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# 1 Configuring Global IP-MAC Address Binding

## 1.1 Introduction

### 1.1.1 Overview

The global IP-Media Access Control (MAC) address binding function is used to verify the IP address and MAC address binding relationship of input packets. If a specified IP address is bound with a MAC address, the device receives only the IP packets containing matched IP address and MAC address. The other packets are discarded.

The address binding function strictly controls the validity of input packets to improve network security.

The address binding function has higher priority than 802.1x authentication, port security, and access control list (ACL) in controlling the validity of input packets.

### 1.1.2 Principles

#### 1. IPv6 Address Binding Mode

IPv6 address binding modes include the compatible, loose, and strict modes. The default mode is the strict mode. If the IPv4-MAC address binding policy is not configured, the IPv6 packet forwarding control rules based on the IPv4-MAC address binding policy do not take effect and all IPv4 and IPv6 packets are allowed to pass through. If the IPv4-MAC address binding policy is configured, the IPv6 packet forwarding control rules take effect, and the device forwards IPv4 and IPv6 packets based on the forwarding rules. The following table describes the forwarding rules.

**Table 1-1 Forwarding Rules**

Binding Mode	IPv4 Packet Forwarding Rule	IPv6 Packet Forwarding Rule
Strict	Packets matching the IPv4-MAC address binding conditions are forwarded.	Packets matching the IPv6-MAC address binding conditions are forwarded.
Loose	Packets matching the IPv4-MAC address binding conditions are forwarded.	<ul style="list-style-type: none"> <li>If IPv6-MAC address binding is configured, packets matching the IPv6-MAC address binding conditions are forwarded.</li> <li>If IPv6-MAC address binding is not configured, all IPv6 packets are forwarded.</li> </ul>
Compatible	Packets matching the IPv4-MAC address binding conditions are forwarded.	<ul style="list-style-type: none"> <li>IPv6 packets are forwarded if they contain MAC addresses matching the MAC address in the IPv4-MAC address binding policy.</li> <li>Packets matching the IPv6-MAC address binding</li> </ul>

Binding Mode	IPv4 Packet Forwarding Rule	IPv6 Packet Forwarding Rule
		conditions are forwarded.

The IPv4-MAC address binding policy can be generated by global IP-MAC address binding or other access security functions, such as port security and IP source guard.

The IPv6-MAC address binding policy can be generated by global IPv6-MAC address binding or other access security functions, such as port security and IPv6 source guard.

## 2. Excluded Ports

The IP-MAC address binding function takes effect on all ports of the device by default. You can configure excluded ports on which this function does not take effect. In practice, the IP-MAC address bindings of the IP packets on the uplink port are not fixed. Generally, the uplink port of the device is configured as an excluded port so that the packets on the uplink port are not checked for IP-MAC address binding.

## 1.2 Restrictions and Guidelines

- When no IP-MAC address binding policy is configured, the IP-MAC address binding function does not take effect after the **address-bind install** command is run and all packets are allowed to pass through.
- The **address-bind uplink** *interface-type interface-number* command can configure only switching ports or layer 2 (L2) aggregation ports (APs) as excluded ports for address binding.

## 1.3 Configuring Global IP-MAC Address Binding

(1) Enter the privileged EXEC mode.

**enable**

(2) Enter the global configuration mode.

**configure terminal**

(3) Configure a global IP-MAC address binding policy.

**address-bind** { *ipv4-address mac-address* | *ipv6-address mac-address* }

No IP-MAC address binding policy is configured by default.

(4) (Optional) Configure a port as an excluded port for address binding.

**address-bind uplink** *interface-type interface-number*

No port is configured as an excluded port for address binding by default.

(5) Enable the IP-MAC address binding function.

**address-bind install**

The IP-MAC address binding function is disabled by default.

(6) (Optional) Configure the IPv6 address binding mode.

**address-bind ipv6-mode** { **compatible** | **loose** | **strict** }

The default IPv6 address binding mode is the strict mode.

- (7) (Optional) Enable address binding log filtering.

**address-bind binding-filter logging [ rate-limit *rate* ]**

Address binding log filtering is disabled by default.

## 1.4 Monitoring

Run the **show** commands to check the running status of a configured function to verify the configuration effect.

**Table 1-1 Monitoring**

Command	Purpose
<b>show address-bind</b>	Displays the global IP-MAC address binding policy.
<b>show address-bind uplink</b>	Displays excluded ports for address binding.