

EMBnet Norway
User introduction pack (instructions and services overview)
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How to connect a Windows workstation to the EMBnet servers using SSH with X-Windows Tunneling:

I) Introduction:

The purpose of this tutorial is to familiarize you with the concepts and procedures required to connect yourselves to a UNIX/LINUX server from a Windows workstation using:

- a) A Secure Shell (SSH) client program
- b) An X-Windows emulator program

For the purposes of this tutorial, we are going to use the 'Putty' client program and 'Xming' as your X-Windows emulator. There are other programs that can achieve the same functionality, but these two are tested and are freely available on the Internet.

II) Concepts:

The SSH client is a program that facilitates secure text-level access to a UNIX shell. It has been widely employed as a secure alternative to the older and insecure TELNET-based protocol. SSH encrypts your session data. It also checks that the server you are trying to connect to is indeed the right one (certain security attacks might masquerade the server you are trying to connect to for the purposes of stealing your password). These features make the task of a cracker that tries to steal your account details extremely difficult or impossible.

The X-Windows emulator allows a Windows Workstation to display graphical output originating from a UNIX server (when you use programs such as the dottup, XGraph or anything that starts on UNIX and contains graphical output). This is necessary because UNIX employs a graphics system (called 'X-Windows') that is incompatible to the graphics system of Microsoft Windows.

'X-Windows Tunneling' is a process that directs the X-Windows session data via your SSH session. Why do we bother doing that? Well, we talked previously about the security features of the SSH protocol. X-Windows is also susceptible to attacks. Hence, it would be nice if we could send all X-Windows data via an SSH connection. In that case, the SSH connection is called a 'tunnel' because it provides a secure path to the X-Windows data. For the technical minded, there is a lot more to tunneling, but for the purposes of using this feature for your everyday work, this is all you need to understand. The rest of this tutorial is concerned with the process of setting up SSH and X-Win 32.

III) Setting up a simple SSH connection (no X-Windows Tunneling):

Installing 'PuTTY' is simple. First, you have to download it from the following web page:

<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>

After successfully downloading the 'putty.exe' file, make sure you can run the executable from the position you saved it. If you have not saved the file on your 'Desktop' area, you can also drag the file to your desktop to create a shortcut. Left double click on the PuTTY icon on your desktop. Let's see how we can first set up a simple SSH connection, without the need for graphical output (and hence X-Windows Tunneling). You should see a screen similar to the one below:

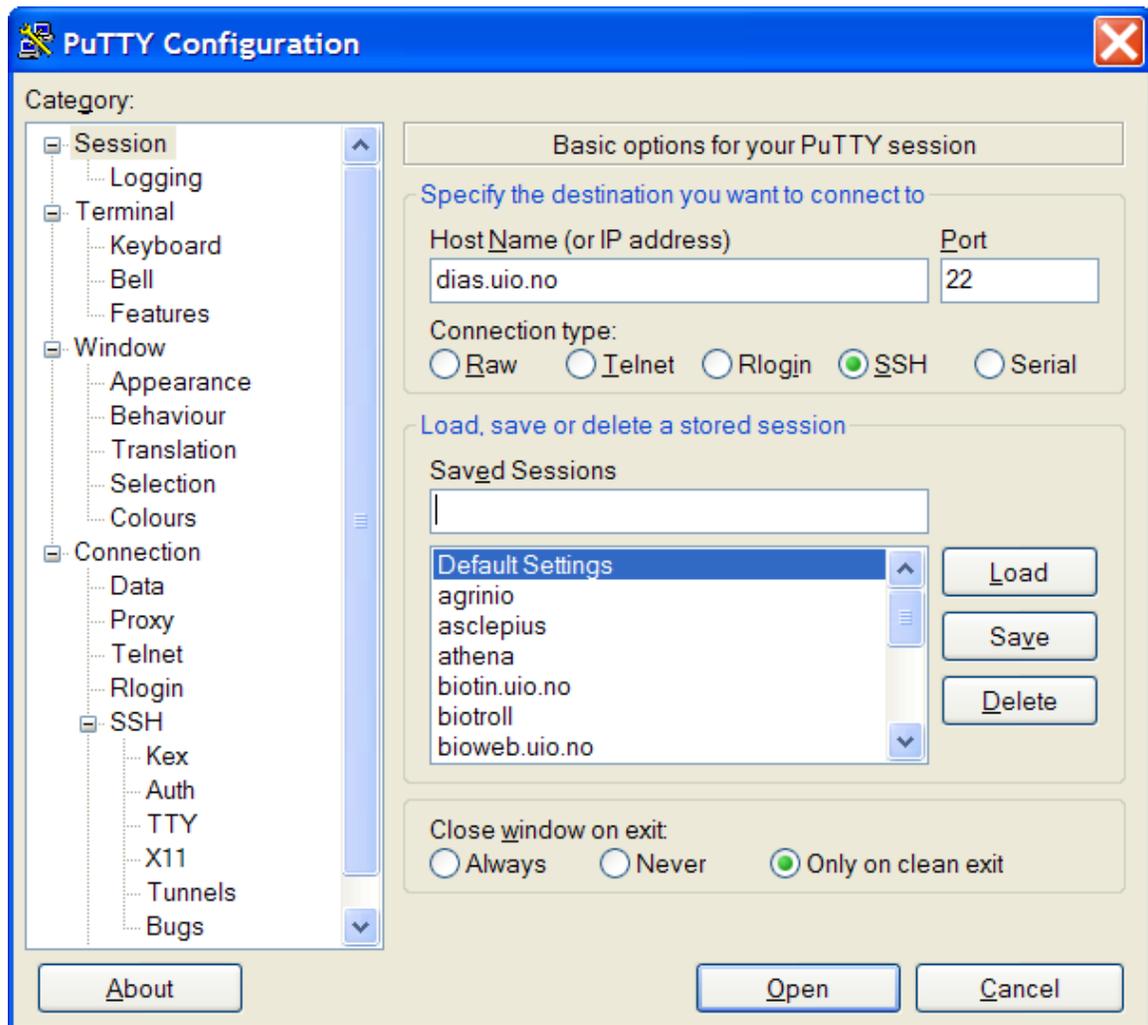


Figure 1: The initial PuTTY screen

A session is a set of configuration details, so you can connect to a specific system. If you have not configured a session before, the 'Saved Sessions' section will be empty. However, as you gradually configure sessions, it will be populated with session names as

Figure 1 shows. The idea is that each time, you should launch PuTTY and double click on a saved session to start a connection without going through the process of configuring all the session details we describe below.

Let's configure a session to connect to EMBnet Norway's EMBOSS server 'dias.uio.no'. With reference to Figure 1, type 'dias.uio.no' in the 'Host Name (or IP address)' field. This is how PuTTY identifies the server to connect and it can be either a valid DNS name or an IP address of the server. The 'Port' field should be always set to 22. The same goes for the 'Connection type' which should be set to SSH.

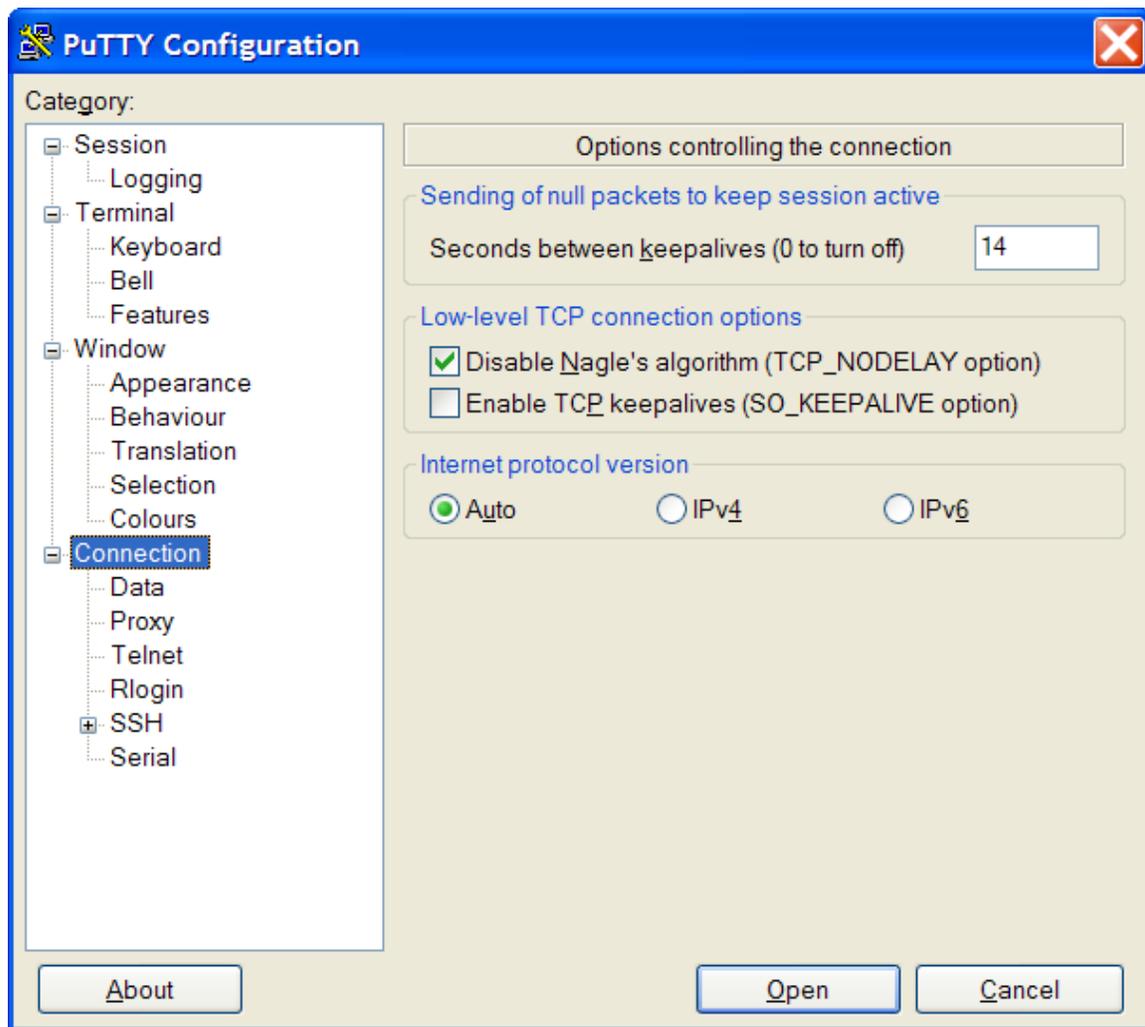


Figure 2: Connection session parameters for PuTTY

Moving over to some configuration parameters on the left side of the screen, Figure 2 shows that we normally should set some 'keepalives', a useful feature that will ensure your session will not be terminated if you do not type any commands for some time. Finally, Figure 3 shows another important configuration parameter, the 'enable X11 forwarding'. Expand the SSH Connection submenu and click on the 'X11' submenu. The

‘enable X11 forwarding’ parameter should always be set, because it makes sure that PuTTY will tunnel the X-Windows data, as described in the previous section.

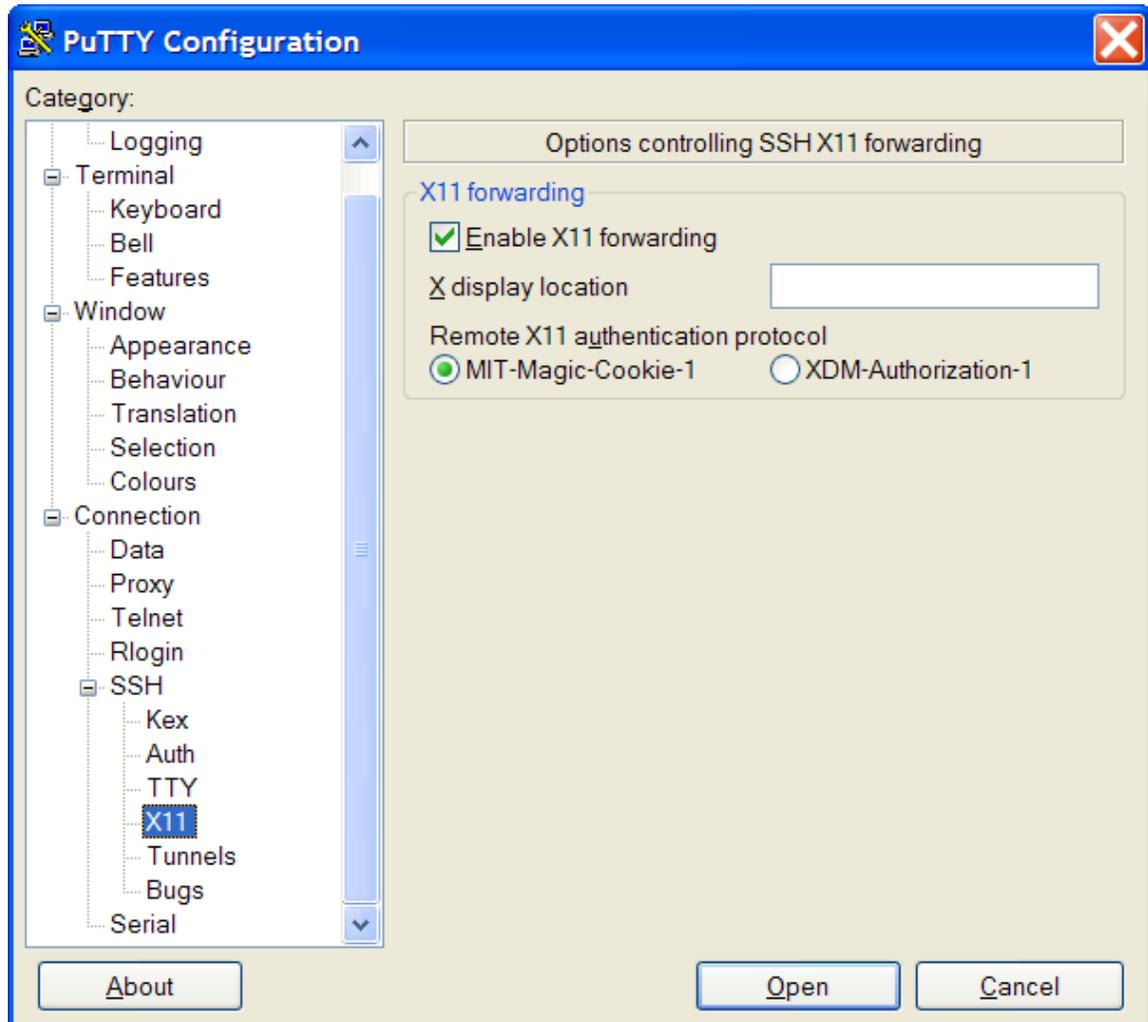


Figure 3: Making sure that X11 forwarding is enabled in PuTTY

At this point, scroll back on the left side, all the way to the top of the ‘Category’ parameter area, click on the ‘Session’ submenu to get back where you started. At the ‘Saved Sessions’ field (middle of the screen), type a meaningful name for the session. Normally the custom is to choose the name of the server as the session name, but other people might type ‘emboss’ to indicate this is the emboss server. It is up to you. I choose the first approach and named the session dias. Then I hit the ‘Save’ button on the right to save the session and its configuration data. Figure 4 shows this final step and figure 5 shows what happens when I hit open and start typing my username and password on the active SSH session.

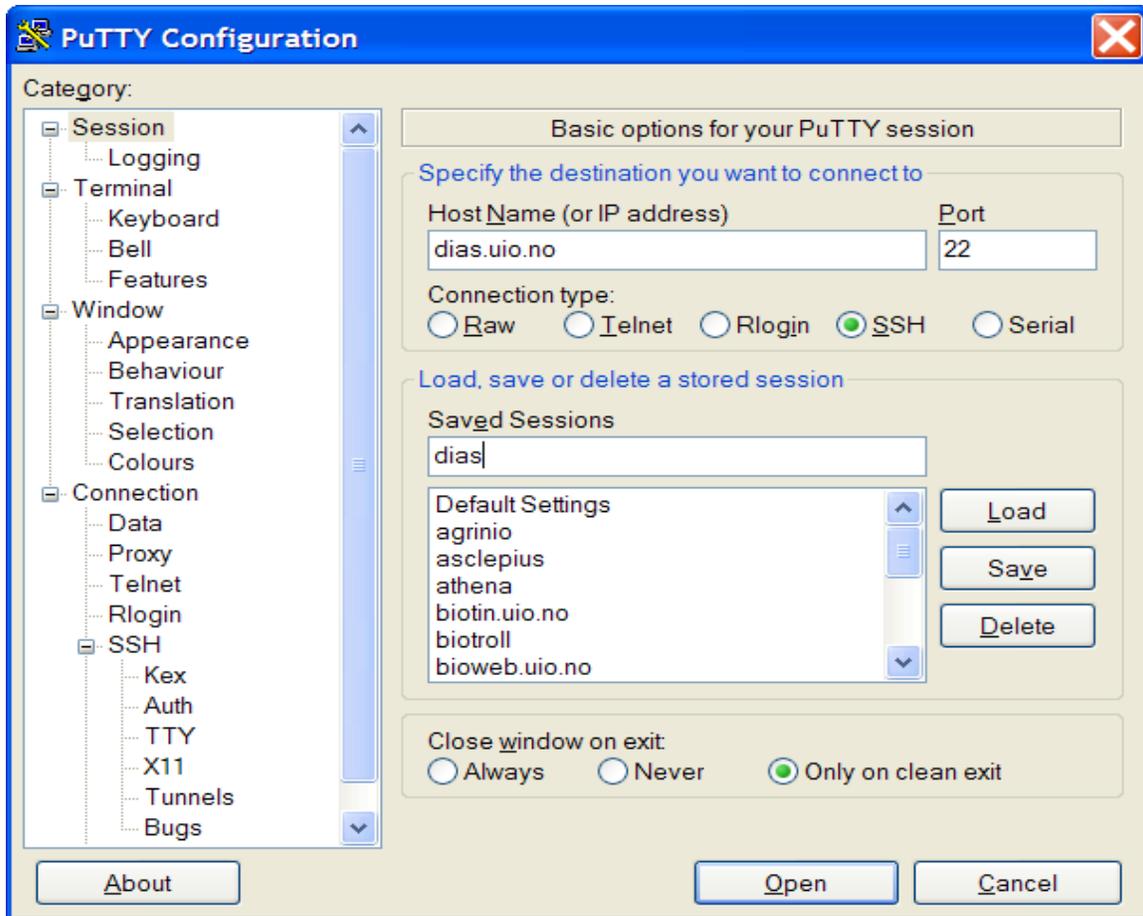


Figure 4: Saving the configured Putty Session

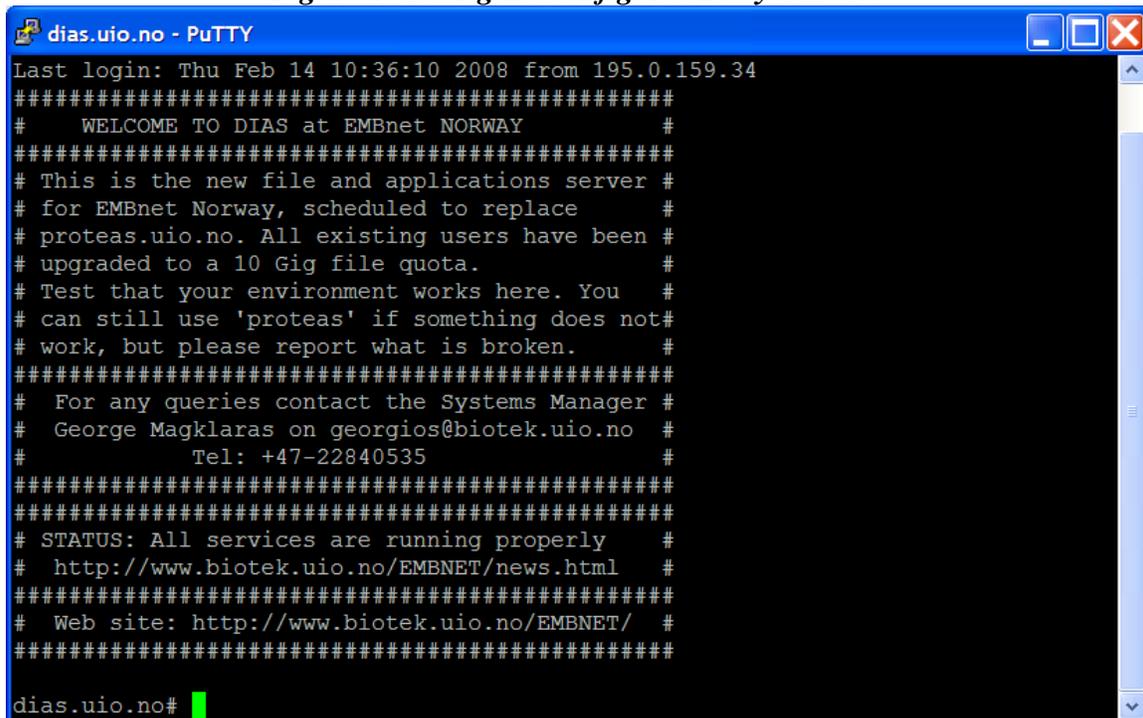


Figure 5: Launching the configured session and getting to the shell prompt

IV) Setting up 'X-Ming' to get graphical output:

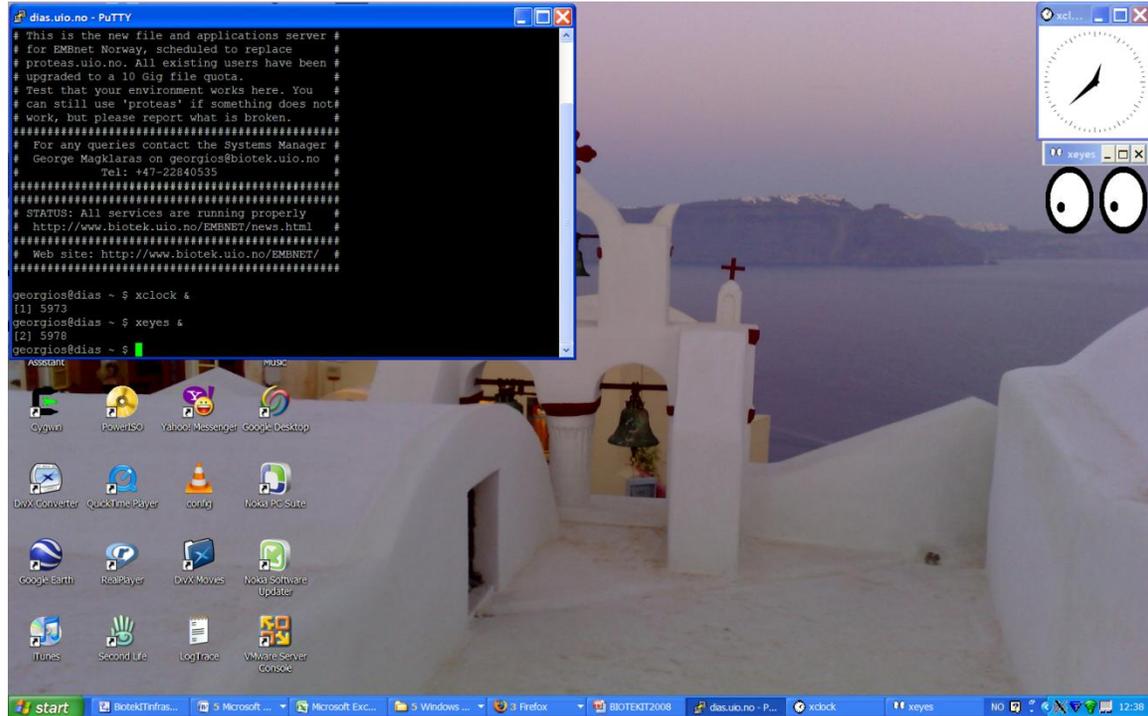


Figure 6: Graphical output from Xming and Putty

If you reached this section, this means you have already configured a basic SSH session and have the functionality of command line access. We are now going to describe how you can get graphical output from the server on your Windows computer.

First of all, you need to download and install Xming on Windows. You can download Xming for free from the following link:

http://sourceforge.net/project/showfiles.php?group_id=156984

It is wise to download the latest version. Launch the downloaded installer and go through the basic process of installing Xming. Depending on the user account settings of your computer, you might need to obtain Administrator privileges, to complete the installation. If you do not have Admin privileges on your Windows system, you need to ask your local IT support to help you with this.

When X-Ming is installed there should be an Xming entry under start-All Programs->Xming. Launch X-Ming and watch as for an X-shaped icon on the right corner of your Windows taskbar (bottom of the Screen). This means that the Xming server is running. Now try to launch your 'dias' PuTTY session. At the command prompt type:

xclock &
and
xeyes &

If you can see output similar to the one in Figure 6, you are all set.

