# Building the Business Case for System z

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" What are your largest issue/problem(s)?

If you can solve the problem instead of "selling your preference" management will ask for your assistance and your solution will receive serious consideration

Environmental / Facility

Software costs

Staffing

Server proliferation

Disaster recovery

Security

# Have you heard these statements?

" My mainframe cost 2x, 5x, 10x compared to my distributed environment" Mainframe

"Mainframe software costs are expensive and are driving me off the platform" Mainframe

"We are on a get off the mainframe strategy" Mainframe

"We keep adding servers and people" Distributed
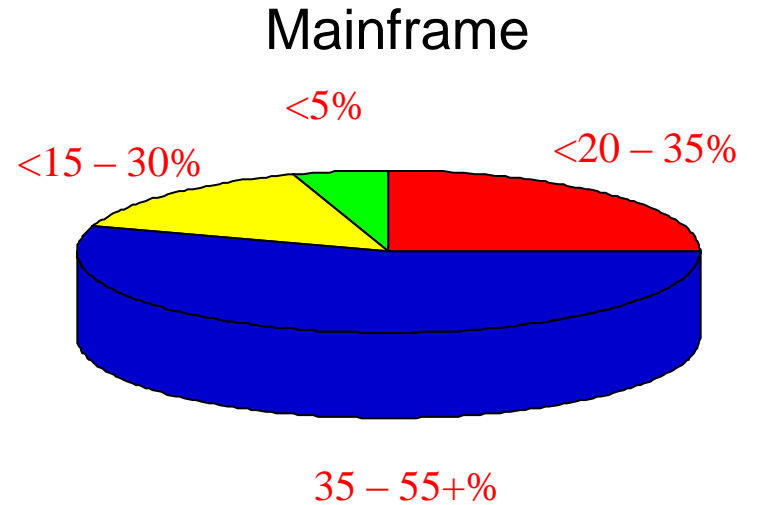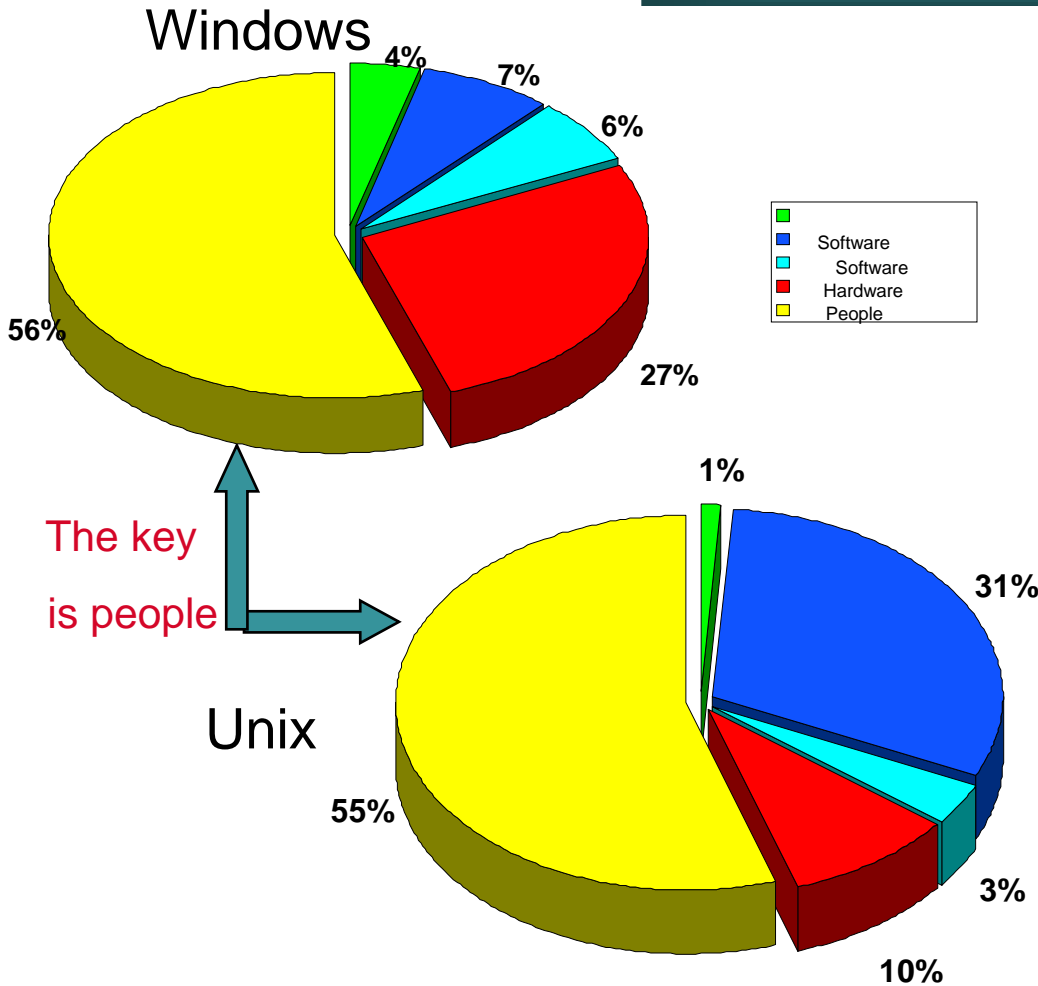
"Our infrastructure can not support our servers" Distributed

*Pain Point: Despite the emergence of virtualization tooling on Unix and Windows architectures, most enterprises continue to buy more processing power than is needed and end up getting ..* more to manage, more costs, more complexity

# Full Burden Cost vs. Incremental Cost

- **Full burden cost is typically reflected in a chargeback system**
  - Mainframe chargeback pools are typically 50% overstated
- **Incremental cost is the "real" cost a customer will pay for additional capacity**
- **Cost Comparisons –Full Burden vs. Incremental**
  - Incremental cost is 20 – 25% of the full burden cost
  - Hardware cost is typically 3x greater
    - 3 – 5 yr depreciation and blexed leases
  - Software cost is typically 4 – 5x greater
    - Capacity discounts, New Workload pricing
    - ISV contracts have a significant impact
  - People costs
    - How many additional people are really needed
  - Facility costs
  - Allocations

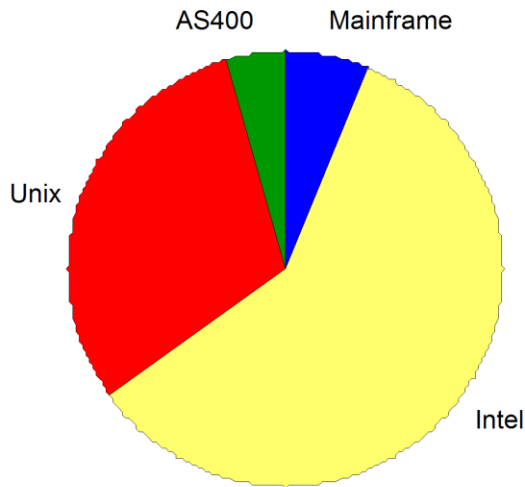- **Chargeback methodology should not be used for comparing the cost of adding or removing a workload**

# Server Annual Cost Distribution
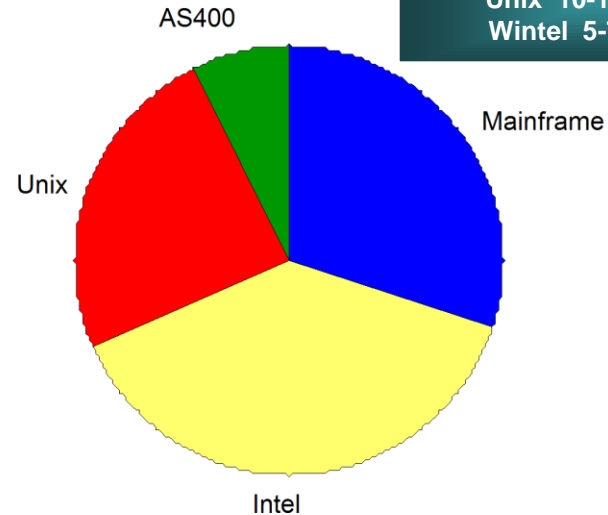
These are typical customer examples



Windows
4%
7%
6%
56%
27%

Software
 Software
Hardware
People

The key
is people

Unix
55%
1%
31%
3%
10%

Mainframe
<5%
<15 – 30%
<20 – 35%
35 – 55+%

# Installed vs. Used capacity

## Installed Capacity: 33M tpms*



## Used Capacity: 4M tpms*

**Typical Utilization**
**Mainframe 80 – 95%**
**Unix 10-15% now 15-40%**
**Wintel 5-7% now 5-20%**



**Server utilization varies significantly by platform and that needs to be accounted for in the business case. The mainframe environment is used most efficiently, but is it the most or least expensive .**
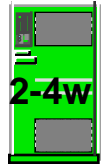
# Server Proliferation

- **Describe a current application environment**
    - Production
        - Database server? How many?
        - Application server? How many?
        - Messaging server? How many?
        - Failover servers? For each?
    - Additional Servers
        - Development servers? Multiple levels?
        - Test servers? Multiple levels?
        - Systems test? Multiple levels?
        - Quality Assurance servers?
        - Education servers?
    - Disaster Recovery
        - Do you have a DR site?
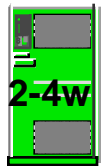- **How many applications/types of workload do you have?**

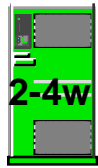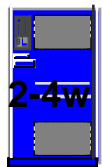# Complexity and Cost – Facility, Software, People
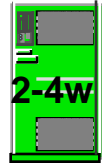
**2-4w** Web/App

**2-4w** App F/O

**2-4w** Development

**2-4w** Test

**2-4w** Web/App D/R & QA

**2-4w** D/R F/O

**2-4w** Messaging

**2-4w** Messaging F/O

**2-4w** Test/Education

**2-4w** Integration

**2-4w** Messaging D/R & QA

**2-4w** D/R F/O
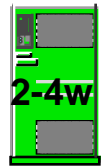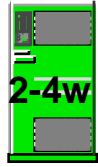
**8w** Database
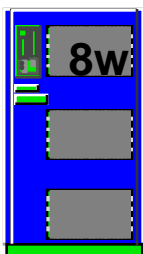
**8w** Database F/O

**8w** Database D/R & QA

**8w** D/R F/O

Hardware
- 3 primary production servers
- 16 total servers
        5:1 ratio

Software
- 32+ processors for database software
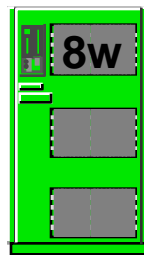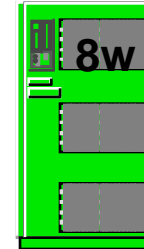    ~ $1.8M for 3yrs
- 15+ processors for application software

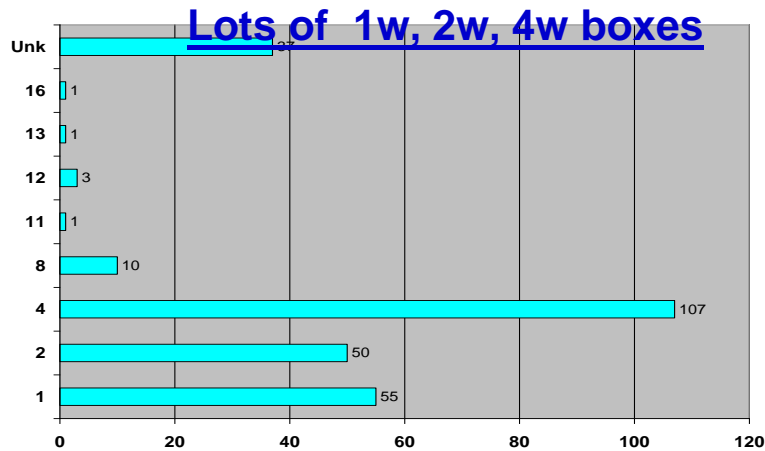**?** **?** **?**
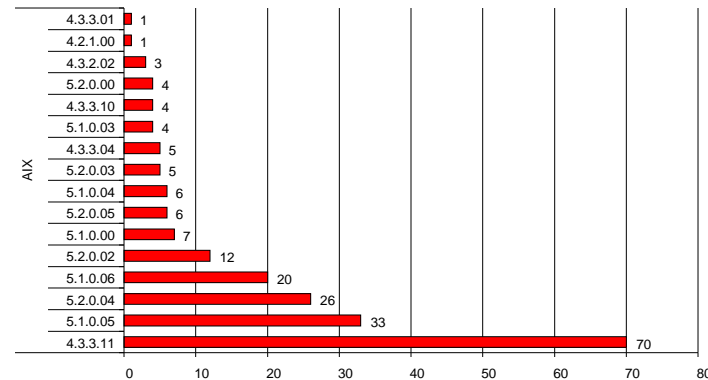
# A Typical Distributed Environment

*Are facilities an issue?*

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## Lots of 1w, 2w, 4w boxes

| Category | Value |
|----------|-------|
| Unk | |
| 16 | 1 |
| 13 | 1 |
| 12 | 3 |
| 11 | 1 |
| 8 | 10 |
| 4 | 107 |
| 2 | 50 |
| 1 | 55 |

## Multiple operating system releases

AIX

| Release | Value |
|---------|-------|
| 4.3.3.01 | 1 |
| 4.2.1.00 | 1 |
| 4.3.2.02 | 3 |
| 5.2.0.00 | 4 |
| 4.3.3.10 | 4 |
| 5.1.0.03 | 4 |
| 4.3.3.04 | 5 |
| 5.2.0.03 | 5 |
| 5.1.0.04 | 6 |
| 5.2.0.05 | 6 |
| 5.1.0.00 | 7 |
| 5.2.0.02 | 12 |
| 5.1.0.06 | 20 |
| 5.2.0.04 | 26 |
| 5.1.0.05 | 33 |
| 4.3.3.11 | 70 |

## Many servers are old

**3 + Years Old**

How much power is being used by these old, single image, low utilized servers?

Server Count

2001 2002 2003 2004 2005 2006 2007 2008 2009
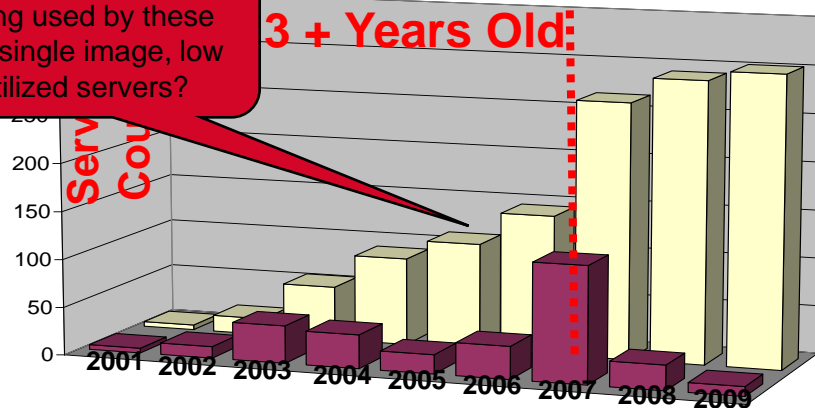
## Servers are under utilized
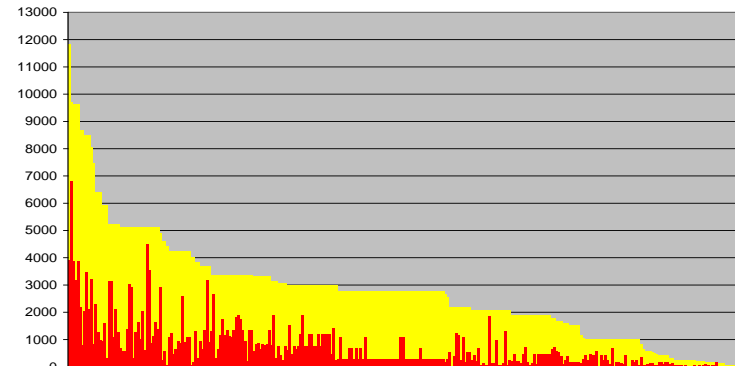
Source: Scorpion Study 1999 - 2009

# These may be prime consolidation candidates
# if you have "facility issues"



**Breakdown of Install Base by Approximate GA Date**

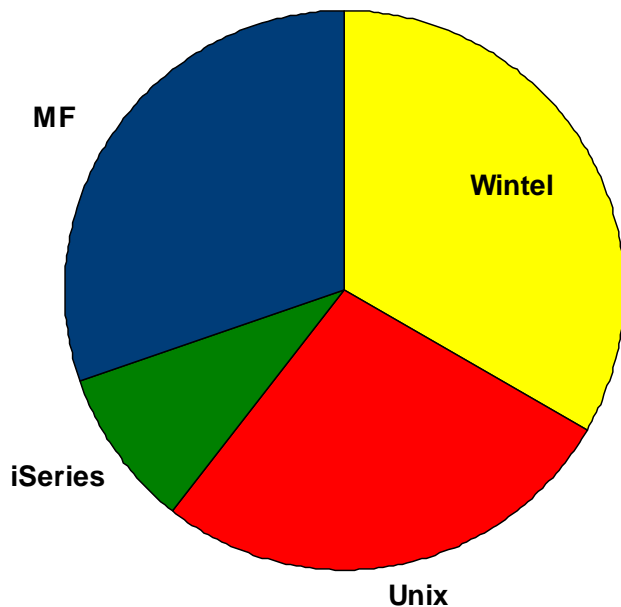*~ 850 servers are 4 years GA or older*
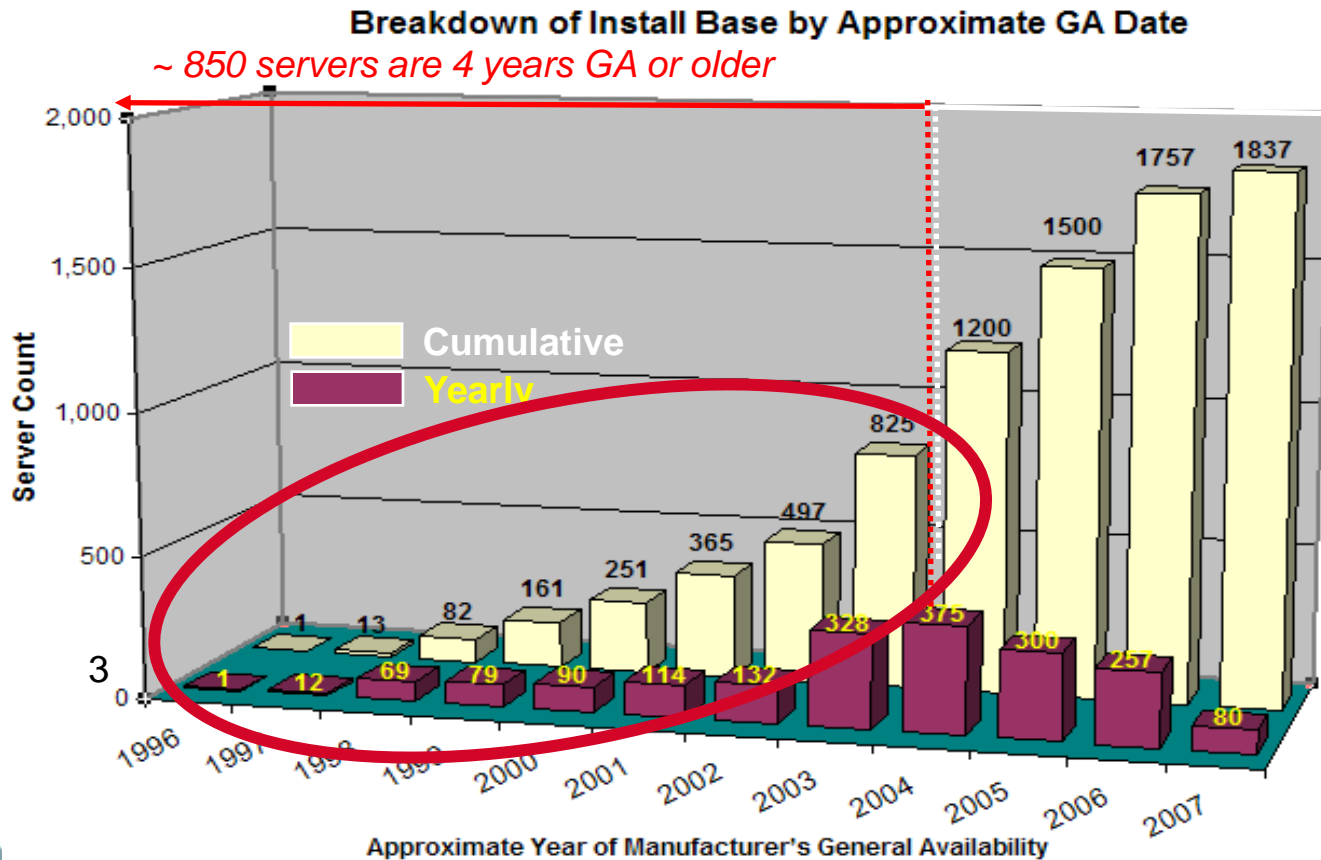
# Current State - Environmental costs are LOW on System z

**Power and cooling resources are dominated by Wintel machines.   Although these resources are not yet constrained at ABC, costs are rising steadily and will continue to do so.   Environmental costs will be included in the business cases.**

| Used Capacity | Power Draw | Ratio |
| --- | --- | --- |



| Watts / Used RIP | |
| --- | --- |
| Wintel | 16.7 |
| Unix | 11.4 |
| iSeries | 2.6 |
| MF | 1.1 |
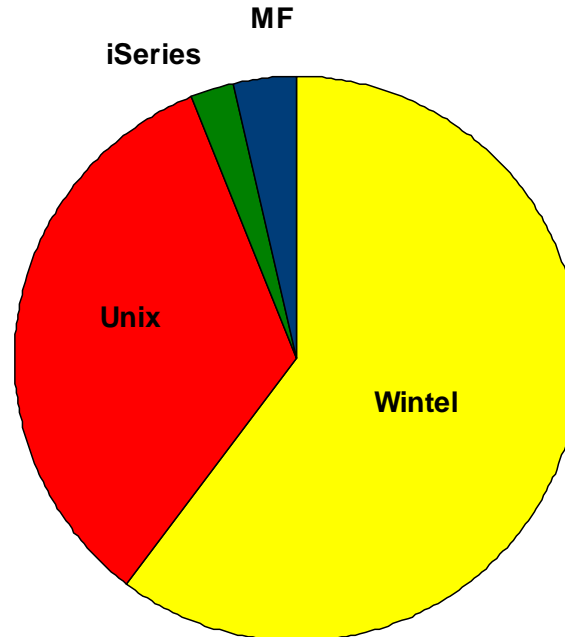
Relative Internal Performance is a cross-architecture capacity metric used here.  It is  to be used only within the context of this study and cannot be compared to external benchmarks or other IBM performance ratings. Load or Used RIPS is the product of estimated utilization and RIP per instance for all 2000 server instances.

# Staffing ratios – Distributed 2000-2009
## And we can prove it…

**Intel Servers to Support FTEs – 50+ studies**
2000/2001 average = **12 SERV/FTE**     2007/2008 average = **47 SERV/FTE**

**UNIX Servers to Support FTEs – 50+ studies**
2000/1 ave = **5 SERV/FTE**     2007/8 ave = **23 SERV/FTE**

**MF Mips to Support FTEs – 50+ studies**
2000/1 ave = **25+ Mips/FTE**     2007/8 ave = **450+ Mips/FTE**

*Distributed systems have improved by a factor of four, while MF by a factor of 20.  QoS is still lagging on distributed.*

# Current State - Staff Efficiency is HIGH on System z

**Staffing Resources are dominated by Unix and Wintel machines and reflect the shared responsibilities between Infrastructure support and Application Development at ABC. Enhancing productivity to enable growth without additional staff will be highlighted in the business cases.**

## Used Capacity
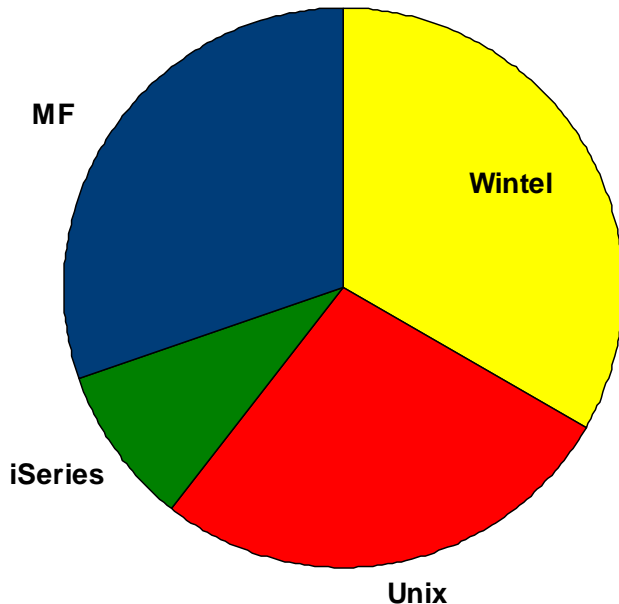


## Dedicated Infrastructure Staff
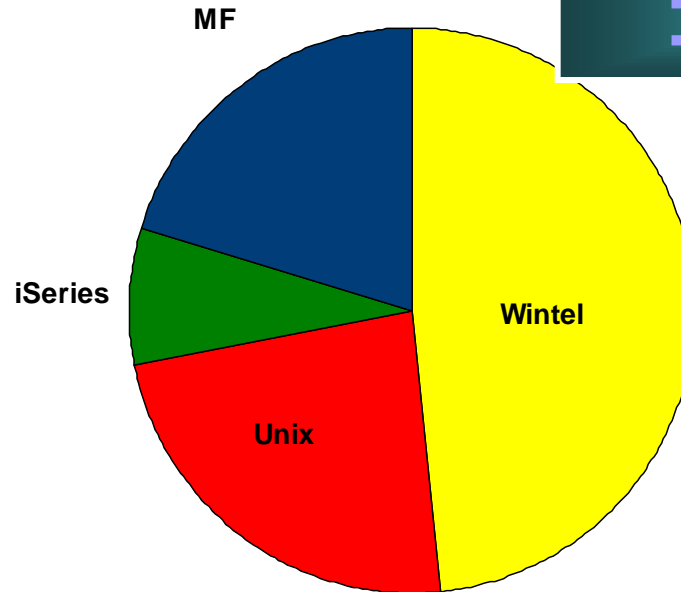


- Customer Profile
  - 1800 servers, 1 location
  - New CIO, "get off the MF"
  - Focused on reducing cost

## Ratio

| Used RIPs / FTE | |
|---|---|
| Wintel | 552 |
| Unix | 578 |
| iSeries | 2198 |
| MF | 1937 |

Relative Internal Performance is a cross-architecture capacity metric used here. It is to be used only within the context of this study and cannot be compared to external benchmarks or other IBM performance ratings. Load or Used RIPS is the product of estimated utilization and RIP per instance for all 1800+ server instances.
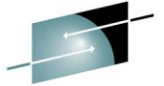
IFL capacity increases "just happen"

*when you do a mainframe hardware upgrade*

"zAAP's & zIIP's too"

# What about zSeries Application Assist Processors (zAAPs)?

## 3 Year Cost of Ownership



Legend:
- **Other** (green)
- **People** (yellow)
- **Software** (blue)
- **Hardware** (red)

Bars:
- Current Sun: $15,025
- Mainframe: $13,500
- MF w/ zAAPs: $9,425

Y-axis: Thousands (0 to 20)
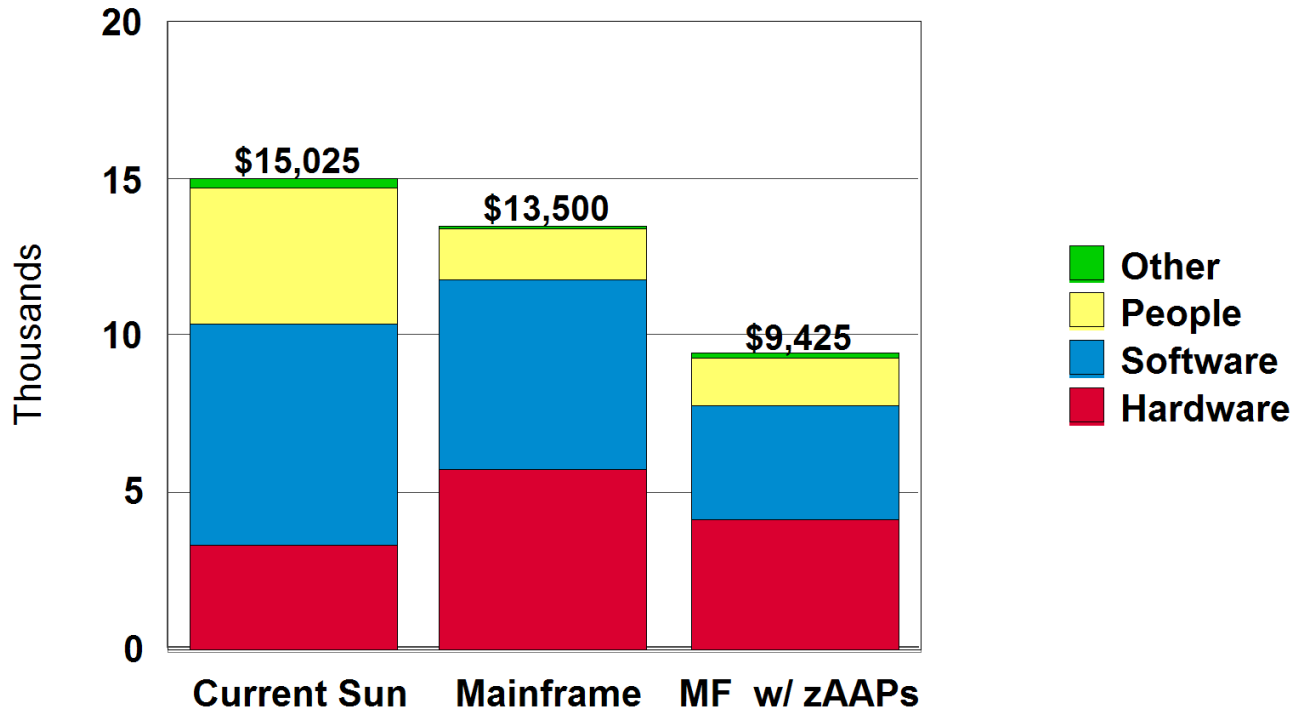
**With zAAP processors, zSeries savings would have been 37%**

# STG Lab Services Scorpion Study Findings

- Existing Mainframe customers
  - Financial and Public Sector Institutions
    - Customers are moving light Java and I/O intensive workloads from Unix servers to Linux on System z to take advantage of consolidation savings (20 – 50%)
    - Customers are consolidating multi-platform and mixed Linux applications to Linux on System z to take advantage of consolidation, energy and software savings ( 20 – 50%)
    - Customers are consolidating multi-platform Java workloads to zOS with specialty engines (zAAP) to take advantage of consolidation, facility, software and people savings (20 – 50+%)
- Existing Unix customers
  - Financial, Communication, Distribution, Healthcare and Public
    - Customers are consolidating mixed applications and databases to AIX and p7 for savings in software, facility and people (20 – 50+%) while improving RAS characteristics
    - Customers are consolidating multiple small/medium applications running on x86 (Windows and Linux) to Linux on POWER to leverage their existing POWER environment (30 – 60%)
    - Customers are consolidating Oracle DB's to Linux on System z to take advantage of software license savings (50+%)
    - Customers are consolidating Unix apps, DB's and E-Mail to Linux on Blades
- Storage customers
  - Financial Services and Healthcare
    - Customers are implementing storage virtualization for distributed environments to more effectively utilize assets
    - Customers are allocating storage based on business requirements for data
    - Customers are defining and deploying storage tiers to support storage service levels
    - Customers are seeing the potential of 50 – 70% reduction in new storage costs going forward after a Scorpion engagement

# What Makes the Best Fit for z

- Leverage classic strengths of the zSeries
    - High availability
    - High i/o bandwidth capabilities
    - Flexibility to run disparate workloads concurrently
    - Requirement for excellent disaster recovery capabilities
    - Security
    - Facilities - 15 yrs ago did you think facilities would be a mainframe strength
- Shortening end to end path length for applications
    - Collocation of applications
    - Consolidation of applications from distributed servers
    - Reduction in network traffic
    - Simplification of support model
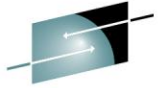
# More Information

# 2010 IBM Systems Technical Conferences – System z

**Major Markets:**

- **NA - IBM System z w/Storage Technical University** Oct 4 – 8, Boston Marriott Copley Place
- **NE - IBM System z Mainframe w/Storage University** – May 17 - 21 Berlin, Hotel Berlin

**Growth Markets:**

- **System z & Storage – Bangalore – April 27 – 30**

- **System z & Storage – Sydney – May 4 – 7**

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# Recent Videos and article

## Videos

**Scorpion series part 1: Mainframe Cost Misconceptions**

**Scorpion series part 2: Server Proliferation and Utilization**

**Scorpion series part 3: Facility and Infrastructure Considerations**

**Scorpion series part 4: Saving Money with zIIPS, zAAPs and IFLs**

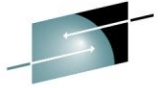**Scorpion series part 5: Building a Business Case**

**Scorpion series part 6: The Best Fit for System z**

http://www-306.ibm.com/software/info/television/index.jsp?lang=en_us&cat=systemz&item=xml/A361366R16875X50.xml

## Six Easy Pieces How to Do Cost of Ownership Analysis Better

http://www.cio.com/article/525068/Six_Easy_Pieces_How_to_Do_Cost_of_Ownership_Analysis_Better

**Total Cost of Ownership (TCO)Considerations When Comparing z/OS and Distributed Platforms**
**By Julie Figura and Tim Raducha-Grace**

# Have a Great Afternoon!