Cisco 3600 router configureren met T1/E1 en digitale modem

Inhoud

Inleiding

In veel omgevingen is het nodig om een toegangsserver te configureren om inkomende oproepen van zowel asynchrone als ISDN-gebruikers te accepteren. Deze gebruikers zouden naadloos met het netwerk kunnen verbinden alsof ze fysiek aanwezig zijn. Vandaar dat deze instelling veel wordt gebruikt om netwerkconnectiviteit te bieden voor reizende en telegebruikers evenals kleine Office-Home Office (SOHO)-sites.

Dit document behandelt hoe u een Cisco 3600 Series router kunt configureren om inkomende asynchrone oproepen op ISDN T1 (PRI of kanaalgekoppelde signalering [CAS]) te accepteren. Deze configuratie bevat alleen het minimale minimum dat vereist is voor de Network Access Server (NAS) om de oproep te accepteren. Afhankelijk van uw behoeften kunnen extra functies aan deze configuratie worden toegevoegd.

Opmerking: Deze configuratie toont niet hoe u Async-dialin via BRI op een 3600 Series router kunt configureren. Raadpleeg voor meer informatie het document Connectiviteit met de modem en een Cisco 3640 BRI.

Voorwaarden

Vereisten

Er zijn geen specifieke vereisten van toepassing op dit document.

Gebruikte componenten

Deze configuratie is ontwikkeld en getest met behulp van de onderstaande software- en hardwareversies.

- Cisco 3640 Series router met een 1-poorts gekanaliseerde T1/ISDN-PRI netwerkmodule (NM-1CT1-CSU) en een 24-poorts netwerkmodule met digitale modem (NM-24DM).
- De Cisco 3640 router voert Cisco IOS®-softwarerelease 12.1(5)T9 uit.
- Eén T1 PRI-circuit.
- Eén T1 CAS-circuit.

De informatie in dit document is gebaseerd op apparaten in een specifieke laboratoriumomgeving. Alle apparaten die in dit document worden beschreven, hadden een opgeschoonde (standaard)configuratie. Als u in een levend netwerk werkt, zorg er dan voor dat u de potentiële impact van om het even welke opdracht begrijpt alvorens het te gebruiken.

Verwante producten

Deze configuratie kan worden gebruikt op elke Cisco 3600 Series router met een T1/E1-netwerkmodule en de netwerkmodule voor digitale modem.

Voor een voorbeeldconfiguratie met behulp van de AS5x00 Series routers, raadpleegt u het document Een toegangsserver met PRI's configureren voor inkomende asynchrone en ISDN-oproepen.

Deze configuratie kan ook worden aangepast voor gebruik met E1- of PRI-poorten. Configureer de E1-controller met de linecodering, vormgeving en andere fysieke eigenschappen die door de Telco zijn geleverd. De PRI D-kanaalconfiguratie (interface-seriële x:15 voor E1s) is gelijk aan de configuratie die hier wordt getoond.

Conventies

Zie de Cisco Technical Tips Convention voor meer informatie over documentconventies.

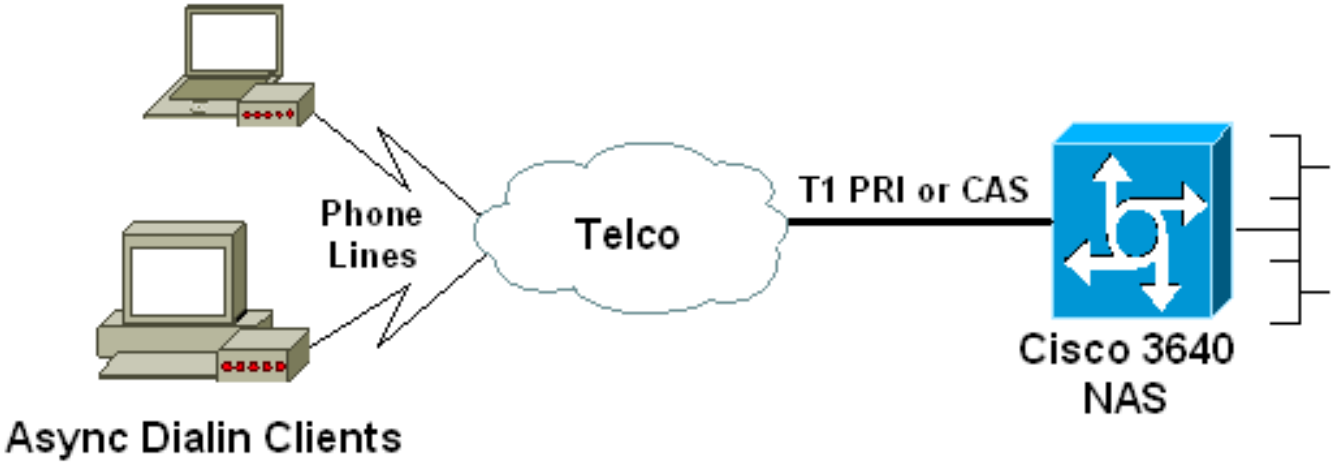
Configureren

Deze sectie bevat informatie over het configureren van de functies die in dit document worden beschreven.

N.B.: Als u aanvullende informatie wilt vinden over de opdrachten die in dit document worden gebruikt, gebruikt u het IOS-opnamegereedschap (alleen geregistreerde klanten).

Netwerkdiagram

Dit document gebruikt de netwerkinstellingen die in het onderstaande schema zijn weergegeven.



Taken vooraf configureren

Task One

Bepaal het nummer van de sleuf waarin de digitale modems zijn geïnstalleerd. Gebruik de opdracht **Show diag** EXEC om de sleuf te bepalen waarin de module geïnstalleerd is. Hieronder staat een voorbeelduitvoer van de opdracht **show diag** EXEC:

```
acc-3640-6a#show diag
Slot 0:
        CT1 (CSU) Port adapter, 1 port
! -- NM-1CT1-CSU is in slot 0. ! -- The T1 interfaces are addressed as controller t1 slot/port.
! -- In this example, controller t1 0/0. Port adapter is analyzed Port adapter insertion time
unknown EEPROM contents at hardware discovery: Hardware revision 1.1 Board revision D0 Serial
number 22677234 Part number 800-01228-04 Test history 0x0 RMA number 00-00-00 EEPROM format
version 1 EEPROM contents (hex): 0x20: 01 26 01 01 01 5A 06 F2 50 04 CC 04 00 00 00 00 0x30: 68
00 00 00 00 12 19 00 FF FF FF FF FF FF FF FF Slot 1:
        Digital Modems Port adapter, 24 ports
! -- Digital modems are in slot 1. Note that there are 24 modems. Port adapter is analyzed Port
adapter insertion time unknown EEPROM contents at hardware discovery: Hardware revision 0.3
Board revision UNKNOWN Serial number 0 Part number 00-0000-00 Test history 0x0 RMA number 00-00-
00 ... ... ! -- Irrelevant Output omitted ....
```

Task Two

Bepaal de lijnnummers of het asynchrone interfacebereik dat bij de modemmodule hoort.

Raadpleeg de tabel in het document Hoe asynchrone lijnen worden genummerd in Cisco 3600 Series routers om het lijnbereik te bepalen.

In dit voorbeeld is de netwerkmodule voor digitale modem in sleuf 1 van de Cisco 3640 router. Verwijzend naar het document dat hierboven is genoemd, bepalen we dat het lijnnummerbereik 33 tot 64 is. Aangezien onze modemmodule echter slechts 24 poorten heeft, is het bereik alleen lijnen 33 tot 56 (de resterende 8 lijnen zijn niet gebruikt).

Tip: U kunt de onderstaande formule ook gebruiken om het lijnbereik te vinden:

```
line number = (<slot> * 32) + <unit> + 1
```

Vandaar dat bij ons voorbeeld het beginlijnnummer (1 * 32) + 0 +1 = 33 is en het eindlijnnummer 56.

Configuraties

Het volgende is voorbeelden van configuraties voor een Cisco 3640 router die asynchrone oproepen accepteert. Het eerste voorbeeld gebruikt een T1 CAS-circuit, terwijl het tweede monster een T1 PRI-circuit gebruikt. Kies de juiste configuratie, afhankelijk van het T1/E1 circuit dat u hebt.

Cisco 3640 met T1 CAS

```
acc-3640-6a#show running-config
Building configuration...

Current configuration : 1137 bytes
!
version 12.1
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service internal
!
hostname acc-3640-6a
!
logging rate-limit console 10 except errors
!
username dialin password 0 user
! -- Usernames for local authentication of the call. ! -
- The client presents the username/password and the NAS
! -- authenticates the peer. ip subnet-zero ! no ip
finger no ip domain-lookup ! async-bootp dns-server
10.98.1.220 ! -- Specifies (for async clients) the IP
address of domain name server. async-bootp nbns-server
10.98.1.221 ! -- Specifies (for async clients) the IP
address of WINS server. call rsvp-sync ! controller T1
0/0 ! -- T1 Physical interface controller configuration.
! -- Interfaces are addressed as controller slot/port. !
-- In this example, the NM-1CT1-CSU module is in slot 0.
framing esf ! -- Framing for this T1 is Extended Super
Frame (ESF). ! -- Obtain this information from the
telco. linecode b8zs ! -- Linecoding for this T1. Obtain
this information from the telco. ds0-group 0 timeslots
1-24 type e & m-immediate-start; ! -- CAS T1 with E & M
Immediate Start provided by telco. ! -- Verify your
signaling type with your local provider. Prior to Cisco
IOS ! -- Software Release 12.0(5)T, this command was
known as cas-group. ! interface Ethernet2/0 ip address
10.98.1.51 255.255.255.0 half-duplex ! interface Group-
Async1 ! -- This group-async interface is the
configuration template for all modems. ! -- Individual
async interface do not have to be configured since they
! -- can be cloned from one managed copy. ip unnumbered
Ethernet2/0 encapsulation ppp dialer in-band dialer-
group 1 !--- Apply interesting traffic definition from
dialer-list 1. ! -- Note: The specified dialer-group
number must be the same as ! -- the dialer-list number;
in this example, defined to be "1". ! -- Interesting
traffic specifies the packets that should reset the idle
```

```
timer.

 dialer idle-timeout 600
 ! -- Sets Idle timer to 600 seconds (10 minutes). async
mode dedicated ! -- Allows only PPP dialup. Prevents
users from establishing ! -- an "EXEC session" to the
router. If the async interface is to answer ! --
different connection types (exec,ppp,slip etc), ! -- use
async mode interactive in conjunction with autoselect
ppp ! -- under the line configuration to auto detect the
connection type. peer default ip address pool dialin ! -
- Clients are assigned addresses from the ip address
pool named "dialin".

 ppp authentication chap pap
 group-range 33 56
 ! -- Modems 33 through 56 are members of this group
async interface. ! -- This range was determined in the
section Pre-configuration Tasks. ! ip local pool dialin
10.98.1.15 10.98.1.39 ! -- IP address pool for dialin
clients. ip classless ip route 0.0.0.0 0.0.0.0 10.98.1.1
no ip http server ! dialer-list 1 protocol ip permit ! -
- Specifies all IP traffic as interesting. Interesting
traffic ! -- specifies the packets that should reset the
idle timer. ! -- This is applied to interface Group-
Async 1 using dialer-group 1. ! -- Note: The specified
dialer-list number must be the same as the ! -- dialer-
group number; in this example, defined to be "1".

!
dial-peer cor custom
!
line con 0
 transport input none
line 33 56
 ! -- TTY lines for the NM-24DM Modems. ! -- This line
range was determined in the section Pre-configuration
Tasks. modem InOut ! -- Support incoming and outgoing
modem calls. transport input all line aux 0 line vty 0 4
login ! end
```

Cisco 3640 Series met T1 PRI-controller

```
acc-3640-6a#show running-config
Building configuration...

Current configuration : 1200 bytes
!
version 12.1
no service single-slot-reload-enable
service timestamps debug datetime msec
service timestamps log uptime
no service password-encryption
!
hostname acc-3640-6a
!
logging rate-limit console 10 except errors
!
username dialin password 0 user

! -- Usernames for local authentication of the call. The
client ! -- presents the username/password and the NAS
authenticates the peer. ! -- To use AAA with RADIUS or
```

```
TACACS+ refer to the document ! -- Implementing the
Server-Based AAA Subsystem ip subnet-zero ! ! no ip
finger no ip domain-lookup ! async-bootp dns-server
10.98.1.220! -- Specifies (for async clients) the IP
address of domain name server. async-bootp nbns-server
10.98.1.221 ! -- Specifies (for async clients) the IP
address of WINS server. isdn switch-type primary-5ess
call rsvp-sync ! controller T1 0/0 ! -- T1 Physical
interface controller configuration. ! -- Interfaces are
addressed as controller slot/port. ! -- In this example,
the NM-1CT1-CSU module is in slot 0. framing esf ! --
Framing for this T1 is Extended Super Frame (ESF). ! --
Obtain this information from the telco. linecode b8zs !
-- Linecoding for this T1. Obtain this information from
the telco. pri-group timeslots 1-24 ! -- For T1 PRI
scenarios, all 24 T1 timeslots are assigned as ! -- ISDN
PRI channels. The router will now automatically create !
-- the corresponding D-channel: interface Serial 0/0:23.

!
interface Serial0/0:23
! -- D-channel configuration for T1 0/0. no ip address
encapsulation ppp isdn switch-type primary-5ess isdn
incoming-voice modem ! -- All incoming voice calls on
this T1 are sent to the modems. ! -- This command is
required if this T1 is to accept async calls. ! -- The
controller will now pass voice calls (bearercap
0x9090A2) to the modem bank. ! interface Ethernet2/0 ip
address 10.98.1.51 255.255.255.0 half-duplex ! interface
Group-Async1 ! -- This group-async interface is the
configuration template for all modems. ! -- Individual
async interface do not have to be configured since they
can ! -- be cloned from one managed copy. ip unnumbered
Ethernet2/0 encapsulation ppp dialer in-band dialer-
group 1 !--- Apply interesting traffic definition from
dialer-list 1. ! -- Note: The specified dialer-group
number must be the same as ! -- the dialer-list number;
in this example, defined to be "1". ! -- Interesting
traffic specifies the packets that should reset the idle
timer.

 dialer idle-timeout 600
 async mode dedicated
 ! -- Allows only PPP dialup. Prevents users from
establishing an ! -- "EXEC session" to the router. If
the async interface is to answer different ! --
connection types(exec,ppp,slip etc), use async mode
interactive in ! -- conjunction with autoselect ppp
under the line configuration ! -- to auto detect the
connection type. peer default ip address pool dialin ! -
- Clients are assigned addresses from the ip address
pool named "dialin". ppp authentication chap pap group-
range 33 56 ! -- Modems 33 through 56 are members of
this group async interface. ! -- This range was
determined in the section Pre-configuration Tasks. ! ip
local pool dialin 10.98.1.15 10.98.1.39 ! -- IP address
pool for dialin clients. ip classless ip route 0.0.0.0
0.0.0.0 10.98.1.1 no ip http server ! dialer-list 1
protocol ip permit ! -- Specifies all IP traffic as
interesting. ! -- Interesting traffic specifies the
packets that should reset the idle timer. ! -- This is
applied to interface Group-Async 1 using dialer-group 1.
! -- Note: The specified dialer-list number must be the
same as the ! -- dialer-group number; in this example,
```

```
defined to be "1".

dial-peer cor custom
!
line con 0
 transport input none
line 33 56
 ! -- TTY lines for the NM-24DM Modems. ! -- This line
range was determined in the section Pre-configuration
Tasks. modem InOut ! -- Support incoming and outgoing
modem calls. transport input all line aux 0 line vty 0 4
login ! end
```

Verifiëren

Deze sectie verschaft informatie die u kunt gebruiken om te bevestigen dat uw configuratie correct werkt.

Bepaalde opdrachten met **show worden ondersteund door de tool** Output Interpreter (alleen voor geregistreerde klanten). Hiermee kunt u een analyse van de output van opdrachten met **show genereren.**

- **ISDN-status tonen** - garandeert dat de router correct met de ISDN-switch communiceert. In de uitvoer, controleer of `Layer 1 Status actief is`, en of de `Layer 2 Status staat = MULTIPLE_FRAME_ESTABLISHED` verschijnt. Deze opdracht geeft ook het aantal actieve oproepen weer.
- *gebruikersnaam* ***voor de beller*** - toont parameters voor de specifieke gebruiker zoals de toegewezen IP-adres, PPP- en PPP-bundelparameters enzovoort. Als uw versie van Cisco IOS-software deze opdracht niet ondersteunt, gebruikt u de opdracht **showgebruiker**.
- **Toon dialer kaart** - Toont geconfigureerde dynamische en statische dialerkaarten. Deze opdracht kan worden gebruikt om te zien of er een dynamische dialerkaart is gemaakt. Zonder een dialerkaart kunt u geen pakketten routeren.

Problemen oplossen

Deze sectie bevat informatie waarmee u problemen met de configuratie kunt oplossen.

Bronnen voor probleemoplossing

Gebruik de volgende bronnen voor probleemoplossing zoals vereist:

- Problemen oplossen bij inkomende modem - voor analoge gespreksproblemen oplossen.
- PRI asynchrone modem - extra informatie over het oplossen van analoge gespreksproblemen.
- T1 Problemen oplossen -Gebruik dit stroomschema als u vermoedt dat het T1-circuit niet goed werkt.
- Loopback-tests voor T1/56K-lijnen - Om te controleren of de T1-poort op de router correct werkt.

Opdrachten voor troubleshooting

Bepaalde opdrachten worden ondersteund door het gereedschap Uitvoertolk, waarmee u een analyse van de opdrachtoutput kunt bekijken.

Opmerking: Voordat u **debug-**opdrachten afgeeft, raadpleegt u Belangrijke informatie over debug-opdrachten.

- **debug dialer** - Hiermee geeft u informatie over het foutoptreden van DDR weer over de pakketten die op een dialerinterface worden ontvangen. Deze informatie kan helpen om ervoor te zorgen dat er interessant verkeer is dat de dialerinterface kan gebruiken.
- **debug ISDN Q931** - Geeft instellingen voor oproepen en verwijdering van de ISDN-netwerkverbinding weer (Layer 3).
- **debug** van **modemactiviteit** - Hiermee geeft u modemactiviteit op een toegangsserver weer. De uitvoer toont wanneer de modemlijn de status verandert.
- **debug** van **modemCCS** - Een EXEC-opdracht om problemen bij Call Switching Module (CSM) op routers met interne digitale modems te voorkomen. Met deze opdracht, kunt u de volledige reeks van het overschakelen van inkomende en uitgaande oproepen overtrekken.
- **debug PPP-onderhandeling** - Informatie over het PPP-verkeer en -uitwisselingen tijdens de onderhandelingen over Link Control Protocol (LCP), Verificatie en Network Control Protocol (NCP). Een succesvolle PPP-onderhandeling opent eerst de LCP-staat, dan Verifieert en tenslotte onderhandelt NCP. Tijdens LCP-onderhandelingen worden multilink-parameters vastgesteld, zoals Maximum Get Reconstruction Unit (MRRU).
- **debug van PPP-verificatie** - displays PPP-verificatieprotocolberichten, inclusief CHAP-pakketuitwisselingen en PAP-uitwisselingen (Wachtwoord Verificatie Protocol).
- **debug** van **PPP** - Hiermee worden protocolfouten en foutstatistieken weergegeven die bij de verbindingsonderhandeling en -handeling in PPP zijn gekoppeld.

Hieronder staan enkele debug-uitgangen voor succesvolle oproepen (met T1 CAS). Let op de bouten en de opmerkingen in de resultaten. Vergelijk de uitvoer die u behaalt met het onderstaande resultaat.

```
acc-3640-6a#show debug
CSM Modem Management:
  Modem Management Call Switching Module debugging is on
PPP:
  PPP authentication debugging is on
  PPP protocol negotiation debugging is on
! -- Only debug modem csm, debug ppp authentication and ! -- debug ppp negotiation were
activated.

acc-3640-6a#
00:13:42: Modem 255/255 CSM: received EVENT_CALL_DIAL_IN with call_id 0000
00:13:42:     src 0/0/0 dest 255/0/255 cause 512
00:13:42: CSM: Next free modem = 1/0; statbits = 10020
00:13:42: Modem 1/0 CSM: modem is allocated, modems free=23
! -- The Call Switch Module (CSM) is informed of the call. ! -- The CSM allocates modem 1/0 to
the incoming call. 00:13:42: Modem 1/0 CSM: (CSM_PROC_IDLE)<--DSX0_CALL 00:13:42: Modem 1/0 CSM:
(CSM_PROC_IC_CAS_CHANNEL_LOCKED)<--CSM_EVENT_MODEM_SETUP 00:13:42: Modem 1/0 CSM: received
EVENT_START_RX_TONE with call_id 0000 00:13:42: src 0/0/0 dest 1/0/0 cause 0 00:13:42: Modem 1/0
CSM: (CSM_PROC_IC_CAS_ANSWER_CALL)<--DSX0_START_RX_TONE 00:13:42: Modem 1/0 CSM: received
EVENT_CHANNEL_CONNECTED with call_id 0000 00:13:42: src 0/0/0 dest 1/0/0 cause 0 00:13:42: Modem
1/0 CSM: (CSM_PROC_IC_CAS_ANSWER_CALL)<--DSX0_CONNECTED 00:14:04: Modem 1/0 CSM:
(CSM_PROC_CAS_WAIT_FOR_CARRIER)<--MODEM_CONNECTED
! -- Modem 1/0 is Connected. 00:14:07: %LINK-3-UPDOWN: Interface Async33, changed state to up
! -- Modem 1/0 corresponds to int async 33 (and line 33). 00:14:07: As33 PPP: Treating
connection as a callin 00:14:07: As33 PPP: Phase is ESTABLISHING, Passive Open [0 sess, 0 load]
```

00:14:07: As33 **LCP: State is Listen**
! -- LCP negotiation begins. 00:14:08: As33 LCP: I CONFREQ [Listen] id 2 len 23 *! -- Incoming LCP CONFREQ. ! -- For more information on interpreting PPP debugs refer to the document ! -- Dialup Technology: Troubleshooting Techniques.* 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: MagicNumber 0x00ADDA8E (0x050600ADDA8E) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: Callback 6 (0x0D0306) 00:14:08: As33 LCP: O CONFREQ [Listen] id 12 len 25 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: AuthProto CHAP (0x0305C22305) 00:14:08: As33 LCP: MagicNumber 0xD0653B57 (0x0506D0653B57) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: O CONFREJ [Listen] id 2 len 7 00:14:08: As33 LCP: Callback 6 (0x0D0306) 00:14:08: As33 LCP: I CONFACK [REQsent] id 12 len 25 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: AuthProto CHAP (0x0305C22305) 00:14:08: As33 LCP: MagicNumber 0xD0653B57 (0x0506D0653B57) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: I CONFREQ [ACKrcvd] id 3 len 20 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: MagicNumber 0x00ADDA8E (0x050600ADDA8E) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: As33 LCP: O CONFACK [ACKrcvd] id 3 len 20 00:14:08: As33 LCP: ACCM 0x000A0000 (0x0206000A0000) 00:14:08: As33 LCP: MagicNumber 0x00ADDA8E (0x050600ADDA8E) 00:14:08: As33 LCP: PFC (0x0702) 00:14:08: As33 LCP: ACFC (0x0802) 00:14:08: **As33 LCP: State is Open**
! --- LCP negotiation is complete. 00:14:08: As33 PPP: Phase is AUTHENTICATING, by this end [0 sess, 0 load] 00:14:08: As33 CHAP: O CHALLENGE id 1 len 32 from "acc-3640-6a" 00:14:08: As33 AUTH: Started process 0 pid 94 00:14:08: As33 CHAP: I RESPONSE id 1 len 27 from "dialin" 00:14:08: **As33 CHAP: O SUCCESS** id 1 len 4
! -- CHAP authentication is successful. ! -- If this fails verify that the username and password are correct. ! -- Refer to Dialup Technology: Troubleshooting Techniques. 00:14:08: As33 **PPP: Phase is UP** [0 sess, 0 load]
! -- IPCP negotiation begins. 00:14:08: As33 IPCP: O CONFREQ [Closed] id 1 len 10 00:14:08: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:08: As33 IPCP: I CONFREQ [REQsent] id 1 len 40 00:14:08: As33 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) 00:14:08: As33 IPCP: Address 0.0.0.0 (0x030600000000) 00:14:08: As33 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) 00:14:08: As33 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) 00:14:08: As33 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:08: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:08: As33 IPCP: Pool returned 10.98.1.15 ! -- The IP Address Pool "dialin" provides the address for the client 00:14:08: As33 IPCP: O CONFREJ [REQsent] id 1 len 22 00:14:08: As33 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) 00:14:08: As33 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:08: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:08: As33 CCP: I CONFREQ [Not negotiated] id 1 len 15 00:14:08: As33 CCP: MS-PPC supported bits 0x00000001 (0x120600000001) 00:14:08: As33 CCP: Stacker history 1 check mode EXTENDED (0x1105000104) 00:14:08: As33 LCP: O PROTREJ [Open] id 13 len 21 protocol CCP 00:14:08: As33 LCP: (0x80FD0101000F12060000000111050001) 00:14:08: As33 LCP: (0x04) 00:14:08: As33 IPCP: I CONFACK [REQsent] id 1 len 10 00:14:08: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:10: As33 IPCP: TIMEout: State ACKrcvd 00:14:10: As33 IPCP: O CONFREQ [ACKrcvd] id 2 len 10 00:14:10: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:10: As33 IPCP: I CONFACK [REQsent] id 2 len 10 00:14:10: As33 IPCP: Address 10.98.1.51 (0x03060A620133) 00:14:11: As33 IPCP: I CONFREQ [ACKrcvd] id 2 len 34 00:14:11: As33 IPCP: Address 0.0.0.0 (0x030600000000) 00:14:11: As33 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) 00:14:11: As33 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) 00:14:11: As33 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:11: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:11: As33 IPCP: O CONFREJ [ACKrcvd] id 2 len 16 00:14:11: As33 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) 00:14:11: As33 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) 00:14:11: As33 IPCP: I CONFREQ [ACKrcvd] id 3 len 22 00:14:11: As33 IPCP: Address 0.0.0.0 (0x030600000000) 00:14:11: As33 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) 00:14:11: As33 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) 00:14:11: As33 IPCP: O CONFNAK [ACKrcvd] id 3 len 22 00:14:11: As33 IPCP: Address 10.98.1.15 (0x03060A62010F) 00:14:11: As33 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) 00:14:11: As33 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) 00:14:11: As33 IPCP: I CONFREQ [ACKrcvd] id 4 len 22 00:14:11: As33 IPCP: Address 10.98.1.15 (0x03060A62010F) 00:14:11: As33 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) 00:14:11: As33 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) 00:14:11: As33 IPCP: O CONFACK [ACKrcvd] id 4 len 22 00:14:11: As33 IPCP: Address 10.98.1.15 (0x03060A62010F) 00:14:11: As33 IPCP: **PrimaryDNS 10.98.1.220** (0x81060A6201DC)
! -- The Primary DNS server is agreed upon. ! -- This was configured using the async bootp commands. 00:14:11: As33 IPCP: **PrimaryWINS 10.98.1.221** (0x82060A6201DD)
! -- The Primary WINS server is agreed upon. ! -- This was configured using the async bootp commands. 00:14:11: As33 **IPCP: State is Open**
! -- IPCP negotiation is complete. The user is now connected. 00:14:11: As33 **IPCP: Install route**

to 10.98.1.15
! -- The NAS installs a route to the client.

Een ICMP-ping naar de afstandsbediening is geslaagd:

```
acc-3640-6a#ping 10.98.1.15

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.98.1.15, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 124/138/148 ms
acc-3640-6a#
```

Hieronder staan enkele debug-uitgangen voor succesvolle oproepen (met T1 PRI). Let op de bouten en de opmerkingen in de resultaten. Vergelijk de uitvoer die u behaalt met het onderstaande resultaat.

```
acc-3640-6a#show debug
CSM Modem Management:
  Modem Management Call Switching Module debugging is on
PPP:
  PPP authentication debugging is on
  PPP protocol negotiation debugging is on
ISDN:
  ISDN Q931 packets debugging is on
  ISDN Q931 packets debug DSLs. (On/Off/No DSL:1/0/-)
  DSL  0 --> 31
  1 - - - - - - -  - - - - - - - -  - - - - - - - -  - - - - - - - -
 ! -- Only debug modem csm, debug ppp authentication, debug ppp negotiation and ! -- debug isdn
q931 were activated.

acc-3640-6a#
*Mar  1 00:22:43.743: ISDN Se0/0:23: RX <-  SETUP pd = 8  callref = 0x32
! -- Incoming Q.931 SETUP message. Indicates an incoming call. ! -- For more information on
Q.931 refer to the document. ! -- Troubleshooting ISDN Layer 3 using the debug isdn q931
Command. *Mar 1 00:22:43.747: Bearer Capability i = 0x9090A2 *Mar 1 00:22:43.747: Channel ID i =
0xA98393 *Mar 1 00:22:43.747: Calling Party Number i = 0x2183, '9194722001', Plan:ISDN,
Type:National *Mar 1 00:22:43.747: Called Party Number i = 0xC1, '9194724137', Plan:ISDN,
Type:Subscriber(local) *Mar 1 00:22:43.755: CSM: MODEM_REPORT from 0/0:18, call_id=0x4,
event=0x1, cause=0x0, dchan_idb=0x62442AB8 *Mar 1 00:22:43.755: CSM: Next free modem = 1/3;
statbits = 10020 ! -- The Call Switch Module (CSM) is informed of the call. ! -- The CSM
allocates modem 2/0 to the incoming call. *Mar 1 00:22:43.755: Modem 1/3 CSM: modem is
allocated, modems free=23 *Mar 1 00:22:43.755: Modem 1/3 CSM: Incoming call from 9194722001 to
9194724137, id 0x4 *Mar 1 00:22:43.755: Modem 1/3 CSM: (CSM_PROC_IDLE)<--ISDN_CALL *Mar 1
00:22:43.803: ISDN Se0/0:23: TX ->  CALL_PROC pd = 8  callref = 0x8032
*Mar  1 00:22:43.803:         Channel ID i = 0xA98393
! -- The Call Proceeding Message is sent through the D-channel. *Mar 1 00:22:43.807: ISDN
Se0/0:23: TX -> ALERTING pd = 8 callref = 0x8032 *Mar 1 00:22:43.807: ISDN Se0/0:23: TX ->
CONNECT pd = 8  callref = 0x8032
! -- D-channel transmits a CONNECT. *Mar 1 00:22:43.907: ISDN Se0/0:23: RX <-  CONNECT_ACK pd =
8  callref = 0x32
! -- Received the Q.931 CONNECT_ACK. *Mar 1 00:22:43.911: ISDN Se0/0:23: CALL_PROGRESS:
CALL_CONNECTED call id 0x4, bchan 18, dsl 0 *Mar 1 00:22:43.911: CSM: MODEM_REPORT from 0/0:18,
call_id=0x4, event=0x4, cause=0x0, dchan_idb=0x62442AB8 *Mar 1 00:22:43.911: Modem 1/3 CSM:
MODEM_REPORT rcvd DEV_CONNECTED for call_id 0x4 *Mar 1 00:22:43.911: Modem 1/3 CSM:
(CSM_PROC_MODEM_RESERVED)<--ISDN_CONNECTED 00:22:43: %ISDN-6-CONNECT: Interface Serial0/0:18 is
now connected to 9194722001 *Mar 1 00:23:06.291: Modem 1/3 CSM: (CSM_PROC_WAIT_FOR_CARRIER)<--
MODEM_CONNECTED
! -- Modem is connected. 00:23:08: %LINK-3-UPDOWN: Interface Async36, changed state to up
! -- Modem 1/3 corresponds to int async 36 (and line 36). *Mar 1 00:23:08.755: As36 PPP:
Treating connection as a callin *Mar 1 00:23:08.755: As36 PPP: Phase is ESTABLISHING, Passive
```

Open [0 sess, 0 load] *Mar 1 00:23:08.755: As36 **LCP: State is Listen**
! -- LCP negotiation begins. *Mar 1 00:23:09.399: As36 LCP: **I CONFREQ** [Listen] id 2 len 23
! -- Incoming LCP CONFREQ. ! -- For more information on interpreting PPP debugs refer to the document ! -- Dialup Technology: Troubleshooting Techniques. *Mar 1 00:23:09.399: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) *Mar 1 00:23:09.399: As36 LCP: MagicNumber 0x009B41FA (0x0506009B41FA) *Mar 1 00:23:09.399: As36 LCP: PFC (0x0702) *Mar 1 00:23:09.399: As36 LCP: ACFC (0x0802) *Mar 1 00:23:09.399: As36 LCP: Callback 6 (0x0D0306) *Mar 1 00:23:09.399: As36 LCP: O CONFREQ [Listen] id 1 len 25 *Mar 1 00:23:09.399: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) *Mar 1 00:23:09.399: As36 LCP: AuthProto CHAP (0x0305C22305) *Mar 1 00:23:09.403: As36 LCP: MagicNumber 0xD06D7DF1 (0x0506D06D7DF1) *Mar 1 00:23:09.403: As36 LCP: PFC (0x0702) *Mar 1 00:23:09.403: As36 LCP: ACFC (0x0802) *Mar 1 00:23:09.403: As36 LCP: O CONFREJ [Listen] id 2 len 7 *Mar 1 00:23:09.403: As36 LCP: Callback 6 (0x0D0306) *Mar 1 00:23:09.523: As36 LCP: I CONFACK [REQsent] id 1 len 25 *Mar 1 00:23:09.523: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) *Mar 1 00:23:09.523: As36 LCP: AuthProto CHAP (0x0305C22305) *Mar 1 00:23:09.523: As36 LCP: MagicNumber 0xD06D7DF1 (0x0506D06D7DF1) *Mar 1 00:23:09.523: As36 LCP: PFC (0x0702) *Mar 1 00:23:09.523: As36 LCP: ACFC (0x0802) *Mar 1 00:23:09.527: As36 LCP: I CONFREQ [ACKrcvd] id 3 len 20 *Mar 1 00:23:09.531: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) *Mar 1 00:23:09.531: As36 LCP: MagicNumber 0x009B41FA (0x0506009B41FA) *Mar 1 00:23:09.531: As36 LCP: PFC (0x0702) *Mar 1 00:23:09.531: As36 LCP: ACFC (0x0802) *Mar 1 00:23:09.531: As36 LCP: O CONFACK [ACKrcvd] id 3 len 20 *Mar 1 00:23:09.531: As36 LCP: ACCM 0x000A0000 (0x0206000A0000) *Mar 1 00:23:09.531: As36 LCP: MagicNumber 0x009B41FA (0x0506009B41FA) *Mar 1 00:23:09.531: As36 LCP: PFC (0x0702) *Mar 1 00:23:09.531: As36 LCP: ACFC (0x0802) *Mar 1 00:23:09.531: **As36 LCP: State is Open**
! --- LCP negotiation is complete. *Mar 1 00:23:09.531: As36 PPP: Phase is AUTHENTICATING, by this end [0 sess, 0 load] *Mar 1 00:23:09.531: As36 CHAP: O CHALLENGE id 1 len 32 from "acc-3640-6a" *Mar 1 00:23:09.651: As36 CHAP: I RESPONSE id 1 len 27 from "dialin" *Mar 1 00:23:09.655: As36 **CHAP: O SUCCESS id 1 len 4**
! -- CHAP authentication is successful. ! -- If this fails verify that the username and password are correct. ! -- Refer to Dialup Technology: Troubleshooting Techniques. *Mar 1 00:23:09.655: As36 PPP: Phase is UP [0 sess, 0 load] *Mar 1 00:23:09.655: As36 IPCP: O CONFREQ [Closed] id 1 len 10 *Mar 1 00:23:09.655: As36 IPCP: Address 10.98.1.51 (0x03060A620133) *Mar 1 00:23:09.771: As36 IPCP: I CONFREQ [REQsent] id 1 len 40 *Mar 1 00:23:09.771: As36 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) *Mar 1 00:23:09.771: As36 IPCP: Address 0.0.0.0 (0x030600000000) *Mar 1 00:23:09.771: As36 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) *Mar 1 00:23:09.771: As36 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) *Mar 1 00:23:09.771: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) *Mar 1 00:23:09.771: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) *Mar 1 00:23:09.771: As36 **IPCP: Pool returned 10.98.1.15**
! -- The IP Address Pool "dialin" provides the address for the client. *Mar 1 00:23:09.771: As36 IPCP: O CONFREJ [REQsent] id 1 len 22 *Mar 1 00:23:09.771: As36 IPCP: CompressType VJ 15 slots CompressSlotID (0x0206002D0F01) *Mar 1 00:23:09.771: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) *Mar 1 00:23:09.771: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) *Mar 1 00:23:09.779: As36 CCP: I CONFREQ [Not negotiated] id 1 len 15 *Mar 1 00:23:09.779: As36 CCP: MS-PPC supported bits 0x00000001 (0x120600000001) *Mar 1 00:23:09.779: As36 CCP: Stacker history 1 check mode EXTENDED (0x1105000104) *Mar 1 00:23:09.779: As36 LCP: O PROTREJ [Open] id 2 len 21 protocol CCP *Mar 1 00:23:09.779: As36 LCP: (0x80FD0101000F12060000000111050001) *Mar 1 00:23:09.779: As36 LCP: (0x04) *Mar 1 00:23:09.783: As36 IPCP: I CONFACK [REQsent] id 1 len 10 *Mar 1 00:23:09.783: As36 IPCP: Address 10.98.1.51 (0x03060A620133) *Mar 1 00:23:11.655: As36 IPCP: TIMEout: State ACKrcvd *Mar 1 00:23:11.655: As36 IPCP: O CONFREQ [ACKrcvd] id 2 len 10 *Mar 1 00:23:11.655: As36 IPCP: Address 10.98.1.51 (0x03060A620133) *Mar 1 00:23:11.759: As36 IPCP: I CONFACK [REQsent] id 2 len 10 *Mar 1 00:23:11.759: As36 IPCP: Address 10.98.1.51 (0x03060A620133) *Mar 1 00:23:12.759: As36 IPCP: I CONFREQ [ACKrcvd] id 2 len 34 *Mar 1 00:23:12.763: As36 IPCP: Address 0.0.0.0 (0x030600000000) *Mar 1 00:23:12.763: As36 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) *Mar 1 00:23:12.763: As36 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) *Mar 1 00:23:12.763: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) *Mar 1 00:23:12.763: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) *Mar 1 00:23:12.763: As36 IPCP: O CONFREJ [ACKrcvd] id 2 len 16 *Mar 1 00:23:12.763: As36 IPCP: SecondaryDNS 0.0.0.0 (0x830600000000) *Mar 1 00:23:12.763: As36 IPCP: SecondaryWINS 0.0.0.0 (0x840600000000) *Mar 1 00:23:12.871: As36 IPCP: I CONFREQ [ACKrcvd] id 3 len 22 *Mar 1 00:23:12.871: As36 IPCP: Address 0.0.0.0 (0x030600000000) *Mar 1 00:23:12.871: As36 IPCP: PrimaryDNS 0.0.0.0 (0x810600000000) *Mar 1 00:23:12.871: As36 IPCP: PrimaryWINS 0.0.0.0 (0x820600000000) *Mar 1 00:23:12.871: As36 IPCP: O CONFNAK [ACKrcvd] id 3 len 22 *Mar 1 00:23:12.871: As36 IPCP: Address 10.98.1.15 (0x03060A62010F) *Mar 1 00:23:12.871: As36 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) *Mar 1 00:23:12.871: As36 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) *Mar 1 00:23:12.979: As36 IPCP: I CONFREQ [ACKrcvd] id 4 len 22 *Mar 1 00:23:12.979: As36 IPCP: Address 10.98.1.15 (0x03060A62010F) *Mar 1 00:23:12.979: As36 IPCP: PrimaryDNS 10.98.1.220 (0x81060A6201DC) *Mar 1

```
00:23:12.983: As36 IPCP: PrimaryWINS 10.98.1.221 (0x82060A6201DD) *Mar 1 00:23:12.983: As36
IPCP: O CONFACK [ACKrcvd] id 4 len 22 *Mar 1 00:23:12.983: As36 IPCP: Address 10.98.1.15
(0x03060A62010F) *Mar 1 00:23:12.983: As36 IPCP:    PrimaryDNS 10.98.1.220 (0x81060A6201DC)
! -- The Primary DNS server is agreed upon. ! -- This was configured using the async bootp
commands. *Mar 1 00:23:12.983: As36 IPCP:    PrimaryWINS 10.98.1.221 (0x82060A6201DD)
! -- The Primary WINS server is agreed upon. ! -- This was configured using the async bootp
commands. *Mar 1 00:23:12.983: As36 IPCP: State is Open
! -- IPCP negotiation is complete. The user is now connected. *Mar 1 00:23:12.983: As36 IPCP:
Install route to 10.98.1.15
! -- The NAS installs a route to the client.
```

Een ICMP-ping naar de afstandsbediening is geslaagd:

```
acc-3640-6a#ping 10.98.1.15

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.98.1.15, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 124/132/140 ms
acc-3640-6a#
```

Gerelateerde informatie

- Netwerkmodule voor digitale modem voor Cisco 3640
- T1 CAS-ondersteuning voor Cisco 3640 netwerkmodule voor digitale modem
- ISDN PRI- en andere signalering via E1- en T1-lijnen configureren
- Overzicht van interfaces, controllers en lijnen die gebruikt worden voor kiestoegang
- Technische ondersteuning - Cisco-systemen