Linux and NT

Linux from an NT expert's perspective

Presented by Mark Minasi

author, The NT Expert's Guide to Linux: the Secret Decoder Ring (coming from Sybex)

www.minasi.com / help@minasi.com

What this talk is all about

As an NT and Windows 2000 networking professional, I've spent the past seven years doing most of my networking work with NT and now with 2000. But I heard more and more about the Linux phenomenon, and so I was intrigued to learn more about it. But I didn't want to have to wade through the large books on the shelf that assumed that I knew nothing about networking. I wanted a short overview of what Linux was and what it was good for, how it compared to NT and how it could work *with* NT – and that didn't stop to re-explain to me what a file share was.

Well, that book didn't exist, so I set out to find out more about Linux. Here's what I've discovered.

Overview

- Why would (or should) an NT professional care about Linux?
- How the Linux world works
- What do people use Linux for as server?
- What can Linux do on the desktop?
- Making it work: what you'll need to play with it
- Linux and Security
- What's best/worst about Linux

Why Care About Linux?

- Linux can complement or replace some NT/2000 functions
- Linux licenses are free, can save money
- You'll probably eventually have to deal with interoperability
- Good admin/programming learning tool
- Demand for Linux admins will grow
- Linux business model is worth understanding

How the Linux World Works

The Linux World

why it's "linnix," not "line-ix"

- In the late 80's a writer built a free micro-Unix for teaching called Minix ("minn-icks")
- Linus Torvalds decided to build a Minix
- But realized he wanted to do *more*
- So he re-named it "Linux"
- Original Linux very basic, no networking even

The Linux World

it’s free, but it’s not public domain

- Torvalds released the OS, source code and all, to the general world, using the GNU Public License
- GPL says:
  - Use Linux and its source in your own products
  - You can even *charge* for your product
  - *But* you must, in turn, offer your source code
  - And you cannot restrict others in the use of your source
- It’s called “open source”

The Linux World

Benefits of a GNU approach

- To paraphrase Linus, “no bug is hard to find when many eyeballs are looking for it”
- Customers can fix the bugs themselves
- Customers could even prove/disprove the validity of a vendor’s claims (“UTSL”)
- “White box” support
- This *isn’t* a new idea (MVS, VMS, Unix…)

The Linux World

why would a vendor do this?

- Open source recruits the customers to help find and fix bugs
- Then the firm sells support, consulting, certification, training, and other items
- You need not be open source to write Linux *applications*

The Linux World

the main point about open source

Open source is the single most compelling thing about Linux.

Period.

If Linux accomplishes nothing more than forcing others to open their source, then it will be perhaps the most significant event in this industry in decades.

Linux as a Server

What Do We Use NT For?

- File Server
- Print Server
- Database, with Oracle or SQL Server
- Mail Server, with Exchange or perhaps Notes
- Web Server, with IIS
- Name Server, as a PDC

There are other uses (routers, firewall, dial-in, mainframe gateway, DNS etc) but they’re not major uses

What People Use Linux For (server-wise)

- Web server
- Mail server
- DNS server
- File server
- Print server
- Firewall

What People *Don't* Use Linux For

- DHCP server
- WINS server
- Database server (check back in 2 years!)
- And, of course, there are no BackOffice implementations for Linux (Exchange et al)

These things exist (believe it or not, there *is* a WINS server for Linux!) but they're not major uses

Linux as a Web Server: Apache

- Created as a joint effort by many; result was “a patchy server”
- Good for hosting multiple sites
- Robust
- Good CGI, programming platform
- Cannot host Active Server Pages off-the-shelf (Halcyon $495, Chilisoft in beta, pricing is apparently a secret)
- Most popular Web server program on the Net

Linux as a Mail Server: Sendmail

- Basic, well-understood Unix mail program
- Supports SMTP
- Does *not* support MAPI
- Nightmarish to configure
- Fast and robust
- Used by countless Unix mail servers
- Simpler option: qmail – but still no picnic

Linux as a DNS Server: BIND

- Again, the standard program in its category
- Bind is very light on the CPU usage, so you can put up an enterprise-strength DNS server on a Pentium 100 with 32 MB of RAM
- Edit a set of ASCII files called “zone files” to modify the DNS database, or Linuxconf helps
- Requires work to make it W2K compatible

Linux as a Firewall: IPCHAINS

- IPCHAINS command
- Can do NAT (“IP masquerading”) so it could share a DSL or cable modem connection throughout the house
- Can implement basic security
- Can support dial-in

Linux as a File/Print Server

In NT, 2000, and Windows networks

- Free tool called “Samba”
- Lets a Linux box attach as a client to NT/2000 file servers
- Lets a Linux box mimic an NT/2000 file server
- Can even be a PDC or WINS server
- Actually faster than NT servers on the same hardware, for uniprocessor systems (ZDlabs)

Linux as a File/Print Server

In Unix networks

- Most Unix boxes share volumes using the Network File System, NFS
- Linux can be either a client or server for NFS
- NT boxes would need an NFS client
- Printing:
  - lpr (client) and lpd (server) included
  - NT has client software to talk to lpd servers

Linux on the Desktop

Can it offer Windows with less pane?

Linux and GUIs

- GUI exists but is (mostly) optional
- Several GUIs available; simplified:
  - KDE more common
  - GNOME competes, newer, from the GNU folks
- You shouldn’t have to put a GUI on but some Linuxes misguidedly mandate it

Do I *have* to use a GUI?

windows icons mice & pull-down menus = WIMP interface

- No, Linux has a long tradition of command line tools, very powerful ones
- Called a “shell” program
- Linux uses “bash,” the Bourne Again SHell
- Great power lies in its script-ability
- Far more powerful than NT batch files, although Windows Scripting Host closes the gap

Are there apps for Linux?

now that I've got the GUI up…

- The good news: several application suites
  - Star Office (now owned by Sun)
  - ApplixWare
  - Corel Office components
  - Some great free ones, including a Pilot organizer
- The bad news: they're just not as good as the Windows offerings, lack the "fit and finish," and there are far fewer of them

Making It Work

What will I need to run it?

Making it Work

Where do I get Linux?

- Red Hat Linux Standard version 6.2, about $30 with StarOffice
- Caldera Linux 2.3 $50, includes WordPerfect, StarOffice (“Personal” versions)
- Slackware 7.0 $40, no extras
- Corel $5

Making it Work

Where Do I Get Linux?

- Debian, a dogmatically “free” Linux
- Mandrake 7.0, aimed at easy installation; $50 gets a lot of stuff or $2 gets a pretty nice GPL version: my favorite Linux
- LinuxStorm another nice implementation
- TurboLinux Server $150, includes commercial server apps

Making it Work

What Processors Does Linux Use?

- Intel x86, Alpha, PowerPC, StrongARM, 680x0, Sinclair ZX81…
- But do non-Intel platforms get the apps?
- Yes, but largely from open source vendors
- Reason: you **often get the source code**, so you just recompile it for the new processor
- Largely solves the old NT problem

Making it Work

Can Linux Co-exist With MS OSes?

- It can read and write FAT, NTFS, FAT32
- Most need a special “EXT2” partition (1GB+ recommended) and a “Linux swap” partition
- Strongly recommend Partition Magic!
- Can dual-boot using LILO, the Linux Loader
- Flexible and powerful but not always implemented well

Making it Work

Will Linux Work On My Hardware?

- Maybe; drivers are written by volunteers
- Really new stuff and expensive stuff may lack drivers
- Video configuration is often a nightmare
- PCMCIA NIC configuration fails on many systems

Making it Work

Hmmm, then what about support?

- Who's going to support a free operating system?
- Well, that's how Red Hat, Caldera, Linuxcare, and the rest intend to make money (that and certification as well)
- In many cases, you'll get better support for Linux than you would for NT
- Again, *all* support people have source code access in the Linux world, not just a few

Linux and Security

Linux and Security

- One point where Linux and Unix differ
- Uses permissions & user accounts, as in NT
- But you don’t make users admins; rather, they all just share the “root” password
- You can only set permissions for *one* user account and *one* group
- Then you set “world” permissions for anyone who’s not that user or in that group

Interoperating with NT

Interop Areas

- Coexistence
  - Bind, Apache, Sendmail, ftp
- Mimicry
  - Samba, LPR/LPD, RDP clients for Linux
- Directory Sync
  - Some products, none shipping yet
- Emulation
  - dosemu, wine

Things to love and hate about Linux and how Linux compares to NT

let’s see, I put that asbestos suit *somewhere*…

Linux Pros

- Faster file server than NT
- Basic Internet infrastructure (Web, mail, DNS, firewall, router) tools excellent
- More remote-able than NT/2000
- Better uptime than NT
- Inexpensive, the perfect second DNS server
- Open source model may offer better support overall
- May be easier to find admins – just hire a recent college graduate!

More Linux Pros

- Can do a lot of system work without rebooting
- Can kill a GUI session remotely and restart, no reboot
- Can often install a new device driver, no reboot
- BSD code often works, source code issue
- Although there are many versions, they're all compatible
- It's possible to refine a copy of Linux to do just one thing, and do it amazingly quickly – rip out the stuff you don't need, crank the buffer sizes, and get knock-your-socks-off performance

Linux Cons

- A real challenge to set up
- No simple way to synchronize NT and Linux user accounts (a pox on both their houses!)
- Drivers are often hard to come by

Linux Cons for NT Pros

server side concerns

- Less flexible permissions structure than NT
- DNS server isn’t Windows 2000-compatible without some work
- Can’t run active server pages w/o buying addons
- Doesn’t support MAPI
- NT better on multiprocessor and clusters
- Needs some new skills -- we NT folks aren’t exactly used to recompiling our kernels, or even our applications

Linux Cons for NT Pros

desktop concerns

- Fewer desktop applications available
- Harder to configure than corresponding NT tools
- GUI is less polished than NT
- I believe that the Linux developer community is, in general, not committed to the kind of hand-holding that Windows does as a matter of course

Linux Cons for NT Pros

support concerns

- I suspect that in the long run Linux support will be *better* than NT/2000 support
- But please don't think that it'll be free
- As more people adopt Linux, the newsgroups seem more impatient with "newbies"
- Assume, then, that you'll be paying for it
- Linux needs different kinds of support: more on getting it set up, less on keeping it running

In Short…

- Pluses:
  - reliability
  - open source & tried-and-true tools
- Minuses
  - retraining costs
  - higher setup costs
  - reduced desktop functionality over Windows
  - lack of support for MS protocols/formats

Recommendations

first steps and cautions

- Get it and start playing with it
- Get *several* distributions
- Consider setting up a DNS server or perhaps an intranet Web server or sendmail
- Or, if you need a router, put Linux on an old 486 box – there is even a version of Linux that *runs on a floppy*, so the box needn't even have a hard disk

Thanks!

- I hope you enjoyed this talk
- Questions?
- I'm at help@minasi.com
- I invite you to sign up for my free e-newsletter at www.minasi.com
- Please consider buying *Linux for NT Experts* when it's finished