Remote X Desktop with VNC

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Introduction

Yes, I admit: I am such a sucker who, already since a young age, fixes his old man's computer and then gets blamed for all future problems... The end result is an old man who hardly minds to learn how to use his desktop environment.

About VNC

Virtual Network Computing (VNC) is a graphical desktop sharing system that uses the Remote Frame Buffer protocol (RFB) to remotely control another computer. It transmits the keyboard and mouse events from one computer to another, relaying the graphical screen updates back in the other direction, over a network.

A VNC system consists of a client, a server, and a communication protocol

- The VNC server is the program on the machine that shares its screen. The server passively allows the client to take control of it.
- The VNC client (or viewer) is the program that watches, controls, and interacts with the server. The client controls the server.
- The VNC protocol (RFB) is very simple, based on one graphic primitive from server to client ("Put a rectangle of pixel data at the specified X,Y position") and event messages from client to server.

Note that the machine the VNC server is running on does not need to have a physical display.

RFB is not secure

By default, RFB is not a secure protocol. While passwords are not sent in plaintext (as in telnet), cracking could prove successful if both the encryption key and encoded password are sniffed from a network. For this reason *it is recommended to use a password of exactly eight characters*, since eight characters is also the upper limit on certain VNC versions. If a password is sent exceeding eight characters, the excess characters are removed and the truncated string is compared to the password.

VNC may be tunnelled over an SSH connection which would add an extra security layer with stronger encryption.

This is why I will refrain from

TCP port 5900+N

VNC by default uses TCP port 5900+N,[6][7] where N is the display number (usually :0 for a physical display). Using VNC over the Internet works well if the user has a broadband connection at both ends. However, it may require advanced NAT, firewall and router configuration such as port forwarding in order for the connection to go through.

x11vnc server

Firstly, the system administrator installs the `x11vnc` package on the machine that will act as the VNC server. For Debian-based systems, this goes like:

```
admin@vncserver $ sudo apt-get update
admin@vncserver $ sudo apt-get install x11vnc
```

Then, switch over to the helpless user and create a password for accessing the `x11vnc` server.

```
admin@vncserver $ sudo su helpless
helpless@vncserver $ x11vnc -storepasswd
```

Use a password no longer than eight characters and different from the password of the system login account. This is done for security reasons. As explained above, the RFB protocol is not entirely secure.

```
Enter VNC password:
Verify password:
Write password to /home/helpless/.vnc/passwd?  [y]/n
Password written to: /home/helpless/.vnc/passwd
```

Equally out of RFB security concerns, it is not advisable to start the `x11vnc` server automatically at desktop login. It is much better to create a custom `startvnc` command.

```
helpless@vncserver ~ $ echo 'export PATH="$HOME/bin:$PATH"' >> .bashrc
helpless@vncserver ~ $ mkdir bin
helpless@vncserver ~ $ cd bin
helpless@vncserver ~/bin $ nano startvnc

    #!/bin/bash
    x11vnc -once -usepw -httpport 5900 -ncache 10

helpless@vncserver ~/bin $ chmod +x startvnc
```

```
helpless@vncserver ~ $ startvnc
```

xvnc4viewer client

Over at the VNC client machine, install `xvnc4viewer`:

```
guru@vncclient $ sudo apt-get update
guru@vncclient $ sudo apt-get install xvnc4viewer
```

To access your desktop just use any vncviewer directing to your IP or domain name and type the VNC password.

```
guru@vncclient $ xvnc4viewer vncserver.domain.net:0
```

References

This work is published at https://hamwaves.com/vnc/en/.

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