Appendix 1: Using the Alpine Linux VM

In order to attempt the lab exercise in Unit 1 using a Windows or OS X platform, it is necessary to do this using a virtual machine with a Linux guest operating system. This is because namespaces are not a feature native to Windows or OS X. The following instructions assume that Oracle VirtualBox is already installed on your platform.

The virtual machine will be created using the Alpine Linux distribution, a small distribution based on BusyBox and the musl C library. Download the standard Alpine Linux ISO.

Using the VirtualBox user interface, create a new virtual machine with the following specification:

- Name: alpine
- Type: Linux
- Version: Linux 2.6/3.x/4.x (64-bit)
- Memory Size: 512 MB
- Create Virtual Disk, Size: 512 MB (dynamically allocated)

Once created, alter the settings for the VM, thus:

- in the storage settings, attach the downloaded ISO, `alpine-mini-3.3.1-x86_64.iso`, to the logical CD/DVD drive of the VM
- change the network setting for the VM's network adapter, so that it uses 'Bridged Adapter' mode

Start the VM, and once it has booted, login at the prompt as `root`. At the command prompt, run the setup script:

```
localhost:~# setup-alpine
```

The following answers should be provided to the questions posed (adjust for your environment):

```
Keyboard: uk
Hostname: box
Interface initialise: eth0
IP address: dhcp
Manual network config: no
Password: <password of choice>
Timezone: GB
HTTP/FTP proxy: none
Mirror: f
SSH server: openssh
NTP client: chrony
```

```
Which disks to use: sda
How would you like to use it? data
Erase disk and continue? y
Stored configs: none
Apk cache directory: none
```

When the setup script has completed, create a user called `alpine`, which will be needed in order to run an ssh session from your local environment:

```
box:~# adduser -h /var/alpine alpine
Changing password for alpine
New password:
Retype password:
Password for alpine changed by root
```

We also need to install some packages for the lab exercise, and add the alpine user to the `sudoers` file:

```
box:~# apk add --update build-base git sudo bash iproute2
box:~# echo “alpine ALL=(ALL) ALL” >> /etc/sudoers
```

Finally, Alpine Linux uses the grsecurity suite, which provides patches to the Linux kernel for enhanced security. Some of the steps in the lab exercise need to circumvent this security. Whilst this is not something you'd expect to do ordinarily, it's OK to do this for the lab exercise:

```
box:~# echo 0 > /proc/sys/kernel/grsecurity/chroot_caps
box:~# echo 0 > /proc/sys/kernel/grsecurity/chroot_deny_mount
```

Logout of the session by typing `exit`, and minimise the VirtualBox window of your VM – we will use the alpine user for the lab exercise, via an SSH session.