

# DEPARTMENT OF TRANSPORTATION

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## **AIRLINE PERFORMANCE AND ECONOMIC INFORMATION SYSTEM (APEIS)**

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### **SECURE FILE TRANSFER PROTOCOL (SFTP) FILE SUBMISSION FOR EXTERNAL ESUBMIT USERS**

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# 1 Introduction

The Bureau of Transportation Statistics (BTS) Office of Airline Information's (OAI) Airline Performance and Economic Information System (APEIS) uses Secure File Transfer Protocol (SFTP) for external carriers to upload files for data processing.

Secure File Transfer Protocol (SFTP) is a network protocol designed for securely accessing, transferring, and managing large files and sensitive data. Developed by the Internet Engineering Task Force as an extension of Secure Shell (SSH), SFTP facilitates secure file access, transfer, and management over a network.

## 2 SFTP Connection Setup

### 2.1 Overview

Several SFTP clients are compatible with OND40 data submission, providing secure and reliable file transfer between local and remote computers. In addition to basic file transfer capabilities, many of these clients also offer scripting options and basic file management features. Below is a list of clients that support the necessary algorithms for OND40 data submission:

- AsyncSSH 2.1.0+
- Axway
- Cyberduck 7.8.2+
- edtFTPjPRO 7.0.0+
- FileZilla 3.53.0+
- libssh 0.9.5+
- Maverick Legacy 1.7.15+
- Moveit 12.7
- OpenSSH 7.4+
- paramiko 2.8.1+
- PuTTY 0.74+
- QualysML 12.3.41.1+
- RebexSSH 5.0.7119.0+
- Salesforce
- ssh2js 0.1.20+
- sshj 0.27.0+
- SSH.NET 2020.0.0+
- WinSCP 5.10+
- Workday
- XFB.Gateway

### 2.2 SFTP Client: WinSCP

Transferring files between blob storage is a common task for system administrators and data analysts. While there are several methods to achieve this, WinSCP provides a user-friendly interface and secure file transfer capabilities. This guide will walk through the configuration process using WinSCP to transfer files between blob storages.

Note that, the installing process requires a one-time download into local to submit data. The below steps use the WinSCP for example.

## Prerequisites

Before getting started, ensure that you have the following:

1. WinSCP installed on your local machine.
2. Properly configured firewall rules allowing SSH connections between the local machine and the blob storage servers.
3. The necessary permissions to read and write files on both storages.
4. “**Private Key file**” is a prerequisite to upload OND40 files. Please contact the esubmit support team to get the private key: [oai.od40.support@dot.gov](mailto:oai.od40.support@dot.gov)

## Step 1: Download and Install WinSCP

If you have not already installed WinSCP, you can download it from the official website and follow the installation instructions provided for your operating system.

1. Go to the WinSCP website at <https://winscp.net/eng>
2. Download the installer by clicking on the "Download Now" button.
3. Run the installer once it's downloaded.
4. Follow the installation wizard's instructions, which typically involve accepting the license agreement, choosing the installation directory, and selecting any additional options you may want.
5. Once the installation is complete, user can launch WinSCP from the Start menu or desktop shortcut.
6. After installation, user can use WinSCP to securely access, transfer, and manage files using the SFTP protocol.
7. Configure WinSCP with the necessary connection settings to connect to SFTP server. Detailed instructions are provided below.

## Step 2: Launch WinSCP

Once installed, launch WinSCP on your local machine. You'll be greeted with the Login screen.

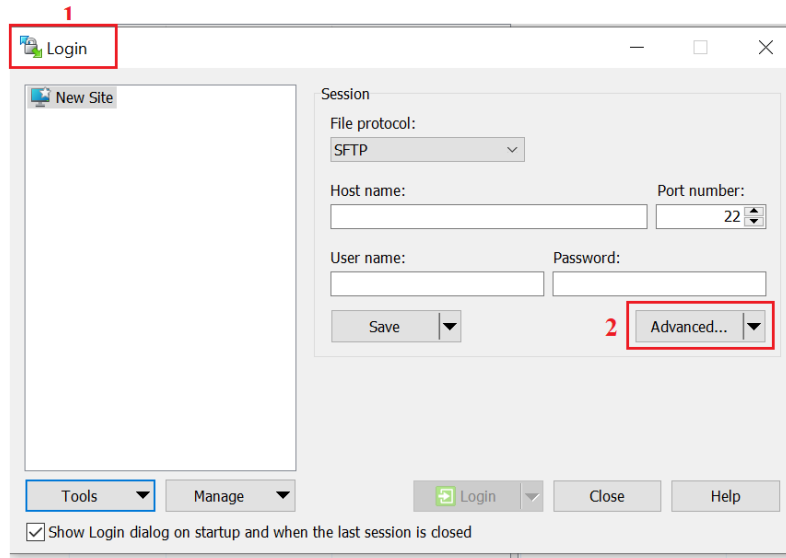
**Note that there are two methods to be connected to the blob storage for file upload.**

### **Method 1: Connect to Blob Storage using SSH Private Key (Key Pair)**

Use Key Pair to connect to a Blob Storage using WinSCP

Open WinSCP and configure the key pair.

Start WinSCP. In the **Login** dialog box, click **Advanced...** in the **Session** section.



**FIGURE 1 WINSCP LOGIN SCREEN**

If the **Login** dialog box does not appear, you can choose **Sessions > New Session...** in the top navigation bar of the WinSCP window to open the dialog box.

- a. In the left-side navigation pane of the **Advanced Site Settings** dialog box, choose **SSH > Authentication**.

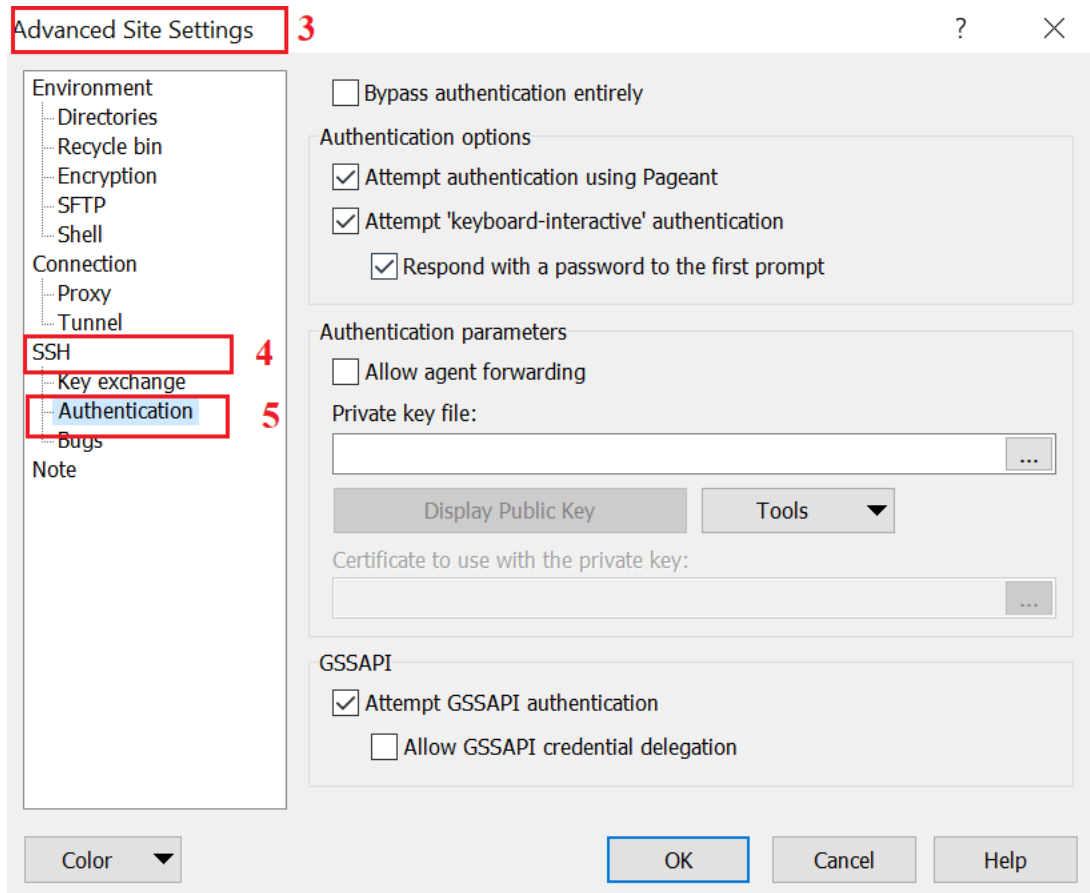


FIGURE 2 WINSCP ADVANCED SITE SETTING

- b. In the **Authentication parameters** section, click ... in the **Private key file** field.

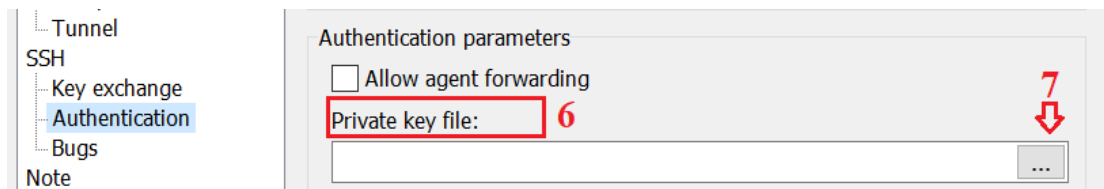


FIGURE 3 AUTHENTICATION PARAMETERS

- c. Select the blob key file in the **.ppk** format that is stored on your computer.  
If the blob key file in the **.ppk** format is not found, you must select **All Private Key Files** to view all private key files.

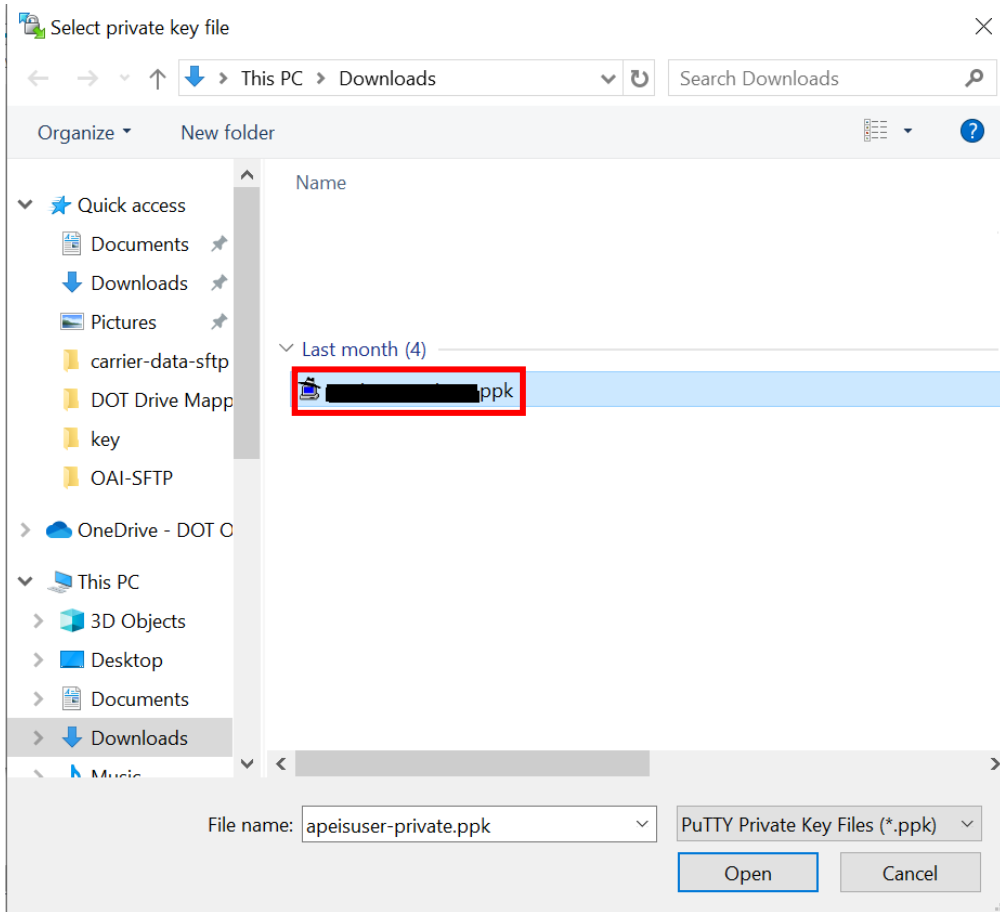


FIGURE 4 CHOOSE PPK FILES

- d. In the message that appears, click **OK**. Since WinSCP only supports key files in the PuTTY format, you will need to convert your existing key file to the **.ppk** format.
- e. After the key file is converted, click **OK** in the Information message. The key file is now in the .ppk format, as shown in the figure below.



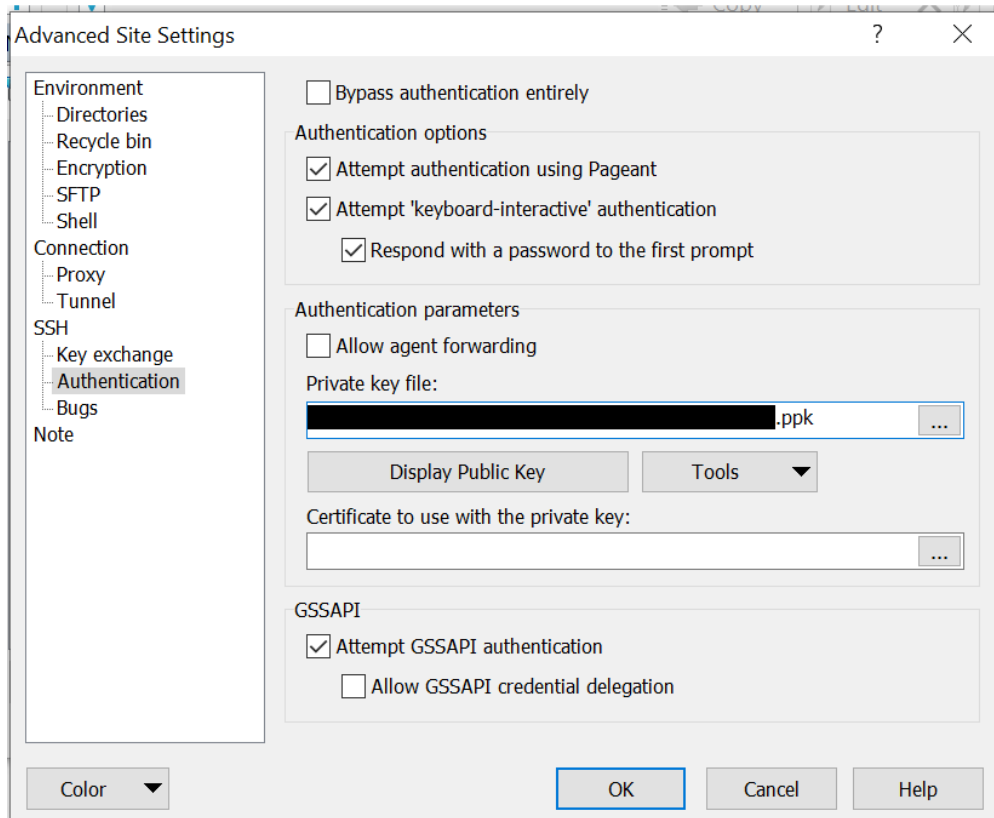


FIGURE 5 ADVANCED SITE SETTING

f. In the **Advanced Site Settings** dialog box, click **OK**.

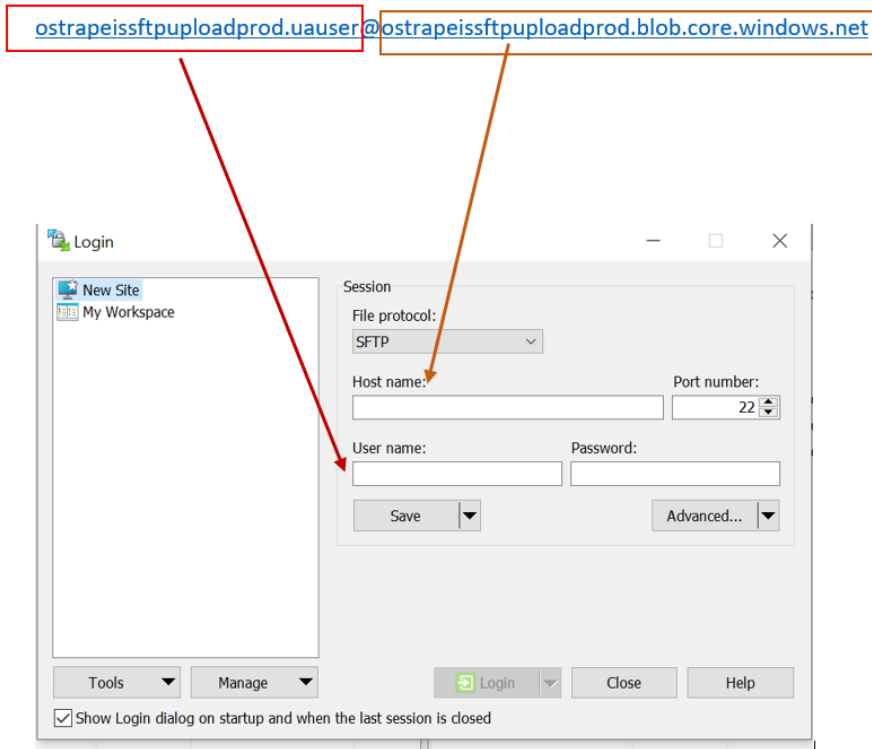
**Method 2: Connect Using Credential (Username & Password) to a Blob Storage using WinSCP.**

In the **Session** section of the **Login** dialog box, configure parameters as shown in the following figure.

**Parameter description:**

- **File protocol:** Select SCP from the drop-down list.
- **Host name:** Enter the public IP or URL address of the blob storage.
- **Port number:** Enter 22.
- **Username:** Enter the username of the simple blob storage.
- **Password:** Enter the password provided

Note: If you want to connect to the blob storage server using a key pair, you do not need to configure the username and password parameter.



**FIGURE 6 WINSCP LOGIN SCREEN**

g. Click Login.

Once logged into the blob storage, you can upload, download, create, or delete files. The following figure shows the WinSCP window.

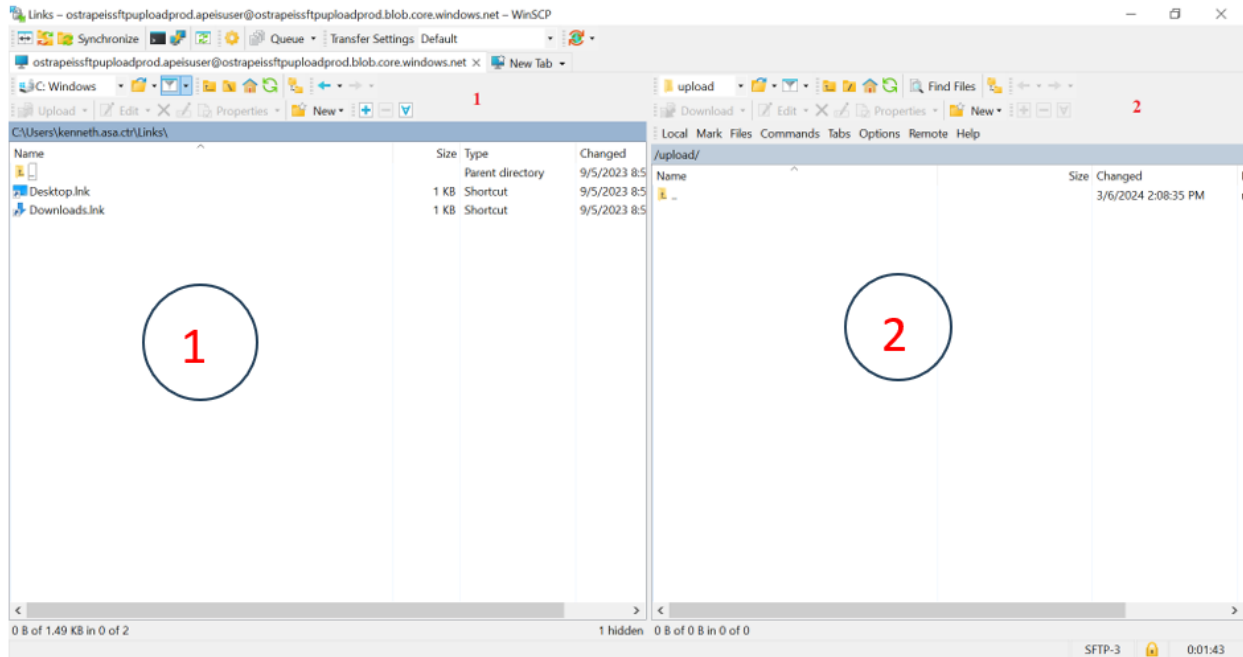


FIGURE 7 WINSCP INTERFACES

The interface consists of the following sections:

- ①: a section for information about the on-premises host, in which the directory information of the on-premises host is shown.
- ②: a section for information about the blob storage, in which the directory information of the blob storage is shown.

**Step 3: Navigate to Source Directory**

After successfully connecting to the source server, you will see the remote file system on the right side of the WinSCP window. Navigate to the directory containing the files you want to transfer.

**Step 4: Navigate to Destination Directory**

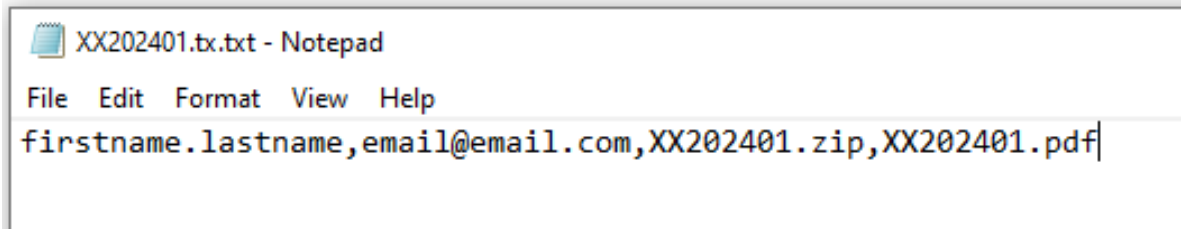
In the new tab, navigate to the directory on the destination storage where you want to transfer the files. This will be the left side of the WinSCP window.

### Step 5: Transfer Files

There are 3 files to be submitted for OND40:

1. **Data File:** The O&D 40 Survey report must be in the DOT specified file format and saved as a comma separated values (\*.csv) or (.zip)  
If submitting a CSV file, it should be named 'CCYYYYMM.csv'  
If submitting a ZIP file, the name should be 'CCYYYYMM.zip', and it can contain one or more CSV files, up to five. For a single CSV file, use CCYYYYMM.csv; for multiple files, use CCYYYYMM-01.csv and CCYYYYMM-02.csv).
2. **Transmittal file:** The Transmittal Letter **must** be saved as a CCYYYYMM.pdf
3. **Log file:** Log **must** be saved as a CCYYYYMM.txt  
Content should contain following information:
  - a. Username: firstname.lastname
  - b. Useremail: email@emaildns.com
  - c. Filenames: zipfile name, transmittal file name

#### Example:



The screenshot shows a Notepad window titled "XX202401.tx.txt - Notepad". The menu bar includes "File", "Edit", "Format", "View", and "Help". The text area contains the following text: "firstname.lastname,email@email.com,XX202401.zip,XX202401.pdf|".

To transfer files from the source storage to the destination storage:

1. Select the files on the source storage.
2. Drag and drop them to the destination directory on the destination storage.

Alternatively, you can use the "Copy" button in the toolbar.

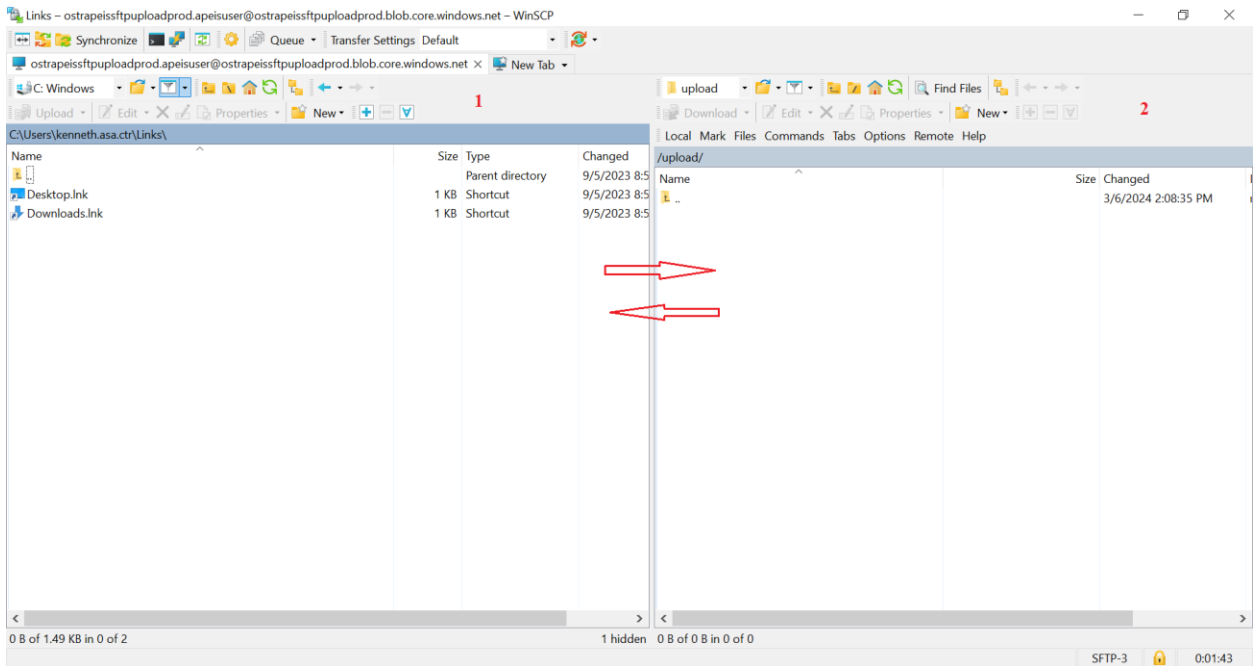


FIGURE 8 TRANSFER FILES

### Step 6: Monitor Transfer Progress

WinSCP displays the file transfer progress in the transfer queue at the bottom of the window. Once the transfer is complete, a confirmation message will appear.

## 2.3 SFTP Client: FileZilla

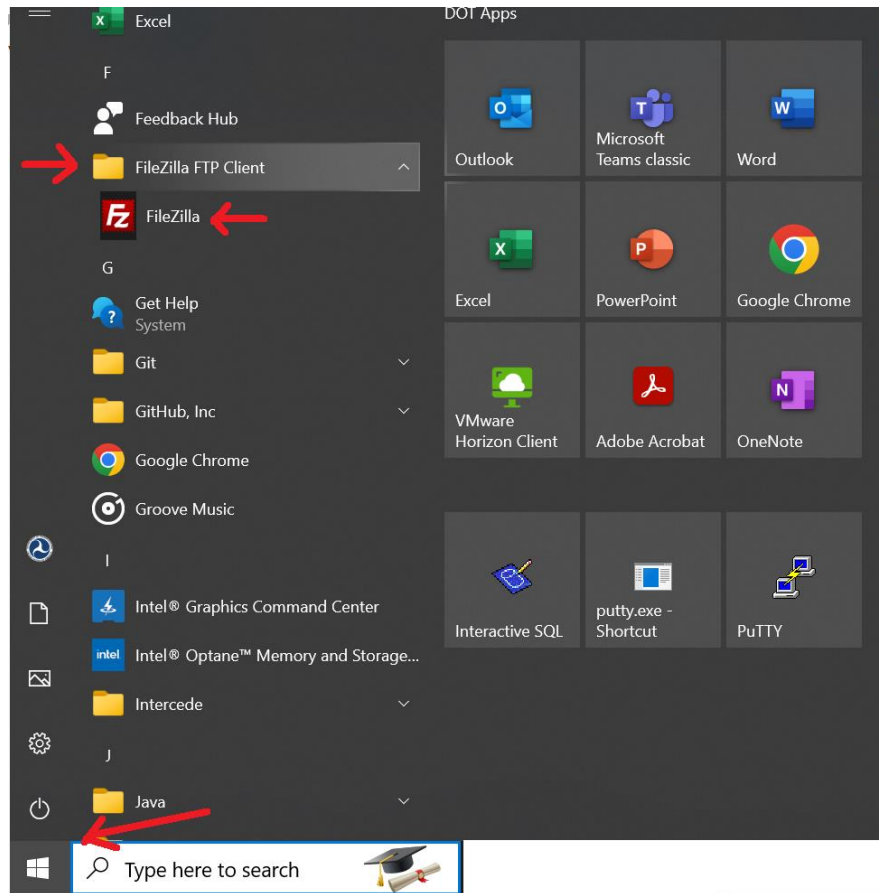
The free FTP solution for both client and server. FileZilla is open-source software distributed free of charge. FileZilla Clients are available for Windows, Linux, and macOS.

### 1. Installing FileZilla

- 1.1 Follow this link to <https://filezilla-project.org/>
- 1.2 Select "save this file to disk" option when download window opens.
- 1.3 Save this file to your desktop.
  - If you don't have option to choose where to save the download, then the file will be located in the computer's downloads folder.
- 1.4 The download will begin. You may need to click "Close" when the download is complete.
- 1.5 To install the program, double-click its icon located on the desktop or in the download folder of your computer depending on the location that it was downloaded to.
- 1.6 Go through the installation process.

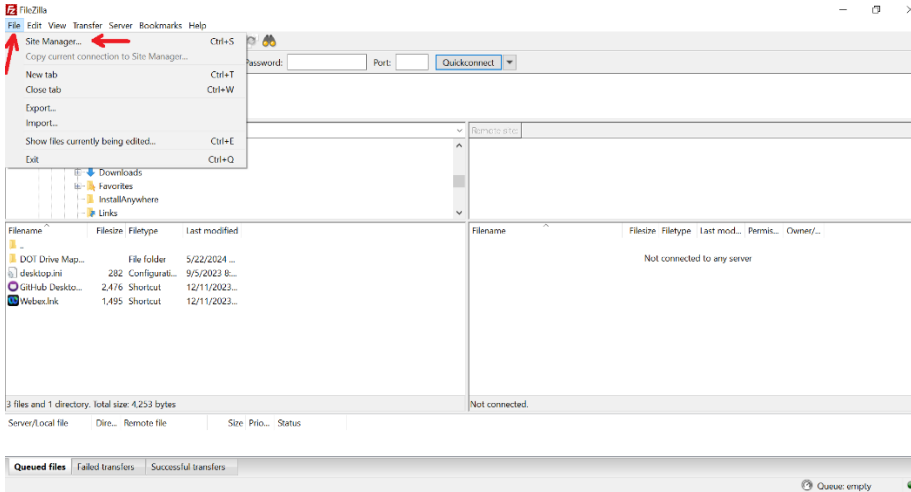
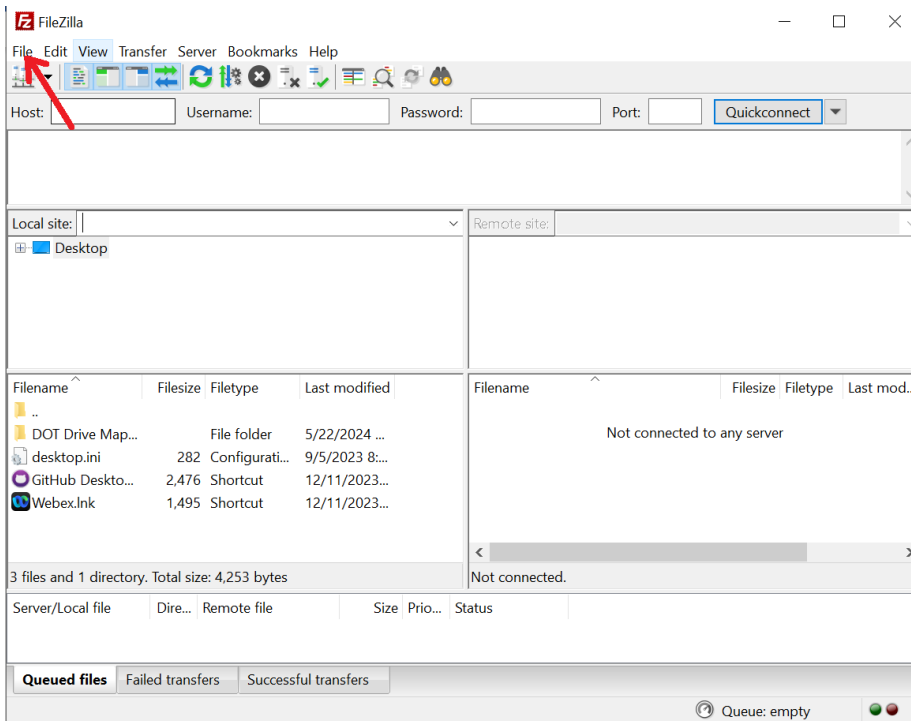
## 2. Configuring FileZilla

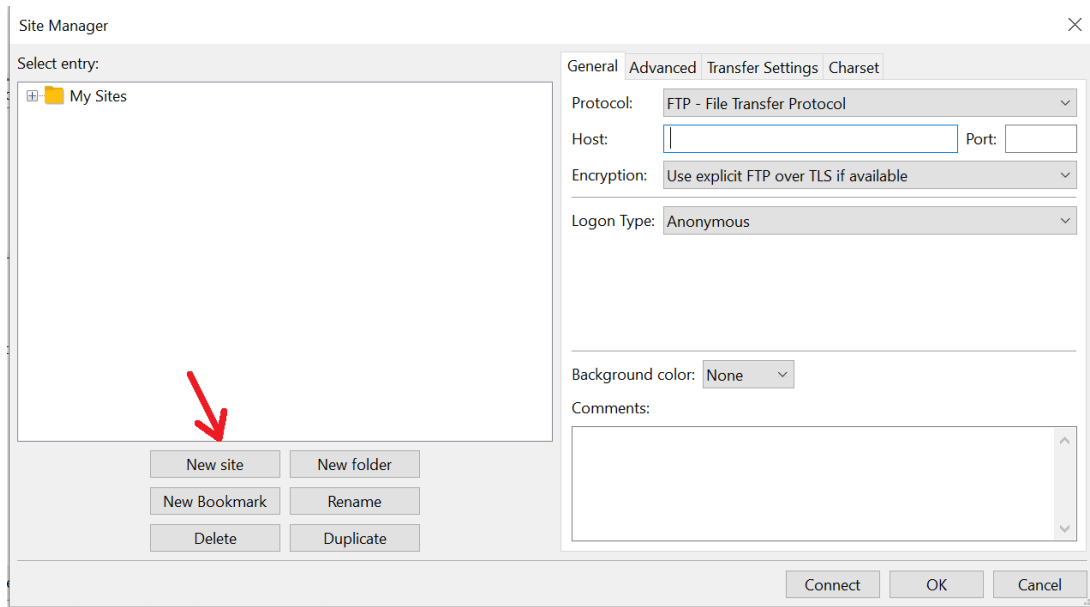
2.1 Start the program by going to the Start >All Programs > FileZilla FTP Client >FileZilla on the bottom left-hand corner of your computer screen.



If you are using Microsoft Windows 10 Enterprise, then go to the START screen by clicking the icon on the lower left part of the screen. Now type FileZilla (when you start typing a search box will open). Now right click on the FileZilla search result and you can choose to pin it to your start screen or the task bar. Going forward the program will be available to start from your chosen location. Click the FileZilla icon to start the program.

## 2.2 Click **File** and then Site Manager.



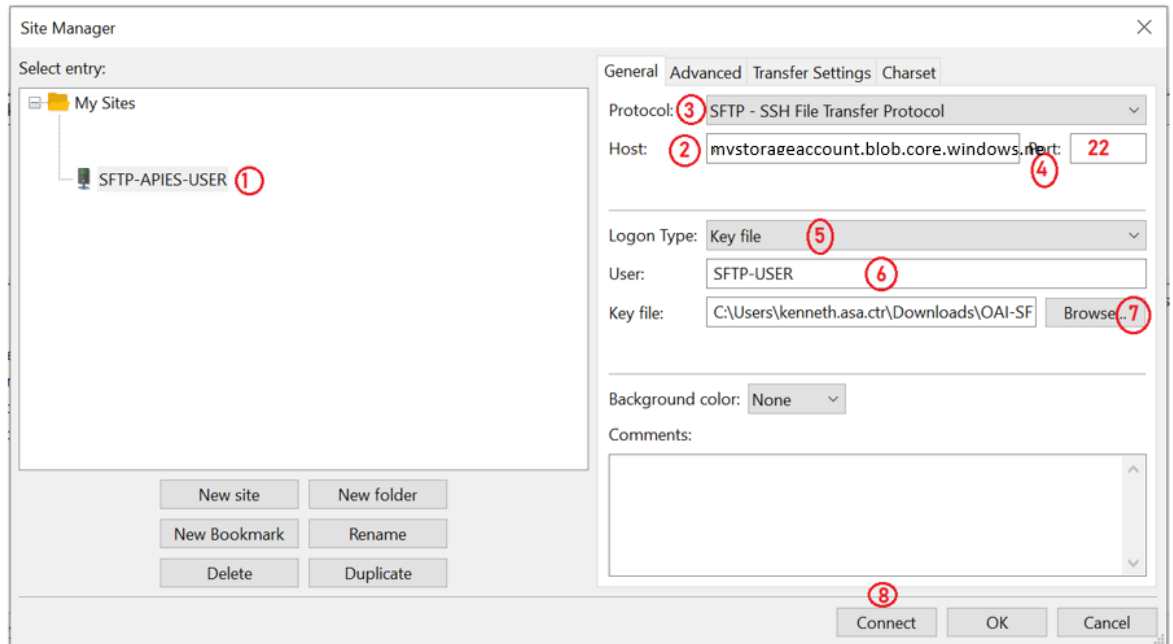


2.3 Click on New Site.

2.4 Type the following information into the fields provided.

- ① Site Name: **SFTP-APIES-USER**
- ② Host: **To be Provided (mystorageaccount.blob.core.windows.net)**
- ③ Protocol: **SFTP – SSH File Transfer Protocol**
- ④ Port: **22**
- ⑤ Logon Type: **Key file**
- ⑥ User: **To be Provided (SFTP-USER)**
- ⑦ Key file: **Click Browse and Select the blob key file in the .ppk format that is stored on your computer.**
- ⑧ Click **“Connect”** to access your SFTP directory.



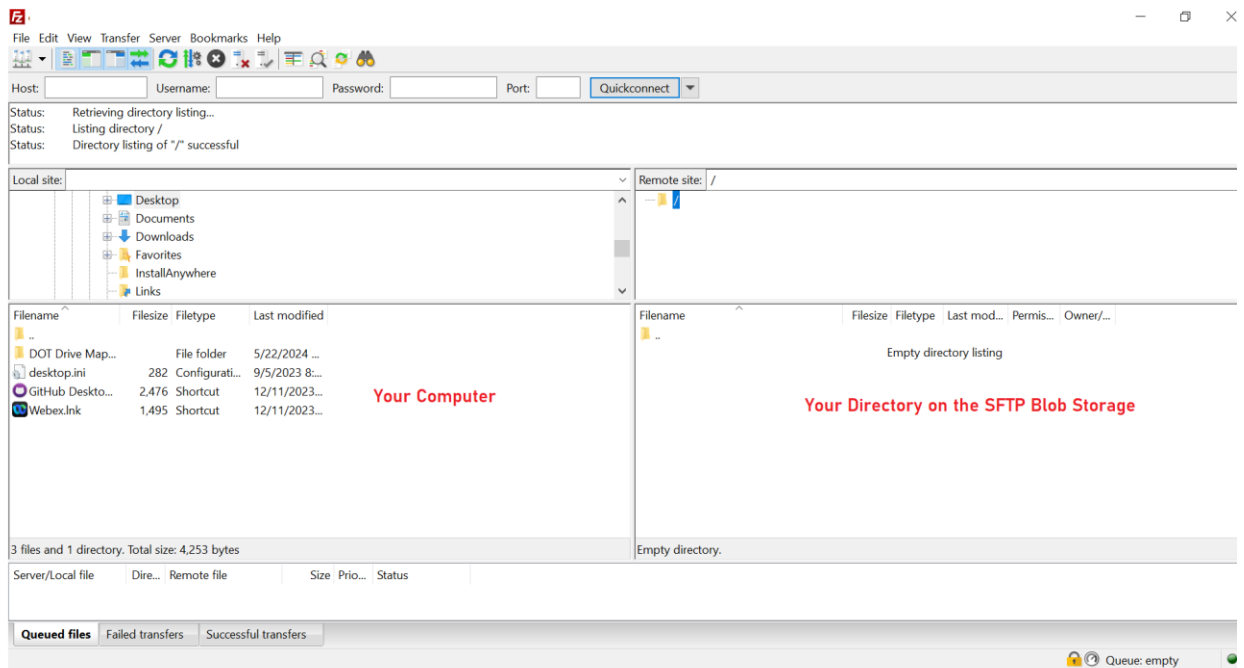


2.5 You are prompted to trust the certificate.

2.6 Click OK to logon to the SFTP Blob Storage

2.7 You should see your directory on the Blob storage

(**mvstorageaccount.blob.core.windows.net**) SFTP blob storage on the right side of the interface.



Follow the steps below to upload or download files to the blob storage.

### 3. Uploading files using FileZilla client:

- 3.1 Start the FileZilla SFTP client. Connect to the blob storage you just configured.
- 3.2 To upload files to the blob Storage, select all files you wish to upload from the window on the left and right-click on mouse, and then select Upload.

### 4. Downloading files to your computer using FileZilla client:

- 4.1 To download\* files from the blob storage to your computer, select all files you wish to download from the window on the right.
- 4.2 In the left window, select the location on your computer where you wish to save the files.
- 4.3 Right-click on mouse, and then select Download.

## 2.4 SFTP Client: Python Package Paramiko

Paramiko is a Python library that provides an interface for SSH and SFTP operations, allowing you to connect to remote servers, transfer files, and execute commands programmatically. It is open-source and widely used in automation tasks within Python.

### 1. Installing Paramiko

- 1.1 Open your terminal or command prompt.
- 1.2 Install Paramiko by running the following command: *pip install paramiko*
- 1.3 The installation will begin, and once completed, Paramiko will be ready for use in your Python environment.

### 2. Configuring Paramiko for SFTP

2.1 Import the Paramiko library in your Python script: *import paramiko*

2.2 Create an SSH client instance and configure the connection:

```
ssh = paramiko.SSHClient()

ssh.set_missing_host_key_policy(paramiko.AutoAddPolicy())

ssh.connect(hostname='your_host', port=22, username='your_username',
            key_filename='path_to_your_private_key')
```

2.3 Open an SFTP session:

```
sftp = ssh.open_sftp()
```

2.4 Set the remote directory you wish to interact with:

```
sftp.chdir('/path/to/remote/directory')
```

### 3. Uploading Files Using Paramiko

3.1 Use the `put` method to upload a file from your local machine to the remote server:

```
sftp.put('/path/to/local/file', '/path/to/remote/directory/file')
```

### 4. Downloading Files to Your Local Machine Using Paramiko

4.1 Use the `get` method to download a file from the remote server to your local machine:

```
sftp.get('/path/to/remote/file', '/path/to/local/directory/file')
```

### 5. Closing the SFTP Connection

5.1 After completing your file transfers, close the SFTP session and SSH connection:

```
sftp.close()
```

```
ssh.close()
```

## 2.4 SFTP Client: Python Package Pysftp

Pysftp is a simple SFTP interface built on top of Paramiko. It offers an easy-to-use wrapper with additional convenience functions, making it ideal for straightforward SFTP tasks in Python.

### 1. Installing Pysftp

1.1 Open your terminal or command prompt.

1.2 Install Pysftp by running the following command:

```
pip install pysftp
```

1.3 The installation will begin, and once completed, Pysftp will be ready for use in your Python environment.

### 2. Configuring Pysftp for SFTP

2.1 Import the Pysftp library in your Python script:

```
import pysftp
```

2.2 Create an SFTP connection to the remote server:

```
with pysftp.Connection(host='your_host', username='your_username',  
private_key='path_to_your_private_key') as sftp:
```

```
print("Connection successfully established...")
```

2.3 Navigate to the remote directory you wish to interact with:

```
sftp.cwd('/path/to/remote/directory')
```

### 3. Uploading Files Using Pysftp

3.1 Use the `put` method to upload a file from your local machine to the remote server:

```
sftp.put('/path/to/local/file')
```

### 4. Downloading Files to Your Local Machine Using Pysftp

4.1 Use the `get` method to download a file from the remote server to your local machine:

```
sftp.get('/path/to/remote/file', '/path/to/local/directory/file')
```

### 5. Closing the SFTP Connection

5.1 After completing your file transfers, the connection will be automatically closed when the block ends:

```
# The 'with' block automatically closes the connection
```

## 3 Contact Us

Please contact OAI Support here for more information and support: [oai.od40.support@dot.gov](mailto:oai.od40.support@dot.gov)