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Application Guide Hongdian-L2TP Server-VPN



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Revision History

Updates between document versions are cumulative. Therefore, the latest document version contains all updates made to previous versions.

Doc Version	Product	Release Data	Details
V0.2	Hongdian Router	2017.12.06	Beta Version

1 Overview

Hongdian routers support L2TP VPN function. This document shows how to build up a L2TP VPN between H8951 and H8922S, wherein we take **H8922S** to be the **L2TP client**, and the **H8951** to be the **L2TP Server**. If you are using your own L2TP server instead of the H8951, the L2TP server configuration may be different with this docment.

Tips:

H8951 need to upgrade the custom firmware, which is support the L2TP Server function.

× 3G/4G Ro	uter	× +										
i 🔏 1	.92.168.8.1/I2tpser	v.cgi					•••	☆	Q	14.31.19.25	\rightarrow	
	I'O DATA	`									Build time: Time: Tue Nov 7	160912-113429 / 19:59:25 2017
	Network Appl	ications VPN	Forward	Security	System	Stat	tus					
	VPDN L2tpServe	er Tunnel 1	PSec Open\	PN								
	L2tp Server		Enable	Disable								
	Basic Settings											
	Local Address		192.16	8.5.1	* eg 19	2.168.1	1.1					
	IP Pool		custon	•								
	Start		192.16	8.5.2	* eg 19	2.168.1	1.2					
	End		192.16	8.5.12	* eg 19	2.168.1	1.12					
	DNS		192.16	8.5.1	eg 192	168.1.1	1					
	Username		l2tp123	34	Max ler	igth is 6	4					
	Password		••••		Max ler	igth is 6	4					
	Advanced Setti	ngs	Display									
			Save	Refresh								
						_			_			

③ 192.	168.8.1/stat	tus_main.cgi					•••	☆	۹ 14	4.31
	1·0 DA	ата								
_	Network	Applications	VPN	Forward	Security	System	Status			
	Basic System	n Information	LAN W	/AN Mode	m Routing	Table				
	Router	Model								
	Router	SN								
	Hardwa	are Version								
	Softwa	re Version		V1.0.2	_160912					
	Temper	ature		0.00 °	с					

2 L2TP VPN and Routing

This section shows you the steps about build up the L2TP VPN connection and setup subnet routing.



Please see the application topology as below, we can ping PC2 from PC1 (or ping on the opposite).

PCI-	L2TP (H8951) Server	227P CH89225)	PC 2
192-168-2-231	192-168-8-1	192-168-38-1	192 .168 .38 .211
	Litp: 192-168.5.1	12tp = 192-168-5.3	
Pinging 192.168.38.	211 from 192.168.8.251 with	32 bytes of data:	
Reply from 192.168.	38.211: bytes=32 time=167ms	TTL=126	
Reply from 192.168.	38.211: bvtes=32 time=156ms	TTL=126	

Notice: Your L2TP Server may not be the same as this document's case, so please prepare your L2TP Server by yourself.

1. Open th	he L2TP S	Server func	tion of	the H8951	router, se	e the l2t	o server s	shows	
3G/4G Rout	er	×	+						
(i) 🔏 19	2.168.8.1/	2tpserv.cgi					•••	☆	Q 14
I	·0 D4	ата							
	Network	Applications	; VPN	Forward	Security	System	Status		
	VPDN L	2tpServer Tu	unnel II	PSec Open	VPN				
	L2tp Se	rver		Enable	Disable				

2. Prepare a CT SIM card, which supports public IP in EVDO network, and prepare the MC2716 3G module. Install into the H8951.

Application Guide - Hongdian-L	.2TP Server-VPN			
3G/4G Router	X 译 百度翻译	× +		
③ 192.168.8.1/status embed	lded.cai		鬷 … ☆	Q 1
PULIAIA				-
Notwork Applicatio		Focurity System	Status	
Resis Custor Toforestion		Deutes Table		
modem	LAN WAN MODE	N Routing Table		
Modem Select	0			
Up Time	5622 s	econds		
Modem Status	connec	ted		
Network Type	evdo			
Signal	. Iffe	30)		
IP Address	113.11	5.246.58		
IMEI	80E15E	87		
Global IP Address	113.11	5.246.58		
DNS	202.96	. 128.86		
SIM Select	sim 1			
SIM Status	ready			
ICCID	898603	17147551288310		

3. Input custom I2tp server settings

D 🔏 192.168.8.1/l2tpserv.c	gi		₩ … ੯	٩ 14.3
Ι'Ο DATA				
Network Applica	tions VPN	Forward Security	System Status	
VPDN L2tpServer	Tunnel IPSe	c OpenVPN		
L2tp Server		Enable Disable		
Basic Settings				
Local Address		192.168.5.1	* eg 192.168.1.1	
IP Pool		custom 👻		
Start		192.168.5.2	* eg 192.168.1.2	
End		192.168.5.12	* eg 192.168.1.12	
DNS		192.168.5.1	eg 192.168.1.1	
Username		l2tp1234	Max length is 64	
Password		••••	Max length is 64	
Advanced Settings		Display		
		Save Refresh		
		Kellesh		

4. Power on H8922S, make sure it can access the Internet, you should insert the SIM card and etc. Enable I2tp

connection

 192. 	168.38.1/	/vpn.cgi						••	·· ☆	Q 14.3
	••	完 Hong	dian co	nnecting	Machine	Contro	ol Panel			
	Network	Арр	lications	VPN	Forward	Security	System	Status		
	VPDN	Tunnel	IPSec	OpenVPN	4					
	Tunr	nel secrets	1				Max len	igth is 64 <mark>S</mark>	ave	
	Inte Na	rface ame 1	Protocol	Server	IP or Domain 115.246.58	Usernam	e Mod	Opera Del Vie	ation w En	Dis

5. View the log check what happen in l2tp building 113.114.242.153

•	。 た 电 [®] Hongdian	Connecting	Machine	Contro	ol Panel		Time
Netwo	k Applications	5 VPN	Forward	Security	System	Status	
Local Lo	g Remote Log	Clock	Account	Network Test	Files		
							Help
Lo	al Log Message	-	Vi	iew Clear Expo	rt		Note: Select the typ view. Then cl content of log log display ta
Log Disp							

6. Click "view" to check it connected as below.

Networl	c Appl	ications	VPN Forward		Security	System	Status		
VPDN	Tunnel	IPSec	OpenVP	N					
Tetr	efaca Name			1					
Inte	riace Name	=		1					
Sta	tus			connect	ed				
Pro	tocol			l2tp					
Loc	al IP Addres	s		192.168.5.3					
Ren	note IP			192.168	.5.1				
				Refresh	Return				



7. Change the H8922S default LAN IP:192.168.8.1 to other's, such as 192.168.38.1.

	(i) 192	168.38	.1/lan_set	tup.cgi					,	••	· ☆	Q 14	.8
		•	元 Hor	gdian ®	Connect	ing Mach	ine (Contro	ol Pane	el			
		Netwo	WAN	plicatior WLAN	Nodem	l Forward	ard Se	curity Netwo	System ork Type	Status Link Backup	DH	ICP Server	
		н	ost Name			r	outer	1/24	* Max	<pre>clength is 32 102.168.8.1/</pre>	24		
By th	ne way, 92.168.38	you ca 3.1/wla	an also	use W	/IFi con	nect to	H8922	S and	connect	t H8951	with	PC's Eth	ernet
	•		宏电	®			_ (ontr	ol Par				
	Netw	ork	Applica	n Co tions	VPN	Forwar	€ C ′d Se	curity	Syster	m Stat	us		
	LAN	WAN	I WLA	NN N	1odem	Paramet	er Select	Netw	ork Type	Link Back	aup	DHCP Serv	,,
						_							
		WLAN St	atus			En	able Disa	ble					

8. Check the ping from the l2tp server to client.

Server (VPN IP:192.168.5.1)
root@router:~# ping 192.168.5.3
PING 192.168.5.3 (192.168.5.3): 56 data bytes
64 bytes from 192.168.5.3: seq=0 ttl=64 time=161.051 ms

You can also login CLI of both two routers for more convenient in ping: L2TP Server : telnet 192.168.8.123 L2TP Client : telent 192.168.38.1 23

9. The routing's network shall be the subnet of the opposite end. That is:
L2TP server: Routing network is the subnet of the l2tp client.
L2TP client:Routing network is the subnet of the l2tp server.
Server:

i) 192.	.168.8.1	/static_r	oute.cgi					•••	🗘 🔍 14.3		
I'O DATA											
	Netwo	ork Ap	plication	5 VPN	Forward	Security	System	Status			
	NAT	Routing	RIP	OSPF	QoS						
	Route Type			Netw	ork	Gateway		Priority	Operation		
		Route		0.0.0	.0/0	modem			Delete		
	Route			192,168.3	38.0/24	l2tpserv0			Delete		
	Add Refresh										

Client:

.168.38.1	1/static_ro	oute.cgi						00 000	•••	☆	Q 14.3
•		ete [®] dian c	:onnectin	g Machin	i€	Contro	ol Pane	1			
Networ	rk Appl	lications	VPN	Forwar	rd	Security	System	Sta	tus		
NAT	Routing	RIP	OSPF	QoS							
	Route Type		Netw	ork		Gateway		Priori	ty	C	peration
	Static Route		0.0.0	.0/0		modem					Delete
	Static Route		192.168	.8.0/24		vpdn 1					Delete
				Ad	d	Refresh					
						Reincon					
	168.38.3	168.38.1/static_rc	168.38.1/static_route.cgi Retwork Routing RIP Route Type Static Route Static Route	168.38.1/static_route.cgi Image: Static_route.cgi Image: Static_route.cgi Image: Static Route Type Route Type Network Static Route 0.0.0 Static Route 192.168	168.38.1/static_route.cgi	168.38.1/static_route.cgi Image: Connecting Machine Image	168.38.1/static_route.cgi Image: Second Se	Ide8.38.1/static_route.cgi Image: Security of the securety of the security of the security of the	168.38.1/static_route.cgi Image: Consecting Machine Control Panel Network Applications VPN Forward Security System Static NAT Route Type Network Gateway Priori Static Route 0.0.0.0/0 modem Static Route 192.168.8.0/24 vpdn1	168.38.1/static_route.cgi Image: Consecting Machine Control Panel Network Applications VPN Forward Security System Status NAT Routing RIP OSPF QoS Ose Ventority Static Route 0.0.0.0/0 modem Static Route 192.168.8.0/24 vpdn1 Add Refresh Add Refresh Refresh	168.38.1/static_route.cgi Image: Consecting Machine in Control Panel Network Applications VPN Forward Security System Status NAT Routing RIP OSPF QoS QoS Route Type Network Gateway Priority C Static Route 0.0.0/0 modem Image: Consecting Machine in Control Panel Add Refresh Refresh Add

10. Compare both iptables: Server:

i 192.168	8.8.1/route_table.cgi			•••	☆ Q 1							
	O DATA											
N	etwork Applications	VPN Forward	Security System	Status								
в	asic System Information	LAN WAN Modem	Routing Table									
Rou	Route											
	Network	Subnet Mask	Gateway	Interface	Metric							
	0.0.0.0	0.0.0.0	0.0.0.0	modem	1							
	14.31.191.254	255.255.255.255	0.0.0.0	modem	0							
	192.168.5.3	255.255.255.255	0.0.0.0	l2tpserv1	0							
	192.168.8.0	255.255.255.0	0.0.0.0	br0	0							
	192.168.10.0	255.255.255.0	0.0.0.0	eth0	0							
	192.168.18.0	255.255.255.0	0.0.0.0	br0	0							
	192.168.38.0	255.255.255.0	0.0.0.0	l2tpserv1	0							

Client:

Net	Hongdian work Application	Connecting M	achine orward	Security	ol Panel	Status	
Basi	c System Information	LAN WAN	WLAN	Modem	Routing Tab	le	
Static	Route						
	Network	Subnet N	lask	Gate	way	Interface	Metric
	0.0.0.0	0.0.0.	0	0.0.0.0		modem	1
	10.0.0.0	255.255.2	55.0	0.0.0.0		eth0	0
	192.168.5.1	255.255.25	5.255	0.0.0.0		vpdn1	0
	192.168.8.0	255.255.2	55.0	0.0.0.0		vpdn 1	0
	192.168.28.0	255.255.2	55.0	0.0.	.0.0	br0	0
	192.168.38.0	255.255.2	55.0	0.0.	.0.0	br0	0
Policy	Route						
	Network	Subnet M	lask	Gate	way	Interface	Priority

If you added routing rule fail, such as Server routing added fail, as below.

Application Guide - Honge	lian-L2TP Server-VPN			
192.168.8.1/route_tabl	e.cgi		驟 … ☆ 🔍 14.31	
PODATA				
Network Appli	cations VPN Forward	Security System	Status	
Basic System Informa	tion LAN WAN Modem	Routing Table		
Route				
Network	Subnet Mask	Gateway	Interface Metric	
0.0.0.0	0.0.0.0	0.0.0.0	modem 1	
14.31.191.25	4 255.255.255.255	0.0.0.0	modem 0	
192, 168, 5, 3	255.255.255.255	0.0.0.0		
192, 168, 10,0	255,255,255.0	0.0.0.0		
192, 168, 18,0	255,255,255,0	0.0.0.0	br0 0	
Network	Subhet Mask	Gateway	interface Phoney	
	Re	fresh		
let us delete that ro	uting rule of server, and	d add it again.		
A 1:	- MDN Forward (C	Chabura	
Network Application		Security System	Status	
NAT Routing RIP	OSPF QoS			
Route Type	Network	Gateway	Priority Operation	
Route	0.0.0/0	modem	Delete	
Route	192.168.38.0/24	l2tpserv1	Delete	
L		J		
	Add	Refresh		
w it is added succes	sful as below.			

〕 192.168	.8.1/route_table.c			•••	☆ Q 1			
I'O DATA								
Ne	ons VP	s VPN Forward		Security System		Status		
Ba	isic System Information	LAN	WAN	Modem	Routing T	Table		
Rou	te							
	Network		Subnet N	lask	Gate	Way	Interface	Metric
	0.0.0.0		0.0.0.0		0.0.0.0		modem	1
	14.31.191.254	25	5.255.25	5.255	0.0.0.0		modem	0
	192.168.5.3	25	5.255.25	5.255	0.0.0.0		l2tpserv1	0
	192.168.8.0	25	55.255.2	.55.0	0.0.	0.0	br0	0
	192.168.10.0	25	55.255.2	55.0	0.0.0.0		eth0	0
	192.168.18.0	2	55.255.2	55.0	0.0.0.0		br0	0
	192.168.38.0	2	55.255.2	.55.0	0.0.	0.0	l2tpserv1	0

11. Ping network

PCI-	L2TP CH8921> Server	227P C H89225, Client) PC 2
192-168-2-251	192-168-8-1	192-168-38-1	192 .168 . 38 .211
	Latp: 192.168.5.1	12tp = 192-168-5-3	

Server

root@router:~# ping 192.168.38.1
PING 192.168.38.1 (192.168.38.1): 56 data bytes
64 bytes from 192.168.38.1: seq=0 ttl=64 time=181.596 ms
64 bytes from 192.168.38.1: seq=1 ttl=64 time=190.889 ms

root@router:~# ping 192.168.38.211

```
PING 192.168.38.211 (192.168.38.211): 56 data bytes
64 bytes from 192.168.38.211: seq=0 ttl=127 time=208.516 ms
64 bytes from 192.168.38.211: seq=1 ttl=127 time=208.915 ms
```

root@router:~# ping 192.168.8.251

Client

```
root@router:~# ping 192.168.8.1
PING 192.168.8.1 (192.168.8.1): 56 data bytes
64 bytes from 192.168.8.1: seq=0 ttl=64 time=224.992 ms
```

root@router:~# ping 192.168.8.251
PING 192.168.8.251 (192.168.8.251): 56 data bytes
64 bytes from 192.168.8.251: seq=0 ttl=127 time=210.067 ms

root@router:~# ping 192.168.38.211

Be careful:

Make sure the PC is configured the correct gateway, or it has enabled auto obtaining the IP from DHCP, as below.



PC1

C:\Users\Administrator>ping -S 192.168.8.251 192.168.38.211 -t

Pinging 192.168.38.211 from 192.168.8.251 with 32 bytes of data: Reply from 192.168.38.211: bytes=32 time=167ms TTL=126 Reply from 192.168.38.211: bytes=32 time=156ms TTL=126

PC2

C:\Users\Administrator>ping -S 192.168.8.251 192.168.38.211 -t

Pinging 192.168.38.211 from 192.168.8.251 with 32 bytes of data: Reply from 192.168.38.211: bytes=32 time=167ms TTL=126 Reply from 192.168.38.211: bytes=32 time=156ms TTL=126

That is, PC1(192.168.8.251) and PC2(192.168.8.251) are connected.

3 L2TP VPN with multiple clients

If there are multiple clients in the VPN connection, as below:



Router2~4 are the VPN clients, and make sure their LAN IP are different, such as 192.168.1.1/24, 192.168.2.1/24 and 192.168.3.1/24.

Also the slave machine PC2~PC4 also need to be in the related subnet, such as 192.168.1.2, 192.168.2.2 and 192.168.3.2

After building up the VPN, following are the two routing cases:

Routing case 1

If you want to access PC2~PC4 from the PC1 (that is PC1-PC2,PC1-PC3,PC1-PC4); You can add the routing as below:

After router2~router4 building up the VPN with the L2TP server, the client router(1~4) should add the routing rule:

network:192.168.8.0/24 gateway:l2tp interface

Netwo	ork Appl	lications	5 VPN	Forw	ard	Security	System	Status	
NAT	Routing	RIP	OSPF	QoS					
	Daula Tran		Natio	unde		Calaman		Deineihe	Orautian
	Route Type		Net	VORK		Gateway		Phonty	Operation
	Static Route		0.0.0).0/0		modem			Delete
	Static Route		192.168	.8.0/24		vpdn 1			Delete
					Add	Refresh			
				_					

And the L2TP server should add 3 routing rules:

network:192.168.1.0/24 gateway:12tp interface network:192.168.2.0/24 gateway:12tp interface

network:192.168.3.0/24 gateway:12tp interface

Routing case 2

If you want to access PC3[~]PC4 from the PC2(That is PC2-PC3, PC2-PC4); You can add the routing as below: After router2[~]router4 building up the VPN with the L2TP server, the Router 3 and Router 4 should add the routing rule:

network:192.168.1.0/24 gateway:l2tp interface

And the Router 2 should add the routing rules:

network:192.168.2.0/24 gateway:l2tp interface
network:192.168.3.0/24 gateway:l2tp interface





Contact us

Q F14 - F16, Tower A, Building 14, No.12, Ganli 6th Road, Longgang District, Shenzhen 518112, China.

+86-755-88864288-5

+86-755-83404677

f hongdianchina

www.hongdian.com

➡ sales@hongdian.com

➔ Hongdian_China