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easyshare

Command line application for transfer files between network hosts.
Like FTP, but (hopefully) easier.

What's easyshare

- A command line client-server application
    - Client: **es**
    - Server: **esd**

- **Handles** local and remote files
  (e.g. create directories, move files, remove files)

- **Transfers** files to and from remote hosts

- Automatically **discover** available *sharings* through **broadcast**

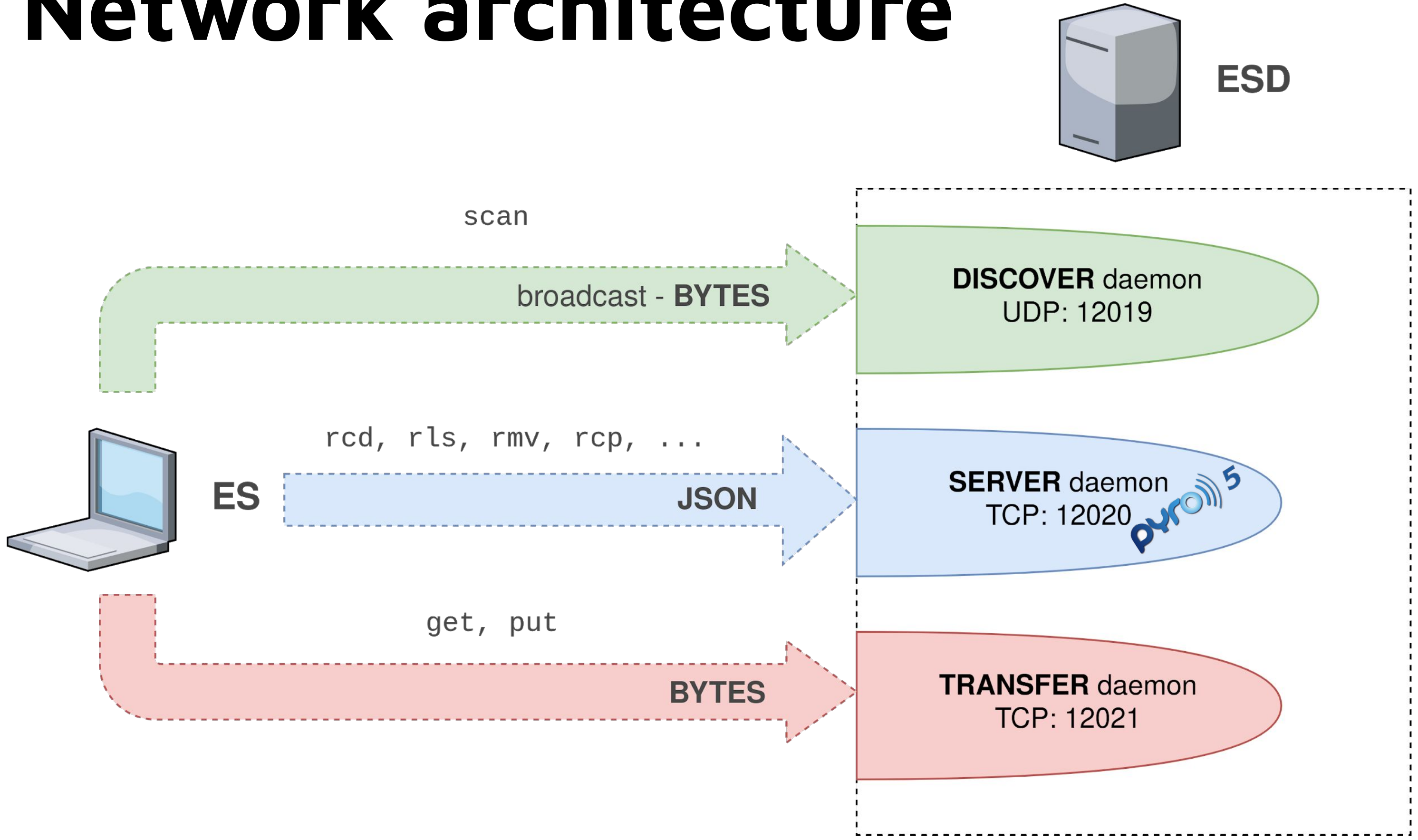
Technologies

- Written in *Python 3*

- Uses *Pyro 5* for high level operation
  A library that enables you to build applications in which objects can talk to each other over the network, with minimal programming effort. ***You can just use normal Python method calls to call objects running on other machines.*** *Pyro is a pure Python library and runs on many different platforms and Python versions.*

- Uses Python's *socket* for low level operation that need efficiency, such as file transfer

Network architecture



An overview: the commands

Local commands

```
pwd
ls
tree
cd
mkdir
cp
mv
rm
exec
```

Remote commands

```
rpwd
rls
rtree
rcd
rmkdir
rcp
rmv
rrm
rexec
```

Connection establishment commands

```
scan
connect
disconnect
open
close
```

Transfer commands

```
get
put
```

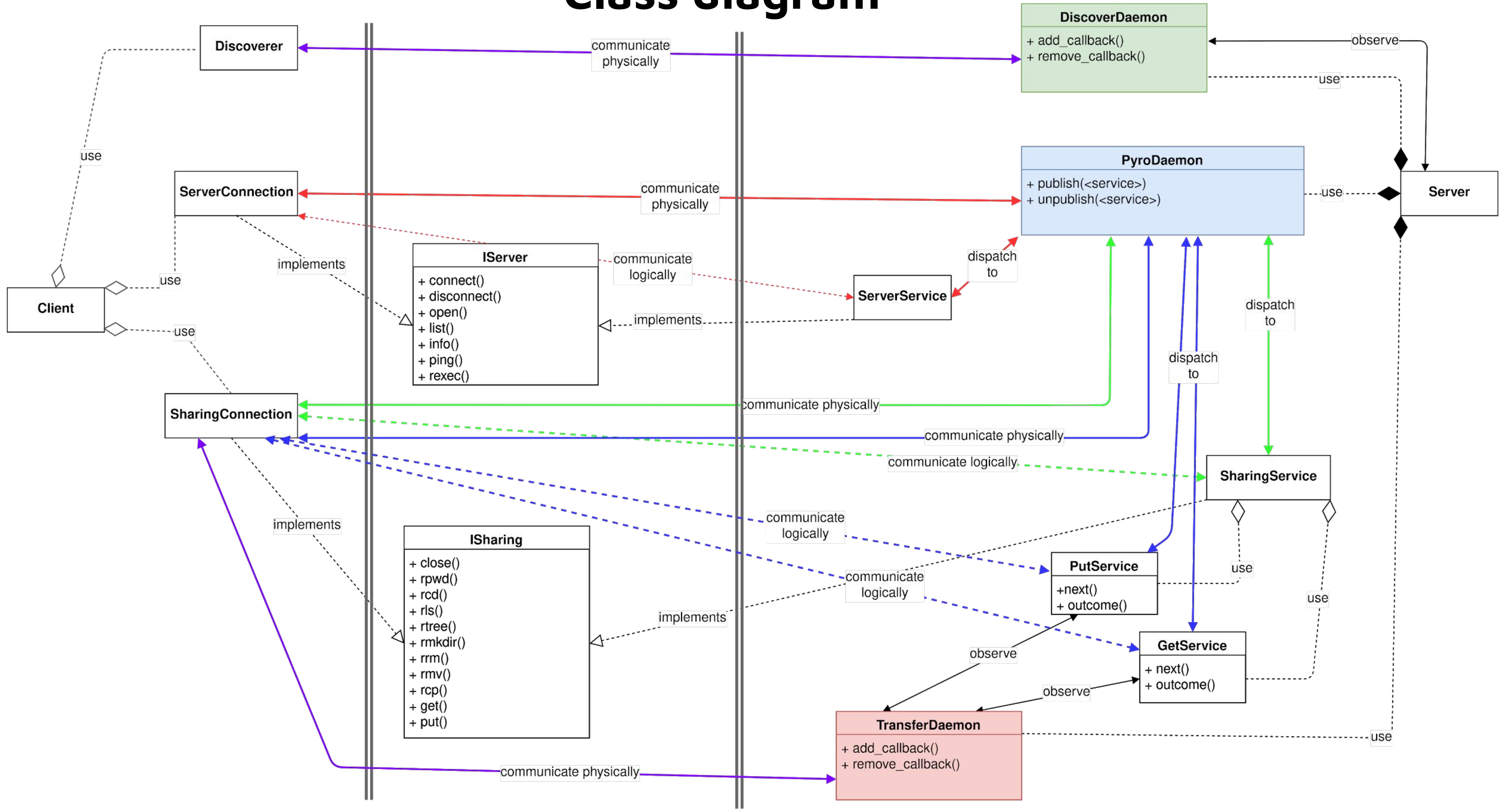
Misc commands

```
help
exit
trace
verbose
```

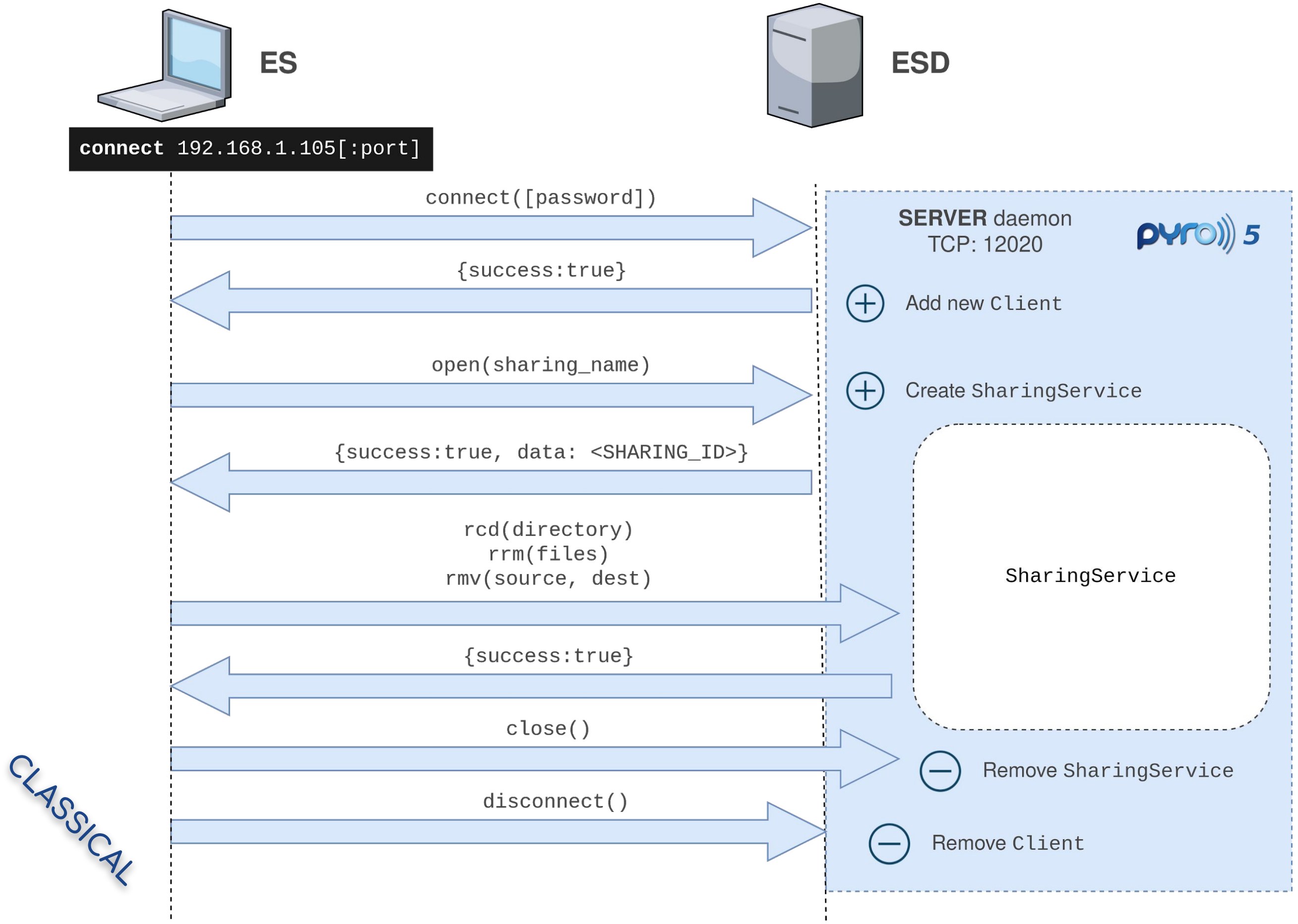
Server info commands

```
info
list
ping
```

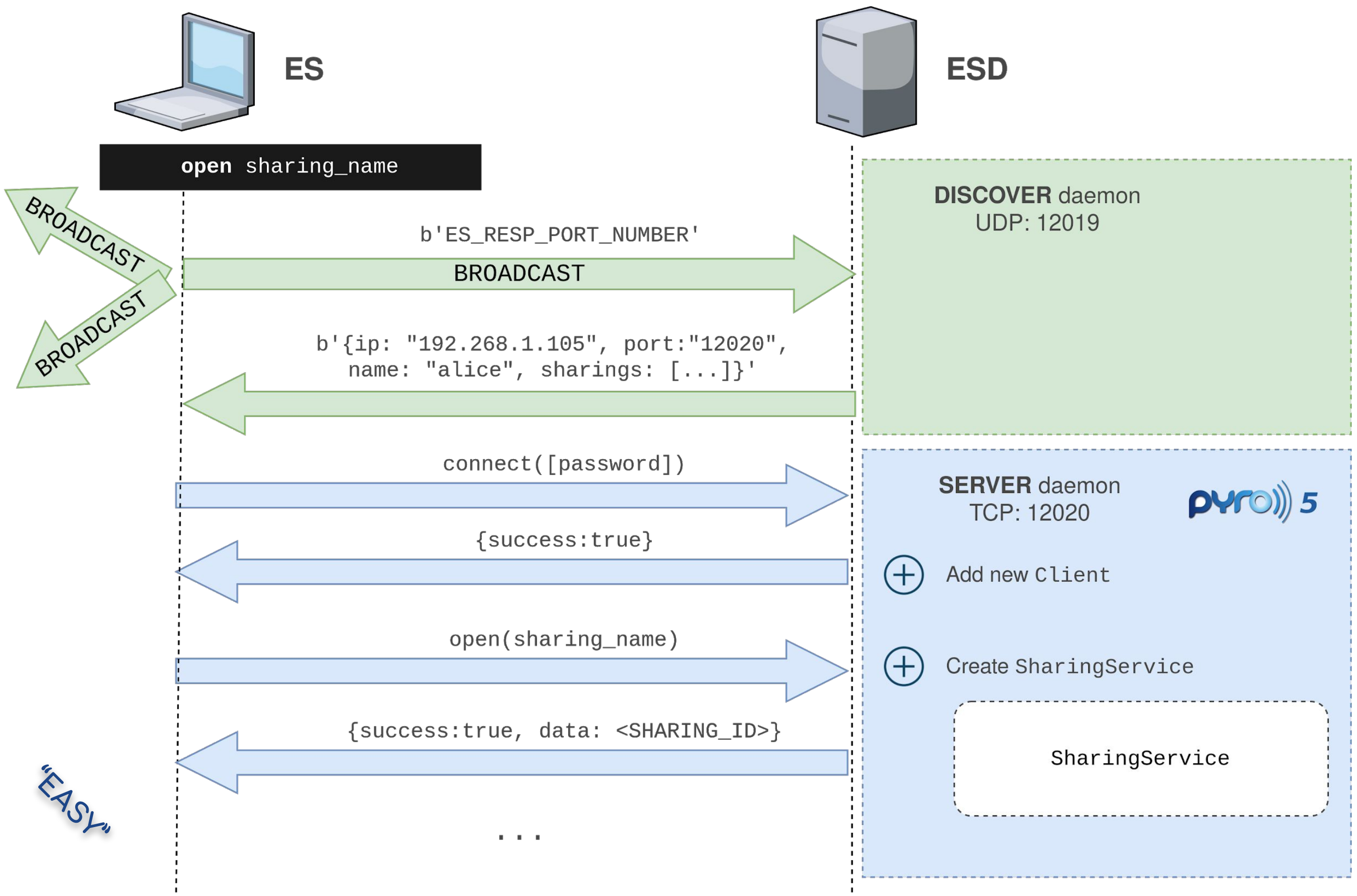
Class diagram



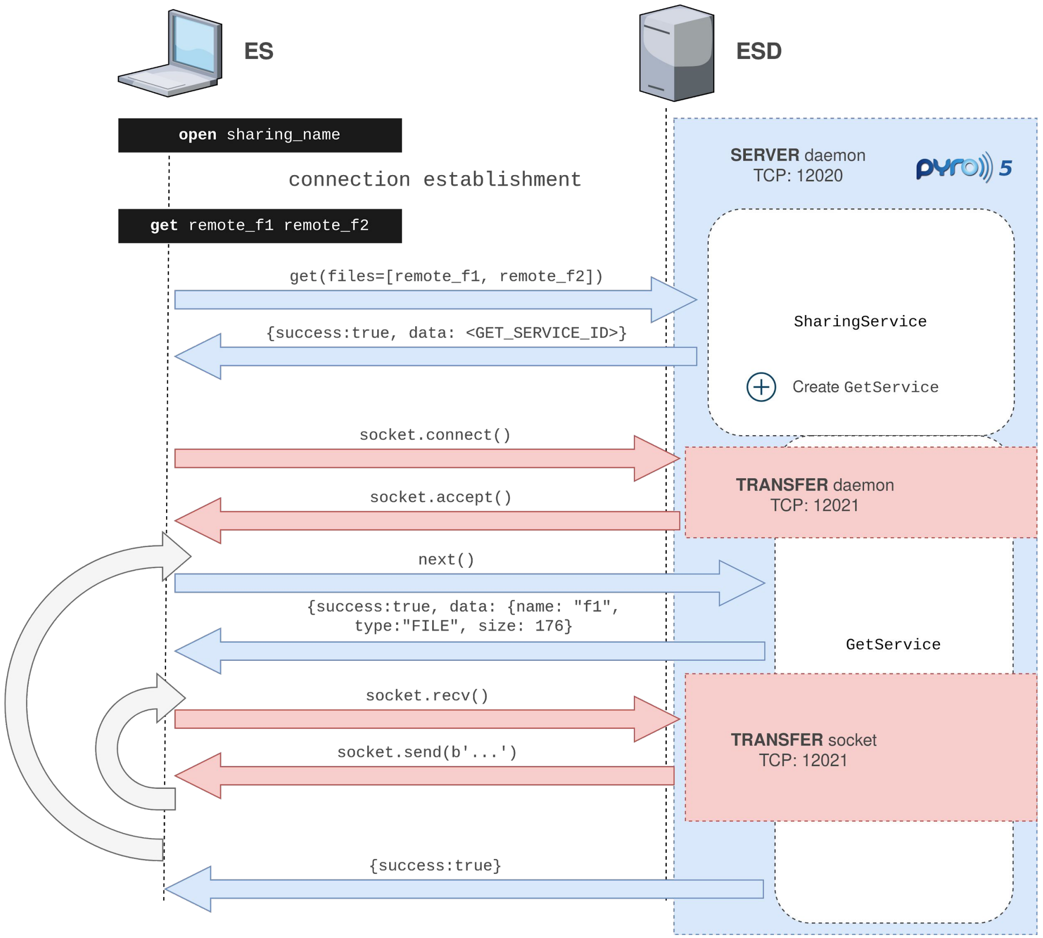
Connection establishment: DIRECTLY



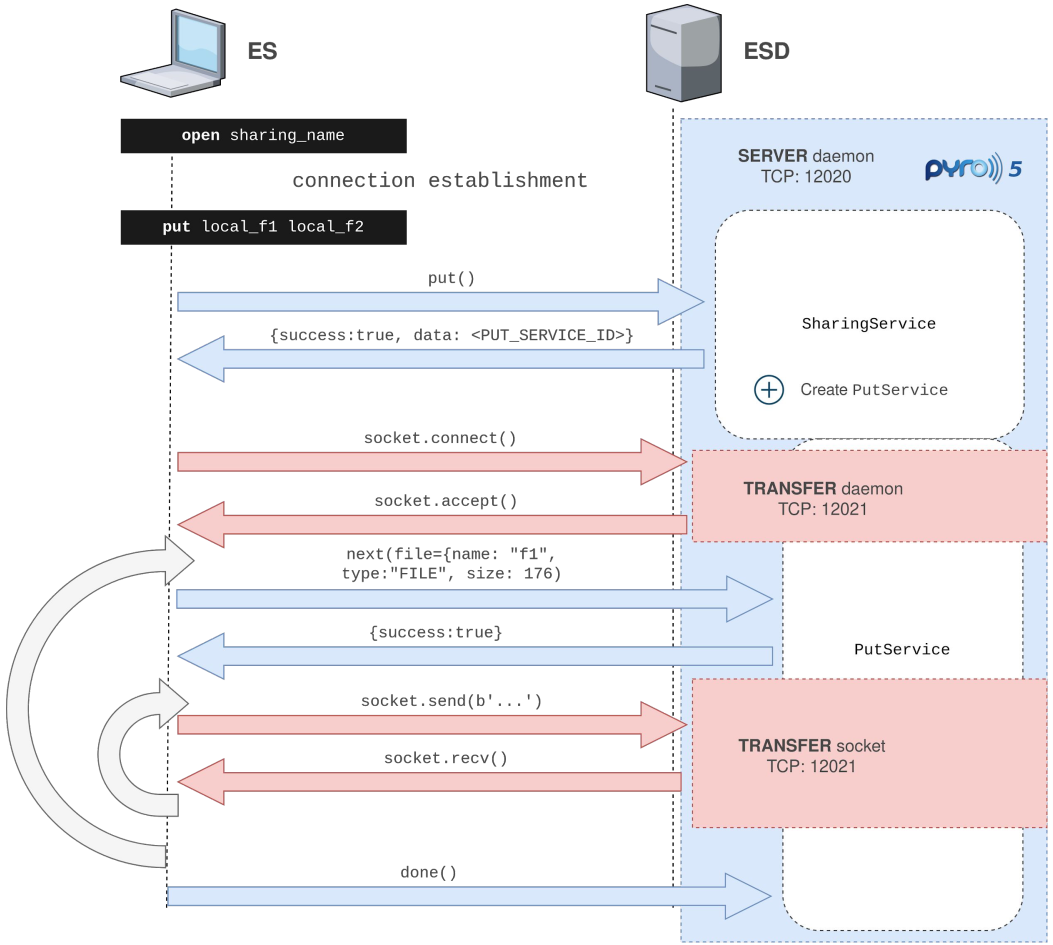
Connection establishment: DISCOVERING



File transfer: get



File transfer: `put`

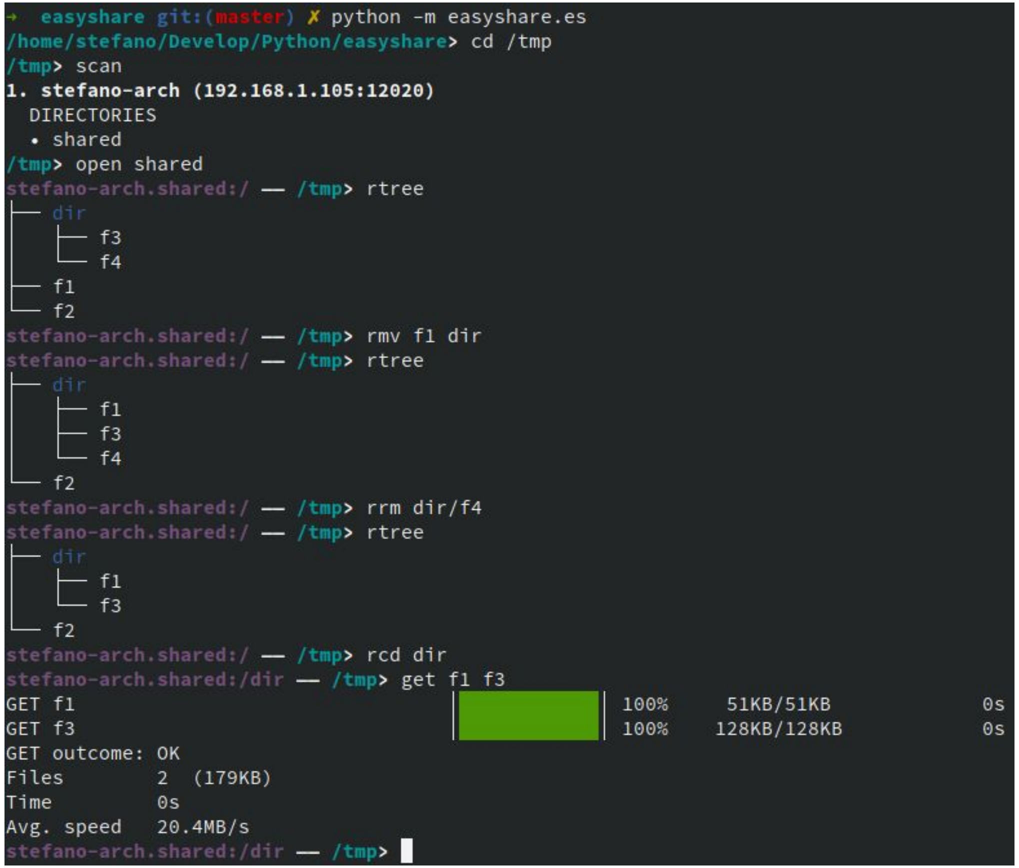


A step inside: es

Connection establishment (DISCOVER)

Remote files management

Files transfer
`get`



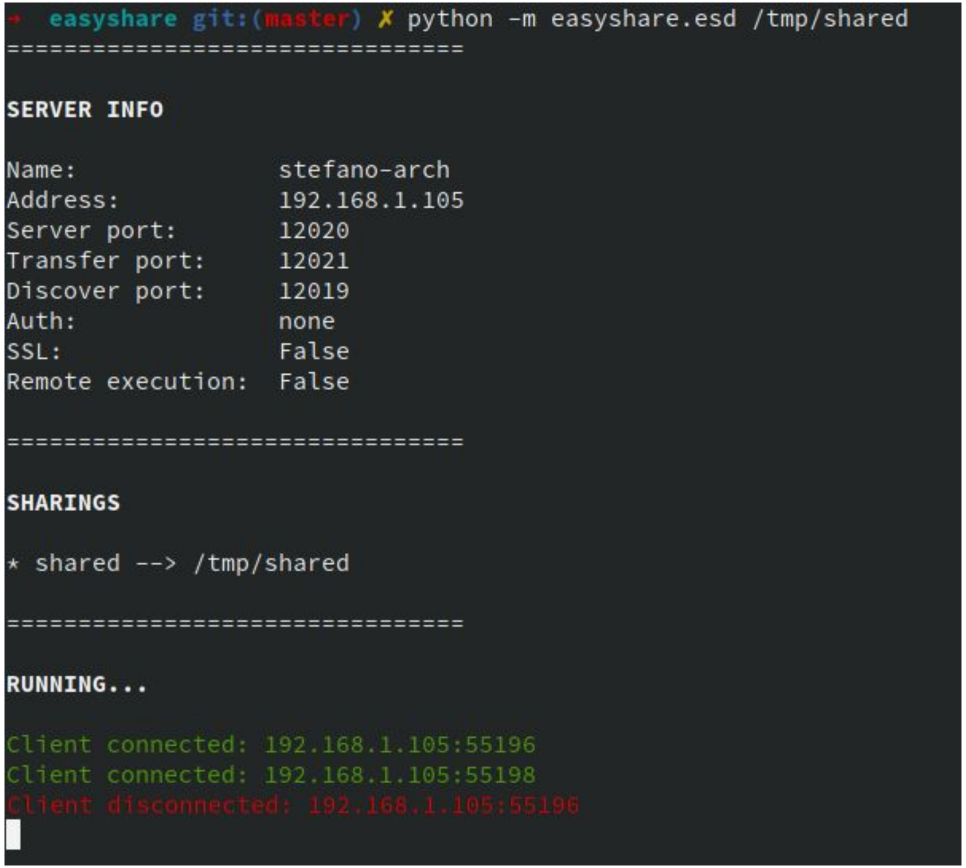
```
➜  easyshare git:(master) ✗ python -m easyshare.es
/home/stefano/Develop/Python/easyshare> cd /tmp
/tmp> scan
1. stefano-arch (192.168.1.105:12020)
  DIRECTORIES
  • shared
/tmp> open shared
stefano-arch.shared:/ — /tmp> rtree
├── dir
│   ├── f3
│   └── f4
├── f1
└── f2
stefano-arch.shared:/ — /tmp> rmv f1 dir
stefano-arch.shared:/ — /tmp> rtree
├── dir
│   ├── f1
│   ├── f3
│   └── f4
└── f2
stefano-arch.shared:/ — /tmp> rrm dir/f4
stefano-arch.shared:/ — /tmp> rtree
├── dir
│   ├── f1
│   └── f3
└── f2
stefano-arch.shared:/ — /tmp> rcd dir
stefano-arch.shared:/dir — /tmp> get f1 f3
GET f1                                        |██████| 100%    51KB/51KB          0s
GET f3                                        |██████| 100%   128KB/128KB         0s
GET outcome: OK
Files        2  (179KB)
Time         0s
Avg. speed   20.4MB/s
stefano-arch.shared:/dir — /tmp> 
```

A step inside: esd

Scenario 1.

When
Easy and fast sharing of <u>one</u> file or directory

How
Specifying sharing location as argument of the command



```
→  easyshare git:(master) ✗ python -m easyshare.esd /tmp/shared
================================

SERVER INFO

Name:                 stefano-arch
Address:              192.168.1.105
Server port:          12020
Transfer port:        12021
Discover port:        12019
Auth:                 none
SSL:                  False
Remote execution:     False

================================

SHARINGS

* shared --> /tmp/shared

================================

RUNNING...

Client connected: 192.168.1.105:55196
Client connected: 192.168.1.105:55198
Client disconnected: 192.168.1.105:55196
```

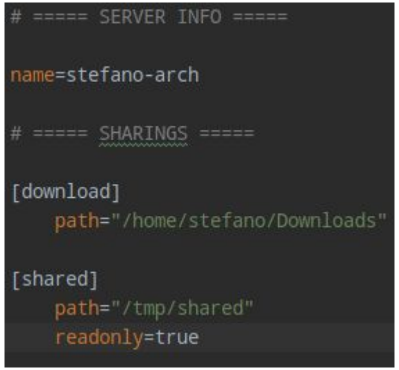
A step inside: esd

Scenario 2.

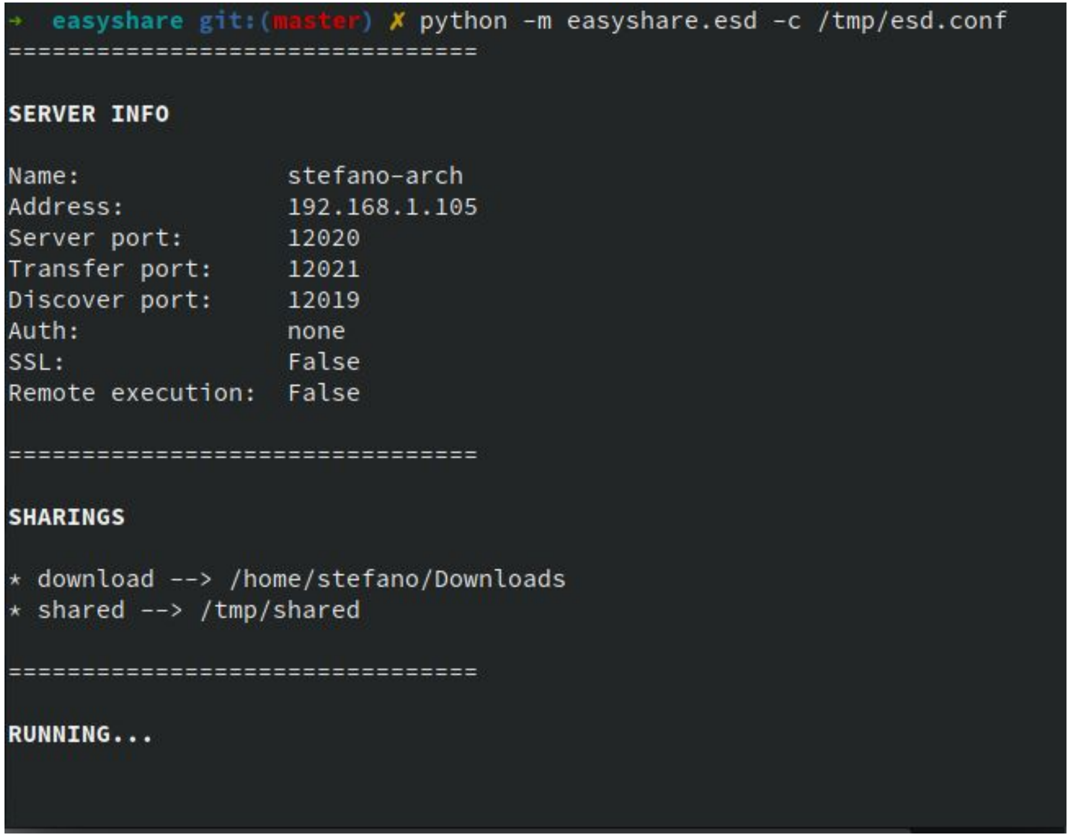
When
Sharing of multiple files or directories

How
Specifying the path to the config file via **-c**

esd.conf



```
# ===== SERVER INFO =====

name=stefano-arch

# ===== SHARINGS =====

[download]
    path="/home/stefano/Downloads"

[shared]
    path="/tmp/shared"
    readonly=true
```



```
→  easyshare git:(master) ✗ python -m easyshare.esd -c /tmp/esd.conf
================================

SERVER INFO

Name:                  stefano-arch
Address:               192.168.1.105
Server port:           12020
Transfer port:         12021
Discover port:         12019
Auth:                  none
SSL:                   False
Remote execution:      False

================================

SHARINGS

* download --> /home/stefano/Downloads
* shared --> /tmp/shared

================================

RUNNING...
```

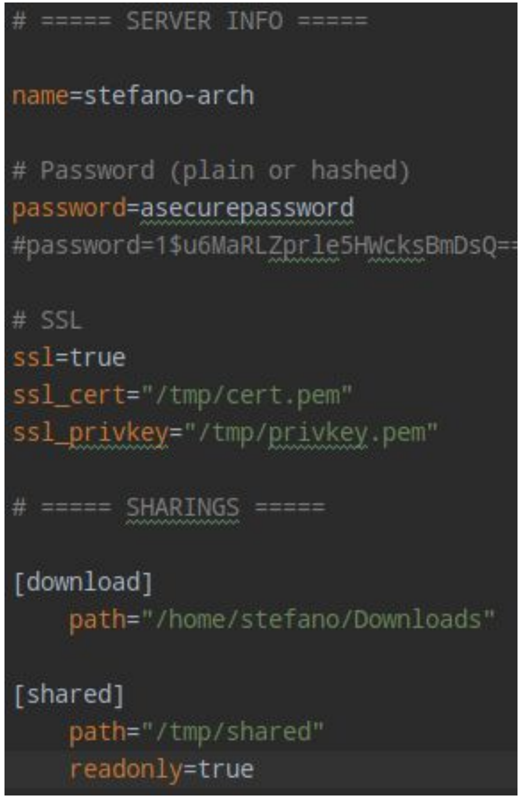
A step inside: esd

Scenario 2+.

When
Sharing of <u>multiple</u> files or directories with <u>more security</u>

How
Specifying the path to the (well configured) config file via **-c**

esd.conf



```
# ===== SERVER INFO =====

name=stefano-arch

# Password (plain or hashed)
password=asecurepassword
#password=1$u6MaRLZprle5HWcksBmDsQ==

# SSL
ssl=true
ssl_cert="/tmp/cert.pem"
ssl_privkey="/tmp/privkey.pem"

# ===== SHARINGS =====

[download]
    path="/home/stefano/Downloads"

[shared]
    path="/tmp/shared"
    readonly=true
```

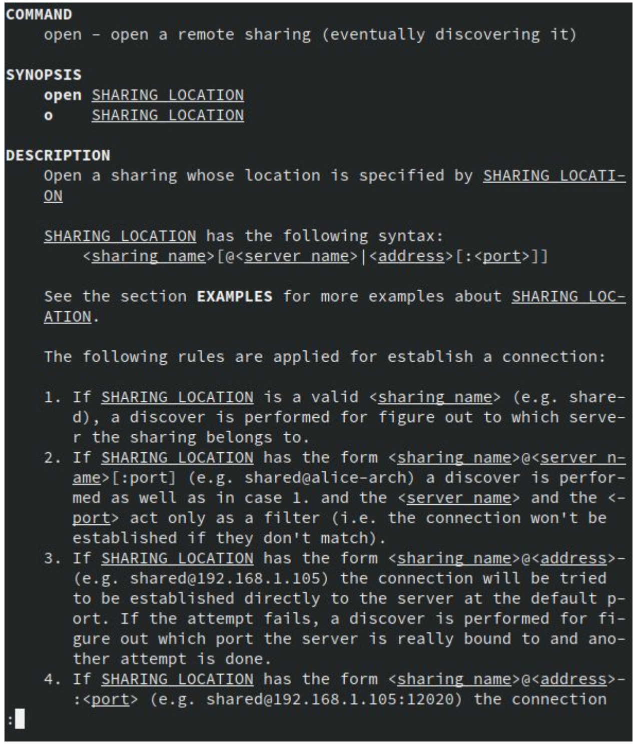
Server password (plain or hashed)

SSL

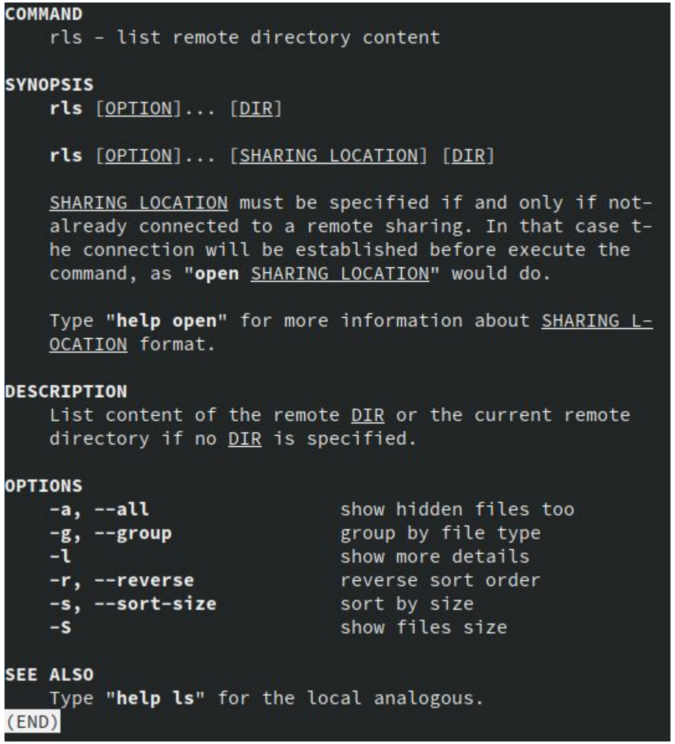
Read-only flag for specific sharings

Need help?

```
help <command>
```



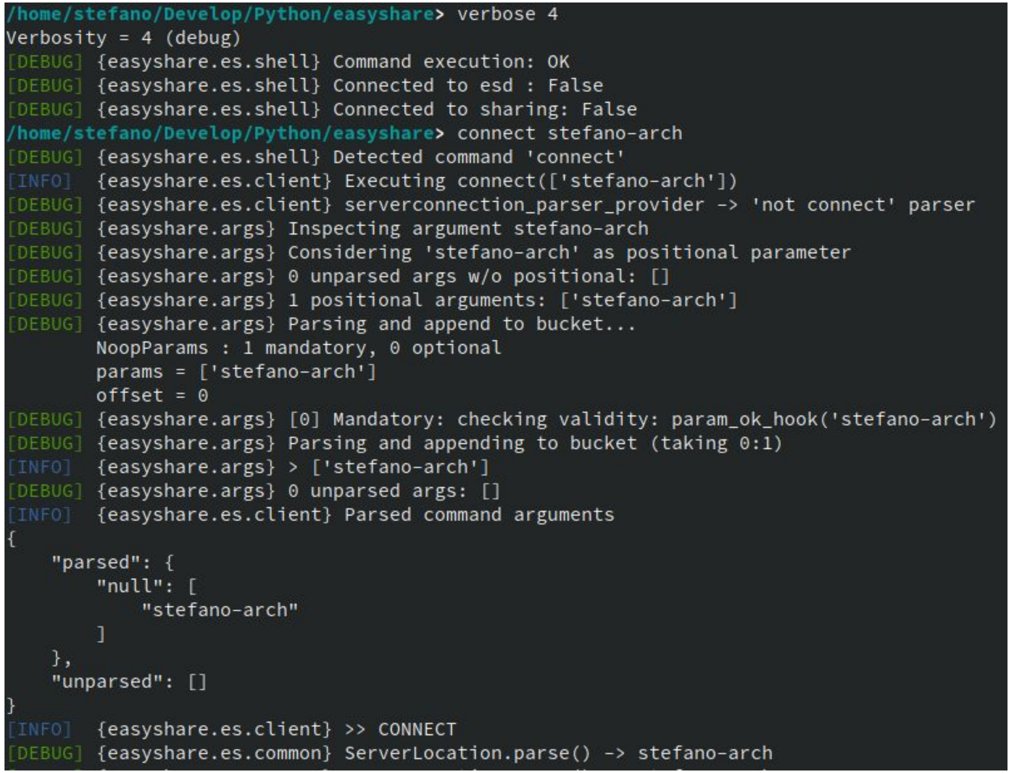
```
COMMAND
    open - open a remote sharing (eventually discovering it)

SYNOPSIS
    open SHARING LOCATION
    o    SHARING LOCATION

DESCRIPTION
    Open a sharing whose location is specified by SHARING LOCATI-
    ON

    SHARING LOCATION has the following syntax:
        <sharing name>[@<server name>|<address>[:<port>]]

    See the section EXAMPLES for more examples about SHARING LOC-
    ATION.

    The following rules are applied for establish a connection:

    1. If SHARING LOCATION is a valid <sharing name> (e.g. share-
       d), a discover is performed for figure out to which serve-
       r the sharing belongs to.
    2. If SHARING LOCATION has the form <sharing name>@<server n-
       ame>[:port] (e.g. shared@alice-arch) a discover is perfor-
       med as well as in case 1. and the <server name> and the <-
       port> act only as a filter (i.e. the connection won't be
       established if they don't match).
    3. If SHARING LOCATION has the form <sharing name>@<address>-
       (e.g. shared@192.168.1.105) the connection will be tried
       to be established directly to the server at the default p-
       ort. If the attempt fails, a discover is performed for fi-
       gure out which port the server is really bound to and ano-
       ther attempt is done.
    4. If SHARING LOCATION has the form <sharing name>@<address>-
       :<port> (e.g. shared@192.168.1.105:12020) the connection
:
```



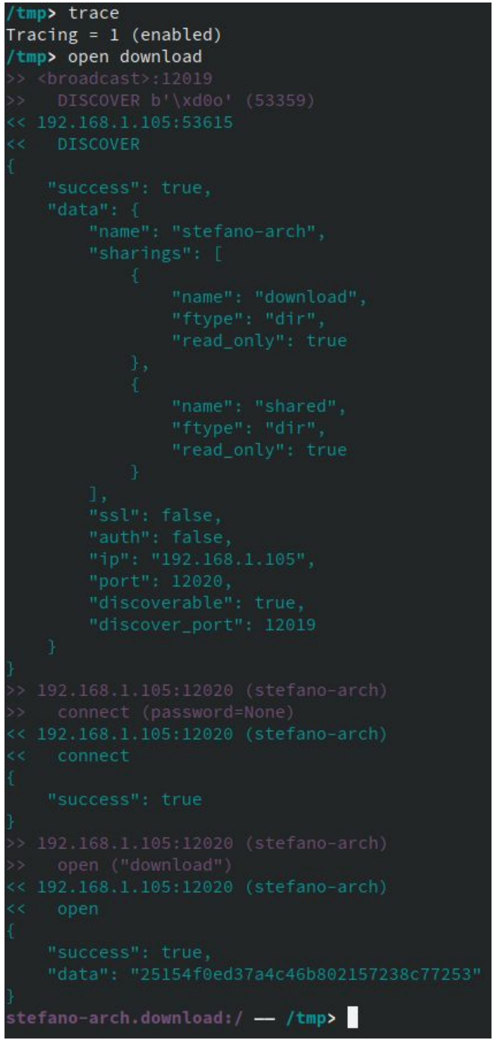
```
COMMAND
    rls - list remote directory content

SYNOPSIS
    rls [OPTION]... [DIR]

    rls [OPTION]... [SHARING LOCATION] [DIR]

    SHARING LOCATION must be specified if and only if not-
    already connected to a remote sharing. In that case t-
    he connection will be established before execute the
    command, as "open SHARING LOCATION" would do.

    Type "help open" for more information about SHARING L-
    OCATION format.

DESCRIPTION
    List content of the remote DIR or the current remote
    directory if no DIR is specified.

OPTIONS
    -a, --all                   show hidden files too
    -g, --group                 group by file type
    -l                          show more details
    -r, --reverse               reverse sort order
    -s, --sort-size             sort by size
    -S                          show files size

SEE ALSO
    Type "help ls" for the local analogous.
(END)
```

Not enough (help)?

verbose, trace



```
/home/stefano/Develop/Python/easyshare> verbose 4
Verbosity = 4 (debug)
[DEBUG] {easyshare.es.shell} Command execution: OK
[DEBUG] {easyshare.es.shell} Connected to esd : False
[DEBUG] {easyshare.es.shell} Connected to sharing: False
/home/stefano/Develop/Python/easyshare> connect stefano-arch
[DEBUG] {easyshare.es.shell} Detected command 'connect'
[INFO]  {easyshare.es.client} Executing connect(['stefano-arch'])
[DEBUG] {easyshare.es.client} serverconnection_parser_provider -> 'not connect' parser
[DEBUG] {easyshare.args} Inspecting argument stefano-arch
[DEBUG] {easyshare.args} Considering 'stefano-arch' as positional parameter
[DEBUG] {easyshare.args} 0 unparsed args w/o positional: []
[DEBUG] {easyshare.args} 1 positional arguments: ['stefano-arch']
[DEBUG] {easyshare.args} Parsing and append to bucket...
        NoopParams : 1 mandatory, 0 optional
        params = ['stefano-arch']
        offset = 0
[DEBUG] {easyshare.args} [0] Mandatory: checking validity: param_ok_hook('stefano-arch')
[DEBUG] {easyshare.args} Parsing and appending to bucket (taking 0:1)
[INFO]  {easyshare.args} > ['stefano-arch']
[DEBUG] {easyshare.args} 0 unparsed args: []
[INFO]  {easyshare.es.client} Parsed command arguments
{
    "parsed": {
        "null": [
            "stefano-arch"
        ]
    },
    "unparsed": []
}
[INFO]  {easyshare.es.client} >> CONNECT
[DEBUG] {easyshare.es.common} ServerLocation.parse() -> stefano-arch
```



```
/tmp> trace
Tracing = 1 (enabled)
/tmp> open download
>> <broadcast>:12019
>>   DISCOVER b'\xd0o' (53359)
<< 192.168.1.105:53615
<<   DISCOVER
{
    "success": true,
    "data": {
        "name": "stefano-arch",
        "sharings": [
            {
                "name": "download",
                "ftype": "dir",
                "read_only": true
            },
            {
                "name": "shared",
                "ftype": "dir",
                "read_only": true
            }
        ],
        "ssl": false,
        "auth": false,
        "ip": "192.168.1.105",
        "port": 12020,
        "discoverable": true,
        "discover_port": 12019
    }
}
>> 192.168.1.105:12020 (stefano-arch)
>>   connect (password=None)
<< 192.168.1.105:12020 (stefano-arch)
<<   connect
{
    "success": true
}
>> 192.168.1.105:12020 (stefano-arch)
>>   open ("download")
<< 192.168.1.105:12020 (stefano-arch)
<<   open
{
    "success": true,
    "data": "25154f0ed37a4c46b802157238c77253"
}
stefano-arch.download:/ — /tmp> 
```

Other features

- **Command** and command's **options** completion with TAB
- Local and remote **files** completion with TAB

- Designed for work behind **NAT** too
  (apart from the broadcast discovery)

- Man pages available
  ```
  man es
  man esd
  ```

- Helper for generate passwords hashes and configuration file
  ```
  es-tools
  ```

Easy to install, as well

```
pip install easyshare
```

Links

- https://github.com/Docheinstein/easyshare

- https://pypi.org/project/easyshare/

```
#!/bin/sh
exit 0
```