

Initiating GARP for NAT Mapping

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Restrictions

- The GARP retry feature provides customer support and minimizes control plane traffic impact, but only when utilized on BD-VIF interfaces.
- GARP for NAT mapping does not support the use of the same IP address in multiple VRFs within the same BD-VIF.
- GARP retry messages are sent only from the active box in a Box-to-Box High Availability (HA) configuration.

Information About Initiating GARP for NAT Mapping

Overview

Initiating Gratuitous Address Resolution Protocol (GARP) for Network Address Translation (NAT) Mapping is a feature that uses the Address Resolution Protocol (ARP) and GARP to map MAC addresses to IP addresses within a local network. This feature proactively updates and notifies devices about address changes in the network, ensuring accurate mapping between MAC and IP addresses.

By utilizing GARP, devices in the Application Centric Infrastructure (ACI) Fabric can efficiently discover and associate MAC addresses with IP addresses. This feature ensures that devices are promptly informed or notified about any changes in address assignments, allowing for seamless connectivity and efficient network operations.

Overall, GARP-based NAT Mapping in ACI Fabric simplifies the process of MAC-to-IP address resolution, enhances network efficiency, and ensures smooth communication between devices within the network.

Gratuitous ARP (GARP)

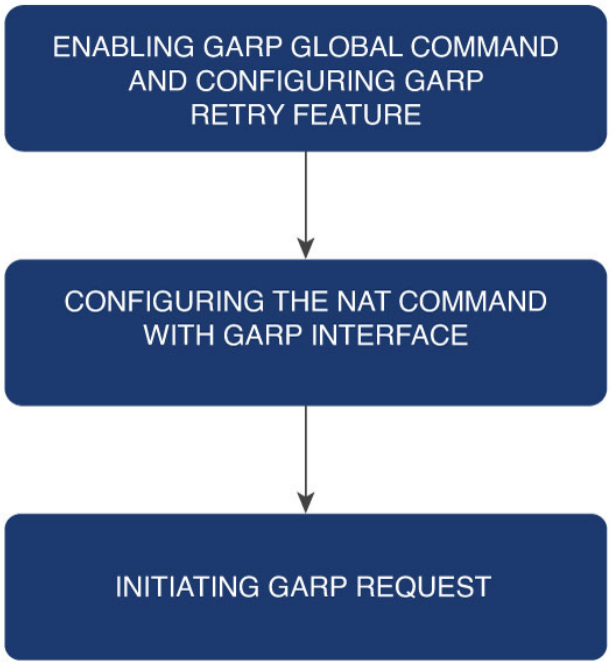
GARP is a part of the ARP that is primarily used to update host devices in a network about changes to IP to MAC address mappings. A network device sends a GARP request when the device's IP address changes, during failovers, or when the IP address initially becomes active on the network. This request ensures that other devices in the network update their ARP tables with the new mapping. In the context of NAT, GARP can be used to initiate or update NAT mappings across the network devices.

Initiating GARP for NAT Mapping in ACI Fabric

For a router connected to an ACI fabric in a cloud deployment, it takes a while to discover networks created due to changes in NAT mapping. With this functionality, whenever there is a change in NAT mapping, the router triggers a GARP message.

This message, in turn, enables the ACI fabric to discover the MAC address that corresponds to the IP address, thereby enabling seamless connectivity and efficient network operation.

Figure 1: Initiating GARP for NAT Mapping in ACI Fabric Process Flow



This feature is part of a broader configuration that brings together GARP and NAT mechanisms.

The process is initiated with the activation of the feature using the GARP global **ip arp nat-garp-retry feature enable** command. This command offers control over several optional parameters, including the number of NAT GARP retry messages, the interval between these messages, and the maximum number of GARP command executions.

Following this activation, the system requests GARP messages using the **garp-interface** option with the **ip nat inside source static** command. This happens on the BD-VIF interface during NAT mapping configuration.

How to Configure the Initiation of GARP for NAT Mapping

Configuring the Initiation of GARP for NAT Mapping

Perform the following steps to configure the initiation of GARP for NAT Mapping.

SUMMARY STEPS

1. **ip arp nat-garp-retry feature enable**
2. **ip arp nat-garp-retry retries** , **ip arp nat-garp-retry interval** , **ip arp nat-garp-retry entries**
3. **ip nat inside source static** {*local-ip*}{*global-ip*} **vrf** {*vrf-name*} **redundancy** {*redundancy-id*} **mapping-id** {*mapping-id*} **match-in-vrf garp-interface** {*interface-name*}

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**ip arp nat-garp-retry feature enable** **Example:** `Device(config)# ip arp nat-garp-retry feature enable`	Configure the GARP retry feature and the ARP retry database. Set the interval for ARP gratuitous retry. **Note** It is essential to enable GARP based NA

Step 2	**ip arp nat-garp-retry retries** , **ip arp nat-garp-retry interval** , **ip arp nat-garp-retry entries**
	Example:
	`Device(config)# ip arp nat-garp-retry retries`
	`Device(config)# ip arp nat-garp-retry interval`
	`Device(config)# ip arp nat-garp-retry entries`
		These are optional arguments or keywords that provide further control over the **ip arp nat-garp-retry** command:
		• **retries:** Specifies the number of NAT GARP Retry messages. The default value is 2, and the permissible range is from 1 to 5. However, it is not recommended to set the value above 3.
		• **intervals:** Configures intervals between NAT GARP Retry messages. The default is 5 seconds, with a permissible range of 1 to 30 seconds
		• **entries:** Defines the number of NAT mappings to be supported. The maximum number of BD-VIF interfaces for GARP initiation is capped at 3000 to optimize control plane load.

Step 3	**ip nat inside source static** {*local-ip*}{*global-ip*} **vrf** {*vrf-name*} **redundancy** {*redundancy-id*} **mapping-id** {*mapping-id*} **match-in-vrf garp-interface** {*interface-name*} **Example:**	Configure NAT mapping with GARP requests.

	Command or Action	Purpose
	`Device(config)# ip nat inside source static 192.168.1.1 203.0.113.1 vrf MYVRF redundancy 1 mapping-id 101 match-in-vrf garp-interface BD-VIF6000`	

Verifying NAT Mapping Configuration

To verify the initiation of GARP for NAT Mapping, use the **show running configuration | include garp-interface** command.

```
Router#sh running-config | inc garp-interface
ip nat inside source static 128.0.125.122 14.224.250.240 vrf ONE match-invrf redundancy 1
mapping-id 5555 garp-interface BD-VIF6000
```

This command will display the optional interface and indicate whether the GARP interface was configured successfully.

Configuration Examples for the Initiation of GARP for NAT Mapping

Configuring the Number of GARP Messages for Address Changes

```
active(config)#ip arp nat-garp-retry retries ?
<1-5> Specify the number of times an GARP is sent for static NAT
active(config)#
```

Configuring the Number of Intervals Between GARP Messages for Address Changes

```
active(config)#ip arp nat-garp-retry interval ?
<1-30> Specify the interval in seconds to send garp
active(config)#
```

Configuring the Number of Times to Initiate GARP

```
active(config)#ip arp nat-garp-retry entries ?
<1-3000> Specify the number of NAT static alias IP addresses to send garp
active(config)#
```

Configuring a GARP Request Using Static NAT Configuration

```
ip nat inside source static 10.180.137.182 155.20.1.112
vrf net50 redundancy 1 mapping-id 77 match-in-vrf garp-interface BD-VIF6000
```