde kuralların eklendiğini görmekteyiz.

Traffic Rules - Kerio Control Ad X

https://172.16.15.1:4081/admin/#trafficRules

İnternete erişebilmek için önce bu ağa giriş yapmalısınız. Ağa giriş sayfasını aç X

**Traffic Rules** Update available Admin

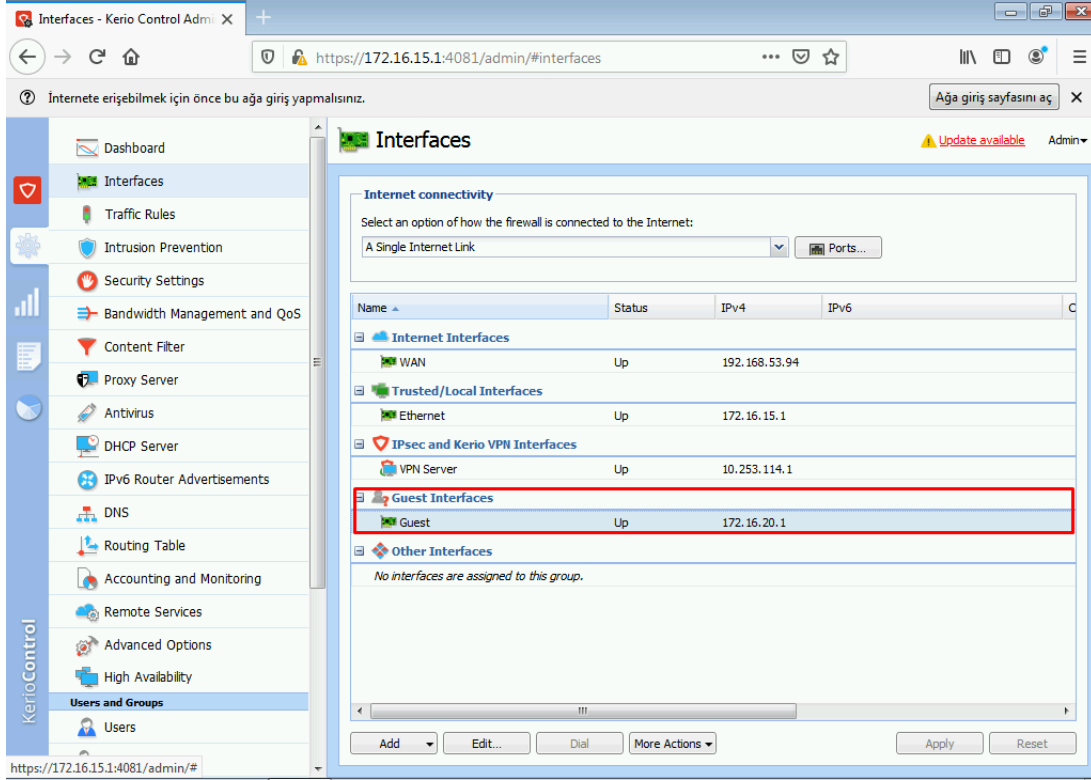
Search: Test Rules Restore View

Name	Source	Destination	Service	IP vers
<input checked="" type="checkbox"/> New Rule	Any	Firewall	RDP	Any
<input checked="" type="checkbox"/> Service Telnet on Firewall	Any	Firewall	Telnet	Any
<input checked="" type="checkbox"/> Service RDP on Firewall	Any	Firewall	RDP	Any
<input checked="" type="checkbox"/> Service SSH on Firewall	Any	Firewall	SSH	Any
<input checked="" type="checkbox"/> Kerio Control Administration	Any	Firewall	Kerio Control W...	Any
<input checked="" type="checkbox"/> Internet access (NAT)	Trusted/Local Interfaces Guest Interfaces VPN clients	Internet Interfaces	Any	Any
<input checked="" type="checkbox"/> Local traffic	Firewall Trusted/Local Interfaces VPN clients All VPN tunnels	Firewall Trusted/Local Interfaces VPN clients All VPN tunnels	Any	Any
<input checked="" type="checkbox"/> Firewall traffic	Firewall	Any	Any	Any
<input checked="" type="checkbox"/> Guests traffic	Guest Interfaces	Firewall	Guest services	Any
Block other traffic	Any	Any	Any	Any

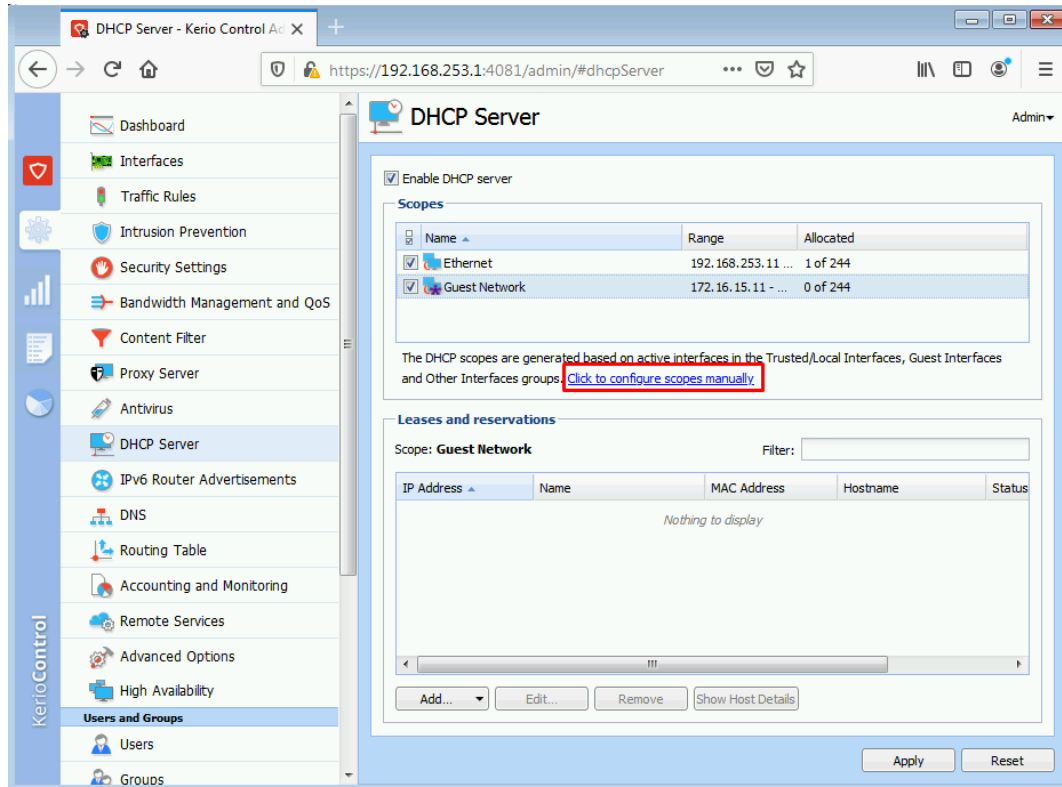
Add Remove More Actions Apply Reset

### 3-) Misafir Ağı

- Ağız “Other Interfaces” altından sürüklenerek “Guest Interfaces” kısmına sürüklenir.



- “DHCP Server” altından “Click to configure scopes manually” tıklanır.



- Ağ'ın ismi verilip "Interface Group"u "Guest Interfaces" olarak seçilir.

Ve ayarlar kontrol edilir.

**Ethernet Interface Properties** ? X

**General**

Name:

Interface Group:

☒ Enable this interface Mode:

**IPv4** **IPv6** **VLAN**

☒ Enable

Configuration:

IP address:

Mask:

Gateway:

DNS server:

- Guest ağımıza çift tıklanır.

Internet erişebilmek için önce bu ağa giriş yapmalısınız. [Ağa giriş sayfasını aç](#)

### DHCP Server

**Enable DHCP server** Update available Admin

**Scopes**

Name	Range	Allocated
Ethernet	172.16.15.11 - ...	2 of 244
Guest	172.16.20.100 - ...	2 of 21

[Add](#) [Edit...](#) [Remove](#) [Generate Scopes Automatically...](#)

**Leases and reservations**

Scope: **Guest** Filter:

IP Address	Name	MAC Address	Hostname	Status	User
172.16.20.100		00-15-5d-38-01-26	Mehmetcan-PC	Leased	
172.16.20.101		00-15-5d-38-01-23	Mehmetcan-PC	Leased	

[Add...](#) [Edit...](#) [Remove](#) [Show Host Details](#)

[Apply](#) [Reset](#)

- DHCP ile dağıtılacak IP aralığı belirlenir.

Edit Scope

?

×

Name:

Guest

Scope definition

First Address:

172.16.20.100

Last Address:

172.16.20.120

Mask:

255.255.255.0

Exclusions...

DHCP options

ID ▲	Name	Value
003	Default gateway	172.16.20.1
006	DNS server	172.16.20.1
051	Lease time	4 days

Add...

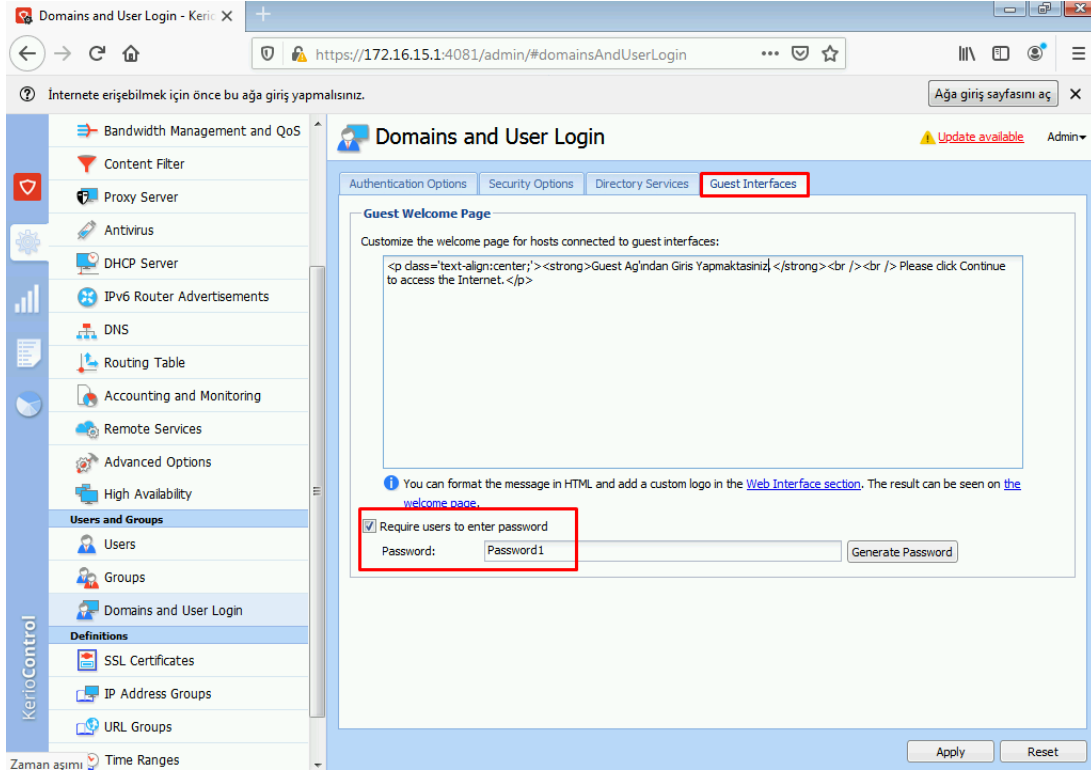
Edit...

Remove

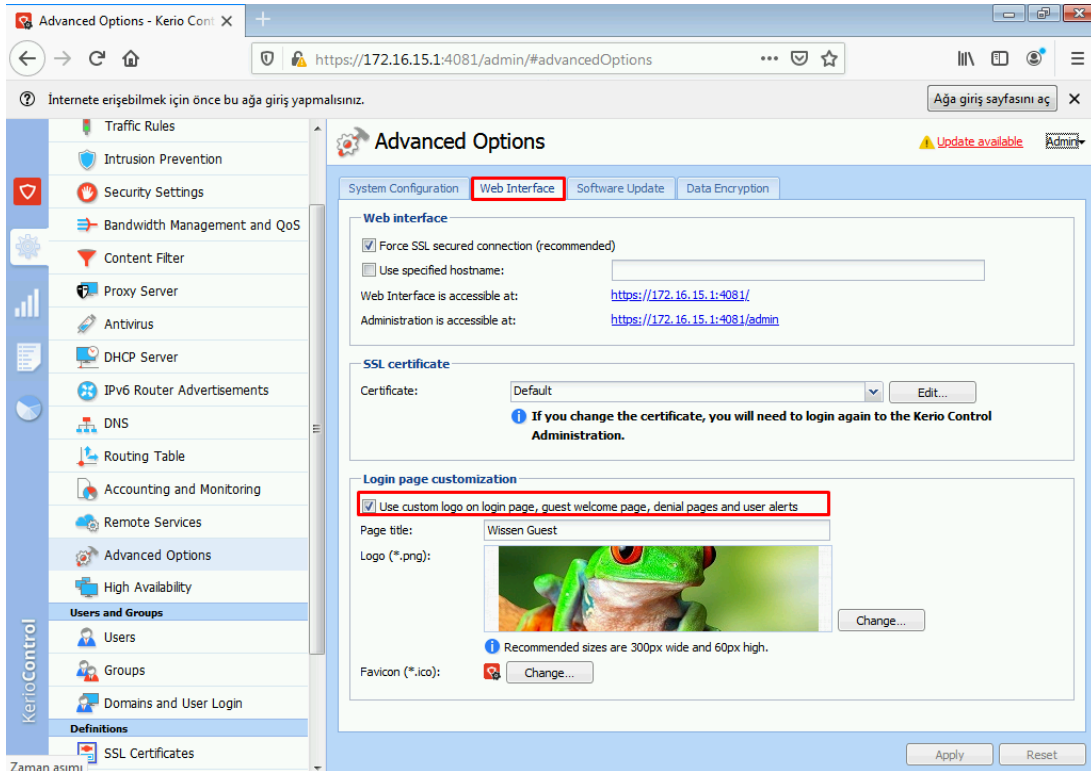
OK

Cancel

- Ardından “Domains and User Login” kısmından “Guest Interfaces” altından “Require users to enter password” tiklenip şifre belirlenir. İsteğe bağlı olarak giriş ekranı yazısı değiştirilir.

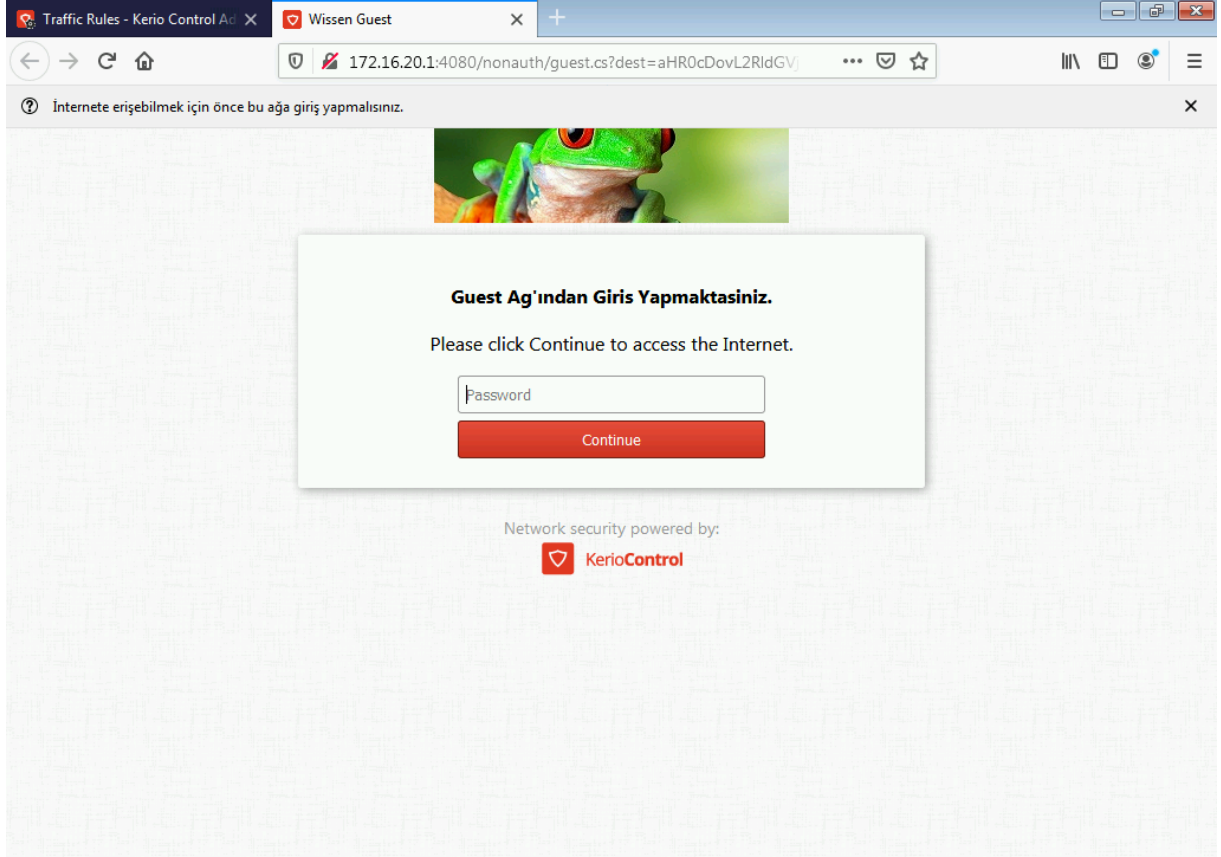


- “Advanced Options” altından “Web Interfaces”a girilip resimdeki tikli yer işaretlenir ve isteğe bağlı olarak giriş ekranı için fotoğraf yüklenir.



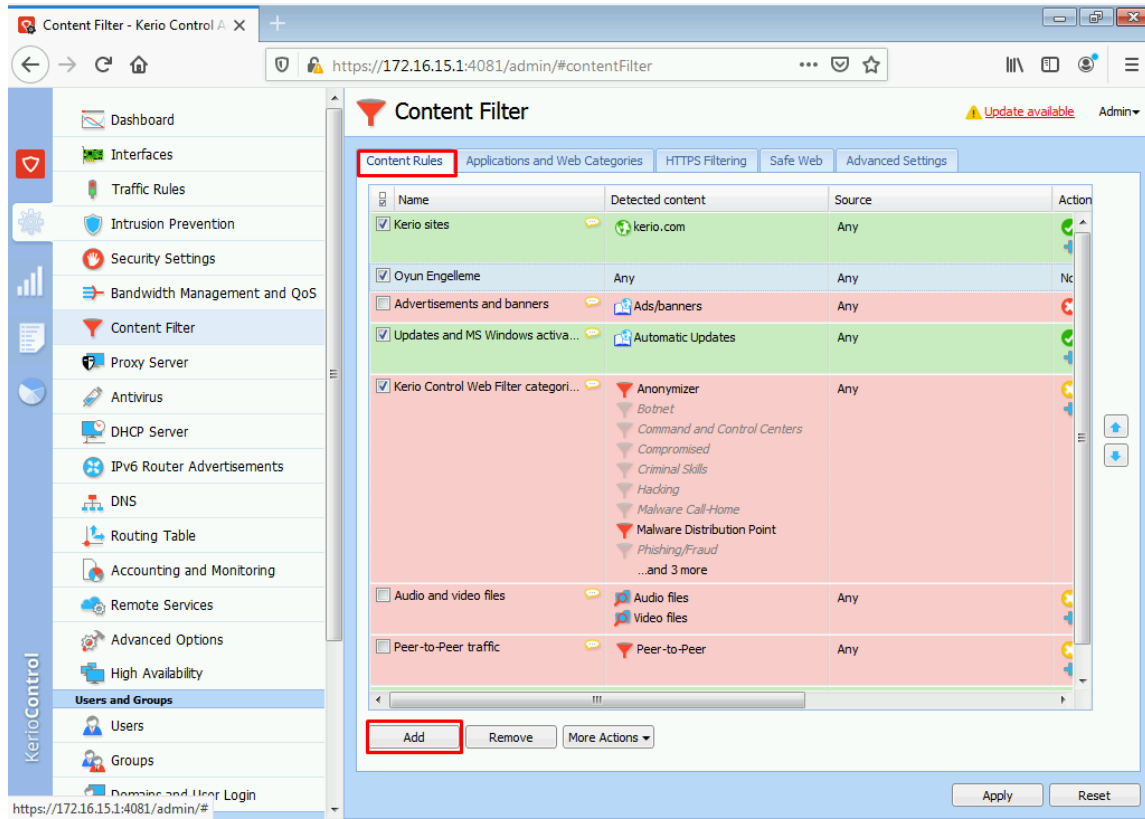


- Guest ağına bağlı olan cihazlardan web browser açıldığında “Ağa giriş sayfasını aç” yazısına tıklanarak giriş ekranı gelmiş olunur.

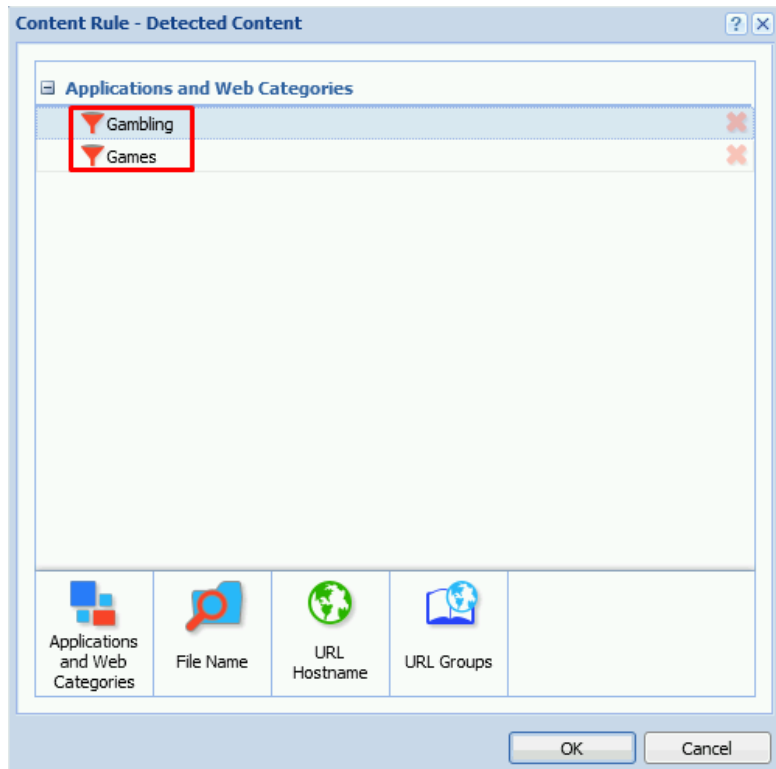


#### 4-) Web Sitesi Erişimi Engelleme

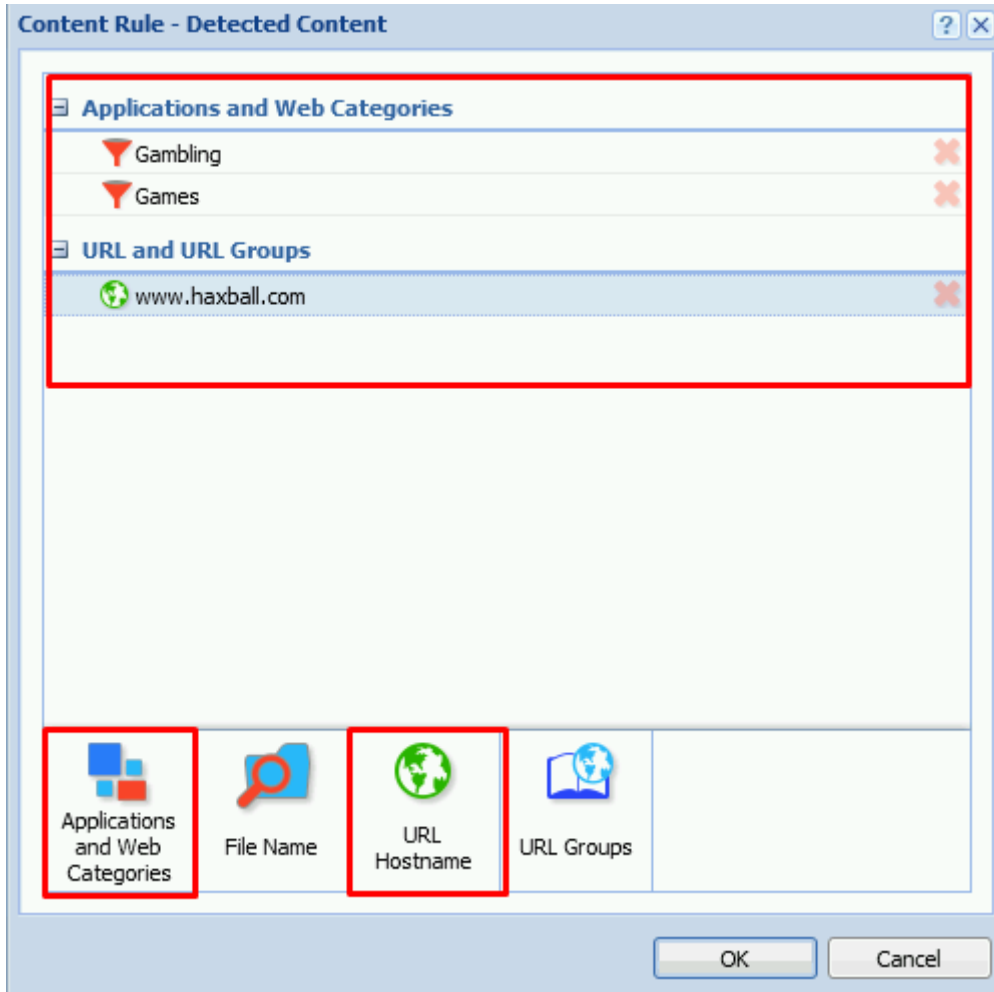
- “Content Filter” altından “Content Rules” kısmından “Add” tıklanır.



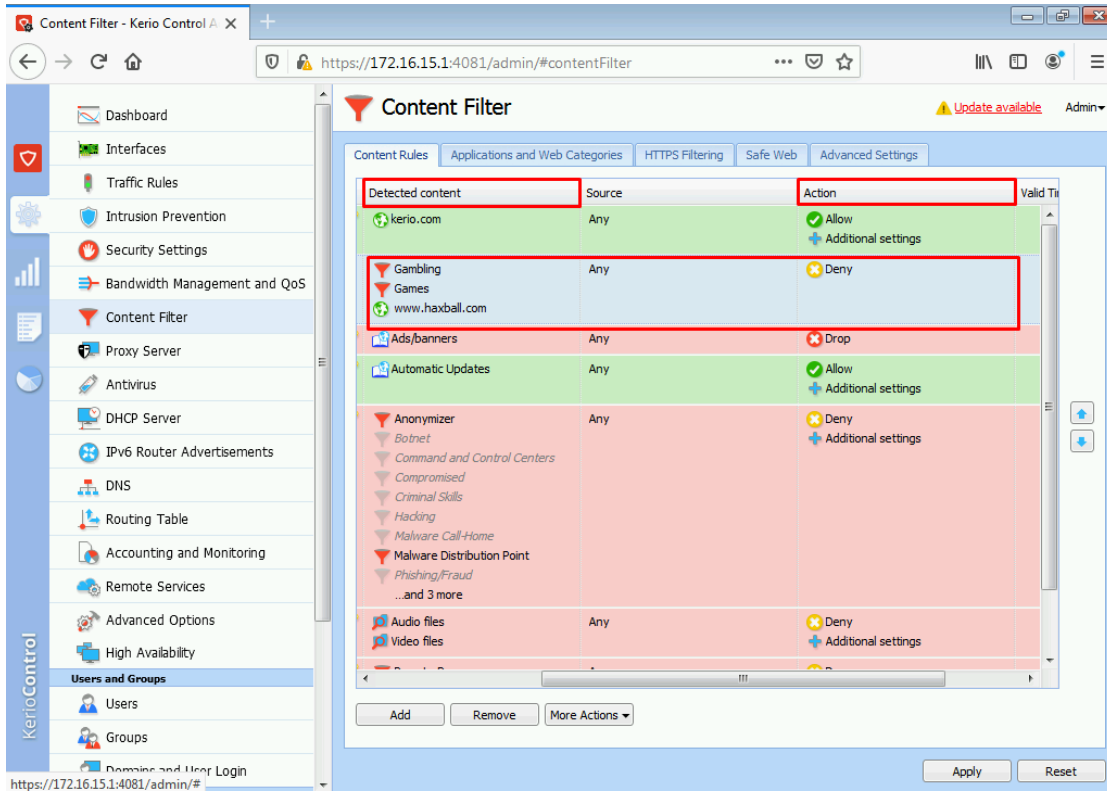
- “Applications and Web Categories”ten “Gambling ve Games” seçilir.



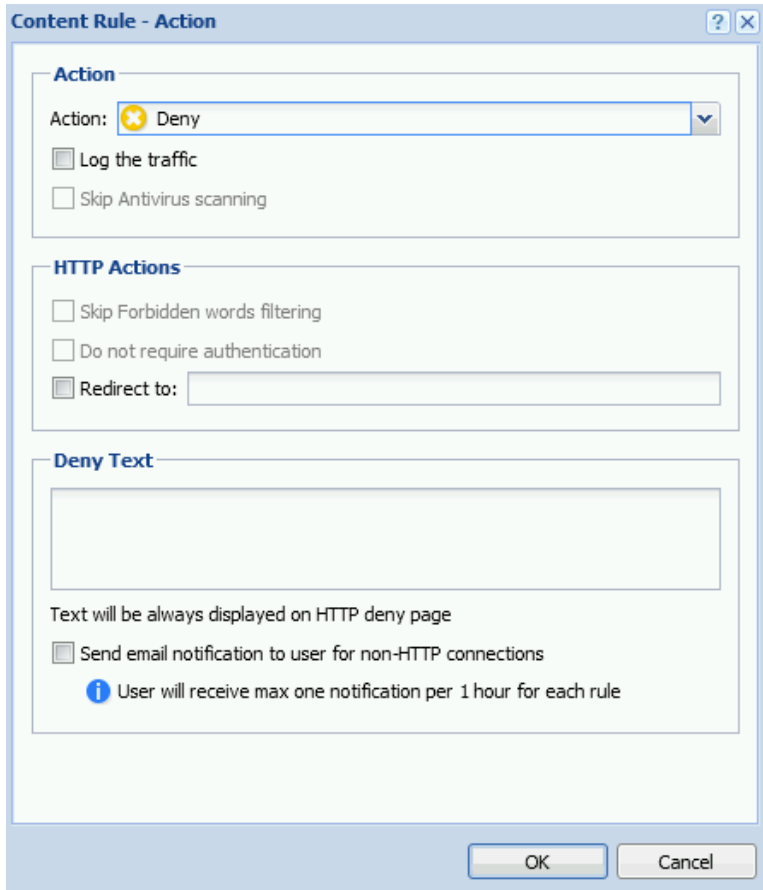
- “URL Hostname” kısmından web sitesinin adı yazılır.



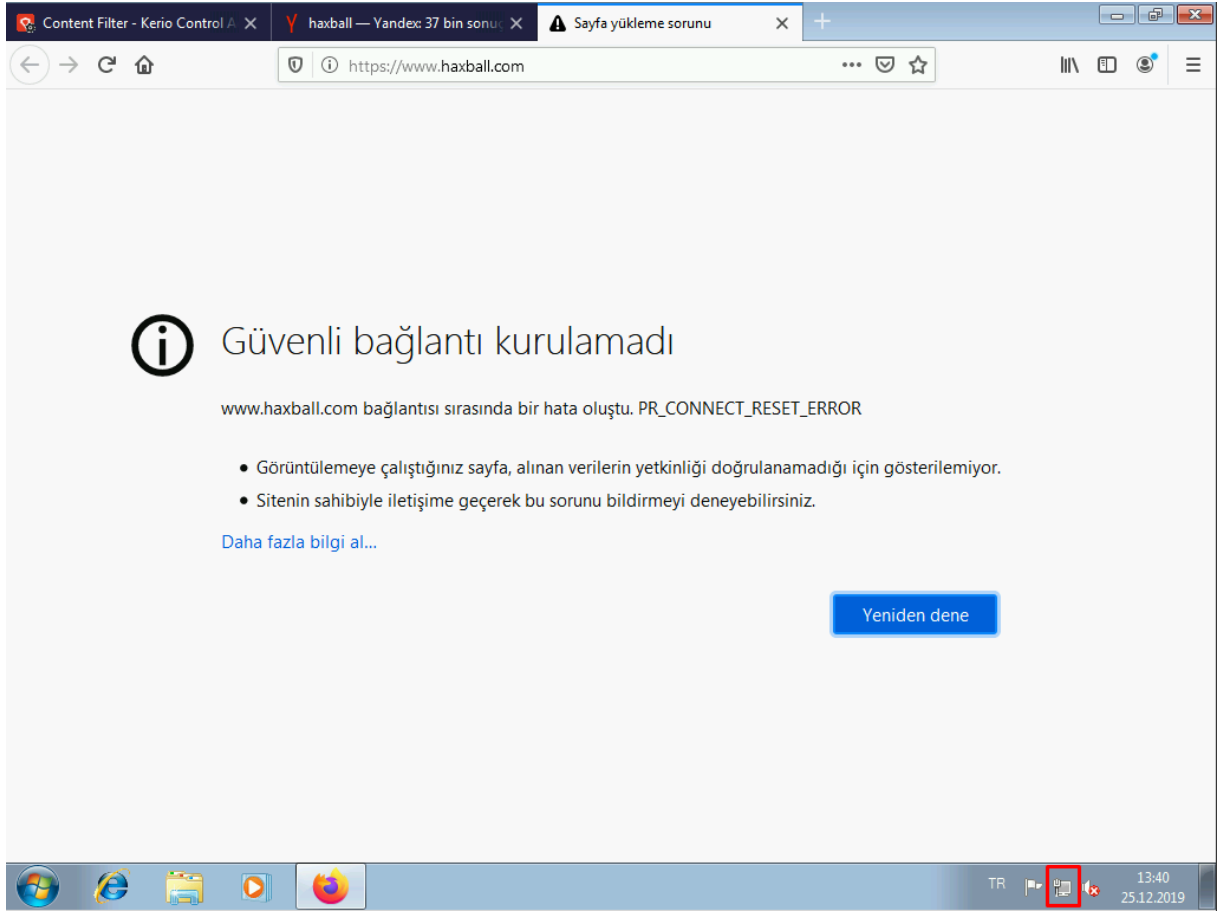
- “Action” altında durumunu belirlemek için çift tıklanır.



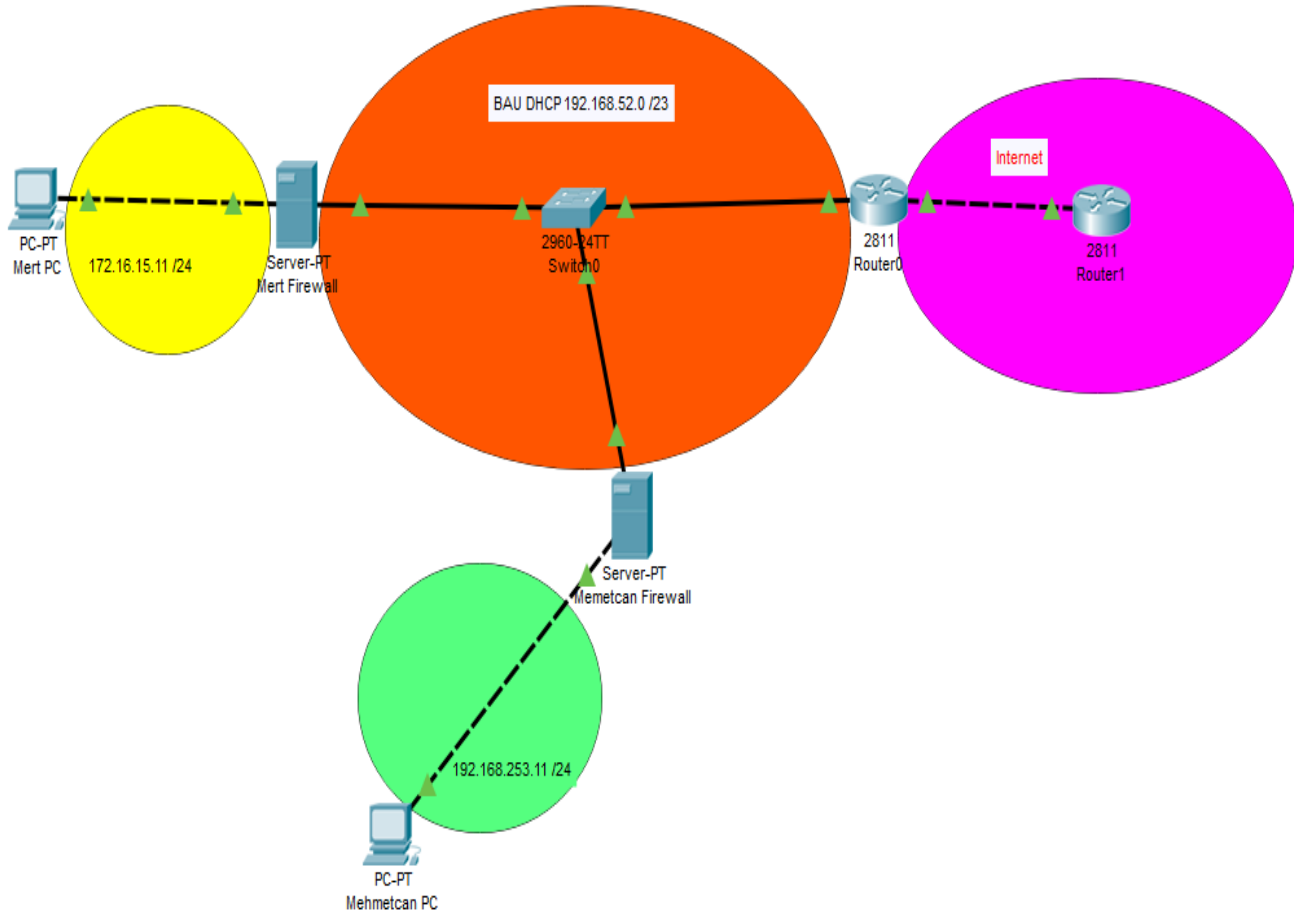
- “Aciton : Deny” seçilir ve “Okay” denir.



- Siteye girmek istediğimizde ise bağlantının engellendiğini görmekteyiz.



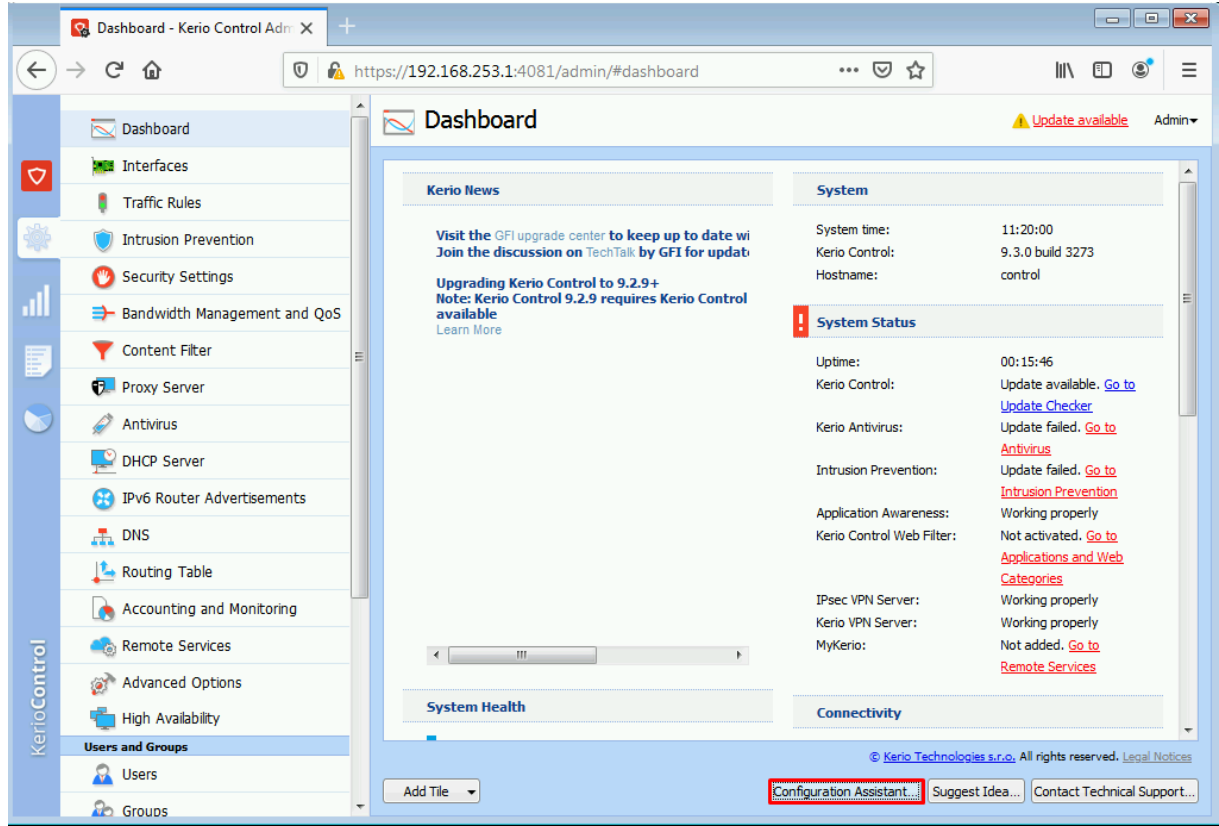
## 5-) 2 Taraflı VPN Oluřturma



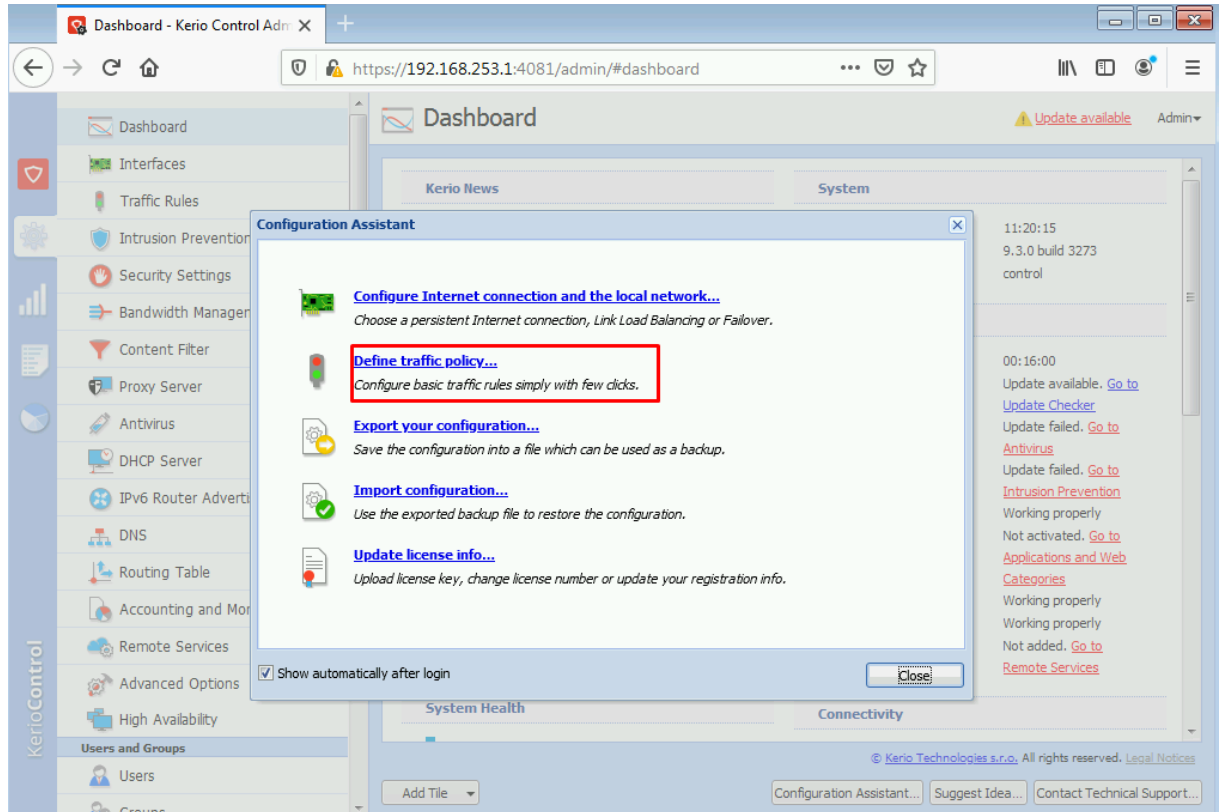
VPN topolojimiz yukarıda ki gibi olup, 2 farklı network kendi firewallları ile BAU'nun IP'si ile internete çıkmaktadır.

Amacımız Mehmetcan PC ile Mert PC arasında haberleşme sağlamaktır.

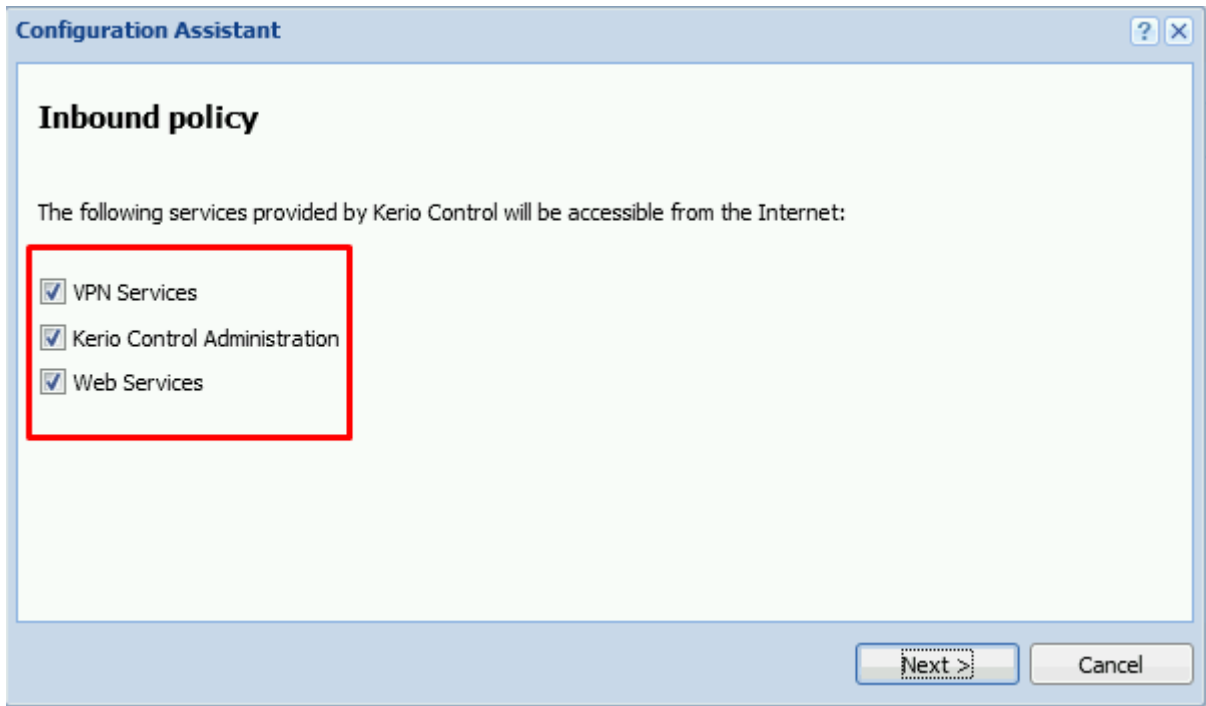
- Her iki cihaz içinde konfigürasyon ayarları yapılır. Bunun için “Dashboard” kısmından işaretli olan “Configuration Assistant”a tıklanır.



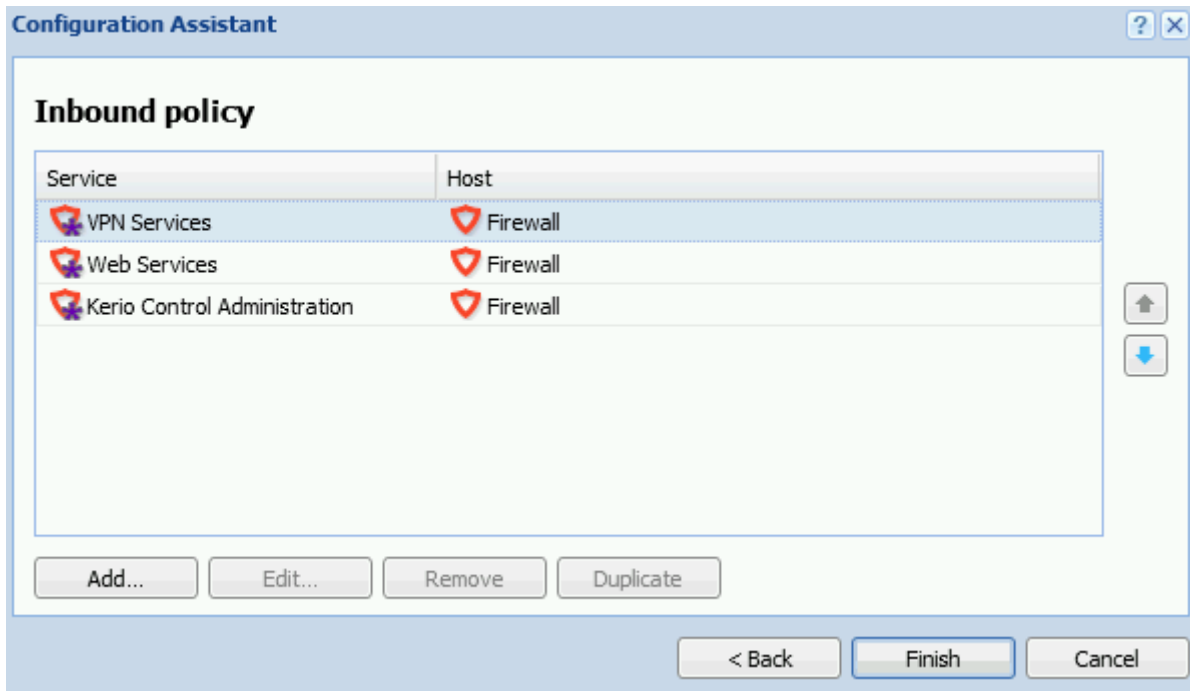
- “Define traffic policy” seçilir.



- Tüm servisler seçilir.

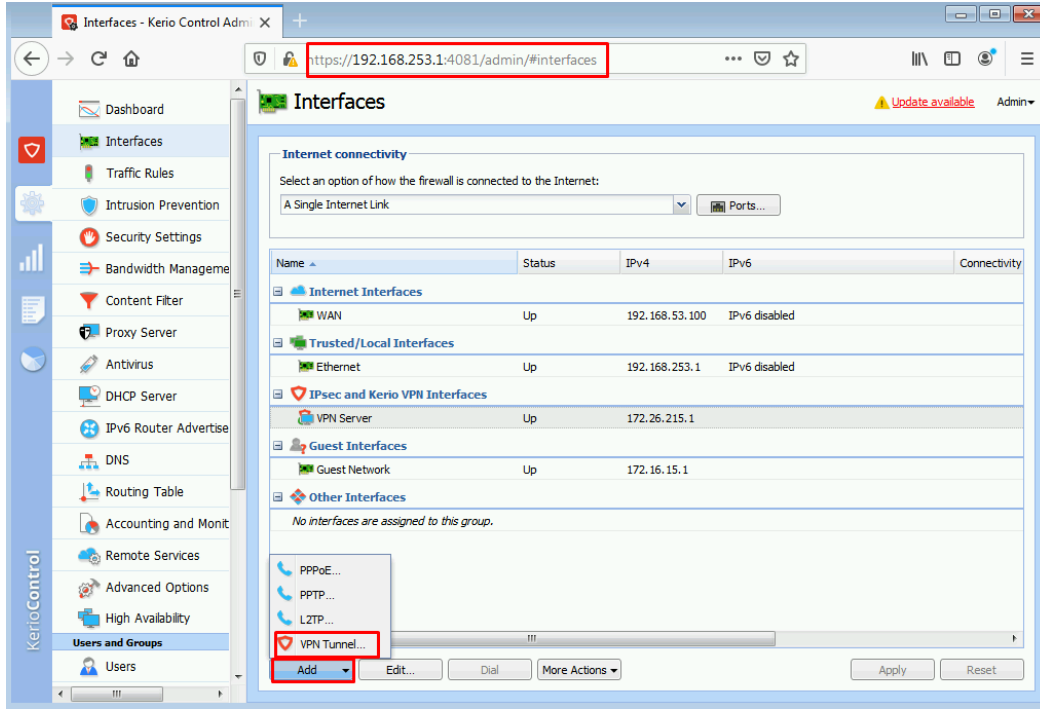


- Finish denerek servisler eklenir.

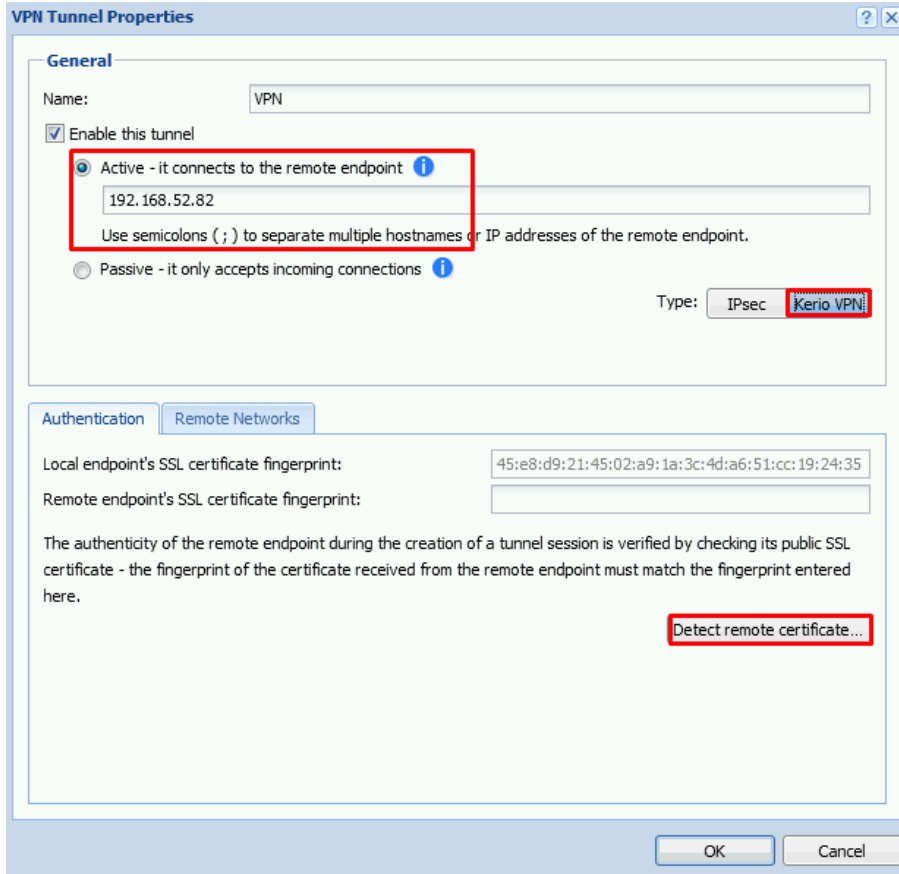




- Mehmetcan PC tarafında “Interfaces” altından “Add” tıklanarak “VPN Tunnel” seçilir.



- İsim girilir, Mert PC'nin WAN IP adresi “Active” kısmından girilir. Ardından “Kerio VPN” seçilip “Detect Remote Certificate” tıklanır.



- Mert PC'den VPN için sertifika almış olduk. Hata ile karşılaşırsanız cihazların internete bağlı olduğundan ve "Define Traffic Policy" ayarlarının yapıldığından emin olun.

Confirm SSL Certificate

Attributes

SSL Certificate has been detected successfully.  
Do you want to accept this certificate?

Name	Value
<b>Issuer</b>	
Hostname	431eeef1-c2f2-fd49-93a1-4535790882d2
Organization name	<not specified>
Organizational Unit	<not specified>
City	<not specified>
State or Province	<not specified>
Country	US
<b>Subject</b>	
Hostname	da858a0d-c6c6-1543-a48e-b7043addee0d
Organization name	<not specified>
Organizational Unit	<not specified>

Fingerprint: 3f:5d:8c:9a:52:12:9a:bf:a7:bc:45:b9:19:00:df:32

SHA1 fingerprint: b0:cc:ef:fb:b5:de:0a:97:f5:b1:cb:92:66:4e:da:3d

SHA-256 fingerprint:

Valid from: 2019-12-23 07:47

Valid to: 2020-12-22 07:47

Accept Certificate

Cancel

- Sertifikanın alınmıştır. “Okay” denerek Mehmetcan PC tarafında VPN oluşturulmuş olunur.

**VPN Tunnel Properties** [?] [X]

**General**

Name:

☒ Enable this tunnel

☒ Active - it connects to the remote endpoint i

Use semicolons ( ; ) to separate multiple hostnames or IP addresses of the remote endpoint.

☐ Passive - it only accepts incoming connections i

Type:

**Authentication** **Remote Networks**

Local endpoint's SSL certificate fingerprint:

Remote endpoint's SSL certificate fingerprint:

The authenticity of the remote endpoint during the creation of a tunnel session is verified by checking its public SSL certificate - the fingerprint of the certificate received from the remote endpoint must match the fingerprint entered here.

- VPN “down” olarak gözükmemektedir. Mert PC tarafında da aynı ayarlar yapıldığında “up” olacaktır.

The screenshot displays the 'Interfaces' configuration page in the Kerio Control Admin interface. The left sidebar contains a navigation menu with various system settings. The main content area shows the 'Internet connectivity' section with a dropdown menu set to 'A Single Internet Link'. Below this is a table listing the system's interfaces.

Name	Status	IPv4	IPv6	Connectivity
<b>Internet Interfaces</b>				
WAN	Up	192.168.53.100	IPv6 disabled	
<b>Trusted/Local Interfaces</b>				
Ethernet	Up	192.168.253.1	IPv6 disabled	
<b>IPsec and Kerio VPN Interfaces</b>				
VPN	Down			
VPN Server	Up	172.26.215.1		
<b>Guest Interfaces</b>				
<b>Other Interfaces</b>				
No interfaces are assigned to this group.				

At the bottom of the interface, there are buttons for 'Add', 'Edit...', 'Dial', 'More Actions', 'Apply', and 'Reset'.

- Mert PC içinde “Interfaces” kısmından “Add” denerek “VPN Tunnel” seçilir.

The screenshot displays the Kerio Control Admin interface. The browser address bar shows the URL `https://172.16.15.55:4081/admin/#interfaces`. The left sidebar contains a list of system settings, including Dashboard, Interfaces, Traffic Rules, Intrusion Prevention, Security Settings, Bandwidth Management and QoS, Content Filter, Proxy Server, Antivirus, DHCP Server, IPv6 Router Advertisements, DNS, Routing Table, Accounting and Monitoring, Remote Services, Advanced Options, High Availability, Users and Groups, Users, and Groups. The main content area is titled 'Interfaces' and shows a table of interfaces. The table has columns for Name, Status, IPv4, and IPv6. The interfaces listed are WAN, Ethernet, and Ethernet 2. A dropdown menu is open, showing options like PPPoE, PPTP, L2TP, and VPN Tunnel. The 'Add' button is highlighted.

Name	Status	IPv4	IPv6
<b>Internet Interfaces</b>			
WAN	Up	192.168.52.82	IPv6 disabled
<b>Trusted/Local Interfaces</b>			
Ethernet	Up	172.16.15.55	IPv6 disabled
<b>IPsec and Kerio VPN Interfaces</b>			
<b>Guest Interfaces</b>			
<b>Other Interfaces</b>			
Ethernet 2	Up	10.10.11.1	

VPN Tunnel...

Add Edit... Dial More Actions...

- İsim girilir. Mehmetcan PC'sinin WAN IP adresi "Active" kısmına girilir. Kerio VPN seçilir ve "Detect remote certificate" tıklanır.

The screenshot shows the 'VPN Tunnel Properties' dialog box with the 'General' tab selected. The 'Name' field contains 'VPN'. The 'Enable this tunnel' checkbox is checked. Under the 'Active' radio button, the remote endpoint IP '192.168.53.100' is entered. The 'Type' dropdown is set to 'Kerio VPN'. In the 'Authentication' section, the 'Local endpoint's SSL certificate fingerprint' is '56:35:c4:24:31:ea:71:98:9a:d3:dc:df:c7:4a:d0:d4'. The 'Remote endpoint's SSL certificate fingerprint' field is empty. A 'Detect remote certificate...' button is highlighted with a red box. The 'OK' and 'Cancel' buttons are at the bottom right.

**VPN Tunnel Properties**

**General**

Name:

☒ Enable this tunnel

☒ Active - it connects to the remote endpoint **i**

Use semicolons ( ; ) to separate multiple hostnames or IP addresses of the remote endpoint.

☐ Passive - it only accepts incoming connections **i**

Type:

**Authentication** **Remote Networks**

Local endpoint's SSL certificate fingerprint:

Remote endpoint's SSL certificate fingerprint:

The authenticity of the remote endpoint during the creation of a tunnel session is verified by checking its public SSL certificate - the fingerprint of the certificate received from the remote endpoint must match the fingerprint entered here.

- Mehmetcan PC'den de sertifikayı almış olduk.

Confirm SSL Certificate

?

×

Attributes

SSL Certificate has been detected successfully.  
Do you want to accept this certificate?

Name	Value
<div>Issuer</div>	
Hostname	96bb8b31-5452-0c4b-a099-03a894fec741
Organization name	<not specified>
Organizational Unit	<not specified>
City	<not specified>
State or Province	<not specified>
Country	US
<div>Subject</div>	
Hostname	5bc20e4d-681a-384f-9ecb-b9adac838c73
Organization name	<not specified>
Organizational Unit	<not specified>

Fingerprint:

2d:24:98:9c:c7:d1:75:d2:33:62:c8:9e:8d:00:fb:01

SHA1 fingerprint:

12:3a:28:89:a3:f8:c7:3e:26:12:07:12:d2:5c:5b:8

SHA-256 fingerprint:

Valid from:

2019-12-24

11:04

Valid to:

2020-12-23

11:04

Accept Certificate

Cancel

- "Okay" denerek VPN oluşturulur.

**VPN Tunnel Properties** [?] [X]

**General**

Name:

☒ Enable this tunnel

☒ Active - it connects to the remote endpoint i

Use semicolons ( ; ) to separate multiple hostnames or IP addresses of the remote endpoint.

☐ Passive - it only accepts incoming connections i

Type:

**Authentication** **Remote Networks**

Local endpoint's SSL certificate fingerprint:

Remote endpoint's SSL certificate fingerprint:

The authenticity of the remote endpoint during the creation of a tunnel session is verified by checking its public SSL certificate - the fingerprint of the certificate received from the remote endpoint must match the fingerprint entered here.



- VPN'ler oluşturulduktan sonra her iki cihaz tarafından da VPN durumu "Up" olmuştur.

Interfaces - Kerio Control Admin

https://172.16.15.55:4081/admin/#interfaces

### Interfaces

Update available Admin

Internet connectivity

Select an option of how the firewall is connected to the Internet:

A Single Internet Link

Name	Status	IPv4	IPv6
<b>Internet Interfaces</b>			
WAN	Up	192.168.52.82	IPv6 disabled
<b>Trusted/Local Interfaces</b>			
Ethernet	Up	172.16.15.55	IPv6 disabled
<b>IPsec and Kerio VPN Interfaces</b>			
VPN	Up		
VPN Server	Up	10.253.70.1	
<b>Guest Interfaces</b>			
<b>Other Interfaces</b>			
Ethernet 2	Up	10.10.11.1	

Add Edit... Dial More Actions Apply Reset

Interfaces - Kerio Control Admin

https://192.168.253.1:4081/admin/#interfaces

### Interfaces

Update available Admin

Internet connectivity

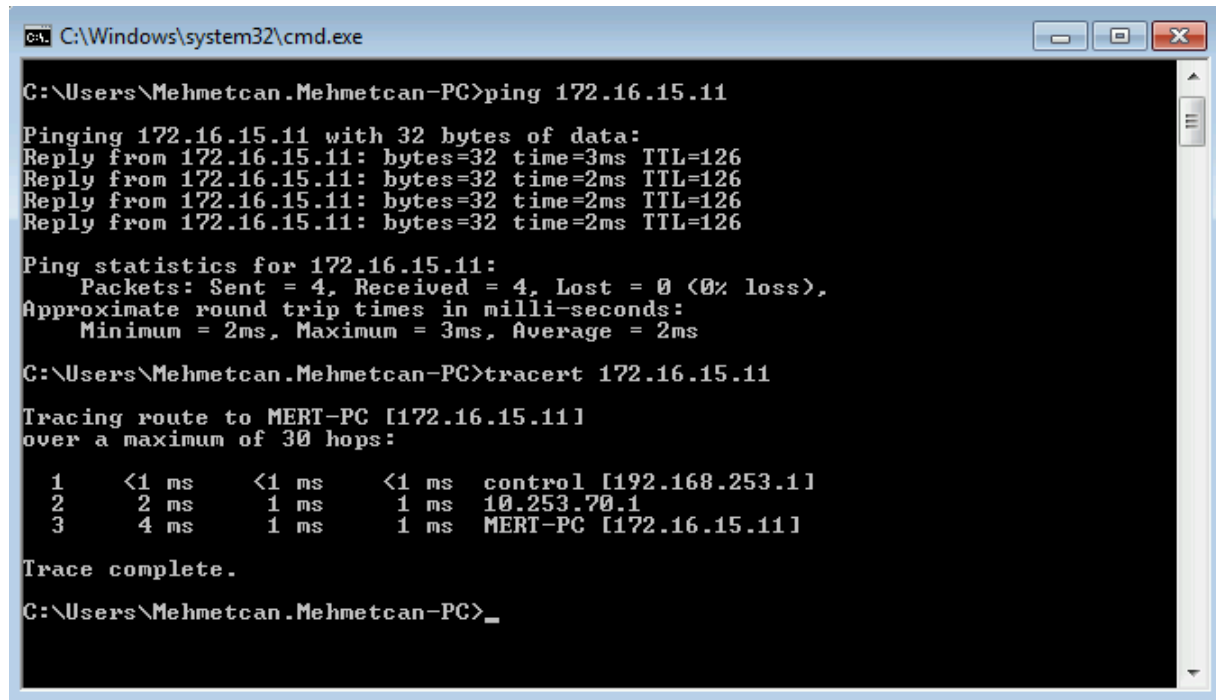
Select an option of how the firewall is connected to the Internet:

A Single Internet Link

Name	Status	IPv4	IPv6	Conn	Details
<b>Internet Interfaces</b>					
WAN	Up	192.168.53.100	IPv6 disabled		eth0
<b>Trusted/Local Interfaces</b>					
Ethernet	Up	192.168.253.1	IPv6 disabled		eth1
<b>IPsec and Kerio VPN Interfaces</b>					
VPN	Up			Connected to 192.168.52.82	
VPN Server	Up	10.189.193.1		0 clients connected.	
<b>Guest Interfaces</b>					
Ethernet 2	Up	10.10.11.1			eth2
<b>Other Interfaces</b>					
No interfaces are assigned to this group.					

Add Edit... Dial More Actions Apply Reset

- Mehmetcan PC'den Mert PC'e ping atabilmekteyiz. Traceroute ile de ping'in hangi IP adreslerinden geçtiğini görmekteyiz.



```
C:\Windows\system32\cmd.exe

C:\Users\Mehmetcan.Mehmetcan-PC>ping 172.16.15.11

Pinging 172.16.15.11 with 32 bytes of data:
Reply from 172.16.15.11: bytes=32 time=3ms TTL=126
Reply from 172.16.15.11: bytes=32 time=2ms TTL=126
Reply from 172.16.15.11: bytes=32 time=2ms TTL=126
Reply from 172.16.15.11: bytes=32 time=2ms TTL=126

Ping statistics for 172.16.15.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 3ms, Average = 2ms

C:\Users\Mehmetcan.Mehmetcan-PC>tracert 172.16.15.11

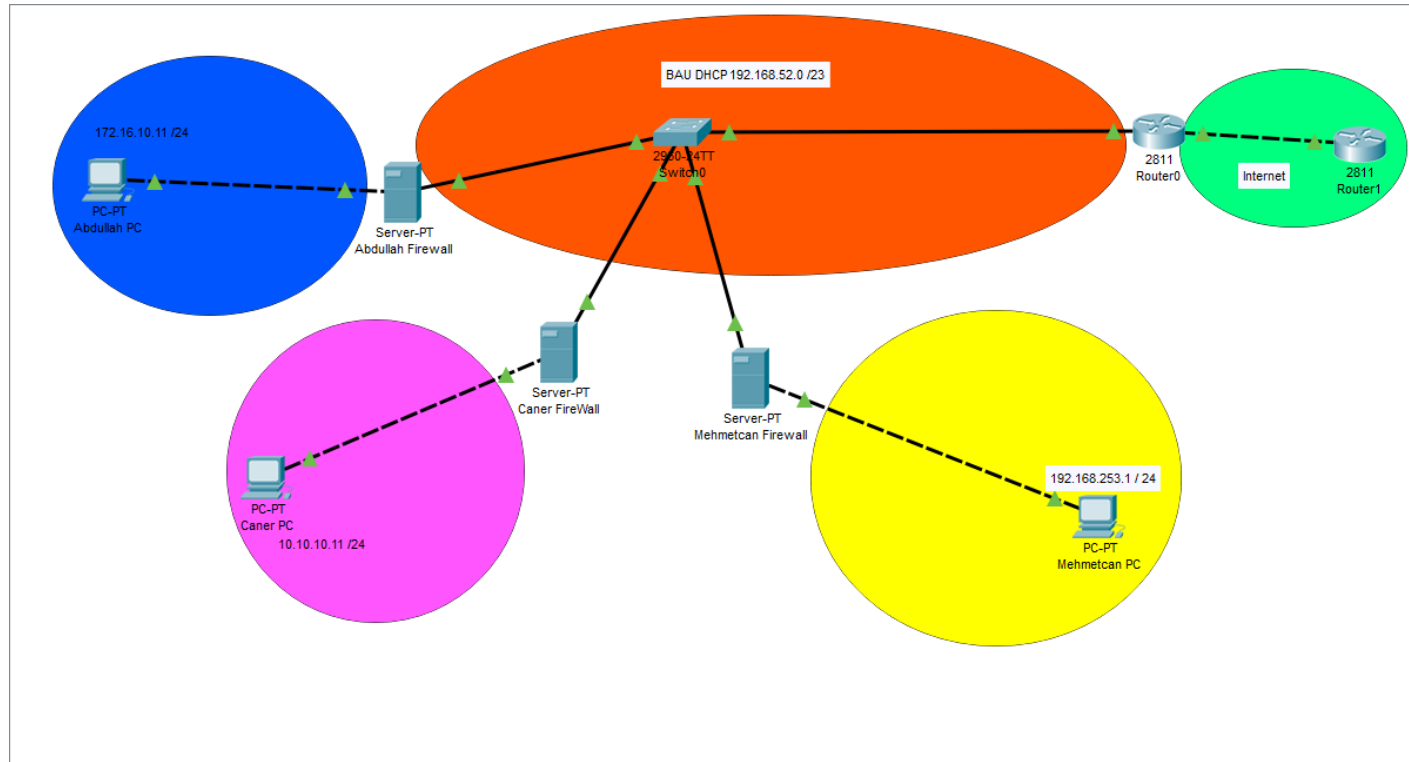
Tracing route to MERT-PC [172.16.15.11]
over a maximum of 30 hops:

  0  <1 ms    <1 ms    <1 ms    control [192.168.253.1]
  1  2 ms     1 ms     1 ms     10.253.70.1
  2  4 ms     1 ms     1 ms     MERT-PC [172.16.15.11]

Trace complete.

C:\Users\Mehmetcan.Mehmetcan-PC>
```

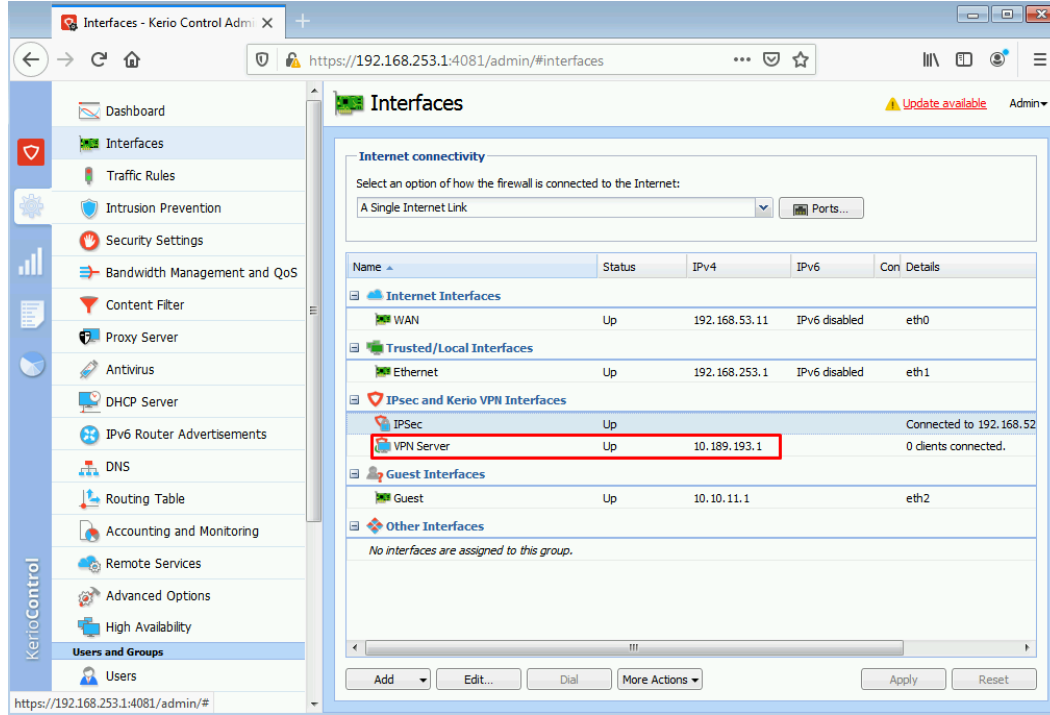
## 6-) 3 Taraflı VPN Oluřturma



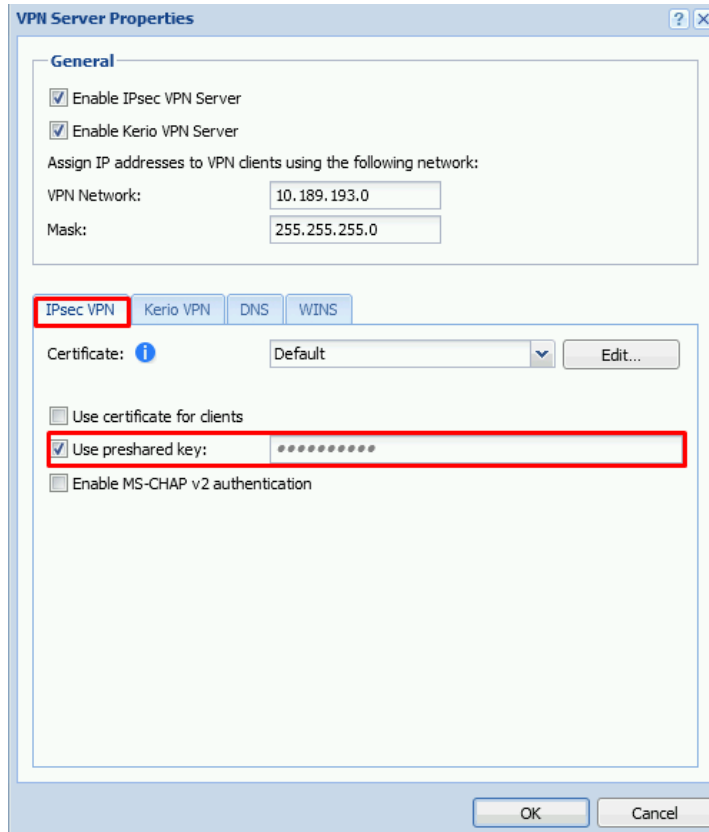
3 taraflı VPN işlemi řu řekildedir: Mehmetcan PC ile Caner PC kendi arasında IPsec VPN kurup, Caner PC ile Abdullah PC kendi arasında IPsec VPN kurmuřtur.

Caner PC üzerinde kısa bir konfigürasyon ile Caner PC, Mehmetcan PC ve Abdullah PC arasında köprü görevi görüp VPN kurulmayan iki network'ü haberleřtirecektir.

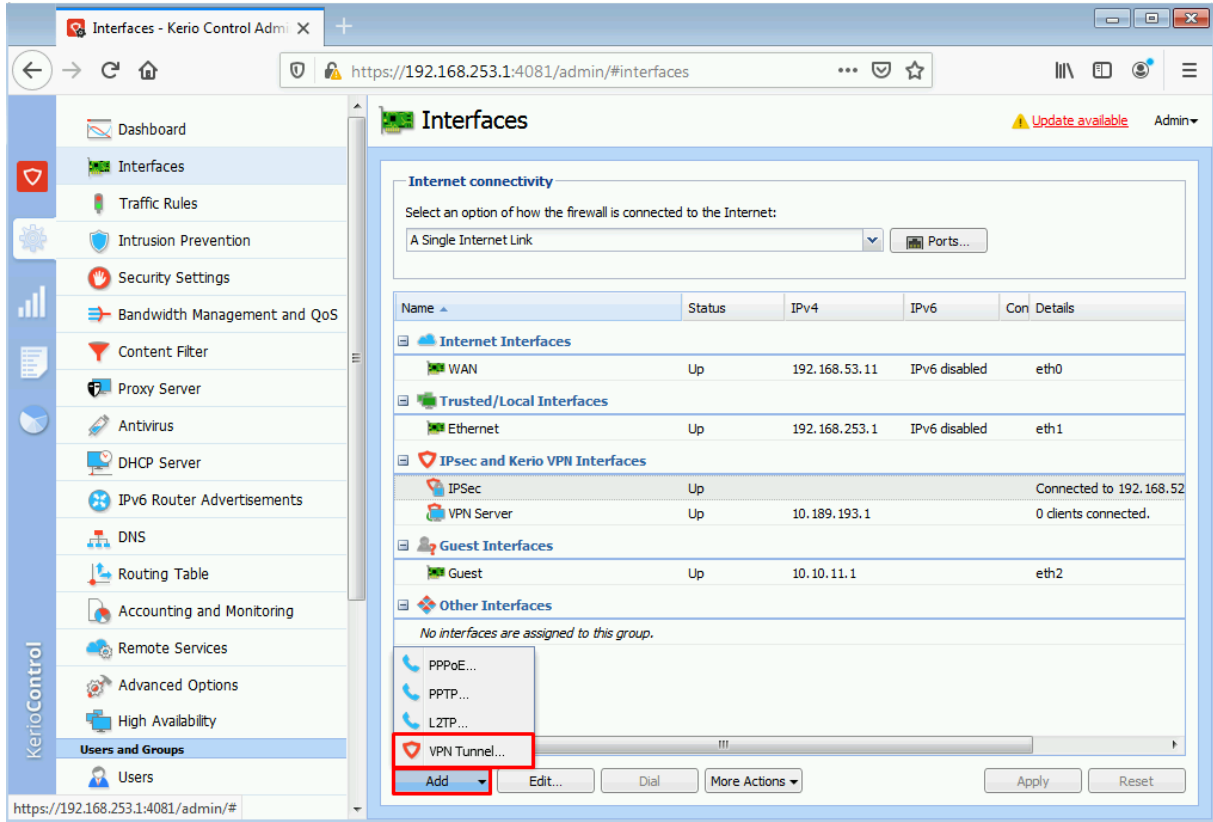
- Mehmetcan PC ile Caner PC arası VPN kurmak için “Pre-shared Key” kullanacağız. Bunun için “Interfaces” altından Kerio Firewall ile otomatik gelen “VPN Server”a çift tıklanır.



- IPsec VPN seçilip “Use preshared key” seçilir ve her cihazla aynı olacak şekilde bir key girilir. Bu işlem Mehmetcan ve Caner PC için ortak yapılır.



- Mehmetcan PC tarafından “Interfaces” altından “Add” tıklanıp “VPN Tunnel” seçilir.



The screenshot shows the Kerio Control Admin interface. The left sidebar contains a navigation menu with options like Dashboard, Interfaces, Traffic Rules, Intrusion Prevention, Security Settings, Bandwidth Management and QoS, Content Filter, Proxy Server, Antivirus, DHCP Server, IPv6 Router Advertisements, DNS, Routing Table, Accounting and Monitoring, Remote Services, Advanced Options, High Availability, Users and Groups, and Users. The main content area is titled 'Interfaces' and shows a table of network interfaces. The 'Add' button is highlighted, and the 'VPN Tunnel...' option is selected in the dropdown menu.

**Internet connectivity**

Select an option of how the firewall is connected to the Internet:

A Single Internet Link

Name	Status	IPv4	IPv6	Con	Details
<b>Internet Interfaces</b>					
WAN	Up	192.168.53.11	IPv6 disabled	eth0	
<b>Trusted/Local Interfaces</b>					
Ethernet	Up	192.168.253.1	IPv6 disabled	eth1	
<b>IPsec and Kerio VPN Interfaces</b>					
IPSec	Up				Connected to 192.168.52
VPN Server	Up	10.189.193.1			0 clients connected.
<b>Guest Interfaces</b>					
Guest	Up	10.10.11.1			eth2
<b>Other Interfaces</b>					
No interfaces are assigned to this group.					

VPN Tunnel...

Add Edit... Dial More Actions

Apply Reset

- Caner PC'sinin WAN IP adresi "Active" kısmına girilir. "IPsec" seçilir. "Authentication" kısmından "Preshared Key" kısmına oluşturduğumuz key girilir. "Local ID" kısmı kendi belirlediğimiz bir isim olmaktadır. Bu isim Caner PC tarafında kullanılacaktır.

"Remote ID" kısmına Caner PC tarafında oluşturulacak olunan "Local ID" ismi şimdiden girilir. İsimler aynı olmalıdır.

The screenshot shows the 'VPN Tunnel Properties' dialog box with the 'General' tab selected. The 'Name' field is 'IPSec'. The 'Enable this tunnel' checkbox is checked. The 'Active - it connects to the remote endpoint' radio button is selected, and the 'Remote endpoint' field contains '192.168.52.191'. The 'Type' dropdown is set to 'IPsec'. The 'Authentication' tab is also visible, showing the 'Preshared key' radio button selected, with a redacted key field. The 'Local ID' is 'terman' and the 'Remote ID' is 'caner'. The 'Phase 1 (IKE) cipher' is 'aes128-sha1-modp2048,3des-sha1-modp1536' and the 'Phase 2 (ESP) cipher' is 'aes128-sha1,3des-sha1'. The 'OK' and 'Cancel' buttons are at the bottom right.

**VPN Tunnel Properties**

**General**

Name: IPSec

☒ Enable this tunnel

☒ Active - it connects to the remote endpoint *i*

192.168.52.191

Use semicolons ( ; ) to separate multiple hostnames or IP addresses of the remote endpoint.

☐ Passive - it only accepts incoming connections *i*

Type: IPsec Kerio VPN

**Authentication** Remote Networks Local Networks

☒ Preshared key: .....

☐ Remote certificate: Not in local store Edit...

Local ID: *i* terman

Remote ID: caner

Phase 1 (IKE) cipher: aes128-sha1-modp2048,3des-sha1-modp1536

Phase 2 (ESP) cipher: aes128-sha1,3des-sha1

Change...

OK Cancel

- “Remote Network” kısmından Caner PC’nin ve Abdulllah PC’nin bağlı olduğu tüm networkler girilir ve Mehmetcan PC tarafından VPN oluşturulmuş olunur..

**VPN Tunnel Properties**

**General**

Name:

☒ Enable this tunnel

☒ Active - it connects to the remote endpoint i

Use semicolons ( ; ) to separate multiple hostnames or IP addresses of the remote endpoint.

☐ Passive - it only accepts incoming connections i

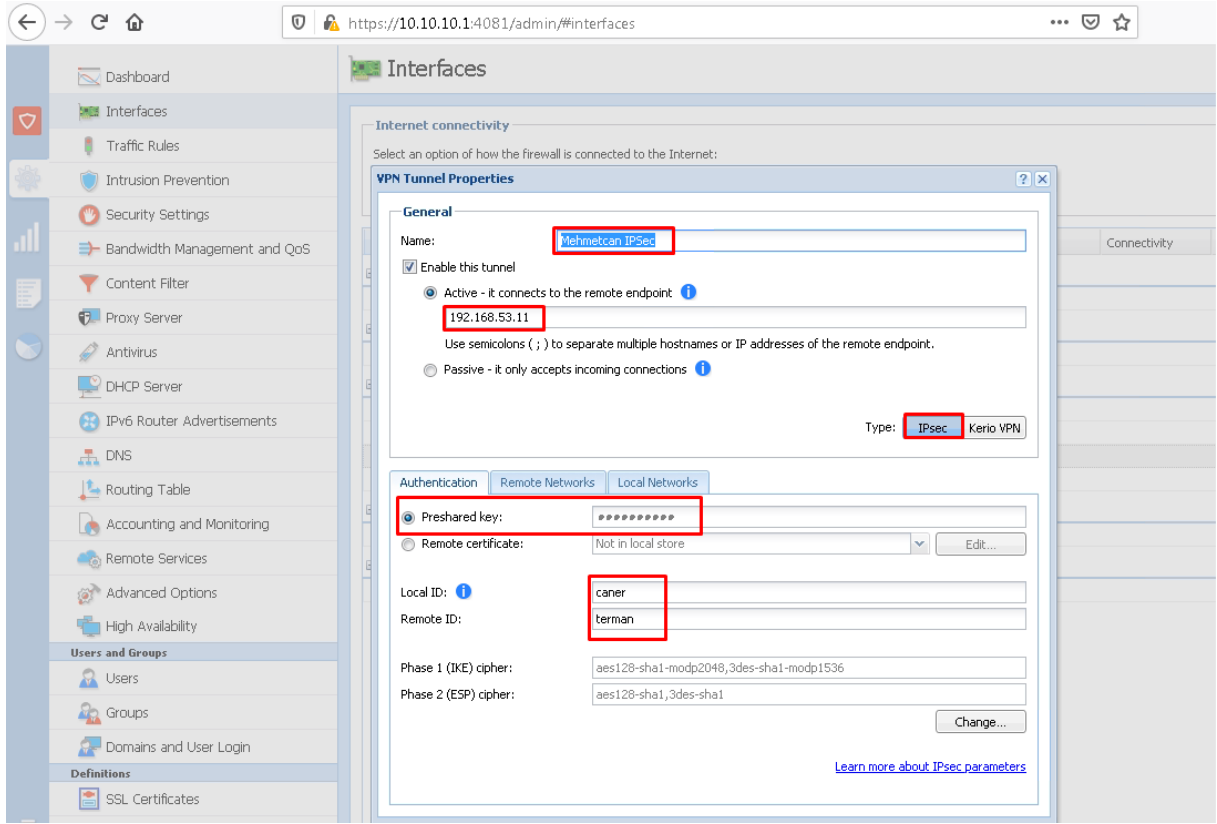
Type:

**Authentication** **Remote Networks** **Local Networks**

Please define all remote networks accesible via this tunnel:

<input checked="" type="checkbox"/>	Network ▲	Mask	Description
<input checked="" type="checkbox"/>	10.10.10.0	255.255.255.0	caner LAN
<input checked="" type="checkbox"/>	10.20.20.0	255.255.255.0	Caner Guest
<input checked="" type="checkbox"/>	10.253.134.0	255.255.255.0	Caner VPN
<input checked="" type="checkbox"/>	172.16.10.0	255.255.255.0	Apo LAN
<input checked="" type="checkbox"/>	172.27.152.0	255.255.255.0	Apo VPN

- Caner PC tarafında Mehmetcan PC'nin bağlı olduğu WAN IP'si "Active" kısmına girilir. "IPsec" seçilir, "Authentication" kısmından "Preshared Key" girilir. "Local ID" ve "Remote ID" girilir.





- “Remote Networks” kısmından Mehmetcan PC tarafında ki tüm networkler yazılır.

The screenshot shows the Mikrotik WinBox interface. The left sidebar contains a menu with various system settings. The main window is titled "Interfaces" and shows the "VPN Tunnel Properties" configuration for a tunnel named "Mehmetcan IPsec". The "General" tab is active, showing the tunnel name, a checked "Enable this tunnel" box, and the "Active" mode selected. The remote endpoint is set to "192.168.53.11". The "Type" is set to "IPsec". The "Remote Networks" tab is also visible, showing a table of networks to be accessible via the tunnel.

**VPN Tunnel Properties**

**General**

Name: Mehmetcan IPsec

☒ Enable this tunnel

☒ Active - it connects to the remote endpoint

192.168.53.11

Use semicolons ( ; ) to separate multiple hostnames or IP addresses of the remote endpoint.

☐ Passive - it only accepts incoming connections

Type: IPsec Kerio VPN

**Remote Networks**

Please define all remote networks accessible via this tunnel:

Network	Mask	Description
<input checked="" type="checkbox"/> 10.10.11.0	255.255.255.0	Mehmetcan Guest
<input checked="" type="checkbox"/> 10.189.193.0	255.255.255.0	Mehmetcan VPN
<input checked="" type="checkbox"/> 192.168.253.0	255.255.255.0	Mehmetcan LAN

Add... Edit... Remove

- “Local Networks” kısmına Abdullah PC tarafında ki tüm networkler yazılır. Bu işlem köprü görevi içindir. Mehmetcan PC için VPN oluşturulmuş olunur. Sırada Caner PC ile Abdullah PC için VPN kurmak.

Dashboard

Interfaces

Traffic Rules

Intrusion Prevention

Security Settings

Bandwidth Management and QoS

Content Filter

Proxy Server

Antivirus

DHCP Server

IPv6 Router Advertisements

DNS

Routing Table

Accounting and Monitoring

Remote Services

Advanced Options

High Availability

Users and Groups

Users

Groups

Domains and User Login

Definitions

SSL Certificates

### Interfaces

Internet connectivity

Select an option of how the firewall is connected to the Internet:

#### VPN Tunnel Properties

**General**

Name: Mehmetcan IPSec

☒ Enable this tunnel

☒ Active - it connects to the remote endpoint

192.168.53.11

Use semicolons ( ; ) to separate multiple hostnames or IP addresses of the remote endpoint.

☐ Passive - it only accepts incoming connections

Type: IPsec Kerio VPN

**Authentication** **Remote Networks** **Local Networks**

☒ Use automatically determined local networks

☒ Use custom networks:

Network	Mask	Description
<input checked="" type="checkbox"/> 172.16.10.0	255.255.255.0	Abdullah LAN
<input checked="" type="checkbox"/> 172.27.152.0	255.255.255.0	Abdullah VPN

Add... Edit... Remove

- Abdullah PC ile VPN için “Active” kısmına Abdullah PC’nin bağlı olduğu WAN IP adresi girilir. “IPsec” seçilir. “Authentication” kısmından “Preshared Key” girilir. “Local ID” ve “Remote ID” girilir.

The screenshot shows the Mikrotik WinBox interface with the 'VPN Tunnel Properties' dialog box open. The 'General' tab is active, showing the following configuration:

- Name:** Abdullah IPsec
- Enable this tunnel:** ☒
- Active - it connects to the remote endpoint:** ☒ (Selected)
- Remote endpoint:** 192.168.53.76
- Type:** IPsec

The 'Authentication' tab is also visible, showing the following configuration:

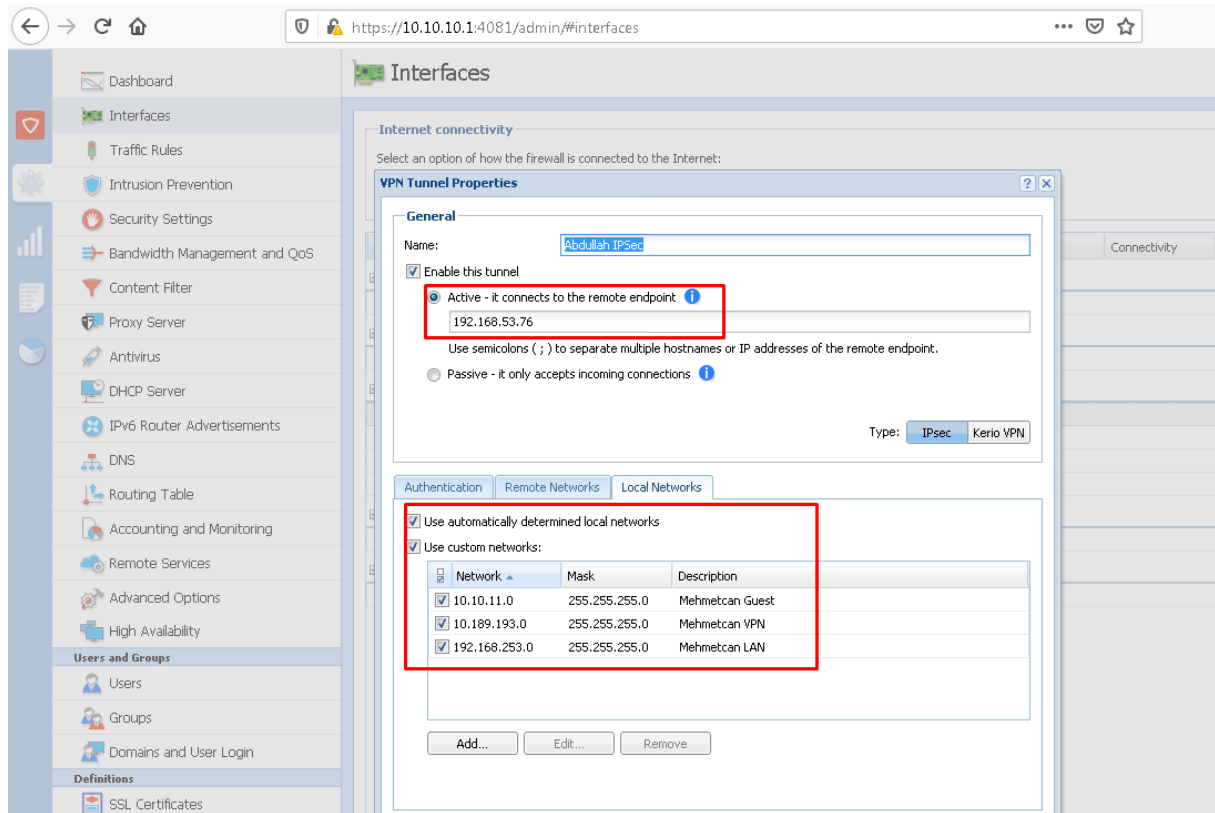
- Preshared key:** [Redacted]
- Remote certificate:** Not in local store
- Local ID:** caner
- Remote ID:** abdullah
- Phase 1 (IKE) cipher:** aes128-sha1-modp2048,3des-sha1-modp1536
- Phase 2 (ESP) cipher:** aes128-sha1,3des-sha1

- “Remote Networks” kısmından Abdulllah PC tarafındaki tüm networkler girilir.

The screenshot shows the Mikrotik WinBox interface with the 'Interfaces' tab selected. A 'VPN Tunnel Properties' dialog box is open, showing the 'General' tab. The 'Name' field is set to 'Abdullah IPsec'. The 'Enable this tunnel' checkbox is checked. The 'Active' radio button is selected, and the 'Remote endpoint' is set to '192.168.53.76'. The 'Type' is set to 'IPsec'. The 'Remote Networks' tab is also visible, showing a table of remote networks to be accessible via the tunnel.

Network	Mask	Description
172.16.10.0	255.255.255.0	Abdullah LAN
172.27.152.0	255.255.255.0	Abdullah VPN

- “Local Networks” kısmında Mehmetcan PC tarafındaki tüm networkler yazılır. Bu işlem köprü görevi görecektir. Caner PC ile Abdullah PC arasında da VPN oluşturulmuş olundu.



The screenshot shows the Mikrotik WinBox interface with the 'VPN Tunnel Properties' dialog box open. The 'General' tab is selected, and the 'Active' mode is chosen. The 'Local Networks' tab is also visible, showing a table of local networks to be routed through the tunnel.

**VPN Tunnel Properties**

**General**

Name:

☒ Enable this tunnel

☒ Active - it connects to the remote endpoint ?

Use semicolons ( ; ) to separate multiple hostnames or IP addresses of the remote endpoint.

☐ Passive - it only accepts incoming connections ?

Type:

**Local Networks**

☒ Use automatically determined local networks

☒ Use custom networks:

Network	Mask	Description
<input checked="" type="checkbox"/> 10.10.11.0	255.255.255.0	Mehmetcan Guest
<input checked="" type="checkbox"/> 10.189.193.0	255.255.255.0	Mehmetcan VPN
<input checked="" type="checkbox"/> 192.168.253.0	255.255.255.0	Mehmetcan LAN

- Mehmetcan PC'den Abdullah PC'sine ping atabilmekteyiz. Traceroute attığımızda ise ping'in köprü görevi gören Caner PC tarafındaki IP adresinden geçtiğini de görmekteyiz.

The screenshot displays the KerioControl web interface and a Windows Command Prompt window. The KerioControl interface shows the 'Routing Table' section with the 'Active routing table' tab selected. The table lists several routes, with 'Caner Guest' and 'Apo VPN' highlighted in red. The Command Prompt window shows the results of a ping and traceroute command.

**KerioControl Routing Table - Active routing table**

Name	Network	Mask	Gateway	Interface	Metric
System route	10.10.11.0	255.255.255.0		Guest	0
System route	192.168.52.0	255.255.254.0		WAN	0
System route	192.168.253.0	255.255.255.0		Ethernet	0
Caner VPN	10.253.134.0	255.255.255.0		IPSec	0
Caner Guest	10.20.20.0	255.255.255.0		IPSec	0
Apo VPN	172.27.152.0	255.255.255.0		IPSec	0
Apo LAN	172.16.10.0	255.255.255.0		IPSec	0

**Windows Command Prompt Output:**

```
C:\Windows\system32\cmd.exe
Copyright (c) 2010 Microsoft Corporation. All rights reserved.

C:\Users\Mehmetcan.Mehmetcan-PC>ping 172.16.10.11

Pinging 172.16.10.11 with 32 bytes of data:
Reply from 172.16.10.11: bytes=32 time=11ms TTL=125
Reply from 172.16.10.11: bytes=32 time=3ms TTL=125
Reply from 172.16.10.11: bytes=32 time=3ms TTL=125
Reply from 172.16.10.11: bytes=32 time=3ms TTL=125

Ping statistics for 172.16.10.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 3ms, Maximum = 11ms, Average = 5ms

C:\Users\Mehmetcan.Mehmetcan-PC>tracert 172.16.10.11

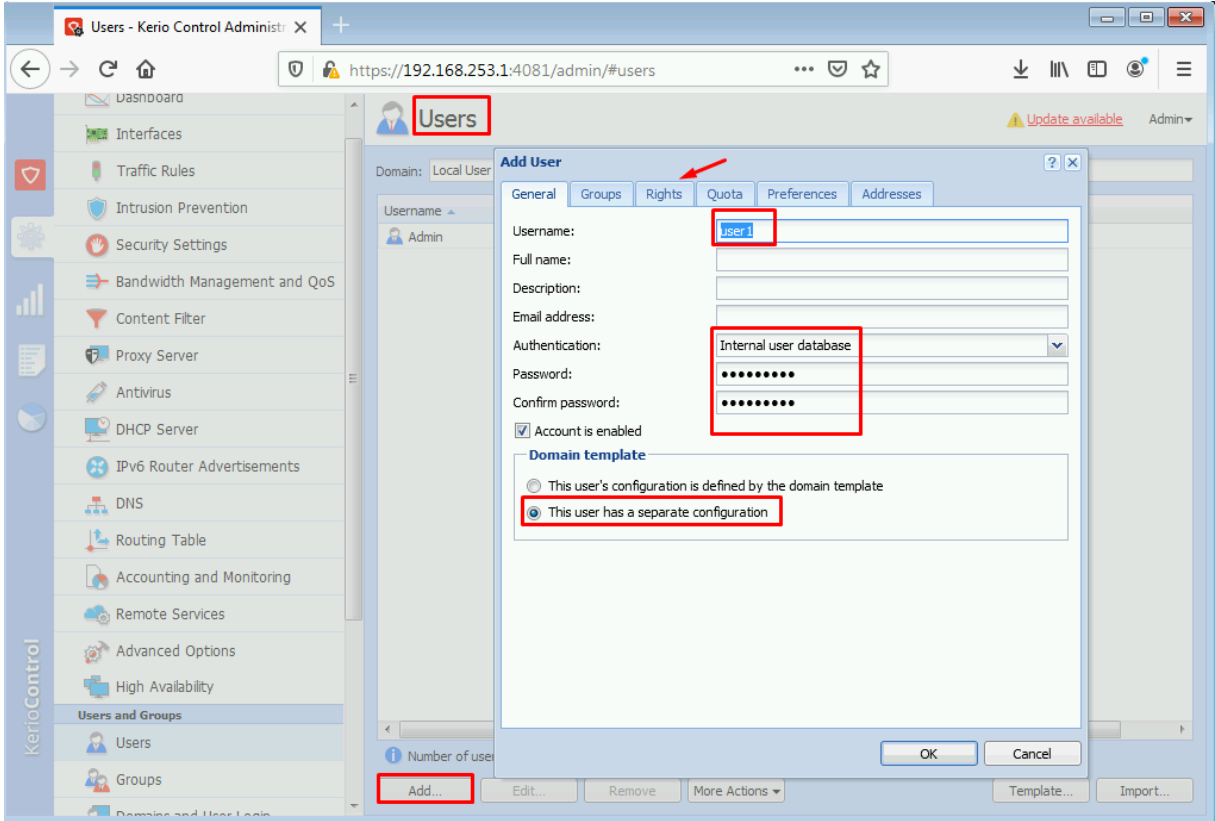
Tracing route to ADMINISTRATOR [172.16.10.11]
over a maximum of 30 hops:
  0  <1 ms    <1 ms    <1 ms   control [192.168.253.1]
  1  2 ms     2 ms     1 ms   10.20.20.1
  2  8 ms     4 ms     8 ms   172.27.152.1
  3  3 ms     2 ms     1 ms   ADMINISTRATOR [172.16.10.11]
```

## 7-) Client VPN

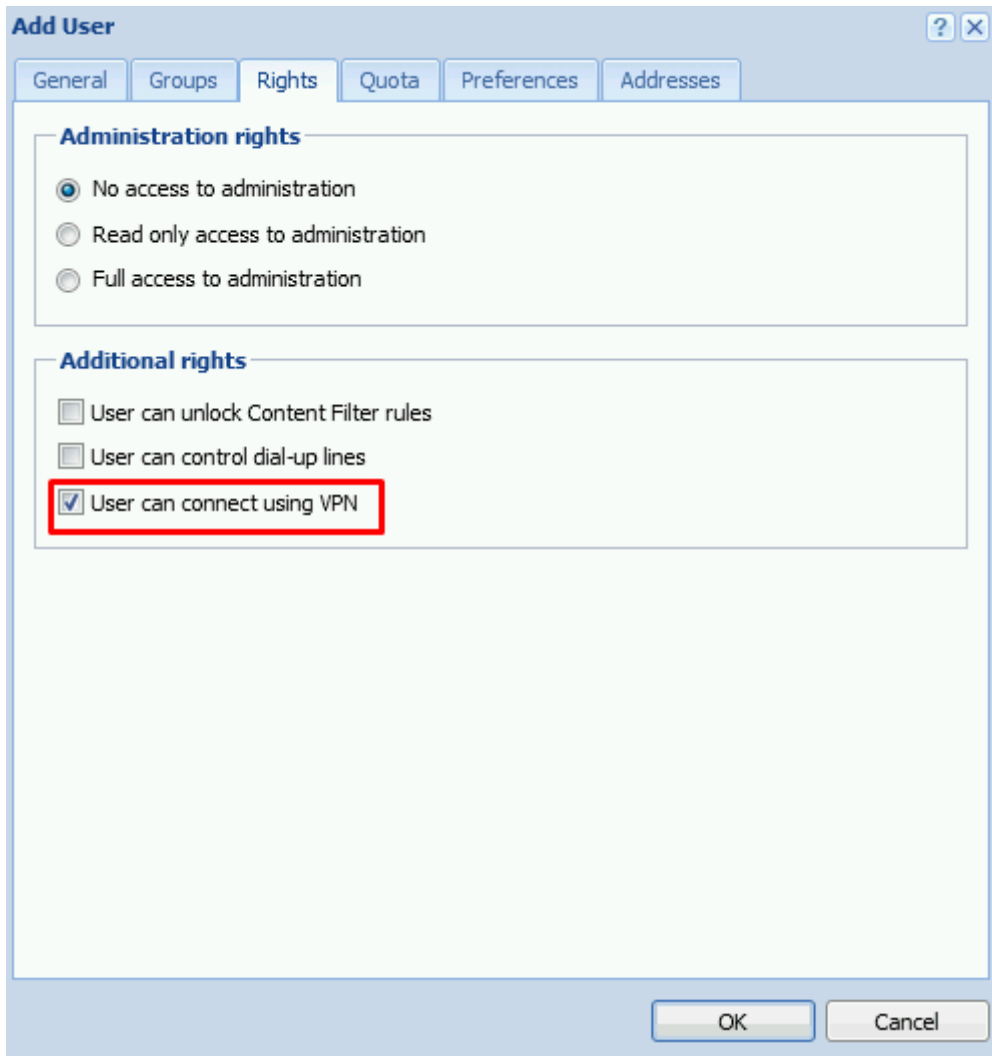
Client VPN, dışarıda bam başka bir networkte olan, şirketin satış yapan bir elemanın şirket içindeki verilere erişmek istediğinde ya da bizim kendi cihazımıza erişip evden çalışmak istediğimiz projeler olduğunda, vb. durumlarda kullanılır.

- İlk olarak network'e giriş yapmak için bir kullanıcı hesabına ihtiyacımız vardır.

“Users” altında “Add” diyerek kullanıcı oluşturulur. “Authentication” “Internal user database” olarak seçilir ve “This user has a separate configuration” işaretlenir. Ardından ok ile gösterilerin “Rights” kısmına geçilir.



- “Additional rights” kısmındaki “User can connect using VPN” tiklenir ve “Okay” denir. Bu işlem yapılmazsa kullanıcı Uzaktan bağlantı ile şirket network’üne giremez.



The image shows a Windows-style dialog box titled "Add User". It has a tabbed interface with tabs for "General", "Groups", "Rights", "Quota", "Preferences", and "Addresses". The "Rights" tab is currently selected. Inside the "Rights" tab, there are two sections: "Administration rights" and "Additional rights".

**Administration rights:**

- ☒ No access to administration
- ☐ Read only access to administration
- ☐ Full access to administration

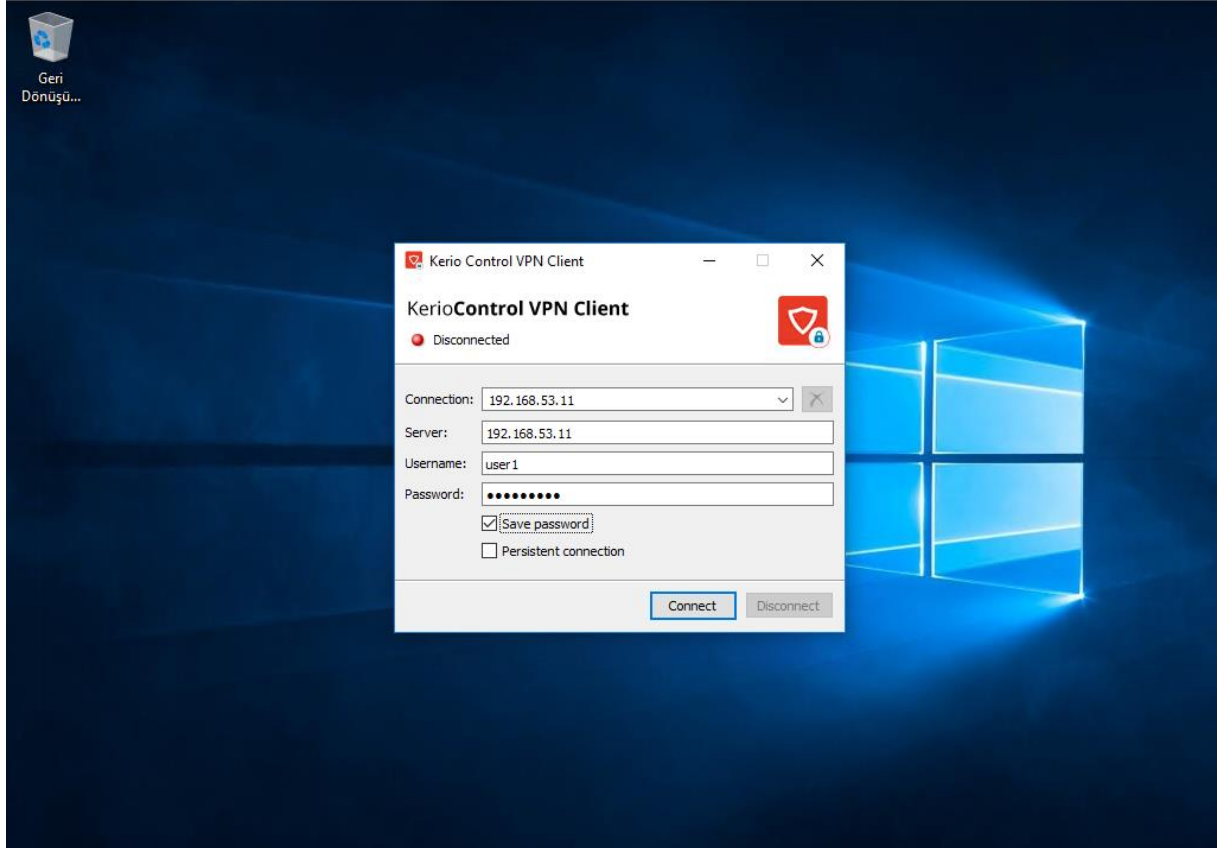
**Additional rights:**

- ☐ User can unlock Content Filter rules
- ☐ User can control dial-up lines
- ☒ User can connect using VPN

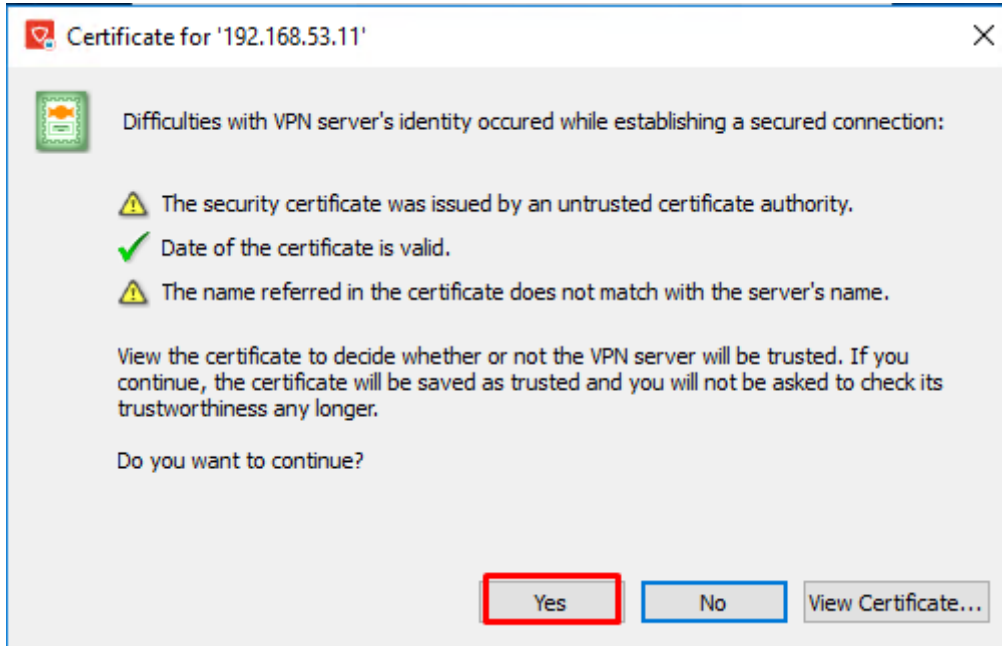
The "User can connect using VPN" option is checked and is enclosed in a red rectangular box. At the bottom right of the dialog, there are "OK" and "Cancel" buttons.



- “Kerio Control VPN Client” indirilip kurulduktan sonra çalıştırılır ve şirketimizin WAN IP adresi ve kullanıcı bilgilerimiz girilir.



- “Yes” denir.



- Cihazımızın bilgi kısmında şirket IP'miz ile bağlantı kuruldu bildirimi gelmektedir.



- “cmd” açıp “ipconfig” ile IP adresimize baktığımızda Kerio Firewall’ın kendi sahip olduğu VPN Server IP adresinden bir IP aldığımızı görmekteyiz.

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. Tüm hakları saklıdır.

C:\Users\Win10>ipconfig

Windows IP Configuration

Ethernet adapter Kerio Virtual Network:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::a584:b28b:8f56:803b%16
    IPv4 Address. . . . . : 10.189.193.3
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::9567:ff9d:a67a:7fb1%11
    IPv4 Address. . . . . : 192.168.53.35
    Subnet Mask . . . . . : 255.255.254.0
    Default Gateway . . . . . : 192.168.52.1

Tunnel adapter Teredo Tunneling Pseudo-Interface:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

C:\Users\Win10>tracert 192.168.253.11

Tracing route to Mehmetcan-PC [192.168.253.11]
over a maximum of 30 hops:

  0  1 ms  <1 ms  1 ms  control [10.189.193.1]
  1  1 ms  1 ms  1 ms  Mehmetcan-PC [192.168.253.11]

Trace complete.

C:\Users\Win10>
```

- Kerio üzerinde baktığımızda da kullanıcımızın hangi tünel tipi ile, hangi IP adresi ile, kullandığı işletim sistemine dair bilgileri görmekteyiz.

VPN Clients - Kerio Control Admin

https://192.168.253.1:4081/admin/#vpnClients

VPN Clients

Update available Admin

1 item (0 selected) Filter:

Username	Tunnel Type	Operating System	Hostname	Client IP
user1	Kerio VPN	Windows 10 x64	192.168.53.35	10.189.193.3

KerioControl

Auto-refresh