How To Set Up VNC Server on Debian 8

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Introduction

VNC (Virtual Network Computing) is a system that enables users to connect and interact with graphical desktops of remote computers. It can transmit screen updates, and keyboard and mouse events, over the network.

VNC is useful when you need a graphical desktop environment for your server.

XFCE is a lightweight desktop environment. Because it has low system resource requirements, and because many VNC users are familiar with it, we will use XFCE in this tutorial. However, you can also use your favorite desktop environment, such as Gnome or KDE, instead.

In this tutorial we will set up a Debian 8 server, install the XFCE desktop environment on it, and connect it to via VNC. Additionally, we will create a startup script for VNC Server and secure it over SSH.

Prerequisities

Please complete the following prerequisites.

- Debian 8 (or 8.1) Droplet with root access. 512 MB of RAM is enough to run VNC and XFCE, but you might need a bigger Droplet depending on what you plan to do with the graphical interface
- VNC viewer (client) on your computer to connect to your server. In this tutorial, we will use UltraVNC on Windows, but you can use other VNC clients. You can download UltraVNC here. OS X comes with a built in VNC client called Screen Sharing
- SSH client to establish a secure connection over SSH. We will use PuTTY for Windows. You can download PuTTY here. On OS X, just use the built in Terminal application

Step 1 — Installing VNC and XFCE

In this step, we will install VNC Server and the XFCE desktop environment, with additional software and an icon pack.

Update your server's package lists:

```
# apt-get update
```

Upgrade the packages themselves:

```
# apt-get -y upgrade
```

Then, we will install `tightvncserver` and XFCE4 with some useful add-ons, and an icon theme:

```
# apt-get install xfce4 xfce4-goodies gnome-icon-theme tightvncserver
```

By default there is no browser installed. You can install `iceweasel` (which is a rebranded version of Mozilla Firefox for Debian) if you want to access the web from your VNC connection:

```
# apt-get install iceweasel
```

Step 2 — Creating a VNC User

We will create a separate user for VNC connections, to keep things secure and tidy. Using `sudo` is highly recommended, instead of using the **root** user directly for your VNC server.

You can add a user named **vnc** to your Debian Droplet by using this command:

```
# adduser vnc
```

Give a password to your new user. You can skip all other questions by simply pressing `ENTER`.

Install `sudo` by executing this command:

```
# apt-get install sudo
```

Add your new **vnc** user to the **sudo** group, which will give permissions to that user to execute root commands.

```
# gpasswd -a vnc sudo
```

Let's switch to the **vnc** user:

```
# su - vnc
```

Step 3 — Starting and Stopping Your VNC Server

As our newly created **vnc** user, we can start VNC Server and test our connection.

Start VNC Server:

```
$ vncserver
```

As it is your first time running the server, you will be asked to set a password that clients will use to connect. Keep this password in mind for later! You can also set a view-only password, which will allow users to see the screen but not interact with it. Passwords should be **6-8 characters**.

You will get a notice about your display number when the server is started.

Output

```
xauth:  file /home/vnc/.Xauthority does not exist

New 'X' desktop is vnc:1

Creating default startup script /home/vnc/.vnc/xstartup
Starting applications specified in /home/vnc/.vnc/xstartup
Log file is /home/vnc/.vnc/vnc:1.log
```

By default, VNC connections are served on ports starting at `5901` for the first display. Your second display will be served on port `5902`, etc.

Don't stop the server now, but we're including the stop command for reference.

Use this command to stop your VNC server on `Display 1` (and port `5901`):

```
  $ vncserver -kill :1
```

`:1` is the display number you want to kill.

You can start VNC Server manually when you want to connect again. We'll create a service for VNC Server in a later step.

Step 4 — Connecting from a VNC Client

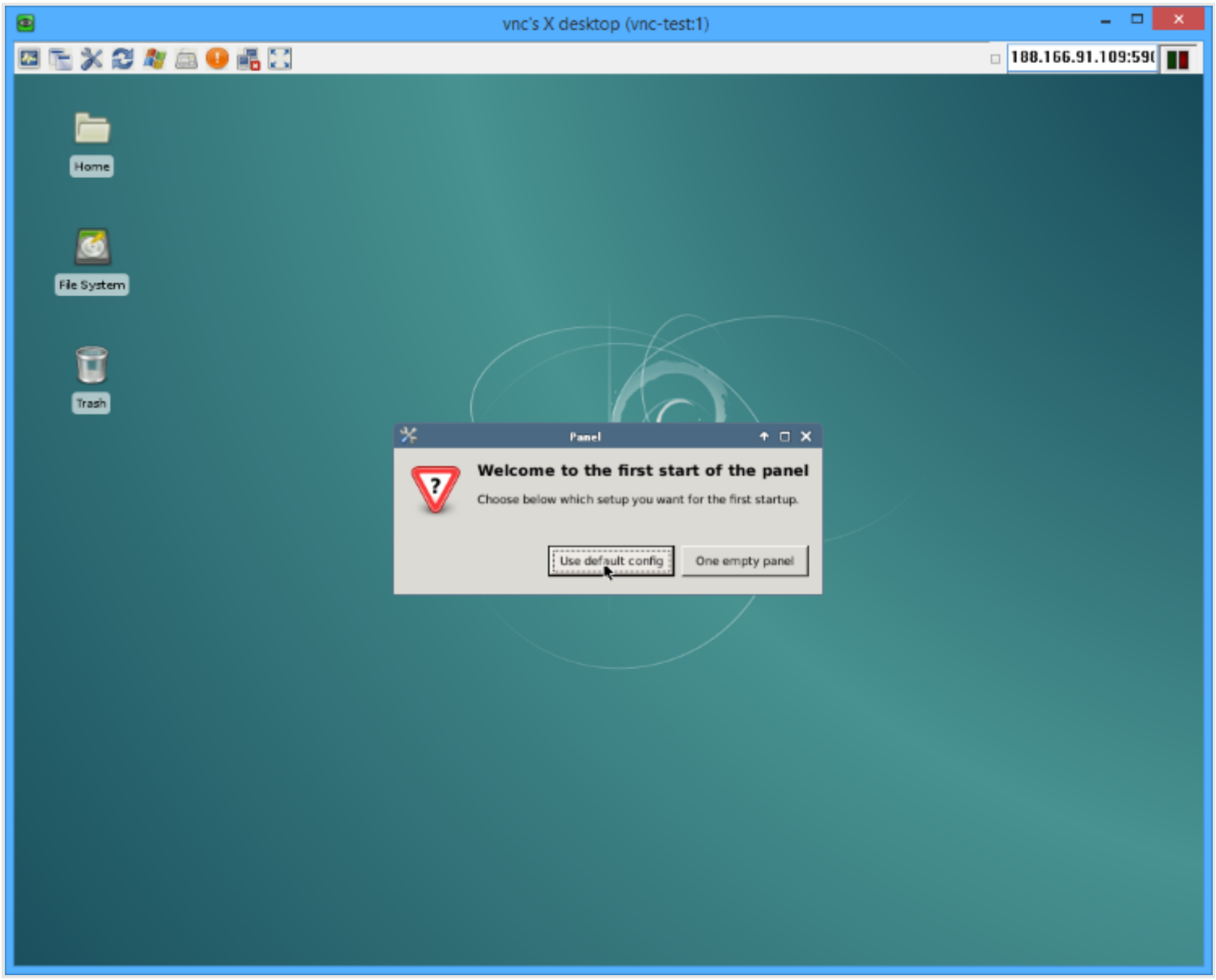
You can now connect to your VNC server. Open your local VNC client, which will vary depending on your operating system.

On Windows, you can use UltraVNC here.

On OS X, you can use the built-in Screen Sharing app or access this app through Safari. In Safari, you can enter **vnc://***yourserverip***:5901**

For your VNC Server address, enter *yourserverip***:5901** and use the password you just set for your VNC connection.

You can select the **Use default config** button on the XFCE welcome screen to get started easily:



Now you can use your remote desktop!

Step 5 — Creating a systemd Service to Start VNC Server Automatically

In this section we'll add VNC Server to systemd. Using a service can be useful to start and stop your VNC server, and also to start it automatically when your Droplet is rebooted.

First, let's kill the current instance:

```
$ vncserver -kill :1
```

Create a simple script to manage and configure our VNC server easily:

As the **vnc** or other sudo user, create a script file by using your favorite text editor.

```
$ sudo nano /usr/local/bin/myvncserver
```

Add these contents exactly. This script provides VNC with a few parameters for startup.

/usr/local/bin/myvncserver

```
#!/bin/bash
PATH="$PATH:/usr/bin/"
DISPLAY="1"
DEPTH="16"
GEOMETRY="1024x768"
OPTIONS="-depth ${DEPTH} -geometry ${GEOMETRY} :${DISPLAY}"

case "$1" in
start)
/usr/bin/vncserver ${OPTIONS}
;;

stop)
/usr/bin/vncserver -kill :${DISPLAY}
;;

restart)
$0 stop
$0 start
;;
esac
exit 0
```

You can modify the script to change the color depth or resolution of your VNC connection.

If you are using nano, you can save the file via `CTRL+O` and exit via `CTRL+X`.

Make the file executable:

```
$ sudo chmod +x /usr/local/bin/myvncserver
```

Our script will help us to modify settings and start/stop VNC Server easily.

If you'd like, you can call the script manually to start/stop VNC Server on port 5901 with your desired configuration.

```
$ sudo /usr/local/bin/myvncserver start
$ sudo /usr/local/bin/myvncserver stop
$ sudo /usr/local/bin/myvncserver restart
```

We can now create a unit file for our service. Unit files are used to describe services and tell the computer what to do to start/stop or restart the service.

```
$ sudo nano /lib/systemd/system/myvncserver.service
```

Copy these commands to the service file. Our service will simply call the startup script above with the user **vnc**.

/lib/systemd/system/myvncserver.service

```
[Unit]
Description=Manage VNC Server on this droplet

[Service]
Type=forking
ExecStart=/usr/local/bin/myvncserver start
ExecStop=/usr/local/bin/myvncserver stop
ExecReload=/usr/local/bin/myvncserver restart
User=vnc

[Install]
WantedBy=multi-user.target
```

Now we can reload `systemctl` and enable our service:

```
$ sudo systemctl daemon-reload
$ sudo systemctl enable myvncserver.service
```

You've enabled your new service now. Use these commands to start, stop or restart the service using the `systemctl` command:

```
$ sudo systemctl start myvncserver.service
$ sudo systemctl stop myvncserver.service
$ sudo systemctl restart myvncserver.service
```

Now you can run VNC Server as a service on your Droplet.

Step 6 — Securing Your VNC Server with SSH Tunneling

By default VNC connections don't use encryption, so it is recommended to use an SSH Tunnel to secure your session.

To do that, we will only let our VNC server serve on **localhost**.
You can do that by adding `-localhost` to the `OPTIONS` line in the startup script created in the previous step.

First, stop the VNC server:

```
$ sudo systemctl stop myvncserver.service
```

Edit your configuration script:

```
$ sudo nano /usr/local/bin/myvncserver
```

Change this line:

/usr/local/bin/myvncserver

```
. . .

OPTIONS="-depth ${DEPTH} -geometry ${GEOMETRY} :${DISPLAY}"

. . .
```

Replace it with:

/usr/local/bin/myvncserver

```
. . .

OPTIONS="-depth ${DEPTH} -geometry ${GEOMETRY} :${DISPLAY} -localhost"

. . .
```

Restart the VNC server:

```
# sudo systemctl start myvncserver.service
```

Now you can't directly connect to your VNC server from your remote computer.

Windows:

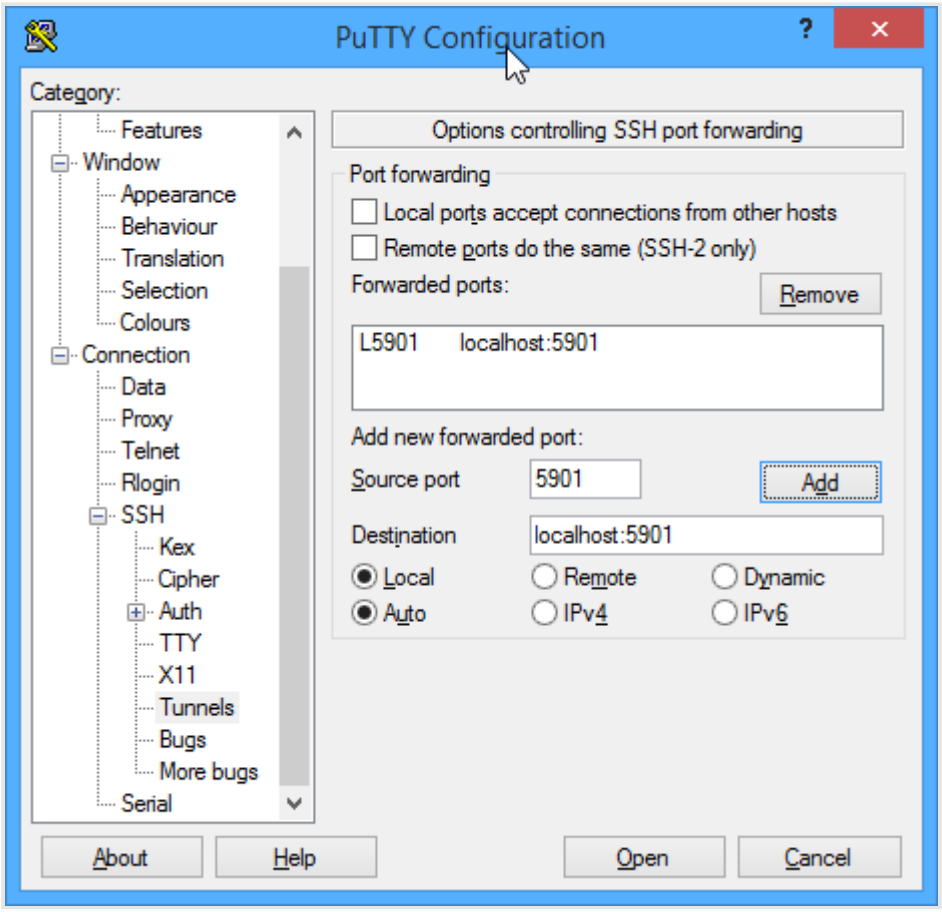
We will use PuTTY to create an SSH Tunnel and then connect through the tunnel we have created.

Open PuTTY.

From the left menu, go to the **Connection->SSH->Tunnels** section.

In the **Add New Forwarded Port** section, enter `5901` as **Source port** and `localhost:5901` as **Destination**.

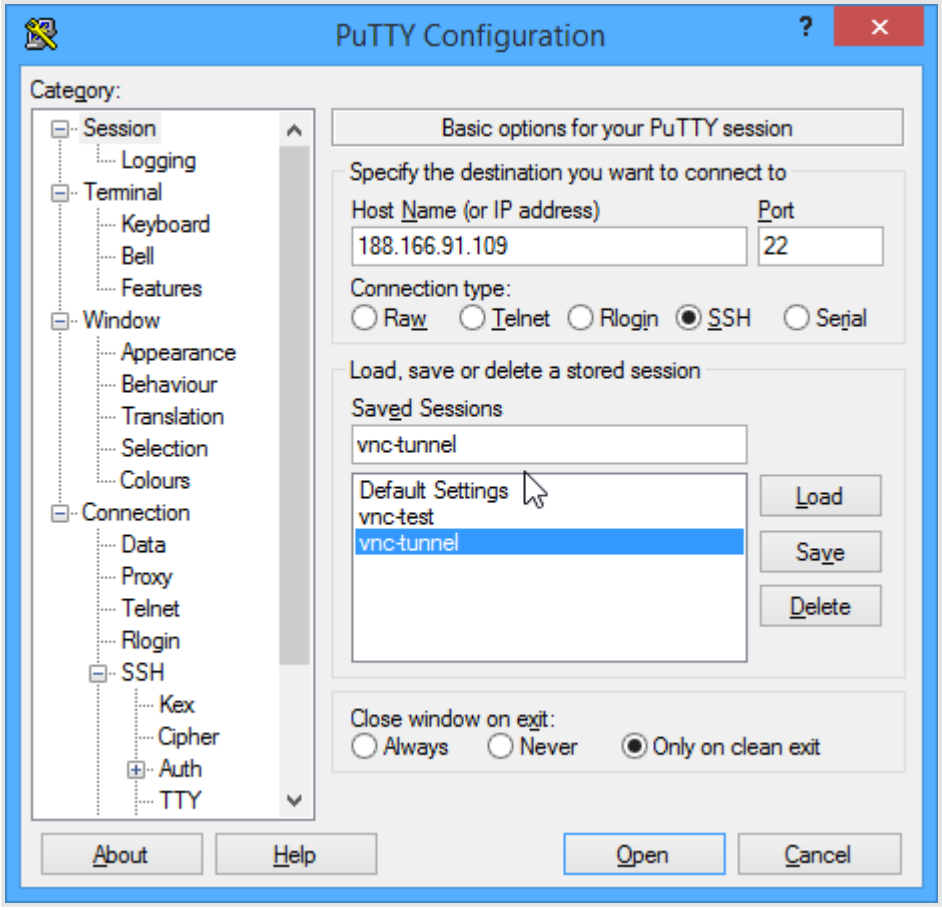
Click the **Add** button.



You can now go to the **Session** section in the left menu.

Enter your Droplet's IP address in the **Host Name (or IP address)** field.

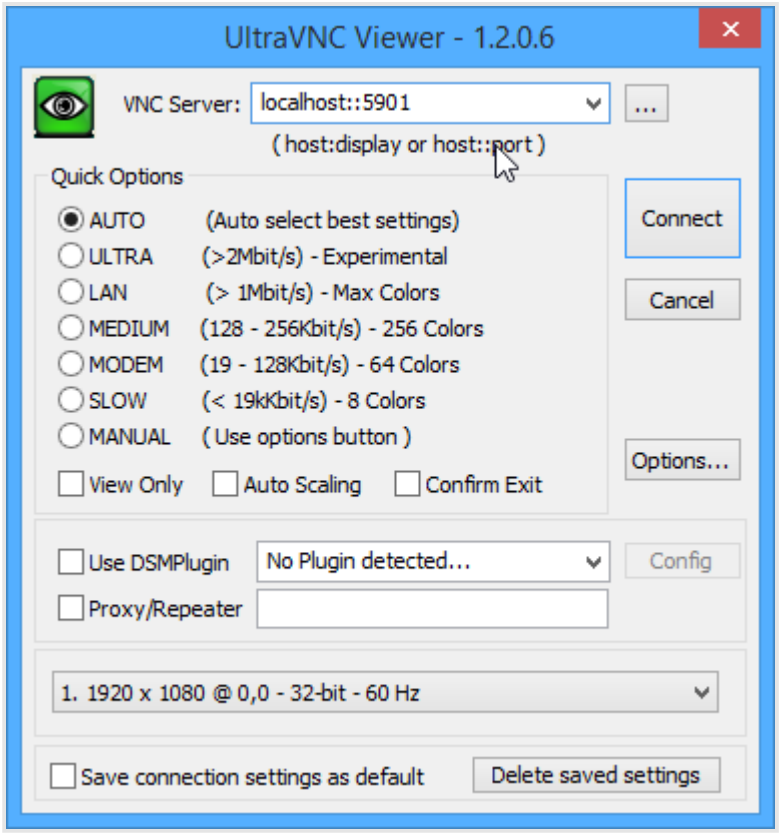
Click the **Open** button to connect. You can also save these options for later use.



Log in with your **vnc** user.

Keep the PuTTY window open while you make your VNC connection.

Now you can use your VNC viewer as usual. Just enter **localhost::5901** as the address, and keep your SSH connection live in the background.



OS X:

To establish an SSH tunnel, use the following line in Terminal:

```
ssh vnc@your_server_ip -L 5901:localhost:5901
```

Authenticate as normal for the **vnc** user for SSH. Then, in the Screen Sharing app, use **localhost:5901**.

Conclusion

Now you can use a shared remote desktop on your Debian 8 server.

Use it to configure your server, or share your screen with others.

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13 Comments

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debysonhit *February 6, 2016*

0 Thank you so much!
Didn't know it's that easy to setup a VNC and GUI

oks *March 10, 2016*

0 I can't get it to work. UltraVNC and Putty (latest versions) on Windows 7 to Tightvnc (latest version) on Debian 8 server, using the exact steps given in the article. The VNC connection tests OK by itself (i.e., without the -localhost option on the server) and SSH works by itself. But when I try to open a VNC session after running an SSH session on the client, I get the error message:

Connection failed - End of Stream
Possible causes:

- Another user is already listening on this ID
- Bad connection

Could you suggest any remedy for this error?

oks *March 10, 2016*

0 I should add that the two computers are on a LAN, there are no other users accessing the server, and latency is no more than would be expected.

oks *March 11, 2016*

0

Well, I have it working now, by following the instructions to the letter.: That is, by running the XFCE desktop instead of my (preferred) KDE, which I had used on the previous attempt.

I'd rather use KDE, so: What might it be about KDE that caused the error?

The relevant line (that was the only step I had done differently):

apt-get install xfce4 xfce4-goodies gnome-icon-theme tightvncserver

I had simply done, on a fresh Debian 8 install selecting KDE as the preferred desktop environment:

apt-get install tightvncserver

Any ideas how to do the setup on KDE?

---

oks *March 11, 2016*

0 It works (with KDE) if I put"User=root" in the myvncserver.service file, but not if "User=vnc". Problem is, that I'm then logged in as root, which is not ideal.

---

oks *March 12, 2016*

0 No response? Then your tutorial is of no use. Are the writers just paid to produce one-off articles and then disappear?

---

darkmorpher *April 7, 2016*

0 Great Tutorial, but you should mention that **File transfer with UltraVNC viewer and TightVNC server is not compatible**.

---

asw *June 14, 2016*

0 Very helpful!
Everything works great for me except the tunneling. I use putty SSH for other things, no problem, and I followed the instructions exactly. However, UltaVNC refuses to connect with the tunneling configuration (though it works fine in the unsecured configuration)
I am running Debian 8.3:
3.16.0-4-amd64 #1 SMP Debian 3.16.7-ckt20-1+deb8u3 (2016-01-17) x86_64 GNU/Linux

Love to hear if others are having (and esp. solving) this problem.

- Ionce

---

asw *June 14, 2016*

0 I suspect the "-localhost" option for secure SSH tunnelling only works with the paid version of VNC....

PikkonMG *July 14, 2016*

0 How would you change the port from 590x to a port of your choosing?

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mgalacci *November 27, 2016*

0 I have a problem with keyboard layout
I have installed the server on "Debian stretch". Works well.
But when i access from the client in Kde (also on Debian streth - krdc or VNC Viewer) I get an error with keyboard. For instance, pressing "f", appear letter "h"

Some idea?

---

mark195351 *April 1, 2017*

1

```
OPTIONS="-depth ${DEPTH} -geometry ${GEOMETRY} :${DISPLAY} -localhost"
```

will still leave port 6001 exposed to the outside world

this should be instead

```
OPTIONS="-depth ${DEPTH} -geometry ${GEOMETRY} :${DISPLAY} -localhost -nolisten tcp"
```

---

darkmorpher *November 1, 2017*

0 Tutorial outdated for Debian 9.

And Iceweasel is now deprecated in favour of Firefox-ESR in Debian 9

https://wiki.debian.org/Iceweasel
https://wiki.debian.org/Firefox

Also, UltraVNC 1.2.1.6 will freeze and crash. Use older version.