



# The Great Migration.

Part 1: How to get to “YES”  
Part 2: Actually Getting it DONE!

*(characters portrayed are AI generated - any  
resemblance to actual persons is coincidental)*

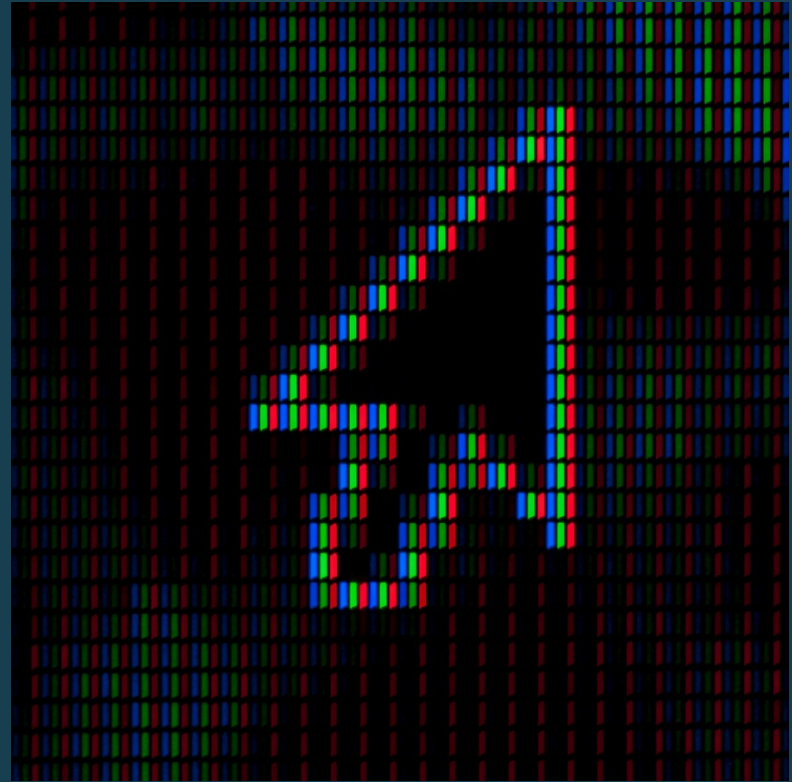


# The Great Migration.

~~2026 will be the year of  
the Linux desktop.~~

2026 will be the year of  
**increased adoption** of  
the Linux Desktop.

(just like every other year.)



# Oh No. The Linux Desktop AGAIN?



Just a fraction of the **50 million tonnes** of e-waste generated annually by upgrades

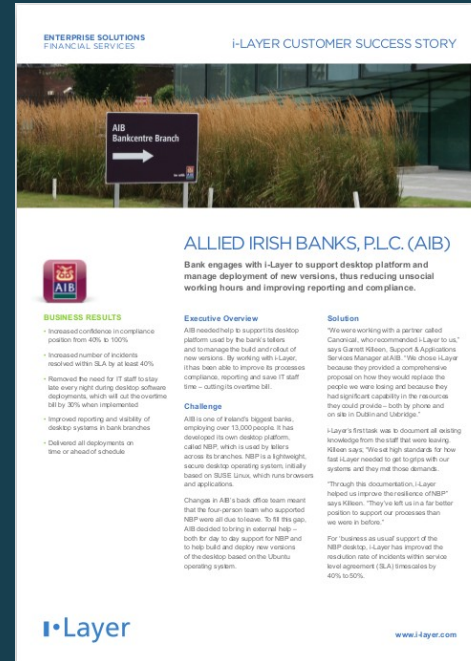
# Who Am I?

- Patrick Fitzgerald
  - 40 years in tech
  - Currently:
    - Founder, Geeko Foundation
    - CEO, i-Layer Limited UK



# Past Experiences at i-Layer

- Open source Cloud Service Provider, in three DCs (using openSUSE & KVM)
- Worked with Allied Irish Banks to migrate and manage 7,500 Linux desktops
- Consulted with other major banks, universities and financial information providers



**ENTERPRISE SOLUTIONS**  
FINANCIAL SERVICES

**I-LAYER CUSTOMER SUCCESS STORY**

**ALLIED IRISH BANKS, PLC. (AIB)**

Bank engages with i-Layer to support desktop platform and manage deployment of new versions, thus reducing unsocial working hours and improving reporting and compliance.

**BUSINESS RESULTS**

- Increased confidence in compliance position from 40% to 100%
- Increased number of incidents resolved within SLA by at least 40%
- Removed the need for IT staff to stay late every night during desktop software releases, which will cut the overtime bill by 30% when implemented
- Improved reporting and visibility of desktop systems in bank branches
- Delivered all deployments on-time or ahead of schedule

**Executive Overview**

AIB needed help to support its desktop platform used by the bank's tellers and to manage the build and roll of new versions. By working with i-Layer, it has been able to improve its process compliance, reporting and save IT staff time – cutting its overtime bill.

**Challenge**

AIB is one of Ireland's biggest banks, employing over 15,000 people. It has developed its own desktop platform, called NBP, which is used by tellers at one of its branches. NBP is a lightweight, secure desktop operating system, initially based on SUSE Linux, which runs tellers' and applications.

Change in AIB's back office team meant that the four-person team who supported NBP were all due to leave. To fill this gap, AIB decided to bring in external help – both for day-to-day support for NBP and to help build and deploy new versions of the desktop based on the Ubuntu operating system.

**Solution**

"We were working with a partner called Centralist, who recommended i-Layer to us," says Gareth Killean, Support & Applications Services Manager at AIB. "We chose i-Layer because they provided a comprehensive proposal on how they would replace the people we were losing and because they had significant capability in the resources they could provide – both by phone and on-site in Dublin and London."

i-Layer's flexibility was a document of existing knowledge from the staff that were leaving. Killean says, "We set high standards for how fast i-Layer needed to get to grips with our systems and they met those demands."

"Through this documentation, i-Layer helped us improve the resilience of NBP," says Killean. "They've left us in a far better position to support our processes than we were in before."

For business as usual support of the NBP desktop, i-Layer has improved the resolution rate of incidents within service level agreement (SLA) timescales by 40% to 50%.

**i-Layer**

[www.i-layer.com](http://www.i-layer.com)

**i-Layer deploys a secure, high-performance, cost-effective cloud**

Using IBM BladeCenter, IBM System x and KVM virtualization technology

Based in London, i-Layer has provided IT solutions, support and services to small and midsize businesses since 1995. Working with a variety of customers, many of which are in the financial industry, i-Layer is an IBM Business Partner and IBM reseller that provides hardware, software and 24/7 services.

## IT evolution—moving toward the cloud

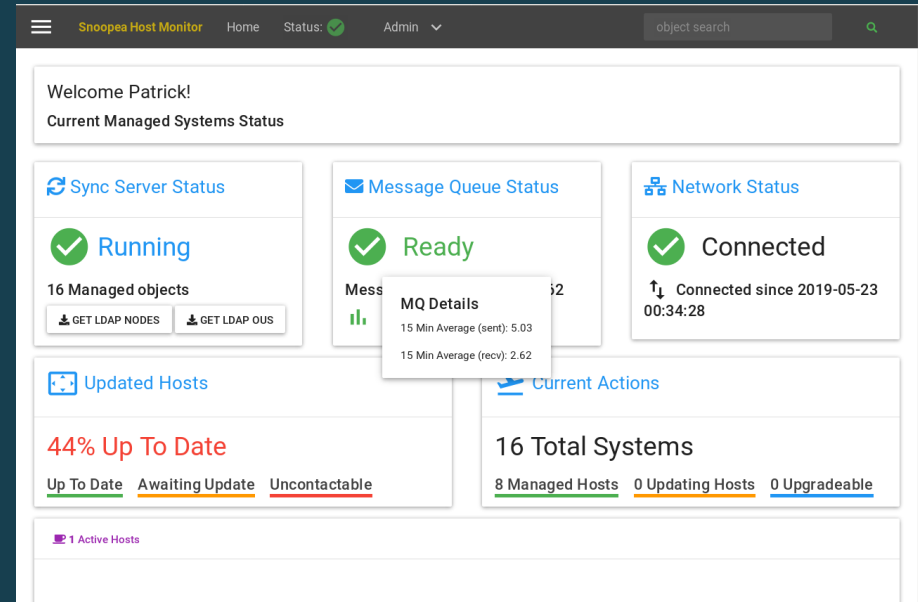
Over the past several years, i-Layer has evolved its IT infrastructure to meet the company's changing internal business needs. i-Layer began by virtualizing its servers to support its business functions, then decided to take the next step: transitioning to a cloud platform that would be accessible by its London and South Africa offices and by remote workers. Following this successful implementation came a similar move aimed at i-Layer's clients. The company began offering hosted cloud services to customers, as well as setting up private clouds for customers to run at their own sites. Describing this business shift, Gareth Chillingworth, technical director at i-Layer, says, "One by one, our clients in London began to realize that the private cloud was the best place to run their production systems, especially as their workforces have become more and more distributed."

Before i-Layer began to roll out these cloud services to customers, the company focused on its own cloud requirements for security, performance and cost. Providing adequate security in a multi-tenant cloud environment hosting numerous customers was a top priority, so i-Layer built security into its infrastructure. Ensuring fast and dependable cloud performance—and having the ability to quickly provision resources—was another main goal. Also critical was controlling costs when deploying new hardware and virtualization software—i-Layer needed to contain its own operational expenses while offering competitive services to customers.



# Required Magic (2018-2022)

- Developed multi-tenant, web based solution that:
  - Performed desktop hardware audits
  - Managed Migration of Windows 7 systems to Linux Desktops
  - Performed scheduled updates
- COVID19 kind of ended that.



Soon to be Open Source!!

# Meanwhile...

Time for a meeting...

- Because you've been recommended as...

“THE Linux Expert!”

- Customer wants to “jump from Windows”.



# Let's Meet Horace

- Horace is the person you need to convince.
- Might be CTO, CIO or other role.
- Has control of budget.
- Will be fired if it all goes wrong.
- Needs a solution. Not an OS.





# Presenting Linux on the Desktop!



# It's a crazy plan

(but it might just work)

- Why?
  - New tariffs on US based goods (and possibly services)
  - Potential Global Recession
  - Greater Need for “National Tech Self Reliance”
  - Move to web based products removes requirements for many local “big name” apps



# It's a crazy plan (IT WILL NEVER WORK!)

Why not?

- Lack of Vendor Support
- Resistance from Hardware Vendors
- Resistance from IT management
- Lack of 1<sup>st</sup> and 2<sup>nd</sup> line support skills
- Lack of native apps
- User Resistance



# But there is demand.

HOME > LIVE NEWS

## 'We're done with Teams': German state hits uninstall on Microsoft

Frankfurt (Germany) (AFP) – At a time of growing concern over the power of the world's mighty tech companies, one German state is turning its back on US giant Microsoft.

ZDNET

tomorrow belongs to those who embrace it today



Home / Business / Enterprise Software

## 5 factors steadily fueling Linux's desktop rise

Linux has been quietly moving from niche to mainstream - and this is why.



Written by **Steven Vaughan-Nichols**, Senior Contributing Editor

May 13, 2025 at 8:15 a.m. PT

Reviewed by **Elyse Betters Picaro**

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tomorrow belongs to those who embrace it today



Home / Business / Enterprise Software

## Switzerland federal government requires releasing its software as open source

The United States remains reluctant to work with open source, but European countries are bolder.



Written by **Steven Vaughan-Nichols**, Senior Contributing Editor

July 23, 2024 at 6:12 a.m. PT

PCMag UK > News > Productivity > Office Suites

## Denmark Wants to Dump Microsoft Software for Linux, LibreOffice

The Danish Ministry for Digital Affairs will move half of its employees off Windows and Microsoft 365 next month as part of a four-year 'digital sovereignty' push.

By **Michael Kan**

Jun 12, 2025



# Google AI Says...

“A mass migration of Windows users to Linux desktop environments is unlikely to occur due to the widespread use of Windows and the familiarity users have with the operating system.

However, individuals and organizations may choose to migrate for various reasons, including cost savings, security, or preference for a different operating system...”

*prompt: “mass migration of Windows to Linux desktop” – March 2025*

# You Said That Before.

- But this time it's different
  - It really is a whole new world
    - More apps browser based (including MS ones)
    - Open source *really is* mainstream
    - Windows 10 replacements require expensive tech
    - Global recession seems likely
  - End users will learn to love it. Really.

# But What Else Is Different?



- A new world, with:
  - Unpredictable global trade
  - Unpredictable politics
  - Unreliable alliances
  - Increased privacy concerns
  - AI concerns
- Digital sovereignty is now even more important!



# What Does it Look Like

- What does the use case require?
- One size does not fit all
  - Linux Desktop – Gnome, KDE, other?
  - Distributions – US Based or European?
  - Applications... how do we make this work?

# What the Goal is...

## Seamless Migration from Windows 10

- With minimal user training
- Automated, unattended, overnight installation
- Little or No user interaction – log in and go
- 100% functionality on day one \*

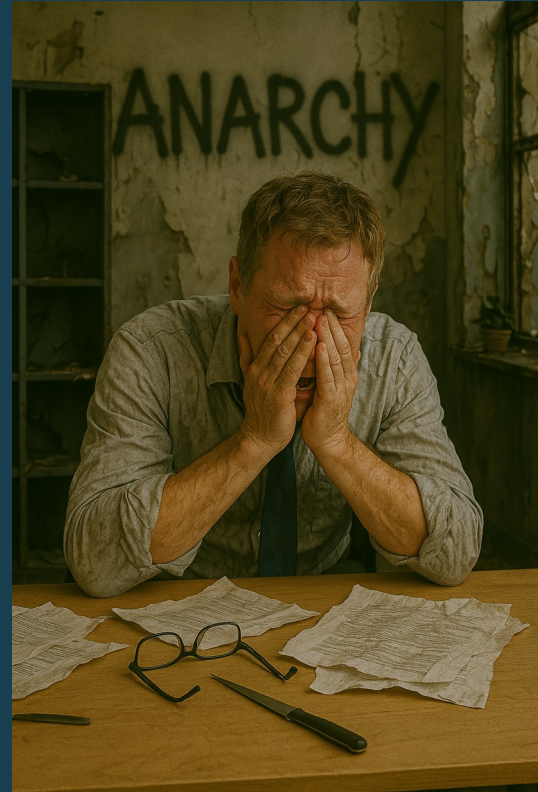
\* Is the goal.



# What the Goal isn't...

- Complete replacement of everything Windows or Microsoft related.
- A Distribution competition
- A Desktop Environment competition
- An excuse to build a (unsupported) new distribution flavour!
  - That way lies ruin, madness and failure \*

(Poor Horace. Listened to a geek who then disappeared)



# Size Really Does Matter

The installation methods will differ

- < 100 systems - will likely be largely manual – or at least simplified
- > 100 systems – can be highly automated
- The larger the environment, the greater the politics, but simpler the technology becomes, and the more fine tuning is possible



# Economics – Windows Update (System Replacement)

**Example: 1,000 systems, single site**

Hardware Replacement cost:  $\sim €600 \times 1000 = €600k$

Average 6 systems / day = 167 man days (33 weeks)

Average contractor cost: €500/day, €83,350 total  
(project management, travel, etc excluded)

**Minimum Cost: €683,350**

(Horace is not happy. But has feels he has no choice.)



# Simple: Let's use a Free OS!

HA HA HA... **NOPE.**

- Horace needs:
  - Accountability!
  - Someone to blame!
  - Someone to sue!
- Now Get TF out of his office!



# Free, But Not Fee-Free.

- Business is all about risk mitigation.
- Moving to Linux is a risk.
- Using an unsupported OS is a much larger risk: this cost of this risk will be reflected in other ways (in the cost of insurance for example)
- Money Allays Risk (think insurance)
- Essentially: 3<sup>rd</sup> level support from a Linux vendor is a requirement.





# Economics – OS Replacement (Windows to Linux Migration)

Hardware replacement cost: €0

Linux Support Licensing ~ €40 x 1000: €40,000

Consulting including first pilot:

10 days @ €1500 = €15,000

Deployment costs: 10 days @ €750 = €7,500

**Minimum Cost: €62,500**

(Horace is super happy. He might just make CEO after all!)

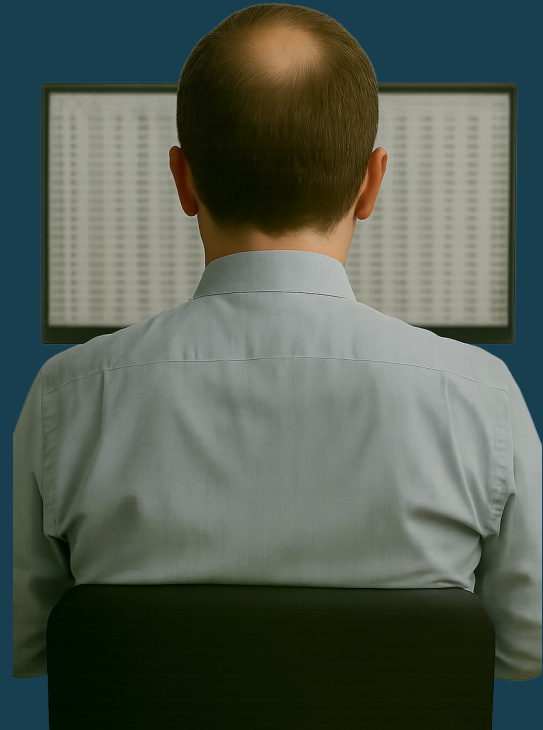


# Example Opportunity

- Across the whole EU:
  - 54 *million* Public Service Employees  
(excluding military forces)
  - **1%** of this is 540,000 (systems)
  - Cost Savings: **€540 million**

Reality check: the Linux desktop is about **5%** of the global market.

So can we save **€2.7 billion**?



# Support - Who Does What?

- 1) Internal Support Team
  - 1) Issues such as printing, application support
- 2) Reseller/Service provider
  - 1) Hardware issues and extended support
- 3) Linux Vendor (e.g. SUSE)
  - 1) Kernel & Wayland Desktops \*
  - 2) SSSD/AD functionality



# Linux Support License?

- Partially goes to the Linux vendor who builds and supports the kernel. (eg: SUSE)
- Contributes towards an OBS build instances located in a secure datacentre(s) – separate from vendor
- Pays for Liability insurance
- Contributes towards the funding of community based support to drive the desktop Linux movement forward via an Open Source foundation



# Who Could Resist? Ah.

- Empire building IT leaders \*
- Desktop Support Teams
  - Windows: **1** engineer to **50-100** desktops
  - Linux: **1** engineer per **3,000** desktops
- Hardware Vendors
  - Initially, fewer systems purchased
- IT Resellers who only know Windows

# How to Begin

- Brief consulting engagement
  - Determine user groups, their functions and core applications
  - Work with management to choose a small trial group
  - Discover desktop hardware\*
  - Build a plan from there



# Start with a Limited Trial

Ideally, start with a user group: that relies 100% on browser based\*, java, node and RDP applications: where the same applications exist unchanged.

(tip: there are a growing number of these, including MS365)



# We've Already Got the OS.

- Now we need:
  - A Linux Vendor's Support
  - Training Provider (training 1<sup>st</sup> & 2<sup>nd</sup> line support)
  - A selection of Resellers (to provide 2<sup>nd</sup> line support)
  - A community willing to embrace change and expansion

(Horace is waiting for a solution)



# Charity begins at home, but...

Support Starts at Hardware.

Start with “enterprise” hardware  
(from Dell, HP, Lenovo etc.)

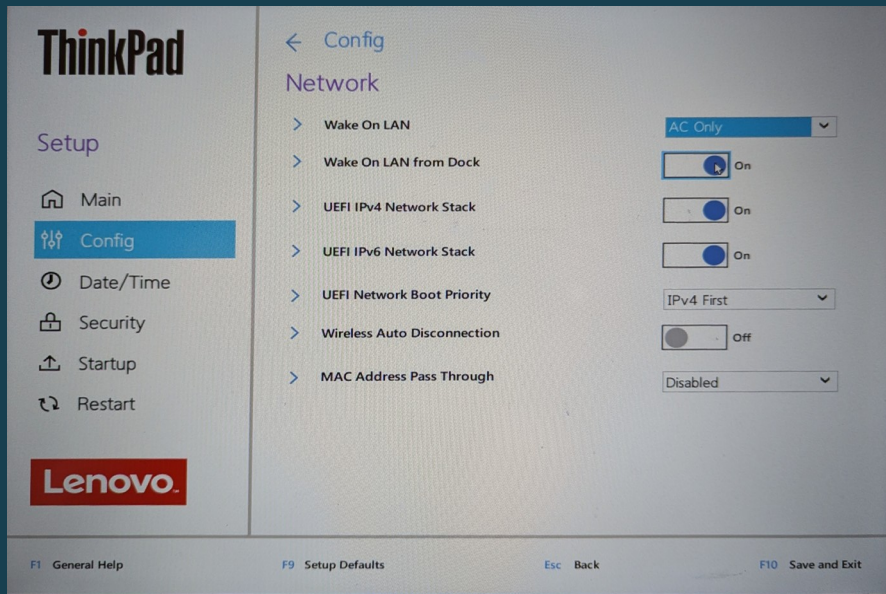
These systems have known and stable  
bios/firmware that features:

- Wake-on-LAN
- PXE/UEFI Boot

(there is nothing worse than dealing with installation problems with  
a “workstation” aka gaming PC with custom everything!)



# Enterprise Firmware!



- Wake on LAN (WOL) = ON
- Network Boot
  - PXE Boot = OFF
    - Old method
  - UEFI Boot = ON
    - Ensures a modern install
  - Network boot text = ON
    - Enables a “F12 to boot from network” message to appear at boot

# Build Your Image (not a distro!!)



- Or at least, modify the default install script and save it to a new ISO image
- Automate everything using...

# Build Your Image using KIWI-NG



kiwi



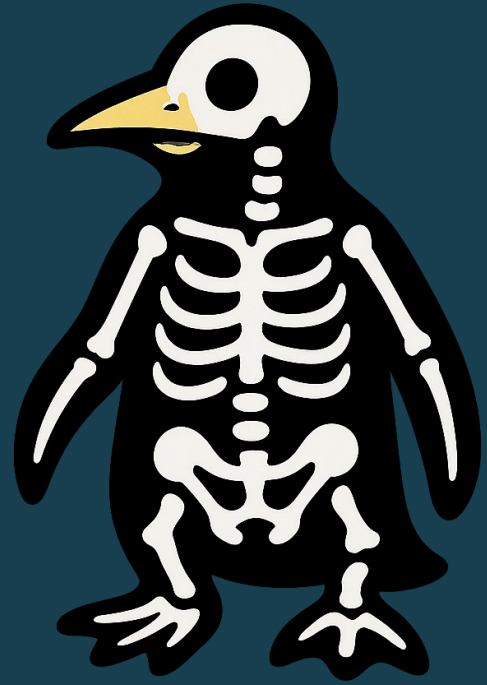
<https://osinside.github.io/kiwi/>

- Command line OS builder
- Define your packages
- Build the image as:
  - Bootable ISO
  - .IMG for deployment
  - Network bootable
  - And more

# Put flesh into the **/etc/skel**

(or /usr/etc/skel or /usr/local/skel...)

- This folder is copied to `/home/<username>`
- Use it to populate configs, apps, or login scripts – anything that needs to be consistent across all users



# Active Directory is your Friend™

Don't mess with it, at least for now – it is a important part of the migration\*

The user's, and the workstation's "Security Identifier" (SID) will become very important...

During migration login scripts may need to be updated to enable data backups etc.



# To Backup or...

(that is the question)

- Users tend to have local data.
- Your Installation script should take this into account
- Does the network have enough free space, or should you buy a NAS especially for the installations?



# 1-25 Desktops – Local Admin

- Humble USB Stick
- Load ISO
- Boot...
- You know the rest
  - Use an install script to maintain consistency



# 1-25 Desktops – With backup

- Bootable USB *Hard disk* loaded with ISO image
- Install script copies `C:\Users` to USB prior to install, then back again to `/home/`
- KALPA Uses this method



# 1-100 Desktops or Remote

- KVM over IP with internet accessibility
- Load ISO image onto device
- Send one or more devices to location
- Attach to first PC, boot
- Remotely install, repeat



Toolbox



> Clipboard

▼ Shortcut

Show All | Modify

Ctrl-L + Alt-L + Del

Alt-L + Shift-L

Alt-L + Tab

Alt-L + F4

▼ Wake On Lan

Modify

device-b9f3

10.1.4.62 | c0:3f:d5:69:b9:f3

Wake

+ Add Device

▼ Terminal

Access Terminal

Access

Virtual Media



Storage Disk

4.32 GB/5.73 GB



Drag or [Click](#) to upload files from host, or  
upload from [Url](#)

openSUSE-Tumbleweed-DVD-x86\_64-Snap...

4.32 GB | Jul 27, 2025



Mount To Remote

12:42  
Thursday 28 August



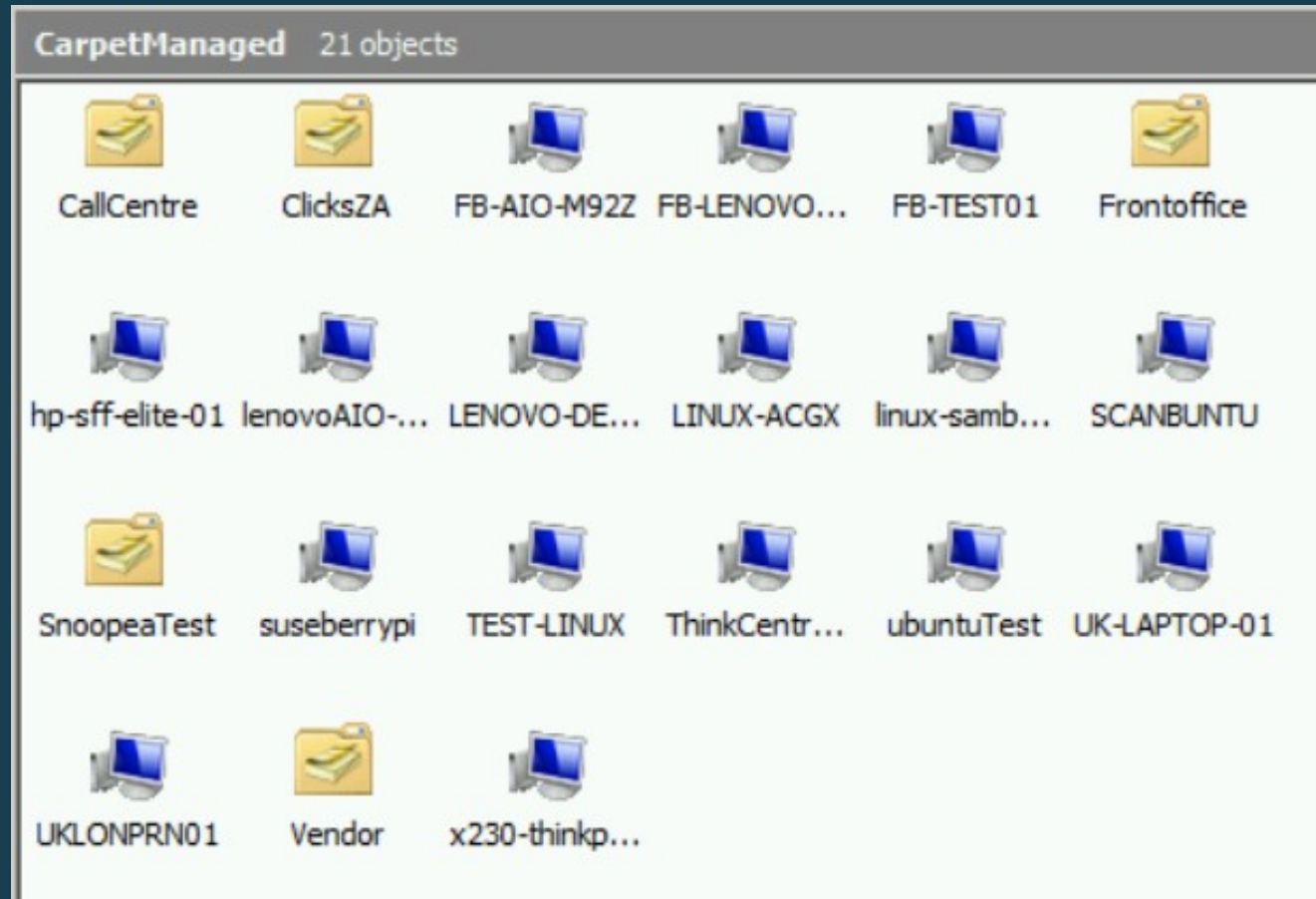
# 100+ Desktops

- Automation, including “autoyast” (or equivalent) tools that take a script to configure machines in bulk
- Network bootable installer using UEFI boot
- Wake on LAN to wake machine for updates
- Hopefully you can preserve AD machine accounts...  
(if you don't, be prepared to double the number of machine accounts in AD... !!!\*)

# Our (i-Layer) Methodology

- Connect LDAP/AD to a migration database
- Manual trigger net boot to use...
  - “Carpet Discover”
  - Populates the migration database with full audit of hardware data, before restarting back to the windows login.
  - The MAC address of the primary ethernet adapter is added to the **networkAddress** field in of the Computer record in LDAP.

# The Active Directory *Group* View



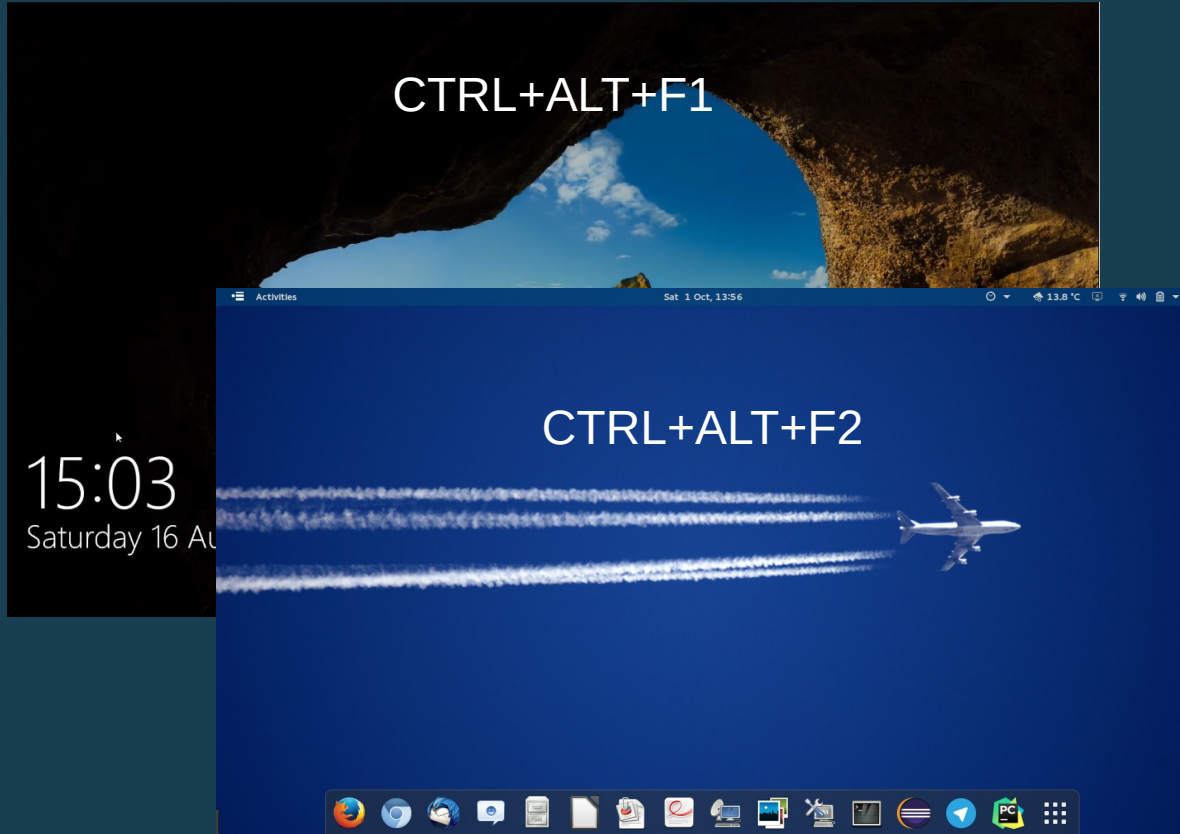


# Makes Possible (Anything)?

For example:

- Changing the AD Group can change the OS Flavour!
- Fast, efficient VDI based on Virt-Viewer\*
- Using Spice, allowing USB endpoint pass through & video acceleration
- Could be delivered as a memory resident image via UEFI network boot
  - (removing disk dependencies)

# More Possibilities...



- Simultaneous Dual Boot?
- Can be booted from LAN or local disk
- Windows – RDP or VDI
- Linux – RDP, VDI or local desktop
- With Linux, anything is possible!
  - Or is it? Up to you!

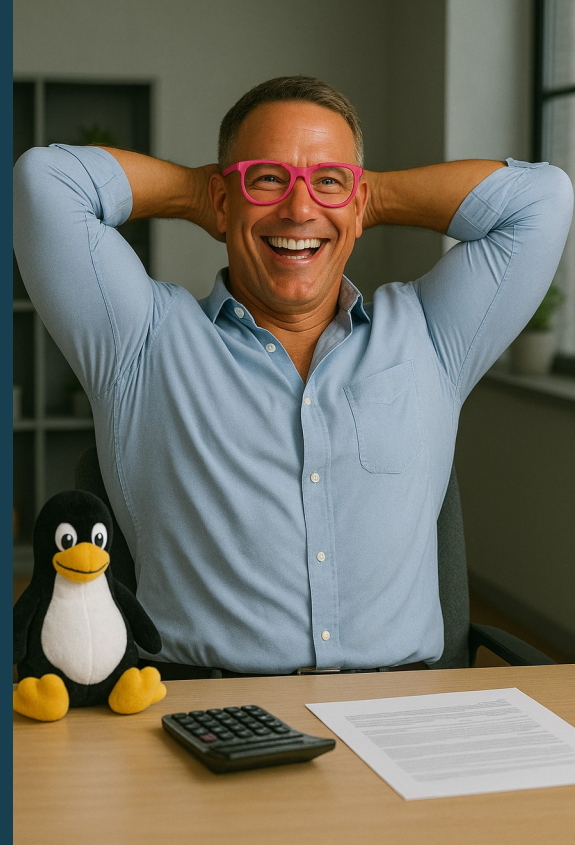
# Summary

- Pick your battles
- Reduce initial scope
- Build an install image for the job
- Auto installations
- Minimise opportunities for user complaints (ie: listen to the trial group)
- Don't impose views: make recommendations
- A/B Test Desktop Environments if client is unsure

# Finally Horace is Happy!

A disciplined approach has provided:

- Low cost desktop solution that slashes acquisition and support costs
- Increases productivity
- Meets environmental targets



# Happiness is:



- A Happy Horace
- Linux on the desktop
- Linux on *his* desktop
- Free at last!

# Thank You!

openSUSE Distributions of Choice



Donate to [geekos.org](https://geekos.org)!

KDE Akademy 2025 - Berlin



# References & Image Credits

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