2002 Update and Direction

IBM @server

IBM @server iSeries

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Marketplace Success in 2001

IBM Clear Favorite in Server Battle

"Only 18 months ago, analysts were predicting that Sun Microsystems had a two- to five-year window of unchallenged server leadership. But IBM is now the heavy favorite, and this market optimism pervades all four IBM server lines..."

One year after IBM @server launch

- 3Q01: 7 points share growth
  - From 23% to 30% of total market
- 4Q01: Overall worldwide server sales leadership with 32.4% revenue share

Source: IDC 3Q & 4Q 2001 Reports

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Networking Evolution

Today

Resource Sharing

"The Grid"
- Standards for distributed access, authentication, data migration
- eLiza extends Grid into commercial market

Information Sharing

The World Wide Web
- HTML page format, HTTP protocol, and Mosaic browser for document exchange
- Initially in universities; commercial adoption

Network Sharing

Inter-Networking and the Internet
- Inter-Networking of regional networks with TCP/IP
- Began to replace regional alternatives
- Worldwide adoption

Networking

Networks
- Multiple regional networks linking computers
- Initially at universities and national labs

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Next generation e-business

Internet devices will boom from today's 100 million to more than 14 billion in 2010 -- Forrester, May 2001

Explosion of Transactions

e-business is key to sustaining $5.3 trillion in e-commerce by 2005 -- IDC, April 2001

Internet - Very High Bandwidth, Low Costs

Internet appliance market will grow 46.8% annually between 2000 and 2005 -- Cahners, March 2001

Rich Media - New Uses, New Markets

Linux installed on 1 out of every 4 servers today -- IDC, February 2001

Deep Computing

50% of Fortune 1000 companies will have extensively deployed wireless LAN technology by 2005 -- Gartner, February 2001

Linux / Open Source

Within next five years, there will be more than 1 billion Internet users, most using cell phones and wireless PDAs for anytime, anywhere access -- Nua Internet Surveys, February 12, 2001

Wireless - Anytime, Anywhere

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Responding to customer requirements

IBM @server

Innovative Technology

- Extreme performance and unmatched scalability with IBM reliability and security

Application Flexibility

- Choice in building and deploying applications from a foundation of open standards for ease of integration

New Tools for Managing e-business

- IBM makes it easier to buy, deploy, integrate, manage and support servers and solutions

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IBM's technology leadership

The leader in innovation

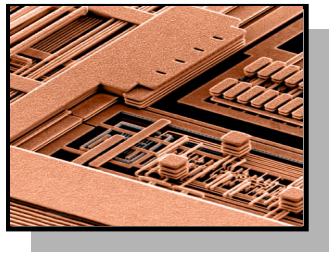
- Nearly 35,000 patents worldwide
- 9-year patent leadership
- $5.6 billion annual R&D investment

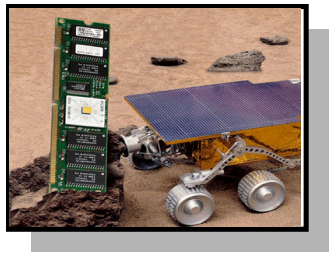
Advanced technology

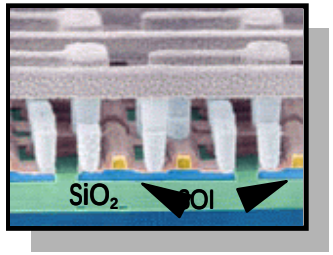
- POWER4: World's fastest engine[1]
- Copper chips
- SOI
- Low-k dielectric
- Chipkill memory

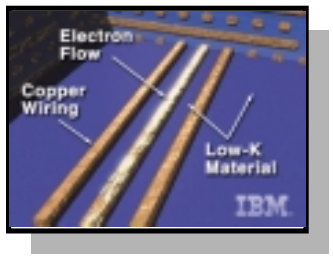
Architecture

- Enterprise X-Architecture™









[1]based on SPECcpu2000 as of 11/1/01

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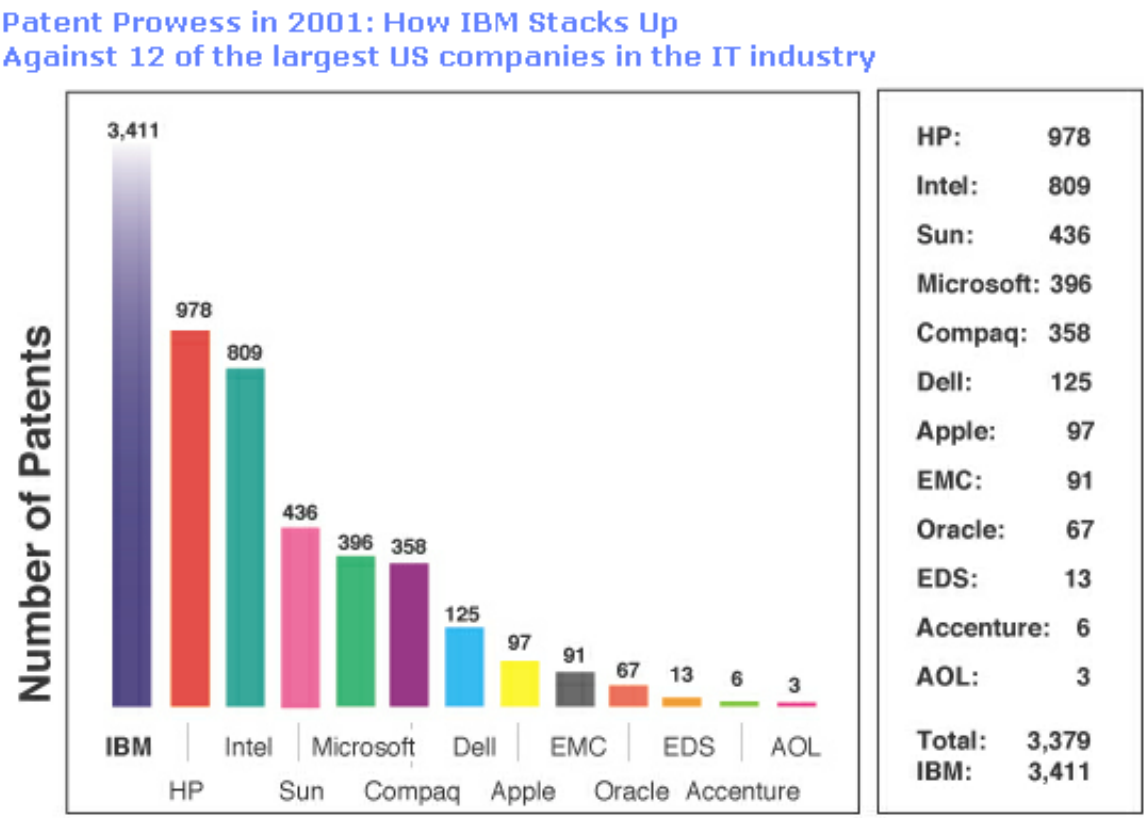
US Patent Ranking for 2001



- **9th consecutive year of patent leadership**
- **More patents than combined total of 12 largest U.S. IT companies**
- **33% of 2000 patents already applied to IBM products and services**

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Application Flexibility

Choice of operating environments, including industry's most extensive support for Linux®

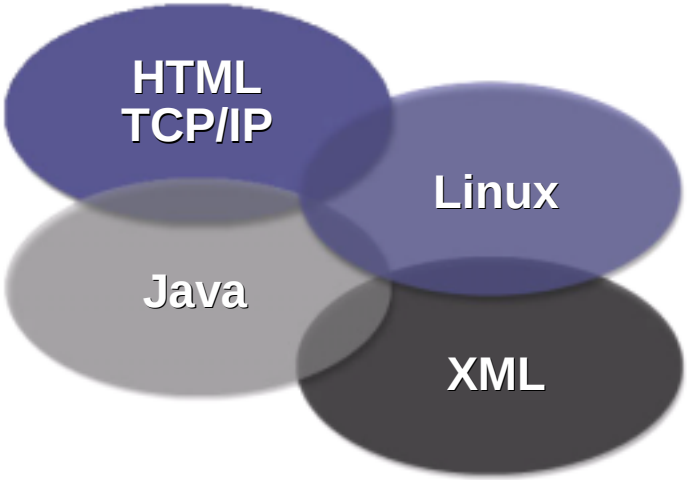
Open standards approach that ensures ease of infrastructure integration

Broadest range of middleware, databases and tools from IBM and key Business Partners

Extensive portfolio of solutions matched to your choice of IBM @server platform

WebSphere software

DB2 Data Management Software



Tivoli software

Lotus. software

Choice in building and deploying applications from a foundation of open standards for ease of integration

New Tools for Managing e-business

- Solution Assurance Advantage
- Capacity Advantage
- Availability Advantage
- Financing Advantage
- Technical Support Advantage

A collection of tangible, available offerings that will help you select, install and manage server implementations

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Meeting Customers' Needs

IBM @server

xSeries

Affordable, Intel-based servers with mainframe-inspired reliability technologies

iSeries

Most flexible, high performance integrated business servers

pSeries

Most powerful, technologically advanced UNIX servers

zSeries

Most reliable, mission-critical database & transaction servers on earth

Innovative Technology - Future Server Technology

zSeries

pSeries

iSeries

xSeries

Series-specific Technologies & Architectures

z/OS, AIX, OS/400, Linux Operating System

Shared Technologies & Common Parts

Processors, I/O, Power, Adapters Switches

What this Means

- Shared Innovation
- Faster Servers
- Improved Availability
- Faster to Market
- Investment Protection

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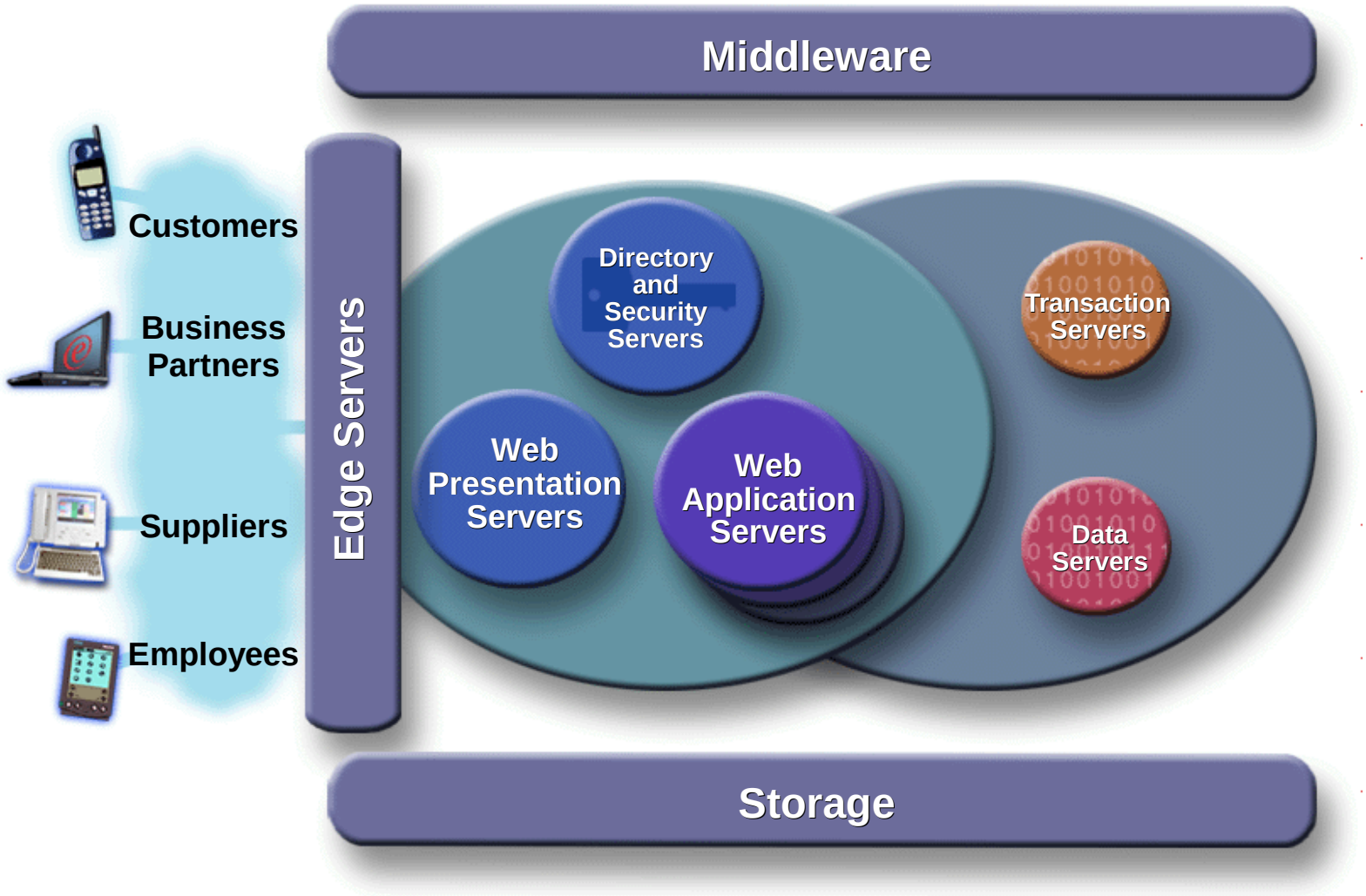
e-business infrastructure



Responsive, dynamic and flexible, scalable and secure

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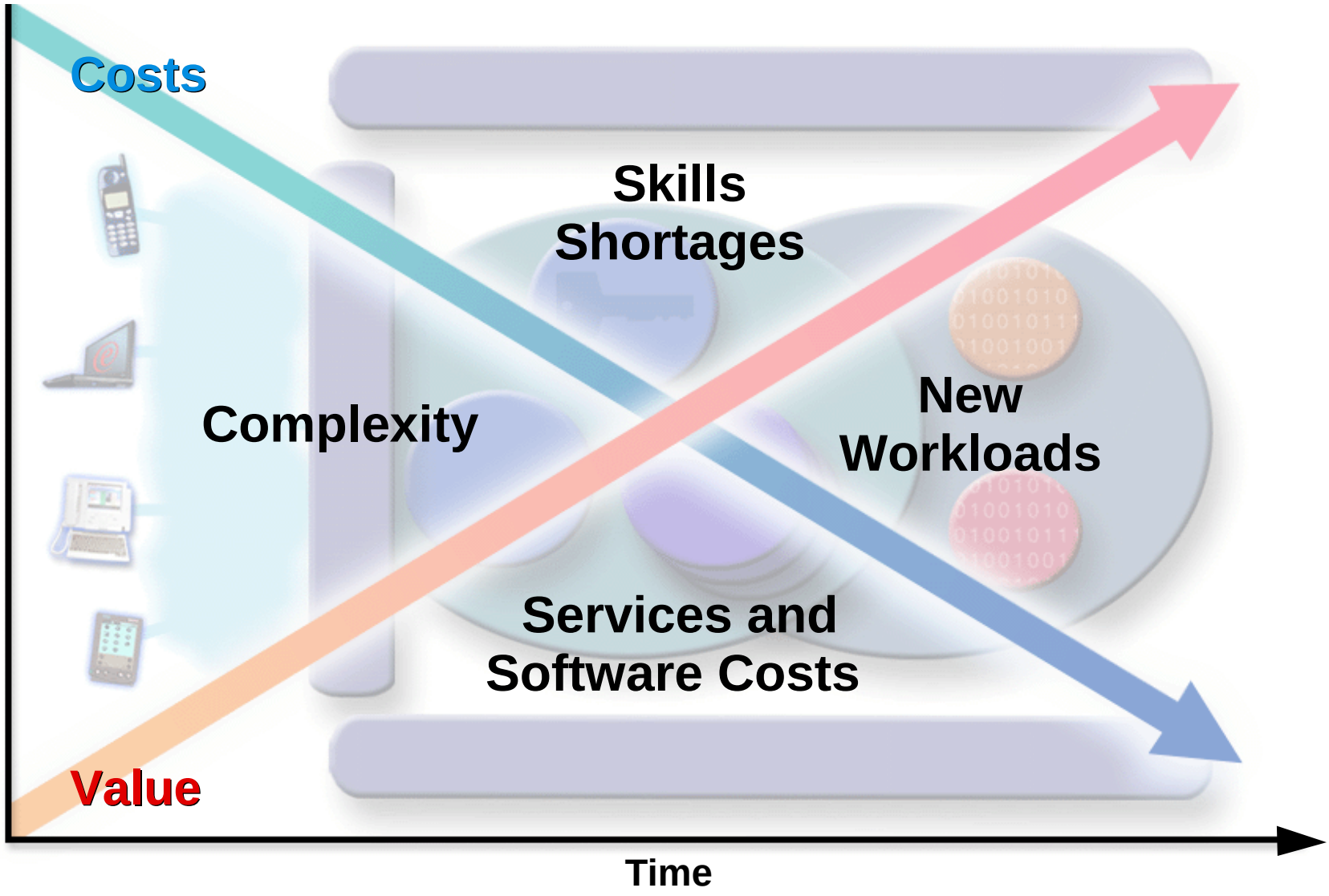
e-business infrastructure

Companies are challenged to manage costs while increasing value (ROI)



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Linux

Fastest growing operating system

- Affordable, manageable Linux virtual servers
- Appliance servers
- Highly available and scalable – supercomputing at a fraction of the cost

Global adoption

- Distributed enterprises
- Central management of geographically dispersed applications
- Linux clusters

Heterogeneous platform support

Key enabler for e-business

Available on all IBM @server product lines

Standard Web (HTML) Server

Web application Server

e-mail Server

Intranet Server

Software Development

Firewall

File and Print Services

Database Server

Desktop office

Desktop Applications

e-commerce Applications

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Project eLiza™: IBM's blueprint for self-managing systems

IBM @server platforms are self-managing:

- End-to-end availability and security
- Lower costs for maintaining and deploying systems
  - Self-configuring
  - Self-healing
  - Self-protecting
  - Self-optimizing

Self-managing systems reduce downtime, operating costs and administrative requirements

Cost of skills:

- Using existing technology, for every US $1 spent on server HW, US $10 will be spent on people to manage the HW by 2004

Cost of downtime:

- US $10,000 per minute for e-commerce

The Standish Group, 2001

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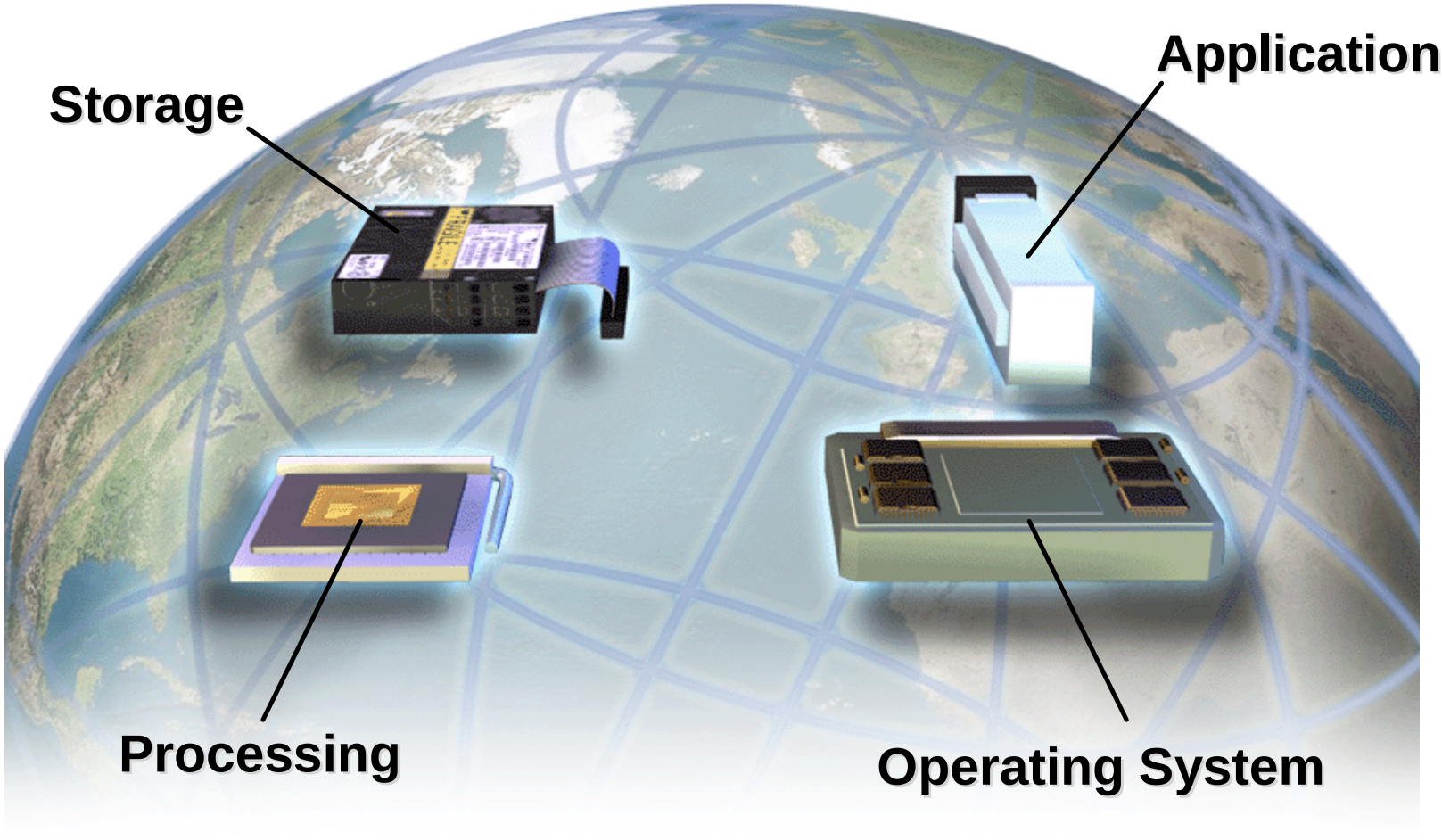
Grid Computing

Internet-based Resource Sharing



One virtual computing platform, 'boundless' global resources

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The Grid - The Internet as a Computing Platform

Grid approaches

- Collaboration for research, design, science, etc.
- Sharing and analyzing vast amounts of data
- Resource aggregation

Grid objectives

- Create virtual, dynamic organizations
- Provide secure, coordinated resource sharing
- Connect individuals, institutions and resources

Lowering the total cost of computing by enabling the efficient sharing of applications, data and computing resources without regard to location.

Research Grids

- US Department of Energy
- UK National Grid
- Netherlands national Grid
- Distributed Terascale Facility
- Blue Grid

Data Sharing Grids

- North Carolina BioGrid (Genomics)
- University of Pennsylvania (Mammography)
- San Diego Super Computer Center (Brain Mapping)

Application/Web Services Grids

- Galileo
- Storebrand ASA
- Hewitt Associates
- Bekins

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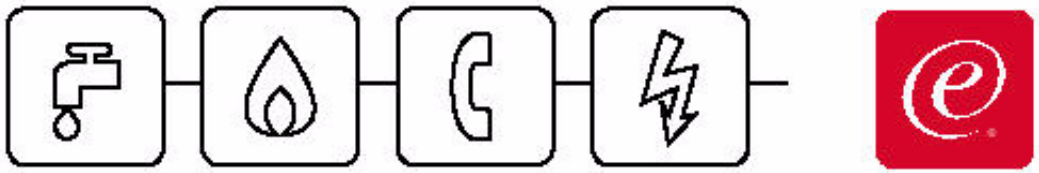
The Next Utility™



To one generation they were technological miracles.

To the next they were practical necessities.

To your kids they are invisible.

We call them utilities.

And in the history of civilization there have only been four...

...until now.

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e-business on demand™

The Next Utility™

- Business Process Outsourcing
- Network-Delivered Applications
- "Intelligent" Services Middleware
- e-business Value-Added Services
- Storage Utility Services
- Hosting/Bandwidth

Offering IT infrastructure and business processes, all in an on-demand, pay-as-you-use model

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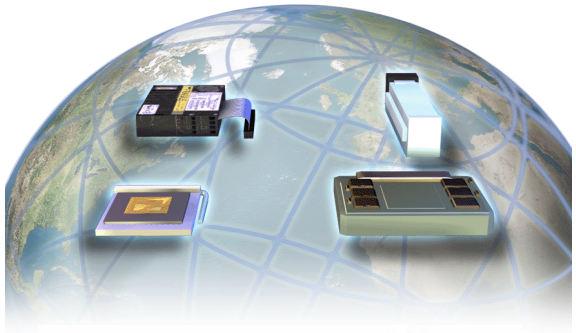
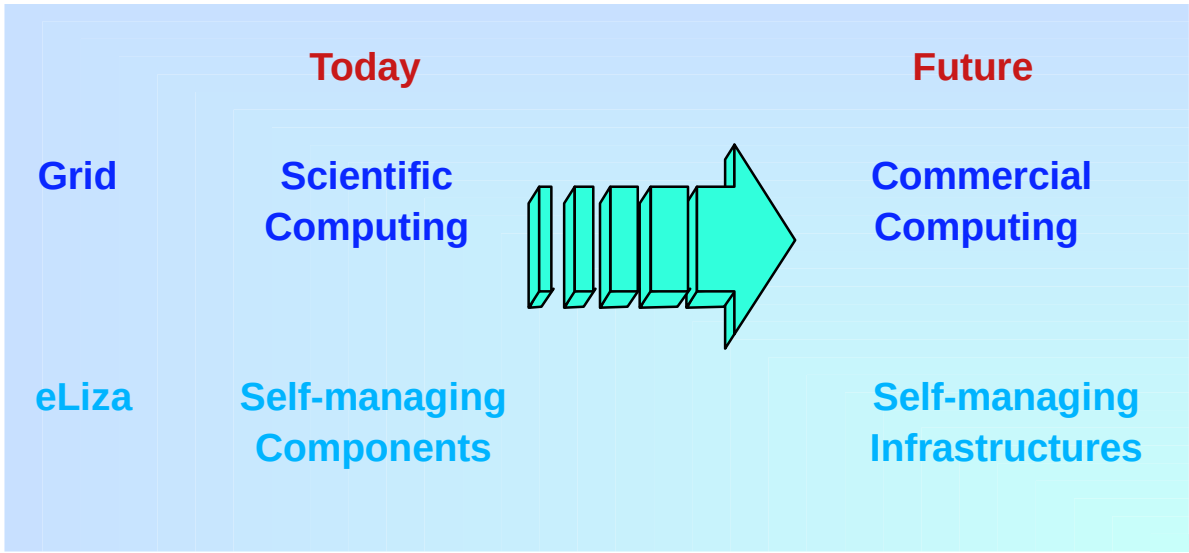
Linux, Project eLiza and Grid Computing on iSeries





Linux

- Full support of Linux in a partition
- iSeries Offering for Linux

Project eLiza

- OS/400 Version 5 exploits IBM's blueprint for self-managing systems
- Capabilities will be significantly expanded in future versions

Grid Computing

- Flexible, secure, standards-based, coordinated access to shared computing resources
- iSeries already on the IBM BlueGrid through OS/400 PASE and Linux

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iSeries delivers recognized value!

Midrange Market Leadership

- Over 750,000 Systems shipped - supporting over 250,000 customers
- Installed in 98% of Fortune 500, 85% of Fortune 100
- Operating in over 150 Countries, 52 Languages

Industry leading customer satisfaction and loyalty

Significant development investment for 2002 and beyond

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iSeries - On a roll!

Best New Technology (LinuxWorld, 2001)

IDC Cost of Ownership (IDC, 2001)

- Low cost of ownership
- High availability

IBM OS/400 Operating System (GartnerResearch, 2001)

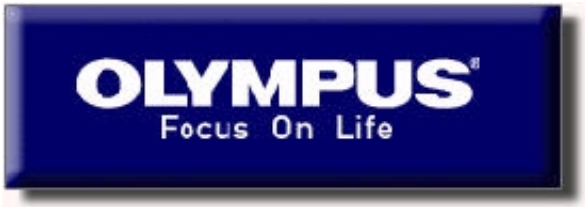
- Shed proprietary image to emerge equipped for e-business
- Shares IBM's most advanced technologies

Best Mid Range Server (ComputerWorld Singapore, 2001)

VarBusiness Award (Best Server -ARC Group, 2001)

What Customers Want

- ✓ **Reliability**
- ✓ **Security**
- ✓ **Rapid Application Deployment**
- ✓ **Low Cost to Manage**



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Server Evaluation & Selection Criteria

Availability & reliability

Security

Performance and scalability (vertical vs. horizontal)

Ability to run required applications (traditional/advanced/emerging)

- OPM, ILE, AIX (PASE), Linux, Java & WebSphere, Domino, Windows NT & 2000
- Multiple work loads, easier integration, reduced network costs, less network latency

Total Cost

- Hardware
- Software
- Integration Services
- Labor to maintain & support
- DB administration, network administration, operations
- Power consumption
- Real estate - smaller total footprint

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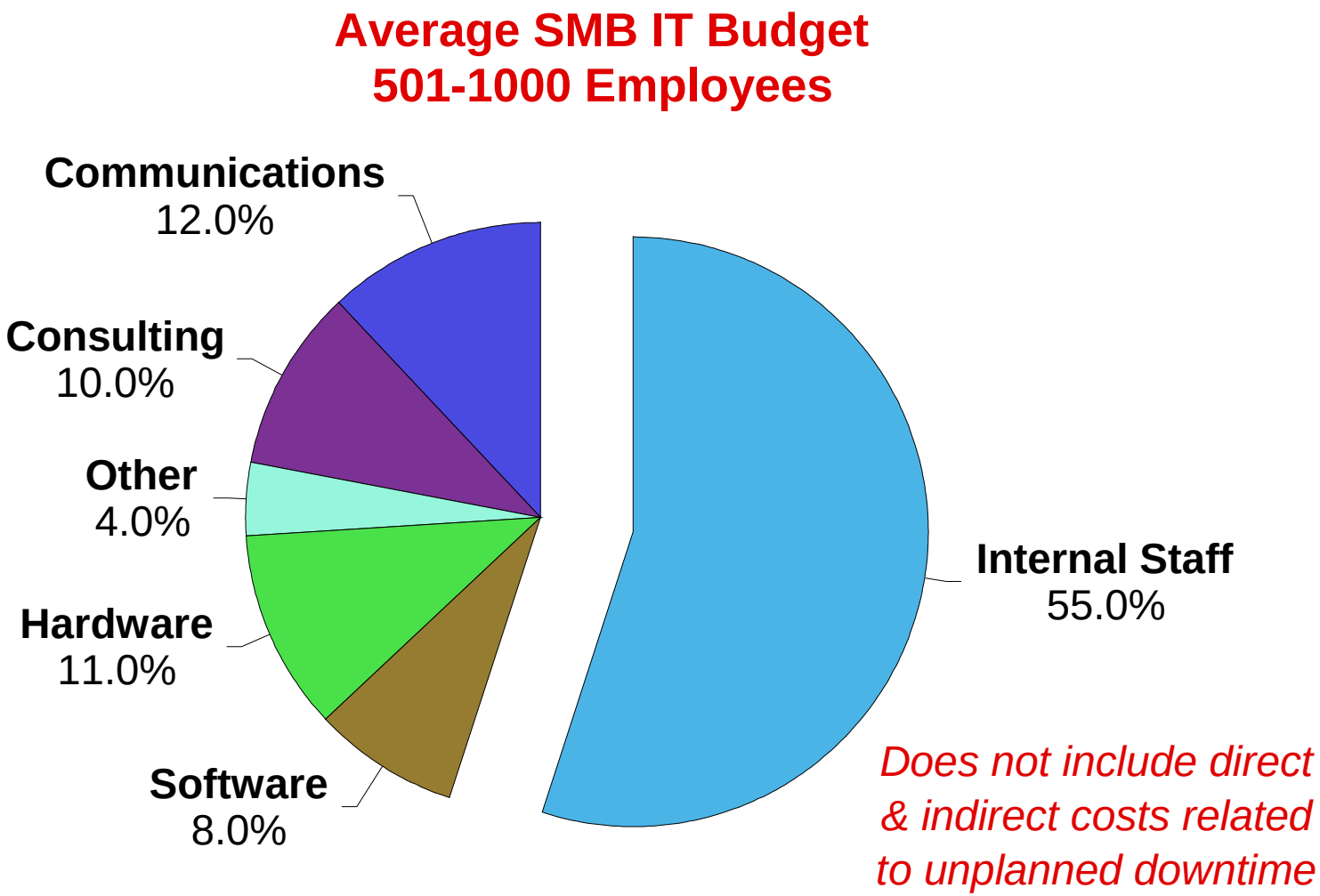
TCO - Influence of Staffing Costs

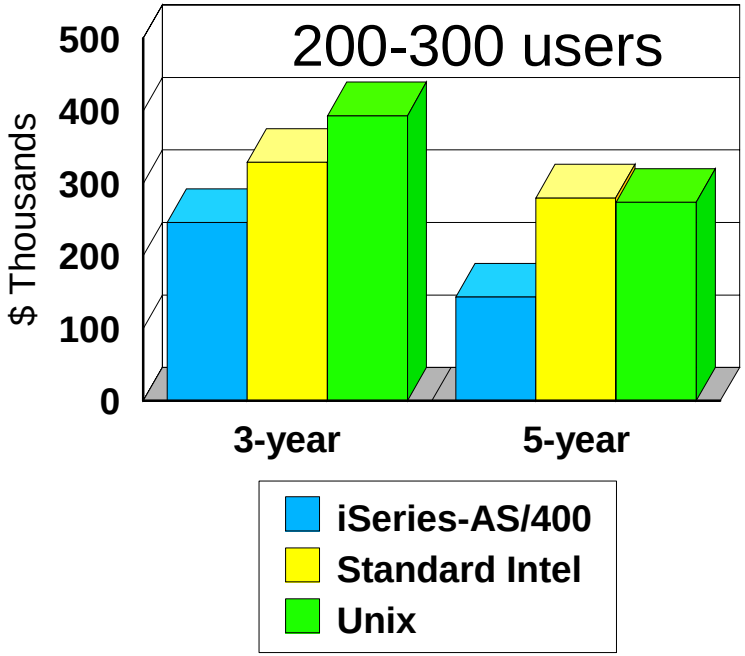


Source: Gartner Symposium 10/01

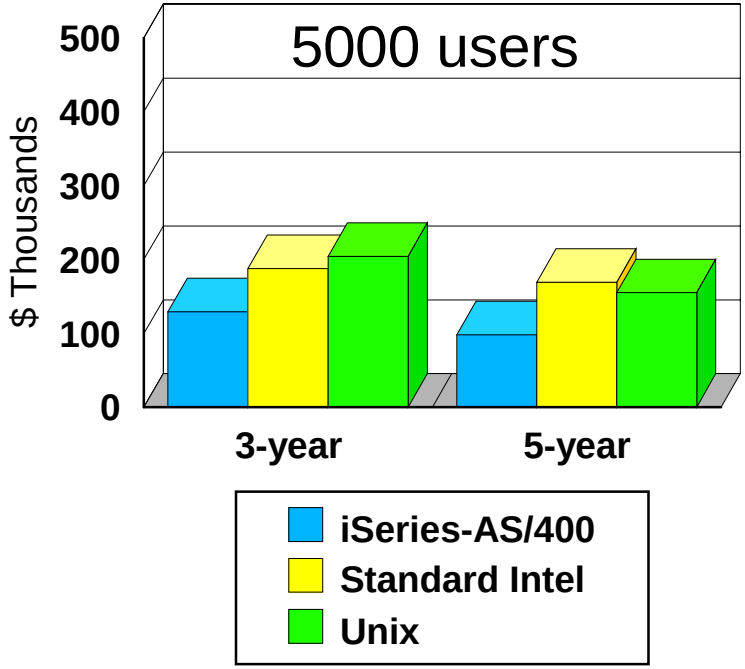
Server Cost of Ownership

- **Small companies with high growth**
  - iSeries advantage increases as operations costs become more significant
- **Large companies**
  - iSeries scalability and built-in management contribute to TCO advantage

Small Companies
TCO Per 100 Users



Large Companies
TCO Per 100 Users



* Source "Server Cost of Ownership in ERM Customer Sites: A Total Cost of Ownership (TCO) Study" IDC September 2001

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Server Cost of Ownership

Cost / Performance Metrics*

User Productivity	iSeries-AS/400 Solution	Standard Intel Architecture Solution	UNIX-based Solution
Users per server	***375.1***	112.8	200.7
Servers per IT Staffer	***3.5***	1.3	2.2
Server operating life (years)	***8.0***	4.5	6.6

iSeries supports more users per server than other solutions

iSeries requires only two thirds of the support staff of Unix solutions

iSeries requires only 40% of the support staff of SIAS solutions

* Source "Server Cost of Ownership in ERM Customer Sites: A Total Cost of Ownership (TCO) Study" IDC September 2001

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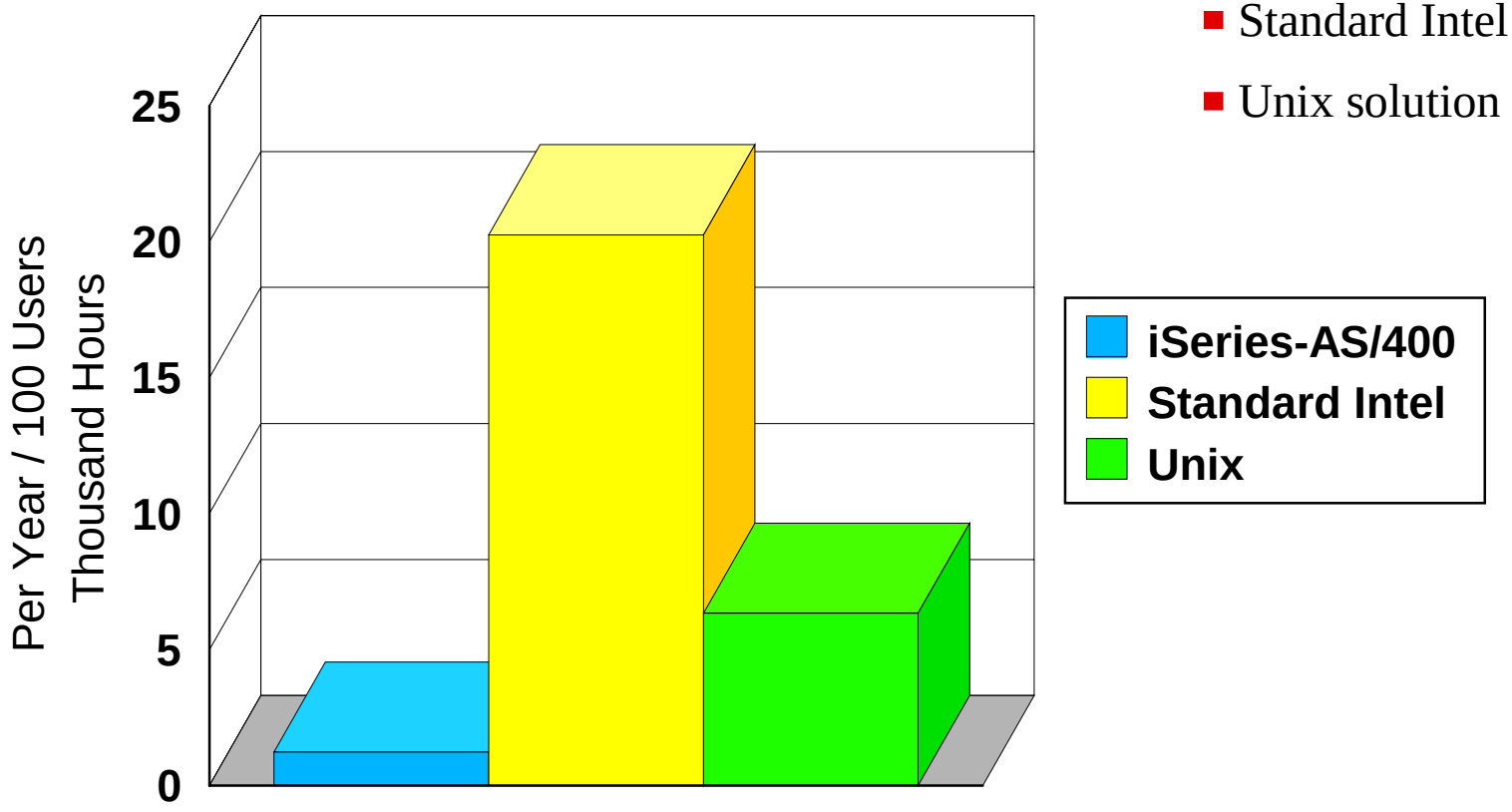
Unplanned User Downtime in ERM Customer Sites*



Availability

- iSeries solution 99.98%
- Standard Intel solution 99.67%
- Unix solution 99.90%

* Source "Server Cost of Ownership in ERM Customer Sites: A Total Cost of Ownership (TCO) Study" IDC September 2001

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Extending the Solution Base iSeries - "The" Flexible Server

Solutions

Business Intelligence CRM

Lotus Domino

Web Enabled e-business

iSeries Business Applications

Application Porting Consolidation / ASP

Integrated xSeries Server

PASE - UNIX Runtime

LINUX

Interconnected for application enhancement

Enablers

Security
- Kerberos
- Passphrase
- Certificates
- Virtual Private Networks
- Integrated SSL
- Hardware Cryptograph

Database
- XML extenders
- UDB
- Net Server
- JDBC interoperability
- ODBC interoperability

Manage-ment
- Pervasive Control
- Single system, multi-workload
- Multi- system
- Management Central

Java
- Java Virtual Machine
- WebSphere
- Just In Time compilation
- Integrated memory management

Cluster Support
- Switched Disk
- Independent ASP
- Replication
- Cluster Services

Across a scalable, secure, reliable platform

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V5R1 - Foundation for Future Function

Excellent Quality

High Acceptance Rate

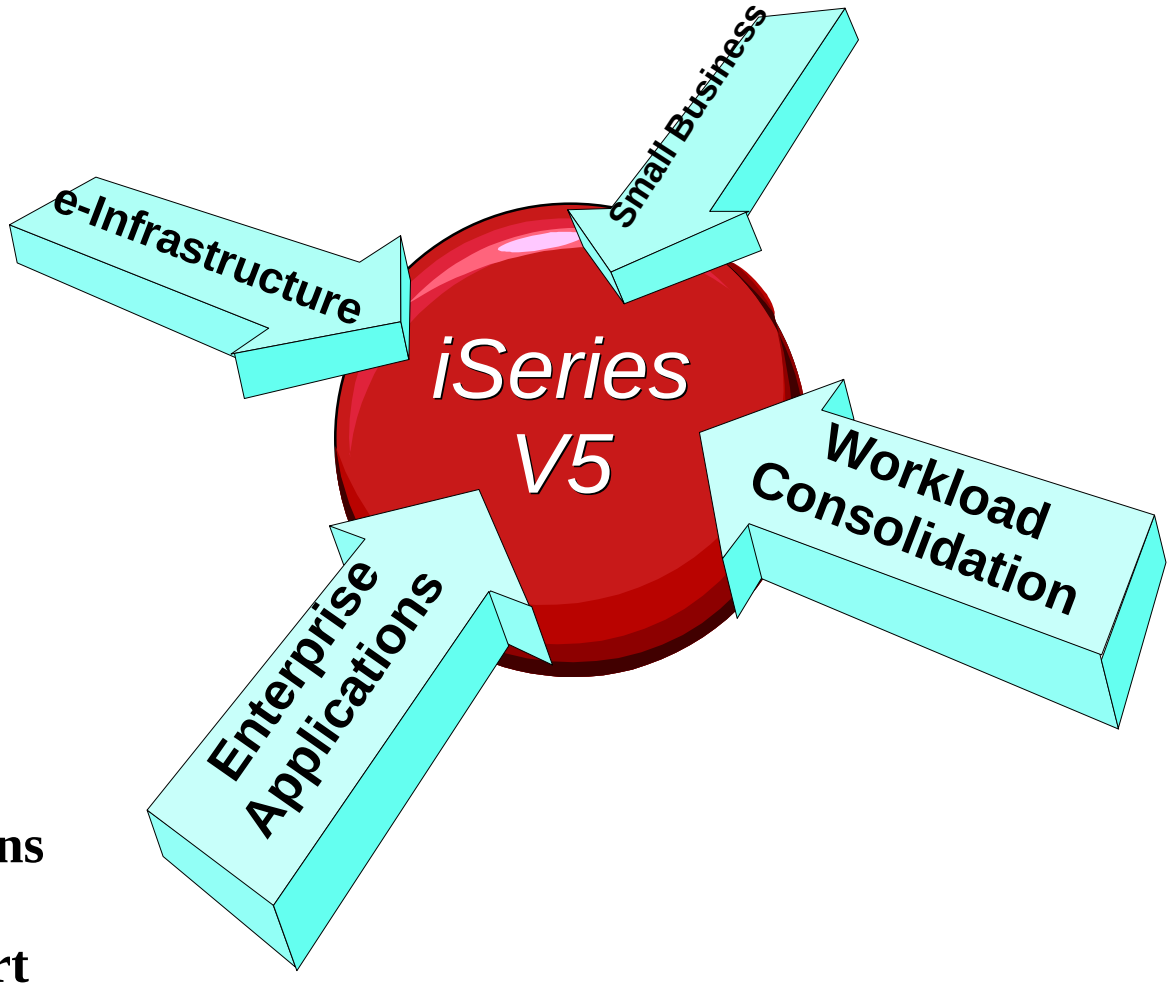
Workload Consolidation

- Security
- Scalability
- Manageability
- Reliability
- Total Cost of Ownership

Enterprise Application Solutions

Strong e-infrastructure Support

Small Business Servers



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What's new?

Announced February 12, 2002

Integrated xSeries Server now available with a 1 GHz processor

New 35GB disk units

- Double maximum system DASD capacities
- BUT WATCH THOSE ARMS!!

	Old max	New max
270	421 GB	844 GB
820	4.1 TB	8.3 TB
830	11.0 TB	22.1 TB
840	18.9 TB	37.9 TB

New large-capacity, high-performance 8mm tape

- 7208 Model 345
- 3 times the capacity and data rate of current model

New 4-line WAN (data/fax) modem adapter

Added speed, capacity and flexibility

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What's coming?

Product Previews from February 12, 2002

Growth for Model 270 Customers

IBM intends to provide technology upgrade options for Model 270 customers in the second half of 2002.

supporting e-business and workload consolidation plans

PCI and HSL deliver balanced performance and higher availability

SPD I/O Not Supported on POWER4 iSeries

IBM does not intend for the planned (second half 2002) POWER4 iSeries servers to support non-PCI (SPD-based) I/O controllers and adapters.

Visit ibm.com/eserver/iseries/support/planning/nav.html for additional planning information

What's new? iSeries Model 890 and V5R2

Announced April 29, 2002

IBM POWER4 technology for unmatched iSeries growth and performance

- Up to 32-way SMP
- 1.85X performance growth, true enterprise class performance
- 64-bit technology leadership with POWER4

Deliver outstanding flexibility for growth of new workloads

- High demand for dynamic LPAR and Capacity Upgrade on Demand
- Aggressive new strategies to compete for new workloads from SAP to Domino to Linux...

Enterprise IT Management Made Simple with OS/400 V5R2

- Extension of eLiza leadership such as single sign on with industry's first implementation of Enterprise Identity Mapping
- Mainframe class availability features including switched disk clusters

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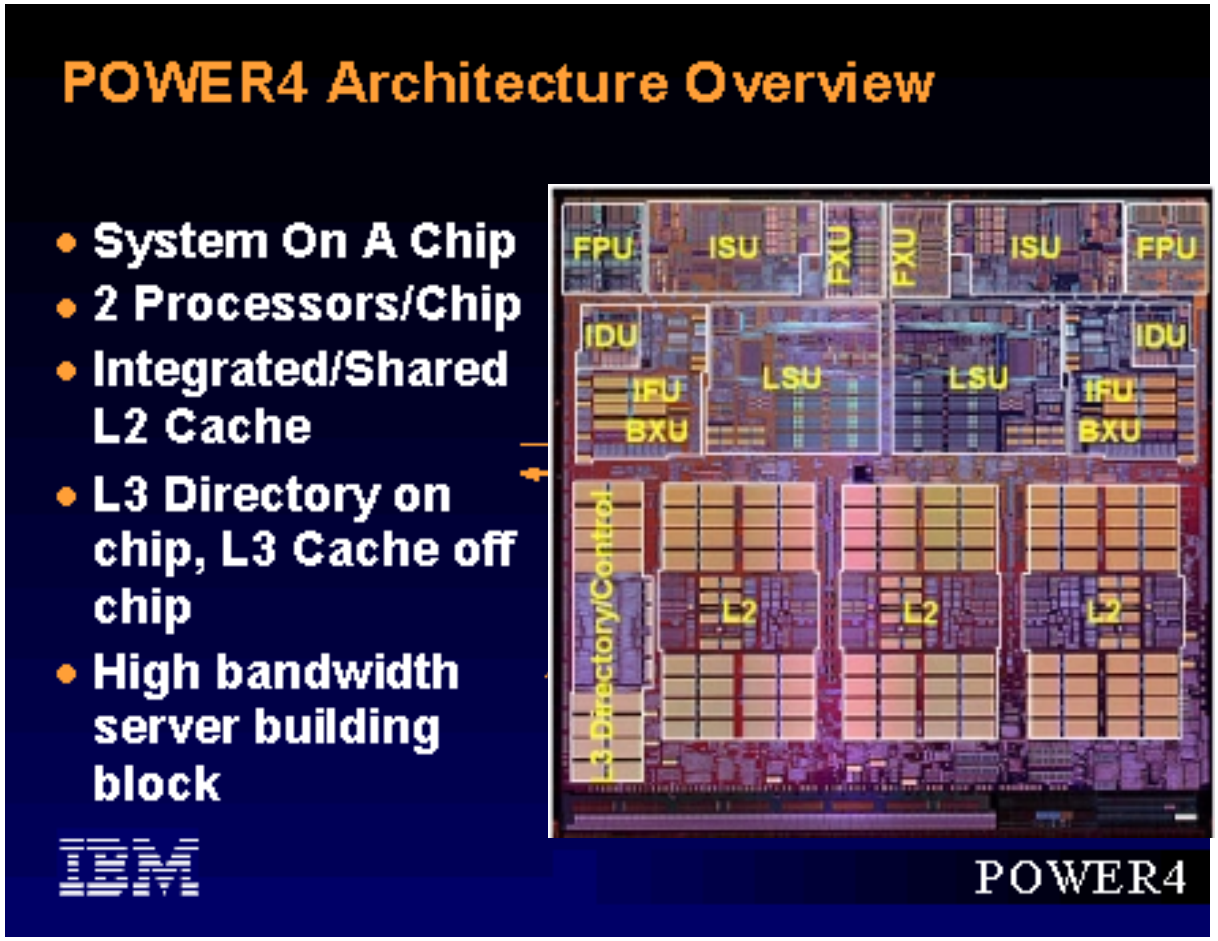
POWER4 Technology

Runs at more than 1GHz

~170 million transistors

Two 1GHz processors with a second-level cache reside on a single chip



The POWER4 chip has the ability to deliver more than 100GB -- or the rough equivalent of 20 full-length DVD movies -- from the second-level cache to the processor in one second.

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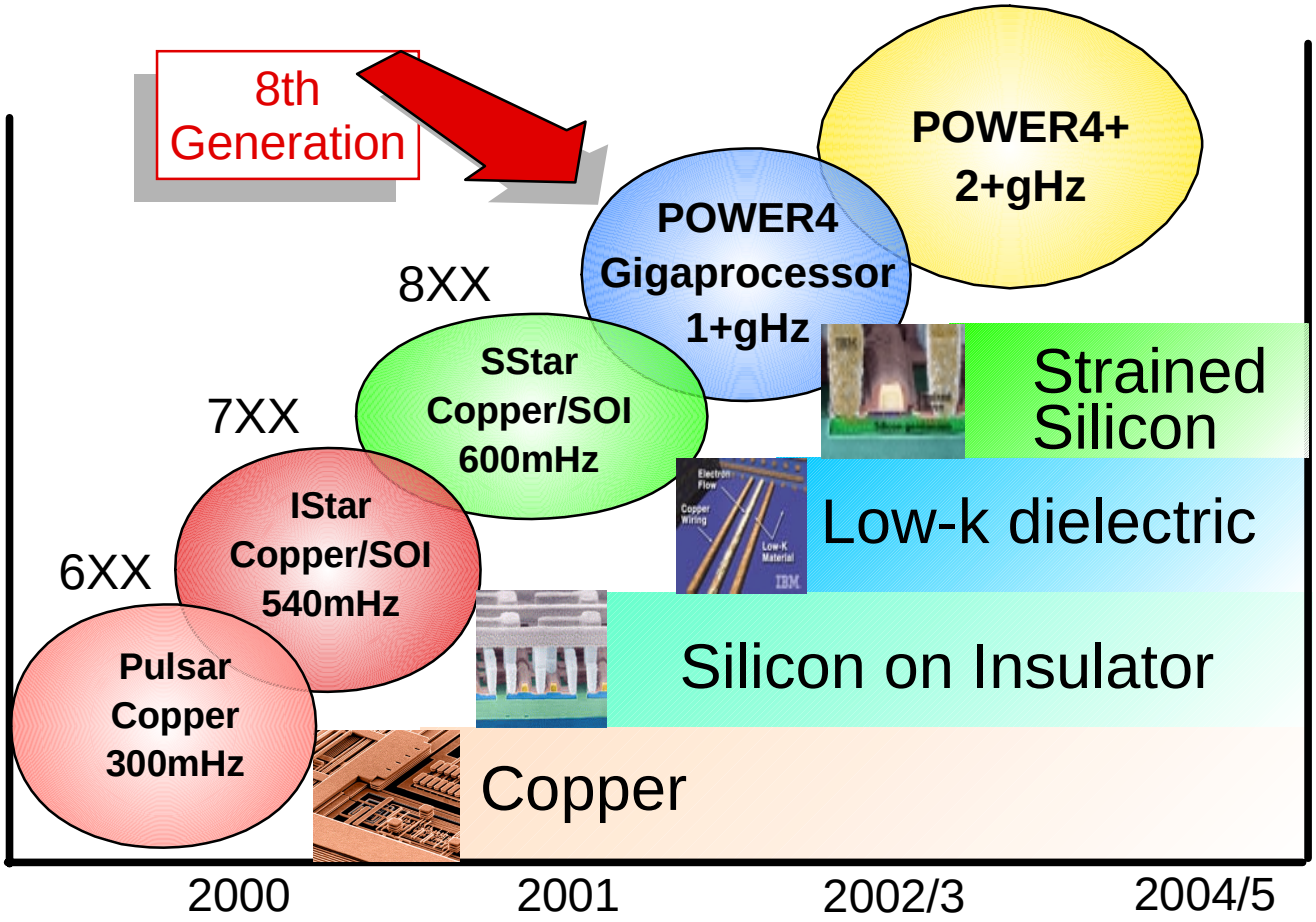
What's coming? iSeries Processor Roadmap...



The POWER4 is a rare technological *tour de force* that simultaneously pushes forward the state of the art on many different levels...

Paul DeMone, 10/16/00
"A Big Blue Shadow over Alpha, SPARC, and IA-64"
www.realworldtech.com

iSeries and pSeries System Roadmap

	2000/1	2002/3	2004/5
SMP	24	32	64
Memory GB)	96	256	512
Disk (TB)	18.9	>100	"big"

2000/1

7XX
- iSeries
- pSeries

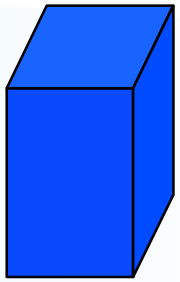
2001/2

8XX
- iSeries
- pSeries

2002/3

POWER4
- iSeries
- pSeries

2004/5



Future System
- iSeries
- pSeries

Investment Protection

OS/400 - Version 5

V5R2 Highlights

Announced April 29, 2002

Performance at your fingertips

- Flexible Capacity Upgrade on Demand now standard on every iSeries 4-way and above
- Dynamic logical partitioning for award-winning 64-bit Linux
- Intuitive iSeries Navigator workload management tools

Adaptive storage virtualization for high availability

- Mainframe-class availability with switched disk cluster management
- Self-optimizing, multiple IBM DB2 UDB images for business unit consolidation
- Extensive Windows server management now supports Microsoft Cluster Server

Flexible, secure management of e-business infrastructure

- Industry's first eLiza Enterprise Identity Mapping enables true single sign on
- High-performance Apache Web serving with secure sockets and caching accelerators
- Simple and pervasive operations with wireless-optimized Web-ready micro-drivers

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Simple, Integrated Administration

V5R1

- New and enhanced GUIs for Operations Navigator and Management Central
- Management Central Pervasive
- Logical Partitioning Management
- DASD Management
- System Wizards
- 90% coverage of typical system function

V5R2

- Self-managing capabilities (eLiza)
- Additional wizards
- Further functional enhancements

What's coming?

Statements of Direction from April 29, 2002

Support AIX on iSeries

IBM plans to include native support for AIX in logical partitions alongside OS/400 partitions.

leveraging a broader range of application environments

providing added flexibility for deploying e-business infrastructure

DB2 and WebSphere Application Server for Linux on iSeries

IBM plans to make DB2 Universal Database and WebSphere Application Server available for Linux on iSeries.

Visit ibm.com/eserver/iseries/support/planning/nav.html for additional planning information

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Freedom to Succeed

iSeries Model 820/830/840/890

Scalable, mixed transaction workloads

Base models

iSeries Model 270

Application and Web server

Base models

Specialized e-Infrastructure Servers

Domino

owered by WebSphere

Linux Edition

Specialized Application Servers

WebSphere

J.D. Edwards

Intentia IBS

Applications that mean business

Servers with simplicity, scalability, flexibility

Single solution to complex needs

Secure the e-business advantage

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Enterprise IT Management Made Simple

iSeries Access for Web

64-Bit Linux

Grid Computing

Innovative Technology

32-way, 64-Bit POWER4

Enterprise Identity Mapping

Adaptive e-transaction Server

Application Flexibility

Apache Web Caching Accelerator

Domino R6

Switched Disk Clustering

iSeries Navigator

Microsoft J Cluster Server

SAN Switch Fabric

Secure Sockets Accelerator

Virtual Ethernet

New Tools for e-business

LPAR Management Tools

Wireless Web Micro-drivers

WebSphere Development Studio for iSeries

Multiple DB2 J UDB Namespaces

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AS/400e	iSeries
e-business logo	OS/400
IBM	

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