

Setting Up VNC Remote Desktops

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Ubuntu Server

Install VNC server with the newer protocol (there are several `vnc-server` packages in the Ubuntu repositories):

```
sudo apt-get install vnc4server
```

After installation, the command `vncserver` points to `vnc4server` through `/etc/alternatives`. Launching `vncserver` first time will ask for setting a password (max. 8 characters). The password can be changed later with `vnc4passwd`.

The following command disables the passwords and sets the X server geometry

```
vncserver -depth 24 -geometry 1280x800 -SecurityTypes None
```

If the X server display number is not given as an argument (for example, `vncserver :10`), the server will choose the next available display from the list 1,2,3,... Once started, the server listens to port $5900 + x$, where x is the display number. For example, the default server instance running on display :1 is listening port 5901.

The different server can be stopped individually with

```
vncserver -kill :<display_number>
```

and all at once with

```
killall Xvnc4
```

If `vncserver` scripts complains about finnish locale setting, add `export LC_ALL=en_US.UTF-8` line to `.bashrc`. This does not affect key mappings.

Then, install the necessary libraries to run `xfce4`, which is a lightweight desktop environment suitable for remote connections.

```
sudo apt-get install xfce4 xfce4-goodies
```

Then edit the VNC `xstartup` script to choose the windows manager and additional startup programs and settings for the remote X session.

```
nano ~/.vnc/xstartup
```

Example contents:

```
#!/bin/sh

[ -x /etc/vnc/xstartup ] && exec /etc/vnc/xstartup
[ -r $HOME/.Xresources ] && xrdp $HOME/.Xresources

# Start a vnc helper application and then an XFCE4 session
vncconfig -iconic &
startxfce4

# Close the vnc server automatically (for this display)
# if the user logs out from XFCE4
vncserver -kill $DISPLAY
```

Securing the VNC connection

Since the vnc connection is not encrypted, it is better to allow only local connections with the *-localhost* option,

```
vncserver -depth 24 -geometry 1280x800 -localhost -SecurityTypes VncAuth
```

and the use SSH port forwarding to securely connect to the vnc port 5900 + <display number>. The following establishes a connection to the remote server *ktpanalytics.vsshp.net* with port forwarding

```
ssh -L 5901:localhost:5901 ktpanalytics.vsshp.net
```

Now, we can point the vnc client to localhost with

```
vncviewer localhost:1
```

and the connection will be encrypted. Using *-SecurityTypes VncAuth* instead of *-SecurityTypes None* prevents other privileged users from accessing the session (unless they know the VNC password).

Ubuntu Desktop

Since Ubuntu Desktop is simply Ubuntu Server with X (with different packages installed by default, but is available through the same repositories), we do not need to download that many X dependencies. The procedure is similar to Ubuntu Server, but in this case we proceed with *gnome-panel* and *metacity*.

```
sudo apt-get install vnc4server gnome-panel metacity
```

Edit the *~/vnc/xstartup* file as follows

```
#!/bin/sh

[ -x /etc/vnc/xstartup ] && exec /etc/vnc/xstartup
[ -r $HOME/.Xresources ] && xrb $HOME/.Xresources
xsetroot -solid darkgrey
metacity &
unity-settings-daemon &
gnome-panel &
gnome-terminal &
```

The background color can be changed with the *xsetroot -solid <colorname>* command on the terminal, and set permanently by editing the above config. The colors names are same than in CSS, see e.g. <http://davidbau.com/colors/>. s

Due to the missing 3D support, some features of Gnome cannot be used. For example, *unity-control-center* does not launch. Nonetheless, we can change the Desktop theme from command line.

To switch from the default dark (Ambiance) theme to the optional light (Radiance) theme in Terminal, issue

```
gsettings set org.gnome.desktop.interface gtk-theme Radiance
gsettings set org.gnome.desktop.wm.preferences theme Radiance
```

And to restore the default

```
gsettings set org.gnome.desktop.interface gtk-theme Ambiance
gsettings set org.gnome.desktop.wm.preferences theme Ambiance
```

Set desktop background image

Install appropriate tool

```
sudo apt-get install feh
```

The, add a line to `~/vnc/xstartup` similar to

```
feh --bg-fill /usr/share/backgrounds/Sea_Fury_by_Ian_Worrall.jpg
```

More options can be found from *feh* manual pages.

References

<https://www.digitalocean.com/community/tutorials/how-to-install-and-configure-vnc-on-ubuntu-14-04>

<http://www.techradar.com/news/software/operating-systems/10-of-the-best-linux-window-managers-90922>

CentOS 7

```
sudo su -
yum install tigervnc-server
cp /lib/systemd/system/vncserver@.service /etc/systemd/system/vncserver@.service
nano /etc/systemd/system/vncserver@.service
```

Edit the file as follows, replasing <USER> with an actual user and change geometry if needed.

```
[Service]
...
ExecStart=/sbin/runuser -l arho -c "/usr/bin/vncserver %i -geometry 1440x900 -SecurityTypes None"
PIDFile=/home/arho/.vnc/%H%i.pid
```

Then, reload the daemon settings

```
systemctl daemon-reload
```

Now, exit from root and issue, as an ordinary user,

```
vncpasswd
```

Then, back to root priviliges

```
sudo su -
systemctl start vncserver@:1.service
systemctl enable vncserver@:1.service
```

If you accidentally crippled your VNC session (e.g. by logging out or closed the clipboard extension client), the service can be restarted with

```
sudo systemctl restart vncserver@:1
```

Open Firewall for VNC

Use ssh to log into the system with an X-server enabled computer (e.g. Mac OS X or Ubuntu Linux) and issue `firewall-config`. Then choose: Zone: public, Configuration: Permanent, enable Service *vnc-server*, and reload Firewalld from the Options -menu.

The other option is to enable the firewall from command line

```
sudo firewall-cmd --permanent --add-service vnc-server
sudo systemctl restart firewalld.service
```

Switch Gnome shell style

The user can switch from Gnome Classic to Gnome by logging out and selecting Gnome from the Session list on the login screen. To switch from Gnome Classic to Gnome from within the user session, run the following command:

```
gnome-shell --mode=user -r &
```

To switch back to classic, issue

```
gnome-shell --mode=classic -r &
```

I have not yet found a way to make this permanent. One option is to introduce an alias in *.bashrc*

```
alias go_gnome='gnome-shell --mode=user -r &'
alias go_classic='gnome-shell --mode=classic -r &'
```

And run that every time when the vncserver needs to be restarted (which is not often).

References: https://access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/7/html/System_Administrators_Guide/ch-TigerVNC.html

Connecting a VNC Desktop

Connecting from Windows

Real VNC Viewer: The Real VNC Viewer is free to use. Server can be connected with simply the name or IP and display number

```
192.168.1.220:1
```

Virt-Viewer: The Windows version of virt-viewer differs from the Linux software with the same name. Open the software and connect with

```
vnc://remotebox.vtt.fi:5901
```

where the machine name or IP is followed by the VNC server port (now 5901 = 5900 + 1 for the first display).

Connecting from Linux

Remmina is one of the best remote desktop viewers for linux (<http://remmina.sourceforge.net/>). For Ubuntu, it is available from software center.

Nonetheless, also Real VNC Viewer is available from <https://www.realvnc.com/download/viewer/>

There are also command line clients available (that can also do ssh-tunneling directly):

```
xvncviewer -via arho@abscissa.vtt.fi 192.168.1.220:1
xtightvncviewer -via arho@abscissa.vtt.fi 192.168.1.220:1
```

Securing the connection with ssh

The ssh port forwarding can be done with with the command line *ssh* or with Putty in Windows.

From command line, issue

```
ssh -L 5901:localhost:5901 abscissa.vtt.fi
```

after which the connection is done to *localhost*, e.g. *vnc://localhost:5901*.