

# Jams User Guide





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# Getting Started

JAMS is a server application used to enroll Jami clients into an Enterprise context. Currently, JAMS supports 3 sources for user authentication: LDAP, Active Directory and an embedded database.

## Obtaining JAMS

The latest Beta build of JAMS can be downloaded at: <https://git.jami.net/savoirfairelinux/jami-jams>

## System Requirements

- Windows, Linux or Mac OS operating system
- Java 11 or higher
- 4 GB RAM
- 1 CPU

## JAMS Concepts

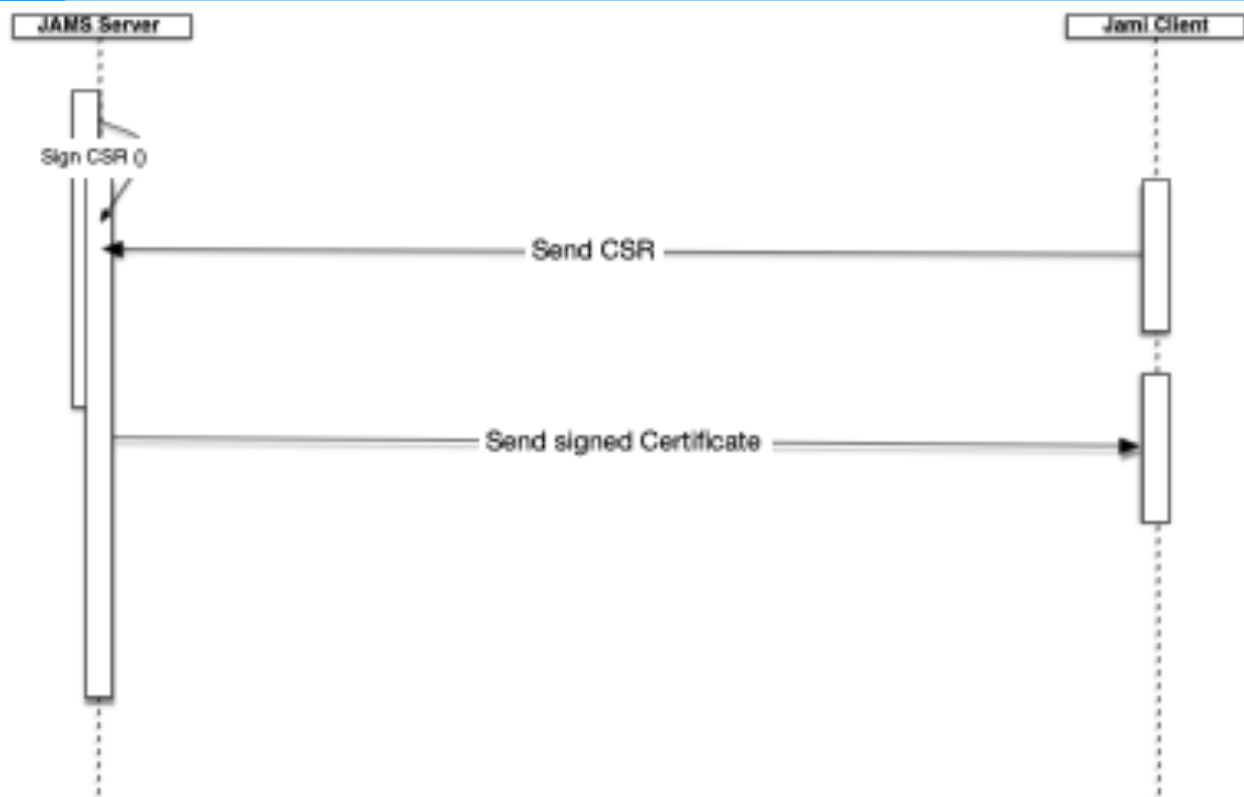
JAMS was built with security in mind, therefore it is intimately related to the X509 certificate management workflows.

The central concepts which are used in JAMS are the Certification Authority (CA) and the Certificate Signing Requests (CSR).

In the JAMS paradigm, a device (Jami client) requests a certificate to the server then presents it to other devices to be recognized as a valid member of the organization. Therefore, JAMS must be provided with a certificate authority in order to work properly.

In order to be completely secure, JAMS does not generate certificates for devices, but instead issues certificates based on a certificate signing request sent to it by the device, therefore removing the need to send a private key over the wire.

The diagram below shows the entire process of how a device enrolls with JAMS:



## Getting Started

1. Download the latest version of JAMS from: <https://jami.net/services/> (<https://jami.net/services/>)
2. Unpack the .tar file to a directory of your choice.
3. It is mandatory to run JAMS using a secure SSL connection. To request your SSL certificate files using OpenSSL and generate a pair of PEM and KEY, enter the following command:

```
openssl req -newkey rsa:2048 -new -nodes -x509 -days 3650 -keyout server.key -out server.pem
```

**Current limitation:** JAMS does not support reading encrypted private keys which require a password unlock.

1. Navigate to the directory where you have extracted the JAMS package and execute the following command:

```
java -jar jams-launcher.jar PORT SSL_CERTIFICATE SSL_CERTIFICATE_KEY
```

Argument	Details
PORT	The TCP port on which you want JAMS to listen for incoming connections

Argument	Details
SSL_CERTIFICATE	The location of the PEM-formatted SSL Certificate file
SSL_CERTIFICATE_KEY	The location of the PEM-formatted key file which is used with the SSL Certificate file from above

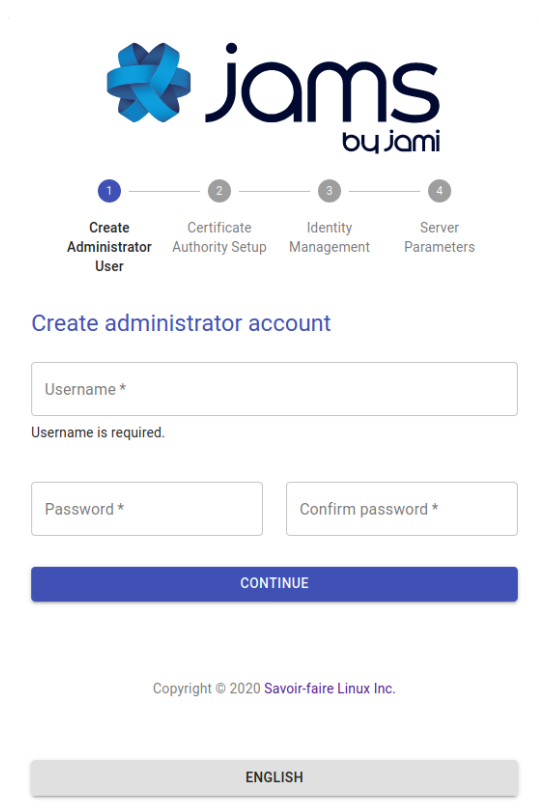
An example of the command would be:

```
java -jar jams-launcher 443 server.pem server.key
```

Please note that any port above 1024 can be safely used to run JAMS.

## Step 1: create your administrator account

This account will have administrative control and the rights to manage your users and group of Jami users.



The screenshot shows the JAMS by Jami web interface. At the top, there is a logo for 'jams by jami'. Below the logo, a progress bar indicates four steps: 1. Create Administrator User (highlighted), 2. Certificate Authority Setup, 3. Identity Management, and 4. Server Parameters. The main heading is 'Create administrator account'. Below this, there is a form with three input fields: 'Username \*', 'Password \*', and 'Confirm password \*'. A message 'Username is required.' is displayed below the first field. A blue 'CONTINUE' button is at the bottom of the form. At the very bottom, there is a copyright notice 'Copyright © 2020 Savoir-faire Linux Inc.' and a button labeled 'ENGLISH'.

## Step 2: setup the Certification Authority

The second step is to define your Certification Authority.

**Important:** a CA is not a server-side ssl certificate, it is a certificate which has the power to issue other certificates. Do not use the import option unless your company's security officer has issued you a CA certificate. Most commercially available certificates (i.e. those issued by

godaddy, letsencrypt, etc... ) are not CA certificates. If you are an end-user we highly recommend you use to create a self-signed CA option as providing an incorrect certificate type will lead to a non-functional server.

The image displays two side-by-side screenshots of the JAMS by Jami installation wizard, specifically the 'Certificate Authority Setup' step (Step 2 of 4).

**Left Screenshot (Self-Signed CA):**

- Progress bar: 1. Create Administrator User (checked), 2. Certificate Authority Setup (active), 3. Identity Management, 4. Server Parameters.
- Text: "Select an option for setting-up the certificate authority that will be used to sign all Jami accounts generated on this JAMS instance."
- Dropdown menu: "Create a self-signed Certificate Authority"
- Form fields: "Common Name \*" (with note "Common name is required."), "Choose a country", "State \*", "City \*", "Organization \*", "Organization Unit \*", and a "5 years" dropdown for validity.
- Button: "GENERATE SELF-SIGNED CERTIFICATE AUTHORITY"
- Footer: "Copyright © 2020 Savoir-faire Linux Inc." and "ENGLISH" language selector.

**Right Screenshot (Import Existing CA):**

- Progress bar: 1. Create Administrator User (checked), 2. Certificate Authority Setup (active), 3. Identity Management, 4. Server Parameters.
- Text: "Select an option for setting-up the certificate authority that will be used to sign all Jami accounts generated on this JAMS instance."
- Dropdown menu: "Import existing Certificate Authority"
- Form fields: "CA file (PEM-encoded)" with a "Browse..." button and "No file selected." text; "Key File (PEM-encoded)" with a "Browse..." button and "No file selected." text.
- Button: "IMPORT CERTIFICATE AUTHORITY"
- Footer: "Copyright © 2020 Savoir-faire Linux Inc." and "ENGLISH" language selector.

This certificate will be used to sign the enrollement requests which come from Jami devices. If you are not familiar with the X509 standard, we highly recommend you read the following articles to get familiar with the processes and practices which surround it:

<https://www.securew2.com/blog/public-key-infrastructure-explained/> (<https://www.securew2.com/blog/public-key-infrastructure-explained/>) <https://cheapsslsecurity.com/blog/understanding-the-role-of-certificate-authorities-in-pki/> (<https://cheapsslsecurity.com/blog/understanding-the-role-of-certificate-authorities-in-pki/>)

## Step 3: setup the user database

JAMS supports 3 different sources for the authentication of users:

- LDAP-compatible directory (such as OpenLDAP)
- Microsoft Active Directory
- Local embedded database

## Option 1: LDAP authentication

If your company provides you with LDAP directory for user management, you will need to know its access information and a automated account which has read-only rights to do use look-ups.

**jams**  
by jami

1 Create Administrator User 2 Certificate Authority Setup 3 Identity Management 4 Server Parameters

### Identity Management

Select the type of user directory to be integrated with JAMS

LDAP Server

LDAP Server informations

Server address \*

Administrator username \* Password \*

Base DN (Please use LDAP convention) \*

Use Start TLS

☐ Yes ☒ No

Filter 1

UID

SET IDENTITY PARAMETERS

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ENGLISH

Your admin should provide you most of this information but we do provide a detailed overview over each field in case you need some extra help:

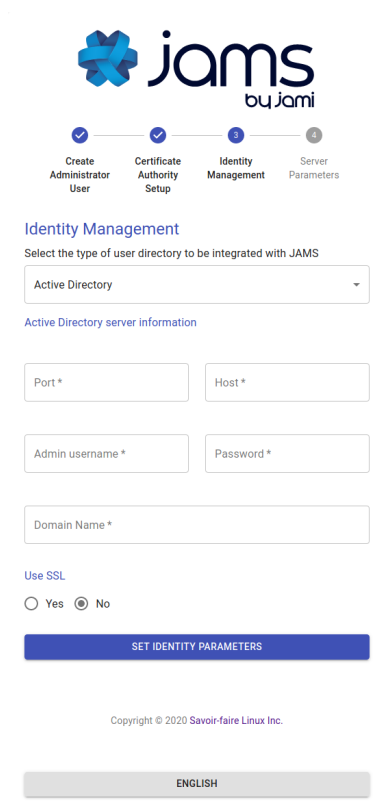
Field	Details
Use StartTLS	Your LDAP server can be configured to use either TLS/STARTTLS or PLAIN sockets, if STARTTLS is used you should mark this as true
Server Address	The address of your server with respect to the JAMS server, your LDAP does not need to be publicly accessible but should be accessible to JAMS. You should have either <code>ldap://</code> or <code>ldaps://</code> preceding the address.
Port	The port on which the LDAP server is listening for requests (usually 389 for PLAIN/STARTTLS and 636 for SSL/TLS)
Administrator Username	This is <b>NOT</b> the LDAP's administration account credentials, but the credentials of the account which has Read permissions to the LDAP database in order to lookup users. The format is generally <code>cn=bot,ou=robots,dc=domain,dc=org</code>
Password	The password used by the account above.



Field	Details
BaseDN	The base realm where the users accounts are located, in most cases it is <code>ou=users,dc=company,dc=org</code>

## Option 2: Microsoft Active Directory

If your company provides you with Active Directory for user management, you will need to know its access information and an automated account which has read-only rights to do use look-ups.



The screenshot shows the JAMS Identity Management setup interface. At the top, the JAMS logo is displayed. Below it, a progress bar indicates four steps: 1. Create Administrator User (checked), 2. Certificate Authority Setup (checked), 3. Identity Management (active), and 4. Server Parameters. The 'Identity Management' section is titled 'Identity Management' and instructs the user to 'Select the type of user directory to be integrated with JAMS'. A dropdown menu shows 'Active Directory' selected. Below this, the 'Active Directory server information' section contains several input fields: 'Port \*', 'Host \*', 'Admin username \*', 'Password \*', and 'Domain Name \*'. There is also a 'Use SSL' section with radio buttons for 'Yes' and 'No' (selected). A blue button labeled 'SET IDENTITY PARAMETERS' is at the bottom. The footer includes the copyright notice 'Copyright © 2020 Savoir-faire Linux Inc.' and a language selector button labeled 'ENGLISH'.

Your admin should provide you most of this information but we do provide a detailed overview over each field in case you need some extra help:

Field	Details
Port	The port on which Active Directory is listening (generally it is either 389 or 636)
Host	The address of your server with respect to the JAMS server, your Active Directory does not need to be publicly accessible but should be accessible to JAMS.

Field	Details
Administrator Username	This is <b>NOT</b> the Active Directory's administration account credentials, but the credentials of the account which has Read permissions to the Active Directory database in order to lookup users. The format is generally <b>cn=bot,ou=robots,dc=domain,dc=net</b>
Password	The password used by the account above.
Use SSL	Whenever this server uses SSL for data transmission
Domain Name	This is the legacy-formatted Windows Domain Name (i.e. <b>WINDOMAIN</b> )

## Option 3: local embedded database

The local database does not require any additional configuration, everything in the process is automated. This option allows you to create Jami users on the fly directly from the JAMS interface.

**jams**  
by jami

1 Create Administrator User 2 Certificate Authority Setup 3 Identity Management 4 Server Parameters

### Identity Management

Select the type of user directory to be integrated with JAMS

Local Database

[Advanced settings](#)

☐ Use public nameserver

**SET IDENTITY PARAMETERS**

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**Advanced settings:** by default, the option "Use public nameserver" is disabled. Usernames of your Jami users will not be stored on the public Jami nameserver and your users will only be able to communicate with users from your organization.

If you want your users to be searchable by external users and allow them to communicate with any Jami users, and not only the one from your organization, enable this option,

## Step 4: setup the server parameters

**jams**  
by jami

Create Administrator User   Certificate Authority Setup   Identity Management   **Server Parameters**

### Server Parameters

The global parameters cover the general configuration of the server's engine.

CORS domain name ⓘ

The domain name of your web client server. Requires http:// or https://

Domain \*

https://localhost:8080

Certificate Revocation List Lifetime ⓘ

5 minutes

Device lifetime

1 Year

User account lifetime

1 Year

SIP Configuration Template

Browse... No file selected.

**SET SERVER PARAMETERS**

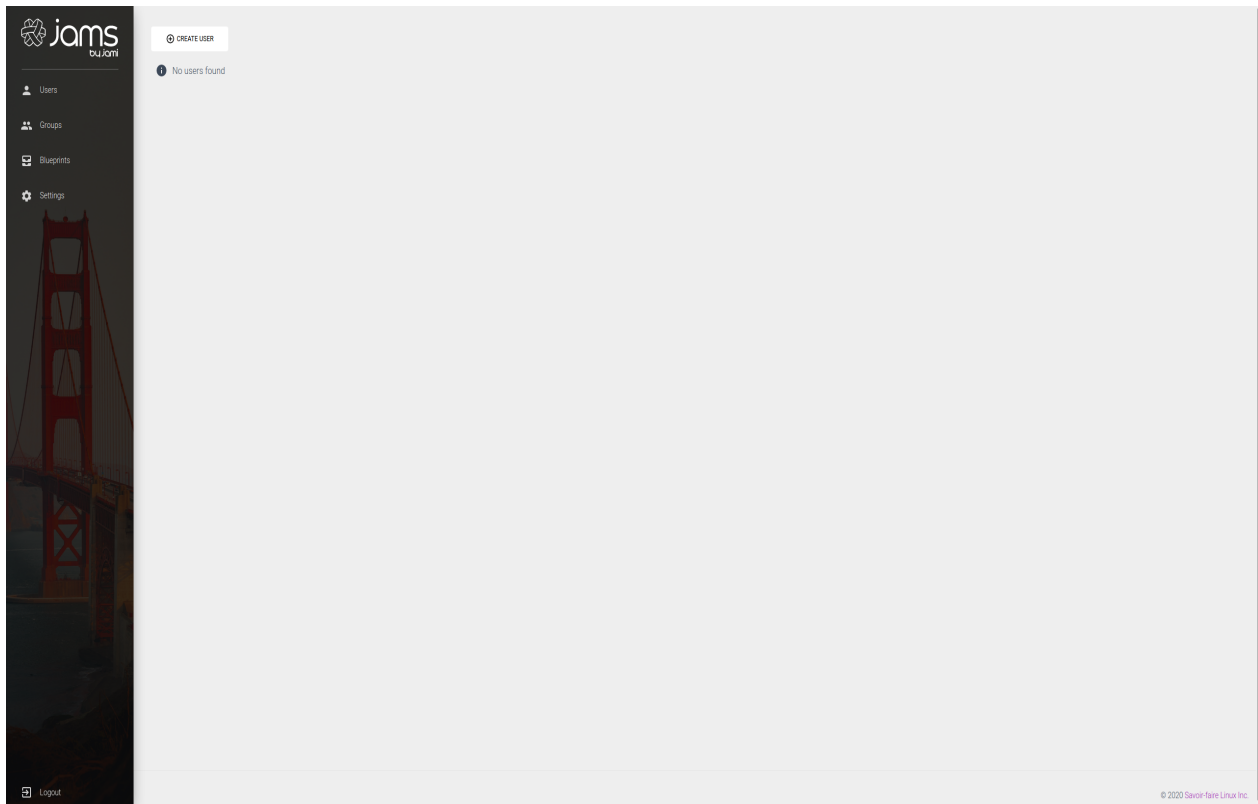
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ENGLISH

Parameter	Details
CORS Domain Name	The domain on which the JAMS client and administration UI will be running.
Certificate Revocation List Lifetime	The frequency at which the CRL is updated in memory
Device Lifetime	How long a device's certificate is valid before being considered stale and requiring re-enrollement
User Account Lifetime	How long a user account is valid before being considered stale and requiring re-enrollement

**Important** The *CORS Domain Name* corresponds to the web address used to access the Web UI. By default, it is set to the same URL as the one where you deploy JAMS. Only set a different URL if the Web UI has a different URL to the one where JAMS is deployed.

Click on "Set Server Parameters" to finalize the configuration. You will be redirected to the JAMS interface.



If you have configured JAMS with your LDAP or Active Directory, the list of users should of your organization should be visible in JAMS. If you have selected the local embedded database, you can now start creating new users by clicking on "Create User"

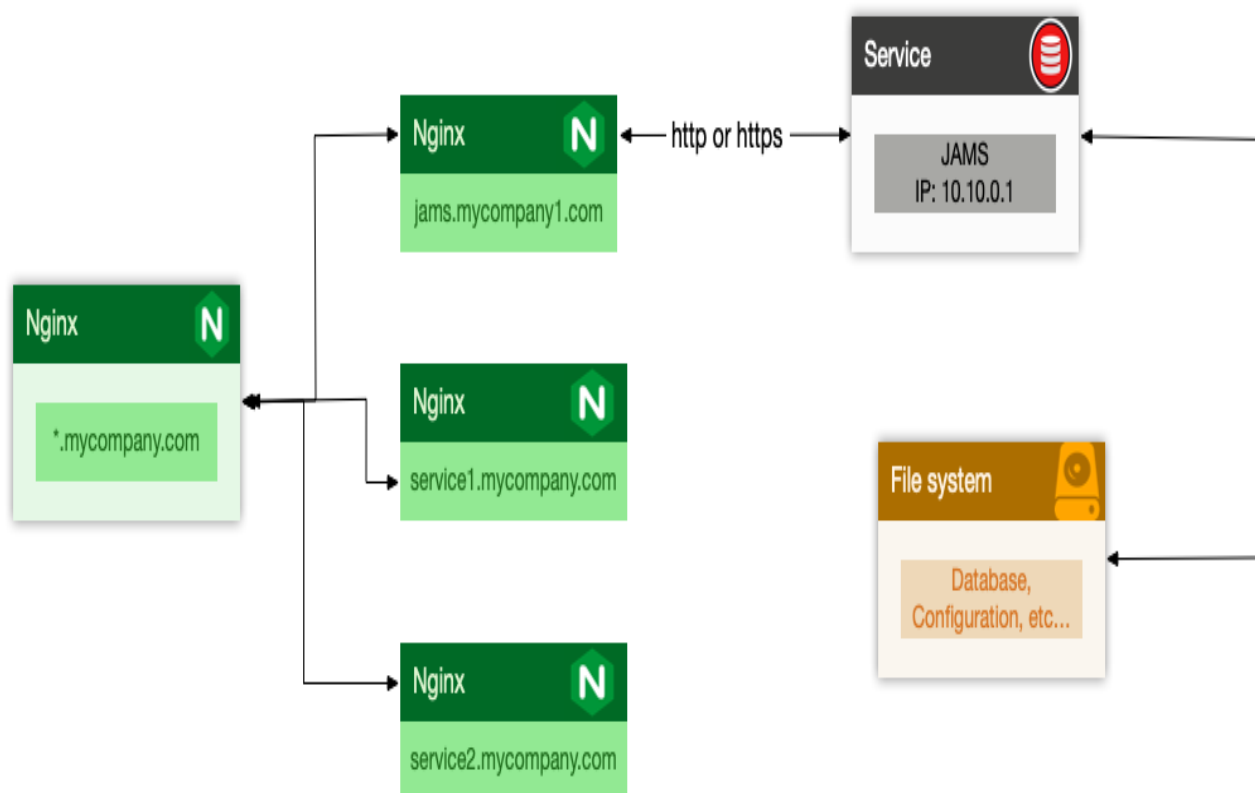
# Admin Guide

By default JAMS runs an embedded tomcat server visible on port 8080, however this is not practical for many reasons. This guide is designed to help you setup Jams to run in a production environment.

## JAMS & Nginx

It is generally not recommended to expose JAMS directly to the outside world and while it is required to run JAMS in SSL mode, we usually recommend users to place it behind Nginx or a similar web server which proxies requests between the outside world and Jams.

The following is an example map of how you could configure JAMS behind Nginx (the process would be similar if you wanted to use any other type of proxying solution):



The IP 10.10.0.1 is random, and should be seen as an example.

Typically you would add a new site called **jams-site.conf** to your nginx configurations which would contain the following entries if you wanted to place an SSL certificate at the Nginx level:

```
server {
    listen 443 ssl;
    listen [::]:443 ssl;
```

```

ssl on;
ssl_certificate /etc/certificates/mycertificate.pem
ssl_certificate_key /etc/certificates/mycertificatekey.pem
client_max_body_size 100M;
server_name jams.mycompany.com;
location / {
    proxy_pass          http://10.10.0.1:8080/;
    proxy_set_header    X-Real-IP $remote_addr;
    proxy_set_header    Host $http_host;
}
}

```

This is the preferred setup method by most admins, as local traffic is usually ran unencrypted since it is usually either inter-VM connection, a VLAN or another dedicated link.

## Troubleshooting and resetting

If you ever need to restart from 0 (i.e. reset everything and drop existing data) you can do so by deleting the following files in the distribution folder (/jams):

**The internal jams folder: /jams/jams**

- derby.log**
- oauth.key**
- oauth.pub**
- config.json**

This will reset the server to its original state and you will be able to run the configuration wizard again. Before performing this operation, please make sure to shutdown the server.

## Running JAMS as Windows Service

### Download and install JAMS

Visit <https://jami.net/services/> and download JAMS.

Extract JAMS to c:\jams

### Download and install JDK 11

Download JDK 11 from <https://www.oracle.com/java/technologies/javase-jdk11-downloads.html> (choose the corresponding architecture of your VM)

Install it using the install wizard.

## Download openssl to generate a key and a certificate

Download OpenSSL from <https://kb.firedaemon.com/support/solutions/articles/4000121705> (or choose another source <https://wiki.openssl.org/index.php/Binaries>)

Once downloaded extract it to c:\openssl then create a folder bin inside c:\openssl\bin

Create a new file inside bin named openssl.cnf (make sure that the file extension is .cnd and not .cnd.txt) and copy past the following default configuration <http://www.flatmtn.com/article/setting-openssl-create-certificates.html>

```
#
# OpenSSL configuration file.
#

# Establish working directory.

dir                = .

[ ca ]
default_ca         = CA_default

[ CA_default ]
serial              = $dir/serial
database            = $dir/certindex.txt
new_certs_dir       = $dir/certs
certificate          = $dir/cacert.pem
private_key         = $dir/private/cakey.pem
default_days        = 365
default_md          = md5
preserve            = no
email_in_dn         = no
nameopt             = default_ca
certopt             = default_ca
policy              = policy_match

[ policy_match ]
countryName         = match
stateOrProvinceName = match
organizationName    = match
organizationalUnitName = optional
commonName          = supplied
emailAddress         = optional
```

```

[ req ]
default_bits                = 1024                # Size of keys
default_keyfile              = key.pem             # name of generated keys
default_md                  = md5                 # message digest algorithm
string_mask                 = nombstr             # permitted characters
distinguished_name          = req_distinguished_name
req_extensions               = v3_req

[ req_distinguished_name ]
# Variable name                Prompt string
#-----
0.organizationName           = Organization Name (company)
organizationalUnitName       = Organizational Unit Name (department, division)
emailAddress                 = Email Address
emailAddress_max             = 40
localityName                 = Locality Name (city, district)
stateOrProvinceName          = State or Province Name (full name)
countryName                  = Country Name (2 letter code)
countryName_min              = 2
countryName_max              = 2
commonName                   = Common Name (hostname, IP, or your name)
commonName_max               = 64

# Default values for the above, for consistency and less typing.
# Variable name                Value
#-----
0.organizationName_default   = My Company
localityName_default         = My Town
stateOrProvinceName_default  = State or Providence
countryName_default          = US

[ v3_ca ]
basicConstraints              = CA:TRUE
subjectKeyIdentifier          = hash
authorityKeyIdentifier        = keyid:always,issuer:always

[ v3_req ]
basicConstraints              = CA:FALSE
subjectKeyIdentifier          = hash

```



## Add OpenSSL to Sytem Environment variables

Go to Edit the system environment variables -> Environment Variables, then in System variables edit Path and add c:\openssl\

## Configure OpenSSL

Execute the following command to set the path to OpenSSL configuration.

```
set OPENSSL_CONF=c:\openssl\bin\openssl.cnf
```

Open the command prompt and cd c:\jams ans generate the Key and Certificate:

```
openssl req -newkey rsa:2048 -new -nodes -x509 -days 3650 -keyout server.key -out server.pem
```

Follow the wizard.

Once the key and certificate are generated execute the dir command you should see an output like this:

```
c:\jams>dir
Volume in drive C has no label.
Volume Serial Number is BC94-9EF2

Directory of c:\jams

2020-11-10  12:38 PM
.
2020-11-10  12:38 PM
..
2020-10-22  10:56 AM      5,186,016 jams-launcher.jar
2020-10-22  10:56 AM     33,413,882 jams-server.jar
2020-11-10  11:53 AM
libs
2020-11-10  12:34 PM      1,732 server.key
2020-11-10  12:38 PM      1,336 server.pem
2020-10-22  04:05 PM     2,047,932 userguide.pdf
          5 File(s)      40,650,898 bytes
          3 Dir(s)    93,365,936,128 bytes free
```

Now execute the following command tot start JAMS

```
java -jar jams-launcher.jar PORT_NUMBER (eg. 8443 or 443) server.pem server.key
```

Open a navigator on the server and visit <https://localhost:443> or <https://localhost:8443> to validate that it's working.

Click CTRL + C to close the application

## Expose your localhost to the internet

Click on Windows and search for Windows Defender Firewall with Advanced Security.

Right click on Inbound Rules and click on New Rule...

Select Port click next and specify the port you want to use example 443 or 8443.

Click next and select Allow the connection and click next.

Leave all of Domain Private and Public select and click next.

Name your Rule JAMS Inbound and click Finish

Now right click on Outbound Rules and click on New Rule...

Select Port click next and specify the port you want to use example 443 or 8443.

Click next and select Allow the connection and click next.

Leave all of Domain Private and Public select and click next.

Name your Rule JAMS Outbound and click Finish.

You are all set. You can now visit your application through the server domain name or IP address on port 443 or 8443.

## Create a JAMS Windows Service (Embed Tomcat Server Windows Service) to start JAMS with the server

In order to create a JAMS Windows Service you can use the tool NSSM provided on <http://nssm.cc/download> <https://github.com/kirillkovalenko/nssm> (<https://github.com/kirillkovalenko/nssm>)

Once downloaded open a command prompt and change directory to `nssm-2.24\win64` then execute:

```
nssm.exe install JAMS
```

A GUI interface will open.

In the Path field specify the path to the Java executable example:

```
"C:\Program Files\Common Files\Oracle\Java\javapath\java.exe".
```

In the Startup directory put the

`"C:\jams" installation folder path.`

In the last field Arguments add the following arguments:

`-classpath "c:\jams" -jar jams-launcher.jar PORT_NUMBER server.pem server.key`

where PORT\_NUMBER is the port number you want to use to serve the application example 443 or 8443

Now your JAMS application will start with the server.

Source: <https://medium.com/@lk.snatch/jar-file-as-windows-service-bonus-jar-to-exe-1b7b179053e4> (<https://medium.com/@lk.snatch/jar-file-as-windows-service-bonus-jar-to-exe-1b7b179053e4>)

## Running JAMS as a Linux Service

Running JAMS as a Linux Service is fairly straightforward with systemd - you simply created a service unit file with the following structure:

**[Unit] Description=JAMS Server**

[Service] Type=simple WorkingDirectory=[DIRECTORY WHERE JAMS WAS UNZIPPED] ExecStart=/usr/bin/java -jar [DIRECTORY WHERE JAMS WAS UNZIPPED]/jams-launcher.jar PORT SSL\_CERTIFICATE SSL\_CERTIFICATE\_KEY

[Install] WantedBy=multi-user.target

# Client Guide

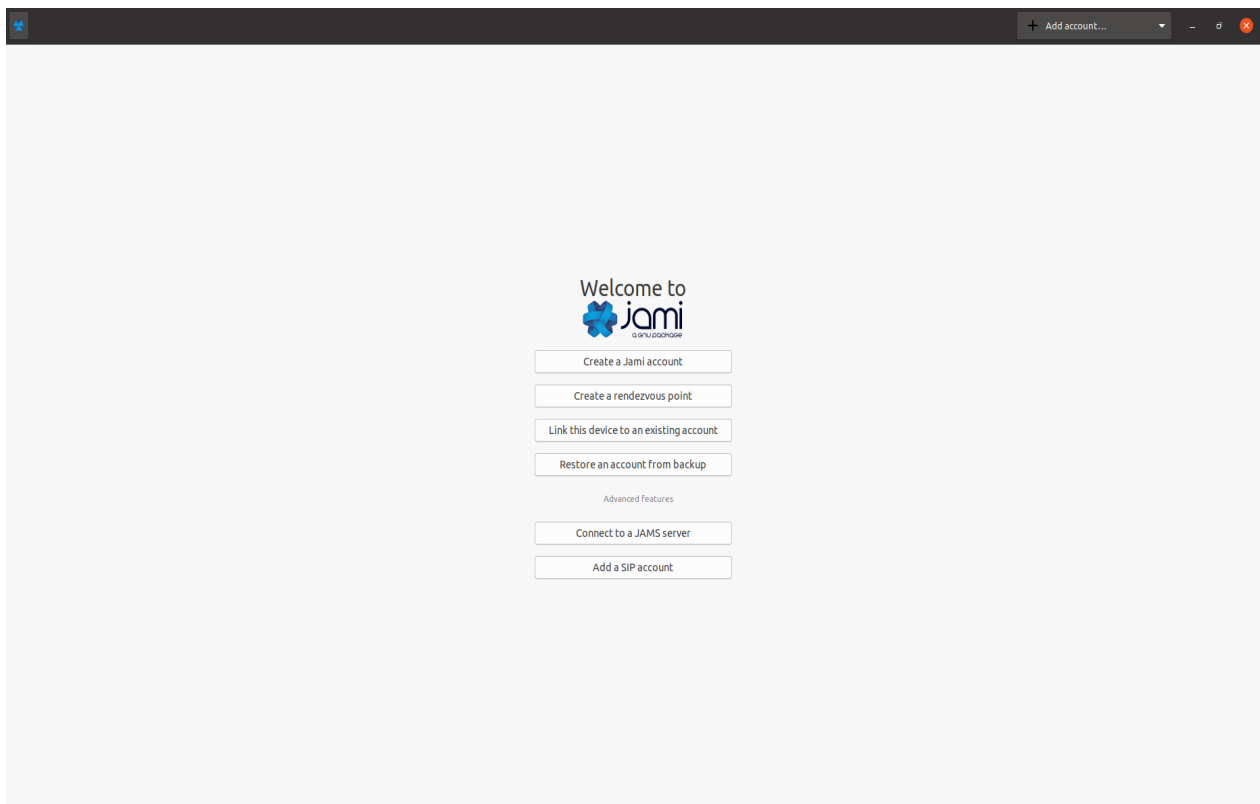
Depending on your operating system, we have included the tutorial on how to connect to the management server from the Windows, MacOS, Android and iOS clients.

For the purposes of this tutorial, we assume that

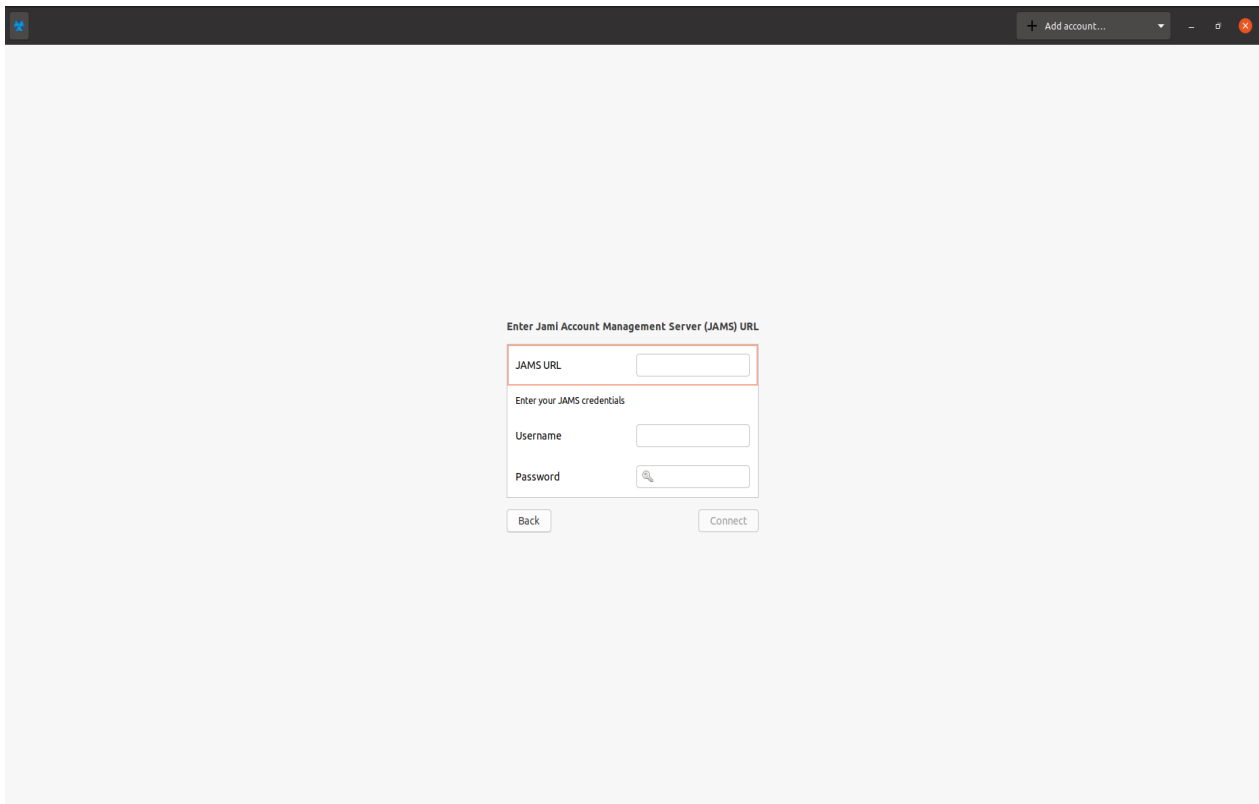
1. The server and the device trying to connect are either
  1. On the same network
  2. The server is publicly accessible to the outside world
2. You have a valid username/password pair to connect to the server

## Connect from a Linux device

Open Jami, go to the login page. Click on "Advanced":



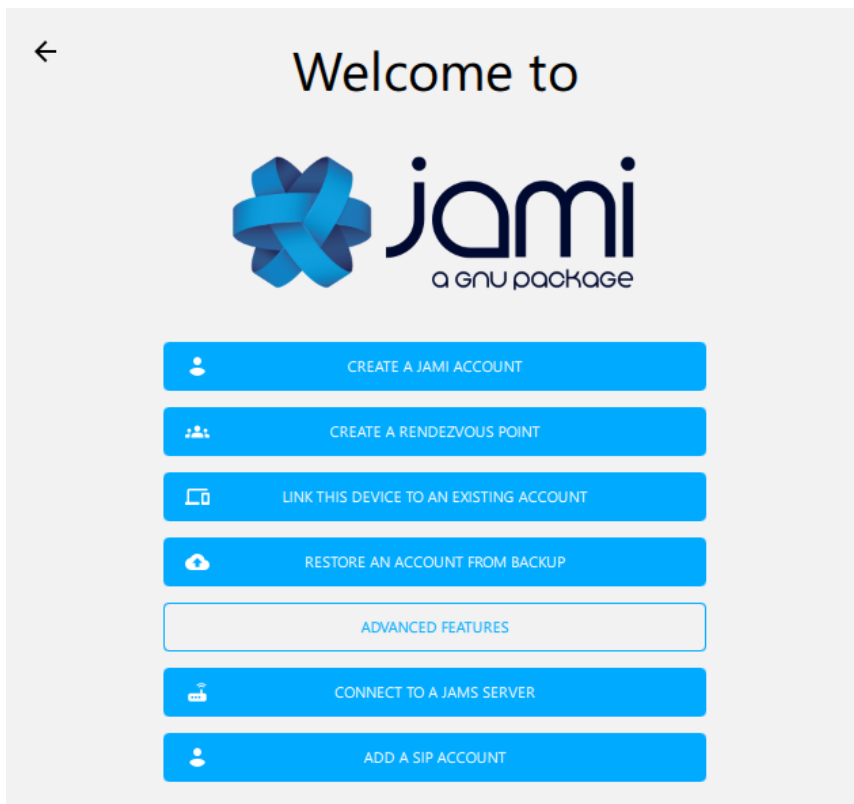
Select the option "**Connect to a JAMS server**" which will lead you to the following screen:

A screenshot of a web browser window showing a login form for the Jami Account Management Server (JAMS). The browser's address bar shows '+ Add account...' and standard window controls. The form is centered on a light gray background. It has a title 'Enter Jami Account Management Server (JAMS) URL'. Below the title, there is a text input field labeled 'JAMS URL'. Underneath that, the text 'Enter your JAMS credentials' is displayed. This is followed by two more input fields: 'Username' and 'Password'. The 'Password' field has a small eye icon to its right. At the bottom of the form, there are two buttons: 'Back' on the left and 'Connect' on the right.

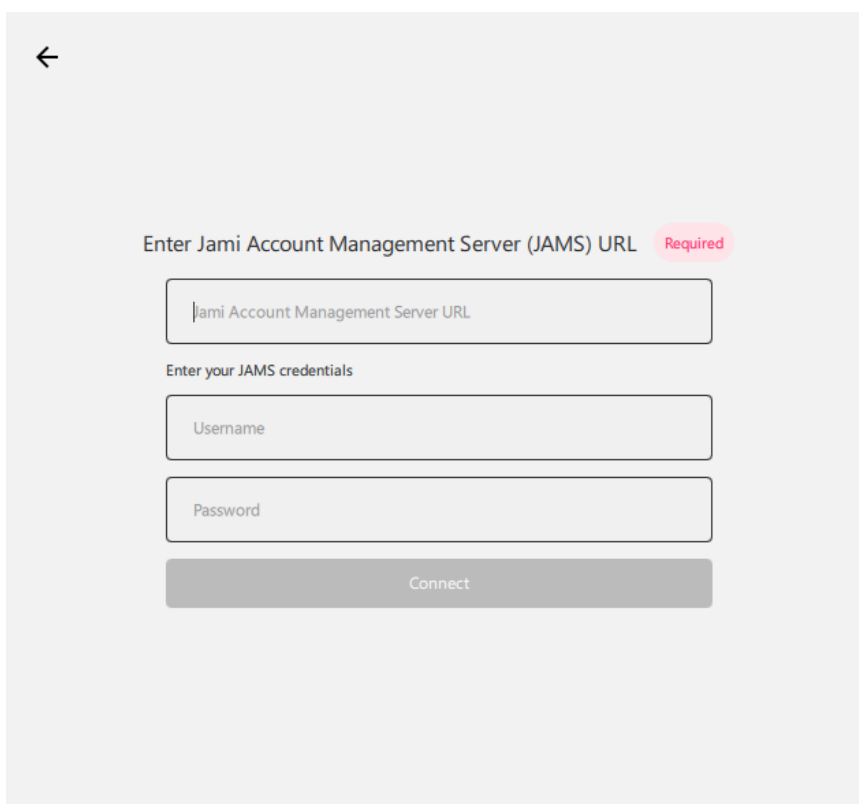
The **Jami Account Management Server URL** in this case would be the DNS address of your server and the username and password which correspond to your account. If you have configured the server with an LDAP/AD backend, it would be your LDAP/AD username and password.

## Connect from a Windows device

Open Jami, go to the login page. Click on "Advanced":



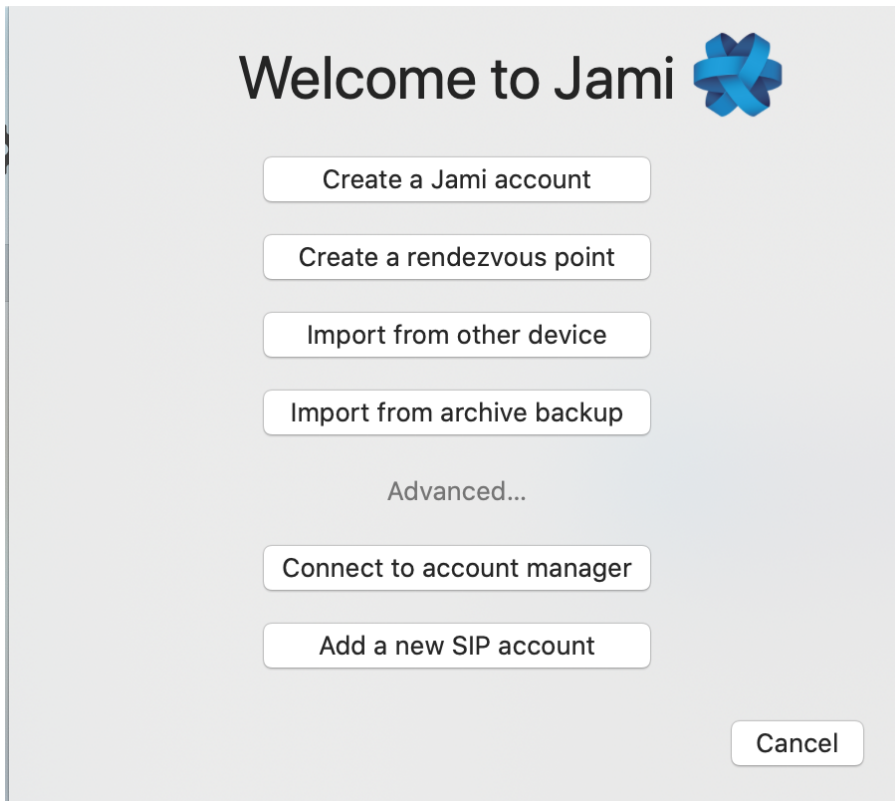
Select the option "Connect to a JAMS server" which will lead you to the following screen:

The image shows the 'Connect to JAMS server' screen. It has a back arrow at the top left. The main heading is 'Enter Jami Account Management Server (JAMS) URL' with a red 'Required' label. Below this is a text input field containing the placeholder 'Jami Account Management Server URL'. Underneath is the heading 'Enter your JAMS credentials'. This is followed by two text input fields: 'Username' and 'Password'. At the bottom is a grey 'Connect' button.

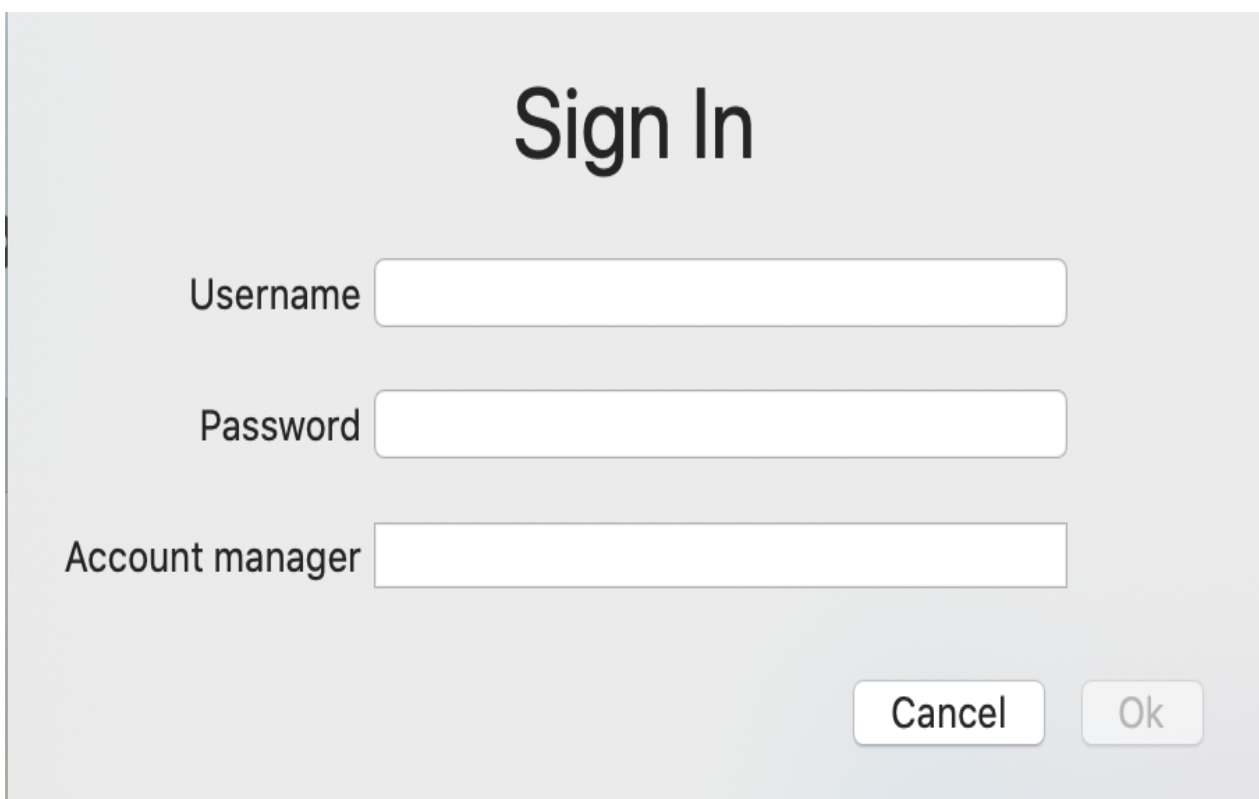
The **Jami Account Management Server URL** in this case would be the DNS address of your server and the username and password which correspond to your account. If you have configured the server with an LDAP/AD backend, it would be your LDAP/AD username and password.

## Connect from a MacOS device

Open Jami, go to the login page. Click on "Advanced":



Select the option "Connect to account manager" which will lead you to the following screen:



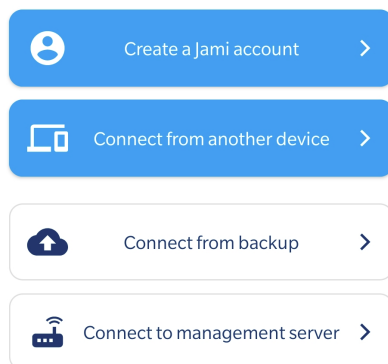
The **Jami Account Management Server URL** in this case would be the DNS address of your server and the username and password which correspond to your account. If you have configured the server with an LDAP/AD backend, it would be your LDAP/AD username and password.

## Connect from an Android device

Open Jami, go to the login page.

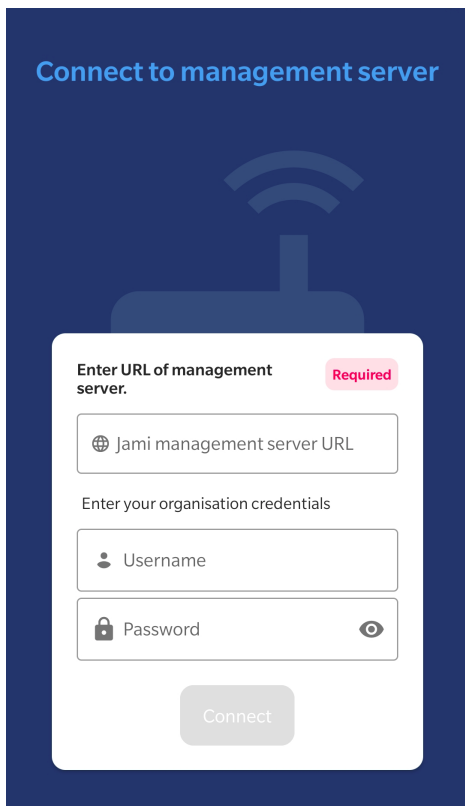


**A Jami account allows you to reach people  
securely in peer to peer through a fully  
distributed network.**



Select the option "**Connect to management server**" which will lead you to the following screen:





Connect to management server

Enter URL of management server. **Required**

Jami management server URL

Enter your organisation credentials

Username

Password

Connect

The server in this case would be the DNS address of your server and the username and password which correspond to your account. If you have configured the server with an LDAP/AD backend, it would be your LDAP/AD username and password.

## Connect from an iOS device

Open Jami, go to the login page.

No SIM

3:38 PM

100%

Cancel



# Welcome to Jami !

[Create a Jami account](#)[Link this device to an account](#)[Connect to account manager](#)[Create Sip Account](#)

Select the option "**Connect to account manager**" which will lead you to the following screen:

No SIM

3:38 PM

100%



## Sign In

Enter Username

Enter Password

Enter account manager URI

Notifications

[Sign In](#)

The server in this case would be the DNS address of your server and the username and password which correspond to your account. If you have configured the server with an LDAP/AD backend, it would be your LDAP/AD username and password.