

K12LTSP

Linux Thin Client System for Schools

or

How to reduce your system administration burden
and cost while increasing service and saving the
planet.

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New Covenant Schools of Bedford

What it is

- Hardware
 - A standard network of PCs
 - Linux Terminal Server comparison
- Software
 - Operating system
 - Applications

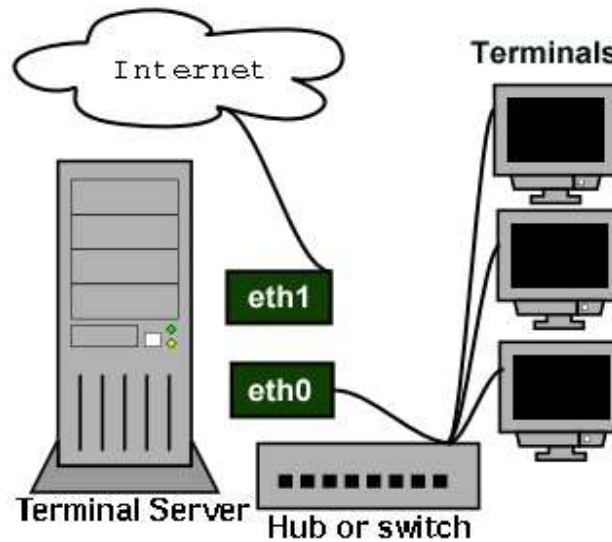
Standard Network of PCs

- Arrangement
 - networked PCs
 - central server
- Functions
 - file, print, authentication
- Hardware
 - PC with hard drive, operating system

Thin Client System

- Server
 - applications, file, print, authentication on one box
- Thin Client - X-window terminal
 - PC without hard drive or local operating system
 - boot from floppy or ROM
 - get IP from bootp or dhcp
 - load OS from server
 - mount filesystem via nfs from server
 - provides keyboard, mouse, display to user
 - files stay on server
 - applications run on server

Linux Terminal Server System



Software

- Operating System
 - Linux - a true multiuser operating system
 - standard RedHat with LTSP RPMs
 - Can get install CDs from www.k12ltsp.org
 - looks like a RedHat install but with an LTSP option
 - can download iso images (3)

Installation



Online Help


If you want to perform a full installation, you must choose the class (or type) of the installation. Your options (Workstation, Server, Laptop, or Custom) are discussed briefly below.


A workstation installation will create a system for your home or desktop use. A graphical, Windows-like environment will be installed.


If you want your system to function as a Linux-based server, and do not want to heavily customize your system configuration or install the X Window System (a graphical environment), a


Installation Type



  Install

 LTSP

 Workstation

 Server

 Custom

  Upgrade Existing System

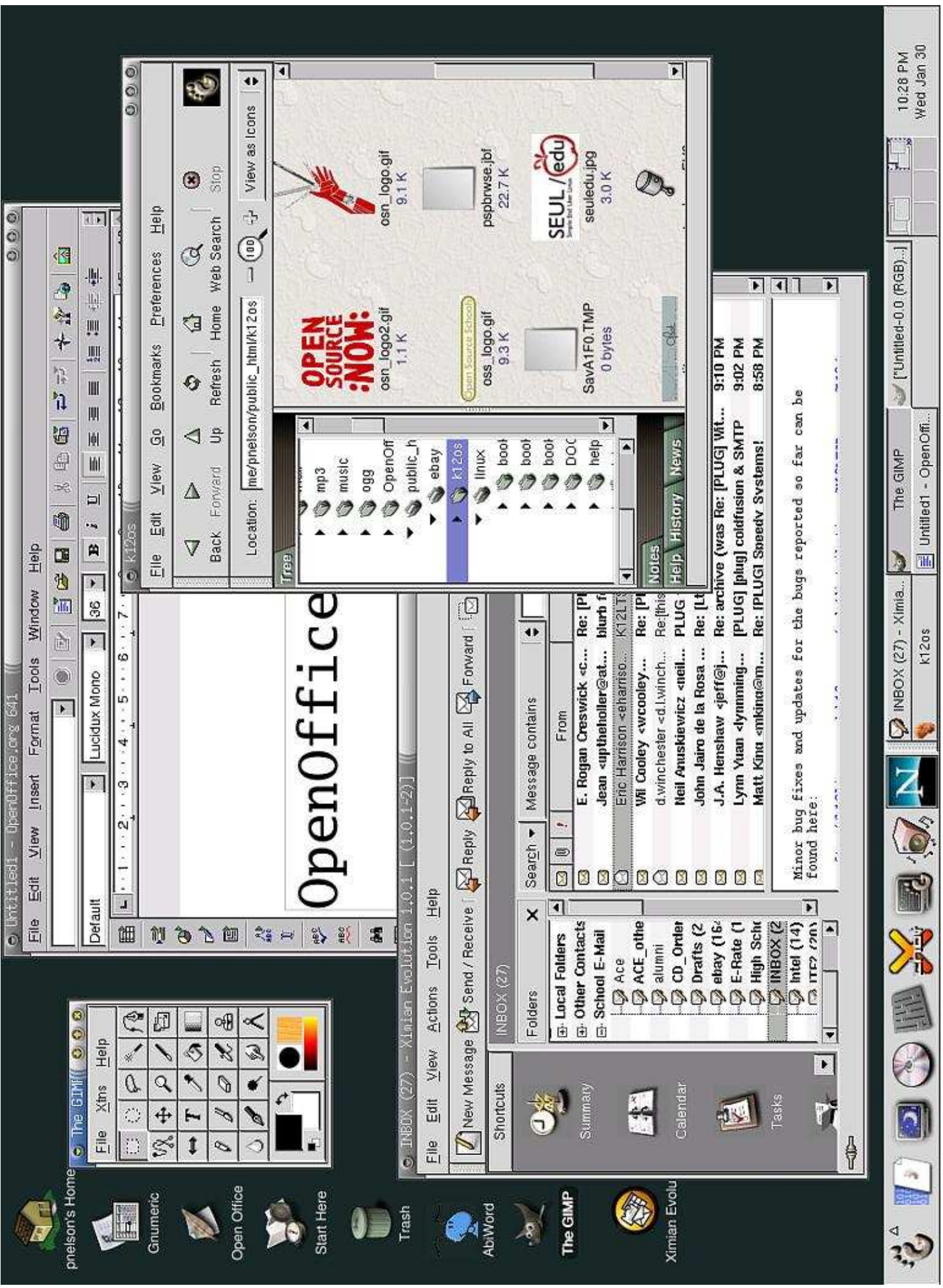
? Hide Help ? Release Notes < Back > Next

Server Services

- dhcp
- nfs
- X applications

- Applications

- Nautilus file manager
- Mozilla browser with Java(tm) and Flash (tm) support
- Ximian Evolution E-Mail, calendar and contact manager
- Adobe Acrobat Reader
- OpenOffice
- K-Office
- Gimp
- AbiWord
- File sharing for both Windows and Macintosh networks
- Much more...



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File Edit View Insert Format Tools Window Help

Default Lucidux Mono 36

OpenOffice

INBOX (27) - Ximian Evolution 1.0.1 [(1,0,1-2)]

File Edit View Actions Tools Help

New Message Send / Receive Reply Reply to All Forward

INBOX (27)

Folders Local Folders Other Contacts School E-Mail

Message list with columns: Search, Message contains, From. Includes email entries from E. Rogan Creswick, Jean, Eric Harrison, etc.

Minor bug fixes and updates for the bugs reported so far can be found here:

The GIMP Ximian Evolu

System tray: INBOX (27) - Ximian..., K12os, Untitled1 - OpenOffi..., 10:28 PM Wed Jan 30

Untitled2 - OpenOffice.org 641

File Edit View Insert Format Tools Window Help

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Fonts are fun!

Arial
Lucidux Serif

Bookman

Technologies for Administrators - OpenOffice.org 641

File Edit View Insert Format Tools Slide Show Window Help

Continuous 0.00cm Black

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Technologies for Administrators

→ Where have we been?

→ Where are we now?

→ Where are we going?

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Technologies for Administrators for Ad...

4.02 / 7.61 0.00 x 0.00

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File Edit View Insert Format Tools Data Window Help

B8

	A	B	C	D	E	F
1						
2	Cat	4				
3	Dog	3				
4	Fox	1				
5	Fish	2				
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Chart

Sheet1 / Sheet2 / Sheet3

Sheet1 / 3 Default 100% STD * Sum=0

[The GIMP]

Technologies for Administrators ...

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Untitled1 - OpenOffice.org 641

11:20 PM
Wed Jan 30

Example Workstation Setup

- get hardware data
 - NIC
 - RAM
 - Video card and RAM
 - Mouse type
- create boot floppy for your NIC
- Boot workstation, not connected to network, get MAC address

- edit /etc/dhcpd.conf
 - option option-128 code 128 = string;
 - option option-129 code 129 = text;
 - host ws001 {
 - hardware ethernet 00:20:AF:31:98:40;
 - fixed-address 192.168.0.1;
 - Option option-128 e4:45:74:68:00:00;
 - option option-129 "NIC=3c509";
 - filename "/lts/vmlinuz-2.4.9-ltsp";
- Service dhcpd restart

- Edit /opt/ltsp/i386/etc/lts.conf

- [ws001]
- XSERVER = XF86_SVGA
- X_MODE_0 = 800x600
- X_COLOR_DEPTH = 16
- X_MOUSE_PROTOCOL = "Microsoft"
- X_MOUSE_DEVICE = "/dev/ttyS0"
- X_MOUSE_BUTTONS = 2
- X_MOUSE_EMULATE3BTN = Y
- LOCAL_APPS = N
- USE_NFS_SWAP = Y
- SWAPFILE_SIZE = 16m
- RUNLEVEL = 5
-



Pros and Cons

- Advantages
 - Only 1 system to maintain
 - 1 set of upgrades and patches
 - 1 place to fix what is broken
 - 1 backup to worry about
 - GPL and Commercial software available
 - Terminals are more bullet-proof than PCs
 - Can have spares ready
 - Emergency replacement can require NO setup
 - It is just a terminal - they are fungible

- Disadvantages

- Central point of failure

- no worse than present file servers

- recommend RAID disks, multiple power supplies

- Harder to up/download files to floppies

- (may be an advantage)

- Not compatible with MS "Licensing 6.0"

New Covenant Schools of Bedford Experience

- Good
- In use for over 3 years for office staff
 - mainly to use StarOffice
- One to two service calls per year
- Not yet in use for students
 - not yet connected to internet
- Remote printing
- Provides bell system for class changes
- Really great bang-for-the-buck and the only system I'm willing to maintain for them

Recommendations

- Use real server hardware
 - SCSI RAID
 - Lots of RAM
 - Multiple CPU
 - Backup PS
- Use same hardware for all terminals
 - PCI NICs
 - Switching hub with port speed and duplex control

Demonstration

- Same login/desktop/files from any terminal
 - You're at home where ever you go.
- Loss of power to terminal