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## How to Configure High Availability CC-Managed CloudGen Firewalls for Virtual Routing

<https://campus.barracuda.com/doc/96026380/>

When configuring a virtual router instance for a CC-managed HA pair, the configuration is transparently transferred to the secondary firewall after being completed for the primary firewall. There is no need to make any configuration for the secondary firewall.

### Before You Begin

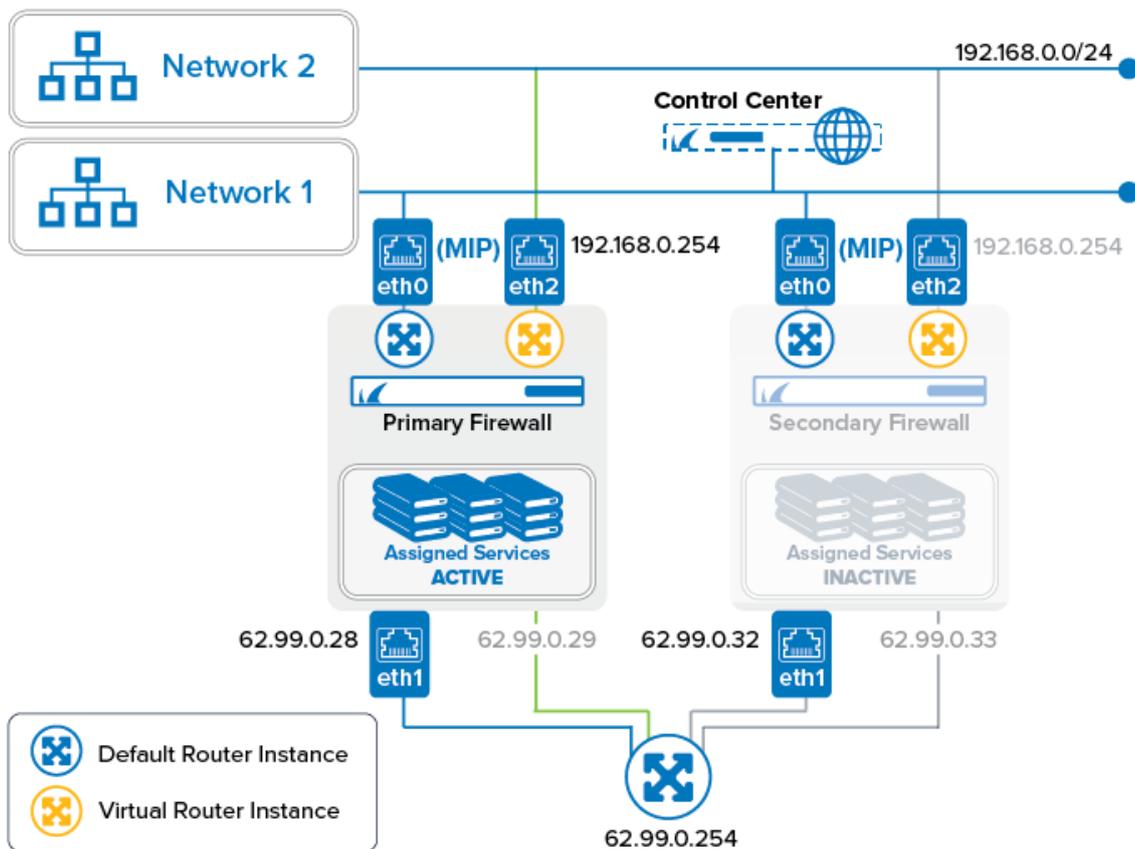
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Verify that two firewalls are operating in high availability mode. For more information, [How to Set Up a Managed High Availability Cluster from Scratch](#).

### Configuration

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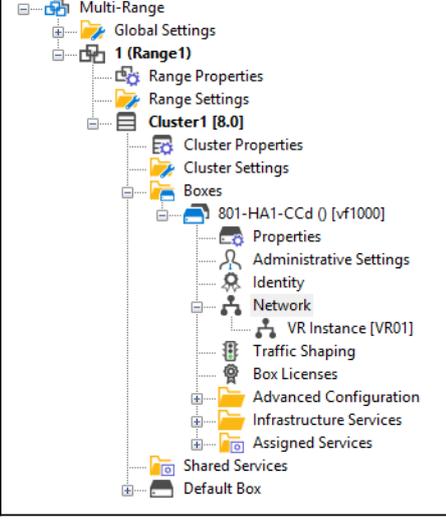
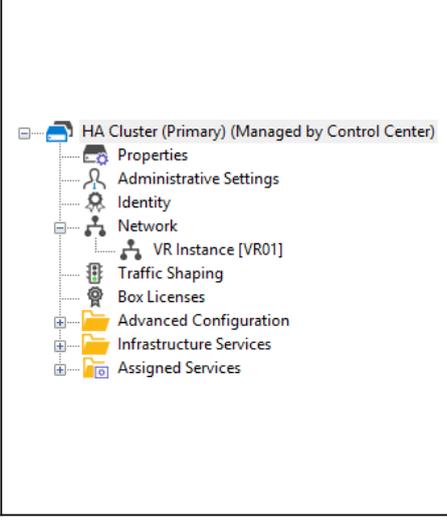
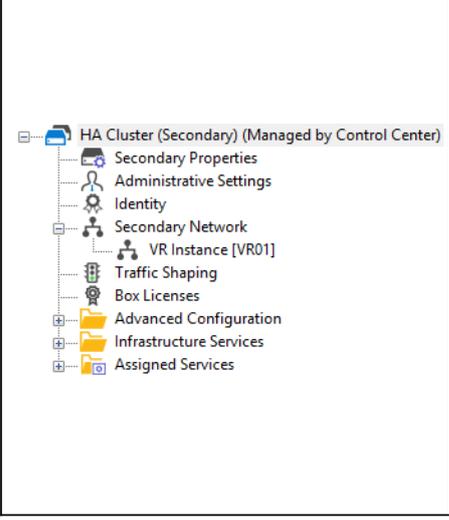
In the following example, an additional virtual instance will be created that routes traffic between a private network (e.g., 192.168.0.0/24) and the Internet. In this setup, the firewall service will be transparent to the additional virtual router instance only if authenticated users are not defined. All other services are not available to the additional virtual router. For more information on which services are available for additional virtual instances, see [Virtual Routing and Forwarding \(VRF\)](#).



## Step 1. On the CC, Create a Virtual Router Instance for the Primary Firewall

When creating a router instance for the primary firewall, the configuration will be mirrored to the secondary firewall.

1. Log into the Control Center.
2. Right-click **CONFIGURATION > Configuration Tree > Multi Range > your range > your cluster > Boxes > your primary firewall > Network**.
3. Select **Lock**.
4. Right-click **CONFIGURATION > Configuration Tree > Multi Range > your range > your cluster > Boxes > your primary firewall > Network**.
5. Select **Create VR Instance** from the list.
6. The **Create a new VR Instance** window is displayed.
7. The window for naming the virtual router is displayed.
8. Enter the name for the virtual router, e.g., VR01.
9. Click **OK**.
10. Click **Send Changes**.
11. The **Activate Changes** window opens.
12. Click **Activate**.

VR Node configured in Control Center	VR Node on Managed Primary Firewall	VR Node on Managed Secondary Firewall
 <p>Multi-Range        Global Settings        1 (Range1)        Range Properties        Range Settings        Cluster1 [8.0]        Cluster Properties        Cluster Settings        Boxes        801-HA1-CCd () [vf1000]        Properties        Administrative Settings        Identity        Network        VR Instance [VR01]        Traffic Shaping        Box Licenses        Advanced Configuration        Infrastructure Services        Assigned Services        Shared Services        Default Box</p>	 <p>HA Cluster (Primary) (Managed by Control Center)        Properties        Administrative Settings        Identity        Network        VR Instance [VR01]        Traffic Shaping        Box Licenses        Advanced Configuration        Infrastructure Services        Assigned Services</p>	 <p>HA Cluster (Secondary) (Managed by Control Center)        Secondary Properties        Administrative Settings        Identity        Secondary Network        VR Instance [VR01]        Traffic Shaping        Box Licenses        Advanced Configuration        Infrastructure Services        Assigned Services</p>

## Step 2. Assign Interfaces to the VR Instance

The configuration for the interfaces will be forwarded from the primary to the secondary HA partner.

1. On your Control Center, double-click **CONFIGURATION > Configuration Tree > Multi Range > your range > your cluster > Boxes > your primary firewall > Network**.
2. In the left menu bar, click **Virtual Router**.
3. Click **Lock**.
4. In the **Interface Assignment** list, double-click the first interface to assign the VR Instance, e.g., **eth2**.
5. The **Interface Assignment** window is displayed.
6. For **VR Instance**, select **VR01**.
7. Click **OK**.
8. In the **Interface Assignment** list, double-click the second interface to assign the VR Instance, e.g., **eth3**.
9. The **Interface Assignment** window is displayed.
10. For **VR Instance**, select **VR01**.
11. Click **OK**.
12. Click **Send Changes**.
13. Click **Activate**.

### VR Instance Interface Assignment

Interface Assignment

Name	VR Instance	Interface Type
eth0	default	Ethernet
eth1	default	Ethernet
eth2	VR01	Ethernet
eth3	VR01	Ethernet
eth4	default	Ethernet
eth5	default	Ethernet

### Step 3. Re-activate the New Network Configuration

1. Log into your primary firewall.
2. On your primary HA firewall, go to **CONTROL > Box**.
3. In the left menu, click **Network** to expand the menu.
4. Click **Activate new network configuration**.
5. The **Network Activation** window is displayed.
6. Click **Failsafe**.
7. Log into you secondary firewall.
8. On your secondary HA firewall, go to **CONTROL > Box**.
9. In the left menu, click **Network** to expand the menu.
10. Click **Activate new network configuration**.
11. The **Network Activation** window is displayed.
12. Click **Failsafe**.

### Step 4. Assign IP Addresses to the Interfaces of the VR Instance

1. On your Control Center, go to **CONFIGURATION > Configuration Tree > Multi-Range > your range > your cluster > Boxes > your primary firewall > Network > VR Instance [ your virtual instance ]**.
2. In the left menu bar, select **IP Configuration**.
3. Click **Lock**.
4. Click **+** to assign the first IP address to the first interface, e.g., eth2 = 192.168.0.254.
5. The **IPv4 Addresses** window is displayed.
6. Enter the name for the first IP address to interface assignment, e.g., VRF-to-CLASSROOM1.
7. Enter the **IPv4 Address Configuration**
  1. **Interface Name** - eth2
  2. **IP Address** - Enter the private network address, e.g., 192.168.0.254.
  3. **Responds to Ping** - yes.

IPv4 Address Configuration	
Interface Name	eth2 <input type="checkbox"/> Other
IP Address	192.168.0.254
Associated Netmask	24-Bit
Responds to Ping	yes
Default Gateway	
Route Metric	1
MTU	1500
Active	yes

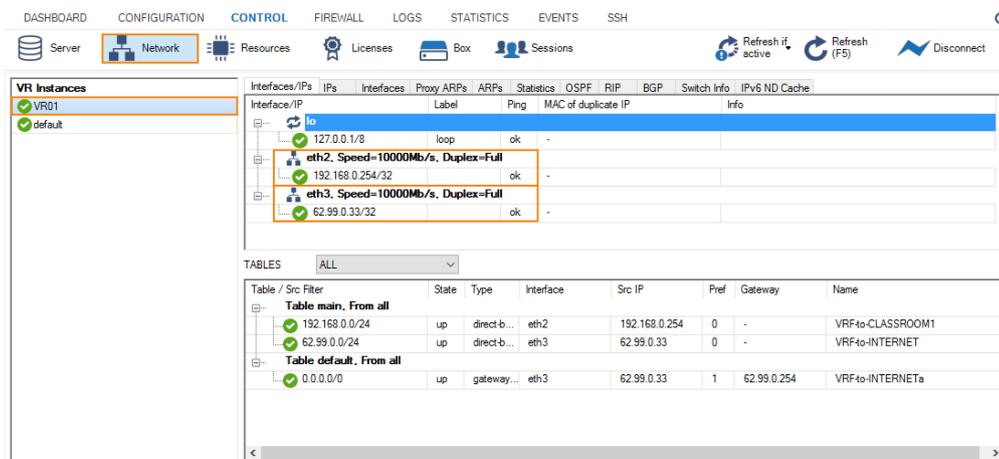
8. Click **OK**.
9. Click **+** to assign the second IP address to the first interface, e.g., eth3 = 62.99.0.33.
10. The **IPv4 Addresses** window is displayed.
11. Enter the name for the second IP address to interface assignment, e.g., VRF - to - INTERNET.
12. Enter the **IPv4 Address Configuration**
  1. **Interface Name - eth3**
  2. **IP Address** - Enter the private network address, e.g. 62.99.0.33.
  3. **Responds to Ping - yes.**
  4. **Default Gateway** - Enter the IP address for the Internet gateway, e.g., 62.99.0.254.

IPv4 Address Configuration	
Interface Name	eth3 <input type="checkbox"/> Other
IP Address	62.99.0.33
Associated Netmask	24-Bit
Responds to Ping	yes
Default Gateway	62.99.0.254
Route Metric	1
MTU	1500
Active	yes

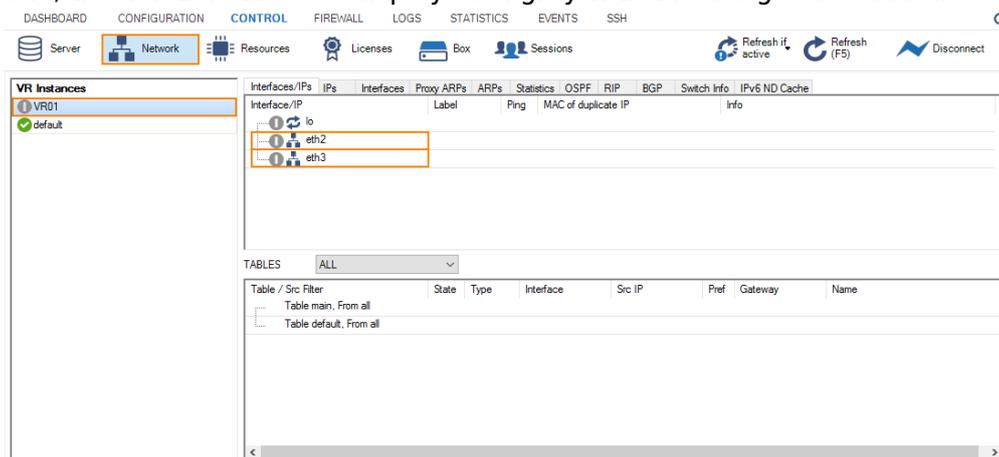
13. Click **OK**.
14. Click **Send Changes**.
15. The **Activate Changes** window opens.
16. Click **Activate**.

## Step 5. Verify Your Configuration on Both HA Partners

On the primary firewall, go to **CONTROL > Network** and click **VR01**. In case the primary firewall is the active one, the interfaces with its IP addresses are displayed as configured.



On the secondary firewall, go to **CONTROL > Network**. In case the secondary firewall is the passive one, the VR01 instance is displayed in gray with the assigned IP addresses being invisible.



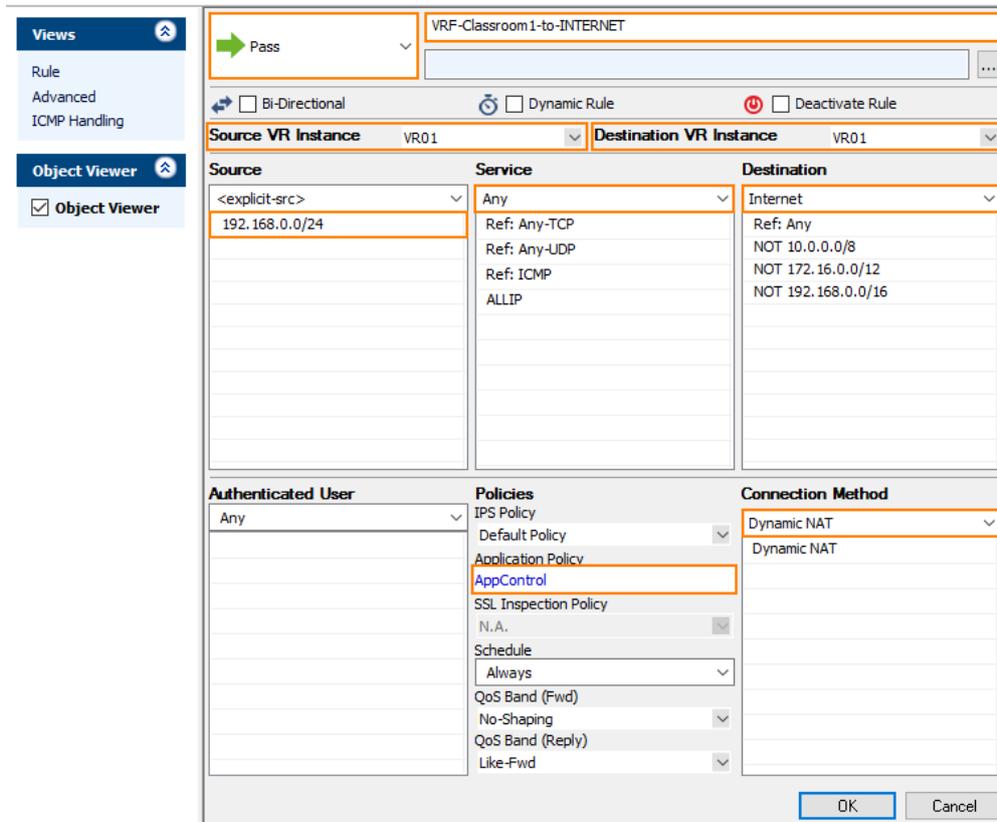
To activate the reverse HA constellation, perform an HA failover. For more information, see [How to Perform a Manual High Availability Failover](#). The upper two images will then be displayed with reversed configuration information accordingly .

### Step 6. Create an Access Rule for the Newly Created Virtual Router VR01

To pass traffic from interface eth2 (192.168.0.254/32) to eth3 (62.99.0.29/32), create an access rule and constrain the access rule to the virtual router VR01.

1. On your Control Center, go to **CONFIGURATION > Configuration Tree > Multi-Range > your range > your cluster > Boxes > your primary firewall > Assigned Services > NGFW (Firewall) > Forwarding Rules**.
2. Click **Lock**.
3. Click **+** to add an access rule.
4. For the access rule type, select **Pass**.
5. Enter a name for the access rule. To differentiate between rules that apply to the default router instance, and for a clearer overview, it is recommended to prepend a prefix like 'VRF' or 'VR01' to the name of the access rule, e.g., VRF - Classroom - to - INTERNET.

6. **Source VR Instance** - Select the name of the virtual router instance, e.g. **VR01**.
7. **Destination VR Instance** - Select the name of the virtual router instance, e.g. **VR01**.
8. **Source** - Enter the IP address of the source network, e.g., 192.168.0.0/24.
9. **Service** - Select **Any**.
10. **Destination** - Enter the IP address for the Internet from the list.
11. **Application Policy** - In case you have licensed Application Control, you can activate it now.
12. **Connection Method** - Select **Dynamic NAT**.
13. Click **OK**.
14. Click **Send Changes**.
15. Click **Activate**.



The screenshot shows the configuration page for a rule named "VRF-Classroom1-to-INTERNET". The rule is set to "Pass" and is not bi-directional, dynamic, or deactivated. The source and destination VR instances are both set to "VR01".

Source	Service	Destination
<explicit-src>	Any	Internet
192.168.0.0/24	Ref: Any-TCP Ref: Any-UDP Ref: ICMP ALLIP	Ref: Any NOT 10.0.0.0/8 NOT 172.16.0.0/12 NOT 192.168.0.0/16

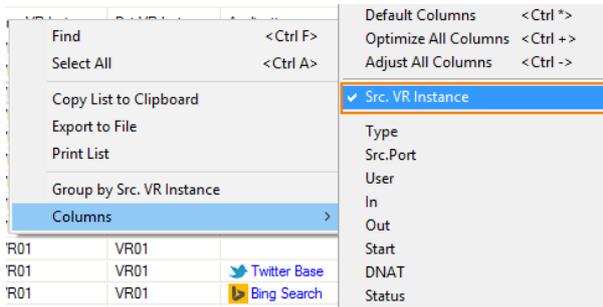
  

Authenticated User	Policies	Connection Method
Any	IPS Policy Default Policy Application Policy <b>AppControl</b> SSL Inspection Policy N.A. Schedule Always QoS Band (Fwd) No-Shaping QoS Band (Reply) Like-Fwd	Dynamic NAT Dynamic NAT

Buttons: OK, Cancel

## Step 7. Activate Columns to Display the Traffic Flow Through Your Virtual Router Instance

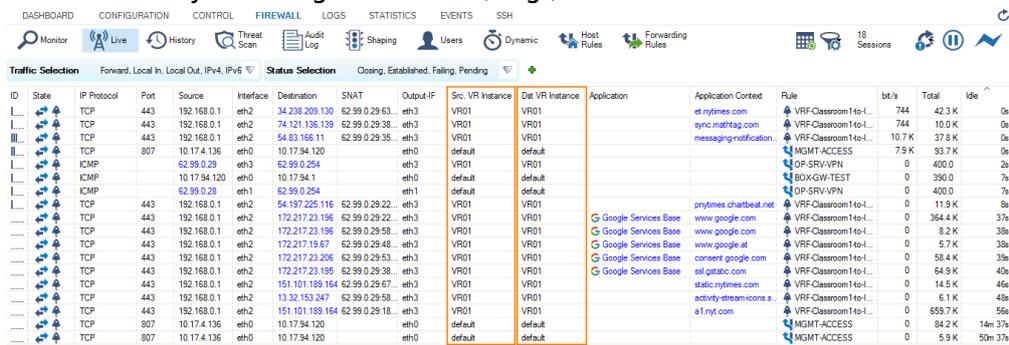
1. On your primary firewall, go to **FIREWALL > Live**.
2. Right-click on any of the column identifiers of the Live view.
3. From the menu, select **Columns -> Src. VR Instance**.
4. Right-click on any of the column identifiers of the Live view.
5. From the menu, select **Columns -> Dst. VR Instance**.



### Step 8. Verify that Traffic is Flowing from the Source Network to the Internet

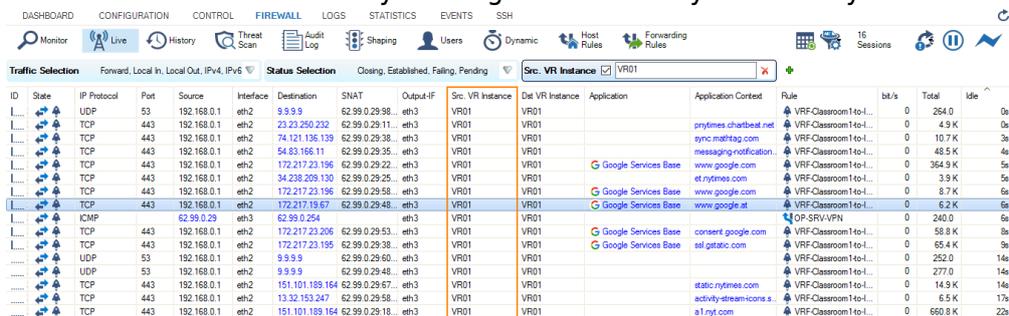
Set up a client with an IP address in the source network (e.g., 192.168.0.1), and set the default route on the client to the address of the virtual router, e.g., 192.168.0.254.

1. On your client, open a web browser and go to a website of your choice, e.g., [www.nytimes.com](http://www.nytimes.com)
2. On your primary firewall, go to **FIREWALL > Live**.
3. The **Live** view will display a mixture of traffic flowing both through the default router and the virtual router you configured before, e.g., VR01.



ID	State	IP Protocol	Port	Source	Interface	Destination	SNAT	Output-IF	Src. VR Instance	Det VR Instance	Application	Application Context	Rule	bit/s	Total	Idle
...	...	TCP	443	192.168.0.1	eth2	34.238.209.130	62.99.0.29.63	eth3	VR01	VR01		et.nytimes.com	VRF-Classroom1-to-I...	744	42.3 K	0s
...	...	TCP	443	192.168.0.1	eth2	74.121.136.139	62.99.0.29.38	eth3	VR01	VR01		sync.mathtag.com	VRF-Classroom1-to-I...	744	10.0 K	0s
...	...	TCP	443	192.168.0.1	eth2	54.83.166.11	62.99.0.29.35	eth3	VR01	VR01		messaging.notification...	VRF-Classroom1-to-I...	10.7 K	37.9 K	0s
...	...	TCP	807	10.17.4.136	eth0	10.17.94.120		eth0	default	default			MGMT-ACCESS	7.9 K	93.7 K	0s
...	...	ICMP		62.99.0.29	eth3	62.99.0.254		eth3	VR01	VR01			OP-SRV-VPN	0	400.0	2s
...	...	ICMP		10.17.94.120	eth0	10.17.94.1		eth0	default	default			BOX-GW-TEST	0	390.0	7s
...	...	ICMP		62.99.0.28	eth1	62.99.0.254		eth1	default	default			OP-SRV-VPN	0	400.0	7s
...	...	TCP	443	192.168.0.1	eth2	54.197.225.116	62.99.0.29.22	eth3	VR01	VR01		nytimes.charbest.net	VRF-Classroom1-to-I...	0	11.9 K	9s
...	...	TCP	443	192.168.0.1	eth2	172.217.23.196	62.99.0.29.22	eth3	VR01	VR01	Google Services Base	www.google.com	VRF-Classroom1-to-I...	0	364.4 K	37s
...	...	TCP	443	192.168.0.1	eth2	172.217.23.196	62.99.0.29.58	eth3	VR01	VR01	Google Services Base	www.google.com	VRF-Classroom1-to-I...	0	8.2 K	38s
...	...	TCP	443	192.168.0.1	eth2	172.217.19.67	62.99.0.29.48	eth3	VR01	VR01	Google Services Base	www.google.at	VRF-Classroom1-to-I...	0	5.7 K	38s
...	...	TCP	443	192.168.0.1	eth2	172.217.23.206	62.99.0.29.53	eth3	VR01	VR01	Google Services Base	consent.google.com	VRF-Classroom1-to-I...	0	58.4 K	38s
...	...	TCP	443	192.168.0.1	eth2	172.217.23.195	62.99.0.29.38	eth3	VR01	VR01	Google Services Base	ssl.gstatic.com	VRF-Classroom1-to-I...	0	64.9 K	40s
...	...	TCP	443	192.168.0.1	eth2	151.101.189.164	62.99.0.29.67	eth3	VR01	VR01	Google Services Base	static.nytimes.com	VRF-Classroom1-to-I...	0	14.5 K	45s
...	...	TCP	443	192.168.0.1	eth2	13.32.153.247	62.99.0.29.58	eth3	VR01	VR01	Google Services Base	activitystream.icons.s...	VRF-Classroom1-to-I...	0	6.1 K	45s
...	...	TCP	443	192.168.0.1	eth2	151.101.189.164	62.99.0.29.18	eth3	VR01	VR01	Google Services Base	a.nytimes.com	VRF-Classroom1-to-I...	0	659.7 K	56s
...	...	TCP	807	10.17.4.136	eth0	10.17.94.120		eth0	default	default			MGMT-ACCESS	84.2 K	14m 37s	
...	...	TCP	807	10.17.4.136	eth0	10.17.94.120		eth0	default	default			MGMT-ACCESS	0	5.9 K	50m 37s

4. In order to restrict display output only to the URL you entered before, activate a display filter for the virtual router instance by clicking on the filter symbol in any of the lines showing VR01.



ID	State	IP Protocol	Port	Source	Interface	Destination	SNAT	Output-IF	Src. VR Instance	Det VR Instance	Application	Application Context	Rule	bit/s	Total	Idle
...	...	UDP	53	192.168.0.1	eth2	9.9.9.9	62.99.0.29.99	eth3	VR01	VR01			VRF-Classroom1-to-I...	0	254.0	0s
...	...	TCP	443	192.168.0.1	eth2	23.23.250.232	62.99.0.29.11	eth3	VR01	VR01		nytimes.charbest.net	VRF-Classroom1-to-I...	0	4.9 K	0s
...	...	TCP	443	192.168.0.1	eth2	74.121.136.139	62.99.0.29.38	eth3	VR01	VR01		sync.mathtag.com	VRF-Classroom1-to-I...	0	10.7 K	3s
...	...	TCP	443	192.168.0.1	eth2	54.83.166.11	62.99.0.29.35	eth3	VR01	VR01		messaging.notification...	VRF-Classroom1-to-I...	0	48.5 K	4s
...	...	TCP	443	192.168.0.1	eth2	172.217.23.196	62.99.0.29.22	eth3	VR01	VR01	Google Services Base	www.google.com	VRF-Classroom1-to-I...	0	364.9 K	5s
...	...	TCP	443	192.168.0.1	eth2	34.238.209.130	62.99.0.29.25	eth3	VR01	VR01		et.nytimes.com	VRF-Classroom1-to-I...	0	3.9 K	5s
...	...	TCP	443	192.168.0.1	eth2	172.217.23.196	62.99.0.29.58	eth3	VR01	VR01	Google Services Base	www.google.com	VRF-Classroom1-to-I...	0	8.7 K	5s
...	...	TCP	443	192.168.0.1	eth2	172.217.19.67	62.99.0.29.48	eth3	VR01	VR01	Google Services Base	www.google.at	VRF-Classroom1-to-I...	0	6.2 K	5s
...	...	ICMP		62.99.0.29	eth3	62.99.0.254		eth3	VR01	VR01			OP-SRV-VPN	0	240.0	6s
...	...	TCP	443	192.168.0.1	eth2	172.217.23.206	62.99.0.29.53	eth3	VR01	VR01	Google Services Base	consent.google.com	VRF-Classroom1-to-I...	0	58.8 K	8s
...	...	TCP	443	192.168.0.1	eth2	172.217.23.195	62.99.0.29.38	eth3	VR01	VR01	Google Services Base	ssl.gstatic.com	VRF-Classroom1-to-I...	0	65.4 K	9s
...	...	UDP	53	192.168.0.1	eth2	9.9.9.9	62.99.0.29.60	eth3	VR01	VR01			VRF-Classroom1-to-I...	0	252.0	14s
...	...	UDP	53	192.168.0.1	eth2	9.9.9.9	62.99.0.29.48	eth3	VR01	VR01			VRF-Classroom1-to-I...	0	277.0	14s
...	...	TCP	443	192.168.0.1	eth2	151.101.189.164	62.99.0.29.67	eth3	VR01	VR01		static.nytimes.com	VRF-Classroom1-to-I...	0	14.9 K	14s
...	...	TCP	443	192.168.0.1	eth2	13.32.153.247	62.99.0.29.58	eth3	VR01	VR01		activitystream.icons.s...	VRF-Classroom1-to-I...	0	6.5 K	17s
...	...	TCP	443	192.168.0.1	eth2	151.101.189.164	62.99.0.29.18	eth3	VR01	VR01		a.nytimes.com	VRF-Classroom1-to-I...	0	660.8 K	22s

## Figures

1. vr\_ha\_managed\_80.png
2. ha\_VR\_node\_created\_in\_CC.png
3. ha\_VR\_node\_created\_on\_primary\_managed.png
4. ha\_VR\_node\_created\_on\_secondary\_managed.png
5. vrf\_HA\_primary\_network\_node\_configured.png
6. vrf\_HA\_configure\_primary\_interface.png
7. vrf\_HA\_configure\_second\_interface.png
8. vrf\_HA\_configuration\_complete\_HA1.png
9. vrf\_HA\_configuration\_complete\_HA2.png
10. vrf\_enter\_access\_rule\_for\_vr01.png
11. vrf\_select\_vr\_column\_to\_display.png
12. vrf\_traffic\_flowng\_through\_all\_router\_instances.png
13. traffic\_flowng\_only\_through\_VR01.png

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