



FTP

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File Transfer Protocol

# FTP

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## □ FTP

- File Transfer Protocol
- Used to transfer data from one computer to another over the internet
- Client-Server Architecture
- Separated control/data connections

## □ FTP connections

- Control connection
  - Created when an FTP session is established
  - Only for passing control information
- Data connection
  - Each time that data is sent, a distinct TCP data connect is established

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## ❑ Data connection Modes

- Active Mode
- Passive Mode
- Request For Comments (RFCs):
  - RFC 959 – File Transfer Protocol
  - RFC 2228 – FTP Security Extensions
  - RFC 2428 – FTP Extensions for IPv6 and NATs
  - RFC 2640 – UTF-8 support for file name
  - RFC 2324 – Hyper Text Coffee Pot Control Protocol

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## ❑ Security concern

- As we seen, FTP connections (both command and data) are transmitted in clear text
- What if somebody sniffing the network?
  - We need encryption

## ❑ Solutions

- FTP over SSH
  - A normal FTP session tunneled through a SSH channel
- SSH File Transfer Protocol (SFTP)
  - Both commands and data are encrypted while transmitting
  - One connection, but poor performance
- FTP over TLS (ftps, ftpes)
  - Only commands are encrypted while transmitting
  - Better performance

# FTP

## - Pure-FTPd (1)

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### □ Introduction

- A small, easy to set up, fast and secure FTP server
- Support chroot
- Restrictions on clients, and system-wide.
- Verbose logging with syslog
- Anonymous FTP with more restrictions
- Virtual Users, and Unix authentication
- FXP (File eXchange Protocol)
- FTP over TLS
- UTF-8 support for filenames

# FTP

## - Pure-FTPd (2)

### ❑ Installation

- Ports: /usr/ports/ftp/pure-ftpd
- Options

```
pure-ftpd-1.0.46
+ [ ] ANONDELETE Allow anonymous user to delete files
+ [ ] ANONRENAME Allow anonymous user to rename files
+ [ ] ANONRESUME Allow anonymous user to resume file upload
+ [x] DOCS Build and/or install documentation
+ [x] EXAMPLES Build and/or install examples
+ [ ] LARGEFILE 2GB+ file download
+ [ ] LDAP User accounts in LDAP directories
+ [ ] MYSQL User accounts in MySQL database
+ [x] PAM PAM authentication
+ [ ] PERUSERLIMITS Per-user concurrency limits
+ [ ] PGSQL User accounts in PostgreSQL database
+ [x] PRIVSEP Privilege separation (recommended)
+ [x] SCRYPT Hash passwords in PureDB with scrypt
+ [x] SENDFILE Sendfile syscall
+ [ ] THROTTLING Bandwidth throttling
+ [x] TLS Secure network connection support via TLS
+ [ ] UPLOADSCRIPT Uploadscript daemon support
+ [x] UTF8 UTF-8 filenames
+ [x] VIRTUALCHROOT Follow symlinks outside a chroot jail

< OK > <Cancel>
```

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## - Pure-FTPd (3)

- Other options

```
nctucs [/usr/ports/ftp/pure-ftpd] -wngth- sudo make extract
```

...

You can use the following additional options:

**LANGUAGE**=lang (default: english)

- Enable compilation of one language support  
available lang: brazilian-portuguese, catalan, czech, danish, dutch,  
english, french, french-funny, german, hungarian, italian, korean,  
norwegian, polish, romanian, russian, simplified-chinese, slovak,  
spanish, swedish, traditional-chinese, Turkish

- LANGUAGE
  - Change the language of output messages

### ☐ Startup

- Add pureftpd\_enable="YES" in /etc/rc.conf

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## - Pure-FTPd Configurations(1)

### ❑ Configurations:

- File: /usr/local/etc/pure-ftpd.conf
- Documents
  - Configuration sample: /usr/local/etc/pure-ftpd.conf.sample
    - All options are explained clearly in this file.
  - Other documents
    - See /usr/local/share/doc/pure-ftpd/\*

```
nctucs [/usr/ports/ftp/pure-ftpd] -wngth- ls
AUTHORS                                README.LDAP
CONTACT                                README.MySQL
COPYING                                README.PGSQL
HISTORY                                README.TLS
NEWS                                    README.Virtual-Users
README                                  THANKS
README.Authentication-Modules           pure-ftpd.png
README.Configuration-File               pureftpd.schema
```



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## - Pure-FTPD Configurations(2)

**# Restrict users to their home directory**

**ChrootEveryone        yes**

**# If the previous option is set to "no", members of the following group  
# won't be restricted. Others will be. If you don't want chroot()ing anyone,  
# just comment out ChrootEveryone and TrustedGID.**

**TrustedGID            0**

**# Disallow authenticated users - Act only as a public FTP server.**

**AnonymousOnly        no**

**# Disallow anonymous connections. Only accept authenticated users.**

**NoAnonymous           yes**

**# If you want simple Unix (/etc/passwd) authentication, uncomment this**

**UnixAuthentication    yes**

**# Port range for passive connections - keep it as broad as possible.**

**PassivePortRange     30000 50000**

**# This option accepts three values:**

**# 0: disable SSL/TLS encryption layer (default).**

**# 1: accept both cleartext and encrypted sessions.**

**# 2: refuse connections that don't use the TLS security mechanism,**

**# including anonymous sessions.**

**# Do not uncomment this blindly. Double check that:**

**# 1) The server has been compiled with TLS support (--with-tls),**

**# 2) A valid certificate is in place,**

**# 3) Only compatible clients will log in.**

**TLS 2**

**# UTF-8 support for file names (RFC 2640)**

**# Set the charset of the server filesystem and optionally the default charset**

**# for remote clients that don't use UTF-8.**

**# Works only if pure-ftpd has been compiled with --with-rfc2640**

**# FileSystemCharset UTF-8**

**# ClientCharset UTF-8**

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## - Pure-FTPd Problem Shooting

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### ❑ Logs Location

- In default, syslogd keeps ftp logs in /var/log/xferlog

### ❑ Most frequent problems

- pure-ftpd: (?@?) [ERROR] Unable to find the 'ftp' account
  - It's ok, but you may need it for Virtual FTP Account.
- pure-ftpd: (?@?) [ERROR] Sorry, but that file doesn't exist: [/etc/ssl/private/pure-ftpd.pem]
  - If you set TLS = 2, then this file is needed.
- How to generate a pure-ftpd.pem?
  - See README.TLS

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## - Pure-FTPd Tools

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### ❑ pure-\*

```
nctucs [~] -wngth- ls /usr/local/sbin/pure-  
/usr/local/sbin/pure-alwaysfail /usr/local/sbin/pure-mrtginfo  
/usr/local/sbin/pure-authd /usr/local/sbin/pure-quotacheck  
/usr/local/sbin/pure-ftpd /usr/local/sbin/pure-uploadsript  
/usr/local/sbin/pure-ftpwho  
nctucs [~] -wngth- ls /usr/local/bin/pure-  
/usr/local/bin/pure-pw /usr/local/bin/pure-statsdecode  
/usr/local/bin/pure-pwconvert
```

### ❑ pure-ftpwho

- List info of users who are currently connecting to the FTP server.

### ❑ pure-pw

- Manage Virtual Users in PureDB format
- pure-pw(8)
- See README.Virtual-Users

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## - More Tools

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- ❑ ftp/pureadmin
  - Management utility for the PureFTPd
- ❑ ftp/lftp
  - Shell-like command line ftp client
  - Support TLS
- ❑ ftp/wget, ftp/curl
  - Retrieve files from the Net via HTTP(S) and FTP
- ❑ ftp/mget
  - Multithreaded commandline web-download manager
- ❑ FileZilla
  - A graphical cross-platform FTP client
  - Support TLS
- ❑ Pure-FTPd WebUI
  - PHP based web interface for Pure-FTPd