# Install and configure SSH server

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# What this exercise is about

The objective of this lab is to guide you through the installation and configuration of SSH server that supports SFTP and generate the key-pair (public-private) using PuTTy key generator.

# What you should be able to do

At the end of this lab you should be able to:

- Install freeSSHd server
- Create users in freeSSHd server
- Install PuTTYgen and generate key pair (public and private) using it

# Introduction

SSH over FTP (SFTP) is a network protocol that provides a mechanism for file transfer over a reliable data stream. SFTP runs on a secure SSH channel on port 22 and encrypts all traffic using either user name and password authentication or public key authentication. Public key authentication uses a pair of computer generated keys, one public and one private.

You will install the freeSSHd server and configure it to create users as a prerequisite for the **FTP Adapter** – **SFTP support** lab.

# Part 1: Install and configure freeSSHd server

This part of the lab describes the steps for installing the SSH server, freeSSHd, and then guides you with the configuration setup.

- 1. Go to the <u>http://www.freesshd.com/?ctt=download</u> and download the latest stable version of freeSSHd onto your local machine
- 2. Double click the downloaded **freeSSHd.exe** file to start the installation
- \_\_\_\_\_3. Follow the instructions on the Welcome screen and click Next

🚰 Setup - freeSSHd SSH/Telnet Server 📃 🗖 🗙				
	Welcome to the freeSSHd SSH/Telnet Server Setup Wizard			
	This will install freeSSHd 1.2.1 on your computer.			
	It is recommended that you close all other applications before continuing.			
	Click Next to continue, or Cancel to exit Setup.			
	Cancel			

4. Accept the default value or Browse and select the location of your choice for and click Next

🖶 Setup - freeSSHd SSH/Telnet Server	_ 🗆 🗙
Select Destination Location Where should freeSSHd SSH/Telnet Server be installed?	
Setup will install freeSSHd SSH/Telnet Server into the following folder.	
To continue, click Next. If you would like to select a different folder, click Browse.	
C:\Program Files\freeSSHd Brows	:e
At least 1.6 MB of free disk space is required.	
< <u>B</u> ack <u>N</u> ext >	Cancel

5. Ensure that the **Full Installation** is selected and click **Next** 

🛃 Setup - free55Hd SSH/Telnet Server	_ 🗆 🗙
Select Components Which components should be installed?	
Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.	
Full installation	•

\_\_\_\_\_6. Click **Next** on the next screen to accept the default start menu folder

🖶 Setup - freeSSHd SSH/Telnet Server	. 🗆 🗙
Select Start Menu Folder Where should Setup place the program's shortcuts?	
Setup will create the program's shortcuts in the following Start Menu folder.	
To continue, click Next. If you would like to select a different folder, click Browse.	
[freeSSHd Browse	
Don't create a Start Menu folder	
< <u>B</u> ack <u>N</u> ext 大 Can	cel

\_\_\_\_\_7. Accept the defaults on the next screen to create a desktop icon and click Next

🖶 Setup - freeSSHd SSH/Telnet Server	_ 🗆 🗙
Select Additional Tasks Which additional tasks should be performed?	
Select the additional tasks you would like Setup to perform while installing freeSSHd SSH/Telnet Server, then click Next.	
Additional icons:	
Create a <u>desktop icon</u>	
< <u>B</u> ack <u>N</u> ext >	Cancel

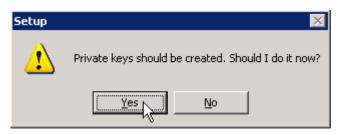
8. Verify and click **Finish** on the summary screen. The installation takes less than a minute depending upon the system resources

7 Setup - freeSSHd SSH/Telnet Server	_ 🗆 🗙
<b>Ready to Install</b> Setup is now ready to begin installing freeSSHd SSH/Telnet Server on your computer.	
Click Install to continue with the installation, or click Back if you want to review change any settings.	or
Destination location: C:\Program Files\freeSSHd	-
Setup type: Full installation	
Selected components: Executable	
Start Menu folder: freeSSHd	
Additional tasks:	_ <b>_</b> _
< <u>B</u> ack	Cancel

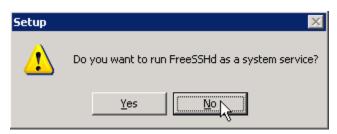
9. Click Close in Try Other Product screen



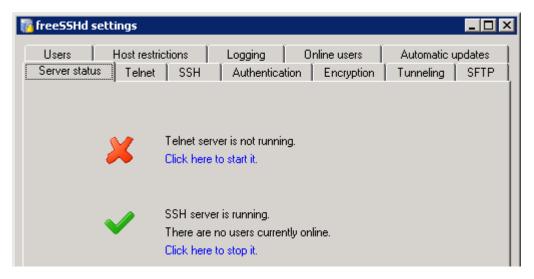
\_\_\_\_\_10. Select **Yes** from the Setup pop-up window to create Private keys



\_\_\_\_ 11. Click **No** in the next Setup window shown below:



- \_\_\_\_\_ 12. Click **Finish** to exit setup
- 13. Select Start > Programs > freeSSHd > freeSSHd
- \_\_\_\_\_ 14. Click the FreeSSHDService (<sup>325</sup>) icon at the bottom tray
- \_\_\_\_\_15. The freeSSHd settings window is opened:



\_\_\_\_\_16. Click **SFTP** tab from the top. Browse and select **C:\Labfiles62\SFTPHome** as SFTP home.

**Note**: Make a note of this directory as this is going to be the home directory for all the users that you will define later in this lab.

reeSSHd settings	
Users Host restrictions Logging Online users Autom Server status Telnet SSH Authentication Encryption Tunneli	iatic updates
	- 
SFTP home path: C:\Labfiles62\SFTPHome	:

17. Click **Telnet** tab from the top and ensure that the **Port** number is **22** 

Users Host re	estrictions Logging Online users	Automatic updates
Server status Teln	net SSH Authentication Encryption	Tunneling SFTP
Listen addre	ess: 0.0.0.0 (All interfaces)	<b>E</b>
P	Port 22	
Max numbe connectio		
Idle timed	out: 0 seconds	
Banner messa	age:	
Command st	hell: C:\WINDOWS\system32\cmd.exe	
	Start Telnet server on freeSSHd startup Use new console engine	

\_\_\_\_\_18. Click the **Authentication** tab. Browse and select or accept the default Public key folder. Make a note of this folder as you are going to use this while generating the public/private key later in this lab.

Users Host restrictions		ne users 🔰 Automatic updates
Server status   Telnet   S	SH Authentication	Encryption Tunneling SFTP
		<u>e</u>
Public key folder: C:\Progr	am Files\freeSSHd\	
Password authentication		
O Disabled	Allowed	C Required
Public key authentication — © Disabled	Allowed	C Required

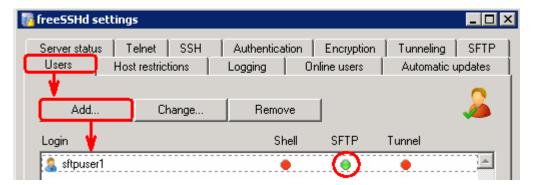
- \_\_\_\_ 19. Add a user without public key authentication: sftpuser1
  - \_\_\_\_a. Click Users tab from the top of the settings window
  - \_\_\_ b. Click Add…

- \_\_\_\_ c. Provide the values as shown below in the User properties window:
  - 1) Login: enter any value, for Ex: **sftpuser1** (This is the user name to connect to your FTP server)
  - 2) Authentication: select Password stored as SHA1 hash from the drop down menu
  - 3) Password: enter any value, for Ex: password
  - 4) Password (again): enter the same value entered for the above field
  - 5) Select the box next to SFTP

🔏 sftpuser properti	es	_ 🗆 🗙
General		
		<u>_</u>
Login:	sftpuser1	
Authorization:	Password stored as SHA1 hash 📃 💌	
Password:	Start typing here to change password	
Password (again):		
Domain:		
	<b>F a</b> , <b>a</b>	
User can use:	Shell	
	SFTP	
	Tunneling	
	OKN Cancel	Apply
		- VY4

6) Click OK

\_\_\_\_ d. You should now see sftpuser1 added under Users tab



- 20. Add another user with public and private key authorization: sftpuser2
  - \_\_\_a. Under Users tab, click Add...
  - \_\_\_\_b. Provide the values as shown below in the User properties window:
    - 1) Login: enter any value, for Ex: **sftpuser2** (This is the user name to connect to your FTP server)
    - 2) Authentication: select Public key (SSH only) from the drop down menu
    - 3) Select the box next to SFTP

🤰 User properties		_ 🗆 🗡
General		
		🭊 📗
Login:	sftpuser2	
Authorization:	Public key (SSH only)	
Password:		1
Password (again):		1
Domain:		1
User can use:	Shell	
	SFTP	
	🔲 Tunneling	
	OK Cancel	Apply

4) Click OK

\_\_\_\_ c. You should see one more user, **sftpuser2**, added under Users tab

Login	Shell	SFTP	Tunnel	
♣ sftpuser1	٠	۲	٠	<b>A</b>
🤱 sftpuser2	•	۲	•	

- 21. Use PuTTY generator to generate public-private key pair
  - \_\_\_\_a. Go to the <a href="http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html">http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html</a> and download the PuTTYgen (puttygen.exe) file onto your local machine.
  - \_\_\_\_b. Double click the downloaded **puttygen.exe** file to start the key generation
  - \_\_\_\_ c. You should see the 'PuTTY Key Generator' window:

🚰 PuTTY Key Generator		×
<u>File K</u> ey Con <u>v</u> ersions <u>H</u> elp		
_ Key		
No key.		
Actions		
Generate a public/private key pair	[	Generate
denerate a public/private key pair	L	
Load an existing private key file		Load
Save the generated key	Save p <u>u</u> blic key	Save private key
Parameters		
Type of key to generate:	C. cou	2004
○ SSH- <u>1</u> (RSA) ○ SSH-2 <u>R</u> SA	SSH	
Number of <u>b</u> its in a generated key:		1024

\_\_\_\_ d. Click Generate and keep moving your curser inside the window to create some randomness

۳	PuTTY	Key Generat	or		×
<u>F</u> ile	<u>K</u> ey	Con <u>v</u> ersions	Help		
L,	<ey—< th=""><th></th><th></th><th></th><th></th></ey—<>				
	Please ;	generate some	randomness by moving	the mouse over the bla	nk area.
			R		
Γ/	Actions				
	General	te a public/priv	ate key pair		<u>G</u> enerate
	Load ar	n existing privat	e key file		Load
1	Save th	e generated ke	у.	Save p <u>u</u> blic key	<u>S</u> ave private key
F	Paramel	ters			
		key to generat [-] (RSA)	e: ⓒ SSH-2 <u>R</u> SA	ssi	H-2 <u>D</u> SA
	Number	of <u>b</u> its in a ger	erated key:		1024

\_\_\_\_e. You should see the generated key as shown below:

🚰 PuTTY Key Generat	or		×
<u>File K</u> ey Con <u>v</u> ersions	Help		
_ Key			
Public key for pasting in	nto OpenSSH authorize	d_keys file:	
wE6dPyVJvDdĹPyhN:	AAABJQAAAIEAh3m6h xs6jheHIWu5SDwe2H6 FinMDuQ6FJsgNg4i67(	/x5ab+U27rP2g8gd5Gi	FdfX/AG1XBcnKa
Key fingerprint:	ssh-rsa 1024 67:56:5a	:e3:8c:d3:3e:b0:54:52:	af:6f:56:6e:4f:df
Key <u>c</u> omment:	rsa-key-20080619		
Key p <u>a</u> ssphrase:			
Confirm passphrase:			
Actions			
Generate a public/priv	ate key pair	R	<u>G</u> enerate
Load an existing private	e key file		Load
Save the generated ke	y	Save p <u>u</u> blic key	<u>Save private key</u>
Parameters			
Type of key to generat C SSH- <u>1</u> (RSA)	e:	ssi 🔿 ssi	H-2 <u>D</u> SA
Number of <u>b</u> its in a gen	erated key:		1024

\_\_\_\_f. Enter any value for Key Passphrase, for Ex: passphrase

\_\_\_\_g. Enter the same value for Confirm Passphrase, for Ex: passphrase

-Key			
Public key for pasting	Public key for pasting into OpenSSH authorized_keys file:		
ssh-rsa AAAAB3NzaC1yc2EAAAABJQAAAIEAh3m6hfXFBCD/BlckilBG6zaGw8owvofT2xM76 wE6dPyVJvDdLPyhNxs6jheHWu5SDwe2H6/x5ab+U27rP2g8gd5GFdfX/AG1XBcnKa 0MFUVr2/aezy0W8NFinMDuQ6FJsgNg4i67Qnq6ftK4EGEBty/hsRPH5BhI9iYYiiaz88= rsa-key-20080619			
Key fingerprint:	ssh-rsa 1024 67:56:5a:e3:8c:d3:3e:b0:54:52:af:6f:56:6e:4f:df		
Key <u>c</u> omment:	rsa-key-20080619		
Key p <u>a</u> ssphrase:	••••••		
Confirm passphrase:	••••••		

\_\_\_\_h. From the main menu, select **Conversions > Export OpenSSH key** 

Ē	ile	<u>K</u> ey	Con <u>v</u> ersions	<u>H</u> elp	
1	-ĸ	ey—	Import key		
	P	ublic k	Export Ope	enSSH key	
		sh-rsa	Export <u>s</u> sh	.com key	η

\_\_\_\_\_i. Browse and select any location to save this private key and provide any name for the file, for Ex: location - C:\Labfiles62\SFTP and file name – PrivateKey.ppk

Note: Make a note of this file name and the path provided here.

\_\_\_\_\_j. Open a windows explorer and browse to your Public key folder, C:\Program Files\freeSSHd, and create a file with exactly same as the user name, sftpuser2, without any file extension

**Note**: The file name should match the user name that you created with public key authorization in the previous steps of this lab.

\_\_\_\_ k. Copy the public key from PuTTY Key Generator window

Г	Key	
	Public key for pasting into OpenSSH authorized_keys file:	
	ssh-rsa AAAAB3NzaC1yc2EAAAABJQAAAIEAh3m6hfXFBCD/BlckilBG6zaGw8owvofT2xM76 wE6dPyVJvDdLPyhNxs6jheHIWu5SDwe2H6/x5ab+U27rP2g8gd5GFdfX/AG1XBcnKa 0MFUVr2/aezy0W8NFinMDuQ6FJsgNg4i67Qnq6ftK4EGEBty/hsRPH5BhI9YYiiaz88= rsa-key-20080619	

\_\_\_ I. Open the above created file, sftpuser2, (using word pad or note pad) and paste the public key into that file

🗉 sftpuser2 - WordPad	٦×
Elle Edit View Insert Format Help	
ssh-rsa AAAAB3NzaC1yc2EAAAABJQAAAIEAh3m6hfXFBCD/BlckiIBG6zaGw8owvofT2xM76wE6dPyVJvDdLPyhNxs6jheH1Wu5SDwe2H6/x5a	ɔ+Ū2

\_\_\_ m. Save changes into that file and close it

- \_\_\_\_\_ 22. Make sure that the server is running:
  - \_\_\_\_a. Click Server status tab and you should see 'SSH server is running':

Users Host restri Server status Telnet	ctions Logging Online users Automatic updates SSH Authentication Encryption Tunneling SFTP
	Telnet server is not running.
<b>—</b>	Click here to start it.
[✔]	SSH server is running. There are no users currently online.
	Click here to stop it.

# What you did in this exercise

In this lab, you installed the freeSSHd server and created two users. Then you continued to install and configure the PuTTYgen to generate key pair as a prerequisite for the FTP Adapter – SSH support lab.