

# PRACE User Support

## Intro

PRACE users coming to Salomon as to TIER-1 system offered through the DECI calls are in general treated as standard users and so most of the general documentation applies to them as well. This section shows the main differences for quicker orientation, but often uses references to the original documentation. PRACE users who don't undergo the full procedure (including signing the IT4I AuP on top of the PRACE AuP) will not have a password and thus access to some services intended for regular users. This can lower their comfort, but otherwise they should be able to use the TIER-1 system as intended. Please see the Obtaining Login Credentials section, if the same level of access is required.

All general PRACE User Documentation should be read before continuing reading the local documentation here.

## Help and Support

If you have any troubles, need information, request support or want to install additional software, please use PRACE Helpdesk.

Information about the local services are provided in the introduction of general user documentation. Please keep in mind, that standard PRACE accounts don't have a password to access the web interface of the local (IT4Innovations) request tracker and thus a new ticket should be created by sending an e-mail to support[at]it4i.cz.

## Obtaining Login Credentials

In general PRACE users already have a PRACE account setup through their HOMESITE (institution from their country) as a result of rewarded PRACE project proposal. This includes signed PRACE AuP, generated and registered certificates, etc.

If there's a special need a PRACE user can get a standard (local) account at IT4Innovations. To get an account on the Salomon cluster, the user needs to obtain the login credentials. The procedure is the same as for general users of the cluster, so please see the corresponding section of the general documentation here.

## Accessing the cluster

### Access with GSI-SSH

For all PRACE users the method for interactive access (login) and data transfer based on grid services from Globus Toolkit (GSI SSH and GridFTP) is supported.

The user will need a valid certificate and to be present in the PRACE LDAP (please contact your HOME SITE or the primary investigator of your project for LDAP account creation).

Most of the information needed by PRACE users accessing the Salomon TIER-1 system can be found here:

- General user's FAQ
- Certificates FAQ
- Interactive access using GSISSH
- Data transfer with GridFTP
- Data transfer with gtransfer

Before you start to use any of the services don't forget to create a proxy certificate from your certificate:

```
$ grid-proxy-init
```

To check whether your proxy certificate is still valid (by default it's valid 12 hours), use:

```
$ grid-proxy-info
```

To access Salomon cluster, two login nodes running GSI SSH service are available. The service is available from public Internet as well as from the internal PRACE network (accessible only from other PRACE partners).

#### **\*Access from PRACE network:**

It is recommended to use the single DNS name `salomon-prace.it4i.cz` which is distributed between the two login nodes. If needed, user can login directly to one of the login nodes. The addresses are:

Login	address	Port	Protocol	Login node
---	---			
	salomon-prace.it4i.cz	2222	gsissh	login1, login2, login3 or login4
	login1-prace.salomon.it4i.cz	2222	gsissh	login1
	login2-prace.salomon.it4i.cz	2222	gsissh	login2
	login3-prace.salomon.it4i.cz	2222	gsissh	login3
	login4-prace.salomon.it4i.cz	2222	gsissh	login4

```
$ gsissh -p 2222 salomon-prace.it4i.cz
```

When logging from other PRACE system, the `prace_service` script can be used:

```
$ gsissh `prace_service -i -s salomon`
```

#### **\*Access from public Internet:**

It is recommended to use the single DNS name `salomon.it4i.cz` which is distributed between the two login nodes. If needed, user can login directly to one of the login nodes. The addresses are:

Login	address	Port	Protocol	Login node
	salomon.it4i.cz	2222	gsissh	login1, login2, login3 or login4
	login1.salomon.it4i.cz	2222	gsissh	login1
	login2-prace.salomon.it4i.cz	2222	gsissh	login2
	login3-prace.salomon.it4i.cz	2222	gsissh	login3
	login4-prace.salomon.it4i.cz	2222	gsissh	login4

```
$ gsissh -p 2222 salomon.it4i.cz
```

When logging from other PRACE system, the `prace_service` script can be used:

```
$ gsissh `prace_service -e -s salomon`
```

Although the preferred and recommended file transfer mechanism is using GridFTP, the GSI SSH implementation on Salomon supports also SCP, so for small files transfer `gsiscp` can be used:

```
$ gsiscp -P 2222 _LOCAL_PATH_TO_YOUR_FILE_ salomon.it4i.cz:_SALOMON_PATH_TO_YOUR_FILE_
```

```
$ gsiscp -P 2222 salomon.it4i.cz:_SALOMON_PATH_TO_YOUR_FILE_ _LOCAL_PATH_TO_YOUR_FILE_
```

```
$ gsiscp -P 2222 _LOCAL_PATH_TO_YOUR_FILE_ salomon-prace.it4i.cz:_SALOMON_PATH_TO_YOUR_FILE_
```

```
$ gsiscp -P 2222 salomon-prace.it4i.cz:_SALOMON_PATH_TO_YOUR_FILE_ _LOCAL_PATH_TO_YOUR_FILE_
```

#### **Access to X11 applications (VNC)**

If the user needs to run X11 based graphical application and does not have a X11 server, the applications can be run using VNC service. If the user is using regular SSH based access, please see the section in general documentation.

If the user uses GSI SSH based access, then the procedure is similar to the SSH based access (look here), only the port forwarding must be done using GSI SSH:

```
$ gsissh -p 2222 salomon.it4i.cz -L 5961:localhost:5961
```

## Access with SSH

After successful obtainment of login credentials for the local IT4Innovations account, the PRACE users can access the cluster as regular users using SSH. For more information please see the section in general documentation.

## File transfers

PRACE users can use the same transfer mechanisms as regular users (if they've undergone the full registration procedure). For information about this, please see the section in the general documentation.

Apart from the standard mechanisms, for PRACE users to transfer data to/from Salomon cluster, a GridFTP server running Globus Toolkit GridFTP service is available. The service is available from public Internet as well as from the internal PRACE network (accessible only from other PRACE partners).

There's one control server and three backend servers for striping and/or backup in case one of them would fail.

### \*Access from PRACE network:

Login address	Port	Node role
gridftp-prace.salomon.it4i.cz	2812	Front end / control server
lgw1-prace.salomon.it4i.cz	2813	Backend / data mover server
lgw2-prace.salomon.it4i.cz	2813	Backend / data mover server
lgw3-prace.salomon.it4i.cz	2813	Backend / data mover server

Copy files **to** Salomon by running the following commands on your local machine:

```
$ globus-url-copy file://_LOCAL_PATH_TO_YOUR_FILE_ gsiftp://gridftp-prace.salomon.it4i.cz:2812
```

Or by using `prace_service` script:

```
$ globus-url-copy file://_LOCAL_PATH_TO_YOUR_FILE_ gsiftp://`prace_service -i -f salomon`/home
```

Copy files **from** Salomon:

```
$ globus-url-copy gsiftp://gridftp-prace.salomon.it4i.cz:2812/home/prace/_YOUR_ACCOUNT_ON_SALOMON
```

Or by using `prace_service` script:

```
$ globus-url-copy gsiftp://`prace_service -i -f salomon`/home/prace/_YOUR_ACCOUNT_ON_SALOMON
```

**\*Access from public Internet:**

Login address	Port	Node role
gridftp.salomon.it4i.cz	2812	Front end /control server
lgw1.salomon.it4i.cz	2813	Backend / data mover server
lgw2.salomon.it4i.cz	2813	Backend / data mover server
lgw3.salomon.it4i.cz	2813	Backend / data mover server

Copy files **to** Salomon by running the following commands on your local machine:

```
$ globus-url-copy file://_LOCAL_PATH_TO_YOUR_FILE_ gsiftp://gridftp.salomon.it4i.cz:2812/home/
```

Or by using prace\_service script:

```
$ globus-url-copy file://_LOCAL_PATH_TO_YOUR_FILE_ gsiftp://`prace_service -e -f salomon`/home/
```

Copy files **from** Salomon:

```
$ globus-url-copy gsiftp://gridftp.salomon.it4i.cz:2812/home/prace/_YOUR_ACCOUNT_ON_SALOMON_
```

Or by using prace\_service script:

```
$ globus-url-copy gsiftp://`prace_service -e -f salomon`/home/prace/_YOUR_ACCOUNT_ON_SALOMON_
```

Generally both shared file systems are available through GridFTP:

File system	mount point	Filesystem	Comment
/home	Lustre	Default HOME directories of users in format /home/prace/login/	
/scratch	Lustre	Shared SCRATCH mounted on the whole cluster	

More information about the shared file systems is available [here](#).

Please note, that for PRACE users a “prace” directory is used also on the SCRATCH file system.

Data type	Default path
large project files	/scratch/work/user/prace/login/
large scratch/temporary data	/scratch/temp/

## Usage of the cluster

There are some limitations for PRACE user when using the cluster. By default PRACE users aren’t allowed to access special queues in the PBS Pro to have high priority or exclusive access to some special equipment like accelerated nodes and high memory (fat) nodes. There may be also restrictions obtaining a working

license for the commercial software installed on the cluster, mostly because of the license agreement or because of insufficient amount of licenses.

For production runs always use scratch file systems. The available file systems are described here.

## Software, Modules and PRACE Common Production Environment

All system wide installed software on the cluster is made available to the users via the modules. The information about the environment and modules usage is in this section of general documentation.

PRACE users can use the “prace” module to use the PRACE Common Production Environment.

```
$ module load prace
```

## Resource Allocation and Job Execution

General information about the resource allocation, job queuing and job execution is in this section of general documentation.

For PRACE users, the default production run queue is “qprace”. PRACE users can also use two other queues “qexp” and “qfree”.

queue	Active project	Project resources	Nodes	priority	authorization	walltime
qexp	no	none required	32 nodes, max 8 per user	150	no	1 / 1h
gt; 0	>1006 nodes, max 86 per job	0 no 24 / 48h	> 0	>1006 nodes, max 86 per job	0 no 24 / 48h	
qfree	yes	none required	752 nodes, max 86 per job	-1024	no	12 / 12h

**qprace, the PRACE \*:** This queue is intended for normal production runs. It is required that active project with nonzero remaining resources is specified to enter the qprace. The queue runs with medium priority and no special authorization is required to use it. The maximum runtime in qprace is 48 hours. If the job needs longer time, it must use checkpoint/restart functionality.

## Accounting & Quota

The resources that are currently subject to accounting are the core hours. The core hours are accounted on the wall clock basis. The accounting runs whenever the computational cores are allocated or blocked via the PBS Pro workload

manager (the qsub command), regardless of whether the cores are actually used for any calculation. See example in the general documentation.

PRACE users should check their project accounting using the PRACE Accounting Tool (DART).

Users who have undergone the full local registration procedure (including signing the IT4Innovations Acceptable Use Policy) and who have received local password may check at any time, how many core-hours have been consumed by themselves and their projects using the command “it4ifree”. Please note that you need to know your user password to use the command and that the displayed core hours are “system core hours” which differ from PRACE “standardized core hours”.

The **it4ifree** command is a part of it4i.portal.clients package, located here: <https://pypi.python.org/pypi/it4i.portal.clients>

```
$ it4ifree
Password:
      PID      Total   Used   ...by me Free
-----
OPEN-0-0 1500000 400644   225265 1099356
DD-13-1   10000   2606     2606   7394
```

By default file system quota is applied. To check the current status of the quota (separate for HOME and SCRATCH) use

```
$ quota
$ lfs quota -u USER_LOGIN /scratch
```

If the quota is insufficient, please contact the support and request an increase.