*esi* **ESI eSIP and eCloud** ESI Phone LDAP Contacts with Active Directory

This document is intended to be followed as a general guideline to set up access to a simple Active Directory (AD) from an ESI Phone using Lightweight Directory Access Protocol (LDAP).

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# Introduction

This document describes the procedure used to access a simple Active Directory (AD) using Lightweight Directory Access Protocol (LDAP). This document should not be interpreted as a universal "how to get access to any Active Directory", but rather a guideline describing how ESI's product Management setup one phone to retrieve information from a very simple Active Directory.

Please notice that the structures of Active Directories will be different in each company and therefore the administrator of the Active Directory needs to be involved in providing the appropriate information to enter into the phone via the GUI interface.

For the creation of this guideline document, a very simple Active Directory was created with fake values with the purpose of illustrating the relationship between the data in the Active Directory and the information required in the phone's GUI to be able to retrieve names and phone numbers for users and contacts.

# **The Active Directory**

Each company will have a different structure for the Active Directory being used. The administrator of the Active Directory should provide assistance in identifying what data should be entered. The network administrator should also provide guidelines as to what user should be used to gain access to the Active Directory. For this procedure, the credentials of one of the users were used, but that doesn't have to be the case always.

Access to the company's Active Directory is always protected and therefore the network administrator should also provide assistance in giving the phones secure access to the network where the Active Directory resides. That may be setting up a VPN connection or something similar. Setting up the secured access to the network where the Active Directory resides is not covered in this document as it will be specific for each customer.

For this exercise, a very simple Active Directory was created on a virtual machine in a personal computer. Access to that virtual machine was therefore very easy and no VPN connection had to be set. The IP address of the virtual machine happened to be **10.0.0.5**, but in actual implementations the IP address to be used should be the address of the server hosting the Active Directory.

The following figure shows three users defined in the Active Directory under the Users folder and at the top, the path where those users are located.



In this exercise, user Jose Mario Venta will use his credentials to access the Active Directory. The figure below shows the **DN** for this user which is one of the elements that need to be known.

Active Directory	Explorer - Sysinternals:	www.sysinternals.com	ESI-Test	t-AD [mario-dc.testdomain.com]]	x
File Edit Favorites Search Compare	History Help				
≱ @ # ₽ @ ++ ▼					
-1 - 1 - 1 - 1 - 1					_
th: CN=Jose Mario Venta,CN=Users,DC=te	stdomain,DC=com,ESI-Test-AD	[mario-dc.testdomain.com]			
CN=Computers	Attribute	Syntax	Count	Value(s)	
CN=Deleted Objects	accountExpires	Integer8	1	0x7FFFFFFFFFFFFFFFF	
OU=Domain Controllers	badPasswordTime	Integer8	1	0x0	
E CN=ForeignSecurityPrincipals	a badPwdCount	Integer	1	0	
CN=Infrastructure	a a a a a a a a a a a a a a a a a a a	DirectoryString	1	Jose Mario Venta	
CN=LostAndFound	CodePage	Integer	1	0	
CN=Managed Service Account	a countryCode	Integer	1	0	
E. CN=NTDS Quotas	description	DirectoryString	1	General Admin.	
OU=PhoneBook	displayName	DirectoryString		Jose M. Venta	
	distinguishedName	DN	1	CN=Jose Mario Venta,CN=Users,DC=testdomain,DC=com	
E CN=TPM Devices	dSCorePropagationData	Generalized time	3	//25/2022 2:33:25 PM;7/25/2022 2:20:22 PM;1/1/1601 12:00:0	00
	givenName	DirectoryString	1	Jose	
E S CN=Administrator	initials	DirectoryString	1	М.	
E CN=Allowed RODC Passw	instanceType	Integer	1	4	
E CN=Cert Publishers	ipPhone	DirectoryString	1	1010	
	astLogoff	Integer8	1	0x0	
🗉 🎪 CN=Denied RODC Passwc _	astLogon	Integer8	1	0x0	
E CN=DnsAdmins	astLogonTimestamp	Integer8	1	7/25/2022 2:05:16 PM	
E CN=DnsUpdateProxy	logonCount	Integer	1	0	
E CN=Domain Admins	mobile	DirectoryString	1	469 010 1010	
E CN=Domain Computers	name	DirectoryString	1	Jose Mario Venta	
CN=Domain Controllers	nTSecurityDescriptor	NTSecurityDescriptor	1	D:AI(OA;;RP;4c164200-20c0-11d0-a768-00aa006e0529;;RS)(0	A
CN=Domain Guests	objectCategory	DN	1	CN=Person,CN=Schema,CN=Configuration,DC=testdomain,DC	=
CN=Domain Users	objectClass	OID	4	top;person;organizationalPerson;user	
CN=Enterprise Admins	objectGUID	OctetString	1	{8D38A338-1F2B-41A9-9898-946C83B0D74D}	
CN=Croup Policy Creator	a) objectSid	Sid	1	S-1-5-21-446639061-4013792813-2762567299-1107	
E. CN=Guest	primaryGroupID	Integer	1	513	
	pwdLastSet	Integer8	1	7/14/2022 3:10:31 PM	
		A CONTRACTOR OF			- 1

The following figure shows the two external contacts defined in the Active Directory under the Phonebook folder.



# Setting up Active Directory via the phone's GUI

## Getting the phone IP address

### Getting the IP address for ePhone8

Obtain the IP address of the phone you want to setup to access the Active Directory. In an ePhone8 you can do that by sliding your finger from the top of the screen down, which will open a small window where the IP address can be seen.



Alternatively, you can also find the IP address by selecting Settings (gear icon) on the main screen,



Here you will find the IP address.



### Getting the IP address for ePhone3/4x v2, ePhoneX/X-1

Press the **Menu** key on the phone.



Then select Status and press OK.



You will find the IP address under the Network tab as shown below.

•	Network	Phone	Account	TR069	Þ
	1. Vlan Id		None		
	2. Mode		DHCP/IPv4		
	3. ETH IP		10.0.0.18		
	4. Wi-Fi IP		N/A		
	5. SSID		N/A		
	Return				

## Getting the IP address for ePhone3/4x v1

Press the **Menu** key on the phone.



Select Status and press Enter.



Under Status you will find the phone IP address.



# Logging in to the phone's GUI

Open a web browser, enter the phone's IP address in the URL field and press Enter.



Then enter the User and Password into the login window and click Login.

User:	admin	••••
Password:		•••
Language:	English	•
	Login	

## Setting up the phonebooks

### ePhone8, ePhone3/4x v2, ePhoneX/X-1

Now you are in the phone's GUI. Go to **Phonebook** > **Cloud Phonebook**.

	Contacts	Cloud phonebook	Call List	Web Dial	Advanced
› System					
> Network	Cloud phoneboo	k XML2 XML3 XI	ML4 BACK		
› Line	Add to phonebook	Add to Blocked List	Add to Allowed List	1	Prev
› Phone settings	Index	Name	Phone		Phone1
> Phonebook	Manage Cloud P	honebooks			
	Index Cloud pho	nebook name Clour	phonebook URI	Calling Search	Phonebook Authentic

We will create two Active Directory Cloud Phonebooks, one for the PBX users and one for the external contacts. You can have up to 4 Active Directory Phonebooks.

Select LDAP from the dropdown menu, then click LDAP Phonebook.

Cloud phon	ebook
LDAP 🗸	LDAP Phonebook LDAP2 LDAP3 LDAP4 BACK
XML	
LDAP	
BroadSoft	
Add to phone	ebook Add Blocked List Add to Allowed list

To create the first phonebook, select LDAP1 from the dropdown menu under LDAP settings, enter the necessary information as shown in the example below and click Apply.

LDAP	LDAP 1 🗸		
Display Title:	PBX Phonebook	Version:	Version 3 🗸
Server Address:	10.0.0.5	Server Port:	389
LDAP TLS Mode:	LDAP 🗸	Calling Line:	AUTO 🗸
Authentication:	Simple	Search Line:	AUTO
Username:	CN=Jose Mario Venta, CN=L	Password:	
Search Base:	CN=Users,DC=testdomain,E	Max Hits:	100
Telephone:	ipPhone	Mobile:	mobile
Other:	mobile	Name Attr:	cn sn
Sort Attr:	cn	Display name:	cn
Name Filter:	((cn=%)(sn=%))	Number Filter:	( (ipPhone=%)(mobile=%)(
Enable In Call Search:		Enable Out Call Search:	

Display Title: Give this phonebook a name, in this case "PBX Phonebook"

Server Address: Enter the IP address of the server hosting the AD.

LDAP TLS Mode: Use LDAP

Authentication: Select "Simple" from the dropdown menu

Username: Enter the complete DN (as shown in the AD) for the user that will give access to the AD.

**Search Base**: Enter the path in the AD where the search should begin, in this example, the users are listed under testdomain.com/Users so, this is CN=Users, DC=testdomain, DC=com

Telephone: Enter the field in the AD where the extension number is specified, in this example, ipPhone

Other: If there are other fields populated in the AD you can enter one of them here

**Sort Att**r and **Name Filter** are automatically populated but if they are not just copy what's shown in the figure above.

Version: select Version 3 from the dropdown menu

Server Port: 389

**Calling Line** and **Search Line**: Enter the phone's line for which you want this Phonebook to show, in this case there is only one line so you can use "AUTO"

**Password**: Enter the AD password for the specified Username

Name Attr: cn sn

Display name: cn

Number filter: should be automatically populated but if it is not, enter

((ipPhone=%)(mobile=%)(other=%))

Please notice that the first field name (ipPhone) should be the same you have entered in the Telephone field above.

Checkmark the "Enable In Call Search" and "Enable Out Call Search"

Click on the Apply button.

**NOTICE:** fields **Telephone**, **Mobile** and **Other**, can be populated with whatever values of the AD you want to retrieve (where phone numbers may have been stored).

The users retrieved from the Active Directory should now be listed in the Cloud phonebook section, and you will see a new button that reads **PBX Phonebook** as shown below.

LDAP	PBX Pt	k Business Contacts LDAP	3 LDAP4 E	DACK	
Add t	o phonebook	Add to Blocked List Add to Allowed List	]	Previou	s Page: 1 ✓ Next
	Index				
	1	Jose Mario Venta	<u>1010</u>	<u>469 010 1010</u>	
	2	Administrator	9999	469 999 9999	
					100 🗸 Entries per page

To create the second phonebook named Business Contacts, select LDAP2 from the dropdown menu under LDAP settings, enter the necessary information as shown in the example below and click Apply.

LDAP	LDAP 2 🗸		
Display Title:	Business Contacts	Version:	Version 3 🗸
Server Address:	10.0.0.5	Server Port:	389
LDAP TLS Mode:	LDAP 🗸	Calling Line:	AUTO 🗸
Authentication:	Simple 🗸	Search Line:	AUTO 🗸
Username:	CN=Jose Mario Venta, CN=L	Password:	
Search Base:	OU=PhoneBook,DC=testdor	Max Hits:	100
Telephone:	telephoneNumber	Mobile:	mobile
Other:	homePhone	Name Attr:	cn sn
Sort Attr:	cn	Display name:	cn
Name Filter:	((cn=%)(sn=%))	Number Filter:	(I(telephoneNumber=%)(mo
Enable In Call Search:		Enable Out Call Search:	

The users retrieved from the Active Directory should now be listed in the Cloud phonebook section, and you will see a new button labeled **Business Contacts** as shown below.

AP	✓ PBX P	honebook Business Cont	LDAP3 LD	AP4 BACK	
dd	to phonebook	Add to Blocked List Add	to Allowed List	[	Previous Page: 1 V Next
)	Index				
	Index 1	Lewis Hamilton		<u>972 111 1111</u>	<u>972 001 0111</u>
) ) )	Index 1 2	Name Lewis Hamilton Sergio Perez		972 111 1111 469 222 2222	972 001 0111 469 022 0222

#### ePhone3/4x v1

LDAP settings for ePhone3 v1 and ePhone4x v1 are similar to the above, with a few minor differences in how a few of the settings are named. You can click the question mark 2 for a description of the setting.

PAC	LDAP 1 🗸		
Display Title	0	Version	Version 3 🗸 🕜
Server Address	0	Server Port	389
Authentication	None 🗸 🕜	Line	Auto 🗸 🕜
Username	0	Password	0
Search Base	<b>0</b>	Enable Calling Search	
Search Line	Auto 🗸		
Telephone	telephoneNumber	Mobile	mobile 📀
Other	home 2	Display name	cn 2
LDAP Name Filter	<b>0</b>	LDAP Number Filter	Ø

Once configured, the phonebook will appear in the Cloud phonebook list.

Cloud phonebook	
Search       XML1     XML2     XML3     XML4     XML5     XML6     XML7     XML8       LDAP4	PBX Phonebook Business Contacts LDAP3

# Viewing phonebook on the ePhone8

## Viewing ePhone8 individually created Phonebooks

On your ePhone8, tap on the Phonebook icon on the main screen.



Now tap on the web phonebook on the menu to the right of the screen.



Both Cloud Phonebooks should be listed on your screen, identified with the names you gave them before. You will see the IP address of the server hosting the Active Directory underneath each name.

Tap on the **PBX Phonebook**.



You will see the contents retrieved from the **PBX Phonebook** Active Directory as shown below. In this example is the contents of the folder that contains the Users. Other Active Directories may be structured differently, with Organization Units and such, in this example you can see a "Guest" user with a phone number and a user for extension 1010.

← PBX Phonebook		Q. Find contacts	
G Group Policy Creator Owners			()
G Guest	972 111 1000		()
J Jose Mario Venta	1010		0
K krbtgt			0
P Protected Users			()
R RAS and IAS Servers			0
Read-only Domain Controllers			()

Go back to the previous screen and tap on the **Business Contacts**.



Now you will see the external contacts and their phone numbers defined in the **Business Contacts** Active Directory.



## Configure Phonebook icon to access Active Directory directly

You can set up the ePhone8 Phonebook icon to access the Active Directory directly.

1. Select Settings Gear Icon that is located on the ePhone8 home screen.



2. Scroll down to System, and then select Display.

1002	Þ		11:54 AM
÷	Phone Settings		
805	Emergency Call		More
Media			
Q	Audio	¢)	Sound
	Video		
Syste	m		
Ý	Display	A	Language & Input
885 885	Кеу	Ŀ	Date & Time
Ð	Password	L.	Maintain
Ċ	Reboot		

3. Scroll down, and then select Select Phonebook Type.

1002	<b>Þ</b>		11:56 AM
÷	Display		
	Enable shortcuts and widgets		
	Enable operator mode		
	Theme	White Theme	
	Screen saver & Sleep		
	Power indicator		
	Select Phonebook Type	Network PhoneBook	

4. Select Network Phonebook.

1002 定			11:59 AM
$\leftarrow$ Display			
Enable sh	ortcuts and widgets Select Pho	e nebook Type	
Enable op	Contacts	0	
Theme	Group	0	
Screen sa	V Network PhoneBook	۲	>
Power ind	DoorAccess List	0	>
Select Pho	onebook Type N	etwork PhoneBook	
Default St	andby Mode D	esktop	

Press the Phonebook icon on the home screen and the Active Directory contacts will be displayed where user can scroll through the directory list or search by either Name or Number.

Search by number:



#### Search by name:



# Viewing phonebook on ePhone3/4x v2, ePhoneX/X-1

## Configure a Contacts Softkey to access Active Directory

Set the contacts Softkey to access the Active Directory as default:

1. Select Menu.



2. Use the arrow keys to scroll to **Basic** and press **OK** 



3. Select 6. Keyboard and press OK



4. Select 2 Soft DSS Key Settings and press OK



- 5. Configure the Soft DSS Key Settings as follows:
  - a. Softkey: 1-1
  - b. Type: Key Event
  - c. Key: LDAP Group
  - d. Line: LDAP Group1
  - e. Name: Contacts (or configure your own key name)
  - f. Press OK

Soft DSS Ke	02:37PM		
1. Softkey	1-1		0
2. Type	Key	Event	$\diamond$
3. Key	LDA	P Group	$\diamond$
4. Line	LDA	P Group1	$\langle \rangle$
5. Name	Cor	tacts	
Return	abc	Delete	ОК

6. From the Keyboard menu select 3. Softkey and press OK

2PM				
2. Soft DSS Key Settings				
3. Softkey				

7. Select 2. Contact and press OK



8. Using the left/right arrow keys select the soft DSS Key previously configured in step 5 and press **OK** (Dsskey1 = Softkey 1-1, Dsskey2 = Softkey 1-2, etc)

Softkey		_	02:39PM
1. Softkey Dsskey		key1	
Return	Left	Right	ОК

9. Return to the idle screen

Press the Contacts softkey **Contacts** and the full Active Directory is displayed where user can scroll through the directory list or search by either Name or Number.

Search by number:



Search by name:



# Viewing phonebook on ePhone3/4x v1

Configure a Contacts Softkey to access Active Directory

1. Select Menu.



2. Select Settings



3. Select Basic Settings



4. Select Keyboard



5. Select **2. Soft DSS Key Settings** and configure a key as follows:



- a. DSS Key1 (or select your desired DSS Softkey).
- b. Type: Key Event
- c. Key: LDAP
- d. Line: LDAP1
- e. Select Save or OK
- 6. Go back to Keyboard.
- 7. Select 5. Softkey

	Keyboard					
1	DSS Key Settings					
2	Soft DSS Key Settings					
3	3 Programmable Keys					
4	4 Desktop Long Pressed					
5	SoftKey					
	Prev. Next Enter Back					

8. Select 2. Dir



9. Use the left/right arrow keys to select value to DSS Key1 (or select your desired DSS soft key).



Notice that the menu name changed from Dir to DSS Key1.

SoftKey				
1	History			
2	DSS Key	r1		
3	DND			ļ
4	Menu			
	Add	Delete	ОК	Exit

- 10. Press **OK**.
- 11. Return to the idle screen.

Notice that the name of the Dir key at the bottom of the screen changed to LDAP.



1. Press the LDAP key to access the Active Directory. The full directory is displayed. The user can scroll through the directory list or search by either name or number.

Search by number:



Search by name:

Search:da_			
💽 Dandy			
💽 Dandy			l l l l l l l l l l l l l l l l l l l
💽 Randall			
💽 Adams			
Delete	2aB	ОК	Exit