

What is Linux ?

Bob Tanner <tanner@real-time.com>

Real Time Enterprises, Inc
Eden Prairie, MN



What is Linux ?

Linux Conference



What is Linux ?

Linux Conference



Linux

- Linux is pronounced LYNN-uks
- Audio file from Linus himself



Outline

- What is Linux?
- What is Linux REALLY?
- The Distant Past
- The Past
- 'Yesterday'
- 'Today'
- The Future
- Conclusions



What is Linux ?

- Linux is a Unix clone written from scratch by Linus Torvalds with assistance from a loosely-knit team of programmers across the Net. It aims towards POSIX compliance. It has all the features you would expect in a modern fully-fledged Unix, including true multitasking, virtual memory, shared libraries, demand loading, shared copy-on-write executables, proper memory management and TCP/IP networking.



What is Linux Really?

- Linus' under-graduate project that is changing the software and computing worlds.
- An **open source** operating system that is free to anyone who wants it.
- A very '–able' solution to your business needs. (flexible, scalable, and reliable).
- Linux can **replace** or **supplement** your current operating system.
- It's a different way of thinking



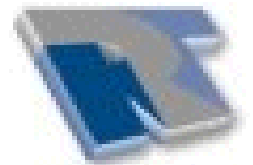
The Distant Past

- Workstations were Windows 3.1, 9600 baud, and Trumpet Winsock
- Servers were Novell, Banyan Vines or LAN Manager
- This was 1993 and only geeks ran Linux
- Homebrew system, maintained everything from raw source files
- Even then Linux was very '–able'
- Linux was not ready for the business world



The Past

- Workstations were Windows 95, Windows 98, and 56K/ISDN
- Servers were Windows NT, Novell
- Slackware then Redhat distributions hit the Internet
- Could maintain your system with pre-built binaries, with seamless upgrades
- Real Time mutated from Consultants to 'Window Wipers'
- Microsoft Exchange SID, PDC, BDC, crash/recovery incident



The Past Continues...

- Real Time starts to build Linux solutions
- Mail Server
- Convincing a client
- Double as a file server and print server
- Churchill decided to beta test the solution
- First success
- Other clients were more willing to try Linux



'Yesterday'

- Workstations were Windows 95, Windows 98, NT Workstation, DSL/Cable modems
- Servers were Windows NT
- Redhat goes IPO with a major splash
- New distributions, major backing from IBM, Intel, etc
- DOJ case against Microsoft
- The Internet explodes in size
- Hackers, crackers, SPAM mail, and Denial of Service attacks
- Linux is ready for the business world



'Today'

- Workstations are Windows 95, Windows 98, NT Workstation **and Linux**, DSL/Cable modems
- Servers are predominately still Windows NT
- Businesses 'get' Linux
- Windows 2000 upgrade or replacement
- Internet security
- Active Linux User Groups, like TCLUG
- Linux Expo and user education



The Future

- Where will Linux be strongest
- Where will Linux need to improve
- Workstations
- Servers
- Internet
- Security
- Integration
- Support

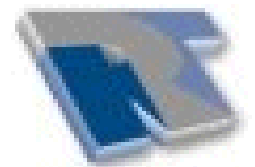
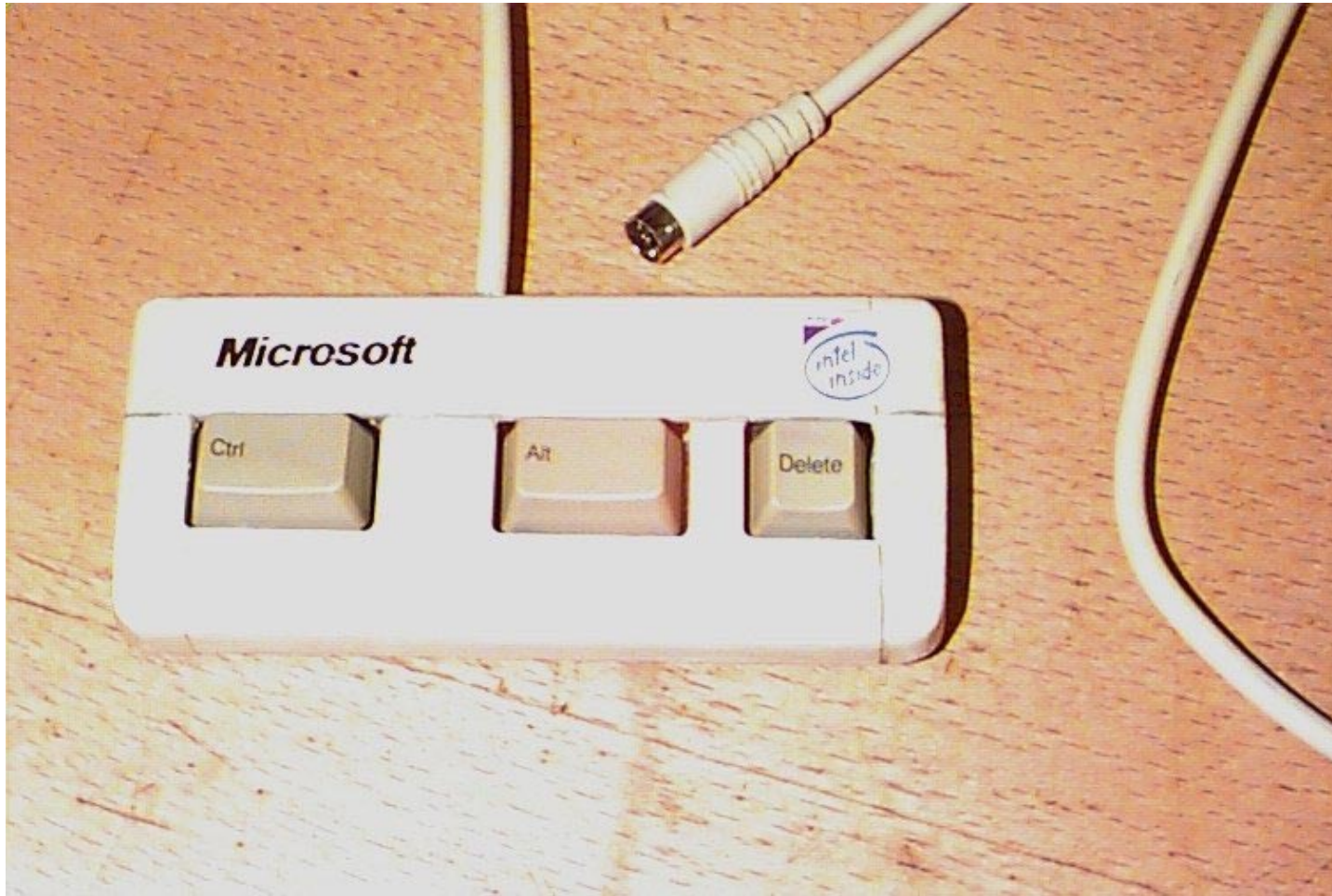


Linux Strength

- Internet servers (web, mail, dns, and ldap)
- Corporate servers (file, print and intranet web)
- Return on Investment
- Stability
- Flexibility
- Integration
- Ease of use



Linux Strength



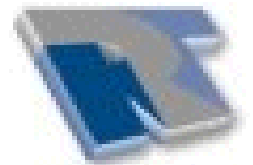
Where Linux Needs to Improve

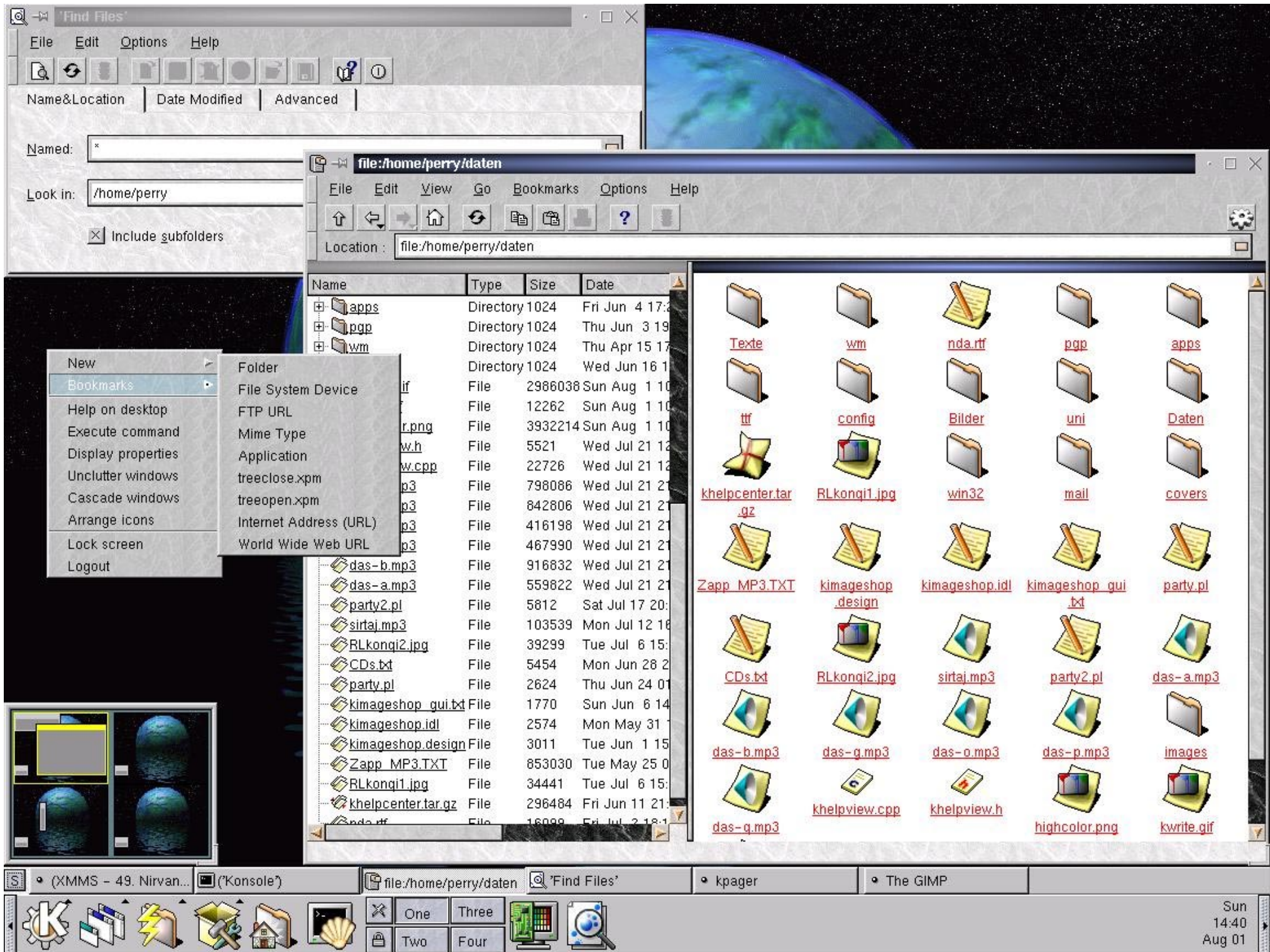
- Hardware support (drivers and detection)
- Richer application environment
- More business applications
- Zealots, anti-Microsoft attitudes
- Don't over promise Linux capabilities



The Future – Workstations

- Windows will always be here
- GNOME 2.0
- KDE 2.0
- GNOME Office Suite
- KOffice
- StarOffice
- WordPerfect Office
- Applixware
- VMWare





The Future – Servers

- Windows will always be here
- Apache
- Sendmail
- DNS
- Directory Services (LDAP and NDS)
- Application Servers (JSP, Servlets, EJB)
- File and Print
- Databases



The Future – The Internet

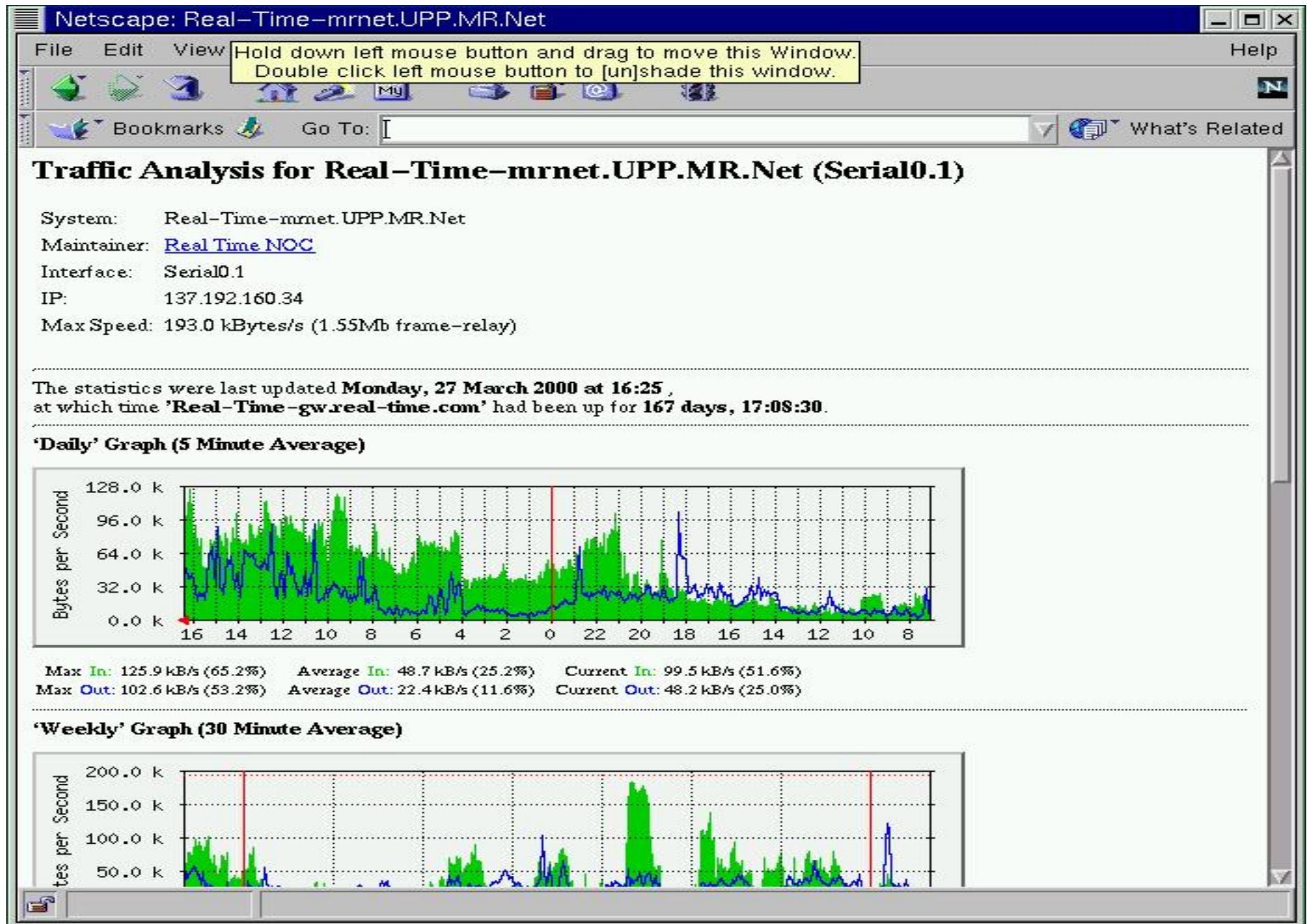
- Security
- Firewall
- Loghost
- Monitor
- Intrusion detection



Real Time Monitoring

```
xterm
Mar 29 13:42:41 gatekeeper kernel: Vendor: WANGTEK Model: 6130-HS
Rev: 4G16
Mar 29 13:42:41 gatekeeper kernel: Type: Sequential-Access
ANSI SCSI revision: 02
Mar 29 13:42:41 gatekeeper kernel: (scsi0:0:1:0) Using asynchronous transfers.
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Mar 29 13:43:19 mage sshd[15181]: log: Connection from 206.10.252.100 port 62696
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MRTG Monitoring Bandwidth



Intrusion Detection

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This is an automated report of possible file integrity changes, generated by
the Tripwire integrity checker. To tell Tripwire that a file or entire
directory tree is valid, as root run:

/usr/sbin/tripwire -update [pathname|entry]

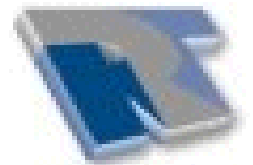
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session, as root run:

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Changed files/directories include:
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+/etc/ssh/ssh_random_seed
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changed: -rw-r--r-- root          9 Mar 29 03:40:53 2000 /etc/ntp/drift
changed: -rw-r--r-- root     12005 Mar 26 04:22:08 2000
--- 235/246: 0000-Admin          File integrity report          -- (end)
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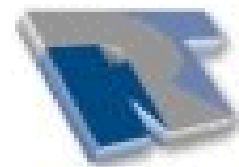

The Future – Integration

- Total duplication of NT Domain Services (Samba TNG)
- Even better SMB support
- Complete compatibility with Novel NDS
- LDAP
- Better support for IPX and SPX
- Appletalk
- NFS v3



The Future – Support

- All 'old' computer companies (IBM, Intel, HP)
- Computer suppliers (Dell, Compaq, Gateway)
- Specialized Linux companies (LinuxCare, VALinux, RedHat)
- Local consulting companies (Real Time)
- Your own staff
- Linux User Groups
- Linux community
- **Open Source Community**



Conclusion

- Linux is a viable alternative for your business needs
- Linux will only get better with time
- The rate at which Linux improves will be substantially quicker than other non–**open source** operating systems
- Linux just works!



Why Does Linux Work?

Audience feedback...



Why Does Linux Work?

- Many Linux users are co-developers
- Ego trip over noosphere homesteading
- Developed and supported via the Internet from day 1
- Built on knowledge and ideas that are 40 years old
- It's **Open Source**



Open Source

"Open Source software is a lot like manure, if you spread around it can make things grow. Hording it you just have a pile of stink."

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What is Open Source?

- The basic idea behind open source is very simple. When programmers on the Internet can read, redistribute, and modify the source for a piece of software, it evolves. People improve it, people adapt it, people fix bugs. And this can happen at a speed that, if one is used to the slow pace of conventional software development, seems astonishing.
- The Cathedral and the Bazaar



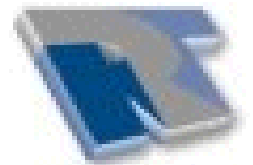
Cathedral

- Traditional or Closed Software development
- The most important software needed to be built like cathedrals, carefully crafted by individual wizards or small bands of mages working in splendid isolation



The Bazaar

- Open Software development
- Release early and often
- Delegate everything you can
- Be open to the point of promiscuity
- The great babbling bazaar of differing agendas and approaches
- Treat the users as co-developers



Why use Open Source Software

- Increased security through public review
- Increased reliability through peer review
- Closer to the developers (co-developer)
- Fast turn-around time on bug-fixes and patches
- You get the source code
- You control your destiny



Real Time and Open Source

- All products we sell are built with 100% open source tools
- Source code is available online
- We try to think outside the square
- Giving back to the Linux community
- Advocate Open Source without being zealots
- Business model



Questions and Answers

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References

Real Time:

- <http://www.real-time.com>

TCLUG:

- <http://www.mn-linux.org>

Open Source

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The Cathedral and the Bazaar

- <http://www.tuxedo.org/~esr/writings/cathedral-bazaar/>

Homesteading the Noosphere

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GNOME Project

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KDE Project

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- <http://www.hp.com>

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- http://www.dell.com/us/en/bsd/topics/linux_linuxhome.htm

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- <http://www.unix.digital.com/linux/index.html>

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- <http://www.gateway.com/mes/specs/gateway%5Fmicro%5Fserver.html>

Linux Kernel Archives

- <http://www.kernel.org>

Java, JSP EJB and Servlets:

- <http://java.sun.com>



References

MRTG:

- <http://ee-staff.ethz.ch/~oetiker/webtools/mrtg/mrtg.html>

Swatch:

- <http://www.stanford.edu/~atkins/swatch>



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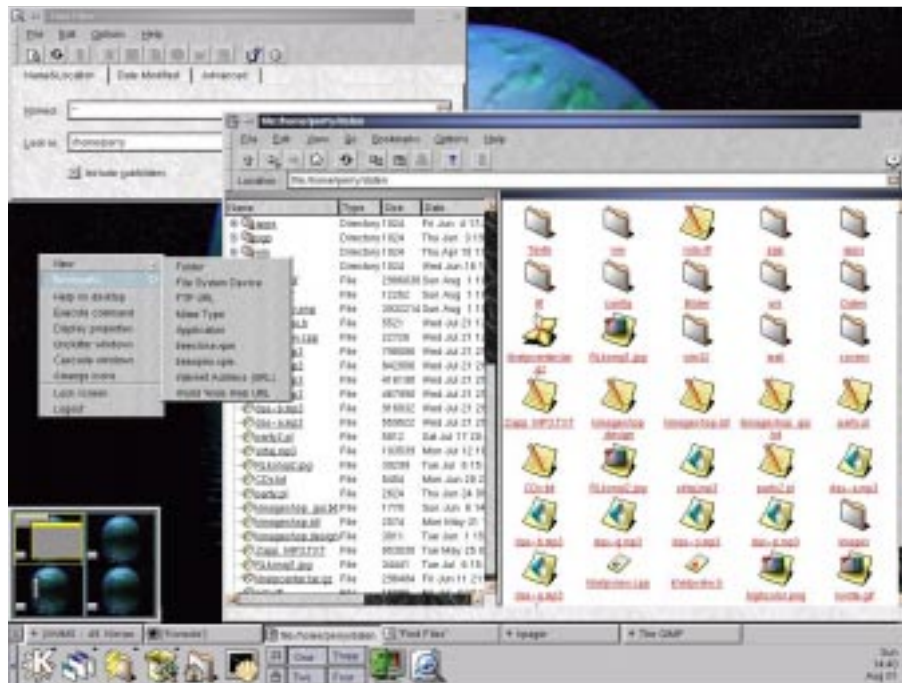


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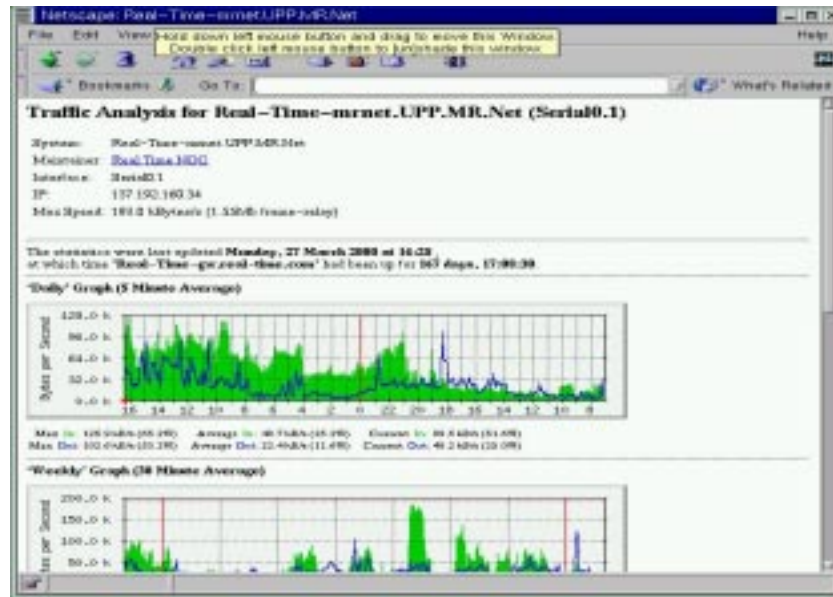
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- LDAP
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This is some notes.

The Future – Support

- All 'old' computer companies (IBM, Intel, HP)
- Computer suppliers (Dell, Compaq, Gateway)
- Specialized Linux companies (LinuxCare, VALinux, RedHat)
- Local consulting companies (Real Time)
- Your own staff
- Linux User Groups
- Linux community
- **Open Source Community**



Complete listing of references in your
handouts

Your staff. Might have several linux
lurkers, people who run it at home already

Conclusion

- Linux is a viable alternative for your business needs
- Linux will only get better with time
- The rate at which Linux improves will be substantially quicker than other non–open source operating systems
- Linux just works!



Why Does Linux Work?

Audience feedback...



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- Release early and often
- Delegate everything you can
- Be open to the point of promiscuity
- The great babbling bazaar of differing agendas and approaches
- Treat the users as co-developers



Why use Open Source Software

- Increased security through public review
- Increased reliability through peer review
- Closer to the developers (co-developer)
- Fast turn-around time on bug-fixes and patches
- You get the source code
- You control your destiny



Because you can get access to source, you can survive the collapse of your vendor
You're no longer totally at the mercy of unfixed bugs. You're not shackled to every
strategic decision your vendor makes. And if your vendor's support fees become
exorbitant, you can buy support from elsewhere.

Real Time and Open Source

- All products we sell are built with 100% open source tools
- Source code is available online
- We try to think outside the square
- Giving back to the Linux community
- Advocate Open Source without being zealots
- Business model



Business model. Solution is the most important aspect, not just the product.

Questions and Answers

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