

epati

High Accessibility With an Active and Passive Cluster Using Link Aggregation

Product: Antikor v2 - Next Generation Firewall

► Configuration Examples

High Accessibility With an Active and Passive Cluster Using Link Aggregation

High availability (HA) Cluster systems are designed to ensure uninterrupted service by preventing accessibility from being blocked due to problems that may arise at a single point. The uninterrupted operation of very important services offered in a network is the primary purpose.

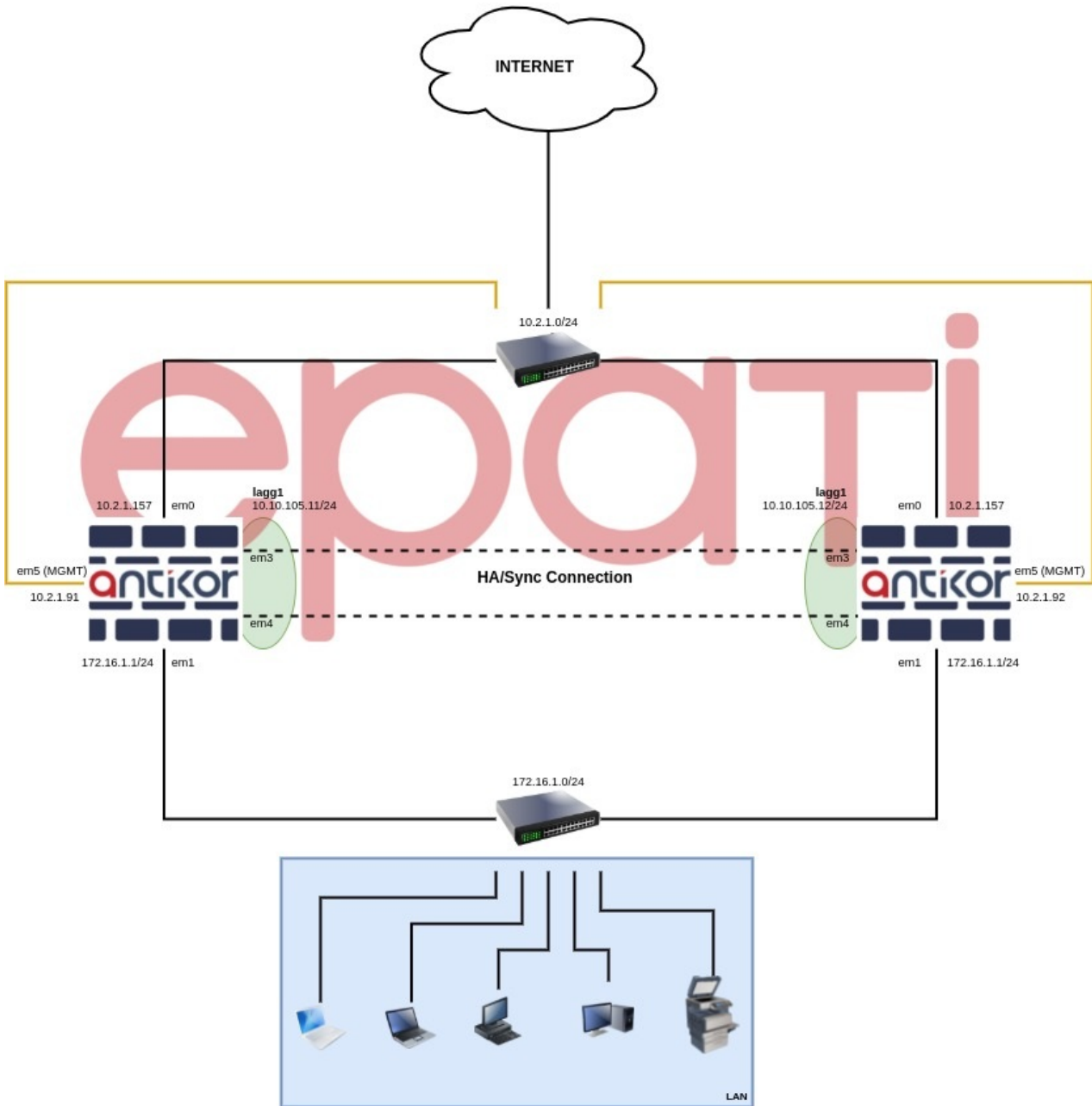
When a server running within the HA Cluster structure encounters any software or hardware errors, passive server is held and another server capable of providing the services provided by the principal server takes over. The service continues uninterrupted while the Master server is correcting the error. This working principle is called failover.

Antikor v2 Firewalls control each other by sending control messages over the network at intervals that we can specify. Task switching occurs between two firewalls when control messages cannot be transmitted due to an error.

The events that initiate the switching task are:

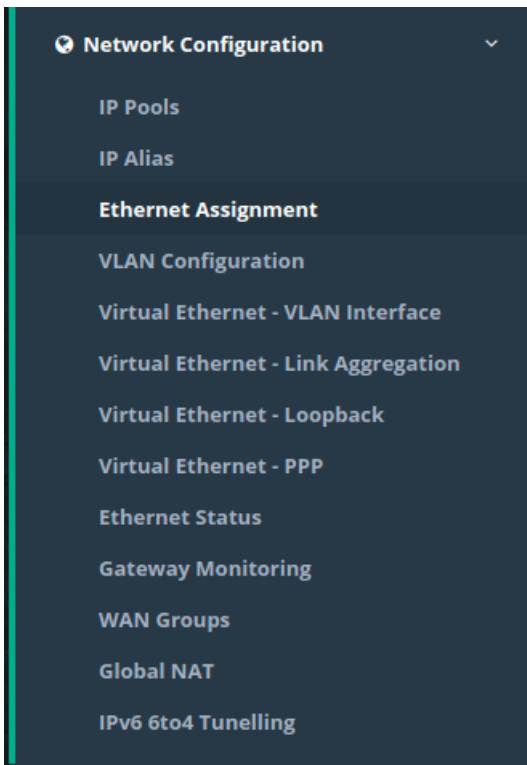
- If there is no access to one or more specified targets through the Active firewall;
- If the Active firewall does not respond to the control messages;
- If there is an error in the path monitoring route or critical software components on the Active firewall.

Network Topology



Common Configurations to Be Made on Both Servers

- **Network Configuration** is entered on the **Ethernet Assignment** page in the menu.



- It should be checked that the ethernet interfaces to be synchronized in the cluster are in the **Active** state of the **Cluster Membership**.

Ethernet Assignment
[Reload](#) [Add WAN](#) [Add LAN](#) [Add DMZ](#) [Add PPPoE](#)

[XLS](#) [CSV](#) [PDF](#)
[Show/Hide](#) [OK](#) [Filter](#) [Reset Filter](#)

#	Status	Cluster Membership	Web Interface Access	Security Zone	Interface	Ethernet Name	Selected Speed	MTU	IPv4 Address	IPv6 Address	Options	Description	Actions
1	Active	Active	Active	lan1-zone (lan1-zone-15p)	LAN1	em1 - Physical	autoselect	1500	172.16.1.1/24		Anti-Spoof DHCPv4 Server Registration MAC-IP Pairing	LAN1	Edit Delete
2	Active	Active	Active	wan1-zone (wan1-zone-15p)	WAN1	em0 - Physical	autoselect	1500	10.2.1.157/24				Edit Delete

« < 1 > » [Go](#)

Ethernet States

Status: Active

Security Zone: lan1-zone (lan1-zone-15j) ▾

Interface: LAN1 ▾

Ethernet Name: em1 (LAN1) ▾

Speed: autoselect ▾

MTU: 1500

Web Interface Access: Active

Cluster Membership: Active

Cluster Ethernet Name: em1

Description: LAN1

IPv4 Settings

Obtain IPv4 Automatically

IPv4 Address: IPv4 172.16.1.1/24

DHCPv4 Pool Mode: Distribute IP to All Clients × ▾

DHCPv4 Start: IPv4 172.16.1.10

DHCPv4 End: IPv4 172.16.1.250

DHCPv4 Gateway: IPv4 172.16.1.1

DHCPv4 Relay Address: IPv4

IPv6 Settings

Obtain IPv6 Automatically

EUI64: Passive

IPv6 Address: IPv6 ffff::1/8

DHCPv6 Start: IPv6

DHCPv6 End: IPv6

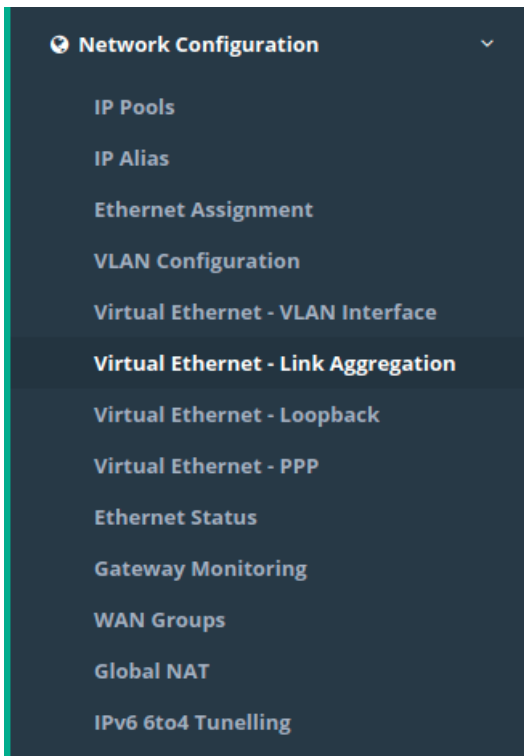
DHCPv6 Relay Address: IPv6

Options

<input checked="" type="checkbox"/> MAC-IP Pairing	<input checked="" type="checkbox"/> Anti-Spoof
<input checked="" type="checkbox"/> Registration	<input type="checkbox"/> Make announcement
<input type="checkbox"/> DHCPv6 Server	<input checked="" type="checkbox"/> DHCPv4 Server
<input type="checkbox"/> DHCPv6 Relay	<input type="checkbox"/> DHCPv4 Relay
<input type="checkbox"/> Managed Flag	<input type="checkbox"/> Other Flag

- **Virtual Ethernet - Link Aggregation** page is entered in the **Network Configuration** menu.





Virtual Ethernet - Link Aggregation

Virtual Ethernet - Link Aggregation

Reload Add

XLS CSV PDF Show/Hide Records Per Page OK Filter Reset Filter

#	Name	Virtual Ethernet Type	Member Ethernet	Description	Actions
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« < > » Go

- In both servers, two ports are combined and save as LACP.

Virtual Ethernet - Link Aggregation - Edit Record



Name: lagg1

Member Ethernet: em3 x em4 x

Virtual Ethernet Type: LACP

Description: lagg1

Cancel Save

Virtual Ethernet - Link Aggregation

Reload Add

XLS CSV PDF Show/Hide Records Per Page OK Filter Reset Filter

#	Name	Virtual Ethernet Type	Member Ethernet	Description	Actions
1	lagg1	LACP	em3 em4	lagg1	Edit Delete

« < 1 > » Go

- Definitions are applied by clicking the **Apply Definitions** button.


Process list to be applied

Apply Changes 2

[Apply All](#)

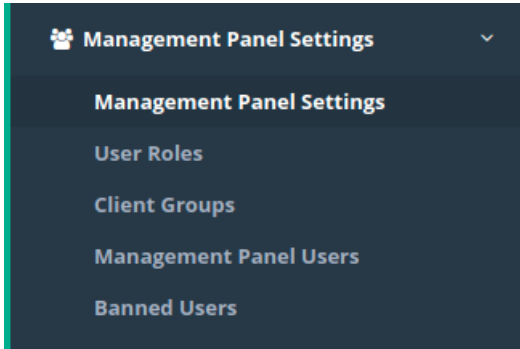
ByPass Ethernets 1	Apply 📄
Virtual Ethernet - Aggregation 1	Apply 📄

Process list to be applied

 Tüm Uygulamalar Güncel

Configurations that Will be Made on the Device where the Beginning Job Will be Active

- Entered **Management Panel Settings** page from **Management Panel Settings** menu.



Management Panel Settings

Service Settings

Web Interface Access Protocol https http

Service Port Number

Cpu Rezervation For Management Panel Closed

Independent Management Infrastructure Closed

[Save](#)

Session Settings

Log Traffic Open

Certificate Based Authentication Closed

Authentication From External Source Closed

Concurrent Login Open

Operation Mode

Login Disclaimer Closed

SSH Banner State Closed

[Save](#)

Service Cases

[Reload](#)

[XLS](#) [CSV](#) [PDF](#)

#	Ethernet Name	IP Address	Interface	Web Interface Access
1	em0	10.2.1.157/24	WAN1	<input type="checkbox"/> Open
2	em1	172.16.1.1/24	LAN1	<input type="checkbox"/> Open

[«](#) [<](#) [1](#) [>](#) [»](#) [Go](#)

Accessible Networks

[Reload](#) [+ Add](#)

[XLS](#) [CSV](#) [PDF](#)

#	IP Address	Description	Actions
1	0.0.0.0/0		Edit Delete

[«](#) [<](#) [1](#) [>](#) [»](#) [Go](#)

- From the **Service Settings** tab **The Independent Management Infrastructure** is activated and the management IP address is given. In this configuration example, the IP address for the device that will be

active in the startup task is set to 10.2.1.91.(After applying cluster synchronization, independent management was used, since the WAN IP addresses of the two devices will be the same.)

Service Settings

Web Interface Access Protocol https http

Service Port Number

Cpu Rezervation For Management Panel Closed

Independent Management Infrastructure Open

Ethernet to be Assigned

IP Address IPv4

Default Gateway IPv4

Output Port for Update

- After entering the settings, the **Save** button is clicked.

- Definitions are applied by clicking the **Apply Definitions** button.

Process list to be applied

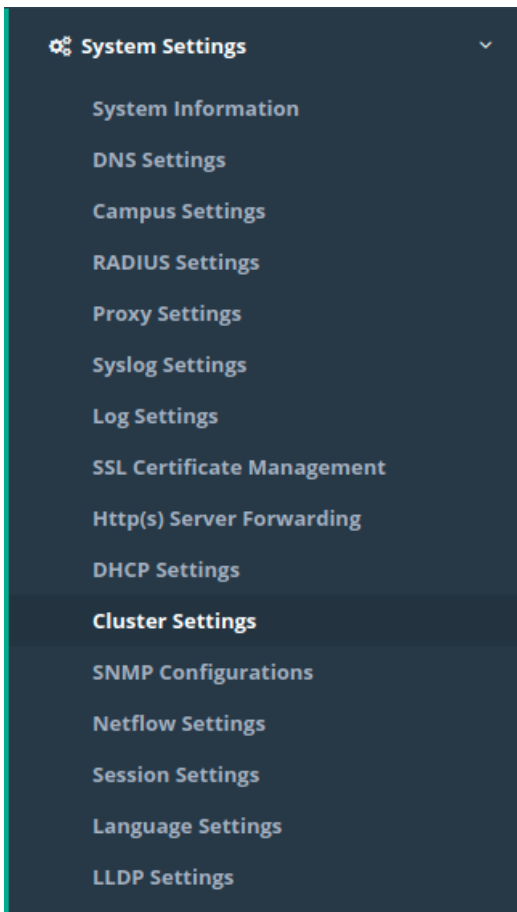
Apply Changes **4**

Web Panel Access Configuration 2	<input type="button" value="Apply"/> <input type="button" value="Save"/>
SSH Configuration 1	<input type="button" value="Apply"/> <input type="button" value="Save"/>
Management Panel Settings 1	<input type="button" value="Apply"/> <input type="button" value="Save"/>
Ethernet Web Interface Access 2	<input type="button" value="Apply"/> <input type="button" value="Save"/>

Process list to be applied

Tüm Uygulamalar Güncel

- Entered **Cluster Settings** page from **System Settings** menu.



Cluster Settings

Other Device's License Key is not verified! Please verify.

Cluster Settings Verify Other Device's License

Operation Mode Settings	Sync Settings
<p>Operation Mode: <input checked="" type="radio"/> Standalone <input type="radio"/> Active - Passive</p> <p>Beginning Job: <input type="radio"/> Active <input type="radio"/> Passive</p> <p>Keepalive Packet Send Frequency: <input type="text" value="100"/> ms</p> <p>Keepalive Packet Receive Timeout: <input type="text" value="400"/> ms</p>	<p>Delegate job if other device is healthy: <input type="checkbox"/> Active <input checked="" type="checkbox"/> Passive</p> <p>Connection States Sync: <input type="checkbox"/> Active <input checked="" type="checkbox"/> Passive</p> <p>Update Package Sync: <input type="checkbox"/> Active <input checked="" type="checkbox"/> Passive</p> <p>Sync Changes From Management: <input type="checkbox"/> Active <input checked="" type="checkbox"/> Passive</p>
Ethernet Settings	Handshake Settings
<p>Sync Ethernet: <input type="text" value="Select..."/></p> <p>IP Address: IPv4 <input type="text" value="10.10.10.10/32"/></p> <p>Other Device IP Address: IPv4 <input type="text" value="10.10.10.10"/></p>	<p>VHID Value: <input type="text" value="1"/></p> <p>Predefined Key: <input type="text"/></p> <p>Other Device License Key: <input type="text"/></p>

Save

- In **Operation Mode** settings, after Working Mode is set to **Active-Passive**, **Beginning Job** is marked as **Active**.
- **Keepalive Packet Send Frequency** (default 100ms) and **Keepalive Packet Receive Timeout** (default 400ms) are left at **default** values.

Operation Mode Settings

Operation Mode Standalone Active - Passive

Beginning Job Active Passive

Keepalive Packet Send Frequency ms

Keepalive Packet Receive Timeout ms

- In **Sync Settings**, **Delegate job if other device is healthy** and **Sync Changes From Management** are set to *Passive*.
- **Connection States Sync** and **Update Package Sync** are set to *Active*.

Sync Settings

Delegate job if other device is healthy

Connection States Sync

Update Package Sync

Sync Changes From Management

- In **Ethernet Settings**, the ethernet interface to be synchronized is selected.
- The IP address of the Ethernet to be synchronized and the Cluster IP address of the opposite device are written. (The IP address to be entered here does not need to be added to the IP pools.)

Ethernet Settings

Sync Ethernet

IP Address

Other Device IP Address

Note: The IP addresses to be given to the two devices must be from the same IP block. For example, if the synchronization IP address of this server is 10.10.105.11/24, the IP address of the other server is different from the opposite server, but is located on the same IP block 10.10.105.12/24 is given.

- The VHID value entered in the **Handshake Settings** must be the same as the device opposite. If there is another device running VRRP on the network (such as a switch, router), there may be a VHID conflict. For

this reason, VHIDS on other devices or devices should be known and given a different value than them.

- **The Predefined Key** must be the same as the device opposite.
- **The Other Device License Key** is entered in the section of the License key of the opposite device.

Handshake Settings

VHID Value	<input type="text" value="19"/>
Predefined Key	<input type="password" value="....."/>
Other Device License Key	<input type="password" value="....."/>

- Click the Save button.

Cluster Settings ✓ Verify Other Device's License

<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"><h4 style="text-align: center; margin: 0;">Operation Mode Settings</h4><p>Operation Mode <input type="radio"/> Standalone <input checked="" type="radio"/> Active - Passive</p><p>Beginning Job <input checked="" type="radio"/> Active <input type="radio"/> Passive</p><p>Keepalive Packet Send Frequency <input type="text" value="100"/> ms</p><p>Keepalive Packet Receive Timeout <input type="text" value="400"/> ms</p></div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"><h4 style="text-align: center; margin: 0;">Ethernet Settings</h4><p>Sync Ethernet <input type="text" value="em4 (CLUSTER)"/></p><p>IP Address <input type="text" value="IPv4 10.10.105.11/24"/></p><p>Other Device IP Address <input type="text" value="IPv4 10.10.105.12"/></p></div>	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"><h4 style="text-align: center; margin: 0;">Sync Settings</h4><p>Delegate job if other device is healthy <input type="checkbox"/> Passive</p><p>Connection States Sync <input checked="" type="checkbox"/> Active</p><p>Update Package Sync <input checked="" type="checkbox"/> Active</p><p>Sync Changes From Management <input type="checkbox"/> Passive</p></div> <div style="border: 1px solid #ccc; padding: 5px;"><h4 style="text-align: center; margin: 0;">Handshake Settings</h4><p>VHID Value <input type="text" value="19"/></p><p>Predefined Key <input type="password" value="....."/></p><p>Other Device License Key <input type="password" value="....."/></p></div>
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Save

- Definitions are applied by clicking the Apply Definitions button.

Process list to be applied Apply Changes 1

Cluster Settings 1 Apply All

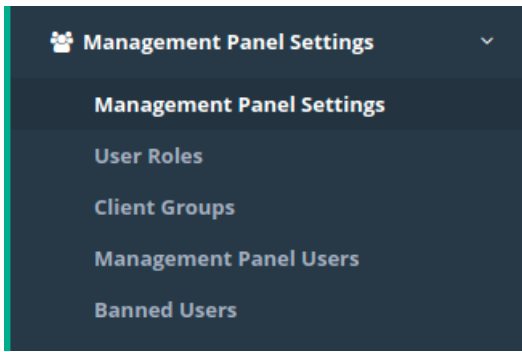
Apply 📄

Process list to be applied

✔ Tüm Uygulamalar Güncel

Configurations that Will be Performed on the Device whose Beginning Job Will Be Passive

- Entered **Management Panel Settings** page from **Management Panel Settings** menu.



Management Panel Settings

Service Settings

Web Interface Access Protocol: https http

Service Port Number:

Cpu Reservation For Management Panel: Closed

Independent Management Infrastructure: Closed

[Save](#)

Session Settings

Log Traffic: Open

Certificate Based Authentication: Closed

Authentication From External Source: Closed

Concurrent Login: Open

Operation Mode:

Login Disclaimer: Closed

SSH Banner State: Closed

[Save](#)

Service Cases [Reload](#)

[XLS](#) [CSV](#) [PDF](#)

#	Ethernet Name	IP Address	Interface	Web Interface Access
1	em0	10.2.1.157/24	WAN1	<input checked="" type="checkbox"/> Open
2	em1	172.16.1.1/24	LAN1	<input checked="" type="checkbox"/> Open

[Go](#)

Accessible Networks [Reload](#) [+ Add](#)

[XLS](#) [CSV](#) [PDF](#)

#	IP Address	Description	Actions
1	0.0.0.0/0		Edit Delete

[Go](#)

- Management IP address is given by activating **Independent Management Infrastructure** from **Service Settings** tab. In this configuration example, the IP address for the device whose initial task will be passive is set to 10.2.1.92. (Independent management is used since the WAN IP addresses of the two devices will be the same after cluster synchronization is applied.)

Service Settings

Web Interface Access Protocol https http

Service Port Number

Cpu Rezervation For Management Panel Closed

Independent Management Infrastructure Open

Ethernet to be Assigned

IP Address

Default Gateway

Output Port for Update

- After entering the settings, the **Save** button is clicked.

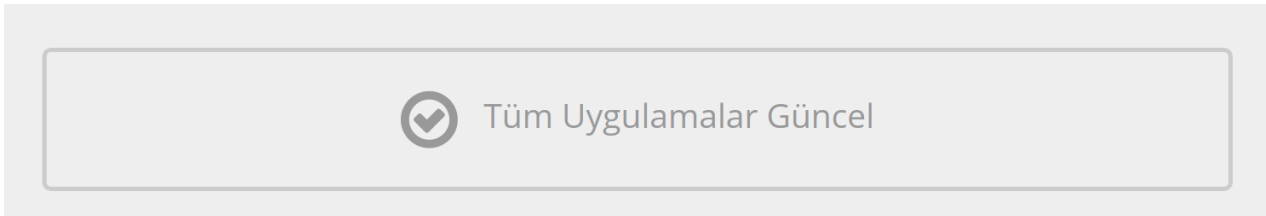
- Definitions are applied by clicking the **Apply Definitions** button.

Process list to be applied

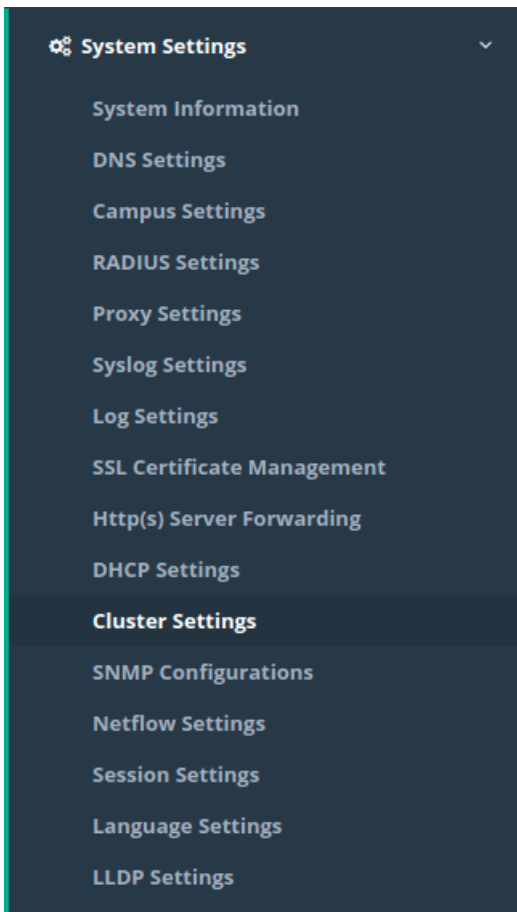
Apply Changes **4**

	<input type="button" value="Apply All"/>
Web Panel Access Configuration 2	<input type="button" value="Apply"/> <input type="button" value="Apply"/>
SSH Configuration 1	<input type="button" value="Apply"/> <input type="button" value="Apply"/>
Management Panel Settings 1	<input type="button" value="Apply"/> <input type="button" value="Apply"/>
Ethernet Web Interface Access 2	<input type="button" value="Apply"/> <input type="button" value="Apply"/>

Process list to be applied



- Entered **Cluster Settings** page from **System Settings** menu.



Cluster Settings

Other Device's License Key is not verified! Please verify.

Cluster Settings Verify Other Device's License

Operation Mode Settings	Sync Settings
<p>Operation Mode: <input checked="" type="radio"/> Standalone <input type="radio"/> Active - Passive</p> <p>Beginning Job: <input type="radio"/> Active <input type="radio"/> Passive</p> <p>Keepalive Packet Send Frequency: <input type="text" value="100"/> ms</p> <p>Keepalive Packet Receive Timeout: <input type="text" value="400"/> ms</p>	<p>Delegate job if other device is healthy: <input type="checkbox"/> Active <input type="checkbox"/> Passive</p> <p>Connection States Sync: <input type="checkbox"/> Active <input type="checkbox"/> Passive</p> <p>Update Package Sync: <input type="checkbox"/> Active <input type="checkbox"/> Passive</p> <p>Sync Changes From Management: <input type="checkbox"/> Active <input type="checkbox"/> Passive</p>
Ethernet Settings	Handshake Settings
<p>Sync Ethernet: <input type="text" value="Select..."/></p> <p>IP Address: IPv4 <input type="text" value="10.10.10.10/32"/></p> <p>Other Device IP Address: IPv4 <input type="text" value="10.10.10.10"/></p>	<p>VHID Value: <input type="text" value="1"/></p> <p>Predefined Key: <input type="text"/></p> <p>Other Device License Key: <input type="text"/></p>

Save

- In **Operation Mode** settings, after Working Mode is set to **Active-Passive**, **Beginning Job** is marked as **Active**.
- **Keepalive Packet Send Frequency** (default 100ms) and **Keepalive Packet Receive Timeout** (default 400ms) are left at **default** values.

Operation Mode Settings

Operation Mode Standalone Active - Passive

Beginning Job Active Passive

Keepalive Packet Send Frequency ms

Keepalive Packet Receive Timeout ms

- In **Sync Settings**, **Delegate job if other device is healthy** and **Sync Changes From Management** are set to *Passive*.
- **Connection States Sync** and **Update Package Sync** are set to *Active*.

Sync Settings

Delegate job if other device is healthy Active Passive

Connection States Sync Active Passive

Update Package Sync Active Passive

Sync Changes From Management Active Passive

- In **Ethernet Settings**, the ethernet interface to be synchronized is selected.
- The IP address of the Ethernet to be synchronized and the Cluster IP address of the opposite device are written. (The IP address to be entered here does not need to be added to the IP pools.)

Ethernet Settings

Sync Ethernet ▼

IP Address

Other Device IP Address

Note: The IP addresses to be given to the two devices must be from the same IP block. For example, if the synchronization IP address of this server is 10.10.105.12/24, the IP address of the other server is different from the opposite server, but is located on the same IP block 10.10.105.11/24 is given.

- The VHID value entered in the **Handshake Settings** must be the same as the device opposite. If there is another device running VRRP on the network (such as a switch, router), there may be a VHID conflict. For

this reason, VHIDS on other devices or devices should be known and given a different value than them.

- **The Predefined Key** must be the same as the device opposite.
- **The Other Device License Key** is entered in the section of the License key of the opposite device.

Handshake Settings

VHID Value

Predefined Key

Other Device License Key

- Click the Save button.

Cluster Settings✔ Verify Other Device's License

Operation Mode Settings

Operation Mode Standalone Active - Passive

Beginning Job Active Passive

Keepalive Packet Send Frequency ms

Keepalive Packet Receive Timeout ms

Sync Settings

Delegate job if other device is healthy Passive

Connection States Sync Active

Update Package Sync Active

Sync Changes From Management Passive

Ethernet Settings

Sync Ethernet

IP Address

Other Device IP Address

Handshake Settings

VHID Value

Predefined Key

Other Device License Key

Save

- Definitions are applied by clicking the **Apply Definitions** button.

Process list to be applied

Apply Changes 1

Cluster Settings 1✔ Apply All

Apply 📄

Process list to be applied


✔

Tüm Uygulamalar Güncel

- After applied the definitions, the connection is tested with the **Verify License Key of Other Device** button. It appears to be successful. In case of failure, the license key and connection between the two servers should be checked.

Cluster Settings ✓ Verify Other Device's License

Operation Mode Settings Sync Settings




Success

Other Device's License Key is verified.

[OK](#)


Note: If you want the settings to be the same on both devices; **Active** device **Cluster Status** on the **Dashboard** when the 'Resynchronize' button is clicked on the tab, all the settings of the active device will be pressed on the Passive device.

Cluster Status Resync ^ x




ACTIVE


[Switch State](#)



Antikor NGFW
10.10.105.11
(ACTIVE)



Antikor NGFW
10.10.105.12
(PASSIVE)
(Online)
(Last seen: 2021-10-26T08:56:11.431Z)




Error Factor: 0

Testing and Controls


- The Cluster Status on the Dashboard should indicate that it is **Online** to the Passive device if the device status is **Active**. If it does not write, the cluster settings and physical connections should be checked.

Cluster Status Resync ^ x




ACTIVE


[Switch State](#)



Antikor NGFW
10.10.105.11
(ACTIVE)



Antikor NGFW
10.10.105.12
(PASSIVE)
(Online)
(Last seen: 2021-10-26T08:56:33.459Z)



Error Factor: 0

- The Cluster Status on the dashboard should say **Online** for the Active device if the device status is **Passive**. If it does not write, the cluster settings and physical connections should be checked.



Antikor NGFW
10.10.105.12
(PASSIVE)

Antikor NGFW
10.10.105.11
(ACTIVE)
(Online)
(Last seen: 2021-10-
26T08:56:52.603Z)



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