



# **zEnterprise – The Ideal Platform For Smarter Computing**

Smarter Computing With zEnterprise

# Smarter Planet Solutions Increase Demands On IT



Between 2000 and 2010 ...

- Servers grew **6x**
- Storage grew **69x**

Virtual machines growing **42% per year**



**32.6M** servers worldwide

- **85%** idle computer capacity
- **15%** of servers run 24/7 without being actively used on a daily basis

**1.2 trillion GB** exist in the digital universe

- **50%** YTY growth
- **25%** of data is unique  
**75%** is a copy



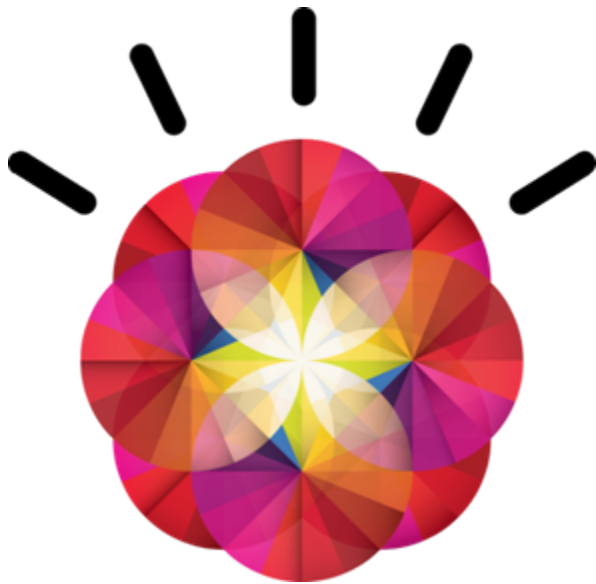
**But IT budgets are growing less than 0.8% per year**

# Resulting Sprawl Drives Unsustainable Costs

**Cost to Manage Growth  
of Inventory Consumes  
IT Budget**



# Smarter Computing...



**Strategies to manage increasing demand for IT services in an environment of flat IT budgets – by achieving breakthrough reductions in cost**

# Smarter Computing...

## Measuring Cost



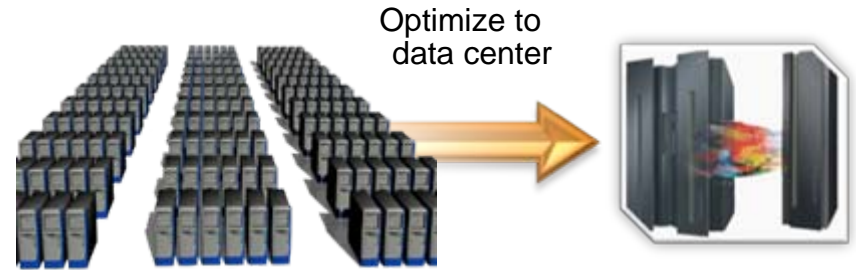
**New metric  
for the age of  
Smarter  
Computing**



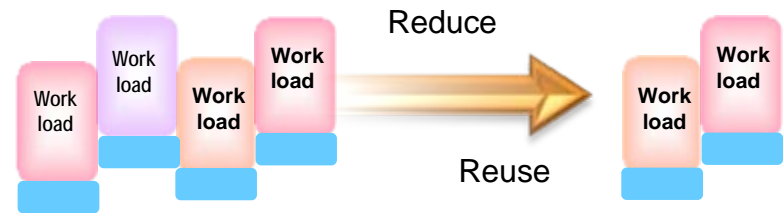
**COST PER  
WORKLOAD**

# Smarter Computing Strategies To Reduce Costs And Improve Value

Consolidate Infrastructure



Eliminate Redundant Software



Improve Service Delivery

Integrated Service Management



Visibility



Control



Automation



Leverage Data to Optimize Business



# The IBM zEnterprise System Is The Ideal Platform For Smarter Computing

- World's first multi-architecture virtualization platform
- Workloads deployed on optimal platforms
- Unified system management
- Broad support for private clouds
- Superior platform for business analytics



**zEnterprise –  
Optimized to deliver the  
lowest cost per workload**

# Consolidate Infrastructure With zEnterprise

## Consolidate Servers

- Server virtualization and consolidation
- Hybrid and standalone workloads
- Best fit to workload

## Consolidate and Optimize Storage

- Storage virtualization and consolidation
- Automated tiering
- Automated data migration
- Policy-based management



### **zEnterprise**

Hybrid workload  
consolidation



### **DS8000**

Virtualized  
storage  
Easy Tier



# Smarter Computing With zEnterprise Delivers Breakthrough Economics

Platforms Optimized For  
Different Workloads



*Best fit for workload*

Consistent Structured  
Management



*Lowest labor costs*

**Lowest Cost Of  
Acquisition Per  
Workload**

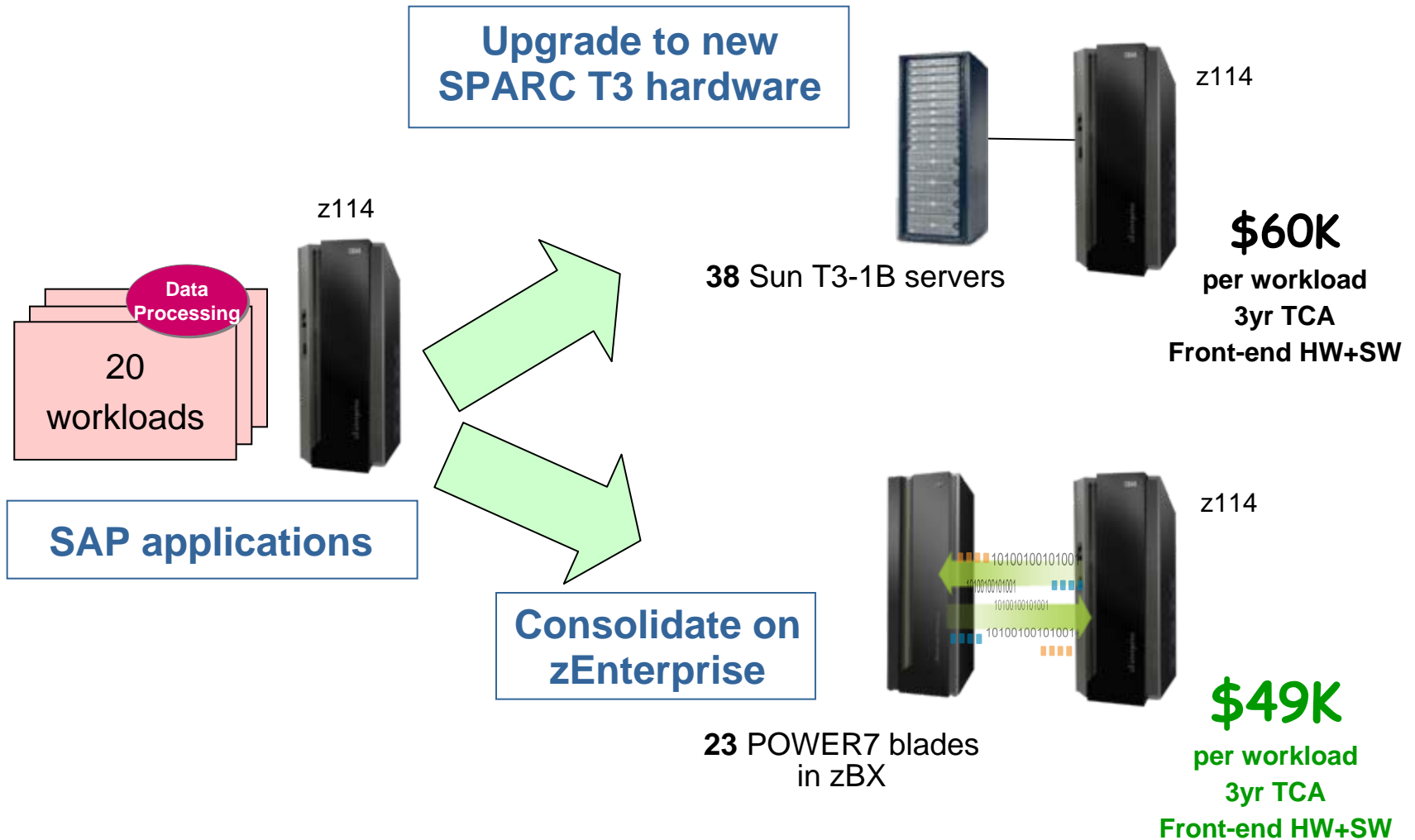
z196



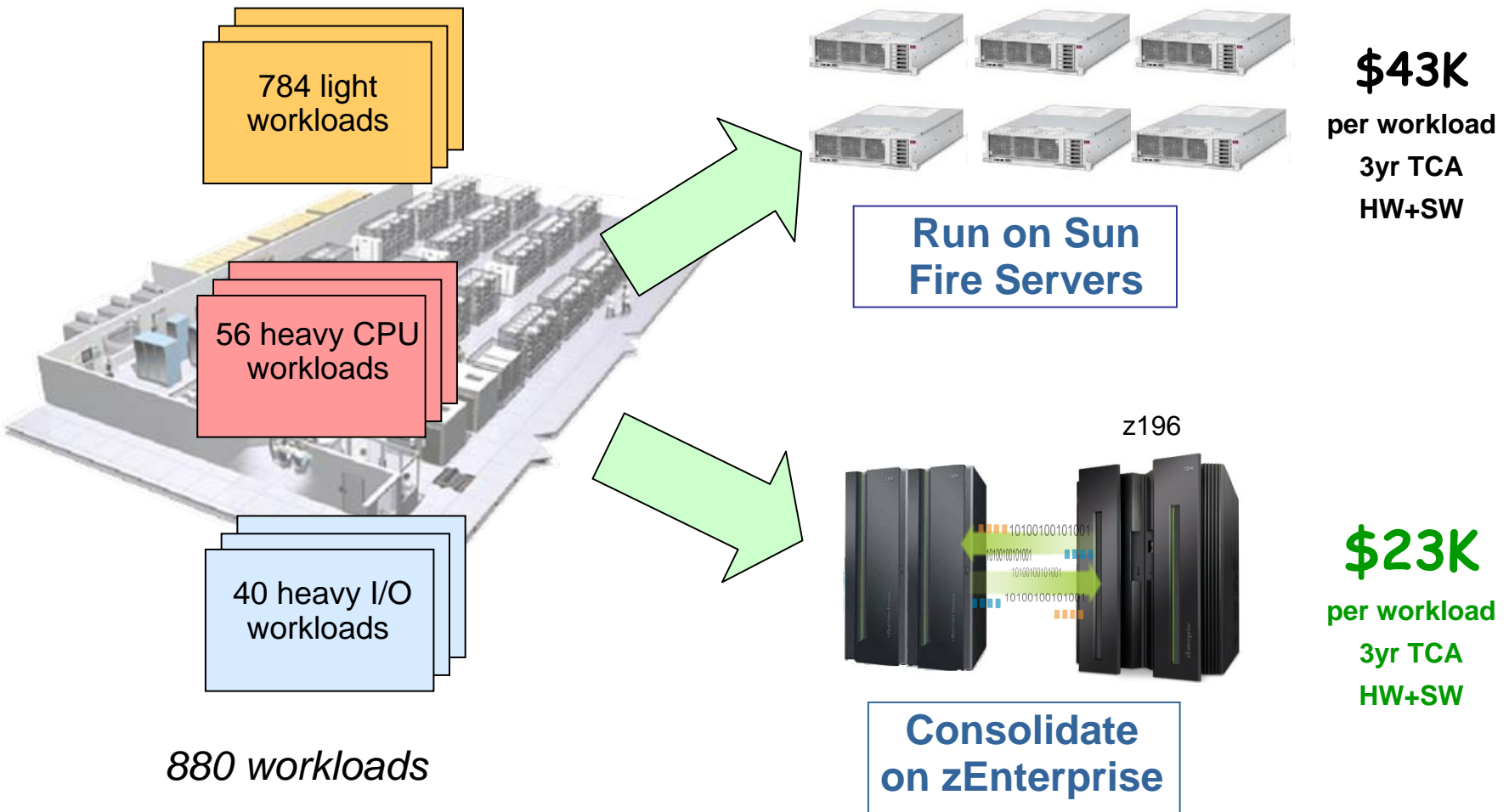
**Lowest Cost Of  
Operation Per  
Workload**

**Lowest Cost Per Workload**

# Consolidate Hybrid SAP Workloads On zEnterprise And Save 18% Over Three Years



# Consolidate Standalone Workloads On zEnterprise And Save 47% Over Three Years



Server configurations are based on consolidation ratios derived from IBM internal studies. Prices are in US currency, prices will vary by country

# Eliminate Redundant Software And Optimize On zEnterprise

## Find and Remove Redundant Assets

- Discover existing assets and map their dependencies
- Consolidate multiple instances of same application systems

## Reuse Services

- Identify componentized software as services
- Categorize and pool services
- Implement a reusable, services-based architecture

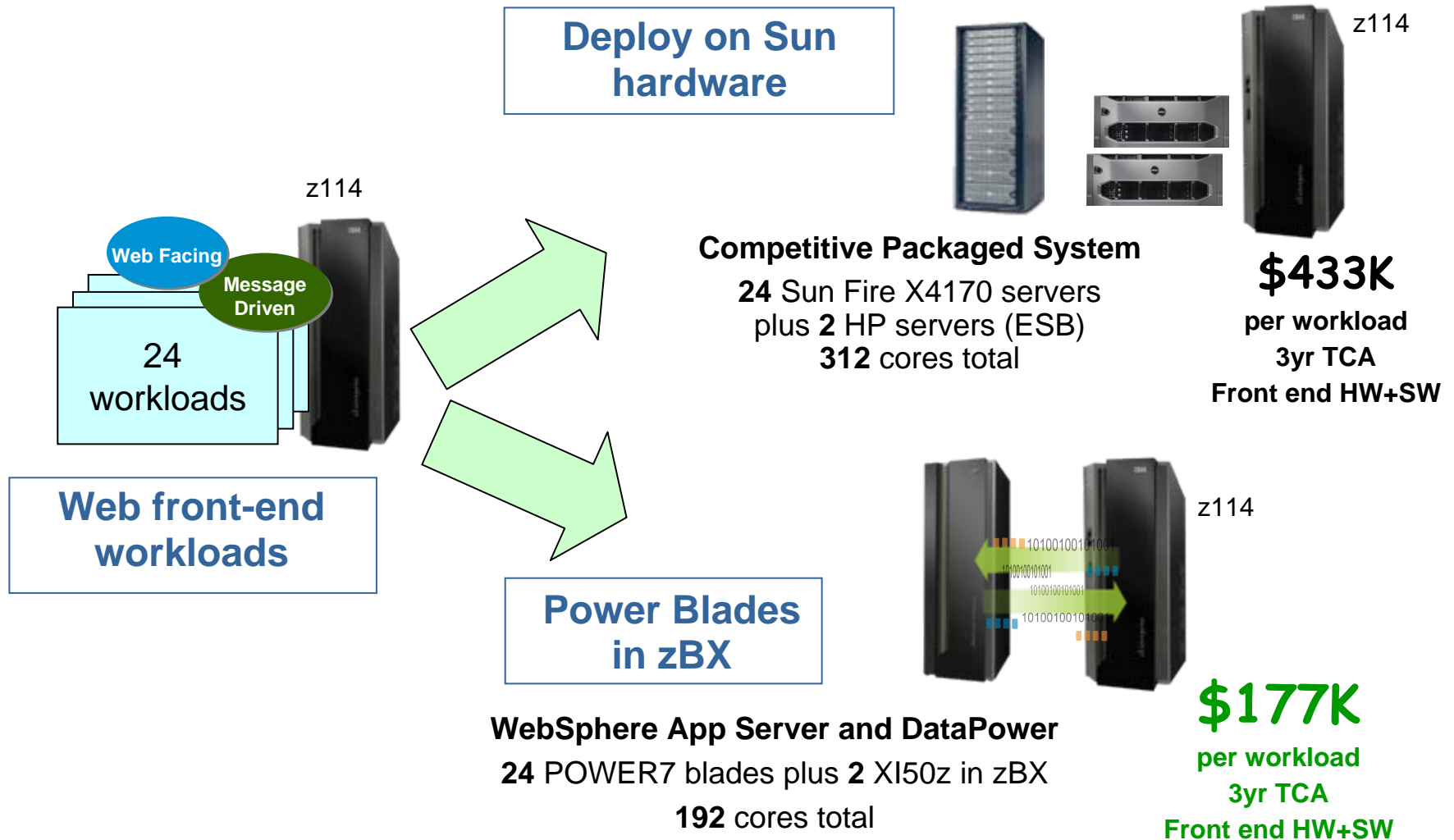
**Tivoli**

**Application  
Dependency  
Discovery  
Manager**



**IBM WebSphere**  
SOA  
Web Services

# Consolidate SOA Workloads On zEnterprise And Save 59% Over Three Years



# Use zEnterprise To Improve Service Delivery And Adopt Cloud Computing

## Transform to Private Cloud Delivery Model

- Self-service automated provisioning and workload scheduling
- Elastic capability to expand
- Pay-as-you-go

## Integrate Service Management

- Visibility, control, automation
- Simplified, Web-based user interaction

## Improve Labor Productivity and Flexibility

- Automatic, dynamic resource reallocation



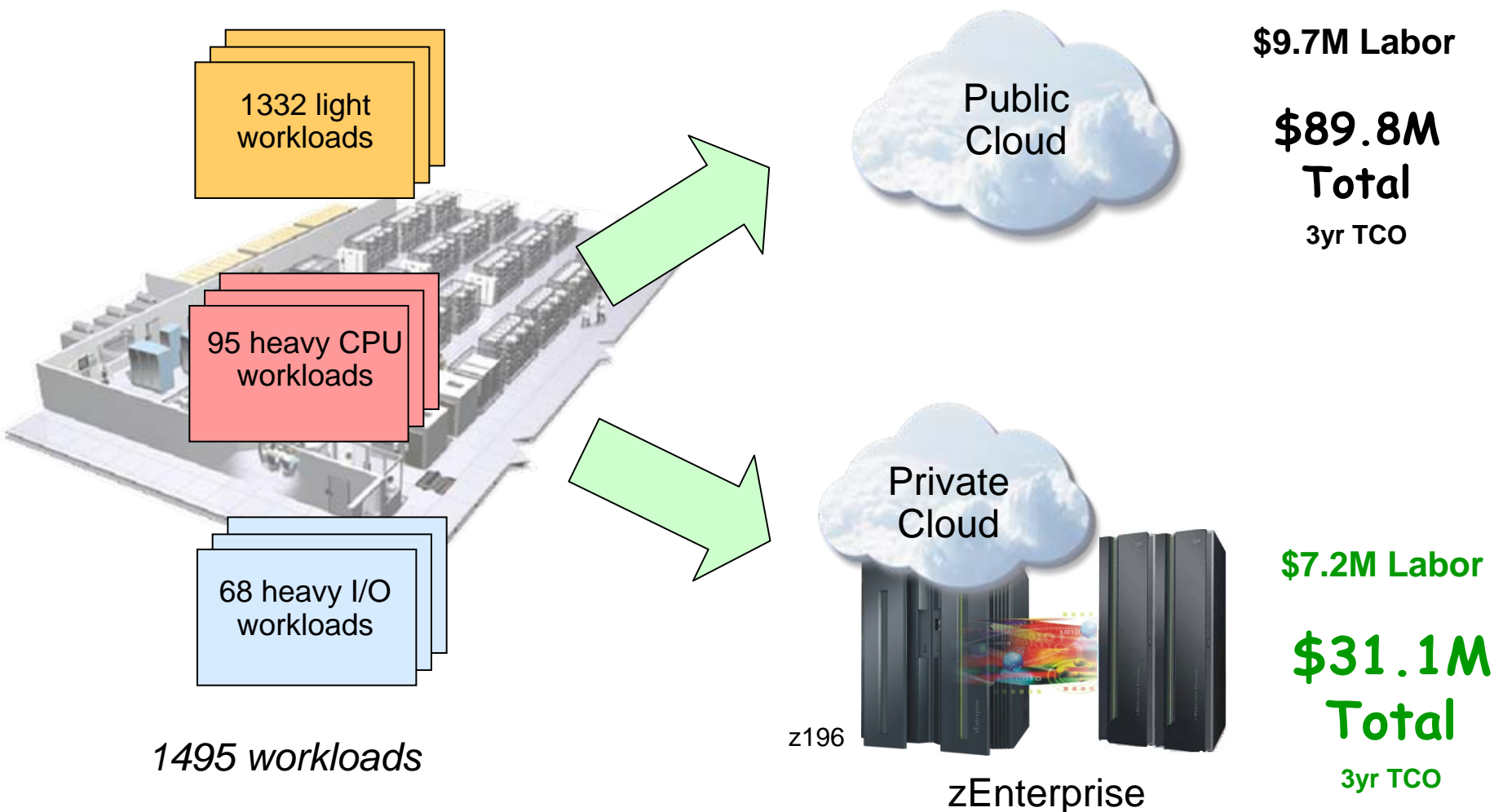
**zEnterprise**  
Unified Resource  
Manager

**Tivoli**

Integrated Service  
Management



# Deploying A Private Cloud On zEnterprise Is 65% Less Expensive



# Use zEnterprise To Leverage Data And Optimize Business

## Reduce Cost of Data Storage

- Reduce database size via data compression
- Avoid duplicating multiple copies

## Extract Greater Value From Data

- Consolidate heterogeneous data sources into a data warehouse
- Apply intelligence and predictive analysis for greater business insight



**Data  
Management**

**Data Warehouse**

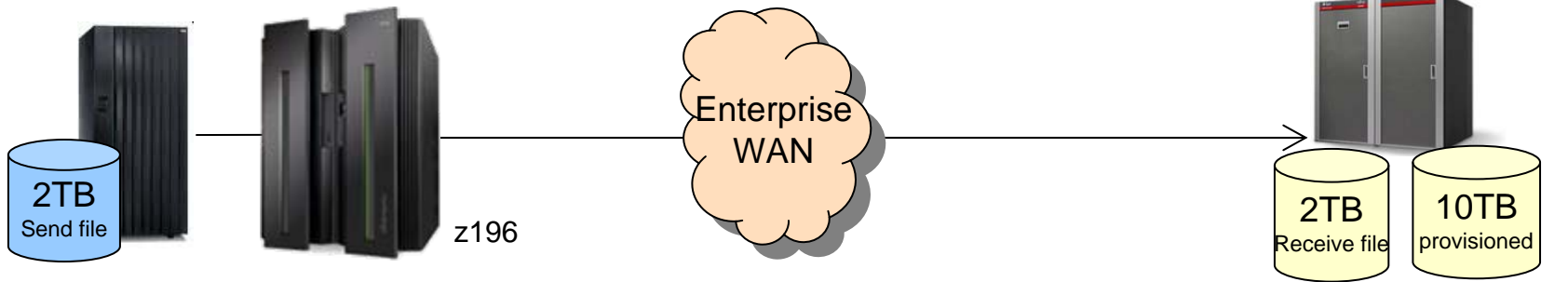
**Cognos  
Business  
Intelligence**

**SPSS**



# Hidden Costs Of Duplicating Data

## The Cost Of Duplicating A 2TB Data Mart



Cost of storage - send file \$12.33/GB x 2048 GB	\$25,252
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Storage acquisition cost  
**\$246,436**

Cost of storage - receive file \$18/GB x 2048 GB	\$36,864
Cost of storage - data mart \$18/GB x 10,240 GB	\$184,320

System z Storage Admin \$5.88/GB/yr x 2048 GB	\$12,042
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Annual storage admin cost  
**\$122,511**

Distributed Storage Admin \$8.99/GB/yr x 12,288 GB	\$110,469
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System z CPU extract \$1.38/GB x 2048 GB x 365	\$1.03M
System z CPU cost FTP \$0.58/GB x 2048 GB x 365	\$434K
System z extract labor \$9.33/job x 365	\$3.3K
System z FTP labor \$5.88/job x 365	\$2.2K

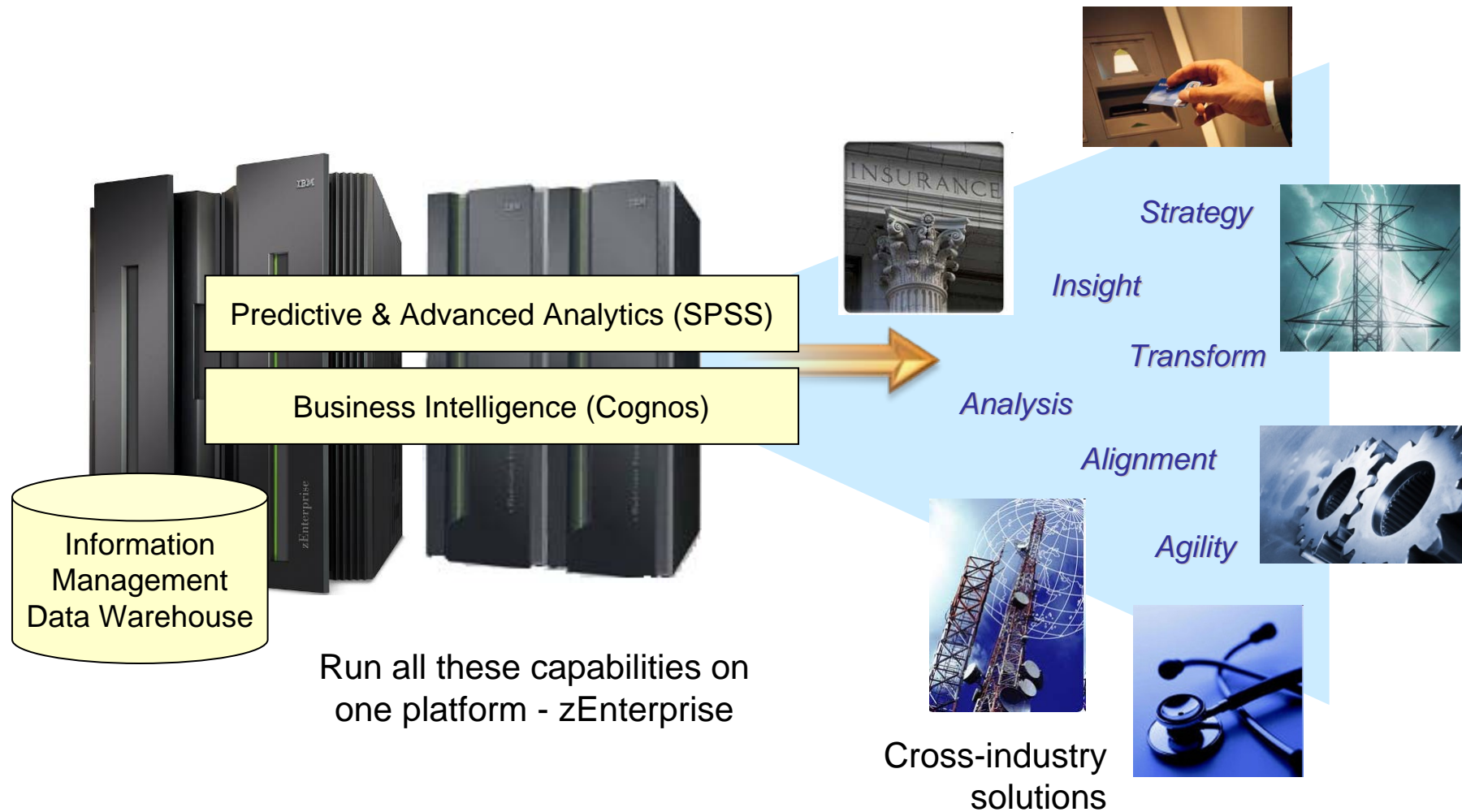
On Premises Network \$0.0024/GB x 2048 GB x 4 hops x 365	\$7.1K
Off Premises Network \$0.29/GB x 2048 GB x 2 hops x 365	\$434K

Annual Transfer Costs  
**\$2,243,290**

Distributed CPU cost load \$0.39/GB x 2048 GB x 365	\$292K
Distributed CPU cost FTP \$0.05/GB x 2048 GB x 365	\$35K
Distributed load labor \$14.00/job x 365	\$5.1K

Data Mart analysis costs not included  
Based on IBM internal study

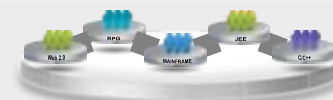
# A Complete Solution For Business And Predictive Analytics On One Platform



# Extend Smarter Computing To Unified Development Teams

## Unified, collaborative work environment

- Break down cultural barriers across teams
- Share common set of development tools and processes across all environments
- Integrated requirements, collaboration, edit/compile/debug, and test support
- Virtualized test systems deployed only as needed to reduce costs



**Rational** software

**Rational  
Requirements  
Manager**

**Rational  
Team  
Concert**

**Rational  
Developer for  
zEnterprise**

**Rational Quality  
Manager**

# IBM IT Transformation = Cost Savings

- Consolidated and virtualized over 3,900 server images onto 30 System z mainframes
- 80% less energy used
- 85% less floor space ... 16,500 sq. ft. reduction
- Cumulative benefit yield of ***\$4.1B over the last 5 yrs***



	1997	Today
Host Data Centers	155	7
Web Hosting Centers	80	5
Network	31	1
Applications	15,000	4,700

# Why Do Customers Continue To Think The Mainframe Is More Expensive?

## Old charge-back practices are outdated and misleading

- Mainframe costs are centralized and easy to track
- Distributed costs are more difficult to track and allocate
- Data centers often lump unrelated costs into the mainframe category

## Result:

- ▶ Mainframe users are charged more than actual cost
- ▶ Distributed users are charged less than actual cost

# Example: Two Commercial Claims Processing Systems

## HP Servers + ISV



Production Servers

HP 9000 Superdome rp4440

HP Integrity rx6600



Dev/Test Servers

HP 9000 Superdome rp5470

HP Integrity rx6600

Claims per year **327,652**

Buy

Which system  
costs less for  
future  
growth?

Calculate  
cost per  
workload

## IBM System z CICS/DB2



Total MIPS 11,302

MIPS used for commercial  
claims processing  
production/dev/test **2,418**

Claims per year **4,056,000**

Build

# Allocated Annual Costs for Two Systems

	Mainframe	Distributed
Hardware	\$1,302,205	\$87,806
Hardware Maintenance	\$315,548	
Software IBM MLC	\$4,842,384	
Software Non IBM OTC	\$647,843	\$196,468
Software Non IBM MLC	\$5,027,936	
Storage	\$877,158	
Network	\$418,755	
Support Staff	\$2,324,623	\$257,289
Platform + Staff Total	\$15,756,452	\$541,563
Platform + Staff Claims Allocation	\$3,371,880	\$541,563
Billing Center	\$1,611,650	
Call Center	\$2,920,090	
Development	\$1,907,382	
Total	\$9,811,002	\$541,563
Claims Processed	4,056,000	327,652
\$ Per Claim	<b>\$2.42</b>	<b>\$1.65</b>

Provided by customer finance department

Mainframe costs easily identified, distributed costs difficult to identify

Billing and call center costs allocated to mainframe, but would be the same for either option

Development still required to customize packaged software for each new contract

**Chargeback says distributed is lower cost**

# True Costs Per Workload

	Mainframe	Distributed
Hardware	\$1,302,205	\$87,806
Hardware Maintenance	\$315,548	
Software IBM MLC	\$4,842,384	
Software Non IBM OTC	\$647,843	\$196,468
Software Non IBM MLC	\$5,027,936	
Storage	\$877,158	?
Network	\$418,755	?
Support Staff	\$2,324,623	\$257,289
Platform + Staff Total	\$15,756,452	\$541,563
Platform + Staff Claims Allocation	\$3,371,880	\$541,563
Billing Center	Same	Same
Call Center	Same	Same
Development	\$1,907,382	\$193,271
Total	\$5,279,262	\$734,834
Claims Processed	4,056,000	327,652
\$ Per Claim	<b>\$1.30</b>	<b>\$2.24</b>

Still can't identify distributed storage and network costs

Billing and call center costs would be the same for either option

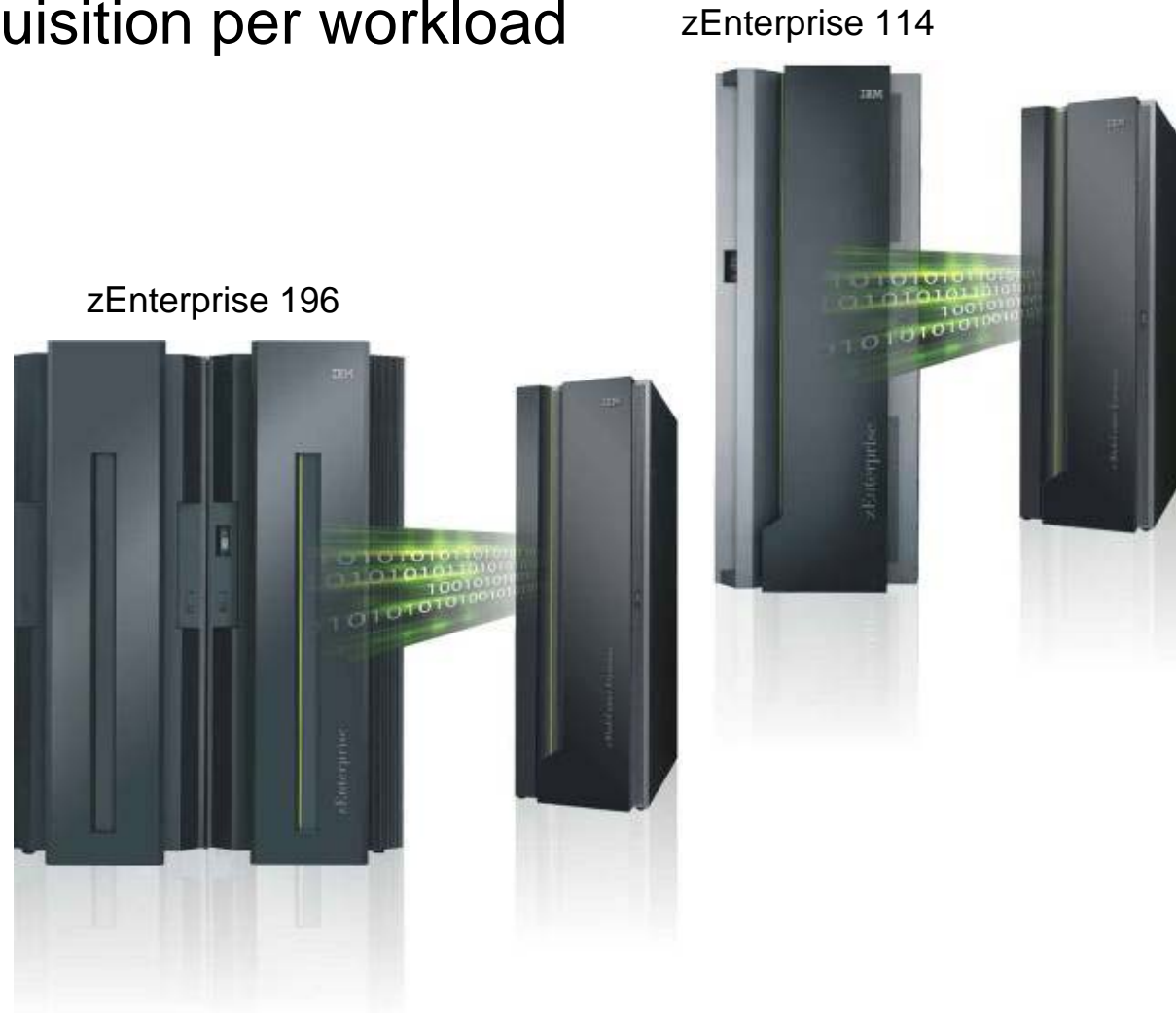
Development cost to customize ISV packaged software for each new contract

**Mainframe actually has lower cost per claim**



# Smarter Computing ... With zEnterprise!

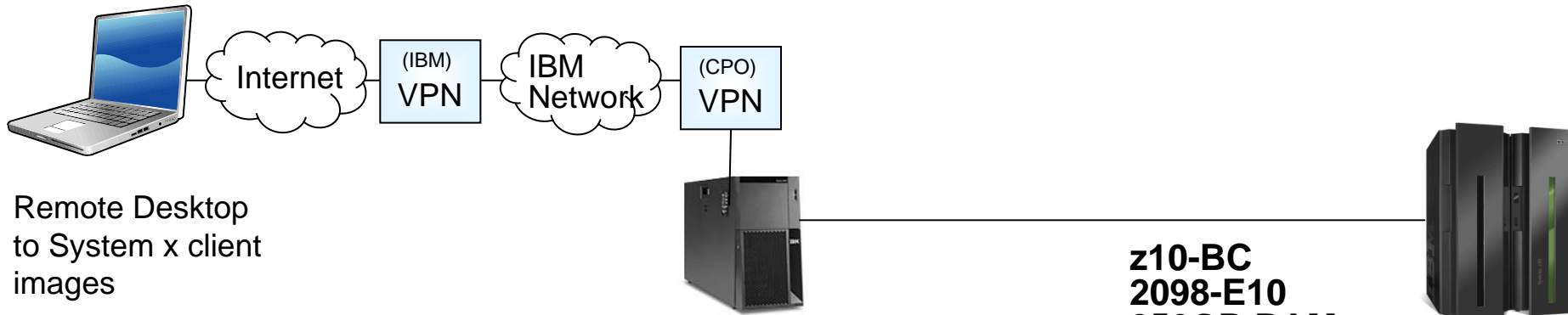
- Lowest cost of acquisition per workload
- Lowest cost of operation per workload
- Lowest cost per workload overall



# Agenda

20 minutes	1 – Smarter Computing With zEnterprise
50 minutes	2 – A Closer Look At The Value Of zEnterprise
20 minutes	<i>Break</i>
50 minutes	3 – Consolidating Server Infrastructure With zEnterprise
35 minutes	4 – The Benefits Of Storage Consolidation
10 minutes	<i>Academic Initiative</i>
60 minutes	<i>Lunch</i>
35 minutes	5 – Eliminating Redundant Software
40 minutes	6 – Improving Service Delivery With Private Cloud Computing
20 minutes	<i>Break</i>
40 minutes	7 – Leveraging Data To Optimize Business
40 minutes	8 – Developing Hybrid Applications For zEnterprise

# DEMO: Architecture



**System x 3950**  
**8 x 3.5GHz Xeon MP**  
**64GB RAM**

System x VMware images running as desktop or server clients to System z



**z10-BC**  
**2098-E10**  
**256GB RAM**

