USQ HPC Data Transfer Guide

Transferring Data between Computers on USQ's Intranet and the HPC

Introduction

This document provides guidelines on transferring data between computers on USQ's intranet and USQ's HPC environment.

General Guidelines for Transferring Data

USQ HPC Users can transfer data to and from the HPC Cluster on campus using a variety of methods. The methods outlined below are recommended to ensure good transfer performance.

When transferring data to and from the HPC always transfer the data via the login node, i.e. hpc-login-prd-t1.usq.edu.au (139.86.56.21).

It is recommended that USQ's Ethernet staff network is used for data transfers to and from the HPC via the login node. Transferring data to and from the HPC via the staff wireless network while possible, **is not** recommended due to the design and limitations of the wireless network as a transfer medium.

By design users can transfer data directly to hpc-login-prd-t1.usq.edu.au from inside the USQ campus network, but **cannot** transfer data directly to hpc-login-prd-t1.usq.edu.au from **outside** the USQ campus network.

It is possible to transfer data to the HPC from outside the USQ network via the staff VPN service: vpn.usq.edu.au. This is not an ideal method, and performance is not optimal as the encryption overhead is doubled and limits transfer rates.

hpc-login-prd-t1.usq.edu.au blocks all incoming Internet network traffic for security reasons. From hpc-login-prd-t1.usq.edu.au (139.86.56.21) you can establish outgoing connections to known trusted hosts, but not the other way around.

Data Transfer Guidelines for Windows, Mac and Linux

1. Windows

Due to limitations in how Microsoft Windows operating system works, some data transfer tools work better than others.

USQ ICT recommends use of **FileZilla** (https://filezilla-project.org/) to transfer data from the users' desktop to USQ's HPC. FileZilla can be installed from USQ's software repository https://kace.usq.edu.au/. Although there are other applications, e.g. *WinSCP* and *CyberDuck*, it is strongly recommended **NOT** to use these applications as performance will be poor due to the way the applications work in Windows.

Staff on campus connected to a wired network and using FileZilla with sftp, should be able to transfer data to or from the HPC at speeds ranging between **60-70 Megabytes per second (MB/s) or 480 to 560 Megabits per second (Mb/s).** Users are advised to log an ICT service desk job for investigation if data transfer speeds are consistently slower than 60-70 MB/s when transferring data between their desktop computer and the HPC.

Data transfer speeds may vary periodically as there are a variety of factors that affect data transfer performance, such as disk IO, or how busy the PC is or on activity on the HPC.

USQ's ICT Network and Security Teams have extensively tested and benchmarked the data transfer performance between Windows desktop PCs and the HPC on the USQ intranet. A screenshot of using **FileZilla** running on Windows and connected to hpc-login-prd-t1.usq.edu.au is shown below:
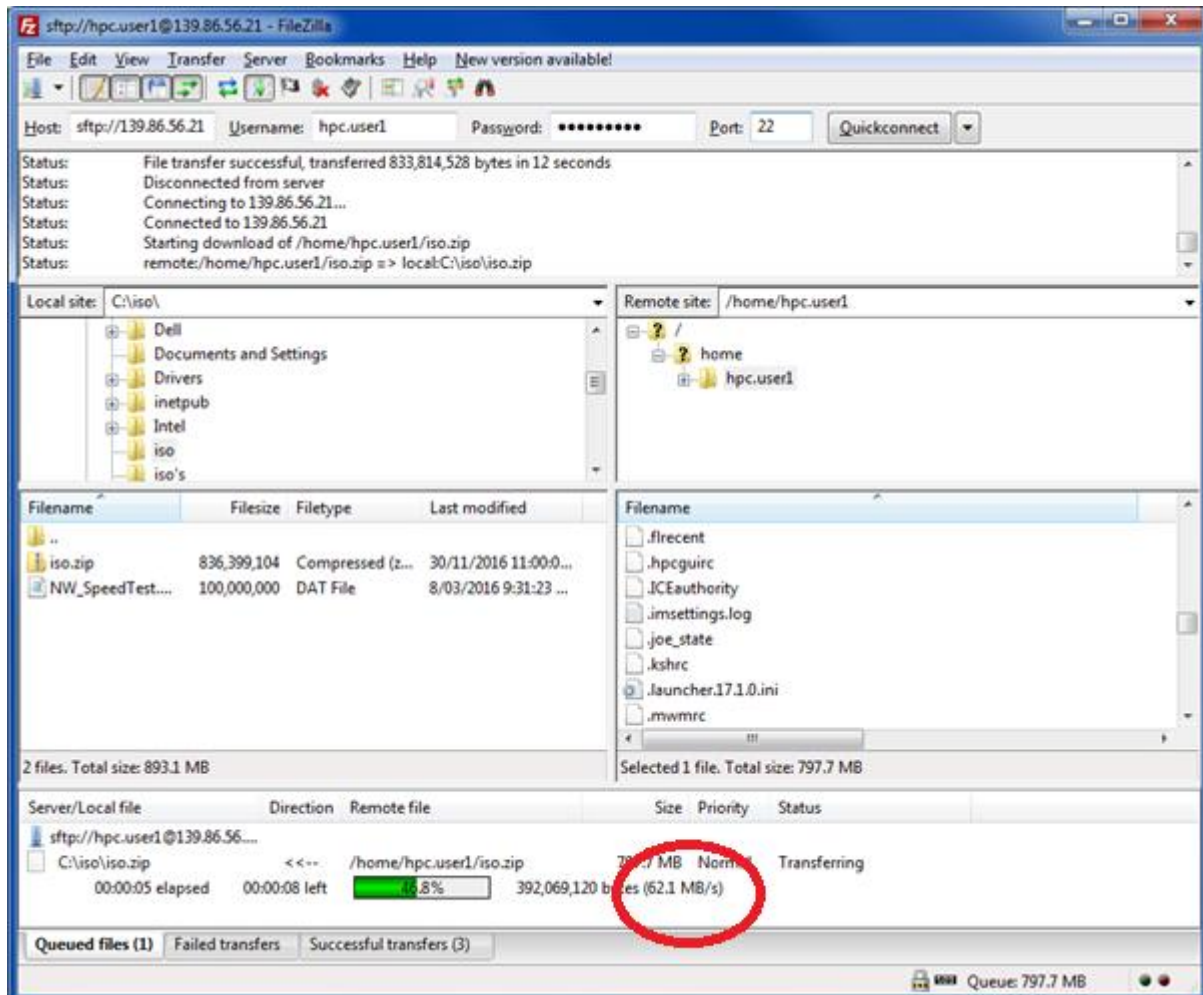
2.   Mac and Linux

It is recommended that Mac and Linux users install and use scp or rsync to transfer data to and from the HPC from their desktop computers on campus.

USQ staff on campus connected to a wired network and using scp on Linux or Mac should be able to transfer files to or from the HPC at speeds ranging between **60-80 Megabytes per second (MB/s) or 480 to 640 Megabits per second (Mb/s).** Users are advised to log an ICT Service Desk job for investigation if data transfer speeds are consistently lower than 60-80 MB/s when transferring data between their desktop computer and the HPC.

USQ's ICT network and security teams have extensively tested and benchmarked the data transfer performance between Mac and Linux desktops and the HPC on the USQ intranet.

Examples of using Scp and Rsync to Transfer Data

The following are examples of transferring data between Mac and Linux desktops and the HPC on the USQ intranet *(the examples assume that your desktop and/or other hosts have **scp** & **rsync** available).*

a. Transfering data *from* your USQ **Desktop** computer *to the* **HPC**:

To send **my-file** located on your desktop system to your HPC home directory *(/home/$USERID)*:

```
my-desktop> scp my-file  hpc-login-prd-t1.usq.edu.au:/home/Your_UsqId
```

To send an **entire** directory **my-directory** located on your desktop system to your HPC home directory locate at *(/home/$USERID)*:

```
my-desktop> rsync -av my-directory  hpc-login-prd-
t1.usq.edu.au:/home/Your_UsqId
```

b. Transfering data *from* the **HPC** to your USQ **Desktop** computer:

To get **hpc-file** located on your home directory at /home/$USERID/hpc-file to your desktop:

```
my-desktop> scp hpc-login-prd-t1.usq.edu.au:/home/Your_UsqId/hpc-file
```

To get **hpc-directory** located on your HPC directory at /home/$USERID/hpc-directory to your desktop:

```
my-desktop> rsync -av hpc-login-prd-t1.usq.edu.au:/home/Your_UsqId/hpc-
directory
```