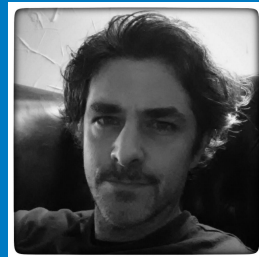


# *NH**S**buntu*

An operating system for the NHS



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- General Practitioner & Emergency Physician, former Anaesthetist
- Clinical informatician / 'General Hacktitioner'
- NHS.UK Alpha, RCGP HIG, Endeavour Health, Apperta Foundation, Eyedraw/OpenEyes, Professional Records Standards Body, NHS Healthy Child Programme, NHS WiFi Programme, NHS Hack Day, CCIO Network, UKHealthCamp, Clinical Software Usability Survey 2015-2016...
- *Concerned about the sustainability of an NHS that is totally dependent on Microsoft and other proprietary products, when clinical demands are ever increasing and we can't just 'buy more software bling' to solve them all*
- ['Open Source is the Only Way For Medicine'](#)

# What is Linux?

- A free, open source UNIX based operating system
- Released 1991 by Linus Torvalds, Finnish Computer Science student
- Now running on 96.6% of the world's top 1 million websites
- It's the operating system inside Android devices and Chromebook laptops
- It's used by the giants of the web including Amazon, Facebook and Google
- Apple, Oracle, and IBM all use free UNIX variants

# What is Ubuntu?

- Ubuntu is 'Linux for Human Beings'
- A more friendly wrapper around Linux
- Backed by Canonical, who provide support services
- The most popular Linux variant, with millions of deployments worldwide
- We have taken Ubuntu and pre-configured it to work with the NHS's most common needs and requirements.

# What is NHSbuntu?

- **NHSbuntu takes plain Ubuntu and optimises it for the NHS**
- **unofficial:** not directly affiliated to NHS or Canonical organisations
- **removes** packages the NHS doesn't need
- **adds** packages the NHS needs, **develops** custom elements
- adds familiarity by configuring **look & feel, branding** etc
- provides **services** around NHSbuntu - customisations, Disaster-recovery Live USB version, custom development.

# What we've made

(Show The Thing....)

<https://gdsengagement.blog.gov.uk/2016/11/04/what-we-mean-when-we-say-show-the-thing/>

# No we did not do WannaCry ;-)

- The May 12th worldwide cyberattack which hit NHS badly
- Was well timed for us in terms of publicity
- But we didn't do it, honest guv **BUT**
- NHSbuntu (as with all Linux) would **not** have been vulnerable
- NHSbuntu in even low-volume use could have provided **herd immunity**
- Linux is not proof against all malware, but its attack surface is smaller and it's harder to do real nasty stuff. Due to a thing we call **security**

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## What it can do





80%

Administrative

20%

Clinical

# 80%

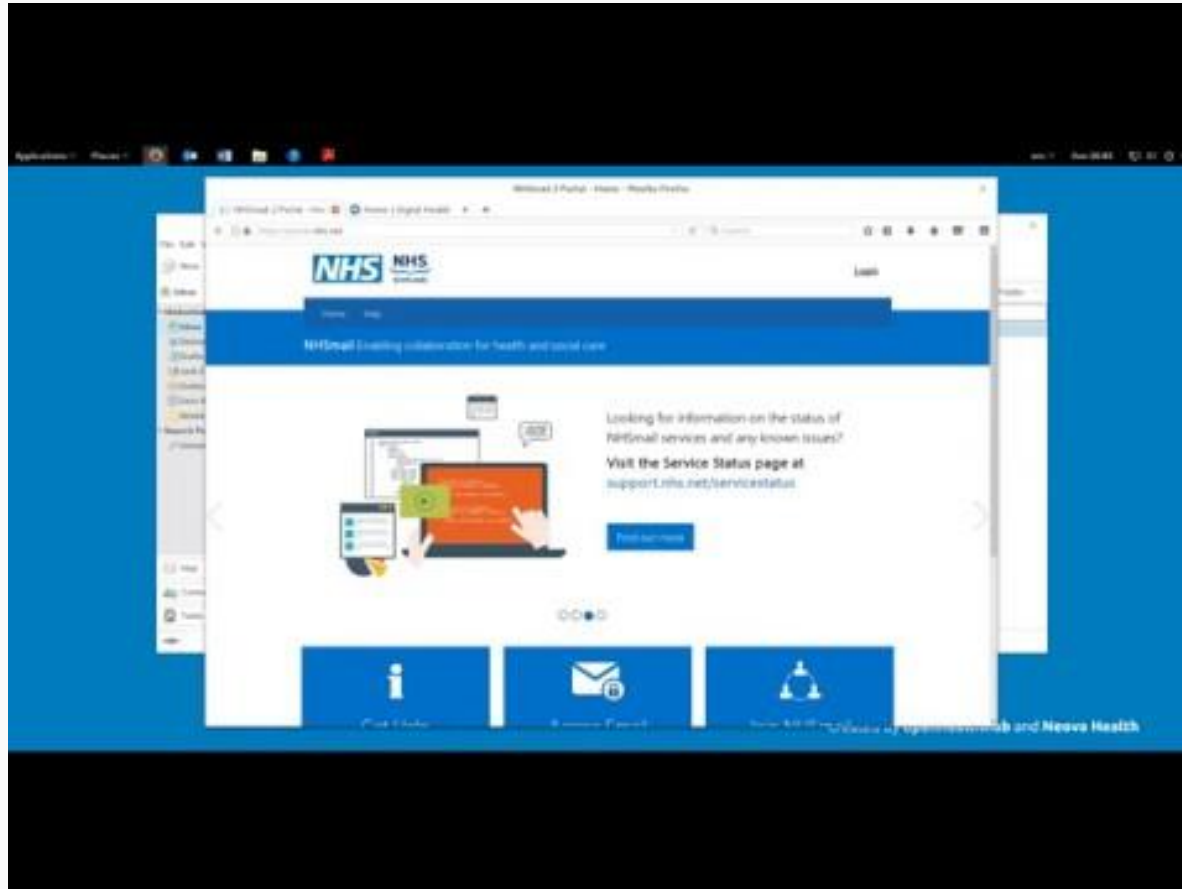
## *NHSbuntu*

- Libre Office suite
- NHSmail2 Email
- NHSmail2 Messaging
- Two MODERN browsers
- Windows 'shared drive'
- Network printers
- Scanner app / drivers

80%



# NHSbuntu - the 'back office' use-case



80%

Administrative

20%

Clinical

# 20%

- PAS / EPR / GPSoC
- Clinical portals
- Spine / NCRS / SCR
- Multiple users

# 20%

## *NHSbuntu*

- Clinical apps!
- Use IE & modern browsers
- Smartcard authentication
- Rapid user switching

# Even cooler stuff, for bioinformaticians

- **Distributed Computing** - we could harness the off-duty CPU/GPU of every NHS computer, by including a swarm client in NHSbuntu by default
  - The most suitable example we've seen for NHS use is **Folding@home** <http://folding.stanford.edu/> - a protein folding computation platform
  - Are there other good projects?
  - Could we grow UK-based projects for the platform?
  - Let us know what you as Bioinformaticians could get out of this?



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## Why we made it



## 'Paperless 2020' could coincide with 'Windowsless 2020'

- Windows 7 End Of Support: **January 14<sup>th</sup> 2020** [[reference](#)].
- New hardware will not work with older Windows versions [[reference](#)]
- Old hardware may not perform well with Win 10 anyway
- Clinical apps may not work with Win10 or Edge Browser/IE11

### Put together, these facts mean:

- 1) You have to migrate to Win10 before 2020
- 2) You have to **replace all legacy clinical apps** before 2020, to do 1)
- 3) You need to upgrade all your hardware in order to do 2)
- 4) You can't afford to do 1), 2), and 3) at the same time (cash/staff/training)
- 5) **You're stuck.**

Can't afford to encrypt, can't afford **NOT** to encrypt.

- Required to use encryption to protect data
- Few (none?) products cover legacy operating systems
- Non-compliance has financial penalties
- Reputation at risk if data leaks

**Put together, these facts mean:**

- 1) You have to **buy** encryption software
- 2) You have to find software for **all your windows versions**
- 3) You have to implement it **everywhere**

**NHSbuntu includes full disk encryption for free.**

## Is Windows 10 unfit for the NHS?

- Windows 10 sends data to Microsoft **in over 30 ways** (incl [raw keystrokes](#))
- This **can** be over-ridden in your org - but it is extra work, and [not easy](#)
- **Third party / home PCs accessing NHSMail, VPNing into trust systems are beyond organisational controls**, and may leak data, so as we develop wider data sharing, it will be impossible to prevent keystrokes being sent to Redmond, WA, USA.

### **Put together these facts mean:**

- 1) We may not be able to stop privacy-critical PID keystroke data being sent to Microsoft via Windows 10 PCs
- 2) We need to think hard about whether Windows 10 is fit for the NHS.

# What are the team working on **right now**

- Native Linux Identity Agent (for NHS Spine Smart cards)
- Automated build chain tooling so we can programmatically make changes to image definition files and have the ISOs build and test automatically.
- Exploration of the 'NHSbuntu for Disaster Recovery' use-case
- Performance testing of LiveUSB version on fast USBdrives/USB SSD
- Discovery work regarding different desktop environments - we're thinking of switching to Cinnamon DE (from Gnome3 DE)

# How can you get involved?

- download the ISO, install and play!
- read more here: [www.nhsbuntu.org](http://www.nhsbuntu.org)
- join our Slack team <https://join-nhsbuntu-slack-team.now.sh/>
- tell us what Bioinformaticians would like to see on NHSbuntu
- tell people about NHSbuntu
- Talk to Trust IT about disaster recovery options using NHSbuntu
- Follow us on Twitter [@nhsbuntu](https://twitter.com/nhsbuntu)

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