

# Storage & Data Transfer Service

[dicos-support@twgrid.org](mailto:dicos-support@twgrid.org)

Academia Sinica Grid-computing Centre (ASGC)



# Outline

- Storage space
- Introduction of Home Space
- Introduction of Group Working Space
- Subscribe to more Group Working Space
- Unsubscribe Space
- Working Space for Computing Jobs
- Using /tmp on the worker node as Intermediate Working Space
- Examples

# Storage space

- Home Space (100GB for free, not extendable)

`/dicos_ui_home/{user_account}`

- Group Working Space (3TB free /each group, pay for extension)

`/ceph/work/{group}`

- [ cryoEM group ]

`/activeEM/data/{group}/{user}`

- Backup Space (will be available in the future)

- Please **back up to secure your data** in these spaces.

# Storage space

- Check your usage on <https://dicos.grid.sinica.edu.tw/profile/info>

DICOSResourcesPolicyAboutDocumentationAPIAppsContactLive Chat

Your account

## User Profile

Username

account\_name

Group

group\_name

First Name

your\_first\_name

Last Name

your\_last\_name

E-mail

your email

Last Login

time\_joined

Date Joined

User Profile

Usage Summary

Group Member List

Subscribe Storage Space

Resource Usage

Logout

Storage Usage

/dicos\_ui\_home/your\_account

Latest Update: 2023-11-14 00:50:02

2.3GB/100GB

/ceph/work/your\_group

Latest Update: 2023-11-14 00:30:03

0.4TB/4.0TB

Edit Profile

Change Password

If /dicos\_ui\_home/ storage usage > 100 GB, user can't log in server.

# Introduction of Home Space

`/dicos_ui_home/{user_account}`

- 100 GB for free, not extendable.
- Backup your important data in Home Space.
- `/dicos_ui_home/` is a temporary space, backup your data in the `/ceph/work/{group}` or transfer to your own data storage.
- Home space will be cleared once your account is expired and deleted.
- **Avoid using the Home Space as the job's working space.**

# Introduction of Group Working Space

`/ceph/work/{group}`

- 3TB free space for each group.
- This space is shared among all members of the group.
- PI has full access and manage rights in this space.
- PI can subscribe & upgrade for more space via [dicos.grid.sinica.edu.tw](https://dicos.grid.sinica.edu.tw).
- Backup your important data in Group Working Space.

# Subscribe to more Group Working Space

- PI can subscribe for upgrade storage space.

<https://dicos.grid.sinica.edu.tw/accounting/subscribe-storage>

**訂閱儲存空間 Subscribe Storage Space**

- 訂閱時，會需要等待一段空間創建的時間。  
When subscribing, there will be a waiting period for the space to be created.
- 重複訂閱時，同樣的空間容量會累加。不同方案(plan: day/year)訂閱時空間大小會累加，但收費機制不同，plan: day 會於每個月的帳單內數；plan: year則會於訂閱當月帳單顯示並事先收費。  
Multiple subscription can be additional size. Different plan (plan: day/year) are different paymentent. For the day plan, it will show on m year plan, the payment will charge on current month bill.
- 刪除訂閱後，plan: day 會在滿1天後刪除，例：2023-08-01建立的空間若當天取消訂閱，會在1天後2023-08-02刪除，若在2023-08-02取消訂閱則順延至2023-08-03刪除；plan: year 會在1年後刪除，例：2023-08-01建立的空間會在2024-08-01刪除，若超過2024-08-01取消則順延至2025-08-01。  
若訂閱的儲存空間裡在超過時間後還有檔案，皆等待至檔案清空或資料夾大小小於保留的空間大小才會進行刪除/重設，期間費用還是按照收費機制照計算。  
After unsubscribe, for the day plan, it will be deleted the space after 1 day, for example, if the space was created on 2023-08-01 and unsubscribed on the same day, it will be deleted on 2023-08-02. If unsubscribed on 2023-08-02, it will be deleted on 2023-08-03; for the year plan, the space will be deleted after 1 year, for example, if the space was created on 2023-08-01, it will be deleted on 2024-08-01. If unsubscribed after 2024-08-01, the deletion will be postponed to 2025-08-01.  
If there is still some files in the subscribed space, the deletion or reduce space will delay to execute and charge the paymentent of period.
- 請注意：刪除訂閱後，因系統機制，將無法馬上進行訂閱相同空間，請等待畫面上顯示正在刪除儲存空間的標記消失後，才能再進行訂閱。  
Attention: the subscription will be unavailable after unsubscription process, please wait for the label of "Wait to Delete Storage Space..." finished.

**1TB Storage: NT\$3/day or NT\$1000/year**

More pricing information at <https://dicos.grid.sinica.edu.tw/resources>

# Subscribe to more Group Working Space

加購工作短期儲存空間  
Upgrade Work Space

1T = NT \$3/1 day  
PATH: /ceph/work/[group]/

1

T

Subscribe

加購工作短期儲存空間：1年方案  
Upgrade Work Space：1 year plan

1T = NT \$1000/1 year  
PATH: /ceph/work/[group]/

1

T

Subscribe

## Current Storage Space

工作短期儲存空間 Work Space

GROUP: ASGC  
PLAN: day  
PATH: /ceph/work/ASGC/  
Latest Update: 2023-07-27 00:30:04

0.0/5

1

T

Unsubscribe

工作短期儲存空間 Work Space

GROUP: ASGC  
PLAN: year  
PATH: /ceph/work/ASGC/  
Latest Update: 2023-07-27 00:30:04

0.0/5

1

T

Unsubscribe

# Unsubscribe Space

- Clear your data and release your space before unsubscription.
- Unable to unsubscribe if the space is not released.  
→ remove data until less or equal to target subscription.
- Unsubscription process will be blocked when space can not be released or cancel year plan.
- Contact info: [dicos-support@twgrid.org](mailto:dicos-support@twgrid.org)



# Working Space for Computing Space

- Group Working Space: [/ceph/work/{group}](#)

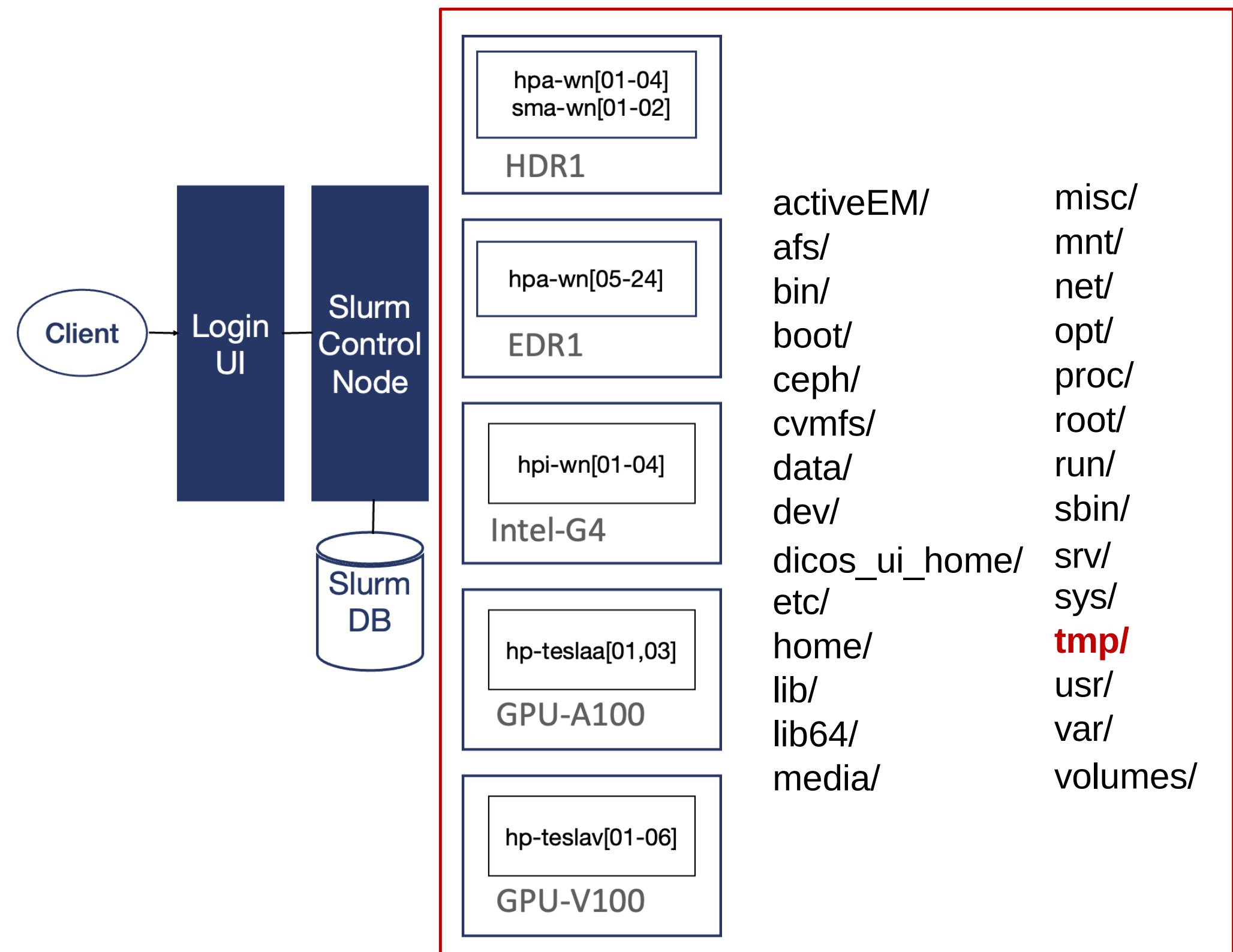


- If your job has high I/O wait output:  
You can also use **/tmp on the worker node** as an intermediate job working space.  
Copy intermediate data to `/ceph/work/{group}`.

# Using /tmp on the worker node as Intermediate Working Space

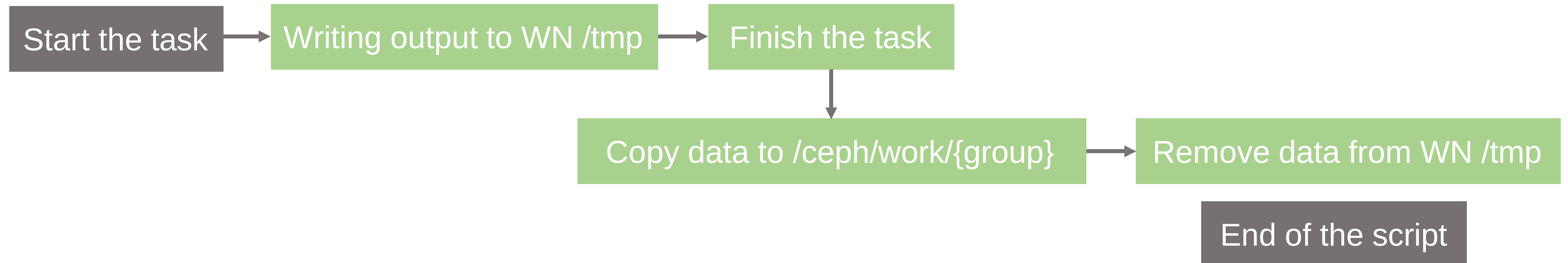
- Each worker node has a different spec (e.g., SSD) & capacity.

| Cluster  | Local Disk SSD |
|----------|----------------|
| HDR1     | 1 TB           |
| EDR1     | 2 TB           |
| Intel-g4 | 2 TB           |



# Using /tmp on the worker node as Intermediate Working Space

- Copy intermediate data to /ceph/work/{group}.
- Remove files from **/tmp on the worker node** when tasks finish.
- /tmp directory on the worker node will be cleaned anytime.



# Examples

**Linux Basic Command**

**Using /tmp on the worker node as Intermediate Working Space**

**Data Transfer**

# Linux Basic Command

ssh username@slurm-ui.twgrid.org

Login

ssh username@dicos-sftp.twgrid.org

pwd

Show current path

mv {src} {dest}

Move file

rm filename

Remove file

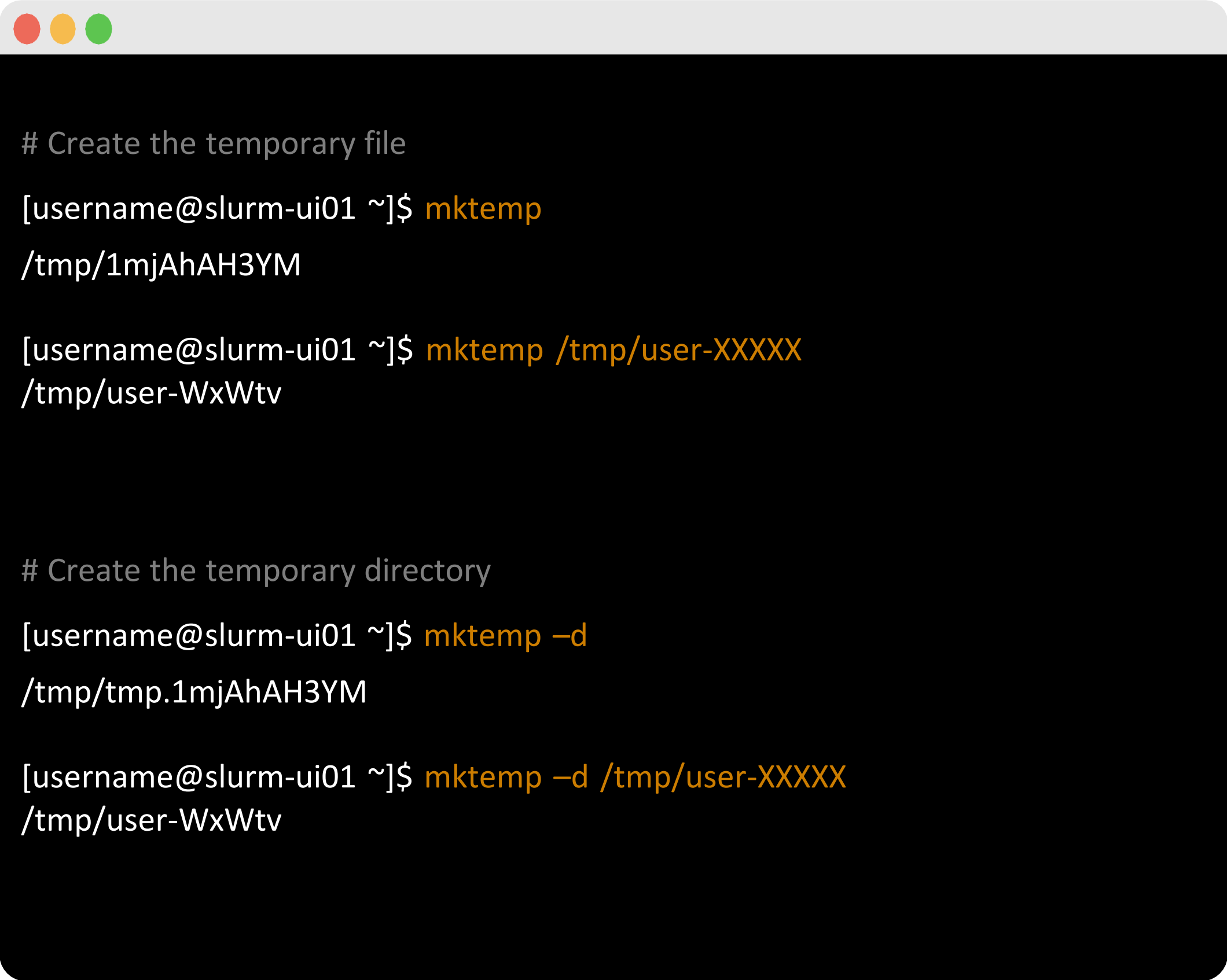
rm -r dirname

Remove directory

cat filename

View file content

# Using /tmp on the worker node as Intermediate Working Space



```
# Create the temporary file
[username@slurm-ui01 ~]$ mktemp
/tmp/1mjAhAH3YM

[username@slurm-ui01 ~]$ mktemp /tmp/user-XXXXX
/tmp/user-WxWtv

# Create the temporary directory
[username@slurm-ui01 ~]$ mktemp -d
/tmp/tmp.1mjAhAH3YM

[username@slurm-ui01 ~]$ mktemp -d /tmp/user-XXXXX
/tmp/user-WxWtv
```

# Using /tmp on the worker node as Intermediate Working Space

```
Job_TemporaryFile.sh

#!/bin/bash
#SBATCH --job-name=helloworld      # Job name
#SBATCH --partition=intel-g4-al9_short  # Partiotion name
#SBATCH --nodes=1                  # Numbers of nodes
#SBATCH --ntasks-per-node=1        # Number of tasks per node
#SBATCH --cpus-per-task=1          # Number of CPUs per task
#SBATCH --output=%j.out            # Standard output file (%j: Job ID)
#SBATCH --error=%j.err            # Standard error file (%j: Job ID)
#SBATCH --time=00-01:00:00         # Time limit
#SBATCH --mail-type=ALL            # Email notifications = BEGIN, END, FAIL, ALL
#SBATCH --mail-user=${username}@twgrid.org # Email address to send notifications

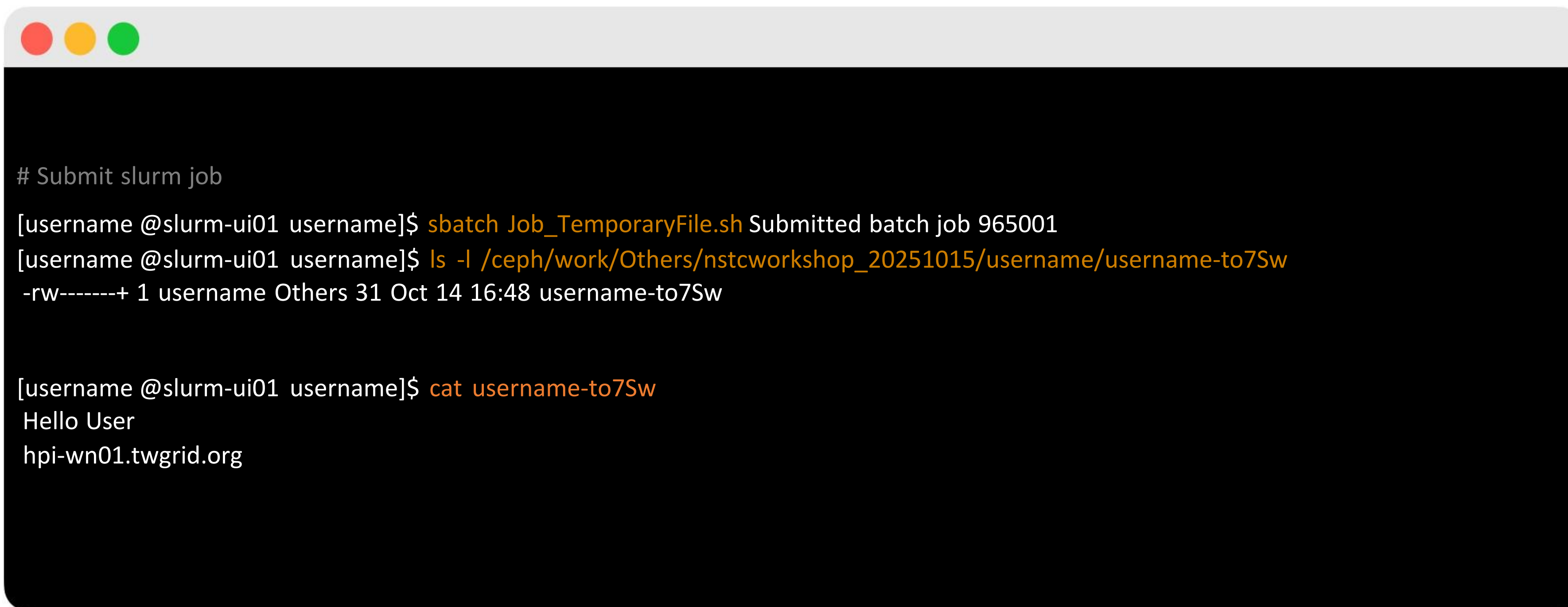
# Create a temporary file with a unique name under /tmp/ directory
TMPFILE=$(mktemp /tmp/${username}-XXXXX)

# Get the filename (without the path) of the temporary file
filename=$(basename "$TMPFILE")

#your computing program
echo "Hello User" >> $TMPFILE
hostname >> $TMPFILE

# Copy the temporary file to the specified destination directory (/ceph/work/{Group}/{your directory})
cp $TMPFILE /ceph/work/Others/nstcworkshop_20251015/${username}/${filename}
# Remove the temporary file from /tmp/ directory to clean up
rm $TMPFILE
```

# Using /tmp on the worker node as Intermediate Working Space

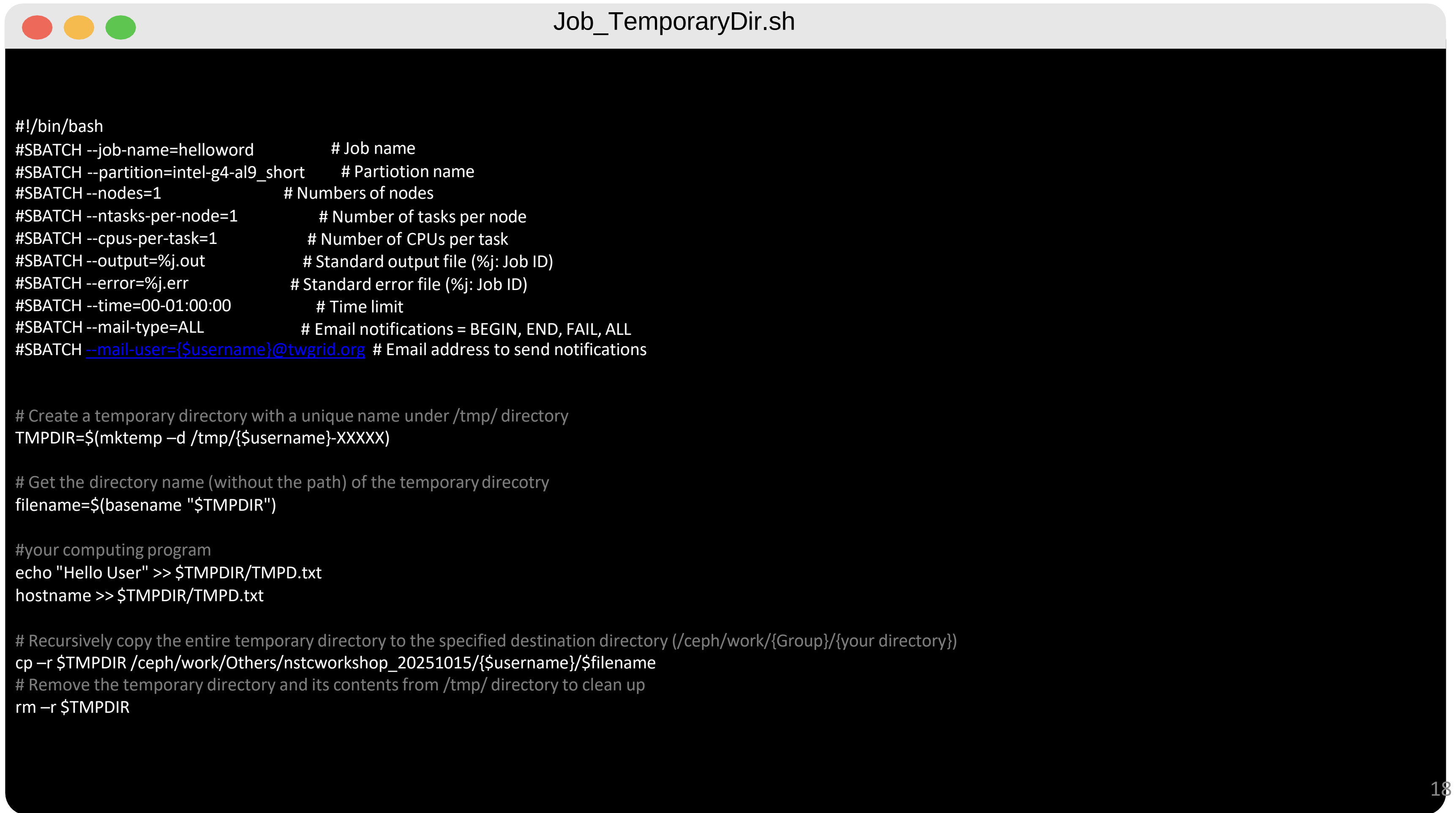


```
# Submit slurm job

[username @slurm-ui01 username]$ sbatch Job_TemporaryFile.sh Submitted batch job 965001
[username @slurm-ui01 username]$ ls -l /ceph/work/Others/nstcworkshop_20251015/username/username-to7Sw
-rw-----+ 1 username Others 31 Oct 14 16:48 username-to7Sw

[username @slurm-ui01 username]$ cat username-to7Sw
Hello User
hpi-wn01.twgrid.org
```

# Using /tmp on the worker node as Intermediate Working Space



```
Job_TemporaryDir.sh

#!/bin/bash
#SBATCH --job-name=helloworld      # Job name
#SBATCH --partition=intel-g4-a19_short  # Partiotion name
#SBATCH --nodes=1                  # Numbers of nodes
#SBATCH --ntasks-per-node=1        # Number of tasks per node
#SBATCH --cpus-per-task=1          # Number of CPUs per task
#SBATCH --output=%j.out            # Standard output file (%j: Job ID)
#SBATCH --error=%j.err             # Standard error file (%j: Job ID)
#SBATCH --time=00-01:00:00         # Time limit
#SBATCH --mail-type=ALL            # Email notifications = BEGIN, END, FAIL, ALL
#SBATCH --mail-user={Username}@twgrid.org # Email address to send notifications

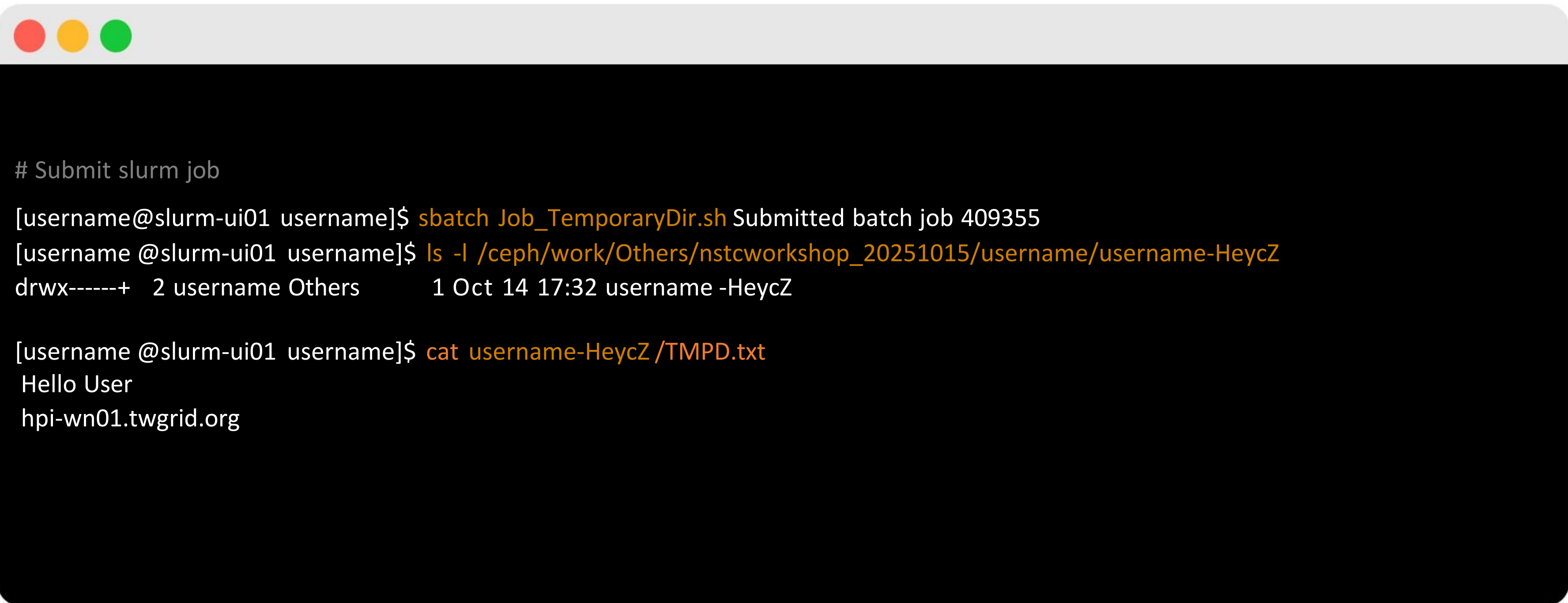
# Create a temporary directory with a unique name under /tmp/ directory
TMPDIR=$(mktemp -d /tmp/{Username}-XXXXX)

# Get the directory name (without the path) of the temporary direcotry
filename=$(basename "$TMPDIR")

#your computing program
echo "Hello User" >> $TMPDIR/TMPD.txt
hostname >> $TMPDIR/TMPD.txt

# Recursively copy the entire temporary directory to the specified destination directory (/ceph/work/{Group}/{your directory})
cp -r $TMPDIR /ceph/work/Others/nstcworkshop_20251015/{Username}/${filename}
# Remove the temporary directory and its contents from /tmp/ directory to clean up
rm -r $TMPDIR
```

# Using /tmp on the worker node as Intermediate Working Space



```
# Submit slurm job
```

```
[username@slurm-ui01 username]$ sbatch Job_TemporaryDir.sh Submitted batch job 409355
```

```
[username @slurm-ui01 username]$ ls -l /ceph/work/Others/nstcworkshop_20251015/username/username-HeycZ
```

```
drwx-----+  2 username Others      1 Oct 14 17:32 username -HeycZ
```

```
[username @slurm-ui01 username]$ cat username-HeycZ /TMPD.txt
```

```
Hello User
```

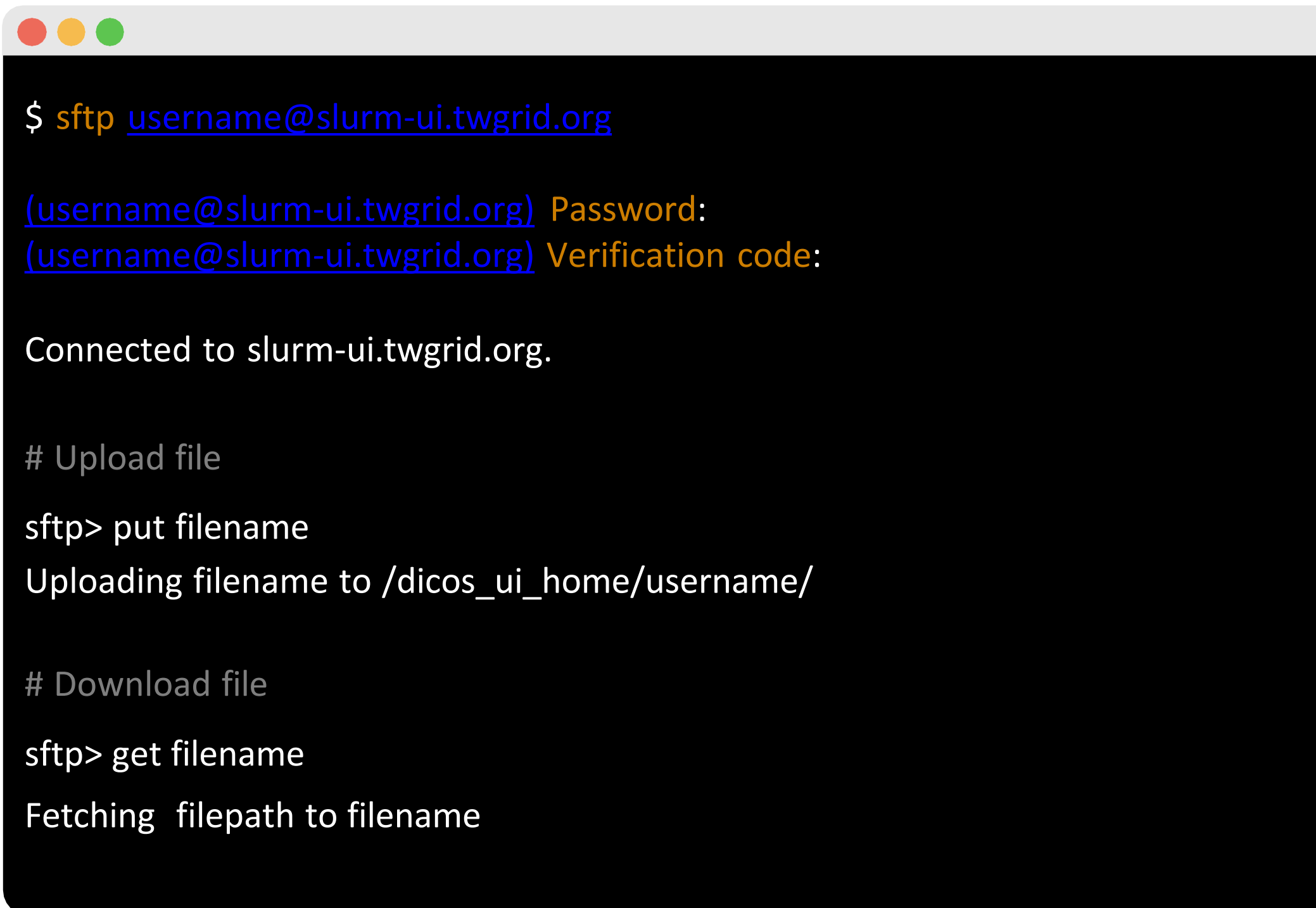
```
hpi-wn01.twgrid.org
```

# Data Transfer

- sftp
- scp
- FileZilla

# Data Transfer using sftp

Node for Data Transfer: **slurm-ui.twgrid.org** or **dicos-sftp.twgrid.org**



```
$ sftp username@slurm-ui.twgrid.org

(username@slurm-ui.twgrid.org) Password:
(username@slurm-ui.twgrid.org) Verification code:

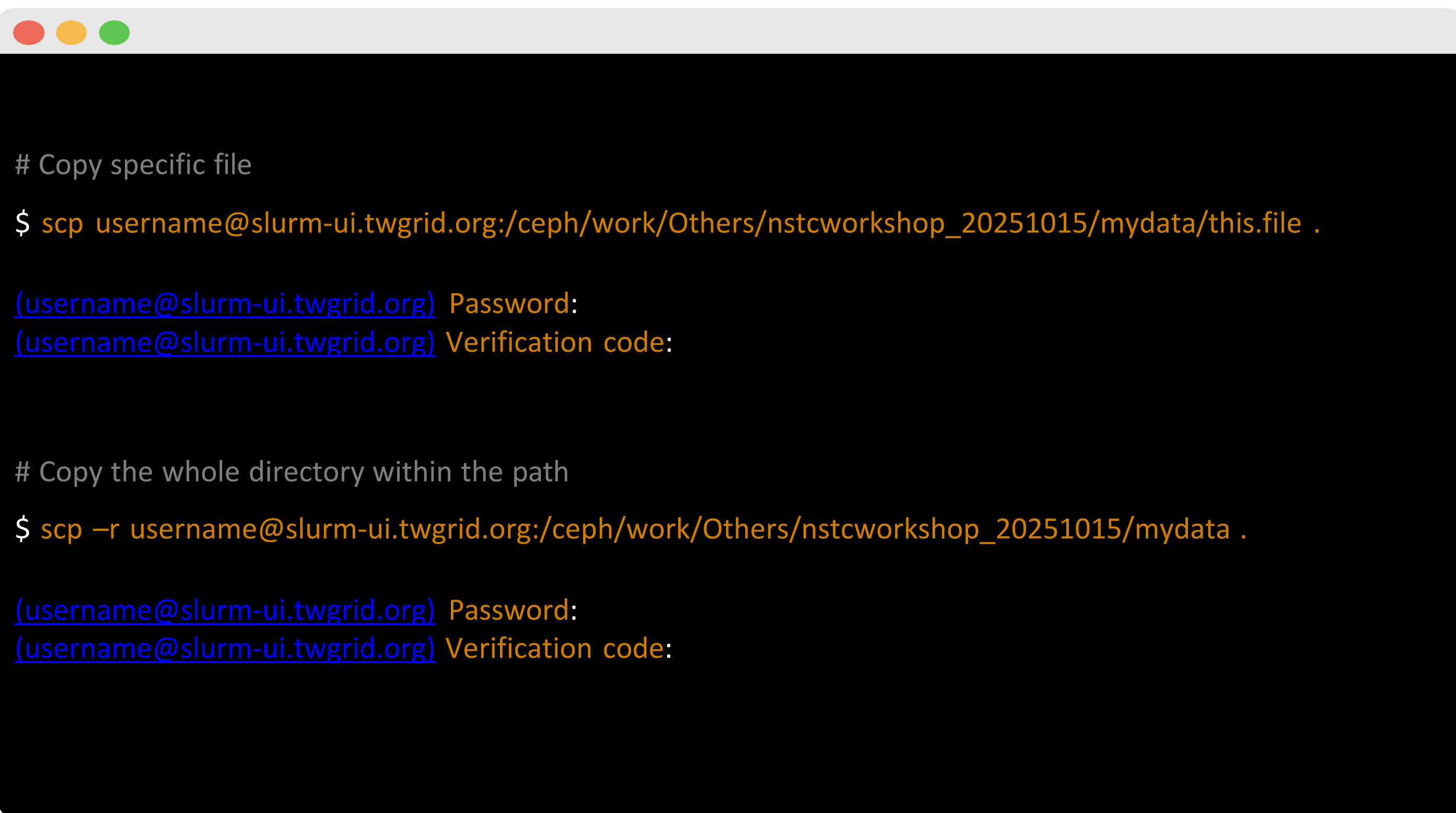
Connected to slurm-ui.twgrid.org.

# Upload file
sftp> put filename
Uploading filename to /dicos_ui_home/username/

# Download file
sftp> get filename
Fetching filepath to filename
```

# Data Transfer using scp

Node for Data Transfer: **slurm-ui.twgrid.org** or **dicos-sftp.twgrid.org**

A terminal window with a dark background and light gray text. The window has a title bar with three colored buttons (red, yellow, green) on the left. The text inside the terminal shows two examples of using the scp command. The first example shows copying a specific file from a remote host to the local machine. The second example shows copying an entire directory from a remote host to the local machine. Both examples include prompts for password and verification code.

```
# Copy specific file
$ scp username@slurm-ui.twgrid.org:/ceph/work/Others/nstcworkshop_20251015/mydata/this.file .

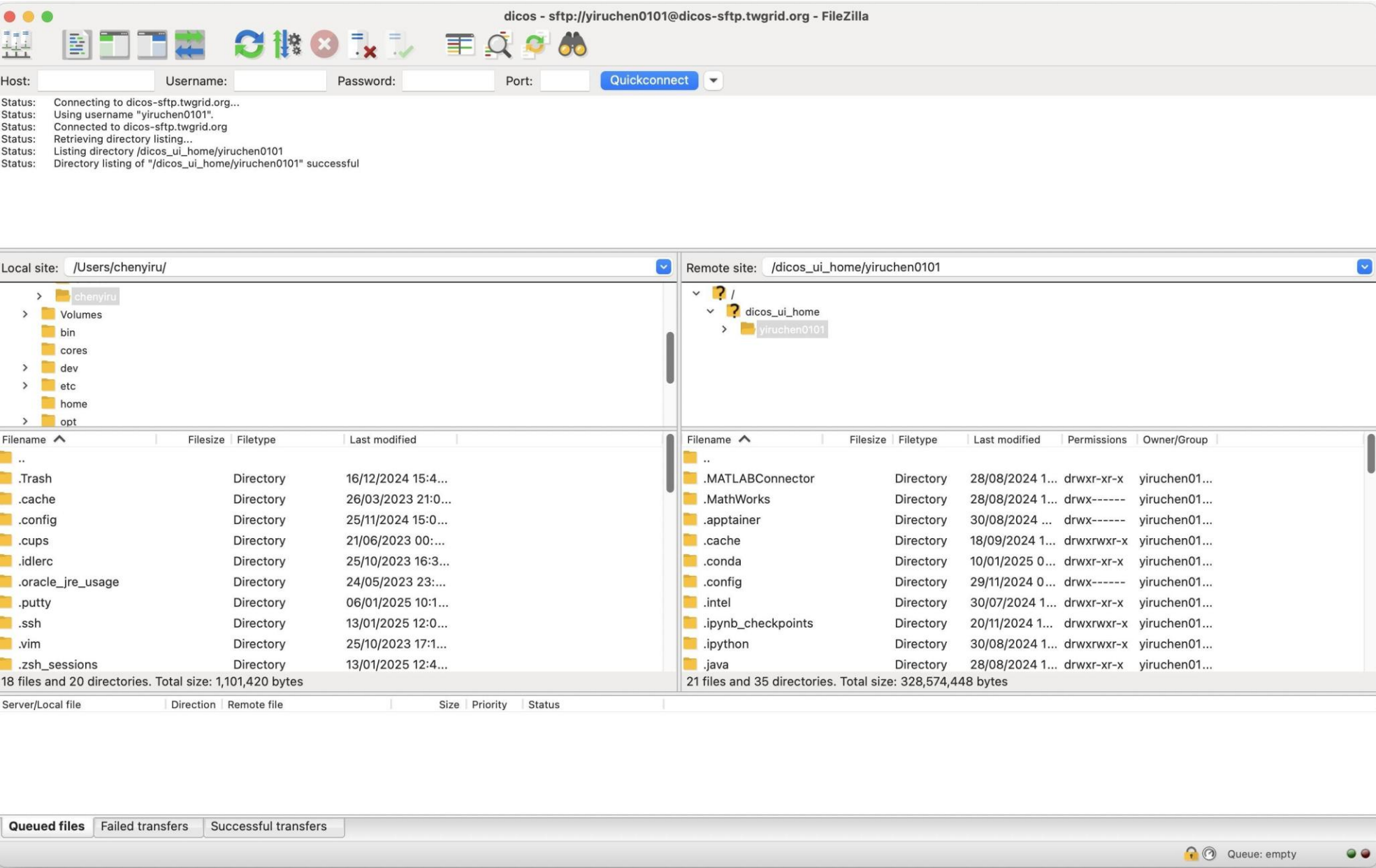
(username@slurm-ui.twgrid.org) Password:
(username@slurm-ui.twgrid.org) Verification code:

# Copy the whole directory within the path
$ scp -r username@slurm-ui.twgrid.org:/ceph/work/Others/nstcworkshop_20251015/mydata .

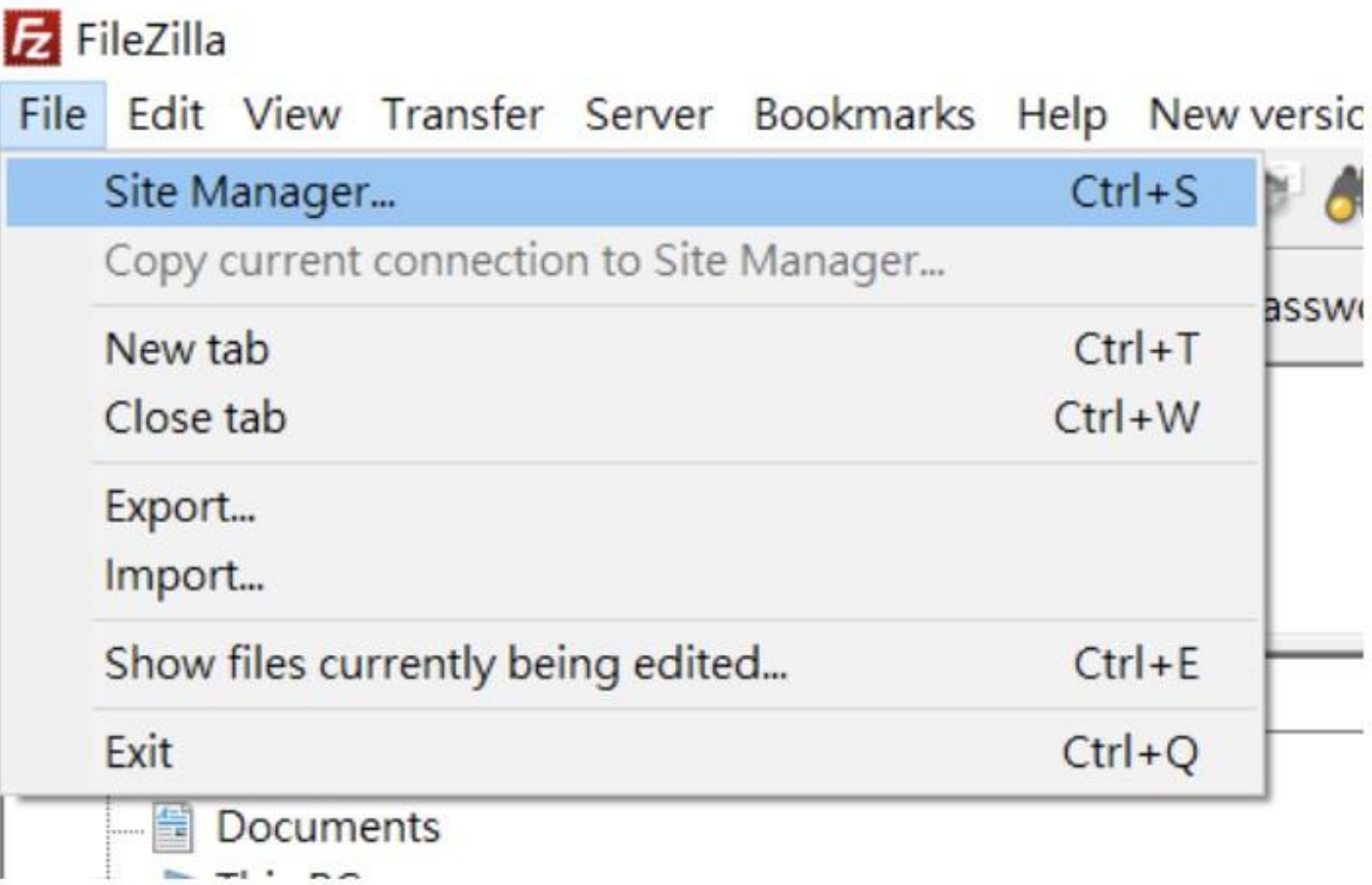
(username@slurm-ui.twgrid.org) Password:
(username@slurm-ui.twgrid.org) Verification code:
```



# Data Transfer using FileZilla



## 1. Choose "Site Manager"

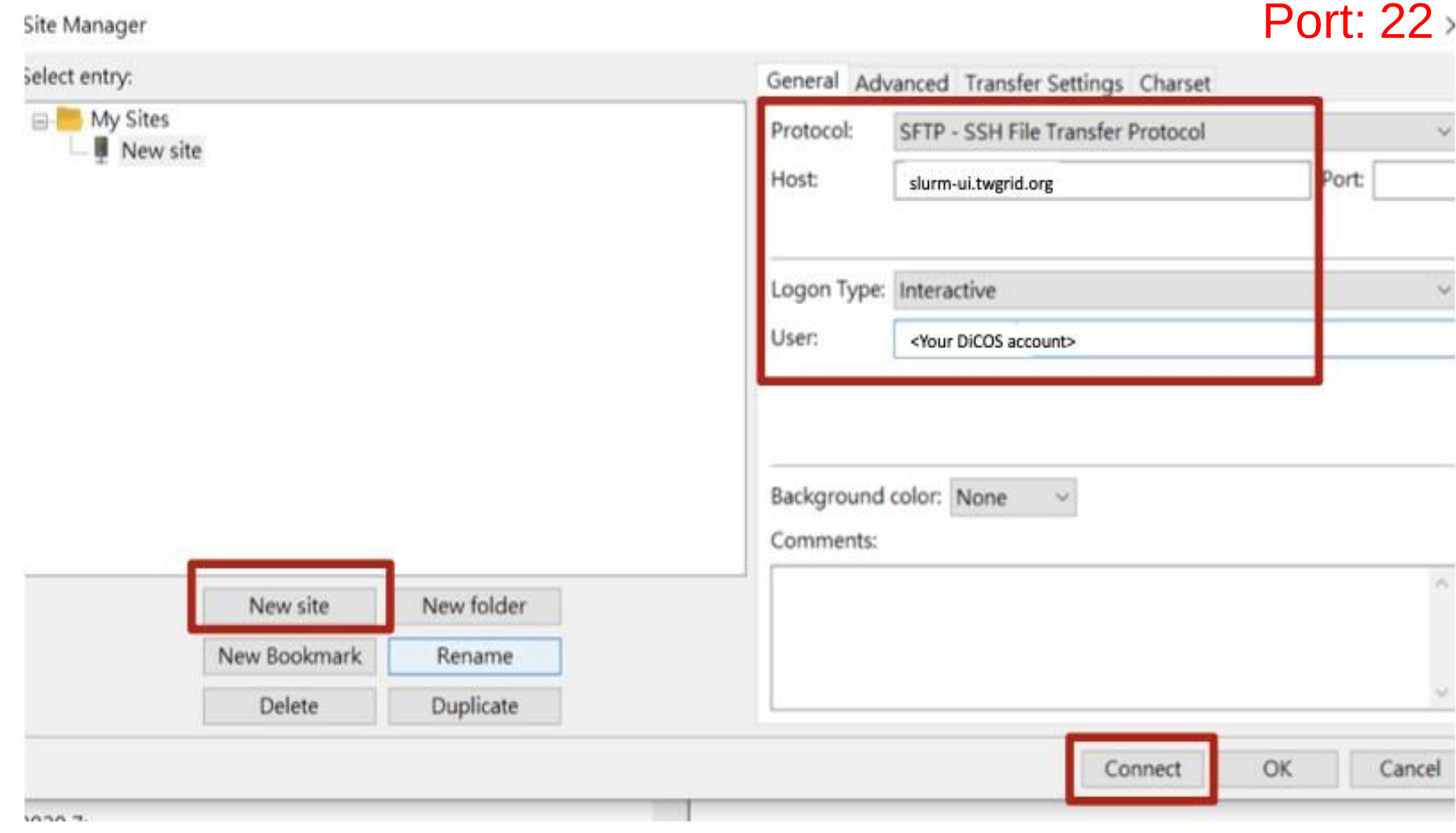




# Data Transfer using FileZilla

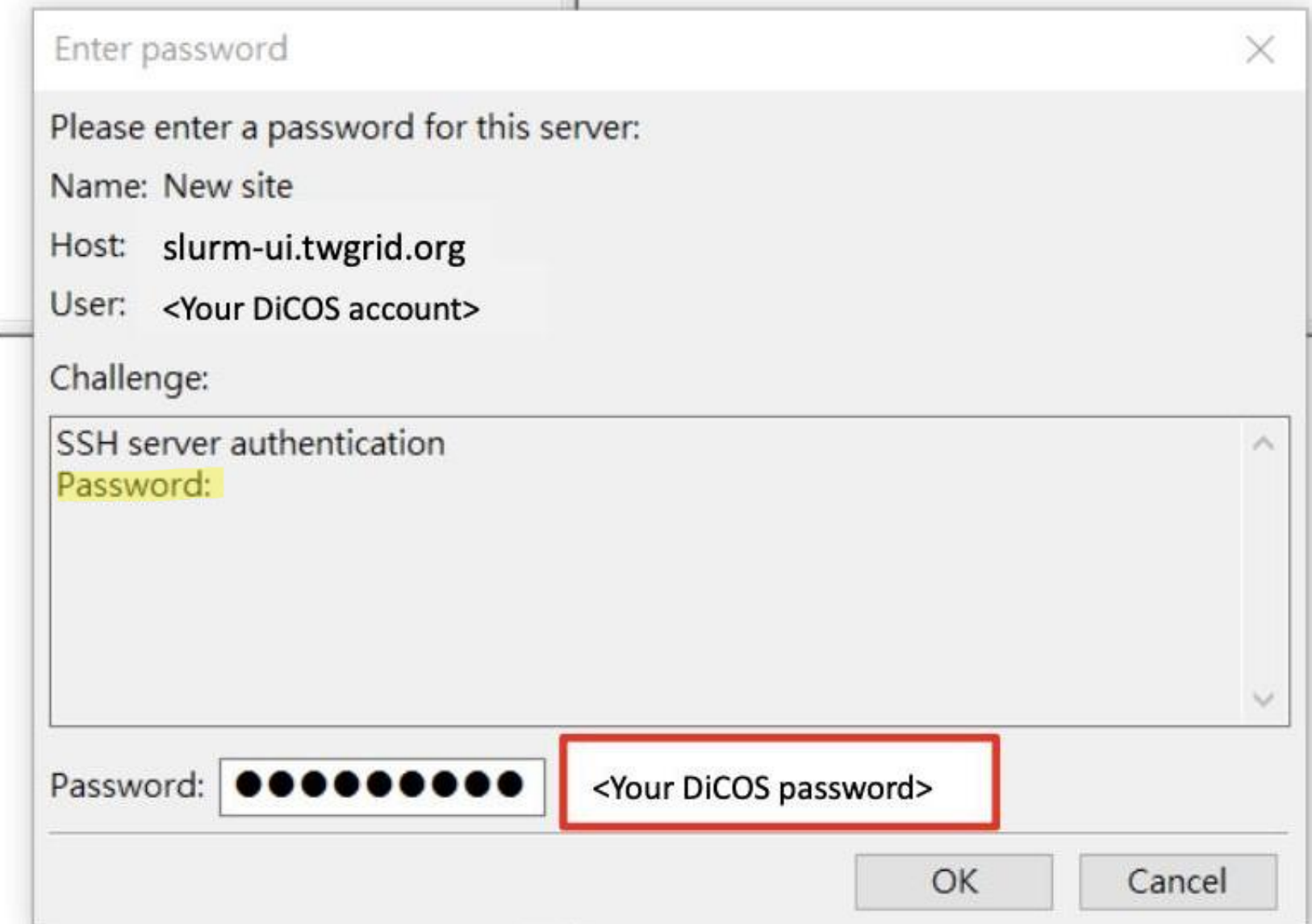
2. Click "New site" -> choose Protocol to "SFTP" -> enter Host "slurm-ui.twgrid.org" -> choose Logon Type to "Interactive" -> enter your DiCOS account to User field -> click "Connect"

Port: 22 >



The image shows the FileZilla Site Manager dialog box. The 'General' tab is selected. The 'Protocol' is set to 'SFTP - SSH File Transfer Protocol'. The 'Host' is 'slurm-ui.twgrid.org'. The 'Port' is '22'. The 'Logon Type' is 'Interactive'. The 'User' is '<Your DiCOS account>'. The 'Background color' is 'None'. The 'Comments' field is empty. The 'New site' button is highlighted with a red box. The 'Connect' button is also highlighted with a red box.

3. After connect, the first pop-up window please enter your DiCOS password



The image shows a pop-up window titled 'Enter password'. It contains the text 'Please enter a password for this server:'. Below this, it shows 'Name: New site', 'Host: slurm-ui.twgrid.org', and 'User: <Your DiCOS account>'. There is a 'Challenge:' section with 'SSH server authentication' and a 'Password:' label. The password input field is filled with dots. The '<Your DiCOS password>' text is highlighted with a red box. The 'OK' and 'Cancel' buttons are at the bottom.



# Data Transfer using FileZilla

4. The second pop-up window please enter 6-digit code of OTP shows on Google authenticator

The dialog box titled 'Enter password' contains the following fields and text:

- Text: 'Please enter a password for this server:'
- Text: 'Name: New site'
- Text: 'Host: slurm-ui.twgrid.org'
- Text: 'User: <Your DiCOS account>'
- Section: 'Challenge:'
- Text: 'SSH server authentication'
- Text: 'Verification code:' (highlighted in yellow)
- Input field: A red rectangular box containing the placeholder text '<6-digit code of one-time password>'
- Text: 'Password:' followed by a masked input field with seven black dots
- Buttons: 'OK' and 'Cancel'

5. After two authentication succussed, you can see the right window list your DiCOS home directory

The screenshot shows the FileZilla interface with the remote site '/dicos\_ui\_home/<your DiCOS account>' selected. The file list on the right is as follows:

| Filename           | Filesize | Filetype   | Last modifi... | Permissi... | Owner/G... |
|--------------------|----------|------------|----------------|-------------|------------|
| ..                 |          |            |                |             |            |
| .bash_history      | 173      | BASH_H...  | 9/20/2024 ...  | -rw-----    | <your      |
| .bash_logout       | 18       | Bash Lo... | 9/19/2024 ...  | -rw-----    | <your      |
| .bash_profile      | 141      | Bash Pr... | 9/19/2024 ...  | -rw-----    | <your      |
| .bashrc            | 492      | Bash RC... | 9/19/2024 ...  | -rw-----    | <your      |
| .google_authent... | 303      | GOOGL...   | 9/20/2024 ...  | -rw-r--r--  | <your      |
| .viminfo           | 914      | VIMINF...  | 9/20/2024 ...  | -rw-----    | <your      |

# Thanks for listening

## Q&A

[dicos-support@twgrid.org](mailto:dicos-support@twgrid.org)

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