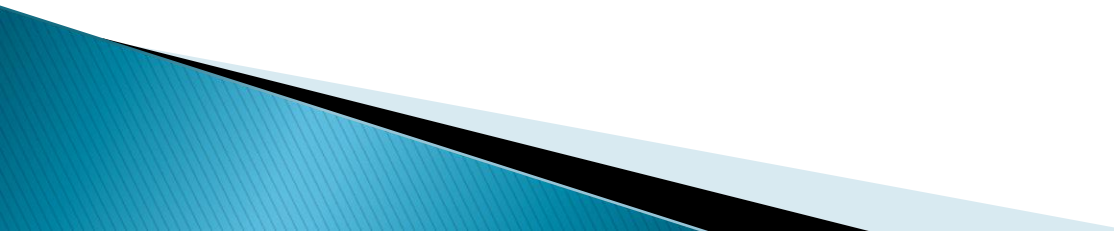


Virtual Machine

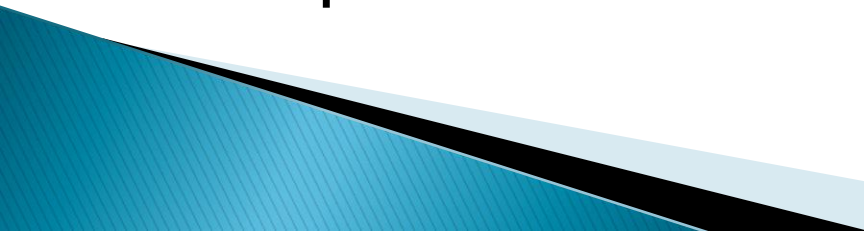
Why a VM?

- ▶ Convenience:
 - All required software has been installed.
 - ROS is a pain to install on non-Linux OS's.
- ▶ Concealment:
 - Much of the required code can be treated as a black box.
 - Allows novice users to focus on basics.

Requirements

- ▶ The Virtual Machine needed:
 - The Brown ROS installation.
 - Scratch
 - A custom Scratch source code image.
 - A few shell scripts to launch the appropriate programs.
- 

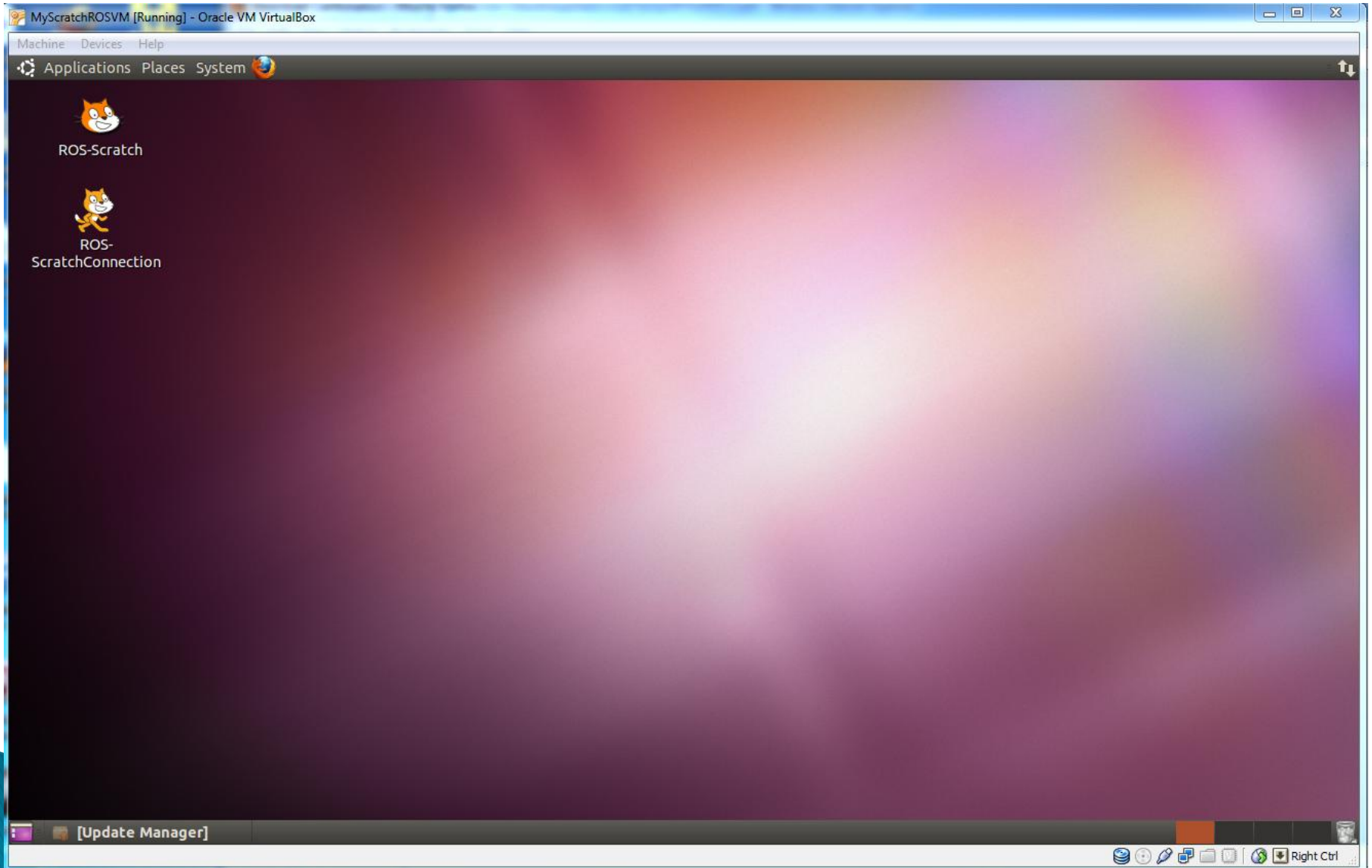
Scripting Considerations

- ▶ Normally, sourcing ROS and adding to the `ROS_PACKAGE_PATH` at the end of `.bashrc` should be sufficient.
 - ▶ However, when scripts are run at startup, they may not work correctly.
 - ▶ The solution is to source ROS and add any needed packages at the beginning of the script.
- 

Startup Code

```
#!/bin/bash
source /opt/ros/diamondback/setup.sh
export
  ROS_PACKAGE_PATH=~/.ros/experimental/pr
  2-remote-
  lab:~/.ros/experimental:~/.ros/unstable:~/.ros
  /stacks/tutorials:$ROS_PACKAGE_PATH
roslaunch
  ~/ROSScratch/ros_scratch/ros_scratch_icreat
  e.launch
```

VM Desktop



Installation Instructions

- ▶ 1. Go to <http://www.virtualbox.org/wiki/Downloads>
- ▶ 2. Download the appropriate binary for your operating system.
- ▶ 3. Double click on the file you just installed. (A .exe for Windows, a .dmg for Mac OS. The filename should have VirtualBox in there somewhere.)
- ▶ 4. Follow installation instructions. More information can be found here: <http://www.virtualbox.org/manual/ch02.html>
- ▶ If you have a USB Bluetooth device, you will probably want to install USB support.
- ▶ 5. Download vmi located at <http://robotics.cs.brown.edu/test/virtualmachines/ScratchROS.vdi>

Installation Instructions

- ▶ 6. Begin VirtualBox.
 - ▶ 7. Click the button that says "New". This begins the new virtual machine wizard.
 - ▶ 8. Name it whatever you want. Choose Linux as an operating system, and Ubuntu for version.
 - ▶ 9. Continue with the wizard until you reach the Virtual Hard Disk step.
 - ▶ Select Use Existing Disk, and click the folder icon to locate the vdi you downloaded.
 - ▶ 10. Continue with the wizard. Your new virtual machine should show up on the left side of your VirtualBox window.
- 