University of Kent SMSAS

Using the SMSAS servers – Acceptable Use and other guidelines

Aimed particularly at researchers new to using the SMSAS servers, these guidelines give a basic introduction to the School's server-based computing resources. **Our shared guiding principle is to strive for an environment where people behave fairly, communicate their needs, and find compromises where necessary.**

The technical and Acceptable Use guidelines outlined below may help new users in successfully integrating into that environment.

- See also the SMSAS computing self-help pages: http://tiny.cc/SMSASIT
- Please contribute your ideas and suggestions: email db400@kent.ac.uk.

SMSAS Servers – a technical summary

SMSAS has the following servers that are managed for us by Information Services. These are all 64 bit systems running Red Hat Enterprise Linux Server release 6.6 (Santiago)

1. **Quince** is used for hosting the personal home pages of academic staff and as a file repository. It replaced the server **Mango** in May 2015 after almost a decade of use. **Quince** has a quad core processor running at 2.5 GHz and cache size of 10240 KB.

2. The research server **Emmy** came online in 2013. It has two later generation 2.0 GHz Quad core processors and with hyper-threading offers 32 virtual CPUs.[1] There is 64 GB RAM and cache size is 20480 KB.

3. Our newest research server **Noether** came online in 2015. The server has 2 2.3 GHz Quad core processors (E5-2698 v3). With hyper-threading the server offers 64 virtual CPUs. There is 64 GB RAM and cache size is 40960 KB.

All of the above use LDAP authentication meaning that Kent network logins are used rather than a server-specific login.

> Note that the servers are managed on our behalf by the IS Operations Team, following University-wide practices and policies. None of the guidelines in this document should be construed as modifying or over-ruling the University IT regulations.

---

[1] This does not necessarily produce double the processing power, but certainly enhances it.

Accessing the servers

To communicate with the server you will need to load a terminal session. These guidelines are based on the use of PuTTY.
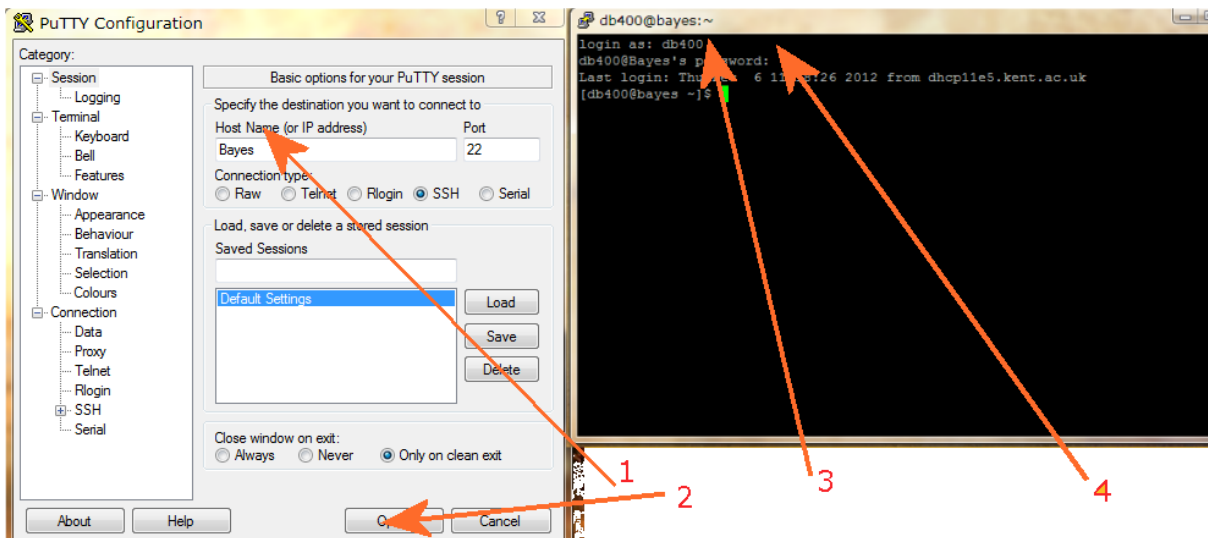

Figure 1 - Settings to use for PuTTY sessions

If you wish to use X Window forwarding (to view an app's GUI on the client) please consult the School's Web & Computing Officer for advice.

1. Type the name of the server in the "Host Name" field. If your computer is not joined to the Kent domain give this in full e.g. "emmy.kent.ac.uk".

2. Leave all other settings as defaults (unless using X Windows) and click Open

3. Log on using your Kent username and password. Note that the password is **not** echoed to the screen and nor are any masking characters such as "*****".

4. If you are accessing the server for the first time you will receive a security alert. In PuTTY this looks like **Figure 2**. You can safely ignore this – click the Yes button.

Figure 2 - PuTTY security alert, seen by users accessing a server for the first time

Note that if you are working from off-campus you will need to have additional access privileges set up. This is outside the scope of these guidelines.

You can adjust the font size, colors etc using PuTTY's settings.
If you wish to change the default settings it is recommended that
you carry this out, and save the settings, *before* logging on to the server.
More help using PuTTY: http://www.kent.ac.uk/itservices/help/guides/putty.pdf

Transferring files to/from the servers

The recommended tool for Windows users is WinSCP. This is downloadable from http://winscp.net/eng/index.php. If you use a Windows Staff Managed Desktop you will find WinSCP within the Central Software list. Guidelines for use of WinSCP are here: https://www.cs.kent.ac.uk/systems/secureservices/winscp.html
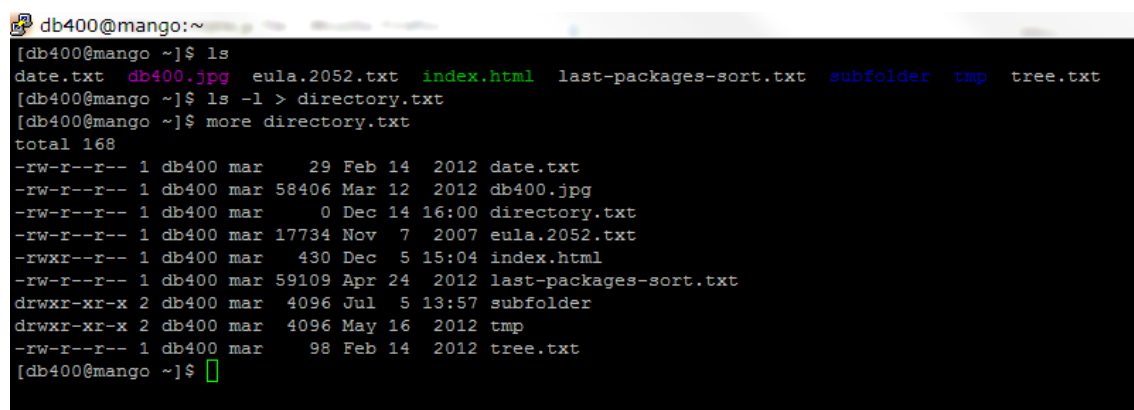
You can also mount/map the servers. This will allow you to drag and drop files/folders to and from your folders on the servers.

- Linux (Ubuntu) users please refer to http://tiny.cc/SMSASITMapLinux
- Mac users: http://tiny.cc/SMSASITMapMac
- Windows http://tiny.cc/SMSASITMapWin

A few very basic Linux commands

There are lots of useful resources online giving information about Linux but you may find the following basic commands useful.

`ls` produces a directory listing in various formats depending on the options you use. You can manipulate the output in various ways. The basic output for `ls` is a directory listing, generally with some color-coding to distinguish between sub-directories and files. A more helpful variant is `ls -l` which shows various file attributes.
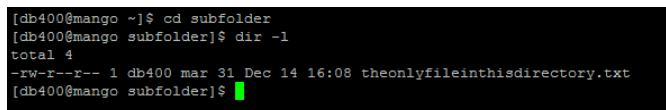

Figure 3 - Using ls -l and more to pipe a directory listing to a text file

`ls -l > directory.txt` directs the output to a file called `directory.txt`.

The `more` command prints the contents of that file to the screen.

`cd` is used to change directory. `cd ..` will take you up the hierarchical "tree" of directories by one folder. `cd subfolder` will take you to the sub-directory of that name (in other words down the hierarchy). There are many other variations you can use to navigate from one

Figure 4 - cd command changes directory

directory to another though it may take some time to get used to if you are mainly used to Graphical User Interfaces.

`pwd` shows you the present working directory though this is usually easy enough to work out from the command prompt. In Figures 3 and 4 the prompt shows the

---

username, the server, and the current working directory, enclosed within square brackets. (The tilde character ~ indicates you are in the root directory.)

You can see which processes you are running using **ps** but a more useful command to use is **top.** This provides an ongoing look at processor activity in real time. It displays a listing of the most CPU-intensive tasks on the system, and can provide an interactive interface for manipulating processes.

Note that the **top** report will keep refreshing every few seconds until you instruct it to quit by typing "**q**". The command has a variety of sophisticated refinements for filtering the output, for example. Type **info top** at the command prompt and/or search online for more information.

See https://www.booleanworld.com/guide-linux-top-command/

School Servers Acceptable Use Guidelines

- Before running a job use **top -H** to see what other processes are running, as well as memory and percentage of CPU resources that are being used.

- If there are a lot less than 16 tasks being run it would probably be a good time to start yours.

- Consider using **nice** for bigger jobs, in particular long-term calculations. In a shared server environment every user's activities can impact upon every other user. If you set a job with higher niceness (2 for example, the default being 0) it should be less resource-intensive. A negative nice setting is similar to using one's elbows to barge to the front of a queue… please do not use this on any of the SMSAS servers.

  To find out much more enter the command **info nice**.

- To break out of **info** listings such as the above use Ctrl-z (i.e. press Ctrl, keep it pressed, then type the Z key).

- Jobs can also be "reniced" i.e. their priority can be changed to influence the extent to which they place load on the server. Find out more: **info renice**

- Whenever possible, please refrain from using too many cores simultaneously.

- Please limit the number of jobs to 8 if these will be running for a few hours or more. A lower number is appropriate for computationally demanding tasks and very demanding tasks should be limited to 2 wherever possible.

- Once jobs are running use "**ps**" or "**top**" to check current process status and "**renice**" to adjust where necessary.

- There are no disk space quotas on the servers i.e. nothing other than courtesy prevents any single user from "hogging" disk space. Please keep an eye on how much you use. Disk space is relatively limited – **Noether** has approximately 550 GB, for example. You can monitor your disk usage using this command: "**du -sh ~**" and can check on how much is left in the '/home' folders area by typing: "**df -h ~**".

- While all alternatives will be explored wherever possible, the School reserves the right to suspend user account(s) if that is the only way to safeguard the interests of other users.

- Where processes have failed to terminate please "**kill**" them. For example:

```
[db400@mango ~]$ ps
  PID TTY          TIME CMD
30351 pts/2    00:00:00 bash
30381 pts/2    00:00:00 info
30415 pts/2    00:00:00 top
30416 pts/2    00:00:00 top
30417 pts/2    00:00:00 top
30426 pts/2    00:00:00 info
30429 pts/2    00:00:00 info
30449 pts/2    00:00:00 ps
[db400@mango ~]$ kill -9 30415
[2]   Killed                  top -H
[db400@mango ~]$ kill -9 30416
[db400@mango ~]$ ps
PID TTY          TIME CMD
30351 pts/2    00:00:00 bash
30381 pts/2    00:00:00 info
30417 pts/2    00:00:00 top
30426 pts/2    00:00:00 info
30429 pts/2    00:00:00 info
30452 pts/2    00:00:00 ps
[3]   Killed                  top
```