

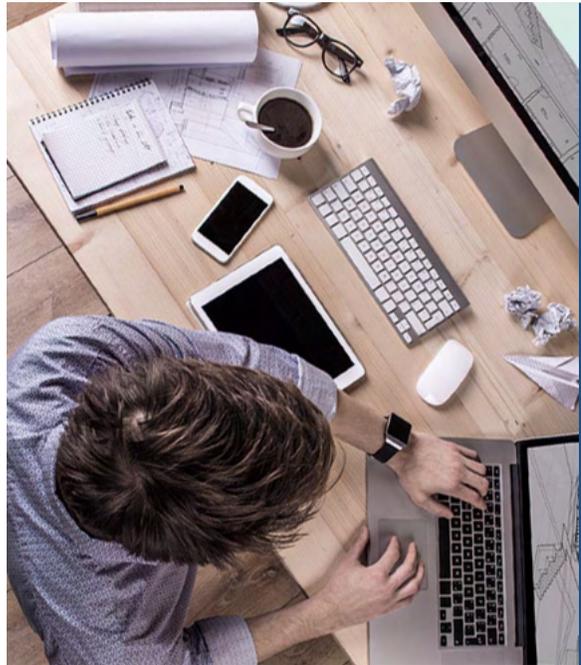


SANGFOR

Sangfor NGAF v8.0.47 Professional

High Availability





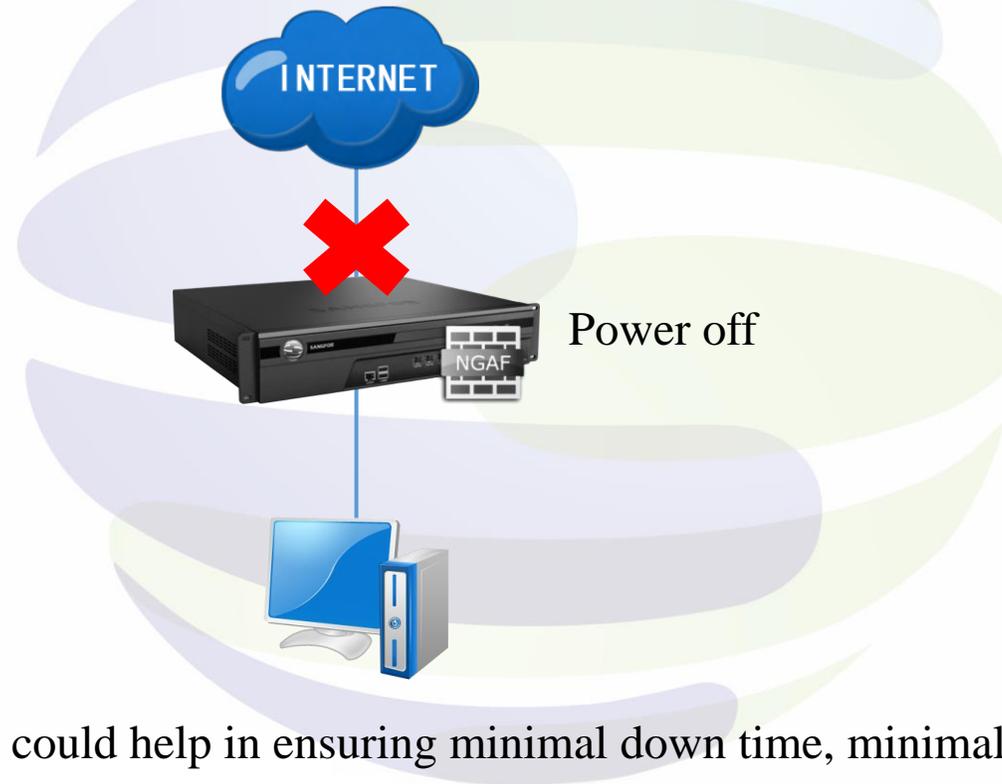
- 1 High Availability
- 2 Active Standby High Availability
- 2 Active Active High Availability
- 2 Other Case Study

1. High Availability



Background

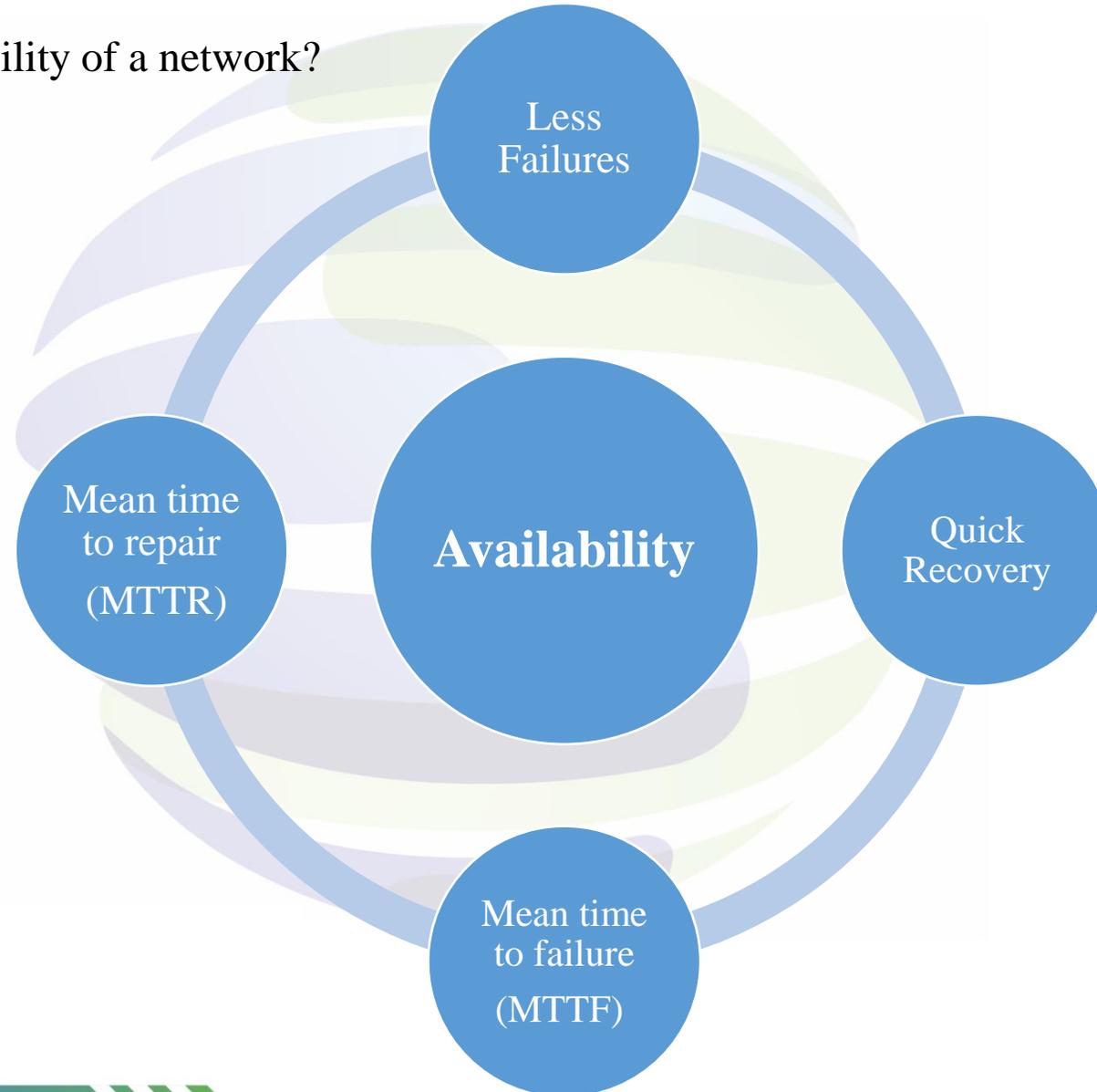
The Internet is more and more widely used in daily life. At the same time, the stability and security of the network is becoming more and more important. The failure of a gateway device in a network may lead to an un-estimated loss.



High Availability (HA) setup could help in ensuring minimal down time, minimal interruption, minimal risk, minimal lost.

Background

How to measure the availability of a network?



Analysis of the advantages of high availability



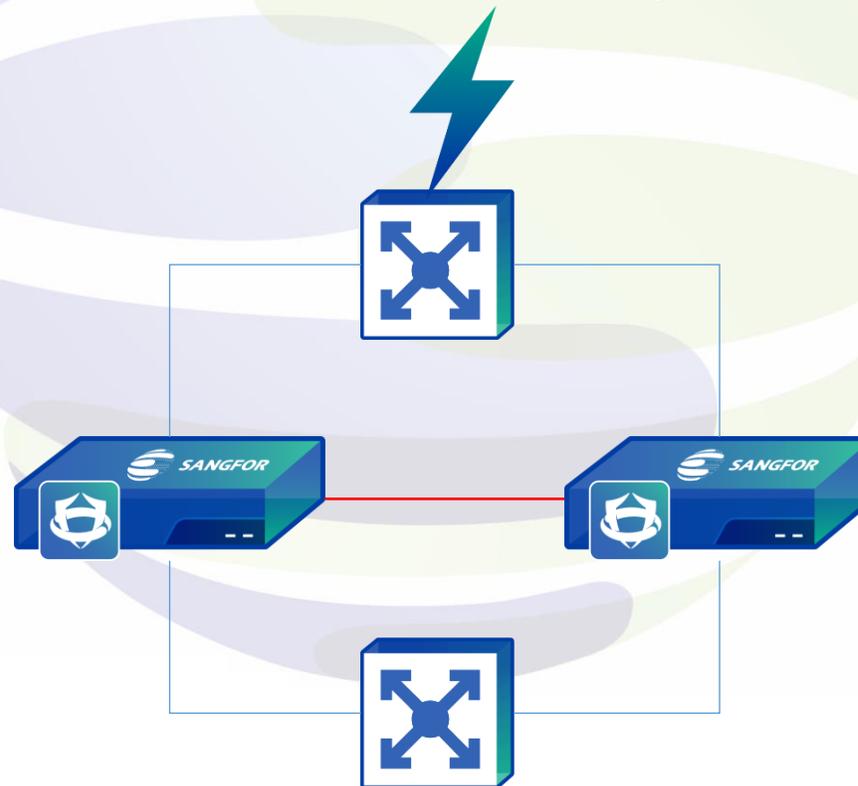
Deployment Mode	Advantages	Disadvantages
Active-Standby Deployment	Simple structure principle, simple deployment and maintenance.	The standby device does not work causing waste of resources. Poor scalability.
Active-Active Deployment	Two devices work and resources are fully utilized.	The structure is relatively complex and needs to handle the synchronization of state data between devices to ensure that the data path back and forth goes through the same device.

2. Active Standby High Availability



Function Overview

Two NGAFs in an active standby state is also known as a active standby deployment. One device is in working state and the other is in hot standby state. The two devices detect the availability of the peer through the heartbeat port and synchronize the configuration and sessions. When the switchover condition is triggered by the problem of the primary device, the device will automatically switch the service to the backup device. Through mechanisms such as session synchronization, the service is guaranteed to continue, thus achieving stable operation of the service.



Basic Principle

The active standby deployment is to select and switch between primary and standby relationships through VRRP protocol. The one with the higher priority is active, and the one with the larger IP address of the heartbeat port in the case of the same priority is active. However, NGAF is not exactly using the standard VRRP protocol, it has done some development on the standard VRRP protocol.

VRRP (Virtual Router Redundancy Protocol) adds a group of routers that can assume the gateway function to the backup group to form a virtual router, so that the gateway of the host is set as a virtual gateway, and it is able to achieve redundancy.

Standard VRRP Protocol	NGAF Active Standby Deployment
Two routers with different IP addresses, need virtual IP	No need for a virtual IP, because the interface IP is the same
Find the peer according to the virtual group ID, and choose the primary backup between devices in the same virtual group	Same as standard VRRP
Conditions that may affect the active and standby: <ol style="list-style-type: none"> 1. Priority, high priority is active 2. Interface IP, IP address large is active 	NGAF is the same, but because the interface IP is consistent, it ultimately depends on the size of the heartbeat port IP
Support set the preemption mode. If the device with high priority can become the active if it is configured in preemption mode after failure recovery	Same as standard VRRP
Heartbeat negotiation via multicast 224.0.0.18	Same as standard VRRP
The heartbeat port is not normally configured	You need to configure the heartbeat port, which is a layer 3 port

Status Switching

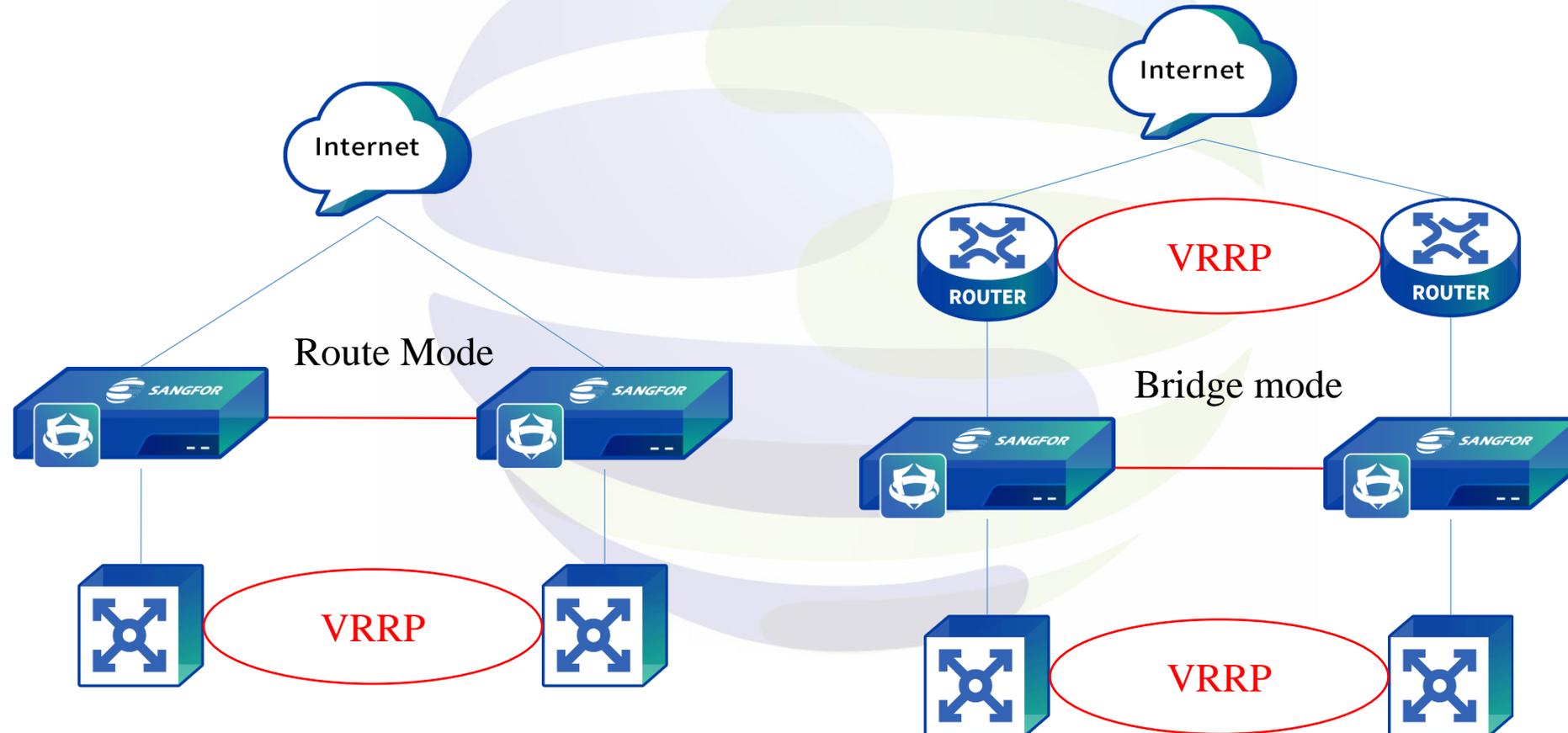


There are various conditions that trigger a active/standby switchover, modified priority, monitor port failure, link state detection failure, device failure, keepalived abnormal and more.

Switching Reason	Switching Time
Preemption mode, modify host priority	Switching within 1 heartbeat time
Member port down, host sends multicast packet with priority=0	Delay-free switching
Get notification message after link state detection failure	Delay-free switching
The keepalived process abnormal	Delayed 3x heartbeat time switching
Device down	Delayed 3x heartbeat time switching
Device power failure	Delayed 3x heartbeat time switching

Application Scenarios

Mainly used in network environments with high network reliability and strong business continuity. Quickly switch to the standby device in case of failure to ensure business continuity. Commonly used are active and standby deployments in route mode and bridge mode (bridge mode includes transparent mode and virtual wire mode).

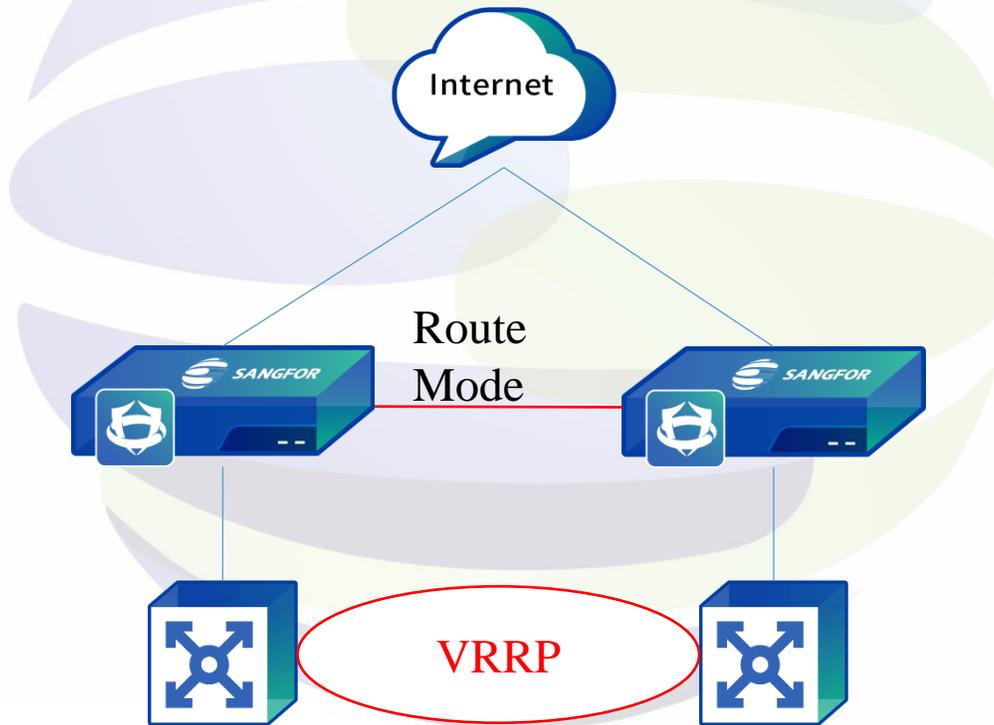


Active Standby Configuration Ideas

Active NGAF Configuration Ideas	Standby NGAF Configuration Ideas
Configure basic network configuration, use -HA for heartbeat port, configure interface link detection	Only configure the heartbeat port to use -HA
Configure routing, security policies, etc.	Synchronize active NGAF configuration after power on
Configure High Availability (Basic Settings, HA Policy, Synch Options) <ul style="list-style-type: none"> • Basic Settings: Select the local address, fill in the address of the other side • HA Policy: VRRP group 100, priority 100, non-preemption, member interface, and route mode can configure tracked interface • Sync Options (enable and check the session information, configuration synchronization, etc.), the default selection of the role are active controller 	Configure High Availability (Basic Settings, HA Policy, Synch Options) <ul style="list-style-type: none"> • Basic Settings: Select the local address, fill in the address of the other side • HA Policy: VRRP group 100, priority 50, non-preemption, member interface, and route mode can configure tracked interface • Sync Options (enable and check the session information, configuration synchronization, etc.), the role select standby controller
Power off, connect cable and power on	Power off, connect cable and powered on after the active device is turned on
Check the status of HA	Check the status of HA and whether configuration are synchronized

Active Standby Case Study

The customer's intranet is a VRRP environment. In order to avoid single point of failure, two NGAFs were purchased as gateways for active and standby deployment on the public network egress to replace the original fire protection. If any device or link failure, fast switching is achieved to guarantee service stability.

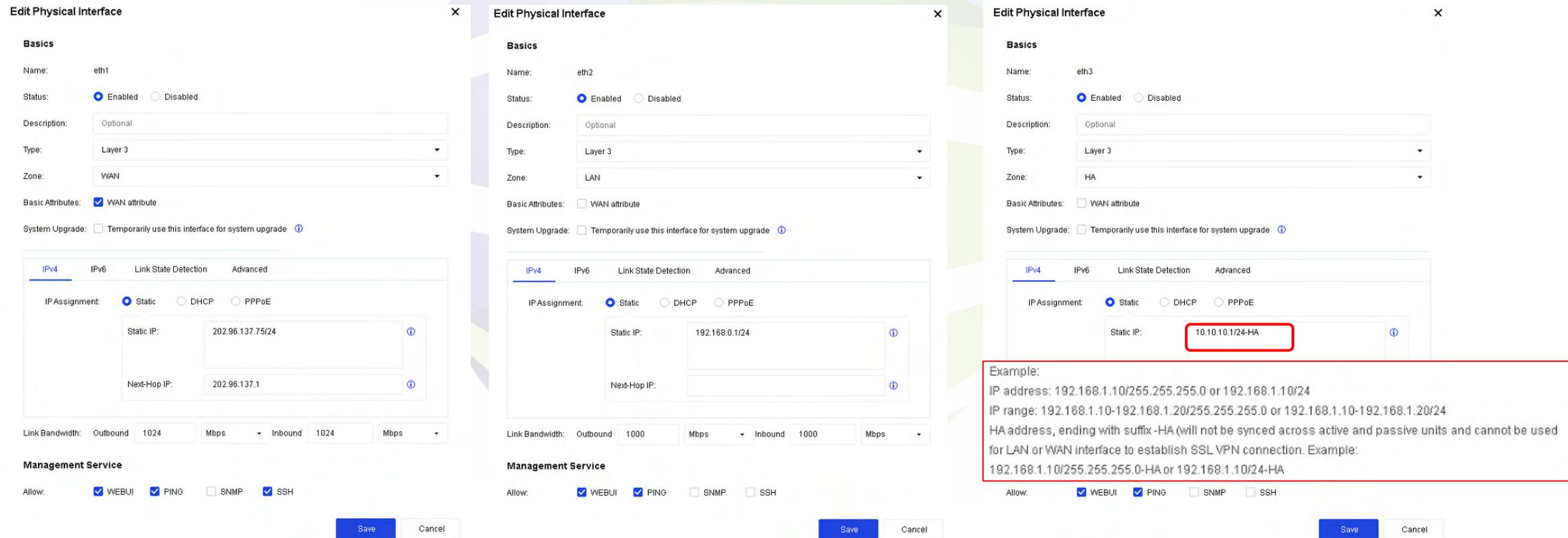


Active Standby Case Study

Configuration steps

Configure Active NGAF-A

1. Configure basic network configuration, below are sample configuration of Interface.



Edit Physical Interface

Basics

Name: eth1

Status: Enabled Disabled

Description: Optional

Type: Layer 3

Zone: WAN

Basic Attributes: WAN attribute

System Upgrade: Temporarily use this interface for system upgrade ⓘ

IP Assignment: Static DHCP PPPoE

Static IP: 202.96.137.75/24 ⓘ

Next-Hop IP: 202.96.137.1 ⓘ

Link Bandwidth: Outbound 1024 Mbps Inbound 1024 Mbps

Management Service

Allow: WEBUI PING SNMP SSH

Edit Physical Interface

Basics

Name: eth2

Status: Enabled Disabled

Description: Optional

Type: Layer 3

Zone: LAN

Basic Attributes: WAN attribute

System Upgrade: Temporarily use this interface for system upgrade ⓘ

IP Assignment: Static DHCP PPPoE

Static IP: 192.168.0.1/24 ⓘ

Next-Hop IP: ⓘ

Link Bandwidth: Outbound 1000 Mbps Inbound 1000 Mbps

Management Service

Allow: WEBUI PING SNMP SSH

Edit Physical Interface

Basics

Name: eth3

Status: Enabled Disabled

Description: Optional

Type: Layer 3

Zone: HA

Basic Attributes: WAN attribute

System Upgrade: Temporarily use this interface for system upgrade ⓘ

IP Assignment: Static DHCP PPPoE

Static IP: 10.10.10.1/24-HA ⓘ

Link Bandwidth: Outbound 1000 Mbps Inbound 1000 Mbps

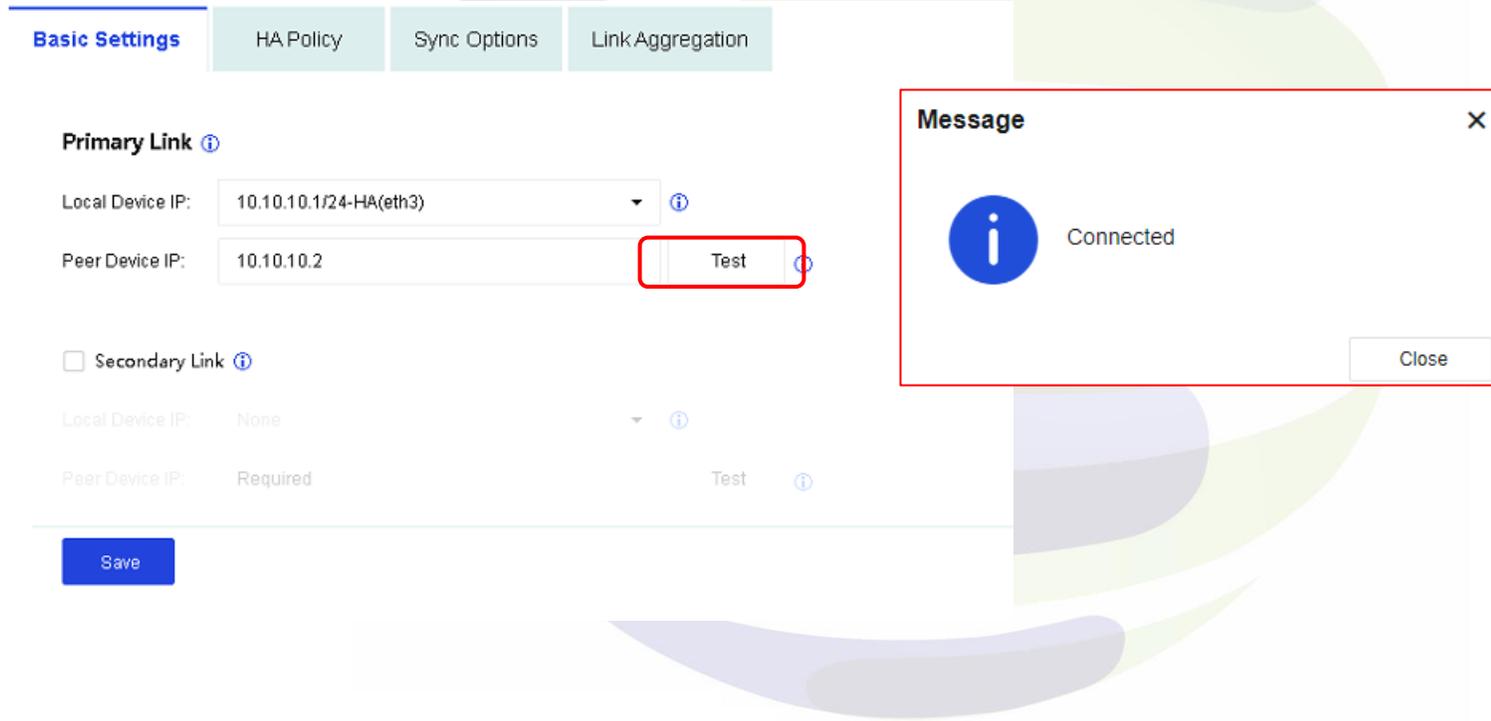
Management Service

Allow: WEBUI PING SNMP SSH

Example:
IP address: 192.168.1.10/255.255.255.0 or 192.168.1.10/24
IP range: 192.168.1.10-192.168.1.20/255.255.255.0 or 192.168.1.10-192.168.1.20/24
HA address, ending with suffix -HA (will not be synced across active and passive units and cannot be used for LAN or WAN interface to establish SSL VPN connection. Example:
192.168.1.10/255.255.255.0-HA or 192.168.1.10/24-HA

Active Standby Case Study

2. Routing(Static route and default route) (configuration **omitted**)
3. NAT(configuration **omitted**)
4. Application control and other security policies (configuration **omitted**)
5. Go to **System > High Availability**, configure high availability basic setting.



The screenshot displays the 'High Availability' configuration page in the Sangfor management interface. The 'Basic Settings' tab is active, showing the 'Primary Link' configuration. The 'Local Device IP' is set to '10.10.10.1/24-HA(eth3)' and the 'Peer Device IP' is '10.10.10.2'. A 'Test' button is highlighted with a red box. Below the Primary Link section, the 'Secondary Link' is disabled. A 'Message' dialog box is overlaid on the right, displaying a blue information icon and the text 'Connected', with a 'Close' button at the bottom right.

Active Standby Case Study

6. Go to **System > High Availability > HA Policy** page, configure **HA Policy**. Enable the module, add a new VRRP group, configure priority, member interface, and link monitoring according to the actual situation.

Edit VRRP Group

Basic Settings

Enable | Ma

Add | Del

VRID ▼

100

VRID:

Priority:

Preemption: Yes

Heartbeat Interval:

Member Interfaces ⓘ

Add | Delete

<input type="checkbox"/>	No.	Interface Group	Operation	...
<input type="checkbox"/>	1	eth1	Edit Delete	
<input type="checkbox"/>	2	eth2	Edit Delete	

Link Monitoring ⓘ

Add | Delete

<input type="checkbox"/>	No.	Interface Group	Operation	...
 No data available				

The device will change to Fault if any of the interface groups gets down.

Note: The VRRP group will be considered down if all the member interfaces become down.

In redundant network, if interfaces of the redundant pair allow all data to pass through, broadcast storm may occur.

Interface	<input type="checkbox"/>	No.	Interface Group	Operation	...
2	<input type="checkbox"/>	1	eth1	Edit Delete	
	<input type="checkbox"/>	2	eth2	Edit Delete	

It means failover condition is eth1 or eth2 down.

<input type="checkbox"/>	No.	Interface Group	Operation	...
<input type="checkbox"/>	1	eth1,eth2	Edit Delete	

It means failover condition is eth1 and eth2 down at the same time.

Active Standby Case Study



7. Go to **System > High Availability > Sync Options** page, enable Sync Option. Enable the module, in object select according to the actual situation. Configuration synchronization role set as master.

Basic Settings | HA Policy | **Sync Options** | Link Aggregation

Enable ⓘ

Auto Sync ⓘ

Objects:

- Available (0)
- User authentication
- Session information
- Configuration synchronization
- OSPF-Route

Role of This NGAF Unit: **Active controller** [Settings](#) ⓘ

Manual Sync ⓘ

[View Logs](#)

Role of This NGAF Unit ✕

Role of This NGAF Unit: Passive Active

Only Active controller can synchronize the configuration to peer. NGAF8.0.17 and above support sync OSPF-Route.

Active Standby Case Study

Configure Standby NGA-F-B

1. Configure basic network configuration, below are sample configuration of Interface.

Edit Physical Interface ×

Basics

Name: eth3

Status: Enabled Disabled

Description:

Type:

Zone:

Basic Attributes: WAN attribute

System Upgrade: Temporarily use this interface for system upgrade ⓘ

IPv4 | IPv6 | Link State Detection | Advanced

IP Assignment: Static DHCP PPPoE

Static IP: ⓘ

Next-Hop IP: ⓘ

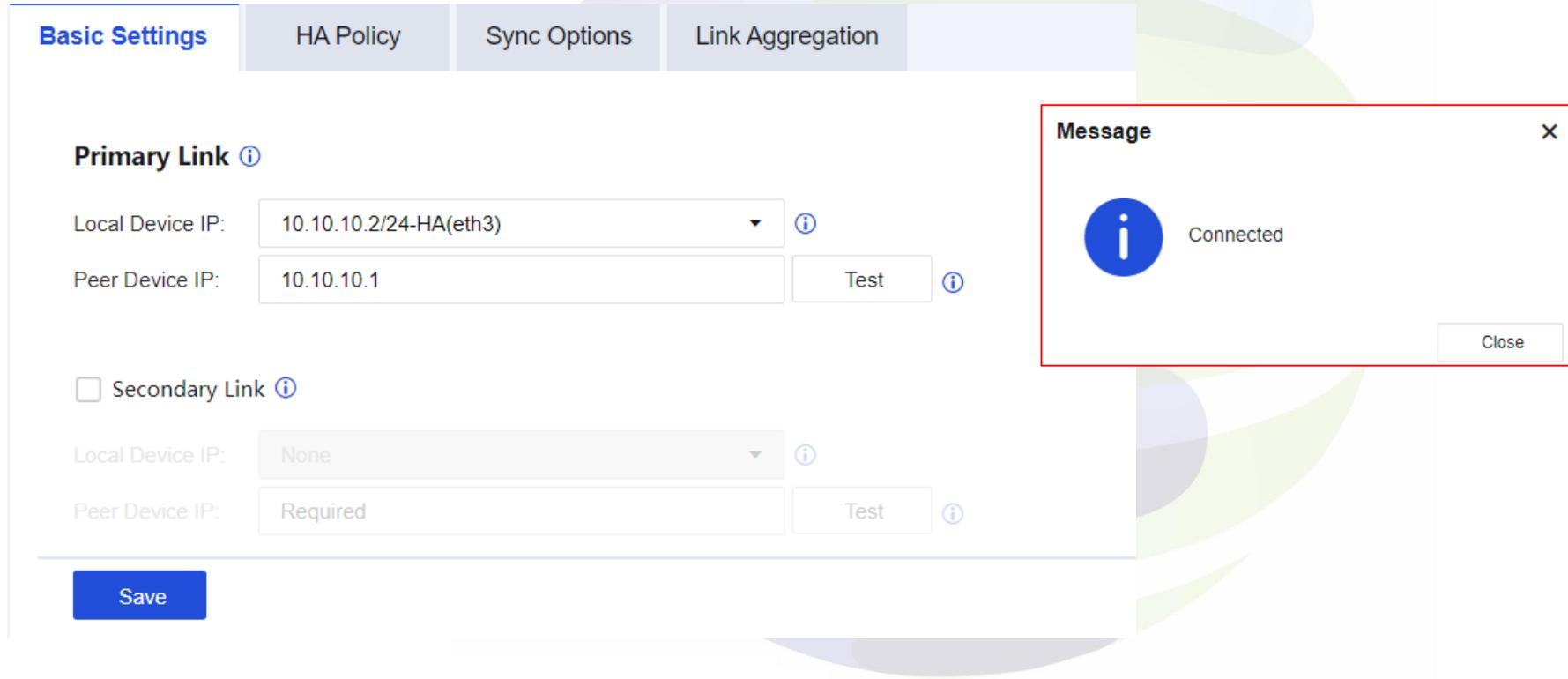
Link Bandwidth: Outbound Mbps Inbound Mbps

Management Service

Allow: WEBUI PING SNMP SSH

Active Standby Case Study

2. Go to **System > High Availability**, configure high availability basic setting.



The screenshot displays the configuration interface for High Availability, specifically the **Basic Settings** tab. The interface is divided into four sections: **Basic Settings**, **HA Policy**, **Sync Options**, and **Link Aggregation**. The **Primary Link** section is active and contains the following fields:

- Local Device IP:** 10.10.10.2/24-HA(eth3)
- Peer Device IP:** 10.10.10.1
- Test** button

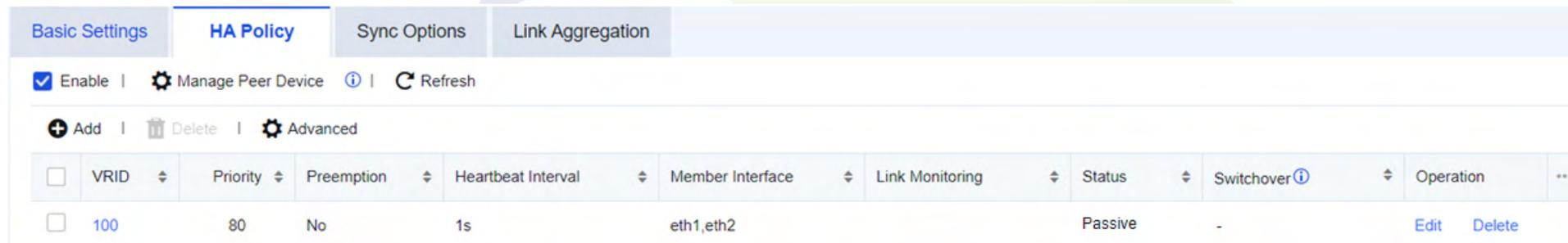
Below the Primary Link section, there is a checkbox for **Secondary Link**, which is currently unchecked. The Secondary Link section contains the following fields:

- Local Device IP:** None
- Peer Device IP:** Required
- Test** button

A **Save** button is located at the bottom left of the configuration area. A **Message** dialog box is overlaid on the right side of the screen, displaying a blue information icon and the text **Connected**. The dialog box has a **Close** button at the bottom right.

Active Standby Case Study

3. Go to **System > High Availability > HA Policy** page, configure **HA Policy**. Enable the module, add a new VRRP group, priority(smaller than the active device), member interface, and link monitoring according to the actual situation.



Basic Settings | **HA Policy** | Sync Options | Link Aggregation

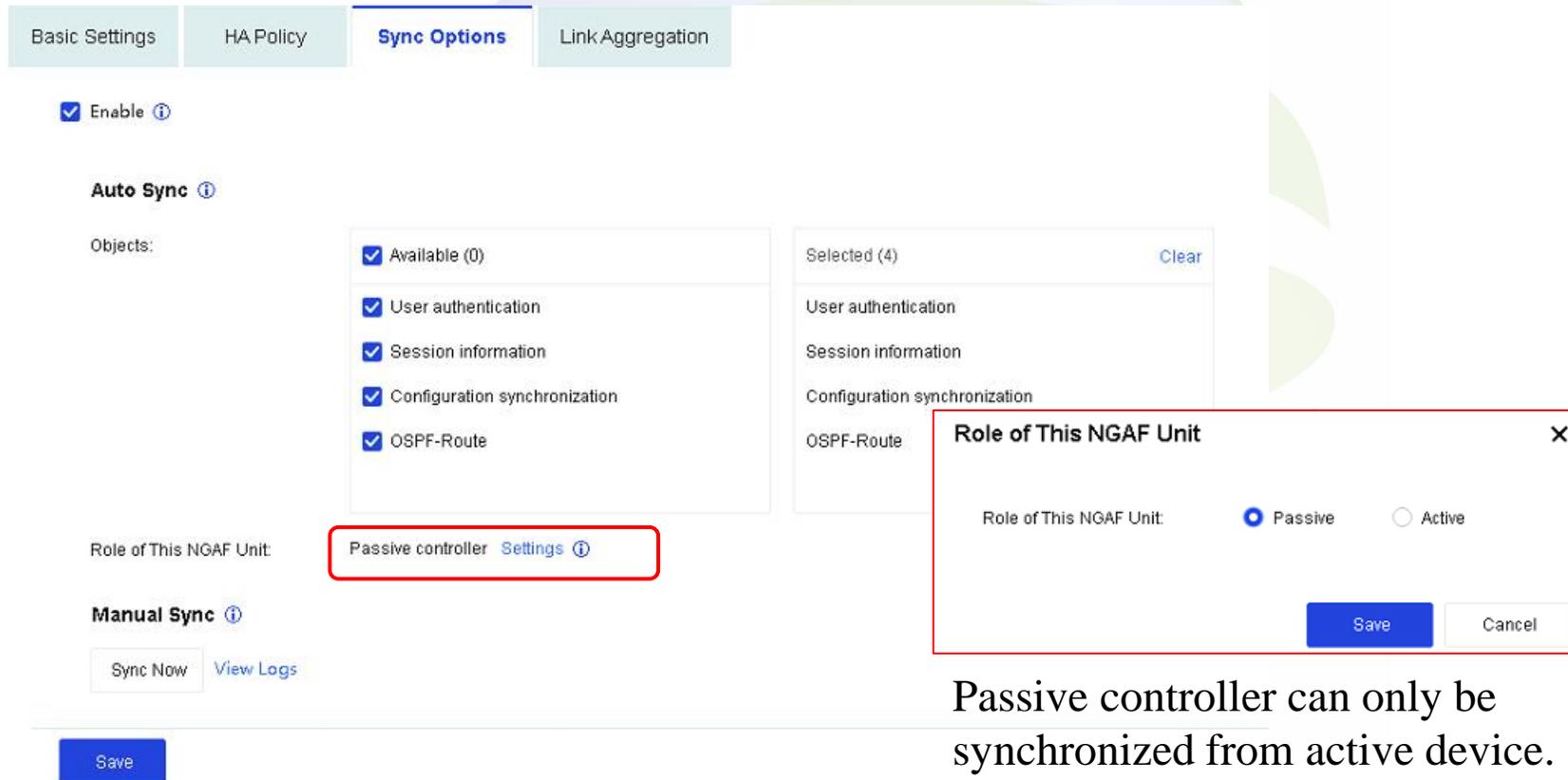
Enable | Manage Peer Device | | Refresh

Add | Delete | Advanced

<input type="checkbox"/>	VRID	Priority	Preemption	Heartbeat Interval	Member Interface	Link Monitoring	Status	Switchover	Operation	...
<input type="checkbox"/>	100	80	No	1s	eth1,eth2		Passive	-	Edit	Delete

Active Standby Case Study

4. Go to **System > High Availability > Sync Options** page, enable Sync Option. Enable the module, in object configure same as active device. Configuration synchronization role as passive.



The screenshot shows the configuration interface for the Sync Options page. The 'Sync Options' tab is selected. The 'Enable' checkbox is checked. Under the 'Auto Sync' section, the following objects are selected: Available (0), User authentication, Session information, Configuration synchronization, and OSPF-Route. The 'Role of This NGAF Unit' is set to 'Passive controller'. A modal dialog titled 'Role of This NGAF Unit' is open, showing 'Passive' selected over 'Active'.

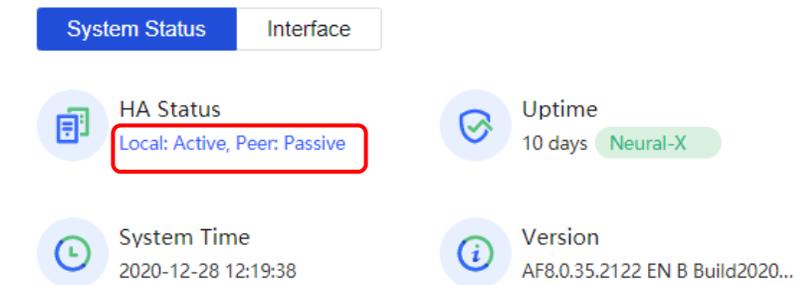
Passive controller can only be synchronized from active device.

Active Standby Case Study

Check the High Availability status

NGAF-A

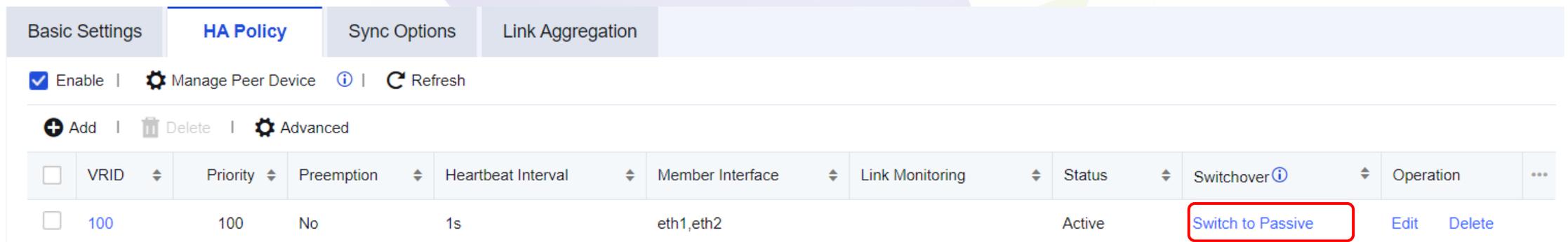
- Dashboard



The dashboard shows the following information:

- System Status** (selected tab) | Interface
- HA Status**: Local: Active, Peer: Passive (highlighted with a red box)
- Uptime**: 10 days Neural-X
- System Time**: 2020-12-28 12:19:38
- Version**: AF8.0.35.2122 EN B Build2020...

- High availability



The High Availability Policy configuration page shows the following settings:

- Basic Settings** | **HA Policy** | Sync Options | Link Aggregation
- Enable | Manage Peer Device | | Refresh
- Add | Delete | Advanced
- | <input type="checkbox"/> | VRID | Priority | Preemption | Heartbeat Interval | Member Interface | Link Monitoring | Status | Switchover | Operation | ... |
|--------------------------|------|----------|------------|--------------------|------------------|-----------------|--------|--|-------------|-----|
| <input type="checkbox"/> | 100 | 100 | No | 1s | eth1,eth2 | | Active | Switch to Passive (highlighted with a red box) | Edit Delete | |

Active Standby Case Study

NGAF-B

- Dashboard

System Status Interface

HA Status
Local: Passive, Peer: Active

Uptime
20 hours

System Time
2020-12-28 12:20:22

Version
AF8.0.35.2122 EN B Build20201215

- High availability

Basic Settings HA Policy Sync Options Link Aggregation

Enable | Manage Peer Device | | Refresh

Add | Delete | Advanced

<input type="checkbox"/>	VRID	Priority	Preemption	Heartbeat Interval	Member Interface	Link Monitoring	Status	Switchover	Operation
<input type="checkbox"/>	100	80	No	1s	eth1,eth2		Passive	-	Edit Delete

1. This local unit must be active and Preemption is not selected.
2. The peer unit must be passive.
3. The peer unit must be active. Otherwise, switchover will fail.

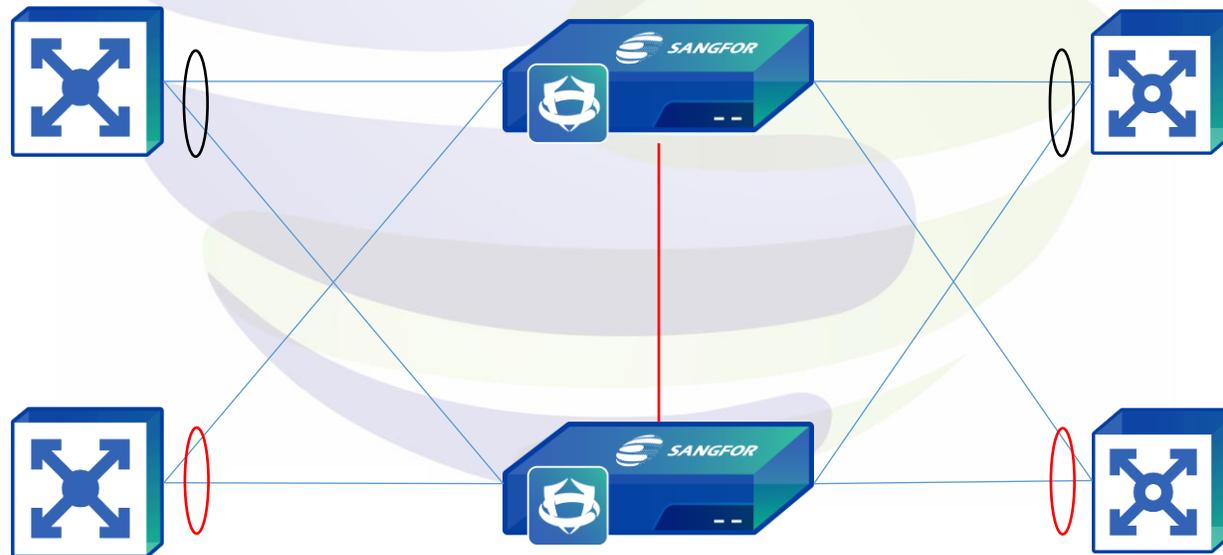
3. Active Active High Availability



Function Overview

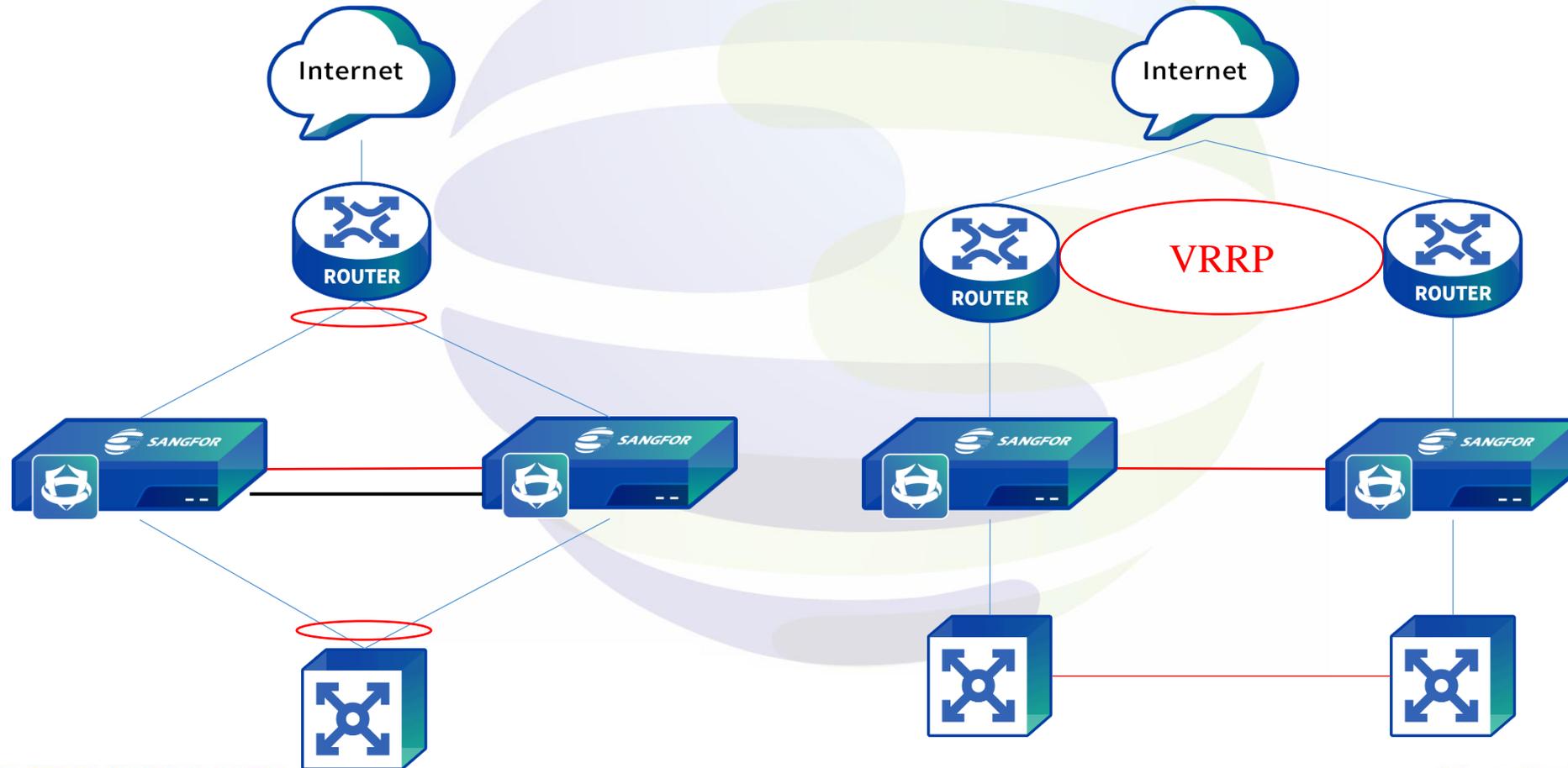
Both NGAFs are in working state. Data processing based on traffic forwarding to different NGAFs, synchronized configuration and sessions via heartbeat port. Active-Active deployment includes route active-active and transparent active-active. However, the current NGAF version does not support route active-active by default and transparent master can be used (VRRP-free active-active is recommended).

Note: Transparent active-active in a link aggregation environment, the HA link aggregation function needs to be configured to prevent asymmetric data forwarding problems.



Application Scenarios

Mainly used in network environments with high network reliability and strong service continuity. Two NGAFs are working at the same time and are often deployed transparently in VRRP networking environment and link aggregation environment.



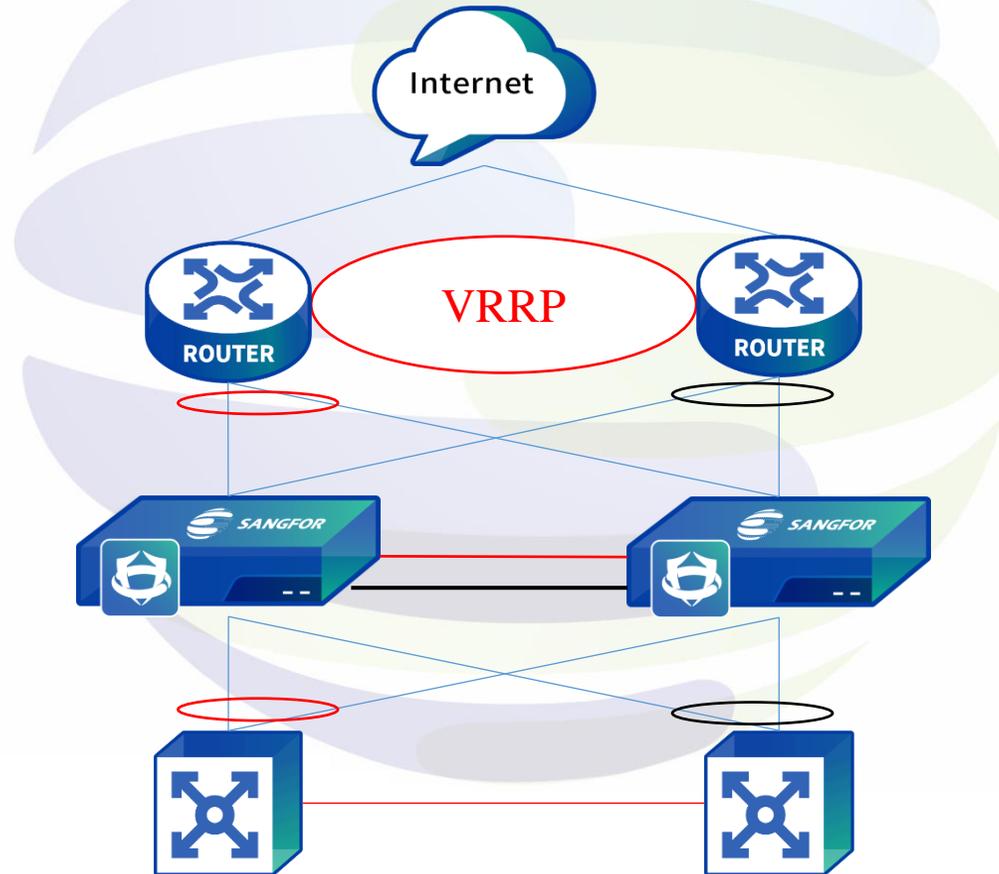
Active-Active Configuration Ideas



Active Controller NGAF Configuration Ideas	Standby Controller NGAF Configuration Ideas
Configure basic network configuration, use -HA for heartbeat port, link state propagation for production port (configured in a link aggregation environment)	Only configure the heartbeat port to use -HA
Configure routing, security policies, etc.	Synchronize active NGAF configuration after power on
Configure HA(basic settings, sync options) <ul style="list-style-type: none"> • Basic settings: Select the local address, fill in the address of the peer • Sync options (enable and check the session information, configuration synchronization), the default role is active • Link aggregation (link aggregation environment requires configuration when there is asymmetric route, else don't need to configure) 	Configure HA(basic settings, sync options) <ul style="list-style-type: none"> • Basic settings: Select the local address, fill in the address of the peer • Sync options (enable and check the session information, configuration synchronization), the default role is passive • Link aggregation (link aggregation environment requires configuration when there is asymmetric route, else don't need to configure)
Power off, connect cable and power on	Power off, connect cable and powered on after the active device is turned on
	Check the configuration are synchronized

Active-Active Case Study

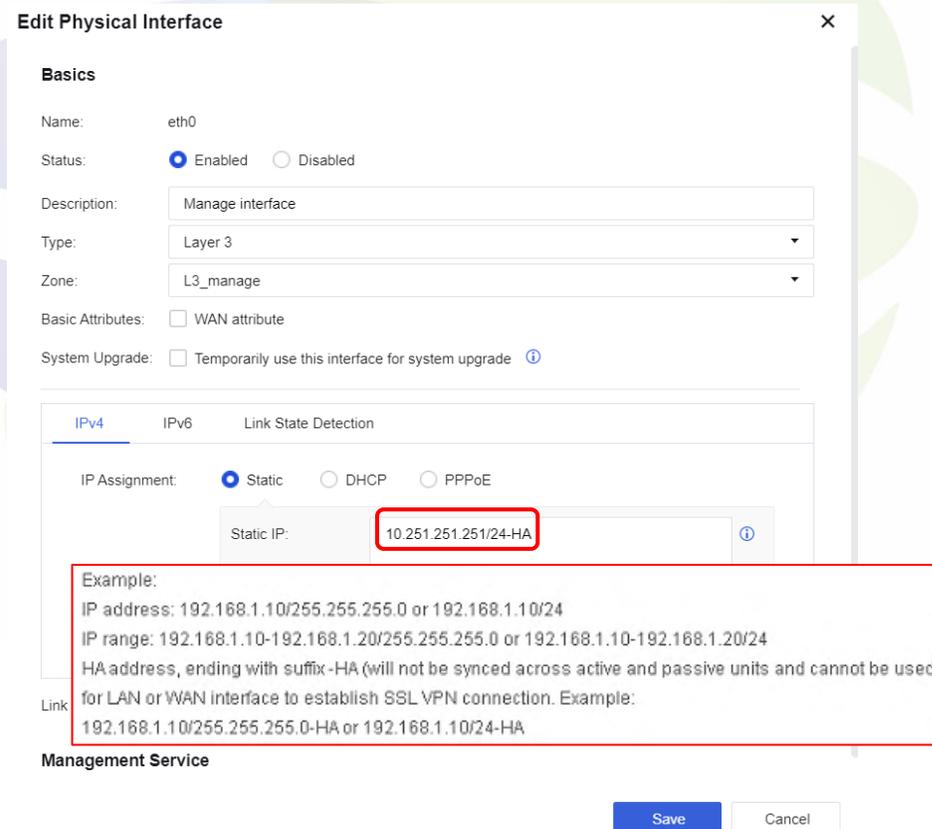
The customer has two routers for VRRP on the egress, two core switches for stacking, and HA link aggregation for the interconnected lines between the routers and core switches. Now two NGAFs are purchased to do security protection and are ready to be deployed into the network with transparent active-active.



Active-Active Case Study

Configure Active NGAF-A

1. Configure basic network configuration(two pairs of virtual network cables), routing, policy and more.
2. Configure the heartbeat port, go to **Network > Interface > Physical Interface**, select a free port to do the heartbeat port configuration IP address, add -HA after the address.



Edit Physical Interface

Basics

Name: eth0

Status: Enabled Disabled

Description: Manage interface

Type: Layer 3

Zone: L3_manage

Basic Attributes: WAN attribute

System Upgrade: Temporarily use this interface for system upgrade ⓘ

IPv4 IPv6 Link State Detection

IP Assignment: Static DHCP PPPoE

Static IP: 10.251.251.251/24-HA ⓘ

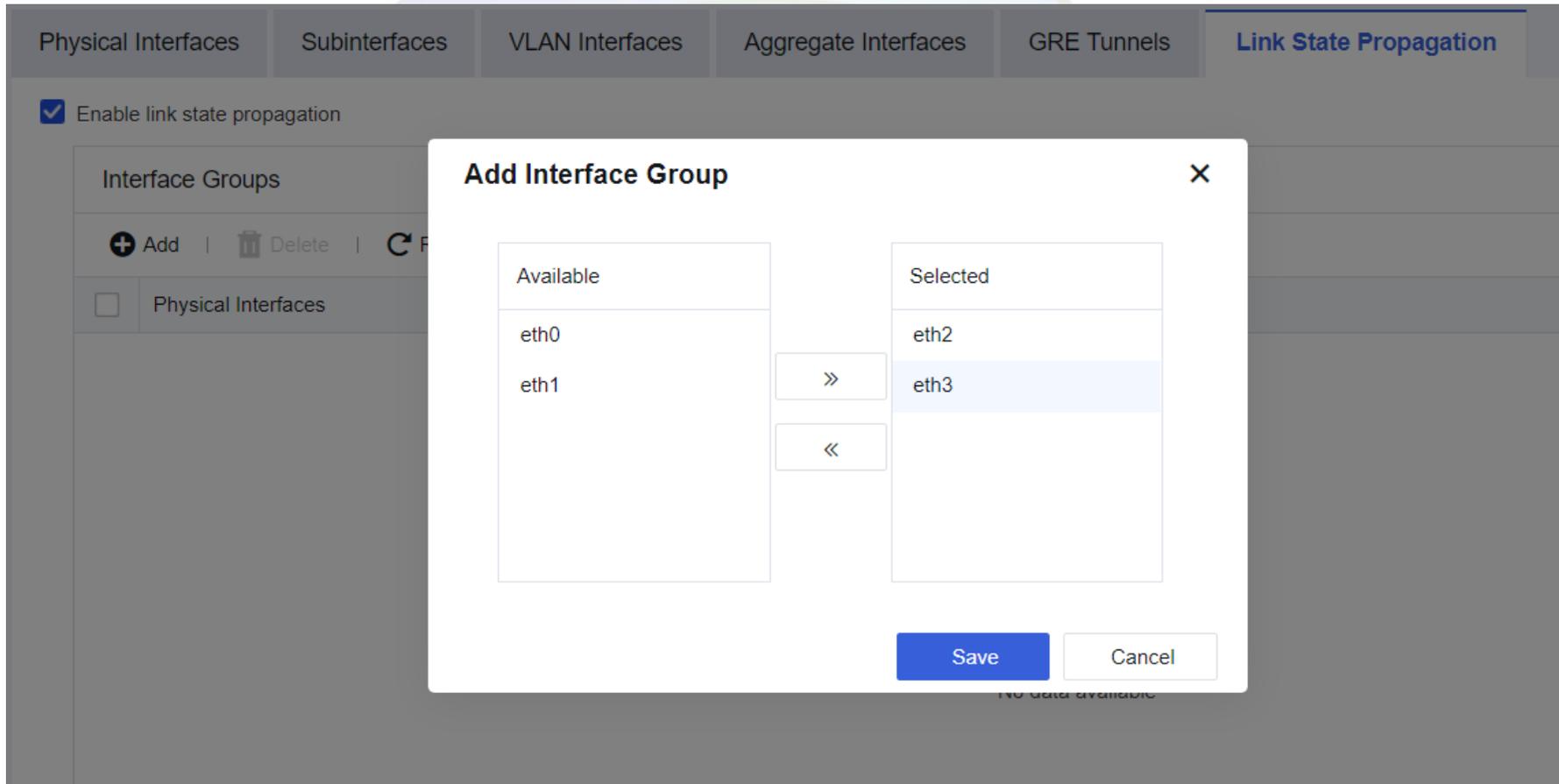
Example:
IP address: 192.168.1.10/255.255.255.0 or 192.168.1.10/24
IP range: 192.168.1.10-192.168.1.20/255.255.255.0 or 192.168.1.10-192.168.1.20/24
HA address, ending with suffix -HA (will not be synced across active and passive units and cannot be used for LAN or WAN interface to establish SSL VPN connection. Example:
192.168.1.10/255.255.255.0-HA or 192.168.1.10/24-HA

Management Service

Save Cancel

Active-Active Case Study

3. Configure link state propagation, go to **Network > Interface > Aggregate Interface**. Enable link state propagation, add two groups of production port, a pair of virtual wire as a group (e.g. eth2 and eth3 are a pair of virtual wire).



The screenshot displays the 'Link State Propagation' configuration page in the SANGFOR network management interface. The 'Enable link state propagation' checkbox is checked. An 'Add Interface Group' dialog box is open, showing a list of available interfaces (eth0, eth1) and a list of selected interfaces (eth2, eth3). The 'Save' button is highlighted.

Active-Active Case Study



4. Go to **System > High Availability > Basic Settings**, configure the basic settings. Select the IP address of the local heartbeat port and fill in the IP address of the planned backup heartbeat port.

Basic Settings | HA Policy | Sync Options | Link Aggregation | Physical Interfaces

Primary Link ⓘ

Local Device IP: 10.251.251.251/24-HA(eth0) ⓘ

Peer Device IP: 10.251.251.250 Test ⓘ

Secondary Link ⓘ

Local Device IP: None ⓘ

Peer Device IP: Required Test ⓘ

Save

Active-Active Case Study



5. Go to **System > High Availability > Sync Options**, enable sync options. Enable the module, select the object according to actual situation, and configuration role to active.

Basic Settings | HA Policy | **Sync Options** | Link Aggregation

Enable ⓘ

Auto Sync ⓘ

Objects:

- Available (0)
- User authentication
- Session information
- Configuration synchronization
- OSPF-Route

Role of This NGAF Unit: **Active controller** [Settings](#) ⓘ

Manual Sync ⓘ

[Sync Now](#) [View Logs](#)

Role of This NGAF Unit ✕

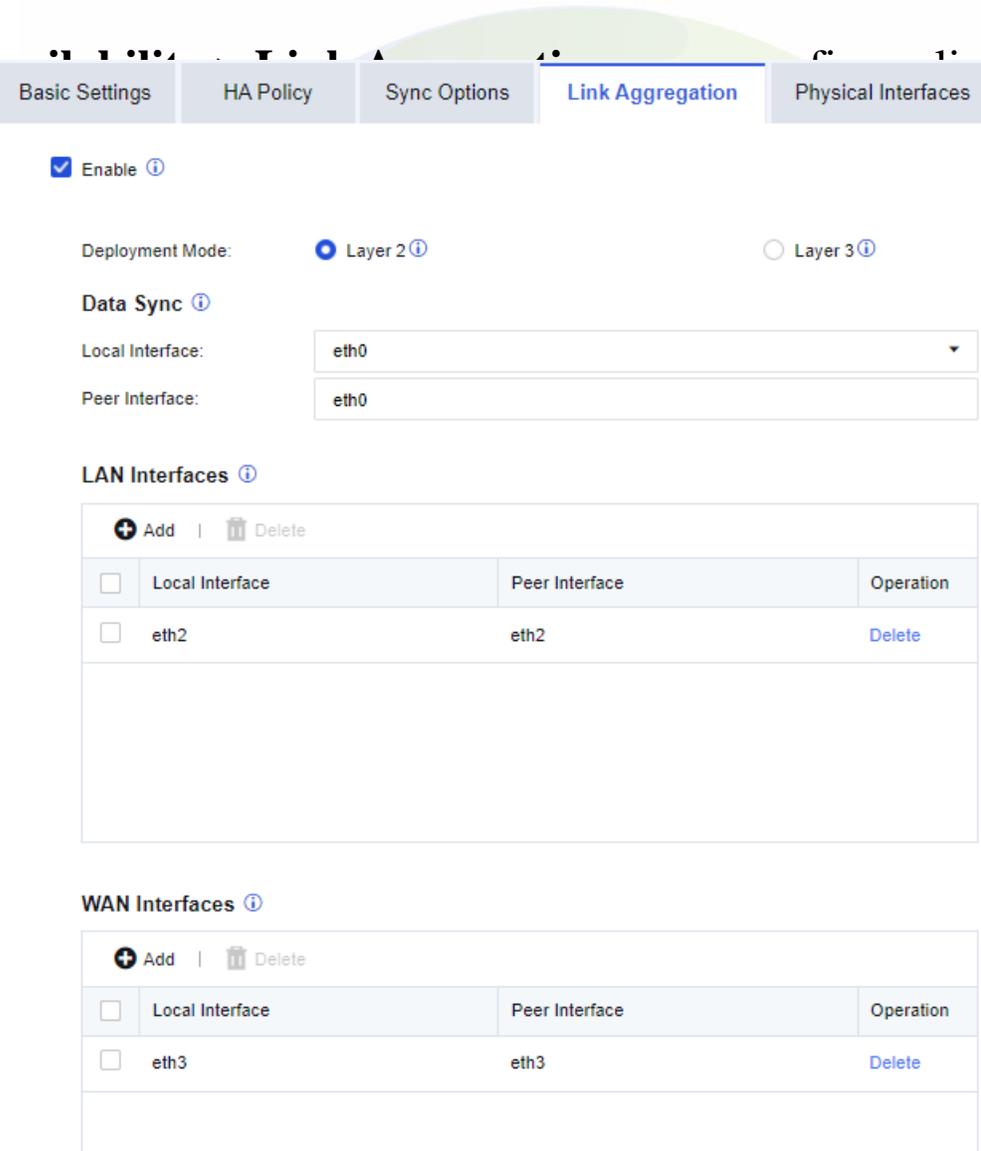
Role of This NGAF Unit: Passive Active

[Save](#) [Cancel](#)

Only Active controller can synchronize the configuration to peer. NGAF8.0.17 and above support sync OSPF-Route.

Active-Active Case Study

6. Go to **System > High Availability**, select the local and the opposite internal and external network



Basic Settings | HA Policy | Sync Options | **Link Aggregation** | Physical Interfaces

Enable ⓘ

Deployment Mode: Layer 2 ⓘ Layer 3 ⓘ

Data Sync ⓘ

Local Interface: eth0

Peer Interface: eth0

LAN Interfaces ⓘ

+ Add | Delete

<input type="checkbox"/>	Local Interface	Peer Interface	Operation
<input type="checkbox"/>	eth2	eth2	Delete

WAN Interfaces ⓘ

+ Add | Delete

<input type="checkbox"/>	Local Interface	Peer Interface	Operation
<input type="checkbox"/>	eth3	eth3	Delete

aggregation. Check Enable, set up the interfaces of the

Active-Active Case Study

Configure Standby NGAF-B

1. Configure the heartbeat port, go to **Network > Interface > Physical Interface**, select a free port to do the heartbeat port configuration IP address, add -HA after the address.

Edit Physical Interface

Basics

Name: eth0

Status: Enabled Disabled

Description: Manage interface

Type: Layer 3

Zone: L3_manage

Basic Attributes: WAN attribute

System Upgrade: Temporarily use this interface for system upgrade

IPv4 | IPv6 | Link State Detection

IP Assignment: Static DHCP PPPoE

Static IP: 10.251.251.250/24-HA

Next-Hop IP:

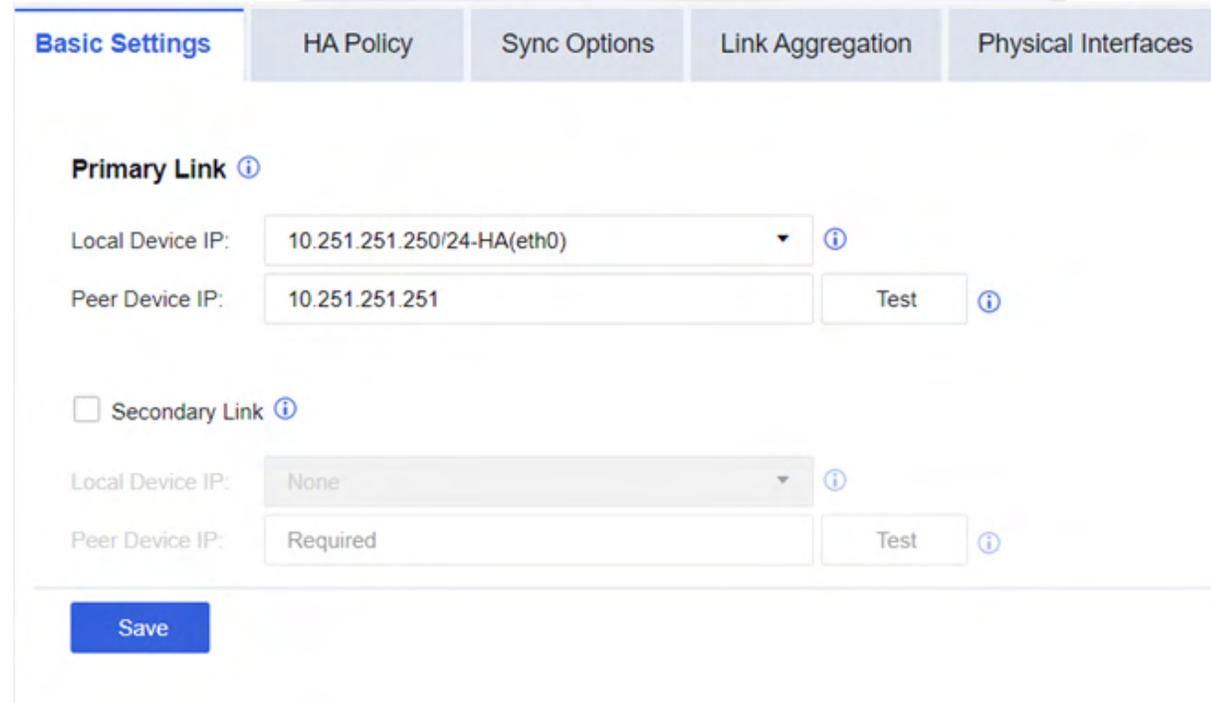
Link Bandwidth: Outbound 8 Mbps Inbound 8 Mbps

Management Service

Save Cancel

Active-Active Case Study

2. Go to **System > High Availability**, configure high availability basic setting.



Basic Settings | HA Policy | Sync Options | Link Aggregation | Physical Interfaces

Primary Link ⓘ

Local Device IP: 10.251.251.250/24-HA(eth0) ⓘ

Peer Device IP: 10.251.251.251 Test ⓘ

Secondary Link ⓘ

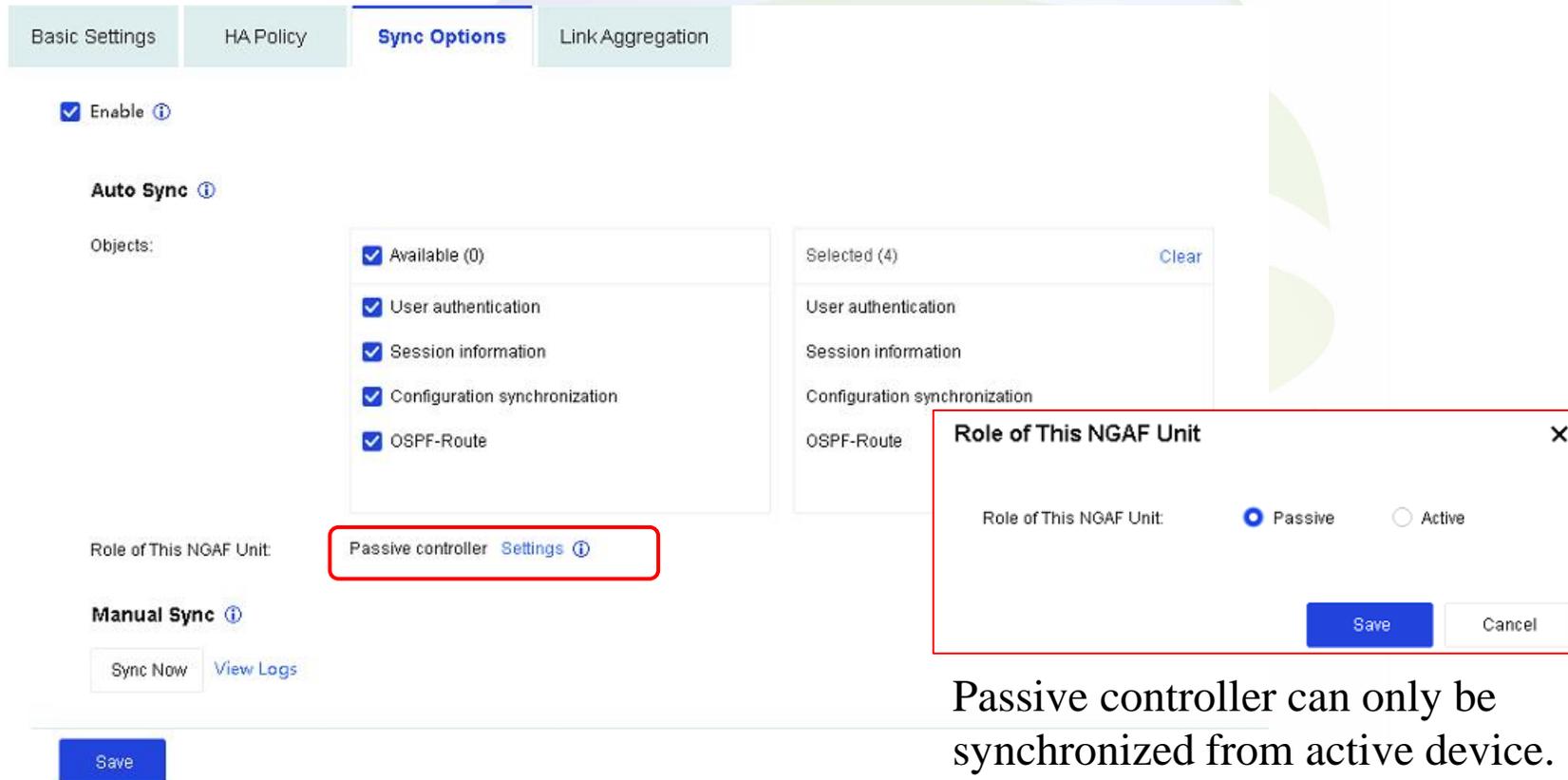
Local Device IP: None ⓘ

Peer Device IP: Required Test ⓘ

Save

Active-Active Case Study

3. Go to **System** > **High Availability** > **Sync Options** page, enable Sync Option. Enable the module, in object configure same as active device. Configuration synchronization role as passive.



Basic Settings HA Policy **Sync Options** Link Aggregation

Enable ⓘ

Auto Sync ⓘ

Objects:

- Available (0)
- User authentication
- Session information
- Configuration synchronization
- OSPF-Route

Selected (4) Clear

- User authentication
- Session information
- Configuration synchronization
- OSPF-Route

Role of This NGAF Unit: **Passive controller** Settings ⓘ

Manual Sync ⓘ

Sync Now View Logs

Save

Role of This NGAF Unit ×

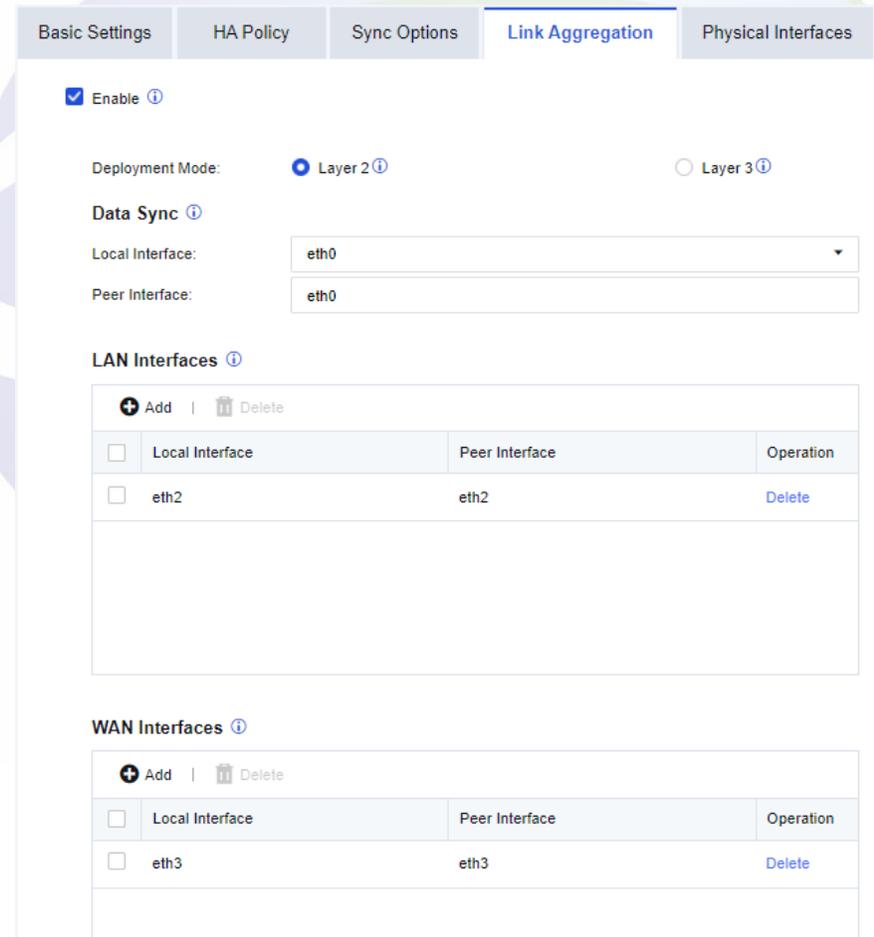
Role of This NGAF Unit: Passive Active

Save Cancel

Passive controller can only be synchronized from active device.

Active-Active Case Study

4. Go to **System > High Availability > Link Aggregation** page, configure link aggregation. Select a routing port on the local and peer as the data sync port. Set the interfaces of the internal and external network zone respectively. Connect the cable and deploy the device.



The screenshot shows the 'Link Aggregation' configuration page. The 'Enable' checkbox is checked. The 'Deployment Mode' is set to 'Layer 2'. The 'Data Sync' section shows 'Local Interface' and 'Peer Interface' both set to 'eth0'. There are two tables for 'LAN Interfaces' and 'WAN Interfaces', each with a 'Delete' button for the listed interface.

Basic Settings | HA Policy | Sync Options | **Link Aggregation** | Physical Interfaces

Enable ⓘ

Deployment Mode: Layer 2 ⓘ Layer 3 ⓘ

Data Sync ⓘ

Local Interface: eth0

Peer Interface: eth0

LAN Interfaces ⓘ

+ Add | Delete

<input type="checkbox"/>	Local Interface	Peer Interface	Operation
<input type="checkbox"/>	eth2	eth2	Delete

WAN Interfaces ⓘ

+ Add | Delete

<input type="checkbox"/>	Local Interface	Peer Interface	Operation
<input type="checkbox"/>	eth3	eth3	Delete

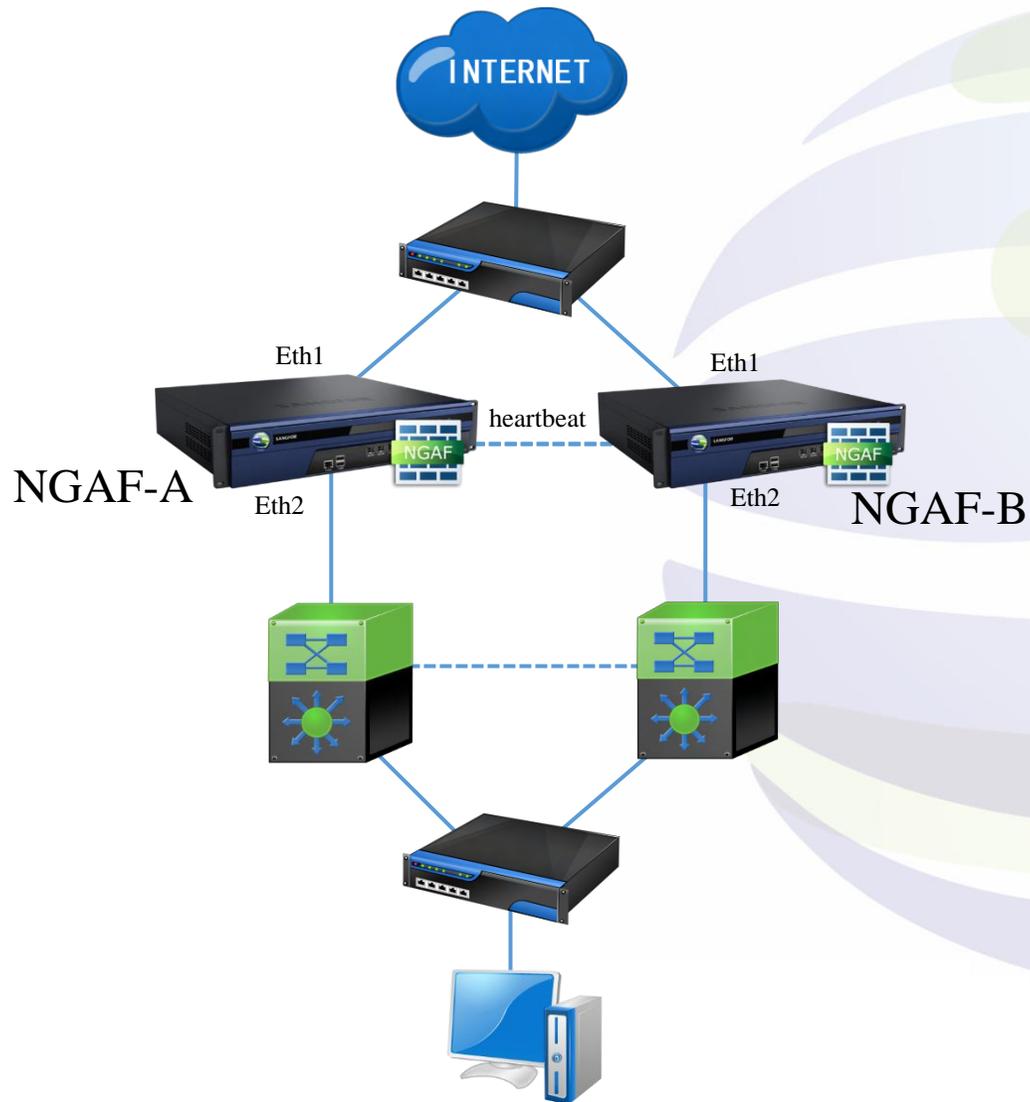
Active-Active Precautions

1. Do not use two pairs of bypass interfaces for HA production interface to avoid broadcast storms.
2. MANAGE interface can be used as a heartbeat interface, but not as a production interface for HA.
3. The heartbeat interface needs to be configured with -HA, while the management port can also be configured to avoid synchronization by adding -HA.
4. Heartbeat interface is recommended to use aggregation interface.
5. Need to configure link state propagation for the actual production port to prevent link failure resulting in service interruption.
6. The bandwidth of the HA link aggregation data sync port should be greater than or equal to the production port.
7. The HA link aggregation data sync port currently supports only a single link.

4. Other Case Study



High Availability Case Study



In this case, if NGAF-A can not reach the internet and eth1 and eth2 are normal(for example, switch don't transmit the traffic of NGAF-A), NGAF don't switch, so the whole internet are broke down.

We can solve this issue with link state detection.

High Availability Case Study

First, we enable the Link state Detection on interface.

Edit Physical Interface x

Basics

Name: eth1

Status: Enabled Disabled

Description: Optional

Type: Layer 3

Zone: WAN

Basic Attributes: WAN attribute

System Upgrade: Temporarily use this interface for system upgrade ⓘ

IPv4 IPv6 **Link State Detection** Advanced

IP Assignment: Static DHCP PPPoE

Static IP: 202.96.137.75/24 ⓘ

Next-Hop IP: 202.96.137.1 ⓘ

Link Bandwidth: Outbound 1024 Mbps Inbound 1024 Mbps

Management Service

Allow: WEBUI PING SNMP SSH

Save Cancel

Link State Detection

IPv4 IPv6 **Link State Detection** Advanced

Status: Enabled Disabled

ARP probe ⓘ

DNS lookup ⓘ

Ping ⓘ

Destination IP 1: 8.8.8.8

Destination IP 2: Optional

Interval (secs): 2

MaxAttempts: 3

High Availability Case Study

Second, Check the tracked interface at redundancy.

Edit VRRP Group

VRID: ⓘ

Priority: ⓘ

Preemption: Yes No

Heartbeat Interval: sec ⓘ

Member Interfaces ⓘ

|

<input type="checkbox"/>	No.	Interface Group	Operation	...
<input type="checkbox"/>	1	eth1	Edit Delete	
<input type="checkbox"/>	2	eth2	Edit Delete	

Link Monitoring ⓘ

|

<input type="checkbox"/>	No.	Interface Group	Operation	...
<input type="checkbox"/>	1	eth1	Edit Delete	

Change it to passive if any group is down.

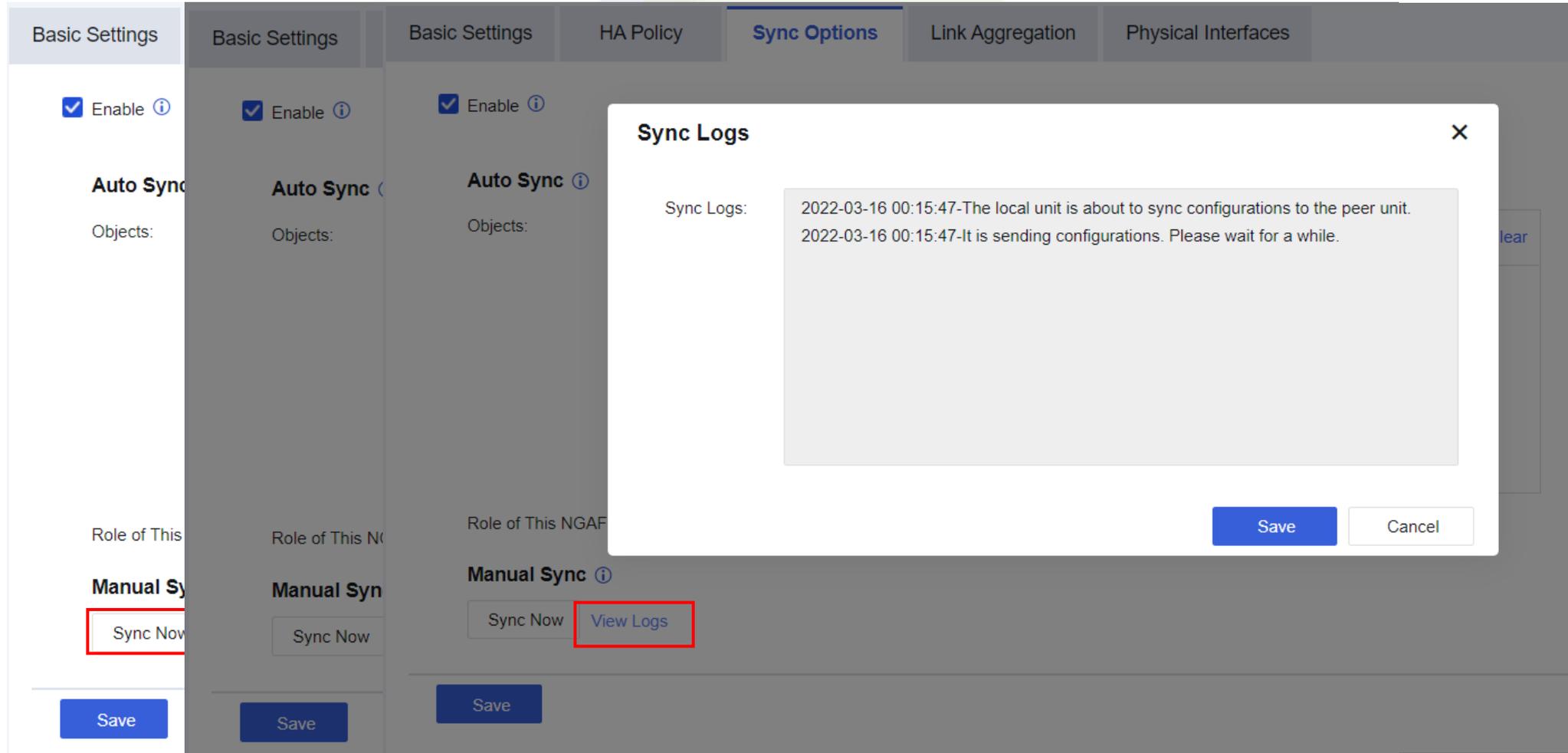
Note: The link is considered down if all the interfaces in that group are down.

Save

Cancel

High Availability Manual Sync

Manual Sync



The screenshot displays the SANGFOR management interface with the 'Sync Options' tab selected. The interface shows three panels for 'Auto Sync' and 'Manual Sync' settings. In the 'Manual Sync' section, the 'Sync Now' button is highlighted with a red box. A 'Sync Logs' dialog box is open, showing the following log entries:

```
Sync Logs:
2022-03-16 00:15:47-The local unit is about to sync configurations to the peer unit.
2022-03-16 00:15:47-It is sending configurations. Please wait for a while.
```

The dialog box also features 'Save' and 'Cancel' buttons. In the background, the 'View Logs' button in the 'Manual Sync' section is also highlighted with a red box.

High Availability Switching



HA will be switched if link state detection failure. Go to **System>Troubleshooting>Logs** check High Availability logs, as show below:

Logs

Options | Refresh

No.	Backend Process	Type	Time	Details
1	High Availability	Info	19:04:14	i0:vrrp_scheduler.c:1439 VRRP group (100) is Standby!
2	High Availability	Info	19:04:14	i0:vrrp.c:766 VRRP group (100) becomes Standby!
3	High Availability	Warning	19:04:13	w0:ha_alarm.c:674 VRRP group(100) switched to Standby state, cause: Local unit is manually switched to the other state
4	High Availability	Info	19:04:13	i0:vrrp.c:1838 VRRP group (100) synchronizes instances to standby node!
5	High Availability	Warning	19:04:13	w0:vrrp.c:1837 VRRP group(100) is changed to standby manually.

Logs

Options | Refresh

No.	Backend Process	Type	Time	Details
1	High Availability	Info	19:04:14	i0:vrrp_scheduler.c:1439 VRRP group (100) is Standby!
2	High Availability	Info	19:04:14	i0:vrrp.c:766 VRRP group (100) becomes Standby!
3	High Availability	Info	19:04:13	i0:vrrp.c:1838 VRRP group (100) synchronizes instances to standby node!
4	High Availability	Info	18:46:20	i0:vrrp.c:888 VRRP group (100) becomes Active!
5	High Availability	Info	18:46:19	i0:vrrp.c:712 VRRP group (100) becomes Active!
6	High Availability	Info	18:46:06	i0:vrrp_scheduler.c:1156 VRRP group (100) becomes Standby!

Precautions

1. **3 circumstances** that will trigger a failover.
 - Continuously failed to receive 3 hello packets from peer.
 - Member interface went down.
 - Tracked interface went down.
2. **3 MUST conditions** for building HA.
 - Version from “appversion” must match from both units.
 - Number of interfaces must be the same.
 - Subscribed licenses must be the same.
3. Paired member interfaces not recommended to be bypass pair, broadcast storm may occur.
4. All NGAF will become to active unit if heartbeat interface can not communicate with each other. You can set an aggregate interface as the heartbeat interface to ensure the network stability.
5. NGAF has used the IP address 1.1.1.1 default, so do not use IP in 1.1.1.0/24 as heartbeat interface.

Precautions

5. Only the role of active controller can synchronize the configuration to standby unit.
6. All business interface should be added in the HA monitor interface. Otherwise, it will interrupt the network.
7. All interface in the HA monitor interface of standby unit only receive the packet and do not reply any packet.
8. If the interface is not enough, management interface can use as heartbeat interface but not the business interface.
9. Eth0 not support configure on HA monitor interface, eth0 cannot configure as production interface when NGAF configure as HA.

Thank you !

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