



## Securities Industry Association

Paul Otellini  
President & Chief Operating Officer, Intel Corporation

intel®

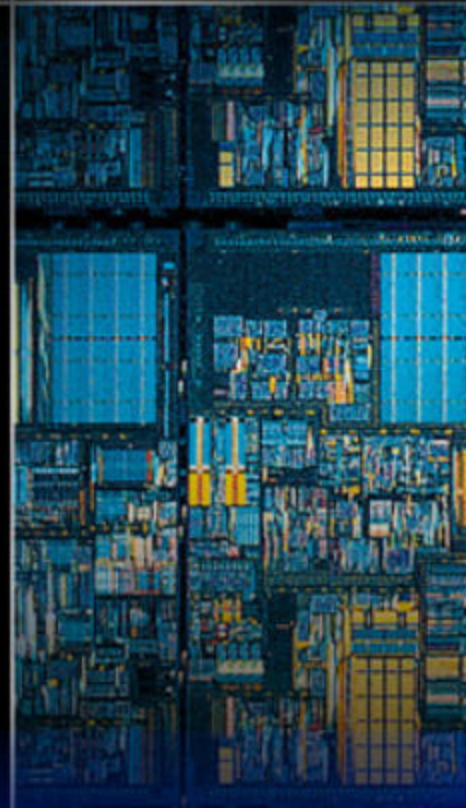
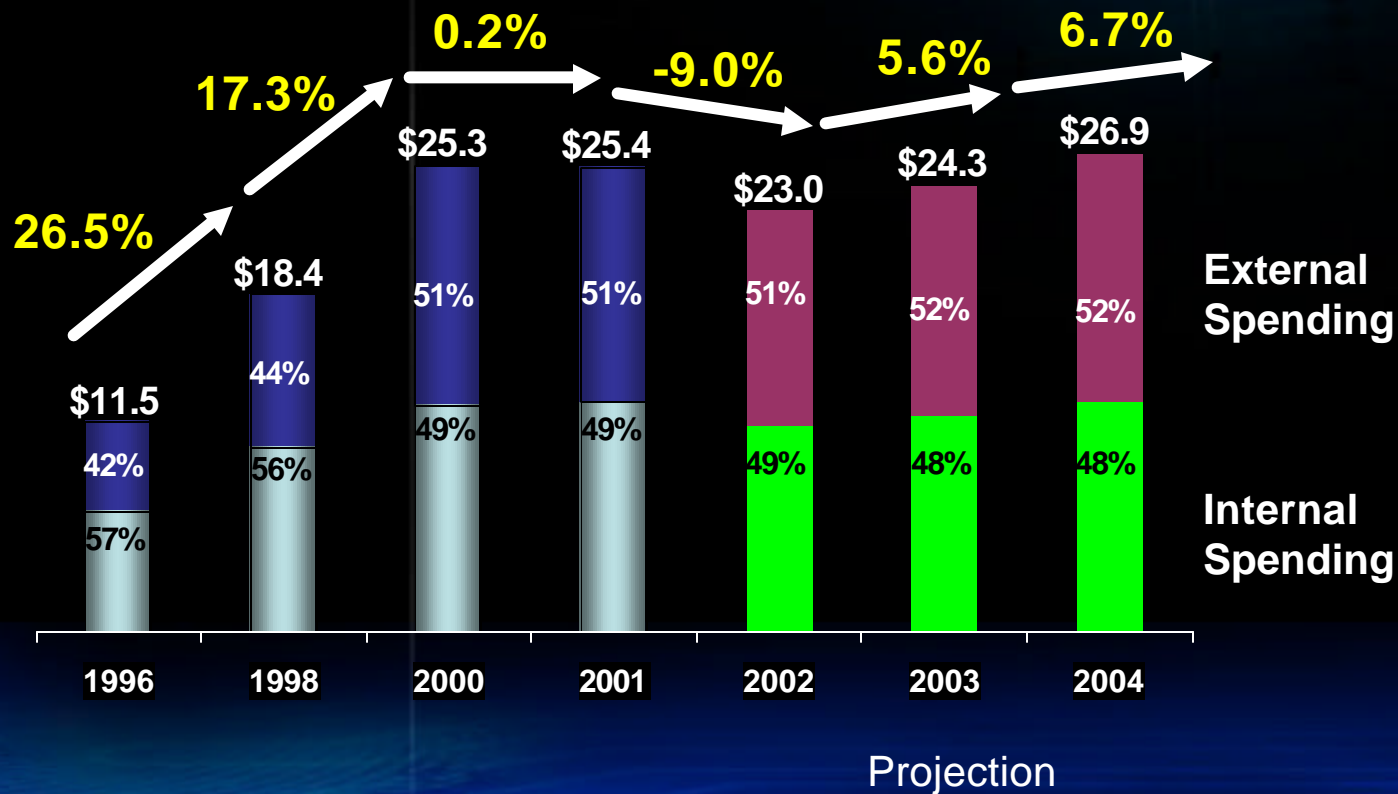


# Agenda

- Wall Street IT Environment
- Worldwide Computing Trends
- Scaling with Intel

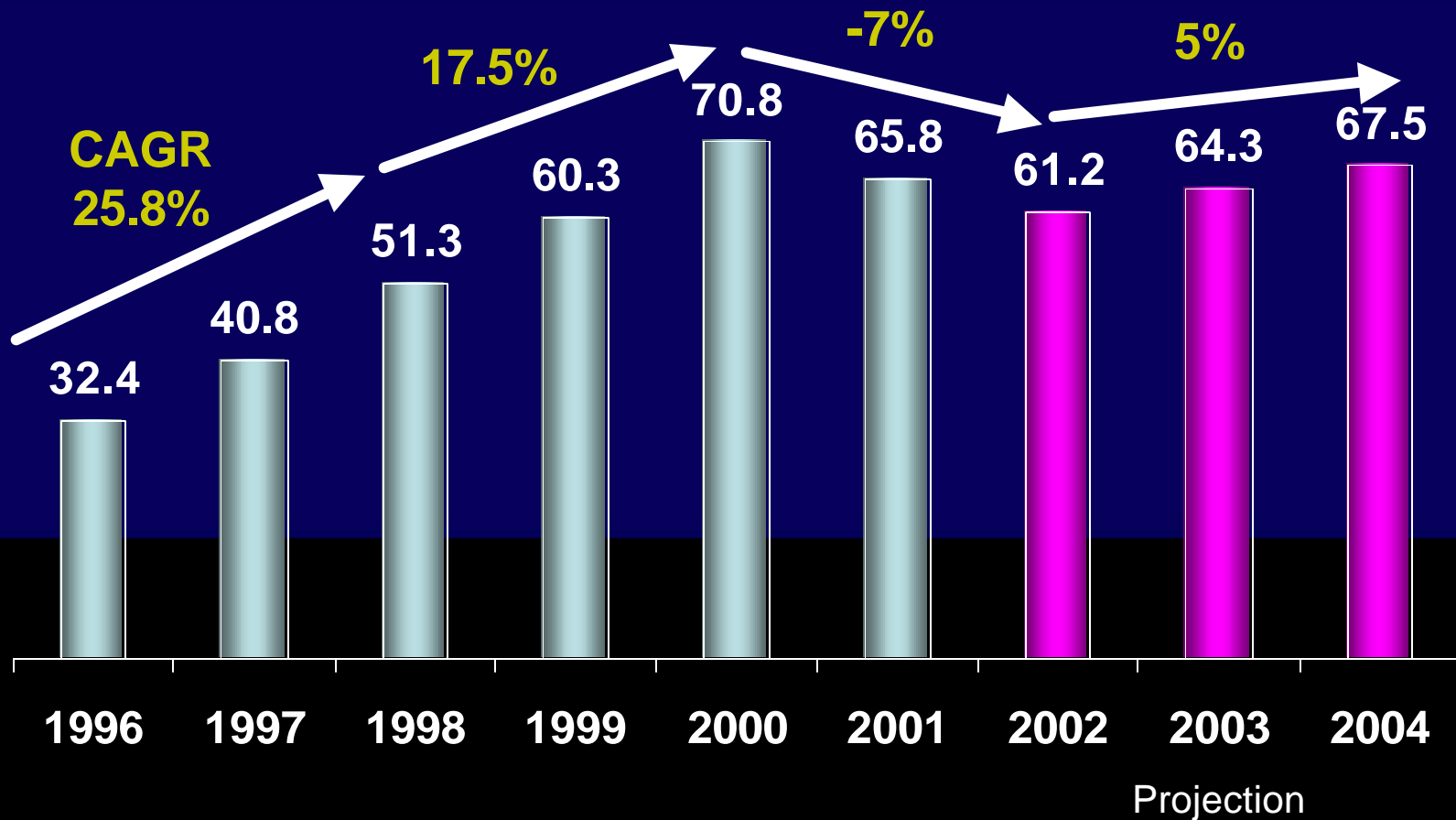
# IT spend decreasing, with small growth projected

North American Securities Industry IT Spending (US\$ billions)



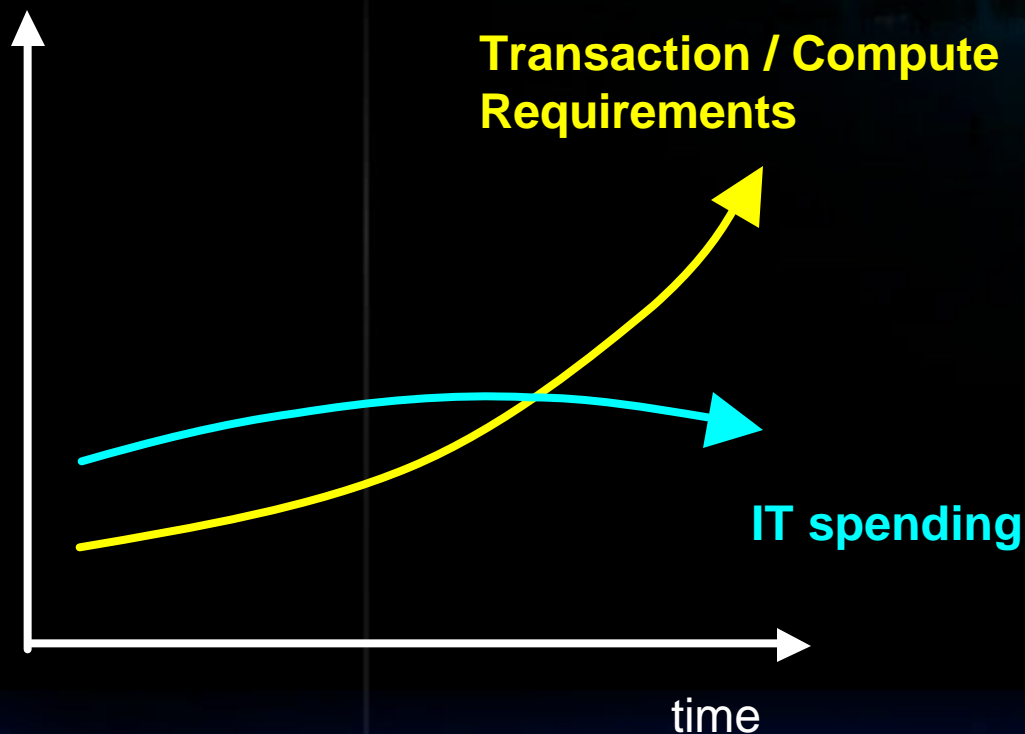
# Driving IT staffing down...

Securities Industry IT Staffing, worldwide (in '000s)



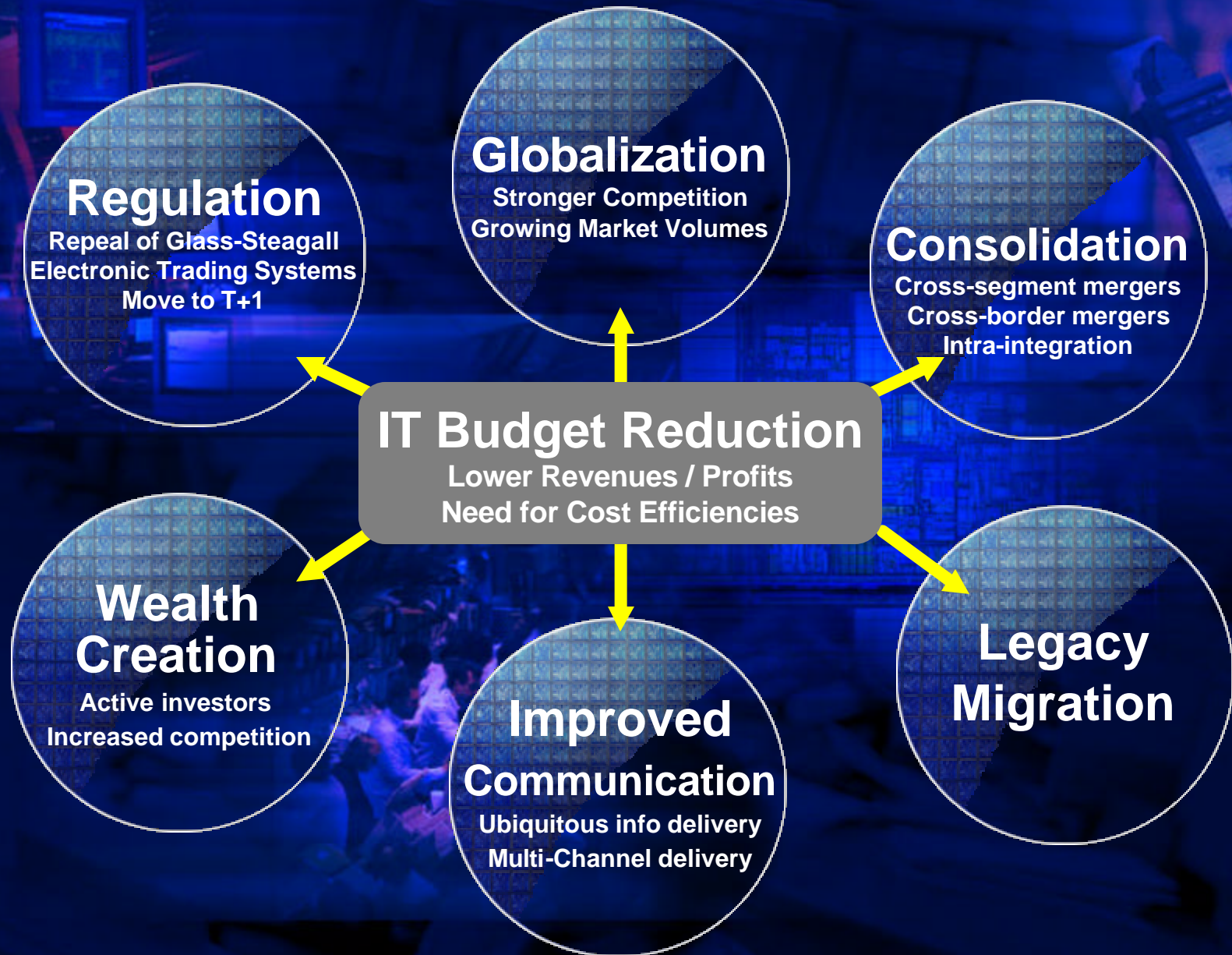


# But “gap” growing between required computing and available IT budget



- Decimalization
- Derivatives complexity
- T+1
- Web Services

# Trends in Financial Services







# **Worldwide**

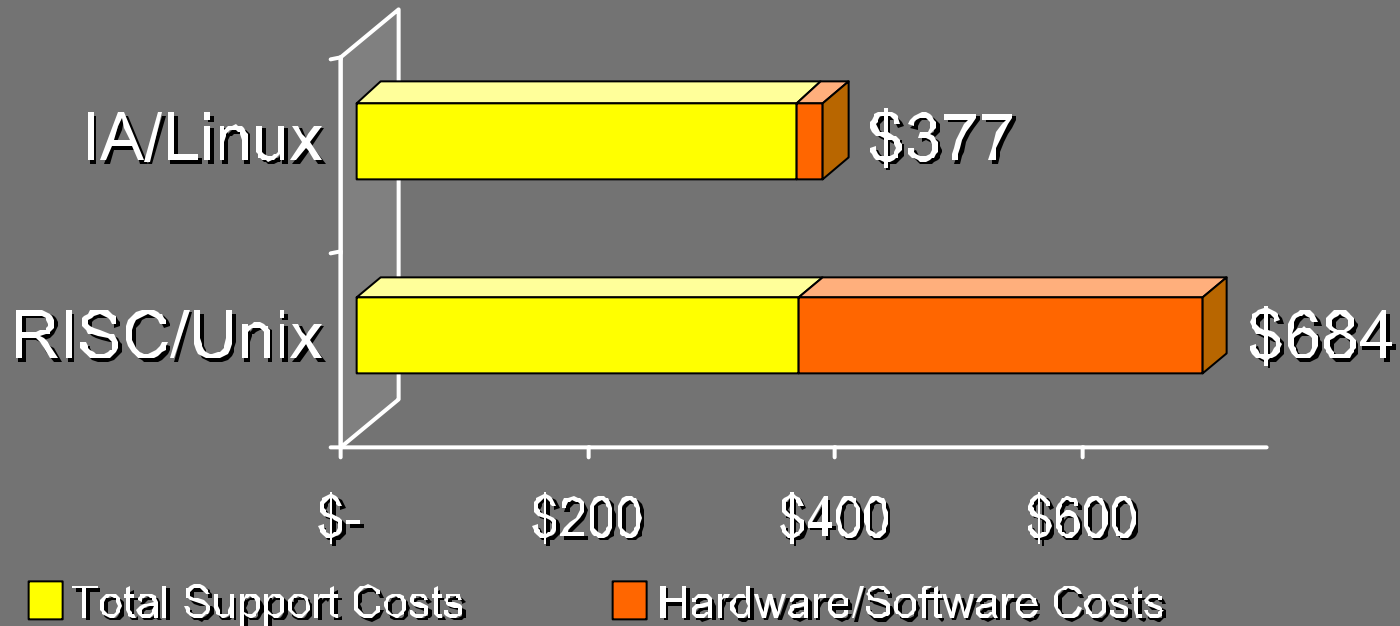
## **Server Market Segment:**

### **Technology Trends**

# Migration from Unix

## TCO for Linux and RISC/Unix Internet/Intranet/Extranet Workloads

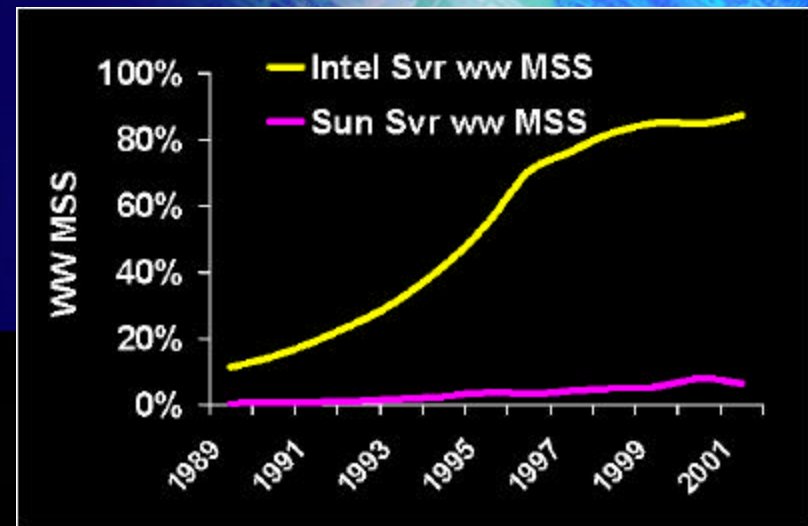
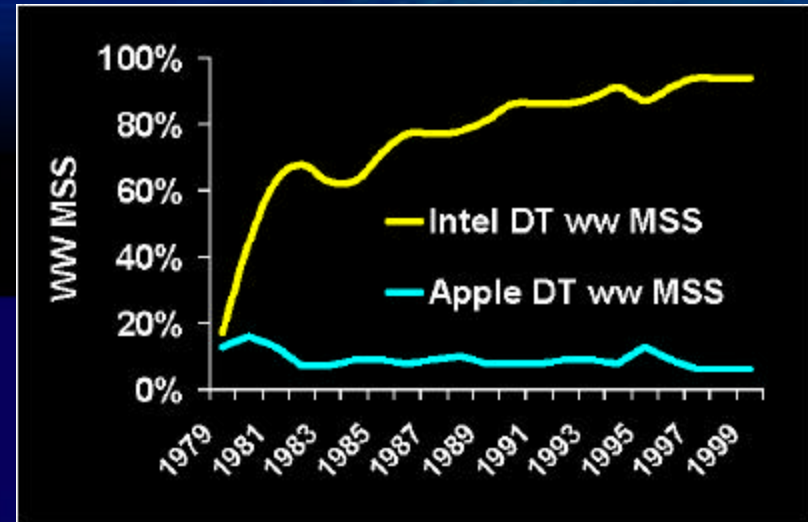
(U.S. dollars per year per user for 1,000 supported users)



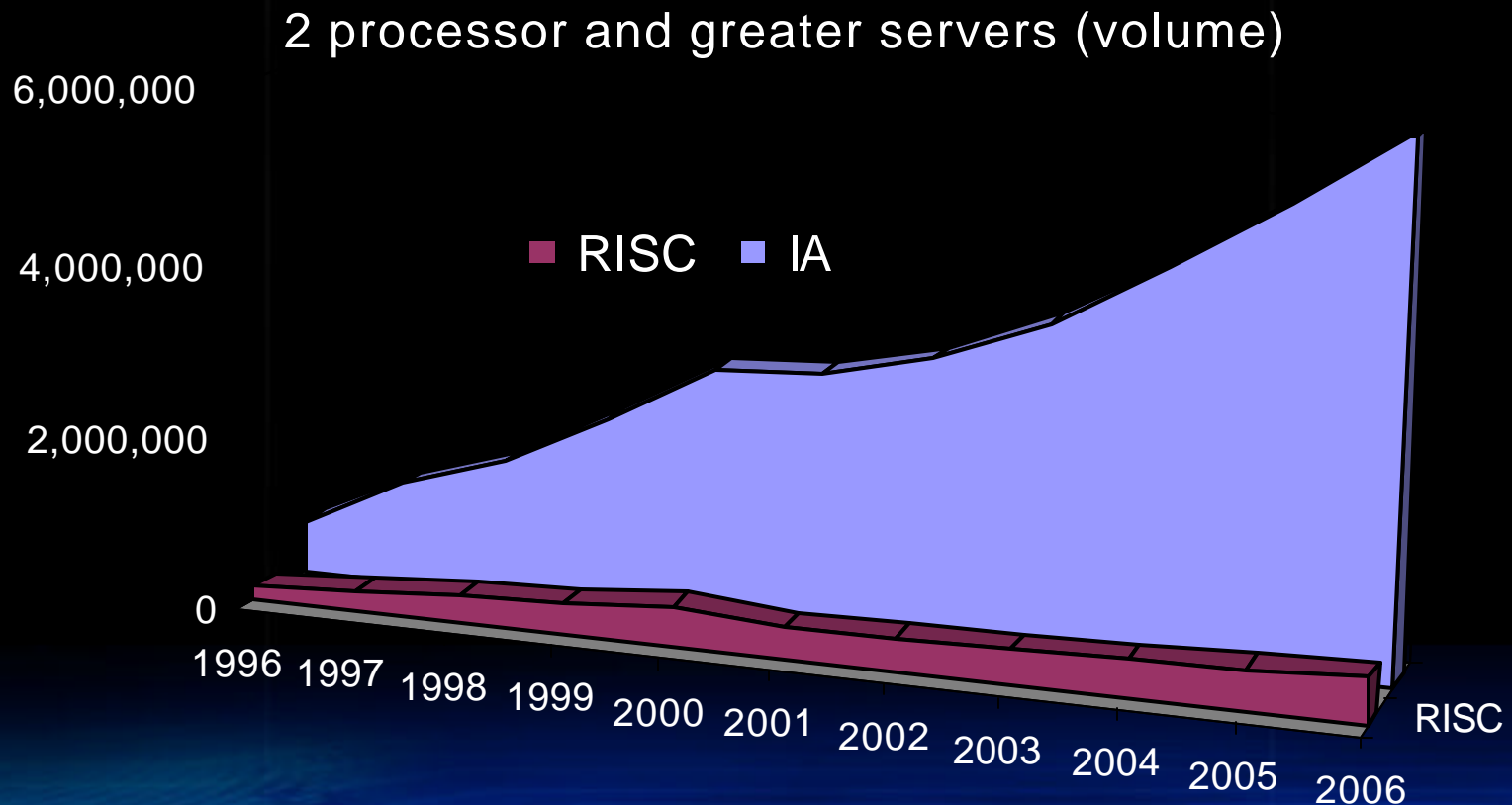


# Remember Apple?

- The fundamentals have not changed
- This is the 1<sup>st</sup> time Sun has had to deal with this
- Basic rules did not apply in the internet bubble

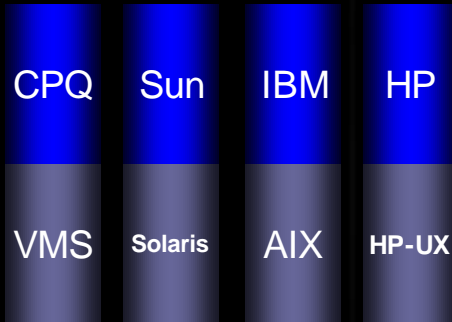


# Companies are making strategic bets on Intel Architecture-based solutions



# “Horizontal-izing” = Best of Class

## “Old” Vertical Industry



SOLUTION BLUEPRINT FINANCIAL SERVICES

Enterprise Risk Management Trust Accounting And Securities Processing System

Market Risk Solutions from B1  
Enterprise Hardware Platform  
Scalable Intel® Architecture

Financial Services  
Business Challenge  
Addressing the need for customer-centric asset management  
is critical. 24/7

Applications

Operating Systems

OEMs

Logos: RISKMETRICS GROUP, NetScout, REUTERS, hp-ux, Microsoft, hp, Stratus, IBM, DELL, UNISYS, egenera

SOLUTION ARCHITECTS

SUNGARD

hp

intel

## Horizontal Industry



# The movement is happening...

*CSFB converted from a four-way RISC-based architecture to a two-way Intel architecture running Red Hat... **Delivers 20x Performance Boost** for Mission Critical Applications*

RALEIGH, NC-April 8, 2002-Red Hat, Inc



*"We were the first software company to pick up the Itanium chip in financial services and we're as **bullish about Itanium now as we were when the 386 first came out**"*

Chris Conde, President, COO, SunGard





Why?

# Intel, Not Just Chips Anymore

**Complimentary**

**Solutions  
Enabling  
e-Business  
For  
All  
Business**

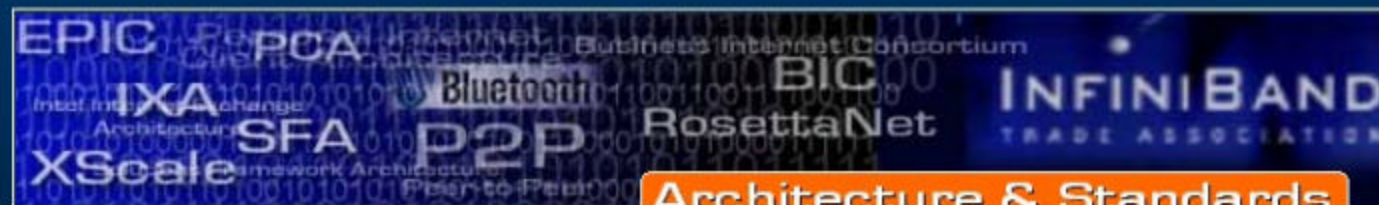


**Solutions Channels**



**Solutions Enabling**

**Platform  
Enabling**



**Architecture & Standards**

**World  
Class  
Products**



**Products**



# Example: Real Solutions, Real Impact

Driving highest performance and lowest cost

High Performance  
Scalability Lab

Performance Comparison	Sun	Unisys	Compaq
<b>SAP Environment (4.0B)</b>			
Operating System	Solaris 2.6	W2K DC 5.00.2195	W2K Advanced
Database	Oracle 8.0.4.4.0	SQLServer 8.00384	SQLServer 8.00384
Server	Sun E10K	Unisys ES7000	Unisys 8500
Number of CPU's	34 x 400 MHz	28 x 700 MHz	8 x 900 MHz
Processor	UltraSparc II	Pentium® III Xeon™	Pentium® III Xeon™
<b>Performance Statistics</b>			
Total Dialogs per hour	250,000	378,099	403,659
Database Requests	56,217,995	67,220,025	70,080,309
Average Response time (total)	<b>700 ms</b>	<b>496.15 ms</b>	<b>508.2 ms</b>
<b>Platform Costs</b>			
Total HW +SW	\$6,996,000	\$2,829,795	\$1,189,910
Cost as Percent of Unix cost	<b>100%</b>	<b>40%</b>	<b>17%</b>

**Sun UE10000 vs Intel Architecture:**











**Intel = ~30% better performance**

**Intel = <20% of the cost**

# Database Performance Leadership

## Top Ten TPC-C by Price/Performance Version 5 Results












☒ All Results
 ☐ Clustered Results
 ☐ Non-Clustered Results

Rank	Company	System	tpmC	Price/tpmC
1		IBM e(logo) xSeries 220 r/s	12,009	3.52 US \$
2		PowerEdge 2500 1.26 1P	11,537	3.68 US \$
3		ProLiant ML370 102/1.26 2P	17,078	3.99 US \$
4		PowerEdge 2500 1/13 1P	11,314	4.38 US \$
5		IBM e(logo) xSeries 360 r/s	23,027	4.41 US \$
6		IBM e(logo) xSeries 250 r/s	15,533	4.67 US \$
7		PowerEdge 2500 1.13 1P	11,320	4.70 US \$
8		IBM eServer xSeries 220 r/s	9,112	4.76 US \$
9		ProLiant ML 530 X1000 1P	9,347	4.77 US \$
10		PowerEdge 6600/4/1.6GHz	59,914	5.27 US \$

10 of 10 Price/Performance

## Top Ten TPC-C by Performance Version 5 Results

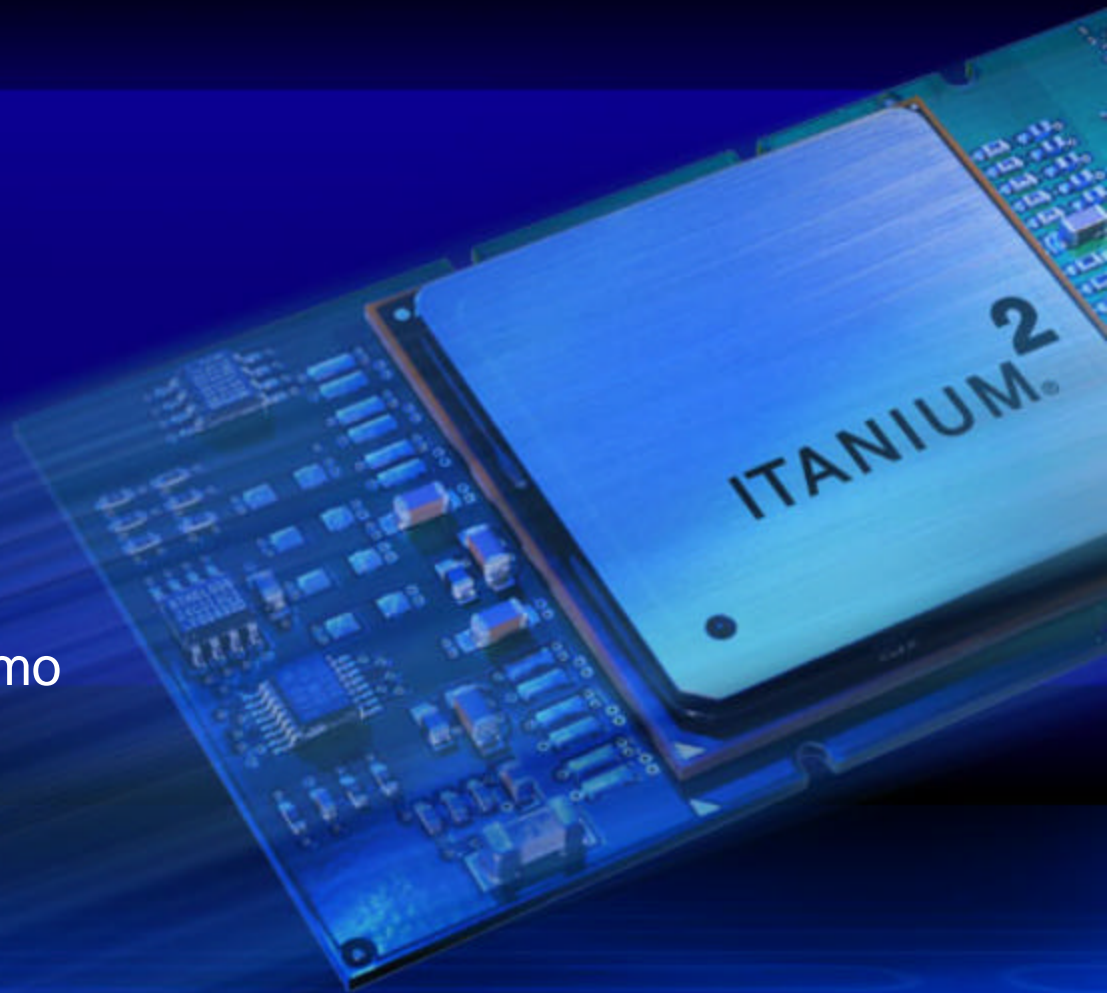
☒ All Results
 ☐ Clustered Results
 ☐ Non-Clustered Results

Rank	Company	System	tpmC	Price/tpmC
1		ProLiant DL 760 900 256P	709,220	14.96 US \$
2		BV e(logo) xSeries 370 r/s	688,220	22.58 US \$
3		ProLiant DL760-900-192P	567,882	14.04 US \$
4		PRIMEPOWER 2000 r/s w 66 Front-Ends	455,878	28.58 US \$
5		BV e(logo) xSeries 370 r/s	440,879	19.35 US \$
6		ProLiant DL760-900-128P	410,769	13.02 US \$
7		IBM eServer pSeries 890 Turbo 70/0-68"	403,255	19.51 US \$
7		Bull Escala PL3200R	403,255	19.62 US \$
8		HP 9000 Superdome Enterprise Server	389,434	21.24 US \$
9		BV e(logo) xSeries 370 r/s	363,129	21.80 US \$
10		Compaq AlphaServer GS320	230,533	44.62 US\$

6 of 10 Performance



Intel Itanium™ 2 Processor Demo



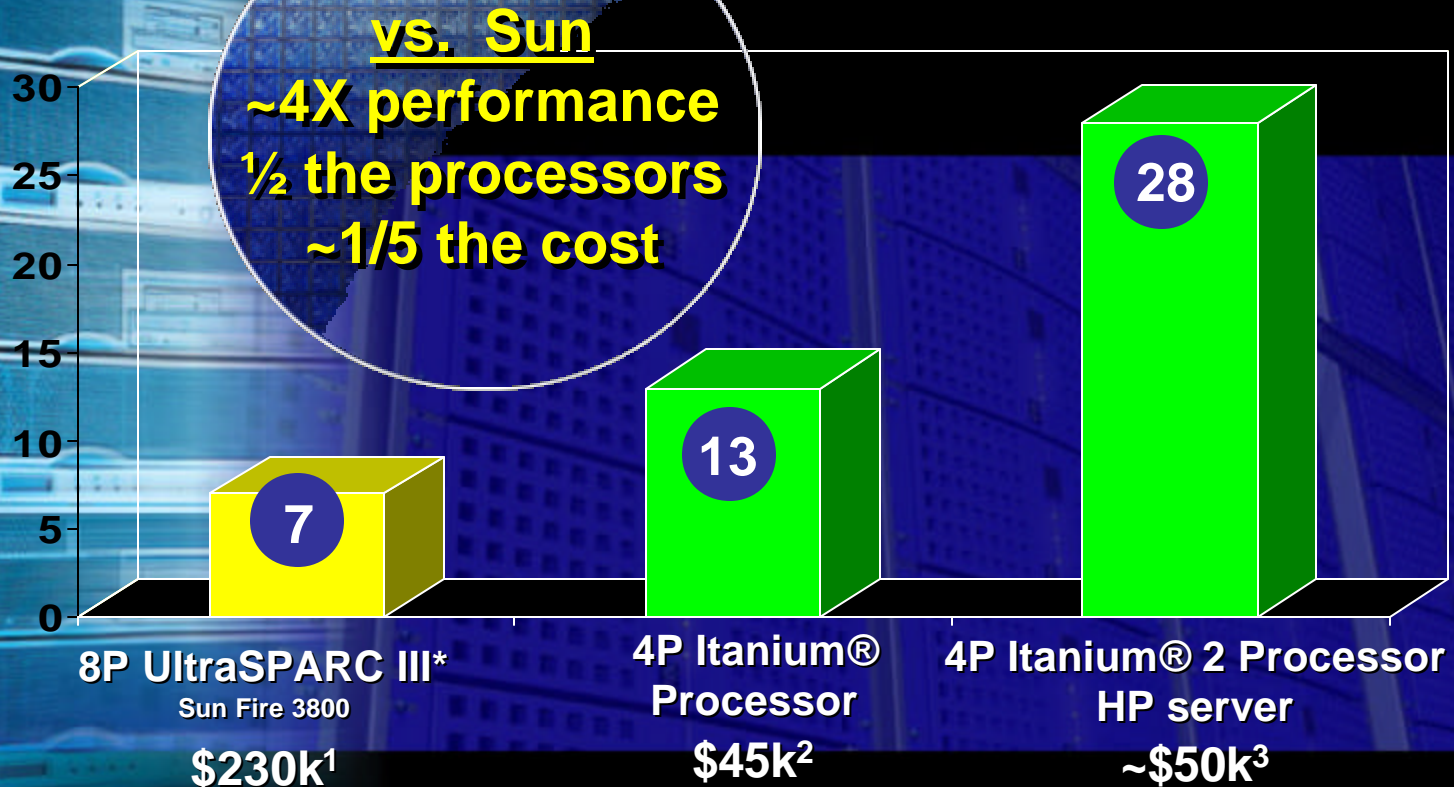


# Financial Transaction Performance

Reuters Structured Negotiation Capability\*

REUTERS  .com

Business Transactions



## Migrating to Itanium® 2 Processor-based solution

Assumes 4P Intel® Xeon™ processor 1.6GHz based application server on a one second response time.  
The other servers shown above are used as database servers.

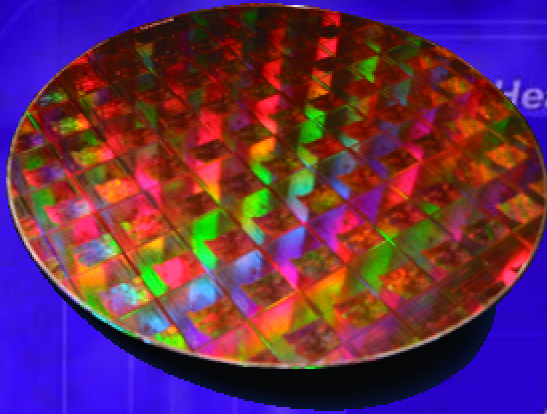
1) From [www.sun.com](http://www.sun.com). 2) Estimated street price of Intel white box. 3) Estimated average street price.

System Configurations: **Application Server:** 4P Intel® Xeon™ processor 1.6GHz, 4GB, Windows 2000, SQL Server 2000. **Database server:** 8P Sun 3800 USIII 900MHz, 8GB, Solaris 8, Oracle 9i.  
4P Itanium processor 733MHz, 4GB, Windows .NET 3590, SQL Server 2000. 4P Itanium 2 processor 1GHz based HP server, 8GB, Windows .NET Enterprise server 3621, SQL Server 2000.

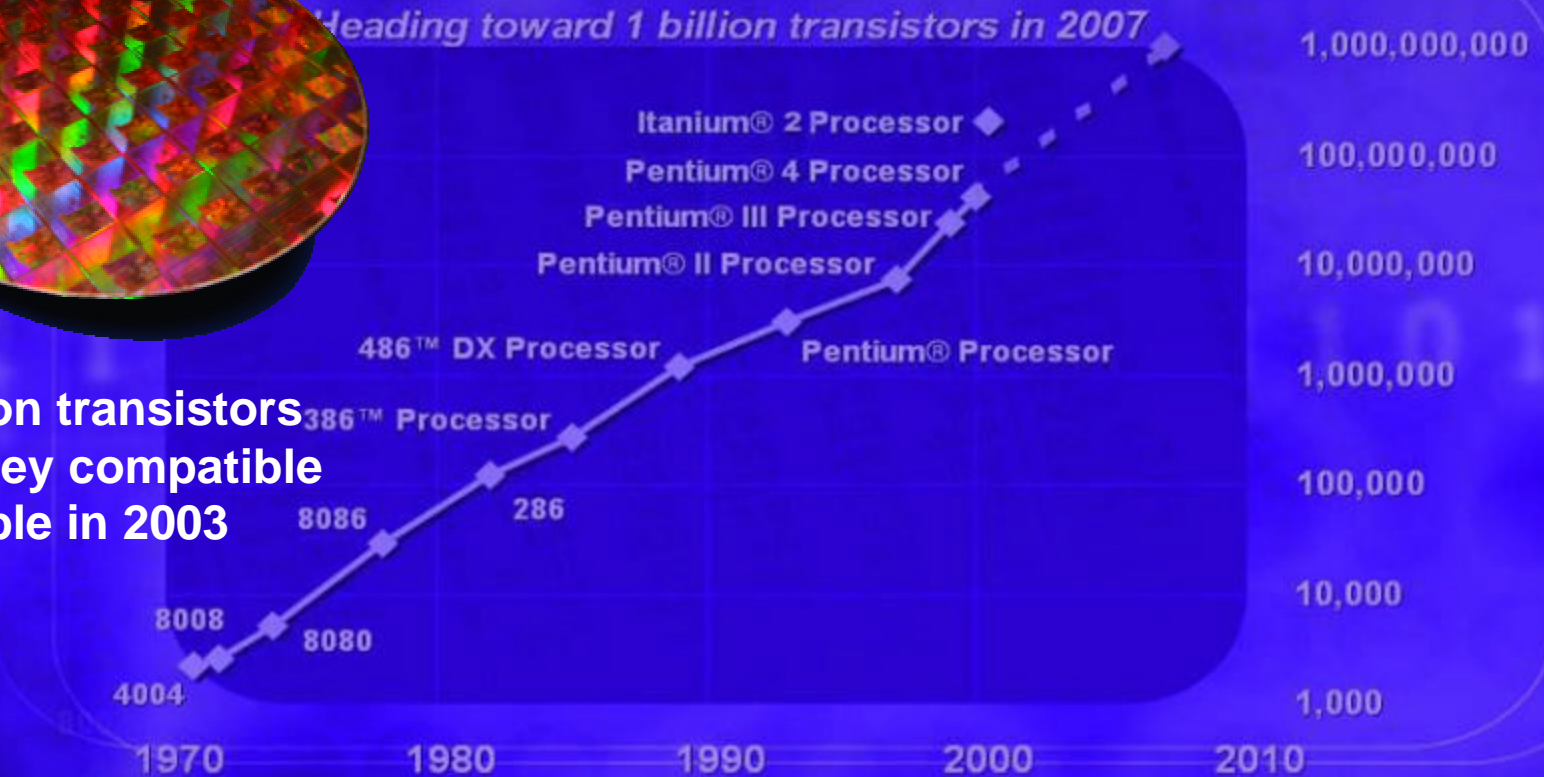
Performance was measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in the system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing.

\*Other names and brands may be claimed as the property of others.

# Madison



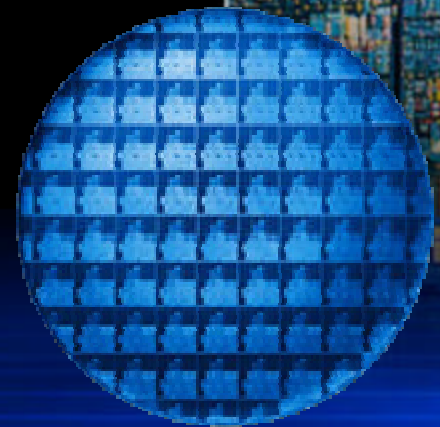
- ½ Billion transistors
- McKinley compatible
- Available in 2003



	<u>Xeon™ Processor</u>	<u>Itanium™ 2 Processor</u>	<u>Madison</u>
Process	0.18μ	.18μ	.13μ
On-die cache	1MB	3MB	6MB
Transistors	110 Million	220 Million	½ Billion

# Summary

- Imperative: Do More with Less
- Standards beget efficiencies
- Leverage our \$10Bn+ Investment







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