



# How to configure High Availability (HA)

Ver.1.1/2020

## Overview

Networks carry information that is the lifeblood of your business, often making network outages or degraded performance unacceptable. Hardware failure such as a failure of the Power supply or Ethernet Interface is the main reason behind the failure of a firewall. To provide reliable and continuous connection to the Internet and also to provide security services, NetXGATE allows configuring two appliances to function as a single NetXGATE Appliance and provide high availability (HA).

To help ensure business continuity and balanced performance NetXGATE Use Virtual Router Redundancy Protocol (VRRP- is a popular protocol for providing device redundancy) which provide robust and scalable high. availability.

**This document will illustrate the necessary steps to configure a high availability (active-standby) between two NetXGATE appliances. This will allow a seamless failover transition to a secondary NetXGATE appliance, in the event of a hardware failure on the primary appliance. This provides unparalleled hardware availability and redundancy for critical network operations and security.**

## Deployment

In VRRP setup out of two NetXGATE NGFW appliances one will be configured as MASTER /PRIMARY through which the traffic flows by default and the other configured as SECONDARY /BACKUP through which the traffic flows during master appliance failure or link(s) failure based on the configured settings.

In other word, When using VRRP, at least one active appliance and a hot-standby are deployed. The backup appliance is ready to assume any active appliance functions in case of any failures.

### Pre-Requisite:

- I. 2 Nos. of NetXGATE NGFW Appliances (one as master & second as backup)
- II. Minimum of 2 Switches (one for WAN & second for LAN Segments)
- III. The LAN (LAN1) interfaces are connected to a switch on the LAN network.

- IV. The WAN (WAN1) interfaces are connected to another switch, which connects to the Internet.
- V. Ensure that the IP address of the HA link port of the primary and Secondary / backup devices is in the same subnet.
- VI. Ensure devices must have the same firmware version installed. This includes maintenance releases and hotfixes.

**Configuration Modes : Active-Passive .**

In Active- Passive Mode, the Primary /Master device Processes the entire traffic .The Secondary / Backup device waits in ready Mode to operate as the primary device, when the Primary / Master device or a monitored link / Interface fails.

The Secondary / Backup Firewall monitors the Primary Firewall . If it does not receive communication from the Primary/Master device at pre-set intervals, the Primary / Master device is deemed to have failed and the Backup device takes ownership of the Virtual Address , becoming the temporary Primary/Master device .Once the Primary device becomes functional , it automatically takes over from the Secondary /Auxiliary or Backup device or it act as configured in Preempt mode configuration , which explained below .

**WAN Addressing**

The WAN addresses will be selected from those assigned by the ISP. For the example in Table [WAN IP Address Assignments](#), the WAN of the HA pair is 1.2.3.0/24, and the addresses 1.2.3.2 through 1.2.3.5 will be used as the WAN IP addresses.

*WAN IP Address Assignments*

IP Address	Usage
1.2.3.4/24	Primary Device WAN IP address
1.2.3.5/24	Secondary /Auxiliary Device WAN IP address

**LAN Addressing**

The LAN subnet is 192.168.1.0/24. For this example, the LAN IP addresses will be assigned as shown in Table [LAN IP Address Assignments](#).

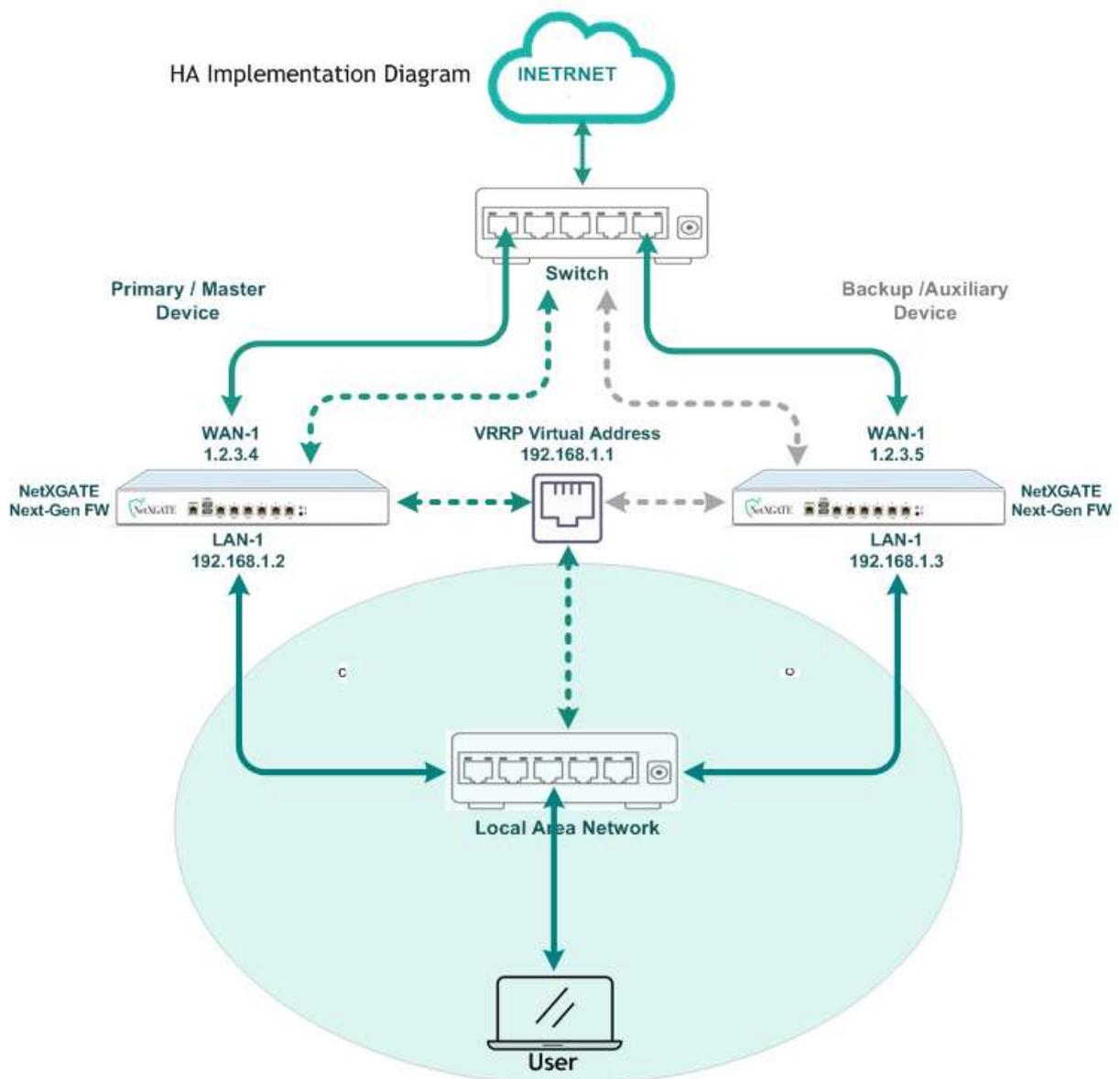
*LAN IP Address Assignments*

IP Address	Usage
192.168.1.1/24	LAN shared /Virtual IP address
192.168.1.2/24	Primary Device LAN IP address

### LAN IP Address Assignments

IP Address	Usage
192.168.1.3/24	Secondary Device LAN IP address

Below given diagram network setup for VRRP, displays how two appliances – Primary and backup Device will be connected physically.



## Background Information

The NetXGATE high availability system is supported on both NetXGATE hardware and Software (VM) . Whether choosing hardware or software, the high availability module requires identical hardware platforms. Something else important to note when deploying high availability is that you must provide a duplication method for each and every connection to the NetXGATE appliance. Every connection the primary unit has (WAN, LAN, etc.) must be replicated across the standby unit to ensure complete replication capabilities exist .

### Note

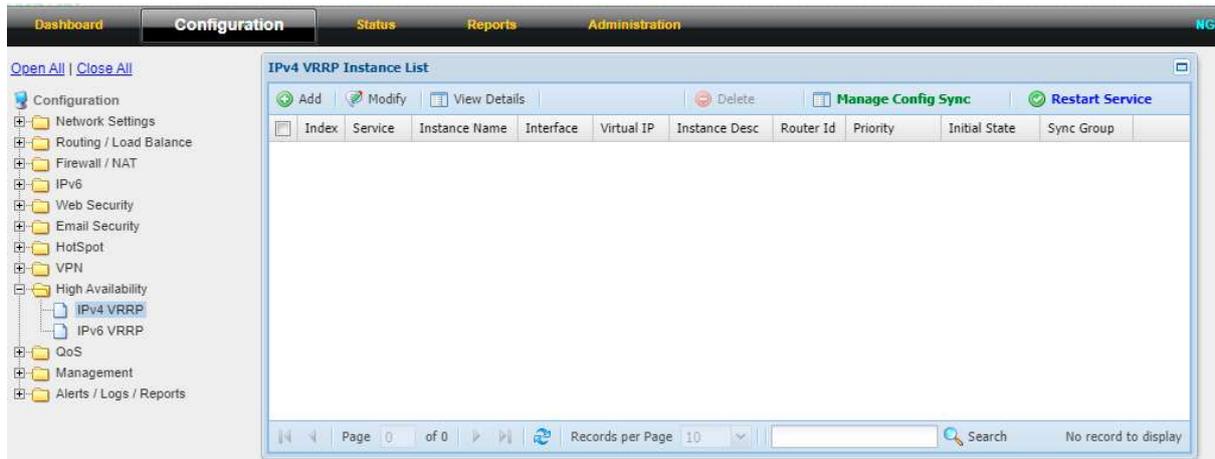
- ✓ Avoid naming the nodes **Master** or **Backup** since those are states and not roles, instead they could be named **Primary** and **Secondary** .
- ✓ Each node requires some basic configuration outside of the actual HA setup. Do not connect both nodes into the same LAN before both nodes have a non-conflicting LAN setup.
- ✓ Configure each firewall with a unique non-conflicting static IP addresses for Both WAN and LAN interface .

## Configuration

### Step- 1

#### Configuring the Primary / Master Firewall for Redundancy

- I. Log in to the device to be configured as the Primary Fw device .
- II. Configure HA Parameters from **Configuration > High Availability > Click to IPv4 VRRP**
- III. New Template will Open , Click to  **Add** – ( On Left top Corner), will open one more template.



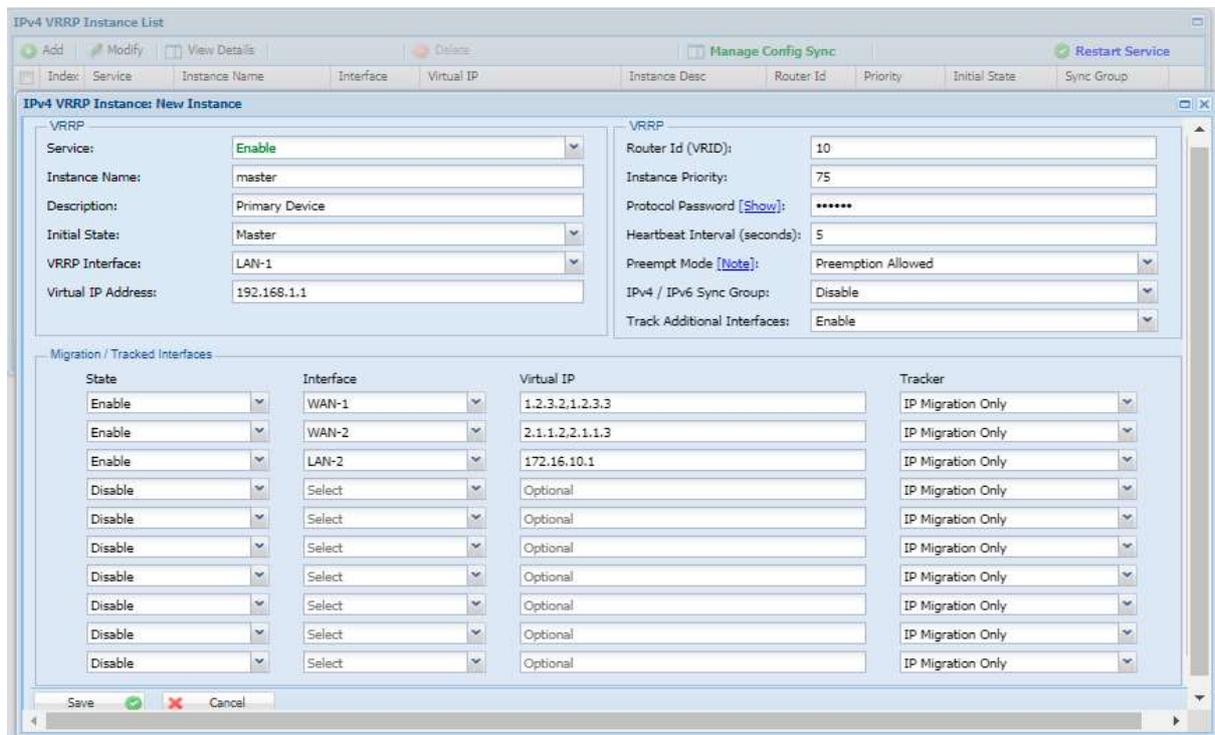
Now follow the following step .

## Step -2

Provide the configurable values in Primary /Master node as shown in the below snapshot.

### Note

Many of these settings may be left at their default values.



## Options Descriptions:

## VRRP Instance: New Instance

I. **Service** - Select the box to  **Enable** or  **Disable** the VRRP instance. This option is enabled by default.

II. **Instance Name**-This is a Mandatory field. A unique name for the VRRP instance is being configured. This field can take alpha-numeric characters but only small letters.

III. **Initial State**-Select the VRRP instance start up state/ mode of operation. When configured as the  **Master** , the VRRP instance performs the routing functions for the Virtual Fw. There can be only one VRRP instance functioning as the master at a given point in time.

VRRP instances configured to function as the Secondary / Backup instances can take-over as masters in the event of a failure of the current master VRRP instance based on the Virtual Instance Priority.

Default: Backup

Values: Backup, Master

### IV. **VRRP Interface-**

Select the interface being configured for the VRRP instance configuration.

Here we use  **LAN1** .

Values: LAN1, LAN2, LAN3, .....LAN9, WAN1, WAN2,WAN3....WAN5

### V. **Virtual IP (VRIP)-**

The IP address associated with the interface that other hosts can use to obtain network service from. The VRIP is managed by the VRRP instances belonging to a VRID.

Virtual IP address must be in the IP/Subnet format. We have given  **192.168.1.1** .This IP acts as a gateway for the LAN Interface for which VRRP is configured

### VI. **Router ID (VRID) -**

Unique identifiers on a network segment for the virtual routers running VRRP for the instance. Note that the Virtual Router ID (VRID) of VRRP instances on the same segment must match for these instances to inter-operate as Masters and Backup.

Default: 10

Range: 1-254

### VII. **Instance Priority -**

The priority assigned to the VRRP instance. This is used to choose the Master VRRP instance among the Backup instances in the event of failure of the current Master. Greater the number higher is the priority of the instance.

Default: 75, Range: 1-254

#### VIII. **Protocol Password** -

Password for VRRP authentication

Default- Optional

#### IX. **Heartbeat Interval** (Seconds)-

This determines the switch-over time in case of a failure of the current designated Master instance.

In case of Primary / Master failure all the access will be through Backup / Slave Device.

Default: 5

Range: 1-254

If heartbeat interval is configured as 5, then at 11<sup>th</sup> sec, slave machine will come up and allows all the traffic.

If heartbeat interval is configured as 1, then at 3<sup>rd</sup> sec, slave machine will come up and allows all the traffic.

#### X. **Preempt Mode**

This determines whether to switch back to the Primary /master state ( which having Higher Instance Priority ) from Secondary / Backup state ( which having Lower Instance Priority ) , when Primary /Master device is up or when configured tracked link is active.

Default : Preemption Allowed

Values : Preemption Allowed and No Preemption

**If enabled** – the VRRP will keep continue to be in the Master state until the current server fails even if the Primary node has highest Instance priority than the current one.

**If disabled** - the VRRP will switch back to the master server where Instance priority is set to highest. Or in other word Selecting this option means that a firewall can take over the role of master if it detects a lower Instance priority currently acting as master.

#### XI. **Track Additional Interfaces**

This is used to add other interfaces to be either assigned a virtual IP and/or tracked.

Values: Enable and Disable

Note- Upon the Requirement, Enable the "Track additional Interfaces" in order to have link redundancy.

### Step- 3

## Under Migration /Traked Interfaces

### I. Tracker

Select "IP Migration Only " if VRRP to switch to slave node in case of any one of the chosen interface is down

Or

Select "Member of Tracker" if VRRP to switch to slave node in case of all the interfaces chosen under the tracker group is down

### II. Virtual IP

#### Note

A VIP must be added for each interface handling user traffic, in this case WAN and LAN.

#### Step-4

### Configuring the Secondary/ Backup Firewall for Redundancy

Simalary configure the Secondry / Backup NetXGATE .All the configuration will be the same other than Instance Priority ( it should be lower than Primary device i.e.-70 ) and LAN and WAN addressing .

Note- Configure WAN and LAN addressing as mentioned under configuration mode, (Picture for Ref.)

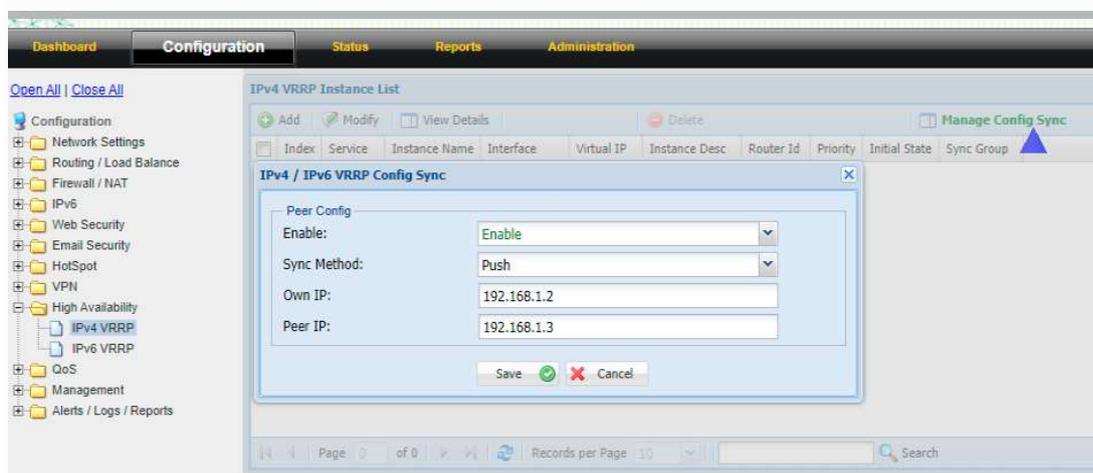
#### Step-5

#### Configure Sync

State synchronization using Manage Config sync must be configured on both the Primary and Secondary Devices to function.

First on the primary node and then on the secondary, perform the following:

- Navigate to **Configuration > High Availability > IPv4 VRRP**
- Click to '**Manage Config Sync**' ( right top corner) , New window ' IPv4/IPv6 VRRP Config ' will Open .
- Select the box to **Enable** or **Disable**
- Select **Push** Option when configuring the Master device and Similarly **Pull** option when configuring the backup device
- Set this to **192.168.1.2** under Own IP and **192.168.1.3** Peer IP when configuring the Primary node, Similarly when configuring the secondary Device Set to **192.168.1.3** under Own IP and **192.168.1.2** Peer IP
- Click **Save**



## Verify HA

Dashboard GUI- master and Slave

Once you have configured the service correctly and applied the change, you should see a confirmation dialog on the master unit (see above).

If you click on *dashboard* you should see the GUI of the backup appliance, which has only a limited set of functions.

## Testing the configuration

- To verify that Primary and Backup NetXGATE appliances are functioning correctly, wait a few minutes, then power off the Primary NetXGATE device. The Backup NetXGATE security appliance should quickly take over.

- From your management workstation, test connectivity through the Backup NetXGATE by accessing a site on the public Internet note that the Backup NetXGATE, when Active, assumes the complete identity of the Primary, including its IP addresses and Ethernet MAC addresses.
- Log into the Backup NetXGATE LAN-1 IP address (Management IP). The management interface should now display Logged Into: **Backup NetxGATE Status: (yellow ball) Active** in the upper left corner.
- Now, power the Primary NetXGATE back on, wait a few minutes, then log back into the management interface. The management interface should again display Logged Into: **Primary NetXGATE Status: (yellow ball) Active** in the upper left corner.
- If you are using the Monitor Interfaces feature, experiment with disconnecting each monitored link to ensure that everything is working correctly.

 **NOTE:** Successful High Availability synchronization is not logged, only failures are logged.

### Note

Now that you have successfully setup your NetXGATE HA, any change you make on the primary unit will automatically get synced to the Backup unit with the exception of Network , administration and backups (these have to be performed manually on the backup unit). the backup unit accessible on it's LAN IP address to check the status of the device or perform the basic manual functions as required.