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1 Configuring FTP Client

1.1 Introduction

1.1.1 Overview

File Transfer Protocol (FTP) is an application of TCP/IP. By setting up a connection-oriented and reliable TCP connection between the FTP client and server, a user can access a remote computer that runs the FTP server program.

An FTP client enables file transfer between a device and the FTP server over FTP. A user uses the client to send a command to the server. The server responds to the command and sends the execution result to the client. By means of command interaction, the user can view files in the server directory, copy files from a remote computer to a local computer, and transfer local files to a remote computer.

FTP facilitates sharing of program/data files and remote use of computers. Users can transfer data in an efficient and reliable manner without caring about differences between files systems on different hosts.

A Orion_B26Q FTP client runs interactive commands in a way different from a standard FTP client. You enter the copy command in the CLI to automatically run commands related to the control connection, such as **open**, **user**, and **pass**. After a control connection is established, the file transfer process starts. Then, a data connection is established to upload or download files.

Note

For the principles of the connection between the FTP client and server, see "Configuring FTP Server" in *IP Service Configuration Guide*.

The following sections introduce only the FTP client.

1.1.2 Principles

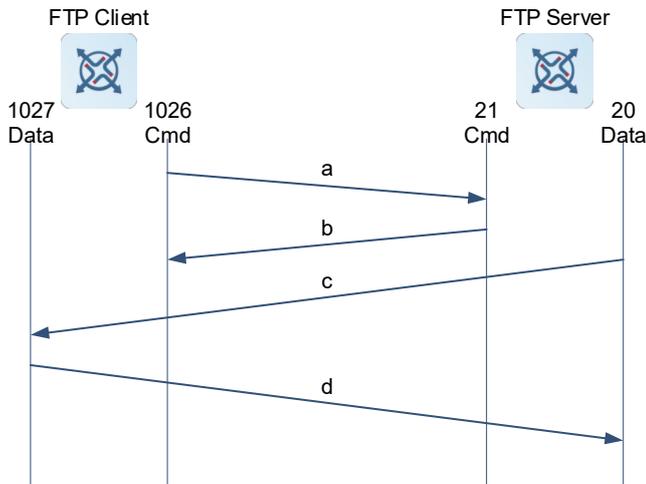
1. FTP Connection Mode

FTP supports two data connection modes: active (PORT) and passive (PASV). The two modes differ only in the way that a data connection is established, and the control connection is the same.

- In PORT mode, when a data connection is established, the FTP server initiates a request to establish a new connection with the client for data transmission. This mode cannot be used if the firewall is deployed on the FTP client. The connection establishment process is as follows:
 - a The FTP client establishes a control channel through port 1026 and port 21 of the FTP server, and sends control commands through this channel.
 - b The client sends the **PORT** command through this channel when it needs to receive data. The **PORT** command contains the port information (1027) of the client data channel.
 - c When transmitting data, the server connects to port 1027 of the client through port 20 on the server to establish a data channel for data transmission and reception.

d The client sends a response. Data transmission ends.

Figure 1-2PORT Mode



- In PASV mode, the FTP client initiates a request when a data connection is established. The connection establishment process is as follows:

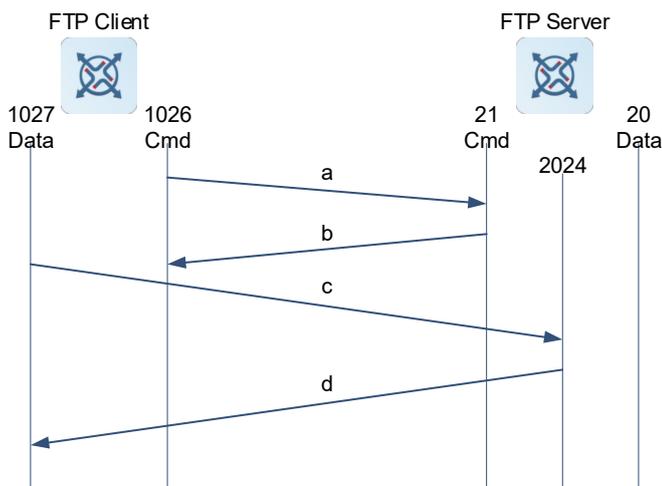
a The FTP client establishes a request through port 1026 and port 21 of the FTP server, and sends control commands through this channel.

b The client sends the **PASV** command through this channel when it needs to receive data.

c After receiving the **PASV** command, the FTP server randomly opens a high-end port 2024 and notifies the client of data transmission to this port.

d The client uses port 1027 to connect to port 2024 of the FTP server, and then sends or receives data on this channel. The FTP server does not need to establish a new connection with the client.

Figure 1-3PASV Mode



Note

The control connection for command and feedback transmission is always present whereas the data connection is established as required. Only the FTP client can select the PASV or PORT mode. The FTP mode supported by an FTP client depends on the actual FTP client software. A Orion_B26Q FTP client uses the PASV mode by default.

2. FTP File Transmission Modes

FTP provides two file transmission modes:

- Binary transmission mode: It is used to transfer program files (for example, .app, .bin and .btm files), executable files, compressed files, image files, and all ASCII values. In this transmission mode, data is not processed, and therefore the transmission rate is faster than that of the text transmission mode.
- Text transmission mode (ASCII mode): It is used to transfer text files (such as .txt, .bat, and .cfg files). This mode is different from the binary mode in carriage return and line feed processing. In ASCII mode, carriage return and line feed are converted to local CRC characters. For example, \n in Unix is \r\n in Windows or \r in Mac. Assume that a file copied by a user contains ASCII text. If a remote computer does not run Unix, FTP automatically converts the file format accepted by the remote computer during file transfer.

3. Specifying the Source IP Address for FTP Transmission

You can configure a source IP address for the FTP client and use it to communicate with an FTP server. With this IP address, the FTP client can connect to the server and share files with the server.

4. Checking Sizes of Files Downloaded from an FTP Server

When the FTP client downloads a file, it checks the file size by default to detect file transfer errors (if any). You can also disable the file size check when downloading files from FTP servers that cannot reply to FTP clients with file sizes.

1.1.3 Protocols and Standards

- RFC959: FILE TRANSFER PROTOCOL (FTP)

1.2 Configuration Task Summary

All the configuration tasks below are optional. Select the configuration tasks as required.

- Configuring basic functions of the FTP client
 - Enabling the FTP Client to Upload Files
 - Enabling the FTP Client to Download Files
- Configuring extended functions of the FTP client
 - Configuring the FTP Connection Mode
 - Configuring the Transmission Mode of the FTP Client
 - Configuring the Source IP Address for FTP Connection

1.3 Enabling the FTP Client to Upload Files

1.3.1 Overview

You can use the FTP client to upload files to the FTP server.

1.3.2 Restrictions and Guidelines

During file transfer, do not insert or remove a storage medium or transmission medium to or from the device to avoid transmission errors.

1.3.3 Prerequisites

The user must have an account with the read and write permissions for the FTP server, and can use this account to access the target folder on the FTP server.

1.3.4 Procedure

(1) Enter the privileged EXEC mode.

```
enable
```

(2) Enter the global configuration mode.

```
configure terminal
```

(3) Upload files.

```
copy flash: [ local-directory ] local-file { ftp: | oob_ftp: } //username:password@destination-ip-address [ lremote-directory ] lremote-file
```

The directory specified by *local-directory* must be already configured on the device. This command does not automatically create a directory.

1.4 Enabling the FTP Client to Download Files

1.4.1 Overview

You can use the FTP client to download files from the FTP server.

1.4.2 Restrictions and Guidelines

During file transfer, do not insert or remove a storage medium or transmission medium to or from the device to avoid transmission errors.

1.4.3 Prerequisites

The user must have an account with the read permission for the FTP server, and can use this account to access the target files on the FTP server.

1.4.4 Procedure

(1) Enter the privileged EXEC mode.

```
enable
```

(2) Enter the global configuration mode.

```
configure terminal
```

(3) Download files.

```
copy { ftp: | oob_ftp: } //username:password@destination-ip-address [ /remote-directory ] /remote-file  
flash: [ /local-directory/ ] /local-file
```

The directory specified by *local-directory* must be already configured on the device. This command does not automatically create a directory.

- (4) (Optional) Disable the size check of files downloaded from the FTP server.

```
ftp-client disable-size-check
```

By default, the sizes of files downloaded from the FTP server are checked.

1.5 Configuring the FTP Connection Mode

1.5.1 Overview

You can download or upload files in the specified FTP connection mode. The default FTP connection mode is PASV. You can set the FTP connection mode to PORT, in which the FTP server initiates a connection request to the client.

1.5.2 Restrictions and Guidelines

If you need to specify the **vrf** *vrf-name* parameter when configuring the FTP client, configure the VRF first. For details about the VRF, see "Configuring VRF" in *IP Routing*.

1.5.3 Procedure

- (1) Enter the privileged EXEC mode.

```
enable
```

- (2) Enter the global configuration mode.

```
configure terminal
```

- (3) Set the connection mode to **PORT**.

```
ftp-client [ vrf vrf-name ] port
```

The default FTP connection mode is PASV.

1.6 Configuring the Transmission Mode of the FTP Client

1.6.1 Overview

You can download or upload files in the specified transmission mode of the FTP client. The default transmission mode is Binary. You can also set the transmission mode to ASCII according to your requirements.

1.6.2 Restrictions and Guidelines

If you need to specify the **vrf** *vrf-name* parameter when configuring the FTP client, configure the VRF first. For details about the VRF, see "Configuring VRF" in *IP Routing*.

1.6.3 Procedure

- (1) Enter the privileged EXEC mode.

```
enable
```

(2) Enter the global configuration mode.

```
configure terminal
```

(3) Set the transmission mode to ASCII.

```
ftp-client [ vrf vrf-name ] asci
```

The default transmission mode is Binary.

1.7 Configuring the Source IP Address for FTP Connection

1.7.1 Overview

You can download or upload files using the specified IP address of the FTP client. The FTP client is bound to the IP address of a port so that the client can use this IP address to connect to the server.

1.7.2 Restrictions and Guidelines

If you need to specify the **vrf vrf-name** parameter when configuring the FTP client, configure the VRF first. For details about the VRF, see "Configuring VRF" in *IP Routing*.

1.7.3 Procedure

(1) Enter the privileged EXEC mode.

```
enable
```

(2) Enter the global configuration mode.

```
configure terminal
```

(3) Configure the source IP address for FTP connection.

```
ftp-client [ vrf vrf-name ] source { ipv4-address | ipv6-address | interface-type interface-number }
```

By default, no source IP address is bound to the FTP client. Instead, an IP address is selected for the client based on the route.

1.8 Monitoring

Run the **show** commands to check the running status of a configured function to verify the configuration effect.

Run the **debug** command to output debugging information.

Caution

The output debugging information occupies system resources. Therefore, disable the debugging function immediately after use.

Table 1-1Monitoring

Command	Purpose
show ftp-client	Displays the FTP client configurations.
debug ftp-client	Debugs the FTP client.

1.9 Configuration Examples

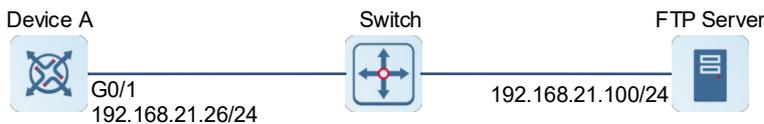
1.9.1 Configuring the FTP Client

1. Requirements

As shown in [Figure 1-1](#), in a LAN, a local device needs to share files with a remote FTP server, and FTP is required to work in the specified connection mode and transmission mode.

2. Topology

Figure 1-1 Configuring the FTP Client



3. Notes

- Set the FTP connection mode to PORT.
- Set the transmission mode to ASCII.
- Use the username **user** and password **pass** to log in to the FTP server, upload the **local-file** file in the **home** directory of the local device to the **root** directory of the FTP server, and rename the file **remote-file**.
- Use the username **user** and password **pass** to log in to the FTP server, download the **remote-file** file from the **root** directory of the FTP server to the **home** directory of the local device, and rename this file **local-file**.

4. Procedure

(1) Configure the FTP server.

Set the IP address of the FTP server to 192.168.21.100/24.

(2) Configure device A.

a. Configure the IP address of device A.

```

DeviceA> enable
DeviceA# configure terminal
DeviceA(config)# interface gigabitethernet 0/1
DeviceA(config-if-GigabitEthernet 0/1)# ip address 192.168.21.26 255.255.255.0
DeviceA(config-if-GigabitEthernet 0/1)# exit
  
```

b. Set the transmission mode to ASCII.

```

DeviceA(config)# ftp-client ascii
  
```

c. Set the FTP connection mode to PORT.

```

DeviceA(config)# ftp-client port
DeviceA(config)# exit
  
```

d. Upload the file.

```
DeviceA# copy flash: home/local-file
ftp://user:pass@192.168.21.100/root/remote-file
```

e. Download the file.

```
DeviceA# copy ftp://user:pass@192.168.21.100/root/remote-file flash:
home/local-file
```

5. Verification

Run the **show ftp-client** command to view the FTP client configurations.

```
DeviceA> enable
DeviceA# show ftp-client
      ftp-client information
=====
type: ASCII
mode: PORT
```

Check whether the **remote-file** file is configured on the FTP server.

Run the **dir** command to check whether the **remote-file** file is configured in the **home** directory of the Flash.

6. Configuration Files

Device A configuration file

```
hostname DeviceA
!
interface gigabitethernet 0/1
ip address 192.168.21.26 255.255.255
!
ftp-client ascii
ftp-client port
!
```

7. Common Errors

- The command formats for uploading and downloading are incorrect.
- The username or password is incorrect.