



## L2TP Pseudowire



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# Used symbols



*Danger* – Information regarding user safety or potential damage to the router.



*Attention* – Problems that can arise in specific situations.



*Information* – Useful tips or information of special interest.



*Example* – Example of function, command or script.

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# 1. Changelog



This Router App has been tested on a router with firmware version 6.3.10. After updating the router's firmware to a higher version, make sure that a newer version of the Router App has not also been released, as it is necessary to update it as well for compatibility reasons.

## 1.1 L2TP Pseudowire Changelog

### **v1.0.0 (2021-12-03)**

- First release

### **v1.0.0 (2016-01-14)**

- First release

### **v1.0.1 (2016-04-01)**

- Added IP encapsulation

### **v1.0.2 (2016-04-27)**

- Added l2spec\_type and cookie values

### **v1.0.3 (2017-02-10)**

- Used l2tp modules built-in kernel

### **v1.0.4 (2017-07-27)**

- Fixed interface start and stop

### **v1.0.5 (2018-09-27)**

- Added expected ranges of values to JavaScript error messages

### **v1.1.0 (2020-10-01)**

- Updated CSS and HTML code to match firmware 6.2.0+

### **v1.1.1 (2021-08-23)**

- Removed bridge settings on physical interfaces - it's handled by FW's init script

## 2. Basic Information

### 2.1 L2TP Pseudowire

In networking, a pseudowire (PW) refers to a mechanism that allows the encapsulation and forwarding of one type of network traffic over another type of network. L2TP pseudowire specifically refers to the use of L2TP (Layer 2 Tunneling Protocol) to establish a virtual connection between two endpoints over an IP or MPLS (Multiprotocol Label Switching) network, emulating the behavior of a point-to-point or multipoint Layer 2 circuit.

L2TP pseudowire is often used in service provider networks to provide Layer 2 connectivity between geographically dispersed customer sites. It enables the transport of Ethernet, Frame Relay, or ATM (Asynchronous Transfer Mode) frames over an IP or MPLS network. The use of L2TP pseudowires allows service providers to offer Layer 2 VPN services to their customers without the need for dedicated physical circuits between customer sites.

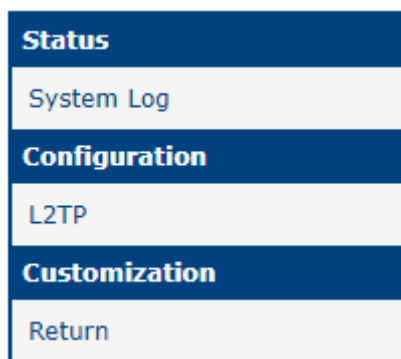
In summary, L2TP pseudowire is a technique that utilizes L2TP to create virtual Layer 2 connections over IP or MPLS networks, providing a flexible and cost-effective way to extend Layer 2 networks across different locations.

# 3. Router App Description

## 3.1 Web Interface

After Router App installation, the module's GUI can be invoked by clicking the router app name on the Router Apps page of router's web interface.

Left part of this GUI contains menu with Status menu section, Configuration menu section and Customization menu section. Customization menu section contains only the Return item, which switches back from the module's web page to the router's web configuration pages. The main menu of router app GUI is shown on Figure below.



<b>Status</b>
System Log
<b>Configuration</b>
L2TP
<b>Customization</b>
Return

Figure 1: Menu

## 3.2 L2TP

Configuration menu section contains L2TP item where all the setting of this router app takes place.

L2TP Pseudowire Configuration	
<input checked="" type="checkbox"/> Enable L2TP Pseudowire	
Local IP Address	<input type="text" value="10.64.0.95"/>
Remote IP Address	<input type="text" value="10.64.0.99"/>
Encapsulation	<input type="text" value="ip"/> ▼
Tunnel ID	<input type="text" value="1000"/>
Peer Tunnel ID	<input type="text" value="2000"/>
UDP Source Port	<input type="text"/>
UDP Destination Port	<input type="text"/>
Session ID	<input type="text" value="3000"/>
Peer Session ID	<input type="text" value="4000"/>
Cookie *	<input type="text"/>
Peer Cookie *	<input type="text"/>
L2 Specific Header	<input type="text" value="default"/> ▼
Local Interface IP Address	<input type="text" value="10.0.10.1"/>
Remote Interface IP Address	<input type="text" value="10.0.10.2"/>
Bridged	<input type="text" value="no"/> ▼
<i>* can be blank</i>	
<input type="button" value="Apply"/>	

Figure 2: L2TP Configuration

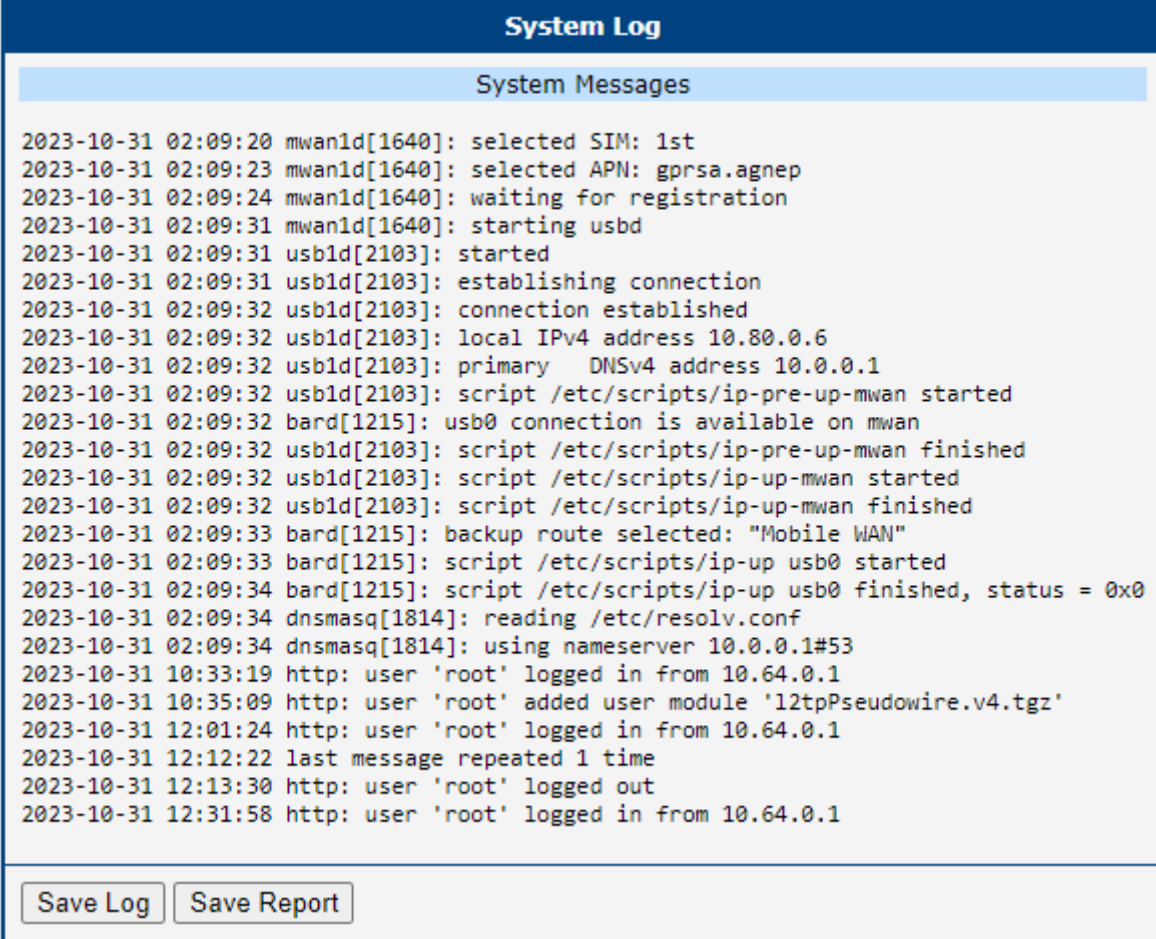


Item	Description
Enable L2TP Pseudowire	Enables L2TP Pseudowire functionality.
Local IP Address	The IP address of the local device is configured with a <b>subnet mask of /30</b> .
Remote IP Address	The IP Address of the remote device device is configured with a <b>subnet mask of /30</b> .
Encapsulation	<ul style="list-style-type: none"> <li>• <b>udp</b> - this option enable UDP Source port and UDP Destination port</li> <li>• <b>ip</b> - this option disable UDP Source port and UDP Destination port</li> </ul>
Tunnel ID	Numeral ID of the local tunnel
Peer Tunnel ID	Numeral ID of peer (remote) tunnel
UDP Source Port	Local UDP port
UDP Destination Port	Remote UDP port
Session ID	Local Session ID
Peer Session ID	Remote Session ID
Cookie	Local cookie value, 8 or 16 characters long, (Only characters 0-9, A-F, not case sensitive)
Peer Cookie	Remote cookie value
L2 Specific Header	<ul style="list-style-type: none"> <li>• default</li> <li>• none</li> </ul>
Local Interface IP Address	IP Address of local interface
Remote Interface IP Address	IP Address of remote interface
Bridged	Select if you want connection bridged or not

Table 1: L2TP Pseudowire Config Items

### 3.3 System log

System log section contains log messages.



The screenshot displays a window titled "System Log" with a sub-header "System Messages". The log contains the following entries:

```
2023-10-31 02:09:20 mwan1d[1640]: selected SIM: 1st
2023-10-31 02:09:23 mwan1d[1640]: selected APN: gprsa.agnep
2023-10-31 02:09:24 mwan1d[1640]: waiting for registration
2023-10-31 02:09:31 mwan1d[1640]: starting usbd
2023-10-31 02:09:31 usb1d[2103]: started
2023-10-31 02:09:31 usb1d[2103]: establishing connection
2023-10-31 02:09:32 usb1d[2103]: connection established
2023-10-31 02:09:32 usb1d[2103]: local IPv4 address 10.80.0.6
2023-10-31 02:09:32 usb1d[2103]: primary DNSv4 address 10.0.0.1
2023-10-31 02:09:32 usb1d[2103]: script /etc/scripts/ip-pre-up-mwan started
2023-10-31 02:09:32 bard[1215]: usb0 connection is available on mwan
2023-10-31 02:09:32 usb1d[2103]: script /etc/scripts/ip-pre-up-mwan finished
2023-10-31 02:09:32 usb1d[2103]: script /etc/scripts/ip-up-mwan started
2023-10-31 02:09:32 usb1d[2103]: script /etc/scripts/ip-up-mwan finished
2023-10-31 02:09:33 bard[1215]: backup route selected: "Mobile WAN"
2023-10-31 02:09:33 bard[1215]: script /etc/scripts/ip-up usb0 started
2023-10-31 02:09:34 bard[1215]: script /etc/scripts/ip-up usb0 finished, status = 0x0
2023-10-31 02:09:34 dnsmasq[1814]: reading /etc/resolv.conf
2023-10-31 02:09:34 dnsmasq[1814]: using nameserver 10.0.0.1#53
2023-10-31 10:33:19 http: user 'root' logged in from 10.64.0.1
2023-10-31 10:35:09 http: user 'root' added user module 'l2tpPseudowire.v4.tgz'
2023-10-31 12:01:24 http: user 'root' logged in from 10.64.0.1
2023-10-31 12:12:22 last message repeated 1 time
2023-10-31 12:13:30 http: user 'root' logged out
2023-10-31 12:31:58 http: user 'root' logged in from 10.64.0.1
```

At the bottom of the log window, there are two buttons: "Save Log" and "Save Report".

Figure 3: System log

## 4. Example

You have 2 devices between which you want to create L2TP pseudowire. Each device have to have this router app installed and Config filled to reflect settings of other device.

<input checked="" type="checkbox"/> Enable L2TP Pseudowire		<input checked="" type="checkbox"/> Enable L2TP Pseudowire	
Local IP Address	10.65.0.93	Local IP Address	10.65.0.94
Remote IP Address	10.65.0.94	Remote IP Address	10.65.0.93
Encapsulation	ip	Encapsulation	ip
Tunnel ID	2000	Tunnel ID	1000
Peer Tunnel ID	1000	Peer Tunnel ID	2000
UDP Source Port		UDP Source Port	
UDP Destination Port		UDP Destination Port	
Session ID	4000	Session ID	3000
Peer Session ID	3000	Peer Session ID	4000
Cookie *		Cookie *	
Peer Cookie *		Peer Cookie *	
L2 Specific Header	default	L2 Specific Header	default
Local Interface IP Address	10.0.10.1	Local Interface IP Address	10.0.10.2
Remote Interface IP Address	10.0.10.2	Remote Interface IP Address	10.0.10.1

Figure 4: Settings on 2 routers

---

After that, the L2TP tunnel is created, which can be confirmed by pinging other device

```
~ # ifconfig l2tpeth0
l2tpeth0  Link encap:Ethernet  HWaddr EA:6B:CF:92:D2:0A
          inet addr:10.0.10.1  Bcast:0.0.0.0  Mask:255.255.255.252
          inet6 addr: fe80::e86b:cfff:fe92:d20a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1488  Metric:1
          RX packets:18  errors:0  dropped:0  overruns:0  frame:0
          TX packets:22  errors:0  dropped:0  overruns:0  carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1684 (1.6 KB)  TX bytes:2060 (2.0 KB)

~ # ping 10.0.10.2 -c 4
PING 10.0.10.2 (10.0.10.2): 56 data bytes
64 bytes from 10.0.10.2: seq=0 ttl=64 time=0.476 ms
64 bytes from 10.0.10.2: seq=1 ttl=64 time=0.425 ms
64 bytes from 10.0.10.2: seq=2 ttl=64 time=0.435 ms
64 bytes from 10.0.10.2: seq=3 ttl=64 time=0.438 ms
```

Figure 5: Ping from local to remote device

```
~ # ifconfig l2tpeth0
l2tpeth0  Link encap:Ethernet  HWaddr 36:1C:BE:FF:F0:4B
          inet addr:10.0.10.2  Bcast:0.0.0.0  Mask:255.255.255.252
          inet6 addr: fe80::341c:beff:feff:f04b/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1488  Metric:1
          RX packets:30  errors:0  dropped:0  overruns:0  frame:0
          TX packets:30  errors:0  dropped:0  overruns:0  carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2972 (2.9 KB)  TX bytes:2732 (2.6 KB)

~ # ping 10.0.10.1 -c 4
PING 10.0.10.1 (10.0.10.1): 56 data bytes
64 bytes from 10.0.10.1: seq=0 ttl=64 time=0.441 ms
64 bytes from 10.0.10.1: seq=1 ttl=64 time=0.420 ms
64 bytes from 10.0.10.1: seq=2 ttl=64 time=0.422 ms
64 bytes from 10.0.10.1: seq=3 ttl=64 time=0.426 ms
```

Figure 6: Ping from remote to local device

## 5. Related Documents

You can obtain product-related documents on *Engineering Portal* at [icr.advantech.com](http://icr.advantech.com) address.

To get your router's *Quick Start Guide*, *User Manual*, *Configuration Manual*, or *Firmware* go to the [Router Models](#) page, find the required model, and switch to the *Manuals* or *Firmware* tab, respectively.

The *Router Apps* installation packages and manuals are available on the [Router Apps](#) page.

For the *Development Documents*, go to the [DevZone](#) page.