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## 概要

注このドキュメントの情報は CiscoIOS<sup>®</sup> ソフトウェア リリース 11.2 以降に基づいています。

このマニュアルでは、パスワード認証プロトコル ( PAP ) またはチャレンジ ハンドシェイク認証プロトコル ( CHAP ) を使用するときの TACACS+ に共通のデバッグの問題を検証します。

Microsoft Windows 95、Windows NT、Windows 98、および Windows 2000 の一般的な PC の設定や、設定例、およびデバッグの正常な例と障害のある例について説明しています。

## 前提条件

### 要件

このドキュメントに関する固有の要件はありません。

### 使用するコンポーネント

このドキュメントは、特定のソフトウェアやハードウェアのバージョンに限定されるものではありません。

このドキュメントの情報は、特定のラボ環境にあるデバイスに基づいて作成されたものです。このドキュメントで使用するすべてのデバイスは、クリアな ( デフォルト ) 設定で作業を開始しています。ネットワークが稼働中の場合は、コマンドが及ぼす潜在的な影響を十分に理解しておく必要があります。

## 表記法

ドキュメント表記の詳細は、『[シスコテクニカルティップスの表記法](#)』を参照してください。

## 一般的な PC セッティング

### Windows 95

次の手順を実行します。

1. [Dialup Networking] ウィンドウで、接続名を選択し、[File] > [Properties] を選択します。
2. [Server Type] タブで、[Type of Dial-up Server] の下にある [Require Encrypted Password] ボックスがチェックされているかどうかを確認します。このボックスがチェックされている場合、PC では CHAP 認証だけが受け入れられています。このボックスがチェックされていない場合、PC では PAP または CHAP の認証が受け入れられます。

### Windows NT

次の手順を実行します。

1. [Dial-Up Networking] ウィンドウで、接続名を選択し、[File] > [Properties] を選択します。
2. Security タブで、設定を確認します。[Accept any authentication including clear text] ボックスにチェックが入っている場合、PC では PAP または CHAP を受け入れられます。[Accept only encrypted authentication] ボックスがチェックされている場合、PC では CHAP 認証だけが受け入れられます。

### Windows 98

次の手順を実行します。

1. [Dial-Up Networking] ウィンドウで、接続名を選択してから [Properties] を選択します。
2. Server Types タブで、Advanced Options エリアの設定を確認します。[Require encrypted password] ボックスがチェックされていない場合、PC では PAP または CHAP の認証が受け入れられます。[Require encrypted password] ボックスがチェックされている場合、PC では CHAP 認証だけが受け入れられています。

### Windows 2000

次の手順を実行します。

1. [Network and Dial-Up Connections] で、接続名を選択してから [Properties] を選択します。
2. [Security] タブ上の [Advanced] > [Settings] > [Allow these protocols] 領域で、次を実行します。  
[Unencrypted password (PAP)] ボックスがチェックされている場合、PC では PAP が受け入れられます。[Challenge Handshake Authentication Protocol (CHAP)] ボックスがチェックされている場合、PC では、RFC 1994 の規定による CHAP が受け入れられます。[Microsoft CHAP (MS-CHAP)] ボックスがチェックされている場合、PC では MS-CHAP バージョン 1 が受け入れられますが、RFC 1994 の規定による CHAP は受け入れられません。

## 設定およびデバッグ例

### 設定:TACACS+ および PAP

```
Current configuration:!  
version 11.2  
service timestamps  
debug uptime  
service timestamps log uptime  
no service  
password-encryption  
service udp-small-servers  
service tcp-small-servers!  
hostname rtpkrb!  
aaa new-model!  
!--- The following four lines of the !--- configuration are specific to !--- Cisco IOS 11.2 and later, until 11.3.3.T. !--- See below this configuration !--- for commands for other Cisco IOS releases.  
aaa  
authentication login default tacacs+ localaaa  
authentication ppp default if-needed tacacs+ localaaa  
authorization exec tacacs+ if-authenticatedaaa  
authorization network tacacs+ if-authenticated  
enable  
secret 5 $1$pkX.$JdAysRElSbdbDe7bj0wyt0  
enable  
password ww!  
username john password 0 doe  
username cse password 0 csecse  
ip host rtpkrb 10.31.1.5  
ip domain-name RTP.CISCO.COM  
ip name-server 171.68.118.103!  
interface Loopback0  
ip address 1.1.1.1 255.255.255.0!  
interface Ethernet0  
ip address 10.31.1.5 255.255.0.0  
no mop enabled!  
interface Serial0  
no ip address  
no ip mroute-cache  
shutdown!  
interface Serial1  
no ip address  
shutdown!  
interface Async1  
ip unnumbered  
Ethernet0  
encapsulation ppp  
async mode dedicated  
peer default ip address pool async  
no cdp enable  
ppp authentication pap!  
ip local pool async 15.15.15.15  
ip classless  
ip route 0.0.0.0 0.0.0.0 10.31.1.1!  
tacacs-server host 171.68.118.101  
tacacs-server key ciscosnmp-server  
community public RWSnmp-server  
host 171.68.118.100  
traps public!  
line con 0  
line 1  
session-timeout 20  
exec-timeout 20 0  
password ww  
autoselect during-login  
autoselect ppp  
modem InOut  
transport input all  
stopbits 1  
speed 38400  
flowcontrol hardware  
line 2  
modem InOut  
speed 38400  
flowcontrol hardware  
line 3  
16  
line aux 0  
line vty 0 4  
password ww!  
end
```

## 他の Cisco IOS リリース用のコマンド

注 これらのコマンドを使用するには、この設定から太字のコマンドを削除して、使用している Cisco IOS リリースによって定義されているとおりに、これらのコマンドを貼り付けます。

### Cisco IOS 11.3.3.T から 12.0.5.T よりも前まで

```
Current configuration:!  
version 11.2  
service timestamps  
debug uptime  
service timestamps log uptime  
no service  
password-encryption  
service udp-small-servers  
service tcp-small-servers!  
hostname rtpkrb!  
aaa new-model!  
!--- The following four lines of the !--- configuration are specific to !--- Cisco IOS 11.2 and later, until 11.3.3.T. !--- See below this configuration !--- for commands for other Cisco IOS releases.  
aaa  
authentication login default tacacs+ localaaa  
authentication ppp default if-needed tacacs+ localaaa  
authorization exec tacacs+ if-authenticatedaaa  
authorization network tacacs+ if-authenticated  
enable  
secret 5  
$1$pkX.$JdAysRElSbdbDe7bj0wyt0  
enable  
password ww!  
username john password 0 doe  
username cse password 0 csecse  
ip host rtpkrb 10.31.1.5  
ip domain-name RTP.CISCO.COM  
ip name-server 171.68.118.103!  
interface Loopback0  
ip address 1.1.1.1 255.255.255.0!  
interface Ethernet0  
ip address 10.31.1.5 255.255.0.0  
no mop enabled!  
interface Serial0  
no ip address  
no ip mroute-cache  
shutdown!  
interface Serial1  
no ip address  
shutdown!  
interface Async1  
ip unnumbered  
Ethernet0  
encapsulation ppp  
async mode dedicated  
peer default ip address pool async  
no cdp enable  
ppp authentication pap!  
ip local pool async 15.15.15.15  
ip classless  
ip route 0.0.0.0 0.0.0.0
```

```
10.31.1.1!tacacs-server host 171.68.118.101tacacs-server key ciscosnmp-server community public
Rwsmtp-server host 171.68.118.100 traps public!line con 0line lsession-timeout 20 exec-timeout
20 0password wwautoselect during-loginautoselect pppmodem InOuttransport input allstopbits
lspeed 38400flowcontrol hardwareline 2modem InOutspeed 38400flowcontrol hardwareline 3 16line
aux 0line vty 0 4password ww!end
```

## Cisco IOS 12.0.5.T 以降

```
Current configuration:!  
version 11.2service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
service udp-small-servers  
service tcp-small-servers!  
hostname rtpkrb!  
aaa new-model!  
!--- The following four lines of the !--- configuration are specific to !---  
-- Cisco IOS 11.2 and later, until 11.3.3.T. !--- See below this configuration !--- for commands  
for other Cisco IOS releases. !  
aaa authentication login default tacacs+ localaaa authentication  
ppp default if-needed tacacs+ localaaa authorization exec tacacs+ if-authenticatedaaa  
authorization network tacacs+ if-authenticatedenable secret 5  
$1$pkX.$JdAysRElSbdbDe7bj0wyt0enable password ww!username john password 0 doeusername cse  
password 0 csecseip host rtpkrb 10.31.1.5ip domain-name RTP.CISCO.COMip name-server  
171.68.118.103!  
interface Loopback0ip address 1.1.1.1 255.255.255.0!  
interface Ethernet0ip address 10.31.1.5 255.255.0.0no mop enabled!  
interface Serial0no ip addressno ip mroute-  
cacheshutdown!  
interface Serial1no ip addressshutdown!  
interface Async1ip unnumbered  
Ethernet0encapsulation pppasync mode dedicatedpeer default ip address pool asyncno cdp enableppp  
authentication pap!  
ip local pool async 15.15.15.15ip classlessip route 0.0.0.0 0.0.0.0  
10.31.1.1!tacacs-server host 171.68.118.101tacacs-server key ciscosnmp-server community public  
Rwsmtp-server host 171.68.118.100 traps public!line con 0line lsession-timeout 20 exec-timeout  
20 0password wwautoselect during-loginautoselect pppmodem InOuttransport input allstopbits  
lspeed 38400flowcontrol hardwareline 2modem InOutspeed 38400flowcontrol hardwareline 3 16line  
aux 0line vty 0 4password ww!end
```

## デバッグの例- TACACS+ および PAP

注次のデバッグ出力では、デバッグの問題を太字で強調表示しています。プレーンテキストは、正常なデバッグを示しています。

```
rtpkrb#show debugGeneral OS:TACACS access control debugging is onAAA Authentication debugging is  
onAAA Authorization debugging is onPPP:PPP authentication debugging is onPPP protocol  
negotiation debugging is onrtpkrb#3d22h: %LINK-3-UPDOWN: Interface Async1, changed state to  
up3d22h: As1 PPP: Treating connection as a dedicated line3d22h: As1 PPP: Phase is ESTABLISHING,  
Active Open3d22h: As1 LCP: O CONFREQ [Closed] id 14 len 243d22h: As1 LCP: ACCM 0x000A0000  
(0x0206000A0000)3d22h: As1 LCP: AuthProto PAP (0x0304C023)3d22h: As1 LCP: MagicNumber 0xF45FB7A7  
(0x0506F45FB7A7)3d22h: As1 LCP: PFC (0x0702)3d22h: As1 LCP: ACFC (0x0802)!--- PC insists on  
doing CHAP !--- ("accept encrypted authentication only"), !--- but router is set up for PAP.As1  
LCP: I CONFNAK [REQsent] id 27 len 12As1 LCP: AuthProto 0xC123 (0x0308C12301000001)As1 PPP:  
Closing connection because remote won't authenticate3d22h: As1 LCP: Interface transitioned,  
discarding packet3d22h: As1 LCP: I CONFACK [REQsent] id 14 len 243d22h: As1 LCP: ACCM 0x000A0000  
(0x0206000A0000)3d22h: As1 LCP: AuthProto PAP (0x0304C023)3d22h: As1 LCP: MagicNumber 0xF45FB7A7  
(0x0506F45FB7A7)3d22h: As1 LCP: PFC (0x0702)3d22h: As1 LCP: ACFC (0x0802)3d22h: As1 LCP:  
TIMEout: Time 0x14417CC4 State ACKRcvd3d22h: As1 LCP: O CONFREQ [ACKrcvd] id 15 len 243d22h: As1  
LCP: ACCM 0x000A0000 (0x0206000A0000)3d22h: As1 LCP: AuthProto PAP (0x0304C023)3d22h: As1 LCP:  
MagicNumber 0xF45FB7A7 (0x0506F45FB7A7)3d22h: As1 LCP: PFC (0x0702)3d22h: As1 LCP: ACFC  
(0x0802)3d22h: As1 LCP: I CONFACK [REQsent] id 15 len 243d22h: As1 LCP: ACCM 0x000A0000  
(0x0206000A0000)3d22h: As1 LCP: AuthProto PAP (0x0304C023)3d22h: As1 LCP: MagicNumber 0xF45FB7A7  
(0x0506F45FB7A7)3d22h: As1 LCP: PFC (0x0702)3d22h: As1 LCP: ACFC (0x0802)3d22h: As1 LCP: I  
CONFREQ [ACKrcvd] id 0 len 203d22h: As1 LCP: ACCM 0x00000000 (0x020600000000)3d22h: As1 LCP:  
MagicNumber 0x000030A3 (0x0506000030A3)3d22h: As1 LCP: PFC (0x0702)3d22h: As1 LCP: ACFC  
(0x0802)3d22h: As1 LCP: O CONFACK [ACKrcvd] id 0 len 203d22h: As1 LCP: ACCM 0x00000000  
(0x020600000000)3d22h: As1 LCP: MagicNumber 0x000030A3 (0x0506000030A3)3d22h: As1 LCP: PFC  
(0x0702)3d22h: As1 LCP: ACFC (0x0802)3d22h: As1 LCP: State is Open3d22h: As1 PPP: Phase is  
AUTHENTICATING, by this end3d22h: As1 PAP: I AUTH-REQ id 4 len 20 from "papuser"3d22h: As1 PAP:  
Authenticating peer papuser3d22h: AAA/AUTHEN: create_user (0x16DAC0) user='papuser' ruser=''  
port='Async1' rem_addr='async' authen_type=PAP service=PPP priv=13d22h: AAA/AUTHEN/START  
(1190231344): port='Async1' list='' action=LOGIN service=PPP3d22h: AAA/AUTHEN/START  
(1190231344): using "default" list3d22h: AAA/AUTHEN (1190231344): status = UNKNOWN3d22h:  
AAA/AUTHEN/START (1190231344): Method=TACACS+3d22h: TAC+: send AUTHEN/START packet ver=193
```

id=11902313443d22h: TAC+: Using default tacacs server list.3d22h: TAC+: Opening TCP/IP to 171.68.118.101/49 timeout=5!--- *The TAC+ server is down, producing an error. !--- Since the user is not in the local database, !--- the failover to local fails.*TAC+: TCP/IP open to 171.68.118.101/49 failed -- Connection refused by remote hostAAA/AUTHEN (866823886): status = ERRORAAA/AUTHEN/START (866823886): Method=LOCALAAA/AUTHEN (866823886): status = FAIL3d22h: TAC+: Opened TCP/IP handle 0x16C1F8 to 171.68.118.101/493d22h: TAC+: 171.68.118.101 (1190231344) AUTHEN/START/LOGIN/PAP queued3d22h: TAC+: (1190231344) AUTHEN/START/LOGIN/PAP processed!--- *The key in the router does not match that of the server.*TAC+: received bad AUTHEN packet: length = 68, expected 67857TAC+: Invalid AUTHEN/START packet (check keys)AAA/AUTHEN (1771887965): status = ERROR 3d22h: TAC+: ver=192 id=1190231344 received AUTHEN status = GETPASS3d22h: TAC+: Closing TCP/IP 0x16C1F8 connection to 171.68.118.101/493d22h: TAC+: Opening TCP/IP to 171.68.118.101/49 timeout=53d22h: TAC+: Opened TCP/IP handle 0x16EF4C to 171.68.118.101/493d22h: TAC+: Opened 171.68.118.101 index=13d22h: AAA/AUTHEN: create\_user (0x16C5EC) user='papuser' ruser='' port='Async1' rem\_addr='async' authen\_type=PAP service=PPP priv=13d22h: TAC+: rev0 inbound pap login for id=1190231344 using id=31128966693d22h: TAC+: 171.68.118.101 (3112896669) AUTHEN/START/LOGIN/PAP queued3d22h: TAC+: (3112896669) AUTHEN/START/LOGIN/PAP processed3d22h: TAC+: ver=192 id=3112896669 received AUTHEN status = GETPASS3d22h: TAC+: send AUTHEN/CONT packet3d22h: TAC+: 171.68.118.101 (3112896669) AUTHEN/CONT queued3d22h: TAC+: (3112896669) AUTHEN/CONT processed!--- *The NT client sends the "DOMAIN\user" !--- and the TAC+ server expects "user".*TAC+: ver=192 id=260507389 received AUTHEN status = FAILTAC+: rev0 inbound pap completed for 1139034411 status=FAILAAA/AUTHEN: free\_user (0x16CDD4) user='CISCO\papuser' ruser='' port='Async1' rem\_addr='async' authen\_type=PAP service=PPP priv=1!--- *The TAC+ server refuses the user !--- because the user is set up for PAP. !--- The user enters a bad password, !--- or both the username and password are bad.*TAC+: ver=192 id=691012958 received AUTHEN status = FAILTAC+: rev0 inbound pap completed for 3917384959 status=FAILAAA/AUTHEN: free\_user (0x15AD58) user='idochap' ruser='' port='Async1' rem\_addr='async' authen\_type=PAP service=PPP priv=13d22h: TAC+: ver=192 id=3112896669 received AUTHEN status = PASS3d22h: TAC+: rev0 inbound pap completed for 1190231344 status=PASS3d22h: AAA/AUTHEN: free\_user (0x16C5EC) user='papuser' ruser='' port='Async1' rem\_addr='async' authen\_type=PAP service=PPP priv=13d22h: TAC+: Closing TCP/IP 0x16EF4C connection to 171.68.118.101/493d22h: AAA/AUTHEN (1190231344): status = PASS3d22h: AAA/AUTHOR/LCP As1: Authorize LCP3d22h: AAA/AUTHOR/LCP: Async1: (1061976769): user='papuser'3d22h: AAA/AUTHOR/LCP: Async1: (1061976769): send AV service=ppp3d22h: AAA/AUTHOR/LCP: Async1: (1061976769): send AV protocol=lcp3d22h: AAA/AUTHOR/LCP: Async1: (1061976769): Method=TACACS+3d22h: AAA/AUTHOR/TAC+: (1061976769): user=papuser3d22h: AAA/AUTHOR/TAC+: (1061976769): send AV service=ppp3d22h: AAA/AUTHOR/TAC+: (1061976769): send AV protocol=lcp3d22h: TAC+: Opening TCP/IP to 171.68.118.101/49 timeout=53d22h: TAC+: Opened TCP/IP handle 0x16C9E0 to 171.68.118.101/493d22h: TAC+: Opened 171.68.118.101 index=13d22h: TAC+: 171.68.118.101 (1061976769) AUTHOR/START queued3d22h: TAC+: (1061976769) AUTHOR/START processed!--- *The user passes authentication !--- (the username/password is good) !--- but fails authorization !--- (the profile is not set up to authorize PPP).*TAC+: (1793875816): received author response status = FAILTAC+: Closing TCP/IP 0x17054C connection to 171.68.118.101/49AAA/AUTHOR (1793875816): Post authorization status = FAILAAA/AUTHOR/LCP As1: Denied3d22h: TAC+: (1061976769): received author response status = PASS\_ADD3d22h: TAC+: Closing TCP/IP 0x16C9E0 connection to 171.68.118.101/493d22h: AAA/AUTHOR (1061976769): Post authorization status = PASS\_ADD3d22h: As1 PAP: 0 AUTH-ACK id 4 len 53d22h: As1 PPP: Phase is UP3d22h: AAA/AUTHOR/FSM As1: (0): Can we start IPCP?3d22h: AAA/AUTHOR/FSM: Async1: (3602788894): user='papuser'3d22h: AAA/AUTHOR/FSM: Async1: (3602788894): send AV service=ppp3d22h: AAA/AUTHOR/FSM: Async1: (3602788894): send AV protocol=ip3d22h: AAA/AUTHOR/FSM: Async1: (3602788894): Method=TACACS+3d22h: AAA/AUTHOR/TAC+: (3602788894): user=papuser3d22h: AAA/AUTHOR/TAC+: (3602788894): send AV service=ppp3d22h: AAA/AUTHOR/TAC+: (3602788894): send AV protocol=ip3d22h: TAC+: Opening TCP/IP to 171.68.118.101/49 timeout=53d22h: %LINEPROTO-5-UPDOWN: Line protocol on Interface Async1, changed state to up3d22h: TAC+: Opened TCP/IP handle 0x17054C to 171.68.118.101/493d22h: TAC+: Opened 171.68.118.101 index=13d22h: TAC+: 171.68.118.101 (3602788894) AUTHOR/START queued3d22h: As1 IPCP: I CONFREQ [Closed] id 1 len 343d22h: As1 IPCP: Address 0.0.0.0 (0x030600000000)3d22h: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)3d22h: As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)3d22h: As1 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000)3d22h: As1 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000)3d22h: TAC+: (3602788894) AUTHOR/START processed3d22h: TAC+: (3602788894): received author response status = PASS\_ADD3d22h: TAC+: Closing TCP/IP 0x17054C connection to 171.68.118.101/493d22h: AAA/AUTHOR (3602788894): Post authorization status = PASS\_ADD3d22h: AAA/AUTHOR/FSM As1: We can start IPCP3d22h: As1 IPCP: 0 CONFREQ [Closed] id 10 len 103d22h: As1 IPCP: Address 10.31.1.5 (0x03060A1F0105)3d22h: As1 IPCP: I CONFACK [REQsent] id 10 len 103d22h: As1 IPCP: Address 10.31.1.5 (0x03060A1F0105)3d22h: As1 IPCP: I CONFREQ [ACKrcvd] id 1 len 343d22h: As1 IPCP: Address 0.0.0.0 (0x030600000000)3d22h: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)3d22h: As1

```

IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)3d22h: As1 IPCP: SecondaryDNS 0.0.0.0
(0x830600000000)3d22h: As1 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000)3d22h: AAA/AUTHOR/IPCP
As1: Start. Her address 0.0.0.0, we want 0.0.0.03d22h: AAA/AUTHOR/IPCP As1: Processing AV
service=ppp3d22h: AAA/AUTHOR/IPCP As1: Processing AV protocol=ip3d22h: AAA/AUTHOR/IPCP As1:
Authorization succeeded3d22h: AAA/AUTHOR/IPCP As1: Done. Her address 0.0.0.0, we want
0.0.0.03d22h: As1 IPCP: Using pool 'async'3d22h: As1 IPCP: Pool returned 15.15.15.153d22h: As1
IPCP: O CONFREQ [ACKrcvd] id 1 len 223d22h: As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)3d22h:
As1 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000)3d22h: As1 IPCP: SecondaryWINS 0.0.0.0
(0x840600000000)3d22h: As1 IPCP: I CONFREQ [ACKrcvd] id 2 len 163d22h: As1 IPCP: Address 0.0.0.0
(0x030600000000)3d22h: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)3d22h: AAA/AUTHOR/IPCP As1:
Start. Her address 0.0.0.0, we want 15.15.15.153d22h: AAA/AUTHOR/IPCP As1: Processing AV
service=ppp3d22h: AAA/AUTHOR/IPCP As1: Processing AV protocol=ip3d22h: AAA/AUTHOR/IPCP As1:
Authorization succeeded3d22h: AAA/AUTHOR/IPCP As1: Done. Her address 0.0.0.0, we want
15.15.15.153d22h: As1 IPCP: O CONFNAK [ACKrcvd] id 2 len 163d22h: As1 IPCP: Address 15.15.15.15
(0x03060F0F0F0F)3d22h: As1 IPCP: PrimaryDNS 171.68.118.103 (0x8106AB447667)3d22h: As1 IPCP: I
CONFREQ [ACKrcvd] id 3 len 163d22h: As1 IPCP: Address 15.15.15.15 (0x03060F0F0F0F)3d22h: As1
IPCP: PrimaryDNS 171.68.118.103 (0x8106AB447667)3d22h: AAA/AUTHOR/IPCP As1: Start. Her address
15.15.15.15, we want 15.15.15.153d22h: AAA/AUTHOR/IPCP: Async1: (3654974050):
user='papuser'3d22h: AAA/AUTHOR/IPCP: Async1: (3654974050): send AV service=ppp3d22h:
AAA/AUTHOR/IPCP: Async1: (3654974050): send AV protocol=ip3d22h: AAA/AUTHOR/IPCP: Async1:
(3654974050): send AV addr*15.15.15.153d22h: AAA/AUTHOR/IPCP: Async1: (3654974050):
Method=TACACS+3d22h: AAA/AUTHOR/TAC+: (3654974050): user=papuser3d22h: AAA/AUTHOR/TAC+:
(3654974050): send AV service=ppp3d22h: AAA/AUTHOR/TAC+: (3654974050): send AV protocol=ip3d22h:
AAA/AUTHOR/TAC+: (3654974050): send AV addr*15.15.15.153d22h: TAC+: Opening TCP/IP to
171.68.118.101/49 timeout=53d22h: TAC+: Opened TCP/IP handle 0x16EF4C to 171.68.118.101/493d22h:
TAC+: Opened 171.68.118.101 index=13d22h: TAC+: 171.68.118.101 (3654974050) AUTHOR/START
queued3d22h: TAC+: (3654974050) AUTHOR/START processed3d22h: TAC+: (3654974050): received author
response status = PASS_ADD3d22h: TAC+: Closing TCP/IP 0x16EF4C connection to
171.68.118.101/493d22h: AAA/AUTHOR (3654974050): Post authorization status = PASS_ADD3d22h:
AAA/AUTHOR/IPCP As1: Processing AV service=ppp3d22h: AAA/AUTHOR/IPCP As1: Processing AV
protocol=ip3d22h: AAA/AUTHOR/IPCP As1: Processing AV addr*15.15.15.153d22h: AAA/AUTHOR/IPCP As1:
Authorization succeeded3d22h: AAA/AUTHOR/IPCP As1: Done. Her address 15.15.15.15, we want
15.15.15.153d22h: As1 IPCP: O CONFACK [ACKrcvd] id 3 len 163d22h: As1 IPCP: Address 15.15.15.15
(0x03060F0F0F0F)3d22h: As1 IPCP: PrimaryDNS 171.68.118.103 (0x8106AB447667)3d22h: As1 IPCP:
State is Open3d22h: As1 IPCP: Install route to 15.15.15.15rtpkrb#

```

## 設定 ; TACACS+ および chap

```

Current configuration:!  

version 11.2  

service timestamps  

debug uetimeservice timestamps log uptime  

no service password-encryption  

service udp-small-servers  

service tcp-small-servers  

hostname rtpkrb!  

aaa new-model!  

!--- The following four lines of the configuration !--- are specific to Cisco IOS 11.2 and later, until 11.3.3.T. !--  

-- See below this configuration !--- for commands for other Cisco IOS releases.  

aaa authentication login default tacacs+ localaaa authentication ppp default if-needed tacacs+ localaaa authorization exec tacacs+ if-authenticatedaaa authorization network tacacs+ if-authenticatedenable secret 5  

$1$pkX.$JdAySRE1SbdbDe7bj0wyt0enable password  

ww!username john password 0 doeusername cse password 0  

csecseip host rtpkrb 10.31.1.5ip name-server 171.68.118.103!  

interface Loopback0ip address 1.1.1.1 255.255.255.0!  

interface Ethernet0ip address 10.31.1.5 255.255.0.0no mop enabled!  

interface Serial0no ip addressno ip mroute-cacheshutdown!  

interface Serial1no ip addressshutdown!  

interface Async1ip unnumbered Ethernet0encapsulation pppasync mode dedicatedpeer default ip address pool asyncno cdp enableppp authentication chap!  

ip local pool async 15.15.15.15ip classlessip route 0.0.0.0 0.0.0.0 10.31.1.1!  

tacacs-server host 171.68.118.101tacacs-server key ciscosnmp-server community public RWSnmp-server host 171.68.118.100 traps public!  

line con 0line lsession-

```

```
timeout 20 exec-timeout 20 0password wwautoselect
during-loginautoselect pppmodem InOuttransport input
allstopbits 1speed 38400flowcontrol hardwareline 2modem
InOutspeed 38400flowcontrol hardwareline 3 16line aux
0line vty 0 4password ww!end
```

## [他の Cisco IOS リリース用のコマンド](#)

注注：これらのコマンドを使用するには、この設定から太字のコマンドを削除して、使用している Cisco IOS リリースによって定義されているとおりに、これらのコマンドを貼り付けます。

### [Cisco IOS 11.3.3.T から 12.0.5.T よりも前まで](#)

```
Current configuration:!  
version 11.2service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
service udp-small-servers  
service tcp-small-servers!  
hostname rtpkrb!  
aaa new-model!  
!--- The following four lines of the configuration !--- are specific to  
Cisco IOS 11.2 and later, until 11.3.3.T. !--- See below this configuration !--- for commands  
for other Cisco IOS releases.  
aaa authentication login default tacacs+ local  
aaa authentication ppp default if-needed tacacs+ local  
aaa authorization exec tacacs+ if-authenticated  
aaa authorization network tacacs+ if-authenticated  
enable secret 5  
$1$pkX.$JdAySRElSbdbDe7bj0wyt0enable password ww!  
username john password 0 doe  
username cse password 0 cse  
cseip host rtpkrb 10.31.1.5  
ip name-server 171.68.118.103!  
interface Loopback0  
ip address 1.1.1.1 255.255.255.0!  
interface Ethernet0  
ip address 10.31.1.5 255.255.0.0  
no mop enabled!  
interface Serial0  
no ip address  
no ip mroute-cache  
shutdown!  
interface Serial1  
no ip address  
shutdown!  
interface Async1  
clip unnumbered Ethernet0  
encapsulation ppp  
async mode dedicated  
peer default ip address pool async  
no cdp enable  
ppp authentication chap!  
ip local pool async 15.15.15.15  
ip classless  
ip route 0.0.0.0 0.0.0.0 10.31.1.1!  
tacacs-server host 171.68.118.101  
tacacs-server key cisco  
snmp-server community public RW  
snmp-server host 171.68.118.100 traps public!  
line con 0  
line 1  
session-timeout 20 exec-timeout 20 0  
password wwautoselect during-login  
autoselect pppmodem InOuttransport input allstopbits 1  
speed 38400flowcontrol hardwareline 2  
modem InOutspeed 38400flowcontrol hardwareline 3 16  
line aux 0  
line vty 0 4  
password ww!end
```

### [Cisco IOS 12.0.5.T 以降](#)

```
Current configuration:!  
version 11.2service timestamps debug uptime  
service timestamps log uptime  
no service password-encryption  
service udp-small-servers  
service tcp-small-servers!  
hostname rtpkrb!  
aaa new-model!  
!--- The following four lines of the configuration !--- are specific to  
Cisco IOS 11.2 and later, until 11.3.3.T. !--- See below this configuration !--- for commands  
for other Cisco IOS releases.  
aaa authentication login default tacacs+ local  
aaa authentication ppp default if-needed tacacs+ local  
aaa authorization exec tacacs+ if-authenticated  
aaa authorization network tacacs+ if-authenticated  
enable secret 5  
$1$pkX.$JdAySRElSbdbDe7bj0wyt0enable password ww!  
username john password 0 doe  
username cse password 0 cse  
cseip host rtpkrb 10.31.1.5  
ip name-server 171.68.118.103!  
interface Loopback0  
ip address 1.1.1.1 255.255.255.0!  
interface Ethernet0  
ip address 10.31.1.5 255.255.0.0  
no mop enabled!  
interface Serial0  
no ip address  
no ip mroute-cache  
shutdown!  
interface Serial1  
no ip address  
shutdown!  
interface Async1  
clip unnumbered Ethernet0  
encapsulation ppp  
async mode dedicated  
peer default ip address pool async  
no cdp enable  
ppp authentication chap!  
ip local pool async 15.15.15.15  
ip classless  
ip route 0.0.0.0 0.0.0.0 10.31.1.1!  
tacacs-server host 171.68.118.101  
tacacs-server key cisco  
snmp-server community public RW  
snmp-server host 171.68.118.100 traps public!  
line con 0  
line 1  
session-timeout 20 exec-timeout 20 0  
password wwautoselect during-login  
autoselect pppmodem InOuttransport input allstopbits 1  
speed 38400flowcontrol hardwareline 2  
modem InOutspeed 38400flowcontrol hardwareline 3 16  
line aux 0  
line vty 0 4  
password ww!end
```

### [デバッグの例- TACACS+ および CHAP](#)

注次のデバッグ出力では、デバッグの問題を太字で強調表示しています。プレーンテキストは、正常なデバッグを示しています。

General OS:TACACS access control debugging is onAAA Authentication debugging is onAAA  
Authorization debugging is onPPP:PPP authentication debugging is onPPP protocol negotiation  
debugging is onrtpkrb#3d22h: As1 LCP: I CONFREQ [Closed] id 0 len 203d22h: As1 LCP: ACCM  
0x00000000 (0x020600000000)3d22h: As1 LCP: MagicNumber 0x000042C5 (0x0506000042C5)3d22h: As1  
LCP: PFC (0x0702)3d22h: As1 LCP: ACFC (0x0802)3d22h: As1 LCP: Lower layer not up, discarding  
packet3d22h: %LINK-3-UPDOWN: Interface Async1, changed state to up3d22h: As1 PPP: Treating  
connection as a dedicated line3d22h: As1 PPP: Phase is ESTABLISHING, Active Open3d22h: As1 LCP:  
O CONFREQ [Closed] id 12 len 253d22h: As1 LCP: ACCM 0x000A0000 (0x0206000A0000)3d22h: As1 LCP:  
AuthProto CHAP (0x0305C22305)3d22h: As1 LCP: MagicNumber 0xF45D776F (0x0506F45D776F)3d22h: As1  
LCP: PFC (0x0702)3d22h: As1 LCP: ACFC (0x0802)3d22h: As1 LCP: I CONFACK [REQsent] id 12 len  
253d22h: As1 LCP: ACCM 0x000A0000 (0x0206000A0000)3d22h: As1 LCP: AuthProto CHAP  
(0x0305C22305)3d22h: As1 LCP: MagicNumber 0xF45D776F (0x0506F45D776F)3d22h: As1 LCP: PFC  
(0x0702)3d22h: As1 LCP: ACFC (0x0802)3d22h: As1 LCP: I CONFREQ [ACKrcvd] id 0 len 203d22h: As1  
LCP: ACCM 0x00000000 (0x020600000000)3d22h: As1 LCP: MagicNumber 0x000042C5  
(0x0506000042C5)3d22h: As1 LCP: PFC (0x0702)3d22h: As1 LCP: ACFC (0x0802)3d22h: As1 LCP: O  
CONFACK [ACKrcvd] id 0 len 203d22h: As1 LCP: ACCM 0x00000000 (0x020600000000)3d22h: As1 LCP:  
MagicNumber 0x000042C5 (0x0506000042C5)3d22h: As1 LCP: PFC (0x0702)3d22h: As1 LCP: ACFC  
(0x0802)3d22h: As1 LCP: State is Open3d22h: As1 PPP: Phase is AUTHENTICATING, by this end3d22h:  
As1 CHAP: O CHALLENGE id 3 len 27 from "rtpkrb"3d22h: As1 CHAP: I RESPONSE id 3 len 29 from  
"chapuser"3d22h: AAA/AUTHEN: create\_user (0x15B394) user='chapuser' ruser='' port='Async1'  
rem\_addr='async' authen\_type=CHAP service=PPP priv=13d22h: AAA/AUTHEN/START (2183639772):  
port='Async1' list='' action=LOGIN service=PPP3d22h: AAA/AUTHEN/START (2183639772): using  
"default" list3d22h: AAA/AUTHEN (2183639772): status = UNKNOWN3d22h: AAA/AUTHEN/START  
(2183639772): Method=TACACS+3d22h: TAC+: send AUTHEN/START packet ver=193 id=21836397723d22h:  
TAC+: Using default tacacs server list.3d22h: TAC+: Opening TCP/IP to 171.68.118.101/49  
timeout=5!--- *The TAC+ server is down, producing an error. !--- Since the user is not in the  
local database, !--- the failover to local fails.*TAC+: TCP/IP open to 171.68.118.101/49 failed -  
- Connection refused by remote hostAAA/AUTHEN (2546660185): status = ERRORAAA/AUTHEN/START  
(2546660185): Method=LOCALAAA/AUTHEN (2546660185): status = FAILAs1 CHAP: Unable to validate  
Response. Username chapuser: Authentication failure3d22h: TAC+: Opened TCP/IP handle 0x17054C to  
171.68.118.101/493d22h: TAC+: 171.68.118.101 (2183639772) AUTHEN/START/LOGIN/CHAP queued3d22h:  
TAC+: (2183639772) AUTHEN/START/LOGIN/CHAP processed!--- *The key in the router does not match  
that of the server.*TAC+: received bad AUTHEN packet: length = 68, expected 67857TAC+: Invalid  
AUTHEN/START packet (check keys)AAA/AUTHEN (1771887965): status = ERROR3d22h: TAC+: ver=192  
id=2183639772 received AUTHEN status = GETPASS3d22h: TAC+: Closing TCP/IP 0x17054C connection to  
171.68.118.101/493d22h: TAC+: Opening TCP/IP to 171.68.118.101/49 timeout=53d22h: TAC+: Opened  
TCP/IP handle 0x16EF4C to 171.68.118.101/493d22h: TAC+: Opened 171.68.118.101 index=13d22h:  
AAA/AUTHEN: create\_user (0x170940) user='chapuser' ruser='' port='Async1' rem\_addr='async'  
authen\_type=CHAP service=PPP priv=13d22h: TAC+: rev0 inbound chap for id=2183639772 using  
id=1667030293d22h: TAC+: 171.68.118.101 (166703029) AUTHEN/START/SENDPASS/CHAP queued3d22h:  
TAC+: (166703029) AUTHEN/START/SENDPASS/CHAP processed!--- *The NT client sends the "DOMAIN\user"  
!--- and the TAC+ server expects "user".*TAC+: ver=192 id=3373385106 received AUTHEN status =  
FAILTAC+: rev0 inbound chap FAIL for id=2082151566AAA/AUTHEN: free\_user (0x170940)  
user='CISCO\chapuser' ruser='' port='Async1' rem\_addr='async' authen\_type=CHAP service=PPP  
priv=1!--- *The TAC+ server refuses the user !--- because the user is set up for PAP. !--- The  
user enters a bad password, !--- or both the username and password are bad.*TAC+: ver=192  
id=1989464562 received AUTHEN status = PASSTAC+: rev0 inbound chap SENDPASS status=PASS for  
id=3657266965TAC+: rev0 inbound chap MD5 compare FAILEDAAA/AUTHEN: free\_user (0x170940)  
user='chapuser' ruser='' port='Async1' rem\_addr='async' authen\_type=CHAP service=PPP priv=1TAC+:  
Closing TCP/IP 0x16EF4C connection to 171.68.118.101/49AAA/AUTHEN (2082151566): status = FAILAs1  
CHAP: Unable to validate Response. Username papuser: Authentication failure3d22h: TAC+: ver=192  
id=166703029 received AUTHEN status = PASS3d22h: TAC+: rev0 inbound chap SENDPASS status=PASS  
for id=21836397723d22h: TAC+: rev0 inbound chap MD5 compare OK3d22h: AAA/AUTHEN: free\_user  
(0x170940) user='chapuser' ruser='' port='Async1' rem\_addr='async' authen\_type=CHAP service=PPP  
priv=13d22h: TAC+: Closing TCP/IP 0x16EF4C connection to 171.68.118.101/493d22h: AAA/AUTHEN  
(2183639772): status = PASS3d22h: AAA/AUTHOR/LCP As1: Authorize LCP3d22h: AAA/AUTHOR/LCP:  
Async1: (683360936): user='chapuser'3d22h: AAA/AUTHOR/LCP: Async1: (683360936): send AV  
service=ppp3d22h: AAA/AUTHOR/LCP: Async1: (683360936): send AV protocol=lcp3d22h:  
AAA/AUTHOR/LCP: Async1: (683360936): Method=TACACS+3d22h: AAA/AUTHOR/TAC+: (683360936):  
user=chapuser3d22h: AAA/AUTHOR/TAC+: (683360936): send AV service=ppp3d22h: AAA/AUTHOR/TAC+:  
(683360936): send AV protocol=lcp3d22h: TAC+: Opening TCP/IP to 171.68.118.101/49  
timeout=53d22h: TAC+: Opened TCP/IP handle 0x16C1F8 to 171.68.118.101/493d22h: TAC+: Opened  
171.68.118.101 index=13d22h: TAC+: 171.68.118.101 (683360936) AUTHOR/START queued3d22h: TAC+:  
(683360936) AUTHOR/START processed!--- *The user passes authentication !--- (the*



```
username/password is good) !--- but fails authorization !--- (the profile is not set up to
authorize PPP).TAC+: (3803447096): received author response status = FAILTAC+: Closing TCP/IP
0x16C2A4 connection to 171.68.118.101/49AAA/AUTHOR (3803447096): Post authorization status =
FAILAAA/AUTHOR/LCP As1: DeniedAAA/AUTHEN: free_user (0x15B2E8) user='noauth' ruser=''
port='Async1' rem_addr='async' authen_type=CHAP service=PPP priv=1As1 CHAP: O FAILURE id 9 len
24 msg is "Authorization failed"3d22h: TAC+: (683360936): received author response status =
PASS_ADD3d22h: TAC+: Closing TCP/IP 0x16C1F8 connection to 171.68.118.101/493d22h: AAA/AUTHOR
(683360936): Post authorization status = PASS_ADD3d22h: As1 CHAP: O SUCCESS id 3 len 43d22h: As1
PPP: Phase is UP3d22h: AAA/AUTHOR/FSM As1: (0): Can we start IPCP?3d22h: AAA/AUTHOR/FSM: Async1:
(977509495): user='chapuser'3d22h: AAA/AUTHOR/FSM: Async1: (977509495): send AV
service=ppp3d22h: AAA/AUTHOR/FSM: Async1: (977509495): send AV protocol=ip3d22h: AAA/AUTHOR/FSM:
Async1: (977509495): Method=TACACS+3d22h: AAA/AUTHOR/TAC+: (977509495): user=chapuser3d22h:
AAA/AUTHOR/TAC+: (977509495): send AV service=ppp3d22h: AAA/AUTHOR/TAC+: (977509495): send AV
protocol=ip3d22h: TAC+: Opening TCP/IP to 171.68.118.101/49 timeout=53d22h: TAC+: Opened TCP/IP
handle 0x16EF4C to 171.68.118.101/493d22h: TAC+: Opened 171.68.118.101 index=13d22h: TAC+:
171.68.118.101 (977509495) AUTHOR/START queued3d22h: As1 IPCP: I CONFREQ [Closed] id 1 len
343d22h: As1 IPCP: Address 0.0.0.0 (0x030600000000)3d22h: As1 IPCP: PrimaryDNS 0.0.0.0
(0x810600000000)3d22h: As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)3d22h: As1 IPCP:
SecondaryDNS 0.0.0.0 (0x830600000000)3d22h: As1 IPCP: SecondaryWINS 0.0.0.0
(0x840600000000)3d22h: TAC+: (977509495) AUTHOR/START processed3d22h: TAC+: (977509495):
received author response status = PASS_ADD3d22h: TAC+: Closing TCP/IP 0x16EF4C connection to
171.68.118.101/493d22h: AAA/AUTHOR (977509495): Post authorization status = PASS_ADD3d22h:
AAA/AUTHOR/FSM As1: We can start IPCP3d22h: As1 IPCP: O CONFREQ [Closed] id 8 len 103d22h: As1
IPCP: Address 10.31.1.5 (0x03060A1F0105)3d22h: As1 IPCP: I CONFACK [REQsent] id 8 len 103d22h:
As1 IPCP: Address 10.31.1.5 (0x03060A1F0105)3d22h: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Async1, changed state to up3d22h: As1 IPCP: I CONFREQ [ACKrcvd] id 1 len 343d22h: As1
IPCP: Address 0.0.0.0 (0x030600000000)3d22h: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)3d22h:
As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)3d22h: As1 IPCP: SecondaryDNS 0.0.0.0
(0x830600000000)3d22h: As1 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000)3d22h: AAA/AUTHOR/IPCP
As1: Start. Her address 0.0.0.0, we want 0.0.0.03d22h: AAA/AUTHOR/IPCP As1: Processing AV
service=ppp3d22h: AAA/AUTHOR/IPCP As1: Processing AV protocol=ip3d22h: AAA/AUTHOR/IPCP As1:
Authorization succeeded3d22h: AAA/AUTHOR/IPCP As1: Done. Her address 0.0.0.0, we want
0.0.0.03d22h: As1 IPCP: Using pool 'async'3d22h: As1 IPCP: Pool returned 15.15.15.153d22h: As1
IPCP: O CONFREQ [ACKrcvd] id 1 len 223d22h: As1 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000)3d22h:
As1 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000)3d22h: As1 IPCP: SecondaryWINS 0.0.0.0
(0x840600000000)3d22h: As1 IPCP: I CONFREQ [ACKrcvd] id 2 len 163d22h: As1 IPCP: Address 0.0.0.0
(0x030600000000)3d22h: As1 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000)3d22h: AAA/AUTHOR/IPCP As1:
Start. Her address 0.0.0.0, we want 15.15.15.153d22h: AAA/AUTHOR/IPCP As1: Processing AV
service=ppp3d22h: AAA/AUTHOR/IPCP As1: Processing AV protocol=ip3d22h: AAA/AUTHOR/IPCP As1:
Authorization succeeded3d22h: AAA/AUTHOR/IPCP As1: Done. Her address 0.0.0.0, we want
15.15.15.153d22h: As1 IPCP: O CONFNAK [ACKrcvd] id 2 len 163d22h: As1 IPCP: Address 15.15.15.15
(0x03060F0F0F0F)3d22h: As1 IPCP: PrimaryDNS 171.68.118.103 (0x8106AB447667)3d22h: As1 IPCP: I
CONFREQ [ACKrcvd] id 3 len 163d22h: As1 IPCP: Address 15.15.15.15 (0x03060F0F0F0F)3d22h: As1
IPCP: PrimaryDNS 171.68.118.103 (0x8106AB447667)3d22h: AAA/AUTHOR/IPCP As1: Start. Her address
15.15.15.15, we want 15.15.15.153d22h: AAA/AUTHOR/IPCP: Async1: (3918374858):
user='chapuser'3d22h: AAA/AUTHOR/IPCP: Async1: (3918374858): send AV service=ppp3d22h:
AAA/AUTHOR/IPCP: Async1: (3918374858): send AV protocol=ip3d22h: AAA/AUTHOR/IPCP: Async1:
(3918374858): send AV addr*15.15.15.153d22h: AAA/AUTHOR/IPCP: Async1: (3918374858):
Method=TACACS+3d22h: AAA/AUTHOR/TAC+: (3918374858): user=chapuser3d22h: AAA/AUTHOR/TAC+:
(3918374858): send AV service=ppp3d22h: AAA/AUTHOR/TAC+: (3918374858): send AV protocol=ip3d22h:
AAA/AUTHOR/TAC+: (3918374858): send AV addr*15.15.15.153d22h: TAC+: Opening TCP/IP to
171.68.118.101/49 timeout=53d22h: TAC+: Opened TCP/IP handle 0x16C9E0 to 171.68.118.101/493d22h:
TAC+: Opened 171.68.118.101 index=13d22h: TAC+: 171.68.118.101 (3918374858) AUTHOR/START
queued3d22h: TAC+: (3918374858) AUTHOR/START processed3d22h: TAC+: (3918374858): received author
response status = PASS_ADD3d22h: TAC+: Closing TCP/IP 0x16C9E0 connection to
171.68.118.101/493d22h: AAA/AUTHOR (3918374858): Post authorization status = PASS_ADD3d22h:
AAA/AUTHOR/IPCP As1: Processing AV service=ppp3d22h: AAA/AUTHOR/IPCP As1: Processing AV
protocol=ip3d22h: AAA/AUTHOR/IPCP As1: Processing AV addr*15.15.15.153d22h: AAA/AUTHOR/IPCP As1:
Authorization succeeded3d22h: AAA/AUTHOR/IPCP As1: Done. Her address 15.15.15.15, we want
15.15.15.153d22h: As1 IPCP: O CONFACK [ACKrcvd] id 3 len 163d22h: As1 IPCP: Address 15.15.15.15
(0x03060F0F0F0F)3d22h: As1 IPCP: PrimaryDNS 171.68.118.103 (0x8106AB447667)3d22h: As1 IPCP:
State is Open3d22h: As1 IPCP: Install route to 15.15.15.15rtpkrb#
```

## debug コマンド

注: debug data authentication 前、AAA 設定の情報を出力する重要な情報 使用参照してください。

- `debug aaa authorization` か。AAA認証の情報を表示する。
- `debug tacacs+` か。TACACS+ と関連付けられる詳細なデバッグ情報を表示する。
- `debug ppp negotiation` か。PPP オプションがネゴシエートされる PPP 始動の間に送信される PPP パケットを表示する。

## 関連情報

- [IOS での TACACS+ に関するドキュメント](#)
- [TACACS+ Support Page](#)
- [テクニカルサポートとドキュメント - Cisco Systems](#)