



The Symbiont
www.thesymbiont.com

Using LTSP to Manage You'reIT

Enterprise Thin Client Solutions for the Desktop

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Introduction

- The cost of deploying personal computers in a networked environment
 - The network terminal solution (LTSP) to simplify and centralize IT support and management
 - The Symbiont and LTSP to provide a solution
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The Personal Computer (PC) Model



- All programs, data, and processing in one box
- Each box is autonomous
 - updates, backups, repairs
 - must be maintained individually
- **Every PC is a cheap server**



“I can get a PC for less than \$500USD”

- The purchase price of PCs has decreased dramatically – but has the cost?
 - Each PC is identical at only one point in time – when the hard drive is imaged.
 - Since each PC stores its own copy of its operating system, programs, and in many cases user data, there is a nonzero cost to maintain its operation before its end of life.
 - And, the hardware required to store and run these programs locally has a short lifespan
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The Network Terminal Model

- All programs, data, and processing are on a server
- Each box is anonymous
 - provides input/output only
 - no maintenance required
- Sometimes a terminal is just a terminal...



So there's no hard drive. So what?

- No hard drive = no locally stored OS, programs, or data
 - Terminal OS and configuration remains on a boot server or appliance
 - All student data is on application/data server: backup the server and all user data is backed up
 - Most applications run on the server: update software on the server and the network is updated, programs utilize the powerful server processing power and run faster
 - A \$250 USD terminal has a total cost not much higher...
 - No moving parts = high reliability, low power
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Enter Linux and LTSP

- **Linux** – Developing since 1991, an open source (*nix based) multi-user OS, suitable for systems from server to desktop
- **LTSP** – The Linux Terminal Server Project – Developing since 1999, an open source project that enables a Linux-based server to boot **true** network terminals



“LTSP is only for deploying Linux.”

Wrong!

- LTSP is a Linux based package that **boots up** network terminals.
 - LTSP must be installed, configured, and run on a Linux-based system
 - **LTSP is designed to connect terminals to any terminal server or mainframe**
 - Windows applications can be pushed through Windows Terminal Services (RDP) or Citrix (ICA)
 - Linux applications can be pushed through X or NX
 - IBM 3270 and other terminal emulation connections can be made as well
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The Symbiont™

LTSP powered products and solutions

- **The Symbiont Boot Appliance**
 - Provides **remote** network terminal administration tools
 - Comes in a tabletop or rackmount chassis design
 - Is designed, tested, and built, to be the perfect **LTSP appliance**
 - Provides LTSP + Enhancements + Functionality + Support
 - Can instantly connect network terminals to virtually any terminal server without setup and/or post-configuration
 - **Symbiont Certified Network Terminals**
 - Are certified to ensure full compatibility with LTSP
 - **The Symbiont Management Suite**
 - Ideal for smaller (isolated) Linux-only deployments
 - Contains LTSP + Enhancements + User management + Support
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Do I need to buy special network terminals?

- A terminal is very dumb, thus the hardware requirements are minimal
 - All of the following can be used:
 - Dedicated network terminal: typically no moving parts, silent, low power, small form factor. Symbiont Certified Network Terminals are dedicated network terminals.
 - Some "thin clients": Varies by manufacturer, difficult to refurbish, often contain embedded software.
 - PC (as old as 486): 16 MB RAM, CPU > 66MHz. Not as reliable, energy efficient, or small. Reusing PC's can sometimes **cost** more than a dedicated network terminal.
 - There is no vendor lock-in
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Symbiont Certified Network Terminals™

- A certification program created by Symbio Technologies to ensure full compatibility with LTSP
 - The only way to ensure future compatibility with LTSP
 - What factors play a role in order to become “certified”
 - Expandable RAM: To provide future “local application” and “local device” support
 - Supported network and video chipsets
 - Supported audio chipsets: For high-quality/low-bandwidth sound
 - Long-term manufacturer support
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Is there commercial support?

- Yes, and it's growing fast
 - **Symbio Technologies** was formed in February, 2002 to contribute to LTSP and to develop commercial tools, hardware, and support to expedite its widespread adoption
 - The number of Symbio Technologies Value Added Resellers (VARs) is growing world-wide
 - **Bralin Technology Solutions (306-445-4881)**
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Conclusion

- LTSP based products and solutions are the ideal way to deploy and maintain server-centric network infrastructures.
 - The result is a simpler, more manageable, versatile, high quality network architecture well within reach of educational organizations large and small, rich and poor.
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More Info.

- Pick-up some brochures and ask us questions at our table (Bralin Technology Solutions - www.bralin.com)
 - www.TheSymbiont.com
 - www.LTSP.org
 - **www.schoolforge.org**
 - **www.K12LTSP.org**
 - www.linuxnews.com
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Questions?

