



SBC Backup Server

Grant Root

Goals

- Replace CrashPlan+ backup service
- Back up multiple Linux / Windows systems
- Local and off-site solutions
- Small footprint / low noise / low power
- Low hardware investment
- Software free as in freedom and beer (if possible)

PC Hardware

- Newer PCs too expensive
- Older PCs may have repair difficulties
 - Although... my Pentium II web server is still humming along! :-)

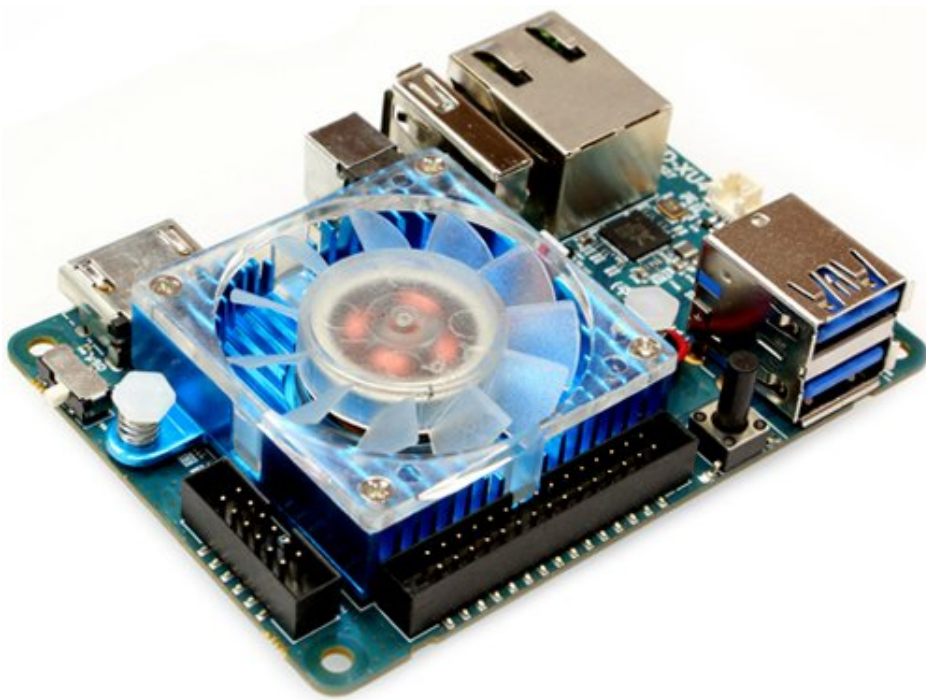
Single Board Computers (SBC)

- Raspberry Pi
 - Pros
 - Price is right.
 - I have plenty in stock. :-)
 - Lots of support
 - Cons
 - 100Mbs networking
 - Shared USB 2.0 storage interface
 - No real-time clock
 - Slow boot

Alternative SBC

- Banana Pi (various models)
 - <http://www.banana-pi.org/product.html>
- ODROID XU4 / XU4Q
 - http://www.hardkernel.com/main/products/prdt_info.php?g_code=G143452239825
- Many others...
 - https://en.wikipedia.org/wiki/Comparison_of_single-board_computers

ODROID XU4Q / XU4Q



ODROID XU4 / XU4Q

- Samsung Exynos5422 ARM Cortex™-A15 2Ghz and Cortex™-A7 quad-core CPUs (total of eight cores)
- Mali-T628 MP6 graphics (OpenGL ES 3.1/2.0/1.1 and OpenCL 1.2 Full profile)
- 2Gbyte LPDDR3 RAM at 933 MHz (14.9 GB/s) PoP stacked
- eMMC5.0 HS400 Flash Storage, microSD card slot
- 2 x USB 3.0 Host, 1 x USB 2.0 Host
- Gigabit Ethernet port
- HDMI 1.4a for display
- Size : 83 x 58 x 20 mm approx.(excluding cooler)
- Power: 5V/4A input
- Xubuntu Linux 16.04 / Android 4.4+

Parts

- ODROID XU4 (w/ fan) or XU4Q (passive) (\$62)
- Power supply (\$7)
- Case (\$7)
- RTC battery (\$4)
- 16GB EMMC module and adapter (\$31)
- Mediasonic ProRaid 2 Bay 3.5" SATA Hard Drive Enclosure - USB 3.0 & eSATA (\$65)
- Hard drives: Toshiba P300 3TB Desktop 3.5 Inch SATA 6Gb/s 7200rpm (\$80 x 3)
- ~1.5' USB cable

Mediasonic ProRaid 2



Software

- Xubuntu Linux 16.04
- BackupPC 3.3.1 (in distro)
 - <http://backuppc.sourceforge.net/>
 - Backs up Windows, Linux, Mac, *nix
 - Uses standard protocols – no client software (kinda)
 - File pooling reduces storage requirements
 - Web interface for configuration, scheduling, backing up, restoring, status monitoring
 - Email notifications

Problems Encountered - Hardware

- ODROID
 - Heat sink gets very hot
 - Reboot command not working
- RAID enclosure
 - Does not support S.M.A.R.T.
 - Only indication of a drive failure is a red light.
 - May end up changing from “RAID 1” to “Single” mode
 - Unexpected shutdowns
 - Resolved by turning off sleep mode

Problems Encountered - BackupPC

- Configuring a new PC can be tedious.
 - Installing Cygwin and rsync on Windows
 - Exchanging keys, setting up users
 - Determining command parameters
- Including / excluding files varies w/ protocol used, sometimes can't do both
- BackupPC 3.3.1 and Samba 4 not compatible
 - Manually backported patch from BackupPC 3.3.2
- Hanging on Windows 10 backup
 - Need to do more testing of underlying command
- BackupPC hanging
 - No web interface, stuck processes – WTF?

To Do

- Resolve various problems
- Add remaining PCs
- Tweak backup schedule / retention
- Develop off-site solution
 - Drive rotation?
 - Cloud?