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## Введение

Этот документ описывает процедуру для настройки Двухточечного соединения через Ethernet (PPPoE) между Windows Machine (который действует как PPPoE-клиент), и маршрутизатор Cisco, который действует как Сервер PPPoE.

## Предварительные условия

### Требования

Cisco рекомендует ознакомиться со Сквозным подключением Уровня 1, Приоритет пользователя (UP).

### Используемые компоненты

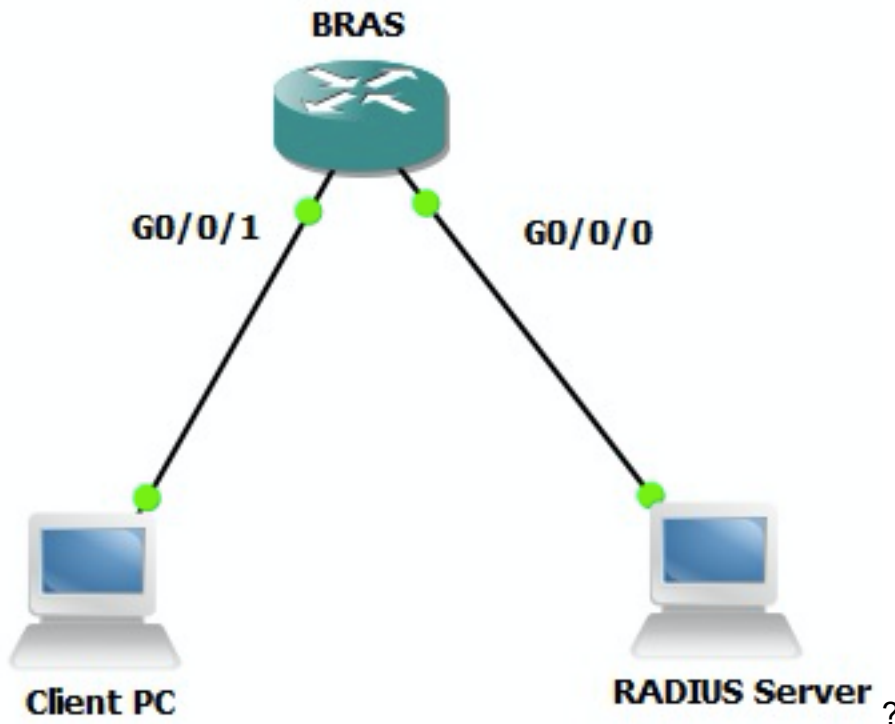
Настоящий документ не имеет жесткой привязки к каким-либо конкретным версиям программного обеспечения и оборудования.

Сведения, представленные в этом документе, были получены от устройств, работающих в специальной лабораторной среде. Все устройства, описанные в этом документе, были запущены с чистой (стандартной) конфигурацией. В рабочей сети необходимо изучить потенциальное воздействие всех команд до их использования.

## Настройка

### Схема сети

Этот документ использует сетевую установку, которую показывают в образе:



## Конфигурации

### Конфигурация BRAS

```

aaa new-model! Enabling AAA on router!aaa authentication ppp PPPOE-METD group PPPOE-RADIUS!
Defining AAA method list for PPP Authenticationaaa authorization network PPPOE-AUTHOR-METD group
PPPOE-RADIUS! Defining AAA method list for PPP Authorizationaaa accounting network PPPOE-ACCT-
METD start-stop group PPPOE-RADIUS! Defining AAA method list for PPP Accounting!aaa group server
radius PPPOE-RADIUS! Defining AAA Server Group named PPPOE-RADIUSserver-private 10.106.39.253
key ciscoip radius source-interface GigabitEthernet0/0/0!bba-group pppoe BBA-TESTvirtual-
template 10!interface GigabitEthernet0/0/1.47encapsulation dot1Q 1 nativepppoe enable group BBA-
TESTend!interface Virtual-Template10ip unnumbered Loopback10peer default ip address pool local!
Calling three named AAA Method lists configured above under this Virtual Templateppp
authentication pap chap PPPOE-METDppp authorization PPPOE-AUTHOR-METDppp accounting PPPOE-ACCT-
METDend!ip local pool local 192.168.1.2 192.168.1.10!interface Loopback10ip address 192.168.1.1
255.255.255.255end!

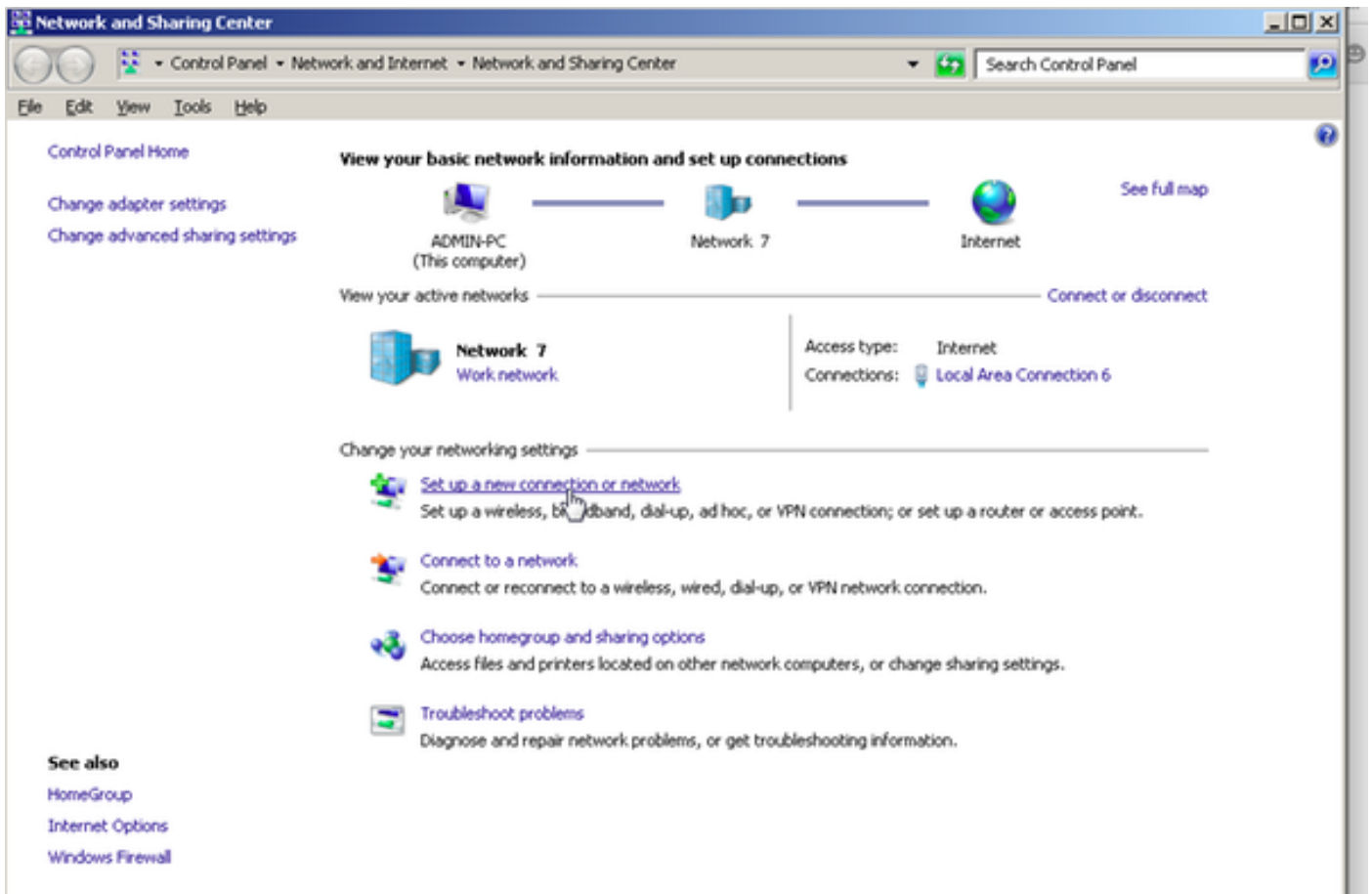
```

### Windows Machine Configurations и параметры настройки

Выполните эти шаги для инициирования Сеанса PPPoE от Windows Machine, который действует как PPPoE-клиент.

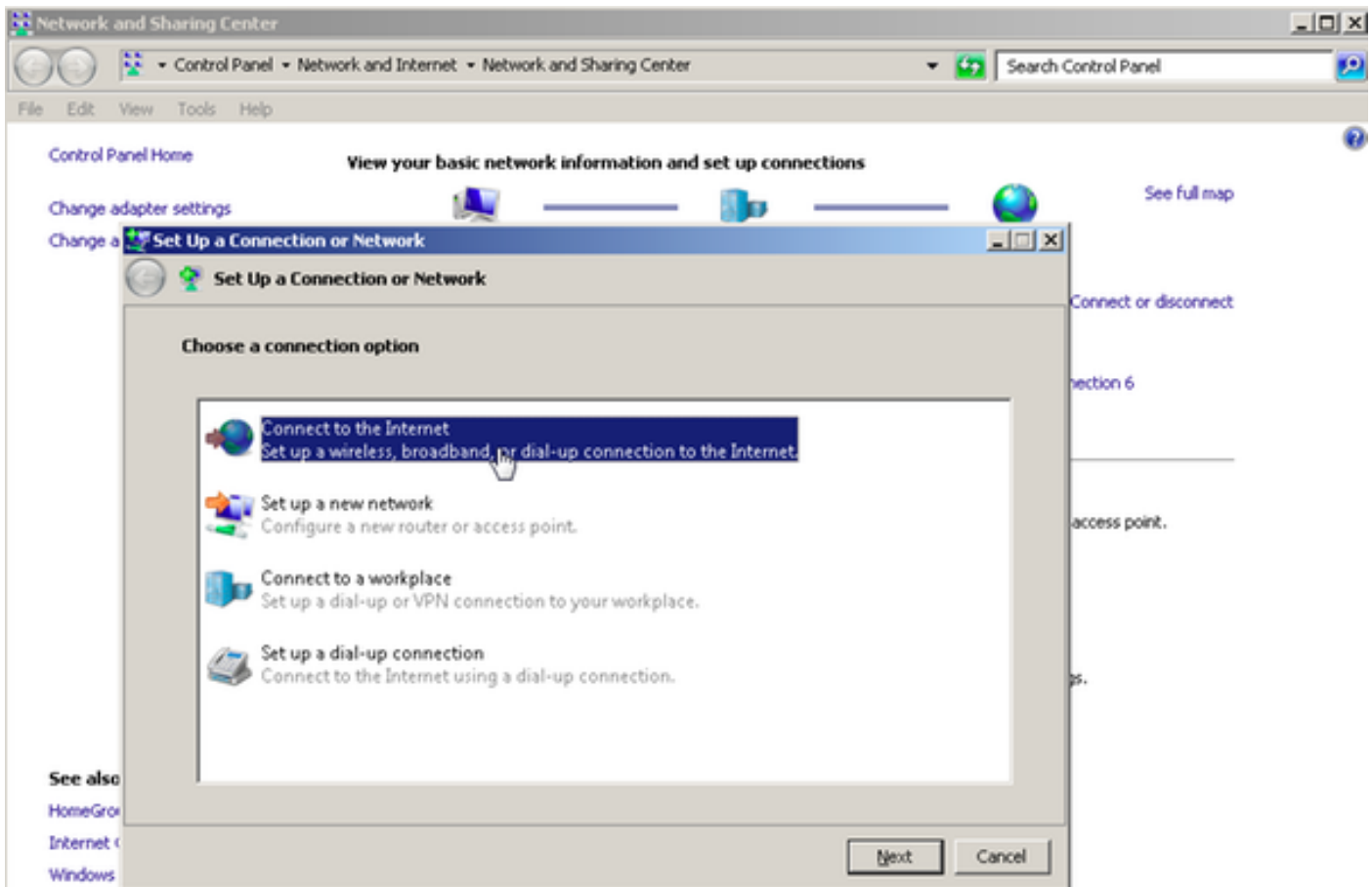
Шаг 1. Открытая сеть и Совместное использование Центра и нажимают **Set up новое соединение или сеть** как показано в образе.

?



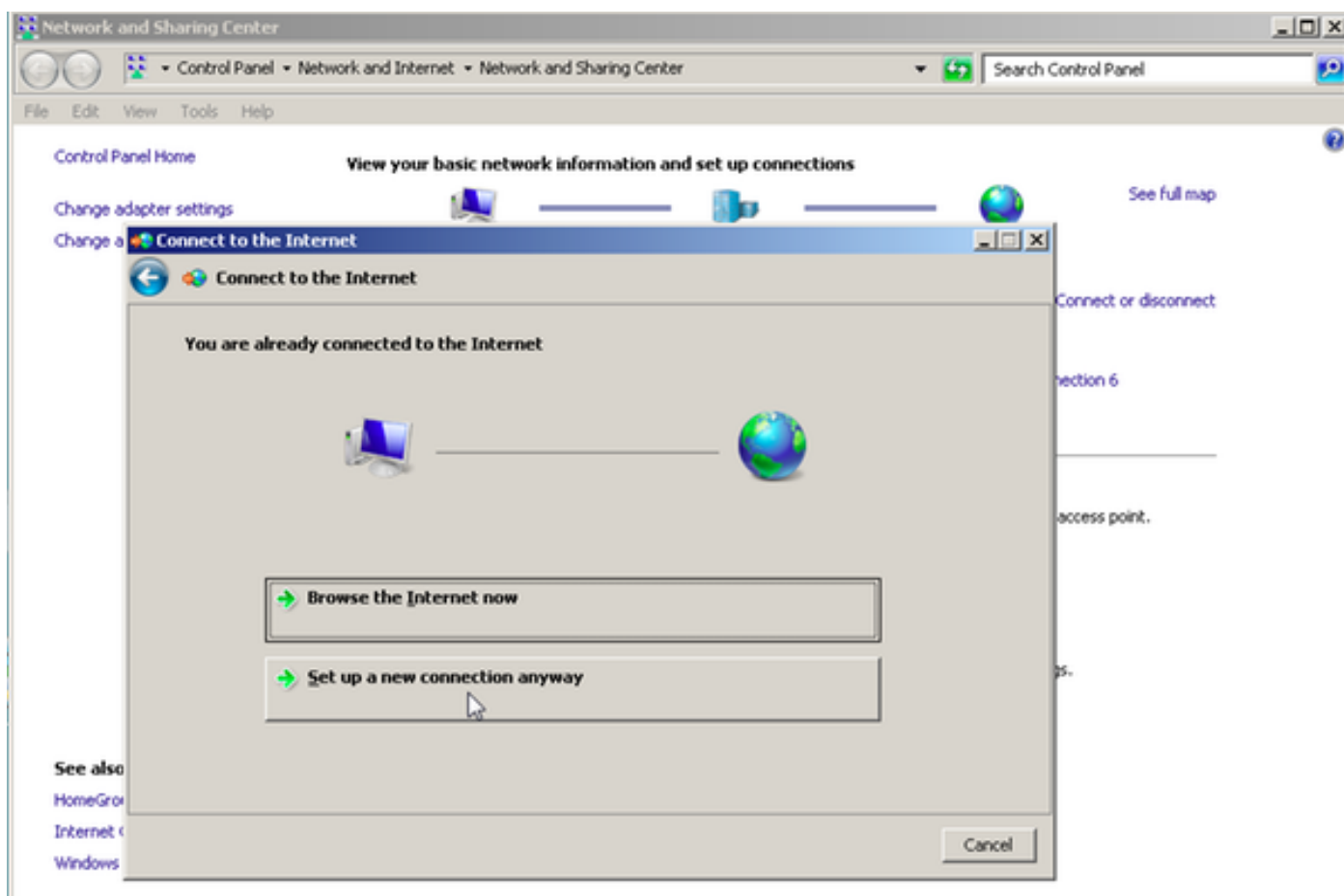
?

Шаг 2. Как показано в образе, выберите **Connect к Интернету** и нажмите **Next**.



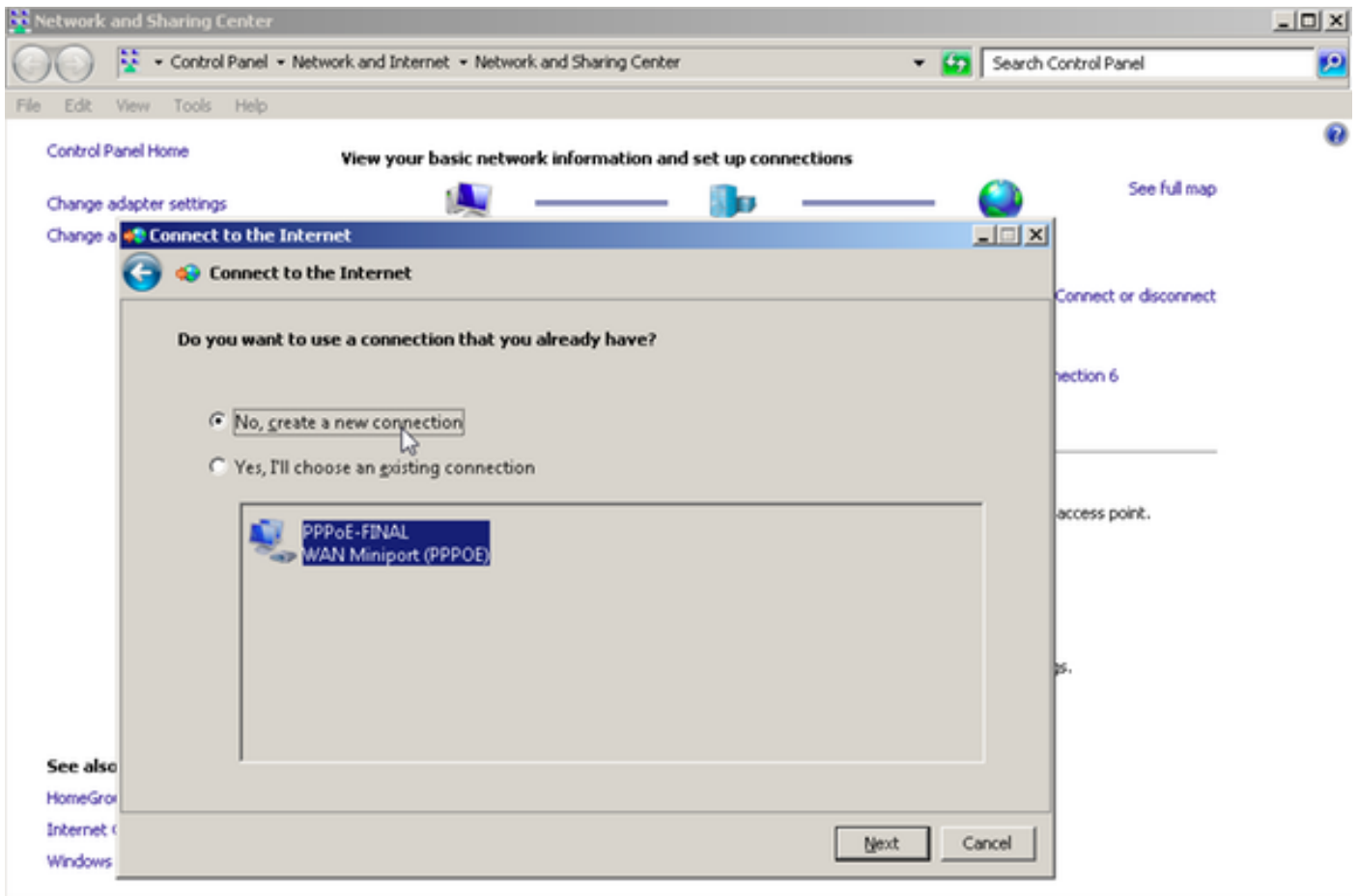
?

Шаг 3. Выберите **Set up новое соединение так или иначе**, как показано в образе:



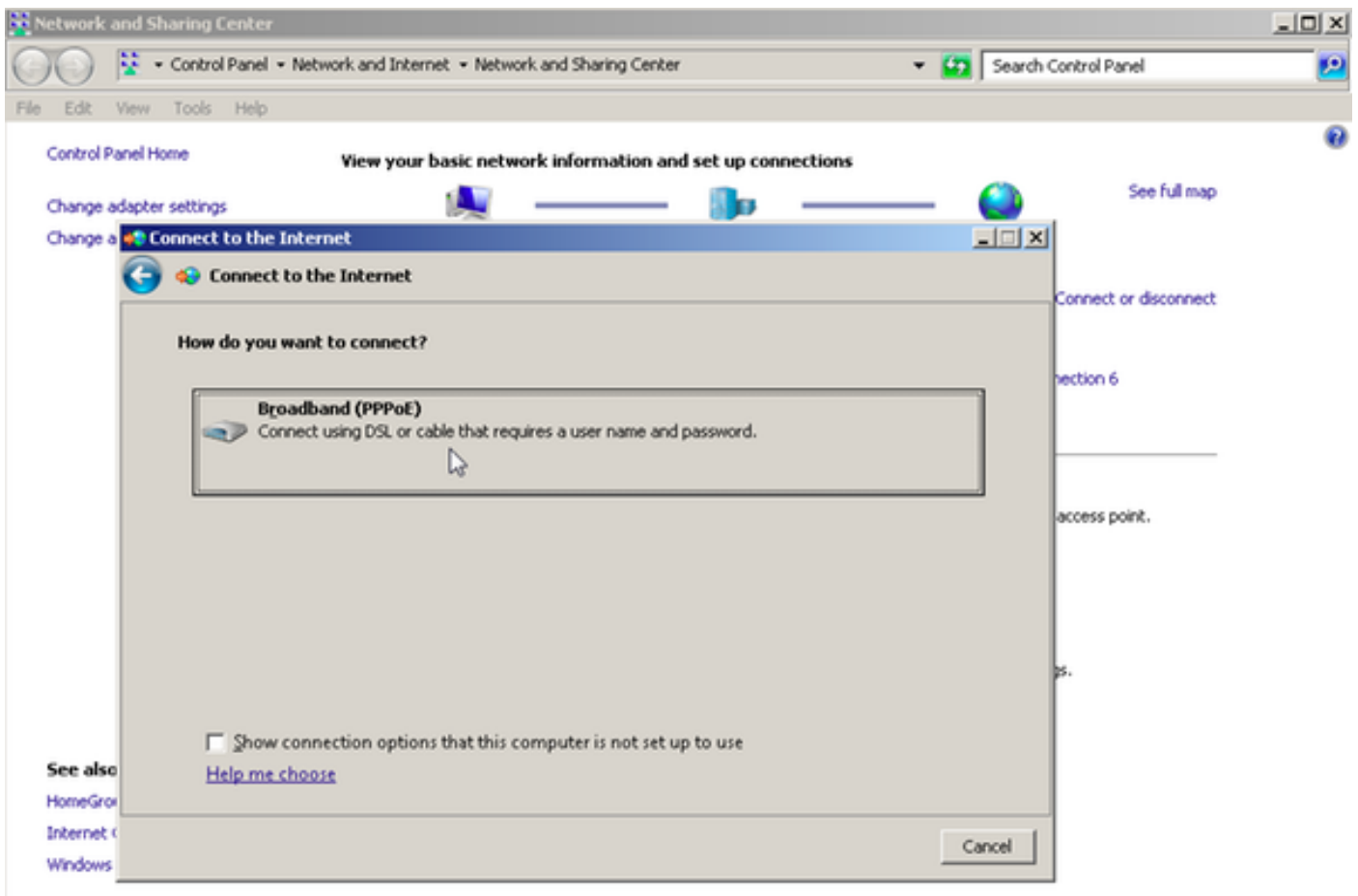
?

Шаг 4. Выберите **№, создайте новое соединение**, как показано в образе:



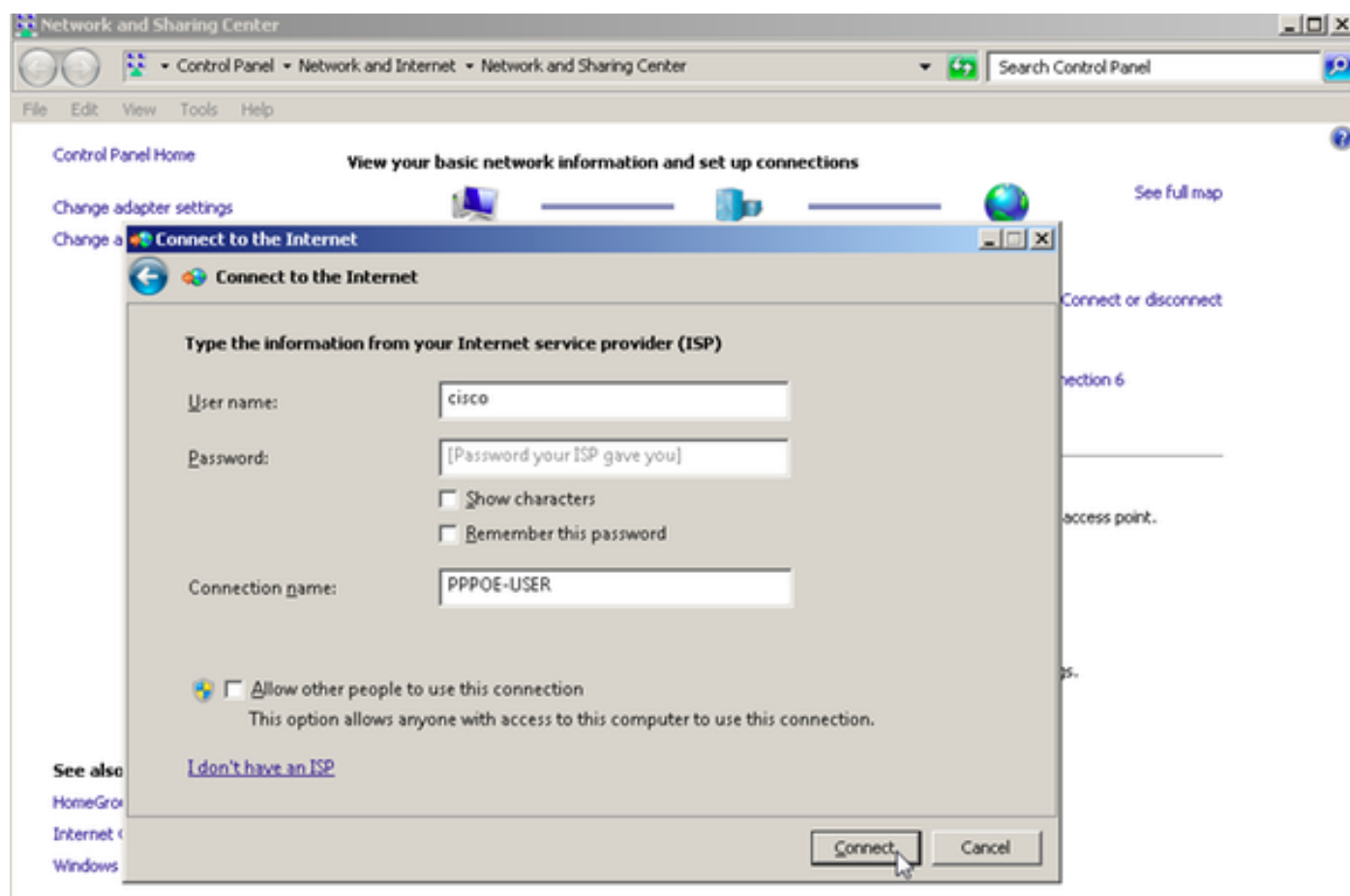
?

Шаг 5. Как показано в образе, щелкните по **Broadband (PPPoE)**:



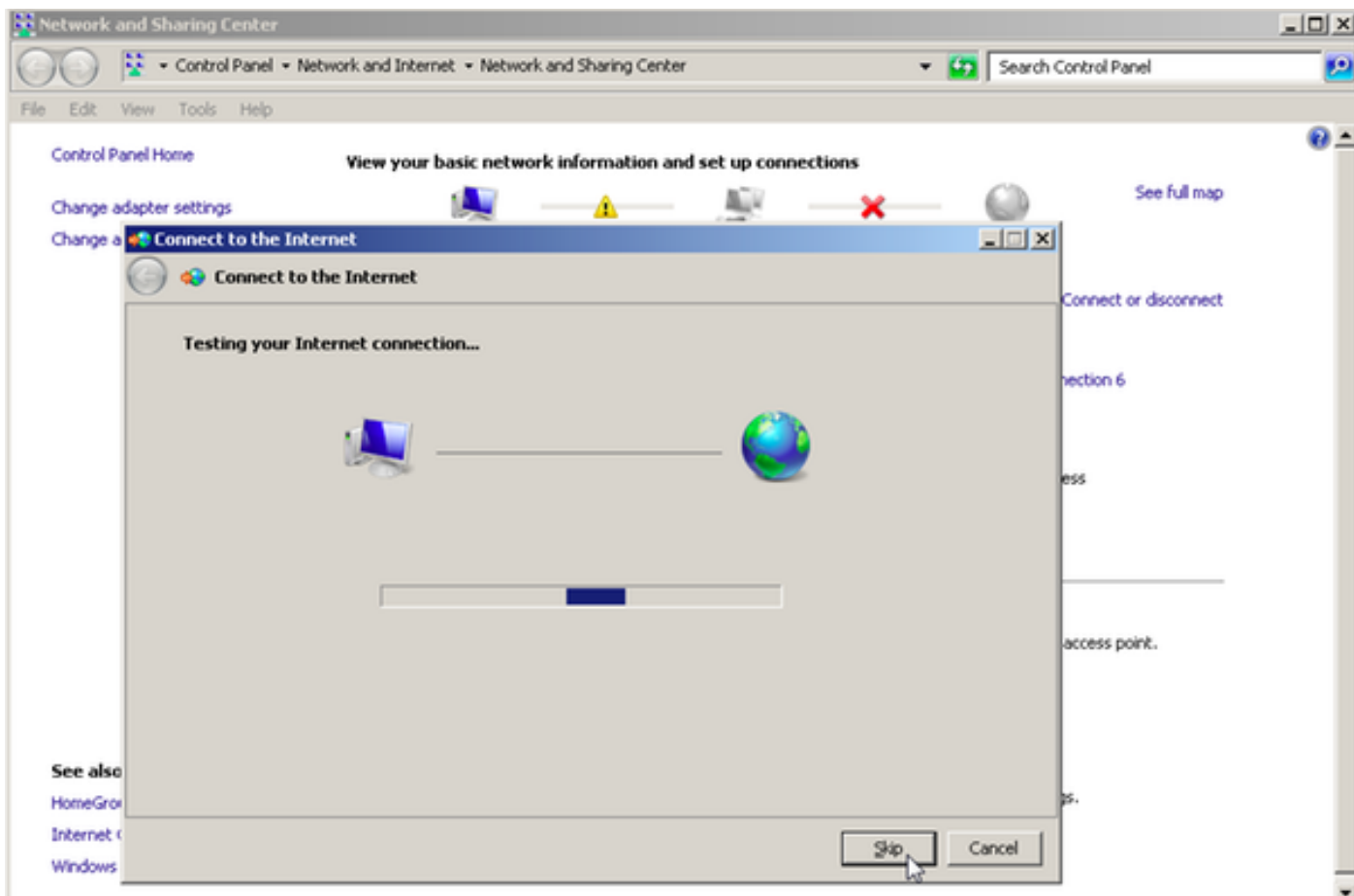
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Шаг 6. Как показано в образе, введите **Имя пользователя**, **Пароль** и **Имя соединения**, и нажмите **Connect**.



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Это инициирует Сеанс PPPoE к серверу. Проверьте сверять раздел как показано в образе:



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## Проверка

Шаг 1. Вкладка **Open Networks** снова, выберите сеть (названный ПОЛЬЗОВАТЕЛЕМ PPPOE в данном примере) и проверьте статус. Нажмите **Connect** для инициирования сеанса после ввода Имени пользователя и пароля, как показано в образе:

Network and Sharing Center

Control Panel > Network and Internet > Network and Sharing Center

File Edit View Tools Help

Control Panel Home

Change adapter settings  
Change advanced sharing settings

**View your basic network information and set up connections**

ADMIN-PC (This computer) — Network 7 — Internet [See full map](#)

View your active networks [Connect or disconnect](#)

**Network 7**  
Work network

Access type: Internet  
Connections: Local Area Connection 6

Change your networking settings

- Set up a new connection or network  
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
- Connect to a network  
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.
- Choose homegroup and sharing options  
Access files and printers located on other network computers, or change sharing options.
- Troubleshoot problems  
Diagnose and repair network problems, or get troubleshooting information.

**See also**

- HomeGroup
- Internet Options
- Windows Firewall

Currently connected to:  
**Network 7**  
Internet access

Dial-up and VPN

PPPOE-USER [Connect](#)

PPPoE-FINAL

PPP-1

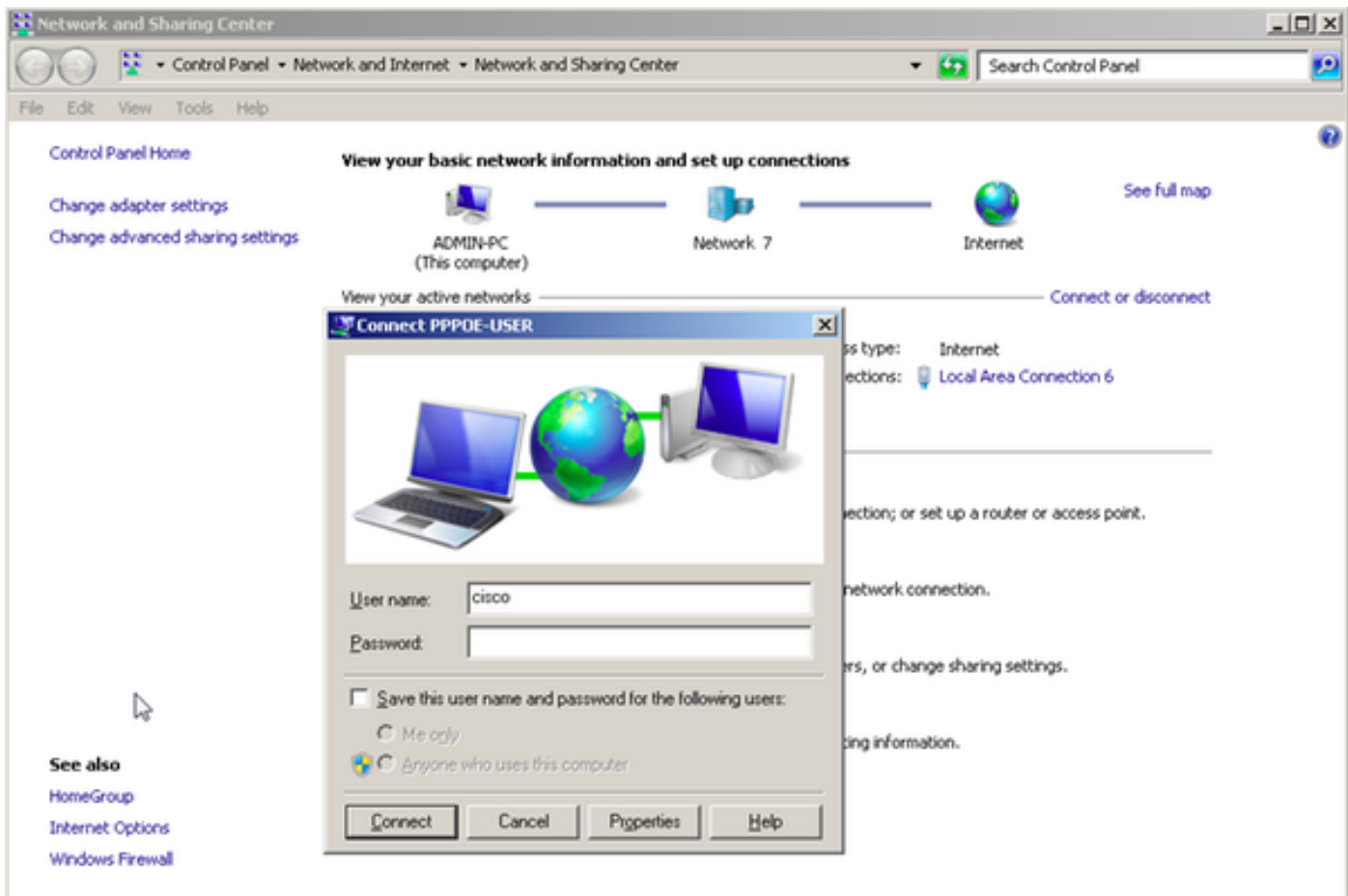
pppoe

(non  
10.76  
\\10.1  
tftp

Open Network and Sharing Center

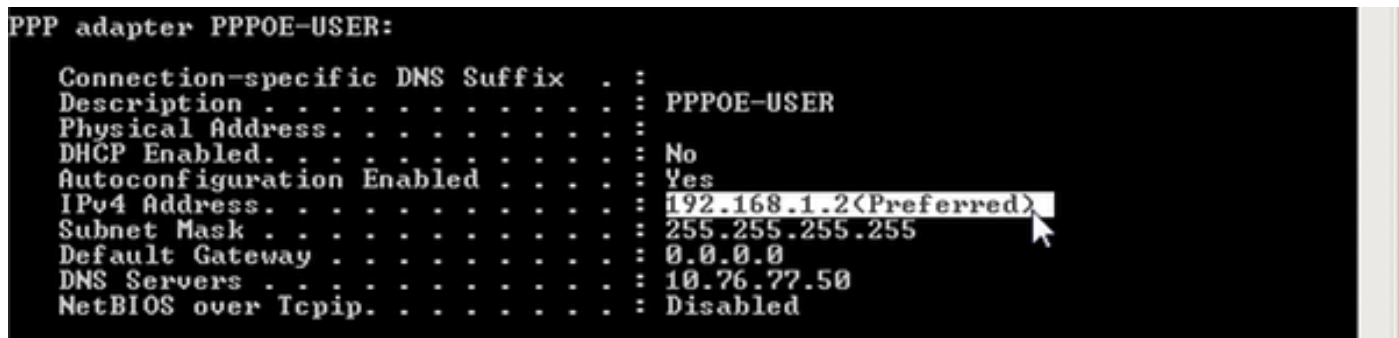
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Шаг 2. Открытая командная строка и выполняет `ipconfig /вс` команда для проверки согласованного IP-адреса, как показано в образе:



?

Шаг 3. Позвольте событию `debug pppoe`, ошибке `debug pppoe` и `debug ppp negotiation` проверить установление Сеанса PPPoE. Мы можем также позволить `debug radius` видеть сообщения, обменянные с сервером RADIUS.

```

BRAS#show debugging PPP:PPP protocol negotiation debugging is onPPPoE:PPPoE protocol events
debugging is onPPPoE protocol errors debugging is on Radius protocol debugging is onRadius
packet protocol debugging is on Debug snippet:BRAS#*Sep 19 18:44:14.531: PPPoE 0: I PADI
R:0050.56ad.7206 L:ffff.fff.fff.fff Gi0/0/1.47 ! Receiving PPPoE Active Discovery Initiation
(PADI) broadcast packet from Windows Machine (MAC 0050.56ad.7206) on Router interface
Gi0/0/1.47*Sep 19 18:44:14.531: Service tag: NULL Tag*Sep 19 18:44:14.531: PPPoE 0: O PADO,
R:d867.d99f.6601 L:0050.56ad.7206 Gi0/0/1.47 ! Sending PPPoE Active Discovery Offer (PADO)
unicast packet from Router interface Gi0/0/1.47 (MAC d867.d99f.6601 ) to Windows Machine (MAC
0050.56ad.7206)*Sep 19 18:44:14.531: Service tag: NULL Tag*Sep 19 18:44:14.533: PPPoE 0: I PADR
R:0050.56ad.7206 L:d867.d99f.6601 Gi0/0/1.47 ! Receiving PPPoE Active Discovery Request (PADR)
unicast packet from Windows Machine (MAC 0050.56ad.7206) on Router interface Gi0/0/1.47*Sep 19
  
```

18:44:14.533: Service tag: NULL Tag\*Sep 19 18:44:14.533: PPPoE : encaps string prepared\*Sep 19  
18:44:14.533: [76]PPPoE 63: Access IE handle allocated\*Sep 19 18:44:14.533: [76]PPPoE 63: AAA  
get retrieved attrs\*Sep 19 18:44:14.533: [76]PPPoE 63: AAA get nas port details\*Sep 19  
18:44:14.533: [76]PPPoE 63: Error adjusting nas port format did\*Sep 19 18:44:14.533: [76]PPPoE  
63: AAA get dynamic attrs\*Sep 19 18:44:14.533: [76]PPPoE 63: AAA unique ID 88 allocated\*Sep 19  
18:44:14.533: [76]PPPoE 63: No AAA accounting method list\*Sep 19 18:44:14.534: [76]PPPoE 63:  
Service request sent to SSS\*Sep 19 18:44:14.534: [76]PPPoE 63: Created, Service: None  
R:d867.d99f.6601 L:0050.56ad.7206 Gi0/0/1.47\*Sep 19 18:44:14.534: [76]PPPoE 63: State  
NAS\_PORT\_POLICY\_INQUIRY Event SSS MORE KEYS\*Sep 19 18:44:14.534: PPP: Alloc Context  
[7FE79EC0D8C8]\*Sep 19 18:44:14.534: ppp76 PPP: Phase is ESTABLISHING\*Sep 19 18:44:14.534:  
[76]PPPoE 63: data path set to PPP\*Sep 19 18:44:14.534: [76]PPPoE 63: Segment (SSS class):  
PROVISION ! We can also enable 'debug sss events' and 'debug sss error' to debug this stage\*Sep  
19 18:44:14.534: [76]PPPoE 63: State PROVISION\_PPP Event SSM PROVISIONED\*Sep 19 18:44:14.534:  
[76]PPPoE 63: O PADS R:0050.56ad.7206 L:d867.d99f.6601 Gi0/0/1.47 ! Sending PPPoE Active  
Discovery Session Confirmation (PADS) unicast packets from Router interface Gi0/0/1.47 (MAC  
d867.d99f.6601 ) to Windows Machine (MAC 0050.56ad.7206)\*Sep 19 18:44:14.534: [76]PPPoE 63:  
Unable to Add ANCP Line attributes to the PPPoE Authen attributes ! Access Node Control Protocol  
(ANCP) is configured between the Digital Subscriber Line Access Concentrator (DSLAM) and  
Broadband Remote Access Server (BRAS), which is used to aggregate traffic from multiple  
subscribers and deliver information for any application independently. More information related  
to ANCP could be found here. It is expected for the IOS to print this message even if ANCP is  
not enabled. \*Sep 19 18:44:14.534: ppp76 PPP: Using vpn set call direction\*Sep 19 18:44:14.534:  
ppp76 PPP: Treating connection as a callin\*Sep 19 18:44:14.534: ppp76 PPP: Session  
handle[8800004C] Session id[76]\*Sep 19 18:44:14.534: ppp76 LCP: Event[OPEN] State[Initial to  
Starting]\*Sep 19 18:44:14.534: ppp76 PPP LCP: Enter passive mode, state[Stopped]\*Sep 19  
18:44:14.539: ppp76 LCP: I CONFREQ [Stopped] id 0 len 21\*Sep 19 18:44:14.539: ppp76 LCP: MRU  
1480 (0x010405C8)\*Sep 19 18:44:14.539: ppp76 LCP: MagicNumber 0x61EB5A46 (0x050661EB5A46)\*Sep 19  
18:44:14.539: ppp76 LCP: PFC (0x0702)\*Sep 19 18:44:14.539: ppp76 LCP: ACFC (0x0802)\*Sep 19  
18:44:14.539: ppp76 LCP: Callback 6 (0x0D0306)\*Sep 19 18:44:14.539: ppp76 LCP: O CONFREQ  
[Stopped] id 1 len 18\*Sep 19 18:44:14.539: ppp76 LCP: MRU 1492 (0x010405D4)\*Sep 19 18:44:14.539:  
ppp76 LCP: AuthProto PAP (0x0304C023)\*Sep 19 18:44:14.539: ppp76 LCP: MagicNumber 0x7B063BEA  
(0x05067B063BEA)\*Sep 19 18:44:14.539: ppp76 LCP: O CONFREQ [Stopped] id 0 len 7\*Sep 19  
18:44:14.539: ppp76 LCP: Callback 6 (0x0D0306)\*Sep 19 18:44:14.539: ppp76 LCP: Event[Receive  
ConfReq-] State[Stopped to REQsent]\*Sep 19 18:44:14.540: ppp76 LCP: I CONFACK [REQsent] id 1 len  
18\*Sep 19 18:44:14.540: ppp76 LCP: MRU 1492 (0x010405D4)\*Sep 19 18:44:14.540: ppp76 LCP:  
AuthProto PAP (0x0304C023)\*Sep 19 18:44:14.540: ppp76 LCP: MagicNumber 0x7B063BEA  
(0x05067B063BEA)\*Sep 19 18:44:14.540: ppp76 LCP: Event[Receive ConfAck] State[REQsent to  
ACKrcvd]\*Sep 19 18:44:14.540: ppp76 LCP: I CONFREQ [ACKrcvd] id 1 len 18\*Sep 19 18:44:14.540:  
ppp76 LCP: MRU 1480 (0x010405C8)\*Sep 19 18:44:14.540: ppp76 LCP: MagicNumber 0x61EB5A46  
(0x050661EB5A46)\*Sep 19 18:44:14.540: ppp76 LCP: PFC (0x0702)\*Sep 19 18:44:14.540: ppp76 LCP:  
ACFC (0x0802)\*Sep 19 18:44:14.540: ppp76 LCP: O CONFACK [ACKrcvd] id 1 len 18\*Sep 19  
18:44:14.540: ppp76 LCP: MRU 1480 (0x010405C8)\*Sep 19 18:44:14.540: ppp76 LCP: MagicNumber  
0x61EB5A46 (0x050661EB5A46)\*Sep 19 18:44:14.540: ppp76 LCP: PFC (0x0702)\*Sep 19 18:44:14.540:  
ppp76 LCP: ACFC (0x0802)\*Sep 19 18:44:14.540: ppp76 LCP: Event[Receive ConfReq+] State[ACKrcvd  
to Open]\*Sep 19 18:44:14.541: ppp76 LCP: I IDENTIFY [Open] id 2 len 18 magic  
0x61EB5A46MSRASV5.20\*Sep 19 18:44:14.541: ppp76 LCP: I IDENTIFY [Open] id 3 len 24 magic  
0x61EB5A46MSRAS-0-ADMIN-PC\*Sep 19 18:44:14.541: ppp76 LCP: I IDENTIFY [Open] id 4 len 24 magic  
0x61EB5A46sPPY.X`I?Z5SWE}}\*Sep 19 18:44:14.541: ppp76 PPP: Queue PAP code[1] id[78]\*Sep 19  
18:44:14.563: ppp76 PPP: Phase is AUTHENTICATING, by this end\*Sep 19 18:44:14.564: ppp76 PAP:  
Redirect packet to ppp76\*Sep 19 18:44:14.564: ppp76 PAP: I AUTH-REQ id 78 len 11 from "cisco" !  
Incoming Authentication Request from Windows Machine using User name "cisco"\*Sep 19  
18:44:14.564: ppp76 PAP: Authenticating peer cisco\*Sep 19 18:44:14.564: ppp76 PPP: Phase is  
FORWARDING, Attempting Forward\*Sep 19 18:44:14.564: ppp76 LCP: State is Open\*Sep 19  
18:44:14.564: ppp76 PPP: Phase is AUTHENTICATING, Unauthenticated User\*Sep 19 18:44:14.564:  
RADIUS/ENCODE(00000088):Orig. component type = PPPoE\*Sep 19 18:44:14.564: RADIUS: DSL line rate  
attributes successfully added\*Sep 19 18:44:14.564: RADIUS/ENCODE: Skip encoding 0 length AAA  
Cisco vsa password\*Sep 19 18:44:14.564: RADIUS(00000088): Config NAS IP: 10.106.39.212\*Sep 19  
18:44:14.564: RADIUS(00000088): Config NAS IPv6: ::\*Sep 19 18:44:14.564: RADIUS/ENCODE: No idb  
found! Framed IP Addr might not be included\*Sep 19 18:44:14.564: RADIUS/ENCODE(00000088):  
acct\_session\_id: 125\*Sep 19 18:44:14.564: RADIUS(00000088): Config NAS IP: 10.106.39.212\*Sep 19  
18:44:14.564: RADIUS(00000088): sending\*Sep 19 18:44:14.564: RADIUS(00000088): Send Access-  
Request to 10.106.39.253:1645 id 1645/106, len 147 ! Sending an Access-Request to Radius Server  
at 10.106.39.253 on port 1645.\*Sep 19 18:44:14.564: RADIUS: authenticator C1 5B AA 62 1D E1 31  
6C - 16 A5 CE 92 D6 9C 12 E7\*Sep 19 18:44:14.564: RADIUS: Framed-Protocol [7] 6 PPP [1]\*Sep 19

```

18:44:14.564: RADIUS: User-Name [1] 7 "cisco"*Sep 19 18:44:14.564: RADIUS: User-Password [2] 18
**Sep 19 18:44:14.564: RADIUS: NAS-Port-Type [61] 6 Virtual [5]*Sep 19 18:44:14.564: RADIUS:
NAS-Port [5] 6 0*Sep 19 18:44:14.564: RADIUS: NAS-Port-Id [87] 9 "0/0/1/1"*Sep 19 18:44:14.564:
RADIUS: Vendor, Cisco [26] 41*Sep 19 18:44:14.564: RADIUS: Cisco AVpair [1] 35 "client-mac-
address=0050.56ad.7206"*Sep 19 18:44:14.564: RADIUS: Service-Type [6] 6 Framed [2]*Sep 19
18:44:14.564: RADIUS: NAS-IP-Address [4] 6 10.106.39.212*Sep 19 18:44:14.564: RADIUS: Acct-
Session-Id [44] 10 "0000007D"*Sep 19 18:44:14.564: RADIUS: Nas-Identifier [32] 12 "BRAS"*Sep 19
18:44:14.564: RADIUS(00000088): Sending a IPv4 Radius Packet*Sep 19 18:44:14.564:
RADIUS(00000088): Started 5 sec timeout*Sep 19 18:44:14.566: RADIUS: Received from id 1645/106
10.106.39.253:1645, Access-Accept, len 52 ! Receiving an Access-Accept from Radius Server*Sep 19
18:44:14.566: RADIUS: authenticator C0 0D 6C 33 F1 A3 04 27 - F0 C2 76 F5 54 FD E2 42*Sep 19
18:44:14.566: RADIUS: Class [25] 32*Sep 19 18:44:14.566: RADIUS: 4A 83 05 60 00 00 01 37 00 01
0A 6A 27 FD 01 D2 12 2E 98 D0 4F B0 00 00 00 00 00 00 14 [ J`7j'.O]*Sep 19 18:44:14.566:
RADIUS(00000088): Received from id 1645/106*Sep 19 18:44:14.566: ppp76 PPP: Phase is FORWARDING,
Attempting Forward*Sep 19 18:44:14.568: [76]PPPoE 63: State LCP_NEGOTIATION Event SSS CONNECT
LOCAL*Sep 19 18:44:14.568: [76]PPPoE 63: Segment (SSS class): UPDATED*Sep 19 18:44:14.568:
[76]PPPoE 63: Segment (SSS class): BOUND*Sep 19 18:44:14.568: [76]PPPoE 63: data path set to
Virtual Access*Sep 19 18:44:14.569: [76]PPPoE 63: State LCP_NEGOTIATION Event SSM UPDATED*Sep 19
18:44:14.569: Vi2.1 PPP: Phase is AUTHENTICATING, Authenticated User*Sep 19 18:44:14.569: Vi2.1
PAP: O AUTH-ACK id 78 len 5*Sep 19 18:44:14.569: Vi2.1 PPP: Reducing MTU to peer's MRU*Sep 19
18:44:14.569: [76]PPPoE 63: AAA get dynamic attrs*Sep 19 18:44:14.569: Vi2.1 PPP: Phase is
UP*Sep 19 18:44:14.569: Vi2.1 IPCP: Protocol configured, start CP. state[Initial]*Sep 19
18:44:14.569: Vi2.1 IPCP: Event[OPEN] State[Initial to Starting]*Sep 19 18:44:14.569: Vi2.1
IPCP: O CONFREQ [Starting] id 1 len 10*Sep 19 18:44:14.569: Vi2.1 IPCP: Address 192.168.1.1
(0x0306C0A80101)*Sep 19 18:44:14.569: Vi2.1 IPCP: Event[UP] State[Starting to REQsent]*Sep 19
18:44:14.569: [76]PPPoE 63: State PTA_BINDING Event STATIC BIND RESPONSE*Sep 19 18:44:14.569:
[76]PPPoE 63: Connected PTA<snip>*Sep 19 18:44:14.572: Vi2.1 IPCP: Event[Receive ConfReq+]
State[ACKRcvd to Open]*Sep 19 18:44:14.595: Vi2.1 IPCP: State is Open*Sep 19 18:44:14.595: PPPoE
: ipfib_encapstr prepared*Sep 19 18:44:14.596: Vi2.1 Added to neighbor route AVL tree: topoid 0,
address 192.168.1.2*Sep 19 18:44:14.596: Vi2.1 IPCP: Install route to 192.168.1.2! Installing
route to PPPoE client

```

```
BRAS#sh pppoe sess
```

```

 1 session in LOCALLY_TERMINATED (PTA) State
 1 session total

```

Uniq ID	PPPoE SID	RemMAC LocMAC	Port	VT	VA VA-st	State Type
76	63	0050.56ad.7206 d867.d99f.6601	Gi0/0/1.47	10	Vi2.1 UP	PTA

```
BRAS#
```

```
?
```

```

BRAS#sh caller ipLine User IP Address Local Number Remote Number <->Vi2.1 cisco 192.168.1.2 - -
inBRAS# ping 192.168.1.2Type escape sequence to abort.Sending 5, 100-byte ICMP Echos to
192.168.1.2, timeout is 2 seconds:!!!!Success rate is 100 percent (5/5), round-trip min/avg/max
= 1/1/1 ms

```

## Устранение неполадок

Для этой конфигурации в настоящее время нет сведений об устранении проблем. Однако мы можем применить стандартные методики поиска и устранения проблем, отнесенные к PPP и PPPoE со справкой связанных отладок.

## Дополнительные сведения

- [Cisco Systems – техническая поддержка и документация](#)