# The Best Damn Linux Presentation Ever !!!

Do you want the truth ???

Can you handle the truth ???

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# Why Customers Choose Linux

- They were already a Unix shop
- It was recommended to them
  - By another vendor
  - By someone on team fresh out of college
- Can't afford to upgrade their hardware
- It's Cheaper (not necessarily)
- They run a very narrow list of applications
- It's more secure
- Apps are easier to pirate
- It's not Microsoft

**"I love Linux !!!"**

Uhhh, what exactly do you mean by "Linux"?

# Major Players

- RedHat
- Suse
- Lindows

# Minor Players

2-Disk Xwindow Linux     Alphalinux     ALT Linux     Arch Linux     Ark Linux
Armed Linux     ASPLinux     Astaro Security Linux     BasicLinux
BearOps Linux     Beehive Linux     Blue Linux     BluePoint Linux
Bootable Business Card     BRD     ByzantineOS     CAEN Linux     CClinux
ChainSaw Linux     ClarkConnect     CLE (Chinese Linux Extensions)
cLIeNUX     CollegeLinux     Compledge Sentinel     Conectiva Linux
Coollinux     Core Linux     Corel Linux     Coyote Linux     CRUX     EmbLin
Damn Small Linux     Debian     GNU/Linux     deepGNU/Linux     DemoLinux
Dettu[Xx] Linux     Devil-Linux     DLX     Linux     DragonLinux     easyLinux
Elfstone Linux     ELinOS     ELKS     Elx Linux     EnGarde Secure Linux

# Minor Players ... 198 total

ESWare    Etlinux    Eurielec Linux    Finnix    FireCast Software Suite for Kiosks    Firegate Server
Fli4L    floppyfw    FrazierWall Linux    Freesco    GamelinuX    GCL- Grey Cat Linux
Gelecek Linux    Gentoo Linux    Gibraltar    giotto    GNU Brutalware Linux    GNU Dualix    GNU/Linux
UTUTO    hal91 Floppy Linux    Haydar Linux    HispaFuentes    Honung Linux    HRID    HVLinux
Icepack Linux    Immunix OS    Independence    IPCop Firewall    Ivrix    JAILBAIT    JB Linux
Jurix Linux    K12LTSP    Kaladix Linux    Keeper Linux    KNOPPIX    Kondara MNU/Linux
KRUD (Kevin's RedHat Über Distribution)    KSI Linux    L13Plus    Lanthan Linux    Laser5    Leka
Rescue Floppy    LindowsOS    LinEx    Linpus Linux    Linux Antarctica    Linux by LibraNet    Linux Pro
LinuxInstall.org    LinuxOne    LinuxROM (aka PizzaBox distro)    LinuxWare    LOAF (Linux on a floppy)
LoopLinux    Lunatix GNU/Linux    LuteLinux    Lycoris    Madeinlinux    MandrakeLinux    Maragda
Mastodon Linux    MaxOS    MCC    Miracle Linux    MNIS/RTLinux and MNIS/SXLinux
Monkey Linux    Morphix    muLinux    Netule Modules    NFSRoot-Linux    NoMad Linux
Nuclinux    O-Net    Peanut Linux    PeeWeeLinux    Phat Linux    PKLinux    Plamo Linux
PLD Linux    Pocket Linux    Probatus Spectra Linux    Progeny Debian    PROSA Debian    Puppy
Pygmy Linux    Rabid Squirrel Linux    Red Flag Linux    RedHat Linux    Relax Linux    Rock Linux
Root Linux    Routerlinux    RT-Linux    SCO/Caldera OpenLinux    ScrudgeWare    Security-Enhanced Linux
SharkLinux    Slackware Linux    Small Linux    SME Server    smoothwall    Server Optimized Linux
SoL-diag    Sorcerer Linux    SOT Linux    Source Mage GNU/Linux    SPB-Linux    Spinix    spyLinux
Stampede Linux    Storm Linux    SuSE Linux    TelemetryBox    The LNX System    TINY Linux
tomsrtbt    Tomukas    TopologiLinux    Trinux    Trustix Secure Linux    Trustix/Merdeka Linux
ttylinux    TurboLinux    University Linux    Ute-Linux    VectorLinux    Vine Linux    Virtual-Linux
White Glove Linux    WholeLinux    WinLinux 2001    Xandros    Xbox Linux    Xdenu    Xteam
Linux    YES Server    Yggdrasil Linux    Yoper    YuO-GNU-Linux    ZIIF Linux    ZipHam    ZipSpeak

Which Linux?  198 different versions according to www.linux.org, of course, only 166 of these are still maintained!!!  This is for Intel platform only!!!

But what if I only plan to use Red Hat?  Only 25 different varieties based on Red Hat!!!

# What about mail? ... 70 choices

aliasman.pl　　Bluetail Mail Robustifier　　Checklocalpwd
CommuniGate Pro　　Courier　　Courier-IMAP　　cucipop
Cyrus IMAP server　　cyrus-imapd-sql　　cyrus-sasl-mysql patch
DlxieMail　　dkimap　　eSquire　　Exim　　Ezmlm　　ezmlm-ldx　　getpg /
UW-IMAP　　GNU Anubis　　GNU pop3d with NIS　　InfinyMail　　Inflex
IntraStore Server 98　　JAMS　　JergoBlatz!　　Mail-Gear
maildir-bulletin　　Mailman　　MailOne　　MasqMail　　Minimalist
Minordomo　　MXM　　Netscape Messaging Server　　nullmailer
ODBCmap OMTA　　pam_cucipop　　perdition　　popa3d　　poplistener
Postfix pwcheck_mysql　　pwcheck_pgsql　　qmail-ldap　　qmail_regex
qmfilt Qpopper　　qpopper-mysql　　RMTP　　SAUCE　　Sendmail
Sendmail PostgreSQL map patch　　sendmail-tls　　smunge　　Solid POP3
Squirrel Mail　　teapop　　tmlm　　Transparent compression for Qmail
UW Imap Server　　UW-IMAP/Linuxconf VDM　　vmail-sql
virtual domains support for GNU pop3d　　vmailmgr　　VoidPOP3
vpopmail　　Webinterface for Unix　　Listproc　　XMail　　ZMailer

Mail server?  Choose between 70!!!

# And Office? ... 48 choices

Abacus    AbiWord    BlackBook    Bynari    TradeMail
Chinese Lyx    Patch Conflux Lite    CyberScheduler
envi.con    R. Heuberger    Form Maker    GCTB
GMCAL    Gstalker    IndeoCRM    jpilot    KFlowChart
Lexi Word Processor    LinuDent    logger    LyX
MagicPoint    MagicPoint Gallery    ManStyle    Maxwell
Muller English-Russian Dictionary Kit    OmniChex
OpenOffice.org    Passepartout    PSSlides    QtGantt
QuickList    Share360 by Cybozu    Siag Office
Slidemaker    SohoVoice    SoL-desktop    sqlDESKTOP
StarOffice    Storagement    Ted    Uniplex    UBS
VetTux    XC Connect    XC Vault    XESS    xmemo
XNotesPlus    xrolo    XRolyPoly

Want Office?  Only 48 different options.

# So which Linux solution ?

- 665,280 different possible combinations just looking at three of the most basic parts of IT !!!

- And we have not even looked at the following:
  - 131 different Firewalls
  - 55 different DNS servers
  - 15 different Collaboration offerings

  - 14,092,426,656,000 ... That is 14 trillion options !!!

- Not my data...searches on www.linux.org on 9/7/03

E-mail client? 196 versions.

Firewalls? 131 versions.

DNS? 55 versions.

Collaboration? 15 versions

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**"Linux is free."**

Yep, just like a puppy.

# Red Hat

- Red Hat Linux Enterprise AS
  - $1499 Standard Edition
  - $2499 Premium Edition
- Red Hat Linux ES
  - $349 Basic
  - $799 Standard
- Red Hat Linux Enterprise WS
  - $179 Basic Edition
  - $299 Standard Edition

# SuSE Linux Enterprise Server

- SuSE Enterprise Server = $749
  - 1 year of on-line/e-mail support = included
  - 1 year of phone support = $2250
  - About 5 years of patch support
- Desktop = $79.95
  - 90 days install support
  - About 2 years of patch support
- Office = $129
  - Allows use of Office 97/2000

# SCO

- SCO pricing
  - $199 per desktop
  - $699 per server ($1399 after Oct 15th)
  - ($1B lawsuit against IBM)

# How IBM Makes Money

- IBM makes money 'indirectly'
  - Hardware, services, "middleware"
- The total cost is much higher
- There are no incentives for IBM to:
  - Guide customers to cost-effective hardware
  - Make Linux simpler to deploy, use & manage
  - Include middleware with Linux distributions

# IBM Supports WebSphere On Linux

**Microsoft**®

| Windows Server 2003 Enterprise (6) | $15,996 |
|---|---|
| Windows Server 2003 Standard (2) | $1,998 |
| SQL Server 2000 Standard | $19,996 |
| Host Integration Server | $9,996 |
| Visual Studio 2003 EA | $21,990 |
| **Total Software** | **$69,976** |

**IBM**®

| Linux | $0 |
|---|---|
| WebSphere App. Server v5.0 | $48,000 |
| DB2 v8.1 | $18,000 |
| CICS Transaction Gateway | $29,252 |
| WebSphere App. Developer | $34,990 |
| **Total Software** | **$130,242** |

**Basic Software Configuration**
Six 2-CPU servers: 2 application servers, 2 database servers, 2 host gateway servers

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# Gartner Comparison Chart
## Desktop

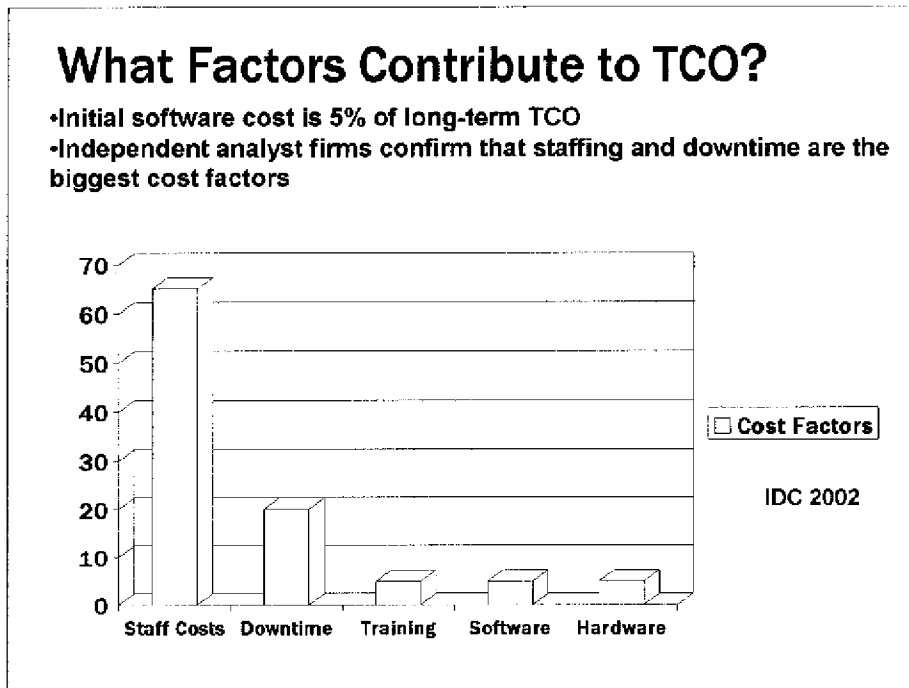|            | HW  | SW  | HW&SW | End User | Total TCO |
|------------|-----|-----|-------|----------|-----------|
| 95/Office  | 481 | 871 | 1423  | 3242     | 6050      |
| XP/Office  | 481 | 871 | 1423  | 2706     | 5285      |
| XP/SO      | 481 | 797 | 1348  | 2896     | 5402      |
| Linux/SO   | 445 | 785 | 1311  | 2986     | 5447      |

# Perception – It's Free

- Red Hat made $91 million last year
  - ($291 million in the bank)
- Gartner estimates that IBM can trace to Linux about $1.2 billion in revenue in 2002 (hardware, software and services)

http://news.com.com/2100-1001_3-5060134.html?tag=fd_top

**"Well, it may not be free,
but it's cheaper..."**

Not really.

# What Factors Contribute to TCO?

•Initial software cost is 5% of long-term TCO
•Independent analyst firms confirm that staffing and downtime are the biggest cost factors



Based on independent research from Gartner, Meta and now IDC, most analysts agree that upfront software acquisition costs are only a tiny portion of the long-term total cost of ownership. Staff costs plus the cost of downtime are the two biggest sources of expense involved in owning and operating an IT infrastructure.
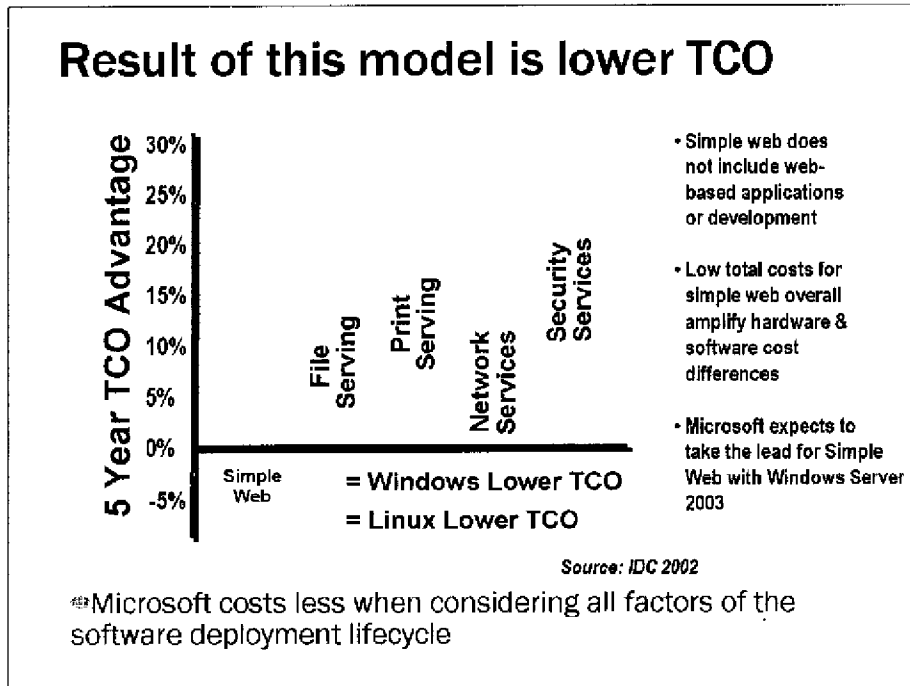
IDC's TCO study confirmed these cost factors, discovering that based on over 100 customer interviews, staff costs associated with installing, upgrading and troubleshooting server operating systems tended to be the largest cost component. Compare that to software acquisition costs of Windows, which were only 5% of most server operating solutions. Unfront "free" does not mean low-cost in the long term.

# Cost: The Facts

"The cost advantages of Windows are significant: 11 to 22% over a 5 year period"

**IDC**
*Analyze the Future*

*Source: IDC Whitepaper, October 2002 "Windows 2000 versus Linux in Enterprise Computing"

# Result of this model is lower TCO

**5 Year TCO Advantage** (y-axis: -5%, 0%, 5%, 10%, 15%, 20%, 25%, 30%)

Simple Web

File Serving

Print Serving

Network Services

Security Services

= Windows Lower TCO

= Linux Lower TCO

- Simple web does not include web-based applications or development

- Low total costs for simple web overall amplify hardware & software cost differences

- Microsoft expects to take the lead for Simple Web with Windows Server 2003

*Source: IDC 2002*

Microsoft costs less when considering all factors of the software deployment lifecycle

The result of the efforts Microsoft puts into solving customer pain, the approach to development, integration and test and the focus on a broad ecosystem is lower TCO and higher business value for you. When asked why customers are interested in Linux, the most popular response is 'low cost'. In fact, many customers report that their intuition says that Linux will be 2-3 times cheaper than Windows. Why? It seems intuitive that an operating system that is free would also cost less over the long term to maintain and operate.

Microsoft has long felt, however, that there are many factors (such as 'people costs') that would be lower for Windows, and that over time, Windows would actually cost less than Linux. In order to test this belief, and show that our investments in engineering would deliver a lower long-term cost profile, Microsoft commissioned an in-depth study with International Data Corporation to study the 5 year total cost of ownership of Windows versus Linux in 5 common workloads.

What the study found was that initial software acquisition costs are a very small percentage of the 5 year TCO, and that the #1 factor is 'People costs'. And, the study found that Windows has a lower TCO than Linux in all but the Web serving workload. In fact, the savings in some of the workloads – especially security servers and print serving – were surprisingly high. (Note: The web workload does not include application-centric web deployments; people costs were still lower for Windows in the web workload; the low cost profile overall for the web workload amplified the software acquisition cost differences and the fact that most customers run Linux web servers on less expensive hardware than Windows web servers (a situation that we expect to change with IIS 6.0, which will operate more efficiently than IIS 5.0).

It is also important to note that we're not stating that TCO is the only factor that companies should use when making operating system platform decisions. Instead, we are asserting that this data shows that the investments we make in rigorous engineering and investing in ecosystem development have yielded returns for customers. In other words, lower TCO doesn't happen by accident. And we encourage customers to question their assumptions about whether low up-front costs in additional workloads (that we didn't study) will translate automatically to lower costs over time. We strongly expect that Window's TCO advantage grows along with the complexity of the workload.

Look at the http://Linux site, where the IDC study is posted, to find additional 3rd party TCO data that corroborates the data found in the IDC study.
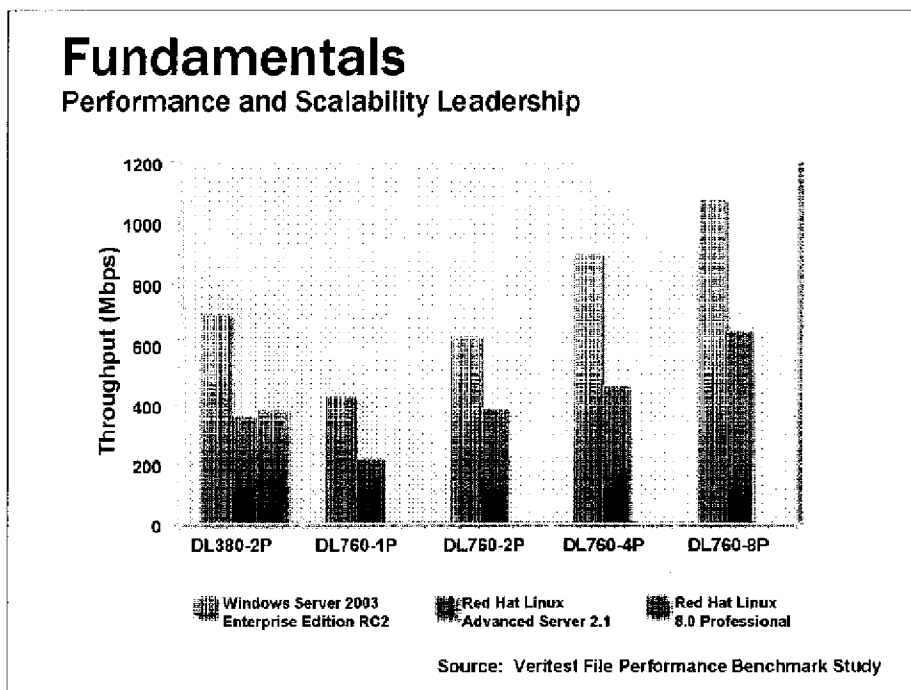
Notes:

-In the case of the web workload, it is important to note that this category covered only basic web serving (static content and basic dynamic content) and that Windows had a lower 'people cost' but hardware costs were higher on Windows than on Linux due to the way that most customers deployed their Linux servers in clusters of very low-end, inexpensive machines. Windows-based web servers tended to not be deployed in clusters and also tended to run more workloads per server, which generally translated to larger, more expensive machines. (Note that because of the advances in IIS Version 6.0, that ships in Windows.NET Server 2003, Microsoft expects that we will come out ahead on the simple web workload in the future.)
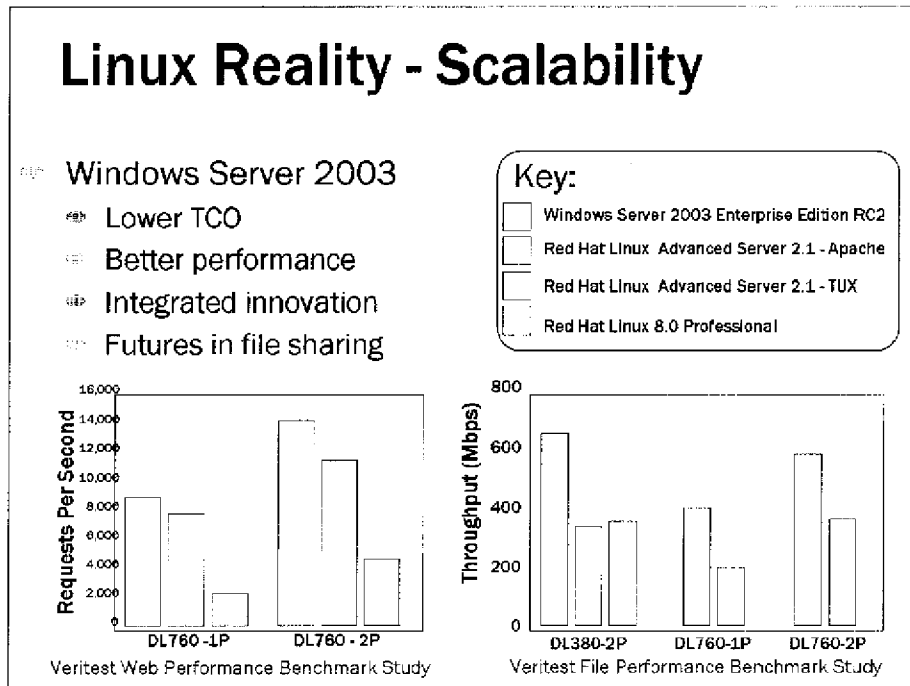
-Microsoft also had leadership positions on a 3 year basis. In fact, the gap on simple web serving was more favorable to Windows.

-The remainder of the details are in the study itself, which can be found on the http://linux portal.
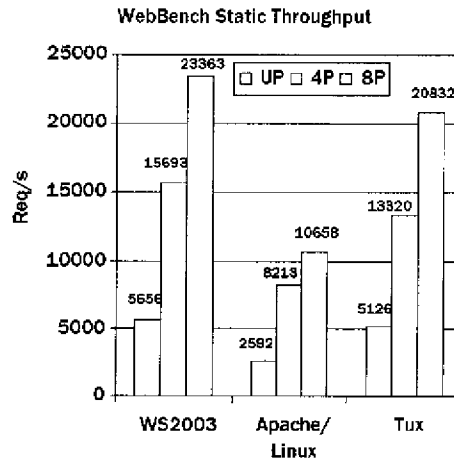
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**"Dude, Linux is just better."**

Nope.

# Fundamentals

## Performance and Scalability Leadership



Source: Veritest File Performance Benchmark Study

# Linux Reality - Scalability

- Windows Server 2003
  - Lower TCO
  - Better performance
  - Integrated innovation
  - Futures in file sharing

Key:

- Windows Server 2003 Enterprise Edition RC2
- Red Hat Linux  Advanced Server 2.1 - Apache
- Red Hat Linux  Advanced Server 2.1 - TUX
- Red Hat Linux 8.0 Professional

Veritest Web Performance Benchmark Study

Veritest File Performance Benchmark Study

- This slide shows the actual peak dynamic CGI and ISAPI test results and the percentage increase in performance when using Windows Server 2003 vs. Red Hat Linux Apache and TUX.

- Windows showed a 300% performance gain over Red Hat Linux Apache.  It also showed significant performance margins over Red Hat TUX on all tested configurations.

- Windows Server 2003 processed 33,991 requests per second on the 8P system compared to RedHat's TUX 13007 and Red Hat Apache 8496 requests per second.

- Requests per seconds are a basic measure of the client/server interaction and give you a rough idea of how many hits per day a server can handle. Keep in mind, though, that WebBench's requests per seconds score is generally higher than the typical load serviced by most Web servers because WebBench uses stress tests to bombard the server with requests as fast as the clients can issue them.

**Reactive TP if asked about red Hat drop off on 8P machines:**

- Veritest noticed a drop off in performance on the 8 processor configuration on TUX.  They requested server tuning info from Red Hat but they were unable to get the needed resolution from RH tech support to complete the testing in time for this report.  Veritest concluded that even if Red Hat could have remedied the situation Windows server 2003 would come out ahead by a significant margin.

- This slide uses data from page 3 of the Veritest report.

# Web Server
# Linux Competitive Data (WebBench Static)
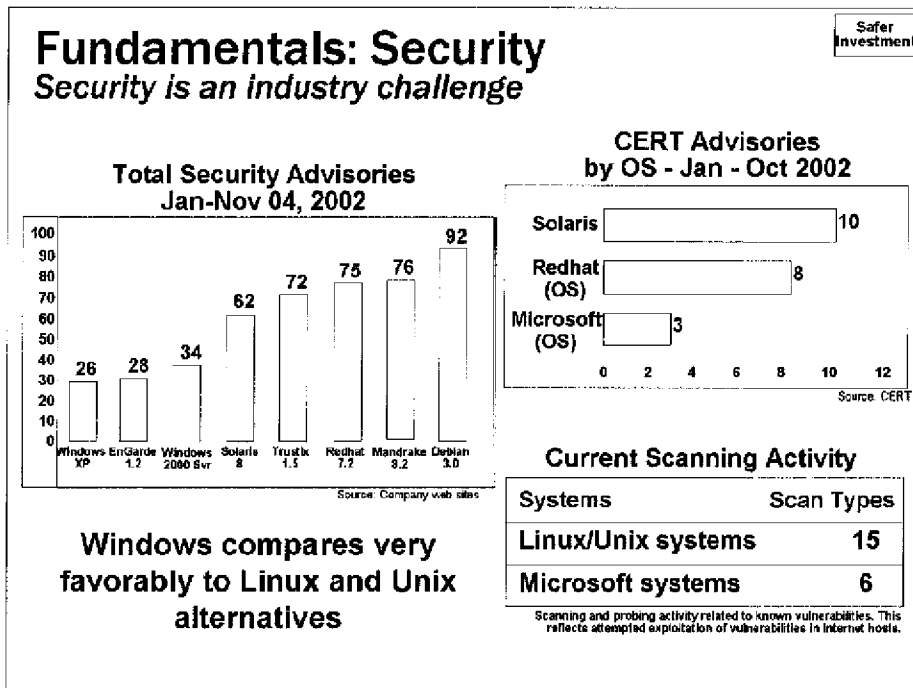
- WebBench Static
  - Static: Small static set (60MB)
  - 6.5KB average response size
  - All requests non-KA
  - Used WCAT client to drive load for 8P
  - WebBench client used for UP/4P
- IIS vs. Tux
  - UP: 10% over TUX
  - 4P: 18% over TUX
  - 8P: 12% over TUX
- IIS twice as fast as Apache/Linux
- Hardware
  - 8P 700 MHz Xeon PIII
  - 4xGB Intel XF NICS
  - 4GB RAM
- Software
  - Windows Server 2003 RC2
  - Linux
    - Red Hat 7.2 + Linux 2.4.9-31
    - Intel GB driver 4.1.7
    - TUX 2.2.0-1
    - Apache 2.0.35

**WebBench Static Throughput**

Legend: □ UP □ 4P □ 8P

Req/s

| | WS2003 | Apache/Linux | Tux |
|---|---|---|---|
| UP | 5656 | 2592 | 5126 |
| 4P | 15693 | 8213 | 13320 |
| 8P | 23363 | 10658 | 20832 |

**"But at least it is more secure…"**

Whatever.

# Fundamentals: Security
*Security is an industry challenge*

Safer Investment

**Total Security Advisories
Jan-Nov 04, 2002**



| | | | | | | | 92 |
|---|---|---|---|---|---|---|---|
| 26 | 28 | 34 | 62 | 72 | 75 | 76 | |

Windows XP, EnGarde 1.2, Windows 2000 Svr, Solaris 8, Trustix 1.5, Redhat 7.2, Mandrake 8.2, Debian 3.0

Source: Company web sites

**Windows compares very
favorably to Linux and Unix
alternatives**

**CERT Advisories
by OS - Jan - Oct 2002**

| Solaris | 10 |
| Redhat (OS) | 8 |
| Microsoft (OS) | 3 |

0  2  4  6  8  10  12

Source: CERT

**Current Scanning Activity**

| Systems | Scan Types |
|---|---|
| Linux/Unix systems | 15 |
| Microsoft systems | 6 |

Scanning and probing activity related to known vulnerabilities. This reflects attempted exploitation of vulnerabilities in Internet hosts.

**Key Slide Take-Aways:**

Microsoft considers security to be an industry challenge. We recognize how critical this issue is for customers and partners and are committed to our leadership position in the industry on this issue. Security is top-of-mind across everything element of our business and development model. We believe that people who examine the industry data on security will conclude that Windows compares very favorably to Linux and Unix.

**Discussion Points:**

It is important to note that Microsoft considers security to be an industry challenge, and that we believe that Windows is not alone as a target for hackers. This is contrary to the belief held by many customers that Linux is inherently more secure than Windows and/or is not targeted for attacks. In fact, if customers examine the data, we believe that they will see that Windows compares very favorably to both Linux and Unix from a vulnerability perspective. For example, Microsoft issued less security bulletins and cert vulnerabilities than Linux in 2002. The fact is, the challenge faced by Linux on security is equal to Microsoft's, and it remains to be seen how well a decentralized community of volunteers can meet that challenge.

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# Security: The Facts

**CERT Advisories by OS - 2002**

Solaris — 12

Redhat — 12

Microsoft — 5

0 2 4 6 8 10 12

**Linux Vulnerabilities Growing 21% Faster Than Microsoft**

Key: Linux / Microsoft

500
400 — 309
300
200 — 149
100
0
2001

485
202
2002

Source: ISS X-Force
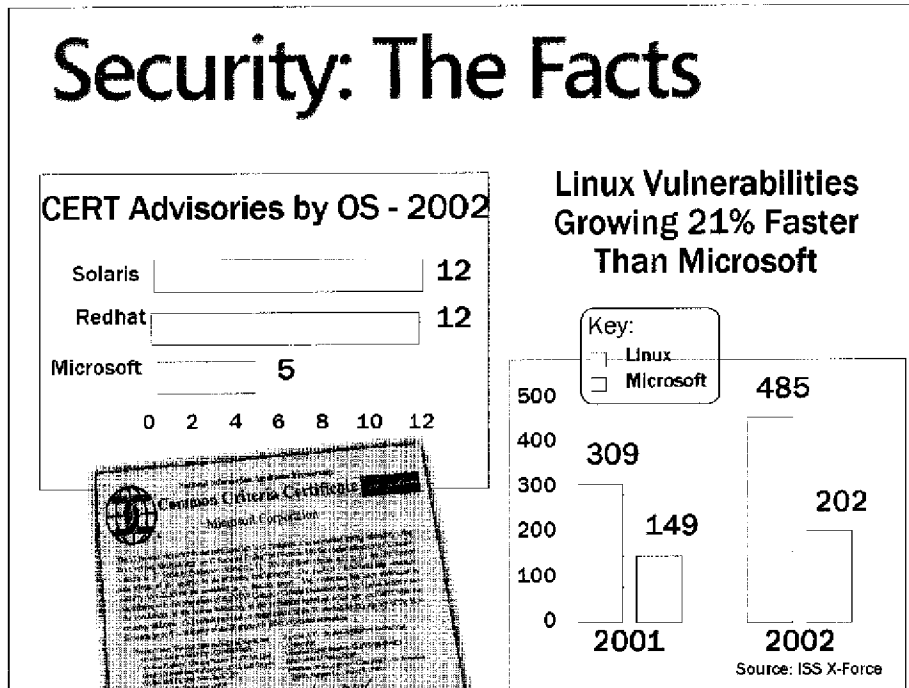
On Tuesday a Cnet story posted announcing that RedHat's Advanced Server had been certified by the DoD's Common Operating Environment (COE) process (http://news.com.com/2100-1001-984202.html; http://www.infoworld.com/article/03/02/12/HNrhat_1.html). Wednesday a piece ran in Tech Daily announcing that IBM would begin a process to obtain Common Criteria certification for the Linux operating system. What followed were several trade press articles announcing that Oracle is going to back RedHat in a quest to secure Common Criteria certification (see links below). We've developed the following reactive talking points and will get them to the field in case this coverage is picked up globally.

**Oracle/RedHat/IBM Coverage**

Cnet: http://news.com.com/2100-1001-984383.html?tag=fd_top

Daily Tech News: http://www.dailytechnews.com/dtn.php?n=8

eWeek: http://www.eweek.com/article2/0,3959,886729,00.asp

ComputerWorld: http://www.computerworld.com/softwaretopics/os/linux/story/0,10801,78484,00.html

**Talking Points**

**CC v. COE**

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# UK Security Site Report (mi2g)

* In May this year, 19,208 successful breaches were recorded against Linux based systems, compared to 3,801 against MS Windows based systems,

http://www.theinquirer.net/?article=9845

## "GNU Project Server Hacked by Intruder."

...[T]he Foundation is warning that some files may still be compromised. "Given the nature of the compromise and the length of time the machine was compromised, we have spent the last few weeks verifying the integrity of the GNU source code stored on gnuftp. Most of this work is done, and the remaining work is primarily for files that were uploaded since early 2003, as our backups from that period could also theoretically be compromised," he explained.

http://www.atnewyork.com/news/article.php/2248811

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# Linux Becoming a Target

- During August, 67 per cent of all successful and verifiable digital attacks against on-line servers targeted Linux, followed by Microsoft Windows at 23.2 per cent. A total of 12,892 Linux on-line servers running e-business and information sites were successfully breached in that month, followed by 4,626 Windows servers, according to the report.

http://www.globetechnology.com/servlet/story/RTGAM.2003091 1.gtlinuxsep11/BNStory/Technology/

**"But what's with all the patches?"**

Patches?  We don't need no stinkin' patches !

# Which Is Buggier –
## Windows or Linux?

- Red Hat Linux 7.2, released early 2001
- Windows XP, released November 2001

## XP Pro = 27 fixes

## Red Hat = 158 fixes

(Counting patches listed on Microsoft and Red Hat web sites from XP release through February 2003.)

http://www.newsfactor.com/perl/story/21583.html

# Do Linux Patches Get Delivered Faster? Reality: Even major distributions take months to turn patches around

- Open Source model opens door to attackers when patches are delivered from only some vendors

- Jan-Oct 15 2002, Redhat released 9 security advisories one or more months after other vendors

- Meanwhile, systems remain vulnerable while administrators wait for the Redhat patches

**Red Hat security advisories**

| |
|---|
| CVE-2002-0002 (stunnel, 1 month late) |
| CVE-2002-0003 (groff, 1 month late) |
| CVE-2002-0004 (at, 2 months late) |
| CAN-2002-0012 (snmp, 1 month late) |
| CAN-2002-0013 (ethereal, 1 month late) |
| CVE-2002-0043 (sudo, 2 months late) |
| CVE-2002-0044 (enscript, 2 months late) |
| CVE-2002-0045 (openldap, 3 months late) |
| CVE-2002-0047 (kernel, 1 month late) |
| CVE-2002-0059 (zlib, 2 months late) |
| CVE-2002-0083 (openssh, 2 months late) |
| CVE-2002-0167 (imlib, 1 month late) |
| CAN-2002-0184 (sudo, 1 month late) |
| CAN-2002-0871 (xinetd, 2 months late) |

(Source: CVE advisories at http://www.cve.mitre.org, RedHat web site)

http://www.cve.mitre.org

http://www.redhat.com/apps/support/errata

Most linux dists appear to ship their fixes relatively close together, RH commonly issues patches later.

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# Microsoft Issues Patches, But Users Don't Apply Them

| | Attack date | Patch issued | Advance notice | Impact of attack |
|---|---|---|---|---|
| SQL Slammer | 1/25/03 | 7/24/02 | 185 days | Infections doubled every 8.5 seconds |
| Bugbear | 9/30/02 | 5/16/01 | 502 days | More than 2 million infected computers |
| Frethem | 7/17/02 | 5/16/01 | 427 days | 12 variants in first two months of activity |
| Yaha | 6/22/02 | 5/16/01 | 402 days | Intercepted in one of every 268 emails at peak |
| ElKern | 4/17/02 | 5/16/01 | 336 days | Detected in more than 40 different countries |
| Klez | 4/17/02 | 5/16/01 | 336 days | $9 billion worldwide productivity loss |
| Badtrans | 1/24/01 | 5/16/01 | 192 days | MessageLabs has seen 458,359 instances |
| Nimda | 9/18/01 | 10/17/00 | 336 days | Spread worldwide in 30 minutes |
| Code Red | 7/19/01 | 6/18/01 | 31 days | Infections doubled every 37 minutes |

**Average: 305 days**

Source: McAfee, MessageLabs, Microsoft, Symantec, and Sophos

Forrester study, "Can Microsoft be Secure?", March 2003

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# Microsoft's Position

It's not the products.  It's the solutions.

# Microsoft's Premise

- The Microsoft Windows platform is more comprehensive, integrated, interoperable, and easy to use
- Microsoft's approach delivers better products, greater choice and a healthier ecosystem
- The combination of these results in greater business value and lower TCO

# Focus on Platform

| Management | Collaboration | Identity Mgmt | Commerce | Productivity | Mobility | | SMS 2000, MOM | Exchange, SPS | MMS, ISA, AD | BizTalk, CS2000 | Office XP | Mobile Info Svr | | Tivoli | Lotus Domino | ??? | WebSphere Commerce | StarOffice | ??? |

| Customer Need | | Microsoft Platform | | IBM "Platform" | |
|---|---|---|---|---|---|
| Data Management | | SQL Server | | DB2 | |
| Programming Frameworks | | .NET Framework    ASP.NET | | J2EE | |
| Web & Application Services | Development Tools | Internet Information Server | Visual Studio.NET | WebSphere      MQ Series | WebSphere Studio |
| Web Server | | MSMQ   Transaction Server | | Apache | |
| **Windows Server** | | | | | |
| File Services | | Distributed File Service | | Samba | |
| Network Access Services | | VPN  RAS  PKI  Smart Card | | ??? | |
| Directory/Security Services | | Active Directory  Kerberos | | IBM SecureWay | |
| Kernel | | Windows Kernel | | RedHat Linux | |

- Integrated, Comprehensive, Easy to Use, Visionary

## MS Smart Connected Organization
### Integrated Innovation ... Providing Solutions

# Desktop: Better Value

| Measurement (Linux + StarOffice) | Result |
|---|---|
| Deployment Success | 2/3 IT Pros Could Not Complete Installation |
| Deployment Time | Avg. 57% More Time to Deploy than Windows |
| Document Compatibility | 35.3% of Office Docs Opened in StarOffice Had Errors |
| Top 11 Office Tasks | StarOffice Tasks Took 2.7 Times Longer |

*eTesting Labs, AIR*

- Myth: Linux costs 2X-3X less than Windows
- Reality: Windows costs ~30% less per year

# Import: Copy/Paste Web Page

**Microsoft Word**

**StarOffice 6.0**

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# File Formats: IRS 1040 Form
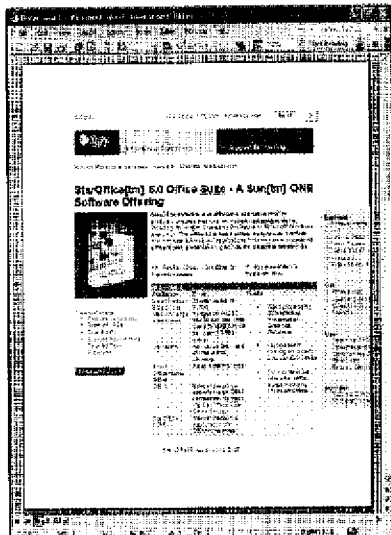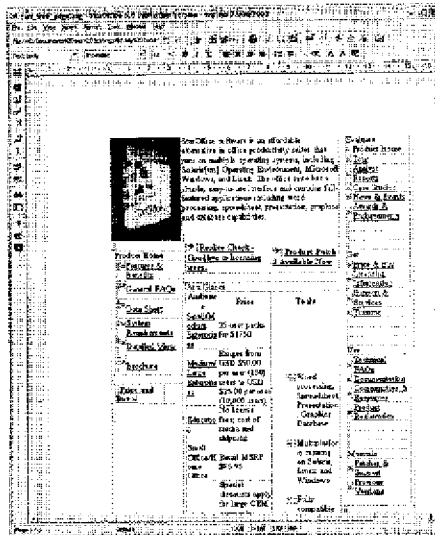
**Microsoft Word**

**StarOffice 6.0**

"StarOffice is so bad that nobody wants it, even for free. A mere 100,000 units have been ordered, which won't put much of a dent in the 78 million copies of Office XP that Microsoft has shipped."

*...Forbes Magazine, November 1, 2002*

"McNealy has to pick his fights with Microsoft. Give this one up. It's a distraction."

*...BusinessWeek, November 25, 2002*

# Our Strengths

- Price is what you pay, value is what you get – you get way more from Microsoft
    - Better Security
    - Better Integration
    - Better Interoperability
    - Far Greater wealth of Applications, Drivers, etc.
    - Much better development tools
    - Better Support/Quicker Fixes
- Safer Bet
    - Well defined roadmap & constant investment
    - Single point of accountability

**"Dang.  So what should we do?"**

Ahhh, Grasshopper, you are learning much.

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Empower people and
businesses to realize their full potential

*CSI Advantage:*  Microsoft products deliver superior advantage
and value to our customers and partners through:

Phase 1                                             Phase 2

Stronger
security

Lower
Overall
Cost

Integrated
innovation

Reliability
and uptime

Inter-
operability

Easy to
deploy
& manage

Simple
& familiar
to use

Wide range
of apps &
partners

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# Understand the Open Source Movement
## Attack of the Clones

- Products
  - Many Microsoft products (Office97, Win98, Outlook) have been copied well
- Business Model
  - Most open source vendors revenue comes from services revenue; building custom apps, support
    - Ximian, JBoss, Zope.com, MySQL, et. al.
- Community
  - Open source has created a competing ecosystem of developers and ISVs
  - Disparate pieces & parts don't serve Enterprises needs
  - Focus customer on vendor accountability
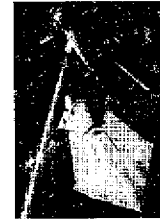
**Ximian on Red Hat**

SuSE KDE

**Oracle's Mad Hatter**

**Oracle's Mad Hatter**
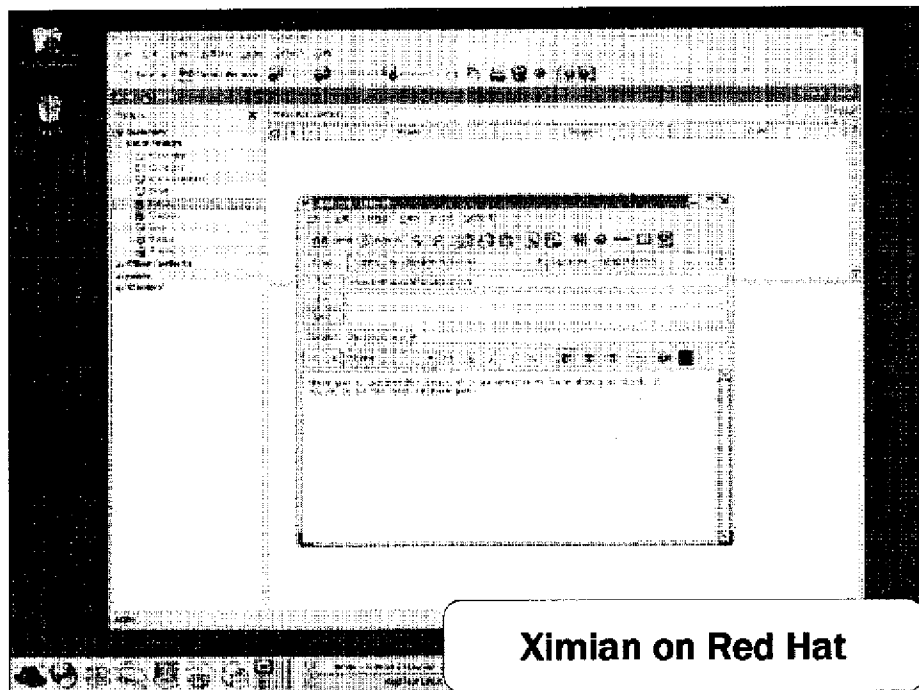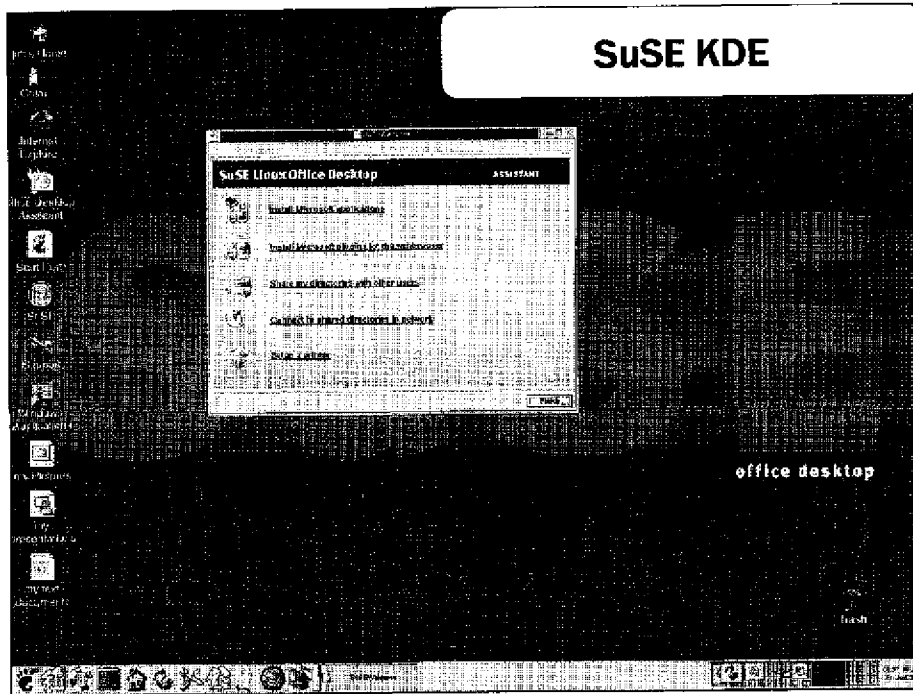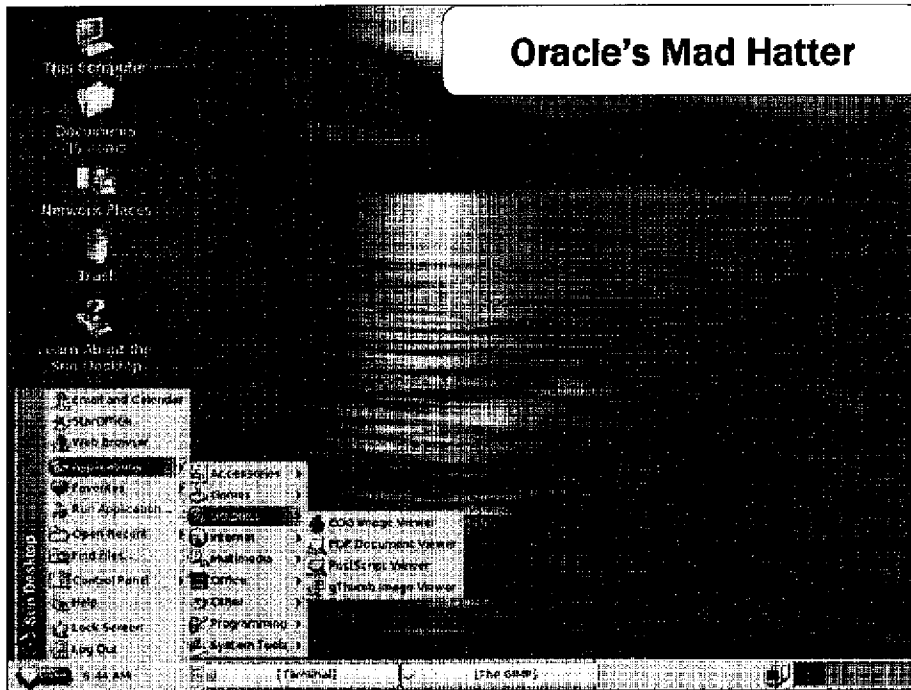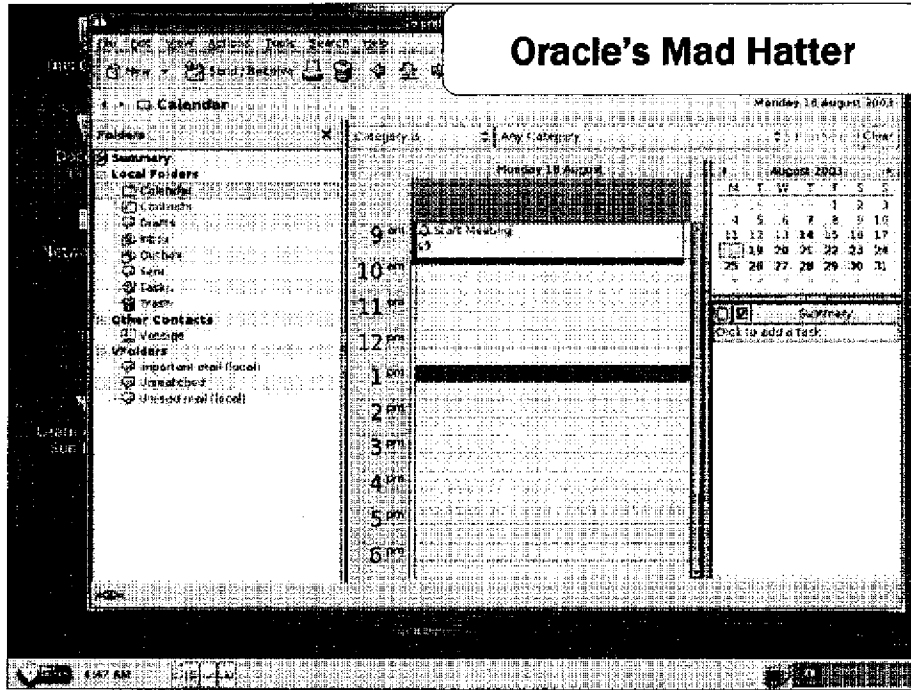
# Upgrade the NT4 installed base

- Over 60% of MS installed base supporting commodity workloads
  - 49% of NT4 installed base running workloads that could potentially be switched to Linux with minimal customer pain
- Windows Server 2003 Changes the Dynamics
  - Dramatic performance, manageability, reliability, storage capacity enhancements make it ideal consolidation platform – "Do More With Less"
  - Built-in integration points between server and client, (AD and Group Policy) give admins unique abilities
  - Broad suite of interoperability services to respond to customers' diverse needs
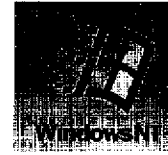
Upgrading the NT4 installed base is a key to positioning Microsoft for future growth. The goal in FY04 is to migrate 40% of this installed base, representing an upgrade opportunity of more than $1 Billion USD.

In a recent U.S. Server Tracker survey over 60% of Microsoft's installed base is supporting commodity workloads.

49% of our installed base is on NT4 running workloads that could potentially be switched over to Linux with minimal customer pain.

**Addressing the challenge in Server Consolidation in the Enterprise:**

We have a unique opportunity to demonstrate customer value centered on server consolidation in the enterprise. When contrasted to Linux, Windows Server 2003(WS03)delivers platform value by supporting key IT scenarios right out of the box as a comprehensive, integrated, and easy-to-use platform.

**Server Consolidation/Migration Scenarios:** Dramatic performance, manageability, reliability and storage capacity enhancements in WS03 make it an ideal consolidation platform, particularly for customers running legacy NT4 or Novell systems.

**Management of the Server-Client Environment Scenarios:** The built-in integration points between the Windows server and client, such as Active Directory and Group Policy, give WS03 administrators the unique ability to centrally manage settings and protect data at both the server and client levels.
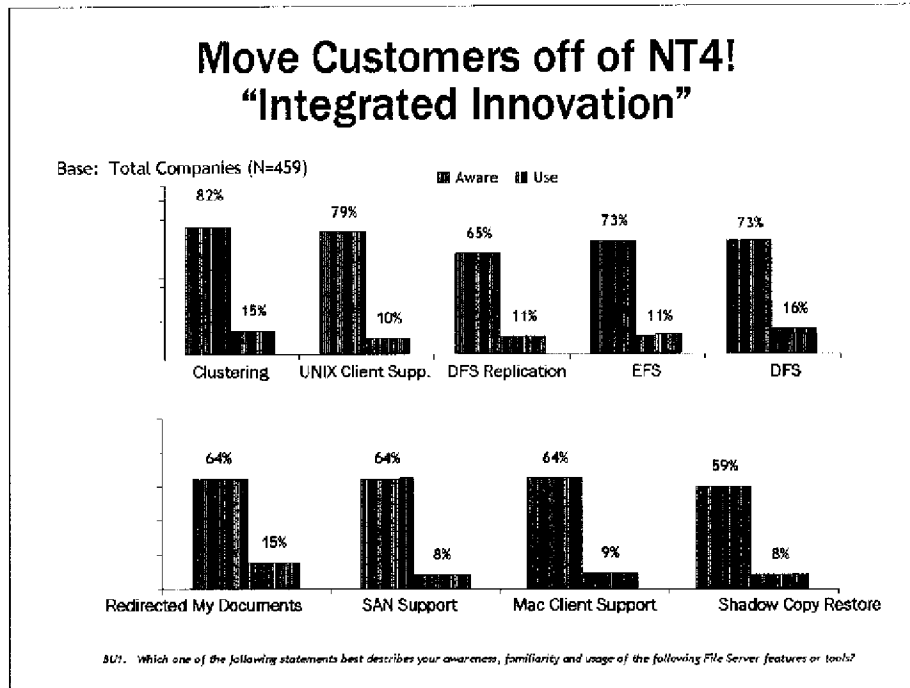
**Identity Management Scenarios:** Active Directory, made dramatically easier to deploy, use and manage in WS03, is uniquely capable of providing a single point of control for managing user identities and access to resources across multiple systems and platforms – Linux has no equivalent offering.

**Secure Mobile Access Scenarios:** WS03 delivers secure wireless and VPN access out-of-the-box, while piecing together a comparable solution on Linux is a complex and costly undertaking.

**Information Worker Productivity Scenarios:** WS03 delivers innovative new solutions for today's information worker, enabling productivity and collaboration benefits that extend far beyond the simple file sharing capabilities of Linux-based offerings.

**Small Business End-to-End Solution Scenario:** For small businesses, Windows Small Business Server is the perfect entry point into the Microsoft server line-up, delivering the richness of Microsoft's server technologies together in a simple, integrated solution for an exceptional value.

**Cross-Platform Interoperability Scenarios:** Recognizing that heterogeneous environments are a fact of life in today's IT environment, Microsoft offers a broad suite of interoperability services with WS03 to respond to the diverse needs of customers.

# Move Customers off of NT4!
# "Integrated Innovation"

Base: Total Companies (N=459)          ■ Aware   ▓ Use



82%    79%    65%    73%    73%

Clustering    UNIX Client Supp.    DFS Replication    EFS    DFS

15%    10%    11%    11%    16%

64%    64%    64%    59%

Redirected My Documents    SAN Support    Mac Client Support    Shadow Copy Restore

15%    8%    9%    8%

*SU1. Which one of the following statements best describes your awareness, familiarity and usage of the following File Server features or tools?*

# Maintain the Desktop Advantage

- Desktop's market position: more to lose
- Linux and other desktop alternatives look more appealing-
  - **only** when compared to Windows 9x than when compared to Windows XP
- Win by communicating value proposition
  - Integrated Innovation: productive, easy powerful
    - Innovation: Tablet, MediaCenter
  - Stronger Security: rigorous engineering
    - Proven compatibility, interoperability, reliable partner
  - Lower Cost: TCO, deployment, manageability

**Windows Desktop**

The Desktop's market position presents a different situation from that of Server.

Concentrate on positive, customer-oriented benefits of Windows XP against previous versions of Windows and competitive alternatives.

Linux and other desktop alternatives look more appealing when compared to Windows 9x than when compared to Windows XP.

Customer interest is in Linux at both ends of the desktop computing spectrum: at the low end, primarily embedded in devices like retail POS devices; and at the high end, primarily in workstations migrating from Unix for engineering or digital content creation.

Linux on the desktop is perceived very favorably by IT Pros.

Win by communicating the positive business value of Windows XP, such as familiarity, ease of use, and application compatibility,

Win by helping our customers deploy upgrades to their existing systems as well as new systems.

# Fight the Myths
## Linux and Open Source Software

| Myth | Reality |
|---|---|
| Lower Cost | Numerous 3rd party TCO studies show Windows a better value over typical lifecycle |
| More Secure | Vulnerability stats, Common Criteria certification demonstrate Windows more secure |
| More Reliable | Numerous customers demonstrate 99.99% reliability; IDC says Windows just as reliable, even with more complex workloads |
| Faster | Veritest demonstrates Windows Server 2003 delivers significantly better File server throughput over Red Hat Advanced Server |
| Best for Unix migration | Microsoft Services For Unix (SFU) wins Best Systems Integration product award at LinuxWorld |
| Good Enough | A.I. Research study shows desktop tasks take ½ time to complete on Windows vs. Linux |

Exploit Business Value Team Success

- posted **25 Linux vs. Windows TCO studies** on its Sharepoint site for internal reference

**Team Objectives**

 Develop Value Methodologies

 Provide customers with Business Cases

 Capture Value  Benchmarks

 Create new tools based on benchmarked data

 Influence Analysts on Microsoft business value

 Case Studies & White Papers

**Tools used by the BV Team**

 Gartner TCO Analyst 5.02

 Total Value of Opportunity (TVO)

 MS Linux Mainframe TCO

**When to Engage**

 Customer desires Business Value evidence and the scenarios match the Business Value team's core programs

**How to Engage**

 Contact Scott Davis (Volt)

# What to Do?

- Profile the Accounts, so we can make sure their infrastructure is on our platform.
- Ask the partner to give you heads up on customer situations – bribe them!
- Know what to pitch
  - Terminal Server
  - SBS Standard
  - Web Server
  - Office Lite
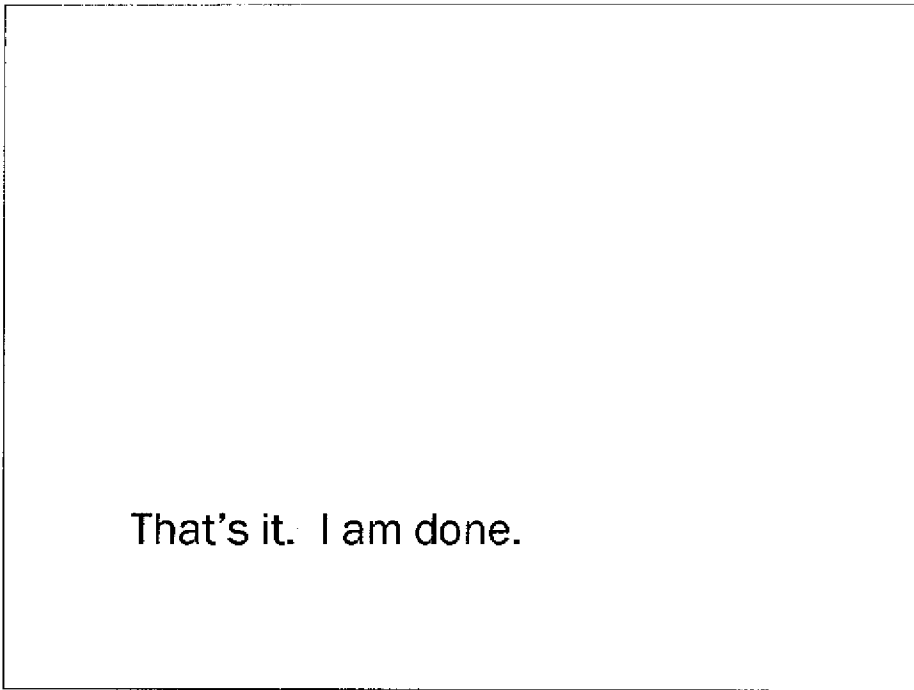  - Etc.
- Feed to Corporate through Comphot

# Resources

- One stop shopping:
    - http://linux
- Available tools on the site
    - Linux Competitive Airlift
    - Competitive selling guide
    - New customer ready BDM & TDM white papers and presentations
    - TCO studies and tools
    - Updated battle cards
- Don't forget the Office compete team
    - http://officemarketing/staroffice

That's it.  I am done.

## Appendix

Slides I thought I was going to use but didn't.

# *customer*

**Cox Communications**

**Alex Kucera, Account Manager**
**Lloyd Burke, Services Executive**
**Southeast Region**

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# Customer Landscape
## Linux Threat
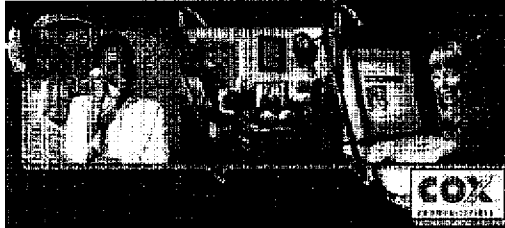


- Cox Enterprises:
  $10 billion Fortune 350 company
- Business Driver:
  Increase Cash Flow
- Linux hype sparked CEO interest

Cox Enterprises ranks in the fortune 350, Cox Communications (CCI, a subsidiary of Cox Enterprises) is the third largest cable operator in the United States. CCI has been challenged by the investor marketplace (Wall Street) to increase Free Cash Flow, a leading indicator in the cable business of business well being. In a capital intensive industry like cable tv, Investors use free cash flow as a primary measure of health.

Facing the pressure of deliverying an additional 350 Million dolars in Free Cash Flow (FCF) CCI is looking at every way possible to free up cash

The CEO of CCI asked the CIO to learn more about Linux,

The CIO asked the VP of IT Ops to check this out.

VP Ops. asked Dell: verify Linux on Intel ROI

Dell, Redhat. Intel produced Linux Assessment; findings: save $7m over 5 years

# Timeline

- Confirmed Linux evaluation was under way
- Asked for "equal time", met w CIO / VP Ops
- Created preliminary business case
- Started In-Depth Rapid Economic Justificaton (REJ) & Proof of Concept

| Preliminary Findings | Linux | Microsoft |
|---|---|---|
| Savings | $7.3M over 3 yrs | $13.9 M over 5 yrs |

- Opportunity for Microsoft –
  - Capture $2.4 million in server revenue
  - High services revenue
  - CRM/ERP, Cox.Net conversion to Win/SQL EAI

The MS account Team Confirmed Linux evaluation was under way

The MS account team , (a parnoid group) Asked for "equal time" and met w CIO/ VP Ops.; We had to ensure that we would have a fair hearing and our #'s would be compared honestly against any Linux eval and the perception that Linux was just a different pew in the Unix church.

By getting executives to acknowledge that MS would be considered, the playing field was leveled.

CCI conducted an internal review and cost analysis that determined there were 7.3 million in savings. By bringing REJ expertise MCS was able to refine the numbers for various alternatives that allowed a more accurate comparison.

We worked with the chief architect to review the CCI analyses that had been prepared to date. WOW Numbers all over the place. An incomplete picture that made apples to apples very difficult. Most of your companies may not know all of the applications, tools and solutions they are running as well as what boxes they might be on.

After several versions and drafts and reviews, The VP Ops came to the conclusion that more info was needed. The preliminary business case was designed only to wet the appetite and ensure a full blown REJ and POC could be started. We needed to increase our understanding of the environment, what could move to Wintel/SQL from Sun/Oracle.

Started In-Depth REJ, & POC

This oppty gives MS the oppty to STOP Linux, Move Sun out of the account and Replace ORACLE. The POC will allow us to prove all the 'abilities' necessary to become the enterprise standard at CCI

Oppty for MS- block Linux, capture $2.4m in server rev., high svc's rev, CRM/ ERP/ Cox.Net conversion to Win/SQL/ EAI

# Best Practices/Do's and Don'ts

- Assume Linux is in your account
- Find and lean on your insider friend, 'the Fox'
- Gain executive sponsor on Microsoft value proposition
- Escalate to CompHot; update Siebel
- Search for assessment funding: customer, partner and Microsoft
- Pull in MCS / partner resources early
- Leverage existing Microsoft technology clout

Assume Linux is in your account  Someone is doing some research

Find and Lean on your insider friend, 'the fox'  Having a trusted MSfriend in the account is critical. Some people (unix Bigots) can think of lots of reasons to not have a MS solution.  MS folks may not be the strongest voice but they are true blelievers (Protect them, make them look good)

Gain exec. Sponsor on MS value prop  Ensure a fair hearing. Results are very easy to manipulate be careful not to over promise You only need enough towin not set unachievable expectations

Contact CompHot; Update Siebel  Document the risk & oppty.

Search for Assessment funding: customer, partner and MS. Customers are wary to pay for the oppty to spend more money with you.

Pull in MCS/ partner resources early Early notice lets everyone rally around the oppty. Dell and Intel were instrumental in the success achieved to date ( But rememeber they win regardless of how Sun loses)

Leverage existing MS technology clout  MS is installed throughout most accounts and may be playing the low cost role the Linux envisions itself in.  Maximize "enterprise capability"  Maturity and support of the MS platform
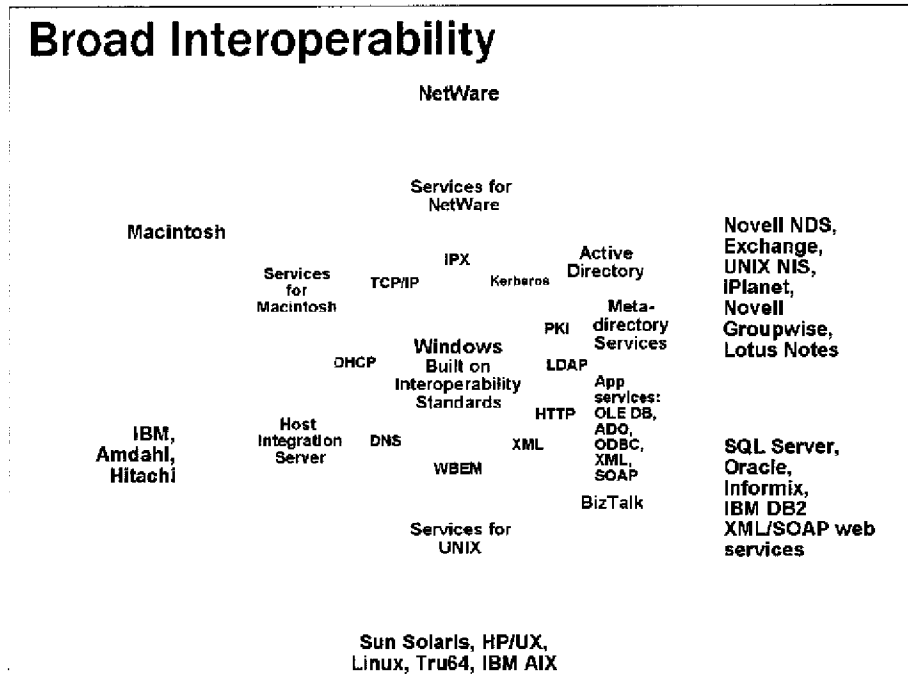
•Discuss Linux considerations at senior level, nothing lower than IT Dir.; evaluate priority of Linux consideration
•Executive level discussion: confirm if Standardization, Optimization, Consolidation, and cost reduction are key business drivers

# What did we learn?

- We must work to get customers to fully understand our value proposition
    - *"Microsoft is too expensive for the value we gain"*
        - *CFO, Government sector*
- We must develop much better relationships with our customers than our competitors
    - *"I have key suppliers that I ask advice from, and Microsoft isn't one of them"*
        - *CIO Global bank*
- We must present a better roadmap of the future for our customers
    - *"I understand where Sun, Oracle and IBM are going with technology, but not Microsoft"*
        - *Chief Architect Global Bank*

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# Broad Interoperability

NetWare



Services for
NetWare

Macintosh
                                                                    Novell NDS,
                                                                    Exchange,
                                    IPX            Active            UNIX NIS,
                Services                           Directory         IPlanet,
                for        TCP/IP      Kerberos                      Novell
                Macintosh                          Meta-            Groupwise,
                                            PKI    directory        Lotus Notes
                              Windows              Services
                    DHCP      Built on      LDAP
                              Interoperability     App
                              Standards            services:
                                            HTTP   OLE DB,
                                                   ADO,
        IBM,      Host                             ODBC,
        Amdahl,   Integration  DNS          XML    XML,            SQL Server,
        Hitachi   Server                           SOAP           Oracle,
                              WBEM                                 Informix,
                                            BizTalk                IBM DB2
                          Services for                            XML/SOAP web
                          UNIX                                    services

                    Sun Solaris, HP/UX,
                    Linux, Tru64, IBM AIX

**Key Slide Take-Aways:**

Windows 2000 provides an unmatched level of interoperability at both the platform and application services level.

- We start with industry standards built into the core of Windows 2000 – TCP/IP, DNS, http, Kerberos and others.
- We then have numerous solutions to provide interop at four levels:
    1. Network: e.g. Novell networks talking to Windows networks
    2. Data. e.g. sharing files and application data between diverse systems
    3. Management e.g. consolidating directories from multiple platforms
    4. Application e.g. getting access to applications and services that are running on other platforms

**Discussion Points:**

- Microsoft has products for Windows 2000 to allow virtually any other operating system client, including Macintosh, UNIX and Linux to use Windows 2000 Servers.
- Products are also available to allow Windows clients to access other server platforms, including UNIX, IBM mainframe and Novell NetWare.
- Microsoft goes beyond the platform interoperability capability to also allow Windows applications and environments to work seamlessly with data and applications hosted on other platforms.
- Active Directory interoperates with other system directory services and can host directory services for third party enterprise applications running on other platforms.
- Data sharing technologies such as XML, ODBC and OLE DB are built into Windows 2000 and SQL 2000 to allow access to distributed corporate data and applications.
- Even UNIX scripts and applications can run on Windows 2000 through the Services for UNIX and Interix products.
- In summary, no other enterprise platform can match the diversity of interoperability that is available with the Windows 2000 product family.

# Thriving Global Ecosystem
## *Enables Greater Choice, Flexibility and Value*

- 750,000 Microsoft partners
- More than 450,000 MCSE professionals
- More than 1.5M MCP certifications holders
- 6M+ developers
- 2200 user groups
- 400 community web sites
- Largest ISV community worldwide

**Key Slide Take-Aways:**

Microsoft believes in and is highly committed to building a vibrant global ecosystem of application providers, service providers, systems integrators, training providers, and hardware developers to compliment the work it does to develop strong, useful technology products. This thriving Microsoft ecosystem of partners and enthusiasts enables customers to realize lower costs via competitive prices, and greater choice and versatility as they seek out technology support, services and solutions across the globe in their local communities. Microsoft's business model also ensures that there is considerable opportunity for people around the world to be successful in choosing to build a local business or software economy around the Windows platform. We did a study and found that, on average, for every dollar that goes to Microsoft, nine dollars go to the local economy.

**Discussion Points:**

Microsoft has a more vibrant global ecosystem than Linux/NCS alternatives. Worldwide, there are:

- 750,000 Microsoft Partners
- More than 450,000 MCSE professionals
- More than 1.5M MCP certifications holders
- 6M+ developers
- 2200 user groups
- 400 community web sites
- Largest ISV community worldwide

...all making up a global, yet local, community of technology service and solution providers to support Microsoft customers around the globe.

*In contrast*, the Linux/NCS ecosystem has no single 'center of gravity' or central body investing in and assuming broad responsibility for its overall health and growth. Today, there are 10X more applications for Windows Server and 100X more trained & certified service providers. In considering this, customers will want to be aware that there are elements of the Linux/NCS ecosystem that are seemingly in competition with each other. For example, IBM has a substantial interest in winning services engagements on Linux, and that puts IBM's services organization (the IBM Global Services (IGS) organization that accounts for >50% of IBM's revenues) in direct competition with any service provider who wants to deliver solutions on Linux. Customers who look to IBM for support and services risk being locked into an end-to-end IBM solution that is typically based on their proprietary services model, offering little competitive advantage and an "ecosystem of one." Being locked into IBM eliminates any advantage of choice that Linux/NCS is supposed to provide.

# Desktop: Greatest Choice

- ## Largest number of applications
  - >4000 apps tested by Microsoft with Windows XP
  - Many, many more available
- ## Largest number of devices
  - 12,000+ device drivers on the XP CD
  - 41,000 devices submitted to WHQL
- ## Broader availability of services
  - >450,000 MCSE professionals world-wide
- ## More training options
  - Wide range of Microsoft certified training courses
  - Many Microsoft certified training providers

# Progress on the Fundamentals

- Reliability
  - IDC TCO Study say Windows and Linux both 99.99+%
  - Windows servers more heavily burdened
- Scalability
  - Windows greater scale-out, scale-up, 60% faster than Samba
- Manageability
  - IDC TCO Study says Linux requires
    higher staffing costs
- Security
  - Fewer vulnerabilities; faster response

# Achieving World-Class Uptime

**Single
Server
Availability**
- Windows 2000 delivers up to 99.99% availability
- Cinergy achieving 99.99% availability
- MSNBC delivered 99.98% during the Winter Olympics

**Multi-
Server
Availability**
- Madrid Stock Exchange achieving 99.999%
- MS.COM has top rated availability (Keynote benchmark)
- Continuous availability for City of San Diego 911 service

**Fault
Tolerant
Offerings**
- Stratus FTServer offers guaranteed 100% availability
- Hewlett-Packard Compaq offers 99.99% uptime guarantee
- Unisys offers 99.99% and higher availability

- Windows 2000 made substantial improvements over Windows NT 4.0
  - Elimination of 80% of reboots per server per year in Windows 2000
  - Windows Server 2003 is expected to have 50% less down-time

Lets start with Reliability. Unfortunately, there is a perception that Windows is less reliable than Linux. We believe that this perception is usually based on customer experiences with Windows NT4 (often early versions prior to SP4). What is important to note is that there have been significant improvement in reliability with Windows 2000 including a great reduction in numbers of reboots and a mean time to crash that is now measured in years. With Windows 2000 customers achieve single server availability of 99.99% and multi-server availability of 99.999% when they have sound testing (checking driver & app compatibility & hardware problems) and integration processes in place, use standard hardware and maintain strong operations/mgmt practices. In addition, our partners offer solutions built on Windows 2000 with guarantees of up to 100% availability, much better than the guarantees offered for NT4. Windows .NET Server 2003 will improve reliability even further, primarily with the new and resilient Web (IIS6) application model.
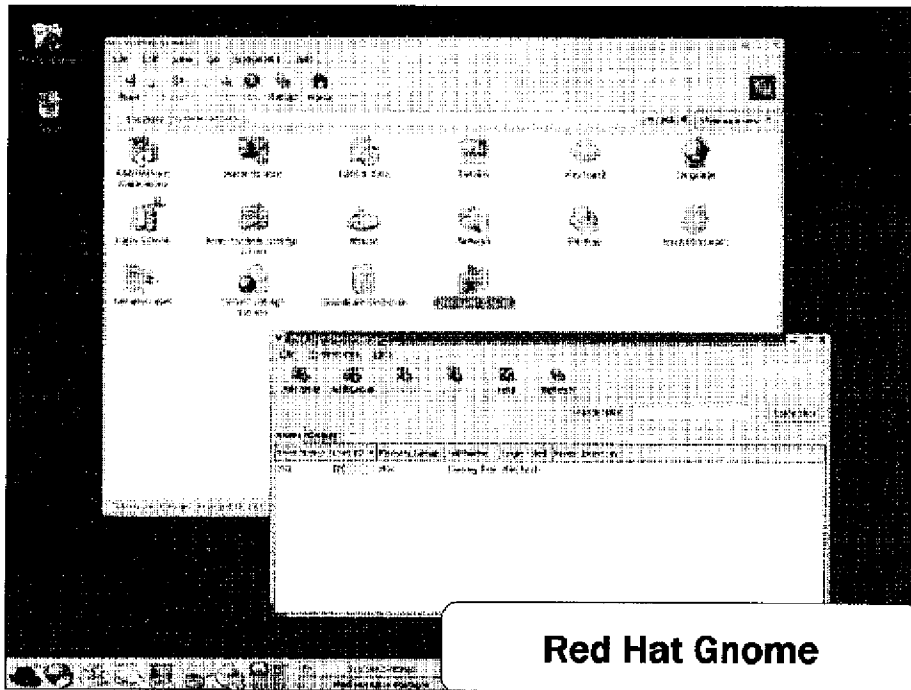
Slide information background:

•Cinergy – Largest non-nuclear electric supplier and one of the leading diversified energy companies in the United States.

•MSNBC hosting the official NBCOlympics.com site during the 2002 Winter Olympics was able to maintain high service availability while serving 113 Million page views and enduring multiple Net attacks.

•Madrid Stock Exchange achieved 99.999% availability and zero downtime in the first seven months running on Windows 2000 Datacenter and Advance Server and SQL 2000.

•Microsoft.com – results from Keynote measurements commissioned by Microsoft show that MS.com has had the highest availability YTD 10/2002 when compared to it's top 5 rival sites (AOL, YAHOO, ORACLE.COM, SUN.COM, and MSN.COM). Rivals selection defined by Microsoft.

•City of San Diego 911 service - San Diego Fire & Life Safety Services achieved continuous service availability running on Windows 2000 Advanced Server.

•The OEM guarantees consider only unplanned reboots in the downtime.

•Stratus and Compaq/HP offer their guarantees with W2K but not with Linux. Compaq/HP used to offer 99.9% with NT (520 minutes vs 52 minutes of downtime for W2k).

•Compaq/HP and Stratus need to do an availability review before accepting a customer. This includes software, mgmt, physical connections, network, hardware, ...
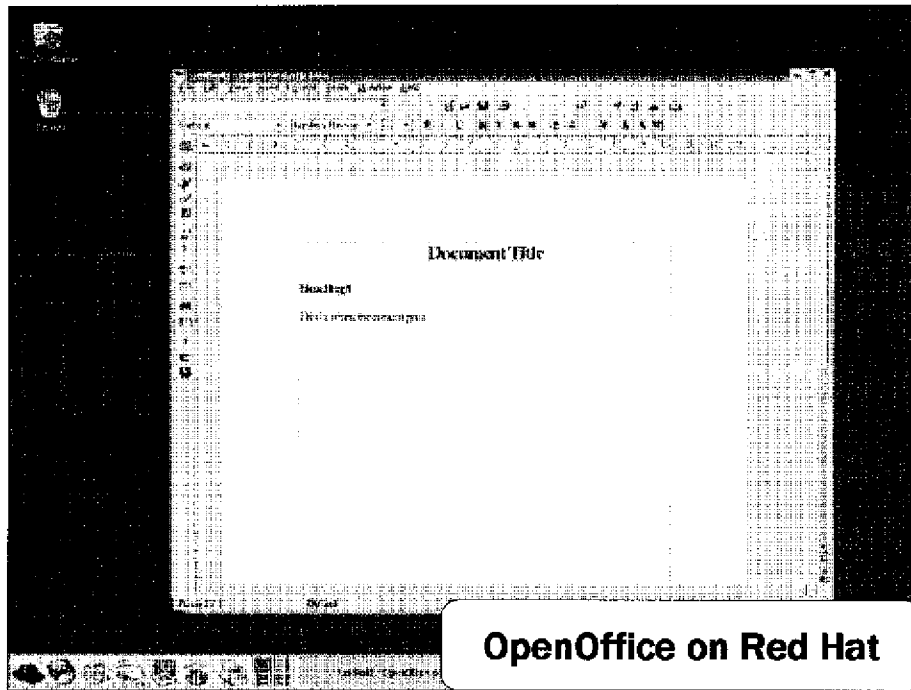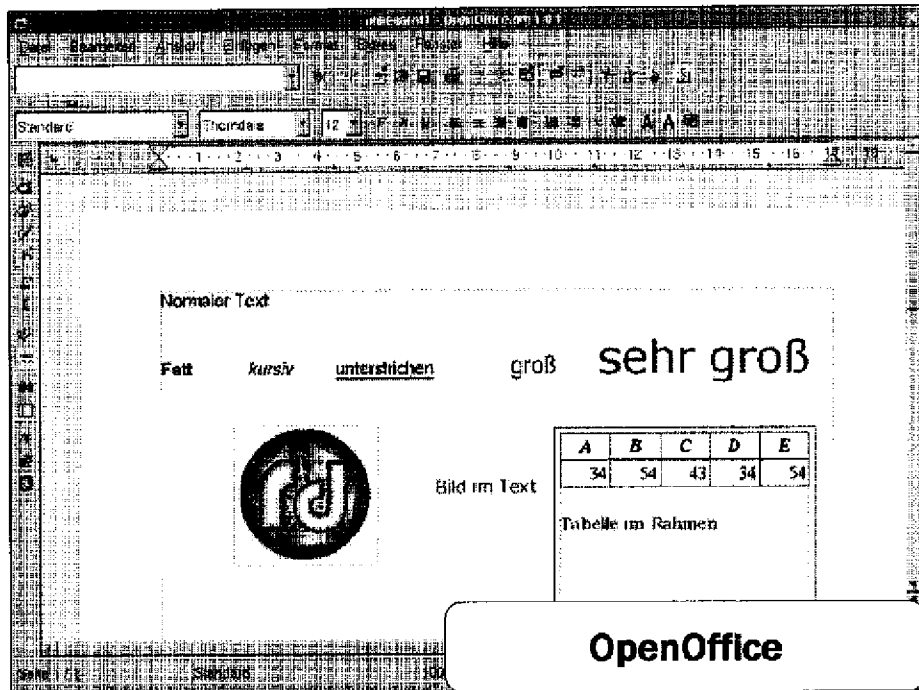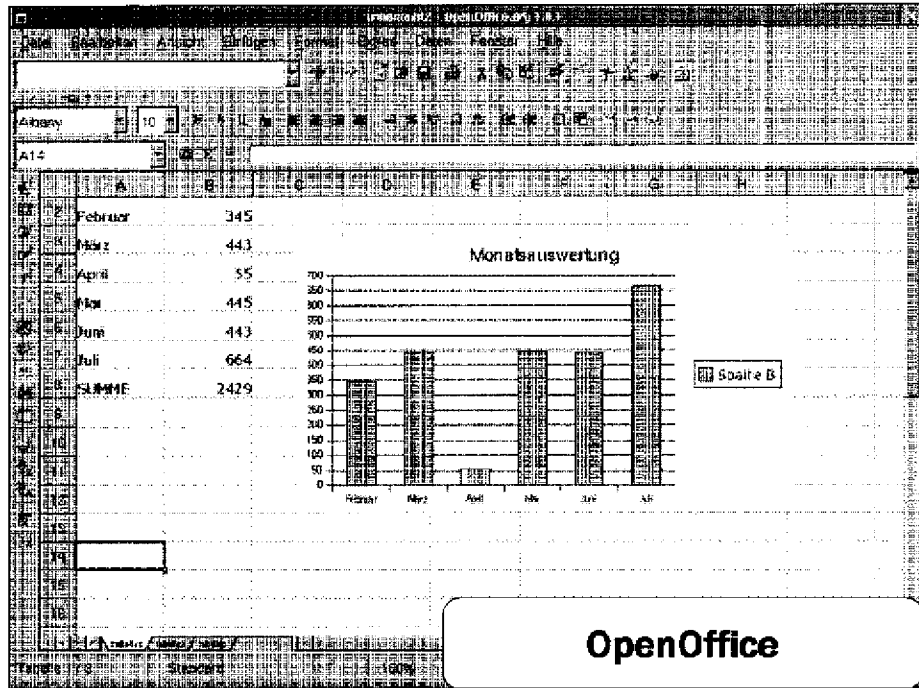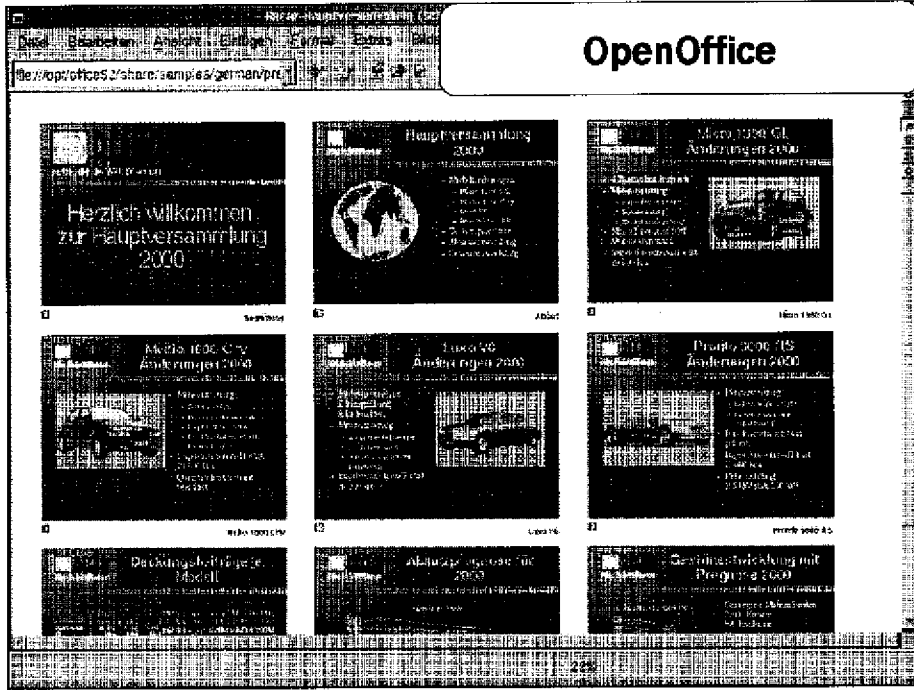
**Red Hat Gnome**
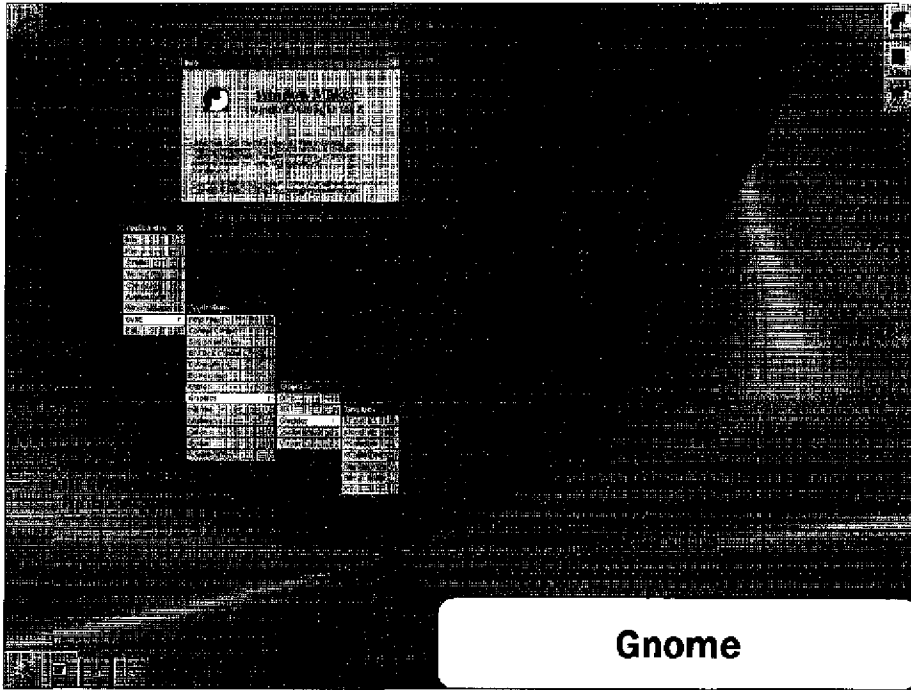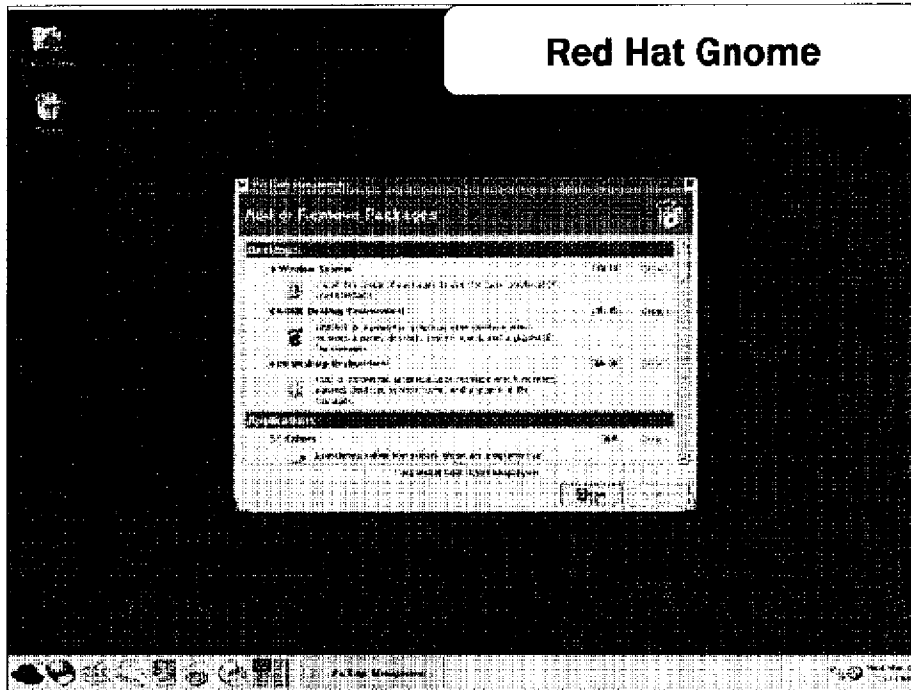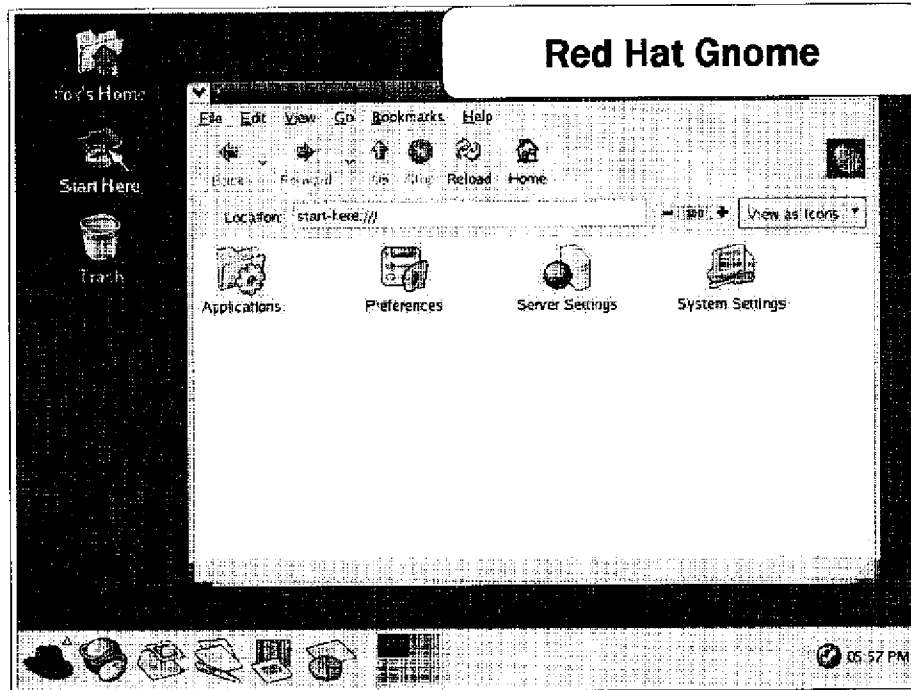
**Red Hat Gnome**

**Red Hat Gnome**

**OpenOffice on Red Hat**

**Ximian on Red Hat**

**Ximian**

**Ximian**

**Ximian**