

# 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*.


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# 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:<br>• arpa<br>• srp<br>• srpa<br>• srpb<br>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

The software uses ARP cache entries to translate 32-bit IP addresses into 48-bit hardware addresses.

Because most hosts support dynamic resolution, you generally need not specify static ARP cache entries.

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.

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 accomodate 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

| | |
|---|---|
| **local** | Enables the dynamic learning of ARP entries for local subnets.<br>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. |
| **disable** | Disables the dynamic learning of all ARP entries. |

## Command Default

This command has no keywords or arguments.

## Command Modes

Sub-interface configuration mode

## 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 |

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

| | |
|---|---|
| *interval* | 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

| | |
|---|---|
| value | Sets the purge delay time in seconds. Range is 1 to 65535. |

## Command Default

Default value is off.

## Command Modes

Interface configuration

## Command History

| 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

| Task ID | Operations |
|---|---|
| cef | read, write |

## Examples

The following is an example of setting the purge delay to 50 seconds:

```
Router# configure
Router(config)# interface HundredGigE 0/0/0/0
Router(config-if)# arp purge-delay 50
```

# 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. |
| *t ype* | Interface type. For more information, use the question mark (?) online help function. |
| *interface- path-id* | Either a physical interface instance or a virtual interface instance as follows:<br>• Physical interface instance. Naming notation is *rack/slot/module/port* and a slash between values is required as part of the notation.<br>  • *rack*: Chassis number of the rack.<br>  • *slot*: Physical slot number of the modular services card or line card.<br>  • *module*: Module number. A physical layer interface module (PLIM) is always 0.<br>  • *port*: Physical port number of the interface.<br>• Virtual interface instance. Number range varies depending on interface type.<br>For more information about the syntax for the router, use the question mark (?) online help function. |
| **location** *node-id* | Clears the ARP entries for a specified location. The *node-id* argument is entered in the *rack/slot/module* 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**

| | |
|---|---|
| *IP-address* | 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 *time* is 20 seconds.

## Command Modes

DAGR peer interface configuration

## Command History

| Release | Modification |
|---|---|
| Release 7.0.12 | This command was introduced. |

## Usage Guidelines

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.

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

| Task ID | Operations |
|---|---|
| cef | write |

## Examples

The following example configures a priority timeout of 25 seconds:

```
Router(config-if-dagr-peer)# priority-timeout 25
Router(config-if-dagr-peer)#
```

# 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** *normal-distance* | Sets normal route (administrative) distance. Range is 0 to 256. |
| **priority** *priority-distance* | 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** *normal-metric* | Sets a normal value for routes installed in the Routing Information Base (RIB). The range of values is 0 to 256. |
| **priority** *priority-metric* | 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 routers 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:<br>• Physical interface instance. Naming notation is *rack/slot/module/port* and a slash between values is required as part of the notation.<br>• *rack*: Chassis number of the rack.<br>• *slot*: Physical slot number of the modular services card or line card.<br>• *module*: Module number. A physical layer interface module (PLIM) is always 0.<br>• *port*: Physical port number of the interface.<br>• Virtual interface instance. Number range varies depending on interface type.<br>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 *node-id* argument is entered in the *rack/slot/module* 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.

## 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:<br>• Dynamic<br>• Interface<br>• Alias<br>• Static<br>• "-" (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 */*/* | Displays the number of IP packets dropped because the buffer ran out of space before an ARP response was received.<br>**Note**<br>*/*/* represents the node ID in the format *rack/slot/module*. |

# 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

| | |
|---|---|
| *interface-name* | Name of the interface |
| *node-id* | 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:

```
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
```

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**

| | |
|---|---|
| *interface* [*IP-address*] | (Optional) Restricts the output to a specific interface and virtual IP address. |

**Command Default**

None

**Command Modes**

XR EXEC mode

**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 | 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:<br>• Physical interface instance. Naming notation is *rack/slot/module/port* and a slash between values is required as part of the notation.<br>  • *rack*: Chassis number of the rack.<br>  • *slot*: Physical slot number of the modular services card or line card.<br>  • *module*: Module number. A physical layer interface module (PLIM) is always 0.<br>  • *port*: Physical port number of the interface.<br>• Virtual interface instance. Number range varies depending on interface type.<br>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 *node-id* argument is entered in the *rack/slot/module* 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

| | |
|---|---|
| **query** *query-time* | 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** *standby-time* | 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 *query-time* is 1 second, and the default for *standby-time* is 20 seconds.

## Command Modes

DAGR peer interface configuration

## Command History

| 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

| Task ID | Operations |
|---|---|
| cef | write |

## Examples

The following example configures a DAGR group peer with a query time of 2 and a standby time of 40:

```
Router(config-if-dagr-peer)# timers query 2 standby 40
Router(config-if-dagr-peer)#
```