



Configuring Authorization

The AAA authorization feature is used to determine what a user can and cannot do. When AAA authorization is enabled, the network access server uses information retrieved from the user's profile, which is located either in the local user database or on the security server, to configure the user's session. Once this is done, the user is granted access to a requested service only if the information in the user profile allows it.

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Prerequisites

Before configuring authorization using named method lists, the following tasks must be performed:

- Enable AAA on your network access server.
- Configure AAA authentication. Authorization generally takes place after authentication and relies on authentication to work properly.
- Define the characteristics of your Lightweight Directory Access Protocol (LDAP), RADIUS, or TACACS+ security server if RADIUS or TACACS+ authorization is issued so that the Cisco network access server can communicate with the RADIUS or TACACS+ security server.

- Define the rights associated with specific users by using the **username** command if local authorization is issued.
- See the Related Documents section for more information on documents related to these prerequisites.

Information About Configuring Authorization

Named Method Lists for Authorization

Method lists for authorization define the ways that authorization is performed and the sequence in which these methods are performed. A method list is simply a named list describing the authorization methods to be queried (such as LDAP, RADIUS, or TACACS+), in sequence. Method lists enable one or more security protocols to be used for authorization, thus ensuring a backup system in case the initial method fails. Cisco IOS software uses the first method listed to authorize users for specific network services; if that method fails to respond, the Cisco IOS software selects the next method listed in the method list. This process continues until there is successful communication with a listed authorization method, or all methods defined are exhausted.



Note The Cisco IOS software attempts authorization with the next listed method only when there is no response from the previous method. If authorization fails at any point in this cycle--meaning that the security server or local username database responds by denying the user services--the authorization process stops and no other authorization methods are attempted.

Method lists are specific to the authorization type requested:

- **Auth-proxy** --Applies specific security policies on a per-user basis.
- **Commands** --Applies to the EXEC mode commands a user issues. Command authorization attempts authorization for all EXEC mode commands, including global configuration commands, associated with a specific privilege level.
- **EXEC** --Applies to the attributes associated with a user EXEC terminal session.
- **Network** --Applies to network connections. This can include a PPP, SLIP, or ARAP connection.
- **Reverse Access** --Applies to reverse Telnet sessions.

When a named method list is created, a particular list of authorization methods for the indicated authorization type is defined.

Once defined, method lists must be applied to specific lines or interfaces before any of the defined methods are performed. The only exception is the default method list (which is named “default”). If the **aaa authorization** command for a particular authorization type is issued without a named method list specified, the default method list is automatically applied to all interfaces or lines except those that have a named method list explicitly defined. (A defined method list overrides the default method list.) If no default method list is defined, local authorization takes place by default.

AAA Authorization Methods

AAA supports five different methods of authorization:

- **TACACS+**--The network access server exchanges authorization information with the TACACS+ security daemon. TACACS+ authorization defines specific rights for users by associating attribute-value pairs, which are stored in a database on the TACACS+ security server, with the appropriate user.
- **If-Authenticated**--The user is allowed to access the requested function provided the user has been authenticated successfully.
- **None** --The network access server does not request authorization information; authorization is not performed over this line/interface.
- **Local**--The router or access server consults its local database, as defined by the **username** command, for example, to authorize specific rights for users. Only a limited set of functions can be controlled through the local database.
- **LDAP**--The network access server requests authorization information from the RADIUS security server. LDAP authorization defines specific rights for users by associating attributes, which are stored in a database on the LDAP server, with the appropriate user.
- **RADIUS**--The network access server requests authorization information from the RADIUS security server. RADIUS authorization defines specific rights for users by associating attributes, which are stored in a database on the RADIUS server, with the appropriate user.



Note With CSCuc32663, passwords and authorization logs are masked before being sent to the TACACS+, LDAP, or RADIUS security servers. Use the **aaa authorization commands visible-keys** command to send unmasked information to the TACACS+, LDAP, or RADIUS security servers.

Authorization Methods

To have the network access server request authorization information through a TACACS+ security server, use the **aaa authorization** command with the **group tacacs+ method** keyword. For more specific information about configuring authorization using a TACACS+ security server, see the Configuring TACACS+ feature module. For an example of how to enable a TACACS+ server to authorize the use of network services, including PPP and ARA, see the TACACS Authorization Examples for more information.

To allow users to have access to the functions they request as long as they have been authenticated, use the **aaa authorization** command with the **if-authenticated method** keyword. If this method is selected, all requested functions are automatically granted to authenticated users.

There may be times when it is not desirable to run authorization from a particular interface or line. To stop authorization activities on designated lines or interfaces, use the **none method** keyword. If this method is selected, authorization is disabled for all actions.

To select local authorization, which means that the router or access server consults its local user database to determine the functions a user is permitted to use, use the **aaa authorization** command with the **local method** keyword. The functions associated with local authorization are defined by using the **username** global configuration command. For a list of permitted functions, see the Configuring Authentication feature module.

To have the network access server request authorization through a LDAP security server, use the **ldap method** keyword. For more specific information about configuring authorization using a RADIUS security server, see the Configuring RADIUS feature module

To have the network access server request authorization through a RADIUS security server, use the **radius method** keyword. For more specific information about configuring authorization using a RADIUS security server, see the Configuring RADIUS feature module.

To have the network access server request authorization through a RADIUS security server, use the **aaa authorization** command with the **group radius method** keyword. For more specific information about configuring authorization using a RADIUS security server, see the Configuring RADIUS feature module. For an example of how to enable a RADIUS server to authorize services, see the RADIUS Authorization Example for more information.



Note Authorization method lists for SLIP follow whatever is configured for PPP on the relevant interface. If no lists are defined and applied to a particular interface (or no PPP settings are configured), the default setting for authorization applies.

Method Lists and Server Groups

A server group is a way to group existing LDAP, RADIUS, or TACACS+ server hosts for use in method lists. The figure below shows a typical AAA network configuration that includes four security servers: R1 and R2 are RADIUS servers, and T1 and T2 are TACACS+ servers. R1 and R2 make up the group of RADIUS servers. T1 and T2 make up the group of TACACS+ servers.

Using server groups, a subset of the configured server hosts can be specified and use them for a particular service. For example, server groups allows R1 and R2 to be defined as separate server groups, and T1 and T2 as separate server groups. This allows either R1 and T1 to be specified in the method list or R2 and T2 in the method list, which provides more flexibility in the way that RADIUS and TACACS+ resources are assigned.

Server groups also can include multiple host entries for the same server, as long as each entry has a unique identifier. The combination of an IP address and a UDP port number creates a unique identifier, allowing different ports to be individually defined as RADIUS hosts providing a specific AAA service. In other words, this unique identifier enables RADIUS requests to be sent to different UDP ports on a server at the same IP address. If two different host entries on the same RADIUS server are configured for the same service--for example, authorization--the second host entry configured acts as fail-over backup to the first one. Using this example, if the first host entry fails to provide accounting services, the network access server tries the second host entry configured on the same device for accounting services. (The RADIUS host entries are tried in the order they are configured.)

For more information about configuring server groups and about configuring server groups based on DNIS numbers. See the Configuring LDAP, Configuring RADIUS or Configuring TACACS+ feature modules.

AAA Authorization Types

Cisco IOS software supports five different types of authorization:

- **Auth-proxy** --Applies specific security policies on a per-user basis. See the Configuring Authentication Proxy section for more information about where to find authentication proxy configuration documentation.
- **Commands** --Applies to the EXEC mode commands a user issues. Command authorization attempts authorization for all EXEC mode commands, including global configuration commands, associated with a specific privilege level.
- **EXEC** --Applies to the attributes associated with a user EXEC terminal session.

- **Network** --Applies to network connections. This can include a PPP, SLIP, or ARAP connection.
- **Reverse Access** --Applies to reverse Telnet sessions.
- **Configuration**--Applies to downloading configurations from the AAA server.
- **IP Mobile**--Applies to authorization for IP mobile services.

Authorization Types

Named authorization method lists are specific to the indicated type of authorization.

To create a method list to enable authorization that applies specific security policies on a per-user basis, use the **auth-proxy** keyword.

To create a method list to enable authorization for all network-related service requests (including SLIP, PPP, PPP NCPs, and ARAP), use the **network** keyword.

To create a method list to enable authorization to determine if a user is allowed to run an EXEC shell, use the **exec** keyword.

To create a method list to enable authorization for specific, individual EXEC commands associated with a specific privilege level, use the **commands** keyword. (This allows all commands associated with a specified command level from 0 to 15 to be authorized.)

To create a method list to enable authorization for reverse Telnet functions, use the **reverse-access** keyword.

Authorization Attribute-Value Pairs

RADIUS and TACACS+ authorization both define specific rights for users by processing attributes, which are stored in a database on the security server. For both RADIUS and TACACS+, attributes are defined on the security server, associated with the user, and sent to the network access server where they are applied to the user's connection.

See the RADIUS Attributes and TACACS+ Attribute-Value Pairs sections for more information about supported RADIUS attributes and TACACS+ attribute-value pair documentation.

How to Configure Authorization

See Authorization Configuration Examples for more information.

Configuring AAA Authorization Using Named Method Lists

Perform this task to configure AAA authorization using named method lists:

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **aaa authorization** {**auth-proxy** | **network** | **exec** | **commands** *level* | **reverse-access** | **configuration** | **ipmobile**} {**default** | *list-name*} [*method1* [*method2*...]]
4. Do one of the following:

- **line** [aux | console | tty | vty] *line-number* [*ending-line-number*]
- **interface** *interface-type* *interface-number*

5. Do one of the following:

- **authorization** {arap | commands *level* | exec | reverse-access} {default | *list-name*}
- **ppp authorization** {default | *list-name*}

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	aaa authorization {auth-proxy network exec commands <i>level</i> reverse-access configuration ipmobile} {default <i>list-name</i> } [<i>method1</i> [<i>method2</i> ...]] Example: Router(config)# aaa authorization auth-proxy default	Creates an authorization method list for a particular authorization type and enable authorization.
Step 4	Do one of the following: <ul style="list-style-type: none"> • line [aux console tty vty] <i>line-number</i> [<i>ending-line-number</i>] • interface <i>interface-type</i> <i>interface-number</i> Example: Router(config)# line aux 0 Example: Router(config)# interface interface-type interface-number	Enters the line configuration mode for the lines to which the authorization method list is applied. Alternately, enters the interface configuration mode for the interfaces to which the authorization method list is applied.
Step 5	Do one of the following: <ul style="list-style-type: none"> • authorization {arap commands <i>level</i> exec reverse-access} {default <i>list-name</i>} • ppp authorization {default <i>list-name</i>} Example: Router(config-line)# authorization arap default	Applies the authorization list to a line or set of lines. Or Applies the authorization list to an interface or set of interfaces.

Command or Action	Purpose
Example: Router(config-line)# ppp authorization default	

Disabling Authorization for Global Configuration Commands

The **aaa authorization** command with the keyword **commands** attempts authorization for all EXEC mode commands, including global configuration commands, associated with a specific privilege level. Because there are configuration commands that are identical to some EXEC-level commands, there can be some confusion in the authorization process. Using **no aaa authorization config-commands** stops the network access server from attempting configuration command authorization.

To disable AAA authorization for all global configuration commands, use the following command in global configuration mode:

Command	Purpose
Device(config)# no aaa authorization config-commands	Disables authorization for all global configuration commands.

To disable AAA authorization on the console, use the following command in global configuration mode:



Note AAA authorization is disabled on the console by default. If AAA authorization is enabled on the console, disable it by configuring the **no aaa authorization console** command during the AAA configuration stage. AAA should be disabled on the console for user authentication.

Command	Purpose
Device(config)# no aaa authorization console	Disables authorization on the console.

Configuring Authorization for Reverse Telnet

Telnet is a standard terminal emulation protocol used for remote terminal connection. Normally, a network access server is logged into and then Telnet is used to access other network devices from that network access server. There are times, however, when it is necessary to establish a reverse Telnet session. In reverse Telnet sessions, the Telnet connection is established in the opposite direction--from inside a network to a network access server on the network periphery to gain access to modems or other devices connected to that network access server. Reverse Telnet is used to provide users with dialout capability by allowing them to Telnet to modem ports attached to a network access server.

It is important to control access to ports accessible through reverse Telnet. Failure to do so could, for example, allow unauthorized users free access to modems where they can trap and divert incoming calls or make outgoing calls to unauthorized destinations.

Authentication during reverse Telnet is performed through the standard AAA login procedure for Telnet. Typically the user has to provide a username and password to establish either a Telnet or reverse Telnet

session. Reverse Telnet authorization provides an additional (optional) level of security by requiring authorization in addition to authentication. When enabled, reverse Telnet authorization can use RADIUS or TACACS+ to authorize whether or not this user is allowed reverse Telnet access to specific asynchronous ports, after the user successfully authenticates through the standard Telnet login procedure.

Reverse Telnet authorization offers the following benefits:

- An additional level of protection by ensuring that users engaged in reverse Telnet activities are indeed authorized to access a specific asynchronous port using reverse Telnet.
- An alternative method (other than access lists) to manage reverse Telnet authorization.

To configure a network access server to request authorization information from a TACACS+ or RADIUS server before allowing a user to establish a reverse Telnet session, use the following command in global configuration mode:

Command	Purpose
Router(config)# aaa authorization reverse-access <i>method1 [method2 ...]</i>	Configures the network access server to request authorization information before allowing a user to establish a reverse Telnet session.

This feature enables the network access server to request reverse Telnet authorization information from the security server, whether RADIUS or TACACS+. The specific reverse Telnet privileges for the user on the security server itself must be configured.

Authorization Configuration Examples

Named Method List Configuration Example

The following example shows how to configure a Cisco AS5300 (enabled for AAA and communication with a RADIUS security server) for AAA services to be provided by the RADIUS server. If the RADIUS server fails to respond, then the local database is queried for authentication and authorization information, and accounting services are handled by a TACACS+ server.

```
aaa new-model
aaa authentication login admins local
aaa authentication ppp dialins group radius local
aaa authorization network scoobee group radius local
aaa accounting network charley start-stop group radius
username root password ALongPassword
radius-server host alcatraz
radius-server key myRaDiUSpassWoRd
interface group-async 1
group-range 1 16
encapsulation ppp
ppp authentication chap dialins
ppp authorization scoobee
ppp accounting charley
line 1 16
autoselect ppp
autoselect during-login
login authentication admins
modem dialin
```

The lines in this sample RADIUS AAA configuration are defined as follows:

- The **aaa new-model** command enables AAA network security services.
- The **aaa authentication login admins local** command defines a method list, admins, for login authentication.
- The **aaa authentication ppp dialins group radius local** command defines the authentication method list “dialins,” which specifies that RADIUS authentication then (if the RADIUS server does not respond) local authentication is used on serial lines using PPP.
- The **aaa authorization network scoobee group radius local** command defines the network authorization method list named scoobee, which specifies that RADIUS authorization is used on serial lines using PPP. If the RADIUS server fails to respond, then local network authorization is performed.
- The **aaa accounting network charley start-stop group radius** command defines the network accounting method list named charley, which specifies that RADIUS accounting services (in this case, start and stop records for specific events) are used on serial lines using PPP.
- The **username** command defines the username and password to be used for the PPP Password Authentication Protocol (PAP) caller identification.
- The **radius-server host** command defines the name of the RADIUS server host.
- The **radius-server key** command defines the shared secret text string between the network access server and the RADIUS server host.
- The **interface group-async** command selects and defines an asynchronous interface group.
- The **group-range** command defines the member asynchronous interfaces in the interface group.
- The **encapsulation ppp** command sets PPP as the encapsulation method used on the specified interfaces.
- The **ppp authentication chap dialins** command selects Challenge Handshake Authentication Protocol (CHAP) as the method of PPP authentication and applies the “dialins” method list to the specified interfaces.
- The **ppp authorization scoobee** command applies the scoobee network authorization method list to the specified interfaces.
- The **ppp accounting charley** command applies the charley network accounting method list to the specified interfaces.
- The **line** command switches the configuration mode from global configuration to line configuration and identifies the specific lines being configured.
- The **autoselect ppp** command configures the Cisco IOS software to allow a PPP session to start up automatically on these selected lines.
- The **autoselect during-login** command is used to display the username and password prompt without pressing the Return key. After the user logs in, the autoselect function (in this case, PPP) begins.
- The **login authentication admins** command applies the admins method list for login authentication.
- The **modem dialin** command configures modems attached to the selected lines to only accept incoming calls.

TACACS Authorization Examples

The following examples show how to use a TACACS+ server to authorize the use of network services, including PPP and ARA. If the TACACS+ server is not available or an error occurs during the authorization process, the fallback method (none) is to grant all authorization requests:

```
aaa authorization network default group tacacs+ none
```

The following example shows how to allow network authorization using TACACS+:

```
aaa authorization network default group tacacs+
```

The following example shows how to provide the same authorization, but it also creates address pools called mci and att:

```
aaa authorization network default group tacacs+
ip address-pool local
ip local-pool mci 172.16.0.1 172.16.0.255
ip local-pool att 172.17.0.1 172.17.0.255
```

These address pools can then be selected by the TACACS daemon. A sample configuration of the daemon follows:

```
user = mci_customer1 {
    login = cleartext "some password"
    service = ppp protocol = ip {
        addr-pool=mci
    }
}
user = att_customer1 {
    login = cleartext "some other password"
    service = ppp protocol = ip {
        addr-pool=att
    }
}
```

RADIUS Authorization Example

The following example shows how to configure the router to authorize using RADIUS:

```
aaa new-model
aaa authorization exec default group radius if-authenticated
aaa authorization network default group radius
radius-server host ip
radius-server key
```

The lines in this sample RADIUS authorization configuration are defined as follows:

- The **aaa authorization exec default group radius if-authenticated** command configures the network access server to contact the RADIUS server to determine if users are permitted to start an EXEC shell when they log in. If an error occurs when the network access server contacts the RADIUS server, the fallback method is to permit the CLI to start, provided the user has been properly authenticated.

The RADIUS information returned may be used to specify an autocommand or a connection access list be applied to this connection.

- The **aaa authorization network default group radius** command configures network authorization through RADIUS. This can be used to govern address assignment, the application of access lists, and various other per-user quantities.



Note Since no fallback method is specified in this example, authorization fails if, for any reason, there is no response from the RADIUS server.

LDAP Authorization Example

The following example shows how to configure the router to authorize using LDAP:

```
aaa new-model
aaa authorization exec default group ldap if-authenticated
aaa authorization network default group ldap
```

The lines in this sample RADIUS authorization configuration are defined as follows:

- The **aaa authorization exec default group ldap if-authenticated** command configures the network access server to contact the LDAP server to determine if users are permitted to start an EXEC shell when they log in. If an error occurs when the network access server contacts the LDAP server, the fallback method is to permit the CLI to start, provided the user has been properly authenticated.

The LDAP information returned may be used to specify an autocommand or a connection access list be applied to this connection.

The **aaa authorization network default group ldap** command configures network authorization through LDAP. This command can be used to govern address assignment, the application of access lists, and various other per-user quantities.

Reverse Telnet Authorization Examples

The following examples show how to cause the network access server to request authorization information from a TACACS+ security server before allowing a user to establish a reverse Telnet session:

```
aaa new-model
aaa authentication login default group tacacs+
aaa authorization reverse-access default group tacacs+
!
tacacs-server host 172.31.255.0
tacacs-server timeout 90
tacacs-server key goaway
```

The lines in this sample TACACS+ reverse Telnet authorization configuration are defined as follows:

- The **aaa new-model** command enables AAA.
- The **aaa authentication login default group tacacs+** command specifies TACACS+ as the default method for user authentication during login.
- The **aaa authorization reverse-access default group tacacs+** command specifies TACACS+ as the method for user authorization when trying to establish a reverse Telnet session.

- The **tacacs-server host** command identifies the TACACS+ server.
- The **tacacs-server timeout** command sets the interval of time that the network access server waits for the TACACS+ server to reply.
- The **tacacs-server key** command defines the encryption key used for all TACACS+ communications between the network access server and the TACACS+ daemon.

The following example shows how to configure a generic TACACS+ server to grant a user, pat, reverse Telnet access to port tty2 on the network access server named “maple” and to port tty5 on the network access server named “oak”:

```
user = pat
  login = cleartext lab
  service = raccess {
    port#1 = maple/tty2
    port#2 = oak/tty5
```



Note In this example, “maple” and “oak” are the configured host names of network access servers, not DNS names or alias.

The following example shows how to configure the TACACS+ server (CiscoSecure) to grant a user named pat reverse Telnet access:

```
user = pat
profile_id = 90
profile_cycle = 1
member = Tacacs_Users
service=shell {
  default cmd=permit
}
service=raccess {
  allow "c2511e0" "tty1" "*"
  refuse "*" "*" "*"
  password = clear "goaway"
```



Note CiscoSecure only supports reverse Telnet using the command line interface in versions 2.1(x) through version 2.2(1).

An empty “service=raccess {}” clause permits a user to have unconditional access to network access server ports for reverse Telnet. If no “service=raccess” clause exists, the user is denied access to any port for reverse Telnet.

The following example shows how to cause the network access server to request authorization from a RADIUS security server before allowing a user to establish a reverse Telnet session:

```
aaa new-model
aaa authentication login default group radius
aaa authorization reverse-access default group radius
!
radius-server host 172.31.255.0
radius-server key go away
auth-port 1645 acct-port 1646
```

The lines in this sample RADIUS reverse Telnet authorization configuration are defined as follows:

- The **aaa new-model** command enables AAA.
- The **aaa authentication login default group radius** command specifies RADIUS as the default method for user authentication during login.
- The **aaa authorization reverse-access default group radius** command specifies RADIUS as the method for user authorization when trying to establish a reverse Telnet session.
- The **radius-server host** command identifies the RADIUS server.
- The **radius-server key** command defines the encryption key used for all RADIUS communications between the network access server and the RADIUS daemon.

The following example shows how to send a request to the RADIUS server to grant a user named “pat” reverse Telnet access at port tty2 on the network access server named “maple”:

```
Username = "pat"
Password = "goaway"
User-Service-Type = Shell-User
cisco-avpair = "raccess:port#1=maple/tty2"
```

The syntax "raccess:port=any/any" permits a user to have unconditional access to network access server ports for reverse Telnet. If no "raccess:port={nasname }/{tty number }" clause exists in the user profile, the user is denied access to reverse Telnet on all ports.

Additional References

The following sections provide references related to the Authorization feature.

Related Documents

Related Topic	Document Title
Authorization Commands	<i>Cisco IOS Security Command Reference</i>
RADIUS	Configuring RADIUS feature module.
LDAP	Configuring RADIUS feature Module.
RADIUS attributes	RADIUS Attributes Overview and RADIUS IETF Attributes feature module.
TACACS+	Configuring TACACS+ feature module.
TACACS+ Attribute-Value Pairs	TACACS+ Attribute-Value Pairs feature module.
Authentication	Configuring Authentication feature module.
Authentication Proxy	Configuring Authentication Proxy feature module.

Standards

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

MIBs

MIB	MIBs Link
None.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
No new or modified RFCs are supported by this feature.	--

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Configuring Authorization

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for Configuring Authorization

Feature Name	Releases	Feature Information
Configuring Authorization	10.0 Cisco IOS XE Release 2.1	<p>The AAA authorization feature is used to determine what a user can and cannot do. When AAA authorization is enabled, the network access server uses information retrieved from the user's profile, which is located either in the local user database or on the security server, to configure the user's session. Once this is done, the user is granted access to a requested service only if the information in the user profile allows it.</p> <p>This feature was introduced in Cisco IOS Release 10.0.</p> <p>This feature was introduced on Cisco ASR 1000 Series Routers.</p>
LDAP integration with Active Directory	15.1(1)T	<p>LDAP is a standard-based protocol used to access directories. It is based on client server model similar to RADIUS. LDAP is deployed on Cisco devices to send authentication requests to a central LDAP server that contains all user authentication and network service access information.</p> <p>This feature provides authentication and authorization support for AAA.</p> <p>The following command was modified: aaa authorization</p>

