

z Systems – The Lowest Cost Platform

Using IT Economics (TCO) to prove that z Systems is in fact the lowest cost platform, with the highest QoS!

David F. Anderson PE dfa@us.ibm.com

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Christopher T. von Koschembahr vonkosch@us.ibm.com

IBM EagleTeam - IT Economics Practice

IBM Eagle Team – IT Economics Practice
IT.Economics@us.ibm.com



IT Economics... What is it?

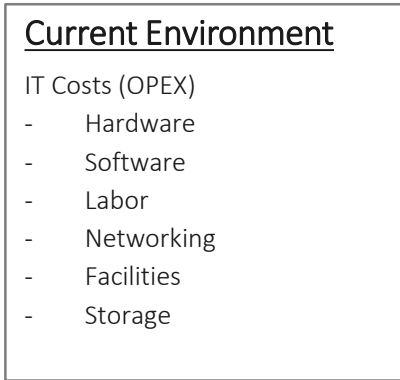
- IT Economics is the **financial assessment** of **IT operations**
 - IT expenses by platform
 - IT expenses by lines of business
 - CAPEX....OPEX
 - Total annual IT spend
- Different methodologies are used to calculate IT spend
- How do you calculate your true IT spend?



IT Economics - Methodology

Examine and **compare alternatives** to determine the most cost-effective solution

TODAY



FUTURE CHOICES

Alternative 1

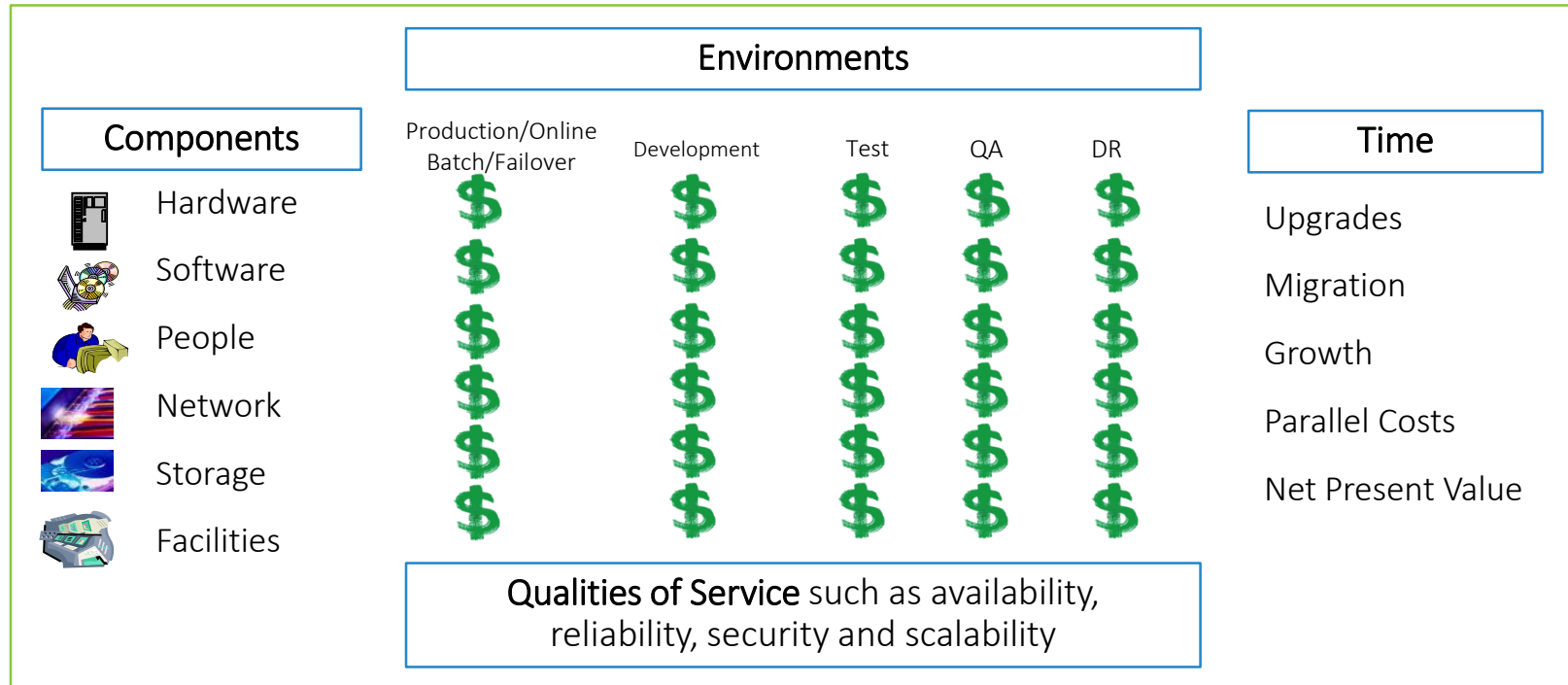
- IT Costs (OPEX)
- Hardware
 - Software
 - Labor
 - Networking
 - Facilities
 - Storage

Alternative 2

- IT Costs (OPEX)
- Hardware
 - Software
 - Labor
 - Networking
 - Facilities
 - Storage

Four Dimensions of TCO

Understand the **Complete** picture



Learn more about true technology costs in IBM Systems Magazine article, "[True Economics](#)"

What Workloads Consolidate Well to Linux on z Systems?

1. Easy Migration

- Native Linux Applications
- Portable Middleware (Oracle, DB2, WebSphere, WebLogic) even on Windows

2. Low Average (Not Peak) CPU Utilization on Intel

- Development and Test Machines
- I/O Intensive Applications (Oracle and DB2 Database)
- Mixed workload environment (Application and Database)
- Weblogic and WebSphere

3. Software priced per core

- 50:1 core consolidation ratio means 50 times fewer software licenses

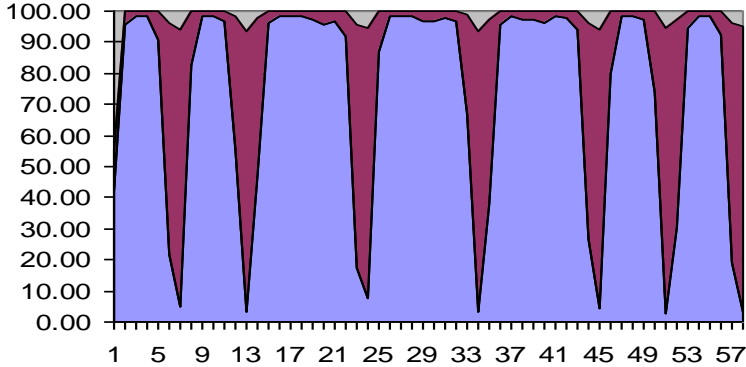
Why does consolidation to Linux on z Systems **reduce cores**?

- Better workload management
- Better total utilization due to reduced peak to average ratio
- Reduced communication layers (fewer cycles for TCP/IP)
- System Assist Processors (SAP) for I/O
- Better caching infrastructure
- Better availability characteristics so additional cores not required
- Capacity Backup Units (CBU) for Disaster Recovery
- Fewer Virtual Servers required (scale up instead of scale out)
- All resources shared (cores, memory, I/O)

z/VM Enables Mixing Of High And Low Priority Workloads

....Without Penalty

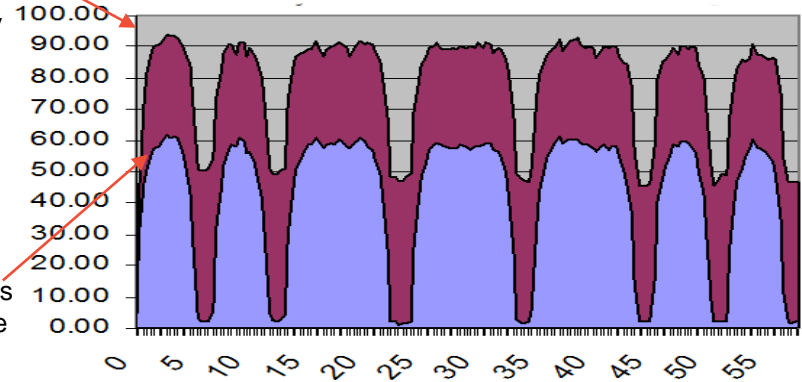
z Systems



Too much resource given to Low Priority workload

High Priority workload gets less resource than needed

Leading Intel Hypervisor



- Perfect workload management
- Consolidate workloads of different priorities on the same platform
- Full use of available processing resource (high utilization)

- Imperfect workload management
- Forces workloads to be segregated on different servers
- More servers are required (low utilization)

Government Agency chooses z Systems for anticipated growth

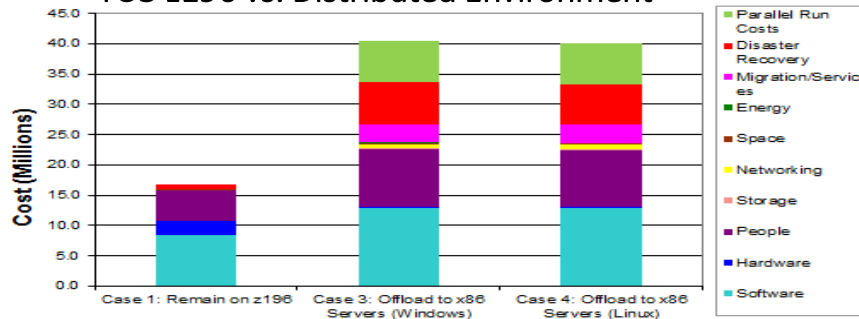
Client Situation

Forecasted growth for a government agency required additional mainframe capacity. The agency needed to upgrade its z196 or replace its mainframe with an x86 based solution.

Solution

- Run workloads on z13 for anticipated growth and greatest savings
- Mainframe environment found to be less expensive than x86 based platform
 - IBM z/OS TCO **\$22M** lower over 5 years
 - Disaster recovery would double hardware, software, electricity, space in x86 environment.

TCO z196 vs. Distributed Environment

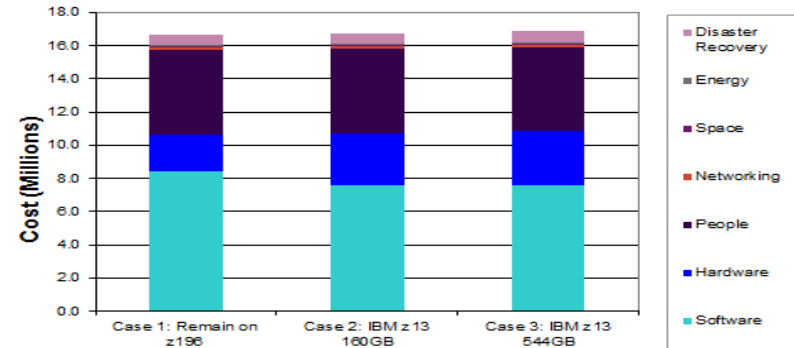


Benefit of z13

z13 provides **greater capacity** for **almost same cost** as z196

- **38%** more performance per processor
- **72%** performance improvement of zIIP
- Reduced Maintenance
- Reduced Software MLC and IPLA

TCO of z196 vs.z13s



Positive business case for Linux on z Systems with only 21 Oracle servers

Client Situation

- IT department of U.S. Federal government agency running primarily Oracle applications in a distributed environment was curious if moving to Linux on z Systems would help reduce IT costs.
- The agency provided only a small portion of their environment (21 Intel servers) running Oracle EE DB on Red Hat for the initial analysis.

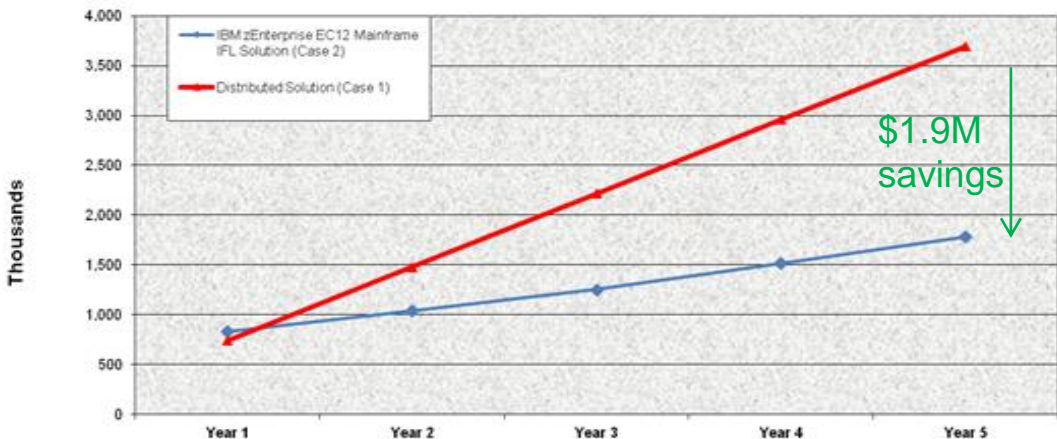
Solution

- Use Linux on z Systems for greatest savings
- z Systems solution estimated at 4 IFLs for current usage requirements
- ...and 2 IFLs for anticipated growth
- x86 solution w/o growth capacity, has higher TCO

Benefit

- Savings of **\$1.9M** over 5 years
- Largest savings contributors are
 - SW (\$1.5M) and
 - Labor (\$0.25M)
- Payback within 1 yr including CAPEX investment

5 Year Accumulated TCO Cost Comparison



\$1.9M savings over 5 yrs for workloads running on 21 Intel servers w/ 64 Oracle licensesthe Agency had >3000 total distributed servers

Healthcare Company finds z Systems has Security and TCO advantages over x86 for anticipated growth

Client Situation

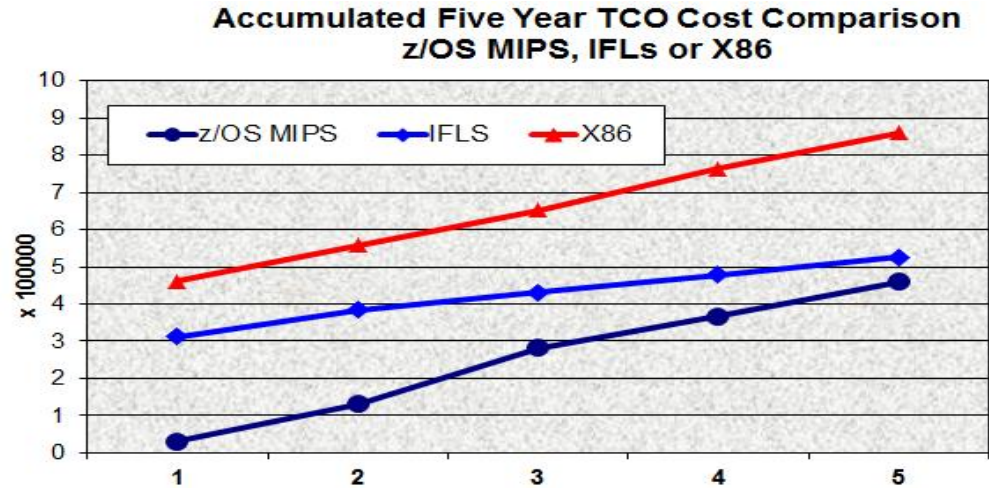
A U.S. Healthcare Company running MQ asked to analyze start up and operating costs of a new workload in a highly secure environment to protect sensitive customer data. MQ messages in the new application were projected to increase from 10M a day to 500M a day over five years.

Solution

- Use either z Systems scenario to minimize TCO by **50%**
- x86 start up and annual run costs are higher than either mainframe scenario

Benefit

- Security solutions on mainframe exploit controls in SW, hypervisor and HW
- Use of mainframe HiperSockets provides secure and fast virtual network



Scenarios Considered

- z/OS Security Server on two existing mainframes configured for high availability
- z/VM with RACF and z/VM tools for Linux on z Systems with two new IFLs on each existing mainframe
- Four 64 core x86 servers for workload and two servers for DR, and security SW

“We need to be on the Internet”

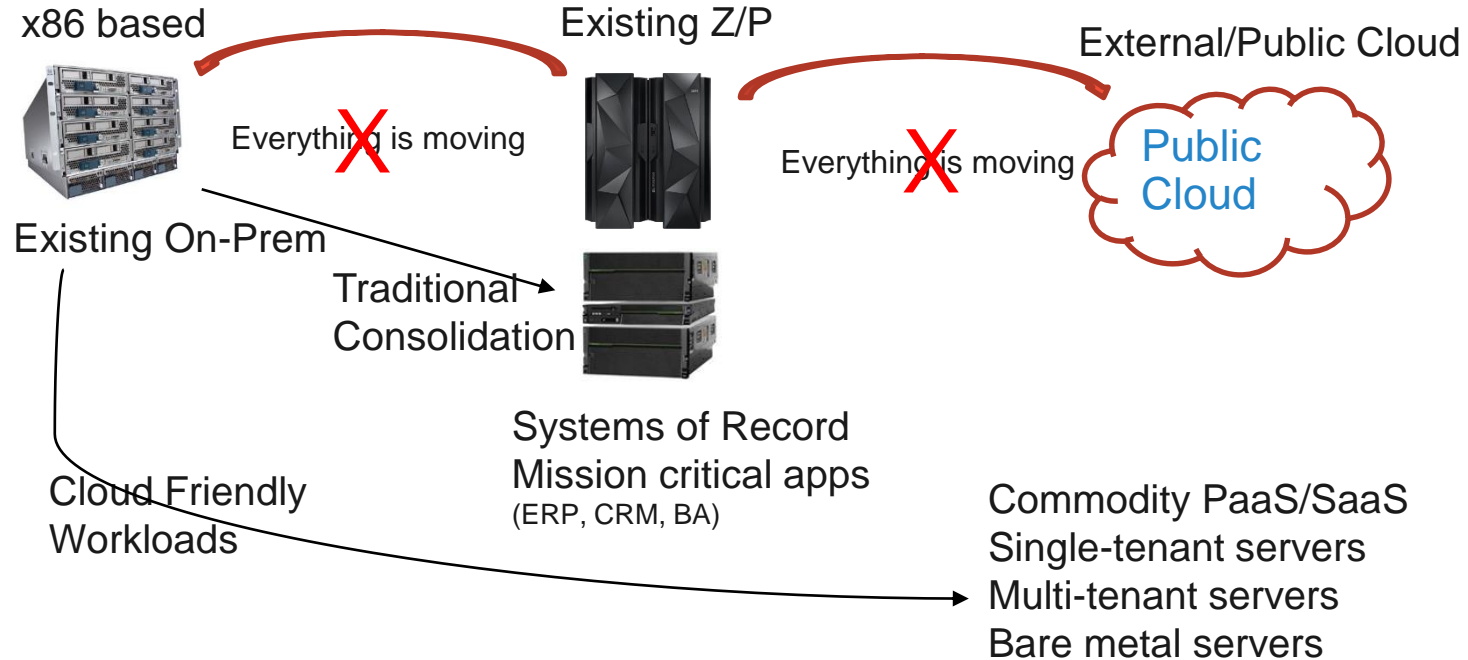
Video

“Benefits of Cloud”

- Elastic Scaling
 - Provision additional servers on demand
Rapid Elasticity with z/VM and On/Off Capacity on Demand
- Faster Time to Value
 - Self Service purchase and provisioning of cloud resources in minutes
Self Service Implemented on Private Cloud via IBM Cloud Orchestrator
- Resiliency and Resource Policy
 - Cloud providers monitor and manage cloud instances
 - Multiple availability zones enable easy DR
Built in RAS, Dynamic LPARS, Parallel Sysplex, CBU Capability, Linux Instances
- Measures Services for Lower TCO
 - Low instance costs on Public Cloud
Private Cloud on IBM z Systems provides a lower TCO and better QoS

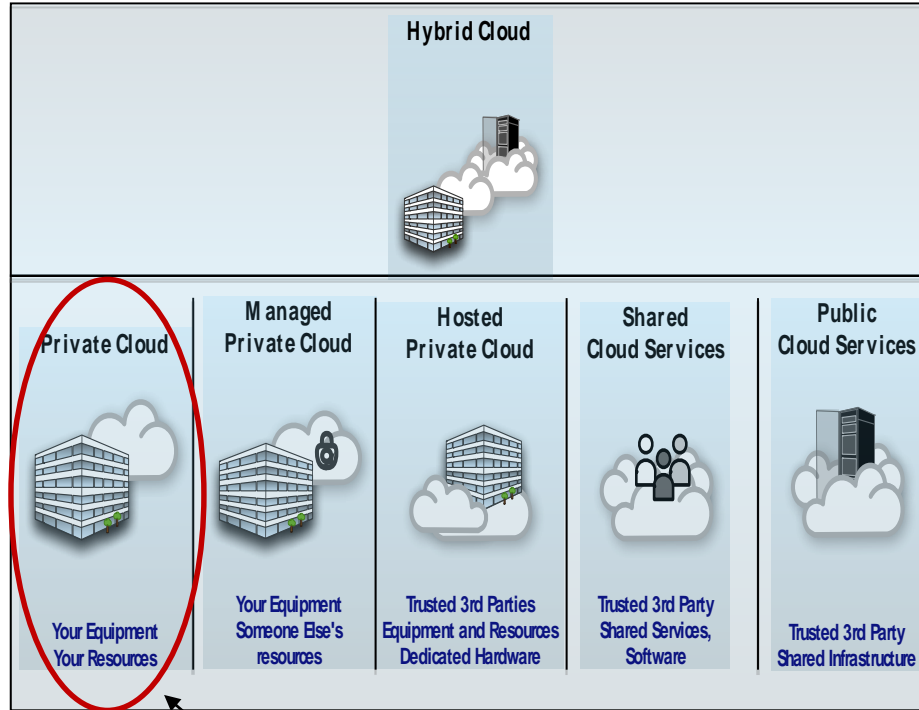
IBM z Systems have these features already built-in

Here we go again...



- A well run Private Cloud on higher end Z and Power almost always provides a lower TCO.
- Consider Public Cloud only after exploring Private Cloud options.

Lets Define Cloud!



Cloud models defined by

- SLA ownership*
- On-prem vs. Hosted
- Tenancy

* - Public cloud providers typically do not provide a strong SLA. There are no guarantees for uptime, provisioning, bandwidth etc.

You may already have a Private Cloud!

Implement the Best (Darn) Private Cloud

Use this 3 Step Program to ensure you have the best Private Cloud

- Step 1 – Perform a Health Check
- Step 2 – Adopt new IBM Offerings to enhance your Private Cloud
- Step 3 – Speak the “Language of the Cloud”

At the same time, Embrace the Hybrid Cloud Journey!

IBM Eagle Team - IT Economics Practice

Benefits of doing an Eagle engagement

- Worldwide experience from **successfully helping hundreds of clients** since 2007
 - ... most likely we have evaluated a similar scenario before
- Leverage **research** and **benchmarks** from the various CPO teams
- Why do IT executives “believe” us?
 - We use **your figures** (not our own)
 - ... through a **transparent model**
 - ... with agreed-to assumptions
 - ... and iterate as required
- Provide a **business case** from which you can make a **financially based IT decision** and **fuel your innovation and growth projects**



Do any of these apply to your organization?

Do you...

- Want to do more with cloud?
- Need to simplify your IT environment?
- Want to grow your business but need to decide where to host the applications?
- Have more than 25 x86, HP-UX or Sun servers running Oracle or Weblogic?
- Want to investigate cognitive solutions?

Are you...

- Deploying workloads on Linux x86?
- Using AWS EC2 or Azure VMs?
- Evaluating the best platform for Big Data?
- Running out of datacenter space?
- Using more than three platforms?
- Looking to reduce IT spend?

These are **common scenarios** where **clients have benefited** from an **IT Economics study**.

Request a study at the end of today's session by contacting

Christopher T. von Koschembahr, vonkosch@us.ibm.com

Or send an email to IT.Economics@us.ibm.com

IT Economics Studies

Use a **business case** to make a **technically** and **financially based IT decision**



Cloud Assessment

Perform a Health Check to find the right private, public or hybrid cloud solution
Examine workload size and activity, SLA and provisioning requirements, and instance costs



Workload Placement Assessment

Consolidate, offload, and place new workloads on alternative platforms
Exploit and compare platform attributes to optimize workload performance and costs



Business Value Assessment (BVA)

Understand solution attributes and how business requirements are mapped
Quantify financial benefits and compare to alternatives to determine the most compelling case



Mobile Assessment

Mitigate high-volume, low-value mobile transaction costs
Evaluate the effects of throughput, response time and other KPIs in mobile topologies



Analytics Assessment

Determine the most cost-effective infrastructure for analytics solutions
Exploit platform attributes and efficient storage solutions for Analytics and Big Data



Chargeback Analysis

Align chargeback policies to actual IT costs
Identify and overcome chargeback policies that drive adverse IT decisions



IT Best Practice Benchmarking

Compare actual IT environment with best practices in the IT industry
Improve forecast and actual spend

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Five Steps for an IT Economics Study

An **IT Economics study** can be completed in a few weeks with minimal effort on your part. Studies involve these five steps:

1. Request a Study

- Ask your IBM Client Representative, business partner or contact the IBM Eagle Team at IT.Economics@us.ibm.com.
- You will be contacted by a senior Eagle Consultant in your region.

2. Decide a Workshop Date

- An IBM Eagle consultant coordinates a date to hold an on-site workshop with you.
- This is typically a two hour meeting.

3. On-site Workshop

- Your IBM Eagle consultant will explain the study's methodologies, capture your objectives for the study and gather information about your IT environment.
- The consultant share best and worst practices.

4. Data Analysis

- Depending on the scope of the study, your IBM Eagle consultant may request additional data after the workshop.
- Analysis and report preparation (performed off-site) are usually complete in three to four weeks.

5. On-site Study Presentation

- Your IBM Eagle consultant will meet with you to present findings and provide recommendations.
- The consultant will answer questions and provide you with a final report with detailed analysis, an executive summary, and a business case

IT.Economics@us.ibm.com
www.ibm.com/iteconomics
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Thank you Questions?