



Optical line terminals
LTP-8X, LTP-4X
EasyMode manual
Версия ПО 3.38.0

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Notes and warnings

 Notes contain important information, tips, or recommendations on device operation and setup.

 Warnings are used to inform the user about harmful situations for the device and the user alike, which could cause malfunction or data loss.

1 LTP-X EasyMode description

EasyMode is a function set of LTP optical terminals. EasyMode is dedicated to fast GPON deployment according to realized service model. EasyMode allows providers to configure Triple-Play services promptly.

EasyMode can be used for:

- Acquaintance with GPON technology and Eltex equipment;
- Fast testing of the main capabilities of the equipment;
- Automatic configuring of the equipment on a network.

2 Software and hardware requirements

The EasyMode is supported by the hardware of B and C revisions and by NTU terminals. For EasyMade operation, it is necessary to use the software no below than:

For LTP-8X(4X)	3.26.1
For NTU-1	3.24.0
For NTU-2W	3.25.1
For NTU-2V(C), NTU-RG-1402G-W	3.25.2
For NTU-RG-1421(31)G-Wac	3.28.1

3 Installation and connection

To familiarize yourself with the hardware of the device, the installation and connection procedure, refer to the 'LTP Operation Manual', which you can find at the link https://eltex-co.com/catalog/olt_gpon/.

4 Connection to the terminal

Connection to LTP is possible either with a console cable or with an Ethernet cable to the GE port.

4.1 Console cable connection

For LTP rev.B, the RS-232 cable DB9(F) – DB9(F), which is included in the delivery, is used. The port is located on the left side of the front panel, as shown in Figure 1 – Front panel of the LTP rev.B.

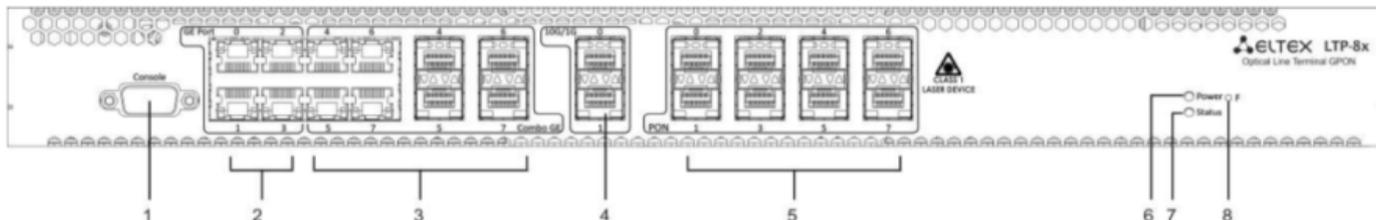


Figure 1 – Front panel of the LTP rev.B

For LTP rev.C, the RS-232 cable RJ-45 – DB9(F), which is included in the delivery, is used. The port is located on the left side of the front panel, as shown in Figure 2 – Front panel of the LTP rev.C.

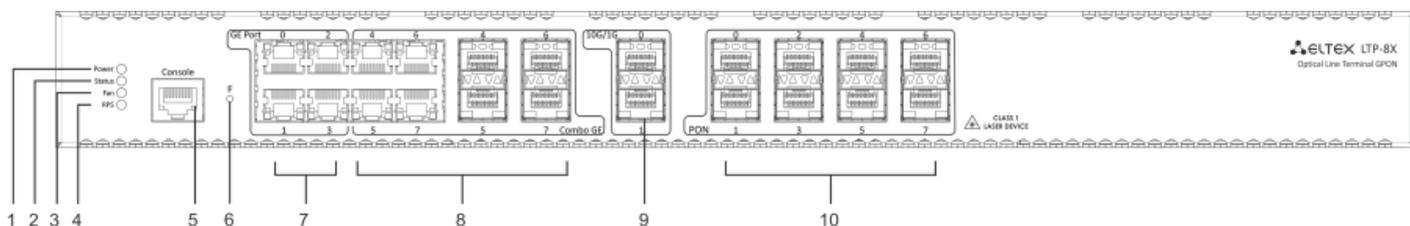


Figure 2 – Front panel of the LTP rev.C

Table 1 – Description of connectors, LEDs and controls located on the front panel of LTP rev.B

#	Front panel element	Description	
1	Console	RS-232 console port for local control of the device	
2	GE Port 0..3	4 RJ-45 connectors of 10/100/1000Base-T Gigabit uplink interfaces for connection to IP networks (for LTP-8X)	
3	Combo GE	0..3	4 chassis for SFP modules of 1000Base-X uplink interface for connection to IP networks (for LTP-4X)
			4 RJ-45 connectors of 10/100/1000Base-T Gigabit uplink interfaces for connection to IP networks (for LTP-4X)
	4..7		4 chassis for SFP modules of 1000Base-X uplink interface for connection to IP networks (for LTP-8X)
			4 RJ-45 connectors of 10/100/1000Base-T Gigabit uplink interfaces for connection to IP networks (for LTP-8X)

#	Front panel element	Description
4	10G/1G 0..1	2 chassis for SFP modules of 10GBase/1000Base-X uplink interface for connection to IP networks
5	PON	4 chassis for SFP modules of xPON 2.5 G (for LTP-4X)
		8 chassis for SFP modules of xPON 2.5 G (for LTP-8X)
6	Power	Device power LED
7	Status	Device operation indicator
8	F	<p>Functional key that reboots the device and resets it to factory default configuration:</p> <ul style="list-style-type: none"> • pressing the key for less than 10 seconds reboots the device; • pressing the key for more than 10 seconds resets the device to factory default configuration. <p>Configuring the response to a button click is done in the CLI of the terminal.</p>

Table 2 lists connectors, LEDs and controls located on the front panel of LTP rev.C.

Table 2 – Description of the connectors, LEDs, and controls located on the front panel of LTP rev.C

#	Front panel element	Description
1	Power	Device power LED
2	Status	Device operation indicator
3	Fan	Fan operation LED.
4	RPS	Redundant power supply LED.

#	Front panel element		Description
5	Console		Console port for local management of the device. Connector pinning: <ul style="list-style-type: none"> · not used · not used · RX · GND · GND · TX · not used · not used · not used
6	F		Functional key that reboots the device and resets it to factory default configuration: <ul style="list-style-type: none"> · pressing the key for less than 10 seconds reboots the device; · pressing the key for more than 10 seconds resets the device to factory default configuration. Configuring the response to a button click is done in the CLI of the terminal.
7	GE Port 0..3		4 RJ-45 connectors of 10/100/1000Base-T Gigabit uplink interfaces for connection to IP networks (for LTP-8X)
8	Combo GE	0..3	4 chassis for SFP modules of 1000Base-X uplink interface for connection to IP networks (for LTP-4X)
			4 RJ-45 connectors of 10/100/1000Base-T Gigabit uplink interfaces for connection to IP networks (for LTP-4X)
		4..7	4 chassis for SFP modules of 1000Base-X uplink interface for connection to IP networks (for LTP-8X)
			4 RJ-45 connectors of 10/100/1000Base-T Gigabit uplink interfaces for connection to IP networks (for LTP-8X)
9	10G/1G 0..1		2 chassis for SFP modules of 10GBase/1000Base-X uplink interface for connection to IP networks

#	Front panel element	Description
10	PON	4 chassis for SFP modules of xPON 2.5 G (for LTP-4X)
		8 chassis for SFP modules of xPON 2.5 G (for LTP-8X)

Connect the cable and configure the following connection parameters:

Baud rate	115200
Data bits	8
Parity	none
Stop bits	1
Flow Control	none

For SecureCRT, the settings will be like in Figure 3.

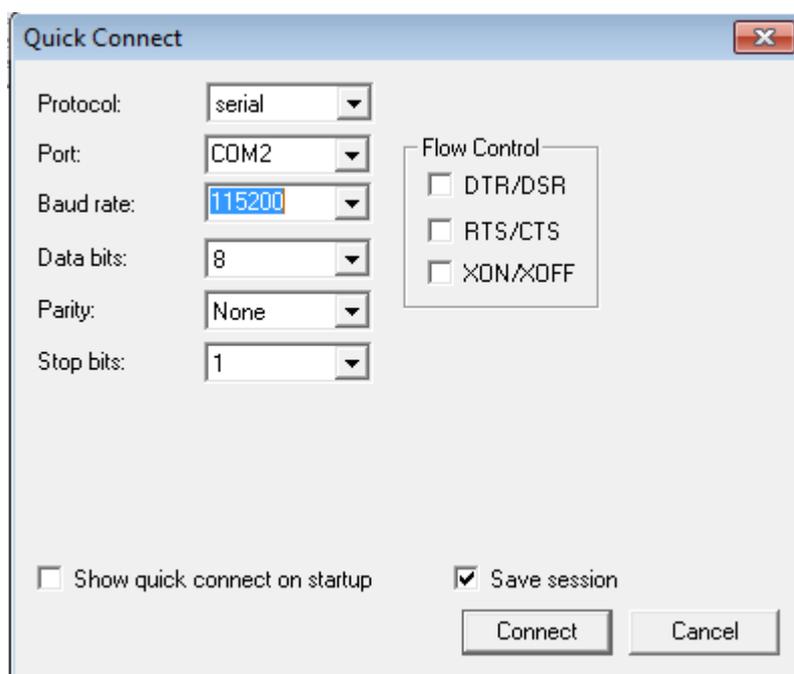


Figure 3 – SecureCRT connection configuration

If the connection is successful, you will see a prompt to enter:

```
*****
*   Optical line terminal LTP-4X rev.B   *
*****
LTP-4X login:
```

Default login and password: **admin/password**.

4.2 Connection via Telnet/SSH

Connect the Ethernet cable to any of the GE/ComboGE ports. By default, the IP address of the LTP management interface – **192.168.1.2/24**. Configure an address **192.168.1.1** on your computer and subnet mask **255.255.255.0** as it shown in Figure 4.

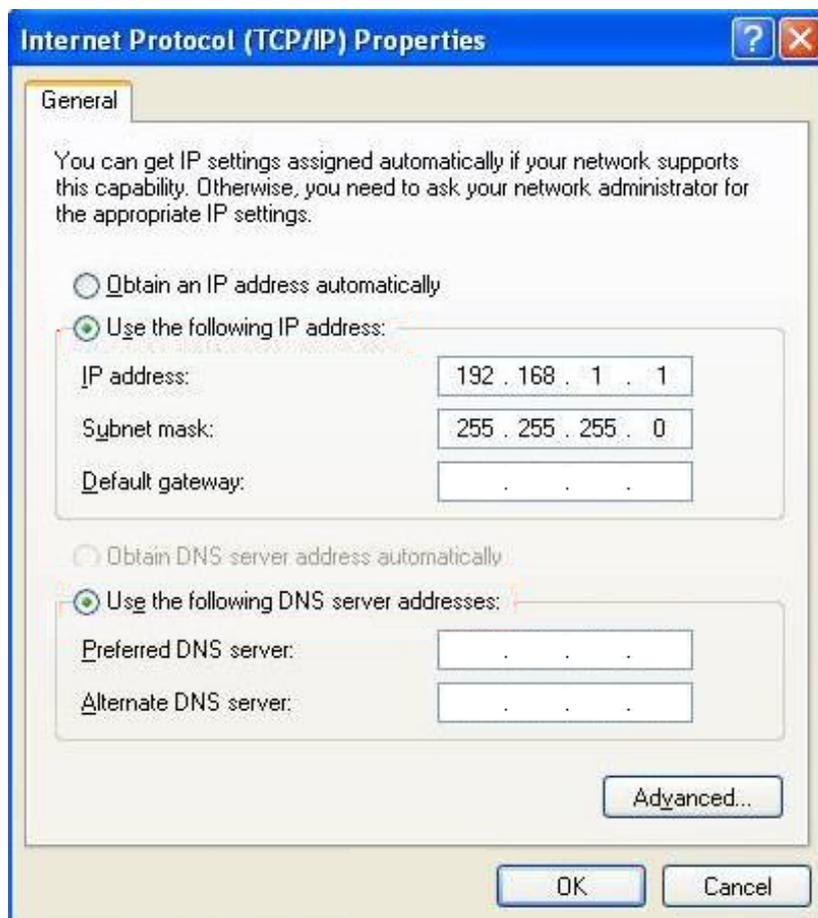


Figure 4 – IP address configuration

Connect via telnet/ssh to 192.168.1.2 and you will see a prompt for input.

```
*****
*   Optical line terminal LTP-4X rev.B   *
*****
LTP-4X login:
```

Default login and password: **admin/password**.

5 Service model in EasyMode

The EasyMode includes a prepared configuration for the network, a diagram of which is shown in Figure 5.

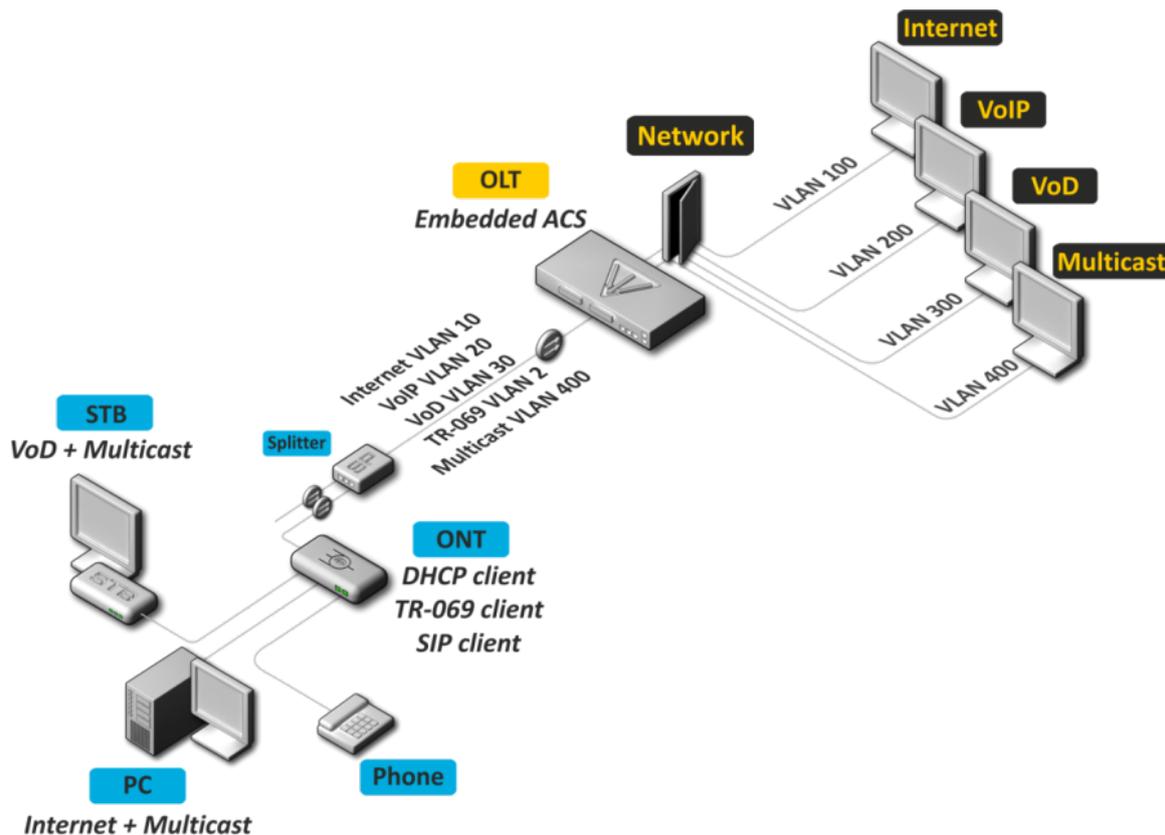


Figure 5 – EasyMode network diagram

Service model of this network:

- Internet service using IPoE technology. It is possible to add option 82 specified by you to DHCP packets.
- VLAN-on-service model. Subscribers of one service are in the same vlan.
- User isolation There is no connectivity between subscribers at the channel level.
- Dedicated multicast vlan. Unicast services: IPTV (Video-On-Demand, VoD) are spaced from multicast traffic.
- Multicast traffic is available for all ports of subscriber terminal.

6 EasyMode enabling and configuration

 Enabling EasyMode will lose the current configuration. Save it if you may need it later.

EasyMode can be used with the values you specify or with default values.

6.1 Default configuration

Parameters to be applied by default:

IP address for LTP management	192.168.1.2
Subnet mask	255.255.255.0
Management VLAN	1
Gateway in management network	none
ACS VLAN (built-in TR-069 server)	2
Internet VLAN	100
VoIP VLAN	200
VoD VLAN	300
Multicast VLAN	400
Option82 Circuit-Id	none
Option82 Remote-Id	none

To enable EasyMode with default values, you need to execute the **easy-mode** command. After that, a warning will be displayed stating that the current configuration of the device will be lost.

 Please make sure that your access settings for the device match those that will be applied, or you have a connection using the console cable.

```
LTP-4X# easy-mode
  Enabling easy-mode will delete current configuration. Are you sure? (y/n)  y
  Configured easy-mode...
  Easy mode enable successfully
LTP-4X#
```

After that, you can proceed to sections 6.3 and 7 of this manual.

6.2 Custom configuration

You can change the settings of the LTP management interface, service VLANs and DHCP options of option 82 using the **Wizard**. In addition, you can quickly add already connected subscriber terminals and after completing the configuration, get a network ready for operation.

To start working with **Wizard**, you need to execute the **easy-mode wizard** command. After that, a warning will be displayed stating that the current configuration of the device will be lost.

```
LTP-4X# easy-mode wizard
    Enabling easy-mode will delete current configuration. Are you sure? (y/n)  y
Customize easy-mode configuration:
< ... >
```

6.2.1 VLAN configuration

Specify the VLANs you want to use for the services. VLAN data will be automatically registered tagged to all Ethernet ports, with the exception of VLANs for the built-in ACS server.

If you are satisfied with all the default values, you can refuse the change by responding **N** to the invitation to change. If you are satisfied with the default value for a single service, you can skip input by simply pressing **<Enter>**.

As an example, change the VLAN as follows:

ACS VLAN	2 (without change)
Internet VLAN	1001
VoIP VLAN	1002
VoD VLAN	1003
Multicast VLAN	3

```
Current VLAN configuration:
ACS VLAN ID: 2
Internet VLAN ID: 100
VoIP VLAN ID: 200
VoD VLAN ID: 300
Multicast VLAN ID: 400
Do you want to change VLAN configuration? (y/N):  y
    Enter ACS service VLAN ID (leave blank for default) [2]:
    Enter Internet service VLAN ID (leave blank for default) [100]: 1001
    Enter VoIP service VLAN ID (leave blank for default) [200]: 1002
    Enter VoD service VLAN ID (leave blank for default) [300]: 1003
    Enter Multicast VLAN ID (leave blank for default) [400]: 3
```

6.2.2 Configuration of the LTP management interface

In the next section, you can change the access settings for LTP. If you are satisfied with the default value, reply **N** to the change prompt. If you are satisfied with the default value for a single parameter, you can skip input by

simply pressing **<Enter>**.

As an example, change the management settings as follows:

Management IP	10.189.55.19
Management mask	255.255.255.0
Management gateway	10.189.55.254
Management vid	189

Current management settings:

IP: 192.168.1.2

Mask: 255.255.255.0

Gateway: 0.0.0.0

Management VLAN ID: 1

Do you want to change management configuration?

Attention, it may cause disconnection from remote sessions! (y/N): y

Enter management IP (leave blank for default) [192.168.1.2]: 10.189.55.19

Enter management mask (leave blank for default) [255.255.255.0]:

Enter management gateway (leave blank for default) [0.0.0.0]: 10.189.55.254

Enter management VLAN ID (leave blank for default) [1]: 189

⚠ It is not allowed to use one VLAN for device management and for the built-in ACS server. When you try to configure this, a warning will be displayed:

```
Error: ACS VLAN intersects with management VLAN. Try again.
```

In this case, you need to select a different VLAN number.

⚠ It is not allowed to use one subnet IP for the device management and for the built-in ACS server.

The built-in ACS uses the address **192.168.200.1/21**. When you try to configure this, a warning will be displayed:

```
Error: ACS network intersects with management network. Try again.
```

In this case, you need to select a different IP subnet.

6.2.3 DHCP Relay Agent (option 82) configuration

The last configuration step – DHCP option 82 configuration for substitution into packets from subscribers. By default, option substitution is disabled. If option 82 is not used on your network, you can skip configuring it by answering **N** to the prompt to change.

When enabling option expansion, the following values of the **Circuit-Id** and **Remote-Id** suboptions are used:

Circuit-Id	%HOSTNAME%%PONSERIAL%%VLAN0%
Remote-Id	-

When configuring the values of options, tokens are used, in place of which the corresponding values will be substituted. The rest of the text will be left unchanged. Tokens used:

%HOSTNAME%	LTP terminal name
%MNGIP%	Mangement IP address
%GPON-PORT%	ONT GPON port number
%ONTID%	ONT number on GPON port
%PONSERIAL%	ONT serial number
%GEMID%	GEM port number
%VLAN0%	External (or single) Vlan
%VLAN1%	Internal (or single) Vlan
%MAC%	MAC address
%OLTMAC%	OLT's MAC address
%OPT60%	Option 60 from the original packet
%OPT82_CID%	Circuit-Id of the option 82 from the original packet
%OPT82_RID%	Remote-Id of the option 82 from the original packet
%DESCR%	ONT description from configuration

If the default values of the **Circuit-Id** and **Remote-Id** suboptions suit you, refuse to make changes by replying to **N** at the invitation to change.

As an example, suppose that the LTP IP address is *10.189.55.19*, ONT is connected to 1 GPON port with ID 15. Set the settings in such a way as to obtain the following values:

Circuit-Id	1-15
Remote-Id	10.189.55.19

```
Do you want to use option 82? (y/N):  y
Current configuration dhcp-ra overwrite-option 82:
Circuit id: %HOSTNAME%-%PONSERIAL%-%VLAN0%
Remote id: -
Do you want to setup Option 82 format?
(answer No for default option) (y/N):  y
Enter Circuit ID (leave blank for empty option): %GPON-PORT%-%ONTID%
Enter Remote ID (leave blank for empty option): %MNGIP%
```

6.3 Saving configuration

After applying the new configuration, you will see a message:

```
Configured easy-mode...  
Easy mode enable successfully
```

Save the configuration changes by executing the **save** command. After that, the configuration will be saved in non-volatile memory.

```
LTP-4X# save  
.....  
Configuration successfully saved to file
```

7 Adding new ONTs

7.1 Automatic ONT activation configuration

In the simplified setup mode, the ONT auto-activation mode is enabled, and the required ONT configuration is applied automatically from the corresponding auto-activation template. These templates were created when **EasyMode** was enabled. For NTU-1, which are controlled using OMCI protocol only, the **easy-ONT** template is used. For all other ONTs, the **easy-RG** template is used.

```
LTP-8X# show running-config gpon olt
configure terminal
gpon olt auto-activation ont enable
gpon olt auto-activation ont default template "easy-RG"
gpon olt auto-activation ont type NTU-1 template "easy-ONT"
exit
commit
LTP-8X#
```

7.2 Manual ONT activation

After enabling and configuring EasyMode to add new connected ONTs to the configuration, you need to:

1. Disable ONT auto-activation

```
LTP-8X(config)# no gpon olt auto-activation ont enable
```

2. Find out the ONT serial numbers, their types, and the GPON port numbers to which they are connected. If during the setup process you want to immediately activate the connected subscriber terminals, you will need a list of their serial numbers and the GPON ports to which they are connected. You can get a list of all inactive ONTs using the **show interface ont 0-7 unactivated** command (for LTP-4X, use **show interface ont 0-3 unactivated**).

```
LTP-4X# show interface ont 0-3 unactivated

GPON-port 0 has no unactivated ONTs
GPON-port 1 has no unactivated ONTs
-----
GPON-port 2 ONT unactivated list
-----

  ##      Serial          ONT ID GPON-port   Status      ...
  1  454C545862000100    n/a    2           UNACTIVATED ...
  2  454C545866000101    n/a    2           UNACTIVATED ...

GPON-port 3 has no unactivated ONTs
```

- Define free ONT IDs for this GPON port. To do this, run the **show interface ont 2 unconfigured** command.

```
LTP-4X# show interface ont 2 unconfigured

GPON-port 2 ONT unconfigured list: 2-127
Total ONT count: 126
LTP-4X#
```

- Switch to the configuration mode. For this use the **configure terminal** command.

```
LTP-4X# configure terminal
LTP-4X(config)#
```

- Select one of the free ONT IDs and switch to the ONT configuration mode. For this, execute the **interface ont 2/2** command.

```
LTP-4X(config)# interface ont 2/2
LTP-4X(config)(if-ont-2/2)#
```

- Specify the serial number of the custom ONT and the template used for it: easy-ONT for NTU-1 and easy-RG for all other. Then exit the ONT configuration mode.

```
LTP-4X(config)(if-ont-2/2)# serial 454C545862000100
LTP-4X(config)(if-ont-2/2)# template easy-ONT
LTP-4X(config)(if-ont-2/2)# exit
LTP-4X(config)#
```

- Repeat steps 4-5 for all remaining ONTs.

```
LTP-4X(config)# interface ont 2/3
LTP-4X(config)(if-ont-2/3)# serial 454C545866000101
LTP-4X(config)(if-ont-2/3)# template easy-RG
LTP-4X(config)(if-ont-2/3)# exit
```

- Exit the configuration mode, apply the changes made with the **commit** command and save them in non-volatile memory with the **save** command.

```
LTP-4X(config)# exit
LTP-4X# commit
Changes successfully committed (2 chunks)
LTP-4X# save
.....
Configuration successfully saved to file
LTP-4X#
```

⚠ After applying the configuration, the subscriber terminals will reboot with the new configuration. The old one will be deleted.

8 Configuration of VoIP on the ONT

Consider configuring RG ONT parameters using the internal ACS using the example of VoIP settings. For more information about working with ACS, refer to the 'Eltex ACS User manual', which can be found at <https://eltex-co.com/catalog/management/>.

Configure for the ONT 454C545866000101 the number 101 with the **secret** password on the sip server **sip.test.pon**. For this, do the following:

1. Execute **acs** command to operate with the built-in ACS server.

```
LTP-4X# acs
LTP-4X(acs)#
```

2. Switch to the ONT configuration mode and select the desired ONT by serial number using the **ont** and **ont 454C545866000101** commands.

```
LTP-4X(acs)#ont
LTP-4X(acs-ont)#ont 454C545866000101
LTP-4X(acs-ont-sn='454C545866000101')#
```

3. Set private parameters for enabling the phone line, SIP server address, numbers and passwords:

```
LTP-4X(acs-ont-sn='454C545866000101')#set private sip_proxy sip.test.pon
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.SIP.UserAgentDomain' = 'sip.test.pon'
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.SIP.RegistrarServer' = 'sip.test.pon'
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.SIP.ProxyServer' = 'sip.test.pon'
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.SIP.OutboundProxy' = 'sip.test.pon'
Ok
LTP-4X(acs-ont-sn='454C545866000101')#set private voice1_enable TRUE
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.Line.1.Enable' = 'TRUE'
Ok
LTP-4X(acs-ont-sn='454C545866000101')#set private voice1_number 101
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.Line.1.SIP.AuthUserName' = '101'
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.Line.1.DirectoryNumber' = '101'
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.Line.1.CallingFeatures.CallerIDName' = '101'
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.Line.1.SIP.URI' = '101'
Ok
LTP-4X(acs-ont-sn='454C545866000101')#set private voice1_password secret
Host property has been updated: 'InternetGatewayDevice.Services.VoiceService.
1.VoiceProfile.1.Line.1.SIP.AuthPassword' = 'secret'
Ok
```

4. Apply the changes with the **commit** command and reconfigure the ONT with the **reconfigure** command.

```
LTP-4X(acs-ont-sn='454C545866000101')#commit
LTP-4X(acs-ont-sn='454C545866000101')#reconfigure
Ok
LTP-4X(acs-ont-sn='454C545866000101')#
```

5. Exit the ACS mode using the **exit** command.

```
LTP-4X(acs-ont-sn='454C545866000101')#exit
LTP-4X(acs-ont)#exit
LTP-4X(acs)#exit
LTP-4X#
```

9 Using a predefined ONT configuration without using EasyMode

If you are not satisfied with the proposed **EasyMode** service model, you can only use the predefined ONT configuration by configuring LTP by yourself, according to your needs.

The predefined configuration includes:

- Internet service

IPoE interface in u-VLAN 10 with DHCP client and IGMP proxy. By the LAN side: ports 1 and 2 for ONT with 4 ports (NTU-RG), or port 1 for ONT with 2 ports (NTU-2V(C), NTU-2W). This interface will be the default route for clients connected to LAN ports. Upstream IGMP reports will also be sent in this VLAN. To send them to the multicast VLAN use the **ip igmp proxy** command on LTP.

- VoIP service

IPoE interface in u-VLAN 20. The built-in SIP client operates from this interface.

- VoD service

Bridge between u-VLAN 30 and LAN ports 3, 4 for ONT with 4 ports (NTU-RG), or port 2 for ONT with 2 ports (NTU-2V (C), NTU-2W).

To activate a predefined configuration, you must add the **easy-mode** command to the ONT settings or to the template used.

```
LTP-4X# configure terminal
LTP-4X(config)# interface ont 2/2
LTP-4X(config)(if-ont-2/2)# easy-mode
LTP-4X(config)(if-ont-2/2)# exit
LTP-4X(config)# exit
LTP-4X# commit
Changes successfully committed (1 chunk)
```

After that, the subscriber terminal will reboot with a predefined configuration. The old one will be deleted.

To roll back the configuration to the factory settings, you must execute the **no easy-mode** command and then reset to the factory settings with the **send omci restore interface ont** command.

```
LTP-4X# configure terminal
LTP-4X(config)# interface ont 2/2
LTP-4X(config)(if-ont-2/2)# no easy-mode
LTP-4X(config)(if-ont-2/2)# exit
LTP-4X(config)# exit
LTP-4X# commit
Changes successfully committed (1 chunk)
LTP-4X# send omci restore interface ont 2/2
[ONT2/2] was successfully restored to default config and rebooted
```