



The Rescue Disk, Trouble Shooting and other Related Topics

1 Aim

After completing this exercise, you will:

- be aware of the usefulness of mini-Linux distributions in solving many problems, many of which are not Linux problems
- have practical experience with one of the best mini-Linux distributions, `tomsrtbt`, available from <http://www.toms.net/rb/>.
- be introduced to a shell script `report` that may be used to diagnose many computer problems, and through that:
 - learn some aspects of shell script programming
 - learn about the Linux `/proc` file system and its usefulness in describing the computer and its operation, as well as the operation of the operating system

2 Procedure

2.1 A mini-Linux distribution: `tomsrtbt`

The mini Linux distribution `tomsrtbt` is useful for recovering from many problems; it can be used to start a restore from backups after the hard disk has been completely destroyed. It is also useful as a trouble-shooting aid. This is how we will use it today.

Note that `tomsrtbt` uses the old `libc5` libraries, which are not included in Red Hat 7.0 and later. You will need to install these libraries to be able to work with `tomsrtbt`. It is convenient to install them from Red Hat 6.2.

1. NFS mount the ftp directory from CSAlinux:

```
$ sudo mount CSAlinux:/var/ftp/pub /mnt
```

2. Change to the Red Hat 6.2 RPM directory:

```
$ cd /mnt/redhat-6.2/RedHat/RPMS
```

3. Install the `libc5` libraries:

```
$ sudo rpm -Uhv ld.so-1.9.5-13.i386.rpm libc-5.3.12-31.i386.rpm
```

Use the `(Tab)` key to complete the filenames rather than typing all the numbers in manually.

4. Change to your home directory.
5. Extract the contents of the file `tomsrtbt-1.7.218.tar.gz` with the command

```
$ tar xvzf /mnt/tomsrtbt/tomsrtbt-1.7.218.tar.gz
```

Again, use filename completion.

6. Unmount the network file system from CSAlinux:

```
$ sudo umount /mnt
```

7. Install `tomsrtbt` on your floppy disk by changing into the directory `~/tomsrtbt-1.7.218` and typing

```
$ sudo ./install.s
```

8. If you do not see the message “Succeeded!” after a few minutes of disk activity, your floppy disk has some defects; since it needs to be formatted with a high capacity, the floppy disk needs to be in new condition. Use a new floppy disk.
9. Boot a computer with this floppy disk.
10. Log in as root.
11. Change to the directory `/proc` and examine the content of the files `cpuinfo`, `meminfo`, `interrupts`, `pci`. Can you imagine any uses for these files?
12. List the partition information on your computer.

2.2 The shell script report

1. Download the shell script `report` from <http://CSAlinux.tycm.vtc.edu.hk/ossi/lab/tomsrtbt/report> (from the subject home page), and save it to your `~/bin` directory (create `~/bin` if it doesn't exist).
2. Make it executable (you should know how!), then execute it to see what it does.
3. Take a few minutes to look at the files that have been made in the directory `/tmp/reports`. What could these files be used for?

2.3 Rebuilding tomsrtbt to create a trouble shooting tool

1. Open the file `tomsrtbt.FAQ` so that you can easily refer to it while working in this section.
2. Unpack the contents of `tomsrtbt` onto your hard disk by executing
`sudo ./unpack.s tomsrtbt.raw`
3. Copy the shell script `report` to the directory `tomsrtbt-1.7.218.unpacked/2/usr/bin`
4. Rebuild a new disk image containing `report` by executing `sudo 2/usr/doc/buildit.s`
5. A new package will be formed in your current directory. Change into the new directory (which has a name like `xxxx.tycm.vtc.edu.hk-tomsrtbt-1.7.219`), and rewrite your `tomsrtbt` disk by executing `./install.s` there.
6. Boot a computer with this disk, and execute the `report` program there.
7. Examine the files created there.
8. See if you can devise a way of:
 - (a) putting these files into a second FAT formatted floppy disk
 - (b) putting them onto the `tomsrtbt` disk itself. You will need to delete some files from your `2` directory and rebuild the disk image to achieve this.

Homework, due at the second laboratory session (within two weeks, i.e., week 24): Arrange this so that it is all automatic, so that you have a single disk that you could give to a customer with instructions to boot the computer with one floppy disk, then return the disk to you so that you have evidence that you can analyse to solve problems, without a site visit.

Here are a few ideas that you might like to consider:

- You will need to delete some commands from `tomsrtbt` to make room for the reports. You could start by deleting the two editors and the man pages. You may need a bit of trial and error to see what commands are required for this all to work.
- The file `1/rc.custom.gz` is the startup script. You will probably need to start `report` from this script; you will do most (all?) of the customisation here.
- You could write the reports to the RAM disk in `/tmp`
- You could compress the reports so that they take less space using `tar` and `bzip2`
- You will need to mount the floppy with a command like

```
# mount /dev/fd0u1722 /f1
```
- Your script should shutdown the computer when it is finished.

A Appendix: the shell script `report` and shell programming

A.1 The shell script itself

The shell script `report` is shown here: