
Bitmask Documentation

Release 0.10a1

LEAP Encryption Access Project

Jul 25, 2017

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Release v0.10. (*Installation and Known Issues*)

CHAPTER 1

What is Bitmask?

Bitmask is the client for the services offered by [the LEAP Platform](#). The services currently deployed are Encrypted Internet Proxy (VPN) and Encrypted Mail.

Bitmask offers a **command-line interface** and a **multiplatform desktop client**. It can be also used as a **set of libraries** to communicate with the different services from third party applications.

Bitmask is written in python using [Twisted](#) and licensed under the [GPL3](#). The Graphical User Interface is written in html+js and uses [PyQt5](#) for serving the application.

Understood! Show me the docs!

These documents that you are reading are, mostly, a **guide for developers** that want to contribute to the development of Bitmask, and seek to understand better the code organization and the contribution process.

The **authoritative users guide** lives at bitmask.net.

Other important documents about the LEAP Project can be found at the [Official LEAP documentation](#) site. If you ever need an offline copy, you can clone the [repo for the LEAP Docs](#) site. That repo contains also the related LEAP Platform documentation and all the latest design documents. Enhancement contributions and new translations are always welcome! Just open a new merge request.

On the contrary, this developers documentation you are reading right now is maintained in the [bitmask-dev](#) git repo itself, and [can also be checked online](#).

Building the docs

if you want to build these docs locally, you can do:

```
make doc
```

from the topmost folder in the [bitmask-dev](#) repo. Note that you need to have sphinx installed.

Installation and packaging

Users: go to the Bitmask Install guide <https://bitmask.net/en/install>

Translators: improved/new translations welcome!

Running latest code

Refer to the *setting up the development environment* section to learn how to run Bitmask from the latest code in the master branch.

Building new bundles

The standalone bundles are built with PyInstaller.

If you are inside a development virtualenv, you should be able to install it together with some extra development dependencies with:

```
pip install -r pkg/requirements-dev.pip
```

And then just do:

```
make bundle
```

To build a new bundle.

There's also a script that automates re-creating the virtualenv from which the packaging takes place:

```
pkg/build_bundle_with_venv.sh
```

To ensure a repeatable system-wide environment, you can build those bundles from within a docker container. First you need to create the container:

```
make docker_container
```

and then you can launch the above script inside that container:

```
make bundle_in_docker
```

A new bundle is created by the CI for every commit using this procedure involving docker, you can read more about the bundles in the *qa section*.

Debian packages

ubuntu: <https://bitmask.net/en/install/linux#ubuntu-packages>

debian: <https://bitmask.net/en/install/linux#debian-packages>

Building latest packages (TBD).

Archlinux

Not officially supported, but DoctorJellyFace maintains a PKGBUILD that can be found in the [AUR](#) repo.

Testing and Reporting

Latest bundles for the next release cycle are automatically built by our Gitlab CI for every commit in master.

Beginning with 0.9.5, we have ported again the VPN service into the Bitmask client. Choose the following testing providers (beware that no guarantee about continuity of the accounts is made at this point):

- For Encrypted Email, test against <https://cdev.bitmask.net>
- For VPN, test against <https://demo.bitmask.net>

Reporting bugs

- Bug reports go into our [Issue Tracker](#).
- [Here](#) is some very good read about what constitutes a [good bug report](#).
- Have also a look at the [Known Issues](#) page.

Tips for QA

If you want to give a hand testing the unreleased bundles, please follow the following tips:

- Focus all your efforts, if possible, on whatever is *the* golden distro at the time of the release. This currently is: Ubuntu 16.04.x LTS, 64bits, with Unity as the default desktop environment. It's very important to have a reference environment as bug-free as possible, before trying to solve issues that are present in other distributions or window managers.
- Identify all issues that need help in the QA phase. You can do that going to the bug tracker, and filtering all the issues for a given release that are in the QA state.

- If the issue is solved in your tests for this alpha release, please add a comment to the issue stating the results of your tests, and the platform and desktop environment in which your tests took place. But please do not change the QA status on the issue. We generally leave this role to the author of the original issue, or to the person playing the role of the release QA master.
- Always test with a newly created account (specially relevant when testing email candidates)
- Always test with the reference Mail User Agent (currently, Thunderbird, in whatever version is present in the reference distribution).
- Remove also any thunderbird configuration, start a freshly configured account.
- If you find a new bug, please make sure that it hasn't already been reported in the issue tracker. If you are absolutely certain that you have found a new bug, please attach a log of a new bitmask session, which should contain *only* the behaviour needed to reproduce the bug you are reporting.

Xenial live image testing

Pasting the following lines in a terminal will help you testing the latest bundle from inside a virtual machine running a **live image for xenial** (note that this is **not** an installation method!):

```
curl https://0xacab.org/leap/bitmask-dev/raw/master/docs/testing/latest-bundle-xenial_
↵| bash
```

Testing against providers with invalid certificates

If you need to test against a provider without a valid certificate, you can use the following flag:

```
SKIP_TWISTED_SSL_CHECK=1 bitmask
```

Thunderbird integration

You can configure Thunderbird manually with the info that is shown in the “Configure a Mail Client” section, within the Mail pane in Bitmask. However, there is a Thunderbird extension that automates this configuration. Before configuring a Bitmask account in Thunderbird, make sure that you have Bitmask running and that you are logged in with an account that supports the mail service (mail.bitmask.net).

These are the steps:

1. Run Bitmask, login with an account that supports encrypted email.
2. From within Thunderbird, install the [Bitmask Thunderbird Extension](#).
3. Enable the menu bar: Right Click in the top bar > Menu Bar
4. Create a Bitmask Account in Thunderbird: From the menubar, click on File > New > Bitmask Account
5. Fill in your name. This can be anything.
6. Fill in your username, in the form “username@provider“

Known Issues

VPN

- Partial support for VPN in Linux.
- Known problems with hibernation (more debug info is welcome).

Wizard

- In the wizard log in / sign up page, the username field gets deselected.
- The list of providers should have icons, be sortable, filterable.
- The wizard should look more pretty.

Main window

- UI doesn't subscribe to events yet, won't get updated if user has logged out via the command line interface.
- Removing an account does not actually clean up all the files associated with that account (need backend code).
- #8840: No ability to recover if the key generation fails.

Pixelated Integration

The integration of the Pixelated webmail is a bit rough at the moment.

Particularly, simultaneous use of Pixelated and Thunderbird is likely to hit some usability issues:

- #8905: pixelated: if a message is open in Thunderbird, the unread count is not updated
- #8906: pixelated: can't see messages that were sent with Thunderbird
- Pixelated MUA is not authenticated.

Hacking

So you want to hack on Bitmask? Thanks, and welcome!

This document assumes a `Linux` environment.

There are also ongoing documents with notes for setting up an `osx` and a `windows` working environments too, contribution is very much welcome on those docs!

Running tests

Tox is all you need:

```
tox
```

Test when changes are made to common/soledad

If you are developing against a non-published branch of `leap.common` or `leap.soledad`, run instead:

```
tox -e py27-dev
```

This expects `leap_common` and `soledad` repos to be checked out in the parent folder.

Setting up the development environment

Automated procedure

There is an automated script that runs, sequentially, all the commands in the section below. In debian-based systems, you can get a fully working development environment with:

```
make dev-bootstrap
```

To activate the freshly created virtualenv the next time, you must use `pew`:

```
pew workon bitmask
```

Note: the bootstrap script is, at the moment, quite opinionated. for instance, it installs and depends on `pew`, it checks out the `bitmask-dev` repo under `~/leap` folder, and it assumes you are using `zsh`. if you think it should allow more freedom of choices, feel free to open a pull request.

Manual instructions

Install the system-wide dependencies. For debian-based systems:

```
sudo apt install build-essential python-dev python-virtualenv \  
libsqlcipher-dev libssl-dev libffi-dev \  
python-pyqt5 python-pyqt5.qtwebkit
```

If you are going to be running tests that involve creating a lot of OpenPGP keys, and specially in vms, the following is also recommended to speed up things:

```
sudo apt install haveged
```

Clone the repo. The master branch has the latest code:

```
git clone https://0xacab.org/leap/bitmask-dev  
cd bitmask-dev
```

Create a virtualenv and activate it:

```
virtualenv venv  
source venv/bin/activate
```

By the way, if you plan to get into heavy development, you might want to consider using something like `pew`, instead of the plain `virtualenv`.

Now you should be able to install all the `bitmask` dependencies:

```
make dev-latest-all
```

You can also install some dependencies that are going to be useful during development:

```
pip install -r pkg/requirements-dev.pip
```

Main Bitmask Components

The Core

The main bitmask-dev repo orchestrates the launching of the bitmaskd daemon. This is a collection of services that launches the vpn and mail services. `bitmask_vpn`, `mail` and `keymanager` are the main modules, and `soledad` is one of the main dependencies for the mail service.

The Qt gui

The Qt gui is a minimalistic wrapper that uses PyQt5 to launch the core and display a qt-webkit browser rendering the resources served by the core. Its main entrypoint is in `gui/app.py`.

The Javascript UI

A modern javascript app is the main Bitmask Frontend. For instructions on how to develop with the js ui, refer to `ui/README.md`.

The Thunderbird Extension

The development for the Thunderbird Extension happens on [this repo](#). This extension gets published to the [mozilla addons page](#).

Debugging Bitmask

A must-read for debugging the Bitmask Core daemon is the [manhole HowTo](#).

Bitmask privileged runner

For launching VPN and the firewall, Bitmask needs to run with administrative privileges. In linux, `bitmask_root` is the component that runs with root privileges. We currently depend on `pkexec` and `polkit` to execute it as root. In order to do that, Bitmask needs to put some policykit helper files in a place that is root-writeable.

If you have installed Bitmask from some distro package, these folders should be already in place. If you're running the Bitmask bundles, the first time you will be prompted to authenticate to allow these helpers to be copied over (or any time that these helpers change).

However, if you're running bitmask in a headless environment, you will want to copy the helpers manually, without involving `pkexec`. To do that, use:

```
sudo `which bitmask_helpers` install
```

You can also uninstall them:


```
sudo `which bitmask_helpers` uninstall
```

How to contribute code

- Send your merge requests to <https://0xacab/leap/bitmask-dev>, it will be subject to code-review.
- Please base your branch for master, and keep it rebased when you push.
- After review, please squash your commits.

Coding conventions

- Follow pep8 for all the python code.
- Git messages should be informative.
- There is a pre-commit hook ready to be used in the docs/hooks folder, alongside some other hooks to do autopep8 on each commit.

```

~~~~~
HOW TO USE THIS TEMPLATE:
~~~~~

Run `git config commit.template docs/hooks/leap-commit-template` or
edit the .git/config for this project and add
`template = docs/hooks/leap-commit-template` under the [commit] block

~~~~~
COMMIT TEMPLATE FORMAT EXPLAINED
~~~~~

[type] <subject>

<body>
<footer>

Type should be one of the following:
- bug (bug fix)
- feat (new feature)
- docs (changes to documentation)
- style (formatting, pep8 violations, etc; no code change)
- refactor (refactoring production code)
- test (adding missing tests, refactoring tests; no production code change)
- pkg (packaging related changes; no production code change)
- i18n translation related changes

Subject should use imperative tone and say what you did.
For example, use 'change', NOT 'changed' or 'changes'.

The body should go into detail about changes made.

The footer should contain any issue references or actions.
You can use one or several of the following:

- Resolves: #XYZ
- Related: #XYZ

```

```
- Documentation: #XYZ
- Releases: XYZ
```

The Documentation field should be included in every new feature commit, and it should link to an issue in the bug tracker where the new feature is analyzed and documented.

For a full example of how to write a good commit message, check out https://github.com/sparkbox/how_to/tree/master/style/git

Dependencies

We try hard not to introduce any new dependencies at this moment. If you really have to, the packages bitmask depends on have to be specified *both* in the setup.py and the pip requirements file.

Don't introduce any pinning in the setup.py file, they should go in the requirements files (mainly pkg/requirements.pip).

Signing your commits

For contributors with commit access, you **should** sign all your commits. If you are merging some code from external contributors, you should sign their commits.

For handy alias for sign and signoff commits from external contributors add to your gitconfig:

```
[alias]
# Usage: git signoff-rebase [base-commit]
signoff-rebase = "!GIT_SEQUENCE_EDITOR='sed -i -re s/^pick/e/' sh -c 'git rebase -i
↪$1 && while test -f .git/rebase-merge/interactive; do git commit --amend --signoff -
↪-no-edit && git rebase --continue; done' -"
```

Merging code

We avoid merge commits into master, they make a very messy history. Put this in your gitconfig to only allow the merges that can be resolved as a fast-forward:

```
[merge]
ff = only
```

Making a new release

A checklist for the release process can be found [here](#)

As part of the release we also tag upload snapshots of the leap.bitmask_js package, in order to allow installation of the javascript application without needing to compile the javascript and html assets. This is done with:

```
cd ui
make dist-build
```

and then you can upload it to pypi:

```
make dist-upload
```

Contribution ideas

Want to help? Come talk to us on irc or the mailing list!

Some areas in which we always need contribution are:

- Localization of the client (talk to elijah).
- Multiplatform gitlab runners
- Windows and OSX packaging (talk to kali)
- Windows Firewall integration for VPN
- Migrating components to py3 (look for vshyba or kali).
- Minimal C++ Qt client (see [kali's bitmaskqt5 repo](#))

Bitmask CLI

`bitmaskctl` is the command line interface.

It will try to launch the bitmask backend.

Creating an user

```
bitmaskctl user create user@example.org
```

If the provider needs invite codes to register new users, you can pass one:

```
bitmaskctl user create --invitecode xxxxxxxx user@example.org
```

Authenticating

To authenticate, start a session and start configured services:

```
bitmaskctl user auth user@example.org
```

Uploading logs

(This needs `pastebinit` installed in your system)

```
bitmaskctl logs send
```

Bitmask Core

The bitmask core daemon can be launched like this:

```
bitmaskd
```

The command-line program `bitmaskctl` and the GUI will launch the daemon when needed.

Starting the REST service

If configured to do so, the bitmask core will expose all of the commands through a REST API. In `bitmaskd.cfg`:

```
[services]
web = True
```

Global API Authentication

To avoid some kind of attacks, the Bitmask API is protected by a global authentication token.

The JS API receives this value when the initial endpoint is loaded for the first time, in the anchor part of the url.

To authenticate any request to the API, the `X-Bitmask-Auth` header has to be added to it, set to the single value that is initialized during the bitmask deaemon startup:

```
curl -X POST http://localhost:7070/API/mail/status
unauthorized:bad auth token

curl -X POST http://localhost:7070/API/mail/status -H 'X-Bitmask-Auth:
↪fae20706aa4f4f98ac0e67996787a370'
{"result": {"status": "on", "childrenStatus": {"smtp": {"status": "on", "error": null}
↪, "imap": {"status": "on", "error": null}}, "error": null}, "error": null}
```

This token can be found in `.config/leap/authtoken`

API Authentication (this section not implemented yet)

By default, the resources in the API are protected by an authentication token.

The rationale is that, since the Bitmask core can be used simultaneously by several users, no single user should be able to interfere with others by querying for sensible information or disrupting other users' interaction with running services.

Therefore, there's a small white list of resources that do not need authentication, based on which is the subset of the API that needs to provide functionality for the creation of new accounts (the first-run wizard from the UI perspective).

The local authentication token is sent back in the response for an authentication call.

This local session token is different from the remote SRP token, although both are returned together. In the case that the remote SRP authentication with the provider fails (or with no network connectivity), the backend **should** signal the error but equally return a local authentication token (this is not implemented yet, but needs to be done to support an offline mode of operation).

To authenticate any request to the API, the `Authorization` header has to be added to it. You need to pass a `Token` field, with a value equal to the concatenation of the username and the local session token, base64-encoded:

```

$ curl -X POST localhost:7070/API/core/stop
$ Unauthorized

>>> import base64
>>> base64.b64encode('user@provider.org:52dac27fcf633b1dba58')
'dXNlckBwcm92aWRlci5vcmc6NTJkYWMyN2ZjZjYzM2IxZGJhNTg='

$ curl -X POST localhost:7070/API/core/stop -H 'Authorization: Token_
↪dXNlckBwcm92aWRlci5vcmc6NTJkYWMyN2ZjZjYzM2IxZGJhNTg='
$ {'shutdown': 'ok'}

```

Resources

Following is a list of currently available resources and a brief description of each one. For details click on the resource name.

By default, all the resources need authentication. An asterisk next to it means that it does not need an authentication header.

Resource	Description
POST <i>/core/version</i> *	Get Bitmask Core Version Info
POST <i>/core/stats</i> *	Get Stats about Bitmask Usage
POST <i>/core/status</i>	Get Bitmask Status
POST <i>/core/stop</i>	Stop Bitmask Core
POST <i>/bonafide/provider/list</i> *	List all providers
POST <i>/bonafide/provider/create</i> *	Create a new provider
POST <i>/bonafide/provider/read</i> *	Get info about a provider
POST <i>cmd_prov_del</i>	Delete a given provider
POST <i>/bonafide/user/list</i>	List all users
POST <i>/bonafide/user/active</i>	Get active user
POST <i>/bonafide/user/create</i> *	Create a new user
POST <i>/bonafide/user/update</i>	Change the user password
POST <i>/bonafide/user/authenticate</i> *	Authenticate an user
POST <i>/bonafide/user/logout</i>	End session for an user
POST <i>/mail/status</i>	Get all known keys for an user
POST <i>/keys/insert/</i>	Insert a new key
POST <i>/keys/delete/</i>	Delete a given key
POST <i>/keys/export/</i>	Export keys

Passing parameters

In all the cases that need data passed as parameter, those will be passed as JSON-encoded data to the POST.

/core/version

POST */core/version*

Get Bitmask Core Version Info

Example request:

```
curl -X POST localhost:7070/API/core/version
```

Example response:

```
{
  "error": null,
  "result":
    {
      "version_core": "0.9.3+185.g59ee6c29.dirty"
    }
}
```

/core/stats

POST /core/stats

Get Stats about Bitmask Usage

/core/status

POST /core/status

Get Bitmask status

/core/stop

POST /core/stop

Stop Bitmask core (daemon shutdown).

/bonafide/provider/list

POST /bonafide/provider/list

List all known providers.

/bonafide/provider/create

POST /bonafide/provider

Create a new provider.

/bonafide/provider/read

POST /bonafide/provider/read

Get info about a given provider.

Example request:

```
curl -X POST localhost:7070/API/bonafide/provider/read -d '["dev.bitmask.net
↪"]'
```

Example response:

```

{
  "error": null,
  "result": {
    "api_uri": "https://api.dev.bitmask.net:4430",
    "api_version": "1",
    "ca_cert_fingerprint": "SHA256:↵
↵0f17c033115f6b76ff67871872303ff65034efe7ddb910062ca323eb4da5c7e",
    "ca_cert_uri": "https://dev.bitmask.net/ca.crt",
    "default_language": "es",
    "description": {
      "en": "Bitmask is a project of LEAP",
    },
    "domain": "dev.bitmask.net",
    "enrollment_policy": "open",
    "languages": [
      "es"
    ],
    "name": {
      "en": "Bitmask"
    },
    "service": {
      "allow_anonymous": false,
      "allow_free": true,
      "allow_limited_bandwidth": false,
      "allow_paid": false,
      "allow_registration": true,
      "allow_unlimited_bandwidth": true,
      "bandwidth_limit": 102400,
      "default_service_level": 1,
      "levels": {
        "1": {
          "description": "Please donate.",
          "name": "free"
        }
      }
    },
    "services": [
      "mx",
      "openvpn"
    ]
  }
}

```

Form parameters:

- domain (*required*) - domain to obtain the info for.

/bonafide/provider/delete**POST /bonafide/provider/delete**

Delete a given provider.

/bonafide/user/list**POST /bonafide/user/list**

List all the users known to the local backend.

Form parameters:

Status codes:

- 200 - no error

/bonafide/user/active

POST /bonafide/user/active

Get the active user.

/bonafide/user/create

POST /bonafide/user/create

Create a new user.

Form parameters:

- username (*required*) - in the form `user@provider`.
- pass (*required*) - the username passphrase
- invitecode (*optional*) - an optional invitecode, to be used if the provider requires it for creating a new account.
- autoconf (*optional*) - whether to autoconfigure the provider, if we have not seen it before.

Status codes:

- 200 - no error

/bonafide/user/update

POST /bonafide/user/update

Change the user password.

Form parameters:

- username (*required*) - in the form `user@provider`
- oldpass (*required*) - current password
- newpass (*required*) - new password

Status codes:

- 200 - no error

/bonafide/user/authenticate

POST /bonafide/user/authenticate

Authenticate an user.

Form parameters:

- username (*required*) - in the form `user@provider`

- `pass` (*required*) - passphrase
- `autoconf` (*optional*) - whether to autoconfigure the provider, if we don't have seen it before.

Status codes:

- 200 - no error

/bonafide/user/logout**POST /bonafide/user/logout**

Logs out an user, and destroys its local session.

/mail/status****POST /mail/status**

Get the status of the mail service

Example request:

```
curl -X POST localhost:7070/API/mail/status -d '["foobar@mail.bitmask.net"]'
```

Example response:

```
{
  "result": {
    "status": "on",
    "keys": "found",
    "unread": 5,
    "childrenStatus": {
      "keymanager": {
        "status": "on",
        "keys": "found",
        "error": null
      },
      "smtp": {
        "status": "on",
        "error": null
      },
      "incoming": {
        "status": "on",
        "unread": 5,
        "error": null
      },
      "imap": {
        "status": "on",
        "error": null
      }
    },
    "error": null
  },
  "error": null
}
```

Form parameters:

- `address` (*required*) - the email address of the account.

Values:

The possible values for **status** are:

- on
- off
- starting
- stopping
- failure

The possible values for the **keys** field are:

- null - nothing is known about the private key status.
- sync - syncing soledad to see if there is a private key.
- generating - creating a new private key as none was found.
- found - there is a valid private key in KeyManager.

/keys/list

POST /keys/list

Get all keys for an user.

/keys/insert/

POST /keys/insert

Insert a new key for an user.

/keys/delete/

POST /keys/delete

Delete a key for an user.

/keys/export/

POST /keys/export

Export keys for an user.

Bonafide

blah blah



Fields in a key document:

- uids
- fingerprint
- key_data
- private. bool marking if the key is private or public
- length
- expiry_date
- refreshed_at
- version = 1
- type = “OpenPGPKey”
- tags = [”keymanager-key”]

Fields in an active document:

- address
- fingerprint
- private
- validation
- last_audited_at
- encr_used
- sign_used
- version = 1
- type = “OpenPGPKey-active”
- tags = [”keymanager-active”]

The meaning of validation, encr_used and sign_used is related to the [Transitional Key Validation](#)

Bitmask Mail

decentralized and secure mail delivery and synchronization

This is the documentation for the `leap.mail` module. It is a `twisted` module, hanging from the `leap.bitmask` namespace, that allows to receive, process, send and access existing messages using the [LEAP](#) platform.

One way to use this library is to let it launch two standard mail services, `smtp` and `imap`, that run as local proxies and interact with a remote [LEAP](#) provider that offers a *soledad synchronization endpoint* and receives the outgoing email. This is what [Bitmask](#) client does.

From the mail release 0.4.0 on, it’s also possible to use a protocol-agnostic email public API, so that third party mail clients can manipulate the data layer. This is what the awesome MUA in the [Pixelated](#) project is using.

From release 0.10 on, the Bitmask Bundles will also ship a branded version of the Pixelated User Agent, that will be served locally. This will be one of the recommended ways of accessing the user emails. The other will be Thunderbird, by using the [Bitmask Thunderbird Extension](#).

Note that this used to be a standalone python package, under the `leap.mail` namespace. It was merged into `bitmask` repo, so it now lives in the `leap.bitmask.mail` namespace. The [legacy repo](#) will no longer be updated.

How does Bitmask Mail work?

All the underlying data storage and sync is handled by a library called `soledad`, which handles encryption, storage and sync. Based on `uldb`, documents are stored locally as local `sqlcipher` tables, and syncs against the `soledad` sync service in the provider.

OpenPGP key generation, discovery, validation, and keyring management are handled by the `leap.bitmask.keymanager` module.

The life cycle of a LEAP Email

See the life cycle of a leap email for an overview of the life cycle of an email through LEAP providers.

Data model

The data model at the present moment consists of several *document types* that split email into different documents that are stored in `Soledad`. The idea behind this is to keep clear the separation between *mutable* and *immutable* parts, and still being able to reconstruct arbitrarily nested email structures easily.

Authentication

Currently, IMAP and SMTP are twisted services that are binded to `localhost`. These services be initialized by the `bitmask.core` daemon, but they are not tied to any user session. When an use attempts to log in to those services, a `twisted.cred` pluggable authentication plugin will try to lookup a `mail token` that is stored inside the `soledad` encrypted storage.

From within the cli, you can get the mail token once you are authenticated with:

```
bitmaskctl mail get_token
```

When launched, the `bitmaskd` daemon writes the tokens for each account to a file inside the folder named `/tmp/bitmask_tokens`, and this is where the Thunderbird Extension reads them from.

Pixelated user agent

From the 0.9.5 release, bundles are shipping the Pixelated User Agent. Until some merge requests (dealing with packaging of the js resources) are merged upstream, you will need to install the pixelated user agent from leap's repo:

```
pip install pixelated_www pixelated_user_agent --find-links https://downloads.leap.se/  
↪libs/pixelated/
```

Pixelated also needs a couple of extra dependencies:

```
pip install whoosh chardet requests==2.11.1
```

Mail development resources

Some old notes that might help you while developing or debugging bitmask mail issues (a bit outdated).

Hacking on Bitmask Mail

Some hints oriented to *leap.mail* hackers. These notes are mostly related to the imap server, although they probably will be useful for other pieces too.

Profiling

If using `twistd` to launch the server, you can use twisted profiling capabilities:

```
LEAP_MAIL_CONFIG=~/.leapmailrc twistd --profile=/tmp/mail-profiling -n -y imap-server.  
->tac
```

`--profiler` option allows you to select different profilers (default is “hotshot”).

Mutt config

You cannot live without mutt? You’re lucky! Use the following minimal config with the imap service:

```
set folder="imap://user@provider@localhost:1984"  
set spoolfile="imap://user@provider@localhost:1984/INBOX"  
set ssl_starttls = no  
set ssl_force_tls = no  
set imap_pass=MAHSIKRET
```

Debugging IMAP

After IMAP service is running, you can telnet into your local IMAP server and read your mail like a real programmer™:

```
% telnet localhost 1984  
Trying 127.0.0.1...  
Connected to localhost.  
Escape character is '^]'.  
* OK [CAPABILITY IMAP4rev1 LITERAL+ IDLE NAMESPACE] Twisted IMAP4rev1 Ready  
tag LOGIN me@myprovider.net mahsikret  
tag OK LOGIN succeeded  
tag SELECT Inbox  
* 2 EXISTS  
* 1 RECENT  
* FLAGS (\Seen \Answered \Flagged \Deleted \Draft \Recent List)  
* OK [UIDVALIDITY 1410453885932] UIDs valid  
tag OK [READ-WRITE] SELECT successful  
^]  
telnet> Connection closed.
```

Although you probably prefer to use `offlineimap` for tests:

```
offlineimap -c LEAPofflineimapRC-tests
```

Use `ngrep` to obtain live logs of the commands and responses:

```
sudo ngrep -d lo -W byline port 1984
```

Thunderbird

To get verbose output from thunderbird/icedove, set the following environment variable:

```
NSPR_LOG_MODULES="imap:5" icedove
```

Minimal offlineimap configuration

You can use this as a sample offlineimap config file:

```
[general]
accounts = leap-local

[Account leap-local]
localrepository = LocalLeap
remoterepository = RemoteLeap

[Repository LocalLeap]
type = Maildir
localfolders = ~/LEAPMail/Mail

[Repository RemoteLeap]
type = IMAP
ssl = no
remotehost = localhost
remoteport = 1984
remoteuser = user
remotepass = pass
```

Testing utilities

There are a bunch of utilities to test IMAP delivery in `imap/tests` folder. If looking for a quick way of inspecting mailboxes, have a look at `getmail`:

```
./getmail me@testprovider.net mahsikret
1. Drafts
2. INBOX
3. Trash
Which mailbox? [1] 2
1 Subject: this is the time of the revolution
2 Subject: ignore me

Which message? [1] (Q quits) 1
1 X-Leap-Provenance: Thu, 11 Sep 2014 16:52:11 -0000; pubkey="C1F8DE10BD151F99"
Received: from mx1.testprovider.net (mx1.testprovider.net [198.197.196.195])
(using TLSv1.2 with cipher ECDHE-RSA-AES256-GCM-SHA384 (256/256 bits))
```

```
(Client CN "*.foobar.net", Issuer "Gandi Standard SSL CA" (not verified))
by blackhole (Postfix) with ESMTPS id DEADBEEF
for <me@testprovider.net>; Thu, 11 Sep 2014 16:52:10 +0000 (UTC)
Delivered-To: 926d4915cfd42b6d96d38660c04613af@testprovider.net
Message-Id: <20140911165205.GB8054@samsara>
From: Kali <kali@leap.se>

(snip)
```

IMAP Message Rendering Regressions

For testing the IMAP server implementation, there is a little regressions script that needs some manual work from your side.

First of all, you need an already initialized account. Which for now basically means you have created a new account with a provider that offers the Encrypted Mail Service, using the Bitmask Client wizard. Then you need to log in with that account, and let it generate the secrets and sync with the remote for a first time. After this you can run the twistd server locally and offline.

From the `leap.mail.imap.tests` folder, and with an already initialized server running:

```
./regressions_mime_struct user@provider pass path_to_samples/
```

You can find several message samples in the `leap/mail/tests` folder.

Changelog

0.10 - la rosa de foc

Features

- #8112: Check validity of key signature
- #8755: Add account based keymanagement API
- #8770: Simplify mail status in the cli
- #8769: Eliminate active user from bonafide
- #8771: Add json print to the cli
- #8765: Require a global authentication token for the api
- #8819: Send key to provider if a new priv key is putted in the keyring
- #8821: Add a 'fetch' flag to key export
- #8049: Restart the VPN automatically
- #8852: Stop the vpn (and all services) when application is shut down
- Initial cli port of the legacy vpn code
- Add VPN API to bitmask.js
- Add vpn get_cert command
- Indicate a successful/failure OpenPGP header import

- Get more detailed status report for email
- VPN and Mail status displayed in the UI
- Port Pixelated UA integration from legacy bitmask
- Add Pixelated Button to the UI
- Add ability to ssh into the bitmask daemon for debug

Bugfixes

- Repeat decryption if signed with attached key
- #8783: use username instead of provider in the vpn calls
- #8868: can't upload generated key with bitmask
- #8832: don't allow putting non-private keys for the keyring address
- #8901: use gpg1 binary if present
- #8971: handle 502 replies from nickname

Misc

- Remove usage of soledad offline flag.
- Tests use soledad master instead of develop
- Build bundles with pixelated libraries

0.9.4 - works for you

Features

- #7550: Add ability to use invite codes during signup
- #7965: Add basic keymanagement to the cli.
- #8265: Add a REST API and bitmask.js library for it.
- #8400: Add manual provider registration.
- #8435: Write service tokens to a file for email clients to read.
- #8486: Fetch smtp cert automatically if missing.
- #8487: Add change password command.
- #8488: Add list users to bonafide.
- Use mail_auth token in the core instead of imap/smtp tokens.

Bugfixes

- #8498: In case of wrong url don't leave files in the config folder.

List of design docs

Here you can find a list of links to authoritative sources for the design documents

- (lots of links to leap.se/docs)
- Paper on the LEAP architecture <https://satsymposium.org/papers/leap.pdf>

List of contributors

The following people have contributed in the history of Bitmask.

All the Code is Copyright 2012-2016 LEAP Encryption Access Project

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Updating the authors file

From the root of the `bitmask-dev` repo:

```
pkg/tools/get_authors.sh
```

However, beware that some of the codebase from the legacy `bitmask_client` repo has not been preserved with the original authorship. Do not remove people here just because you don't see the commits they made :)

- search