nanofiles-c protocol specification

Revision B

Notation

- asdf: static data
- a|b: disjunction of options
- < >: mandatory field
- [ ]: optional field
- [...]: last object N times
- All sizes are in bytes

Directory protocol

UTF-8 encoded text/plain in key:value format over simple UDP. Whitespaces are stripped.

Client requests

Ping request Test the connection and compatibility

- Operation `ping`
- Fields
  - `protocol id`
- Answer 'ping reply'

```
operation: ping
protocol: <protocol id>
```

Filelist request Get file information known by directory

- Operation `filelist`
- Fields: None
- Answer 'filelist reply'

```
operation: filelist
```

Publish request Inform directory of list available files for download from client

- Operation `publish`
- Fields: (see below), the list can be empty
- Answer 'publish response'

```
operation: publish
[port: <port>]
<hash1>: <filename1>; <size1>
<hash2>: <filename2>; <size2>
```

```
[...]
```

Directory responses

Ping reply Acknoledges back connection and informs client of compatibility

- Operation `pingok`
- Fields: None
- Answer to 'ping request'

```
operation: pingok
```

Ping bad reply Warns the client its using the wrong protocol

- Operation `pingbad`
- Fields: None
- Answer to 'ping request'

```
operation: pingbad
```

Filelist reply Send back list of known (filename, hash, size and peers) for every file known

- Operation `filelistres`
- Fields: (see below), the list can be empty
- Answer to 'filelist request'

```
operation: filelistres
<hash1>: <filename1>; <size1>; <server1a>, <server1b> [...]
<hash2>: <filename2>; <size2>; <server2a>, <server2b> [...]
[...]
```

Publish reply Acknowledge publish request

- Operation `publishack`
- Fields: None
- Answer to: 'publish request'

```
operation: publishack
```

Peer protocol

Binary little-endian over TCP buffers

All messages begin with an opcode byte

Client requests

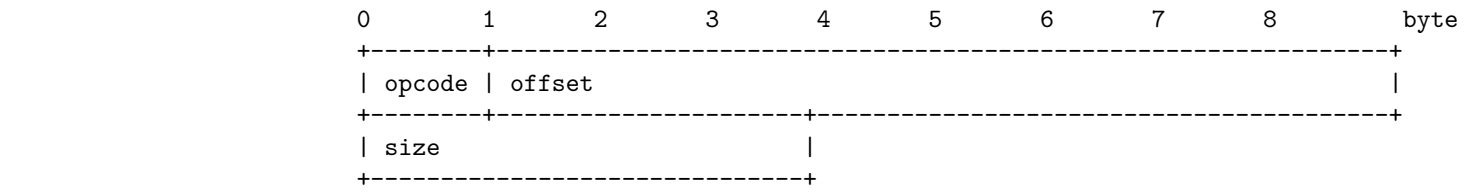
Opcode in 0x0X

File request Requests availability of file to be downloaded

- Opcode: 0x01
- Fields:
  - fnamelen[1]: Filename length
  - filename[fnamelen]: Filename
- Answer: 'accepted' or 'file not found error'

Chunk request Asks server to send a chunk

- Opcode: 0x02
- Fields:
  - offset[8]: Starting byte of chunk
  - size[4]: Size of chunk
- Answer: 'chunk'



Stop download Terminates current file request

- Opcode: 0x03
- Fields: None
- Answer: None

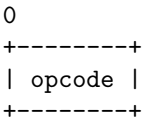
Server requests

Opcode in 0x1X

Accepted File is available to download via chunk requests

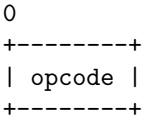
- Opcode 0x11
- Fields: None

- Answer to: ‘file request’



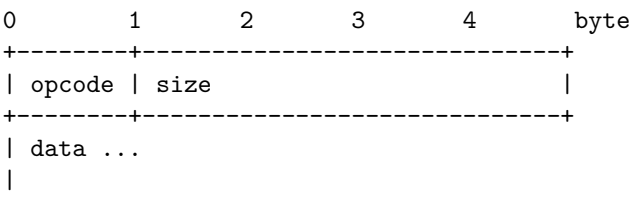
Bad chunk request error File is unavailable or not found

- Opcode: 0x12
- Fields: None
- Answer to: ‘file request’



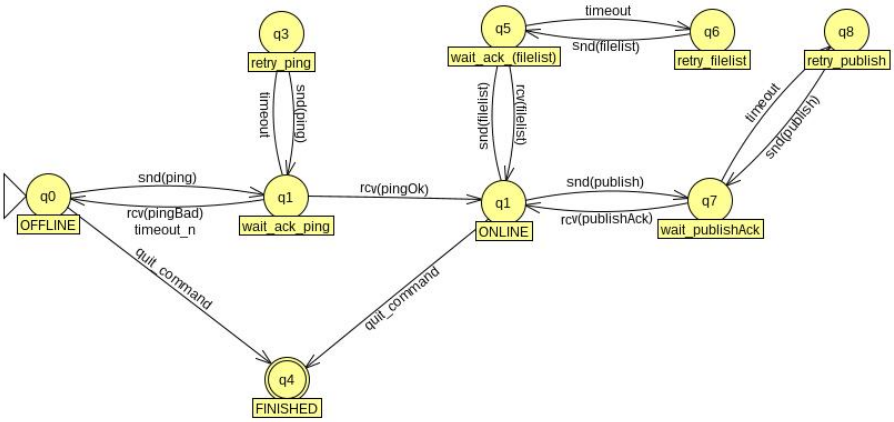
Chunk Data chunk of file

- Opcode: 0x13
- Fields:
  - size[4]: Size of chunk
  - data[size]:
- Answer to: ‘chunk request’

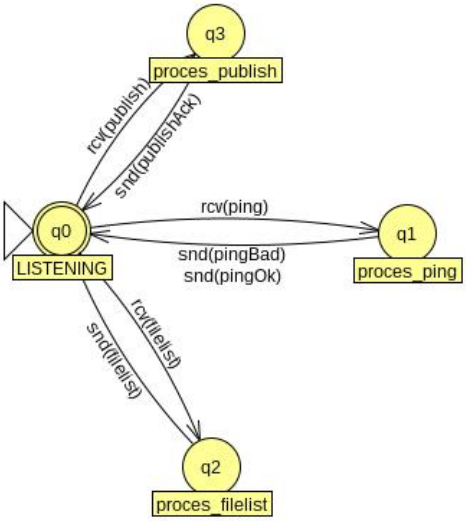


Application automaton

Directory protocol

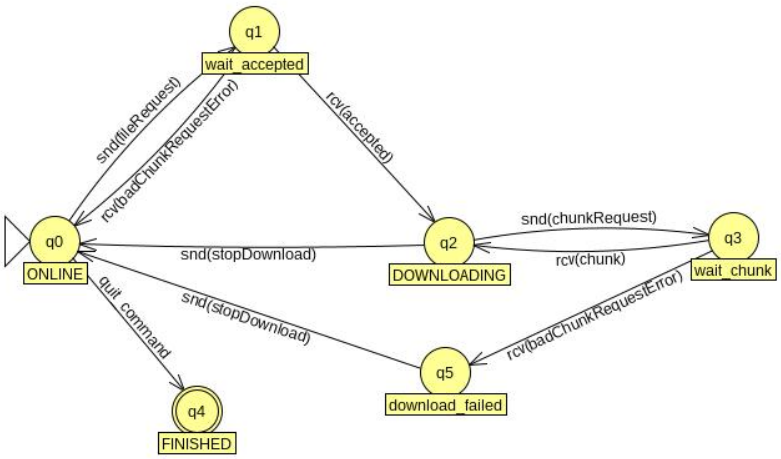


Client automaton

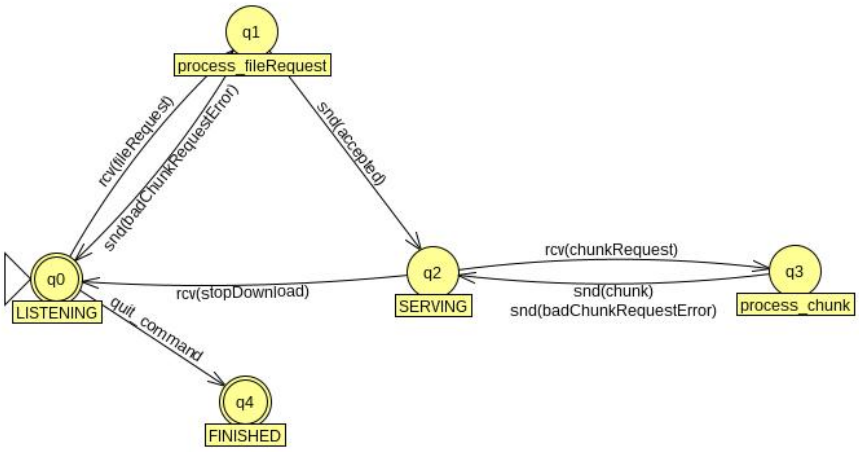


Server automaton

Peer protocol



Client automaton



Server automaton