



MINIX

BY: LUCAS NEIDLINGER

FEATURES OF MINIX

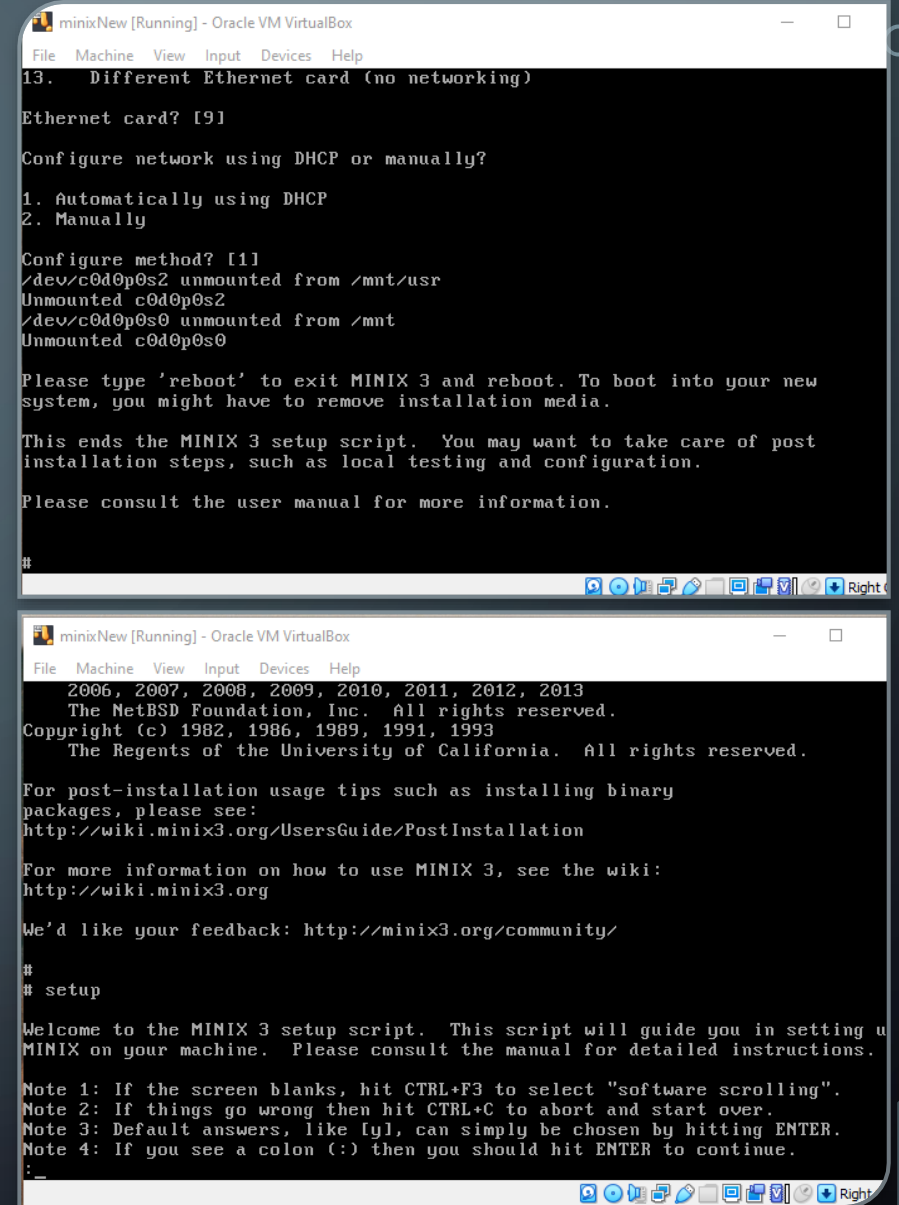
- Minix being a microkernel allows it to be small in size
- Minix uses a multi-level queuing system as the scheduler
- Minix does utilize virtual memory post 3.2 (Most current being 3.3)
- System calls are present as they are needed to handle message passing and memory grants to the hardware

FEATURES OF MINIX

- Minix does not support kernel threads but does implement its own threading library to handle request from different sources
- Minix is 32-bit only

COMPILING AND BOOTING KERNEL

- On initial boot there is a startup script that takes care of the initial compiling of the kernel. After running the script, you just need to reboot without the .iso.
- Subsequent compiles of the kernel can be accomplished by running “make build” in the /usr/src/ folder using the included make file.



```
minixNew [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
13. Different Ethernet card (no networking)

Ethernet card? [9]

Configure network using DHCP or manually?

1. Automatically using DHCP
2. Manually

Configure method? [1]
/dev/c0d0p0s2 unmounted from /mnt/usr
Unmounted c0d0p0s2
/dev/c0d0p0s0 unmounted from /mnt
Unmounted c0d0p0s0

Please type 'reboot' to exit MINIX 3 and reboot. To boot into your new
system, you might have to remove installation media.

This ends the MINIX 3 setup script. You may want to take care of post
installation steps, such as local testing and configuration.

Please consult the user manual for more information.

#

minixNew [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013
The NetBSD Foundation, Inc. All rights reserved.
Copyright (c) 1982, 1986, 1989, 1991, 1993
The Regents of the University of California. All rights reserved.

For post-installation usage tips such as installing binary
packages, please see:
http://wiki.minix3.org/UsersGuide/PostInstallation

For more information on how to use MINIX 3, see the wiki:
http://wiki.minix3.org

We'd like your feedback: http://minix3.org/community/

#
# setup

Welcome to the MINIX 3 setup script. This script will guide you in setting u
MINIX on your machine. Please consult the manual for detailed instructions.

Note 1: If the screen blanks, hit CTRL+F3 to select "software scrolling".
Note 2: If things go wrong then hit CTRL+C to abort and start over.
Note 3: Default answers, like lyl, can simply be chosen by hitting ENTER.
Note 4: If you see a colon (:) then you should hit ENTER to continue.
:
=
```

```
minix [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

done.

Minix/i386 (192.168.50.96) (console)

login: lucasNeidlinger
Password:
Copyright (c) 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005,
2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013
The NetBSD Foundation, Inc. All rights reserved.
Copyright (c) 1982, 1986, 1989, 1991, 1993
The Regents of the University of California. All rights reserved.

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$
```

```
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# ifconfig
/dev/ip: address 192.168.50.96 netmask 255.255.255.0 mtu 1500
# pring google.com
pring: not found
# ping google.com
PING google.com (142.250.64.174): 64 data bytes
64 bytes from 142.250.64.174: icmp_seq=0 ttl=110 time=16.666667 ms
64 bytes from 142.250.64.174: icmp_seq=1 ttl=110 time=16.666667 ms
64 bytes from 142.250.64.174: icmp_seq=2 ttl=110 time=16.666667 ms
^C
---google.com PING Statistics---
3 packets transmitted, 3 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 16.666667/16.666667/16.666667/nan ms

#
```

```
minix [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

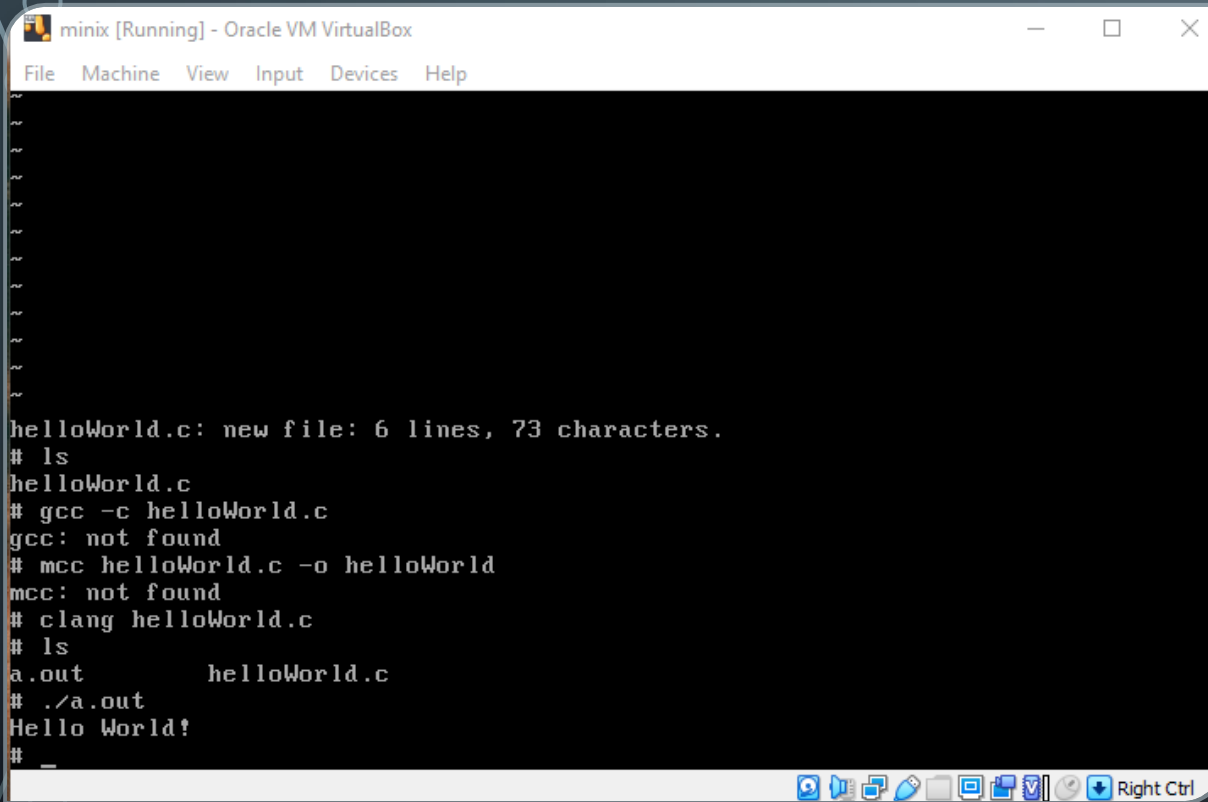
#Changing user database information for lucasNeidlinger.
Login: lucasNeidlinger
Password: *****
Uid [#]: 1000
Gid [# or name]: 100
Change [month day year]:
Expire [month day year]:
Class:
Home directory: /home/lucasNeidlinger
Shell: /bin/sh
Full Name:
Location:
Office Phone:
Home Phone:

/tmp/pw.01903a: unmodified: line 1
```

```
minix [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

# passwd
Changing local password for root.
New password:
Retype new password:
# date
Thu Nov 18 18:16:51 GMT 2021
# echo export TZ=America/New_York > /etc/rc.timezone
# cat /etc/rc.timezone
export TZ=America/New_York
# pkin update
pkin: not found
# pkgin update
Database needs to be updated.
proceed ? [Y/n]
reading local summary...
processing local summary...
updating database: 100%
pkg_summary.bz2 100% 624KB 312.3KB/s 200.5KB/s 00:02
processing remote summary (http://www.minix3.org/pkgsrc/packages/3.3.0/i386/All)
...
updating database: 100%
#
```

COMPILING AND RUNNING PROGRAMS



```
minix [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
~
~
~
~
~
~
~
helloWorld.c: new file: 6 lines, 73 characters.
# ls
helloWorld.c
# gcc -c helloWorld.c
gcc: not found
# mcc helloWorld.c -o helloWorld
mcc: not found
# clang helloWorld.c
# ls
a.out      helloWorld.c
# ./a.out
Hello World!
# _
```

- Out of the box Minix comes with vi installed to edit programs with
- To compile C code gcc does not work with Minix, instead the C compiler clang comes standard.
- Then normal ./ runs the compiled program.

CHANGE TO THE KERNEL

- To create a change to the scheduler or creating a system call is quite simple as you just need to go to the respective file and make you desired change.
- Then to recompile the kernel simply run “make build” in the `/usr/src/` directory
- Then reboot and you change will be present.

The background is a dark blue gradient. In the corners, there are white line art illustrations of circuit boards or neural networks, with lines and small circles representing nodes.

ANY QUESTIONS?

WORKS CITED

- Shenoy, Prashant. “Lecture 11 - University of Massachusetts Amherst.” *Lecture 11: Minix Memory Management*, 2020, lass.cs.umass.edu/~shenoy/courses/spring20/lectures/lecture11-scribe.pdf.
- Shenoy, Prashant. *Minix File System*. 2020, lass.cs.umass.edu/~shenoy/courses/spring20/lectures/Lec18.pdf.