CS544 Project 1 Getting Acquainted

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April 11th

Operating Systems II
Spring 2018

Abstract

In this assignment, we boot the virtual machine of Linux kernel, using a QEMU virtual machine monitor. This report lists the commands for booting the QEMU VM, the explanations of command lines, and our team work logs and version control logs.

I. Command List

1) Open the terminal then type
   usename@os2.engr.oregonstate.edu
2) cd /scratch/spring2018
3) mkdir 14
   =>group number is 14
4) cd 14
5) git clone git://git.yoctoproject.org/linux-yocto-3.19.
   =>Export the kernel from URL
6) cd linux-yocto-3.19
7) git checkout tags/v3.19.2
   =>Change the version
8) git branch
   =>Checking out the version
9) cp /scratch/files/*/scratch/spring2018/14/
   =>copy all the files for preparing
10) cp config-3.19.2-yocto-standard ./linux-yocto-3.19/.config
    =>make config files
11) make menuconfig
    =>Change LOCALVERSION, it can help us to check VM followed .config
12) make -j4
    =>setting environment by following .config file
13) source 14/environment-setup-i586-poky-linux
    =>Before typing this command, user should change mode into shell, because source is in bash command
    need to change into the shell (source is the cmd in ”Bash”)Source file have something about the ”qemu-system-i386” cmd bash
14) qemu-system-i386 -gdb tcp::5614 -S -nographic -kernel linux-yocto-3.19/arch/x86/boot/bzImage -drive file=core-image-lsb-sdk-qemux86.ext4,if=virtio -enable-kvm -net none -usb -localtime –no-reboot –append ”root=/dev/vda rw console=ttyS0 debug”
    =>launch qemu
    On the Second Terminal
15) cd /scratch/spring2018/14
16) (gdb) target remote :5514
    =>connect the interface, which used to launch
17) (gdb) continue =>the process will go back to the first terminal
    On the First Terminal
18) root
19) uname -a

II. Flag in the listed qemu command-line

qemu-system-i386 -gdb tcp::5614 -S -nographic -kernel linux-yocto-3.19/arch/x86/boot/bzImage -drive file=core-image-lsb-sdk-qemux86.ext4,if=virtio -enable-kvm -net none -usb -localtime –no-reboot –append ”root=/dev/vda rw console=ttyS0 debug”

=>When this terminal ran, the CPU would be halted, then it started to launch qemu in debug mode. In order to use VM, we executed gdb in another terminal, which connected gdb to a remote target at the port specified above.

1) -gdb
   Wait for gdb connection on device dev.
2) tcp::
   QEMU will wait for a client socket application to connect to the port before continuing, unless the no wait option was specified.
3) -S
   Do not use CPU at beginning.
4) -nographic
   Totally disable graphical output so that QEMU is a simple command line application.
5) -kernel
   Boot a kernel without installing the disk image.It will use bzImage as kernel image.
6) -drive file=core-image-lsb-sdk-qemux86.ext3,if=virtio
   Define a new drive. The ”if” defines on which type on interface the drive is connected. The virtio is short for a virtualization standard.
7) -enable-kvm
   Enable KVM full virtualization support. This option is only available if KVM support is enabled when compiling.
8) -net none
   Prevents the kernel from configuring any network devices to this case. The ”none” not configure any network devices.
9) -usb
   For using USB driver.
10) -localtime
    Set VM’s time same as local time.
11) –no-reboot
    Exiting with no reboot.
12) –append ”root=/dev/vda rw console=ttyS0 debug”
    Using a specific kernel command at startup.

III.Version control log

Date	Commit	Author	Description
04/09	076727aaf73ee5c4f874c45d50eb661db9318d2c	Webster	Initial commit
04/09	32c3e10e447a368134e1a60221b6e5e33dc83165	Webster	Update README.md
04/09	82b17ebd0b3d55a7b94ac29922af37246542d1ed	Webster	Add PDF and tarbz2 Makefile
04/11	62a6d7963fff814b1119ee22492a46833430f688	Webster	Add- Submodule of tex file from Overleaf

IV. Work log

Date	Name	Detail
Apr.4	All	Project Preparation
Apr.5	All	Group Meeting
Apr.6	Webster	Boot VM Success
Apr.8	Webster	Setting environment of overleaf and Git
Apr.8	Zhuoling	Writing LaTex
Apr.9	Sheng	Concurrency and OS scheduling research
Apr.11	All	Group Meeting
Apr.12	Zhuoling	LaTex done
Apr.13	All	Concurrency Code Finish
Apr.14	All	Review Project

Reference

1) S.Weil, "QEMU Binaries for Windows and QEMU Documentation" Dec 21, 2017 *QEMU Emulator User Documentation* [Online] Available: https://qemu.weilnetz.de/w64/2012/2012-12-04/qemu-doc.html [Accessed on Apr 06, 2018]