



ARP Commands

This chapter describes the commands used to configure and monitor the Address Resolution Protocol (ARP) on Cisco 8000 Series Routers.

For detailed information about ARP concepts, configuration tasks, and examples, refer to the *IP Addresses and Services Configuration Guide for Cisco 8000 Series Routers*.

- [arp](#), on page 2
- [arp cache-limit](#), on page 4
- [arp dagr](#), on page 5
- [arp gratuitous ignore](#), on page 6
- [arp learning](#), on page 7
- [arp police-interval](#), on page 8
- [arp purge-delay](#), on page 9
- [arp timeout](#), on page 10
- [clear arp-cache](#), on page 11
- [local-proxy-arp](#), on page 13
- [peer \(DAGR\)](#), on page 14
- [priority-timeout](#), on page 15
- [proxy-arp](#), on page 16
- [route distance](#), on page 17
- [route metric](#), on page 18
- [show arp](#), on page 19
- [show arp idb](#), on page 23
- [show arp dagr](#), on page 25
- [show arp traffic](#), on page 26
- [timers \(DAGR\)](#), on page 29

arp

To add a permanent entry in the Address Resolution Protocol (ARP) cache, use the **arp** command in XR Config mode. To remove an entry from the ARP cache, enter the **no** form of this command.

arp [**vrf** *vrf-name*] *ip-address hardware-address encapsulation-type* [**alias**]
no arp [**vrf** *vrf-name*] *ip-address hardware-address encapsulation-type* [**alias**]

Syntax Description	vrf	(Optional) Specifies VPN routing and forwarding (VRF) instance.
	vrf-name	(Optional) VRF instance that identifies a VPN.
	ip-address	IPv4 (network layer) address for which a permanent entry is added to the ARP cache. Enter the IPv4 address in a four-part dotted-decimal format that corresponds to the local data-link address (a 32-bit address).
	hardware-address	Hardware (data link layer) address that the IPv4 address is linked to. Enter the local data-link address (a 48-bit address), such as 0800.0900.1834.
	encapsulation-type	Encapsulation type. The encapsulation types are: <ul style="list-style-type: none"> • arpa • srp • srpa • srpb For Ethernet interfaces, this is typically the arpa keyword.
	alias	(Optional) Causes the software to respond to ARP requests as if it were the owner of both the specified IP address and hardware address, whether proxy ARP is enabled or not.
Command Default	No entries are permanently installed in the ARP cache.	
Command Modes	XR Config mode	
Command History	Release	Modification
	Release 7.0.12	This command was introduced.
Usage Guidelines	<p>The software uses ARP cache entries to translate 32-bit IP addresses into 48-bit hardware addresses.</p> <p>Because most hosts support dynamic resolution, you generally need not specify static ARP cache entries.</p> <p>Static entries are permanent entries that map a network layer address (IPv4 address) to a data-link layer address (MAC address). If the alias keyword is specified when creating the entry, the interface to which the entry is attached will act as if it is the owner of the specified addresses, that is, it will respond to ARP request packets for this network layer address with the data link layer address in the entry.</p>	

The software does not respond to any ARP requests received for the specified IP address unless proxy ARP is enabled on the interface on which the request is received. When proxy ARP is enabled, the software responds to ARP requests with its own local interface hardware address.

To remove all nonstatic entries from the ARP cache, enter the `clear arp-cache` in XR EXEC mode.

Task ID	Task ID	Operations
	cef	read, write

Examples

The following is an example of a static ARP entry for a typical Ethernet host:

```
Router# configure
Router(config)# arp 192.168.7.19 0800.0900.1834 arpa
```

arp cache-limit

To configure a limit on ARP cache entries on the router, use the **arp cache-limit** command in interface configuration mode.

arp cache-limit *limit*

Syntax Description

limit Specify the value for the cache entries. The supported range in the router is 0–127999.

Note

The arp cache resources vary depending on the hardware resources available in a router. Ensure the cache-limit configured such that the available resources in the router are able to accommodate the entries.

Command Default

By default, the ARP cache limit per interface in the router is 127999.

Command Modes

Interface configuration

Command History

Release	Modification
Release 7.9.1	This command was introduced.
Release 7.5.4	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Examples

The following example shows how to set the ARP cache limit for an interface:

```
Router# configure
Router(config)# interface HundredGigE 0/0/0/0
Router(config-if)#arp cache-limit 3900
Router(config-if)#commit
```

arp dagr

To configure Direct Attached Gateway Redundancy (DAGR), use the **arp dagr** command in interface configuration mode.

arp dagr

Syntax Description	This command has no keywords or arguments.
---------------------------	--

Command Default	Disabled
------------------------	----------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	Release 7.0.12	This command was introduced.

Usage Guidelines	This command has no keywords or arguments.
-------------------------	--

Task ID	Task ID	Operations
	cef	write

Examples The following example enables DAGR configuration:

```
Router# configure
Router(config)# interface HundredGigE 0/0/0/0
Router(config-if)# arp dagr
Router(config-if-dagr)#
```

arp gratuitous ignore

To ignore receipt of gratuitous Address Resolution Protocol (ARP) packets, use the **arp gratuitous ignore** command in interface configuration mode. To receipt gratuitous ARP packets, use the no form of this command.

arp gratuitous ignore
no arp gratuitous ignore

Syntax Description	This command has no keywords or arguments.
---------------------------	--

Command Default	Disabled
------------------------	----------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	Release 7.0.12	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
-------------------------	--

Task ID	Task ID	Operations
	cef	write

Examples

This example shows how to configure **arp gratuitous ignore** command:

```
Router# configure
Router(config)# interface HundredGigE 0/1/0/0
Router(config-if)# arp gratuitous ignore
```

arp learning

To enable the dynamic learning of ARP entries for a local subnet or all subnets, use the **arp learning** command.

To disable this command, use the **no** prefix or the **disable** option for this command.

```
arp learning local
no arp learning local
arp learning disable
no arp learning disable
```

Syntax Description	<p>local Enables the dynamic learning of ARP entries for local subnets.</p> <p>When arp learning local is configured on an interface or sub-interface, it learns only the ARP entries from ARP packets on the same subnet.</p> <p>disable Disables the dynamic learning of all ARP entries.</p>				
Command Default	This command has no keywords or arguments.				
Command Modes	Sub-interface configuration mode				
Command History	<table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>Release 7.0.12</td><td>This command was introduced.</td></tr> </table>	Release	Modification	Release 7.0.12	This command was introduced.
Release	Modification				
Release 7.0.12	This command was introduced.				
Usage Guidelines	No specific guidelines impact the use of this command.				
Task ID	<table> <tr> <th>Task ID</th><th>Operations</th></tr> <tr> <td>cef</td><td>write</td></tr> </table>	Task ID	Operations	cef	write
Task ID	Operations				
cef	write				

The following example shows how to configure **arp learning local** command that enables the learning of ARP entries for only the local subnet:

```
Router(config)#interface HundredGigE 0/0/0/1
Router(config-if)# ipv4 address 192.0.2.1 255.255.255.0
Router(config-if)# arp learning local
Router(config-if)# no shut
Router(config-if)# commit
```

The following example shows how to configure **arp learning disable** command that disables the learning of all ARP entries.

```
Router(config)# interface HundredGigE 0/0/0/1
Router(config-if)# ipv4 address 192.0.2.1 255.255.255.0
Router(config-if)# arp learning disable
Router(config-if)# commit
```

arp police-interval

To permit policing of duplicate ARP packets from the same sender protocol address (IP) or same source MAC address within the specified interval, use the **arp police-interval** command in the global configuration mode.

Behavior of the policer:

- When the **arp police-interval** command is configured, ARP requests coming from the same IP address or MAC address within the configured interval are dropped.
- If there was an ARP response existing for the ARP request from the same IP address within the configured interval, the new request will be dropped.
- If the ARP response was not existing already for the ARP request from the same IP address, then the MAC policer will be checked.

arp police-interval *interval*

Syntax Description	<i>interval</i> Specify the police interval value. The supported range is 1–60 seconds.
---------------------------	---

Command Default	Disabled
------------------------	----------

Command Modes	Global configuration mode
----------------------	---------------------------

Command History	Release	Modification
	Release 7.8.1	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
-------------------------	--

Examples	This example shows how to set the ARP police interval.
-----------------	--

```
Router# configure
Router(config)#arp police-interval 34
Router(config)#commit
```


arp purge-delay

To delay purging Address Resolution Protocol (ARP) entries when an interface goes down, use the **arp purge-delay** command in interface configuration mode. To turn off the purge delay feature, use the **no** form of this command.

arp purge-delay *value*
no arp purge-delay *value*

Syntax Description	<i>value</i> Sets the purge delay time in seconds. Range is 1 to 65535.				
Command Default	Default value is off.				
Command Modes	Interface configuration				
Command History	<table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>Release 7.0.12</td><td>This command was introduced.</td></tr> </table>	Release	Modification	Release 7.0.12	This command was introduced.
Release	Modification				
Release 7.0.12	This command was introduced.				
Usage Guidelines	Use the arp purge-delay command to delay purging ARP entries when an interface goes down. If the interface comes up within the delay time, then the ARP entries are restored to prevent packet loss with Equal Cost Multipath (ECMP) configured.				
Task ID	<table> <tr> <th>Task ID</th><th>Operations</th></tr> <tr> <td>cef</td><td>read, write</td></tr> </table>	Task ID	Operations	cef	read, write
Task ID	Operations				
cef	read, write				
Examples	<p>The following is an example of setting the purge delay to 50 seconds:</p> <pre>Router# configure Router(config)# interface HundredGigE 0/0/0/0 Router(config-if)# arp purge-delay 50</pre>				

arp timeout

To specify the duration of dynamic entries learned on an interface remain in the Address Resolution Protocol (ARP) cache, enter the **arp timeout** command in interface configuration mode. To remove the **arp timeout** command from the configuration file and restore the system to its default condition with respect to this command, enter the **no** form of this command.

arp timeout *seconds*

no arp timeout *seconds*

Syntax Description

seconds Indicates the time, in seconds, for which an entry remains in the ARP cache. Range is 30 to 4294967295.

Command Default

Entries remain in the ARP cache for 14,400 seconds (4 hours).

Command Modes

Interface configuration

Command History

Release	Modification
Release 7.0.12	This command was supported.

Usage Guidelines

This command is ignored when issued on interfaces that do not use ARP. Also, ARP entries that correspond to the local interface or that are statically configured by the user never time out.

The **arp timeout** command applies only to the interface that is entered. When the timeout is changed for an interface the change applies only to that interface.

The **show interfaces** command displays the ARP timeout value in hours:minutes:seconds, as follows:

```
ARP type: ARPA, ARP Timeout 04:00:00
```

Task ID

Task ID	Operations
cef	read, write

Examples

The following example shows how to set the ARP timeout to 3600 seconds to allow entries to time out more quickly than the default:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#
RP/0/RP0/CPU0:router(config-if)# arp timeout 3600
```

clear arp-cache

To delete all dynamic entries from the Address Resolution Protocol (ARP) cache, clear the fast-switching cache, and clear the IP route cache, use the **clear arp-cache** command in XR EXEC mode.

clear arp-cache {**traffic** *type interface-path-id* | **location** *node-id*}

Syntax Description	traffic	Deletes traffic statistics on the specified interface.
	<i>t type</i>	Interface type. For more information, use the question mark (?) online help function.
	<i>interface- path-id</i>	Either a physical interface instance or a virtual interface instance as follows: <ul style="list-style-type: none"> Physical interface instance. Naming notation is <i>rack/slot/module/port</i> and a slash between values is required as part of the notation. <ul style="list-style-type: none"> <i>rack</i>: Chassis number of the rack. <i>slot</i>: Physical slot number of the modular services card or line card. <i>module</i>: Module number. A physical layer interface module (PLIM) is always 0. <i>port</i>: Physical port number of the interface. Virtual interface instance. Number range varies depending on interface type. For more information about the syntax for the router, use the question mark (?) online help function.
	location <i>node-id</i>	Clears the ARP entries for a specified location. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
Command Default	No default behavior or values	
Command Modes	XR EXEC mode	
Command History	Release	Modification
	Release 7.0.12	This command was introduced.
Usage Guidelines	When issued without keywords or arguments, the clear arp-cache command clears all entries in the ARP cache.	
Task ID	Task ID	Operations
	cef	execute

Examples

The following example shows how to remove traffic statistic entries from the ARP cache that match the specified interface:

```
Router# clear arp-cache traffic HundredGige 0/1/0/0 location 0/1/CPU0
```

The following example shows how to remove entries from the ARP cache that match the specified location:

```
Router# clear arp-cache location 0/1/CPU0
```

local-proxy-arp

To enable local proxy Address Resolution Protocol (ARP) on an interface, enter the **local-proxy-arp** command in interface configuration mode. To disable local proxy ARP on the interface, enter the **no** form of this command.

local-proxy-arp
no local-proxy-arp

Syntax Description	This command has no keywords or arguments.
---------------------------	--

Command Default	Local proxy ARP is disabled on all interfaces.
------------------------	--

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	Release 7.0.12	This command was introduced.

Usage Guidelines	When local proxy ARP is enabled, the networking device responds to ARP requests that meet all the following conditions:
-------------------------	---

- The target IP address in the ARP request, the IP address of the ARP source, and the IP address of the interface on which the ARP request is received are on the same Layer 3 network.
- The next hop for the target IP address is through the same interface as the request is received.

Typically, local proxy ARP is used to resolve MAC addresses to IP addresses in the same Layer 3 network such as, private VLANs that are Layer 2-separated. Local proxy ARP supports all types of interfaces supported by ARP and unnumbered interfaces.

Using the **no** form of the command removes the specified command from the configuration file and restores the system to its default condition with respect to the command.

Task ID	Task ID	Operations
	cef	read, write

peer (DAGR)

To create a Direct Attached Gateway Redundancy (DAGR) group for a virtual IP address, use the **peer** command in DAGR interface configuration mode.

peer ipv4 *IP-address*

Syntax Description	<i>IP-address</i> Virtual IPv4 address for the DAGR group.	
Command Default	None	
Command Modes	DAGR interface configuration	
Command History	Release	Modification
	Release 7.0.12	This command was introduced.
Usage Guidelines	No specific guidelines impact the use of this command.	
Task ID	Task ID	Operations
	cef	write

Examples

The following example configures a DAGR group peer:

```
Router(config-if-dagr)# peer ipv4 192.168.7.19
Router(config-if-dagr-peer)#
```

priority-timeout

To configure the timer to time out a high-priority Direct Attached Gateway Redundancy (DAGR) route and reverting to normal priority, use the **priority-timeout** command in DAGR peer interface configuration mode.

priority-timeout *time*

Syntax Description	time Time in seconds after which a high-priority route reverts to a normal priority route. The range of values is 1 to 10000.				
Command Default	Default for <i>time</i> is 20 seconds.				
Command Modes	DAGR peer interface configuration				
Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Release 7.0.12</td><td>This command was introduced.</td></tr></table>	Release	Modification	Release 7.0.12	This command was introduced.
Release	Modification				
Release 7.0.12	This command was introduced.				
Usage Guidelines	<p>To use this command, you must be in a user group associated with a task group that includes the proper task IDs. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.</p> <p>When this function is applied, the DAGR group configuration is updated in the database.</p> <p>The new timer values take effect the next time the timer is set. No immediate timer restarts are triggered on the basis of this event.</p>				
Task ID	<table><tr><th>Task ID</th><th>Operations</th></tr><tr><td>cef</td><td>write</td></tr></table>	Task ID	Operations	cef	write
Task ID	Operations				
cef	write				
Examples	<p>The following example configures a priority timeout of 25 seconds:</p> <pre>Router(config-if-dagr-peer) # priority-timeout 25 Router(config-if-dagr-peer) #</pre>				

proxy-arp

To enable proxy Address Resolution Protocol (ARP) on an interface, enter the **proxy-arp** command in interface configuration mode. To disable proxy ARP on the interface, enter the **no** form of this command.

proxy-arp
no proxy-arp

Syntax Description	This command has no keywords or arguments.
---------------------------	--

Command Default	Proxy ARP is disabled on all interfaces.
------------------------	--

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	Release 7.0.12	This command was introduced.

Usage Guidelines	When proxy ARP is disabled, the networking device responds to ARP requests received on an interface only if one of the following conditions is met:
-------------------------	---

- The target IP address in the ARP request is the same as the interface IP address on which the request is received.
- The target IP address in the ARP request has a statically configured ARP alias.

When proxy ARP is enabled, the networking device also responds to ARP requests that meet all of the following conditions:

- The target IP address is not on the same physical network (LAN) on which the request is received.
- The networking device has one or more routes to the target IP address.
- All of the routes to the target IP address go through interfaces other than the one on which the request is received.

Using the **no** form of the command removes the specified command from the configuration file and restores the system to its default condition with respect to the command.

Task ID	Task ID	Operations
	cef	read, write

Examples

The following example shows how to enable proxy ARP on HundredGigE interface 0/0/0/0:

```
Router#(config)# interface HundredGigE 0/0/0/0
Router#(config-if)# proxy-arp
```


route distance

To configure route distance for a given Direct Attached Gateway Redundancy (DAGR) group, use the **route distance** command in DAGR peer interface configuration mode.

route distance normal *normal-distance* **priority** *priority-distance*

Syntax Description	normal <i>normal-distance</i>	Sets normal route (administrative) distance. Range is 0 to 256.
	priority <i>priority-distance</i>	Sets priority route (administrative) distance. Range is 0 to 256.

Command Default Default for *normal-distance* default is 150 and the default for *priority-distance* is 5.

Command Modes DAGR peer interface configuration

Command History	Release	Modification
	Release 7.0.12	This command was introduced.

Usage Guidelines The default setting for a priority distance takes precedence over that of a typical Internet Gateway Protocol (IGP). The normal distance setting does not.

When this setting is applied, the DAGR group is updated in the database.

Task ID	Task ID	Operations
	cef	write

Examples The following example configures a DAGR group peer with a normal route distance of 48 and priority route distance of 5:

```
Router(config-if-dagr-peer) # route distance normal 48 priority 5
Router(config-if-dagr-peer) #
```

route metric

To configure normal and priority route metrics for a given Direct Attached Gateway Redundancy (DAGR) group, use the **route metric** command in DAGR peer interface configuration mode.

route metric normal *normal-metric* **priority** *priority-metric*

Syntax Description	normal <i>normal-metric</i>	Sets a normal value for routes installed in the Routing Information Base (RIB). The range of values is 0 to 256.
	priority <i>priority-metric</i>	Sets a priority value for routes installed in the RIB. The range of values is 0 to 256.

Command Default The default for *normal-metric* is 100, and the default for *priority-metric* is 90.

Command Modes DAGR peer interface configuration

Command History	Release	Modification
	Release 7.0.12	This command was introduced.

Usage Guidelines The route metric values are of less significance than the **route distance** command values. Setting a route metric allows the configuration of values for routes installed in the RIB.

When this setting is applied, the DAGR group is updated in the database.

Task ID	Task ID	Operations
	cef	write

Examples The following example configures a DAGR group peer with a normal metric of 48 and a priority metric of 5:

```
Router(config-if-dagr-peer)# route metric normal 48 priority 5
Router(config-if-dagr-peer)#
```

show arp

To display the Address Resolution Protocol (ARP), enter the **show arp** command in XR EXEC mode.

show arp *vrf vrf-name [ip-address hardware-address interface-path-id] location node-id*

Syntax Description

vrf	(Optional) Specifies VPN routing and forwarding (VRF) instance.
vrf-name	(Optional) VRF instance that identifies a VPN.
ip-address	(Optional) The ARP entries you want to display.
hardware-address	(Optional) The ARP entries that match the 48-bit MAC address are displayed.
interface- path-id	(Optional) Either a physical interface instance or a virtual interface instance as follows: <ul style="list-style-type: none"> Physical interface instance. Naming notation is <i>rack/slot/module/port</i> and a slash between values is required as part of the notation. <ul style="list-style-type: none"> <i>rack</i>: Chassis number of the rack. <i>slot</i>: Physical slot number of the modular services card or line card. <i>module</i>: Module number. A physical layer interface module (PLIM) is always 0. <i>port</i>: Physical port number of the interface. Virtual interface instance. Number range varies depending on interface type. <p>For more information about the syntax for the router, use the question mark (?) online help function.</p>
location node-id	(Optional) Displays the ARP entry for a specific location. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default

The active RSP is the default location.

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

ARP establishes correspondences between network addresses (an IP address, for example) and Ethernet hardware addresses. A record of each correspondence is kept in a cache for a predetermined amount of time and then discarded.

For **show arp** *interface-type interface-instance* form, the **location node-id** keyword and argument is mandatory for Bundle and VLAN-on-Bundle interfaces to indicate which location the cache entries for the bundle should be displayed. For physical interfaces, specifying the **location node-id** keyword and argument is optional since the interface can only exist on one node.

show arp

Task ID	Task ID	Operations
	cef	read

Examples

The following is sample output from the **show arp** command with no location specified:

Router# **show arp**

0/7/CPU0

Address	Age	Hardware Addr	State	Type	Interface
192.1.1.2	-	e4c7.2284.f863	Interface	ARPA	HundredGigE0/7/0/3
192.1.1.2	-	e4c7.2284.f863	Interface	ARPA	HundredGigE0/7/0/3.1
192.79.1.1	-	e4c7.2284.f887	Interface	ARPA	HundresGigE0/7/0/39

0/RP0/CPU0

Address	Age	Hardware Addr	State	Type	Interface
203.1.24.208	00:00:03	0016.9cf2.3800	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.0.1	00:53:00	0000.0c07.ac07	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.0.2	00:00:01	0026.0bdd.0000	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.0.3	00:00:05	0026.0bdc.ffc0	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.13.2	02:41:25	0015.17d6.684b	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.36.19	00:33:28	0014.a841.0ffc	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.44.1	00:54:57	6c20.5618.96aa	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.44.2	01:46:47	6c20.5618.982e	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.44.3	02:46:28	4c4e.35b6.57e8	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.44.100	02:45:10	4c4e.35b6.57e8	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.44.101	02:45:05	6c20.5618.96aa	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.49.41	00:03:16	6400.f142.134c	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.49.43	01:10:36	6400.f142.134c	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.49.121	02:54:42	0020.b007.6700	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.49.122	01:51:05	0020.b007.6700	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.49.123	00:31:59	0033.b515.68ff	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.49.254	00:24:09	0003.310a.a039	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.54.10	-	e050.07fa.ef05	Interface	ARPA	MgmtEth0/RP0/CPU0/0
203.7.54.11	-	e050.07fa.ef05	Interface	ARPA	MgmtEth0/RP0/CPU0/0
203.7.54.12	01:24:34	4c4e.35b6.4af8	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.57.1	00:06:21	10f3.11b6.c634	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.57.2	00:05:58	6400.f142.1500	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.57.8	01:59:01	0024.c4d8.c2cc	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.57.9	00:54:16	6400.f142.0bbe	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.57.10	01:25:07	6400.f142.115a	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.57.11	00:59:03	0022.56d8.36a0	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0
203.7.57.13	00:22:16	000a.b8b7.fff8	Dynamic	ARPA	MgmtEth0/RP0/CPU0/0

The following is sample output from the **show arp** command with the *interface-type interface-instance* argument:

Router# **show arp HundredGigE 0/0/0/1**

0/RP0/CPU0

Address	Age	Hardware Addr	State	Type	Interface
20.30.1.1	-	c472.95a6.2a86	Interface	ARPA	HundredGigE0/0/0/1
20.30.1.2	00:04:58	6c9c.ed2c.a060	Dynamic	ARPA	HundredGigE0/0/0/1

```
Router# show arp mgmtEth 0/RP1/CPU0/0
```

Address	Age	Hardware Addr	State	Type	Interface
192.4.9.2	00:35:55	0030.7131.abfc	Dynamic	ARPA	MgmtEth0/RP1/CPU0/0
192.4.9.1	00:35:55	0000.0c07.ac24	Dynamic	ARPA	MgmtEth0/RP1/CPU0/0
192.4.9.99	00:49:12	0007.ebea.44d0	Dynamic	ARPA	MgmtEth0/RP1/CPU0/0
192.4.9.199	-	0001.c9eb.dffe	Interface	ARPA	MgmtEth0/RP1/CPU0/0

The following is sample output from the **show arp** command with the *hardware-address* designation:

```
Router# show arp 0005.5f1d.8100
```

Address	Age	Hardware Addr	State	Type	Interface
192.16.7.2	-	0005.5f1d.8100	Interface	ARPA	HundredGigE0/0/0/2

The following is sample output from the **show arp** command with the **location** keyword and *node-id* argument:

```
Router# show arp location 0/2/CPU0
```

Address	Age	Hardware Addr	State	Type	Interface
192.168.15.1	-	00dd.00ee.00ff	Alias	ARPA	
192.168.13.1	-	00aa.00bb.00cc	Static	ARPA	
203.16.7.1	00:35:49	0002.fc0e.9600	Dynamic	ARPA	HundredGigE0/1/0/2
203.16.7.2	-	0005.5f1d.8100	Interface	ARPA	HundredGigE0/1/0/2

This table describes the significant fields shown in the display.

Table 1: show arp Command Field Descriptions

Field	Description
Address	Displays the network address that corresponds to the hardware address.
Age	Displays the age in hours:minutes:seconds of the cache entry. A hyphen (-) means the address is local.
Hardware Addr	Displays the LAN hardware address of a MAC address that corresponds to the network address.
State	Displays the current state of the cache entry. Values are: <ul style="list-style-type: none"> • Dynamic • Interface • Alias • Static • “-” (indicates global static and alias entries)
Type	Displays the encapsulation type the Cisco IOS XR software is using for the network address in this entry. Value is ARPA.
Interface	Displays the interface associated with this network address.

Field	Description
ARP statistics	Displays ARP packet and error statistics.
ARP cache	Displays general information about the IP address and MAC address association entries in the ARP cache.
IP Packet drop count for node */*/*	<p>Displays the number of IP packets dropped because the buffer ran out of space before an ARP response was received.</p> <p>Note */*/* represents the node ID in the format <i>rack/slot/module</i>.</p>

show arp idb

To display the ARP database statistics for an interface, use the **show arp idb** command in EXEC mode.

show arp idb *interface-name* **location** *node-id*

Syntax Description	<i>interface-name</i>	Name of the interface
	<i>node-id</i>	Location of the interface. LC node for physical interfaces, RP or LC node for virtual interfaces
Command Default	There is no default location, location needs to be provided in the CLI.	
Command History	Release	Modification
	Release 3.3.0	This command was introduced.
Usage Guidelines	The show arp idb command is useful to verify the IP addresses, Mac address, ARP configuration(s) applied on the interface and the entry statistics.	
	For show arp idb interface-type interface-instance form, the location node-id keyword and argument is mandatory for Bundle and VLAN-on-Bundle interfaces to indicate which location the cache entries for the bundle should be displayed.	
Task ID	Task ID	Operations
	cef	read
Examples	The following is sample output from the show arp idb command:	
	<pre>RP/0/0/CPU0:ios#show arp idb GigabitEthernet 0/0/0/0 location 0/0/CPU0 Mon Jan 30 10:32:15.387 IST GigabitEthernet0/0/0/0 (0x00000060): IDB Client: default IPv4 address 1.1.1.1, Vrf ID 0x60000000 VRF Name default Dynamic learning: Enable Dynamic entry timeout: 14400 secs Drop adjacency timeout: Disable Purge delay: off Cache limit: 128000 Incomplete glean count: 1</pre>	

```

Complete glean count: 0
Complete protocol count: 0
Dropped glean count: 0
Dropped protocol count: 0
IPv4 caps added (state up)
MPLS caps not added
Interface not virtual, not client fwd ref,
Proxy arp not configured, not enabled
Local Proxy arp not configured
Packet IO layer is NetIO
Srg Role : DEFAULT
Idb Flag : 49292
IDB is Complete
IDB Flag Description:
[CAPS | COMPLETE | IPV4_CAPS_CREATED | SPIO_ATTACHED |
SPIO_SUPPORTED]
Idb Flag Ext : 0x0
Idb Oper Progress : NONE
Client Resync Time : Jan 30 10:07:10.736787
Total entries : 9
| Event Name | Time Stamp | S, M
| idb-create | Jan 30 10:07:10.784 | 1, 0
| idb-state-up | Jan 30 10:07:10.784 | 0, 0
| caps-state-update | Jan 30 10:07:10.784 | 0, 1
| address-update | Jan 30 10:07:10.784 | 0, 0
| idb-complete | Jan 30 10:07:10.784 | 0, 0
| idb-entry-create | Jan 30 10:07:10.784 | 0, 0
| idb-caps-add | Jan 30 10:07:10.784 | 0, 0
| idb-caps-add-cb | Jan 30 10:07:10.784 | 0, 0
| idb-last-garp-sent | Jan 30 10:07:11.808 | 0, 0

```


show arp dagr

To display the operational state of all Direct Attached Gateway Redundancy (DAGR) groups, use the **show arp dagr** command in XR EXEC mode

```
show arp dagr [interface [IP-address]]
```

Syntax Description	<i>interface [IP-address]</i> (Optional) Restricts the output to a specific interface and virtual IP address.
--------------------	---

Command Default	None
-----------------	------

Command Modes	XR EXEC mode
---------------	--------------

Command History	<table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>Release 7.0.12</td><td>This command was introduced.</td></tr> </table>	Release	Modification	Release 7.0.12	This command was introduced.
Release	Modification				
Release 7.0.12	This command was introduced.				

Usage Guidelines	This command has no keywords or arguments.
------------------	--

Task ID	<table> <tr> <th>Task ID</th><th>Operations</th></tr> <tr> <td>cef</td><td>read, write</td></tr> </table>	Task ID	Operations	cef	read, write
Task ID	Operations				
cef	read, write				

Examples	The following example shows the current operational state of the DAGR groups:
----------	---

```
Router# show arp dagr

-----
0/1/CPU0
-----
Interface          Virtual IP      State      Query-pd Dist Metr
HundredGigE0/1/0/2  192.0.2.1      Active    None      150  100
HundredGigE0/1/0/2  192.24.0.45    Query     1         None  None
HundredGigE0/1/0/3  192.66.0.45    Init      None      None  None
```

show arp traffic

To display Address Resolution Protocol (ARP) traffic statistics, enter the **show arp traffic** command in XR EXEC mode.

show arp traffic [**vrf** *vrf-name*] [*interface-path-id*] [**location** *node-id*]

Syntax Description	
vrf	(Optional) Specifies VPN routing and forwarding (VRF) instance.
vrf-name	(Optional) VRF instance that identifies a VPN.
interface- path-id	(Optional) Either a physical interface instance or a virtual interface instance as follows: <ul style="list-style-type: none"> Physical interface instance. Naming notation is <i>rack/slot/module/port</i> and a slash between values is required as part of the notation. <ul style="list-style-type: none"> <i>rack</i>: Chassis number of the rack. <i>slot</i>: Physical slot number of the modular services card or line card. <i>module</i>: Module number. A physical layer interface module (PLIM) is always 0. <i>port</i>: Physical port number of the interface. Virtual interface instance. Number range varies depending on interface type. For more information about the syntax for the router, use the question mark (?) online help function.
location node-id	(Optional) Displays the ARP entry for a specific location. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.

Command Default The active RSP is the default location.

Command History	Release	Modification
	Release 7.0.12	This command was introduced.

Usage Guidelines ARP establishes correspondences between network addresses (an IP address, for example) and Ethernet hardware addresses. A record of each correspondence is kept in a cache for a predetermined amount of time and then discarded.

For **show arp traffic**, *interface-instance*, the **location***node-id* keyword and argument is mandatory for Bundle and VLAN-on-Bundle interfaces to indicate which location the cache entries for the bundle should be displayed. For physical interfaces, specifying the **location** *node-id* keyword and argument is optional since the interface can only exist on one node.

Task ID

Task ID Operations

cef read

Examples

The following is sample output from the **show arp traffic** command:

```
Router# show arp traffic
```

```
show arp traffic
Thu Dec 10 09:51:38.761 UTC
```

```
-----
0/6/CPU0
-----
```

```
ARP statistics:
  Recv: 163 requests, 79 replies
  Sent: 14138 requests, 177 replies (0 proxy, 0 local proxy, 14 gratuitous)
  Resolve requests rcvd: 7204
  Resolve requests dropped: 295
  Errors: 0 out of memory, 0 no buffers, 0 out of sunbet
```

```
ARP cache:
  Total ARP entries in cache: 22
  Dynamic: 11, Interface: 11, Standby: 0
  Alias: 0,    Static: 0,    DHCP: 0
```

```
IP Packet drop count for node 0/6/CPU0: 6909
```

```
Total ARP-IDB:19
```

```
-----
0/2/CPU0
-----
```

```
ARP statistics:
  Recv: 162532 requests, 243 replies
  Sent: 15879 requests, 162561 replies (0 proxy, 0 local proxy, 29 gratuitous)
  Resolve requests rcvd: 47593
  Resolve requests dropped: 0
  Errors: 0 out of memory, 0 no buffers, 0 out of sunbet
```

```
ARP cache:
  Total ARP entries in cache: 125
  Dynamic: 112, Interface: 13, Standby: 0
  Alias: 0,    Static: 0,    DHCP: 0
```

```
IP Packet drop count for node 0/2/CPU0: 44804
```

```
Total ARP-IDB:13
```

The following is sample output from the **show arp traffic** command with the **location** keyword and **node-id** argument:

```
Router# show arp traffic location 0/4/CPU0
```

```
Thu Dec 10 09:51:56.209 UTC
```

```
ARP statistics:
  Recv: 364474 requests, 96 replies
  Sent: 14131 requests, 364499 replies (0 proxy, 0 local proxy, 25 gratuitous)
  Resolve requests rcvd: 5699
  Resolve requests dropped: 94
  Errors: 0 out of memory, 0 no buffers, 0 out of sunbet

ARP cache:
  Total ARP entries in cache: 18
  Dynamic: 9, Interface: 9, Standby: 0
  Alias: 0,   Static: 0,   DHCP: 0

IP Packet drop count for node 0/4/CPU0: 5603

Total ARP-IDB:18
```

timers (DAGR)

To configure the Direct Attached Gateway Redundancy (DAGR) timers for sending ARP requests, use the **timers** command in DAGR peer interface configuration mode.

timers **query** *query-time* **standby** *standby-time*

Syntax Description	<table> <tr> <td data-bbox="386 506 646 537">query <i>query-time</i></td><td data-bbox="654 506 1523 600">The value is a time (in seconds) between successive ARP requests being sent out to the virtual IP address, when the group is in the query state. The range of values is 1 to 10000.</td></tr> <tr> <td data-bbox="386 627 646 659">standby <i>standby-time</i></td><td data-bbox="654 627 1523 722">The value is a time (in seconds) between successive ARP requests being sent out to the virtual IP address, when the group is in the standby state. The range of values is 1 to 10000.</td></tr> </table>	query <i>query-time</i>	The value is a time (in seconds) between successive ARP requests being sent out to the virtual IP address, when the group is in the query state. The range of values is 1 to 10000.	standby <i>standby-time</i>	The value is a time (in seconds) between successive ARP requests being sent out to the virtual IP address, when the group is in the standby state. The range of values is 1 to 10000.
query <i>query-time</i>	The value is a time (in seconds) between successive ARP requests being sent out to the virtual IP address, when the group is in the query state. The range of values is 1 to 10000.				
standby <i>standby-time</i>	The value is a time (in seconds) between successive ARP requests being sent out to the virtual IP address, when the group is in the standby state. The range of values is 1 to 10000.				
Command Default	The default for <i>query-time</i> is 1 second, and the default for <i>standby-time</i> is 20 seconds.				
Command Modes	DAGR peer interface configuration				
Command History	<table> <tr> <th data-bbox="386 905 548 936">Release</th><th data-bbox="557 905 1523 936">Modification</th></tr> <tr> <td data-bbox="386 963 548 995">Release 7.0.12</td><td data-bbox="557 963 1523 995">This command was introduced.</td></tr> </table>	Release	Modification	Release 7.0.12	This command was introduced.
Release	Modification				
Release 7.0.12	This command was introduced.				
Usage Guidelines	When this function is applied, the DAGR group configuration is updated in the database. The new timer values take effect the next time the timer is set. No immediate timer restarts are triggered on the basis of this event.				
Task ID	<table> <tr> <th data-bbox="386 1146 467 1178">Task ID</th><th data-bbox="475 1146 1523 1178">Operations</th></tr> <tr> <td data-bbox="386 1241 467 1272">cef</td><td data-bbox="475 1241 1523 1272">write</td></tr> </table>	Task ID	Operations	cef	write
Task ID	Operations				
cef	write				
Examples	<p>The following example configures a DAGR group peer with a query time of 2 and a standby time of 40:</p> <pre>Router(config-if-dagr-peer)# timers query 2 standby 40 Router(config-if-dagr-peer)#</pre>				

