User's Guide

bintec R1200 / R1200w(u) / R3000 / R3000w / R3400 / R3800(wu)

L2TP

Version 3.0

Purpose

This document is part of the user's guide to the installation and configuration of bintec gateways running software release 7.4.10 or later. For up-to-the-minute information and instructions concerning the latest software release, you should always read our **Release Notes**, especially when carrying out a software update to a later release level. The latest **Release Notes** can be found at www.funkwerk-ec.com.

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bintec gateways comply with the following guidelines and standards:

R&TTE Directive 1999/5/EG

CE marking for all EU countries and Switzerland

You will find detailed information in the Declarations of Conformity at www.funkwerk-ec.com.

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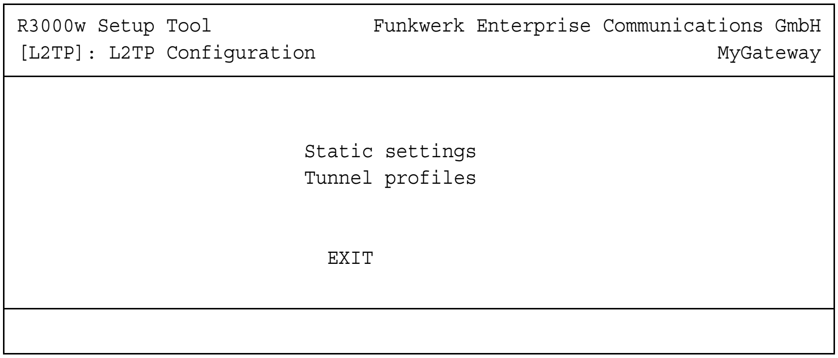
1 L2TP Menu

The fields of the *L2TP* menu are described below.



```
R3000w Setup Tool              Funkwerk Enterprise Communications GmbH
[L2TP]: L2TP Configuration                                   MyGateway


                           Static settings
                           Tunnel profiles


                             EXIT

```

The Layer 2 Tunneling Protocol allows tunneling PPP connections through a UDP connection.

The bintec implementation covers the L2TP Network Server (LNS) functions as well as the functions of a client L2TP Access Concentrator (LAC client). A client LAC is able to locally encapsulate the PPP data in L2TP. Thus, it is possible to use L2TP no matter how hosts in a LAN are connected to the gateway. Presently our gateways support L2TP tunnels over UDP connections only.

bintec gateways support the following two L2TP modes:

- L2TP LNS Mode: only for incoming connections
- L2TP LAC Mode: only for outgoing connections

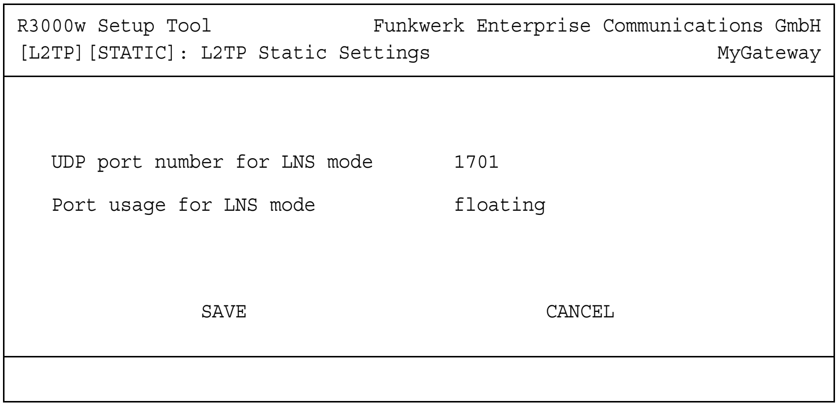
To use L2TP a respective WAN Partner must be configured in the ***WAN PARTNER* ➜ *ADD/EDIT*** menu and the required option - *PPP over L2TP (LNS mode)* or *PPP over L2TP (LAC mode)* - selected in the WAN partner's ***ADVANCED SETTINGS*** menu. It is also necessary to choose an ***L2TP TUNNEL PROFILE***. The list of profiles you can choose from is created in the ***L2TP*** menu which is accessible from the Setup Tool main menu.

The L2TP menu contains the following submenus:

- ***STATIC SETTINGS***
- ***TUNNEL PROFILES***

2 Static settings Submenu

The fields of the *STATIC SETTINGS* menu are described below.



```
R3000w Setup Tool              Funkwerk Enterprise Communications GmbH
[L2TP][STATIC]: L2TP Static Settings                         MyGateway


   UDP port number for LNS mode       1701

   Port usage for LNS mode            floating



                 SAVE                           CANCEL

```

In the ***L2TP* ➜ *STATIC SETTINGS*** menu basic options for the LNS (L2TP network server) are configured.

The submenu ***STATIC SETTINGS*** offers the following configuration options:

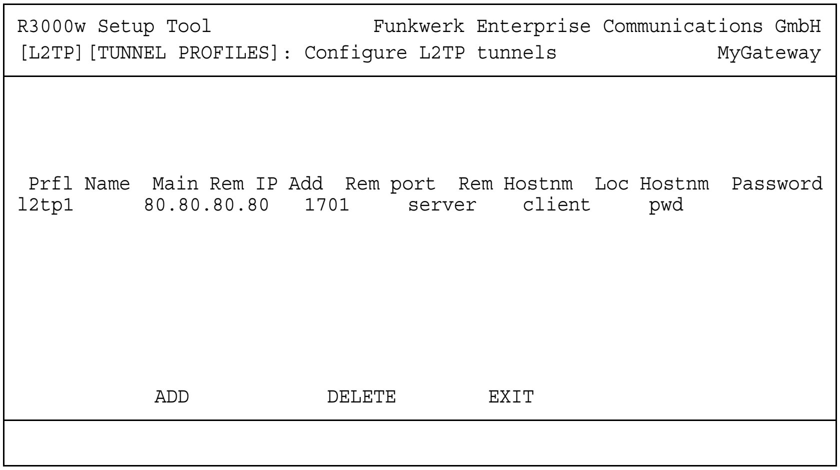
Field	Description
UDP port number for LNS mode	This is the port monitored by the LNS for incoming L2TP tunnel connections. Available values are all integers from *1* to *65535*, the default value is *1701* as detailed in RFC 2661.
Port usage for LNS mode	This parameter determines if the LNS will only use the monitored port (***UDP PORT NUMBER FOR LNS MODE***) as local source port for the L2TP connection (*single*) or if it chooses one of the available free ports (*floating*, default value).

Table 2-1: ***L2TP* ➜ *STATIC SETTINGS***

3 Tunnel Profiles Submenu

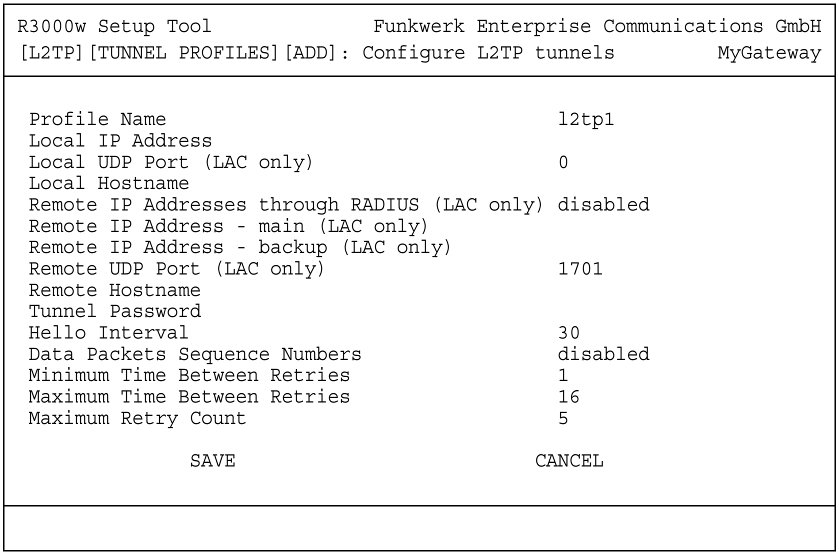
The fields of the *TUNNEL PROFILES* menu are described below.

The ***L2TP*** ➜ ***TUNNEL PROFILES*** menu displays a list of all already configured tunnel profiles for L2TP connections.



```
R3000w Setup Tool             Funkwerk Enterprise Communications GmbH
[L2TP][TUNNEL PROFILES]: Configure L2TP tunnels             MyGateway



 Prfl Name  Main Rem IP Add  Rem port  Rem Hostnm  Loc Hostnm  Password
l2tp1      80.80.80.80   1701      server    client     pwd







            ADD             DELETE        EXIT

```

The L2TP tunnel profiles are created or edited in the ***L2TP*** ➜ ***TUNNEL PROFILES*** ➜ ***ADD/EDIT*** submenu.



```
R3000w Setup Tool               Funkwerk Enterprise Communications GmbH
[L2TP][TUNNEL PROFILES][ADD]: Configure L2TP tunnels         MyGateway

 Profile Name                                  l2tp1
 Local IP Address
 Local UDP Port (LAC only)                     0
 Local Hostname
 Remote IP Addresses through RADIUS (LAC only) disabled
 Remote IP Address - main (LAC only)
 Remote IP Address - backup (LAC only)
 Remote UDP Port (LAC only)                    1701
 Remote Hostname
 Tunnel Password
 Hello Interval                                30
 Data Packets Sequence Numbers                 disabled
 Minimum Time Between Retries                  1
 Maximum Time Between Retries                  16
 Maximum Retry Count                           5

              SAVE                          CANCEL
```

Note the following when configuring server and client:

- On both sides (LAC and LNS) a tunnel profile has to be configured:
  - On the LAC side (initiator) the respective L2TP tunnel profile is referenced in the corresponding WAN partner and us used for setting up the connection.
  - On the LNS side (responder) the L2TP tunnel profile is used for accepting the connection.
- *(LAC only)* fields are only to be configured on the LAC side.

It offers the following configuration options:

Field	**Description**
Profile Name	Here you can enter a description for the current profile. The gateway automatically numbers the profiles "*l2tp..*", but this value can be changed.

Field	Description
Local IP Address	Here you enter the IP address that will be used as source address for all L2TP connections based on this profile. If left blank, the gateway uses the IP address of the interface via which the L2TP tunnel reaches ***REMOTE IP ADDRESS (LAC ONLY)***.
Local UDP Port (LAC only)	Here you can enter the port number that is used as source port for all outgoing L2TP connections based on this profile. Available values are *0* to *65535*; the default value *0* means that ports will be dynamically allocated to connections using this profile.
Local Hostname	Here you enter the host name for LNS resp. LAC: ■ LAC: The ***LOCAL HOSTNAME*** is included in outgoing tunnel establishment messages for identifying this gateway and is compared with the ***REMOTE HOSTNAME*** of one of the L2TP tunnel profiles configured at the LNS. These messages are the SCCRQs (Start Control Connection Request) sent by the LAC and SCCRPs (Start Control Connection Reply) sent by the LNS. The LNS uses this parameter to match the incoming SCCRQ to one of the available L2TP profiles. ■ LNS: Equals the ***REMOTE HOSTNAME*** included in the incoming tunnel establishment message sent by the LAC. The maximum length of the entry is 35 characters.

Field	Description
Remote IP Addresses through RADIUS (LAC only)	Here you define whether to use RADIUS to request ***REMOTE IP ADDRESS - MAIN*** and ***REMOTE IP ADDRESS - BACKUP*** (*enabled*) or not (*disabled*, default value). (You can configure a RADIUS Server in the ***IP ➜ REMOTE AUTHENTICATION (RADIUS/TACACS+) ➜ RADIUS AUTHENTICATION AND ACCOUNTING ➜ ADD*** menu.)
Remote IP Address - main (LAC only)	Only for ***REMOTE IP ADDRESSES THROUGH RADIUS (LAC ONLY)*** = *disabled* Here you must enter the static IP address of the LNS for outgoing connections based on this profile.
Remote IP Address - backup (LAC only)	Only for ***REMOTE IP ADDRESSES THROUGH RADIUS (LAC ONLY)*** = *disabled* Here you can enter the static IP address of a second LNS for backup purposes.
RADIUS Group ID	Only for ***REMOTE IP ADDRESSES THROUGH RADIUS (LAC ONLY)*** = *enabled* Here you specify the RADIUS Server group, ***REMOTE IP ADDRESS - MAIN (LAC ONLY)*** and ***REMOTE IP ADDRESS - BACKUP (LAC ONLY)*** are to be requested. The Group ID of the RADIUS server is entered via SNMP shell into the *radiusServerTable* as GroupID.
Remote UDP Port (LAC only)	Here you enter the destination port number used for outgoing L2TP connections based on this profile. The remote LNS must be listening on this port. Possible values are *0* ... *65535*. Default value is *1701*.

Field	Description
Remote Hostname	Here you enter the host name of the LNS resp. LAC: ■ LAC: Defines the Local Hostname of the LNS (included in the SCCRQs received by the LNS and SCCRPs received by the LAC). The ***Local Hostname*** configured on the LAC has to match the ***Remote Hostname*** configured for the intended profile on the LNS, and vice versa. ■ LNS: Defines the ***Local Hostname*** of the LAC. A blank ***Remote Hostname*** specified on the LNS qualifies the associated profile as a default entry that is used for all incoming calls for which no profile with a matching ***Remote Hostname*** can be found. The maximum length of the entry is 35 characters.
Tunnel Password	Here you enter the password that is used for tunnel authentication. Authentication between LAC and LNS is two-way, i.e. the LNS checks the ***Local Hostname*** and the ***Tunnel Password*** contained in the LAC SCCRQ against the ones specified in the relevant profile. The LAC does the same for the respective fields of the LNS SCCRP. If this field is left blank, authentication data will neither be sent nor considered in tunnel establishment messages.

Field	Description
Hello Interval	Here you enter the interval (in seconds) between sending two L2TP HELLO messages in order to keep the tunnel open. Available values are *0* to *255*, the default value is *30*. A value of *0* means that no L2TP HELLO messages are sent.
Data Packets Sequence Numbers	Here you can choose if the gateway uses sequence numbers for data packets sent through a tunnel based on this profile. Function not used at present. Available choices are *disabled* (default value) and *enabled*.
Minimum Time Between Retries	Here you enter the minimum time (in seconds) the gateway waits before resending an L2TP control packet to which it has received no reply. Wait time will be dynamically increased until it reaches the ***MAXIMUM TIME BETWEEN RETRIES***. Independently of the current wait time, no more retries are sent if ***MAXIMUM RETRY COUNT*** has been reached. Available values are *1* to *255*, the default value is *1*.
Maximum Time Between Retries	Here you enter the maximum time (in seconds) the gateway waits before resending an L2TP control packet to which it has received no reply. Available values are *8* to *255*, the default value is *16*.

Field	Description
Maximum Retry Count	Here you enter the maximum number of times the gateway retransmits an L2TP control packet it has not received an acknowledgement for. If this number is reached without receiving a reply, the tunnel times out. Available values are *1* to *255*, the default value is *5*.

Table 3-1: ***L2TP ➜ TUNNEL PROFILES ➜ ADD/EDIT***

Index: L2TP