Grandstream Networks, Inc.

LDAP Configuration Guide

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INTRODUCTION

LDAP stands for Lightweight Directory Access Protocol which is a client/server protocol used to access and manage directory information. It reads and edits directories over IP networks and runs directly over TCP/IP using simple string formats for data transfer.   Just as a database management system which is used to process queries and updates to a database, the UCM6xxx act as an LDAP server for users to manage corporate phonebook in a centralized manner. The LDAP information model is based on entries. An entry is a collection of attributes that has a globally-unique Distinguished Name (DN). The DN is used to refer to the entry. Each of the entry's attributes has a type and one or more values. The types are typically mnemonic strings, like "cn" for Common Name, or "mail" for Email Address. The syntax of values depends on the attribute type.

The UCM built-in LDAP server provides corporate directory to IP Phones using one or multiple phonebooks. UCM6xxx offers also "Sync LDAP directory" feature allowing to synchronize LDAP directories between other UCMs for SIP peer trunks to have a centralized phonebook directory between all UCM branches.

In this guide we will introduce the configuration settings needed to set up the UCM6xxx as LDAP server and how to download phonebook entries from other LDAP servers.

LDAP SERVER CONFIGURATION

The LDAP server configuration settings are available under **Web GUI → System Settings → LDAP Server → LDAP Server Configurations**. The default LDAP server configurations are displayed on the following screenshot:
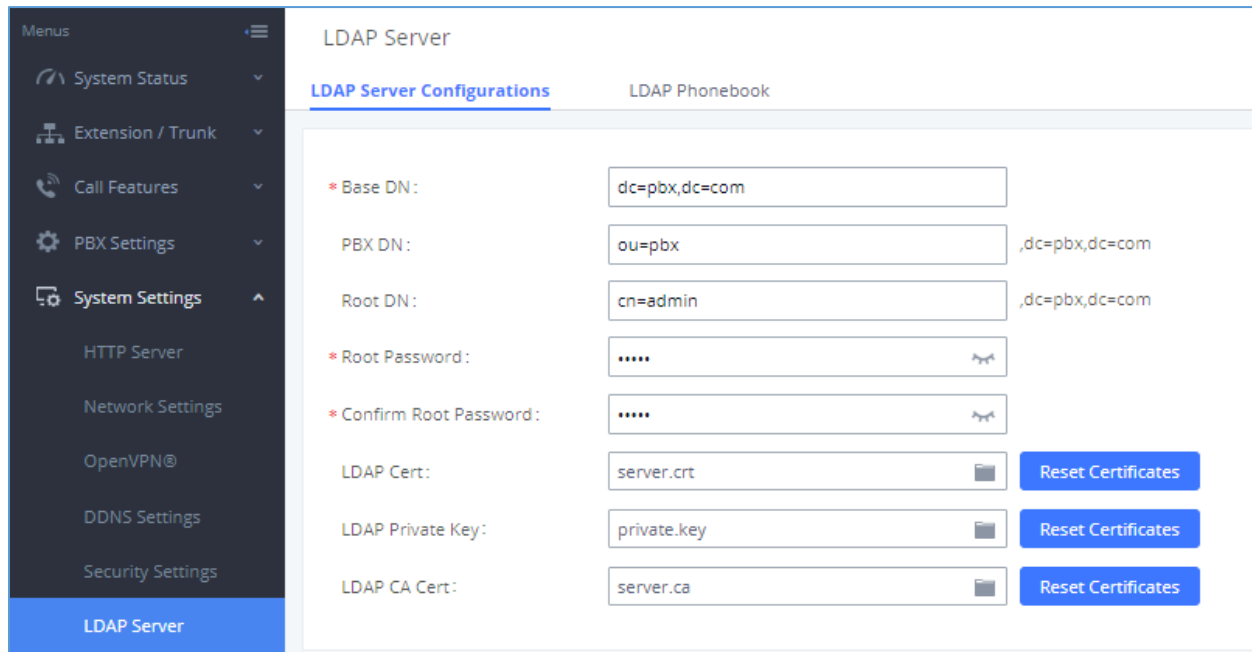

Figure 1: LDAP Server Configurations

Terminology:

- cn= Common Name
- ou= Organization Unit
- dc= Domain Component

Please refer to following table describing the LDAP server configuration settings:

Table 1: LDAP Server Configurations

Base DN	Specifies the location in the directory where the search is requested to begin. By default it's "**dc=pbx,dc=com**".
PBX DN	Specifies the location in the directory where the search for PBX entry is requested to begin. It narrows the search scope and decreases directory lookup time. By default it's "**ou=pbx,dc=pbx,dc=com**".
Root DN	Specifies the location in the directory where the search for the admin user entry is requested to begin. It narrows the search scope and decreases directory lookup time. By default it's "**cn=admin,dc=pbx,dc=com**"
Root Password	Defines the root password for authentication. By default, is "**admin**".
Confirm Root Password	Confirms the root password for authentication.

LDAP Cert	Certificate for LDAPS connections. Uploaded files must be less than 2MB in file size and will be automatically renamed to "server.crt".
LDAP Private Key	Private key for LDAPS connections. Uploaded files must be less than 2MB in file size and will automatically be renamed to "private.key".
LDAP CA Cert	Root certificate for LDAPS connections. Uploaded files will be automatically renamed to "server.ca".

Note: The UCM6xxx LDAP server supports anonymous access (read-only) by default. Therefore, the LDAP client doesn't have to configure username and password to access the phonebook directory. The "Root DN" and "Root Password" here are for LDAP management and configuration where users will need provide for authentication purpose before modifying the LDAP information.

LDAP PHONEBOOK

By default, the LDAP server has generated the first phonebook not editable with PBX DN "**ou=pbx,dc=pbx,dc=com**" based on the UCM6xxx user extensions.
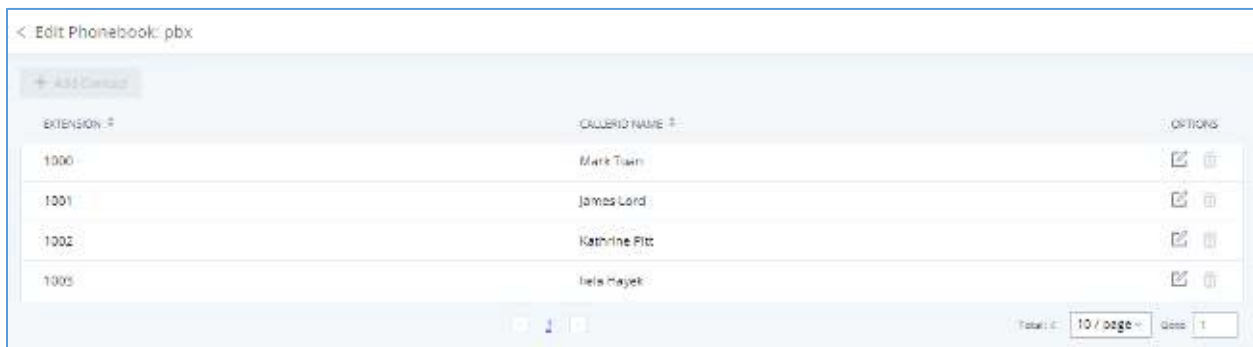
Users could add new phonebook with a different phonebook DN for other external contacts, for example, "**ou=grandstream,dc=pbx,dc=com**".

Note: All the phonebooks in the UCM6xxx LDAP server have the same Base DN "**dc=pbx,dc=com**".

Access the Default Phonebook DN

The first phonebook created by default on the UCM6xxx is for local extensions. The default phonebook list in this LDAP server can be accessible by clicking on [icon] but not editable.

The following figure show an example of default phonebook displaying the existing extension.
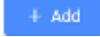

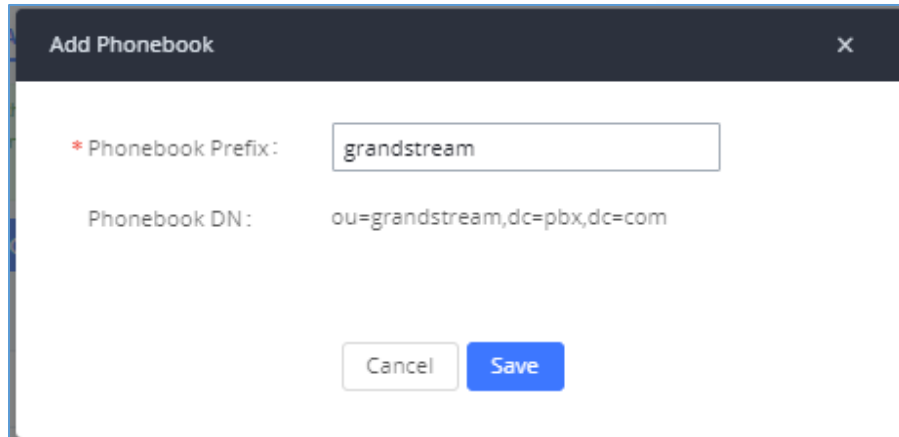**Figure 2: Default LDAP Phonebook**

Notes:
- The contacts displayed on the default LDAP phonebook cannot be added or deleted directly. To add or delete the contacts, users need to modify the accounts in "Extensions" page first. To modify the read-only attributes, please edit the corresponding items in "Extensions" page and the phone book will be automatically updated when the change is saved and applied.
- If users have the Grandstream phones provisioned by the UCM6xxx, the LDAP directory will be configured on the phones and can be used right away for users to access all phonebooks. Additionally, users could manually configure the LDAP client settings to manipulate the built-in LDAP server on the UCM6xxx.

Add a New Phonebook DN

Users can add other phone books for external accounts. For those phone books, users can edit LDAP attributes, add or delete contacts directly.

Please refer to following steps in order to add a new LDAP phonebook

1. Click on **Add** button [+ Add] under LDAP phonebook section (LDAP server page).
2. Configure the Phonebook Prefix that will be used for phonebook DN (Distinguished Name).
3. The phonebook DN which is a sibling dn of pbx dn will be generated automatically under Phonebook DN field as displayed on following example.

Figure 3: Add new phonebook

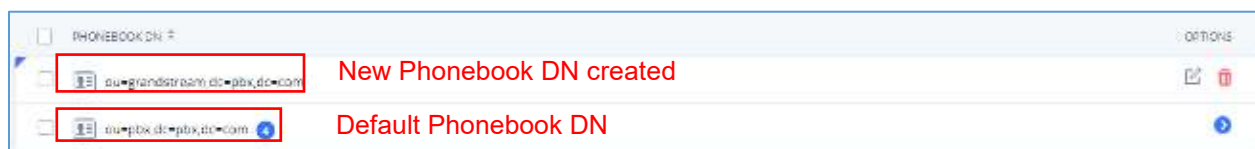4. Click on **Save** button to confirm adding the new phonebook.

Figure 4: List of Phonebook DN

Note:

- User can edit or delete the new created phonebooks by clicking on for editing and adding the new contacts or select to delete phonebook.

- If the UCM6xxx has multiple LDAP phonebooks created, in the LDAP client configuration, users could use "**dc=pbx,dc=com**" as Base DN to have access to all phonebooks on the UCM6xxx LDAP server, or use a specific phonebook DN, for example "**ou=grandstream,dc=pbx,dc=com**", to only access LDAP entries on Phonebook DN "**ou=grandstream,dc=pbx,dc=com**".

Add contacts to Phonebook DN

After creating /configuring the new phonebook that will be used for your LDAP configuration, users may add, edit or delete the phonebook entries (LDAP Attributes).
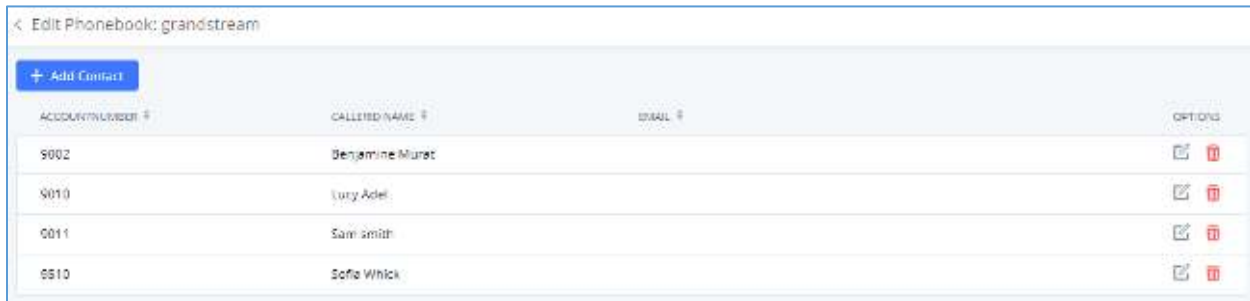
Please refer to following steps describing how we can add, edit or delete the LDAP attributes on your phonebook DN:

1. Access the **Web GUI → System Settings → LDAP Server → LDAP phonebook**

2. Select the phonebook DN on which you want to manage the LDAP entries.

3. Click on **Add Contact** button and fill in the contact's details on the appropriated fields (Account number, caller ID name, Email, first/last name …).

4. Press **Save** button to add the new contact to **Contact list.**

5. Press **Apply Changes** button to save all the new contacts and update the contact

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list on your phonebook DN.

Note:

- For more detailed information and description of the LDAP attributes, please refer to **[Table 2]**.
- To edit or clean a field on a specific contact, users can select it from contact list and do the modifications needed, then press **Save** and **Apply Changes** buttons to update the contact list.

- To delete a specific contact, users need press on delete icon 🗑 appropriated to the contact that they want to remove it from their phonebook DN.

Figure 5: LDAP Entries

Please refer to following table describing the LDAP attributes:

Table 2: LDAP attributes description

Account Number	Defines the account number attribute of a LDAP contact entry. The "+" is now supported.
CallerID Name	Specifies the caller id name attributes of a LDAP contact entry.
Email	Specifies the email address attribute of a LDAP contact entry.
First Name	Defines the first name attributes of a LDAP contact entry.
Last Name	Defines the last name attributes of a LDAP contact entry.
Department	Specifies the department attribute of a LDAP contact entry.
Mobile Number	Specifies the mobile number attributes of a LDAP contact entry.
Home Number	Specifies the home number attributes of a LDAP contact entry.
Fax	Specifies the fax number attributes of a LDAP contact entry.

Import Phonebook to LDAP Server

UCM6xxx permits to import phonebook and use it on LDAP server.

Please refer to following steps describing how to import the phonebook:

1- Access the Web GUI →**System Settings** → **LDAP Server > LDAP phonebook**

2- Click on **Import Phonebook** button [↴ Import Phonebook].

3- Dialog window will prompt as shown in the figure below.

4- Select the file type (CSV or VCF) and click on [Choose File to Upload 🗀] to browse and select your phonebook from your directory.

Note: The file to be imported must be a CSV file with UTF-8 encoding. Users can open the CSV file with Notepad and save it with UTF-8 encoding.
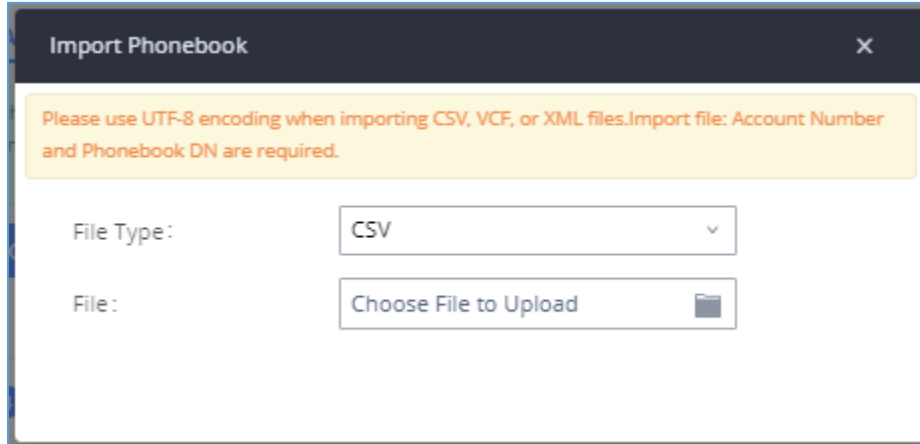

Figure 6: Import Phonebook

The following screenshot illustrate an example of a sample phonebook in CSV format to import. Please note "Account Number" and "Phonebook DN" fields are required. Users could export a phonebook file from the UCM6xxx LDAP phonebook section first and use it as a sample to start with.

	A	B	C	D	E	F	G	H	I	J	K
1	First Name	Last Name	Account N	CallerID Name	Email	Department	Mobile Number	Home Number	Fax	Phonebook DN	
2	William	Jackson	1500	William Jackson	Jackson@gmail.com	Documentation	221456622	12145666		grandstream	
3	Lucy	Adele	1505	Lucy Adele	Adele@gmail.com	Documentation	334165421	12112153		grandstream	
4	Samuel	Smerfy	2024	Samuel Smerfy	smerfy@gmail.com	Sales	423662636	26629832	26629833	grandstream	
5	John	Whick	2300	John Whick	jwick@gmail.com	Sales	414566526	12269646	1226947	grandstream	
6	Mark	Spicy	3005	Mark Spicy	spicy@gmail.com	Support	444629126			grandstream	
7	Sofia	Bulgaro	3006	Sofia Bulgaro	bulgaro@gmail.com	Support	465629262	124822153		grandstream	
8	Bejnamin	Kayto	3007	Benjamin Kayto	kayto@gmail.com	Marketing	546266520			grandstream	
9											

Figure 7: Example Phonebook

Note:
- The Phonebook DN field is the same "Phonebook Prefix" entry as when the user clicks on "Add" to create a new phonebook. Therefore, for example if the user enters "grandstream1" in "Phonebook DN" field in the CSV file, the actual phonebook DN "**ou=grandstream1,dc=pbx,dc=com**" will be automatically created by the UCM6xxx once the CSV file is imported.

- In the CSV file, users can specify different phonebook DN fields for different contacts. If the phonebook DN already exists on the UCM6xxx LDAP Phonebook, the contacts in the CSV file will be added into the existing phonebook. If the phonebook DN doesn't exist on the UCM6xxx LDAP Phonebook, new phonebooks with this phonebook DN will be created.

- As the default LDAP phonebook with phonebook DN "ou=pbx,dc=pbx,dc=com" cannot be edited or deleted in LDAP phonebook section, users cannot import contacts with phonebook DN field "pbx" if existed in the CSV file.

The following figure illustrate the new phonebook created after importing the sample example of figure 7:
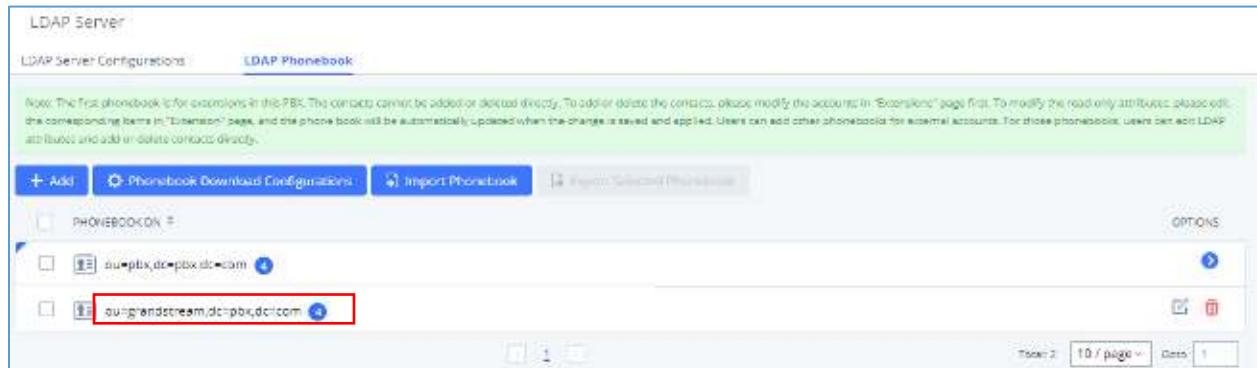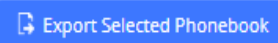

Figure 8: LDAP Phonebook Imported

Export Phonebook from LDAP Server

To export phonebook, select the checkbox for the LDAP phonebook and then click on **Export Selected Phonebook** button [Export Selected Phonebook] to export the selected phonebook to desired directory.

The exported phonebook can be used as a record or a sample CSV file for the users to add more contacts in it and import to the UCM6xxx again.
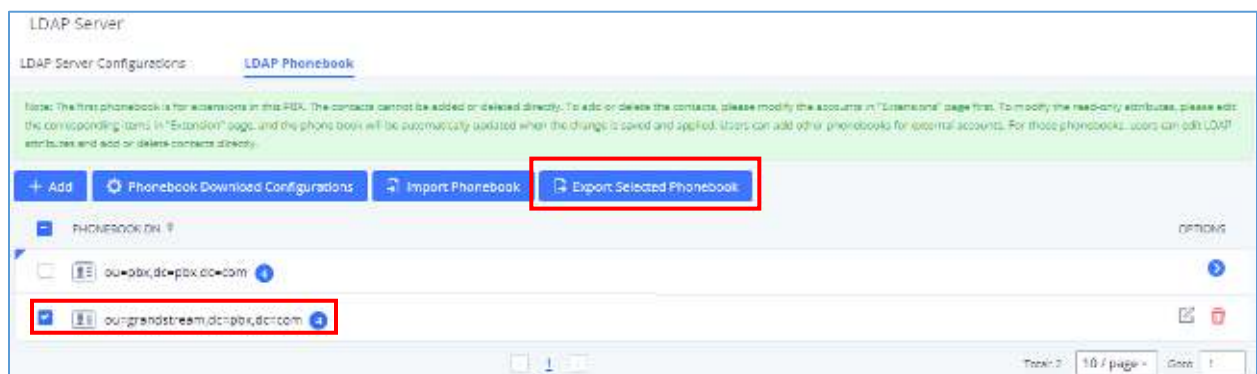

Figure 9: Phonebook Export

LDAP CLIENT CONFIGURATION EXAMPLE

The UCM6xxx can also act as a LDAP client to download phonebook entries from other LDAP servers.

LDAP Client Configurations settings are available under **Web GUI → System Settings → LDAP Server → LDAP Phonebook → Phonebook Download Configurations**.

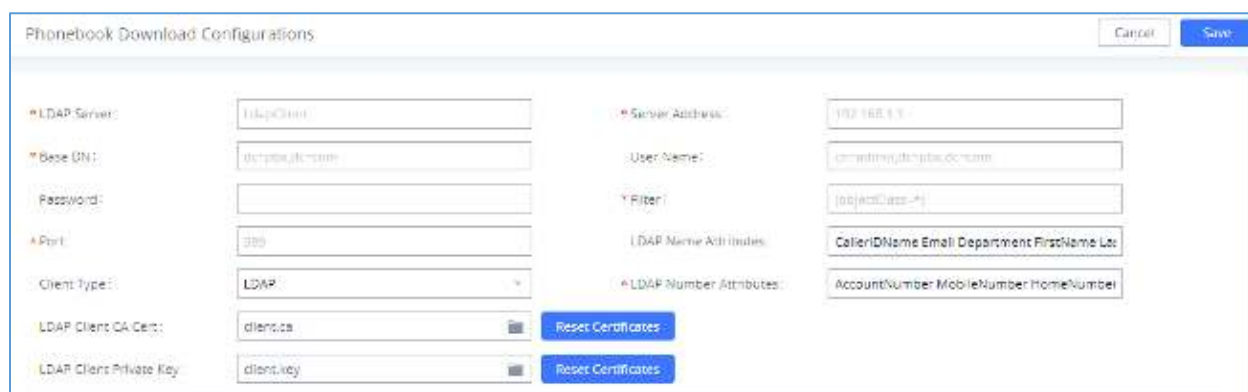The following figure gives a sample configuration for UCM6xxx acting as a LDAP client.

Figure 10: LDAP Client Configuration

Assuming the server base dn is "**dc=pbx,dc=com**", configure the LDAP clients as following:

- **LDAP Server:** Enter the IP address or domain name for remote LDAP server.

- **Server Address:** LDAP server IP address

- **Base DN:** dc=pbx,dc=com

- **User Name:** Enter username. This field cannot exceed 64 characters.

- **Password:** "LDAP server login password"

- **Filter:** (|(CallerIDName=%)(AccountNumber=%))

- **Port:** 389

- **LDAP Number Attributes:** Customized number attributes depending on LDAP server attributes

- **LDAP Name Attributes:** Customized Name attributes depending on LDAP server attributes

- **Client Type:** Choose Client Type to be either LDAP or LDAPS

- **LDAP Client CA Cert:** Upload LDAP client CA certificate, The following file types are supported: .crt .der and .pem

- **LDAP Client Private Key:** Private key for LDAPS connections. Uploaded files must be less than 2MB in file size.