

Multi-wavelength Data Analysis System User's Guide,
Astronomy Data Center,
National Astronomical Observatory of Japan

April 18, 2019

Contents

1	Introduction	1
1.1	About the Multi-wavelength Data Analysis System	1
1.2	ADC open-use help desk	1
1.3	Various information related to the Multi-wavelength Data Analysis System	1
2	Regulations for use of Data Analysis System	3
3	Application of the user account	5
3.1	Application of the MDAS user account	5
3.2	Application of the VPN service	5
3.3	Application of the Group ID service	5
4	How to use computers	7
4.1	How to use interactive data analysis servers	7
4.1.1	System configuration	7
4.1.2	How to login	8
4.1.3	Disk spaces	9
4.1.4	Network access control	10
4.2	How to use batch processing data analysis servers	10
4.2.1	System configuration	11
4.2.2	Queue configuration	11
4.2.3	Tutorial	11
4.2.4	The details of the PBS Professional	12
4.3	How to use terminal workstations	18
4.3.1	System configuration	18
4.3.2	How to login	18
4.3.3	Disk spaces	19
4.3.4	Network access control	19
4.4	How to use remote login terminal computers	19
4.4.1	System configuration	19
4.4.2	How to login	20
4.4.3	Disk spaces	20
4.4.4	Matters that require attention	20
5	Software configuration	21
5.1	Software configuration of the interactive/batch processing data analysis servers and terminal workstations	21
5.2	Software configuration of the remote login terminal computers	24
5.3	How to use software	26
6	Unique commands of the MDAS	31
6.1	How to use unique commands	31
6.1.1	lpall	31
6.1.2	userinfo	31
6.1.3	modify_userinfo	32
6.1.4	nfsdf	32

7	How to use peripherals	33
7.1	Network printer	33
7.1.1	Available printers	33
7.1.2	How to use network printers from the interactive data analysis servers and terminal workstations	33
7.2	External storage devices	34
7.2.1	Available external storage devices	34
7.2.2	How to use external storage devices	35
8	How to use open-use rooms	39
8.1	About open-use rooms	39
8.2	How to use shared PCs	39
8.2.1	System configuration	39
8.2.2	Software configuration of shared PCs	40
8.2.3	How to use shared PCs	42
8.3	How to use printers and scanners	42
8.3.1	System configuration	42
8.3.2	How to use network printers	43
8.3.3	How to use large-format printers	43
8.3.4	How to use scanners	44
8.4	Network connection	44
8.4.1	KTnet (NAOJ network)	45
8.4.2	Internet	45

Chapter 1

Introduction

1.1 About the Multi-wavelength Data Analysis System

The Astronomy Data Center (ADC) have operated the Multi-wavelength Data Analysis System (MDAS), which is the open-use computing system. This system is constructed in order to analyze astronomy data having various wavelengths. There are over one hundred pieces of software and it supports data reduction and analysis of astronomy data observed by various telescopes.

The MDAS consists of computers and its peripherals. The computers are classified with interactive data analysis servers, batch processing data analysis servers, terminal workstations, and remote login terminal computers. In the MDAS, the interactive data analysis servers are the main computer. Users access the interactive data analysis servers with SSH connection and analyze data on these servers. If necessary, users submit jobs to the batch processing data analysis servers from the interactive data analysis servers. The terminal workstations are located in the open-use room of the Subaru building and the room 101 of the ALMA building and the remote login terminal computers are located in the open-use room of the South building in the Mitaka campus. These computers are used for connecting to the interactive data analysis servers or light processing.

The MDAS is intended to be used for analytic research of astronomy data. Performing numerical computation and simulation using this system is not permitted. Those who want to do those researches need to use the computing system which Center for Computational Astrophysics (<http://www.cfca.nao.ac.jp>) employs.

1.2 ADC open-use help desk

The ADC open-use help desk operates the Multi-wavelength Data Analysis System and supports the users. If you have any questions about the system and open-use rooms in the Mitaka campus, please feel free to contact us.

Place	ADC open-use help desk, 1F South building
Reception time	Mon-Fri 9:30-12:00, 13:00-17:30
E-mail address	consult(at-mark)ana.nao.ac.jp
Extension number	3832

1.3 Various information related to the Multi-wavelength Data Analysis System

Please refer to the following URLs for various information related to the Multi-wavelength data analysis system.

Web site of the MDAS (https://www.adc.nao.ac.jp/MDAS/mdas_e.html)

This is a link to the MDAS web site. The website provides you various information related to the MDAS such as application of user account, system working status, and so on.

Information from the ADC (<https://www.adc.nao.ac.jp/cgi-bin/cfw2013/wiki.cgi/adcinfo/MLinfo>)

This page contains announcements from the ADC. Maintenance schedules and other information are posted on this page.

FAQ : Frequently Asked Questions (<https://www.adc.nao.ac.jp/cgi-bin/cfw/wiki.cgi/FAQ/FAQE>)

Answers to Frequently Asked Questions are posted on this page. Please refer to this page if you have any problems firstly.

Chapter 2

Regulations for use of Data Analysis System

National Astronomical Observatory of Japan Astronomy Data Center Regulations for use of Data Analysis System

(Purpose)

The 1st article

This regulation intends to establish requirements about use of the data analysis system (hereafter "system") in National Astronomical Observatory of Japan Astronomy Data Center (hereafter "center")

(User qualification)

The 2nd article

The person who can use the system (hereafter "user") is a member to whom the following applies:

1. Staff of National Astronomical Observatory of Japan (hereafter NAOJ)
2. Researchers (who graduated from college) of astronomy and the related field
3. The person who is allowed by the center chief in particular

(The kind of use)

The 3rd article

The kind of use of the system is limited to the following.

1. Data processing of astronomy and related fields
2. The study and the work which are permitted by the center chief in particular

(Use application)

The 4th article

The person who would like to use the system has to submit a prescribed application form to the center chief and to receive an approval. When applying person belongs to the research institute outside Japan, the research and educational staff of NAOJ must be a supervisor of the applicant.

(Approval)

The 5th article

1. When the center chief accepts application form of the preceding article and admits to be suitable, he approves it and gives the user a distinction sign (hereafter "user ID") and also gives the group distinction sign (hereafter "group ID") if necessary.
2. The validity of user ID and group ID of the preceding clause is 1 year from approved use starting day. And it is available up until the next March 31.

3. When users hope to use their approved user ID or group ID continuously beyond the next March 31, they must renew the application within the period designated by the center chief.

(The prohibition of user ID diversion)

The 6th article

Users cannot use their user ID for the purpose other than that of application and users cannot allow third party to use their user ID.

(The prohibition of group ID diversion)

The 7th article

Users cannot use their group ID for the purpose other than that of application and users cannot allow third party except for their research group to use the group ID.

(Notification)

The 8th article

When the following has occurred during the validity period of use, users should notify the center chief promptly.

1. Use of system was ended or stopped.
2. Institution or position was changed.

(Revoke of use qualification)

The 9th article

When users do not comply with the regulation of center or use the system except for the approved purpose, the center chief can revoke the use qualification or suspend the use.

(Final report)

The 10th article

When studies that related to the use of system have finished or the validity period of user ID has ended, the center chief may ask users to submit reports on the system use (progress reports).

(The publication of results)

The 11th article

When users make public the results obtained by using the system, they must acknowledge clearly in their papers the use of the system.

(Others)

The 12th article

1. Alteration and abolition of this regulation is executed by the center chief after consultation with the technical committee.
2. In addition to this regulation, the center chief can establish a special bylaw about the system use requirements.

(The rider)

1. This regulation comes into effect on the March 1st 2013.

Chapter 3

Application of the user account

In order to use the Multi-wavelength Data Analysis System, you must submit an application of the MDAS. By applying, your MDAS account will be issued and you will be able to access computers on the MDAS. If your terminal is on the NAOJ network (KTnet), then you can access the computers on the MDAS with SSH connection. In contrast, if your terminal is not on the NAOJ network, you must establish Virtual Private Network (VPN) connection before access the computers on the MDAS with SSH connection. The ADC offers VPN service, so you should also submit an application of the VPN service if there is a possibility that you access the computers on the MDAS using a terminal not on the NAOJ network. The MDAS also provides a group ID service. If you want to share data with users, please submit an application of the group ID service.

3.1 Application of the MDAS user account

An application form of the MDAS is on https://www.adc.nao.ac.jp/MDAS/appl/id_e.html. Please refer to regulations for use of the MDAS (see [Section 2](#)) before applying. Account registration will be carried out after you submit the application and a usage permit will be mailed to the postal address, but it might take some time before it is delivered. Moreover, you can also receive the usage permit at the ADC open-use help desk.

3.2 Application of the VPN service

The ADC offers two VPN services, which are the VPN service for the MDAS only (hereafter MDAS VPN service) and the VPN for the NAOJ staff only (hereafter NAOJ VPN service). The MDAS VPN service can only access the computers on the MDAS, while the NAOJ VPN service can access various computers on the NAOJ network (KTnet). If you are the NAOJ staff, please use the NAOJ VPN service. If not so, please use the MDAS VPN service.

An application form of the MDAS VPN service is on https://www.adc.nao.ac.jp/MDAS/appl/vpn_e.html. Please fill in the required items on the application form. After you submit the application, the use of the MDAS VPN service will be sent you by E-mail. Note that you must install anti virus software to your client terminal when you establish VPN connection. If anti virus software is not installed on your client terminal, please install it. If you have any questions about the MDAS VPN service, please contact the ADC open-use help desk (consult(at-mark)ana.nao.ac.jp).

An application form of the NAOJ VPN service is on <https://nethelp.mtk.nao.ac.jp/contents/en/node/4>. Please fill in the required items on the application form. If you have any questions about the NAOJ VPN service, please contact the Network Operation Center (noc(at-mark)nao.ac.jp).

3.3 Application of the Group ID service

The group ID (GID) is set to a group of user accounts on the Linux system. If you want to share data in your research group, you can set the common group ID (GID) as the group ownership. An application

6

form of the group ID is on https://www.adc.nao.ac.jp/MDAS/appl/gid_e.html. Note that only users who have the MDAS account can apply for the group ID.

Chapter 4

How to use computers

The Multi-wavelength Data Analysis System consists of computers and its peripherals. The computers are classified with the interactive data analysis servers, batch processing data analysis servers, terminal workstations, and remote login terminal computers. The peripherals are composed of printers, external storage devices, and so on. In this chapter, we will introduce how to use the computers.

4.1 How to use interactive data analysis servers

Interactive data analysis servers consist of 20 middle-range interactive data analysis servers (kaim[01-20].ana.nao.ac.jp) and 12 high-end interactive data analysis servers (kaih[01-12].ana.nao.ac.jp). The purpose of these servers is to reduce and analyze astronomy data interactively. Users access a server from the personal computer, terminal workstations, or remote login terminal computers with SSH connection. If you would like to perform a non-interactive calculation which requires a lot of calculation resources, please use the batch processing data analysis servers introduced in [Section 4.2](#).

4.1.1 System configuration

Interactive data analysis servers consist of 32 servers (FUJITSU Server PRIMERGY RX2530 M2). These servers are classified with middle-range interactive data analysis servers and high-end interactive data analysis servers from the difference in the performance of the Random Access Memory (RAM) and Hard Disk Drive. A middle-range interactive data analysis server has 192GB RAM and 12TB HDD, while a high-end interactive data analysis server has 256GB RAM and 51TB HDD. Each server is installed the Red Hat Enterprise Linux 7.

Table 4.1: **Specification of the middle-range interactive data analysis server**

Host name	kaim[01-20].ana.nao.ac.jp
Machine	FUJITSU Server PRIMERGY RX2530 M2
Quantity	20
OS	Red Hat Enterprise Linux 7
CPU	Intel Xeon E5 2667 V4 3.2 GHz 16 core
RAM	DDR4 2400 RDIMM 192GB
HDD of the local disk region	1.8 TB 2.5 inch SAS 10000 rpm
Size of the local disk region	12.24 TB

Table 4.2: **Specification of the high-end interactive data analysis server**

Host name	kaih[01-12].ana.nao.ac.jp
Machine	FUJITSU Server PRIMERGY RX2530 M2
Quantity	12
OS	Red Hat Enterprise Linux 7
CPU	Intel Xeon E5 2667 V4 3.2 GHz 16 core
RAM	DDR4 2400 RDIMM 256GB
HDD of the local disk region	10 TB 3.5 inch NLSAS 7200 rpm
Size of the local disk region	51 TB

4.1.2 How to login

The way to access the interactive data analysis servers differs from each other depending on whether the client terminal is on the NAOJ network (KTnet) or not because the machines of the MDAS is on the NAOJ network. If the client terminal is not on the NAOJ network, you must establish VPN connection before access the interactive data analysis servers. We introduce the ways to access the interactive data analysis servers in the situations where the client terminal is on the NAOJ network or not.

From the client terminal on the NAOJ network

We introduce how to access the interactive data analysis servers from the client terminal connecting to the NAOJ network. There are two possible ways to access the interactive data analysis servers. One is the way to access a load balancer, and the other is the way to access a server directly. We recommend to access a load balancer because you can login to a server having a low usage automatically by access the load balancer. However, you cannot choose a server when you access a load balancer, so if you use a local disk of each server, you have to access the server directory.

Table 4.3: Address of the interactive data analysis servers

Server	Host name	Load balancer (recommended to connect)
Middle-range servers	kaim[01-20].ana.nao.ac.jp	kaim.ana.nao.ac.jp
High-end servers	kaih[1-12].ana.nao.ac.jp	kaih.ana.nao.ac.jp

Login to the middle-range interactive data analysis servers You should access the "kaim.ana.nao.ac.jp" which is the load balancer of the middle-range interactive data analysis servers. Please input commands to your terminal as follows. The "your_account" and "your_password" represent your account and password you got.

```
$ ssh [-X] your_account@kaim.ana.nao.ac.jp
your_account@kaim.ana.nao.ac.jp's password:your_password
```

If you use the "/wkm[01-20]" which are the local disk regions of the middle-range interactive data analysis servers, you should access each server directly.

```
$ ssh [-X] your_account@kaim[01-20].ana.nao.ac.jp
your_account@kaim[01-20].ana.nao.ac.jp's password:your_password
```

Login to the high-end interactive data analysis servers You should access the "kaih.ana.nao.ac.jp" which is the load balancer of the high-end interactive data analysis servers. Please input commands to your terminal as follows. The "your_account" and "your_password" represent your account and password you got.

```
$ ssh [-X] your_account@kaih.ana.nao.ac.jp
your_account@kaih.ana.nao.ac.jp's password:your_password
```

If you use the `"/wkh[01-12]"` which are the local disk regions of the high-end interactive data analysis servers, you should access each server directory.

```
$ ssh [-X] your_account@kaih[01-12].ana.nao.ac.jp
your_account@kaim[01-12].ana.nao.ac.jp's password:your_password
```

From the client terminal not on the NAOJ network

If the client terminal is not on the NAOJ network, you must establish the VPN connection in order to connect to the NAOJ network. The ADC offers two VPN services (see [Section 3.2](#)), which are the MDAS VPN service and the NAOJ VPN service. After you establish the VPN connection, you can access the interactive data analysis servers with SSH connection introduced in "From the client terminal on the NAOJ network".

How to use the MDAS VPN service In order to establish the VPN connection of the MDAS VPN service, you have to use AnyConnect, which is a VPN client software. Please download and install the AnyConnect according to the procedure written in the E-main you got after you apply the MDAS VPN service. When you establish the VPN connection, you have to connect to the MDAS VPN servers, The `"kaimvpn.ana.nao.ac.jp"` or `"kaihvpn.ana.nao.ac.jp"` using AnyConnect. Please input your account and password into the window of the AnyConnect. Note that you can login to the middle-range or high-end interactive data analysis servers from both the `"kaimvpn.ana.nao.ac.jp"` and `"kaihvpn.ana.nao.ac.jp"`.

Table 4.4: MDAS VPN server

Server	Host name
VPN server m	kaimvpn.ana.nao.ac.jp
VPN server h	kaihvpn.ana.nao.ac.jp

How to use the NAOJ VPN service Please refer to <https://nethelp.mtk.nao.ac.jp/contents/en/node/4> for details of the NAOJ VPN service.

4.1.3 Disk spaces

The following disk spaces are available on the interactive data analysis servers.

Table 4.5: Disk spaces available in the interactive data analysis servers

Space	Mount point	Size per a mount point	Soft/Hard limit	Retention period
User home directory (NFS)	/home[01-02]	55TB	140GB/150GB	As long as your account in force
Large volume file system (NFS)	/lfs[01-16]	102TB	30TB · 32TB	12 months
Local disk space of the middle-range servers	/wkm[01-20]	12TB	None/None	3 months
Local disk space of the high-end servers	/wkh[01-12]	51TB	14TB/16TB	3 months

- If you use the large volume file system or local disk space, you have to create a directory named your account under the disk space.
- If an amount of the user data reaches the limit, then any software do not run normally.
- If the difference between the current time and change time (ctime) of a file exceed the retention period, then the file would be removed during the scheduled maintenance.

The MDAS implements disk quotas in order to set a limit on the disk usage of each user. The available disk spaces, the soft limit and hard limit of the quotas, are different in each disk space. If an amount of the user data reaches the limit, then any software do not run normally, so you should copy or remove your data before an amount of your data reaches the limit. Moreover, a retention period of the data is fixed according to each disk space. If the difference between the current time and change time (ctime) of a file passes the retention period, then the file would be removed in the scheduled maintenance.

4.1.4 Network access control

You cannot access (i.e. ssh, scp, or rsync) computers on the NAOJ network from the interactive data analysis servers for a security measure. If you would like to download data from the interactive data analysis servers, please execute commands such as "scp" and "rsync" on your computer.

```
$ scp your_account@kai[mh] [01-20].ana.nao.ac.jp ~/your/computer
```

4.2 How to use batch processing data analysis servers

Batch processing data analysis servers consist of 2 middle-range batch processing data analysis servers (kaibm[01-02].ana.nao.ac.jp). The purpose of these servers is to execute batch processes with job management system. In order to execute batch processes, the batch processing data analysis servers are installed PBS Professional (PBS: Portable Batch System), and the "kaibm01.ana.nao.ac.jp" works as a PBS management server and the "kaibm[01-02].ana.nao.ac.jp" work as calculation servers. PBS management server allocates jobs to calculation servers, so that jobs which need many CPU cores or many memory regions are executed with efficiency.

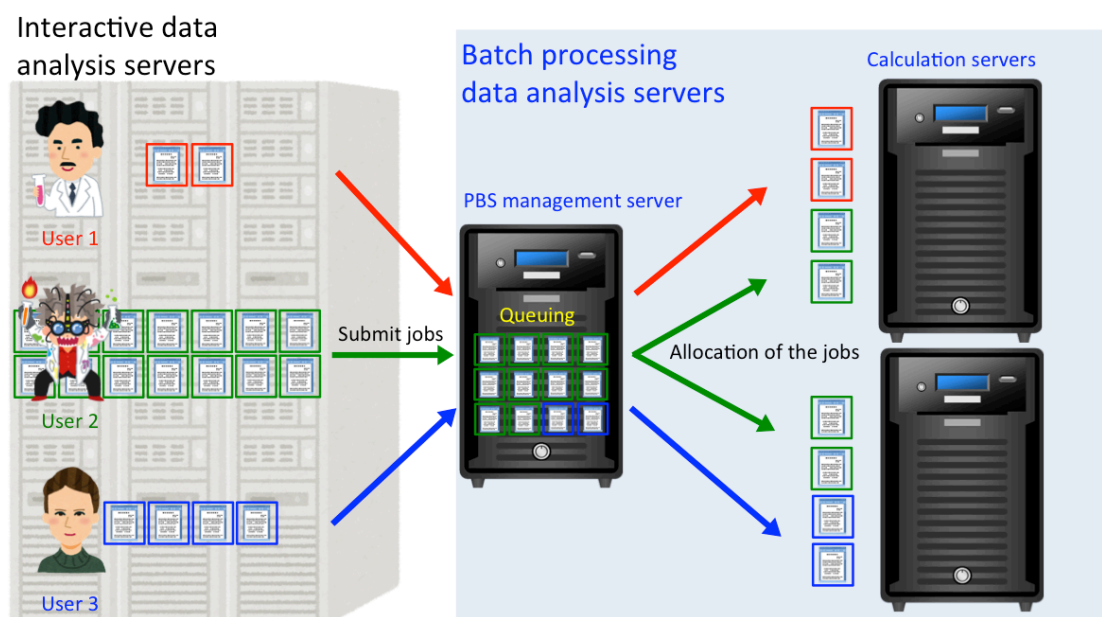


Figure 4.1: An illustrated outline of the batch processing data analysis servers.

4.2.1 System configuration

Batch processing data analysis servers consist of 2 servers (FUJITSU Server PRIMERGY RX2530 M2). Each server is installed the Red Hat Enterprise Linux 7.

Table 4.6: **Specification of the batch processing data analysis server**

Host name	kaibm[01-02].ana.nao.ac.jp
Machine	FUJITSU Server PRIMERGY RX2530 M2
Quantity	2
OS	Red Hat Enterprise Linux 7
CPU	Intel Xeon E5 2667 V4 3.2 GHz 16 core
RAM	DDR4 2400 RDIMM 192GB

4.2.2 Queue configuration

PBS Professional have job queue which control an execution sequence of jobs. When a user submit a job to one of job queues, the PBS management server makes a judgment whether the calculation servers can execute the job or not. If the PBS management server judges that the calculation servers cannot execute the job, then the processing of the job will be a waiting state. The usable computational resource and the execution priority differ by the job queues. Users must select a suitable queue depending on the scale of the user's own jobs because to use an unsuitable queue is a wasteful use of computational resource.

Table 4.7: **Job queue configuration of the middle-range batch processing data analysis servers**

Queue	CPU cores	Usable memory per a job	Time limit for a job	Number of executable jobs per an user
q1	1	11GB	30 days	32 (soft-limit: 2)
q4	4	44GB	30 days	8 (soft-limit: 1)
q8	8	88GB	15 days	4 (soft-limit: 1)
q16	16	176GB	15 days	2 (soft-limit: 1)

- The maximum number of jobs which can be submitted by each user is 1024.
- The job priority is q1 >q4 >q8 >q16.
- Please refer to [Section 4.2.4-7](#) for details of the soft-limit.

4.2.3 Tutorial

In order to use the batch processing data analysis servers, you need to make a shell script called PBS script and submit a job into a job queue using the "qsub" command on the middle-range or high-end interactive data analysis servers. In this section, we introduce the basic steps to submit your jobs.

1. [How to make a PBS script](#)
2. [How to submit and delete a job](#)
3. [How to display job status](#)

1. How to make a PBS script

PBS script is a shell script in which the orders for the PBS Professional and executable programs are described. The following script is an example of the PBS script when we want to execute a program "a.out" on the queue "q1".

```
#!/bin/bash
#PBS -q q1
#PBS -m abe
#PBS -M taro.tenmon@nao.ac.jp
# Go to this job's working director
cd $PBS_O_WORKDIR
# Run your executable
./a.out
```

The "#PBS" lines are the orders for the PBS Professional. In this script, we have made the following orders. Other orders are introduced in [Section 4.2.4](#).

PBS -q q1: A job is submitted to the queue "q1".

PBS -m abe: An E-mail is sent when a job is stopped, when a submitted job begins execution, and when an executed job has completed, respectively.

PBS -M taro.tenmon@nao.ac.jp: An E-mail is sent to taro.tenmon@nao.ac.jp.

The "\$PBS_O_WORKDIR" is an environment variable defined in the PBS Professional. The "\$PBS_O_WORKDIR" expresses the path to the directory where the PBS script is submitted. We can execute several programs using the "&".

2. How to submit and delete a job

We can submit a job to a queue by executing the "qsub" command.

```
$ qsub Your_PBS_Script.sh
```

The submitted job can be deleted by executing the "qdel" command. As we shall see later, the Job_ID can be seen by executing the "qstat" command.

```
$ qdel Job_ID
```

3. How to display job status

We can display status of jobs submitted to queues by executing the "qstat" command.

```
$ qstat
Job id          Name          User          Time Use  S  Queue
-----
9013.a000      job1          user1         50:20:10  R  q1
9019.a000      job2          user2         40:32:13  R  q1
9030.a000      job3          user3         30:14:19  R  q1
9079.a000      job4          user4         00:59:15  R  q1
9102.a000      job5          user5                0  Q  q1
```

Each column represents the job ID, job name, user name, elapsed time, status of a job, and queue name, respectively. The status of a job has following states.

E (Exiting): A job has finished execution and is being terminated.

H (Held): A job is in a suspension state.

Q (Queued): A job is held in a queue in a suspended state.

R (Running): A job is under executing.

S (Suspended): A job is being suspended.

4.2.4 The details of the PBS Professional

This section introduces the details of the PBS Professional installed in the batch processing data analysis servers.

1. [About the PBS Professional](#)
2. [The way to submit and delete a job](#)
3. [Examples of the PBS script](#)
4. [The orders for the PBS Professional](#)
5. [The environment variables of the PBS Professional](#)
6. [The way to display the job status](#)
7. [About a priority control of the jobs](#)
8. [About a Round-robin type control](#)

1. About the PBS Professional

PBS Professional is a distributed workload management system, which performs management and monitoring of calculating processing workload on one or more computers. This application servers the following three main purposes:

Queuing If an user submits a job to a resource management system, these jobs will be in the state of awaiting execution until their execution commences.

Scheduling The process of selecting when and where a job is being submitted to according to the policy defined in advance.

Monitoring Pursuing and reserving a system resource and enforcement of a resource use policy.

2. The way to submit and delete a job

Submit a job We can submit a job to a queue by executing the "qsub" command.

```
$ qsub PBS_script.sh
```

It is possible to pass values to variables in your PBS script by using "-v" option. We show the format and an example below.

```
$ qsub -v var1=val,var2=val,var3=val PBS_script.sh
$ qsub -v x=10,y=20,char=abc my_pbs.sh
```

If you submit a job without a PBS script, you have to specify the orders for the PBS Professional, path to your executable in the full path, and arguments used in your executable on the "qsub" command line. We show the format and an example below.

```
$ qsub orders -- your_executable_with_full_path arg1 arg2
$ qsub -q q1 -m abe -M taro.tenmon@nao.ac.jp -- /lfs01/tenmontr/my_prog.out 3.14 2.71
```

Please refer to the details of the "qsub" command using the following command.

```
$ man qsub
```

Delete a job The submitted job can be deleted by executing the "qdel" command. As we shall see later, the Job_ID can be seen by executing the "qstat" command.

```
$ qdel Job_ID
```

3. Examples of the PBS script

We show several examples of the PBS script.

```
# An example of the PBS script usign single core.
#!/bin/sh
#PBS -r y
#PBS -m abe
#PBS -q q1
#PBS -o Log.out
#PBS -e Log.err
#PBS -N job_name
#PBS -M taro.tenmon@nao.ac.jp
# Go to this job 's working director
cd $PBS_O_WORKDIR
# Run your executable
./a.out
```

```
# An example of the PBS script using multi-cores.
#!/bin/bash
#PBS -r y
#PBS -m abe
#PBS -q q4
#PBS -o Log.out
#PBS -e Log.err
#PBS -N job_name
#PBS -M taro.tenmon@nao.ac.jp
# Go to this job 's working directory
cd $PBS_O_WORKDIR
# Run your executable
./a_0.out &
./a_1.out &
./a_2.out &
./a_3.out
```

4. The orders for the PBS Professional

In the PBS script, many orders for the PBS Professional can be available. The following orders for the PBS Professional are some of the most commonly used.

PBS -q This order specifies a queue where you submit a job. If you do not specify this order, then the PBS Professional assumes that the "PBS -q q1" is specified.

- PBS -q q1: A job is submitted to the queue "q1".
- PBS -q q4: A job is submitted to the queue "q4".
- PBS -q q8: A job is submitted to the queue "q8".
- PBS -q q16: A job is submitted to the queue "q16".

PBS -r This order specifies whether the PBS Professional restart the submitted jobs or not after the system is restored. If you do not specify this order, then the PBS Professional assumes that the "PBS -r y" is specified.

- PBS -r y: If a job is interrupted by a system breakdown, the PBS Professional restart the job after the system is restored.
- PBS -r n: If a job is interrupted by a system breakdown, the job is deleted from the queue.

PBS -m This order specifies whether the PBS Professional send you an E-mail or not. If you do not specifies this order, then the PBS Professional assumes that the "PBS -m a" is specified.

- PBS -m a: E-mail is sent when a job is stopped.

- PBS -m b: E-mail is sent when a submitted job is started.
- PBS -m e: E-mail is sent when an executed job has been completed.
- PBS -m n: E-mail is not sent.

PBS -M This order specifies an E-mail address where the E-mail from the PBS Professional will be send. If you have specified the "PBS -m [abe]", you must specify the "PBS -M Your_E-mail_Address".

- PBS -M taro.tenmon@nao.ac.jp: An E-mail is sent to taro.tenmon@nao.ac.jp.

PBS -N This order specifies a particular name of the job which will be submitted. The particular name is displayed when the "qstat" command is executed. Note that the job-name should be an ASCII alphanumeric-characters sequence of less than 15 characters, and should not be a number but a character. If you do not specify this order, then the name of the PBS script is used as a job name.

- PBS -N job_name: The job is named Job_Name.

PBS -o This order specifies whether the PBS Professional writes the standard output to a file or not.

- PBS -o hoge.out: The PBS Professional writes the standard output to the hoge.out. If you do not specify the file name, then the file name will be the "PBS_Script_Name.oJob_ID".

PBS -e This order specifies whether the PBS Professional writes the standard error to a file or not.

- PBS -e hoge.err: The PBS Professional writes the standard error to the hoge.err. If you do not specify the file name, then the file name will be the "PBS_Script_Name.eJob_ID".

PBS -l This order sets a limit on the calculation resource.

- PBS -l select=1:ncpus=X:mem=Ygb : The "select=1" sets a limit on the calculation resource of each calculation server. The "ncpus=X" specifies the number of CPU cores used in the calculation servers. Note that you do not specify the number of cores which exceed the number of cores allocated in each queue. The "mem=Ygb" specify the usable memory size per a job. Note that you do not specify the memory size which exceed the usable memory allocated in each queue. The unit of the memory size is b, kb, mb and gb.
- PBS -l walltime=hh:mm:ss : The "walltime=hh:mm:ss" sets a limit on the job execution time. Each queue has different time limit (Table 4.7). We recommend that you should allocate a suitable walltime for each job because the PBS Professional predicts the time when the calculation resource is available.

5. The environment variables of the PBS Professional

In the PBS script, we can use the PBS environment variables defined in the PBS Professional. The following variables are the typical PBS environment variables.

PBS_O_WORKDIR: The path to a current directory in which the PBS script will be submitted.
 PBS_JOBNAME: The job name of the job which will be submitted.
 PBS_JOBID: The job ID of the job which will be submitted.
 PBS_O_HOME: The home directory of the user who will submit the job.
 PBS_O_QUEUE: The name of the queue to which the job will be submitted.

6. The way to display the job status

The "qstat" command displays a status of jobs which are submitted to queues. The "qstat" command includes a lot of options. The following examples are the typical options of the "qstat" command.

qstat The "qstat" command without options displays the following output.

```
$ qstat
Job id      Name      User      Time Use  S  Queue
-----
9013.a000   job1     user1     50:20:10  R  q1
9019.a000   job2     user2     40:32:13  R  q1
9030.a000   job3     user3     30:14:19  R  q1
9079.a000   job4     user4     00:59:15  R  q1
9102.a000   job5     user5           0  Q  q1
```

The status of jobs is expressed in the column of the "S".

- E (Exiting): An execution of the job has been finished.
- H (Held): The job is in a suspension state.
- Q (Queued): The job is held in a queue in a suspended state.
- R (Running): The job is under execution.
- S (Suspended): The job is being suspended.

qstat -Q The "qstat -Q" command displays the information of the queues available in the batch processing data analysis servers.

```
$ qstat -Q
Queue      Max  Tot Ena Str  Que  Run  Hld  Wat  Trn  Ext Type
-----
q1          0    0 yes yes   0    0    0    0    0    0 Exec
q4          0    0 yes yes   0    0    0    0    0    0 Exec
q8          0    0 yes yes   0    0    0    0    0    0 Exec
q16         0    0 yes yes   0    0    0    0    0    0 Exec
```

qstat -q The "qstat -q" command displays the information of the queues in a different format.

```
$ qstat -q
Queue      Memory CPU Time Walltime Node  Run  Que  Lm  State
-----
q1         11gb  --   720:00:0  --    0    0  --  E R
q4         44gb  --   720:00:0  --    0    0  --  E R
q8         88gb  --   360:00:0  --    0    0  --  E R
q16        176gb --   360:00:0  --    0    0  --  E R
-----
                                0    0
```

qstat -u The "qstat -u" displays only your job.

```
$ qstat -u your_account
```

qstat -r The "qstat -r" displays only the executing jobs.

```
$ qstat -r
```

man qstat Please refer to the details of the "qstat" command using the following command.

```
$ man qstat
```

7. About a priority control of the jobs

If an user submit several jobs which exceed the number of maximum executable jobs defined in the queue, then the priority of the user's own jobs is decreased. This priority control is a soft-limit of the PBS Professional. The following settings are an example for explaining the priority control.

```
set queue q1 max_run = [u:PBS_GENERIC=8]
set queue q1 max_run_soft = [u:PBS_GENERIC=4]
```

If other users submit jobs of not more than 8 pieces when low priority jobs are under execution, then the low priority jobs will be set in a suspend state and it will be kept waiting until the other user's jobs are finished. The suspended jobs are displayed as "S" in the result of the "qstat" command.

Job id	Name	User	Time Use	S	Queue
9013.a000	myjob	someuser	01:02:10	S	q1

Examples of the priority control We show an example of the priority control in the situation where several users submit jobs to the queue "q1". Note that we assumed that 8 CPU cores are available in the "q1", the number of maximum executable jobs is 8 jobs, and the soft-limit is 4 jobs.

1. If user "A" submit 11 jobs and no other user have submitted jobs, then 8 jobs will be executed.

```
Running   : A A A A A' A' A' A'   The jobs between 5th and 8th from the left (A') are in the low priority.
Queued    : A" A" A"              The 9th and the subsequent jobs (A") are held in the queue.
```

2. If user "B" submit 4 jobs, then the low priority jobs (A') will be suspended.

```
Running   : A A A A B B B B   The jobs B instead of jobs A' are executed.
Queued    : A" A" A"
Suspended : A' A' A' A'       The jobs A' are suspended.
```

3. When the jobs B are terminated, then the jobs A' will be re-executed.

```
Running   : A A A A A' A' A' A'   The jobs A' are re-executed.
Queued    : A" A" A"
```

- The priority control of the jobs is performed by the soft-limit of the PBS Professional. If the number of users is less than the calculation servers, a counter-intuitive control might be performed.
- If the system is stopped when the suspended jobs exist like the state 2, after a reboot, the jobs previously executed might be suspended and the jobs previously suspended might be executed.

8. About a Round-robin type control

If jobs are submitted when no jobs have been submitted, the jobs will be allocated as below. This is a Round-robin type control for sharing the load among the calculation servers.

```
kaibm01 => kaibm02 => kaibm01 => kaibm02 => ...
```

4.3 How to use terminal workstations

Terminal workstations consist of 13 workstations located in the open-use room of the Subaru building (sbt[01-13].ana.nao.ac.jp) and 9 workstations located in the room 101 of the ALMA building (alt[01-09].ana.nao.ac.jp). The purpose of these workstations is to reduce and analyze astronomy data and to access the interactive data analysis servers. Remote login to the terminal workstations is not allowed, so please come to the open-use room of the Subaru building or the room 101 of the ALMA building if you would like to use the terminal workstations.

4.3.1 System configuration

Terminal workstations consist of 22 workstations (HP Z840 Workstation). 13 workstations are located in the open-use room of the Subaru building and 9 workstations are located in the room 101 of the ALMA building in the Mitaka campus. Each workstation is installed the Red Hat Enterprise Linux 7.

Table 4.8: **Specification of the terminal workstation located in the open-use room of the Subaru building**

Host name	sbt[01-13].ana.nao.ac.jp
Machine	HP Z840 Workstation
Quantity	13
OS	Red Hat Enterprise Linux 7
CPU	Intel Xeon E5 2637 V4 3.4 GHz 4 core
RAM	DDR4 2400 RDIMM 64GB
HDD of the local disk region	1 TB 3.5 inch SATA 7200 rpm
Size of the local disk region	500 GB

Table 4.9: **Specification of the terminal workstation located in the room 101 of the ALMA building**

Host name	alt[01-09].ana.nao.ac.jp
Machine	HP Z840 Workstation
Quantity	9
OS	Red Hat Enterprise Linux 7
CPU	Intel Xeon E5 2637 V4 3.4 GHz 4 core
RAM	DDR4 2400 RDIMM 64GB
HDD of the local disk region	1 TB 3.5 inch SATA 7200 rpm
Size of the local disk region	500 GB

- The "sbt13" in the open-use room of the Subaru building is connected to the 10GBase-T network switch of the MDAS, so high speed data communication is available on the "sbt13". Please use the "sbt13" when you upload or download a lot of data.

4.3.2 How to login

You need an account and a password of the MDAS when you use the terminal workstations. The login steps are as follows.

1. Input your account name into the username field.
2. After that, input your password into the password field.

4.3.3 Disk spaces

The following disk spaces are available on the terminal workstations.

Table 4.10: **Disk spaces available on the terminal workstations**

Space	Mount point	Size per a mount point	Soft/Hard limit	Retention period
User home directory (NFS)	/home[01-02]	55TB	140GB/150GB	As long as your account in force
Large volume file system (NFS)	/lfs[01-16]	102TB	30TB/32TB	12 months
Local disk space of the terminal workstations	/work	500GB	None/None	1 week

- If you use the large volume file system or local disk space, you have to create a directory named your account under the disk space.
- If an amount of the user data reaches the limit, then any software do not run normally.
- If the difference between the current time and change time (ctime) of a file exceed the retention period, then the file would be removed during the scheduled maintenance.

The MDAS implements disk quotas in order to set a limit on the disk usage of each user. The available disk spaces, the soft limit and hard limit of the quotas, are different in each disk space. If an amount of the user data reaches the limit, then any software do not run normally, so you should copy or remove your data before an amount of your data reaches the limit. Moreover, a retention period of the data is fixed according to each disk space. If the difference between the current time and change time (ctime) of a file passes the retention period, then the file would be removed in the scheduled maintenance.

4.3.4 Network access control

You cannot access the terminal workstations remotely and you cannot access (i.e. ssh, scp, or rsync) computers on the NAOJ network from the terminal workstations for a security measure. If you would like to copy or move data from the terminal workstations to your computer, please use your own USB memory or USB HDD.

4.4 How to use remote login terminal computers

Remote login terminal computers consist of 13 computers (new-r[01-13].adc.nao.ac.jp) located in the open-use room A of the South building. The purpose of these computers is to reduce and analyze astronomy data and to access the interactive data analysis servers. Remote login to the remote login terminal computers is not allowed, so please come to the open-use room A of the South building if you would like to use the computers.

4.4.1 System configuration

Remote login terminal computers consist of 13 workstations (HP Z420 Workstation). These workstations are located in the open-use room A of the South building in the Mitaka campus. Each workstation is installed CentOS Release 6.

Table 4.11: **Specification of the remote login terminal computer**

Host name	new-r[01-13].adc.nao.ac.jp
Machine	HP Z420 Workstation

Quantity	13
OS	CentOS Release 6 64bit
CPU	Intel Xeon E5 1620 V2 3.7 GHz 4 core
RAM	16GB

4.4.2 How to login

Only guest account is available when you login to the remote login terminal computers. In order to login, please input the guest account "guest?" and password displayed on the window. We show how to login to the "new-r01" below.

```
CentOS release 6.9 (Final)
Kernel X.X.XX-XXX.XX.X.el6.x86_64 on an x86_64
User-ID=guest01
PASSWD=hoge (This is "one-day password", generated on 20XX-XX-XX 00:01:01)

!!! NOTE !!!
  This PASSWD changes at midnight everyday.
  So if the generated time of the PASSWD is not today,
  please push "Enter" key to refresh this screen.

new-r01 login: guest01
Password: hoge
```

After login, Graphical User Interface (GUI) is available by inputting the "startx" command.

```
$ startx
```

4.4.3 Disk spaces

The following disk spaces are available on the remote login terminal computers.

Table 4.12: **Disk space available on the remote login terminal computers**

Space	Mount point	Size per a mount point	Soft/Hard limit	Retention period
Local disk space	/home	193GB	40GB/50GB	until scheduled maintenance

4.4.4 Matters that require attention

- You cannot access the remote login terminal computers remotely and you cannot access (i.e. ssh, scp, or rsync) computers in the NAOJ network from the computers for a security measure.
- It is prohibited to use more than one terminal computer by one user at the same time.
- We prohibit to use more than one computer by one user simultaneously.
- In the GUI mode, the computer lock the screen automatically after a given period of time. You can unlock the screen-lock by entering the password to the screen. The password can be found in a console window, and Ctrl+Alt+F2 keys switch the window from the locked window to a console window. After getting the password, you can return to the locked window by typing Ctrl+Alt+F7 keys.

Chapter 5

Software configuration

5.1 Software configuration of the interactive/batch processing data analysis servers and terminal workstations

Table 5.1: Operating system

Operating system	Host
Red Hat Enterprise Linux 7	kaim[01-20], kaih[01-12], kaibm[01-02], sbt[01-13], alt[01-09]

Table 5.2: Development environment

Software	Version	Remarks
kterm	6.2.0	
mlterm	3.8.4	
rxvt	2.7.10	
xterm	7.6.0	
GNU awk	4.0.2	
GNU make	3.82	
GNU patch	2.7.1	
GNU sed	4.2.2	
GNU tar	1.26	
bzip2	1.0.6	
gzip	1.5	
less	458	
lz4	1.7.3	

Table 5.3: Web browser

Software	Version	Remarks
Firefox	latest version	
Google Chrome	latest version	

Table 5.4: Word processing and Japanese input system

Software	Version	Remarks
GNU Emacs	22.3, 24.3	
XEmacs	21.5.34	
nvi	1.79	
vim	7.4	
LaTeX	3.14159265	
pLaTeX	3.14159265	
TeX Live	2017	
BibTeX	0.99d	
pandoc	–	
pdvips	5.997	
a2ps	4.14	
ghostview	3.7.4	
ghostscript	9.07	
Anthy	9100h	
Canna	3.7	
FreeWnn	1.1.1-a023	
nkf	2.1.3	
skk	16.1	

Table 5.5: Video and image processing software

Software	Version	Remarks
Evince	3.14.2	
tgif	4.2.2	
xfig	3.2.5	
gimp	2.8.16	
ImageMagick	6.7.8.9	
netpbm	10.61.02	
mpeg_play	2.4	
mpeg_encode	1.5c	

Table 5.6: Programming language

Software	Version	Remarks
cpanm	1.6922	
GCC	3.4.6, 4.8.5	g77 is in GCC 3.4.6
GDB	7.6.1	
Java SE Development Kit	1.8.0	
Intel Parallel Studio Composer Edition	2019 Update 3	
PDL	2.019	
Perl	5.16.3	
PHP	5.4.16	
Python	2.7.14, 3.5.4	
Python modules		

astropy	2.0.3	
Cosmolopy	0.1.104	Only available on Python 2.7
dustmaps	0.1a12	
Healpy	1.11.0	
ipython	5.5.0, 6.2.1	Python2: 5.5.0, Python3: 6.2.1
Jupyter Notebook	1.0.0	available with Python3
matplotlib	2.1.1	
Numpy	1.13.3	
pandas	0.21.1	
Pmw	2.0.1	
pyfits	3.5	
Pygments	2.2.0	
pymultinest	2.6	
PyRaf	2.1.14	
pyregion	2.0	
PySpecKit	0.1.21	
Requests	2.18.4	
rpy2	2.8.6, 2.9.1	Python2: 2.8.6, Python3: 2.9.1
Scipy	1.0.0	
seaborn	0.9.0	
urwid	2.0.1	
R	3.4.3	
Ruby	2.0.0p648	
Tcl/Tk	8.5.13	
Bash	4.1.46	
Tcsh	6.18.01	

Table 5.7: Astronomy and science software

Software	Version	Remarks
AIPS	31-Dec-17	
Astrometry.net	0.73	
CASA	4.7.0-1, 4.7.1, 4.7.2, 5.0.0, 5.1.0, 5.1.1, 5.1.2, 5.3.0, 5.4.0, 5.4.1	
CASA Analysis Utilities	1.3845	
CDSclient	3.84	
COMICS q_series	4.2	Software for SUBARU
diffmap	2.5a	
ds9	8.0.1	
FITSIO/CFITSIO	3.42	
fv	5.4	
GILDAS	dec17a	
gnuplot	5.2.2	
gsl	1.15	
HEAsoft	6.22.1	
HyperZ	1.1	
IDL	8.7.2	

IDL Astronomy User's Library	21-Nov-2017	
IRAF	2.14.1, 2.16.1	
Java NewStar	20171120	Software for Nobeyama 45m radio telescope
Mathematica	11.3.0	
MCSMDP	1.1.3	Software for SUBARU
MCSRED	20161125	Software for SUBARU, Please refer to Section 5.3 .
MCSRED2	20171125	Software for SUBARU Only available on IRAF 2.16.1
MIDAS	17FEBpl1.2	
MIRIAD	4.3.8	
Montage	5.0	
MSCRED	5.05	Only available on IRAF 2.16.1
MultiNest	3.1	
NewStar	20150422	Software for Nobeyama 45m radio telescope
NOSTAR	20120528	Software for Nobeyama 45m radio telescope
PBS Professional	18.2.3	Software for batch system
Pgperl	2.21	
Pgplot/Cpgplot	5.2.2	
Scamp	2.0.4	
SDFRED	1.4.1, 2.0.1	Software for SUBARU
SExtractor	2.19.5	
SkyCat	3.1.3	
starfinder	1.8.2	
STSDAS	3.17	
SWarp	2.38.0	
TABLES	3.17	
VEDA	–	Software for VERA
WCSTools	3.9.4	
XPA	2.1.17	
x11iraf	2.0beta	

5.2 Software configuration of the remote login terminal computers

Table 5.8: List of the software in the remote login terminal computers

Open-use room A at 2F South building		
Software	Version	installation directory
apr	1.5.0	/usr/local/lib64
apr-util	1.5.3	/usr/local/lib64
Astro-IRAF-CL	0.2.0	/usr/local/share/perl5/Astro /usr/local/lib64/perl5/auto/Astro
CFITSIO	3.360	/usr/local/lib64
ds9	7.1 7.3.2	/usr/local/bin/ds9 (default path) /usr/local/bin/ds9-7.3.2
Expect	1.21	/usr/local/lib64/perl5/auto/Expect /usr/local/share/perl5
GNU compiler		Fortran, C, C++ are available
httpd	apache 2.4.9	/usr/local/apache2/bin/httpd

imake	1.0.2-11.el6	/usr/bin/imake
IO-Stty	0.03	/usr/local/share/perl5/IO
IO-Tty	1.10	/usr/local/lib64/perl5/IO/Tty /usr/local/lib64/perl5/auto/IO/Tty
IRAF	2.16.1	/usr/local/iraf2161
libiconv	1.14	/usr/local/lib64
Montage	3.3	/usr/local/Montage_v3.3
pcre-devel	7.8.6	/usr/lib64
PostgreSQL	8.4.20	/usr/bin/psql
Python(*2)	2.7 2.6	/usr/local/bin/python (default path) /usr/bin/python
Python 2.7 modules		
APLpy	0.9.11	/usr/local/lib/python2.7/site-packages/APLpy-0.9.11-py2.7.egg/aplpy
astropy	1.1.1	/usr/local/lib/python2.7/site-packages/astropy-0.3.1-py2.7-linux-x86_64.egg/astropy
easy_install	20.0	/usr/local/bin/easy_install
ipython	4.1.1	/usr/local/lib/python2.7/site-packages/IPython
matplotlib	1.5.1	/usr/local/lib/python2.7/site-packages/matplotlib-1.3.1-py2.7-linux-x86_64.egg/matplotlib
nose	1.3.7	/usr/local/lib/python2.7/site-packages/nose-1.3.1-py2.7.egg/nose
numdisplay	1.5.6	/usr/local/lib/python2.7/site-packages/numdisplay
Numpy	1.10.4	/usr/local/lib/python2.7/site-packages/numpy
PIL	1.1.7	/usr/local/lib/python2.7/site-packages/PIL
pip	8.0.2	/usr/local/lib/python2.7/site-packages/pip
Pmw	1.3.3	/usr/local/lib/python2.7/site-packages/Pmw/Pmw_1.3.3
pyds9	1.7	/software/unpack/pyds9-1.7
pyfits	3.4	/usr/local/lib/python2.7/site-packages/pyfits-3.4-py2.7.egg-info
Pyflakes	0.7.3	/usr/local/lib/python2.7/site-packages/pyflakes-0.7.3-py2.7.egg/pyflakes
PyRAF	2.1.10	/usr/local/bin/pyraf /usr/local/lib/python2.7/site-packages/pyraf-2.1.10-py2.7.egg-info
pywcs	1.12	/usr/local/lib/python2.7/site-packages/pywcs-1.12-py2.7-linux-x86_64.egg/pywcs
rpy2	2.3.9	/usr/local/lib/python2.7/site-packages/rpy2
urwid	1.2.0	/usr/local/lib/python2.7/site-packages/urwid-1.2.0-py2.7-linux-x86_64.egg/urwid
R	3.0.3	/usr/local/bin/R
SExtractor	2.19.5	/usr/local/bin/sex
STSDAS	3.16	/usr/local/iraf2161/iraf/extern/stsdas
SWIG	3.0.0	/usr/local/bin/swig
TABLES	3.16	/usr/local/iraf2161/iraf/extern/tables
tcl, tcl-devel	8.5.7-6	/usr/lib64/tcl8.5
tix, tix-devel	8.4.3-5	/usr/lib64/tcl8.5/Tix8.4.3
tk, tk-devel	8.5.7-5	/usr/lib64/tk8.5
WCStools	3.8.7	/usr/local/wcstools-3.8.7
X11iraf	2.0beta	/usr/local/bin
XPA	2.1.14	/usr/local/bin

5.3 How to use software

We introduce software which is required notice on the MDAS.

1. [AIPS](#)
2. [CASA](#)
3. [CASA Analysis Utilities](#)
4. [GILDAS](#)
5. [IDL](#)
6. [IRAF](#)
7. [Jupyter Notebook](#)
8. [MCSRED](#)
9. [Miriad](#)
10. [NEWSTAR](#)
11. [pLaTeX](#)
12. [SDFRED](#)
13. [xdvi](#)

1. AIPS

Use application If you use AIPS, please inform us (consult(at-mark)ana.nao.ac.jp) your MDAS account. With AIPS on the MDAS, you become able to analyze data analyzed by Server_A on Server_B by putting AIPS temporary files into your home directory. For this purpose, we have to write the pass to your home directory into AIPS setting files, so we want to know whether you use AIPS or not. If you do not inform us, you can only use AIPS ID 2-9, but ID 2-9 are the target of the scheduled deletion.

How to start AIPS Please input commands below.

```
$ source /usr/local/aips/LOGIN.SH
$ aips tv=local:0
```

2. CASA

How to start CASA The default path of CASA is a latest version. If you want to use old versions, please execute following lines.

```
[4.7.0-1] /usr/local/casa/casa-release-4.7.0-1-el7
[4.7.1] /usr/local/casa/casa-release-4.7.1-el7
[4.7.2] /usr/local/casa/casa-release-4.7.2-el7
[5.0.0] /usr/local/casa/casa-release-5.0.0-218.el7
[5.1.0] /usr/local/casa/casa-release-5.1.0-74.el7
[5.1.1] /usr/local/casa/casa-release-5.1.1-5.el7
[5.1.2] /usr/local/casa/casa-release-5.1.2-4.el7
[5.3.0] /usr/local/casa/casa-release-5.3.0-143.el7
[5.4.0] /usr/local/casa/casa-release-5.4.0-70.el7
```

3. CASA Analysis Utilities

How to use CASA Analysis Utilities are installed into following path: "/usr/local/src/casa/analysis_scripts/". Edit your casapy initializing file "~/.casa/init.py" or create new file if it does not exist, and add the following.

```
import sys
aupath = '/usr/local/src/casa/analysis_scripts'
if aupath not in sys.path:
    sys.path.append(aupath)
import analysisUtils as aU
```

checked functions Operation of function on the following web site was confirmed.

Analysis Utilities in CASA Guide (https://casaguides.nrao.edu/index.php/Analysis_Utilities)

Note following points:

- Functions of plotbandpass and plotweather are not confirmed because these functions are included in CASA. Use the CASA tasks of the same name.
- The following function was found not to work properly in some cases.
 - obslist: It does not work properly when antenna ID is set for parameter cofa.
 - plotWVRSolutions: Error when field is set by ID or name.
 - timeOnSource: Probably return incorrect results for mosaic observation data.

About Antenna Pad Information Because antenna pad information is not installed, functions that require it can not work properly.

When you install into your home directory You can install CASA Analysis Utilities also into your home directory. In that case, deploy the tools referring to the following site and change the path described in the init.py to the appropriate one.

Analysis Utilities in CASA Guide (https://casaguides.nrao.edu/index.php/Analysis_Utilities)

4. GILDAS

How to start GILDAS You need to input the following command before starting the GILDAS.

```
$ gilenv
```

After executing the command, you should be able to start the GILDAS only on the terminal.

5. IDL

Can't start IDL (1) After you kill IDL, you may have a trouble to restart IDL. The IDL configuration files may be damaged due to the forced termination. You may solve the problem with following operation, but the operation can damage the configuration files.

```
Rename "~/IDLWorkspace8?"
Rename "~/.idl"
```

Can't start IDL (2) If you change shells after you login to the MDAS, you do not start IDL because IDL does not read configuration files. Please use a following command if you want to change shells.

```
$ modify_userinfo -s [Shells]
```

6. IRAF

How to start IRAF 2.14 The default path is IRAF 2.16. If you want to use IRAF 2.14, please append following lines into your configuration files.

```
[sh, bash]
Append following script to both "~/.bashrc" and "~/.bash_profile".
if [ -r /usr/local/iraf2141/iraf/unix/hlib/setup.sh ]; then
export IRAFARCH=redhat
export iraf=/usr/local/iraf2141/iraf/
. $iraf/unix/hlib/setup.sh
fi

[csh, tcsh]
Append following script to "~/.cshrc".
if ( -r /usr/local/iraf2161/iraf/unix/hlib/setup.csh ) then
  setenv IRAFARCH redhat
  setenv iraf /usr/local/iraf2141/iraf/
  source $iraf/unix/hlib/setup.csh
endif
```

7. Jupyter Notebook

If you wish to execute jupyter notebook with "--no-browser" option on the MDAS interactive server, and use the notebook on a web browser on your local computer inside the network of NAOJ, we strongly recommend the use of SSH port forwarding, because the communication between your computer and the interactive server is not encrypted.

(If you use the VPN software and VPN servers of the MDAS, the software encrypts the communication between your computer and the VPN server of the MDAS, so that the use of SSH port forwarding is not required)

How to use SSH port forwarding for Jupyter Notebook

1. Execute jupyter notebook on the MDAS interactive server with "--no-browser" option.

```
$ jupyter notebook --no-browser

--> URL to access the notebook is displayed.
e.g.: http://localhost:8888/?token=...
```

2. Execute SSH on your local computer (In case that the port number in URL is 8888).

```
$ ssh -L 8888:localhost:8888 your_account@server_name(executing jupyter)

Note: If the port number in URL differs from 8888,
      match the number in SSH option to the port number.
```

3. Execute web browser on your computer, input the URL in address bar, and access the URL.

8. MCSRED

How to start the MCSRED When you load mcsred on the IRAF, then the MCSRED2 will be started in default setting. If you would like to start the MCSRED, you need to modify the following files.


```
<login.cl>
task $mcsred=/usr/local/subaru/MCSRED/mcsred.cl
set dir_mcsred="/usr/local/subaru/MCSRED/"
```

```
<sh/csh setting files>
[sh, bash]
Please add a following line into ~/.bashrc and ~/.bash_profile.
export MCSRED_DIR=/usr/local/subaru/MCSRED

[csh, tcsh]
Please add a following line into ~/.cshrc.
setenv MCSRED_DIR /usr/local/subaru/MCSRED
```

9. Miriad

How to use Miriad You need to call any of the following aliases before starting the Miriad.

```
[e.g. sh, bash]
alias mirenv="source /usr/local/miriad/miriad_start.sh" (for CARMA)
alias mirenv-sma="source /usr/local/miriad/miriad-sma/lib/miriad/automiriad.sh"
(for SMA)
alias mirenv-ata="source /usr/local/miriad/miriad-ata/lib/miriad/automiriad.sh"
(for ATA)
alias mirenv-bima="source /usr/local/miriad/miriad-bima/lib/miriad/automiriad.sh"
(for BIMA)
alias mirenv-gmrt="source /usr/local/miriad/miriad-gmrt/lib/miriad/automiriad.sh"
(for GMRT)
alias mirenv-wsrt="source /usr/local/miriad/miriad-wsrt/lib/miriad/automiriad.sh"
(for WSRT)
alias mirenv-atnf="source /usr/local/miriad/miriad-atnf/miriad/MIRRC.sh" (for ATNF)
alias mirenv-atnf2="source /usr/local/miriad/miriad-atnf2/lib/miriad/automiriad.sh"
(for ATNF, old version)
alias mirenv-fasr="source /usr/local/miriad/miriad-fasr/miriad_start.sh" (for FASR)
alias mirenv-lofar="source /usr/local/miriad/miriad-lofar/miriad_start.sh" (for LOFAR)
```

```
[e.g. Starging Miriad for SMA]
$ mirenv-sma
$ miriad
```

- If you call an unsuitable alias, the Miriad would output incorrect results.
- We have prepared two ATNF aliases because a part of tasks did not work in the old version. If you would like to use old version, please call the "mirenv-atnf2".

10. NEWSTAR

Can't start NEWSTAR If empty temporary files such as "nsmmmlock", "mmm*", "pops*", "AIPS*", and "ttt*" exist in your home directory, then you can't open a login window or "AIPS can't start" would be displayed after you push a "ok" in the login window. You can start NEWSTAR normally after remove the temporary files.

11. pLaTeX

Compilation error If you cannot compile LaTeX files with EUC-JP encoding, please use `-kanji` option because default character set of the pLaTeX on the MDAS is UTF-8.

```
$ platex -kanji=euc hoge.tex
```

12. SDFRED

How to start SDFRED The default path of SDFRED is a latest version. If you want to use SDFRED 1.4.1, please append following lines into your configuration files.

```
[sh, bash]
```

- 1) Append following lines to both "`~/.bashrc`" and "`~/.bash_profile`".
 `PATH=/usr/local/subaru/sdfred20100528/bin:$PATH export PATH`
 `export PATH`
- 2) Execute "`source ~/.bashrc`"

```
[csh, tcsh]
```

- 1) Append a following line to "`~/.cshrcf`"
 `set path=(/usr/local/subaru/sdfred20100528/bin $path)`
- 2) Execute "`source ~/.cshrc`".
- 3) Execute "`rehash`".

13. xdvi

Text garbling Files compiled with EUC-JP encoding would be garbled on xdvi. Please use `-kanji` option if you compile files with EUC-JP encoding.

```
$ platex -kanji=euc hoge.tex
```

Chapter 6

Unique commands of the MDAS

6.1 How to use unique commands

The MDAS provides the following unique commands.

Table 6.1: List of unique commands

Name	Outline
lpall	Print files on a printer
userinfo	Display user information
hline modify_userinfo	Change user information
nfsdf	Display an usage list of the <code>"/lfs[01-16]"</code> .

6.1.1 lpall

Using lpall command, you can print PS/PDF/TEXT files on single or both side of a paper simply.

```
Usage
$ lpall -d [printer_name] {-L,-K} [file_name]
Option
-d: specify printer
-L: double sided printing, binding long edge
-K: double sided printing, binding short edge
Example
$ lpall -d nwp-m1 test.ps
# single sided printing of test.ps on nwp-m1
$ lpall -d nwp-m1 -L test.pdf
# double-sided printing (binding long edge) of test.pdf on nwp-m1
```

6.1.2 userinfo

Using userinfo command, you can see your login shell, E-mail address, or name (GECOS). In order to userinfo command, you have to enter your password₃₁

```
Usage
  $ userinfo
Example
  $ userinfo
  Enter LDAP Password:
  loginshell: /bin/bash
  mail: your_account@nao.ac.jp
  gecos: Your Name
```

6.1.3 modify_userinfo

Using modify_userinfo command, you can change your login shell, E-mail address, or name (GECOS).

```
Usage
  $ modify_userinfo [-hpmsv] [arguments]
Option
  -h Display help message and exit
  -p Change password
  -m Change E-mail address
  -s Change login shell. The following shells are available;
    /bin/bash (/usr/local/bin/bash)
    /bin/tcsh (/usr/local/bin/tcsh)
    /bin/csh
    /bin/ksh
    /bin/sh
    /bin/zsh (/usr/local/bin/zsh)
  -v Display version information and exit
```

6.1.4 nfsdf

Using nfsdf command, you can show an usage list of the "/lfs[01-16]".

```
Usage
  $ nfsdf
```

Chapter 7

How to use peripherals

This section introduces printers connected to the MDAS and peripherals available on the terminal workstation "sbt13" located in the Subaru open-use room.

7.1 Network printer

7.1.1 Available printers

Network printers are located at the open-use rooms of the South building and Subaru building, and the room 101 of the ALMA building. You can print out data with A3 or A4 paper from the interactive data analysis servers and terminal workstations.

Table 7.1: Network printer

Host name	IP address	Place
nwp-m1.ana.nao.ac.jp	133.40.130.137	Open-use room A of the South building
nwp-m2.ana.nao.ac.jp	133.40.130.138	Open-use room B of the South building
nwp-sb.ana.nao.ac.jp	133.40.130.139	Open-use room of the Subaru building
nwp-al.ana.nao.ac.jp	133.40.130.140	Room 101 of the ALMA building

7.1.2 How to use network printers from the interactive data analysis servers and terminal workstations

We can send data from the interactive data analysis servers and terminal workstations to the network printers located in the open-use room of the South building, open-use room of the Subaru building, and room 101 of the ALMA building (Table 7.1). Each computer is set the following printer by default.

Table 7.2: The default network printer of the interactive data analysis servers and terminal workstations

Host name of the computer	Host name of the printer	Place
kaim[01-20].ana.nao.ac.jp	nwp-sb.ana.nao.ac.jp	Open-use room of the Subaru building
sbt[01-13].ana.nao.ac.jp	nwp-sb.ana.nao.ac.jp	Open-use room of the Subaru building
kaih[01-12].ana.nao.ac.jp	nwp-al.ana.nao.ac.jp	Room 101 of the ALMA building
alt[01-09].ana.nao.ac.jp	nwp-al.ana.nao.ac.jp	Room 101 of the ALMA building

In order to send data to a printer, we have to use "lpall" command. The "lpall" command is a unique command of the MDAS, which provides to print PS/PDF/TEXT files on single or both side of a paper.

The format of the "lpall" command

```

Format
  $ lpall -d [printer_name] {-L,-K} [file_name]
Option
  -d: specify printer
  -L: double sided printing, binding long edge
  -K: double sided printing, binding short edge

```

- This command identifies the type of input file not by extension of file-name but by content of the file.
- Execution without "-d" option will use the default printer as set up on the execution hos

Example of the "lpall" command

```

$ lpall -d nwp-m1 test.ps (single sided printing of test.ps on nwp-m1)
$ lpall -d nwp-m1 -L test.pdf (double-sided printing of test.pdf on nwp-m1)

```

7.2 External storage devices

Terminal workstations in the MDAS provide external storage devices for input/output and bringing/take out of large observation data. We describe the devices name and the usage of the devices connected to the terminal workstations.

7.2.1 Available external storage devices

A part of the terminal workstations has an external LTO tape drive and Blu-ray disk (BD) drive. Additionally, each terminal workstation have an internal BD drive.

Table 7.3: A list of the external storage devices

Type	Model	Place	Host	Device
External LTO tape drive	LT70 USB	Open-use room of the Subaru building	sbt13	/dev/st0
External BD drive	UBD-4070HQ	Open-use room of the Subaru building	sbt13	/dev/st1
Internal BD drive	BU40N	Open-use room of the Subaru building, Room 101 of the ALMA building	sbt[01-13], alt[01-09]	/dev/sr0

Each drive supports the following medias.

Table 7.4: A list of the supported medias

Type	Media
External LTO tape drive	Ultrium5 (Read Only), Ultrium6, Ultrium7
External BD drive	BD-R, BD-R DL, BD-R XL, BD-RE, BD-RE DL, BD-RE XL, DVD-ROM, DVD-R, DVD-R DL, DCD-RW, CD-ROM, CD-R, CD-RW
Internal BD drive	BD-ROM, BD-R, BD-R DL, BD-R XL, BD-RE, BD-RE DL, BD-RE XL, DVD-ROM, DVD+/-RW, DVD+/-R DL, DVD+/-R, CD-ROM, CD-R

- BD drives support to write to writable medias.
- BD drives may not be able to read and write a DVD-RAM media.
- BD drives have needed time to write to a DVD+R media in our writing test (more than 4 times the DVD-R media, more than 8 times the BD-R media).
- External BD drives have been able to write to BD-R XL and BD-RE XL medias in our writing test without a manufacturer's guarantee.
- Internal BD drives can write to BD medias, but we do not recommend it. If you write your data into BD medias, please use the external BD drive connected to the "sbt13".

7.2.2 How to use external storage devices

1. How to write to CD/DVD/BD medias using the GUI software

The internal BD drive built in the terminal workstations can write to CD/DVD medias and the external BD drive connected to the "sbt13" can write to BD medias by using the GUI software. Please refer to the following PDF files for details.

- CD/DVD : <https://www.adc.nao.ac.jp/MDAS/ug/image/DVD-GUI-E.pdf>
- BD : <https://www.adc.nao.ac.jp/MDAS/ug/image/BD-GUI-E.pdf>

2. How to write to BD medias using the CUI commands

The external BD drive connected to the "sbt13" can write to BD-R and BD-RE medias by also using the CUI commands. You have to carry out the following steps on the "sbt13".

BD-R media (write-once media) After moving to the "/work" region which is a local disk region of the terminal workstations, please make an image file and write the image file into the BD-R using the "drmake" and "drtran" commands.

```
$ cd /work/your_account
$ drmake -i ./data -F [udf150 or udf250] | drtran -t /dev/sr1
```

- The external BD drive is not able to add data into a recorded BD-R if it has free space.
- We recommend that you carry out these operation under the "/work" region which is a local disk region of the terminal workstations because we have found that the image file is not made on the "/lfs[01-16]" and these operation require enough partition volume and quota.
- The UDF 1.50 is a popular file system available on a lot of OSs, but the maximum data size of the UDF 1.50 is 8.5 GB. If you need to write data more than 8.5 GB, you have to choice the UDF 2.50 of which the maximum data size is 100 GB. However, your OS may not supports the UDF 2.50 because the UDF 2.50 is a new file system.
- It takes about 5 minutes to write about 5 GB data into a BD-R (1-6x).

Please refer to the following commands if you only make a image file or only write a image file.

```
[Make a image file]
$ drmake -i ./data -o data.iso -F [udf150 or udf250]
[Write a image file]
$ drtran -t /dev/sr1 -s ./data.iso
```

BD-RE media (re-writable media) In order to write to the BD-RE media, you have to use the "olx*" commands. We recommend that you use a new BD-RE media because it is necessary to format the BD-RE media in the following steps.

- Execute the "drtran" command in order to erase data with high-speed. This operation is not necessary if the media is formatted. After formatting, the media will be rejected.

```
$ drtran -t /dev/sr1 -x1 -l
device name = [/dev/sr1]
Media Load
Get Media Information
MediaType(BD-RE BLANK)
Start High Speed Erase
Media Unload
Normal End
```

b. Execute the "olx_format" command in order to format the media.

```
$ olx_format -f /dev/sr1
```

c. Execute the "olx_mount" command in order to mount the media.

```
$ olx_mount /dev/sr1 /mnt
```

d. Copy your data to the media. We recommend that you copy data after moving to "/mnt".

```
$ cd /mnt
$ cp -r /work/your_account/data .
```

e. Execute the "olx_umount" command after writing.

```
$ olx_umount /mnt
```

f. Eject the media after unmounting.

```
$ olx_umount -e /dev/sr1
```

- It is necessary to format (olx_format) a media first time only. If you have a formatted media, you can start from "olx_mount" (step [c]).
- After executing the "olx_mount" command (step [c]), you can use Unix commands such as "cp" and "rm". However, we do not recommend to use the "mv" command because warnings may be displayed.
- If you cannot copy your directory to the media (step [d]), make a image file of the directory using the "drmake" command and copy the image file to the media.
- It takes about 50 minutes to write about 5 GB data into a BD-RE (1-2x).

3. How to use tape device

How to input/output data You can input/output data to/from tape devices by using the "tar" or "dd" command. We show how to dump and restore data with the "tar" command here.

Dump Dump all files under /lfs[01-16]/your_account/test1 to a tape using the "tar" command.

```
$ cd /lfs[01-16]/your_account/test1
$ tar cvf /dev/st0 .
```

Restore Restore tar formatted data from the tape to under /lfs[01-16]/your_account/test2.


```
$ cd /lfs[01-16]/your_account/test2
$ tar xvf /dev/st0 .
```

It takes about 3 minutes for dumping/restoring 5 GB data.

How to use body of the tape device

Eject button: You push this button when you eject a tape cartridge from the drive.

Power button: This button turns on/off the power of the device.

The meaning of the body lamp

operating state

- Green lamp Light: The power is ON and you can normally use this.
- Green lamp Blinking: The device inns reading/writing a tape cartridge.

Encryption

- Green lamp Light + White lamp Light: An encrypted tape cartridge is loaded.
- Green lamp Blinking + White lamp Blinking: Encrypted data is in reading/writing.

Error

- Orange lamp Light + Error code: A hardware error of the drive is occurring. If the device is not recovered by turning off/on the power, please contact the operator.
- Orange lamp Blinking + Error code: A hardware error of the drive is occurring. When the drive needs cleaning, then error code "C" is displayed. Please contact the operator.

Chapter 8

How to use open-use rooms

8.1 About open-use rooms

Open-use rooms are provided in order to support users and their researches. These rooms are located in the South building and Subaru building in the Mitaka campus. Users can analyze astronomy data using workstations and make posters using large-format printers. Every afternoon from Monday to Friday, an operator is in each open-use room and supports users.

Note that the ADC also manages the machines and printers in the ALMA building room 101, but the room is owned by NAOJ Chile observatory. You need to get permission from NAOJ Chile observatory before entering the room. Please ask NAOJ Chile observatory if you have any question about the room 101.

Table 8.1: List of open-use rooms

	South building open-use room A and B	Subaru building open-use room
Place	2F, South building	1F, Subaru building
Extension number	3578	3505
Opening hours of operator desk	At 13:00 - 17:30 from Monday to Friday	
Usable machines	Remote login terminal computers (14 units), Shared computers (4 units), A3 printers (2 units), Large-format printers (3 units)	Terminal workstations (13 units), Shared PCs (3 units), A3 printer (1 unit), Large-format printer (1 unit)

- Please refer to [Section 4.4](#) and [Section 4.3](#) for details on how to use remote login terminal computers and terminal workstations, respectively.

8.2 How to use shared PCs

There are shared PCs in the South building open-use room B and Subaru building open-use room. Users can make poster data and output the data to large-format printers using the shared PCs. Each PC handles Windows or Macintosh. You do not need to apply for using shared PCs.

8.2.1 System configuration

Shared PCs are meant to be used to make poster data and output the data to large-format printers. Each PC has RAMs over 32GB, therefore shared PCs handle large size poster data having many images. Various software packages are available because Windows and Macintosh machines are provided.

Table 8.2: **List of shared PCs in the South building open-use room B**

Host	Machine	OS	CPU	RAM
mnwin1	EPSON Endeavor MR8000	Windows10 Pro	Intel Core i7 4.2GHz	64GB
mnwin2	EPSON Endeavor MR8100	Windows10 Pro	Intel Core i7 3.2GHz	64GB
mnmac1	Apple iMac Retina 2015	macOS Sierra	Intel Core i7 4.0GHz	32GB
mnmac2	Apple iMac Retina 2017	macOS Mojave	Intel Core i7 4.2GHz	64GB

Table 8.3: **List of shared PCs in the Subaru building open-use room**

Host	Machine	OS	CPU	RAM
sbwin1	EPSON Endeavor Pro5700-M	Windows10 Pro	Intel Core i7 4.01GHz	32GB
sbwin2	EPSON Endeavor MR7300	Windows10 Pro	Intel Core i7 4.0GHz	32GB
sbmac1	Apple iMac Retina	OSX El Capitan	Intel Core i7 4.0GHz	32GB

8.2.2 Software configuration of shared PCs

Table 8.4: **List of software configuration of shared PCs in the South building open-use room B**

mnwin1	
Software	Remarks
Adobe Creative Cloud	Acrobat DC, Illustrator CC, Photoshop CC
Microsoft Office 2016	Word, Excel, PowerPoint, Access, Publisher
CyberLink PowerDVD 12	
EPSON Scan	Driver for DS-70000
Firefox	
Google Chrome	
Lhaplus	
Tera Term	
WinSCP	
Yonde!!koko	
mnwin2	
Software	Remarks
Adobe Creative Cloud	Acrobat DC, Illustrator CC, Photoshop CC, Premiere Pro CC
Microsoft Office 2016	Word, Excel, PowerPoint, Access, Publisher
CyberLink PowerDVD 14	
ESET Endpoint AntiVirus	
Firefox	
Tera Term	
WinSCP	
Lhaplus	
mnmac1	
Software	Remarks

Adobe Creative Cloud	Acrobat DC, After Effects CC, Bridge CC, Character Animator CC, Illustrator CC, InDesign CC, Lightroom Clasic CC, Media Encoder CC, Photoshop CC, Premiere Pro CC
Microsoft Office 2011	Word, Excel, PowerPoint
iWork	Pages, Numbers, Keynote
GIMP	
ParaView	
StuffIt Expander	
Xcode	
mnmac2	
ソフト名	備考
Adobe Creative Cloud	Acrobat DC, Adobe Color, After Effects CC, Behance, Bridge CC, Character Animator CC, Illustrator CC, InDesign CC, Lightroom CC, Media Encoder CC, Photoshop CC, Portfolio, Premiere Pro CC, Spark
Microsoft Office	Word, Excel, PowerPoint
iWork	Pages, Numbers, Keynote
GIMP	
ParaView	
StuffIt Expander	
Xcode	

Table 8.5: List of software configuration of shared PCs in the Subaru building open-use room

sbwin1	
Software	Remarks
Adobe Creative Cloud	Acrobat DC, After Effects CC, Character Animator CC, Illustrator CC, InDesign CC, Media Encoder CC, Photoshop CC, Premiere Pro CC
Microsoft Office 2016	Word, Excel, PowerPoint
CyberLink PowerDVD 12	
Firefox	
GIMP	
Gnuplot	
Google Chrome	
IDL 8.1	
Nero Express	
PuTTY	
ScanSnap Manager	
Tera Term	
WinSCP	
Xming	
+Lhaca	
sbwin2	
Software	Remarks
Adobe Creative Cloud	Acrobat DC, After Effects CC, Bridge CC, Character Animator CC, Illustrator CC, Media Encoder CC, Photoshop CC, Premiere Pro CC
Microsoft Office 2013	Word, Excel, PowerPoint
ASTEC-X	
CyberLing PowerDVD 10	
Firefox	

GIMP	
Gnuplot	
IDL 8.1	
Nero Express	
PuTTY	
Tera Term Y	
WinSCP	
+Lhaca	
sbmac2	
Software	Remarks
Adobe Creative Cloud	Acrobat DC, After Effects CC, Character Animator CC, Illustrator CC, InDesign CC, Media Encoder CC, Photoshop CC, Premiere Pro CC
Microsoft Office 2011	Word, Excel, PowerPoint
iWork	Pages, Numbers, Keynote
StuffIt Expander	
Xcode	

8.2.3 How to use shared PCs

Shared PCs are always logged-in as user "kyoudou". If a shared PC is logged-out, please login with a following account and password.

Account: kyoudou
Password: kyoudou

Note that you should delete your files on a shared PC after use because shared PCs are used by unspecified users. If user's files remain on shared PCs, operators delete the files once a month.

8.3 How to use printers and scanners

There are A3 network printers, large-format printers, and scanners in the South building open-use room A,B, and Subaru building open-use room. Users can input/output documents using these devices. You do not need to apply for using these devices.

8.3.1 System configuration

Table 8.6: List of printers

South building open-use room A and B			
Host	IP address	Format	Printer
nwp-m1.ana.nao.ac.jp	133.40.130.137	A3	Fuji Xerox Docuprint C5000d
nwp-m2.ana.nao.ac.jp	133.40.130.138	A3	Fuji Xerox Docuprint C5000d
lfp-m1	—	Large-format	EPSON SC-P1005PS
lfp-m2	—	Large-format	EPSON SC-P1005PS
lfp-m3	—	Large-format	EPSON SC-P1005PS
Subaru building open-use room			
Host	IP address	Format	Printer
nwp-sb.ana.nao.ac.jp	133.40.130.139	A3	Fuji Xerox Docuprint C5000d
lfp-sb	—	Large-format	EPSON SC-P1005PS

- Large-format printers are available from shared PCs. You cannot output data from your PC.
- The lfp-m3 is a dedicated printer to use cloth paper.

8.3.2 How to use network printers

There are A3 network printers in the South building open-use room and Subaru building open-use room. A3 and A4 papers are set in the network printers. Users can output data from shared PCs or your PC on the KTnet(NAOJ network). Please refer to an instruction manual of each application for printing procedure. If you want to output from your PC, you have to install a network printer's driver into your PC.

How to install a network printer's driver

Following URL is a link to the network printer's driver. Please install the driver into your PC.

- Driver: http://www.fujixerox.co.jp/download/docuprint_c/dpc5000d.html#prt

About printer supplies

Printer supplies such as papers and toners are prepared near the network printer. Operators exchange supplies with new ones, but in the case that operators are absence, you have to exchange the supplies yourself. After exchanging supplies, please fill in a form in the record book near the network printer.

8.3.3 How to use large-format printers

There are large-format printers in the South building open-use room B and Subaru building open-use room. Super A0 or super B0 roll papers with glossy or plain are available. Only in the case when you use "lfp-m3" in the South building open-use room, you can use a cloth roll paper because the "lfp-m3" is a dedicated printer to use cloth papers. Users can output data only from shared PCs (cannot output from your PC). After using the large-format printer, please fill in a form in the record book near the printers.

The following description is how to use the large-format printer from Windows and Macintosh on the shared PCs. Usually, a super A0 glossy roll paper is set on the "lfp-m1", "lfp-m2", and "lfp-sb" and super A0 cloth roll paper is set on the "lfp-m3", respectively. If you want to use other papers, operators exchange the paper, but in the case that operators are absence, you have to exchange the paper yourself.

From Windows

The following description is the way to output data from Adobe Acrobat DC on Windows on the shared PC to a large-format printer.

1. Click the "File" tab and click the "Print".
2. In the "Printer" select box, select a printer name. The choice is depending on whether the print size is defined size (e.g. A and B series paper sizes) or not (e.g. long-size printing). Note that the "lfp-m3" and "lfp-m3_PostScript" are the dedicated printer to use cloth papers.
 - Defined paper size: lfp-m1, lfp-m2, lfp-m3, lfp-sb
 - Undefined paper size: lfp-m1_PostScript, lfp-m2_PostScript, lfp-m3_PostScript, lfp-sb_PostScript
3. Click the "Properties".
4. In the "Media Type" select box of the "Main" tab, select a type as follows:
 - When a glossy role paper is set: EPSON Pro Photo <Glossy>
 - When a plain role paper is set: EPSON Plain Paper <Singleweight>
 - When a cloth role paper is set: EPSON MC/PM Cloth
5. In the "Source" select box, select a "Roll paper".
6. In the "Size" select box, select a print size you want .
7. In the "Output Paper" select box of "Paper Layout" tab, select a paper size set in the printer (super A0 or super B0).
8. Set the "Scale" to 100% or any scale.
9. Click the "OK".
10. Click the "Print".

The "lfp-XX_PostScript" in the "Printer" select box can perform long-size printing but cannot display a print preview window. Each software use each print dialog, so if you have any questions, please contact operators.

From Macintosh

The following description is the way to output data from Adobe Acrobat DC on Macintosh on the shared PC to a large-format printer.

1. Click the "File" tab and click the "Print...".
2. In the "Printer" select box, select a printer name. The choice is depending on whether the print size is defined size (e.g. A and B series paper sizes) or not (e.g. long-size printing). Note that the "lfp-m3" and "lfp-m3_PostScript" are the dedicated printer to use cloth papers.
 - Defined paper size: lfp-m1, lfp-m2, lfp-m3, lfp-sb
 - Undefined paper size: lfp-m1_PostScript, lfp-m2_PostScript, lfp-m3_PostScript, lfp-sb_PostScript
3. Click the "Page Setup".
4. In the "Format For" select box, select a printer name you selected above.
5. In the "Paper size" select box, Select a paper as follows:
 - When a super A0 roll paper is set: A0 (Roll Paper - Borderless, Retain Size).
 - When a super B0 roll paper is set: B0 (Roll Paper - Borderless, Retain Size).
6. Click the "OK".
7. In the "Page Sizing & Handing" menu, set the page size you want.
8. Click the "Print".

The "lfp-XX_PostScript" in the "Printer" select box can perform long-size printing but cannot display a print preview window. Each software use each print dialog, so if you have any questions, please contact operators.

About printer supplies

Printer supplies such as papers and toners are prepared near the large-format printer. Operators exchange supplies with new ones, but in the case that operators are absence, you have to exchange the supplies. After exchanging supplies, please fill in a form in the record book near the large-format printer.

8.3.4 How to use scanners

There are scanners in the South building open-use room B and Subaru building open-use room. Each scanner can be available from shared PCs.

Table 8.7: List of scanners

Place	Machine	Max. available paper	Connected PC
South building open-use room B	EPSON DS-70000	A3	mnwin1
Subaru open-use room	Fujitsu ScanSnap iX500	A4	sbwin1

Each scanner is connected to a shared PC, but locale of the shared PC is Japanese. If you want to use scanners, please contact to an operator.

8.4 Network connection

The KTnet (NAOJ network) and the internet are available in the NAOJ Mitaka campus. Accesses from the KTnet to the internet is permitted, but in contrast, accesses from the internet to the KTnet is not permitted for a security measure. This section introduces a usage of the KTnet and the internet on the open-use rooms.

8.4.1 KTnet (NAOJ network)

The KTnet (NAOJ network) is a isolated network, which consists of networks in the Mitaka campus and each observatory. If you are an NAOJ staff, you can connect to the KTnet. If you are an visitor, you can use the internet (see [Section 8.4.2](#)) while you cannot connect to the KTnet.

Connection to the KTnet

NAOJ staffs can apply a registration of a static IP address in the KTnet. If you apply for the KTnet VPN service, you can access the KTnet from the internet. Please refer to a website of the NAOJ NETWORK SERVICE HELP CENTER (<https://nethelp.mtk.nao.ac.jp/contents/>) for details. Note that this web site is not accessible from the internet.

Connection to the interactive data analysis servers

Since all of the MDAS machines are on the KTnet, you have to connect to the KTnet before access the interactive data analysis servers. In the open-use rooms, remote login terminal computers and terminal workstations are on the KTnet, so both computers can access the interactive data analysis servers.

Connection to the network printers

Since network printers in the open-use rooms are on the KTnet, you have to connect to the KTnet before using the printers. In the open-use rooms, shared PCs, remote login terminal computers, and terminal workstations are on the KTnet, so these computers can output data to the printers. We prohibit outputs from personal computers to the Large-format printers. If you use the large-format printers, please output from the shared PCs.

8.4.2 Internet

In the Mitaka campus, visitors and NAOJ staffs can use the internet. Wired LAN is available in the open-use rooms, and wireless LAN is available across the Mitaka campus.

Wired LAN

In the South building open-use rooms and Subaru building open-use room, network hubs are provided for connecting to the internet. Locations of the hubs in the open-use rooms are as follows.

Table 8.8: Locations of the hubs in the open-use rooms

Room	Place
South building open-use room A	On the working desk
Subaru open-use room	On the working desk, Near the sbt03, Near the sbt07

Wireless LAN

In the South building open-room and Subaru building open-use room, the internet is available through the wireless LAN (Wi-Fi). The SSID of the wi-fi is "naoj-open". In order to know the password, please contact a NAOJ staff or see the digital information signage in each building. The password is updated once a week.

Connection to the interactive data analysis servers from internet

Any machines on the internet cannot connect to the interactive data analysis servers since connection from the internet to the NAOJ network is not permitted. However, if you apply for the ADC VPN service, you can only access the interactive data analysis servers through the internet (cannot access other machines on the NAOJ network). Please refer to [Section 3.2](#) for the application.

Connection to the network printers

Any machine on the internet cannot connect to the network printers since connection from the internet to the NAOJ network is not permitted. Please output from the shared PCs.

Update history

2019-04-18	Updated the information of mnmac2 in Section 8.2.
2019-04-15	Added Chapter 8. In Section 5.1, added "CASA 5.4.1", updated IDL from 8.6.1 to 8.7.2, updated PBS from 14.2.4 to 18.2.3, updated Intel Parallel Studio Composer Edition from 2018 update 1 to 2019 update 3, updated Mathematica from 11.2.0 to 11.3.0, and updated ds9 from 7.5 to 8.0.1. Added a full-path of CASA 5.4.0 into the description of CASA in Section 5.3. Updated the information of mnwin2 in Section 8.2.
2019-02-21	Added "PySpecKit" into Section 5.1. We added precautions for use of Jupyter Notebook. Added a full-path of CASA 5.4.0 into the description of CASA in Section 5.3.
2018-11-19	Corrected URLs of links.
2018-10-31	Added "CASA 5.4.0" into Section 5.1. Added a full-path of CASA 5.3.0 into the description of CASA in Section 5.3.
2018-09-05	Added "pandoc" and "seaborn" into Section 5.1.
2018-08-20	Added "difmap" into Section 5.1.
2018-07-31	Revised Section 4.3.2. Added "2. How to write to BD medias using the CUI commands" and "3. How to use tape device" into Section 7.2.2.
2018-07-04	Added CASA 5.3.0 into Section 5.1. Added a full-path of CASA 5.1.2 into the description of CASA in Section 5.3. Added description of MCSRED into Section 5.3. Removed description of CFITSIO in Section 5.3. Added Section 7.2.2.
2018-06-25	Revised Section 7.2.1 and Section 5.3 (AIPS, GILDAS, and Miriad).
2018-06-08	Added Section 7.2.
2018-05-25	Added sentences into "How to use remote login terminal computers". Added PDL and cpanm into "Software configuration of the interactive/batch processing data analysis servers and terminal workstations".
2018-05-18	Revised the structure of the chapters.
2018-04-27	Added "How to use interactive data analysis servers". Added "How to use network printers". Added CosmoloPy, dustmaps, GCC 3.4.6, Healpy, Montage, pyregion, urwid, Requests, and Jupyter Notebook into "Software in the interactive/batch processing data analysis servers and terminal workstations".
2018-04-25	Added CASA Analysis Utilities into "Software configuration of the interactive/batch processing data analysis servers and terminal workstations". Added "how to use the CASA Analysis Utilities" into "How to use software".
2018-04-13	Added CASA 5.1.2 and lz4 into "Software configuration of the interactive/batch processing data analysis servers and terminal workstations". Revised "How to use batch processing data analysis servers".
2018-03-12	We added "nfsdf" into "Unique commands of the MDAS". Added "Peripherals" and "How to use batch processing data analysis servers".
2018-03-05	Revised sentences in "How to access the Multi-wavelength Data Analysis System".
2018-03-02	Specified that CosmoloPy, Healpy, pyregion, urwid, Requests, APLpy, and lz4 have not yet been installed.

- 2018-02-26 Revised sentences in "Application of the Group ID service". Added CosmoloPy, Healpy, pyregion, urwid, Requests, APLpy, and lz4 into "Software in the interactive/batch processing data analysis servers and terminal workstations". Added "How to use software".
- 2018-02-16 Removed an incorrect explanation in "Access from the client terminal on the NAOJ network". Added an explanation about the MDAS VPN service into "How to use the MDAS VPN service".
- 2018-02-15 First edition was issued.