How to connect to ECMWF using NX

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1 Introduction

There are different ways to connect to ECMWF using various functionalities offered by the ECaccess service. External users can connect using ssh and telnet (which is being phased out) or using the SSHVNC service. All these possibilities are described in:

http://www.ecmwf.int/services/ecaccess/guide/index.html

A new service has been developed and is now available to users. This new service uses the NX technology and allows users to run at ECMWF X Window based applications like Metview, XCdp, or a simple xterm.

You can access this new service at[1]:

http://ecaccess.ecmwf.int/

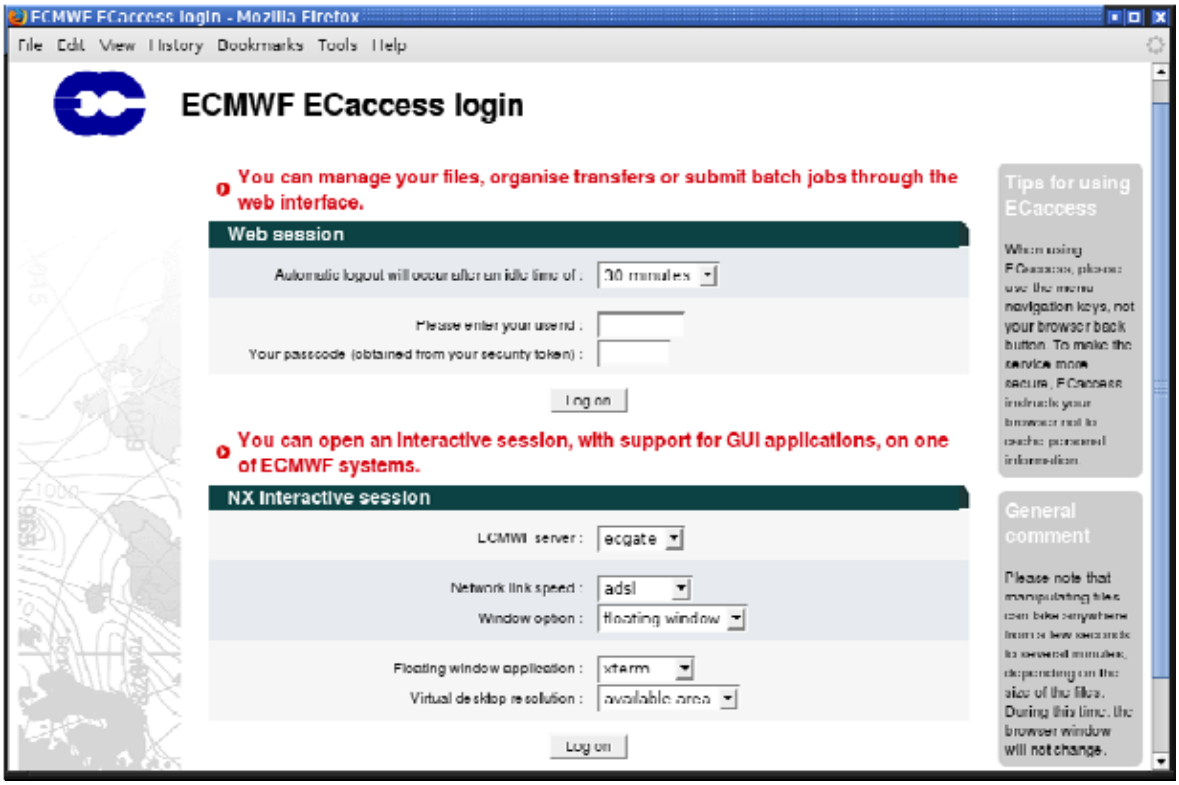

Figure 1: Web page allowing users to select the new "NX interactive session" service.

This option is described in more detail in the section "How to connect using a web browser".

It is also possible to connect using a standalone NX client application completely independent of any web browser. This option is described in more detail in the section "How to connect using a standalone NX client".

A similar service is available through the ECaccess gateway "msaccess.ecmwf.int" and through your local gateway provided that you have installed the ECaccess gateway v3.2.0 at least.

[1] For ECMWF users only: please note that you **cannot** establish a VPN session at the same time you want to open an NX session.

2 What is NX

NX allows you to run remote X Window sessions even across slow or low-bandwidth network connections, making it possible to start sessions from clients running on Windows, Linux, Mac OS X and Solaris platforms.

NX, thanks to exclusive X protocol compression techniques and an integrated set of proxy agents, improves the power of the X Window System to transparently run graphical desktops and applications through the network. Even on slow or low-bandwidth network connections, you can get a fast response thanks to the NX lazy encoding algorithm and NX capability to automatically tune itself to network bandwidth and latency parameters.

In addition, compared to the functionalities offered through the SSHVNC service, NX allows having both standalone X terminal and “virtual desktops” independent of the web browser session used to start them. The windows can be minimised and the web browser can even be terminated.

For more information on NX, please see:

http://www.nomachine.com/documents.php

3 How to connect using a web browser

The easiest way to connect to ECMWF using the new NX service is simply to go to:

http://ecaccess.ecmwf.int/

You will get to a page like:

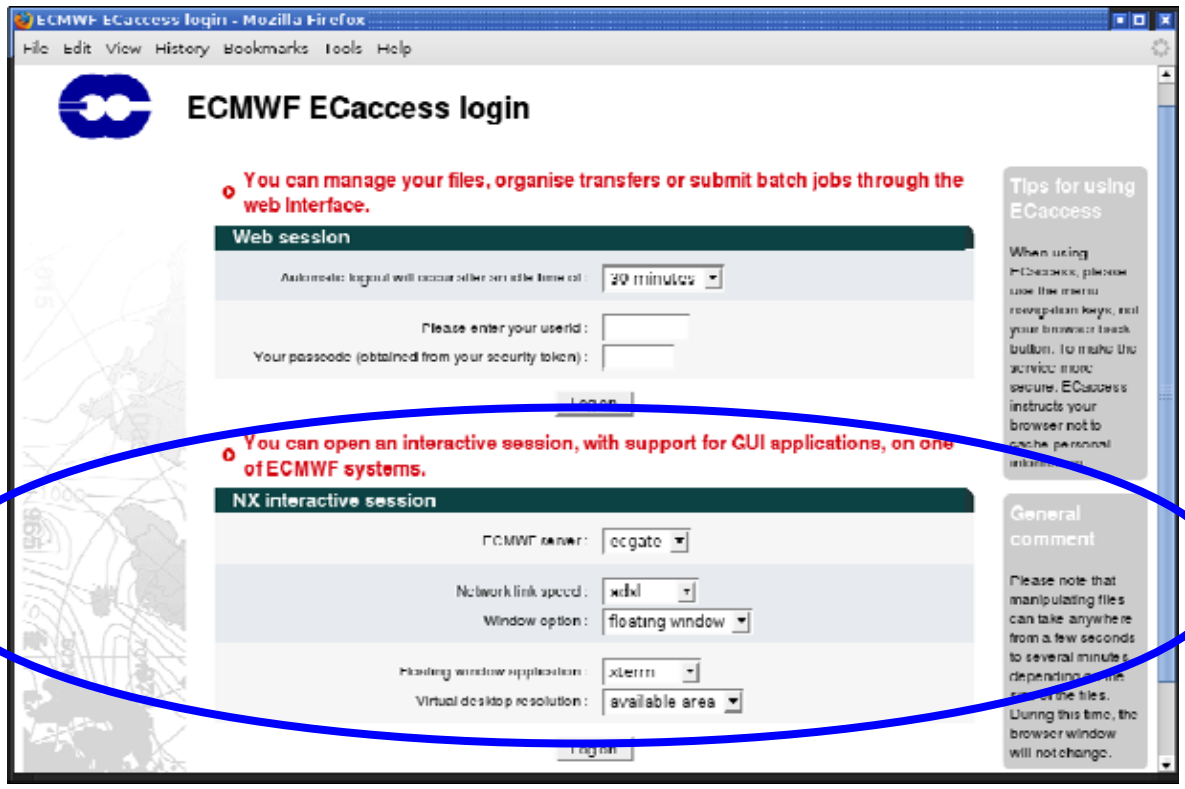

Figure 2: ECaccess login page with the new option to start an NX interactive session

Using various drop down menus in the bottom part of the page (outlined) you will be able to select the type of NX session you want to establish. Please note that your web browser need to be Java enabled.

You can connect to both ecgate and the supercomputer (at the moment “hpce” for Member State users) using the drop down menu “ECMWF server”.

You can select the type of network link you are using with the menu “Network link speed”. This will select a number of options which should by optimal for your configuration.

You can select the type of window you want to have using the “Window option” menu: if you select “floating window” you will get a single X Window application like xterm or Metview (you can choose the application using the next menu). If, instead, you select “virtual desktop” you will get a fully working desktop using the WindowMaker window manager. In this case you can select the “Virtual desktop resolution” to be either “available area” or “full screen”.

3.1 Example of session starting a standalone xterm application on hpce

In this case you need to select “hpce” as “ECMWF server”, specify your type of network link (you can leave this to the default “adsl”), then select “floating window” as “Window option, leave the default “Floating window application” to “xterm” and press “Log on”.

This, after some windows warning about certificates and ssh key which you need to accept, will display the following page:

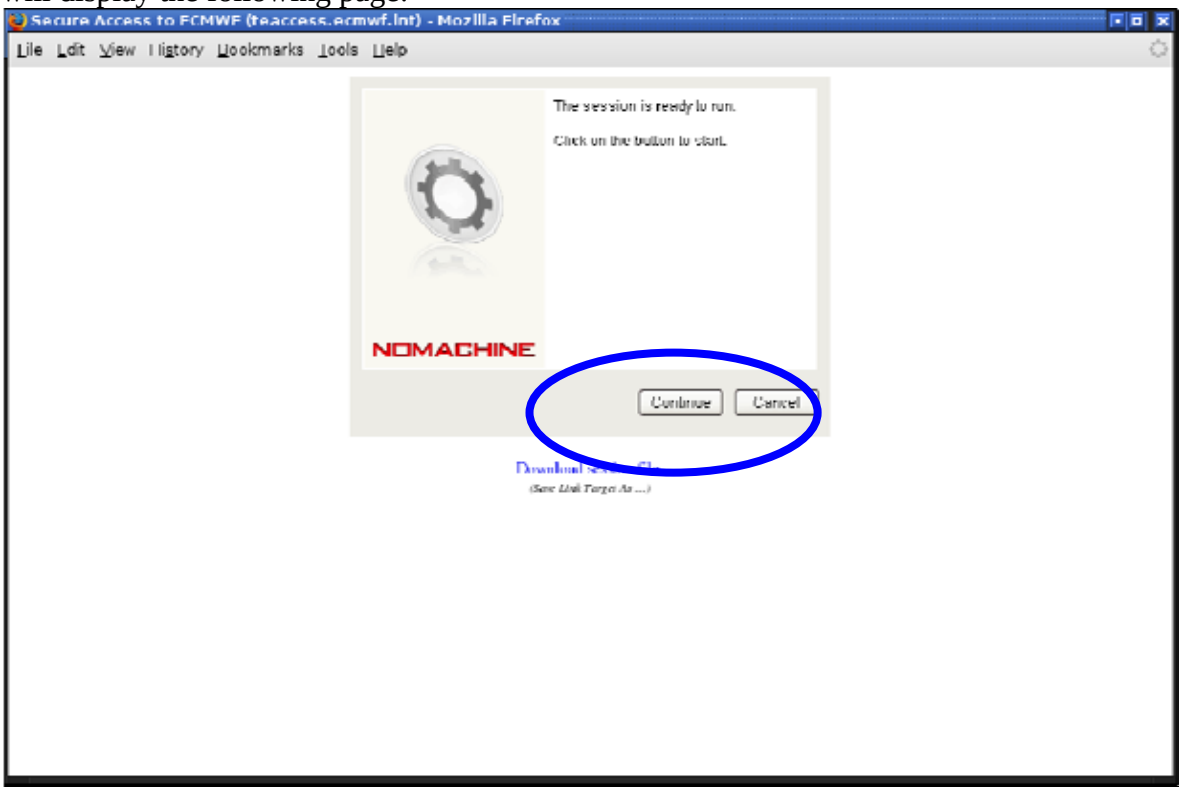

Figure 3: The NX Java applet has been loaded in your web browser and it is ready to start.

You will need to click on the “Continue” button to start the NX connection. The following window will appear:

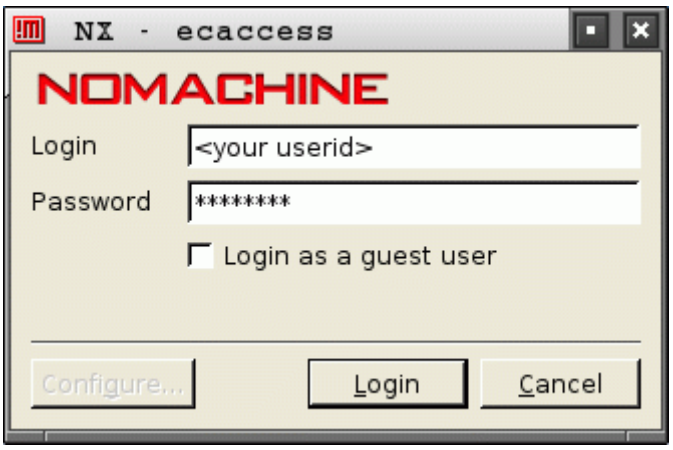

Figure 4: NX prompt which allows you to login with your userid and "passcode"

This window allows you to enter your userid and corresponding **passcode**[2] generated by your SecurID/ActivIdentity token. After entering the appropriate information click on "Login" to proceed. The Java applet in the web browser will display various messages detailing the progress of the connection to ECMWF (depending on your firewall setup you may get various warning messages: you will need to authorise all sessions from anything related to NX — nxclient, nxauth, nxssh, etc) until this will be displayed in your browser:

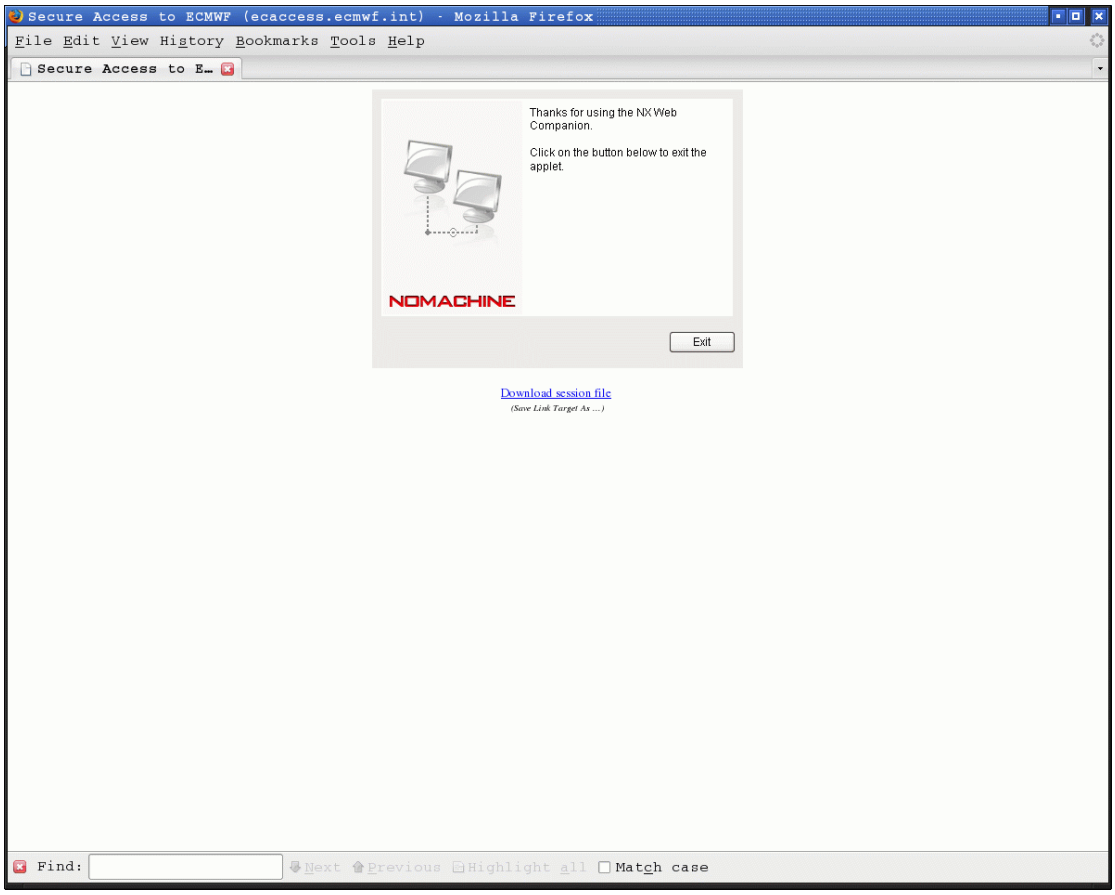

Figure 5: The NX connection has been established and a separate X application has been started

The application you have requested to start, in this case an "xterm", should also start as a separate X based window. You can now minimise (or even close) your web browser and start using your xterm.

[2] Please remember to use the **passcode** generated by your SecurID/ActivIdentity token and **not** to use any password such as a web password or a Unix password.

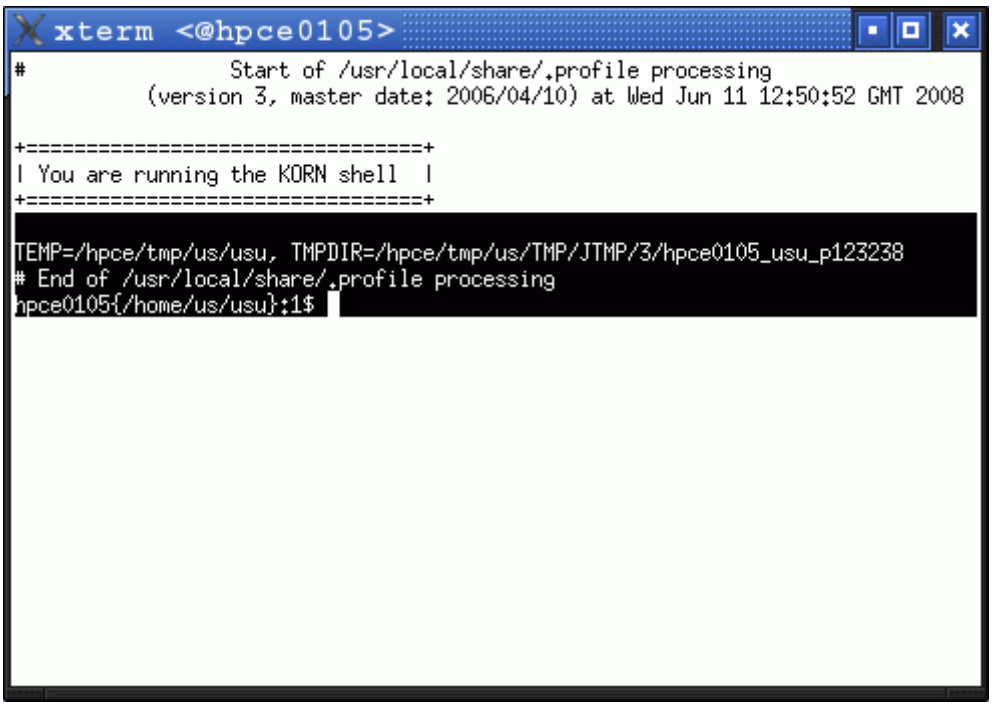

Figure 6: xterm terminal on hpce appears as a standalone window

3.2 Example of session starting a virtual desktop on ecgate

In this case you need to select “ecgate” as “ECMWF server”, specify your type of network link (you can leave this to the default “adsl”), then select:

“Window option”	“virtual desktop”
“Virtual desktop resolution”	“available area”

and press “Log on”.

The login process will be the same as the one described in the previous example but at the end the following window will appear:

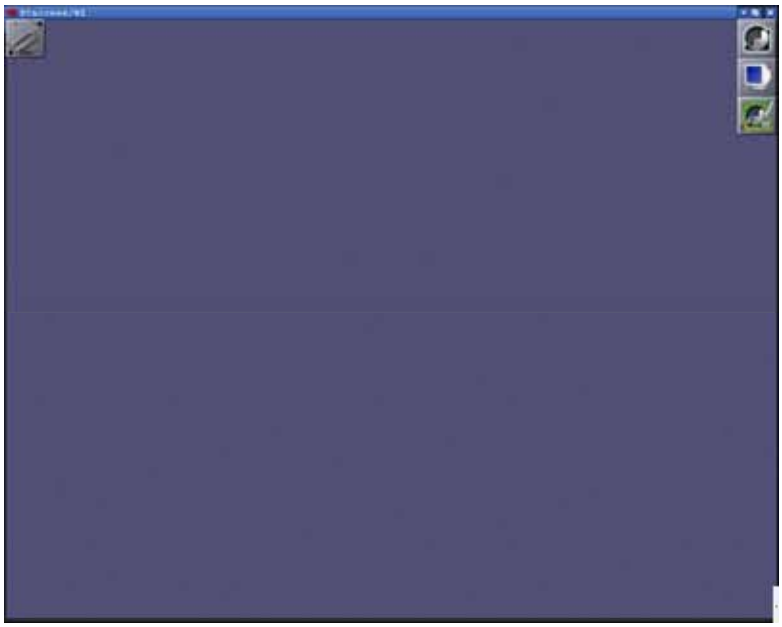

Figure 7: Virtual desktop on ecgate running as a standalone window

The window manager available on this desktop is called WindowMaker. By right clicking on the mouse you will get an Application Menu which allows you to start an xterm or other X based applications. The main desktop window is a standalone X Window and can be minimised. If you prefer, you can start a virtual desktop in full screen mode by choosing the "Virtual desktop resolution" option "full screen".

The section "WindowMaker overview" below describes in more detail the usage of WindowMaker.

4 How to connect using a standalone NX client

In addition to using the web browser based access to ECMWF via NX described previously, you can also download a standalone NX client. To do this, go to:

http://www.nomachine.com/download.php

and select the NX client for your platform. The installation is quite straightforward and is described in more detail at:

http://www.nomachine.com/documents/client/install.php

You can then use the "Download session file" option available through the web interface:

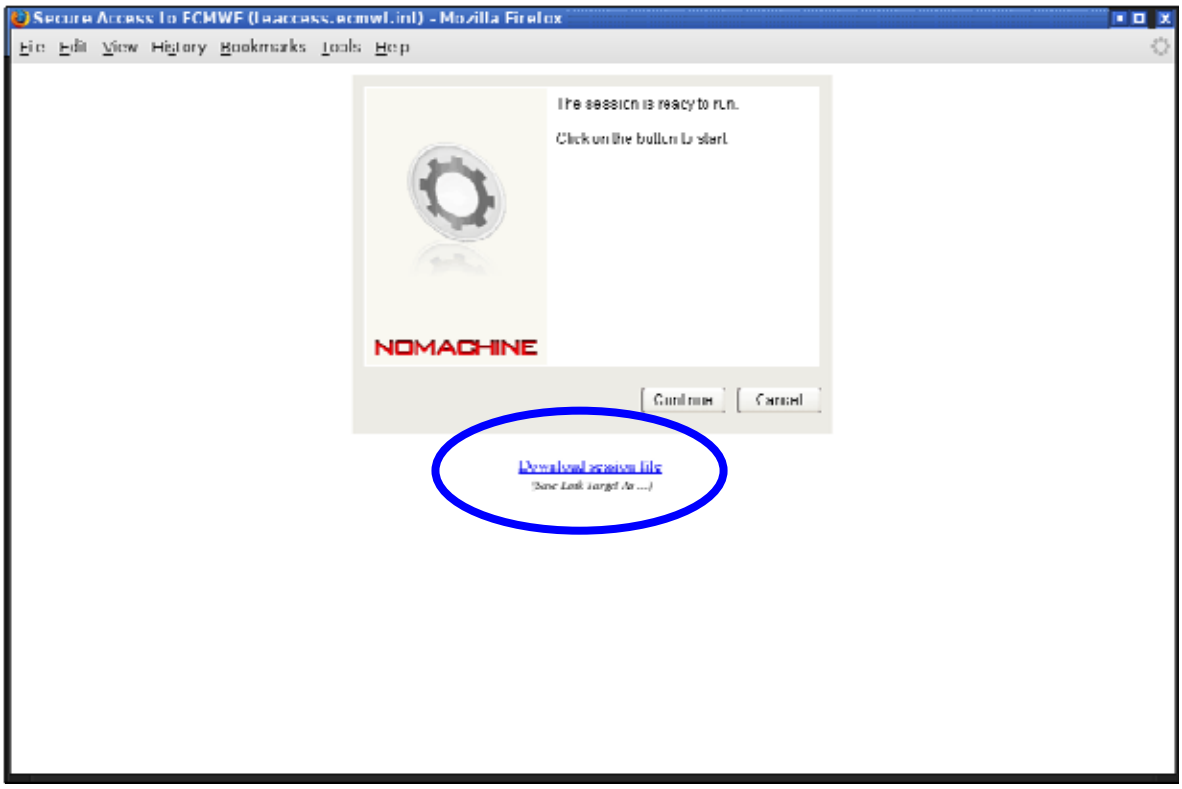

Figure 8: Web page showing the "Download session file"

This URL allows you to download a complete configuration file which can be used with your standalone NX client. You can have multiple configuration files, say one for a standalone xterm on ecgate and another one for a full virtual desktop still on ecgate, and then select the appropriate one from your NX client.

Alternatively, you can use the NX client “Wizard” to setup your own configuration as described in the NX client documentation available at:

http://www.nomachine.com/documents/configuration/client-guide.php

We recommended using this option for advanced users only. We also recommend that you first look at one of the configuration files which you can obtain using the “Download session file” URL.

The first time you start the NX client the following window will appear (see Step 1).

Figure 9: NX Connection Wizard Step 1

You will have to click “Next” where you will be asked to enter the name of your NX session (in the example <your session>) and the host to connect to. You will have to enter the ECaccess host name “ecaccess.ecmwf.int” as host (see Step 2).

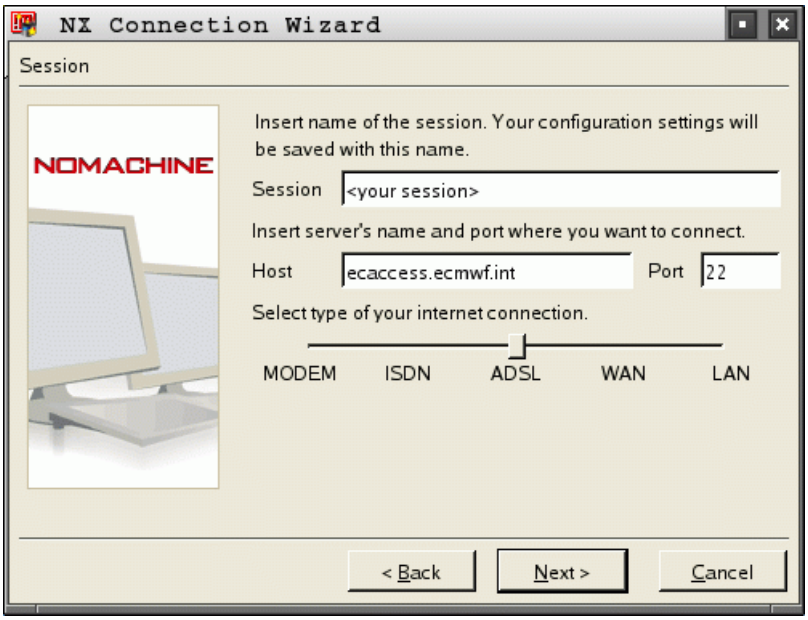

Figure 10: NX Connection Wizard Step 2

You will then get the following window (see Step 3) where you can choose you type of desktop. You will need to choose “Unix” and “Custom”.

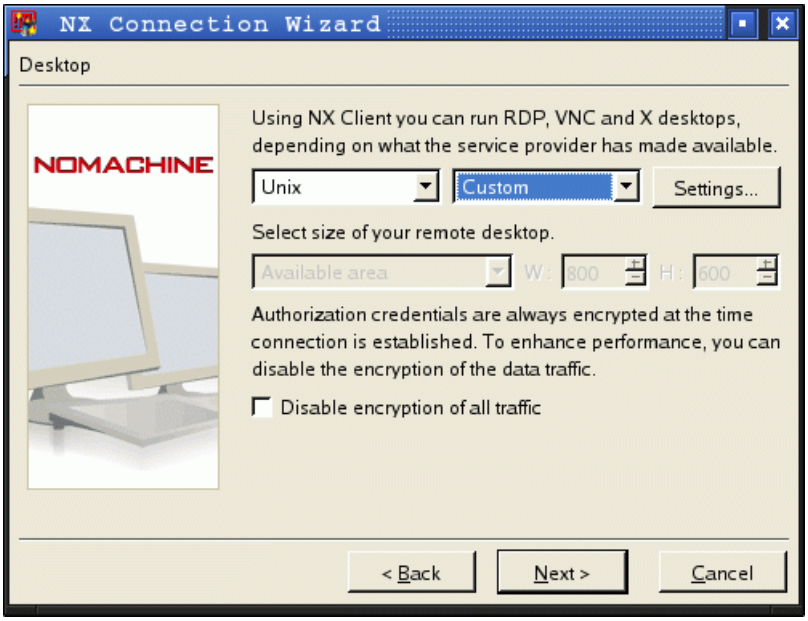

Figure 11: NX Connection Wizard Step 3

Click on “Next” to get the following window (see Step 4). Check the “Show the Advanced Configuration dialog” box and click the Finish button. You will get the following window (see Step 5).

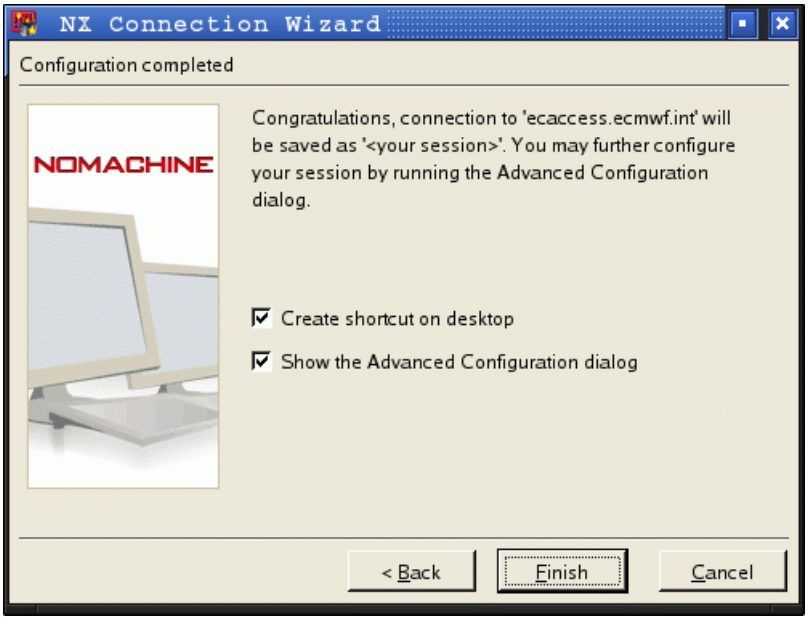

Figure 12: NX Connection Wizard Step 4

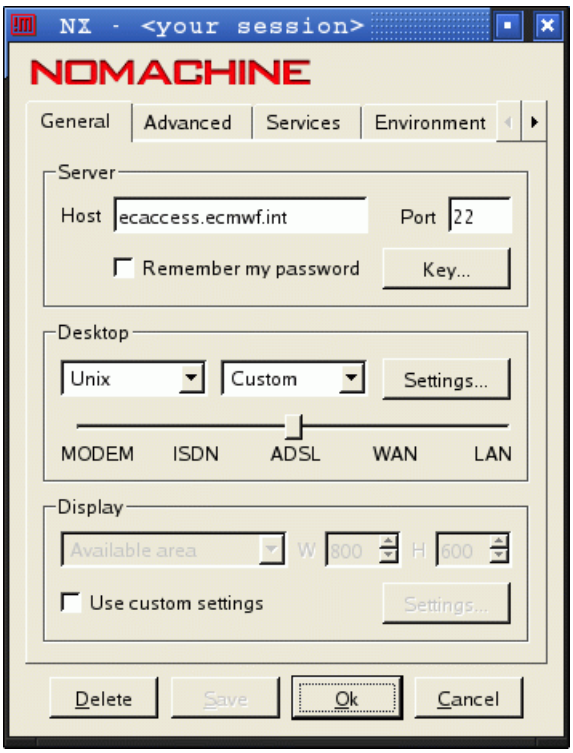

Figure 13: NX Connection Wizard Step 5

If you then click “Ok” you will be able to start your session. In this case you will get a standalone xterm on ecgate. Depending on your firewall setup you may get various warning messages. You will need to authorise all sessions from anything related to NX (nxclient, nxauth, nxssh, etc).

5 WindowMaker overview

WindowMaker is a popular window manager for the X Window System, allowing graphical applications to be run on Unix-like operating-systems. It is designed to emulate NeXT's GUI as an OpenStep-compatible environment and has been described as "one of the most useful and universal window managers available." WindowMaker has a reputation for being fast, efficient and highly stable and is very popular among open source solutions for use on both newer and older machines.

More information on WindowMaker can be found at:

http://en.wikipedia.org/wiki/Window_Maker
http://www.windowmaker.info/

WindowMaker is the window manager which is used when you connect with NX to either ecgate or the supercomputer (hpce/hpcf) and select the “virtual desktop” option.

For example, when you connect to ecgate using the virtual desktop you will get a desktop like this:

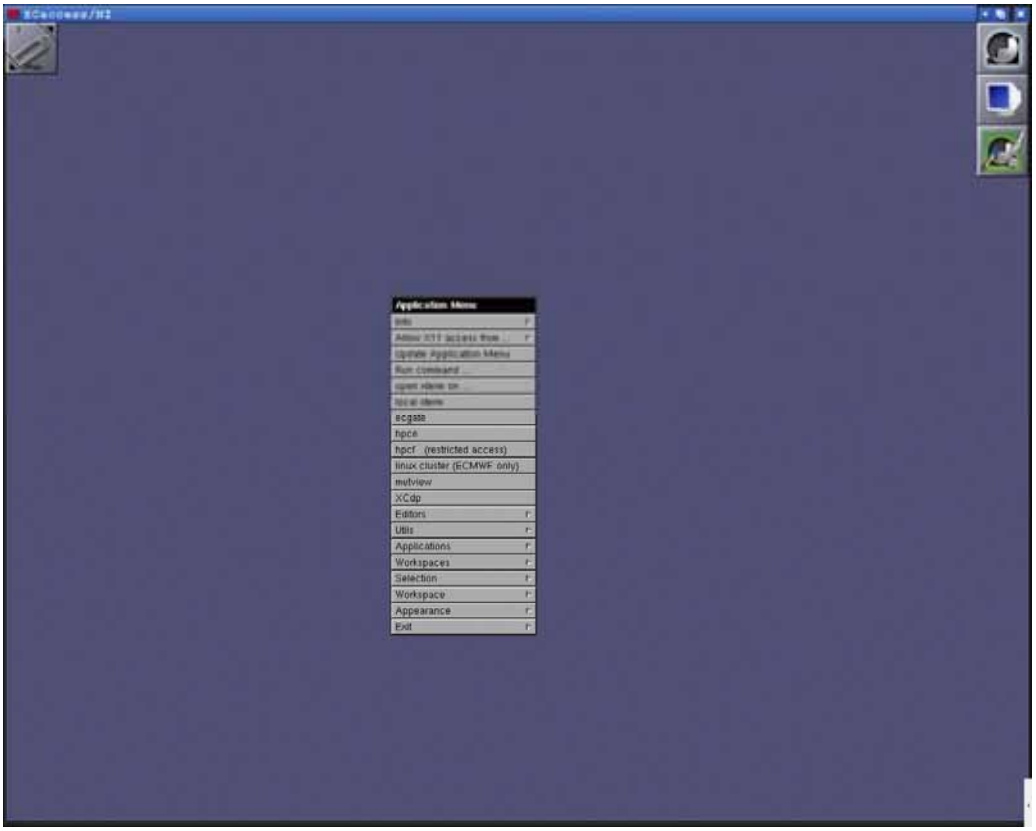

Figure 14: Virtual desktop on ecgate started using NX

The main customisation which has been implemented is a specific “Application Menu” which you can obtain when right-click (opposite mouse button for left-handed mouse) on the desktop. This will bring up the menu on the left when working on ecgate and the one on the right when working on the supercomputer.

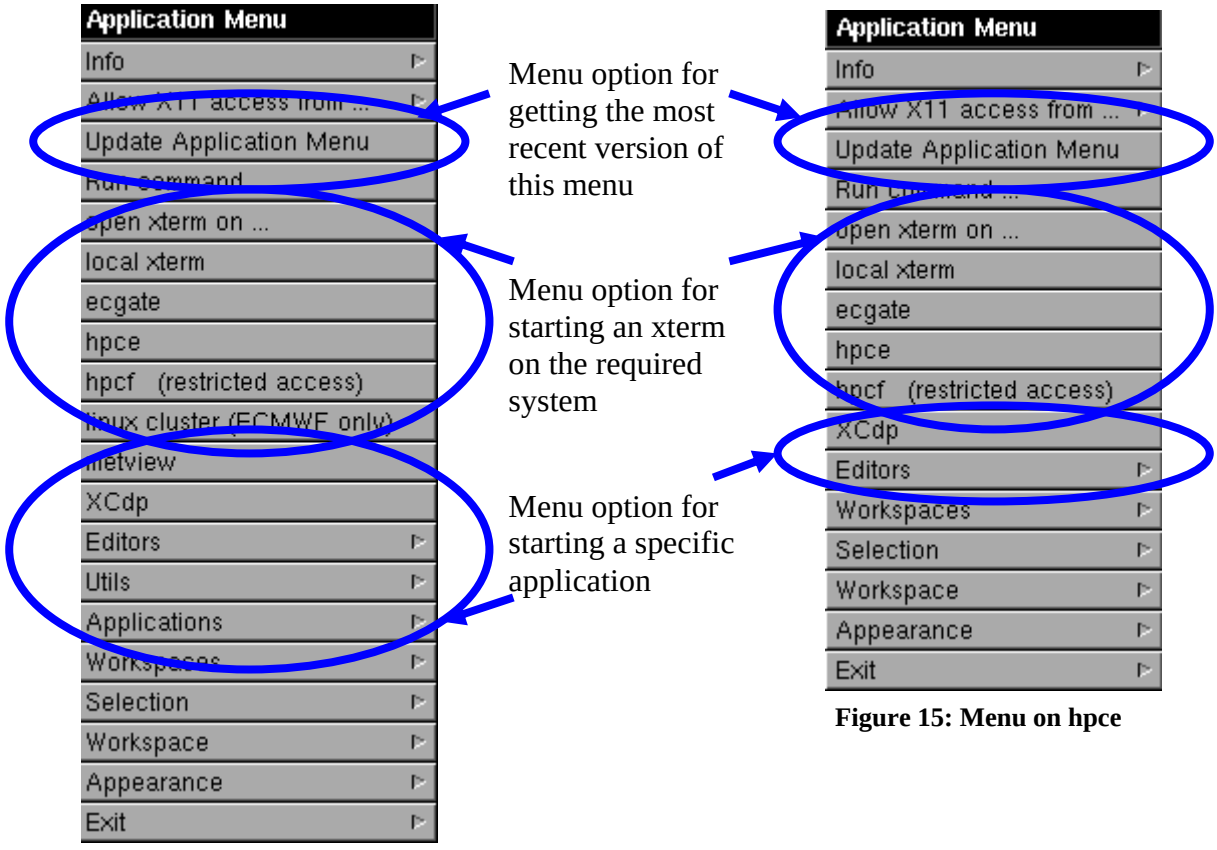

Figure 15: Menu on hpce

Figure 16: Menu on ecgate

The two menus are designed to be very similar with one on ecgate offering more choices regarding the available applications.

The usage of the menu should be quite straightforward.

To terminate a WindowMaker session you need to select the “Exit” option from the menu

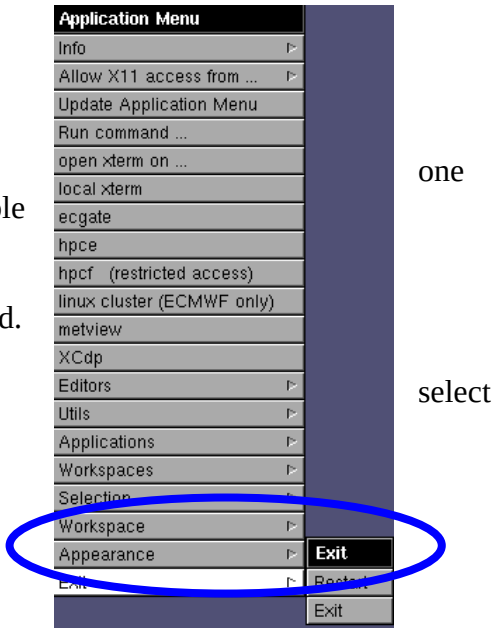

Figure 17: Exit submenu