RADIUS EAP Support

First Published: October 15, 2001
Last Updated: February 28, 2006

The RADIUS EAP Support feature allows users to apply to the client authentication methods that may not be supported by the network access server; this is done via the Extensible Authentication Protocol (EAP). Before this feature was introduced, support for various authentication methods for PPP connections required custom vendor-specific work and changes to the client and NAS.

History for the RADIUS EAP Support Feature

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.2(2)XB5</td>
<td>This feature was introduced on the Cisco 2650, Cisco 3640, Cisco 3660, Cisco AS5500, and Cisco AS400 platforms.</td>
</tr>
<tr>
<td>12.2(13)T</td>
<td>This feature was integrated into Cisco IOS Release 12.2(13)T.</td>
</tr>
<tr>
<td>12.2(28)SB</td>
<td>This feature was integrated into Cisco IOS Release 12.2(28)SB.</td>
</tr>
</tbody>
</table>

Finding Support Information for Platforms and Cisco IOS Software Images

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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- Feature Overview, page 2
- Prerequisites, page 3
- Configuration Tasks, page 3
- Configuration Examples, page 4
- Additional References, page 6
Feature Overview

EAP is an authentication protocol for PPP that supports multiple authentication mechanisms that are negotiated during the authentication phase (instead of the link control protocol [LCP] phase). EAP allows a third-party authentication server to interact with a PPP implementation through a generic interface.

How EAP Works

By default, EAP runs in proxy mode. This means that EAP allows the entire authentication process to be negotiated by the NAS to a back-end server that may reside on or be accessed via a RADIUS server. After EAP is negotiated between the client and the NAS during LCP exchange, all further authentication messages are transparently transmitted between the client and the back-end server. The NAS is no longer directly involved in the authentication process; that is, the NAS works as a proxy, sending EAP messages between the remote peers.

Note

EAP can also run in a local mode; the session is authenticated using the Message Digest 5 (MD5) algorithm and obeys the same authentication rules as Challenge Handshake Authentication Protocol (CHAP). To disable proxy mode and authenticate locally, you must use the `ppp eap local` command.

Newly Supported Attributes

The RADIUS EAP Support feature introduces support for the following RADIUS attributes:

<table>
<thead>
<tr>
<th>Number</th>
<th>IETF Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>79</td>
<td>EAP-Message</td>
<td>Encapsulates one fragment of an EAP message, which includes the PPP type, request-id, length, and EAP-type fields.</td>
</tr>
<tr>
<td>80</td>
<td>Message Authenticator</td>
<td>Ensures source integrity of the message; all messages that are received with invalid checksums are silently discarded by either end. This attribute contains an HMAC-MD5 checksum of the entire RADIUS request or response message and uses the RADIUS server secret as the key.</td>
</tr>
</tbody>
</table>

Benefits

The RADIUS EAP Support feature makes it possible to apply to the client various authentication methods within PPP (including proprietary authentication) that are not supported by the NAS. Thus, customers can use standard support mechanisms for authentication schemes, such as token cards and public key, to strengthen end-user and device authenticated access to their networks.
RADIUS EAP Support

Prerequisites

Cisco IOS Release: Multiple releases (see the Feature History table)

Restrictions

When EAP is running in proxy mode, there may be a significant increase in the authentication time because every packet from the peer must be sent to the RADIUS server and every EAP packet from the RADIUS server must be sent back to the client. Although this extra processing will cause delays, you can increase the default authentication timeout value by using the `ppp timeout authentication` command.

Prerequisites

Before enabling EAP RADIUS on the client, you must perform the following tasks:

- Configure an interface type and enter interface configuration mode by using the `interface` command.
- Configure the interface for PPP encapsulation by using the `encapsulation` command.

For more information on completing these tasks, refer to the chapter “Configuring Media-Independent PPP and Multilink PPP” in the *Cisco IOS Dial Technologies Configuration Guide*, Release 12.4.

Configuration Tasks

See the following sections for configuration tasks for the RADIUS EAP Support feature. Each task in the list is identified as either required or optional.

- Configuring EAP, page 3 (required)
- Verifying EAP, page 4 (optional)

Configuring EAP

To configure EAP on an interface configured for PPP encapsulation, use the following commands in interface configuration mode:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>Router(config-if)# ppp authentication eap</code></td>
<td>Enables EAP as the authentication protocol.</td>
</tr>
<tr>
<td><code>Router(config-if)# ppp eap identity string</code></td>
<td>(Optional) Specifies the EAP identity when requested by the peer.</td>
</tr>
<tr>
<td><code>Router(config-if)# ppp eap password [number] string</code></td>
<td>(Optional) Sets the EAP password for peer authentication. <strong>Note</strong> This command should only be configured on the client.</td>
</tr>
<tr>
<td><code>Router(config-if)# ppp eap local</code></td>
<td>(Optional) Authenticates locally instead of using a RADIUS back-end server, which is the default. <strong>Note</strong> This command should only be configured on the NAS.</td>
</tr>
</tbody>
</table>
Verifying EAP

To verify EAP configurations on your client or NAS, use at least one of the following commands in privileged EXEC configuration mode:

<table>
<thead>
<tr>
<th>Command</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Router# show users</td>
<td>Displays information about the active lines on the router.</td>
</tr>
<tr>
<td>Router# show interfaces</td>
<td>Displays statistics for all interfaces configured on the router or access server.</td>
</tr>
<tr>
<td>Router# show running-config</td>
<td>Ensures that your configurations appear as part of the running configuration.</td>
</tr>
</tbody>
</table>

Command Examples

This section provides the following configuration examples:

- EAP Local Configuration on Client Example, page 4
- EAP Proxy Configuration for NAS Example, page 5

EAP Local Configuration on Client Example

The following example is a sample configuration for a client configured for EAP:

```
interface Ethernet0/0
 ip address 10.1.1.202 255.255.255.0
 no ip mroute-cache
 half-duplex
!
interface BRI0/0
 ip address 192.168.101.100 255.255.255.0
 encapsulation ppp
 no ip mroute-cache
dialer map ip 192.168.101.101 56167
dialer-group 1
 isdn switch-type basic-5ess
 ppp eap identity user
 ppp eap password 7 141B1309
!
```
EAP Proxy Configuration for NAS Example

The following example is a sample configuration for a NAS configured to use EAP proxy:

```
aaa authentication login default group radius
aaa authentication login NOAUTH none
aaa authentication ppp default if-needed group radius
aaa session-id common
enable secret 5 $1$x5D0$cfTL/D8Be.34PgTbdSdg1/
!
username dtw5 password 0 lab
username user password 0 lab
ip subnet-zero
no ip domain-lookup
ip host lab24-boot 172.19.192.254
ip host lb 172.19.192.254
!
controller T1 3
framing esf
linecode b8zs
pri-group timeslots 1-24
!
interface Ethernet0
  ip address 10.1.1.108 255.255.255.0
  no ip route-cache
  no ip mrout-cache
!
interface Serial3:23
  ip address 192.168.101.101 255.255.255.0
  encapsulation ppp
dialer map ip 192.168.101.100 60213
dialer-group 1
isdn switch-type primary-5ess
isdn T321 0
ppp authentication eap
ppp eap password 7 011F0706
!
!
ip default-gateway 10.0.190.1
ip classless
ip route 192.168.101.0 255.255.255.0 Serial3:23
no ip http server
!
dialer-list 1 protocol ip permit
!
radius-server host 10.1.1.201 auth-port 1645 acct-port 1646 key lab
radius-server retransmit 3
call rsvp-sync
!
mgcp profile default
!
```

Cisco IOS Release: Multiple releases (see the Feature History table)
Additional References

The following sections provide references related to RADIUS EAP Support.

Related Documents

<table>
<thead>
<tr>
<th>Related Topic</th>
<th>Document Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuring RADIUS</td>
<td>Cisco IOS Security Configuration Guide, Release 12.4</td>
</tr>
<tr>
<td>PPP Configuration</td>
<td>Cisco IOS Dial Technologies Configuration Guide, Release 12.4</td>
</tr>
<tr>
<td>Dial Technologies commands</td>
<td>Cisco IOS Dial Technologies Command Reference, Release 12.4T</td>
</tr>
<tr>
<td>Security Commands</td>
<td>Cisco IOS Security Command Reference, Release 12.4T</td>
</tr>
</tbody>
</table>

Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>None</td>
<td>—</td>
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</table>

MIBs

<table>
<thead>
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<th>MIB</th>
<th>MIBs Link</th>
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</thead>
<tbody>
<tr>
<td>None</td>
<td>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></td>
</tr>
</tbody>
</table>
RFCs

<table>
<thead>
<tr>
<th>RFC</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFC 2284</td>
<td>PPP Extensible Authentication Protocol (EAP)</td>
</tr>
<tr>
<td>RFC 1938</td>
<td>A One-Time Password System</td>
</tr>
<tr>
<td>RFC 2869</td>
<td>RADIUS Extensions</td>
</tr>
</tbody>
</table>

Technical Assistance

<table>
<thead>
<tr>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Cisco Technical Support &amp; Documentation website contains thousands of 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.</td>
<td><a href="http://www.cisco.com/techsupport">http://www.cisco.com/techsupport</a></td>
</tr>
</tbody>
</table>

Command Reference

This section documents modified commands only.

- ppp authentication
- ppp eap identity
- ppp eap local
- ppp eap password
- ppp eap refuse
- ppp eap wait
ppp authentication

To enable at least one PPP authentication protocol and to specify the order in which the protocols are selected on the interface, use the **ppp authentication** command in interface configuration mode. To disable this authentication, use the no form of this command.

```
ppp authentication [protocol1 [protocol2...]] [if-needed] [list-name | default] [callin] [one-time] [optional]
no ppp authentication
```

**Syntax Description**

- `protocol1 [protocol2...]` At least one of the keywords described in Table 1.
- `if-needed` (Optional) Used with TACACS and extended TACACS. Does not perform Challenge Handshake Authentication Protocol (CHAP) or Password Authentication Protocol (PAP) authentication if authentication has already been provided. This option is available only on asynchronous interfaces.
- `list-name` (Optional) Used with authentication, authorization, and accounting (AAA). Specifies the name of a list of methods of authentication to use. If no list name is specified, the system uses the default. The list is created with the **aaa authentication ppp** command.
- `default` (Optional) Name of the method list created with the **aaa authentication ppp** command.
- `callin` (Optional) Authentication on incoming (received) calls only.
- `one-time` (Optional) The username and password are accepted in the username field.
- `optional` (Optional) Accepts the connection even if the peer refuses to accept the authentication methods that the router has requested.

**Defaults**

PPP authentication is not enabled.

**Command Modes**

Interface configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>12.1(1)</td>
<td>The <strong>optional</strong> keyword was added.</td>
</tr>
<tr>
<td>12.1(3)XS</td>
<td>The <strong>optional</strong> keyword was added.</td>
</tr>
<tr>
<td>12.2(2)XB5</td>
<td>Support for the eap authentication protocol was added on the Cisco 2650, Cisco 3640, Cisco 3660, Cisco AS5300, and Cisco AS5400 platforms.</td>
</tr>
<tr>
<td>12.2(13)T</td>
<td>The eap authentication protocol support introduced in Cisco IOS Release 12.2(2)XB5 was integrated into Cisco IOS Release 12.2(13)T.</td>
</tr>
<tr>
<td>12.2(28)SB</td>
<td>This command was integrated into Cisco IOS Release 12.2(28)SB.</td>
</tr>
</tbody>
</table>
Usage Guidelines

When you enable Password Authentication Protocol (PAP), Challenge Handshake Authentication Protocol (CHAP), or Extensible Authentication Protocol (EAP) authentication (or all three methods), the local router requires the remote device to prove its identity before allowing data traffic to flow. PAP authentication requires the remote device to send a name and a password, which is checked against a matching entry in the local username database or in the remote security server database. CHAP authentication sends a challenge message to the remote device. The remote device encrypts the challenge value with a shared secret and returns the encrypted value and its name to the local router in a Response message. The local router attempts to match the name of the remote device with an associated secret stored in the local username or remote security server database; it uses the stored secret to encrypt the original challenge and verify that the encrypted values match. EAP works much as CHAP does, except that identity request and response packets are exchanged when EAP starts.

You can enable CHAP, Microsoft CHAP (MS-CHAP), PAP, or EAP in any order. If you enable all four methods, the first method specified is requested during link negotiation. If the peer suggests using the second method, or refuses the first method, the second method is tried. Some remote devices support only one method. Base the order in which you specify methods on the ability of the remote device to correctly negotiate the appropriate method and on the level of data-line security you require. PAP usernames and passwords are sent as clear text strings, which can be intercepted and reused.

Caution

If you use a list-name value that was not configured with the `aaa authentication ppp` command, you will disable PPP on this interface.

Table 1 lists the protocols used to negotiate PPP authentication.

<table>
<thead>
<tr>
<th>Protocols</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>chap</td>
<td>Enables CHAP on a serial interface.</td>
</tr>
<tr>
<td>eap</td>
<td>Enables EAP on a serial interface.</td>
</tr>
<tr>
<td>ms-chap</td>
<td>Enables MS-CHAP on a serial interface.</td>
</tr>
<tr>
<td>pap</td>
<td>Enables PAP on a serial interface.</td>
</tr>
</tbody>
</table>

Enabling or disabling PPP authentication does not affect the ability of the local router to authenticate itself to the remote device.

If you are using autoselect on a tty line, you can use the `ppp authentication` command to turn on PPP authentication for the corresponding interface.

MS-CHAP is the Microsoft version of CHAP. Like the standard version of CHAP, MS-CHAP is used for PPP authentication; authentication occurs between a personal computer using Microsoft Windows NT or Microsoft Windows 95 and a Cisco router or access server acting as a network access server.

To configure Cisco PDSN in compliance with the TIA/EIA/IS-835-B standard, you must configure the PDSN virtual template as follows:

```
ppp authentication chap pap optional
```

Examples

The following example configures virtual-template interface 4:

```
interface virtual-template 4
ip unnumbered loopback0
ppp authentication chap pap optional
```
The following example enables CHAP on asynchronous interface 4 and uses the authentication list MIS-access:

```plaintext
interface async 4
   encapsulation ppp
   ppp authentication chap MIS-access
```

The following example enables EAP on dialer interface 1:

```plaintext
interface dialer 1
   encapsulation ppp
   ppp authentication eap
```

### Related Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>aaa authentication ppp</code></td>
<td>Specifies one or more AAA authentication methods for use on serial interfaces running PPP.</td>
</tr>
<tr>
<td><code>aaa new-model</code></td>
<td>Enables the AAA access control model.</td>
</tr>
<tr>
<td><code>autoselect</code></td>
<td>Configures a line to start an ARAP, PPP, or SLIP session.</td>
</tr>
<tr>
<td><code>encapsulation</code></td>
<td>Sets the encapsulation method used by the interface.</td>
</tr>
<tr>
<td><code>ppp accm</code></td>
<td>Identifies the ACCM table.</td>
</tr>
<tr>
<td><code>username</code></td>
<td>Establishes a username-based authentication system, such as PPP, CHAP, and PAP.</td>
</tr>
</tbody>
</table>
**ppp eap identity**

To specify the Extensible Authentication Protocol (EAP) identity, use the `ppp eap identity` command in interface configuration mode. To remove the EAP identity from your configuration, use the `no` form of this command.

```
ppp eap identity string

no ppp eap identity string
```

**Syntax Description**

- `string` EAP identity.

**Defaults**

No default behavior or values.

**Command Modes**

Interface configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.2(2)XB5</td>
<td>This command was introduced.</td>
</tr>
<tr>
<td>12.2(13)T</td>
<td>This command was integrated into Cisco IOS Release 12.2(13)T.</td>
</tr>
<tr>
<td>12.2(28)SB</td>
<td>This command was integrated into Cisco IOS Release 12.2(28)SB.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `ppp eap identity` command to configure the client to use a different identity when requested by the peer.

**Examples**

The following example shows how to enable EAP on dialer interface 1 and set the identity to “cat”:

```
interface dialer 1
encapsulation ppp
ppp eap identity cat
```
ppp eap local

To authenticate locally instead of using the RADIUS back-end server, use the **ppp eap local** command in interface configuration mode. To reenable proxy mode (which is the default), use the **no** form of this command.

```
ppp eap local
no ppp eap local
```

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

**Defaults**  
Authentication is performed via proxy mode.

**Command Modes**  
Interface configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
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<tbody>
<tr>
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<td>12.2(28)SB</td>
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</tr>
</tbody>
</table>

**Usage Guidelines**  
By default, Extensible Authentication Protocol (EAP) runs in proxy mode. This means that EAP allows the entire authentication process to be negotiated by the network access server (NAS) to a back-end server that may reside on or be accessed via a RADIUS server. To disable proxy mode (and thus to authenticate locally instead of via RADIUS), use the **ppp eap local** command.

In local mode, the EAP session is authenticated using the MD5 algorithm and obeys the same authentication rules as does Challenge Handshake Authentication Protocol (CHAP).

**Examples**

The following example shows how to configure EAP to authenticate locally:

```
interface dialer 1
encapsulation ppp
ppp authentication eap
ppp eap local
```

**Related Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ppp authentication</strong></td>
<td>Enables at least one PPP authentication protocol and specifies the order in which the protocols are selected on the interface.</td>
</tr>
</tbody>
</table>
**ppp eap password**

To set the Enhanced Authentication Protocol (EAP) password for peer authentication, use the `ppp eap password` command in interface configuration mode. To disable the password, use the `no` form of this command.

```
ppp eap password [number] string
no ppp eap password [number] string
```

**Syntax Description**

- `number` (Optional) Encryption type, including values 0 through 7; 0 means no encryption.
- `string` Character string that specifies the EAP password.

**Defaults**

No default behavior or values.

**Command Modes**

Interface configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.2(2)XB5</td>
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<tr>
<td>12.2(28)SB</td>
<td>This command was integrated into Cisco IOS Release 12.2(28)SB.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

For remote EAP authentication only, you can configure your router to create a common EAP password to use in response to challenges from an unknown peer; for example, if your router calls a rotary of routers (either from another vendor or from an older running version of the Cisco IOS software) to which a new (that is, unknown) router has been added, the common password will be used to respond to the new router. The `ppp eap password` command allows you to replace several username and password configuration commands with a single copy of this command on any dialer interface or asynchronous group interface.

**Examples**

The following example shows how to set the EAP password “7 141B1309” on the client:

```
ppp eap identity user
ppp eap password 7 141B1309
```
ppp eap refuse

To refuse Enhanced Authentication Protocol (EAP) from peers requesting it, use the `ppp eap refuse` command in interface configuration mode. To return to the default, use the `no` form of this command.

`ppp eap refuse [callin]`

`no ppp eap refuse [callin]`

**Syntax Description**

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>callin</td>
<td>(Optional) Authentication is refused for incoming calls only.</td>
</tr>
</tbody>
</table>

**Defaults**

The server will not refuse EAP authentication challenges received from the peer.

**Command Modes**

Interface configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
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</tr>
</thead>
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</tr>
<tr>
<td>12.2(28)SB</td>
<td>This command was integrated into Cisco IOS Release 12.2(28)SB.</td>
</tr>
</tbody>
</table>

**Usage Guidelines**

Use the `ppp eap refuse` command to disable EAP authentication for all calls. If the `callin` keyword is used, the server will refuse to answer EAP authentication challenges received from the peer but will still require the peer to answer any EAP challenges the server sends.

**Examples**

The following example shows how to refuse EAP authentication on incoming calls from the peer:

```plaintext
ppp authentication eap
ppp eap local
ppp eap refuse callin
```

**Related Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>ppp authentication</code></td>
<td>Enables at least one PPP authentication protocol and specifies the order in which the protocols are selected on the interface.</td>
</tr>
</tbody>
</table>
**ppp eap wait**

To configure the server to delay the Enhanced Authentication Protocol (EAP) authentication until after the peer has authenticated itself to the server, use the **ppp eap wait** command in interface configuration mode. To disable this functionality, use the **no** form of this command.

```
ppp eap wait
no ppp eap wait
```

**Syntax Description**

This command has no arguments or keywords.

**Defaults**

No default behavior or values.

**Command Modes**

Interface configuration

**Command History**

<table>
<thead>
<tr>
<th>Release</th>
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<td>12.2(28)SB</td>
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</tr>
</tbody>
</table>

**Usage Guidelines**

Use the **ppp eap wait** command to specify that the server will not authenticate to a peer requesting EAP authentication until after the peer has authenticated itself to the server.

**Examples**

The following example shows how to configure the server to wait for the peer to authenticate itself first:

```
ppp authentication eap
ppp eap local
ppp eap wait
```

**Related Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>ppp authentication</strong></td>
<td>Enables at least one PPP authentication protocol and specifies the order in which the protocols are selected on the interface.</td>
</tr>
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</table>
attribute—A RADIUS Internet Engineering Task Force (IETF) attribute is one of the original set of 255 standard attributes that are used to communicate authentication, authorization, and accounting (AAA) information between a client and a server. Because IETF attributes are standard, the attribute data is predefined and well known; thus all clients and servers that exchange AAA information via IETF attributes must agree on attribute data such as the exact meaning of the attributes and the general bounds of the values for each attribute.

CHAP—Challenge Handshake Authentication Protocol. Security feature that is supported on lines using PPP encapsulation and prevents unauthorized access. CHAP does not itself prevent unauthorized access; it merely identifies the remote end. The router or access server then determines whether that user is allowed access.

EAP—Extensible Authentication Protocol. A PPP authentication protocol that supports multiple authentication mechanisms that are negotiated during the authentication phase (instead of the Link Control Protocol [LCP] phase). EAP allows a third-party authentication server to interact with the PPP implementation through a generic interface.

LCP—link control protocol. Protocol that establishes, configures, and tests data-link connections for use by PPP.

MD5 (HMAC variant)—Message Digest 5. A hash algorithm used to authenticate packet data. HMAC is a key hashing for message authentication.

NAS—network access server. A device providing local network access to users across a remote access network such as the public switched telephone network (PSTN).

PAP—Password Authentication Protocol. Authentication protocol that allows PPP peers to authenticate one another. The remote router attempting to connect to the local router is required to send an authentication request. Unlike CHAP, PAP passes the password and host name or username in the clear (unencrypted). PAP does not itself prevent unauthorized access; it merely identifies the remote end. The router or access server then determines if that user is allowed access. PAP is supported only on PPP lines.

PPP—Point-to-Point Protocol. A protocol that encapsulates network layer protocol information over point-to-point links. PPP is defined in RFC 1661.

RADIUS—Remote Authentication Dial-In User Service. Database for authenticating modem and ISDN connections and for tracking connection time.

Note
See Internetworking Terms and Acronyms for terms not included in this glossary.