Introducing CrossConnect

Remote Access Client for Linux Desktops

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Converted to docbook

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1. Introduction

1.1. Synopsis

CrossConnect displays a remote desktop on your local Windows PC. It's targetted at X Window System (*X11*) based desktops.

A secure shell (*SSH*) connection to the remote system establishes the session. Session authentication with a smart card is supported. When authentication forwarding is enabled for the session, the smart card interface can be accessed by applications on the remote system (cryptoki forwarding). Every aspect of the session including the X11 protocol is running completely within the context of the secure SSH session.

1.2. Features

1. Remote access to a Linux desktop (X11 over SSH), easy to setup and use.
2. Concurrent desktops (multiple X11 programs open) to different Linux systems.
3. Smart card authentication for the SSH connection.
4. Remote Linux Session can be allowed to use the smart card on the windows client.
5. Easy way of running SSH tunnels without windows showing on your desktop. Icon is nicely tucked away in the notification area of the taskbar.
6. Small installer approx. 4 MB

2. Design

CrossConnect is a redistribution of PuTTY (with modifications) and additional programs. It makes remote access to a Linux Desktop more convenient.

For showing the graphical desktop CrossConnect detects whether Xming or Cygwin/X is installed on your system. An Xming release is also available for download from the same location as CrossConnect.

Let's assume you want to access a remote Linux desktop from your Windows PC. To do that, you'll need to run several programs. Each program needs to be started with specific parameters. The programs show icons in the taskbar and some may even open an additional console window. While this can be made to work, it's still a bit of a mess.

With CrossConnect, you'll create a session or select a pre-existing one and then CrossConnect orchestrates the programs and hides the appropriate windows. It is all together much cleaner as there is only one application in control.

To display the remote desktop we use the X Window System (X11). Counterintuitively the program that actually displays the remote desktop on your windows PC is called an X *server*. The two open source candidates to use for this are either Cygwin/X or or Xming.

Cygwin/X is build on Cygnus Solution's Unix emulation technology. The design of Cygwin causes systematic problems that are hard to work around. These problems are caused by different versions of Cygwin on the same PC conflicting with each other. e.g. the NX client from nomachine can cause Cygwin/X to stop working when you run the NX client before running Cygwin/X.

Xming is a native Windows program and closely related to Cygwin/X. However, it is currently not as mature and stable as Cygwin/X. Luckily Xming is actively maintained and therefore should improve with time. In order to be flexible, we currently just detect both Cygwin/X as well as Xming and let the user decide which one to use.

CrossConnect contains the latest PuTTY 0.58 package with enhancements. All normal PuTTY functionality is still in place, but additionally all programs including PuTTY's own authentication agent (pageant) can connect to our smart card enabled authentication agent Castella.

Castella supports smart card forwarding. This is a unique feature that allows applications running on the remote linux server to use your smart card on the Win-

dows client. We support several applications e.g. FireFox, Thunderbird and the OpenSSH client from the remote linux session. Castella adds significant value to CrossConnect. Please take a look at the Castella product page [http://www.xpt.nl/products-castella] for more information.

3. Incorporated Software

3.1. PuTTY

We have made several patches to PuTTY in order to incorporate smart card support and to support PuTTY session editing from within CrossConnect. Our release closely tracks the PuTTY development. We are dilligent in incorporating security fixes made to PuTTY immediately into CrossConnect.

We use a version numbering scheme that will allow you to determine exactly what PuTTY version you are using.

So e.g. version 0.58.5613.22 is defined as follows:

0.58current PuTTY version on which the release is based.

5613revision of the PuTTY repository.

22revision of the CrossConnect repository.

3.2. External Links

The links below point to the sites where the software used in CrossConnect originated.

- PuTTY [http://www.chiark.greenend.org.uk/~sgtatham/putty/]
- Xming [http://freedesktop.org/wiki/Xming]
- Cygwin/X [http://x.cygwin.com/]
- Castella [http://www.xpt.nl/products-castella]
- SafeSign [http://www.aeteurope.nl/html/aet.html]

4. Known Issues

4.1. Xming

4.1.1. XKB

The XKEYBOARD extension is disabled by default, because it is not really tested very well and sometimes can cause the X server to crash.

4.2. Cygwin/X

4.2.1. Conflicts with NX Client

The primary reason Xming is preferred over Cygwin/X is because of NoMachines NX client. This technology is based on Cygwin/X. Because both Cygwin/X itself and the NX Client use the cygwin library (although a different version), running them at the same time is out of the question. Unfortunately NoMachine leaves a program running after you shut the NX client down. This application named ipc-daemon2.exe keeps the cygwin library in memory and thus makes the Cygwin/X X11 server crash. Xming being a native windows program is not affected by this.

4.3. Terminating an X11 session

An X11 session can be terminated by closing your local Xming or Cygwin/X. This severs the connection with the remote desktop in an unfriendly way. It becomes a problem when there are still applications on the remote computer that think they are connected to your X Window System. The remote applications will keep their connection open and prevent you from connecting again, at least for a while. The situation usually resolves itself once the remote applications timeout and drop their connection.

4.4. Low speed connections

The SSH protocol supports compression which will enhance performance for a slow remote connection. However this does nothing to reduce protocol roundtrips that are a major cause of slowdown. The current release of CrossConnect was designed with low latency broad band connections in mind. There has been no effort to investigate the performance over low speed connections.

5. LICENSE

6. DISCLAIMER