



Figure 1 Section 8 Configuring the VPDN to Work with Local AAA

```
R3 as Dialup Client
hostname R3
!
interface BRI0/0
no ip address
encapsulation ppp
dialer pool-member 1
isdn switch-type basic-ni
isdn spid1 26278037230101
isdn spid2 26278037240101
!
interface Dialer0
ip address negotiated
encapsulation ppp
no ip route-cache
no ip mroute-cache
dialer pool 1
dialer remote-name ccie4460@cisco.com
dialer string 5551212
dialer-group 1
no cdp enable
ppp authentication chap callin
ppp chap hostname ccie4460@cisco.com
ppp chap password cisco
!
dialer-list 1 protocol ip permit
!
ip route 0.0.0.0 0.0.0.0 Dialer 0
```

R5's Dialer Access Configuration

```
hostname R5
aaa new-model
aaa authentication ppp default local
aaa authorization network default local
!
username R5 password 0 cisco
username R8 password 0 cisco
!
vpdn enable
vpdn search-order domain
vpdn logging local
vpdn logging remote
!
vpdn-group 1
 request-dialin
  protocol l2tp
  domain cisco.com
 initiate-to ip 130.100.26.8 priority 1
 local name R5
!
interface BRI0/0
no ip address
encapsulation ppp
dialer pool-member 1
isdn switch-type basic-ni
isdn spid1 26293867870101
isdn spid2 26293867880101
ppp authentication chap
!
interface Dialer0
ip unnumbered serial 0
encapsulation ppp
no ip route-cache
no ip mroute-cache
dialer pool 1
dialer-group 1
no cdp enable
ppp authentication chap
!
dialer-list 1 protocol ip permit
```

## **PIX2**

```
static (inside,outside) 130.100.26.8 192.168.1.1 netmask
255.255.255.255 0 0
access-list outside_access_in permit udp any host
130.100.26.8 eq 1701
```

R8

```

aaa new-model
aaa authentication ppp default local
aaa authorization network default local
!
username CCIE4460@cisco.com password 0 cisco
username R5 password 0 cisco
username R8 password 0 cisco
!
vpdn enable
!
vpdn-group 1
  accept-dialin
  protocol l2tp
  virtual-template 1
  terminate-from hostname R5
  local name R8
  lcp renegotiation on-mismatch
!
interface Virtual-Template1
  ip unnumbered Loopback100
  encapsulation ppp
  no ip route-cache
  no ip mroute-cache
  peer default ip address pool HOME
  ppp authentication chap
!
interface Loopback100
  ip address 192.168.100.1 255.255.255.0
!
ip local pool HOME 192.168.100.10 192.168.100.20

```

On the LNS R5:

```

debug ppp negotiation
debug vpdn event
debug vpdn l2x-event
debug vpdn l2x-error
debug vtemplate - display cloning information for a virtual
access interface from the time it is cloned from a virtual
template to the time the virtual access interface comes down
when the call ends.

```

The R5 receives an ISDN call from the number 5551212.

```

R5#
*Sep 18 14:45:09.684: ISDN BRI0/0: RX <- SETUP pd = 8
callref = 0x3D03
*Sep 18 14:45:09.688: Sending Complete
*Sep 18 14:45:09.688: Bearer Capability i = 0x8890
*Sep 18 14:45:09.688: Channel ID i = 0xA18387
*Sep 18 14:45:09.688: Calling Party Number i = 0xA1,
'5551212', Plan:ISDN, Type:National
*Sep 18 14:45:09.688: Called Party Number i = 0x81,
'214', Plan:ISDN, Type:Unknown
*Sep 18 14:45:09.692: %LINK-3-UPDOWN: BRI0/0:1, changed
state to up
*Sep 18 14:45:09.692: BRI0/0:1 PPP: Treating connection
as a callin

```

```

*Sep 18 14:45:09.692: BRI0/0:1 PPP: Phase is
ESTABLISHING, Passive Open [0 sess, 0 load]
*Sep 18 14:45:09.692: BRI0/0:1 LCP: State is Listen
*Sep 18 14:45:09.696: ISDN BRI0:0: TX -> CALL_PROC pd = 8
callref = 0xBD03
*Sep 18 14:45:09.696: Channel ID i = 0xA98387
*Sep 18 14:45:09.696: ISDN BRI0:0: TX -> CONNECT pd = 8
callref = 0xBD03
*Sep 18 14:45:09.696: Channel ID i = 0xA98387
*Sep 18 14:45:09.752: ISDN BRI0:0: RX <- CONNECT_ACK pd
= 8 callref = 0x3D03
*Sep 18 14:45:09.752: ISDN BRI0:0: CALL_PROGRESS:
CALL_CONNECTED call id
0x90, bchan 6, dsl 0
*Sep 18 14:45:09.844: BRI0/0:1 LCP: I CONFREQ [Listen]
id 179 len 10
*Sep 18 14:45:09.844: BRI0/0:1 LCP: MagicNumber
0x5B90B785 (0x05065B90B785)
*Sep 18 14:45:09.844: BRI0/0:1 LCP: O CONFREQ [Listen] id
1 len 15
*Sep 18 14:45:09.844: BRI0/0:1 LCP: AuthProto CHAP
(0x0305C22305)
*Sep 18 14:45:09.844: BRI0/0:1 LCP: MagicNumber
0x1A9DC8A5 (0x05061A9DC8A5)
*Sep 18 14:45:09.844: BRI0/0:1 LCP: O CONFACK [Listen] id
179 len 10
*Sep 18 14:45:09.844: BRI0/0:1 LCP: MagicNumber
0x5B90B785 (0x05065B90B785)
*Sep 18 14:45:09.876: BRI0/0:1 LCP: I CONFACK [ACKsent]
id 1 len 15
*Sep 18 14:45:09.876: BRI0/0:1 LCP: AuthProto CHAP
(0x0305C22305)
*Sep 18 14:45:09.876: BRI0/0:1 LCP: MagicNumber
0x1A9DC8A5 (0x05061A9DC8A5)
*Sep 18 14:45:09.876: BRI0/0:1 LCP: State is Open
*Sep 18 14:45:09.876: BRI0/0:1 PPP: Phase is
AUTHENTICATING, by this end [0 sess,
0 load]
*Sep 18 14:45:09.876: BRI0/0:1 CHAP: O CHALLENGE id 1 len
24 from "R5".
*Sep 18 14:45:09.924: BRI0/0:1 CHAP: I RESPONSE id 1 len
39 from "ccie4460@cisco.com"
*Sep 18 14:45:09.924: BRI0/0:1 PPP: Phase is FORWARDING
[0 sess, 0 load]
*Sep 18 14:45:09.924: BRI0/0:1 VPDN: Got DNIS string 214
*Sep 18 14:45:09.924: BRI0/0:1 VPDN: Looking for tunnel -
- cisco.com --
*Sep 18 14:45:09.928: BRI0/0:1 VPDN/RPMS/GroupCisco: Got
tunnel info for cisco.com
*Sep 18 14:45:09.928: BRI0/0:1 VPDN/RPMS/GroupCisco: R5
*Sep 18 14:45:09.928: BRI0/0:1 VPDN/RPMS/GroupCisco:
l2tp-busy-disconnect yes
*Sep 18 14:45:09.928: BRI0/0:1 VPDN/RPMS/GroupCisco: IP
130.100.26.8
*Sep 18 14:45:09.928: BRI0/0:1 VPDN/GroupCisco: curlvl 1
Address 0: 130.100.26.8,
priority 1

```

```
*Sep 18 14:45:09.928: BRI0/0:1 VPDN/GroupCisco: Select
non-active address 130.100.26.8,
priority 1
*Sep 18 14:45:09.928: BRI0/0:1 VPDN: Find LNS process
created
*Sep 18 14:45:09.928: Tnl 2027 L2TP: SM State idle
*Sep 18 14:45:09.928: Tnl 2027 L2TP: O SCCRQ
*Sep 18 14:45:09.928: Tnl 2027 L2TP: Tunnel state change
from idle to wait-ctl-reply
*Sep 18 14:45:09.928: Tnl 2027 L2TP: SM State wait-ctl-
reply
*Sep 18 14:45:09.928: BRI0/0:1VPDN: Forward to address
130.100.26.8
*Sep 18 14:45:09.928: BRI0/0:1VPDN: Pending
*Sep 18 14:45:09.932: BRI0/0:1VPDN: Process created
*Sep 18 14:45:09.956: Tnl 2027 L2TP: I SCCRP from LNS
*Sep 18 14:45:09.956: Tnl 2027 L2TP: Got a challenge from
remote peer, R8
*Sep 18 14:45:09.956: Tnl 2027 L2TP: Got a response from
remote peer, R8
*Sep 18 14:45:09.956: Tnl 2027 L2TP: Tunnel
Authentication success
*Sep 18 14:45:09.956: Tnl 2027 L2TP: Tunnel state change
from wait-ctl-reply
to established
*Sep 18 14:45:09.956: Tnl 2027 L2TP: O SCCCN to R8 tnliid
11514
*Sep 18 14:45:09.956: Tnl 2027 L2TP: SM State established
*Sep 18 14:45:09.956: BRI0/0:1VPDN: Forwarding...
*Sep 18 14:45:09.956: BRI0/0:1VPDN: Bind interface
direction=1
*Sep 18 14:45:09.956: Tnl/Cl 2027/18 L2TP: Session FS
enabled
*Sep 18 14:45:09.956: Tnl/Cl 2027/18 L2TP: Session state
change from idle to
wait-for-tunnel
*Sep 18 14:45:09.960: BRI0/0:1 Tnl/Cl 2027/18 L2TP:
Create session
*Sep 18 14:45:09.960: Tnl 2027 L2TP: SM State established
*Sep 18 14:45:09.960: BRI0/0:1 Tnl/Cl 2027/18 L2TP: O
ICRQ to R8 11514/0
*Sep 18 14:45:09.960: BRI0/0:1 Tnl/Cl 2027/18 L2TP:
Session state change from
wait-for-tunnel to wait-reply
*Sep 18 14:45:09.960: BRI0/0:1 VPDN: Ccie4460@cisco.com
is forwarded
*Sep 18 14:45:10.008: BRI0/0:1 Tnl/Cl 2027/18 L2TP: O
ICCN to R8 11514/6
*Sep 18 14:45:10.008: BRI0/0:1 Tnl/Cl 2027/18 L2TP:
Session state change from
wait-reply to established
*Sep 18 14:45:10.960: %LINEPROTO-5-UPDOWN: Line protocol
on BRI0/0:1,
changed state to up
*Sep 18 14:45:15.692: %ISDN-6-CONNECT: BRI0/0:1 is now
connected to 5551212
ccie4460@cisco.com
R5#show vpdn tunnel
```

```
L2TP Tunnel Information Total tunnels 1 sessions 1
LocID RemID Remote Name State Remote Address Port Sessions
36556 45655 R8 est 130.100.26.8 1701 1
```

debug Commands on the LNS

The LNS R8 receives SCCRQ from LAC R5.

R8#

```
*Sep 18 02:13:06.499: L2TP: I SCCRQ from R5 tnl 2027
*Sep 18 02:13:06.507: Tnl 11514 L2TP: Got a challenge in
SCCRQ, R5
*Sep 18 02:13:06.511: Tnl 11514 L2TP: New tunnel created for
remote R5, address 10.48.75.7
*Sep 18 02:13:06.515: Tnl 11514 L2TP: O SCCRP to R5 tnlid
2027
*Sep 18 02:13:06.523: Tnl 11514 L2TP: Tunnel state change
from idle to wait-ctl-reply
*Sep 18 02:13:06.535: Tnl 11514 L2TP: I SCCCN from R5 tnl
2027
*Sep 18 02:13:06.539: Tnl 11514 L2TP: Got a Challenge
Response in SCCCN from R5
*Sep 18 02:13:06.543: Tnl 11514 L2TP: Tunnel Authentication
success
*Sep 18 02:13:06.543: Tnl 11514 L2TP: Tunnel state change
from wait-ctl-reply
to established
*Sep 18 02:13:06.547: Tnl 11514 L2TP: SM State established
*Sep 18 02:13:06.555: Tnl 11514 L2TP: I ICRQ from R5 tnl
2027
*Sep 18 02:13:06.559: Tnl/Cl 11514/6 L2TP: Session FS
enabled
*Sep 18 02:13:06.563: Tnl/Cl 11514/6 L2TP: Session state
change from idle to wait-connect
*Sep 18 02:13:06.567: Tnl/Cl 11514/6 L2TP: New session
created
*Sep 18 02:13:06.567: Tnl/Cl 11514/6 L2TP: O ICRP to R5
2027/18
*Sep 18 02:13:06.583: Tnl/Cl 11514/6 L2TP: I ICCN from R5
tnl 2027, cl 18
*Sep 18 02:13:06.591: Tnl/Cl 11514/6 L2TP: Session state
change from wait-connect to
established
*Sep 18 02:13:06.591: Vt1 VTEMPLATE: Unable to create and
clone vaccess
*Sep 18 02:13:06.595: Vi1 VTEMPLATE: Reuse Vi1, recycle
queue size 1
*Sep 18 02:13:06.595: Vi1 VTEMPLATE: Hardware address
0000.0c4a.4314
*Sep 18 02:13:06.599: Vi1 VPDN: Virtual interface created
for ccie4460@cisco.com
*Sep 18 02:13:06.603: Vi1 PPP: Phase is DOWN, Setup [0 sess,
0 load]
*Sep 18 02:13:06.603: Vi1 VPDN: Clone from Vtemplate 1
filterPPP=0 blocking
*Sep 18 02:13:06.607: Vi1 VTEMPLATE: Has a new cloneblk
vtemplate, now it has vtemplate
*Sep 18 02:13:06.611: Vi1 VTEMPLATE: ***** CLONE
VACCESS1
```

```
*****
*Sep 18 02:13:06.615: Vi1 VTEMPLATE: Clone from Virtual-
Template1
interface Virtual-Access1
default ip address
no ip address
encap ppp
ip unnumbered Loopback100
end
*Sep 18 02:13:07.095: %LINK-3-UPDOWN: Interface Virtual-
Access1, changed state to up
*Sep 18 02:13:07.099: Vi1 PPP: Using set call direction
*Sep 18 02:13:07.103: Vi1 PPP: Treating connection as a
callin
*Sep 18 02:13:07.103: Vi1 PPP: Phase is ESTABLISHING,
Passive Open [0 sess, 0 load]
*Sep 18 02:13:07.107: Vi1 LCP: State is Listen
*Sep 18 02:13:07.111: Vi1 VPDN: Bind interface direction=2
*Sep 18 02:13:07.111: Vi1 LCP: I FORCED CONFREQ len 11
*Sep 18 02:13:07.115: Vi1 LCP: AuthProto CHAP (0x0305C22305)
*Sep 18 02:13:07.119: Vi1 LCP: MagicNumber 0x1A9DC8A5
(0x05061A9DC8A5)
*Sep 18 02:13:07.119: Vi1 VPDN: PPP LCP accepted rcv CONFACK
*Sep 18 02:13:07.123: Vi1 LCP: I FORCED CONFACK len 6
*Sep 18 02:13:07.127: Vi1 LCP: MagicNumber 0x5B90B785
(0x05065B90B785)
*Sep 18 02:13:07.131: Vi1 VPDN: PPP LCP accepted sent
CONFACK
*Sep 18 02:13:07.131: Vi1 PPP: Phase is AUTHENTICATING, by
this end [0 sess, 0 load]
*Sep 18 02:13:07.135: Vi1 CHAP: O CHALLENGE id 2 len 24 from
"R8"
*Sep 18 02:13:07.143: Vi1 CHAP: I RESPONSE id 1 len 39 from
"ccie4460@cisco.com"
*Sep 18 02:13:07.151: Vi1 CHAP: O SUCCESS id 1 len 4
*Sep 18 02:13:07.155: Vi1 PPP: Phase is UP [0 sess, 0 load]
*Sep 18 02:13:07.159: Vi1 IPCP: O CONFREQ [Closed] id 1 len
10
*Sep 18 02:13:07.163: Vi1 IPCP: Address
192.168.100.1(0x03060C0C0C01)
*Sep 18 02:13:07.215: Vi1 IPCP: I CONFREQ [REQsent] id 34
len 10
*Sep 18 02:13:07.219: Vi1 IPCP: Address 0.0.0.0
(0x030600000000)
*Sep 18 02:13:07.223: Vi1 IPCP: Pool returned 192.168.100.1
*Sep 18 02:13:07.227: Vi1 IPCP: O CONFNAK [REQsent] id 34
len 10
*Sep 18 02:13:07.231: Vi1 IPCP: Address
192.168.100.1(0x03060C0C0C02)
*Sep 18 02:13:07.235: Vi1 IPCP: I CONFACK [REQsent] id 1 len
10
*Sep 18 02:13:07.239: Vi1 IPCP: Address
192.168.100.1(0x03060C0C0C01)
*Sep 18 02:13:07.271: Vi1 IPCP: I CONFREQ [ACKrcvd] id 35
len 10
*Sep 18 02:13:07.275: Vi1 IPCP: Address
192.168.100.1(0x03060C0C0C02)
```

```
*Sep 18 02:13:07.279: Vi1 IPCP: O CONFACK [ACKrcvd] id 35
len 10
*Sep 18 02:13:07.283: Vi1 IPCP: Address
192.168.100.1(0x03060C0C0C02)
*Sep 18 02:13:07.287: Vi1 IPCP: State is Open
*Sep 18 02:13:07.295: Vi1 IPCP: Install route to
192.168.100.1
*Sep 18 02:13:08.159: %LINEPROTO-5-UPDOWN: Line protocol on
Interface
Virtual-Access1, changed state to up
```

```
R8#show vpdn tunnel
L2TP Tunnel Information Total tunnels 1 sessions 1
LocID RemID Remote Name State Remote Address Port Sessions
45655 36556 R5 est 140.100.56.5 1701 1
```

```
R8#show caller ip
Line User IP Address Local Number Remote Number <->
Vi1 ccie4460@cisco.com \
192.168.100.1 214 5551212 in
```