LKDSCloud - cloud-based service for LMDS

Usage guidelines

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This manual contains description of software that facilitates interaction of lift units having direct access to Internet with basic software of Lift Monitoring and Diagnostics System (LMDS)

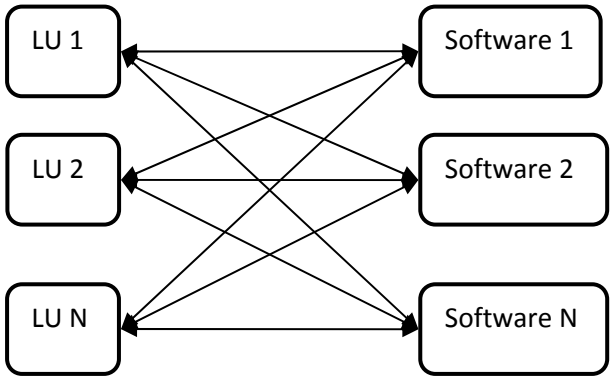
Contents

Introduction

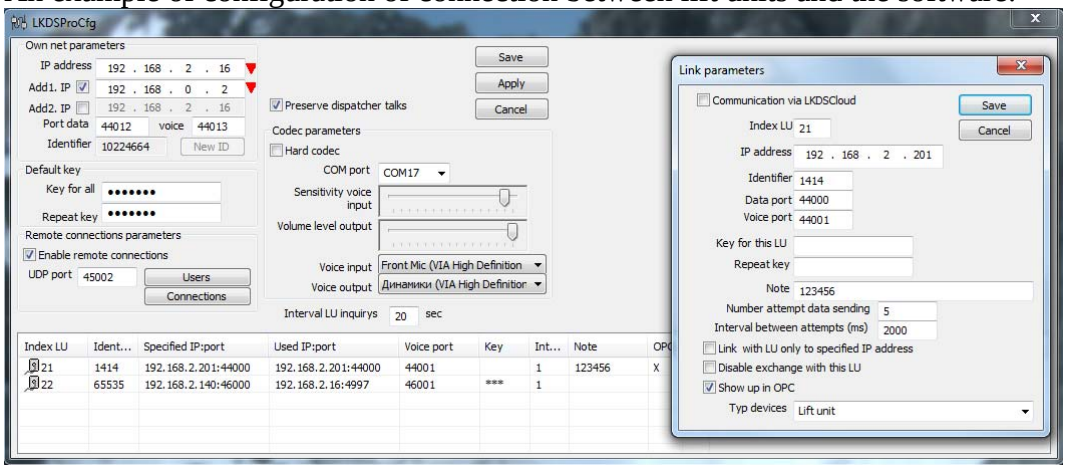
"Lift-Complex DS", manufacturer of Lift Monitoring & Diagnostics System, produces lift units (LU6.1Pro CM3 and LU7.2) that have direct access to Internet and provide data immediately to LMDS software. UDP protocol of Internet networks is used for data exchange between LU and the software. UDP protocol is used both for transmission of telemetric data and for tuning of LU and LU firmware updating. Promiscuous UDP ports are opened for such data exchange between LU and the software. The transmitted data are protected with a key. Each member of data exchange (LU and a software component) has its own unique identifier (Ident) that allows verification of both sender and receiver of data. That is to say, each LU and the LMDS software are characterized by four parameters:

1. UDP port used to send and receive data;
2. IP address used to send and receive data;
3. Data protection key;
4. Identifier.

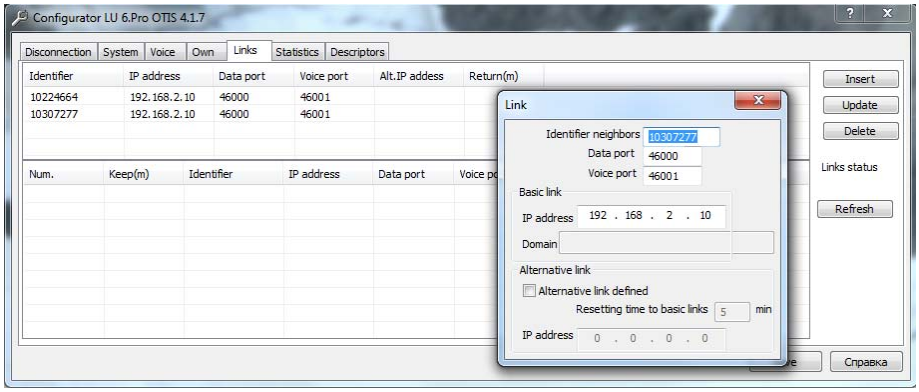
Configuring of LU and the software includes registering one's own UDP port, IP address, key and identifier, and describing links with neighbors, i.e. specifying UDP ports, IP addresses and keys and identifiers of neighbors.



An example of configuration of connection between lift units and the software:



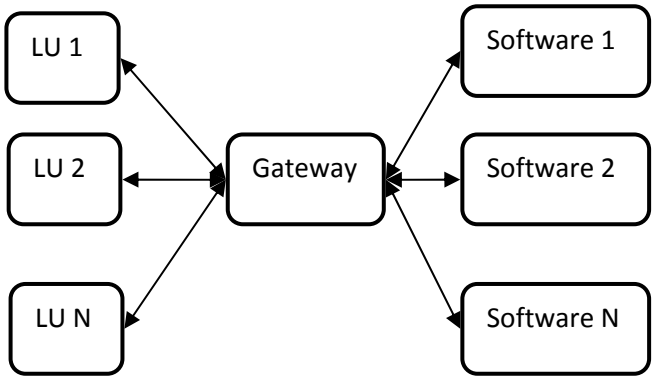
An example of configuration of links of one lift unit with several instances of the software:



Configuring usually presents no difficulties but requires punctuality and diligence as all connection parameters should be specified without any mistakes.

Besides, obtaining real static IP addresses from Internet service providers may be a nuisance, and at least one computer (namely, that of the control room) must have a static IP address available to lift units that are linked to this computer.

If you want to simplify configuration process of your LU and the software and bypass the necessity to have a static IP address you can introduce an intermediate service (i.e. some intermediate software, a kind of gateway) that has a pre-assigned IP address and a UDP port. You can have permanent connection between the LU and the software embedded, and then the interaction of your LU and the software using the UDP protocol will be as follows:



As the UDP port and the IP address of this gateway are know to both the LU and the software, then only the key and the LU identifier should be specified in the software, and the LU does not require this specification at all as the LU will set up dynamic links based on incoming packages from the software.

The procedure for linking up LU configuration utilities is also simplified; when connecting the utilities to the LU only the key and the lift unit identifier will be required.

The LU is in constant communication with the gateway, and so one can check availability of Internet/gateway immediately from the LU.

Functionality of server-based solution (LKDSDisp) can be implemented through this gateway, so there is no need to deploy LKDSDisp server together with a SQL server on your computer.

"Lift-Complex DS" has developed such server; it is called LKDSCloud cloud service; below is a more detailed description of its abilities and ways of usage.

Checking availability of Internet access from LU

By default LU has the connection with LKDSCloud. LU will periodically send to LKDSCloud messages with its parameters. As soon as LKDSCloud receives its first message from LU it will send to LU its sound messages which the LU will play through its speaker. That is to say, when you connect a LU to Internet and hear the sound resembling that of an USB device being connected, this will certainly mean that the LU has access to external Internet network and has been registered with LKDSCloud. If the LU is already connected to a computer network and you want to ascertain that the LU has access to external Internet and been registered by LKDSCloud you can make use of "Voice loop" test. To start the test you must simultaneously press and release the "POWER ON" and the "CALL" buttons on the LU. If you hear a short gong signal that means the LU has access to external LU; next, for 6 seconds the LU mike will be transmitting sound to LKDSCloud and then the sound will be transmitted back to the LU and replayed through its speaker.

If the connection between the LU and LKDSCloud has been interrupted for more than 3 minutes LKDSCloud will consider connection with the LU lost. Upon receipt of the first data package from that LU LKDSCloud will again transmit to the LU its sound data which the LU will play through its speaker. That is to say, if the Ethernet jack (RJ45) is ejected from the LU for longer than 3 minutes and then inserted again, the :U will again play the sound resembling that of a USB device being connected to a Windows-based system.

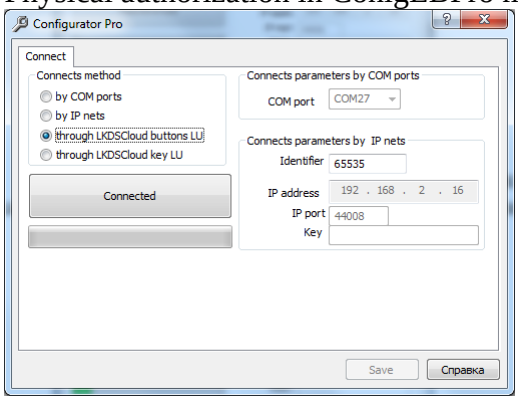
Setting up lift units

To set up a LU or to load firmware updates, ConfigLBPro, MProgPro and AToolCloud (an Android application, available on Play Market) modules can be connected to the LU via LKDSCloud.

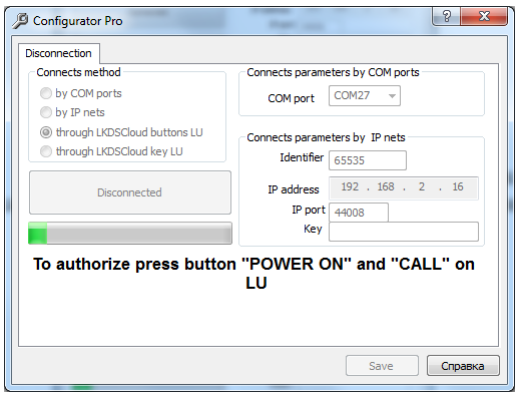
Authorization, i.e. access verification, can be of two types:

1. Physical: after pressing the lit "Connect" button simultaneously press and release the "POWER ON" and the "CALL" buttons on the LU.
2. Remote: using the key, when you must enter the key on connection panel and then get connected.

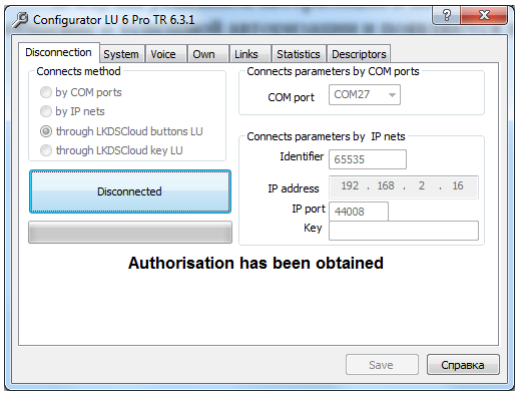
Physical authorization in ConigLBPro module:



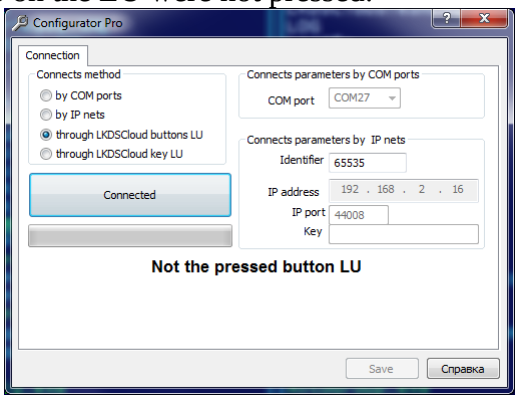
After the "Connect" button is pressed a prompt will pop up, urging you to press the LU buttons, and the LU will play the invitation sound:



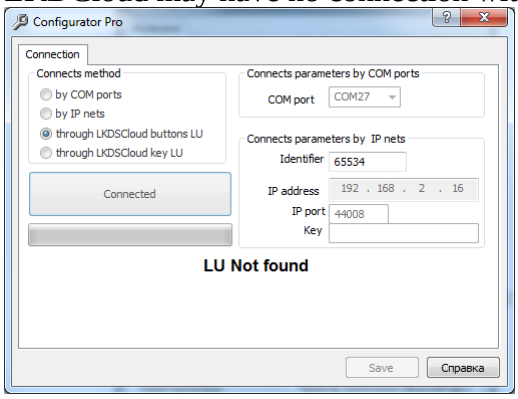
In case of successful authorization you will see the corresponding message in the "Connection/Disconnection" panel, and there you will also see tabs with the following parameters:



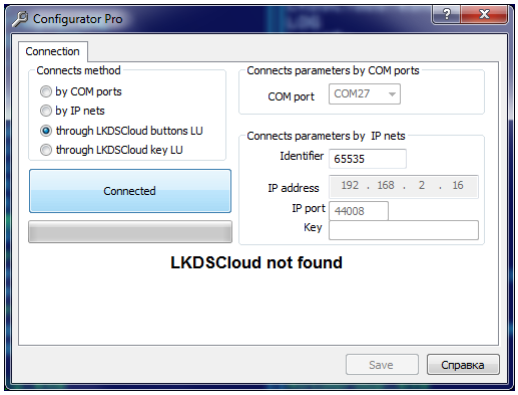
If connection was not successful there will appear a message with the reason. Maybe the buttons on the LU were not pressed:



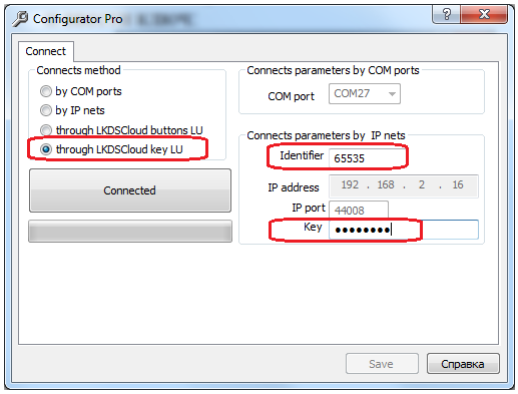
LKDCloud may have no connection with this LU:



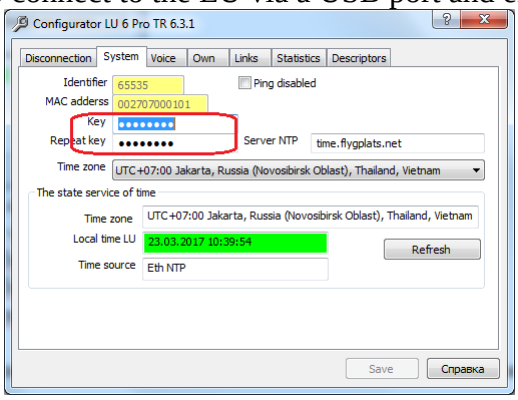
LKDSCloud may not be available from the computer on which the configurator was started:



To authorize using the key please choose the corresponding authorization type and enter the key:



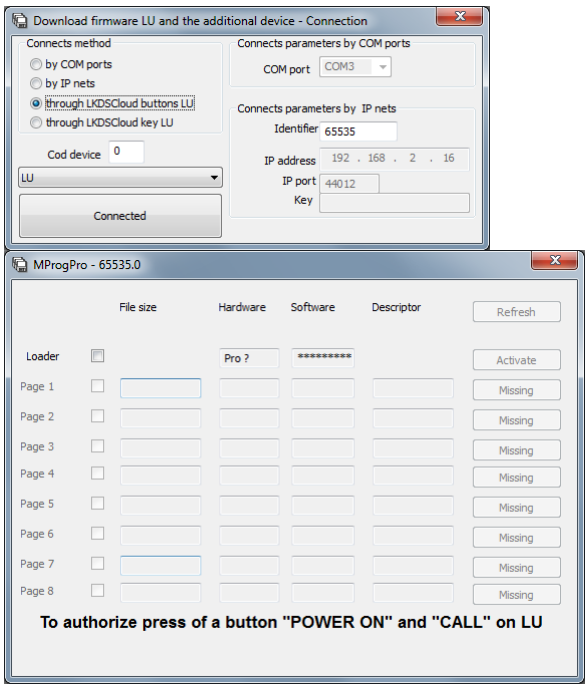
In order to be able to connect using the key it is necessary to initially set this key in the lift unit. If the lift unit is newly-connected or if its parameters were reset to default then you will have to connect to the LU via a USB port and enter the key in the "System" tab:



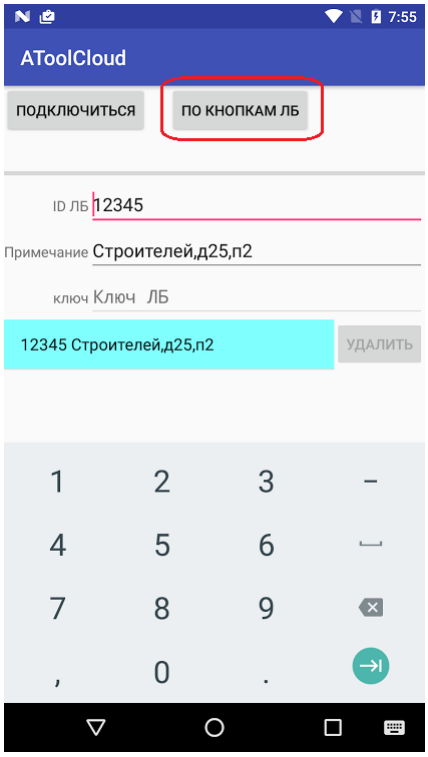
The key must comply with the following conditions:

1. Its length should be 8 or more symbols;
2. It must contain at least one letter;
3. It must contain at least one digit'
4. It must not contain two similar symbols in succession.

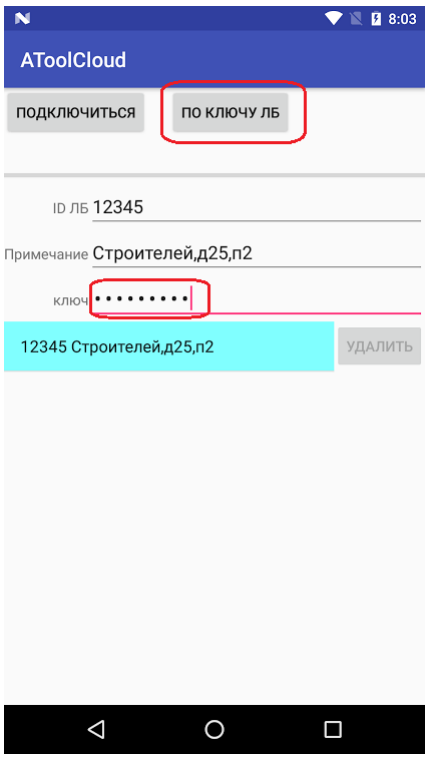
The same principle is used to connect to LKDSCloud via your firmware update download module:



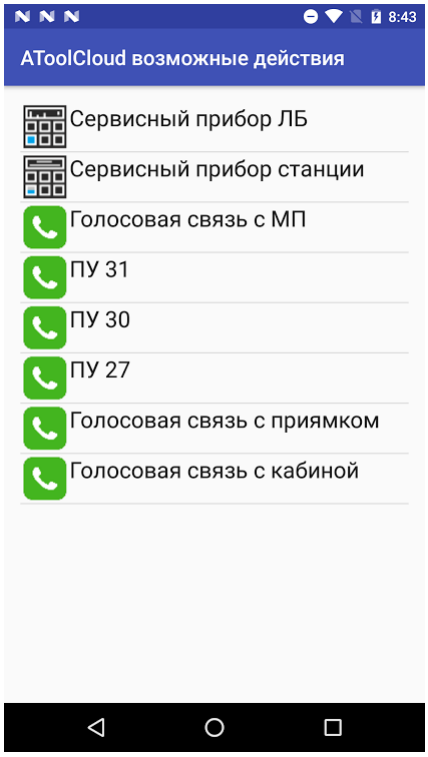
To connect the AToolCloud application to the lift unit through physical authorization method:



To connect the AToolCloud application to the lift unit through key authorization method:



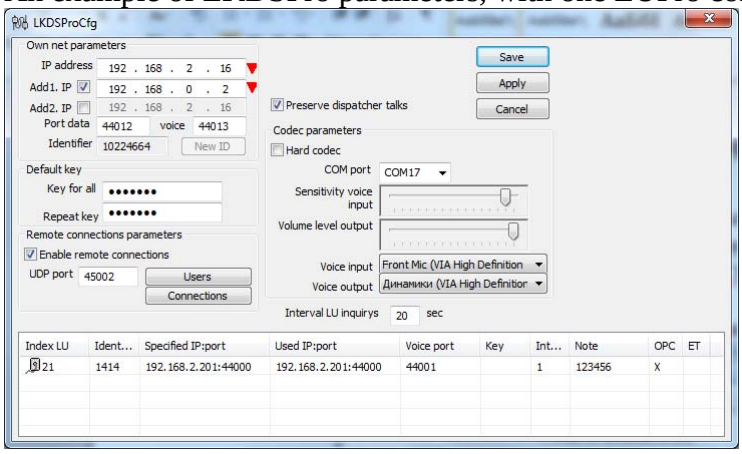
When connected successfully, the panel with the following possible choices will be available:



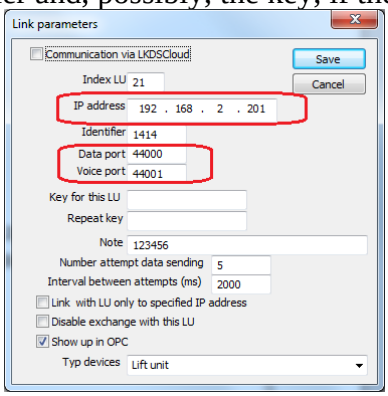
Support of communication between LU and basic LKDSDrv and LKDSPro software

Basic software enables data exchange between the LU and applications (MPultPro, LKDSDisp). LKDSPro is a Windows OS service. LKDSProCfg application is used to configure it.

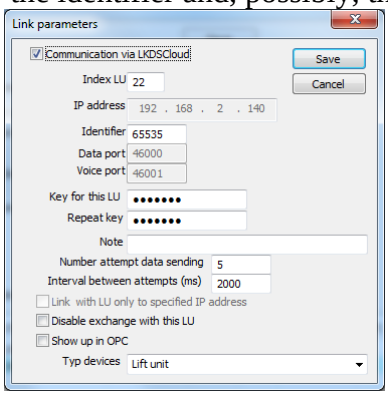
An example of LKDSPro parameters, with one LUPro connection:



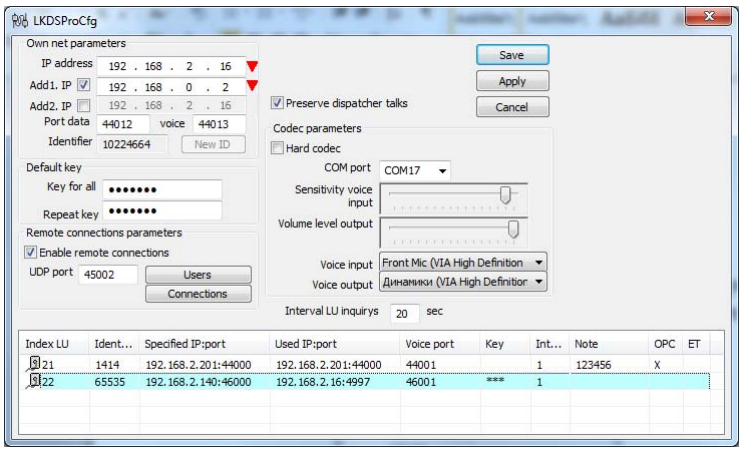
The connection is described directly from LUPro, specifying IP addresses, UDP ports, the identifier and, possibly, the key, if the key is different from the key to all LU's:



Connection with LUPro can be described via LKDSCloud, and then you will have to specify the identifier and, possibly, the key, if the key is different from the key to all LU's:



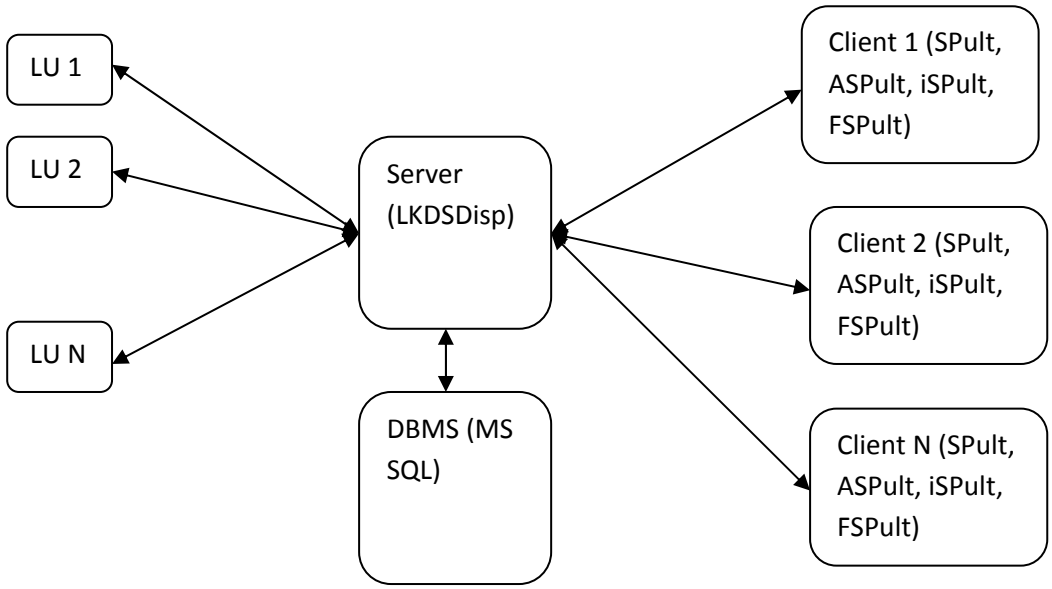
In the following list the LKDSCloud connection is highlighted in turquoise blue:



When impossible to obtain a real static IP address for the computer in the control room, the only possible option to establish the connection with LUPro and LKDSPro is the use of LKDCloud.

Server-based solution using LKDSCloud

The LMDS software has its server-based solution. The experience of using LMDS has proven efficiency of the client-server system. The client-server option means using one central computer (server) which obtains data from equipment (lift units). The server will store significant information in its database and transfer this information to client computers (smartphones) which will display this information to dispatchers, mechanics, communication operators, executives and other consumers of information on lift status.



The software for setting up such system is freeware and available on our server. Configuring the client-server system comprises:

1. installation of software from LKDSProEN.msi onto the server (this file is available on LKDS.RU page);
2. configuration of connections between lift units and the server;
3. installation of MS SQL onto the server (available on microsoft.com; EXPRESS freeware is sufficient);
4. configuration of LKDSDisp server:
    a. description of geographical position of a lift under control of a LU (street, house, communal entrance);
    b. entering end users' ID's with names, passwords, access rights to groups of lifts, rights to certain operations with lifts.

Users' computers will require software from SPultENDst.msi file to be installed (the file is available on LKDS.RU page). Users' smartphones will require the following client applications:

1. ASPult from PlayMarket;
2. iSPult from AppStore;
3. FSPult from Windows Shop.

Such settings procedure presents no special difficulties, though it requires certain qualification and availability of a computer (server) connected to an Internet access point having a real ('white') IP address. LKDSCloud provides the ability to avoid having the server and, correspondingly, installing server software and finding a static IP address, when all LU's have direct access to external Internet.

Configuration of system software for end user (granted the lift unit is already installed in the lift and that it has direct access to external Internet) who uses LKDSCloud as his own server to display lift statuses will comprise the following actions:

1. setting up a permissible key for each LU, 'permissible' here meaning:
    a. having the length of 8 or more symbols;
    b. containing at least one letter;
    c. containing at least one digit;
    d. containing no same two symbols in succession.
2. registering himself with LKDSCloud as a team;
3. setting up the registered team:
    a. description of geographical position of a lift under control of a LU (street, house, communal entrance);
    b. entering end users' ID's with names, passwords, access rights to groups of lifts, rights to certain operations with lifts.

Client software from the file SPultDst.msi must be installed on Windows-based computers. ASPult application (available on PlayMarket) must be installed on Android-based smartphones.

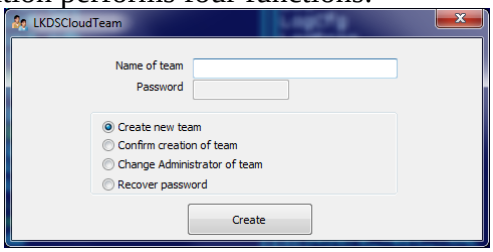
Setting up is definitely simpler now; you do not have to enter parameters referring to information transport. You do not need a server, so you do not require a 'white' IP address or installation of MS SQL.

The following description assumes some initial acquaintance with the client-server solution of the Lift Monitoring and Diagnostics System (LKDSDisp service) as there will be comparisons made between the LMDS and the LKDSCloud service, and references made to using the client-server solution of LMDS ("Start"\ "All programs"\ "LMDS"\ "Client - server solution"\ "Client - server solution - Guide to setting up and operation").

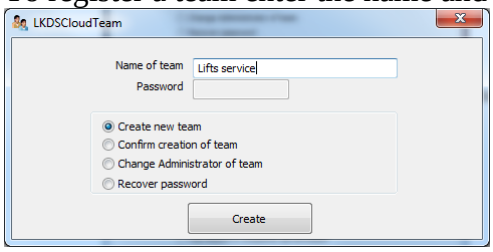
Logically, LKDSCloud is several LKDSDisp instances, one LKDSDisp for each registered team. One enterprise (a legal or a physical entity) can register several teams. Each team will have its own, not overlapping, set of users and lifts (structures). One lift unit can be described and displayed in several teams, i.e. the identifier of this LU can be specified for several

lifts of one or several teams. This allows avoiding the limitation of 32 groups of lifts max in one team, as when the 32 groups are not enough you can register one more team with 32 more groups.

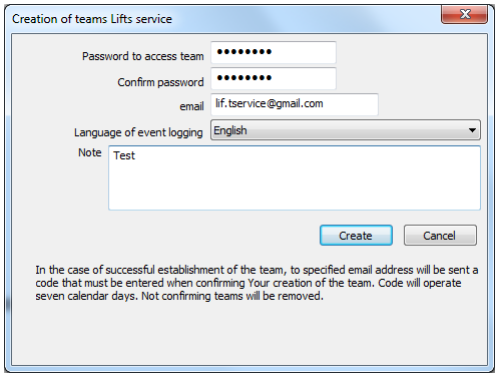
The first step in using LKDSCloud is registration of a team within LKDSCloud. Registration is done at "Start"\ "All programs"\ "LMDS"\ "Client - server solution"\ "Client - server solution - Teams of LKDSCloud (LKDSCloudTeam.exe)" The LKDSCloudTeam.exe application performs four functions:



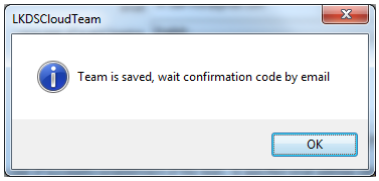
To register a team enter the name and choose "Create new team":



Then press "Create". Enter a password which will be used to confirm creation of the team and the e-mail address to be sent a confirmation code to, and then press "Create":



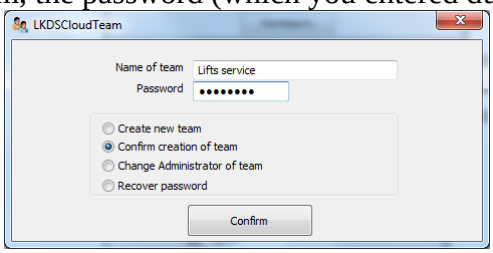
If there is no team with such name (Liftovik54) yet, there will appear a message on creation of a team:



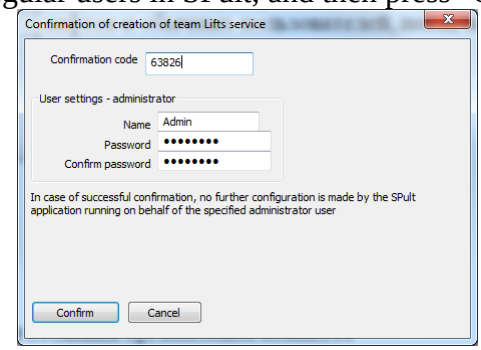
Next you will receive a letter to the specified e-mail address as follows:

Example: "For the team "Lifts service", a confirmation code in LKDSCloud 63826"

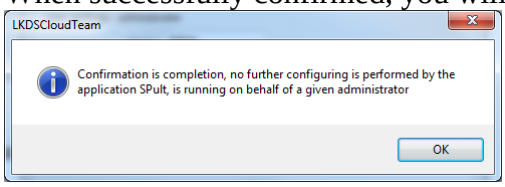
After receipt of the confirmation code re-start LKDSCloudTeam.exe, enter the name of the team, the password (which you entered during the first step) and press "Confirm":



In the opened tab enter the confirmation code and the name and the password of the user who will the administrator of the team, meaning who will be able to introduce location of lifts and regular users in SPult, and then press "Confirm":



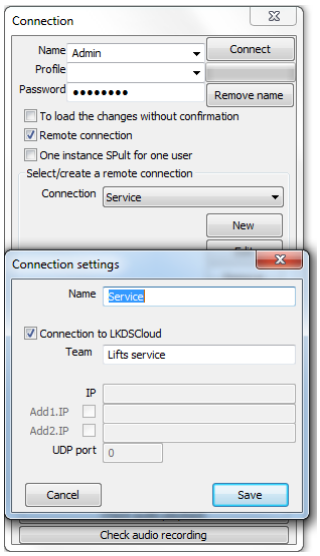
When successfully confirmed, you will see the information panel as follows:



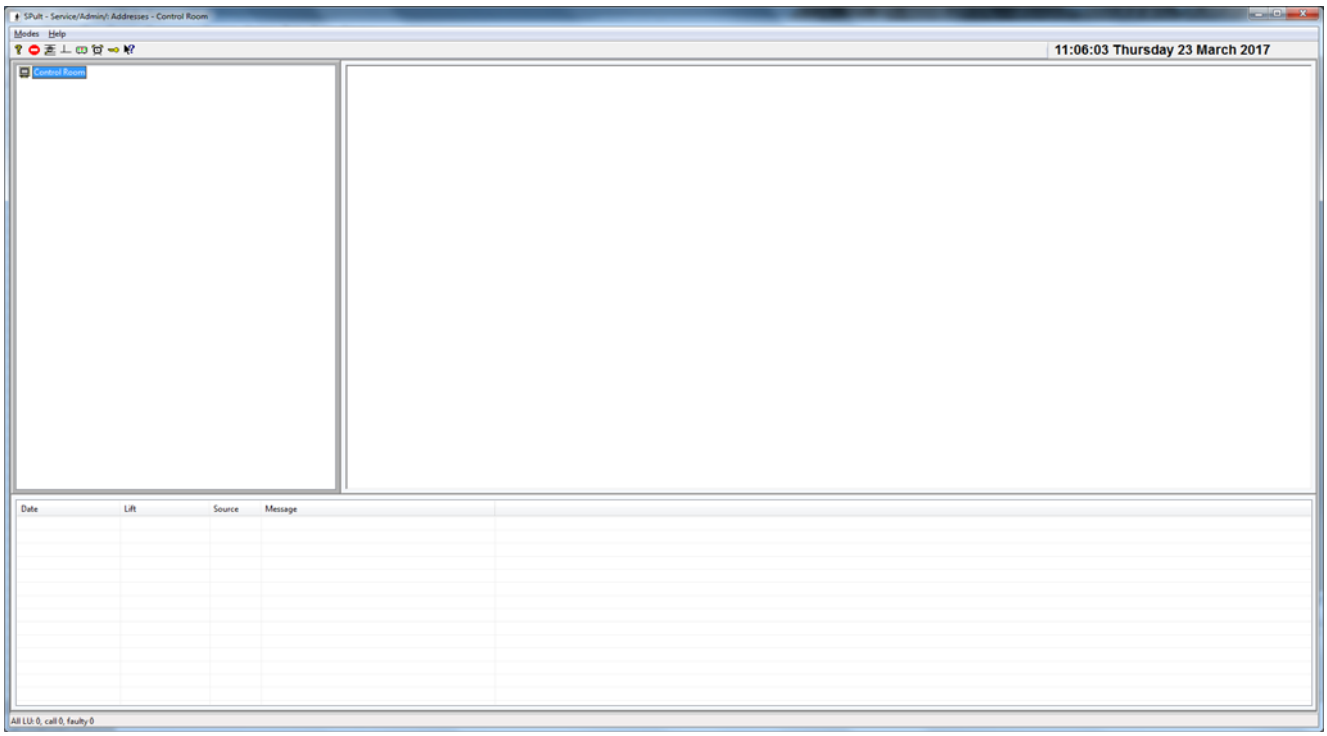
The "Change parameters of Administrator" function allows introducing a new administrator or changing the password of the existing one. This function is used when the password of the current administrator is lost.

The "Recover password" function allows receiving a lost team password by e-mail.

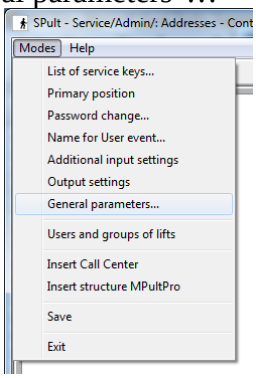
When the team is successfully confirmed, you must start SPult as follows:



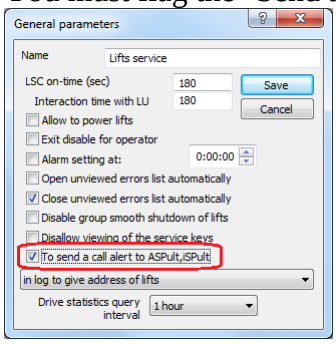
Next you will see the main window of SPult application in the Administration mode:



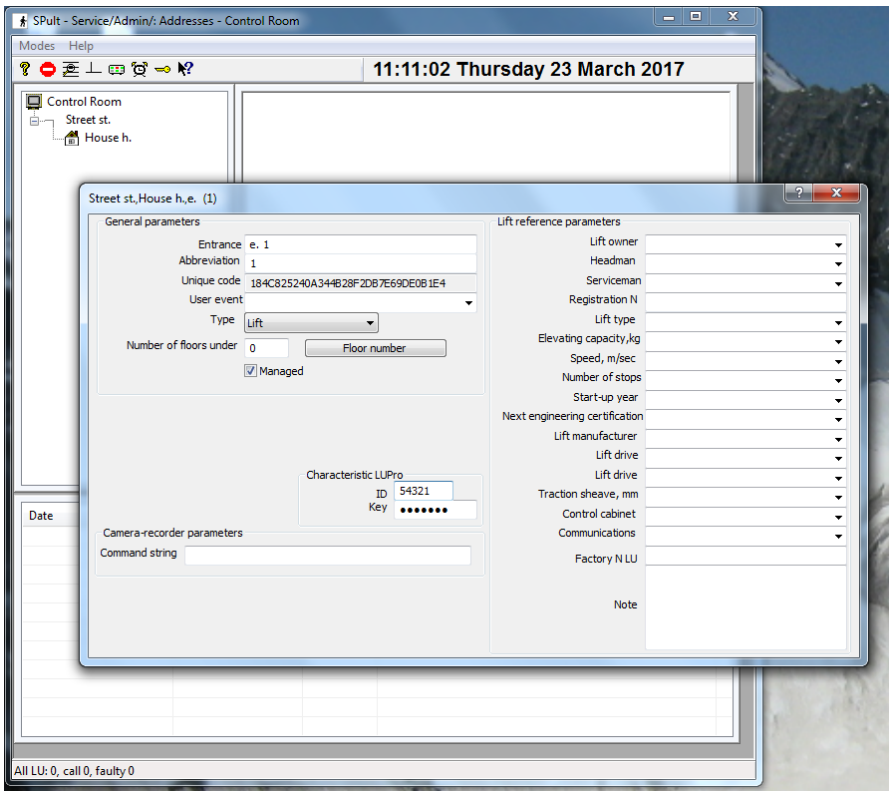
If it is planned to use notifications of calls on your smartphones as pop-up notices, then in "General parameters"…



You must flag the "Send a caller alert to ASPult":

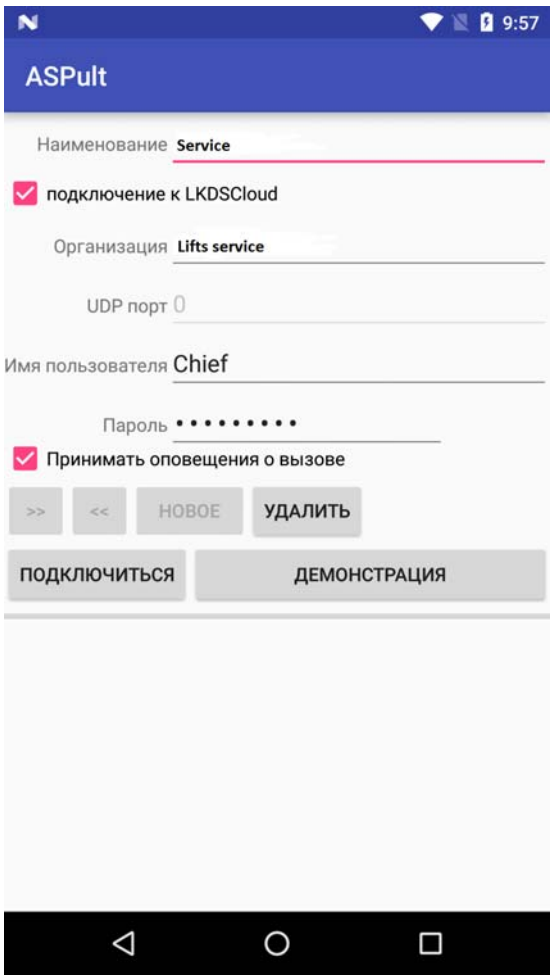


In the lift input panel you must enter the identifier and the key of the lift unit that is located at the given geographical address:



Further operation of SPult in the Administration and the Operation modes does not differ greatly from regular operation of SPult together with LKDSDisp.

ASPult application is connected to LKDSCloud only in the Operation mode as follows:



Comparing LKDSDisp and LKDSCloud capabilities

LKDCloud:

1. No SMS or e-mail messages concerning lift events
2. No integration with LKDSVideo for video surveillance
3. Essential limitation: operates only with LUPro CM3 or LU7.