



TOHOKU  
UNIVERSITY



Cyberscience  
Center

# How to Use AOBA (1<sup>st</sup> step)

## スパコンAOBA利用の第一歩

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# High Performance Computing

## ■ This course will provide an opportunity to use the AOBA supercomputer.

- Assuming that students already have the basic knowledge about ...
  - Use of basic Linux commands
  - C/C++ programming

These background knowledge topics will not be explained during the lecture and should be acquired beforehand through self-study.

It would also be better to be familiar with the software tools such as ...

## Visual Studio Code with Remote Development extension

<https://code.visualstudio.com/docs/remote/remote-overview>

# Login to Supercomputer

## ■ Supercomputer = Shared Resource

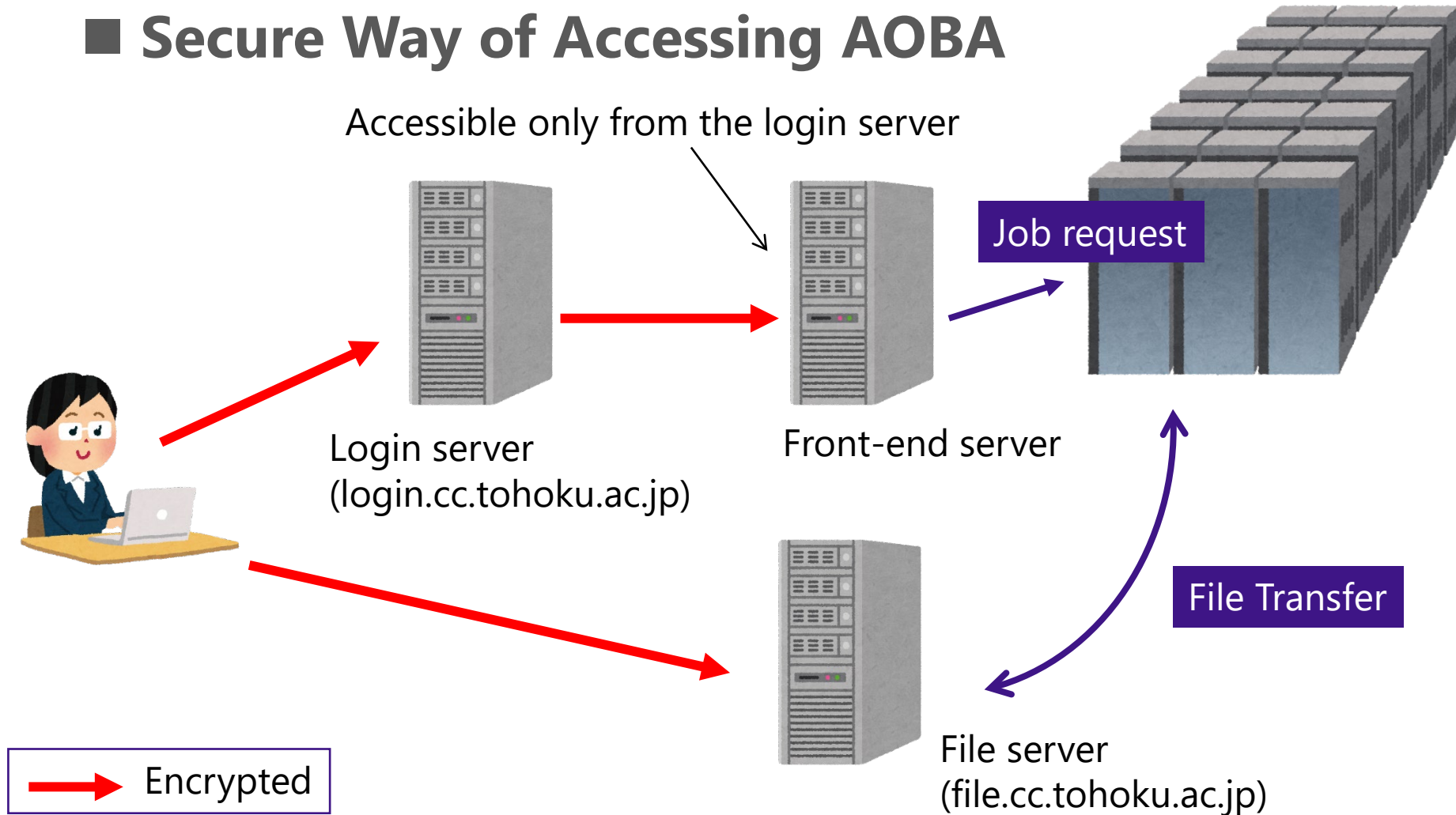
- Shared by many users
- Used remotely from your PC **via the Internet**



# System Configuration

## ■ Secure Way of Accessing AOBAs

Accessible only from the login server



# Secure Shell (SSH)

## ■ Communication Protocols for encrypted communication

- A number of **user authentication** mechanisms are available to check if a right person is going to access the remote computer.

## ■ Public Key Infrastructure (PKI)

- A pair of a **public key** and a **private key** is used for user authentication.

## ■ There are many SSH clients

- Windows Subsystem for Linux (WSL)
- Windows Powershell
- MacOS

# AOBA User Portal

- Create a pair of one **private key** and its corresponding **public key**



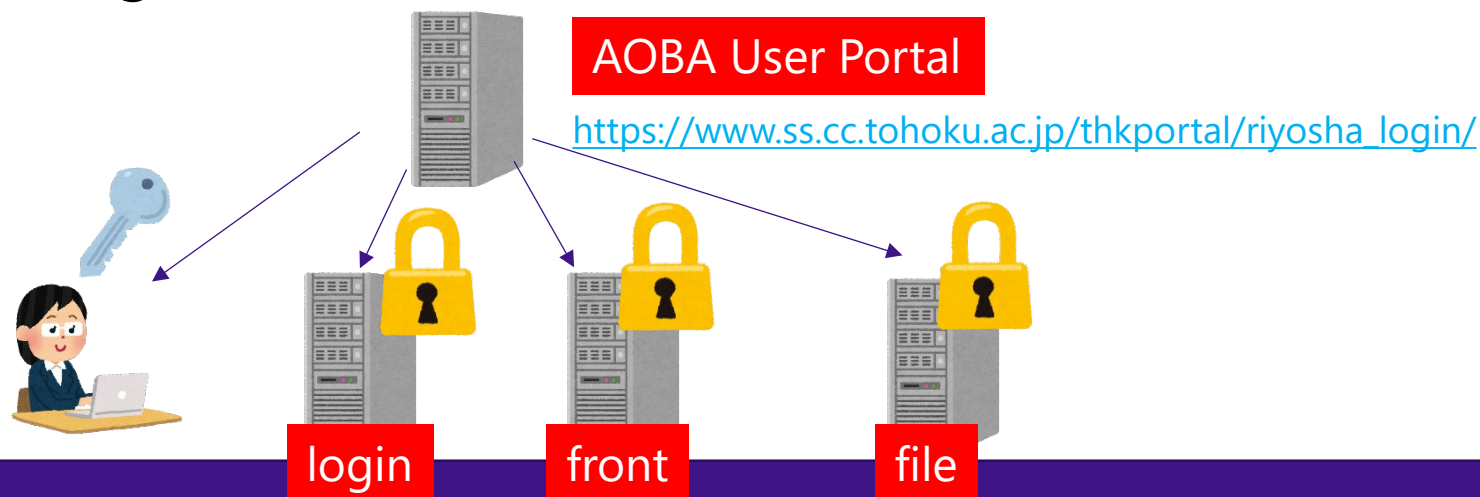
**A private key is used to prove your identity.**

You must always **keep it secret**, and never put it on the Internet. You must store it only on your own PC.



**A public key is actually something like a key hole.**

In the case of AOBA, it is **automatically put** onto login, front, and file servers.



# Login to AOBA Portal

## ■ You need **User Id** and Initial **Password**

- The initial password is used to login to the portal site and to create keys.

The diagram illustrates the login process for the AOBA Portal. It starts with a 'User login' form on the left, which includes fields for 'User Id' and 'Password', a language selection (Japanese/English), and a 'login' button. A purple arrow labeled 'Login to the portal page' points from this form to the right, where the 'Cyberscience center, Tohoku University User Portal' dashboard is shown. The dashboard includes a 'logout' button (highlighted with a red 'Logout' box), 'User Information / Billing Statistics Information', 'Project Information' table, and buttons for 'Details of Project Billing', 'Details of User Billing', 'Download Journal Information', 'Change Password', and 'Create and Register Keys for SSH Login' (highlighted with a red 'Create a key pair' box).

**User login** (2020/10/11)

User Id:   
Password:   
☐ Japanese ☒ English

**Cyberscience center, Tohoku University User Portal** (2020/10/12)

**User Information / Billing Statistics Information**

Click the button for your purpose.

**User Information**

|                 |              |
|-----------------|--------------|
| User ID         | w20675       |
| User Name       | キョウイクコウシュウカイ |
| Expiration Date | 期限なし         |

**Project Information**

| Select                           | Project Code | Project Name | Expiration Date |
|----------------------------------|--------------|--------------|-----------------|
| <input checked="" type="radio"/> | center01     | センター内利用      | 期限なし            |

**Download Journal Information**

**Change Password**

**Create and Register Keys for SSH Login**

# Create a Key Pair

## ■ Set a Passphrase for your private key

- Even if your private key is stolen, it still needs the passphrase for user authentication.

Cyberscience center, Tohoku University User Portal

2020/10/12 logout

Create and Register Keys for SSH Login 2020/10/12

Input Pass Phrase for Your Key.

Pass Phrase

Confirm Pass Phrase

Create and Register Keys

Close

Expiration Date

期限なし

Journals of Project

Journals of User

Change Password

Change Password

Create and Register Keys for SSH Login

Create and Register Keys for SSH Login

Enter Your Secret Pass Phrase Twice

Cyberscience center, Tohoku University User Portal

2020/10/12 logout

User Information / Billing Statistics Information

Click the button for your purpose.

User Information

User ID w20675

User Name キョウイクコウシュウカイ

Expiration Date 期限なし

Project Information

| Select                           | Project Code | Project Name | Expiration Date |
|----------------------------------|--------------|--------------|-----------------|
| <input checked="" type="radio"/> | center01     | センター内利用      | 期限なし            |

Details of Project Billing

Details of User Billing

Download Journal Information

Create and Register Keys for SSH Login

id\_rsa

すべて表示

Private key is downloaded onto your PC  
Public key is registered in remote servers.



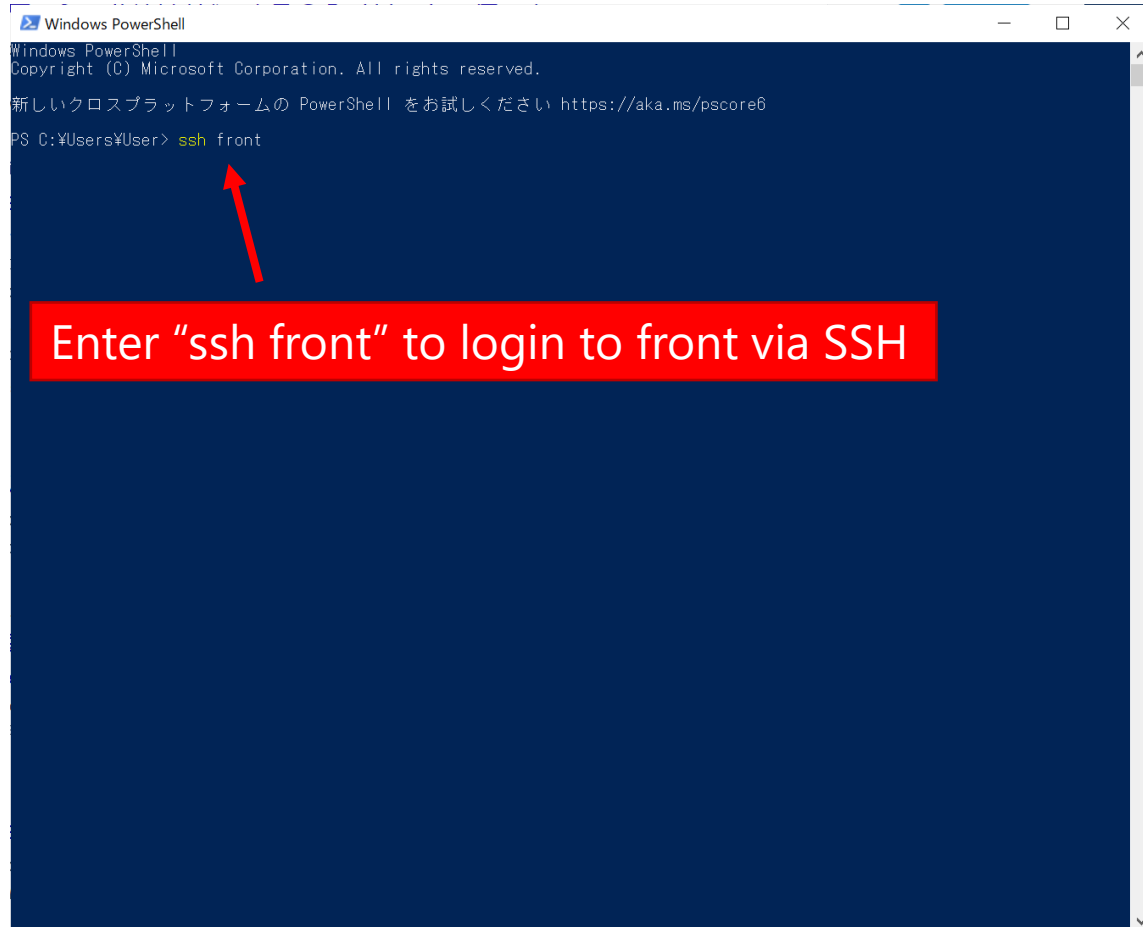
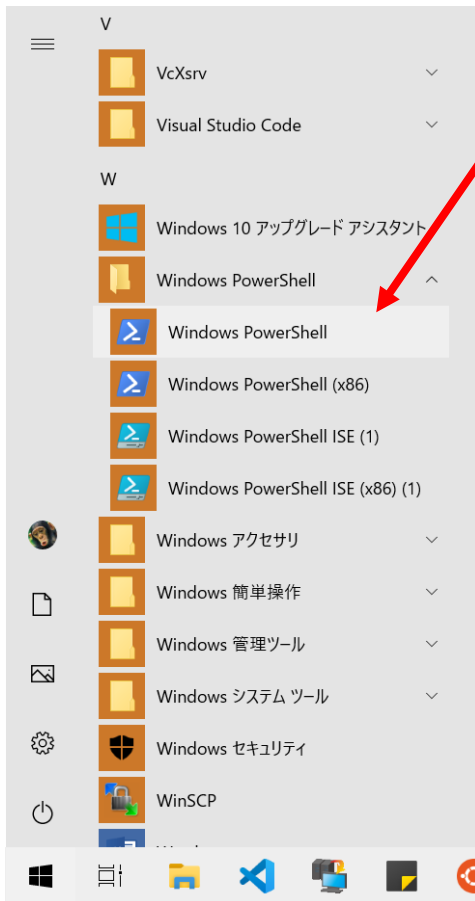
# Set up your Windows PC

- Move the private key (Don't copy) to ...
  - Create a folder `C:\Users\[Name]\.ssh`
  - Here, `[Name]` is probably your name on your PC.
- Create a text file “config” in the same folder (be sure no file extension)

```
# For login server
Host login
HostName login.cc.tohoku.ac.jp      # host name
User [User Id]                     # User Id at portal
IdentityFile ~/.ssh/id_rsa          # private key file
# For front server
Host front
HostName front.cc.tohoku.ac.jp      # host name
User [User Id]                     # User Id at portal
ProxyCommand ssh -CW %h:%p login    # access front via login
IdentityFile ~/.ssh/id_rsa
# For file server
Host file
HostName file.cc.tohoku.ac.jp       # host name
User [User Id]                     # User Id at portal
IdentityFile ~/.ssh/id_rsa          # private key file
```

# Windows PowerShell

Windows PowerShell



Enter "ssh front" to login to front via SSH

# FAQ

- If you got the following message,

```
CreateProcessW failed error:2  
posix_spawn: No such file or directory
```

then, first find the ssh.exe on your system.

```
PS C:¥Users¥User> gcm ssh
```

| CommandType | Name    | Version | Source                               |
|-------------|---------|---------|--------------------------------------|
| Application | ssh.exe | 7.7.2.1 | C:¥WINDOWS¥SYSTEM32¥OPENSSSH¥ssh.exe |

# For front server

Host front

HostName front.cc.tohoku.ac.jp

User [User Id]

ProxyCommand C:¥WINDOWS¥SYSTEM32¥OPENSSSH¥ssh.exe -CW %h:%p login

IdentityFile ~/.ssh/id\_rsa

Use it in your "config" file