FreeBSD "First Steps" with VirtualBox: XFCE4 in FreeBSD

Notebook: MCi Pub - Articles

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Source: https://www.freebsd.org/doc/en_US.ISO8859-1/articles/linux-users/article.html#network

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Edition 3

See also:

- Ferrell, John. *FreeBSD Quickstart Guide for Linux® Users*
- FreeBSD Wiki. *Pkg Primer*
- *FreshPorts*
- FreeBSD Handbook (Also available in PDF format)
  - Note section 22.2 in the FreeBSD Handbook: *FreeBSD as a Guest OS*
    - This manual section illustrates a procedure for a new FreeBSD edition with an older version of VirtualBox
    - The following "First Steps" outline focuses on using the FreeBSD 10 VMDK dowloaded from FreeBSD.org, in which a bare-bones installation of FreeBSD 10 is already created
    - The essential procedure would be similar with newer versions of VirtualBox
  - Note section 6.5, *Xorg Configuration*
- FreeBSD Wiki. *VirtualBox*
- Matloff, Norm. *An Extremely Quick and Simple Introduction to the Vi Text Editor*

Steps:

1. Download and install VirtualBox and extension pack
2. Download FreeBSD 10 VMDK virtual image (AMD64)
3. Configure VirtualBox to use the downloaded VMDK image as the filesystem for a virtual machine in Virtualbox
   - By default, this will create a NAT Virtualbox networking interface for the virtual machine
4. Boot the virtual machine
   - Note that the default VMDK image does not include guest-add ons. Furthermore, VirtualBox mouse integration is not initially available in the FreeBSD guest VMDK. If the mouse cursor cannot be recovered within the FreeBSD console, on newer Microsoft Windows platforms consider 'CTRL+ALT+DEL' and subsequent 'ESC'
   - The default FreeBSD shell, `csh`, is relatively *spartan.* Furthermore, the console offers no *scrollback* when FreeBSD is initially booted via VirtualBox.
5. Login as root
6. Set root password: `passwd`
7. Configure networking: `dhclient -b em0`
   - This instructs dhclient to acquire an IPv4 address for the network interface 'em0', in the background
   - The DHCP request is made to the DHCP client included in the VirtualBox NAT configuration
   - Add to /etc/rc.local:
     - echo dhclient -b em0 >> /etc/rc.local
8. Install 'pkg':
   - `pkg install pkg`
   - The'pkg' command will present a query, initially, for installing 'pkg'
   - 'pkg' is roughly analogous to Debian's `apt-get`, but offers a unique range of options not available with apt-get
9. ***Optional*:** Install the Jed text editor, an Emacs-like alternative to VI
   - `pkg install jed`
10. ***Optional*:** Install BASH and BASH completions
    - `pkg install bash bash-completion`
    - Observe messages output when the packages are installed, and modify configurations appropriately

```
bash requires fdescfs(5) mounted on /dev/fd

If you have not done it yet, please do the following:

        mount -t fdescfs fdesc /dev/fd

To make it permanent, you need the following lines in /etc/fstab:

        fdesc   /dev/fd         fdescfs         rw      0       0

=====================================================================
Message for bash-completion-2.1_5,1:
 =====================================================================

To enable the bash completion library, add the following to
your .bashrc file:

[[ $PS1 && -f /usr/local/share/bash-completion/bash_completion.sh ]] && \
        source /usr/local/share/bash-completion/bash_completion.sh

See /usr/local/share/doc/bash-completion/README for more information.

=====================================================================
root@:~ #
```

- Advice: Consider adding the recommended `.bashrc` settings to `/etc/skel/dot.bashrc`
- BASH will be added to /etc/shells when the `bash` package is installed
- rbash is also installed with the `bash` package

11. Create a non-root user for normal login, adding the user to the 'wheel' group. The following example also specifies that BASH will be used as the user's shell and that `/etc/skel/` will be used to populate files in the user's home directory
    - `adduser -u 1000 -G wheel -s bash -k /etc/skel/`
12. Install Virtualbox OSE guest additions and kernel module:
    - `pkg install vitualbox-ose-additions vitualbox-ose-kmod`
    - The `xorg-server` package will also be installed, at this time. This outline proceeds to the installation of the full `xorg` package, in a subsequent task item
    - Results:

```
=====================================================================
Message for virtualbox-ose-additions-4.3.22:
 =====================================================================

VirtualBox Guest Additions were installed.


You need to enable the vboxguest startscript to load the kernel module and
vboxservice to use host time synchronization.

vboxguest_enable="YES"
vboxservice_enable="YES"

You also have to add all X11 users that want to use any of the additional
features (clipboard sharing, window scaling) to the wheel group.

%25 pw groupmod wheel -m jerry

Reboot the machine to load the needed kernel modules.

For detailed informations please visit http://wiki.freebsd.org/VirtualBox

=====================================================================
root@:~ #
```

13. Modify `/etc/rc.conf` with contents according to the message printed when `vitualbox-ose-additions` is installed
    - Simple file create/append: `cat <<EOF >> /etc/rc.conf` {RETURN} *{TEXT}* {RETURN}`EOF`
14. Exit the root user's shell (CTRL+D)
    - Reboot. Then log in, again, as the root superuser
15. Install full the full X.org package, and XFCE, add-ons for XFCE, and xinit
    - `pkg install xorg xinit xfce xfce4-wm xfce4-wm-themes xfce4-panel gtk-xfce-engine`
16. Generate X.org configuration

- Generate a prototype configuration for X.org, in the file `xorg.conf.new`
  - `Xorg -configure`
- Test the configuration generated in `xorg.conf.new`
  - `Xorg -config xorg.conf.new -retro`
- If the screen shows the X mouse cursor on the crosshatched background, then install the generated configuration as the main X.org configuration, as the root superuser:
  - `cp xorg.conf.new /etc/X11/xorg.conf`

17. Modify `/etc/X11/xorg.conf`
    - Add the following to the "Modules" section of the X.org configuration:
      - `Load "freetype"`
    - Rewrite the "Input Device" section, to ensure that only the following two lines are contained in that section of the configuration file
      - `Identifier "Mouse0"`
      - `Driver "vboxmouse"`
18. Run XFCE 4
    - `startxfce4`
19. ***Optional:*** As a non-root user, create a file `~/.xinitrc` [shell script] to run `xfce4-session` after `startx` is run
20. ***Optional:*** Install a *display manager* such as XDM, SLiM, GDM, or KDM
    - Feature: multi-user login to X.org via graphical terminal
21. ***Optional:*** Install additional desktop applications, such as a web browser, text editor, ...
22. ***Optional:*** Install toolchains for *port* building
    - ...
23. ***Optional:*** Build a custom kernel
24. ***Optional:*** Optimize the kernel's runtime with `sysctl`
25. ***Optional:*** Optimize network performance with TCP Congestion Control
26. ***Optional:*** Install and configure 32-bit binary compatibility for Linux ELF archives
    - See also: FreeBSD Handbook. *Linux® Binary Compatibilit*