WSL2 SSH In Windows 11

To access the server of the Space Environment Information Processing System via the Internet, you need to go through a login server (a Jump_Server). The login server is accessed by SSH public key authentication. In this article, we install Windows Subsystem for Linux 2 (WSL2) on Windows 11 and connect to the login server via SSH. How to install Linux on Windows with WSL (Microsoft)

Connection settings for this article

	Host Name	**Login Name**
Server	Jump_Server	Jump_Server_Username
Client	Localhost	Local_Username

Command install

Check OS version

Start PowerShell or Command Prompt by selecting “Run as administrator”. PowerShell or Command Prompt can also be opened in Windows Terminal[1)]. The command to check the OS version is as follows:

```
PS C:\Windows\System32> winver
```

Select and install a Linux distribution

Linux distributions that install WSL2 online can be found with “wsl -l -o”.

```
PS C:\Windows\System32> wsl -l -o
The following is a list of valid distributions that can be installed.
Install using 'wsl.exe --install <Distro>'.

NAME                                   FRIENDLY NAME
Ubuntu                                 Ubuntu
Debian                                 Debian GNU/Linux
kali-linux                             Kali Linux Rolling
Ubuntu-18.04                           Ubuntu 18.04 LTS
Ubuntu-20.04                           Ubuntu 20.04 LTS
Ubuntu-22.04                           Ubuntu 22.04 LTS
OracleLinux_7_9                        Oracle Linux 7.9
OracleLinux_8_7                        Oracle Linux 8.7
OracleLinux_9_1                        Oracle Linux 9.1
openSUSE-Leap-15.5                     openSUSE Leap 15.5
SUSE-Linux-Enterprise-Server-15-SP4    SUSE Linux Enterprise Server 15 SP4
SUSE-Linux-Enterprise-15-SP5           SUSE Linux Enterprise 15 SP5
openSUSE-Tumbleweed                    openSUSE Tumbleweed
```

It can also be installed from the Microsoft Store rather than by command.

Here we install Ubuntu-22.04(

wsl_install.jpg

).

```
wsl --install -d Ubuntu-22.04
```

Reboot the system as instructed.

Ubuntu Linux startup and initial configuration

Ubuntu will start automatically after rebooting, but if it does not, start it from the menu. Enter your client username and password.

```
Enter new UNIX username: Local_Username
New password:
Retype new password:
passwd: password updated successfully
Installation successful!
...
```

Updating Ubuntu.

```
username@localhost:/etc/apt$ sudo apt update
username@localhost:/etc/apt$ sudo apt -y full-upgrade
```

Check the timezone and locale, and change them if necessary.

```
username@localhost:/etc/apt$ timedatectl
               Local time: Fri 2024-01-12 11:51:24 JST
           Universal time: Fri 2024-01-12 02:51:24 UTC
                 RTC time: Fri 2024-01-12 02:51:24
                Time zone: Asia/Tokyo (JST, +0900)
System clock synchronized: yes
              NTP service: inactive
          RTC in local TZ: no
username@localhost:/etc/apt$ localectl status
   System Locale: LANG=C.UTF-8
       VC Keymap: n/a
      X11 Layout: us
       X11 Model: pc105
```

Generate an SSH Key Pair

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

```
username@localhost:~$ ssh-keygen -t ecdsa -b 384
Generating public/private ecdsa key pair.
Enter file in which to save the key (/home/username/.ssh/id_ecdsa):
Created directory '/home/username/.ssh'.
Enter passphrase (empty for no passphrase):       #Enter passphrase
Enter same passphrase again:                      #Enter passphrase
Your identification has been saved in /home/username/.ssh/id_ecdsa
Your public key has been saved in /home/username/.ssh/id_ecdsa.pub
The key fingerprint is:
SHA256:qIOIpGWS430BdmS8b+6ARH5JUoLj+eDZ4LD4ux8gEXA username@Win11
The key's randomart image is:
+---[ECDSA 384]---+
|+ E..+           |
| =  =.           |
|o o= o.          |
|.B+ =...         |
|XoXo +o S        |
|B@o=o..o         |
|+o.o+oo          |
|  . .o..         |
|  o+. ..         |
+----[SHA256]-----+
```

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

Register the created private key with ssh-agent. (After # are comments)

```
username@localhost:~$ eval $(ssh-agent)                          # Start ssh-
agent
Agent pid 658
username@localhost:~$ ssh-add ~/.ssh/id_ecdsa                    # Register
private key
Enter passphrase for /home/username/.ssh/id_ecdsa:               # pass phrase
Identity added: /home/username/.ssh/id_ecdsa (username@Win11)
```

You can check if it is registered with the following command.

```
username@localhost:~$ ssh-add -l
384 SHA256:qIOIpGWS430BdmS8b+6ARH5JUoLj+eDZ4LD4ux8gEXA username@Win11
(ECDSA)
```

SSH Connection

Enter the following:

```
username@localhost:~$  ssh Jump_Server_Username@Jump_Server -AX
The authenticity of host 'Jump_Server' can't be established.
ED25519 key fingerprint is
SHA256:TTWvEs781VjJwKrzOLJVDtTbLUn/1Ut00as1oihi5QI.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'Jump_Server' (ED25519) to the list of known
hosts.
```

option -A: Enables forwarding of connections from an authentication agent such as ssh-agent. option -X: Enables X11 forwarding. 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.

About x11 forwarding

WSL 2 enables Linux GUI applications to feel native and natural to use on Windows. There is no need to install a new X server.
Run Linux GUI apps on the Windows Subsystem for Linux

- OpenSSH on macOS 10.15

[1)]
Terminal available by default in Windwos 11. Tabs can be used and it is easy to customize. (What is Windows Terminal?)

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