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Retro Gaming with Linux
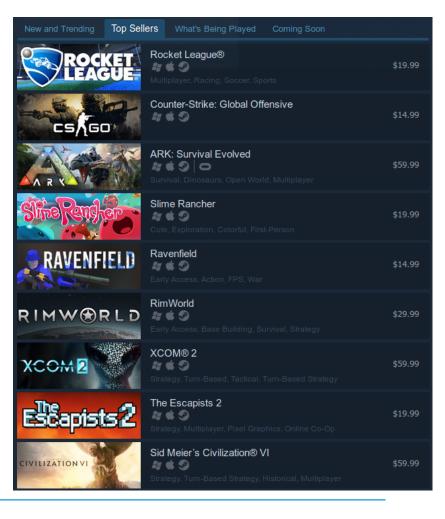
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Agenda

- Linux gaming: The big picture

- The retro-gaming revival

- Linux retro gaming with emulators

- A dedicated retro console: The Rasperry Pi

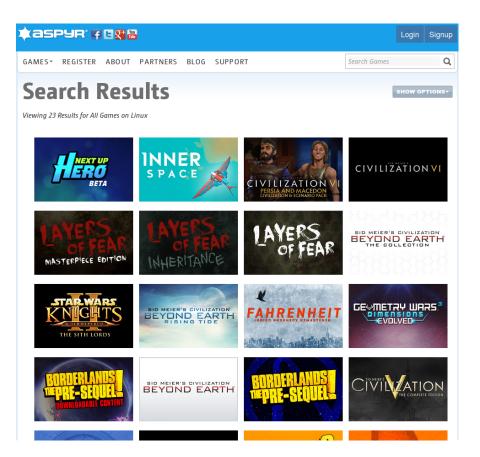- Hardware choice

- Software choice

- Demo

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Linux gaming: The big picture

- Most of the computer games released today still target Windows and maybe Mac

- A growing percentage of the games are released under Linux

- Steam is pushing toward it

  - They want their own console ultimately

  - They don't like the Microsoft-owned Windows game stores

  - As of today, Steam has 2621 Linux games

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Is the Linux PC market that big?

- The Linux desktop is about 3% of the polled machines

- But once a game is written against a modern engine, its binaries can be released on Windows, Mac, PS4, XBox, etc.

- The Linux release is mostly a matter of packaging and testing

- Some companies (e.g., Aspyr) make a brisk business buying AAA title rights for porting them to Linux

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Old titles revived

- Some online stores (e.g., GOG.com, pictured right) sell new Linux games

- As well as older titles with a Linux compatibility layer (DOSBox or Wine)

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Open source games
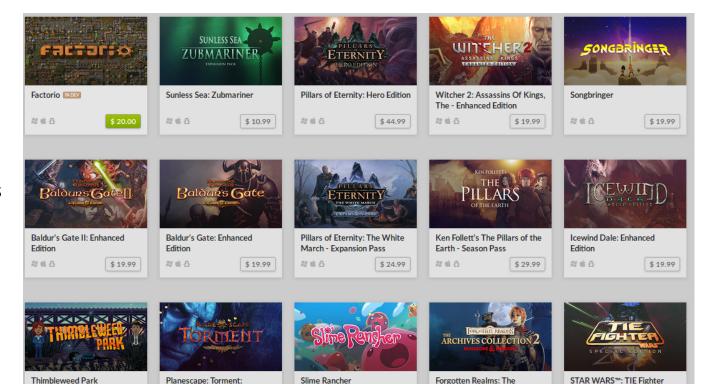
- There are also a lot of OSS games, some of which rival AAA titles. A few examples:

    - Heroes of Wesnoth, a tactical RPG (pictured at right)

    - SimuTrans, a transport sim (below)

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The retro-game revival

- Boomers who grew up with early video games now have their kids in college

- They have more time and disposable income (until the grandchildren arrive)

- Hey, let's sell these suckers some 8-bit nostalgia!

- The 2600 graphics… you had to be there.

Linux retro gaming with emulators

- There are Linux emulators for almost all classic gaming platform and older 8-bit and 16-bit machines

- Some emulators (e.g., PS/2, Atari ST, TRS-80) need BIOS files

- Then you can play old ROMs and game titles

- Partial list of emulated machines follows (source: LGDB.org)

Android
Atari 2600
Atari 400/800/XL/XE
Atari 5200
Atari 7800
Atari Falcon
Atari Jaguar
Atari Lynx
Atari ST
Bandai WonderSwan
Bandai WonderSwan Color
Coleco ColecoVision
Commodore 64
Commodore Amiga
Fujitsu FM Towns Marty
Magnavox / Philips Odyssey[2]
Microsoft DOS
Microsoft Windows
NEC PC Engine / TurboGrafx-16
NEC PC-98
NEC PC-FX
Nintendo 3DS
Nintendo 64
Nintendo DS
Nintendo Entertainment System

Nintendo Game Boy / GB Advance / GB Color
Nintendo GameCube
Nintendo SNES / Super Famicom / Super Comboy
Nintendo Super Game Boy
Nintendo Virtual Boy
Nintendo Wii
Panasonic 3DO Interactive Multiplayer
Pioneer LaserActive
Sega Dreamcast
Sega Game Gear
Sega Master System / SG-1000 Mark III
Sega Mega Drive / Genesis / Super Gam*Boy
Sega Model 3
Sega Saturn
Sinclair Research ZX Spectrum
Sinclair Research ZX80/81
SNK Neo Geo AES
SNK Neo Geo CD
SNK Neo Geo Pocket
SNK Neo Geo Pocket Color
Sony PlayStation
Sony PlayStation 2
Sony PlayStation Portable
Various Arcade Systems

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Dedicated hardware

- The main problems with these emulators:

  - They attract young children. "Ooooh, it's like Minecraft blocks!" (Climbs on you lap.)

  - ... and graying yuppies. "Ooooh, I remember I played that game on our RCA TV!" (Starts explaining why you blew on the cartridge contacts.)

- Obviously, you want them all off your Linux PC. You need...
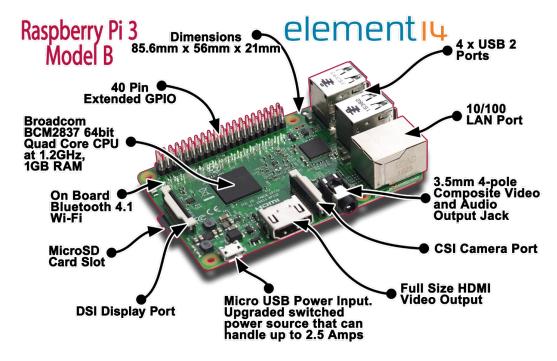
- Dedicated hardware!

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Sega Mega Drive, a.k.a Genesis, 1988.

A Linux game console with the Raspberry Pi

- Very small Single-Board Computer

- Available in several versions

- Based on 1GHz ARM CPUs

- Able to run Linux distros and emulators

- You will also need:

    - A micro USB 2.5 A power supply ($9)

    - A USB gamepad (e.g. Logitech, $22)

    - A case (e.g. Enokay, $6)

    - A MicroSD card, 8GB or more

    - HDMI and Ethernet cables

Raspberry Pi 3 Model B
element14

Dimensions 85.6mm x 56mm x 21mm

4 x USB 2 Ports

40 Pin Extended GPIO

Broadcom BCM2837 64bit Quad Core CPU at 1.2GHz, 1GB RAM

10/100 LAN Port

On Board Bluetooth 4.1 Wi-Fi

3.5mm 4-pole Composite Video and Audio Output Jack

MicroSD Card Slot

CSI Camera Port

DSI Display Port

Micro USB Power Input. Upgraded switched power source that can handle up to 2.5 Amps

Full Size HDMI Video Output

Not bad for $35. Source: element14.com

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Software choice

- There are several Linux distros for the Pi

- However, for gaming, the best distro is RetroPie (retropie.org.uk)

- Installation:

  - Download the ISO

  - Write to the MicroSD card
    ```
    dd if=/path/to/retropi.iso \
        of=/dev/sdx bs=1M
    ```

  - Boot the Pi on the card

  - Set up password

  - SCP games to the Pi:

```
rsync \
' Pokemon - LeafGreen Version (USA, Europe) (Rev 1).gba' \
   pi@192.168.1.127:/home/pi/RetroPie/roms/gba/
```

```
fmora@ocelot ~/downloads/roms/gba $ ssh pi@192.168.1.127

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.
Last login: Fri Aug 18 14:17:32 2017

    .***.        Friday, 18 August 2017,  3:14:27 pm UTC
    *****        Linux 4.9.35-v7+ armv7l GNU/Linux
    `***'
     |*|
     |*|         Filesystem       Size  Used Avail Use% Mounted on
     |*|         /dev/root        29G   2.2G   26G    8% /
   ..|*|..       Uptime..............: 0 days, 00h21m57s
 .*** * ***.     Memory..............: 578644kB (Free) / 750636kB (Total)
 *******@@**     Running Processes..: 119
 `*****@@**'     IP Address..........: 192.168.1.127
  `*******'      Temperature........: CPU: 51°C/123°F GPU: 51°C/123°F
   `"""'         The RetroPie Project, https://retropie.org.uk
```

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Demo

Questions?

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