

How to Apply Access Lists to Dial Interfaces with a TACACS+ Server

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Introduction

Prerequisites

- Requirements
- Components Used
- Conventions

Configure

- Network Diagram
- Configurations
- Define Numbered Access Lists on the Router
- Define Access Lists on the Server

Verify

Troubleshoot

- Troubleshooting Commands

NetPro Discussion Forums – Featured Conversations

Related Information

Introduction

This document demonstrates how to apply access lists to dial interfaces with a TACACS+ server. There are two possible methods:

- Define the numbered access list on the router and reference the numbered access list on the server. This is supported in most Cisco IOS® Software releases.
- Define the entire access list on the server. Cisco IOS Software Release 11.3 or later is required for this **per-user** method.

Note: For ISDN, you must use the **per-user** method and you must have virtual profiles configured on the router.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on these software and hardware versions:

- Cisco IOS Software Release 11.1 or later (define access lists on the router)
 - Cisco IOS Software Release 11.3 or later (define access lists on the server)
- Cisco Secure ACS for UNIX
 - Cisco Secure ACS for Windows 2.x and later

Note: This document assumes that Dial access was previously configured. This document does not discuss the details of the Dial configuration. Refer to *Configuring the NAS for Basic Dial Access* for information on how to configure a network access server (NAS) for Dial.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

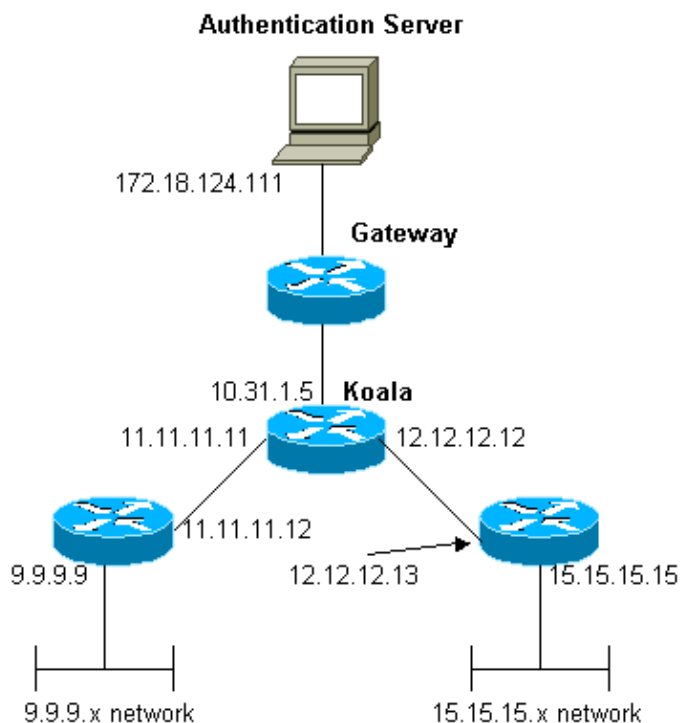
Configure

In this section, you are presented with the information to configure the features described in this document.

Note: Use the Command Lookup Tool (registered customers only) to find more information on the commands used in this document.

Network Diagram

This document uses this network setup:



Note: The configurations allow the user that receives an address 1.1.1.x from "mypool" to ping (ICMP traffic) network 9.9.9.x and Telnet (TCP traffic) to network 15.15.15.x. It does not allow the user to ping network 15.15.15.x or Telnet to network 9.9.9.x.

Configurations

This document uses these configurations.

- Cisco 2500 Series Router running Cisco IOS Software Release 12.0(5)T
- Cisco Secure ACS for UNIX 2.3
- Cisco Secure ACS for Windows 3.2

Define Numbered Access Lists on the Router

Cisco 2500 Series Router that run Cisco IOS Software Release 12.0(5)T

```
Current configuration:
!
version 12.0
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname koala
!
aaa new-model
!

!--- These three lines of the configuration
!--- are specific to Cisco IOS Software Release 12.0.5.T and later.
!--- See the Commands for Other Cisco IOS Releases section for commands
!--- for other Cisco IOS releases.

!
aaa authentication login default local group tacacs+
aaa authentication ppp default if-needed group tacacs+
aaa authorization network default group tacacs+
enable secret 5 $1$mnZQ$g6XdsgVnnYjEa.l7v.Pijl
enable password ww
!
username john password 0 doe
!
ip subnet-zero
!
cns event-service server
!
interface Ethernet0
ip address 10.31.1.5 255.255.255.0
no ip directed-broadcast
no mop enabled
!
interface Serial0
ip address 11.11.11.11 255.255.255.0
no ip directed-broadcast
no ip mroute-cache
no fair-queue
!
interface Serial1
ip address 12.12.12.12 255.255.255.0
no ip directed-broadcast
!
interface Async1
ip unnumbered Ethernet0
no ip directed-broadcast
encapsulation ppp
no ip route-cache
no ip mroute-cache
```

```

async mode dedicated
peer default ip address pool mypool
fair-queue 64 16 0
no cdp enable
ppp authentication chap
!
ip local pool mypool 1.1.1.1 1.1.1.5
ip classless
ip route 0.0.0.0 0.0.0.0 10.31.1.1
ip route 9.9.9.0 255.255.255.0 11.11.11.12
ip route 15.15.15.0 255.255.255.0 12.12.12.13
no ip http server
!

!--- Access list 101 is defined on the NAS.

access-list 101 permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255
access-list 101 permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
!

!--- Specify TACACS+ server host and key.

tacacs-server host 172.18.124.111
tacacs-server key cisco
!
line con 0
transport input none
line 1
modem InOut
transport input all
stopbits 1
speed 115200
flowcontrol hardware
line 2 16
line aux 0
line vty 0 4
password ww
!
end

```

Commands for Other Cisco IOS Releases

Note: In order to use these commands, remove the commands in bold from the Cisco 2500 Series Router configuration and paste these commands in, as dictated by your Cisco IOS Software release.

Cisco IOS Software Release 11.3.3.T through 12.0.5.T

```

aaa authentication login default tacacs+ local
aaa authentication ppp default if-needed tacacs+ local
aaa authorization network default tacacs+

```

Cisco IOS Software Release 11.1 through 11.3.3.T

```

aaa authentication login default tacacs+
aaa authentication ppp default if-needed tacacs+
aaa authorization network tacacs+

```

Server Configuration – TACACS+ Freeware

```
user = chaprtr {
  chap = cleartext chaprtr
  service = ppp protocol = ip {
    inacl=101
  }
}
```

Server Configuration – Cisco Secure UNIX – TACACS+

```
rtp-berry# ./ViewProfile -p 9900 -u chaprtr
User Profile Information
user = chaprtr{
profile_id = 182
set server current-failed-logins = 1
profile_cycle = 2
service=ppp {
protocol=lcp {
}
}
protocol=ip {
set inacl=101
}
}
password = chap "chaprtr"
}
```

Server Configuration – Cisco Secure ACS for Windows 2.x and Later – TACACS+

Complete these steps in order to configure Cisco Secure ACS for Windows to specify which ACLs the NAS should apply.

1. Click **Group Setup**, select the group the user belongs to, and click **Edit Settings**.
2. Click the **PPP IP**, **In access control list** and **PPP LCP** checkboxes in the TACACS+ Settings section.

Specify the ACL number to be applied (in this case 101) in the 'In access control list' box.

3. Check **Enabled** in order to enable the **PPP IP** and **PPP LCP** options.

CISCO SYSTEMS **Group Setup**

Jump To **Access Restrictions**

Downloadable ACLs

Assign IP ACL: **-ACL DB EMPTY-**

TACACS+ Settings

PPP IP

In access control list:

Out access control list:

Route:

Routing: Enabled

PPP LCP

Callback line:

Callback rotary:

No callback verify: Enabled

Shell (exec)

Access control list:

Auto command:

Sample Router Debug

```

koala#show debug
General OS:
TACACS access control debugging is on
AAA Authentication debugging is on
AAA Authorization debugging is on
koala#show ip access-lists
Extended IP access list 101
permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255 log (2 matches)
permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255 log (11 matches)
koala#
4d05h: As1 AAA/AUTHOR/FSM: (0): LCP succeeds trivially
4d05h: %LINK-3-UPDOWN: Interface Async1, changed state to up
4d05h: AAA: parse name=Async1 idb type=10 tty=1
4d05h: AAA: name=Async1 flags=0x11 type=4 shelf=0 slot=0
adapter=0 port=1 channel=0
4d05h: AAA/MEMORY: create_user (0x54F934) user='chaptrr'
ruser='' port='Async1' rem_addr='async' authn_type=CHAP
service=PPP priv=1
4d05h: AAA/AUTHEN/START (1203050692): port='Async1' list=''
action=LOGIN service=PPP
4d05h: AAA/AUTHEN/START (1203050692): using "default" list
4d05h: AAA/AUTHEN (1203050692): status = UNKNOWN
4d05h: AAA/AUTHEN/START (1203050692): Method=tacacs+ (tacacs+)
4d05h: TAC+: send AUTHEN/START packet ver=193 id=1203050692

```

```
4d05h: TAC+: Using default tacacs server-group "tacacs+" list.
4d05h: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
4d05h: TAC+: Opened TCP/IP handle 0x538778 to 172.18.124.111/49
4d05h: TAC+: 172.18.124.111 (1203050692) AUTHEN/START/LOGIN/CHAP queued
4d05h: TAC+: (1203050692) AUTHEN/START/LOGIN/CHAP processed
4d05h: TAC+: ver=192 id=1203050692 received AUTHEN status = GETPASS
4d05h: TAC+: Closing TCP/IP 0x538778 connection to 172.18.124.111/49
4d05h: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
4d05h: TAC+: Opened TCP/IP handle 0x538BBC to 172.18.124.111/49
4d05h: TAC+: Opened 172.18.124.111 index=1
4d05h: AAA: parse name=Async1 idb type=-1 tty=-1
4d05h: AAA: name=Async1 flags=0x11 type=4 shelf=0 slot=0 adapter=0
port=1 channel=0
4d05h: AAA/MEMORY: create_user (0x19FCF8) user='chaptrtr' ruser=''
port='Async1' rem_addr='async' authen_type=CHAP service=PPP priv=1
4d05h: TAC+: rev0 inbound chap for id=1203050692 using id=2966879003
4d05h: TAC+: 172.18.124.111 (2966879003) AUTHEN/START/SENDPASS/CHAP queued
4d05h: TAC+: (2966879003) AUTHEN/START/SENDPASS/CHAP processed
4d05h: TAC+: ver=192 id=2966879003 received AUTHEN status = PASS
4d05h: TAC+: rev0 inbound chap SENDPASS status=PASS for id=1203050692
4d05h: TAC+: rev0 inbound chap MD5 compare OK
4d05h: AAA/MEMORY: free_user (0x19FCF8) user='chaptrtr' ruser=''
port='Async1' rem_addr='async' authen_type=CHAP service=PPP priv=1
4d05h: TAC+: Closing TCP/IP 0x538BBC connection to 172.18.124.111/49
4d05h: AAA/AUTHEN (1203050692): status = PASS
4d05h: As1 AAA/AUTHOR/LCP: Authorize LCP
4d05h: As1 AAA/AUTHOR/LCP (3002156107): Port='Async1' list='' service=NET
4d05h: AAA/AUTHOR/LCP: As1 (3002156107) user='chaptrtr'
4d05h: As1 AAA/AUTHOR/LCP (3002156107): send AV service=ppp
4d05h: As1 AAA/AUTHOR/LCP (3002156107): send AV protocol=lcp
4d05h: As1 AAA/AUTHOR/LCP (3002156107): found list "default"
4d05h: As1 AAA/AUTHOR/LCP (3002156107): Method=tacacs+ (tacacs+)
4d05h: AAA/AUTHOR/TAC+: (3002156107): user=chaptrtr
4d05h: AAA/AUTHOR/TAC+: (3002156107): send AV service=ppp
4d05h: AAA/AUTHOR/TAC+: (3002156107): send AV protocol=lcp
4d05h: TAC+: using previously set server 172.18.124.111 from group tacacs+
4d05h: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
4d05h: TAC+: Opened TCP/IP handle 0x539000 to 172.18.124.111/49
4d05h: TAC+: Opened 172.18.124.111 index=1
4d05h: TAC+: 172.18.124.111 (3002156107) AUTHOR/START queued
4d05h: TAC+: (3002156107) AUTHOR/START processed
4d05h: TAC+: (3002156107): received author response status = PASS_ADD
4d05h: TAC+: Closing TCP/IP 0x539000 connection to 172.18.124.111/49
4d05h: As1 AAA/AUTHOR (3002156107): Post authorization status = PASS_ADD
4d05h: As1 AAA/AUTHOR/FSM: (0): Can we start IPCP?
4d05h: As1 AAA/AUTHOR/FSM (1577158668): Port='Async1' list='' service=NET
4d05h: AAA/AUTHOR/FSM: As1 (1577158668) user='chaptrtr'
4d05h: As1 AAA/AUTHOR/FSM (1577158668): send AV service=ppp
4d05h: As1 AAA/AUTHOR/FSM (1577158668): send AV protocol=ip
4d05h: As1 AAA/AUTHOR/FSM (1577158668): found list "default"
4d05h: As1 AAA/AUTHOR/FSM (1577158668): Method=tacacs+ (tacacs+)
4d05h: AAA/AUTHOR/TAC+: (1577158668): user=chaptrtr
4d05h: AAA/AUTHOR/TAC+: (1577158668): send AV service=ppp
4d05h: AAA/AUTHOR/TAC+: (1577158668): send AV protocol=ip
4d05h: TAC+: using previously set server 172.18.124.111 from group tacacs+
4d05h: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
4d05h: TAC+: Opened TCP/IP handle 0x539444 to 172.18.124.111/49
4d05h: TAC+: Opened 172.18.124.111 index=1
4d05h: TAC+: 172.18.124.111 (1577158668) AUTHOR/START queued
4d05h: TAC+: (1577158668) AUTHOR/START processed
4d05h: TAC+: (1577158668): received author response status = PASS_ADD
4d05h: TAC+: Closing TCP/IP 0x539444 connection to 172.18.124.111/49
4d05h: As1 AAA/AUTHOR (1577158668): Post authorization status = PASS_ADD
4d05h: As1 AAA/AUTHOR/FSM: We can start IPCP
4d05h: %LINEPROTO-5-UPDOWN: Line protocol on Interface Async1,
changed state to up
```

```

4d05h: As1 AAA/AUTHOR/IPCP: Start. Her address 0.0.0.0, we want 0.0.0.0
4d05h: As1 AAA/AUTHOR/IPCP: Processing AV service=ppp
4d05h: As1 AAA/AUTHOR/IPCP: Processing AV protocol=ip
4d05h: As1 AAA/AUTHOR/IPCP: Processing AV inacl=101
4d05h: As1 AAA/AUTHOR/IPCP: Authorization succeeded
4d05h: As1 AAA/AUTHOR/IPCP: Done. Her address 0.0.0.0, we want 0.0.0.0
4d05h: As1 AAA/AUTHOR/IPCP: Start. Her address 0.0.0.0, we want 1.1.1.2
4d05h: As1 AAA/AUTHOR/IPCP: Processing AV service=ppp
4d05h: As1 AAA/AUTHOR/IPCP: Processing AV protocol=ip

```

!--- Apply ACL 101 in the inbound direction.

```

4d05h: As1 AAA/AUTHOR/IPCP: Processing AV inacl=101
4d05h: As1 AAA/AUTHOR/IPCP: Authorization succeeded
4d05h: As1 AAA/AUTHOR/IPCP: Done. Her address 0.0.0.0, we want 1.1.1.2
4d05h: As1 AAA/AUTHOR/IPCP: Start. Her address 1.1.1.2, we want 1.1.1.2
4d05h: As1 AAA/AUTHOR/IPCP (1659098608): Port='Async1' list=''
service=NET
4d05h: AAA/AUTHOR/IPCP: As1 (1659098608) user='chaptrtr'
4d05h: As1 AAA/AUTHOR/IPCP (1659098608): send AV service=ppp
4d05h: As1 AAA/AUTHOR/IPCP (1659098608): send AV protocol=ip
4d05h: As1 AAA/AUTHOR/IPCP (1659098608): send AV addr*1.1.1.2
4d05h: As1 AAA/AUTHOR/IPCP (1659098608): found list "default"
4d05h: As1 AAA/AUTHOR/IPCP (1659098608): Method=tacacs+ (tacacs+)
4d05h: AAA/AUTHOR/TAC+: (1659098608): user=chaptrtr
4d05h: AAA/AUTHOR/TAC+: (1659098608): send AV service=ppp
4d05h: AAA/AUTHOR/TAC+: (1659098608): send AV protocol=ip
4d05h: AAA/AUTHOR/TAC+: (1659098608): send AV addr*1.1.1.2
4d05h: TAC+: using previously set server 172.18.124.111 from
group tacacs+
4d05h: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
4d05h: TAC+: Opened TCP/IP handle 0x538BBC to 172.18.124.111/49
4d05h: TAC+: Opened 172.18.124.111 index=1
4d05h: TAC+: 172.18.124.111 (1659098608) AUTHOR/START queued
4d05h: TAC+: (1659098608) AUTHOR/START processed
4d05h: TAC+: (1659098608): received author response status = PASS_REPL
4d05h: TAC+: Closing TCP/IP 0x538BBC connection to 172.18.124.111/49
4d05h: As1 AAA/AUTHOR (1659098608): Post authorization status = PASS_REPL
4d05h: As1 AAA/AUTHOR/IPCP: Reject 1.1.1.2, using 1.1.1.2
4d05h: As1 AAA/AUTHOR/IPCP: Processing AV service=ppp
4d05h: As1 AAA/AUTHOR/IPCP: Processing AV protocol=ip
4d05h: As1 AAA/AUTHOR/IPCP: Processing AV inacl=101
4d05h: As1 AAA/AUTHOR/IPCP: Processing AV addr*1.1.1.2
4d05h: As1 AAA/AUTHOR/IPCP: Authorization succeeded
4d05h: As1 AAA/AUTHOR/IPCP: Done. Her address 1.1.1.2, we want 1.1.1.2
4d05h: %SEC-6-IPACCESSLOGDP: list 101 permitted icmp 1.1.1.2 ->
9.9.9.9 (0/0), 3 packets
koala#show ip access-lists
Extended IP access list 101
permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255 log (5 matches)
permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255 log (11 matches)
koala#

```

Define Access Lists on the Server

Note: Route statements do not have to be passed down from the server to the router. The Dial user normally picks up the routes from the router. The presence of the route statements on the router depends on whether the routes are passed down from the server or picked up from the router:

```

ip route 9.9.9.0 255.255.255.0 11.11.11.12
ip route 15.15.15.0 255.255.255.0 12.12.12.13

```

In this sample configuration, passing the routes down from the server is for illustration purposes only.

Router Configuration

```
Current configuration:
!
version 12.0
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname koala
!
aaa new-model
!

!--- These three lines of the configuration
!--- are specific to Cisco IOS Software Release 12.0.5.T and later.
!--- See the Commands for Other IOS Releases section for
!--- commands for other Cisco IOS Software releases.

!
aaa authentication login default group tacacs+ none
aaa authentication ppp default if-needed group tacacs+
aaa authorization network default group tacacs+
enable secret 5 $1$mnZQ$g6XdsgVnnYjEa.17v.Pijl
enable password ww
!
username john password 0 doe
!
ip subnet-zero
!
cns event-service server
!
interface Ethernet0
ip address 10.31.1.5 255.255.255.0
no ip directed-broadcast
no mop enabled
!
interface Serial0
ip address 11.11.11.11 255.255.255.0
no ip directed-broadcast
no ip mroute-cache
no fair-queue
!
interface Serial1
ip address 12.12.12.12 255.255.255.0
no ip directed-broadcast
!
interface Async1
ip unnumbered Ethernet0
no ip directed-broadcast
encapsulation ppp
no ip route-cache
no ip mroute-cache
async mode dedicated
peer default ip address pool mypool
fair-queue 64 16 0
no cdp enable
ppp authentication chap
!
ip local pool mypool 1.1.1.1 1.1.1.5
ip classless
ip route 0.0.0.0 0.0.0.0 10.31.1.1
ip route 172.17.192.0 255.255.255.0 10.31.1.1
ip route 172.18.124.0 255.255.255.0 10.31.1.1
ip route 172.18.125.0 255.255.255.0 10.31.1.1
no ip http server
```

```

!
dialer-list 1 protocol ip permit
dialer-list 1 protocol ipx permit
!
tacacs-server host 172.18.124.111
tacacs-server key cisco
!
line con 0
transport input none
line 1
autoselect during-login
autoselect ppp
modem InOut
transport input all
stopbits 1
speed 115200
flowcontrol hardware
line 2 16
line aux 0
line vty 0 4
password ww
!
end

```

Commands for Other Cisco IOS Releases

Note: In order to use these commands, remove the commands in bold from the Router configuration and paste these commands in, as dictated by your Cisco IOS Software release.

Cisco IOS Software Release 11.3.3.T through 12.0.5.T

```

aaa authentication login default tacacs+ local
aaa authentication ppp default if-needed tacacs+ local
aaa authorization network default tacacs+

```

Cisco IOS Software Release 11.3 through 11.3.3.T

```

aaa authentication login default tacacs+
aaa authentication ppp default if-needed tacacs+
aaa authorization network tacacs+

```

Server Configuration – TACACS+ Freeware

```

user = chaprtr {
chap = cleartext chaprtr
service = ppp protocol = ip {
route#1 = "9.9.9.9 255.255.255.255 11.11.11.12"
route#2 = "15.15.15.15 255.255.255.255 12.12.12.13"
route#3 = "15.15.15.16 255.255.255.255 12.12.12.13"
inacl#1 = "permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255"
inacl#2 = "permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255"
}
}

```

Server Configuration – Cisco Secure UNIX – TACACS+

```

rtp-berry# ./ViewProfile -p 9900 -u chaprtr
User Profile Information
user = chaprtr{
profile_id = 183
set server current-failed-logins = 1
profile_cycle = 4

```

```

service=ppp {
protocol=lcp {
}
protocol=ip {
set route#1="9.9.9.9 255.255.255.255 11.11.11.12"
set route#2="15.15.15.15 255.255.255.255 12.12.12.13"
set route#3="15.15.15.16 255.255.255.255 12.12.12.13"
set inacl#1="permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255"
set inacl#2="permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255"
}
}

password = chap "chaptr"
}

```

Server Configuration – Cisco Secure Windows 2.x – TACACS+

Complete these steps in order to configure Cisco Secure for Windows to pass ACLs to the NAS.

1. Click **Interface Configuration** and select **TACACS+ Cisco**.
2. Check **Display a window for each service selected in which you can enter customized TACACS+ attributes** in the 'Advanced Configuration Options' section and click **Submit**.

The screenshot shows the 'Interface Configuration' window in Cisco Secure Windows 2.x. On the left is a navigation pane with icons for User Setup, Group Setup, Shared Profile Components, Network Configuration, System Configuration, Interface Configuration (highlighted), Administration Control, External User Databases, Reports and Activity, and Online Documentation. The main area is titled 'Interface Configuration' and contains a list of services with checkboxes:

<input type="checkbox"/>	<input type="checkbox"/>	PPP Apple Talk
<input type="checkbox"/>	<input type="checkbox"/>	PPP VPDN
<input type="checkbox"/>	<input checked="" type="checkbox"/>	PPP LCP
<input type="checkbox"/>	<input type="checkbox"/>	ARAP
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Shell (exec)
<input type="checkbox"/>	<input type="checkbox"/>	PIX Shell (pixshell)
<input type="checkbox"/>	<input type="checkbox"/>	SLIP

Below this is a 'New Services' section with a table:

	Service	Protocol
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>

At the bottom is the 'Advanced Configuration Options' section with a help icon:

- Advanced TACACS+ Features
- Display a Time-of-Day access grid for every TACACS+ service where you can override the default Time-of-Day settings
- Display a window for each service selected in which you can enter customized TACACS+ attributes
- Display enable default (Undefined) service configuration

At the bottom right are 'Submit' and 'Cancel' buttons.

3. Click **Group Setup**, select the group the user belongs to, and click **Edit Settings**.
4. Go to the PPP IP section and click the **PPP IP**, **Custom Attributes** and **Enable** checkboxes from

TACACS+ Settings.

Enter the text shown here in the Custom attributes box and click **Submit**.

```
route#1=9.9.9.9 255.255.255.255 11.11.11.12
route#2=15.15.15.15 255.255.255.255 12.12.12.13
route#3=15.15.15.16 255.255.255.255 12.12.12.13
inacl#1=permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255
inacl#2=permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255
```

The screenshot shows the Cisco Group Setup interface. The 'Jump To' dropdown is set to 'Access Restrictions'. The 'TACACS+ Settings' section is active, showing the following configuration:

- PPP IP**
 - In access control list
 - Out access control list
 - Route
 - Routing Enabled
 - Custom attributes
 - 255.255.255.255 12.12.12.13
 - inacl#1=permit icmp 1.1.1.0
 - 0.0.0.255 9.9.9.0 0.0.0.255
 - inacl#2=permit tcp 1.1.1.0
 - 0.0.0.255 15.15.15.0 0.0.0.255
- PPP LCP**
 - Callback line
 - Callback rotary
 - No callback verify Enabled
 - Custom attributes

Buttons at the bottom: Submit, Submit + Restart, Cancel.

Sample Router Debug

This user profile was used to create this debug output.

```
chaptr
{
login = cleartext cisco
chap = cleartext
chaptr service = ppp
protocol = ip
{
route#1 = "9.9.9.9 255.255.255.255 11.11.11.12"
route#2 = "15.15.15.15 255.255.255.255 12.12.12.13"
route#3 = "15.15.15.16 255.255.255.255 12.12.12.13"
inacl#1 = "permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255"
```

```

inac1#2 = "permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255"
}
}

koala#
*Mar 1 01:22:39.963: As1 LCP: I CONFREQ [Closed] id 0 len 23
*Mar 1 01:22:39.967: As1 LCP: ACCM 0x00000000 (0x020600000000)
*Mar 1 01:22:39.971: As1 LCP: MagicNumber 0x000034BD (0x0506000034BD)
*Mar 1 01:22:39.971: As1 LCP: PFC (0x0702)
*Mar 1 01:22:39.975: As1 LCP: ACFC (0x0802)
*Mar 1 01:22:39.975: As1 LCP: Callback 6 (0x0D0306)
*Mar 1 01:22:39.979: As1 LCP: Lower layer not up, Fast Starting
*Mar 1 01:22:39.983: As1 PPP: Treating connection as a dedicated line
*Mar 1 01:22:39.983: As1 PPP: Phase is ESTABLISHING, Active Open [0 sess, 0 load]
*Mar 1 01:22:39.987: As1 AAA/AUTHOR/FSM: (0): LCP succeeds trivially
*Mar 1 01:22:39.991: As1 LCP: O CONFREQ [Closed] id 30 len 25
*Mar 1 01:22:39.995: As1 LCP: ACCM 0x000A0000 (0x0206000A0000)
*Mar 1 01:22:39.999: As1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 1 01:22:40.003: As1 LCP: MagicNumber 0xE069F1B8 (0x0506E069F1B8)
*Mar 1 01:22:40.003: As1 LCP: PFC (0x0702)
*Mar 1 01:22:40.007: As1 LCP: ACFC (0x0802)
*Mar 1 01:22:40.011: As1 LCP: O CONFREQ [REQsent] id 0 len 7
*Mar 1 01:22:40.011: As1 LCP: Callback 6 (0x0D0306)
01:22:40: %LINK-3-UPDOWN: Interface Async1, changed state to up
*Mar 1 01:22:40.139: As1 LCP: I CONFACK [REQsent] id 30 len 25
*Mar 1 01:22:40.143: As1 LCP: ACCM 0x000A0000 (0x0206000A0000)
*Mar 1 01:22:40.143: As1 LCP: AuthProto CHAP (0x0305C22305)
*Mar 1 01:22:40.147: As1 LCP: MagicNumber 0xE069F1B8 (0x0506E069F1B8)
*Mar 1 01:22:40.151: As1 LCP: PFC (0x0702)
*Mar 1 01:22:40.151: As1 LCP: ACFC (0x0802)
*Mar 1 01:22:40.155: As1 LCP: I CONFREQ [ACKrcvd] id 1 len 20
*Mar 1 01:22:40.159: As1 LCP: ACCM 0x00000000 (0x020600000000)
*Mar 1 01:22:40.163: As1 LCP: MagicNumber 0x000034BD (0x0506000034BD)
*Mar 1 01:22:40.163: As1 LCP: PFC (0x0702)
*Mar 1 01:22:40.167: As1 LCP: ACFC (0x0802)
*Mar 1 01:22:40.171: As1 LCP: O CONFACK [ACKrcvd] id 1 len 20
*Mar 1 01:22:40.171: As1 LCP: ACCM 0x00000000 (0x020600000000)
*Mar 1 01:22:40.175: As1 LCP: MagicNumber 0x000034BD (0x0506000034BD)
*Mar 1 01:22:40.179: As1 LCP: PFC (0x0702)
*Mar 1 01:22:40.179: As1 LCP: ACFC (0x0802)
*Mar 1 01:22:40.183: As1 LCP: State is Open
*Mar 1 01:22:40.183: As1 PPP: Phase is AUTHENTICATING, by this end
[0 sess, 1 load]
*Mar 1 01:22:40.187: As1 CHAP: O CHALLENGE id 10 len 26 from "koala"
*Mar 1 01:22:40.295: As1 LCP: I IDENTIFY [Open] id 2 len 18 magic
0x000034BD MSRASV4.00
*Mar 1 01:22:40.307: As1 LCP: I IDENTIFY [Open] id 3 len 21 magic
0x000034BD MSRAS-1-ZEKIE
*Mar 1 01:22:40.315: As1 CHAP: I RESPONSE id 10 len 28 from "chaptrtr"
*Mar 1 01:22:40.323: AAA: parse name=Async1 idb type=10 tty=1
*Mar 1 01:22:40.323: AAA: name=Async1 flags=0x11 type=4 shelf=0 slot=0
adapter=0 port=1 channel=0
*Mar 1 01:22:40.327: AAA/MEMORY: create_user (0x4ED58C) user='chaptrtr'
ruser='' port='Async1' rem_addr='async' authen_type=CHAP service=PPP
priv=1
*Mar 1 01:22:40.331: AAA/AUTHEN/START (2439833946): port='Async1'
list='' action=LOGIN service=PPP
*Mar 1 01:22:40.335: AAA/AUTHEN/START (2439833946): using "default" list
*Mar 1 01:22:40.339: AAA/AUTHEN (2439833946): status = UNKNOWN
*Mar 1 01:22:40.339: AAA/AUTHEN/START (2439833946): Method=tacacs+ (tacacs+)
*Mar 1 01:22:40.343: TAC+: send AUTHEN/START packet ver=193 id=2439833946
*Mar 1 01:22:40.347: TAC+: Using default tacacs server-group "tacacs+" list.
*Mar 1 01:22:40.347: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
*Mar 1 01:22:40.359: TAC+: Opened TCP/IP handle 0x4EDDF8 to 172.18.124.111/49
*Mar 1 01:22:40.367: TAC+: 172.18.124.111 (2439833946)
AUTHEN/START/LOGIN/CHAP queued

```

```
*Mar 1 01:22:40.667: TAC+: (2439833946) AUTHEN/START/LOGIN/CHAP processed
*Mar 1 01:22:40.671: TAC+: ver=192 id=2439833946 received AUTHEN
status = GETPASS
*Mar 1 01:22:40.675: TAC+: Closing TCP/IP 0x4EDDF8 connection to
172.18.124.111/49
*Mar 1 01:22:40.679: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
*Mar 1 01:22:40.695: TAC+: Opened TCP/IP handle 0x4EE23C to 172.18.124.111/49
*Mar 1 01:22:40.695: TAC+: Opened 172.18.124.111 index=1
*Mar 1 01:22:40.699: AAA: parse name=Async1 idb type=-1 tty=-1
*Mar 1 01:22:40.703: AAA: name=Async1 flags=0x11 type=4 shelf=0 slot=0
adapter=0 port=1 channel=0
*Mar 1 01:22:40.707: AAA/MEMORY: create_user (0x4EC300) user='chaptrtr'
ruser='' port='Async1' rem_addr='async' authen_type=CHAP service=PPP priv=1
*Mar 1 01:22:40.711: TAC+: rev0 inbound chap for id=2439833946 using
id=1730351499
*Mar 1 01:22:40.715: TAC+: 172.18.124.111 (1730351499)
AUTHEN/START/SENDPASS/CHAP queued
*Mar 1 01:22:40.915: TAC+: (1730351499) AUTHEN/START/SENDPASS/CHAP processed
*Mar 1 01:22:40.919: TAC+: ver=192 id=1730351499 received AUTHEN
status = PASS
*Mar 1 01:22:40.923: TAC+: rev0 inbound chap SENDPASS status=PASS
for id=2439833946
*Mar 1 01:22:40.927: TAC+: rev0 inbound chap MD5 compare OK
*Mar 1 01:22:40.927: AAA/MEMORY: free_user (0x4EC300) user='chaptrtr'
ruser='' port='Async1' rem_addr='async' authen_type=CHAP service=PPP
priv=1
*Mar 1 01:22:40.935: TAC+: Closing TCP/IP 0x4EE23C connection to
172.18.124.111/49
*Mar 1 01:22:40.939: AAA/AUTHEN (2439833946): status = PASS
*Mar 1 01:22:40.943: As1 AAA/AUTHOR/LCP: Authorize LCP
*Mar 1 01:22:40.947: As1 AAA/AUTHOR/LCP (4250537500): Port='Async1'
list='' service=NET
*Mar 1 01:22:40.947: AAA/AUTHOR/LCP: As1 (4250537500) user='chaptrtr'
*Mar 1 01:22:40.951: As1 AAA/AUTHOR/LCP (4250537500): send AV service=ppp
*Mar 1 01:22:40.955: As1 AAA/AUTHOR/LCP (4250537500): send AV protocol=lcp
*Mar 1 01:22:40.955: As1 AAA/AUTHOR/LCP (4250537500): found list "default"
*Mar 1 01:22:40.959: As1 AAA/AUTHOR/LCP (4250537500):
Method=tacacs+ (tacacs+)
*Mar 1 01:22:40.963: AAA/AUTHOR/TAC+: (4250537500): user=chaptrtr
*Mar 1 01:22:40.963: AAA/AUTHOR/TAC+: (4250537500): send AV service=ppp
*Mar 1 01:22:40.967: AAA/AUTHOR/TAC+: (4250537500): send AV protocol=lcp
*Mar 1 01:22:40.971: TAC+: using previously set server 172.18.124.111
from group tacacs+
*Mar 1 01:22:40.971: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
*Mar 1 01:22:40.987: TAC+: Opened TCP/IP handle 0x4EE680 to 172.18.124.111/49
*Mar 1 01:22:40.991: TAC+: Opened 172.18.124.111 index=1
*Mar 1 01:22:40.999: TAC+: 172.18.124.111 (4250537500) AUTHOR/START queued
*Mar 1 01:22:41.195: TAC+: (4250537500) AUTHOR/START processed
*Mar 1 01:22:41.199: TAC+: (4250537500): received author response
status = PASS_ADD
*Mar 1 01:22:41.203: TAC+: Closing TCP/IP 0x4EE680 connection to
172.18.124.111/49
*Mar 1 01:22:41.207: As1 AAA/AUTHOR (4250537500): Post authorization
status = PASS_ADD
*Mar 1 01:22:41.215: As1 CHAP: 0 SUCCESS id 10 len 4
*Mar 1 01:22:41.219: As1 PPP: Phase is UP [0 sess, 0 load]
*Mar 1 01:22:41.223: As1 AAA/AUTHOR/FSM: (0): Can we start IPCP?
*Mar 1 01:22:41.223: As1 AAA/AUTHOR/FSM (2403262371): Port='Async1'
list='' service=NET
*Mar 1 01:22:41.227: AAA/AUTHOR/FSM: As1 (2403262371) user='chaptrtr'
*Mar 1 01:22:41.231: As1 AAA/AUTHOR/FSM (2403262371): send AV service=ppp
*Mar 1 01:22:41.231: As1 AAA/AUTHOR/FSM (2403262371): send AV protocol=ip
*Mar 1 01:22:41.235: As1 AAA/AUTHOR/FSM (2403262371): found list "default"
*Mar 1 01:22:41.239: As1 AAA/AUTHOR/FSM (2403262371):
Method=tacacs+ (tacacs+)
*Mar 1 01:22:41.239: AAA/AUTHOR/TAC+: (2403262371): user=chaptrtr
```

```
*Mar 1 01:22:41.243: AAA/AUTHOR/TAC+: (2403262371): send AV service=ppp
*Mar 1 01:22:41.243: AAA/AUTHOR/TAC+: (2403262371): send AV protocol=ip
*Mar 1 01:22:41.247: TAC+: using previously set server 172.18.124.111
from group tacacs+
*Mar 1 01:22:41.251: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
*Mar 1 01:22:41.263: TAC+: Opened TCP/IP handle 0x4EEAC4 to
172.18.124.111/49
*Mar 1 01:22:41.267: TAC+: Opened 172.18.124.111 index=1
*Mar 1 01:22:41.275: TAC+: 172.18.124.111 (2403262371) AUTHOR/START queued
*Mar 1 01:22:41.323: As1 CCP: I CONFREQ [Not negotiated] id 4 len 12
*Mar 1 01:22:41.327: As1 CCP: OUI (0x0002)
*Mar 1 01:22:41.327: As1 CCP: MS-PPC supported bits 0x00007080
(0x120600007080)
*Mar 1 01:22:41.335: As1 LCP: O PROTREJ [Open] id 31 len 18 protocol CCP
(0x80FD0104000C0002120600007080)
*Mar 1 01:22:41.339: As1 IPCP: I CONFREQ [Closed] id 5 len 40
*Mar 1 01:22:41.343: As1 IPCP: CompressType VJ 15 slots CompressSlotID
(0x0206002D0F01)
*Mar 1 01:22:41.347: As1 IPCP: Address 0.0.0.0 (0x030600000000)
*Mar 1 01:22:41.351: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)
*Mar 1 01:22:41.355: As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)
*Mar 1 01:22:41.359: As1 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000)
*Mar 1 01:22:41.363: As1 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000)
*Mar 1 01:22:41.607: TAC+: (2403262371) AUTHOR/START processed
*Mar 1 01:22:41.623: TAC+: (2403262371): received author response
status = PASS_ADD
*Mar 1 01:22:41.627: TAC+: Closing TCP/IP 0x4EEAC4 connection to
172.18.124.111/49
*Mar 1 01:22:41.635: As1 AAA/AUTHOR (2403262371): Post authorization
status = PASS_ADD
*Mar 1 01:22:41.647: As1 AAA/AUTHOR/FSM: We can start IPCP
*Mar 1 01:22:41.651: As1 IPCP: O CONFREQ [Closed] id 7 len 10
*Mar 1 01:22:41.655: As1 IPCP: Address 10.31.1.5 (0x03060A1F0105)
*Mar 1 01:22:41.659: As1 AAA/AUTHOR/FSM: (0): Can we start CDPCP?
*Mar 1 01:22:41.663: As1 AAA/AUTHOR/FSM (840307497): Port='Async1'
list='' service=NET
*Mar 1 01:22:41.667: AAA/AUTHOR/FSM: As1 (840307497) user='chaprtr'
*Mar 1 01:22:41.671: As1 AAA/AUTHOR/FSM (840307497): send AV service=ppp
*Mar 1 01:22:41.671: As1 AAA/AUTHOR/FSM (840307497): send AV protocol=cdp
*Mar 1 01:22:41.675: As1 AAA/AUTHOR/FSM (840307497): found list "default"
*Mar 1 01:22:41.675: As1 AAA/AUTHOR/FSM (840307497): Method=tacacs+
(tacacs+)
*Mar 1 01:22:41.679: AAA/AUTHOR/TAC+: (840307497): user=chaprtr
*Mar 1 01:22:41.683: AAA/AUTHOR/TAC+: (840307497): send AV service=ppp
*Mar 1 01:22:41.683: AAA/AUTHOR/TAC+: (840307497): send AV protocol=cdp
*Mar 1 01:22:41.687: TAC+: using previously set server 172.18.124.111
from group tacacs+
*Mar 1 01:22:41.691: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
*Mar 1 01:22:41.703: TAC+: Opened TCP/IP handle 0x4EE23C to
172.18.124.111/49
*Mar 1 01:22:41.707: TAC+: Opened 172.18.124.111 index=1
*Mar 1 01:22:41.715: TAC+: 172.18.124.111 (840307497) AUTHOR/START queued
*Mar 1 01:22:41.759: As1 IPCP: I CONFACK [REQsent] id 7 len 10
*Mar 1 01:22:41.763: As1 IPCP: Address 10.31.1.5 (0x03060A1F0105)
*Mar 1 01:22:41.915: TAC+: (840307497) AUTHOR/START processed
*Mar 1 01:22:41.923: TAC+: (840307497): received author response
status = FAIL
*Mar 1 01:22:41.927: TAC+: Closing TCP/IP 0x4EE23C connection to
172.18.124.111/49
*Mar 1 01:22:41.931: As1 AAA/AUTHOR (840307497): Post authorization
status = FAIL
*Mar 1 01:22:41.935: As1 AAA/AUTHOR/FSM: We cannot start CDPCP
*Mar 1 01:22:41.935: As1 CDPCP: State is Closed
01:22:42: %LINEPROTO-5-UPDOWN: Line protocol on Interface Async1,
changed state to up
*Mar 1 01:22:42.359: As1 PPP: Outbound cdp packet dropped,
```

```
CDPCP is Closed [starting negotiations]
*Mar 1 01:22:42.359: As1 CDPCP: State is Closed
*Mar 1 01:22:42.499: As1 PPP: Outbound cdp packet dropped,
CDPCP is Closed [starting negotiations]
*Mar 1 01:22:42.503: As1 CDPCP: State is Closed
*Mar 1 01:22:42.639: As1 PPP: Outbound cdp packet dropped,
CDPCP is Closed [starting negotiations]
*Mar 1 01:22:42.643: As1 CDPCP: State is Closed
*Mar 1 01:22:42.795: As1 PPP: Outbound cdp packet dropped,
CDPCP is Closed [starting negotiations]
*Mar 1 01:22:42.799: As1 CDPCP: State is Closed
*Mar 1 01:22:43.147: As1 CDPCP: TIMEout: State Closed
*Mar 1 01:22:43.151: As1 CDPCP: State is Listen
*Mar 1 01:22:43.155: As1 IPCP: I CONFREQ [ACKrcvd] id 5 len 40
*Mar 1 01:22:43.159: As1 IPCP: CompressType VJ 15 slots
CompressSlotID (0x0206002D0F01)
*Mar 1 01:22:43.163: As1 IPCP: Address 0.0.0.0 (0x030600000000)
*Mar 1 01:22:43.167: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)
*Mar 1 01:22:43.171: As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)
*Mar 1 01:22:43.171: As1 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000)
*Mar 1 01:22:43.175: As1 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000)
*Mar 1 01:22:43.179: As1 AAA/AUTHOR/IPCP: Start. Her address 0.0.0.0,
we want 0.0.0.0
*Mar 1 01:22:43.183: As1 AAA/AUTHOR/IPCP: Processing AV service=ppp
*Mar 1 01:22:43.187: As1 AAA/AUTHOR/IPCP: Processing AV protocol=ip
```

```
!--- The NAS received the route statements and ACLs
!--- from the ACS device.
```

```
*Mar 1 01:22:43.187: As1 AAA/AUTHOR/IPCP: Processing AV route#1=
9.9.9.9 255.255.255.255 11.11.11.12
*Mar 1 01:22:43.191: As1 AAA/AUTHOR/IPCP: Processing AV route#2=
15.15.15.15 255.255.255.255 12.12.12.13
*Mar 1 01:22:43.195: As1 AAA/AUTHOR/IPCP: Processing AV route#3=
15.15.15.16 255.255.255.255 12.12.12.13
*Mar 1 01:22:43.199: As1 AAA/AUTHOR/IPCP: Processing AV inacl#1=
permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255
*Mar 1 01:22:43.199: As1 AAA/AUTHOR/IPCP: Processing AV inacl#2=
permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255
*Mar 1 01:22:43.203: As1 AAA/AUTHOR/IPCP: Authorization succeeded
*Mar 1 01:22:43.207: As1 AAA/AUTHOR/IPCP: Done. Her address 0.0.0.0,
we want 0.0.0.0
*Mar 1 01:22:43.211: As1 IPCP: Pool returned 1.1.1.1
*Mar 1 01:22:43.215: As1 IPCP: O CONFREQ [ACKrcvd] id 5 len 28
*Mar 1 01:22:43.219: As1 IPCP: CompressType VJ 15 slots
CompressSlotID (0x0206002D0F01)
*Mar 1 01:22:43.223: As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)
*Mar 1 01:22:43.227: As1 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000)
*Mar 1 01:22:43.231: As1 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000)
*Mar 1 01:22:43.339: As1 IPCP: I CONFREQ [ACKrcvd] id 6 len 16
*Mar 1 01:22:43.343: As1 IPCP: Address 0.0.0.0 (0x030600000000)
*Mar 1 01:22:43.347: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)
*Mar 1 01:22:43.351: As1 AAA/AUTHOR/IPCP: Start. Her address 0.0.0.0,
we want 1.1.1.1
*Mar 1 01:22:43.355: As1 AAA/AUTHOR/IPCP: Processing AV service=ppp
*Mar 1 01:22:43.355: As1 AAA/AUTHOR/IPCP: Processing AV protocol=ip
```

```
!--- The NAS applies the route statements and ACLs.
```

```
*Mar 1 01:22:43.359: As1 AAA/AUTHOR/IPCP: Processing AV route#1=
9.9.9.9 255.255.255.255 11.11.11.12
*Mar 1 01:22:43.363: As1 AAA/AUTHOR/IPCP: Processing AV route#2=
15.15.15.15 255.255.255.255 12.12.12.13
*Mar 1 01:22:43.363: As1 AAA/AUTHOR/IPCP: Processing AV route#3=
15.15.15.16 255.255.255.255 12.12.12.13
*Mar 1 01:22:43.367: As1 AAA/AUTHOR/IPCP: Processing AV inacl#1=
```

```

permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255
*Mar 1 01:22:43.371: As1 AAA/AUTHOR/PCP: Processing AV inacl#2=
permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255
*Mar 1 01:22:43.375: As1 AAA/AUTHOR/PCP: Authorization succeeded
*Mar 1 01:22:43.375: As1 AAA/AUTHOR/PCP: Done. Her address 0.0.0.0,
we want 1.1.1.1
*Mar 1 01:22:43.383: As1 PCP: O CONFNAK [ACKrcvd] id 6 len 16
*Mar 1 01:22:43.387: As1 PCP: Address 1.1.1.1 (0x030601010101)
*Mar 1 01:22:43.391: As1 PCP: PrimaryDNS 172.18.125.3 (0x8106AC127D03)
*Mar 1 01:22:43.499: As1 PCP: I CONFREQ [ACKrcvd] id 7 len 16
*Mar 1 01:22:43.503: As1 PCP: Address 1.1.1.1 (0x030601010101)
*Mar 1 01:22:43.507: As1 PCP: PrimaryDNS 172.18.125.3 (0x8106AC127D03)
*Mar 1 01:22:43.511: As1 AAA/AUTHOR/PCP: Start. Her address 1.1.1.1,
we want 1.1.1.1
*Mar 1 01:22:43.519: As1 AAA/AUTHOR/PCP (2646570182): Port='Async1'
list='' service=NET
*Mar 1 01:22:43.519: AAA/AUTHOR/PCP: As1 (2646570182) user='chaprtr'
*Mar 1 01:22:43.523: As1 AAA/AUTHOR/PCP (2646570182): send AV service=ppp
*Mar 1 01:22:43.523: As1 AAA/AUTHOR/PCP (2646570182): send AV protocol=ip
*Mar 1 01:22:43.527: As1 AAA/AUTHOR/PCP (2646570182): send AV addr*1.1.1.1
*Mar 1 01:22:43.531: As1 AAA/AUTHOR/PCP (2646570182): found list "default"
*Mar 1 01:22:43.535: As1 AAA/AUTHOR/PCP (2646570182): Method=tacacs+ (tacacs+)
*Mar 1 01:22:43.539: AAA/AUTHOR/TAC+: (2646570182): user=chaprtr
*Mar 1 01:22:43.539: AAA/AUTHOR/TAC+: (2646570182): send AV service=ppp
*Mar 1 01:22:43.543: AAA/AUTHOR/TAC+: (2646570182): send AV protocol=ip
*Mar 1 01:22:43.543: AAA/AUTHOR/TAC+: (2646570182): send AV addr*1.1.1.1
*Mar 1 01:22:43.547: TAC+: using previously set server 172.18.124.111 from
group tacacs+
*Mar 1 01:22:43.551: TAC+: Opening TCP/IP to 172.18.124.111/49 timeout=5
*Mar 1 01:22:43.563: TAC+: Opened TCP/IP handle 0x4EE23C to 172.18.124.111/49
*Mar 1 01:22:43.567: TAC+: Opened 172.18.124.111 index=1
*Mar 1 01:22:43.575: TAC+: 172.18.124.111 (2646570182) AUTHOR/START queued
*Mar 1 01:22:43.875: TAC+: (2646570182) AUTHOR/START processed
*Mar 1 01:22:43.887: TAC+: (2646570182): received author response
status = PASS_REPL
*Mar 1 01:22:43.891: TAC+: Closing TCP/IP 0x4EE23C connection to
172.18.124.111/49
*Mar 1 01:22:43.899: As1 AAA/AUTHOR (2646570182): Post authorization
status = PASS_REPL
*Mar 1 01:22:43.911: As1 AAA/AUTHOR/PCP: Reject 1.1.1.1, using 1.1.1.1
*Mar 1 01:22:43.915: As1 AAA/AUTHOR/PCP: Processing AV service=ppp
*Mar 1 01:22:43.919: As1 AAA/AUTHOR/PCP: Processing AV protocol=ip
*Mar 1 01:22:43.923: As1 AAA/AUTHOR/PCP: Processing AV route#1=
9.9.9.9 255.255.255.255 11.11.11.12
*Mar 1 01:22:43.923: As1 AAA/AUTHOR/PCP: Processing AV route#2=
15.15.15.15 255.255.255.255 12.12.12.13
*Mar 1 01:22:43.927: As1 AAA/AUTHOR/PCP: Processing AV route#3=
15.15.15.16 255.255.255.255 12.12.12.13
*Mar 1 01:22:43.931: As1 AAA/AUTHOR/PCP: Processing AV inacl#1=
permit icmp 1.1.1.0 0.0.0.255 9.9.9.0 0.0.0.255
*Mar 1 01:22:43.935: As1 AAA/AUTHOR/PCP: Processing AV inacl#2=
permit tcp 1.1.1.0 0.0.0.255 15.15.15.0 0.0.0.255
*Mar 1 01:22:43.939: As1 AAA/AUTHOR/PCP: Processing AV addr*1.1.1.1
*Mar 1 01:22:43.939: As1 AAA/AUTHOR/PCP: Authorization succeeded
*Mar 1 01:22:43.943: As1 AAA/AUTHOR/PCP: Done. Her address 1.1.1.1,
we want 1.1.1.1
*Mar 1 01:22:43.947: As1 PCP: O CONFACK [ACKrcvd] id 7 len 16
*Mar 1 01:22:43.951: As1 PCP: Address 1.1.1.1 (0x030601010101)
*Mar 1 01:22:43.955: As1 PCP: PrimaryDNS 172.18.125.3
(0x8106AC127D03)
*Mar 1 01:22:43.959: As1 PCP: State is Open
*Mar 1 01:22:44.483: As1 PCP: Install route to 1.1.1.1
koala#
koala#

```

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

Troubleshooting Commands

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

Note: Refer to Important Information on Debug Commands before you use **debug** commands.

- **debug aaa authentication** Displays information about AAA/TACACS+ authentication.
- **debug aaa authorization** Displays information about AAA/TACACS+ authorization.
- **debug aaa per-user** Displays information about the per-user configuration settings on the router or access servers that are sent from an AAA server.
- **debug tacacs+** Displays detailed debugging information associated with TACACS+.
- **debug ppp negotiation** Displays PPP packets transmitted during PPP startup, where PPP options are negotiated.

Refer to Troubleshooting Access Lists on Dial Interfaces for troubleshooting information.

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