System Administration

Week 03, Warmup Exercise 2:
Resizing a filesystem on Debian Linux

Department of Computer Science
Stevens Institute of Technology

Jan Schaumann
jschauma@stevens.edu
https://stevens.netmeister.org/615/
Filesysten Exercise

• create a Debian instance
• create a 1GB volume and attach it to the instance
• create two 512MB partitions on the disk
• create new filesystem on each of the partitions
• mount and create some files on one of the partitions
• resize the first partition to the full 1GB space
• resize the partition to a 256MB partition

https://stevens.netmeister.org/615/resize-exercise.html
laptop$ attachVolume vol-061f348a3275874a3 i-08400e2a663740aea
{
    "AttachTime": "2024-02-10T22:03:15.328000+00:00",
    "Device": "/dev/sdf",
    "InstanceId": "i-08400e2a663740aea",
    "State": "attaching",
    "VolumeId": "vol-061f348a3275874a3"
}
laptop$ ec2wait i-08400e2a663740aea
Instance i-08400e2a663740aea should now be up and running:
ec2-34-229-109-136.compute-1.amazonaws.com

laptop$ ssh admin@ec2-34-229-109-136.compute-1.amazonaws.com
Warning: Permanently added 'ec2-34-229-109-136.compute-1.amazonaws.com,34.229.109.136' (ED25519) to the list of known hosts.
Linux ip-10-10-0-8 6.1.0-15-cloud-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.66-1 (2023-12-09) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Welcome to fdisk (util-linux 2.38.1).
Changes will remain in memory only, until you decide to write them. Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0x63f7aa08.

Command (m for help): p
Disk /dev/nvme1n1: 1 GiB, 1073741824 bytes, 2097152 sectors
Disk model: Amazon Elastic Block Store
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 4096 bytes / 4096 bytes
Disklabel type: dos
Disk identifier: 0x63f7aa08
Pass 3: Checking directory connectivity
Pass 4: Checking reference counts
Pass 5: Checking group summary information
Free blocks count wrong for group #0 (32215, counted=32214).
Fix? yes

Free blocks count wrong (128911, counted=128910).
Fix? yes

Free inodes count wrong for group #0 (8181, counted=8180).
Fix? yes

Free inodes count wrong (32757, counted=32756).
Fix? yes

/dev/nvme1n1p1: ***** FILE SYSTEM WAS MODIFIED *****
/dev/nvme1n1p1: 12/32768 files (0.0% non-contiguous), 2162/131072 blocks

$ sudo resize2fs /dev/nvme1n1p1
resize2fs 1.47.0 (5-Feb-2023)
Resizing the filesystem on /dev/nvme1n1p1 to 261888 (4k) blocks.
The filesystem on /dev/nvme1n1p1 is now 261888 (4k) blocks long.
Jan Schaumann
2024-02-12

Filesystem Exercise
CS615 - System Administration

```bash
admin@ip-10-10-0-8:~$ df -h /mnt
FilesystemSize Used Avail Use% Mounted on
/dev/nvme1n1p1 1007M 28K 956M 1% /mnt
```n
```bash
admin@ip-10-10-0-8:~$ sudo umount /mnt
```n
```bash
admin@ip-10-10-0-8:~$ sudo resize2fs /dev/nvme1n1p1 256M
resize2fs 1.47.0 (5-Feb-2023)
Please run 'e2fsck -f /dev/nvme1n1p1' first.
```n
```bash
admin@ip-10-10-0-8:~$ sudo e2fsck -f /dev/nvme1n1p1
e2fsck 1.47.0 (5-Feb-2023)
Pass 1: Checking inodes, blocks, and sizes
Pass 2: Checking directory structure
Pass 3: Checking directory connectivity
Pass 4: Checking reference counts
Pass 5: Checking group summary information
/dev/nvme1n1p1: 12/65536 files (0.0% non-contiguous), 4284/261888 blocks
```n
```bash
admin@ip-10-10-0-8:~$ sudo resize2fs /dev/nvme1n1p1 256M
resize2fs 1.47.0 (5-Feb-2023)
Resizing the filesystem on /dev/nvme1n1p1 to 65536 (4k) blocks.
The filesystem on /dev/nvme1n1p1 is now 65536 (4k) blocks long.
```n
```bash
admin@ip-10-10-0-8:~$ ✖️
```
Filesystem Exercise

• to grow a filesystem, use `fdisk(8)` to adjust the partition sizes first
• use `e2fsck(8)` and `resize2fs(8)` to grow the filesystem to the end of the partition
• note: this will destroy any data on that portion of the disk!

• to shrink a filesystem, use `e2fsck(8)` and `resize2fs(8)` first
• use `fdisk(8)` to update the partition table to match
• you can now use the remainder of the disk for another partition, but you’ll have to create a new filesystem on it to use it