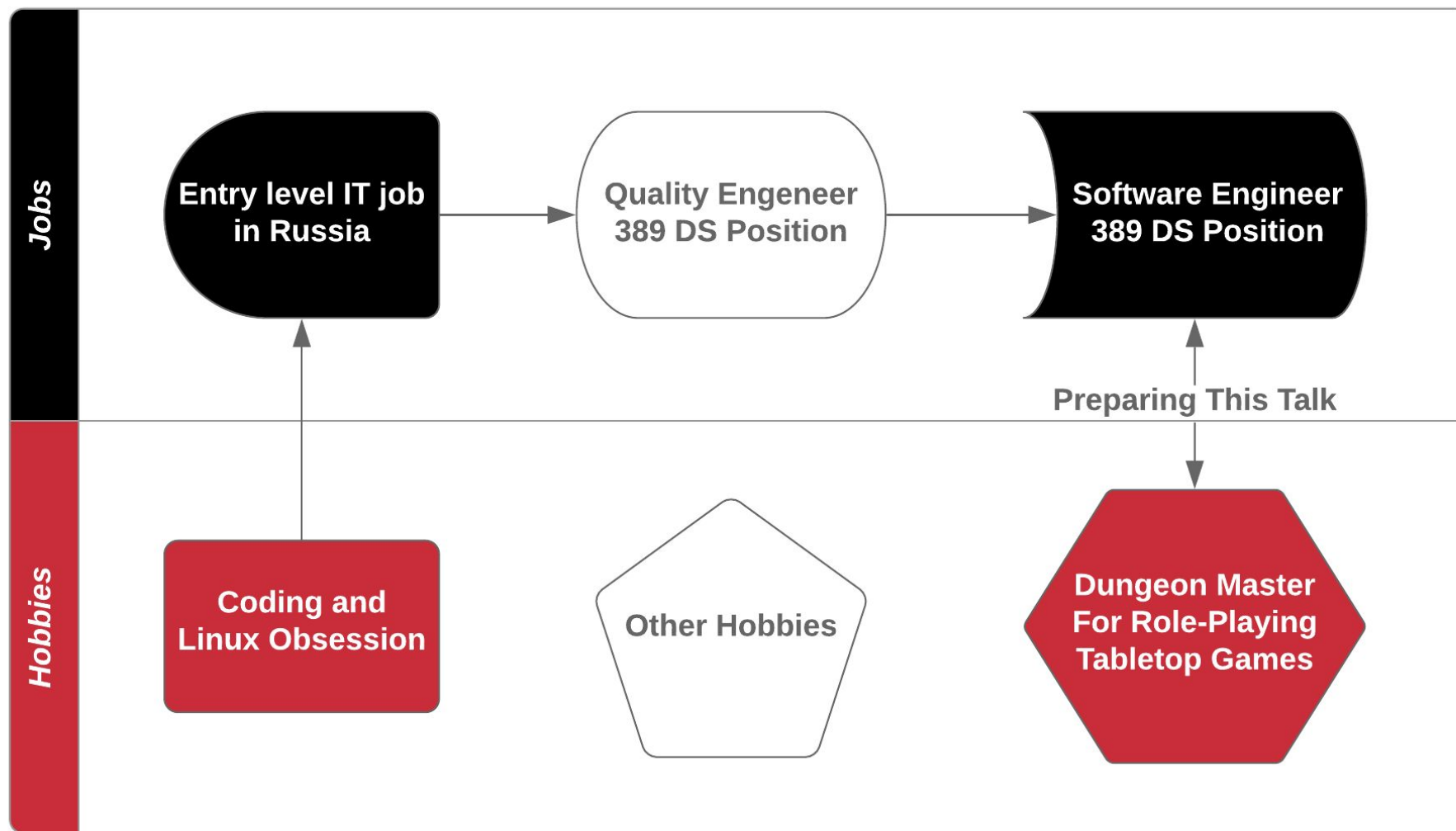


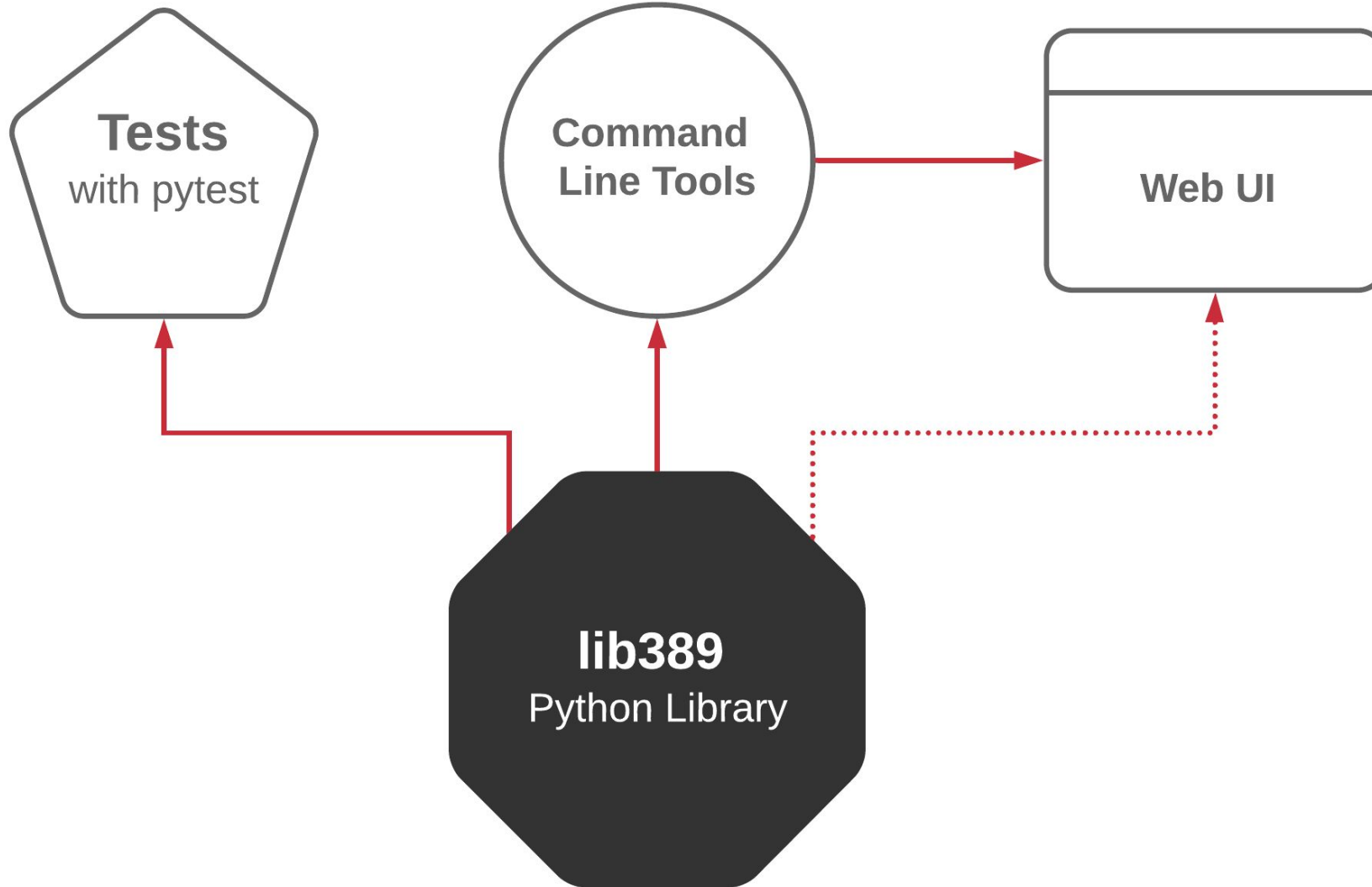
Discovering The Library That Drives 389 Directory Server's CLI, Web UI, and much more

Simon Pichugin
Software Engineer



Start of the Journey



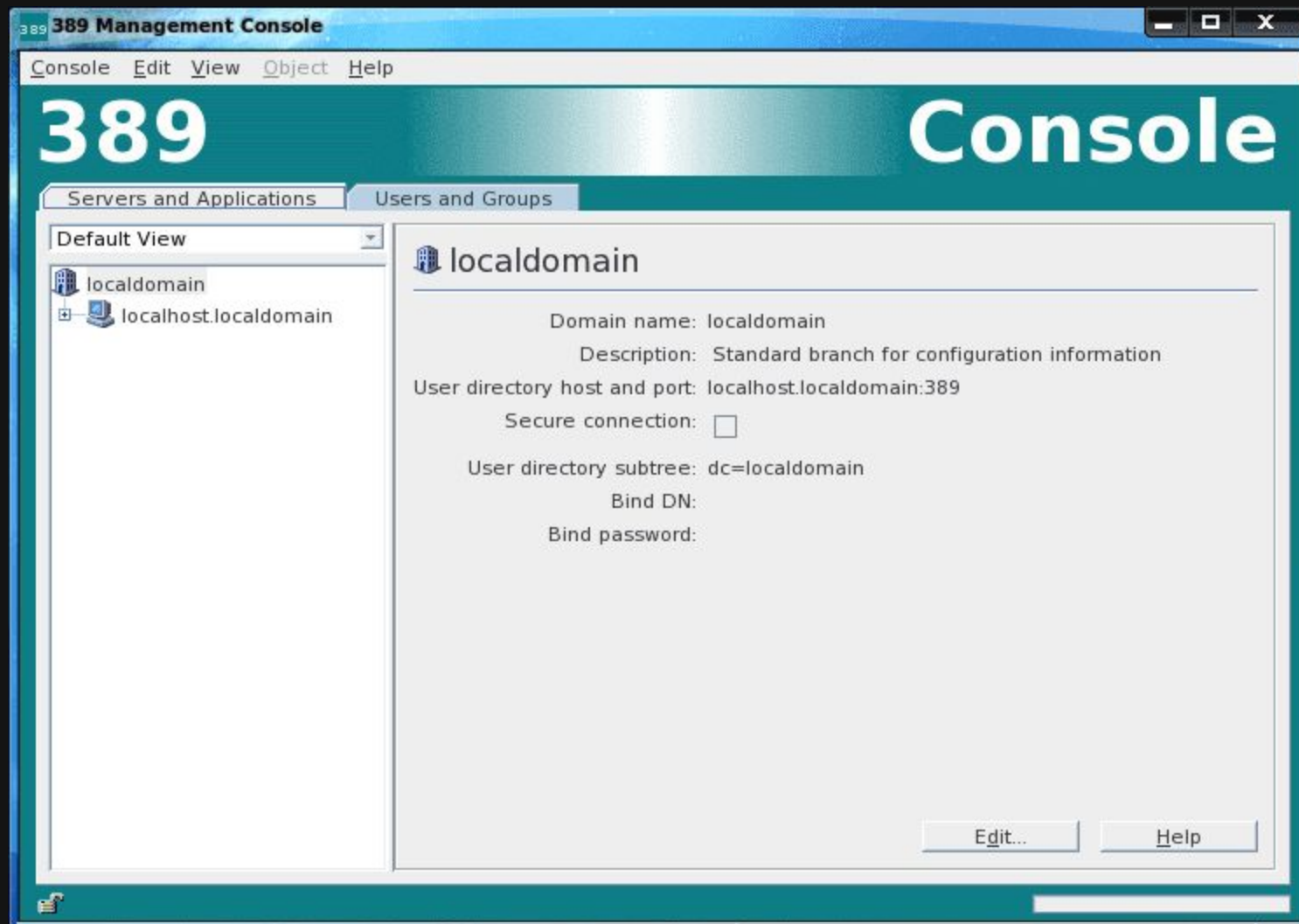


**LDIF Files
and
Direct Requests**

**In
The Past**

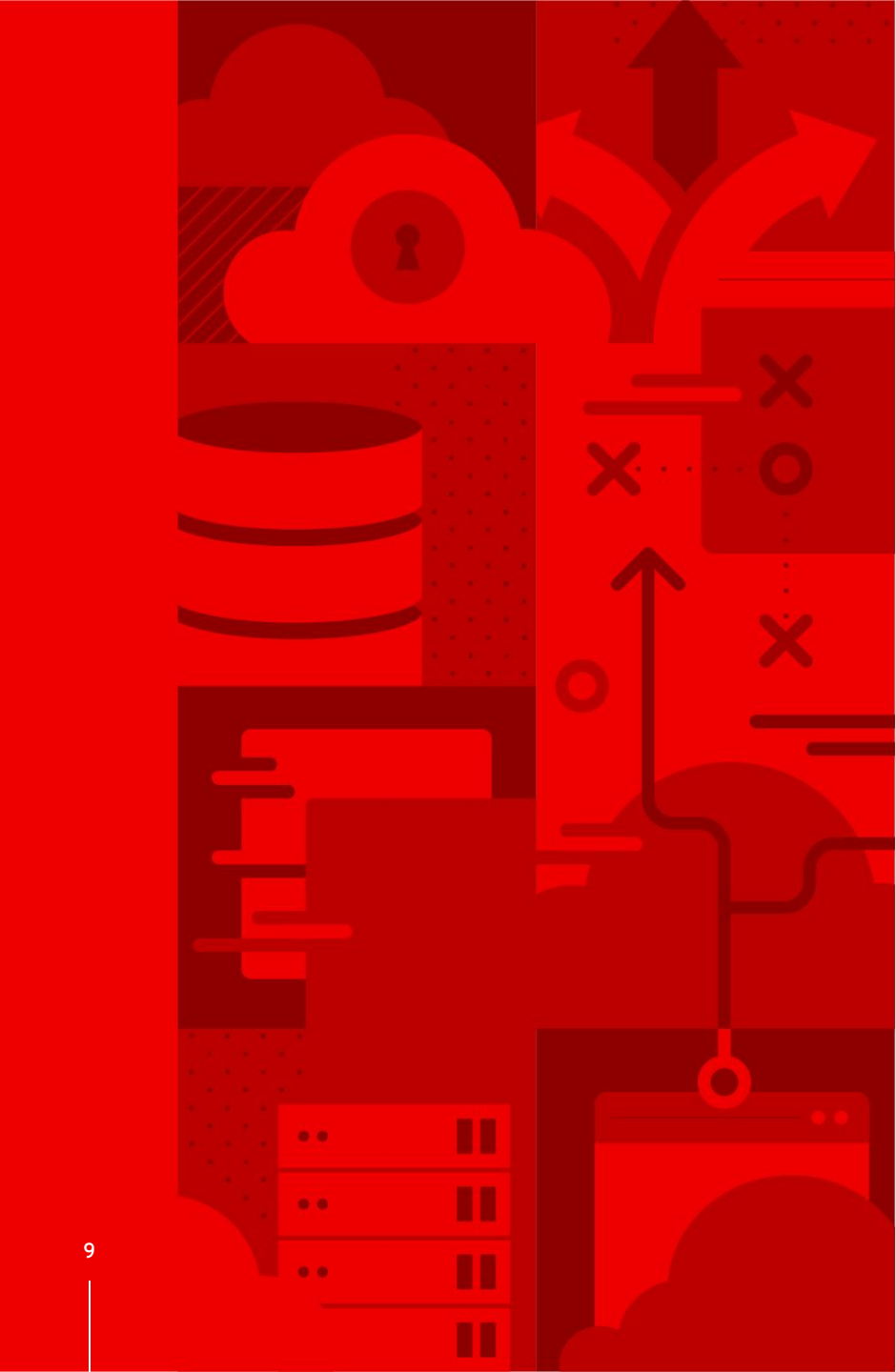
**Perl and Bash
Scripts**

**389 Management
Console**



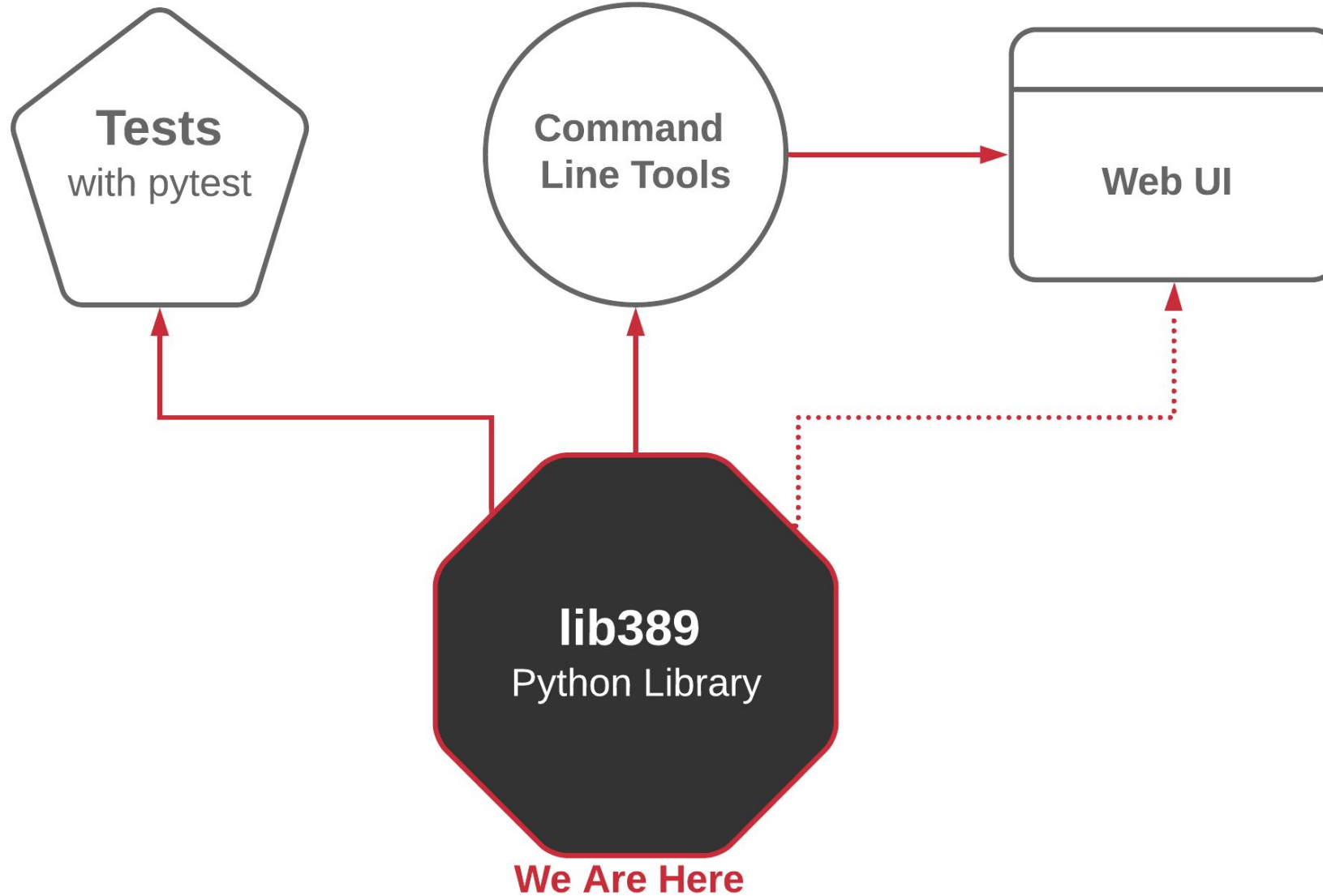


```
setup-ds.pl remove-ds.pl  
start-dirsrv stop-dirsrv restart-dirsrv status-dirsrv  
bak2db db2bak db2index db2ldif dn2rdn ldif2db ldif2ldap  
...  
fixup-linkedattrs.pl  
fixup-memberof.pl  
cleanallruv.pl  
schema-reload.pl  
ns-accountstatus.pl ns-activate.pl ns-inactivate.pl ns-newpwpolicy.pl
```

New Library

The Beginning





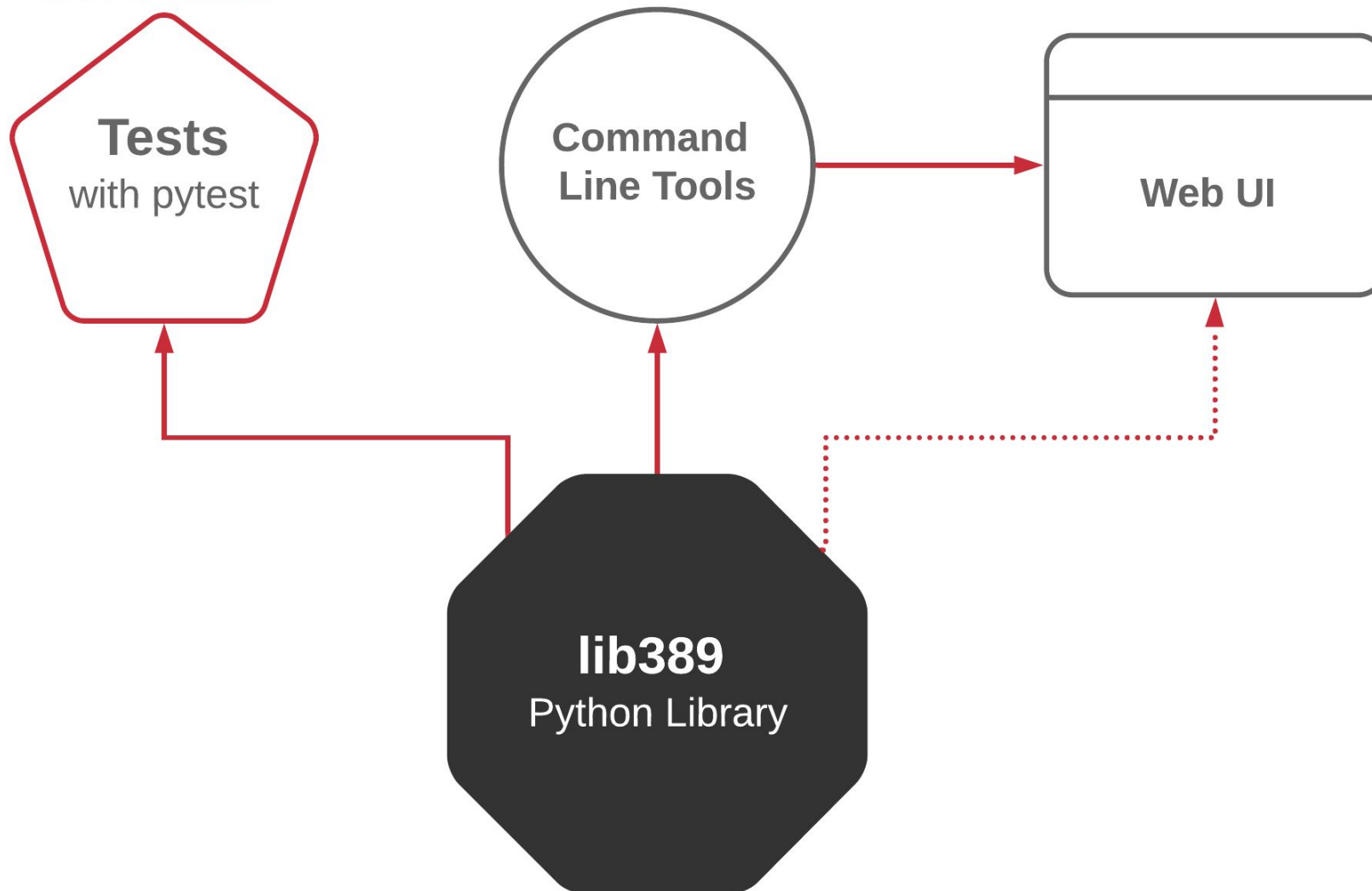
```
instance = DirSrv(verbose=True)
instance.local_simple_allocate(
    serverid='example',
    ldapuri='ldaps://www.example.com:636'
    password=dm_password
)
instance.open()
instance.config.set('nsslapd-secureport', '63601')
instance.restart()
```



```
dbgen(instance, 50000, import_ldif, 'dc=example,dc=com')

instance.stop()
instance.ldif2db(bename='userRoot',
                 suffixes=None,
                 excludeSuffixes=None,
                 encrypt=None,
                 import_file=file_path)
instance.start()
```

We Are Here





```
topology_st  
topology_st_gssapi  
topology_i2  
topology_i3  
topology_m1  
topology_m1h1c1
```

```
topology_m1c1  
topology_m2  
topology_m3  
topology_m4  
topology_m2c2
```

○ ○ ○

```
search_params = ([('1.1', 'cn', False),
                  ('*', 'cn', True),
                  ('cn', 'cn', True)]
@pytest.mark.parametrize("attrs, attr, present", search_params)
def test_search_req_attrs(topology_st, add_test_entry, attrs, attr, present):
    entry = topology_st.standalone.search_s(USER4_DN,
                                             ldap.SCOPE_BASE,
                                             'objectclass=top',
                                             attrs)

    if present:
        assert entry[0].hasAttr(attr)
    else:
        assert not entry[0].hasAttr(attr)
```

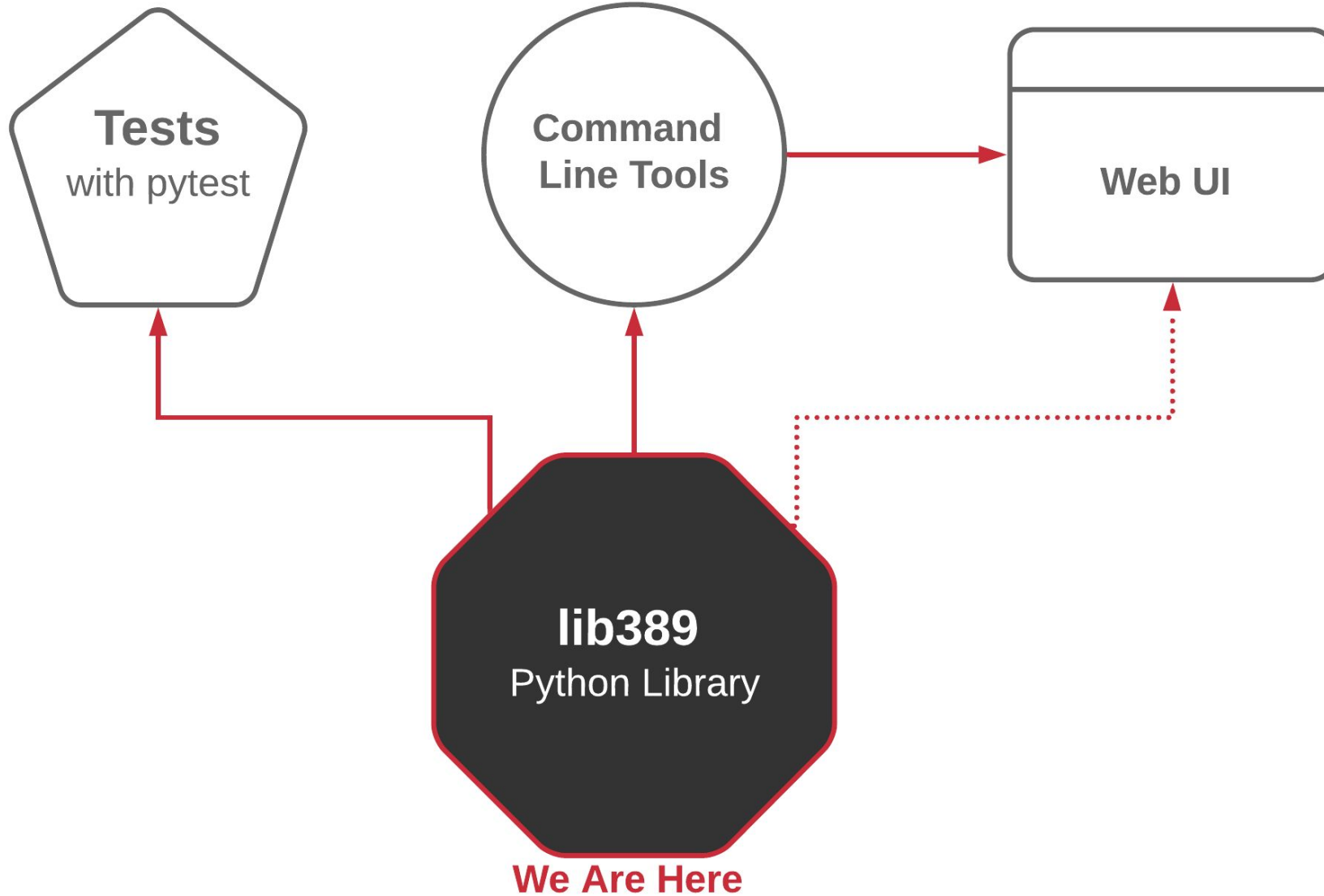
Number of Lines in Simple Paged Results Test Suite

Bash Framework

4178

lib389 + pytest

1175



Agreement

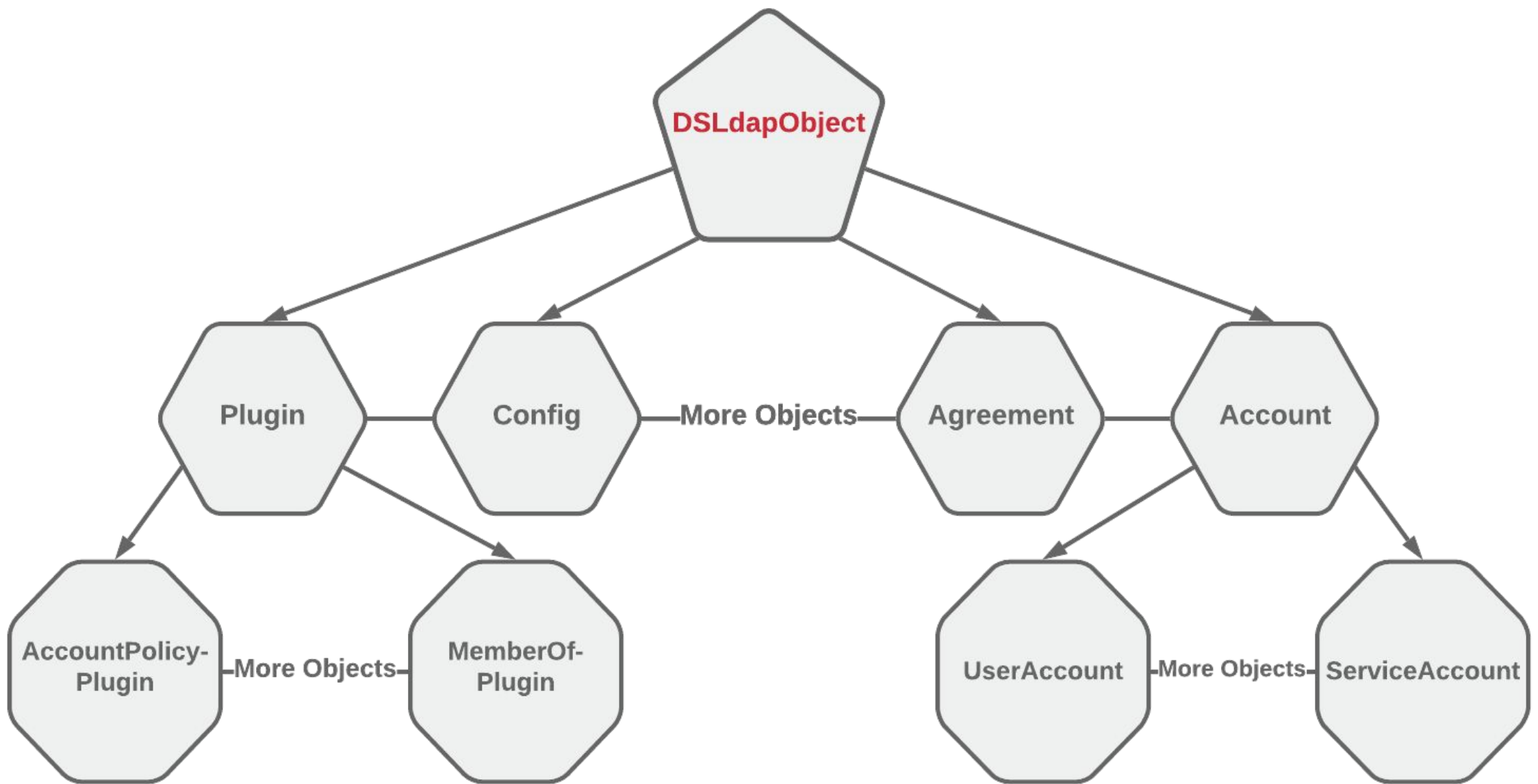
- `getProperties(agmnt_dn, properties)`
- `setProperties(suffix, agmnt_dn, agmnt_entry)`
- `list(suffix, consumer_host, consumer_port)`
- `create(suffix, host, port, properties)`
- `delete(suffix, consumer_host, consumer_port, agmtdn)`

- `status(agreement_dn, just_status)`
- `schedule(agmtdn, interval)`
- `init(suffix, consumer_host, consumer_port)`
- `pause(agmtdn, interval)`
- `resume(agmtdn, in`

Backend

- `getProperties(suffix, backend_dn, bename, properties)`
- `setProperties(suffix, backend_dn, bename, properties)`
- `list(suffix, backend_dn, bename)`
- `create(suffix, properties)`
- `delete(suffix, backend_dn, bename)`

- `toSuffix(entry, name)`
- `requireIndex(suffix)`





```
plugin = MemberOfPlugin(inst)
plugin.enable()

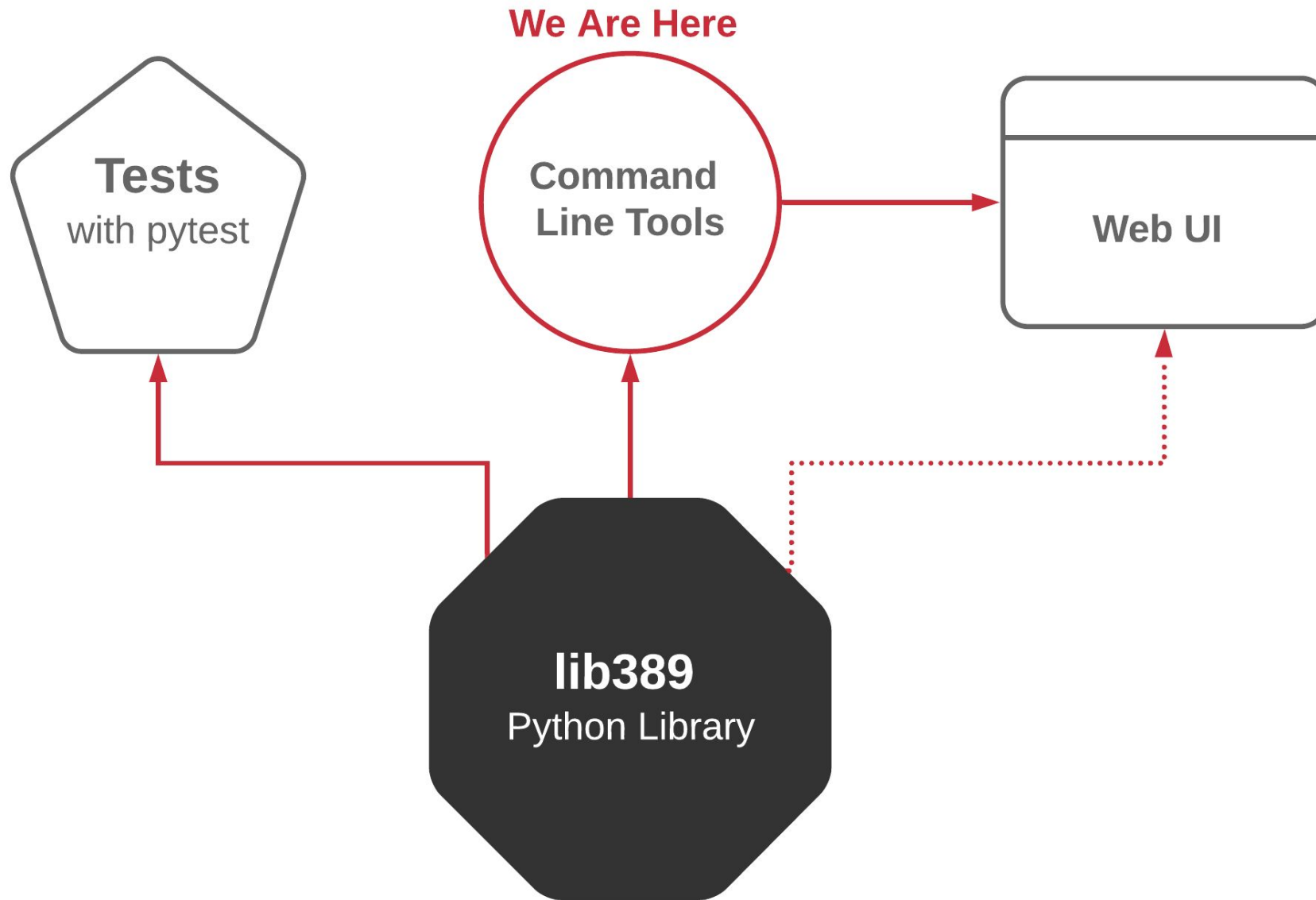
users = UserAccounts(inst, DEFAULT_SUFFIX)
user = users.create_test_user(uid=1001, gid=2001)

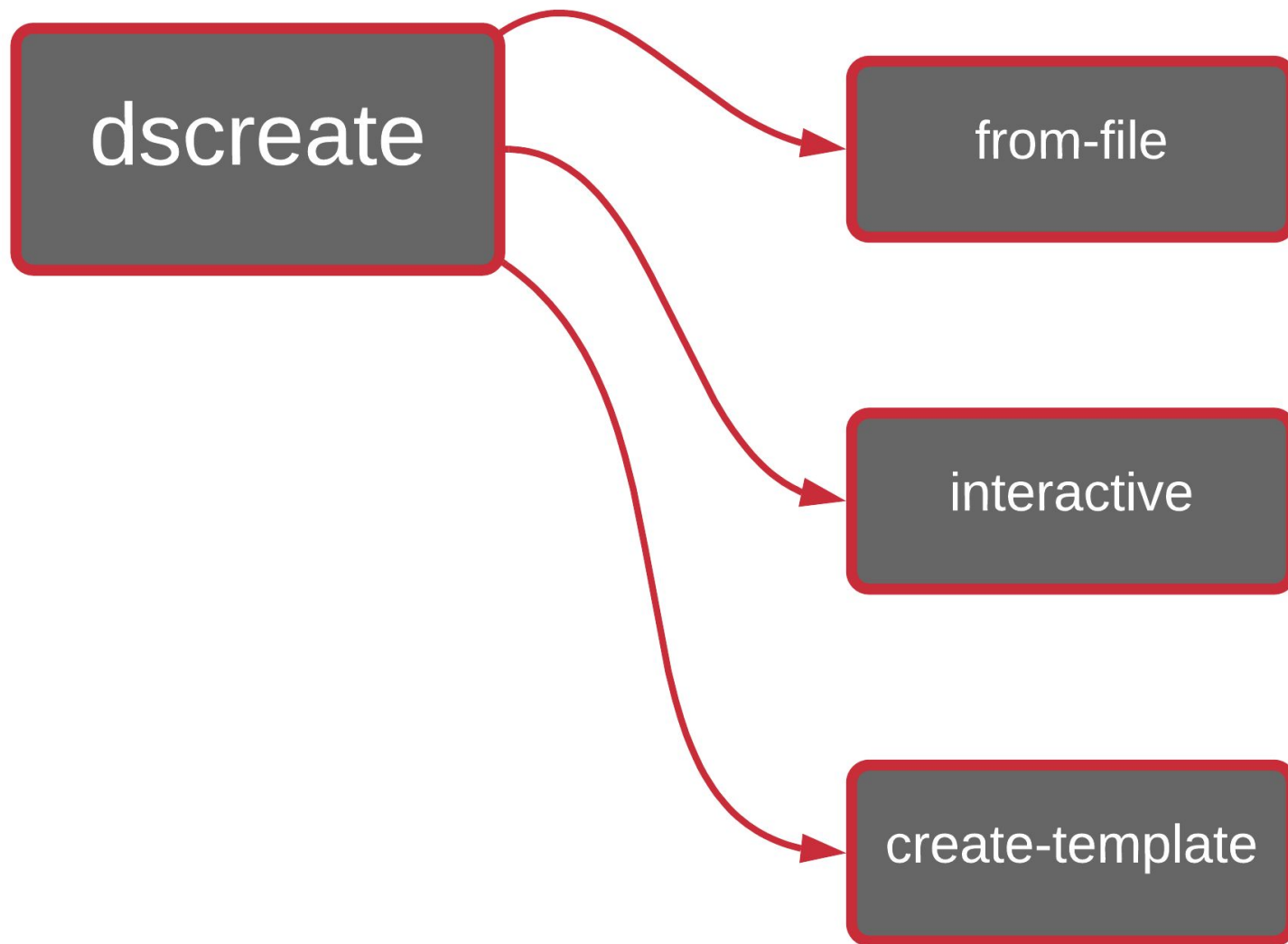
groups = Groups(inst, DEFAULT_SUFFIX)
group = groups.create(properties={'cn': 'group',
                                'member': user.dn})

memberof_config = MemberOfSharedConfig(inst, f'cn=memberOf config,{DEFAULT_SUFFIX}')
memberof_config.create(properties={'cn': 'memberOf config',
                                'memberOfGroupAttr': 'member',
                                'memberOfAttr': 'memberOf'})

assert user.present('memberOf', group.dn)
```

Something is happening...





dsctl

restart

db2index

remove

start

db2bak

db2ldif

stop

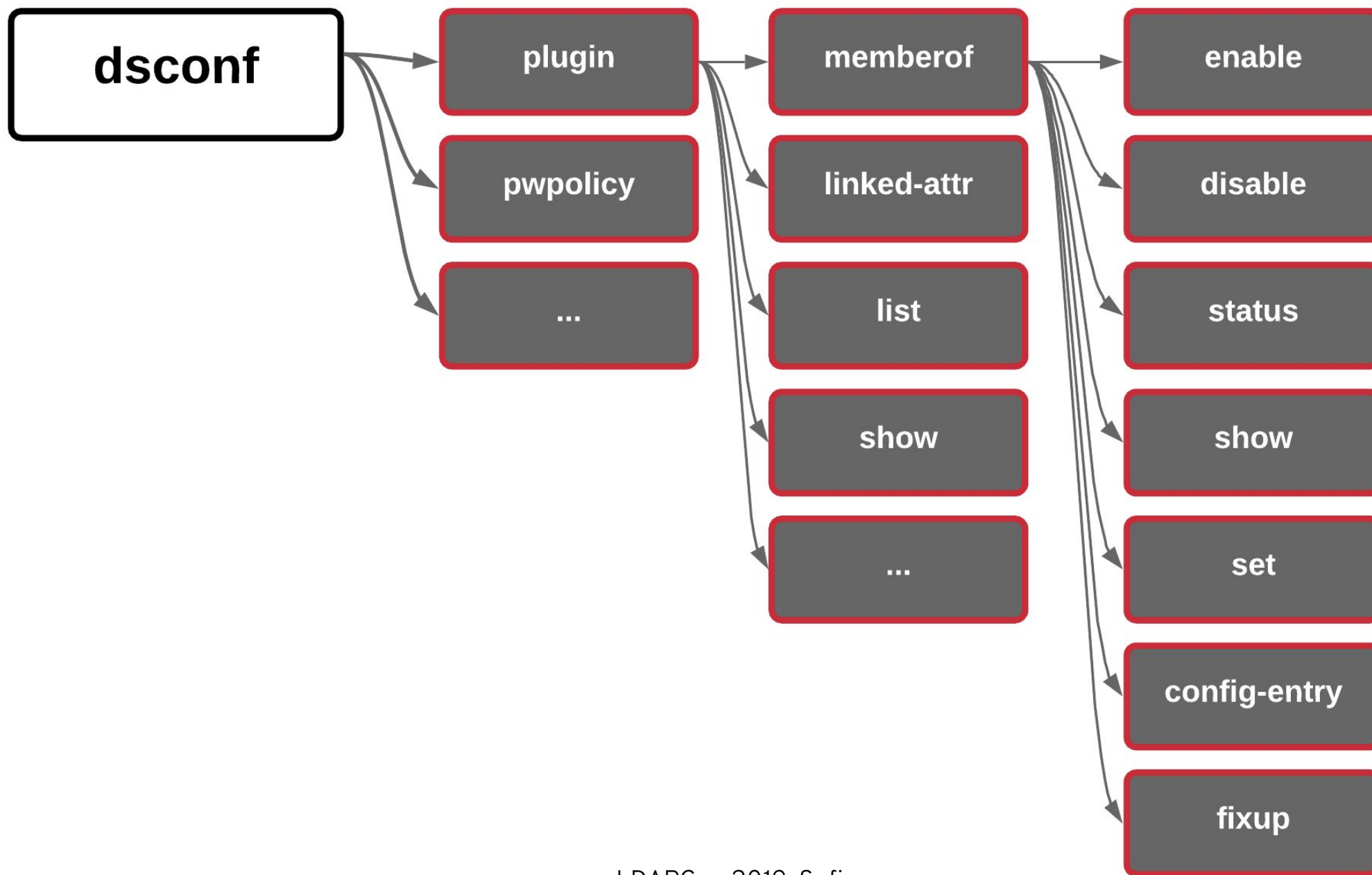
back2db

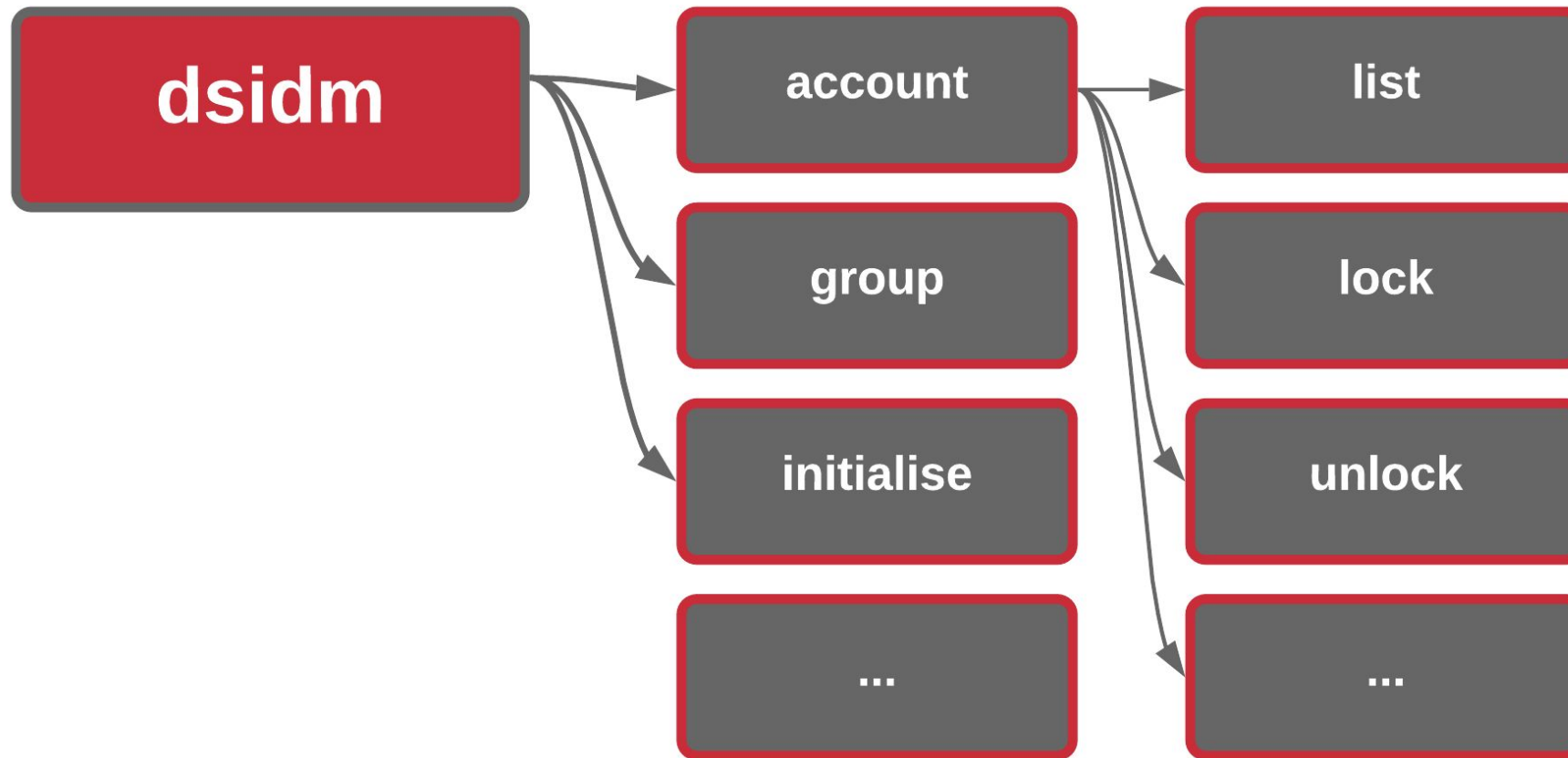
ldif2db

status

dbverify

backups





```

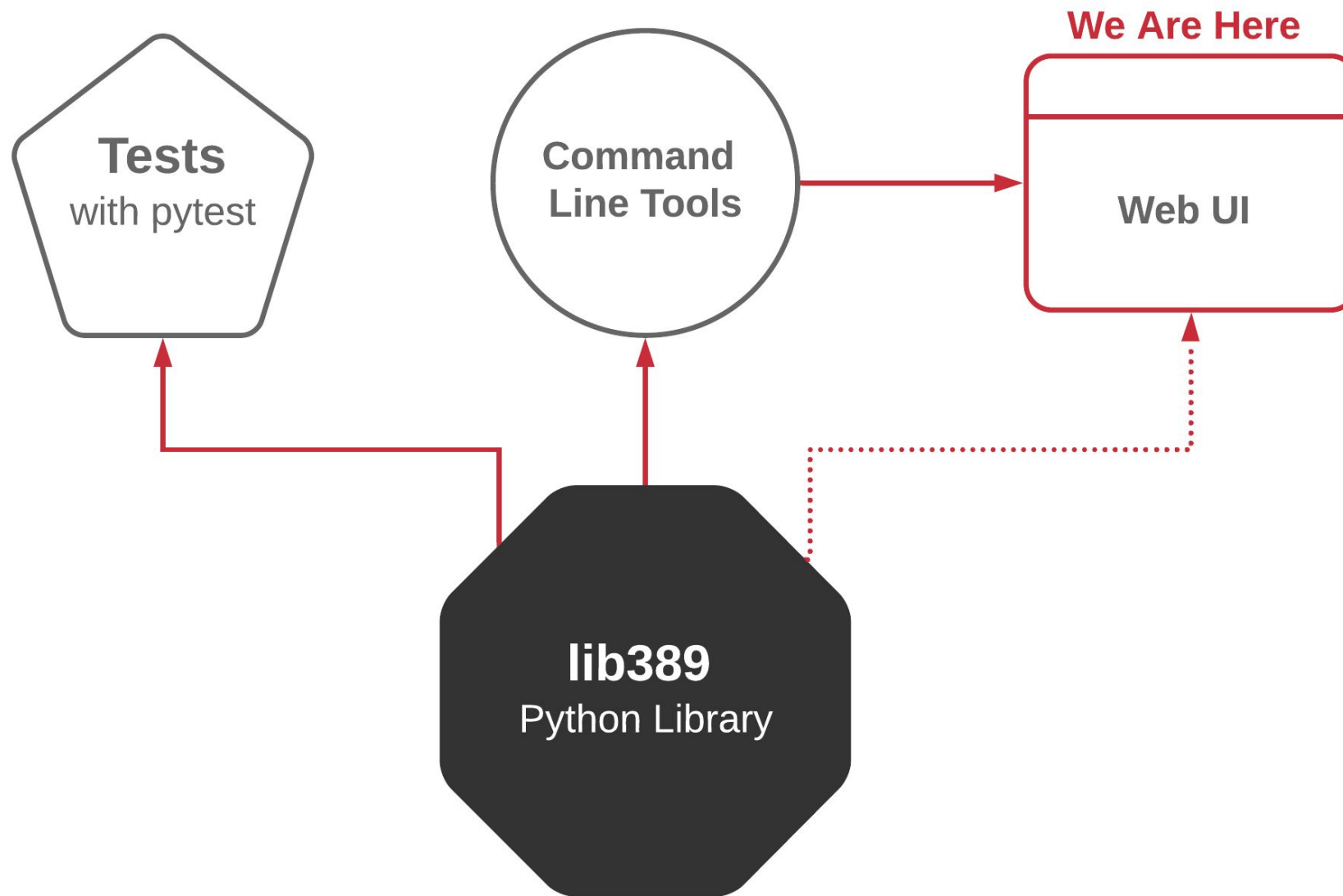
currentconnectionsataxthreads: 0
maxthreadsperconnhits: 0
stablesize: 1024
readwaiters: 0
opsinitiated: 2
opscompleted: 1
entriesent: 0
bytesent: 14
currenttime: 20191105003430Z
starttime: 20191105003421Z
backends: 1

- ● 11:14:30
$ sudo dsconf standalone -D "cn=directory manager" -W backend create -h
usage: dsconf instance backend create [-h] [--parent-suffix PARENT SUFFIX]
                                     --suffix SUFFIX --be-name BE NAME
                                     [--create-entries] [--create-suffix]

optional arguments:
  -h, --help            show this help message and exit
  --parent-suffix PARENT SUFFIX
                        Sets the parent suffix only if this backend is a sub-
                        suffix
  --suffix SUFFIX        The database suffix DN, for example
                        "dc=example,dc=com"
  --be-name BE NAME      The database backend name, for example "userroot"
  --create-entries        Create sample entries in the database
  --create-suffix        Create the suffix object entry in the database. Only
                        suffixes using the attributes 'dc', 'o', 'ou', or 'cn'
                        are supported in this feature

- ● 11:14:30
$ sudo dsconf standalone -D "cn=directory manager" -W backend create

```





Host



localhost.localdomain



Dashboard



Search

System

Logs

Networking

Accounts

Services

389 Directory Server

Applications

Software Updates 

Terminal

Hardware [Red Hat OpenStack Compute](#)

Asset Tag 4c4c4544-0052-4310-8038-c2c04f305732

Machine ID e4659f437b124fb38a91d9c5a156b0b7

Operating System Fedora 31 (Thirty One)

 [Security Updates Available](#)Secure Shell Keys [Show fingerprints](#)Host Name [localhost.localdomain](#)Domain [Join Domain](#)System Time [2019-11-04 17:21](#) 

Power Options

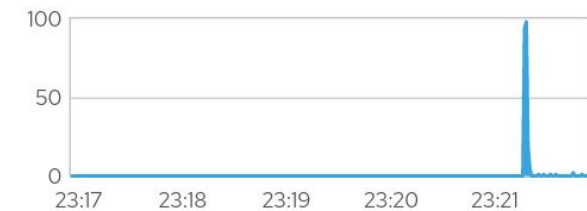
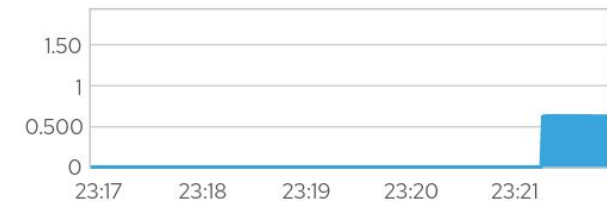
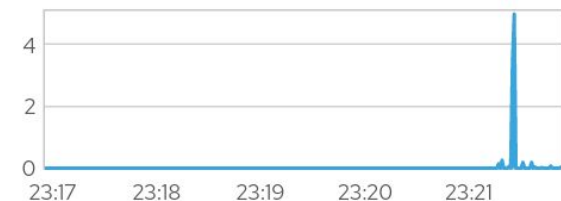
Restart

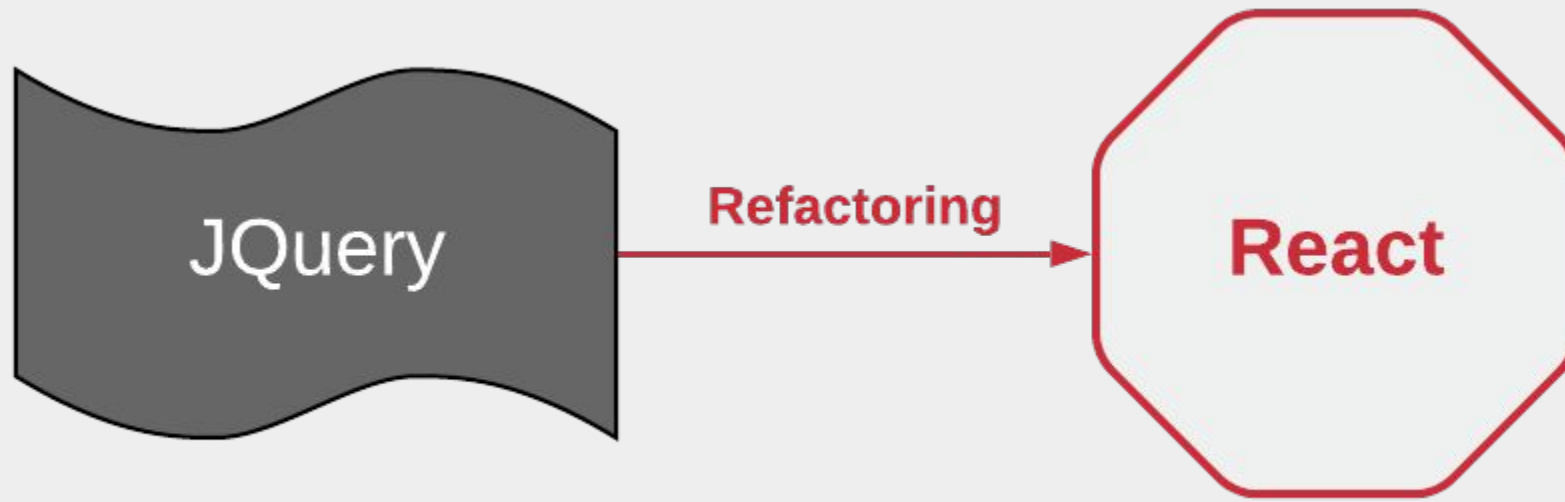


Performance Profile none

[Enable stored metrics...](#)

% of 1 CPU core

GiB [Memory](#)MiB/s [Disk I/O](#)[Network Traffic](#)



389 Directory Server Management ldap://standalone Actions

Server Settings Security Database Replication Schema Plugins Monitoring

All People
Account Policy
Attribute Uniqueness
User Attributes
DNA
Auto Membership
MemberOf
Managed Entries
Passthrough Authentication
Proxy Groups
Referential Integrity
Relic Changing
Read-Only Access Control
LDAP

MemberOf

Status: OFF

Attribute: memberOf

Group Attribute: member

Entry Scope: all

Entry Scope Exclude Subtree:

Shared Config Entry:

Auto Add OC:

Run From Task

Show Advanced Settings

Save Config

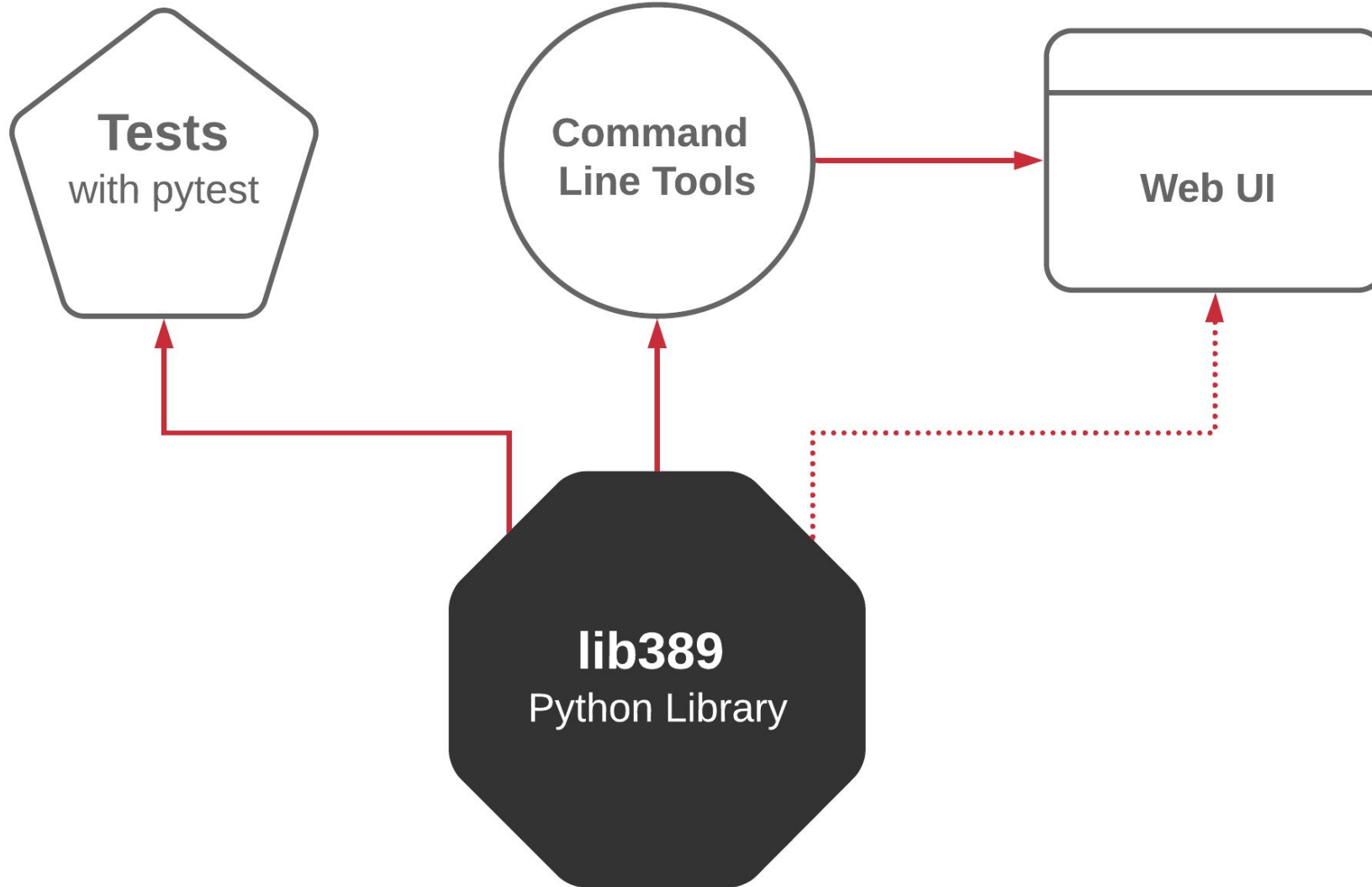
account
accountactivitylimit
accountlocktime
accountpolicyentry
all
administratortaskcode
advice

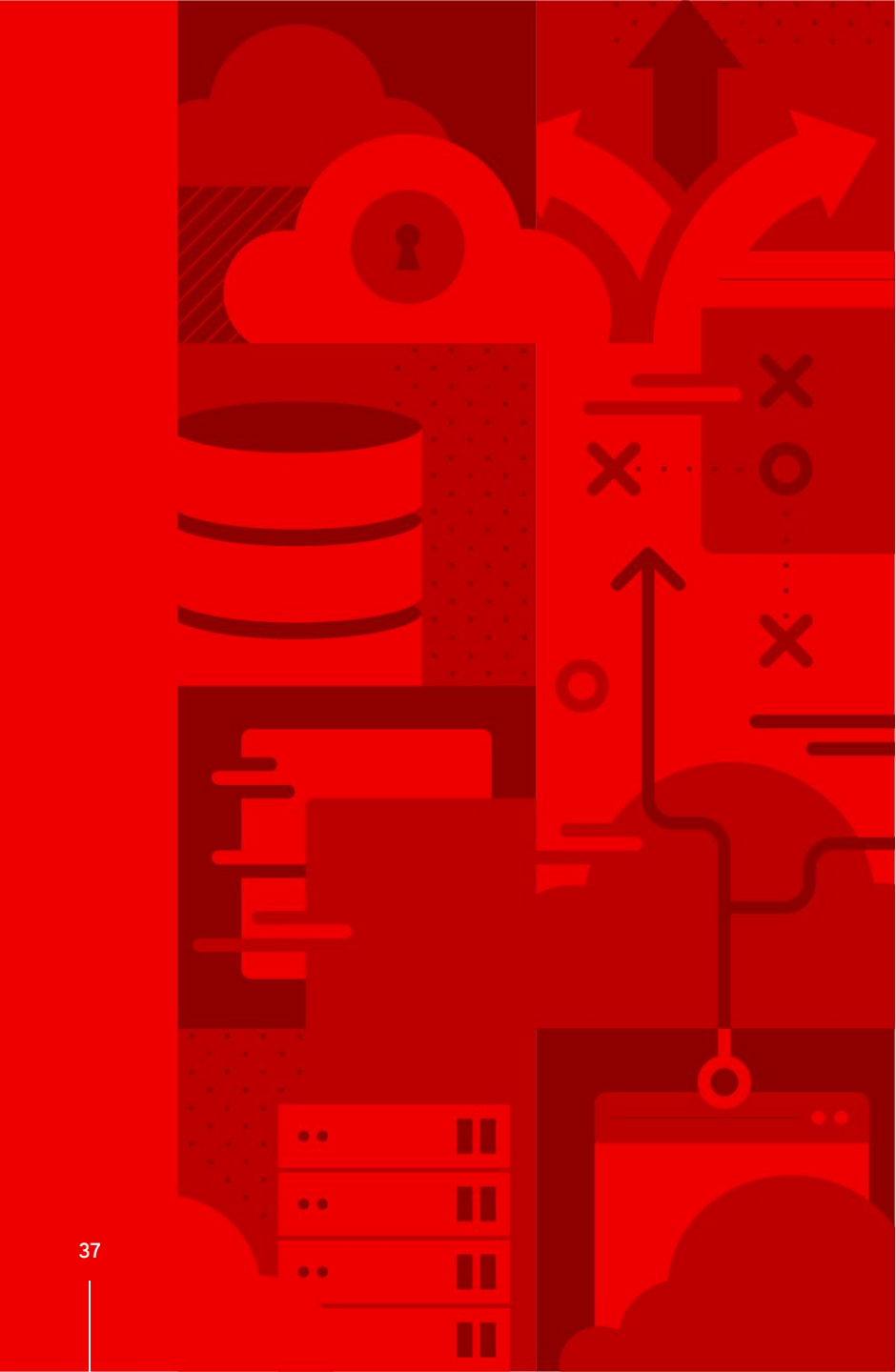
The Challenges we went through

Dealing With a Lack of Documentation

Careful investigation and design of a flexible architecture

Bright Future





Thank you!

You can check more what we have at
directory.fedoraproject.org