WAN Configuration Commands

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1 PPP Configuration Commands

ThecommandsinthischapterareusedtoconfigurePPPforthedialWANconnection of the router.

For PPPconfiguration of the router, refer to section“Configuring PPP”.

FormorePPPinformation,refertoRFC1661.FormoreMLPinformation,refer toRFC 1717.

FormorePAPinformation,refertoRFC1334.FormoreCHAPinformation,referto RFC1994.

1.1 PPPConfigurationCommands

PPPconfigurationcommandsinclude:

- interface virtual-tunnel
- peerdefaultipaddress
- peerneighbor-route
- pppaccount
- ppp authentication
- pppauthorization
- pppchapecho
- pppchap hostname
- pppchaprefuse
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- pppipcprfc-default
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WAN Configuration Commands

- ppp timeout authentication
- ppptimeoutncp
- ppp timeout lcp
- show iplocalpool
- show ppp
- username
- debugppp

1.1.1 interface virtual-tunnel

TocreateVPDNcombiningtheclientandNAS,run**interfacevirtual-tunnel**.Youcan run **no interfacevirtual-tunnel**to delete the interface.

interfacevirtual-tunnel*interface-number*

no interface virtual-tunnel

Parameter

Parameter	Description
interface-number	Number of the virtual tunnel

Default

Theinterfaceisnotconfigured.

Command mode

Globalconfigurationmode

Usage description

Whenthe**virtual-tunnel**interfaceiscreated,itisautomaticallyencapsulatedasPPP by default and the VPDN connectionwillbetriggeredinspecialconditions.

Example

Thefollowingexampleshowshowtocreatevirtualtunnel1andconfiguretheIP address.

```
!
interface virtual-tunnel 1
    ip address 192.168.20.100 255.255.255.0
!
```

Relatedcommand

ppp ddr

1.1.2 ip local pool

Toconfigurealocaladdresspooltodistributethe IPaddressestothepeersofthe point-to-pointinterfaces,run**iplocalpool**.Youcanrun**noiplocalpool**todeletea localaddress pool.

ip local pool {default|*pool-name begin-ip-address*[*ip-address-number*]}

no ip local pool{**default**|*poolname***}**

Parameter

Parameter	Description
default	Uses the default local address pool to name other address pools.
pool-name	Specifiednameofthelocaladdresspool
begin-ip-address	BeginningIPaddressintheaddresspool
ip-address-number	NumberoftheIPaddressesintheaddresspool,whichisoptionalIfthis valueis not included in the parameters, onlythe beginning IPaddress is in the address pool. Each address pool can include up to 1024 IPaddresses.

Default

Theaddresspoolisnotconfigured.

Commandmode

Globalconfigurationmode

Usagedescription

YoucanuseIPlocalpooltogenerateoneormultiplelocaladdresspools.Whenahost isplugged,anIPaddresswillbedistributedfromtheseaddresspoolstothehost.To useanaddresspoolontheinterface,run**peerdefaultipaddresspool**.

Youcanrun**showip localpool**to check the addresspool.

Example

Thefollowingexampleshowsthatalocal IPaddresspoolnamedmypoolisgenerated andtheincluded IPaddressrangeisfrom 172.16.23.0 to 172.16.23.254.

```
ip local pool mypool192.168.23.0 254
```

Relatedcommand

showip local pool

1.1.3 peer default ip address

TospecifyanIPaddressfortheremotepeerorobtaintheIPaddressfromanIP addresspoolortheDHCPmechanism.TocanceltheIPaddresspoolconfigurationof the remotepeeron the interface, run**nopeerdefaultipaddress**.

peerdefaultipaddress {*ip-address* |**dhcp|** **pool**[*pool-name*]}

no peer default ip address

Parameter

Parameter	Description
ip-address	DistributesanIPaddressforthepluggedremotepeerontheinterface.To avoiddistributingrepeatedIPaddressesontheinterface,the**ip-address** parametercannotbeusedonthe**dialerrotarygroup**interfaceandthe ISDN interface.
dhcp	Distributes an IPaddress for the peer through the DHCPprotocol.
pool	Ifthepoolnameisnotspecified,thedefaultglobalmechanismdefinedby the**ipaddress-pool**parameter willbeused.
pool-name	Nameofthelocaladdresspoolgeneratedbythe**IPlocal-pool**command, which is an optionalparameter Ifanaddressisobtainedfromtheaddresspool,theconfigurationofthe defaultglobalmechanismwillbeomitted.

Default

Theaddresspoolisnotconfigured.

Commandmode

Interface configuration mode

Usage description

The administrator can run the command to configure all possible address pool mechanismsforeachinterface.

(1) Fortheinterfacesthatarenotconfiguredthroughthe**peerdefaultipaddress** mechanism,therouterwillusethe**ipaddress-pool**commandtodefinethe defaultglobalmechanism.

(2) If**peerdefaultipaddresspoolpool-name**isrun,therouterwillusethe locally-configuredaddresspool on the interface. Any address pool will be omitted.

(3) If**peerdefaultipaddressip-address**isrun,thespecifiedIPaddresswillbe distributedtotheport-connectedremoteterminalandany default global mechanism will be omitted.

Example

Thefollowingexampleshowshowtosetthelocal IPaddresspoolofthe**mypool** interface.

```
peer default ipaddress pool mypool
```

The followingexample showshow to specify the interface to use IP192.168.3.29.

```
peer default ipaddress 192.168.3.29
```

Thefollowingexampleshowshowtore-enablethedefaultglobalmechanismofan interface:

```
peer default ipaddress pool
```

Relatedcommand

ip local pool

1.1.4 peer neighbor-route

Tore-activategenerationofhost’srouteontheinterface,run**peerneighbor-route**in interfaceconfigurationmode.Tocancelthegenerationofhost’srouteontheinterface, run **nopeerneighbor-route**in interface configuration mode.

peerneighbor-route
no peer neighbor-route

Parameter

The commandhas noparameters orkeywords.

Default

AfterthenegotiationofPPPIPCP,aroutepointingtotheremoteaddressofthe point-to-pointinterfaceis generated.

Commandmode

Interface configuration mode

Usage description

The**nopeerneighbor-route**commandisusedonlywhenthedefaultbehaviorleads to trouble inthe network.

Example

The followingexample showshow to reactivate thedefault behavior on the interface.

```
peer neighbor-route
```

1.1.5 ppp account

TospecifythePPPaccountingfunctionontheinterface,run**pppaccount**.Tocancel the PPPaccounting function on the interface, run**nopppaccount**.

pppaccount

nopppaccount

Parameter

None

Default

PPPaccounting is not performed by default.

Commandmode

Interface configuration mode

Usage description

Aftertheaccountingfunctionisactivated,thestatisticsinformationwillbesenttothe usermanagementmoduleforaccountingwhentheconnectioniscreatedand disconnected.

Example

Thefollowingexampleshowshowtoactivatetheaccountingfunctiononinterface virtual-tunnel 1.

```
!
interface virtual-tunnel 1
   ppp account 1
!
```

Relatedcommand

aaa authentication ppp
username password

1.1.6 ppp authentication

ToconfiguretheorderofCHAPorPAPonaninterface,run**pppauthentication**.To cancel theauthentication, run **nopppauthentication**.

pppauthentication{**chap|ms-chap|pap**}[[*list-name*|**default**][**callin**]

no ppp authentication

Parameter

Parameter	Description
chap	ActivatesCHAPonanserialinterface.
pap	ActivatesCHAPona serial interface.
ms-chap	ActivatesMS-CHAPonaserialinterface.
list-name	AparameterusedtogetherwithAAA/TACACS+,specifyingthenameof theTACACS＋listduringauthenticationIfthelistnameisnotdesignated, the default list will be used. You can run **aaa authentication ppp** to create alist.
default	AnoptionalparameterusedtogetherwithAAA/TACACS+Youcanrun**aaa authenticationppp**to createa default list.
callin	An optionalparameter to specifya received call to be authenticated

WhenthePPPauthenticationisconducted,oneofthethreeprotocols**chap**,**ms-chap** and**pap**,or anycombinationofthethreeprotocolswillbeused.

Default

The PPPauthentication isnot conducted.

Commandmode

Interface configuration mode

Usage description

Whenone,twoorallofCHAP,MS-CHAPandPAPareactivated,thelocalrouterwill authenticatetheidentificationofaremotedevicebeforetheremotedevicetransmits thedata.

(4) PAPauthenticationrequiresthe remote device to send a name/password peer to checkwhetherthelocaluserdatabaseortheremoteTACACS/TACACS+hasa correspondingoption.

(5) AfterachallengeistransmittedtoaremotedeviceduringCHAPauthentication, theremotedevicemustencryptthechallengeusingpublicencryptionandthen returnaresponsemessagecontainingencryptionresultsandself-nametoa localrouter.Thelocalrouterthensearchesthecorrespondingencryptioninthe

localuserdatabaseortheremoteTACACS/TACACS+databaseusingthename oftheremotedevice.Aftertheencryptionisfound,itwillbeusedtoencryptthe initialchallenge.Aftertheencryption,thelocalrouterwillcheckwhetherthe encryption result is sameto the result returned by the remotedevice.

PAP, MS-CHAP and CHAP can be activated in any order. If two authentication modes are activated, the first authentication mode will be used to offer requests during the negotiation. If the remote terminal suggests using the second authentication mode or simply refuses the first authentication mode, the second authentication mode will be used. Some remote terminal devices only support CHAP or PAP. As to specify the order of the two authentication methods, you need to base the proper authentication mode on the negotiation capacity of the remote device and the security requirements of the data link. The username and password of PAP will be transmitted as the plain text, which can be captured or reused. However, CHAP can get rid of most of the security bugs so far to be known.

No matter the PPP authentication mode is activated or canceled, the local router will not be affected as to whether the local router will be authenticated for the remote terminal device.

Example

ThefollowingexampleshowshowtoactivatetheCHAPauthenticationandusethe **access1** authentication list on interface **virtual-tunnel 1**.

```
interface  virtual-tunnel 1
  ppp authentication chap access1
```

Relatedcommand

aaaauthenticationppp
usernamepassword

1.1.7 ppp authorization

ToactivatetheAAAauthorizationonthedesignatedinterface,run**pppauthorization** in interface configurationmode.

pppauthorization[**default|*list-name***]

no ppp authorization

Parameter

Parameter	Description
default	List name created bythe **aaaauthorization**command,whichisoptional
list-name	Nameofthedesignatedauthorizationlist,whichisoptionalIfthenameof the authorization list is not designated, use the default value.

Default

Theauthorizationisnotenabled.

Commandmode

Interface configuration mode

Usage description

Aftertheaaaauthorization**aaaauthorization**commandisenabledandaauthorizationmethodlistis defined,theauthorizationcorresponding totheauthorizationlistmustexistonaproper interface.The**pppauthorization**commandisusedtoapplythespecifiedmethodlist onthespecifiedinterface.

Example

Thefollowingexampleshows howto usethe**sun**method list oninterface **virtual-tunnel 1**.

```
interface virtual-tunnel 1
  ppp authorization sun
```

Relatedcommand

aaaauthorization

1.1.8 ppp chap echo

To set the interval of the CHAPauthentication, run the following command:

pppchapehco*seconds*

Parameter

Parameter	Description
seconds	Interval of the CHAPauthentication,rangingbetween0and2147483647

Default

Thefixed-timeCHAPauthenticationisnotenabledandtheintervaloftheCHAP authentication is set to zero.

Commandmode

Interface configuration mode

Usage description

WhentheCHAPauthenticationisconfigured,the**second**parametermustbesetto more than 0.

Example

Thefollowingexampleshowshowtosetthenameofthelocalroutertо**routerA**,and **echo**to10secondswheninterfacevirtual-tunnel 1conductstheCHAPauthentication.

```
interface virtual-tunnel 1
  ppp authentication chap
  ppp chap hostname routerA
  ppp chap echo10
```

Relatedcommand

pppauthentication
pppchaphostname

1.1.9 ppp chap hostname

TocreatethenameoftheCHAProuter,run**pppchaphostname*hostname***.To cancel thename of the CHAProuter, run **no ppp chap hostname*hostname***.

pppchaphostname *hostname*

nopppchaphostname*hostname*

Parameter

Parameter	Description
hostname	Name contained in the transmitted CHAPchallenge

Default

Thefunctionisnotenabled.Thenameofthehostrouterwillbetransmittedinall CHAPchallenges by default.

Commandmode

Interface configuration mode

Usage description

The command is alwaysused for the local/remote CHAPauthentication.

Example

Inthefollowingexample,thecommandisusedtoencapsulatePPP oninterfacevirtual-tunnel 1.CHAPonlyauthenticatethereceivedcalls.The**guest**usernamewillbetransmitted withallCJAPchallenges and **response**messages.

```
interface virtual-tunnel1
   ppp authentication chap callin
   ppp chap hostname guest
```

Relatedcommand

aaaauthenticationppp
pppauthentication
pppchappassword
ppppap

1.1.10 ppp chap refuse

TodeclinetheCHAOauthenticationmodeofthepeer,run**pppchaprefuse**.

Parameter

There is noparameters orkeywords.

Default

TheCHAOauthenticationmodeofthepeertoauthenticatethelocaldeviceisallowed by default.

Commandmode

Interface configuration mode

Usage description

After **ppp chap refuse** is configured, all users are declined to use the CHAP authentication.

Example

ThefollowingexampleshowshowtodeclinetheCHAPauthenticationoninterface virtual-tunnel 1.

```
interface virtual-tunnel 1
  ppp chap refuse
```

Relatedcommand

pppauthentication

1.1.11 ppp ddr

TotriggertheVPDNconnectionthroughpacketsonthe**virtual-tunnel**port,run**ppp ddr**.

Parameter

There is noparameters orkeywords.

Default

ThepacketdoesnottriggertheVPDNconnectionbydefault.TheVPDNconnection willbecontinuouslytriedtoestablishaftertheportislinedup.

Commandmode

Interface configuration mode

Usage description

AfterPPPDDRisconfigured,thevirtual-tunnelportreports**protocolup**totheupper layerandaddsthelocalroute.Whenthepacketfromtheupperlayeristransmittedto the virtual-tunnel port through the localroute, the VPDNconnection is triggered.

Example

ThefollowingexampleshowshowtodeclinetheCHAPauthenticationoninterface virtual-tunnel 1.

```
!
interface virtual-tunnel
 1ppp ddr
!
```

Relatedcommand

interfacevirtual-tunnel

1.1.12 ppp ipcp rfc-default

TosettheIPCPnegotiationtothedefaultvalueofthePPPprotocol,run**pppipcp rfc-default**.

Parameter

None

Default

The IPCP negotiation is not the default value of the protocol, that is, the IPCP negotiation is not performed by default.

Commandmode

Interface configuration mode

Usage description

Ingeneral,thecommandneednotbeconfigured.Thecommandisusedtotestthe IPCPnegotiationortheconditionthattheIPCPnegotiationisnotsupportedbythe peer.

Example

ThefollowingexampleshowshowtosettheIPCPnegotiationtothedefaultvalueof the protocol.

```
Interfacevirtual-tunnel 1
  ppp ipcp rfc-default
```

Relatedcommand

ppp ipcp rfc-default

1.1.13 ppp lcp echo

To set the transmission interval of theLCPechopacket, run the following command:

ppplcpecho*seconds*

Parameter

Parameter	Description
seconds	TransmissionintervaloftheLCPechopacket,rangingbetween0and 2147483647seconds

Default

10 seconds

Commandmode

Interface configuration mode

Usage description

BeforetheLCPechopacketistransmitted,youshouldset**second**toavaluelarger thanzero.

Example

ThefollowingexampleshowshowtosetlCPechooninterface**serial1/0**to10 seconds.

```
!
interface virtual-tunnel 1
      ppp lcp echo10
!
```

Relatedcommand

ppp lcp echo

1.1.14 ppp lcp rfc-default

Toset the LCPnegotiation to the default valueof the PPPprotocol(do not negotiate all LCPoptions),run **pppicprfc-default**.

Parameter

There is noparameters orkeywords.

Default

TheLCPnegotiationoptionisnotthedefaultvalueoftheprotocol,thatis,theLCP option willbe negotiated.

Commandmode

Interface configuration mode

Usage description

Ingeneral,thecommandneednotbeconfigured.Thecommandisusedtotestthe LCPnegotiationortheconditionthattheLCPnegotiation is not supported by the peer.

Example

Thefollowingexampleshows howtosettheLCPnegotiationtothedefaultvalueofthe protocol.

```
interface virtual-tunnel 1
  ppp lcp rfc-default
```

Relatedcommand

ppp lcp rfc-default

1.1.15 ppp lcp

ppp lcp [close | listen | open]

Toopen,closeandlistentheLCPconnection, run the previouscommand.

Parameter

Parameter	Description
close	Closes the LCPconnection.
listen	Sets LCPto the listening state.
open	Creates the LCPconnection.

Default

The LCPisinthelisteningstate.

Commandmode

Interface configuration mode

Usage description

WhenthecurrentPPPconnectionisclosedbythe**ppplcpclose**command,theLCP isinthe**closed**state.Afterwards,the connectionwill notbe createdevenifthe remote dial-inisconducted.TostartthePPPconnection,youmustrun**ppplcplisten**or**ppp lcpopen**.The**ppplcpopen**commandisusedtotransmittheLCPnegotiation requestpositively.

Example

ThefollowingcommandisusedtoclosetheLCPconnection.

```
interface virtual-tunnel 1
 ppp lcp close
```

Relatedcommand

ppp lcp close

1.1.16 ppp max-bad-auth

Toconfigureapoint-to-pointinterfacewhichwillnotberesetafteranunsuccessful authentication,run**pppmax-bad-auth*number***.Toimmediatelyresetapoint-to-point interface after an unsuccessful authentication, run **nopppmax-bad-auth**.

pppmax-bad-auth*number*

no ppp max-bad-auth

Parameter

Parameter	Description
number	Specifiesthetimesofre-authentication,whichrangesbetween1and255. Thedefaultvalueis5.

Default

Commandmode

Interface configuration mode

Usage description

Thecommandcanbeappliedtoanyppp-encapsulatedserialinterface,includingthe asynchronous serialinterface,synchronousinterfaceorISDNinterface.

Example

ThefollowingexampleshowsthattheBRIOinterfacecanbeauthenticatedtwiceafter the first failedauthentication.

```
!
interface virtual-tunnel1
  ppp authentication chap
  ppp max-bad-auth 3
!
```

Relatedcommand

encapsulation ppp

1.1.17 ppp multilink

TostartPPPwithmultiplelinks,run**pppmultilink**.ToclosePPPwithmultiplelinks, run**no pppmultilink**.

ppp multilink

no ppp multilink

Parameter

None

Default

The multilink is not started.

Commandmode

Interface configuration mode

Usage description

Thecommandcanbeappliedtoanyppp-encapsulatedserialinterface,includingthe asynchronous serialinterface,synchronousinterfaceorISDNinterface and pppoe.

Example

```
!
interface virtual-tunnel 1
 ip address 99.0.0.2 255.0.0.0
 ppp idle-timeout 500
 ppp authentication chap
 ppp multilink
!
```

Relatedcommand

ppp multilink

1.1.18 ppp pap refuse

To decline thePAPauthentication modeof the peer, run **ppppaprefuse**.

Parameter

There are noparametersor keywords.

Default

ThePAPauthenticationcanbeusedonthe peer to test the local terminal.

Commandmode

Interface configuration mode

Usage description

Afterppppaprefuseisconfigured,allusers,legalusersincluded,aredeclinedtouse thePAPauthentication.

Example

ThefollowingexampleshowshowtodeclinethePAPauthenticationoninterface Virtual-tunnel 1.

```
!
interface Virtual-tunnel 1
        ppp pap refuse
!
```

Relatedcommand

pppauthentication

1.1.19 ppp pap sent-username

ToactivatethePAPsupportontheremoteterminalandusesent-usernameand passwordinthePAP request,run**ppppapsent-username**.ToforbidthePAPsupport on the remote terminal, run **no ppppap sent-username**.

ppppapsent-username*usernamepassword*

no ppp pap sent-username

Parameter

Parameter	Description
username	User name in thePAPauthentication request
password	Password in thePAPauthentication request

Default

TheremotePAPsupportisforbidden.

Commandmode

Interface configuration mode

Usage description

ThecommandisusedtoactivatetheremotePAPsupportandspecifytheparameter duringthePAPrequesttransmission.

Example

Thefollowingexampleshowshowtoconfiguredialerinterface0tothedialergroup head and activate PPP encapsulation on the interface. CHAP or PAP only authenticatesthereceivedcalls.Whentheremoteterminalrequeststherouterto conductthePAPauthentication,**guset1**and**mykey**willbetransmittedtotheremote terminalas the usernameandpassword respectively.

```
!
interface Virtual-tunnel 1
 ppp authentication chappap callin
 ppp chap hostname guest1
 ppp chap password mykey
 ppp pap sent-username guest1 password mykey
!
```

Relatedcommand

aaaauthentication
ppp pppauthentication
pppchaphostname

1.1.20 ppp timeout authentication

To set the timeout value of PPPauthentication, run the following command:

ppptimeoutauthentication*seconds*

Parameter

Parameter	Description
seconds	Timeout time of negotiation,whose unit is second

Default

The timeout time of the PPPauthentication is3 seconds.

Commandmode

Interface configuration mode

Usage description

DuringPPPauthentication,iftheechopacketfromthepeerisnotreceivedinthe designatedinterval,PPPresendstheauthenticationpacketwhichistransmittedinthe previous time.

Example

Thefollowingexampleshowsthatthetimeoutvalueof PPPauthenticationissetto10 seconds.

```
Interface Virtual-tunnel 1
  ppp timeout authentication 10
```

Relatedcommand

pppauthentication

1.1.21 ppp timeout ncp

To set the timeout value of PPPNCPnegotiation, run the following command:

ppptimeoutncp*seconds*

Parameter

Parameter	Description
seconds	Timeout time of NCPnegotiation, whose unit is second

Default

The timeout time of the PPPNCPnegotiation is3 seconds.

Commandmode

Interface configuration mode

Usage description

DuringPPPNCPnegotiation,iftheechopacketfromthepeerisnotreceivedinthe designatedinterval,PPPresendstheauthenticationpacketwhichistransmittedinthe previous time.

Example

Thefollowingexampleshowsthatthetimeoutvalueof PPPNCPnegotiationissetto 10 seconds.

```
Interface Virtual-tunnel 1
  ppp timeout ncp 10
```

Relatedcommand

ppp timeout ncp

1.1.22 ppp timeout lcp

To set the timeout value of PPPLCPnegotiation, runthe following command:

ppp timeoutlcp*seconds*

Parameter

Parameter	Description
seconds	Timeout time of LCPnegotiation, whose unit is second

Default

The timeout time of the PPPLCPnegotiation is3 seconds.

Commandmode

Interface configuration mode

Usage description

DuringPPPLCPnegotiation,iftheechopacketfromthepeerisnotreceivedinthe designated interval, PPPresends thepacket whichis transmittedin the previous time.

Example

ThefollowingexampleshowsthatthetimeoutvalueofPPPLCPnegotiationissetto 10 seconds.

```
Interface Virtual-tunnel 1
  ppp timeout lcp10
```

Relatedcommand

ppp timeout ncp

1.1.23 show ip local pool

To display thestatistics information of theIPaddresspool, run the following command:

showip local pool

Parameter

There are noparametersor keywords.

Commandmode

Privileged EXEC mode

Usage description

Thesoftwarewilldisplaythegenerallistsandcorresponding**I**Paddressesofall definedaddresspools.

Example

The followingis an example of the **showip local pool**command.

```
Router# showip localpool
Name      Begin              End              Number
sun      192.168.0.1        192.168.0.10          10
```

Relatedcommand

ip local pool

1.1.24 show ppp

To display thestatistics information of the**I**Paddresspool, run the following command:

showppp{multilink|queue|status}

Parameter

Parameter	Description
multilink	Displaysrelativeinformationaboutpppmultilink.
queue	Displays the number of messages that the PPPqueue hasnot handled.
Status	Displaysthe information about interface states which relate with PPP configuration.

Commandmode

All modes except theuser mode

Usage description

The command is used todisplay information about PPP.

Example

Thefollowingisinformationabouttheinterfacestateafterthecommandis run:

```
Router# showppp status
PPPstatus information:
    5 links (total)
    1 link (protocol up)
    4 links (protocol down)
Protocol up:
    Name       IDType    Status           Uptime       Peer
    S2/0       2ALGC     Network Phase     0:04:32:01  1.0.0.2
Protocol down:
    Name       IDType    Status           Downtime
    a0/0       1ADC      Link Dead        0:04:48:15
    vt1       4LVT      Link Dead        0:04:48:07
    d1         6D        Link Dead        0:04:48:07
    m1          7 LMU     LCPPhase          0:04:48:07
```

Onthepreviousinformation,therouterisidentifiedthatfiveinterfacesareconfigured PPP;onlywheninterfaces2/0isinthe**up**state,the**up**timeis04:32:01.Theaddress of the peeris then 1.0.0.2.Otherportsareinthe **down**state.

Relatedcommand

None

1.1.25 username

To specifyapassword to use for the calleridentifier ofPPPCHAPand thePAP, run the followingcommand:

username*name*password*secret*

Parameter

Parameter	Description
name	Host name, server name, user ID or commandname
secret	Specifies thepassword for thelocal router, access server or remote device duringCHAPauthentication.Thepasswordwillbestoredonthelocal serverortheaccessserverafterencryption,whichpreventsthepassword beingstolen.Thepasswordconsistsofupto11printableASCII characters,spaceandunderlineexcluded.Thereisnolimitationforthe numberoftheusername/passwordpeer.Anynumberofremotedevices can be authenticated.

Default

Predefinedpassword does not exist.

Commandmode

Globalconfigurationmode

Usage description

The command is used toadda **name** entrance for every remotesystem requiring to be authenticatedon the localrouteror theaccess server.

Asanecessarypartofauthenticationprotocolconfiguration,the**username**command ismandatory.Ausernameentrancemustbeaddedifeveryremotesystemofthelocal router andtheaccessserver need beauthenticated.

Example

ThefollowingexampleshowshowtoenableCHAPoninterface0.Thefollowing informationalsoshowsthatapasswordisdefinedforlocalserver**Adam**andremote server **Eve**.

```
!
username Eve password theirsystem
!
hostnameAdam
!
interface Virtual-tunnel1
 ppp authentication chap
!
```

Relatedcommand

hostname

1.1.26 debug ppp

ItisusedtodisplaythePPP parameternegotiation,authentication,messagereception andtransmissionanderrorinformation.

debugppp[***authentication*|cbcp|*error*|multilink|*negotiation*|*packet*|*raw***] [**interface***]*

Note: the**raw**parameteronly usedon the asynchronous interface. Run

nodebug snmpto stop displayingrelative information.

Parameter

Parameter	Description

authentication	Enablesthedebuggingswitch of the PPPauthentication.
cbcp	EnablesthedebuggingswitchofthePPPdial-backcontrolprotocol.

error	Enables the debugging switch of the incorrect SNMPinformation.
negotiation	EnablesthedebuggingswitchthePPPnegotiation.
packet	Enablesthedebuggingswitch of the input/output SNMPmessage.
raw	Enables the debugging switch of the input/output PPP asynchronous packet.
interface	Interface where PPPdebugs information

Commandmode

EXEC

UsageDescription

AfterthePPPdebuggingswitchisenabled,thePPPparameternegotiation, authenticationprocess,messagetransmissionandreceptionanderrorinformationare exported, helping you to check the PPPfault.

Example

Thefollowingexampleshowstheprocedureofreceivingandtransmittingthe SNMP message:

```
Router#debugppp packet Virtual-tunnel 1
PPPVirtual-tunnel1: TX ->packet, len=88, protocol: LCP
FF 03 00 21 4500 00 5400 2F 00 00 FF 01 3E F1    ...!E..T./....>.
01 00 00 0C 7B 7B 00 02 08 00 CB 37 00 12 00 00     ....{{.....7....
00 02 37A5 04 05 06 0708 09 0A0B 0C 0D 0E 0F    ..7.............
10 1112 13 14 15 16 1718 19 1A1B 1C 1D 1E 1F    ................
PPPVirtual-tunnel1: RX <- packet, len=85
21 45 00 00 54 9E 73 00 00 FF 01A0AC 7B 7B 00    !E..T.s......{{.
02 01 00 00 0C 00 00 D3 370012 00 00 00 02 37       ........7. ....7
A5 04 0506 07 08 09 0A0B 0C 0D 0E 0F 10 1112    ................
13 14 15 16 17 18 19 1A1B 1C 1D 1E 1F 20 21 22    ............. !"
```

Domain	Description
PPP	The currently debugged protocol is the PPP protocol.
Virtual-tunnel 1	Current debugging interface
TX ->packet	PPPtransmitting message
Len=85	Length for transmitting the message
protocol: LCP	Sub-protocolencapsulatedinthecurrentPPP protocol
FF030021450000540 02F0000FF01 3E F1 01 00 000C 7B 7B 00 02 08 00 CB 37 00120000000237A5040506070809 0A0B0C0D0E0F1011121314151617 18 19 1A1B1C1D 1E 1F	ThefirstfourbytescombinethePPPheader, while the following content is the data.
...!E..T./....>.	ASCII code presentation of message

....{{.....7....	transmitting The content which is not in the

..7............	range of theASCII code is presentedwith dots.
RX<-packet	SNMPreceives the message.
Len=88	Length for receiving the message
21450000549E730000FF01A0AC7B 7B00020100000C0000D337001200 00000237A50405060708090A0B0C 0D0E0F101112131415161718191A 1B 1C1D 1E1F 20 21 22	Thefirstbyteis 0X21,whichis aPPPvalueafter IP and PFC are compressed. The previous valueis0X0021. Thefollowingisthedataarea.
!E..T.s......{{. ....7......7 .... !"	ASCIIcodepresentationofmessagereceiving Thecontentwhichisnotintherangeofthe ASCII code is presentedwith dots.

Thefollowingexampleshows howtosimplifythePPPparameternegotiation.

```
Router#debugppp negotiation Virtual-tunnel 1
PPPVirtual-tunnel1: LCP  Listen  ; Start
PPPVirtual-tunnel1: LCP  Listen  ;TX ->Config Req, id: 52, len: 14
PPPVirtual-tunnel1: LCP  Req Sent; RX <- ConfigAck, id: 52, len: 14
PPPVirtual-tunnel1: LCP  Ack Rcvd; RX<- Config Req, id: 88, len: 14
PPP Virtual-tunnel1: LCP   Ack Rcvd; TX -> Config Ack, id: 88, len: 14
PPP Virtual-tunnel1: LCP   Ack Rcvd; Opened
PPP Virtual-tunnel1: IPCP Listen   ; Start
PPP Virtual-tunnel1: IPCP Listen   ; TX -> Config Req, id: 53, len: 10
PPP Virtual-tunnel1: IPCP Req Sent; RX <- Config Req, id: 89, len: 16
PPP Virtual-tunnel1: IPCP Req Sent; TX -> Config Ack, id: 89, len: 16
PPP Virtual-tunnel1: IPCP Ack Sent; RX <- Config Ack, id: 53, len: 10
PPP Virtual-tunnel1: IPCP Ack Sent; Opened
```

Domain	Description
Virtual-tunnel 1	Current debugging interface
PPP	PPPprotocol
LCP	Linkcontrolprotocol
IPCP	IPcontrol protocol
Listen、ReqSent、Ack Rcvd、AckSent	State of the PPPprotocol
id: 53	Message identifier
len:10	Length of the message