Structuring and deploying a Manageable Virtual Desktop Infrastructure

Cutter Project Ltd
Mike Banahan
Jonathan Mills
AKA Thin Clients “done right”

The PC is not always the best desktop
   Expensive to procure and maintain
   Poor energy efficiency
Thin clients look appealing
   But do they work?
   And what do we mean by “work”
We think there is a case to be made
   And thousands of customers mostly agree
How we got here

Started in schools, using LTSP
  It's all roll-your-own
  Unpolished
  You have to deliver video, sound, usb devices
  MS Windows is critical

Discovered Sun Ray devices
  Invested engineering skills in deployment
  Rather than just making it work

Our story follows
Overview

Many apparent benefits

Highly manageable
Nearly all operations performed remotely
High availability
Simplicity
Cost
Low energy
OS Agnostic (within reason)
PC Desktop Issues

3-4 year refresh cycle (cost, waste, etc.)
Maintenance & Support
Viruses, Updates, Bug Fixes, etc.
Energy (heat and air con)
Noise
Start-up and Reboot time
Gartner estimate annual cost $3541
Capabilities for Desktop Delivery

- Supported Education Desktops
- Data Centre: Virtualisation System
  - Desktop Delivery via VDI system
- Home User
  - VPN
- Internet
- Mobile User
  - HTTPS (SGD)
Technology

Experiments with various thin clients
Impressed by Sun Ray devices
Impressed by Sun software stack (Vdi3/Sun Ray and SGD)
Not evangelists for Sun, just liked the products

Sun VDI can use other back end Virtualisation technologies. VMWare VirtualBox and Hyper-V

Led to some hard thinking
Time to be ruthless

Standardise hardware stack
Standardise deployment tools
Invest in record-keeping
Presume you cannot travel
Do EVERYTHING remotely
Instrument, monitor, manage
KISS
Sun Ray 2 & 270

28 x 122 x 205 (unit)

377 x 191 x 407 (overall)
VDI Design

[Diagram showing a network design with VDI Core Servers, Primary, Secondary, Ethernet Switch, xVM VirtualBox Servers, and Storage connections]
VDI Design Considerations

Cores (Nehalem gives big increase in images per core)

RAM

Storage (Disk I/O is king)

Supported Desktop OS
- Windows XP/Vista/7
- Windows Terminal Server
- Linux (Ubuntu and Suse)
- Solaris and OpenSolaris
- Mac OS X

Unsupported (anything that will install on VBox)
How we deploy?

Pre configured for customer technical staff to rack kit
Remote commissioning and support
No need for installation staff on site at all
Real bonus to customer, no need to chaperone
Bare Metal remote recovery
Full suite of automated tools
De-Risking

Any colour you want as long as it is black
Do not build one off
Simplify, Automate, reproduce
Centralised Monitoring
Built to be supportable
Take Advantage of Free Software

Nagios/Cacti

Monitoring alerts support staff often before customer notices
Fixed before it's broken (almost)
Trends and reporting nice to see, look neat
Install as a matter of course
User experiences

Near instant-on, silent, low heat
Long lasting devices
Identical software whether local or remote
No brainer for the majority of desktop users
But some things just aren't for thin client

Probably 60%-70% desktops suitable .. all depending on the user need
Remote Access

Secure access to user desktop
  Via mobile phone (just)
  Internet Cafe
  Home via broadband, own laptop
Very successful, extremely popular
Lower pressure on terminal rooms
Cost Implications

Initial hardware cost similar to desktop refresh
Small pilot schemes relatively costly
Wins come on
  Ten year + life of desktop devices
  Power consumption
  Asset disposal
  Flexibility and freedom
  Maintenance: estimate 25 to 1 reduction
Some More Numbers

<table>
<thead>
<tr>
<th>PC</th>
<th>Sun Ray 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-4 yrs</td>
<td>10-12 yrs</td>
</tr>
<tr>
<td>80-150 W</td>
<td>4 W *</td>
</tr>
<tr>
<td>20-50 dB</td>
<td>0 dB</td>
</tr>
<tr>
<td>May affect air quality</td>
<td>Negligible effect</td>
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</tbody>
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* 12 W including power for 1/100 server usage
Summary

If you set out to achieve:
- Lower TCO
- Reduced Environmental Impact
- Increased Reliability
- Improved Accessibility
- Better Security

And are ruthless........you can!