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## ICHEC SSH Key, Accessing Kay and File Copy Guide<sub>v2.0</sub>

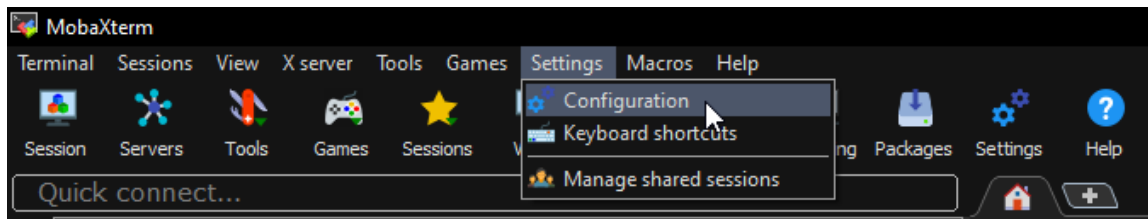
To start, this guide follows on from the “ICHEC Getting Started Guide”, so please make sure that all the required steps from that guide have been completed.

The focus of this guide is accessing the ICHEC Kay supercomputer from a Windows-based PC and assumes that a generated SSH key has not been sent to ICHEC previously.

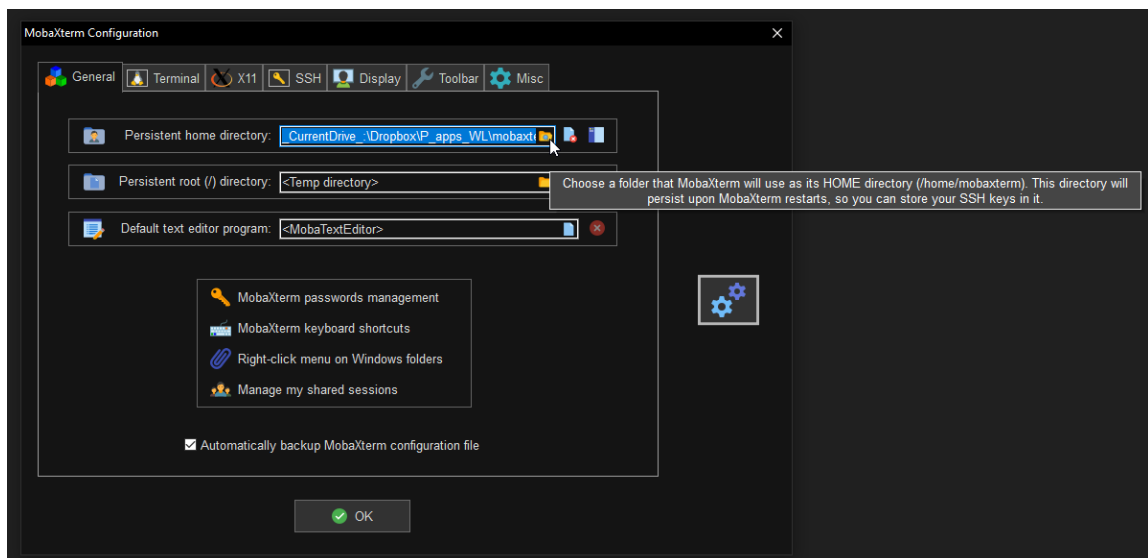
### SSH Key Pair Generation and Accessing Kay

To begin, install [MobaXterm](#). The application can also be installed as a portable application if you do not have administrator rights on your PC. The next step is generating an SSH Key Pair. You should only generate **one** key per device. Follow the steps below to generate the SSH Key Pair from within MobaXterm:

- Start MobaXterm
- Go to “Settings” then “Configuration” as shown:



- Click the yellow folder icon as shown beside “Persistent home directory”:

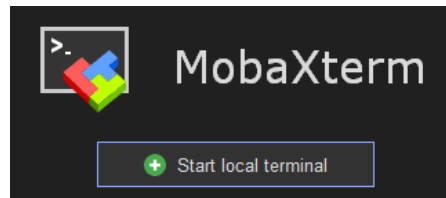


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- Select or create a folder for storing files that MobaXterm will have access to every time it opens. An example could be “C:\Users\C12345678\OneDrive - Technological University Dublin\Documents\moba\_home” which should appear as the following once selected:

```
_MyDocuments_\moba_home
```

- Click the “Start local terminal” button to start a new local terminal. This local terminal will support most of the Linux shell commands:



- Run the following command in the local terminal to create a new directory in your home folder for saving the SSH keys:

```
mkdir -p "$HOME\.ssh"
```

Note: Paths in Windows use backslash as separator while Paths in Linux use forward slash as separator.

- Run the following command in the local terminal to create the SSH keys:

```
ssh-keygen -t ed25519 -f "$HOME\.ssh\id_ed25519"
```

When prompted enter a memorable and strong passphrase to secure the SSH key. This passphrase is similar to a password and will be needed to use the generated SSH keys. It doesn't need to be your ICHEC account password, it can be anything. Note: SSH keys are generated in pairs. A private key (id\_ed25519) and a public key (id\_ed25519.pub). The private key (id\_ed25519) should be kept locally and should **NOT** be shared (not even with ICHEC). The public key (id\_ed25519.pub) should be added to the ICHEC remote server as discussed later.

The SSH Key Pair should now have been created.

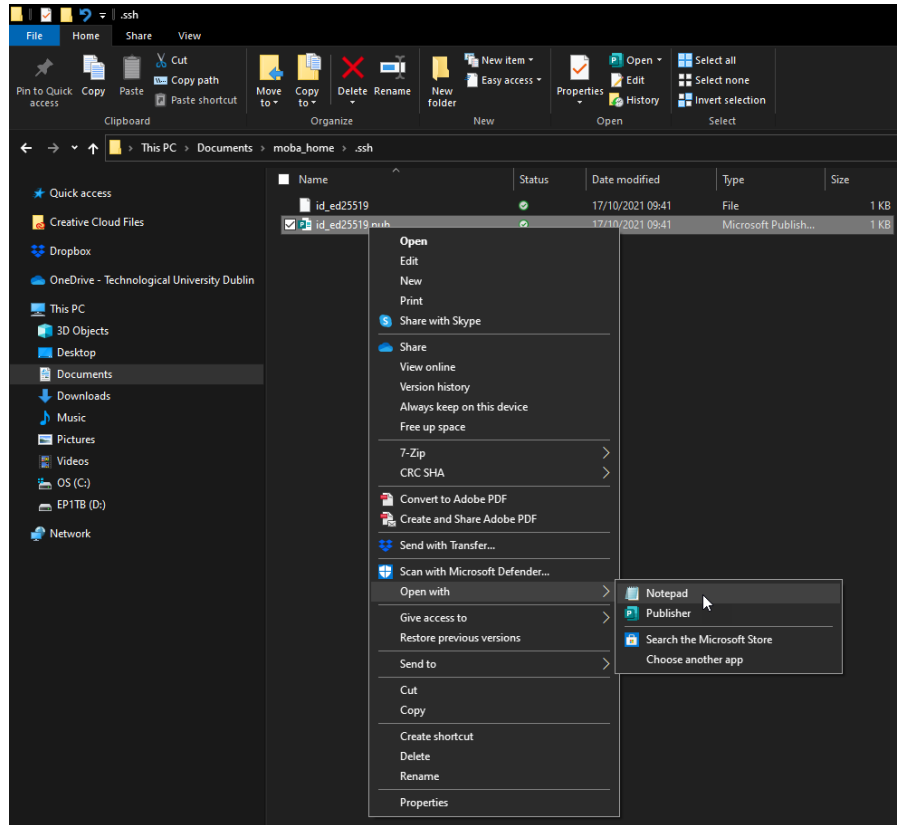
You can view and copy the **public** SSH key (id\_ed25519.pub) by going to the .ssh folder e.g. C:\Users\C12345678\OneDrive - Technological University Dublin\Documents\moba\_home\.ssh and opening the file using Notepad:

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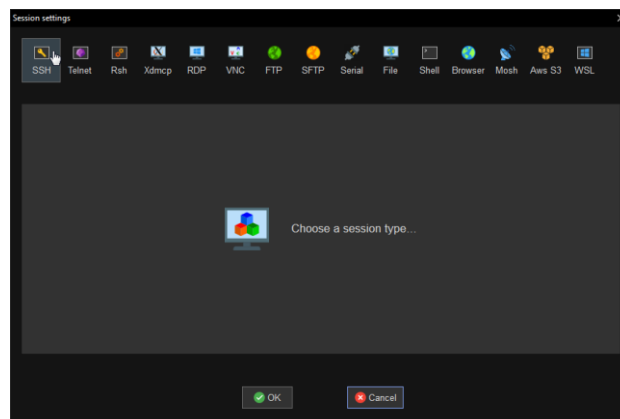
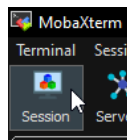
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Copy **all** of the text in the file and send this text in an email from your registered ICHEC account email address to ICHEC at [support@ichec.ie](mailto:support@ichec.ie). Once the key has been added to the ICHEC system, click “Session” in the top left of the screen and then “SSH” in the next popup:

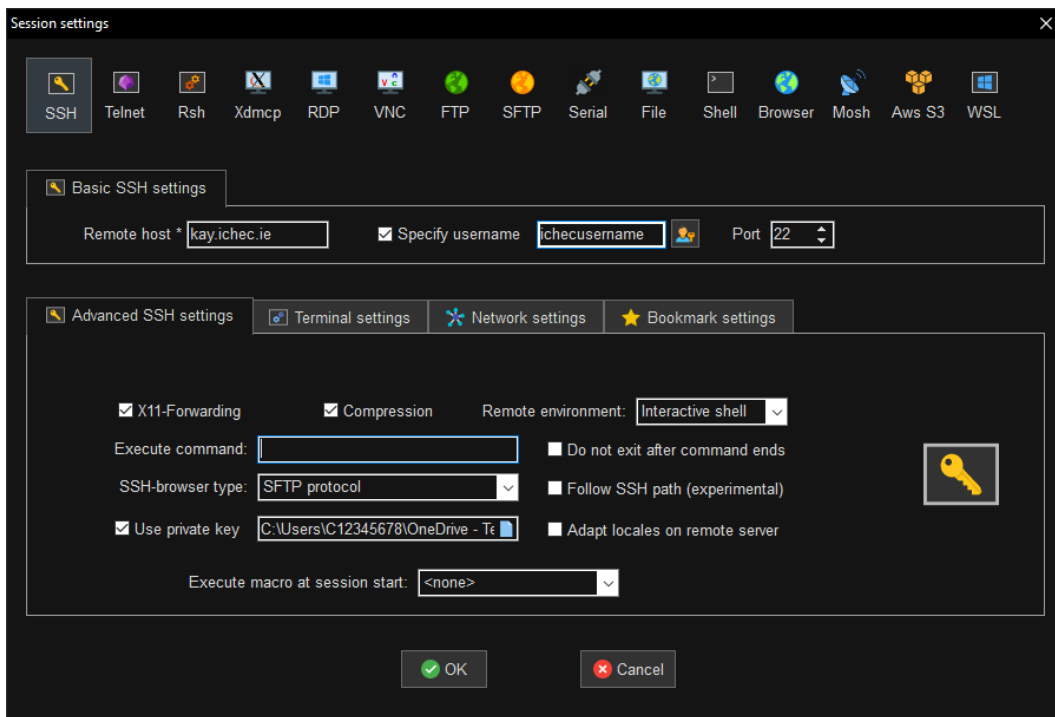


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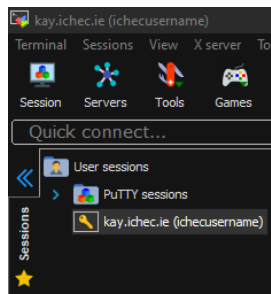
Enter the following information into the tabs, updating for username and SSH key location:

<p><b>“Basic SSH settings” Tab</b>          Remote host: kay.ichec.ie          Check box for Specify username          Specify username: ichecusername</p>	<p><b>“Advanced SSH settings” Tab</b>          Check “Use private key” box          Use private key: C:\Users\C12345678\OneDrive          - Technological University          Dublin\Documents\moba_home\.ssh\id_ed25519</p>
--	--

The screen should look like this after inputting all of the information:



Click “OK”. The session should automatically start, where you should enter your password and eventually access Kay. To start the session any other time, double-click on the “kay.ichec.ie” session in the menu:



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## Traversing the ICHEC folder structure through the terminal

Before continuing, it is recommended to look at some common linux commands like `cd` and `mkdir`. Some good sources include [here](#) and [here](#).

## Copying content to/from ICHEC Kay systems

If you need to copy code or files to the ICHEC Kay systems, a Bash terminal shell can be created that executes an `rsync` command when required.

In terms of overall folder structure, taking an example project folder called “myproject”, it is a good idea to have “home” and “work” subfolders on your PC; any code or source files for execution could be in the “home” folder, while any output files could be in the “work” folder. ICHEC has separate areas and storage allocations for home and work folders. So, in essence, a simple folder structure on your Windows PC could be:

**Main folder:** `C:\Users\C12345678\OneDrive - Technological University  
Dublin\Documents\myproject`

**Subfolder for code:** `C:\Users\C12345678\OneDrive - Technological University  
Dublin\Documents\myproject\home`

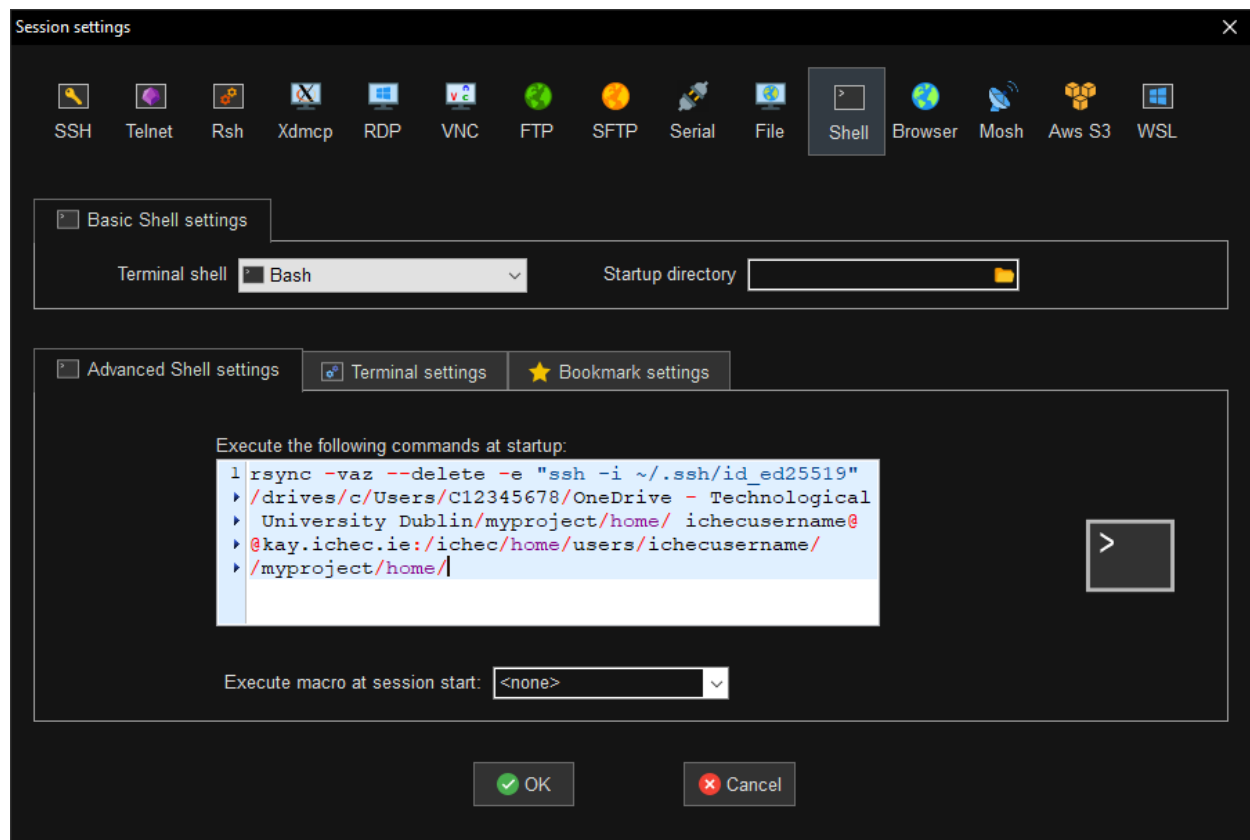
**Subfolder for output:** `C:\Users\C12345678\OneDrive - Technological University  
Dublin\Documents\myproject\work`

A simple workflow is to mirror the “home” folder contents on your Windows PC with the ICHEC code folder. In this case, a folder structure would already have been created by the user on the ICHEC system using the commands mentioned earlier. The mirror command used would then look like the following:

```
rsync -vaz --delete -e "ssh -i ~/.ssh/id_ed25519"
/drives/c/Users/C12345678/OneDrive - Technological University
Dublin/myproject/home/
ichecusername@kay.ichec.ie:/ichec/home/users/ichecusername/myproject/h
ome/
```

The mirroring can be implemented by clicking “Session” to bring up the Session panel, clicking “Shell” on the top of the new window and configuring like shown:

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Click “OK” when finished. This session can be accessed in the same way as the main ICHEC session (by double-clicking in the menu on the left). It is a good idea to name the session so that it is easy to identify. This can easily be done by right-clicking on the session and selecting “Rename session”.

A similar mirror command and session can be set up for copying output files from ICHEC Kay to your computer:

```
rsync -vaz --delete -e "ssh -i ~/.ssh/id_ed25519"
ichecusername@kay.ichec.ie:/ichec/work/tuengXXXc/myproject/work/
/drives/c/Users/C12345678/OneDrive - Technological University
Dublin/myproject/work/
```

This is just one way to setup the copying procedures. A good source of information on `rsync` is [here](#), and other configurations can be set up as necessary.

## **Conclusion**

This covers the generation of an SSH Key Pair for addition to the ICHEC system, accessing the ICHEC Kay systems from MobaXterm on Windows and also copying content to/from the ICHEC Kay systems.

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Useful links:

- [Access to HPC | ICHEC](#)
- [National Service Projects | ICHEC](#)
- [Documentation | ICHEC](#)
- [Key User Guide | ICHEC](#)
- [FAQs | ICHEC](#)
- [Tutorials | ICHEC](#)
- [Setting up SSH Keys | ICHEC](#)
- [Software | ICHEC](#)