

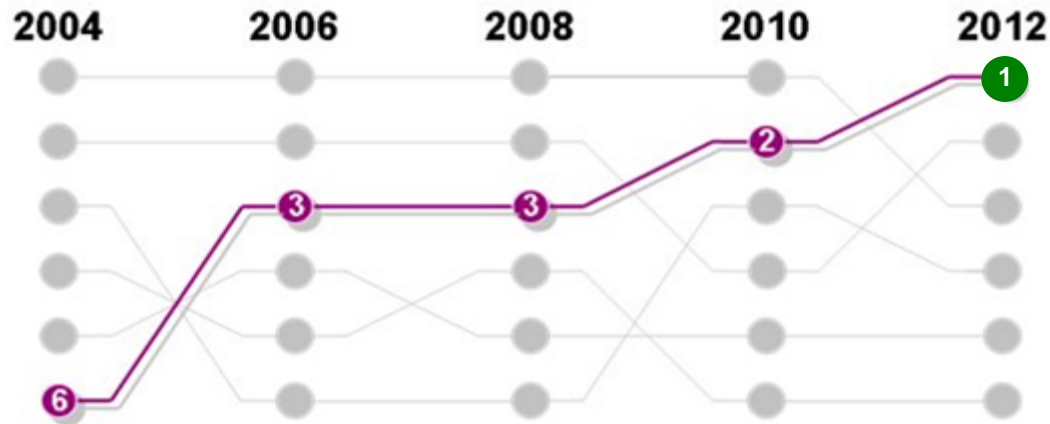
IBM.

Smarter Computing: What's Next. Ready Now.

The IT infrastructure that enables a Smarter Planet



CEOs Believe Technology Will Be At The Forefront Of Driving Change Through 2015



Factors impacting organizations:

1. Technology factors
2. People skills
3. Market factors
4. Macro-economic factors
5. Regulatory concerns
6. Globalization

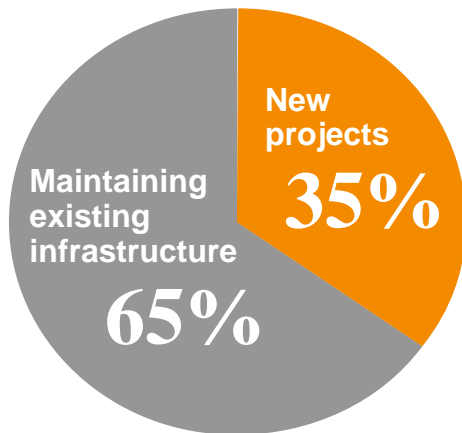
Source: IBM CEO Study 2012

“71% of CEOs identify technology change as the most important external force impacting their organizations”*

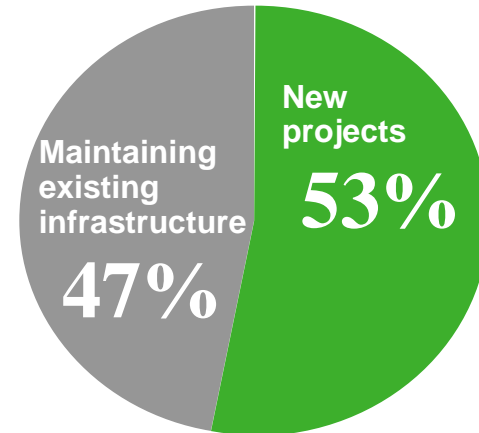
* IBM, *Leading Through Connections: Insights from the Global Chief Executive Officer Study*, May 2012.

Yet Only 1 in 5 CIOs Can Allocate More Than Half Their IT Budget to Innovation

Less Efficient IT Organizations



Most Efficient IT Organizations



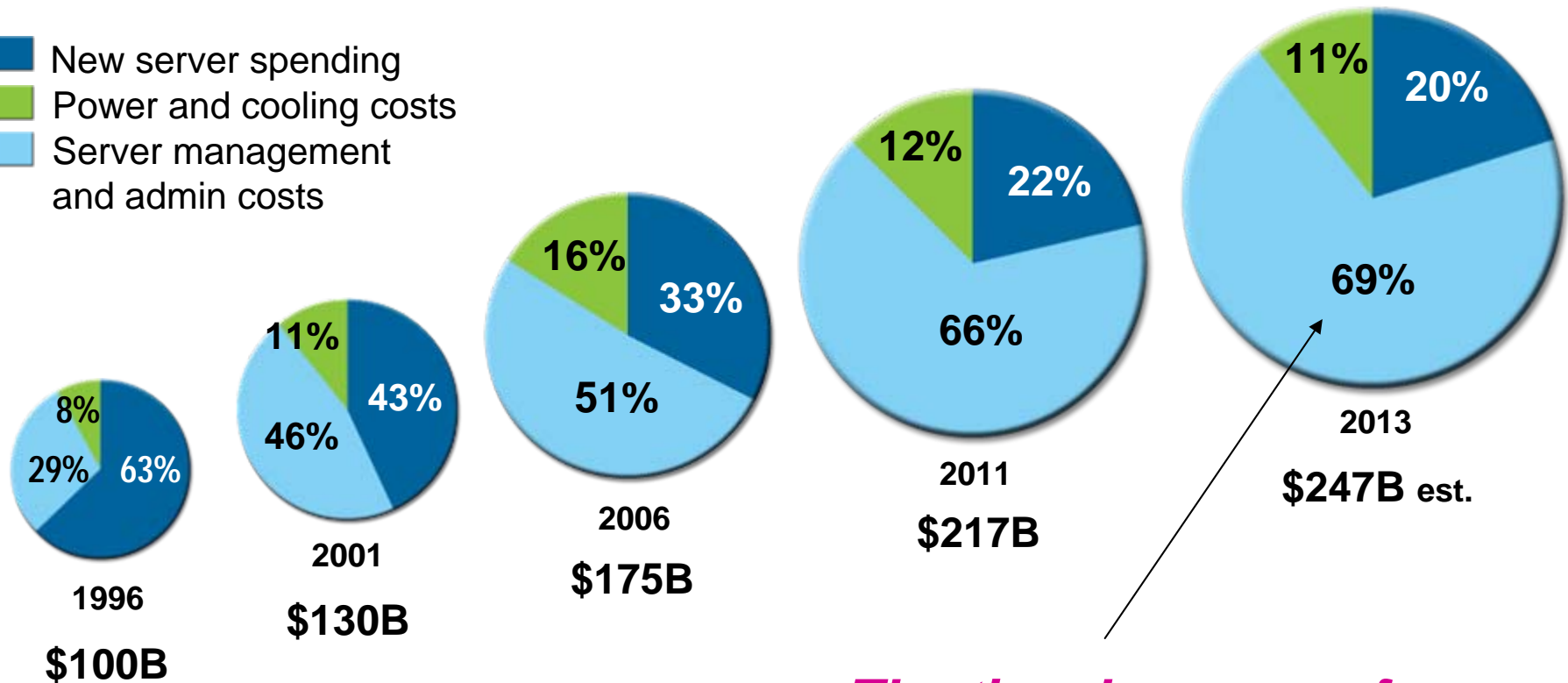
IBM study, *Data center operational efficiency best practices*, April 2012.

Various challenges drive up IT costs ...

Rising Operating Costs

Worldwide IT Spending on Servers, Power, Cooling and Management Administration

- New server spending
- Power and cooling costs
- Server management and admin costs

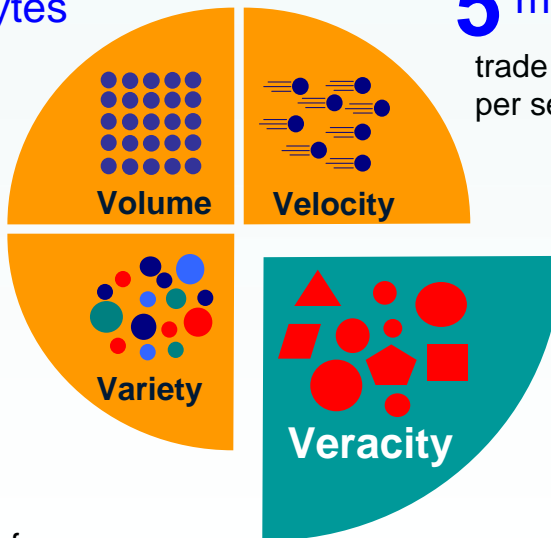


The time has come for a new approach

Big Data Presents Cost Challenges

12 terabytes
of Tweets
created daily

5 million
trade events
per second



100's
Of video feeds from
surveillance cameras

Connected devices will surge to **22** billion by 2020*, with digital content rocketing to **8 zettabytes** by 2015 (**90%** unstructured)*

Find actionable insight hidden in a sea of data

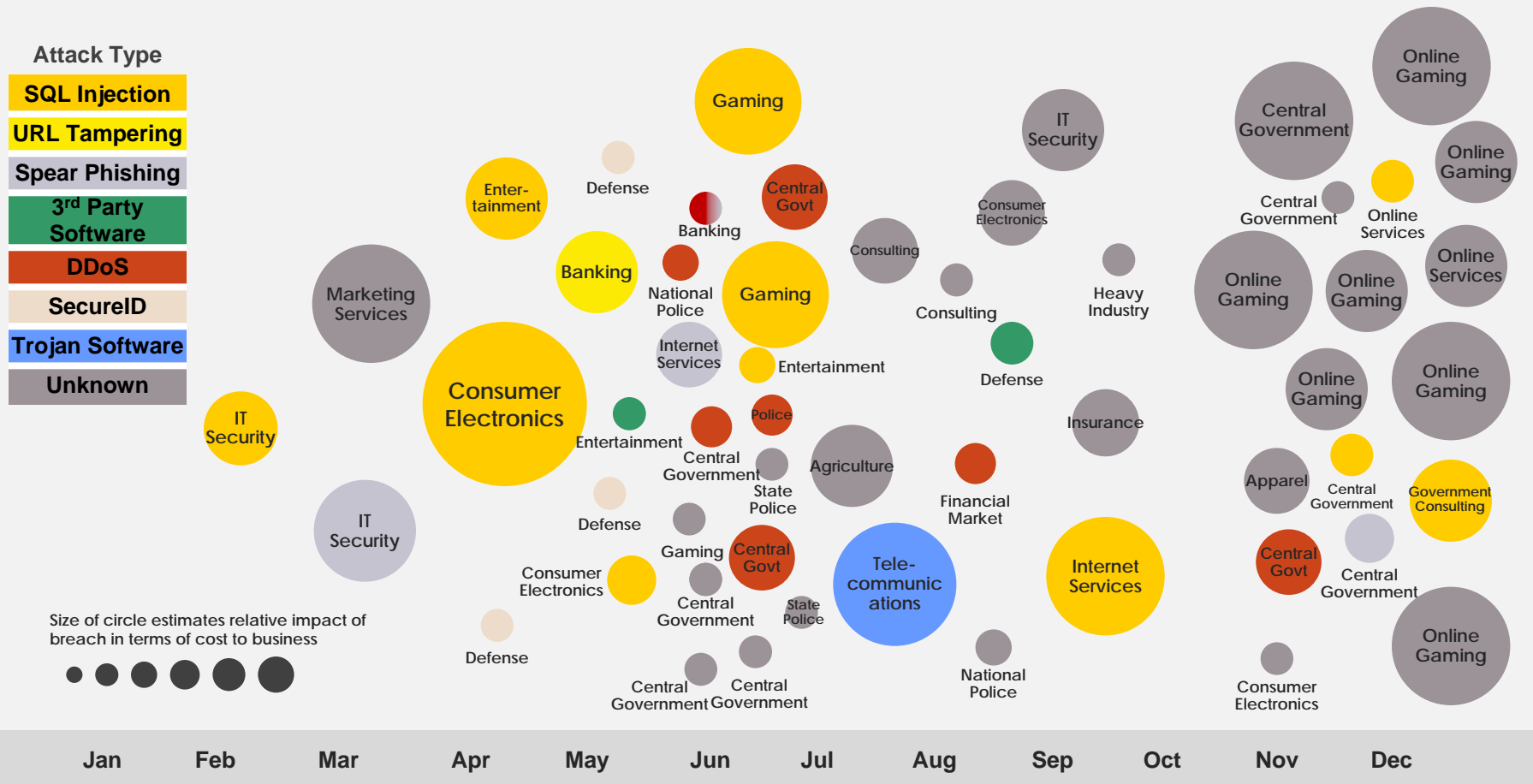
*Source: Forrester, BT 2020: To Thrive In The Empowered Era, You'll Need Software, Software Everywhere, January 2012

*Source: IDC Predictions 2012: Competing for 2020

Frequent Security Breaches Drive Up Costs

2011 Sampling of Security Incidents by Attack Type, Time and Impact

conjecture of relative breach impact is based on publicly disclosed information regarding leaked records and financial losses



Source: IBM X-Force® Research 2011 Trend and Risk Report

Meeting These Challenges

Smarter Computing:
What's Next. Ready Now.



Cloud Ready



Data Ready



Security Ready

***IT infrastructure to deliver
breakthrough economics and value***

Smarter Computing: IT Infrastructure To Deliver Breakthrough Economics And Value



A **Cloud Ready** infrastructure



**Speeds Time to Market,
Improves Efficiency**



A **Data Ready** infrastructure



**Delivers More
Actionable Insight**



A **Security Ready** infrastructure



**Helps Comply, Reduce
Risk and Protect**

IBM Provides A Complete Range Of Systems To Support Smarter Computing Strategies

PureSystems



Expert Integrated Systems

- *Built-in Expertise*
- *Integrated by Design*
- *Simplified Experience*

Enterprise Systems

Critical Application Systems

- *Security of Data*
- *Infrastructure Efficiency*
- *Information Delivery*

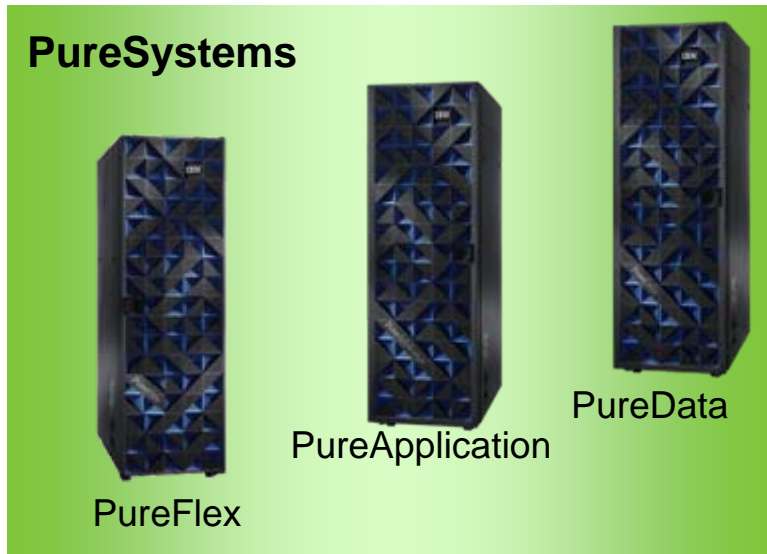


Smarter Storage

- *Efficient by Design*
- *Self-optimizing*
- *Cloud Agile*

Together they form the most comprehensive portfolio of IT infrastructure to deliver breakthrough economics and value

Smarter Computing With PureSystems

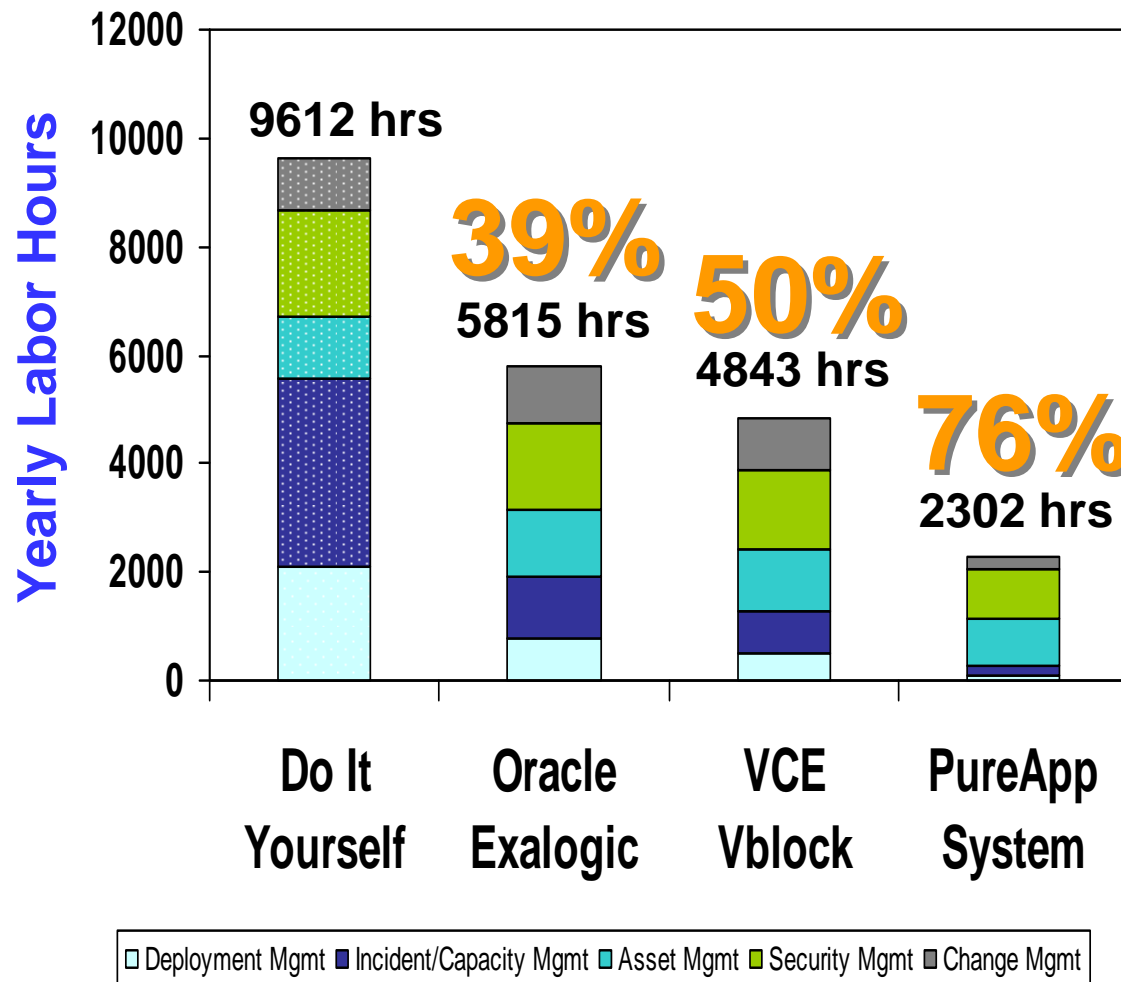


PureSystems

- Expert integrated systems
- Simplify and speedup delivery of blade workloads
- Significantly reduce operations costs
- PureApplication: Cloud ready infrastructure
- PureData: Data ready infrastructure

Cloud Ready: PureApplication System Lowers Operations Costs

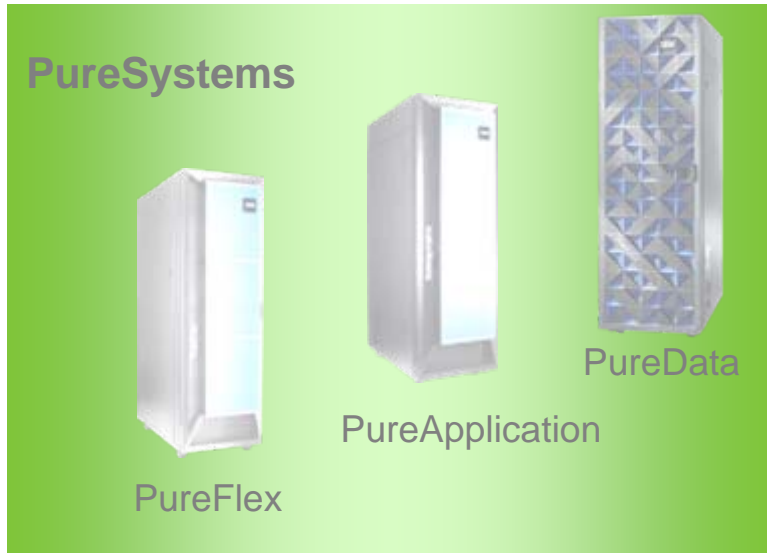
Case Study With 72 Workloads On 9 Blades



PureApplication Contributors to Labor Savings

- **Deployment**
 - ▶ Fully assembled and configured
 - ▶ Pre-installed management software
 - ▶ Fast pattern-based deployment
- **Incident/capacity**
 - ▶ Centrally monitor and resolve issues with automatic scaling
- **Asset**
 - ▶ Track license usage of products
- **Security**
 - ▶ Centralized access control
- **Change**
 - ▶ Visibility into relationships of virtual images in a workload
 - ▶ Automatically apply changes to desired virtual servers

Smarter Computing With Power Enterprise Systems



Power 770/780/795

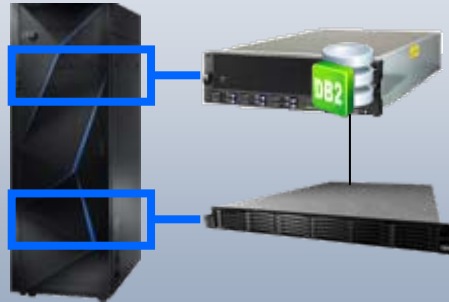
- More processing resource to efficiently support larger workloads
- Capacity to deliver up to 1024 threads
- IBM Software optimizations for Power deliver better price/performance

Data Ready: POWER7+ With DB2 And IBM Storage

Brokerage Database Workload Maximum Throughput

Brokerage Workload Maximum Throughput

IBM DB2 Advanced Enterprise Server Edition v10



IBM Power 780+

2S x 8c = **16 cores**
AIX 7.1, 64-bit

EXP30 SSD Drawer
387GB SSDs

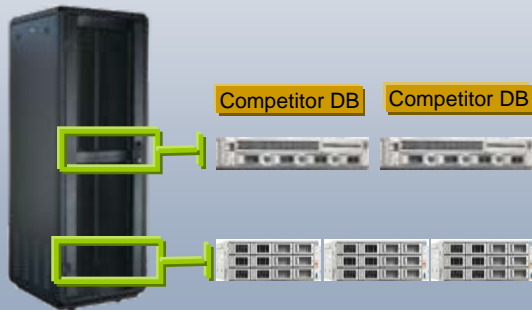
3.4x Better

Price/Performance

8,111 Transactions/sec

\$285 per Trans/sec

Pre-integrated Database Competitor



Competitor Linux-¼ Rack
2 Data Nodes
(2s x 8c = **16 cores**)

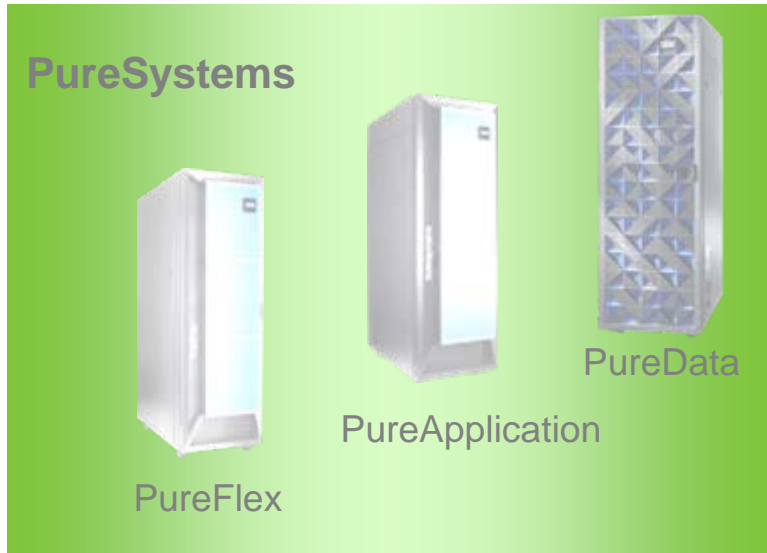
3 Storage Nodes
(3s x 8c = **24 cores**)

2,363 Transactions/sec

\$959 per Trans/sec

This is an IBM internal study designed to replicate a typical IBM customer workload usage in the marketplace. The results were obtained under laboratory conditions, and not in an actual customer environment. IBM's internal workload studies are not benchmark applications, nor are they based on any benchmark standard. As such, customer applications, differences in the stack deployed, and other systems variations or testing conditions may produce different results and may vary based on actual configuration, applications, specific queries and other variables in a production environment.

Smarter Computing With System z



System z

- Optimized for workloads requiring highest I/O operations, scale, and reliability
- Unique I/O subsystem delivers highest I/O operations per second
- IDAA Optimized accelerator for analytics

Data Ready: Unlock Value Of Data On System z

Daily Analytic Report Workload

Standalone Pre-integrated Competitor V3

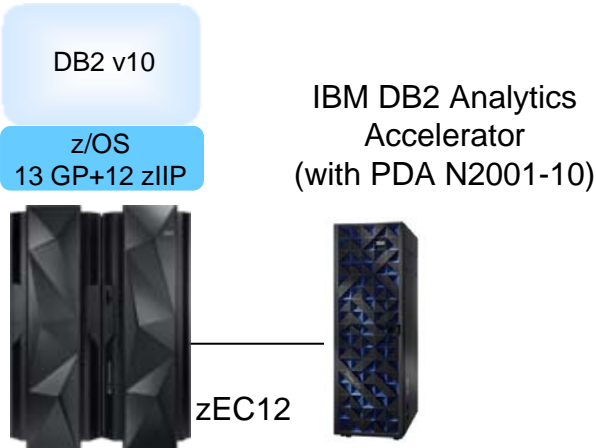
Quarter Unit



Unit Cost
\$51/Reports per Hour

Workload Time	141 mins
Reports per Hour	68,581
Total Cost (3 yr. TCA) (HW+SW+Storage)	\$3,530,041

IBM zEnterprise Analytics System 9700



Unit Cost
\$17/Reports per Hour

Workload Time	25 mins
Reports per Hour	386,798
Total Cost (3 yr. TCA) (13 GP + 12 zIIP, HW+SW+ Storage + Accelerator V3.1 with PDA N2001-10 hardware)	\$6,464,849

3x price performance!

Source: Customer Study on 1TB BIDAY data running 161,166 concurrent reports. Intermediate and complex reports automatically redirected to IBM DB2 Analytics Accelerator for z/OS. Results may vary based on customer workload profiles/characteristics. Note: Indicative 9700 pricing only internal to IBM, quotes to customer require a formal pricing request with configurations.

IBM Smarter Storage Optimizes Capacity And Lowers Storage Costs



Achieve utilizations close to, or exceeding 100%
Compress data up to 80%
Unify storage services across environment
Simplify storage management



Performance up to 11.5x faster
No administrator intervention
No application changes
Easy Tier a quick fix for application performance



Automated storage tiering lowers costs
Business policy aligns storage to business need
Save up to **30%** on storage costs/TB

Security Ready: IBM Provides A Comprehensive Framework That Covers All Aspects Of Security



Smarter Computing - IT Infrastructure That Enables A Smarter Planet

- Improve service delivery with a **Cloud**
 - ▶ Lower operations cost, faster time to market
- Derive more value from **Data**
 - ▶ More actionable insights
- Ensure **Security** of critical information
 - ▶ Reduction in risk and impact to business

Deliver breakthrough economics and value