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简介

本文包含电缆环境中的通用路由封装 (GRE) 的说明、配置和验证。GRE是Cisco开发的一种隧道协议，能够将广泛的协议信息包类型封装在IP隧道内。

开始使用前

规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

先决条件

本文档没有任何特定的前提条件。

使用的组件

本文档中的信息基于以下软件和硬件版本。

- 运行 Cisco IOS® 软件版本 12.1(5)T4 的电缆调制解调器 uBR924

注意：虽然使用不同的思科IOS版本，可以在其他Cisco 有线调制解调器平台（如uBR904平台）上配置GRE通道，但是该功能正式支持的版本是Cisco IOS 12.1(5)T4 for uBR920 和Cisco IOS 12.1(3) for uBR910。

电缆调制解调器平台	Cisco IOS 软件版本
uBR920	12.1(5)T4
uBR910	从 12.1(3) 及更高版本

要运行此配置，两个电缆调制解调器之间需要有 [IP 连接](#)。

本文档中的信息都是基于特定实验室环境中的设备创建的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您是在真实网络上操作，请确保您在使用任何命令前已经了解其潜在影响。

背景理论

隧道建立提供将外国协议的信息封装在传输协议内部的一种方式。通道实施作为一个虚拟接口，为配置提供简单接口。隧道接口不依赖于特定的乘客或传输协议，但是它是提供实施任何标准的点到点封装机制所需业务的体系结构。隧道是点对点链路，并且您必须为每条链路配置一个单独隧道。

GRE 创建经由 IP 互连网络连接远程点上 Cisco 路由器的虚拟点对点链接。通过在单协议骨干网环境连接多协议子网络，使用GRE的IP隧道允许网络扩展穿越整个单协议骨干网环境。有线调制解调器终端系统（CMTS）是兼容任意电缆传输数据服务接口规格(DOCSIS)的头端有线路由器，如 Cisco UBR7246、uBR7223或uBR7246VXR。

配置

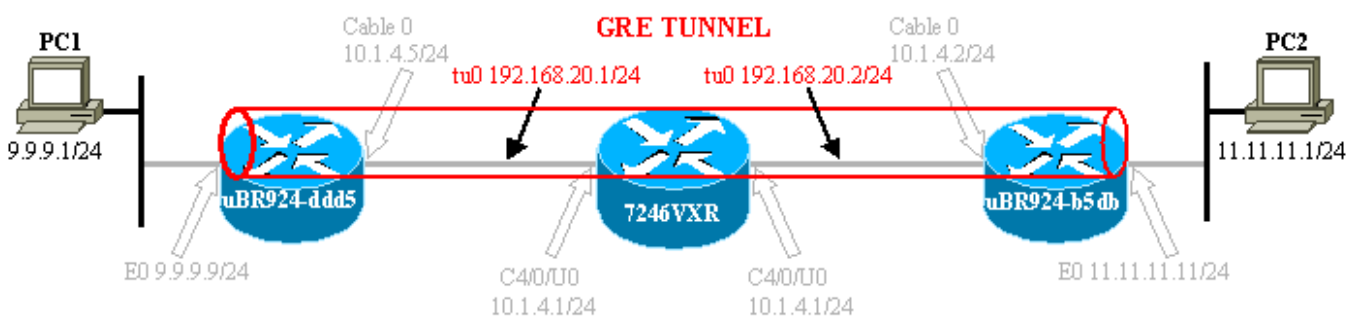
本部分提供有关如何配置本文档所述功能的信息。

网络图

本文档使用下图所示的网络设置。

此设置在两个电缆调制解调器 uBR924-ddd5 和 uBR924-b5db 之间创建一个隧道。以下示例使用两个 uBR924 和一个 uBR7246VXR。在此设置中，有线调制解调器的名称是ubr924-ddd5和ubr924-b5db，它们使用的是Cisco IOS版本12.1(5)T4。此隧道接口通过发出 interface tunnel 0 命令在全局配置模式中动态创建。

注意：只要二个有线调制解调器之间有IP连接，那么uBR900 有线调制解调器就无需连接到同一个uBR7200 CMTS或同一个服务提供商网络上。



配置

本文档使用如下所示的配置。

注意：粗体文本指 GRE 相关命令。注释为蓝色，指上一行。

ubr924-ddd5

```
version 12.1  
no service single-slot-reload-enable  
no service pad  
service timestamps debug uptime  
service timestamps log uptime  
no service password-
```

```
encryption!hostname ubr924-ddd5!logging rate-limit
console 10 except errors!clock timezone - -80ip subnet-
zerono ip finger!call rsvp-sync!! !!!!!!!interface
Tunnel0!--- Tunnel interface 0. ip address 192.168.20.1
255.255.255.0!--- IP address of the GRE tunnel interface
0. tunnel source Ethernet0 !--- IP source of the tunnel.
It is best to make this an !--- interface with a public,
routable IP address so that !--- it is reachable from
the other endpoint of the tunnel. tunnel destination
11.11.11.11 !--- IP destination of the tunnel. Make sure
this is !--- reachable via the ping command !---
Otherwise, the tunnel will not be created properly.
!interface Ethernet0 ip address 9.9.9.9 255.255.255.0 ip
rip send version 2!--- Send RIP version 2 packets. ip
rip receive version 2!--- Receive RIP version 2
packets.!interface cable-modem0 ip rip send version 2!--
- Send RIP version 2 packets. ip rip receive version 2!--
- Receive RIP version 2 packets. cable-modem downstream
saved channel 525000000 40 1 cable-modem mac-timer t2
40000 no cable-modem compliant bridge!router rip version
2 passive-interface Tunnel0 !--- This command is used to
avoid recursive routing. network 10.0.0.0 network
9.0.0.0 no auto-summary!ip default-gateway 10.1.4.1ip
classlessno ip http serverno ip http cable-monitor!snmp-
server packetsize 4096snmp-server manager!voice-port 0
input gain -2!voice-port 1 input gain -2!!line con 0
transport input noneline vty 0 4 login!endubr924-ddd5#
```

ubr924-b5db

```
version 12.1no service single-slot-reload-enableno
service padservice timestamps debug uptimeservice
timestamps log uptimeno service password-
encryption!hostname ubr924-b5db!logging rate-limit
console 10 except errorsenable password ww!clock
timezone - -80ip subnet-zerono ip finger!mgcpcall rsvp-
sync!!!!!!!!!!!!!!interface Tunnel0!--- Tunnel interface 0
ip address 192.168.20.2 255.255.255.0!--- IP address of
the gre tunnel interface 0 tunnel source Ethernet0 !---
IP source of the tunnel. It is best to make this an !---
interface with a public, routable IP address so that !--
- it is reachable from the other endpoint of the tunnel.
tunnel destination 9.9.9.9 !--- IP destination of the
tunnel. Make sure this is !--- reachable via the ping
command !--- Otherwise, the tunnel will not be created
properly. !interface Ethernet0 ip address 11.11.11.11
255.255.255.0 ip rip send version 2!--- Send RIP version
2 packets. ip rip receive version 2!--- Receive RIP
version 2 packets.! no ip route-cache no ip mroute-
cache!interface cable-modem0 ip rip send version 2!---
Send RIP version 2 packets. ip rip receive version 2!---
Receive RIP version 2 packets. no ip route-cache no ip
mroute-cache no cable-modem compliant bridge!router rip
version 2 passive-interface Tunnel0 !--- This command is
used to avoid recursive routing. network 10.0.0.0
network 11.0.0.0 no auto-summary!ip default-gateway
10.1.4.1ip classlessno ip http serverno ip http cable-
monitor!snmp-server packetsize 4096snmp-server
manager!voice-port 0 input gain -2!voice-port 1 input
gain -2!!line con 0 exec-timeout 0 0 transport input
noneline vty 0 4 password ww login!endubr924-b5db#
```

本部分所提供的信息可用于确认您的配置是否正常工作。

输出解释器工具支持某些 **show** 命令 (只限于注册用户) , 通过它可以查看 **show** 命令输出的分析

。

验证CMTS (7246VXR)配置正确 , 并且调制解调器处于联机状态。CMTS 的配置如下所示。

```
7246VXR#show runBuilding configuration...Current configuration : 4579 bytes!! Last configuration
change at 13:22:17 PDT Mon Feb 26 2001! NVRAM config last updated at 13:22:46 PDT Mon Feb 26
2001!version 12.1no service single-slot-reload-enableno service padservice timestamps debug
datetime msec localtimeservice timestamps log datetime localtimeno service password-
encryptionsservice linenumberservice udp-small-servers max-servers no-limit!hostname
7246VXR!logging buffered 1000000 debugginglogging rate-limit console 10 except errorsenable
password cable!cable qos profile 8cable qos profile 10cable qos profile 10 grant-size 1500cable
qos profile 12 guaranteed-upstream 100000no cable qos permission createno cable qos permission
updatecable qos permission modemscale cable time-serverclock timezone PDT -8clock summer-time PDT
recurringclock calendar-validip subnet-zero ip finger!interface Ethernet2/0 ip address
172.16.30.4 255.255.255.192 no ip mroute-cache half-duplex!interface Cable4/0 ip address
172.16.29.1 255.255.255.224 secondary ip address 10.1.4.1 255.255.255.0 no keepalive cable
downstream rate-limit token-bucket shaping cable downstream annex B cable downstream modulation
64qam cable downstream interleave-depth 32 cable downstream frequency 555000000 cable upstream 0
frequency 40000000 cable upstream 0 power-level 0 no cable upstream 0 shutdown cable upstream 1
shutdown cable upstream 2 shutdown cable upstream 3 shutdown cable upstream 4 shutdown cable
upstream 5 shutdown cable dhcp-giaddr policy cable helper-address 172.16.30.2!interface Cable5/0
ip address 172.16.29.225 255.255.255.224 secondary ip address 10.1.5.1 255.255.255.0 load-
interval 30 no keepalive cable downstream rate-limit token-bucket shaping cable downstream annex
B cable downstream modulation 64qam cable downstream interleave-depth 32 cable downstream
frequency 620000000 cable upstream 0 frequency 25008000 cable upstream 0 power-level 0 no cable
upstream 0 shutdown no cable upstream 1 shutdown cable dhcp-giaddr policy!router eigrp 202
redistribute connected redistribute static network 10.0.0.0 network 172.16.0.0 no auto-summary
no eigrp log-neighbor-changes!router rip version 2 redistribute connected redistribute static
network 10.0.0.0 network 172.16.0.0 no auto-summary!ip default-gateway 172.16.30.1ip classlessip
route 0.0.0.0 0.0.0.0 172.16.30.1ip route 172.16.30.0 255.255.255.0 Ethernet2/0ip http serverip
http authentication local!access-list 188 permit tcp any any eq www logaccess-list 188 permit ip
any anyroute-map docsis permit 10!snmp-server engineID local 00000009020000E01ED77E40snmp-server
community public ROsnmp-server community private RWline con 0 exec-timeout 0 0 transport input
noneline aux 0 speed 19200line vty 0 4 session-timeout 60 exec-timeout 0 0!ntp clock-period
17179973end7246VXR#show cable modemInterface Prim Online Timing Rec QoS CPE IP address MAC
address Sid State Offset PowerCable4/0/U0 69 online 2812 0.25 5 0 10.1.4.3
0002.1685.b5dbCable4/0/U0 70 online 2288 0.00 5 0 10.1.4.6 0010.7bed.9b23Cable4/0/U0 71 online
2289 0.50 5 0 10.1.4.2 0010.7bed.9b45Cable4/0/U0 72 online 2812 0.00 5 0 10.1.4.4
0002.fdfa.0a63Cable4/0/U0 73 online 2812 -0.75 5 0 10.1.4.5 0004.2752.ddd5Cable4/0/U0 74 online
2813 0.25 5 0 10.1.4.7 0001.64ff.e47d
```

如果电缆调制解调器在线状态不显示 **online** , 请参阅[针对 uBR 电缆调制解调器不在线进行故障排除文档](#)。

```
7246VXR#show ip interface briefInterface IP-Address OK? Method Status ProtocolFastEthernet0/0
192.168.7.253 YES NVRAM up down Ethernet2/0 172.16.30.4 YES manual up up Ethernet2/1 unassigned
YES NVRAM administratively down down Ethernet2/2 unassigned YES NVRAM administratively down down
Ethernet2/3 unassigned YES NVRAM administratively down down Cable3/0 10.1.3.1 YES manual up up
Cable4/0 10.1.4.1 YES manual up up Cable5/0 10.1.5.1 YES manual up up 7246VXR#show ip
routeCodes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP D - EIGRP, EX -
EIGRP external, O - OSPF, IA - OSPF inter area N1 - OSPF NSSA external type 1, N2 - OSPF NSSA
external type 2 E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP i - IS-IS, L1 -
IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area * - candidate default, U - per-user
static route, o - ODR P - periodic downloaded static routeGateway of last resort is 172.16.30.1
to network 0.0.0.0 172.16.0.0/16 is variably subnetted, 4 subnets, 3 masksC 172.16.29.224/27 is
directly connected, Cable5/0C 172.16.29.0/27 is directly connected, Cable4/0S 172.16.30.0/24 is
directly connected, Ethernet2/0C 172.16.30.0/26 is directly connected, Ethernet2/0 9.0.0.0/24 is
subnetted, 1 subnetsR 9.9.9.0 [120/1] via 10.1.4.5, 00:00:09, Cable4/0R 192.168.20.0/24 [120/1]
via 10.1.4.5, 00:00:09, Cable4/0 10.0.0.0/8 is variably subnetted, 5 subnets, 2 masksC
10.1.3.0/24 is directly connected, Cable3/0R 10.5.5.0/24 [120/1] via 10.1.4.4, 00:00:01,
```

Cable4/0R 10.0.0.0/8 [120/1] via 172.16.30.10, 00:00:24, Ethernet2/0C 10.1.5.0/24 is directly connected, Cable5/0C 10.1.4.0/24 is directly connected, Cable4/0 11.0.0.0/24 is subnetted, 1 subnetsR 11.11.11.0 [120/1] via 10.1.4.3, 00:00:15, Cable4/0S* 0.0.0.0/0 is directly connected
从电缆调制解调器侧，验证两个设备的 **sh version**，如下所示。

```
ubr924-ddd5#sh verCisco Internetwork Operating System Software IOS (tm) 920 Software (UBR920-K1V4Y556I-M), Version 12.1(5)T4, RELEASE SOFTWARE (fc1)TAC Support: http://www.cisco.com/pcgi-bin/ibld/view.pl?i=supportCopyright (c) 1986-2001 by cisco Systems, Inc.Compiled Fri 02-Feb-01 10:55 by ccaiImage text-base: 0x800100A0, data-base: 0x806DB770ROM: System Bootstrap, Version 12.0(6r)T3, RELEASE SOFTWARE (fc1)ROM: 920 Software (UBR920-K1V4Y556I-M), Version 12.1(5)T4, RELEASE SOFTWARE (fc1)ubr924-ddd5 uptime is 2 hours, 1 minuteSystem returned to ROM by reload at 12:45:25 - Fri Feb 23 2001System restarted at 12:46:07 - Fri Feb 23 2001System image file is "flash:ubr920-k1v4y556i-mz.121-5.T4"
cisco uBR920 CM (MPC850) processor (revision 4.d) with 15872K/1024K bytes of memory.Processor board ID FAA0444Q14ZBridging software.1 Ethernet/IEEE 802.3 interface(s)1 Cable Modem network interface(s) 3968K bytes of processor board System flash (Read/Write)1536K bytes of processor board Boot flash (Read/Write)Configuration register is 0x2102
ubr924-b5db#show verCisco Internetwork Operating System Software IOS (tm) 920 Software (UBR920-K1V4Y556I-M), Version 12.1(5)T4, RELEASE SOFTWARE (fc1)TAC Support: http://www.cisco.com/pcgi-bin/ibld/view.pl?i=supportCopyright (c) 1986-2001 by cisco Systems, Inc.Compiled Fri 02-Feb-01 10:55 by ccaiImage text-base: 0x800100A0, data-base: 0x806DB770ROM: System Bootstrap, Version 12.0(6r)T3, RELEASE SOFTWARE (fc1)ROM: 920 Software (UBR920-K1V4Y556I-M), Version 12.1(5)T4, RELEASE SOFTWARE (fc1)ubr924-b5db uptime is 1 hour, 53 minutesSystem returned to ROM by reload at 12:55:34 - Fri Feb 23 2001System restarted at 12:56:15 - Fri Feb 23 2001System image file is "flash:ubr920-k1v4y556i-mz.121-5.T4"
cisco uBR920 CM (MPC850) processor (revision 3.e) with 15872K/1024K bytes of memory.Processor board ID FAA0422Q04FBridging software.1 Ethernet/IEEE 802.3 interface(s)1 Cable Modem network interface(s)3968K bytes of processor board System flash (Read/Write)1536K bytes of processor board Boot flash (Read/Write)Configuration register is 0x2102
```

只要以下条件存在，此隧道就会显示 up/up：

- 它使用有效 IP 地址配置。
- 路由表中具有到达隧道目的地的 IP 地址的路由，没有分配到隧道远端的 IP 地址的路由。

不论您是否可以 ping 目的地地址，都应如此。不正确的静态路由或指向错误方向的默认路由将调动隧道，但隧道不会工作。

验证隧道运行的第一步是验证隧道是否开通。在两个电缆调制解调器上发出 **show ip interface brief** 和 **show interface tunnel 0** 命令。示例命令输出如下所示。

```
ubr924-ddd5#show ip interface briefInterface IP-Address OK? Method Status ProtocolEthernet0 9.9.9.9 YES manual up up Tunnel0 192.168.20.1 YES manual up up cable-modem0 10.1.4.5 YES unset up up
ubr924-ddd5#show interface tunnel 0Tunnel0 is up, line protocol is up Hardware is Tunnel Internet address is 192.168.20.1/24 MTU 1514 bytes, BW 9 Kbit, DLY 500000 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation TUNNEL, loopback not set Keepalive set (10 sec) Tunnel source 9.9.9.9 (Ethernet0), destination 11.11.11.11 Tunnel protocol/transport GRE/IP, key disabled, sequencing disabled Checksumming of packets disabled Last input 00:15:25, output 00:14:27, output hang never Last clearing of "show interface" counters never Queueing strategy: fifo Output queue 0/0, 2 drops; input queue 0/75, 0 drops 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0 packets/sec 146 packets input, 21024 bytes, 0 no buffer Received 0 broadcasts, 0 runts, 0 giants, 0 throttles 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 172 packets output, 57392 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets 0 output buffer failures, 0 output buffers swapped out
ubr924-b5db#show ip interface briefInterface IP-Address OK? Method Status ProtocolEthernet0 11.11.11.11 YES manual up up Tunnel0 192.168.20.2 YES manual up up cable-modem0 10.1.4.3 YES NVRAM up up
ubr924-b5db#show interface tunnel 0Tunnel0 is up, line protocol is up Hardware is Tunnel Internet address is 192.168.20.2/24 MTU 1514 bytes, BW 9 Kbit, DLY 500000 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation TUNNEL, loopback not set Keepalive set (10 sec) Tunnel source 11.11.11.11 (Ethernet0), destination 9.9.9.9 Tunnel protocol/transport GRE/IP, key disabled, sequencing disabled Checksumming of packets disabled Last input 00:16:42, output 00:17:40, output hang never Last clearing of "show interface" counters never Queueing strategy: fifo Output queue 0/0, 5 drops; input queue 0/75, 0 drops 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0 packets/sec 118
```

packets input, 19144 bytes, 0 no buffer Received 0 broadcasts, 0 runts, 0 giants, 0 throttles 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 164 packets output, 49624 bytes, 0 underruns 0 output errors, 0 collisions, 0 interface resets 0 output buffer failures, 0 output buffers swapped out

验证此隧道的工作是 ping 隧道目标 IP 地址。这只会验证 IP 连接，而不会验证通道的实际运行情况

。

```
Fromubr924-ddd5weping11.11.11.11ubr924-ddd5#ping11.11.11.11Typeescape sequenceto abort.Sending5,100-byteICMPEchos to11.11.11.11,timeoutis2seconds:!!!!!!Successrateis100percent(5/5),round-tripmin/avg/max=12/14/17msubr924-ddd5#
```

从ubr924-b5db目标地址9.9.9.9Ping。

```
ubr924-b5db#ping9.9.9.9Typeescape sequenceto abort.Sending5,100-byteICMPEchos to9.9.9.9,timeoutis2seconds:!!!!!!Successrateis100percent(5/5),round-tripmin/avg/max=12/14/16msubr924-b5db#
```

要验证此隧道是否能工作，请发出 **show ip route x.x.x.x** 命令，其中 x.x.x.x 是分配给此隧道远端的 IP 地址。在这种情况下，它是远端路由器的环回地址。如果显示的唯一路由是对隧道接口，那么到该地址的 ping 将证明此隧道会工作。

如果有 IP 编制机制，反向穿过网络通告路由回通道分段，则应该是有一个以上的路由到达通道接口的远端如果那是实际情形，则很难检验隧道是够正在运行。通常，在这种情况下，您不会想将路由复制到隧道网络。应当由网络的路由协议采取措施，防止路由通告。如果隧道被用来传输来自 IP 的不同协议的数据流，则应使用同一个基本验证方法。

```
Fromubr924-ddd5wegetubr924-ddd5#showiproute192.168.20.2Routingentryfor192.168.20.0/24Knownvia"connected",distance0,metric0(connected,viainterface)RoutingDescriptorBlocks:*directlyconnected,viaTunnel0Route metricis0,trafficsharecountis1Fromubr924-b5dbwegetubr924-b5db#showiproute192.168.20.1Routingentryfor192.168.20.0/24Knownvia"connected",distance0,metric0(connected,viainterface)RoutingDescriptorBlocks:*directlyconnected,viaTunnel0Route metricis0,trafficsharecountis1
```

验证 PC1 能访问 PC2 并且反之亦然，请在有线调制解调器上执行扩展的 ping，同时也从 PC 执行 ping。

将 ping 从ubr924-b5db以太网接口(11.11.11.11)扩展到ubr924-ddd5以太网接口(9.9.9.9)。

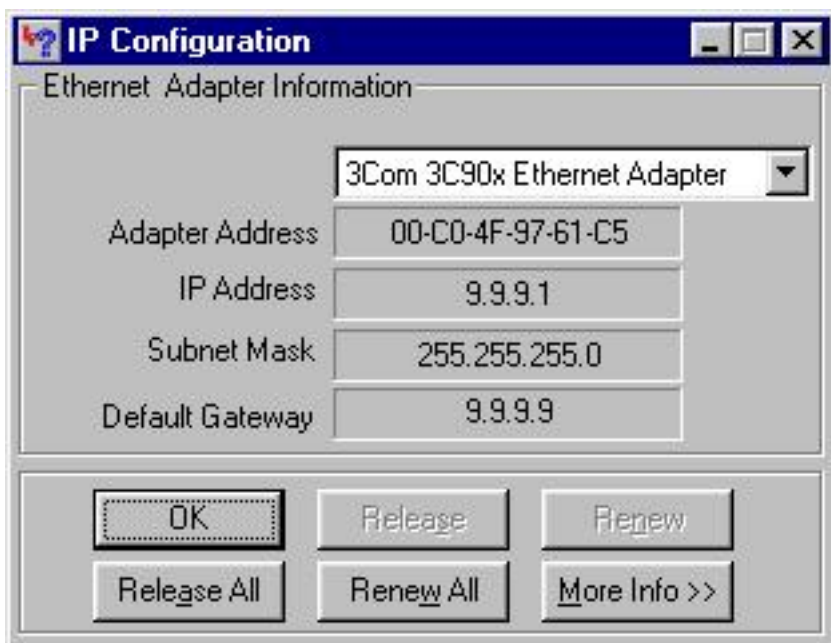
```
ubr924-b5db#pingipTargetIPaddress:9.9.9.9!---ubr924-ddd5Ethernet'sIPaddress.Repeatcount[5]:Datagramsize[100]:Timeoutinseconds[2]:Extendedcommands[n]:ySourceaddressorinterface:11.11.11.11!---ubr924-b5dbEthernet'sIPaddress.Typeofservice[0]:SetDFbitinIPheader?[no]:Validatereplydata?[no]:Datapattern[0xABCD]:Loose,Strict,Record,Timestamp,Verbose[none]:Sweeprangeofsizes[n]:Typeescape sequenceto abort.Sending5,100-byteICMPEchos to9.9.9.9,timeoutis2seconds:!!!!!!Successrateis100percent(5/5),round-tripmin/avg/max=12/16/28msubr924-b5db#
```

执行相反步骤测试另一侧的连接。

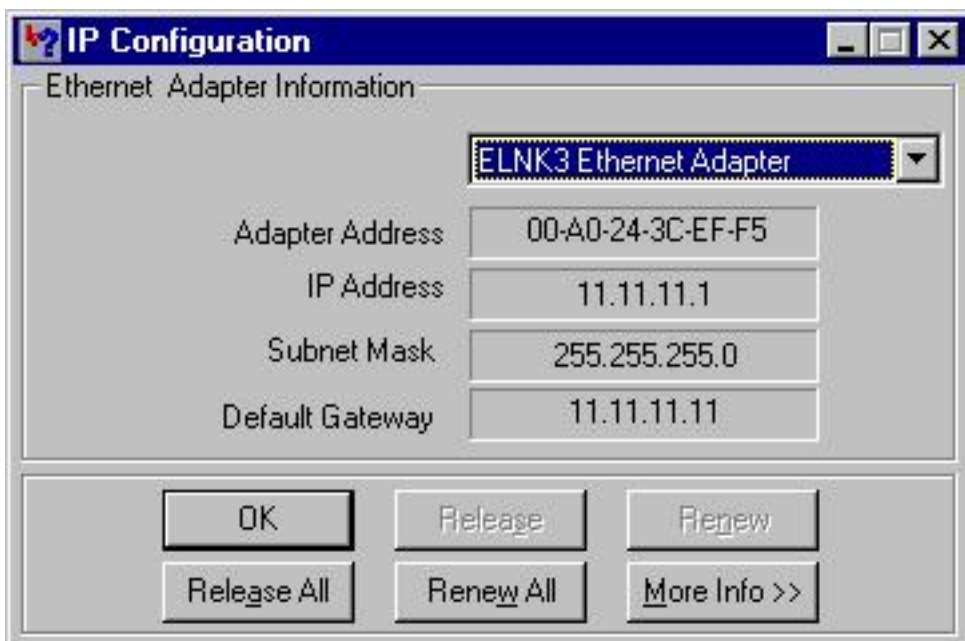
```
ubr924-ddd5#pingipTargetIPaddress:11.11.11.11!---ubr924-b5dbEthernet'sIPaddress.Repeatcount[5]:Datagramsize[100]:Timeoutinseconds[2]:Extendedcommands[n]:ySourceaddressorinterface:9.9.9.9!---ubr924-ddd5Ethernet'sIPaddress.Typeofservice[0]:SetDFbitinIPheader?[no]:Validatereplydata?[no]:Datapattern[0xABCD]:Loose,Strict,Record,Timestamp,Verbose[none]:Sweeprangeofsizes[n]:Typeescape sequenceto abort.Sending5,100-byteICMPEchos to11.11.11.11,timeoutis2seconds:!!!!!!Successrateis100percent(5/5),round-tripmin/avg/max=12/14/16msubr924-ddd5#
```

最终测试是从 PC1 ping 到 PC2，以及从 PC2 ping 到 PC1。

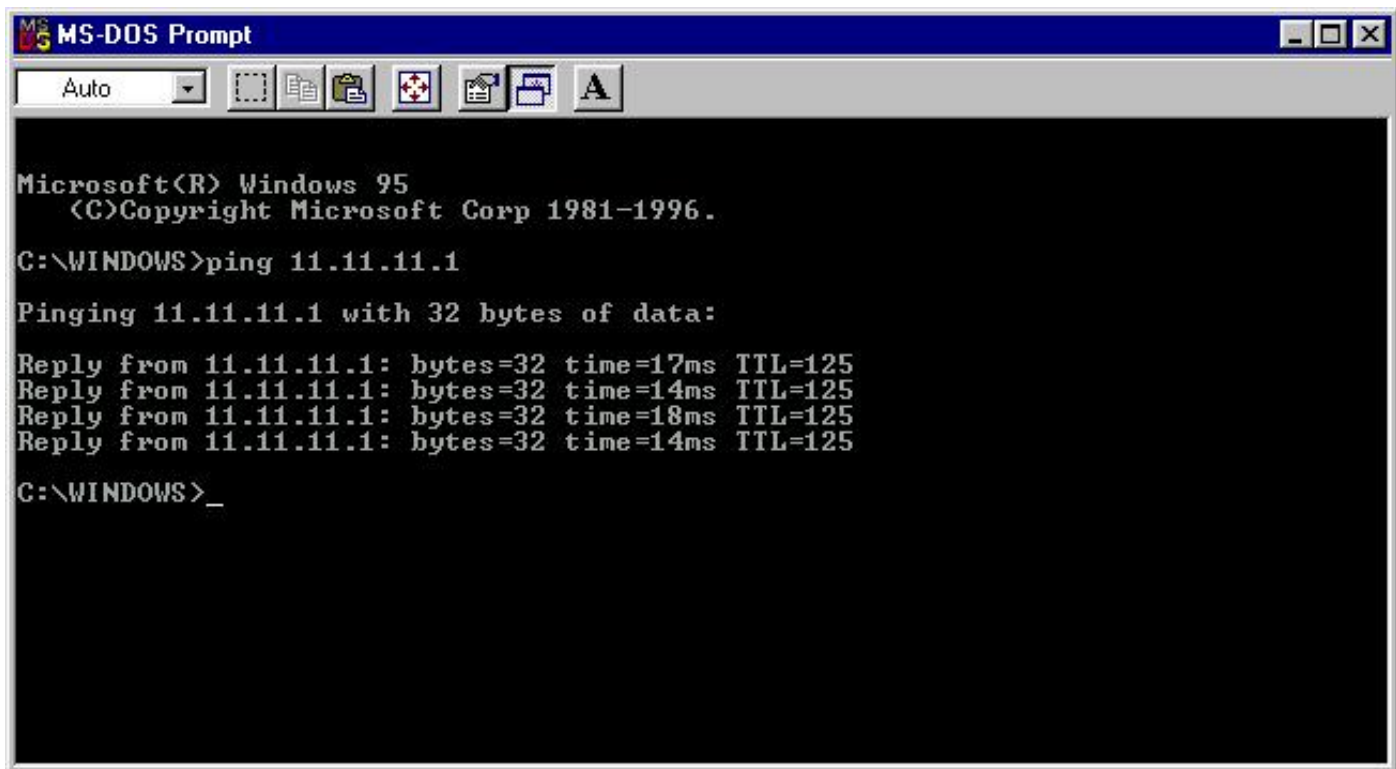
PC1 的 IP 地址为 9.9.9.1。



PC2 的 IP 地址是 11.11.11.1。

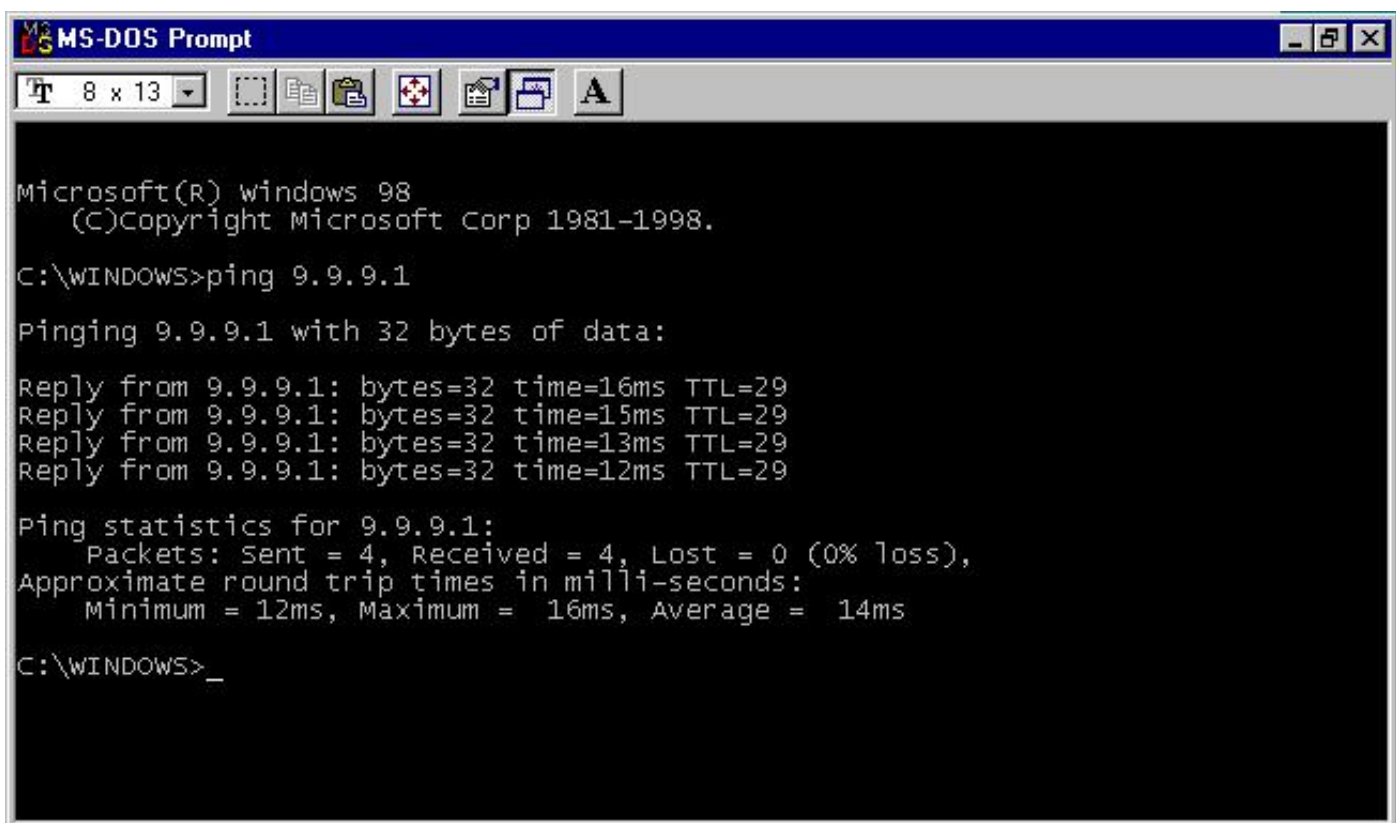


从 PC1 ping PC2。



```
MS-DOS Prompt
Auto
Microsoft(R) Windows 95
(C)Copyright Microsoft Corp 1981-1996.
C:\WINDOWS>ping 11.11.11.1
Pinging 11.11.11.1 with 32 bytes of data:
Reply from 11.11.11.1: bytes=32 time=17ms TTL=125
Reply from 11.11.11.1: bytes=32 time=14ms TTL=125
Reply from 11.11.11.1: bytes=32 time=18ms TTL=125
Reply from 11.11.11.1: bytes=32 time=14ms TTL=125
C:\WINDOWS>_
```

从 PC2 ping PC1。



```
MS-DOS Prompt
8 x 13
Microsoft(R) windows 98
(C)Copyright Microsoft Corp 1981-1998.
C:\WINDOWS>ping 9.9.9.1
Pinging 9.9.9.1 with 32 bytes of data:
Reply from 9.9.9.1: bytes=32 time=16ms TTL=29
Reply from 9.9.9.1: bytes=32 time=15ms TTL=29
Reply from 9.9.9.1: bytes=32 time=13ms TTL=29
Reply from 9.9.9.1: bytes=32 time=12ms TTL=29
Ping statistics for 9.9.9.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 12ms, Maximum = 16ms, Average = 14ms
C:\WINDOWS>_
```

故障排除

目前没有针对此配置的故障排除信息。

相关信息

- [故障排除 UBR 电缆调制解调器不上线的问题](#)
- [技术支持 - Cisco Systems](#)