nanofiles-c protocol specification

Notation

- asdf: static data
- < >: 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

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 [bad]'

```
operation:filelist
```

Publish requst   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>]
<filename1>: <size1>; <hash1>
<filename2>: <size2>; <hash2>
[...]
```

Directory responses

Ping reply   Acknoledges back connection and informs client of compatibility

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

```
operation:pingOk
```

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

Filelist reply bad Inform client of an error condition on the directory

- Operation `filelistBad`
- Fields: None
- Answer to 'filelist request'

```
operation:filelistBad
```

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

File request Requests availability of file to be downloaded

- Opcode: 0x02
- Fields:
    - fnamelen: Filename length
- Answer: 'accepted' or 'file not found error'

```
0          1          byte
+--------+--------+
| opcode |fnamelen|
+-----------------+
| filename        |
| ...             |
```

Get chunk   Requests availability of file to be downloaded

- Opcode: 0x04
- Fields:
    - offset[8]: Starting byte of chunk
    - size[4]: Size of chunk
- Answer: 'chunk served'

```
0          1          2          3          4          5          6          7          8          byte
+--------+---------------------------------------------------------------------+
| opcode | offset                                                              |
+--------+---------------------+---------------------------------------------+
| size                         |
+------------------------------+
```

Stop download

- Opcode: 0x05
- Fields: None
- Answer: None

```
0
+--------+
| opcode |
+--------+
```

Server requests

File not found error

- Opcode: 0x01
- Fields: None
- Answer to: 'file request'

```
0
+--------+
| opcode |
+--------+
```

Accepted

- Opcode 0x03
```

- Fields: None
- Answer to: 'file request'

```
0
+--------+
| opcode |
+--------+
```

Chunk served   Requests availability of file to be downloaded

- Opcode: 0x06
- Fields:
    - size[4]: Size of chunk
    - data:
- Answer to: 'get chunk'

```
0        1         2         3         4         byte
+--------+----------------------------+
| opcode | size                       |
+--------+----------------------------+
| data ...
|
```