



## ARP—Auto Logoff

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The ARP—Auto Logoff feature adds finer control for probing authorized Address Resolution Protocol (ARP) peers. A new ARP command specifies when to start a probe (the timeout), how frequent a peer is probed (the interval), and the maximum number of retries (the count). The benefit of this feature is more accurate billing cycles, which are configurable, and prevention of premature logoff.

### Feature History for the ARP—Auto Logoff Feature

Release	Modification
12.3(8)XX	This feature was introduced.
12.3(14)T	This feature was integrated into Cisco IOS Release 12.3(14)T.

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Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

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# Information About ARP—Auto Logoff

To configure the ARP—Auto Logoff feature, you should understand the following concepts:

- [Authorized ARP Auto—Logoff, page 2](#)
- [Feature Design of ARP—Auto Logoff, page 2](#)

## Authorized ARP Auto—Logoff

The current authorized ARP auto-logoff functionality supports one-minute billing cycles only. When authorized ARP is enabled, the probing takes place every 30 seconds and allows one to two retries, 30 seconds apart. In a busy network, reply packets can be missed and a premature logoff can occur.

With this release, it is possible to have a more accurate and controlled detection of a peer by configuring the start of a probe, the interval between unsuccessful probes, and the maximum number of retries before triggering an auto logoff.

## Feature Design of ARP—Auto Logoff

Once authorized ARP is configured, ARP learning is stopped and a private table is maintained. The table is populated by an authorized application, such as DHCP. Each entry in the table has a managed timer associated with it. An ARP probe monitors the expiration times of all entries in the table. When the time expires, an ARP request is sent to a peer, and the peer is probed at a specified interval for a maximum count. The ARP reply from the peer stops the current probing, and the timeout value for the entry is updated in the table. An ARP request packet is sent to the peer router, and the counter of the retries is decremented by one. If the counter is zero, the retries stop.

A notification is triggered for an authorization application, such as DHCP server, and the proper action is taken. In the meantime, the ARP entry is removed from the table.

The start time of the probe for an entry is calculated by adding the interface ARP timeout value to the entry timestamp. Once an ARP reply is received from a peer, the timestamp is updated by the ARP input process. This event triggers a message so that the ARP probing process updates its timer to reflect the new state.

In general, three activities trigger the event message:

- Change of timeout configuration
- Receipt of ARP reply
- Authorized application request of updating or removing of the entry

When a new start time is set, the counter is also reset to the initial configured value.

# How to Configure ARP—Auto Logoff

Perform the following steps to configure the ARP—Auto Logoff feature.

## Prerequisites

Authorized ARP auto logoff and DHCP secure ARP should be configured and working properly.

## SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number* [*name-tag*]
4. **arp interface** {**arpa** | **frame-relay** | **snap**}
5. **arp timeout** *seconds*
6. **arp probe interval** *interval-number count seconds*
7. **exit**
8. **show processes cpu**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>interface</b> <i>type number</i> [ <i>name-tag</i> ]  <b>Example:</b> Router(config)# interface ethernet 2/4	Specifies an interface and enters interface configuration mode.
Step 4	<b>arp interface</b> { <b>arpa</b>   <b>frame-relay</b>   <b>snap</b> }  <b>Example:</b> Router(config-if)# arp interface frame-relay	Controls the interface-specific handling of IP address resolution into 48-bit Ethernet, FDDI, Frame Relay, and Token Ring hardware addresses. The keywords are as follows: <ul style="list-style-type: none"> <li>• <b>arpa</b>—Standard Ethernet-style ARP (RFC 826).</li> <li>• <b>frame-relay</b>—ARP over a Frame Relay encapsulated interface.</li> <li>• <b>snap</b>—ARP packets conforming to RFC 1042.</li> </ul>

	Command or Action	Purpose
Step 5	<pre>arp timeout seconds</pre> <p><b>Example:</b> Router(config-if) arp timeout 10</p>	Configures the timeout, in seconds, that an entry remains in the ARP cache. A value of zero means that entries are never cleared from the cache.
Step 6	<pre>arp probe interval interval-number count count-number</pre> <p><b>Example:</b> Router(config-if)# arp probe interval 2 count 30</p>	<p>Specifies an interval, in seconds, and number of probe retries. The arguments are as follows:</p> <ul style="list-style-type: none"> <li><i>interval-number</i>—Interval after which the next probe will be sent to see if a peer is present. The range is from 1 to 10.</li> <li><i>count-number</i>—Number of probe retries. If there is no reply after the count has been reached, the peer has logged off. The range is from 1 to 60.</li> </ul> <p><b>Note</b> You must use the <b>no</b> form of the command to stop the probing process.</p>
Step 7	<pre>exit</pre> <p><b>Example:</b> Router(config-if)# exit</p>	Exits to privileged EXEC mode.
Step 8	<pre>show processes cpu</pre> <p><b>Example:</b> Router# show processes cpu</p>	Displays the ARP probing process.

## Configuration Examples for ARP—Auto Logoff

This section provides the following configuration example:

- [ARP—Auto Logoff Configuration: Example, page 4](#)

### ARP—Auto Logoff Configuration: Example

The following example shows how to configure the number of intervals at which the peer is probed and for how many seconds:

```
!
interface Ethernet0
 ip address 10.0.0.1 255.255.255.0
 arp authorized
 arp probe interval 5 count 15
 arp timeout 60
```

# Additional References

The following sections provide references related to the ARP—Auto Logoff feature.

## Related Documents

Related Topic	Document Title
ARP optimization and configuration	<ul style="list-style-type: none"> <li>“Configuring IP Addressing” chapter in <i>Cisco IOS IP Configuration Guide</i>, Release 12.3</li> <li><i>DHCP Authorized ARP</i>, Release 12.3(4)T</li> </ul>
ARP commands	<i>Cisco IOS IP Command Reference, Volume 1 of 4: Addressing and Services</i> , Release 12.3 T

## Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

## MIBs

MIBs	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

## RFCs

RFCs	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

## Technical Assistance

Description	Link
Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	<a href="http://www.cisco.com/public/support/tac/home.shtml">http://www.cisco.com/public/support/tac/home.shtml</a>

## Command Reference

This section documents one new command and one modified command only.

- [arp probe interval](#)
- [show processes cpu](#)

# arp probe interval

To control the the probing of authorized peers, use the **arp probe interval** command in interface configuration mode. To disable the probe, use the **no** form of this command.

**arp probe interval** *seconds* **count** *count-number*

**no arp probe**

Syntax Description		
<i>seconds</i>		Interval in seconds after which the next probe will be sent to see if the peer is still present. The range is from 1 to 10.
<b>count</b> <i>count-number</i>		Number of probe retries. If no response, the peer has logged off. The range is from 1 to 60.

**Defaults** Disabled

**Command Modes** Interface configuration

Command History	Release	Modification
	12.3(8)XX	This command was introduced.
	12.3(14)T	This command was integrated into Cisco IOS Release 12.3(14)T.

**Usage Guidelines** Once you configure the **arp probe interval** command, probing continues until you disable it using the **no** form of the command on all interfaces.

**Examples** The following example shows a 2 second interval with a probe of the peer occurring 5 times:

```
interface ethernet 0
  arp probe interval 2 count 5
```

Related Commands	Command	Description
	<b>arp (interface)</b>	Controls the interface-specific handling of IP address resolution.
	<b>clear arp-cache</b>	Deletes all dynamic entries from the ARP cache.
	<b>show interfaces</b>	Displays statistics for all interfaces configured on the router or access server.

# show processes cpu

To display detailed CPU utilization statistics (CPU use per process), use the **show processes cpu** command in privileged EXEC mode.

**show processes cpu [history | sorted]**

## Syntax Description

<b>history</b>	(Optional) Displays CPU history in a graph format.
<b>sorted</b>	(Optional) Displays CPU history sorted by percentage of utilization.

## Command Modes

Privileged EXEC

## Command History

Release	Modification
12.0	This command was introduced.
12.2(2)T	The <b>history</b> keyword was added.
12.3(8), 12.3(14)T	This command was enhanced to display ARP.

## Usage Guidelines

You can use the output of this command in the Cisco.com Output Interpreter to display potential issues and fixes. Access the Output Interpreter through:

<http://www.cisco.com/warp/public/63/highcpu.html>

To use Output Interpreter, you must be a Cisco.com registered customer, be logged in, and have JavaScript enabled.

If you use the optional **history** keyword, three graphs are displayed:

- CPU Utilization for the last 60 seconds
- CPU Utilization for the last 60 minutes
- CPU Utilization for the last 72 hours

The horizontal axis shows times (for example; 0, 5, 10, 15 minutes), the vertical axis shows total percentage of CPU utilization (0 to 100 percent).

## Examples

The following is sample output from the **show processes cpu** command:

```
Router# show processes cpu

CPU utilization for five seconds: 5%/2%; one minute: 3%; five minutes: 2%
  PID Runtime (ms)   Invoked uSecs   5Sec  1Min  5Min  TTY  Process
    1      1736         58   29931    0%   0%   0%   0   Check heaps
    2         68        585    116   1.00% 1.00% 0%   0   IP Input
    3         0        744     0     0%   0%   0%   0   TCP Timer
    4         0         2     0     0%   0%   0%   0   TCP Protocols
    5         0         1     0     0%   0%   0%   0   BOOTP Server
    6        16       130    123    0%   0%   0%   0   ARP Input
    7         0         1     0     0%   0%   0%   0   Probe Input
    8         0         7     0     0%   0%   0%   0   MOP Protocols
```

```

 9          0          2          0      0%  0%  0%  0  Timers
10         692         64    10812     0%  0%  0%  0  Net Background
11          0          5          0     0%  0%  0%  0  Logger
12          0         38          0     0%  0%  0%  0  BGP Open
13          0          1          0     0%  0%  0%  0  Net Input
14         540        3466        155     0%  0%  0%  0  TTY Background
15          0          1          0     0%  0%  0%  0  BGP I/O
16        5100        1367        3730     0%  0%  0%  0  IGRP Router
17          88        4232         20    0.20% 1.00%  0%  0  BGP Router
18         152       14650         10     0%  0%  0%  0  BGP Scanner
19         224         99        2262     0%  0% 1.00%  0  Exec

```

The following is sample output from the **show processes cpu** command that shows an ARP probe Process:

```
Router# show processes cpu | include ARP
```

```

17        38140        389690          97  0.00%  0.00%  0.00%  0 ARP Input
36          0          1          0  0.00%  0.00%  0.00%  0 IP ARP Probe
40          0          1          0  0.00%  0.00%  0.00%  0 ATM ARP INPUT
80          0          1          0  0.00%  0.00%  0.00%  0 RARP Input
114         0          1          0  0.00%  0.00%  0.00%  0 FR ARP

```

Table 1 describes the fields shown in the displays.

**Table 1** *show processes cpu* Field Descriptions

Field	Description
CPU utilization for five seconds:	CPU utilization for the last 5 seconds. The second number indicates the percent of CPU time spent at the interrupt level.
one minute:	CPU utilization for the last minute.
five minutes:	CPU utilization for the last 5 minutes.
PID	Process ID.
Runtime (ms)	CPU time the process has used (in milliseconds).
Invoked	Number of times the process has been invoked.
uSecs	Microseconds of CPU time for each process invocation.
5Sec	CPU utilization by task in the last 5 seconds.
1Min	CPU utilization by task in the last minute.
5Min	CPU utilization by task in the last 5 minutes.
TTY	Terminal that controls the process.
Process	Name of the process.



**Note**

Because platforms have a 4- to 8-millisecond clock resolution, run times are considered reliable only after a large number of invocations or a reasonable, measured run time.

**Related Commands**

Command	Description
<b>show processes memory</b>	Displays amount of system memory used per system process.

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