

Grandstream Networks, Inc.

LDAP Server



LDAP stands for Lightweight Directory Access Protocol, 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 like a database management system that is used to process queries and updates to a database, the UCM6xxx acts as an LDAP server for users to manage the 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 a corporate directory to IP Phones using one or multiple phonebooks. UCM6xxx offers also a **"Sync LDAP directory"** feature allowing the synchronization of LDAP directories between other UCMs for SIP peer trunks to have a centralized phonebook directory between all UCM branches.

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

UCM6XXX series include UCM620x series, UCM630x series, UCM630xA series, and UCM6510.

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 in the following screenshot:

The screenshot displays the 'LDAP Server Configurations' web interface. The left sidebar contains a navigation menu with 'System Settings' expanded and 'LDAP Server' selected. The main panel is titled 'LDAP Server' and has two tabs: 'LDAP Server Configurations' (active) and 'LDAP Phonebook'. The configuration fields include: 'Enable LDAP Server' (checkbox), 'Base DN' (text field with 'dc=pbx,dc=com'), 'PBX DN' (text field with 'ou=pbx'), 'Root DN' (text field with 'cn=admin'), 'Root Password' and 'Confirm Root Password' (password fields), 'LDAP CA Cert' (text field with 'server.ca'), 'LDAP Cert' (text field with 'server.crt'), 'LDAP Private Key' (text field with 'private.key'), and a 'Certificate & Private Key' section with a 'Reset' button. At the bottom are 'Cancel' and 'Save' buttons.

LDAP Server Configurations

Terminology:

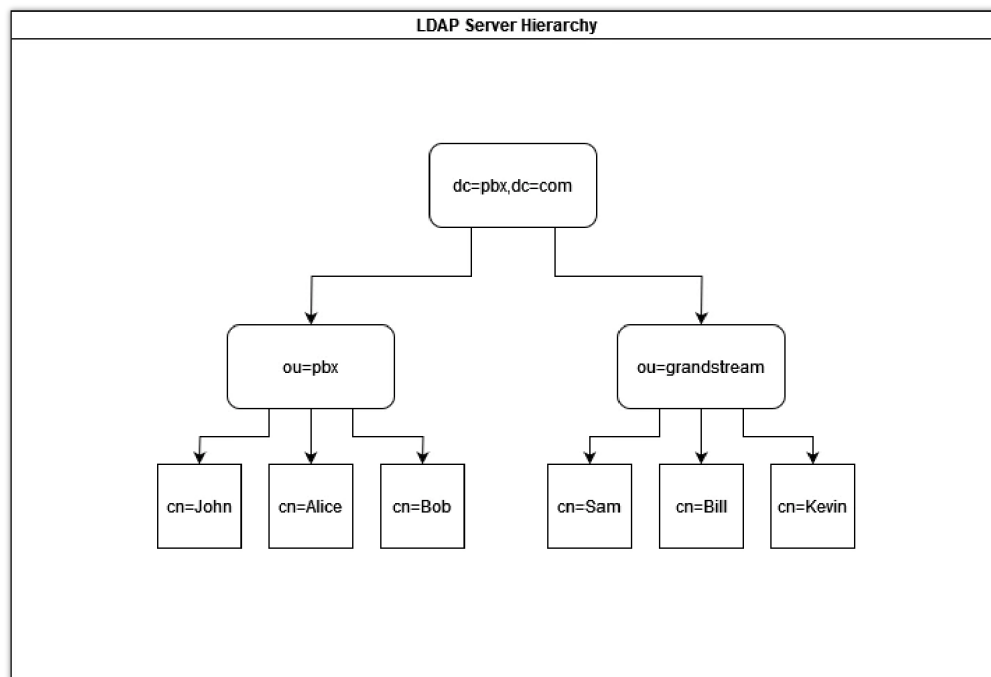
- **cn** = Common Name
- **ou** = Organization Unit
- **dc** = Domain Component

Terminology:

- **cn** = Common Name

- ou= Organization Unit
- dc= Domain Component

The following diagram shows the hierarchy of a UCM LDAP server with the default phonebook ou=pbx and an added one which is ou=grandstream



UCM LDAP Server Diagram

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

Parameter	Description
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".

- Aside from UCM630x and UCM630xA series, The UCM6xxx LDAP server supports anonymous access (read-only) by default. Therefore, the LDAP client does not 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.

- The UCM630x and UCM630xA series do not allow anonymous access.

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**".

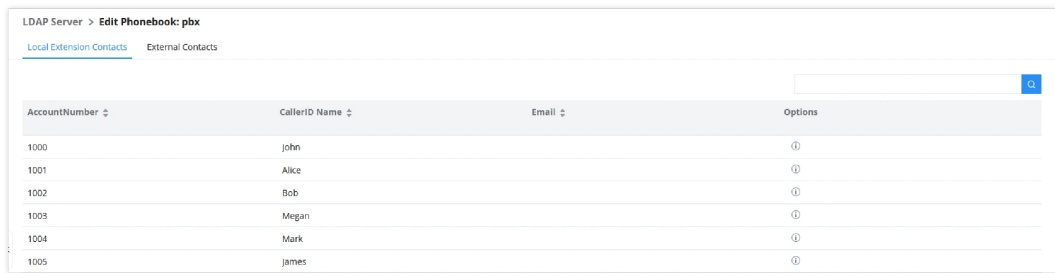
Note:

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  but is not editable.

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



LDAP Server > Edit Phonebook: pbx			
Local Extension Contacts		External Contacts	
AccountNumber	CallerID Name	Email	Options
1000	John		
1001	Alice		
1002	Bob		
1003	Megan		
1004	Mark		
1005	James		

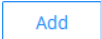
Default LDAP Phonebook

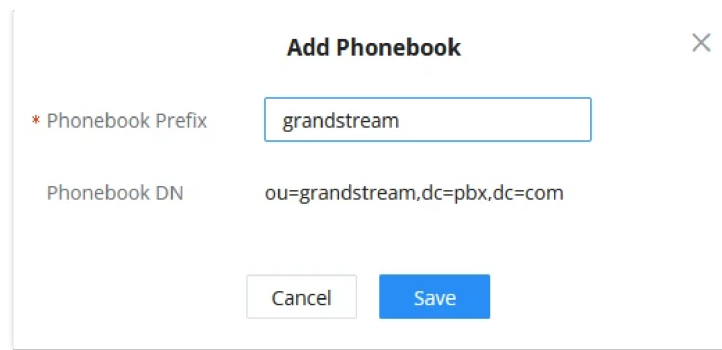
- The contacts displayed on the default LDAP phonebook cannot be added or deleted directly. To add or delete the contacts, users need to modify the accounts in "Extensions" page first. To modify the read-only attributes, please edit the corresponding items in "Extensions" page and the phone book will 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 the following steps in order to add a new LDAP phonebook:

1. Click on **Add** button  under LDAP phonebook section.
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.



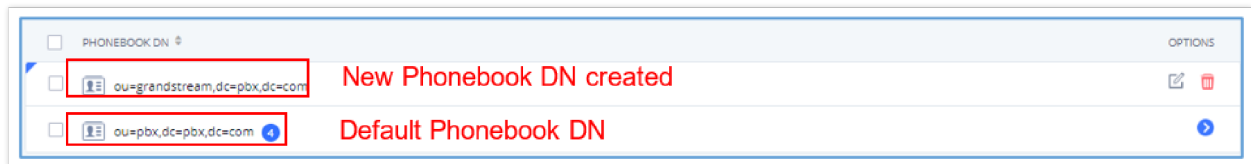
Add Phonebook [X]

* Phonebook Prefix:

Phonebook DN: ou=grandstream,dc=pbx,dc=com

Add new phonebook

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



PHONEBOOK DN		OPTIONS
☐ ou=grandstream,dc=pbx,dc=com	New Phonebook DN created	
☐ ou=pbx,dc=pbx,dc=com	Default Phonebook DN	

List of Phonebook DN

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

LDAP Client Configuration

If the UCM6xxx has multiple LDAP phonebooks created, users can configure the Base DN (**dc=pbx,dc=com**) to allow the LDAP client to access all the phonebooks. This is because all the phonebooks (e.g. **ou=grandstream,dc=pbx,dc=com**) nest within the Base DN. (Please refer to the UCM LDAP Server Diagram)

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 the 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 list on your phonebook DN.

Note:

- Users can use the search bar to easily locate specific phonebook. The search can be done using account number, callerID name or email address. (Fuzzy matching is supported)
- 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.

LDAP Server > Edit Phonebook: grandstream

Add Contact

AccountNumber	CallerID Name	Email	Options
4000	Sam		 
4001	Bill		 
4002	Kevin		 

Total: 3 1 10 / page Goto

LDAP Entries

Please refer to the following table describing the LDAP attributes:

Parameter	Description
Account Number	Defines the account number attribute of an LDAP contact entry. Only numbers, "+" and "-" are supported
CallerID Name	Specifies the caller id name attributes of an LDAP contact entry.
Email	Specifies the email address attribute of an LDAP contact entry.
First Name	Defines the first name attributes of an LDAP contact entry.
Last Name	Defines the last name attributes of an LDAP contact entry.
Department	Specifies the department attribute of an LDAP contact entry.
Mobile Number	Specifies the mobile number attributes of an LDAP contact entry.
Home Number	Specifies the home number attributes of an LDAP contact entry.
Fax	Specifies the fax number attributes of an LDAP contact entry.

Import Phonebook to LDAP Server

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

Please refer to the 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 
3. Dialog window will prompt as shown in the figure below.
4. Select the file type (CSV, VCF or XML) and click on  to browse and select your phonebook from your directory.

The file to be imported must CSV, VCF or XML with UTF-8 encoding. The fields Account Number and Phonebook DN are required.

Import Phonebook ✕

Please use UTF-8 encoding when importing CSV, VCF, or XML files. Import file: Account Number and Phonebook DN are required.

File Type

CSV

File

Choose File to Upload

📁

Import Phonebook

The following screenshot illustrates 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											

Example Phonebook

Notes

- The Phonebook DN field corresponds to the “Phonebook Prefix” entry when a user tries to to create a new phonebook.
- The contacts in the imported file will be added to their respective Phonebook DN configured on the UCM.
- If the user enters Phonebook DN in the imported file, that doesn’t exist on the UCM, it will be created automatically.
- As the default LDAP phonebook with phonebook DN “ou=pbx,dc=pbx,dc=com” cannot be edited or deleted, users cannot import contacts with “pbx” under Phonebook DN.

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

LDAP Server

LDAP Server Configurations LDAP Phonebook

Note: The first phonebook is for extensions in this PBX. The contacts cannot be added or deleted directly. To add or delete the contacts, please modify the accounts in “Extensions” page first. To modify the read-only attributes, please edit the corresponding items in “Extension” page, and the phone book will be automatically updated when the change is saved and applied. Users can add other phonebooks for external accounts. For those phonebooks, users can edit LDAP attributes and add or delete contacts directly.

[Add](#)
[Phonebook Download Configurations](#)
[Import Phonebook](#)
[Export Selected Phonebook](#)
[LDAP Settings](#)

☐ Phonebook DN

Options

☒ ou=pbx,dc=pbx,dc=com

Options

☐ ou=grandstream,dc=pbx,dc=com

Options

Total: 2

1

/

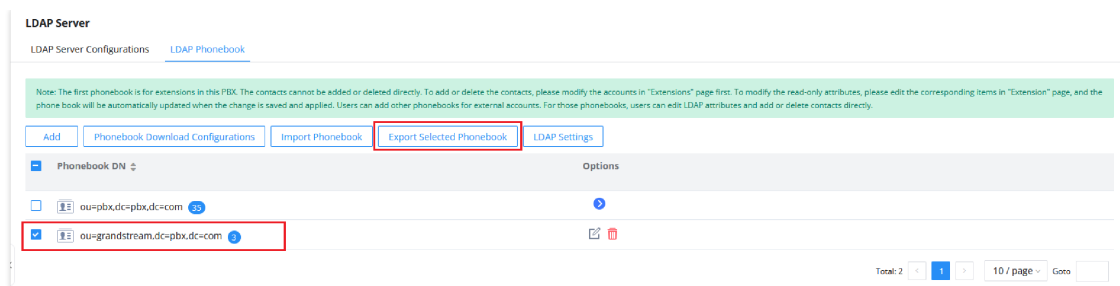
10 / page

LDAP Phonebook Imported

Export Phonebook from LDAP Server

To export the 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 the 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.



Export Phonebook

LDAP Client Configuration Example

The UCM6xxx can also act as an 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 an LDAP client.

LDAP Client Configuration

Assuming the server base dn is "**dc=example**", configure the LDAP client as follows:

- **Server Address:** The IP address or domain name of this IP-PBX device.
- **Base DN:** dc=example (the same as the server base dn or a subset of the server base dn)
- **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 LDAPS 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.