

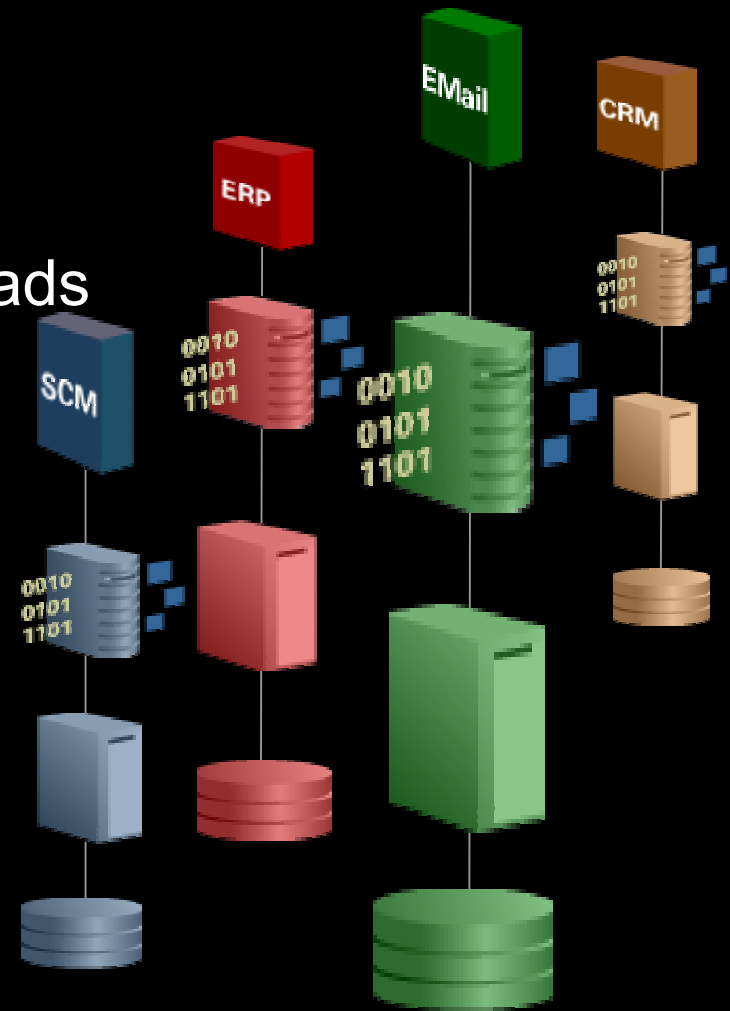
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**Morana Kobal Butković**  
Sales Consultant  
Oracle Hrvatska

# Oracle's Linux Strategy and Oracle Grid Computing

# Problems with IT

- Islands of computation
  - Configured for peak loads
  - Limited scalability
  - Availability < 99.x%
  - Fragmented security
- Escalating costs
- Affects all businesses



# The Time is Right

- Unprecedented pressure to lower costs
- Inexpensive, commodity blade servers
- Inexpensive OS optimized for 1-4 CPUs
- Storage no longer tied to a single server: NAS and SANs
- Fast interconnect technologies

# Grid Computing Defined

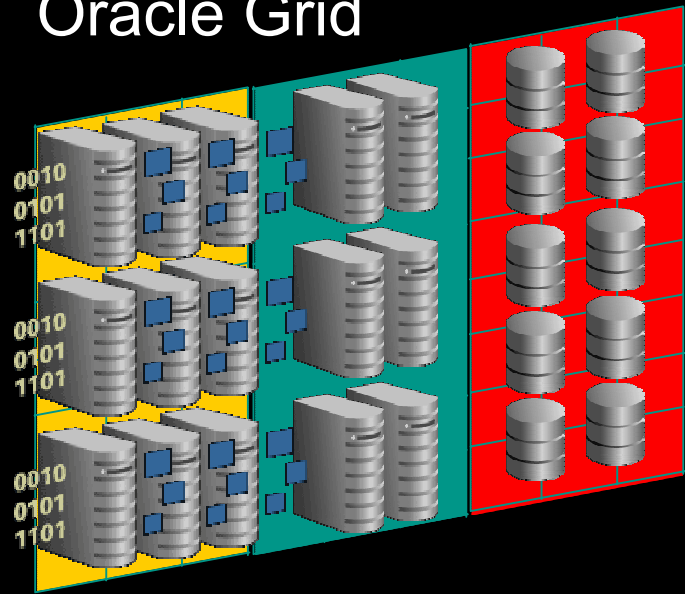
Coordinated use of  
many servers and storage  
acting as one large computer.

# Reducing IT Costs

Large Dedicated Server



Oracle Grid



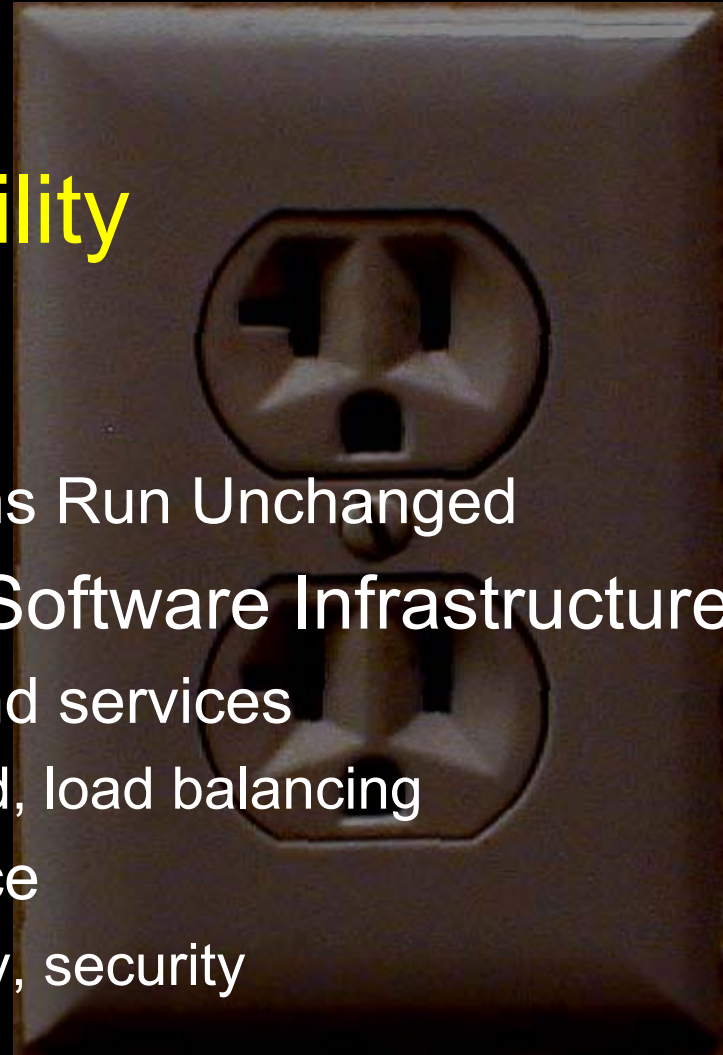
- Expensive costly components
- High incremental costs
- Single point of failure
- Enterprise service at high cost

- Low cost modular components
- Low incremental costs
- No single point of failure
- Enterprise service at low cost

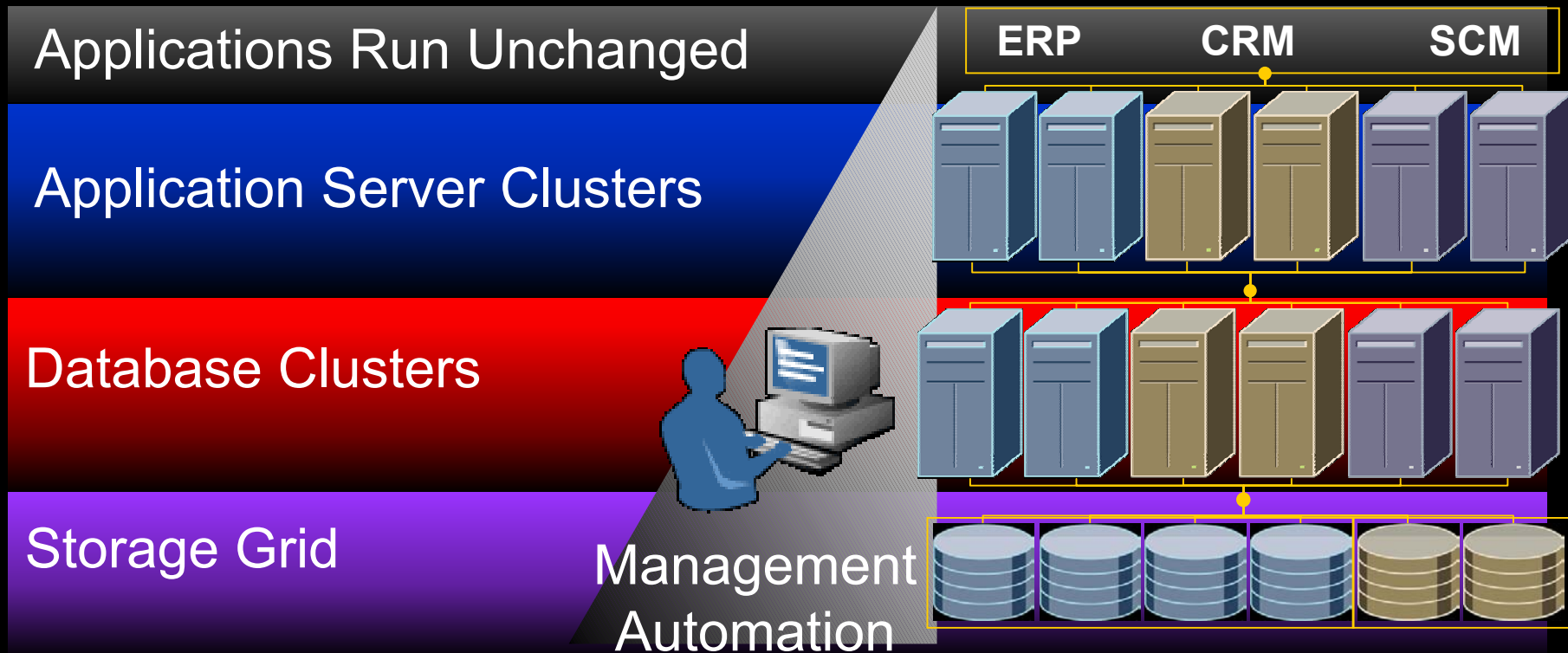
# Grid Vision

## Computing as a Utility

- End User Simplicity
  - Packaged Applications Run Unchanged
- Complete, Integrated Software Infrastructure
  - Virtualized servers and services
    - Capacity on demand, load balancing
  - High Quality of Service
    - Availability, reliability, security



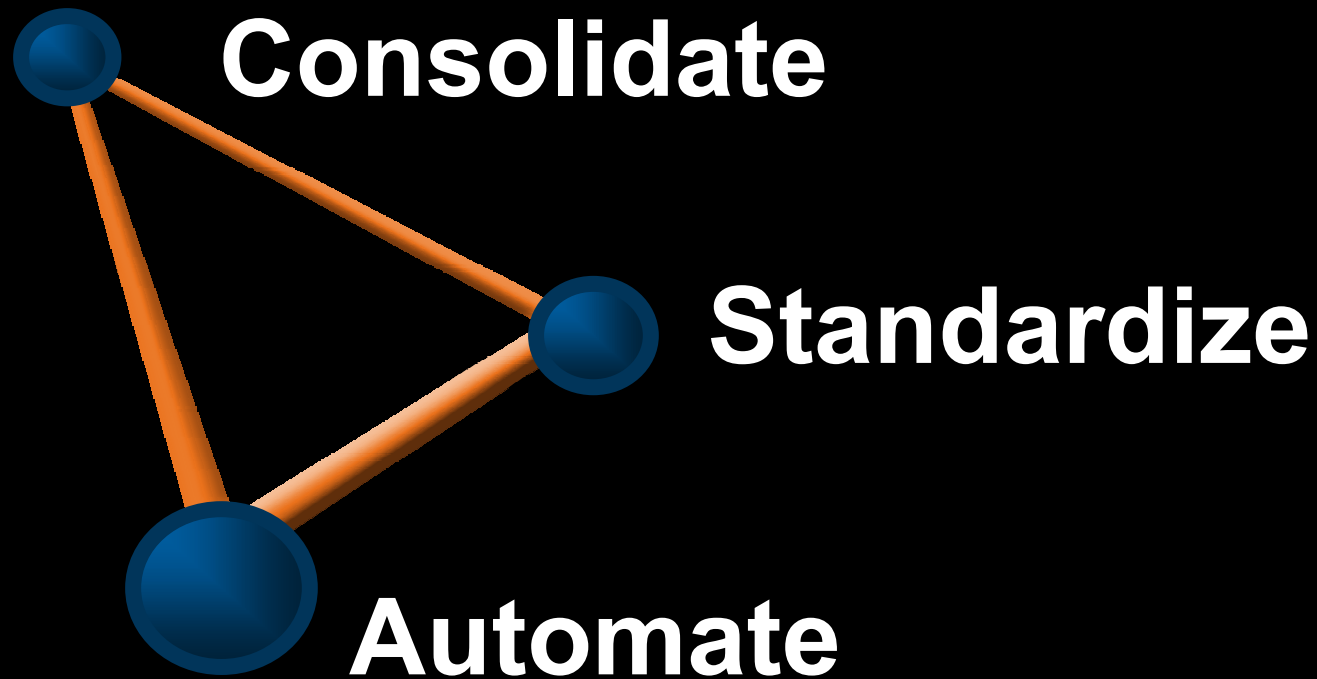
# Oracle Grid Computing



# Continuation of Oracle's Strategy

- Key innovations
  - Real Application Clusters
  - Unbreakable Linux
  - Commodity Servers
  - Consolidation
  - Outsourcing
- All designed to lower computing cost

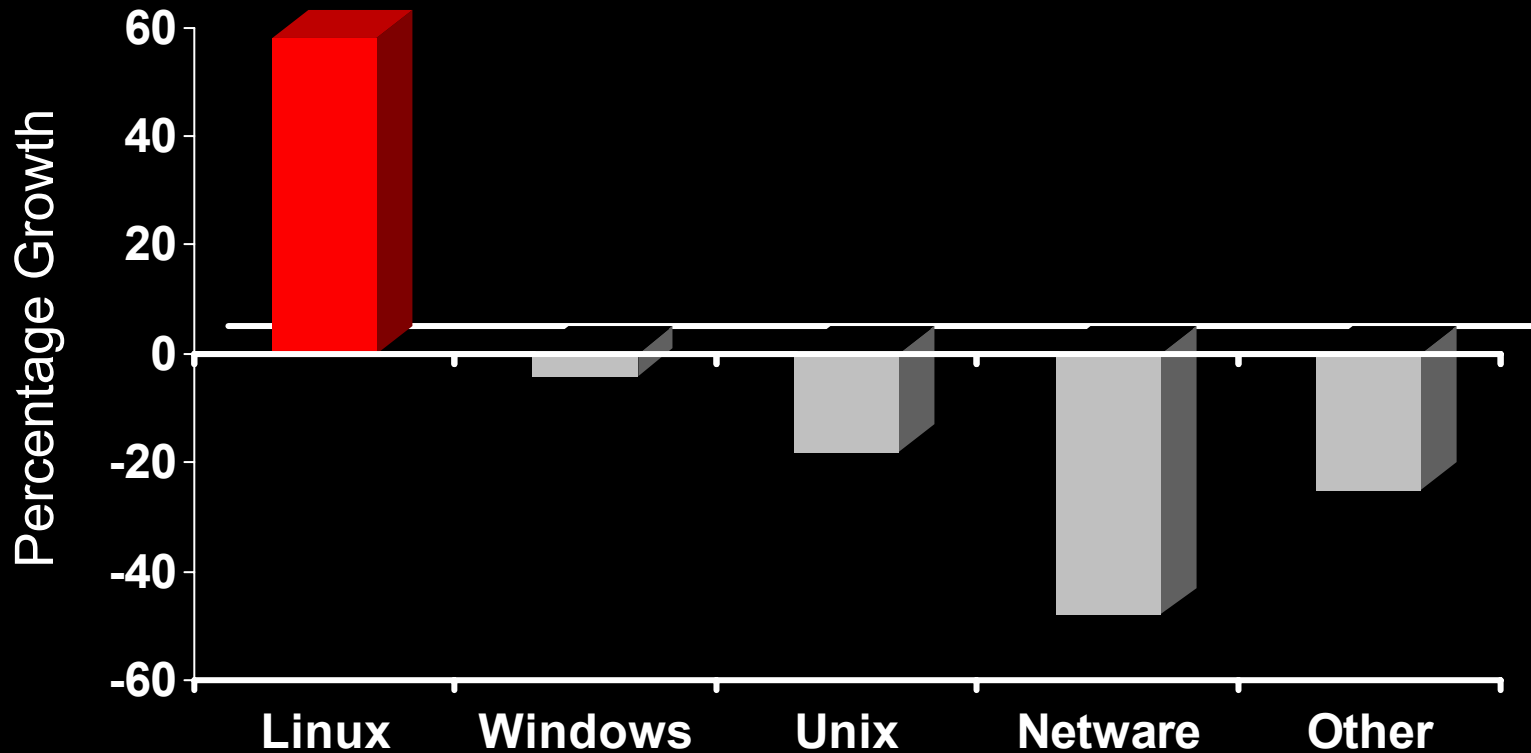
# The Path to Grid



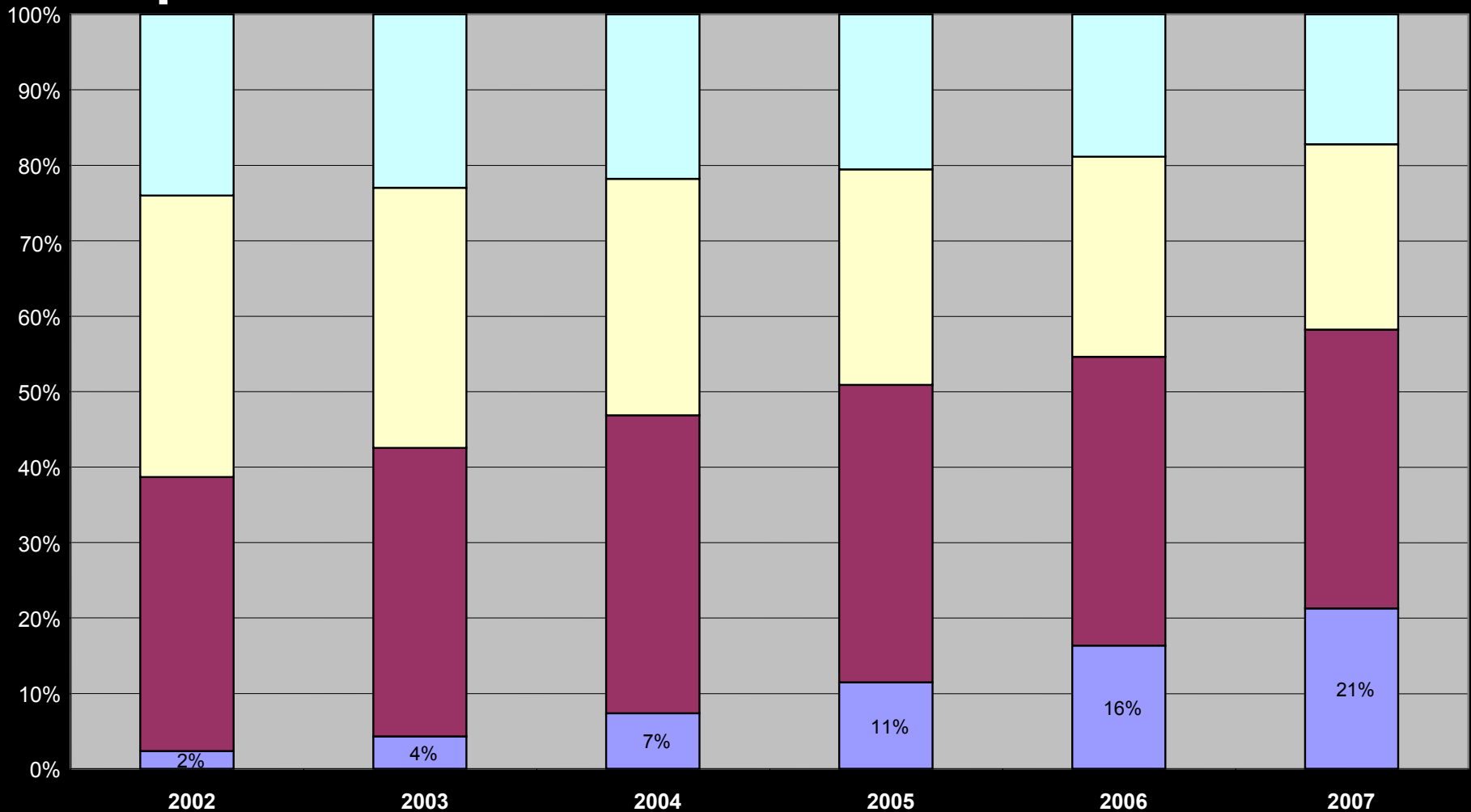
# Foundation for the Grid is Oracle on Linux

# Linux: The Analyst Choice

The fastest growing platform, projected to grow 174% to US\$5.9 billion 2002 - 2006



# Linux forecasted to make dramatic gains in platform share for database



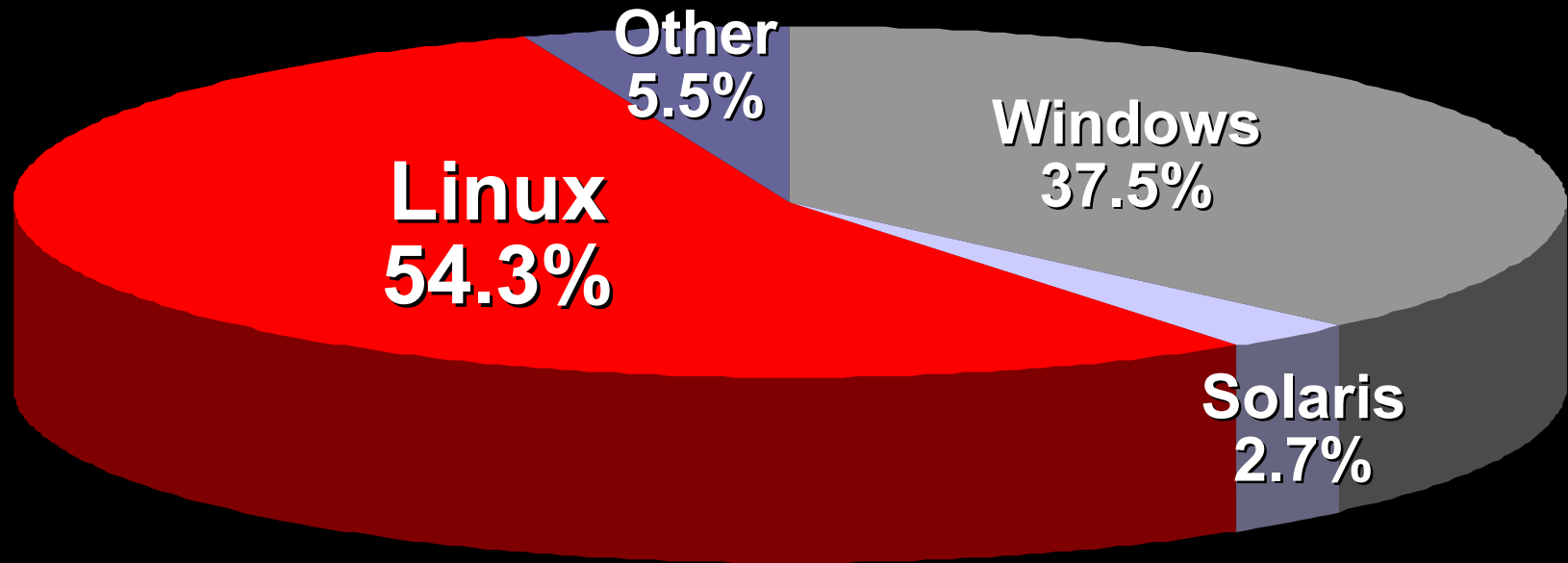
Source: IDC, 2003

Linux Windows Unix Other Platforms

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# Linux: The Developers Choice

Which OS Will You Do Most Of Your Programming on Next Year?



# Why We Believe In Linux

- Lower Cost
  - To purchase
  - To maintain
- More Reliable and Scalable
  - Than SMP-based architectures
- Better Performance
  - Than Windows or Unix

# Linux Landscape - Partners

- Over a couple hundred Linux distributions
  - Oracle supports enterprise-class (Unbreakable) only
- Unbreakable - two major Linux camps cover over 95% of the Linux OS Market
  - Red Hat Enterprise Linux AS & ES
  - UnitedLinux
    - SuSE Enterprise Server8 (SLES8)
    - Connectiva Linux Enterprise Edition
    - Turbolinux Enterprise Server 8 (Advanced & Basic)

# Oracle's Commitment to Linux

- Product Milestones
  - First Enterprise Database on Linux (1998)
  - All Oracle products now available on Linux
  - Record benchmarks (TPC, ECPerf, Oracle Apps SB)
  - Over million downloads of Oracle on Linux
- Partner Milestones
  - 4000 Oracle/Linux ISVs
  - 550 certified applications
- Market Development
  - Launched “Unbreakable Linux” campaign in June 2002
  - Partnering with Red Hat and SuSEto offer ‘mainframe quality’ Linux solution

# Linux: Oracle's Choice

**“We’ll be running  
our whole business  
on Linux.”**

Lawrence J. Ellison  
Oracle Corporation, 2003

# Oracle's Deployments

- Application demonstration environment
  - Running demo systems that sales force uses daily to showcase Oracle product
  - On April 7, 2002 5 large SMP servers moved to 250 2-processor Intel servers using Red Hat Advanced Server
  - Conversion over one weekend, no issues deploying and no crashes
- Oracle hosting
  - Supporting real customers
  - Using E-Business Suite Certified Configuration
  - 2-processor, 4-processor and RAC, 200+ servers

# Oracle's Deployments

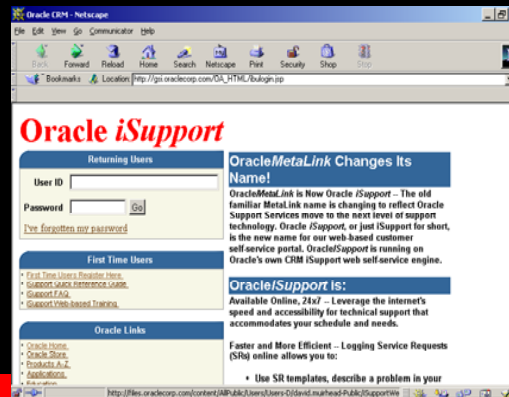
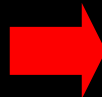
- Oracle's Data Center
  - Greater than 60% of the servers are now Linux/Intel (total 2,000+ servers)
  - All mid-tier servers are converted
  - Some of the back-end database servers are converted
  - Enterprise Business Suite: HR, Finance
    - **Global Single Instance**
    - **15 Linux Servers**
  - Collaboration Suite
    - **40,000+ employees, Single Instance, 20+ servers**
    - **Most mid tiers are Linux**
    - **DB tier is Linux, Sun, and HP**

# More Linux Systems

- Oracle Education – 300 Servers
- Web Servers
- Oracle Mobile
- Other Global IT Projects – 150 Servers
- Atlanta Enterprise Technology Center (ETC)
- Experimental Linux Desktop

# Customer Support

- Direct support of Linux OS with Oracle products
  - Red Hat Enterprise Linux AS and ES
  - UnitedLinux
- Single point of solution for support
- Access to 6,000 support engineers in 128 countries
- No additional Oracle support contract required
  - must have Red Hat or UnitedLinux support contract



# Open-source Contributions

- Established Linux kernel team making contributions to open-source under GPL
  - Oracle Cluster File System
- Work with Red Hat, UnitedLinux and the open source community to drive features into Linux
  - Improved I/O throughput
  - Improved memory utilization
  - Improved SMP scalability
  - Graceful degradation under load
- Oracle Open Source projects <http://oss.oracle.com>

# New Development Model

- Oracle and Red Hat development teams integrated in a non-exclusive partnership
- Oracle now contributes to Linux kernel code
- Enhancements benefit all database and enterprise implementations
- Oracle QA now part of Red Hat development process

# TPC-C World Record

# 1,184,893 tpmC

16-nodes cluster, 4 processors/node = 64 processors on Linux



## Common Question

When will Linux  
be ready for the  
enterprise?

# Oracle's Commitment to Linux: What We Tell Our Customers

- 100% of your middle-tier applications should run on Linux
- 75% of Oracle database customers should run on Linux

## Cost Reduction via Intel Linux

### Intel Linux

3 times faster

5 times cheaper than conventional gear

Easy to automate en mass → more reliable

ORACLE

## Cost Reduction via Intel Linux

### The Right Box

2 processors – 2.8 Ghz each

6 GB memory

2U Rack

Easy to automate en mass → more reliable

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# Oracle on Linux: Customer's Choice

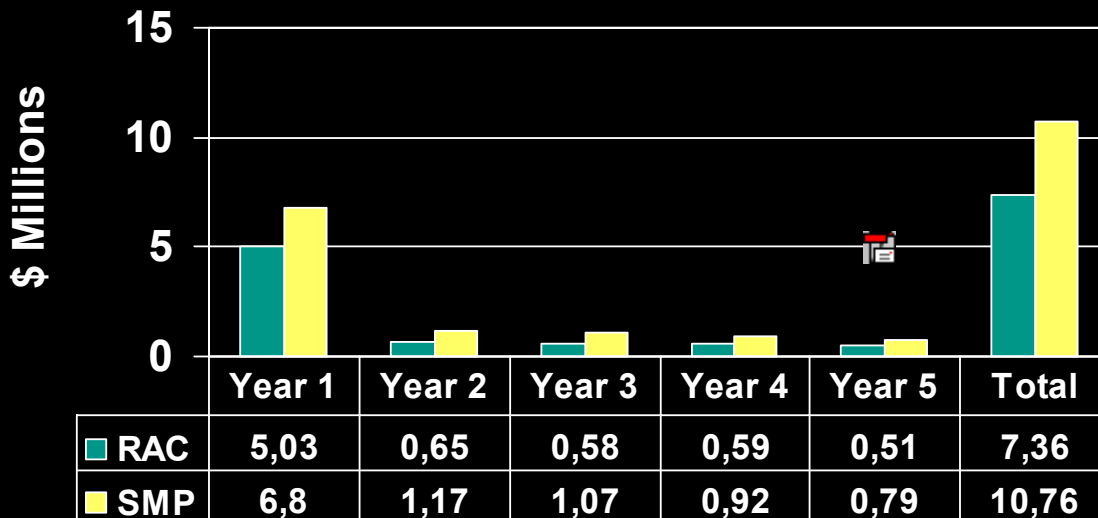


# Customer Example: Electronic Arts

- World's leading independent developer and publisher of interactive entertainment software
- Online gaming application
- Plan to implement 20, 4-node Linux clusters
- Tested load to 30,000 SQL operations per second
- Easily add servers as the player community grows

# Customer Example: Electronic Arts

## Discounted Cash Outlay Comparison



Year 1 cash investment

RAC: \$5.03M

Big SMP: \$6.80M

**Big SMP is 35%+ More Expensive**

Total 5 year discounted cash investment

RAC: \$7.36M

Big SMP: \$10.76M

**Big SMP is 46%+ More Expensive**

Source: Electronic Arts

# Oracle's Linux Strategy – Unbreakable Linux

- Enable lower cost of computing
- Technology Leadership
  - All Oracle Products available on Linux, including RAC
  - Enhancements in the Linux OS
  - Contributions to open source
- Support Leadership
  - Oracle is THE only vendor providing code-level support for the entire software stack including the OS
- Key Partnerships
  - Linux OS vendors – Red Hat and SuSE
  - OEMs

# Resources Available

- Oracle Home Page
  - [www.oracle.com/linux](http://www.oracle.com/linux)
- Technical: Oracle Technology Network (OTN) Linux Developer Center
  - [otn.oracle.com/linux](http://otn.oracle.com/linux)
  - FREE software downloads for development
  - Sample code, documentation, discussion forums, collaboration, tips, tutorials and more ...
  - Hosted development environments



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