

# OpenSSH In Windows 10

Connection settings for this article

	Host Name	Login Name
Server	Jump_Server	Jump_Server_Username
Client	Localhost	Local_Username

※[about PDF](#)

## Open PowerShell

Press Start and then press "[Windows PowerShell](#)".

## How do I know if OpenSSH is installed?

Check if the OpenSSH client is installed by typing the following command into PowerShell.

```
PS C:\> gcm ssh | fl

Name           : ssh.exe
CommandType    : Application
Definition     : C:\WINDOWS\System32\OpenSSH\ssh.exe
Extension      : .exe
Path           : C:\WINDOWS\System32\OpenSSH\ssh.exe
FileVersionInfo : File:           C:\WINDOWS\System32\OpenSSH\ssh.exe
                InternalName:
                OriginalFilename:
                FileVersion:    7.7.2.1
...

```

If the details of ssh.exe are displayed as above, it has been installed.

If you do not see it, Windows Update (version 1803 or later) with administrator privileges will install the OpenSSH client by default. If not, open Settings, select Apps > Apps & Features, then select "[Optional Features](#)".

## Generate an SSH Key Pair

Generate an ssh key in PowerShell. (After # are comments)

```
PS C:\> ssh-keygen -t ecdsa -b 384
Generating public/private ecdsa key pair.
Enter file in which to save the key (C:\Users\username\.ssh\id_ecdsa): #

```

```
enter
Enter passphrase (empty for no passphrase): #Enter passphrase
Enter same passphrase again: #Enter passphrase
Your identification has been saved in test.
Your public key has been saved in test.pub.
The key fingerprint is:
SHA256:UQwYcMTRGPdEDwQ7y4z50S+j9PhFpavrKZ3W7jEuH1E username@localhost
The key's randomart image is:
+----[ECDSA 384]----+
|    .+*B+**      |
|    .+..=.o      |
|      + . E      |
|    = + +        |
|    o S +        |
|    . o o        |
|    ..+o*        |
|    ..oBB.+      |
|    o*B0*        |
+-----[SHA256]-----+
```

Key pairs are created in the

(C:\Users\username\.ssh\id\_ecdsa)

by default. The key may not be used unless it is placed in a folder under the user.

## Apply for a key

Please apply for registration of the created public key id\_ecdsa.pub.

[\[Isee Jump\\_Server account request\]](#) [\[CIDAS System account request\]](#)

## Add your SSH key to the ssh-agent

Use ssh-agent to avoid entering the passphrase for ssh connections and to avoid putting the private key on the steppingstone server.

Select Start > Administrative Tools > Services. Open the properties of the

"OpenSSH Authentication Agent"

. [Select automatic as the startup type, press start, and start the ssh-agent service](#)  
(properties)

Next, register the private key id\_ecdsa.

```
PS C:\> ssh-add 'C:\Users\username\.ssh\id_ecdsa'
Enter passphrase for C:\Users\username\.ssh\id_ecdsa: #Enter passphrase
Identity added: C:\Users\username\.ssh\id_ecdsa
(C:\Users\username\.ssh\id_ecdsa)
```

The registered key can be checked with “ssh-add -l”. If you want to delete a registered key, use “ssh-add -D” to do so.

## SSH Connection

Enter the following:

```
PS C:\> ssh Jump_Server_Username@Jump_Server -A
The authenticity of host 'Jump_Server (***.***.***.***)' can't be
established.
ECDSA key fingerprint is SHA256:UQwYcMTRGPdEDwQ7y4z50S+j9PhFpavrKZ3W7jEuH1E.
Are you sure you want to continue connecting (yes/no)? # yes
Warning: Permanently added Jump_Server,***.***.***.***' (ECDSA) to the list
of known hosts.
```

option -A: Enables forwarding of connections from an authentication agent such as ssh-agent. After connecting to the Jump\_Server, you can use the same private key that you used at the first connection to connect to another server.

## x11 forwarding

X11 Forwarding is what gives you the ability to use X11 application window on your local host when connecting remotely.

First, download and install VcXsrv Windows X Server.

[VcXsrv download](#)

[In the startup screen, proceed with the default settings, and in the final](#)

["finish configuration" screen](#)


[, press “save configuration” to save the settings in an appropriate location. The default name of the configuration file is “config.xlaunch”.](#)

[By double-clicking the configuration file, VcXsrv Windows X Server will start. To make it start automatically, register it to the startup.](#)

Open Start > Windows system tools >

[Open Run Command](#)

[, then press “shell:startup”. Move the configuration file “config.xlaunch” saved earlier to the startup folder.](#)

Next, set the DISPLAY environment variable. When VcXsrv Windows X Server is running, an icon appears in the indicator. When you hover the mouse over the icon, you will see something like “localhost:0.0 -1 clients”, so set this localhost:0.0 to the environment variable DISPLAY. The localhost part here can be either the local hostname, 127.0.0.1, or localhost. 

```
PS C:\ [System.Environment]::SetEnvironmentVariable("DISPLAY",
```

```
"localhost:0.0", "User")
```

Restart PS and check if it is set.

```
PS C:\ $env:DISPLAY  
localhost:0.0
```

Add the option to allow X-forwarding and make a ssh connection. Start the X11 application and check if the transfer is successful.

```
PS C:\ ssh -AXY Jump_Server_Username@Jump_Server
```

## File for ssh connection settings

By saving the ssh configuration to a file (C:\Users\username\.ssh\config), the ssh command can be omitted. IdentityFile is not necessary since the private key is registered with ssh-agent, but it is recommended to include it for the record.

```
Host Jump_Server  
  ForwardAgent yes  
  ForwardX11 yes  
  ForwardX11Trusted yes  
  User Jump_Server_Username  
  HostName Jump_Server  
  IdentityFile "C:\Users\username\.ssh\id_ecdsa"
```

Connect to ssh with the following:

```
PS C:\ ssh Jump_Server
```

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