**Requirements for Project tftpd**

**Revision History**

| Revision | Author | Contact Info | Description | Date |
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# Functionalities

The project name tftpd means TFTP server. Its functional requirements are as follows:

* An independent module of switch software that functions as a TFTP server, that is, the server role of TFTP protocol used to upload and download files to and from a switch.
* Support concurrent processing of up to 3 read requests from clients even for the same file. However, it is not allowed for both read and write sessions to occur simultaneously, nor for two or more write sessions to occur simultaneously.
* The server can be enabled and disabled by command: [no] tftp server enable
* Support configurable UDP port of TFTP server by command: [no] tftp server port {*port*}
* Support configurable timeout and retry count for re-transmission by command: [no] tftp server retransmit {*timeout*} {*retry*}. The default values of the two parameters are 3 seconds and 3 times respectively. The value range of timeout is 1~255 inclusive, and retry 1~6inclusive, and their product cannot be greater than 255. Note that the retry value includes the first normal transmission.
* Support negotiation of blocksize, defined by RFC2348
* Support negotiation of windowsize, defined by RFC7440 (optional)
* Support CLI commands:
* [no] tftp server enable: see above
* [no] tftp server port {*port*}: see above
* [no] tftp server retransmit {*timeout*} {*retry*}: see above
* Saving configurations: All the non default configurations can be saved as the above configuration command lines into the startup configuration file using command write.
* show tftp server: show the configurations and status of the TFTP server including current sessions, file names in operation, operations (read or write) etc.
* show running: The configuration commands for non default values of tftpd should be able to be listed by this command.
* show version: the command “show version all” or “show version module tftpd” shows the version of the module tftpd.

# Performance

* For files of the same size, in a single session scenario, the upload and download time is not more than the time of the existing TFTP client method, i.e. the method through the command “copy tftp”.
* In the case of three simultaneous sessions, the download time of one session is not more than 125% of the download time for a file of the same size in a single session scenario.

# Code

* Module name of source code: tftpd
* Conventions for source files:
* ttfpd\_task.c: entry function of the task
* tftpd.c: functions at all levels implementing the functionalities
* tftpd\_cmd.c: commands implementation
* tftpd.h: common definitions and function declarations referenced by C files
* Style: clear structure, good hierarchy (fan-in and fan-out), and good readability
* Clean UI
* In the source code of the official version submitted to SVN, all printing statements used for debugging should be removed. If you want to formally log the failures of some operations, use the routine syslog(). For the purpose of tracking the operation process, we actually have standardized debug commands and their printing statements, but we do not require them in this project.
* Use a consistent layout and standardized display information for the show commands.
* Comply with the known programming standards
* System calls: use BDCOM encapsulation for all system calls

# Testing

Before the source code is considered to have met the functional requirements and to be officially submitted for review, it must pass testing.

Test cases should be developed for testing, including functional testing, robustness testing and performance testing. A test report containing test cases must be submitted.

Robustness test cases include but are not limited to:

* The same client has a read request before the write session ends, or vice versa.
* Interface down event due to unplugging the network cable
* The IP address of the interface is deleted and configured again (or it is changed directly)
* Extra long file name