

Workload Optimized Systems As Next Big Thing

CIO Challenges, The Critical Selection Criteria, Why Big Iron's Back

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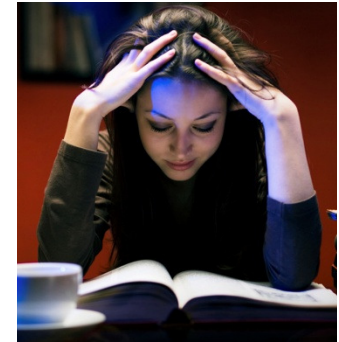
Perspectives From Office Of CIO

*Where Are The Waking Moments,
And Wallet Spend*



What Keep CIO/CTO Awake At Night

The Visceral Concerns



- Corporate Executive Team views technology solutions as necessary part of doing business, but I/T only get the left-over budget (after marketing/sales and R&D spend)
- I need to look at the “just good enough technology” for leanest price points
- On occasion, I will pay for best of breed, but only where functionality/benefit can prove significant competitive advantage at business architecture level
- My most important qualifier: “Spend money on those problems that are the most profitable to solve first”

Addressing Next Gen Data Center Challenges



Every one of these challenges is improved dramatically through an advanced virtualization stack – and often why CIO's rethink Z

IT Trends & Critical Selection Criteria

*Infrastructure Consolidation &
Advanced Virtualization Remains Heavy Investment Focus*

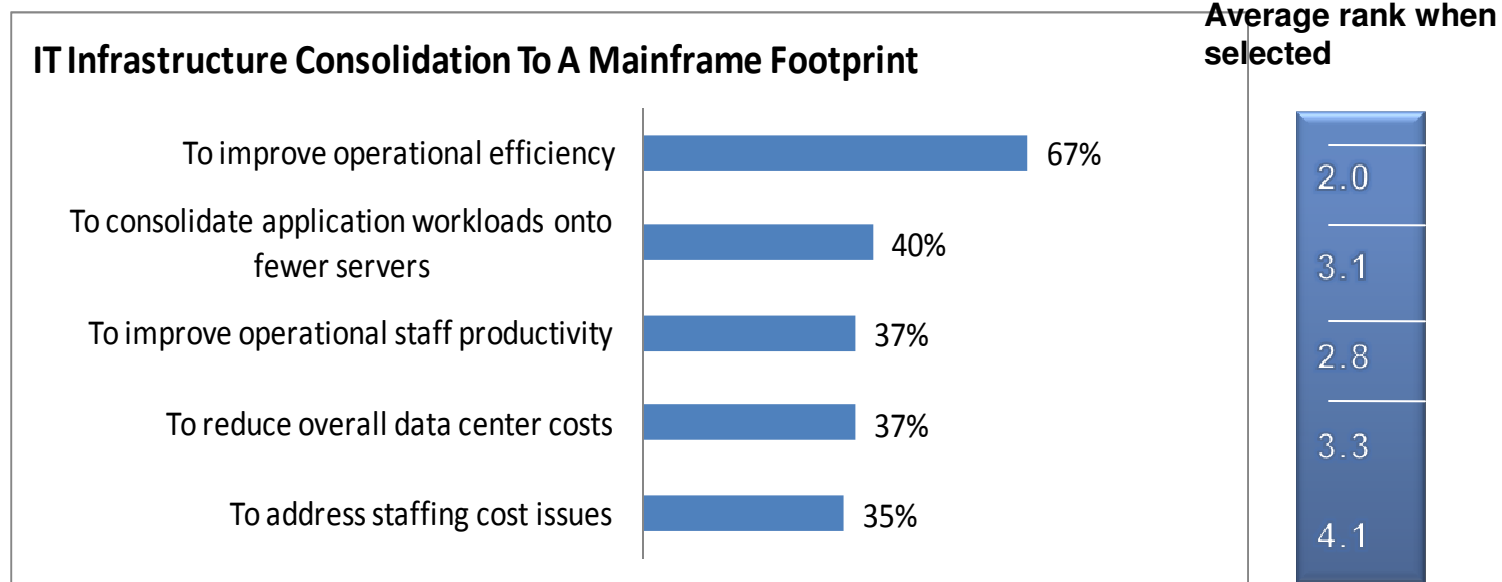
Consolidation Success Is Optimized Through Advanced Virtualization

- Advanced virtualization is a core ingredient for a successful infrastructure consolidation
- Infrastructure consolidation often stimulates investigation of systems migration
- Infrastructure consolidation and virtualized environments create new pricing models (capacity on demand & utility pricing)
- Infrastructure consolidation end state still needs to demonstrate improved cost-of-life-cycle ownership outcome, or the often complex process won't take

Infrastructure consolidation

Operational efficiency, cost reduction are key objectives

“Rank the top five motivators for your data center consolidation effort”

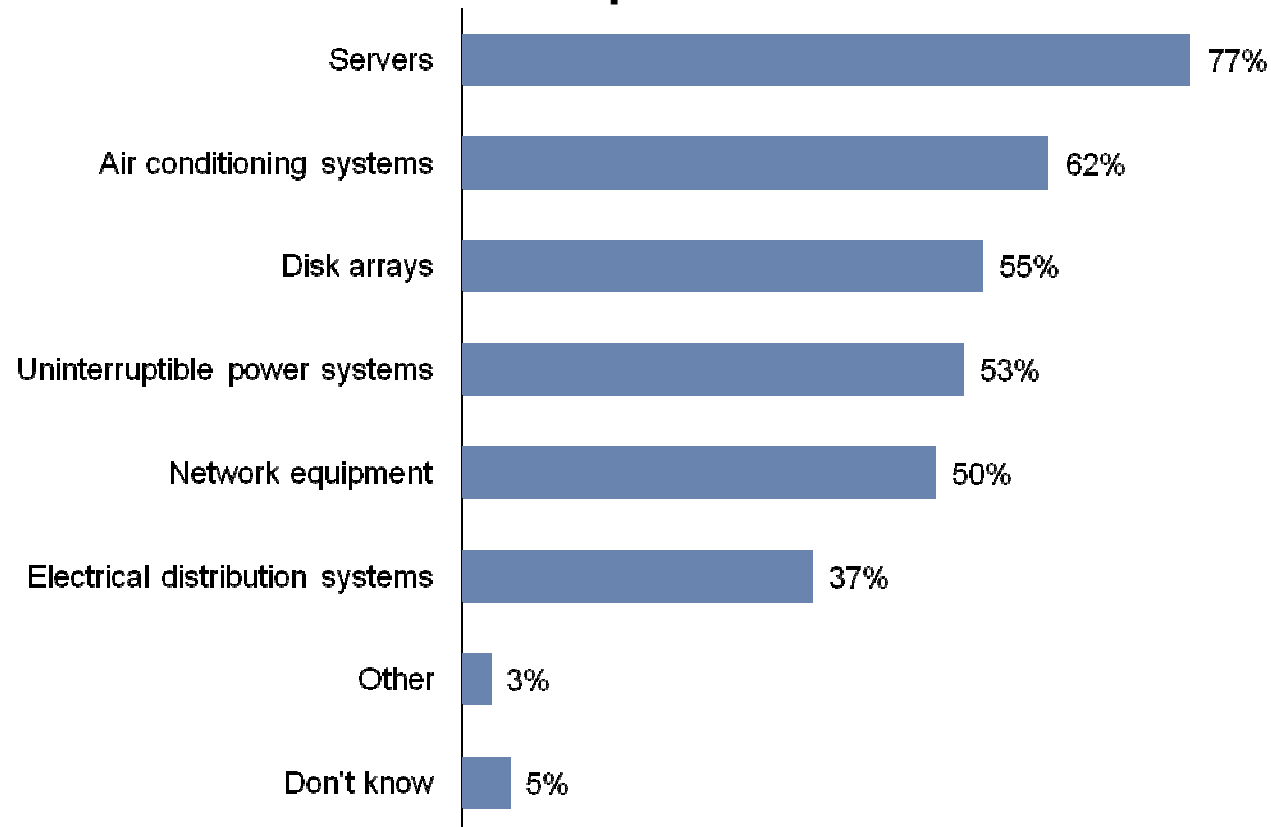


Base: 43 IT executives and managers at US enterprises that have consolidated or plan to consolidate onto a mainframe footprint

Source: August 2008 US Enterprise IT Consolidation Online Survey

Energy & Power Improvements – Huge Gains Are Happening

“Which data center elements are you targeting for electrical consumption or waste reduction ?”



Base: 111 data center decision-makers at North American and European enterprises that have interest in increasing electrical efficiency in the data center
(multiple responses accepted)

CIO's Wish-List – Catalyst For Z and New Workloads

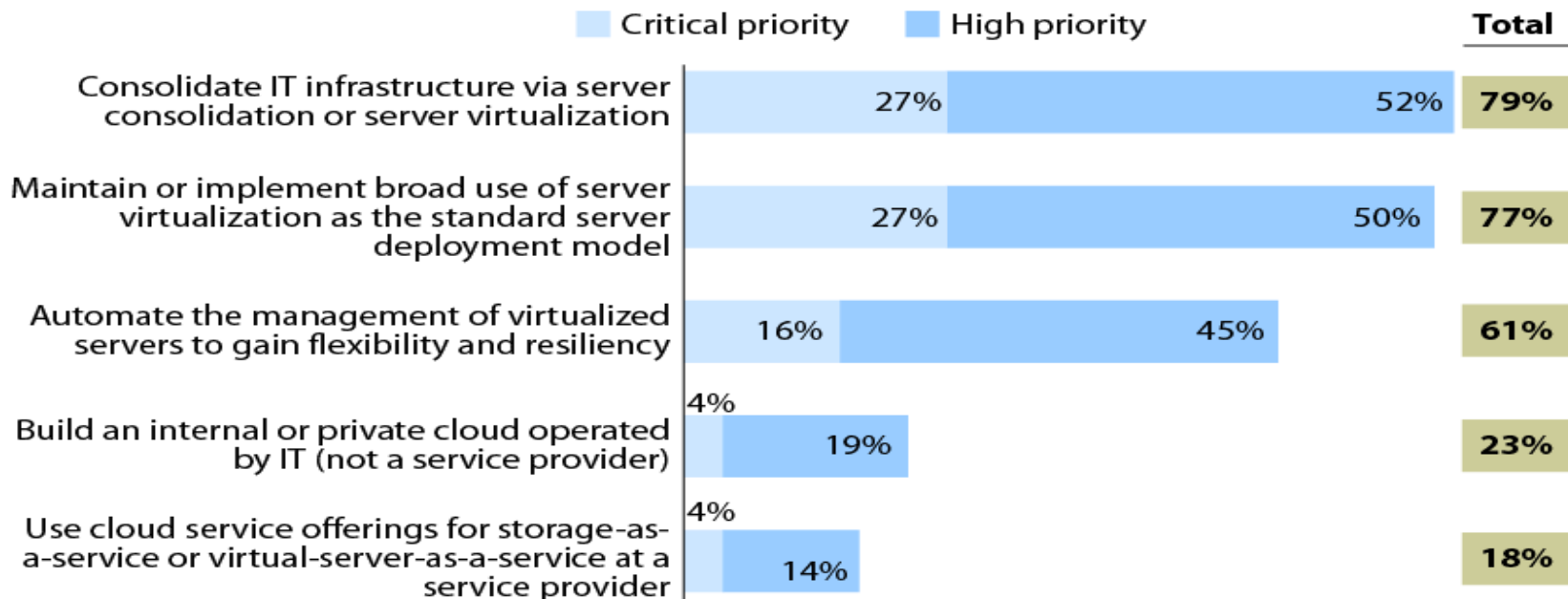
What Initiatives Set Stage For System Z Consideration



Forrester Research has this data available relating to North American and European SMBs, which can be cut by size, geography, industry, and other criteria for Forrester clients.

“Which of the following initiatives are likely to be your firm’s/organization’s top hardware/IT infrastructure priorities over the next 12 months?”

(3 or 4 on a scale of 1 [not on our agenda] to 4 [critical priority])



Base: 1,020 North American and European enterprise IT hardware decision-makers

9 Source: Enterprise And SMB Hardware Survey, North America And Europe, Q3 2009



Optimized Capacity Utilization – Only Pay For Computing Cycles You Are Using

Key Differentiator For Mainframe

- Capacity utilization audit is the critical first step before server refresh
 - Mainframes have highest capacity utilization
 - Typically 85% to 120% due to legacy of virtual machine optimized and best of breed workload management technology
 - Unix environments weigh in at 28% to 40%
 - Especially true in entry workgroup and midrange
 - Windows weighs in at 12% to 15% capacity utilization
 - With lowest possible capacity utilization
 - Due still to single-app-per-server mentality

Performance metrics changing - and balanced systems means everything

- Higher linear scalability of applications workloads on lower and lower processor count is what you care about.
 - Types and results of applications' specific benchmarks yields higher importance (combination of historical data and future promise).
 - More simplistic decision criteria to measure technology advantage versus the cost-of-life-cycle ownership requirements to acquire, deploy, and manage it.
- Balanced systems design will remain point of innovation and differentiation (must do scale up, scale out, and scale within support of applications workloads equally as well)
 - Scale out becomes the design center for grid and next generation HPTC computing infrastructures.
 - Scale up becomes the design center for multicore SMP focus on multithreading (still the backbone for mission-critical, heavy-lifting applications).
 - Scale within becomes the design center for a new virtualized operating systems architecture (VOSA).

Forrester – Key Findings Looking Forward



Advanced Virtualization Stacks

...Remains The Core Vendor Battle-Ground



- Virtualization of servers, storage, and networks will become more pervasive.
 - Provides high custom customer value by reducing infrastructure costs and improving responsiveness.
- Hypervisors will be the most important server virtualization point of differentiation.
 - Provide fine-grained resource sharing and are easy to apply within both scale-up and scale-out infrastructures.
- Ultimate future benefit of virtualization will be more simplified IT management.
 - Management labor costs generally far exceed server hardware costs.
 - Virtualization will reduce management costs by simplifying management tasks.
- In the mission-critical enterprise computing environments, IBM advanced virtualization will maintain its leadership.
 - System z and POWER virtualization stacks will continue to set the high water mark on innovations

“Workload optimized” app stacks will drive next gen systems architectures

Workload characteristics are fickle and nuanced...

**System Z
(now);
Unix**

Transaction Processing and Database

High Transaction Rates
High Quality of Service
Peak Workloads
Resiliency and Security
Scale up and out

Analytics and High Performance Computing

Compute intensive
High Memory Bandwidth
Floating point
Scale up linearity

**System Z
(next);
UNIX;
Linux**

**System Z
(now);
UNIX;
Linux;
Windows**

Business Applications

Quality of Service
Large Memory Footprint
Responsive Infrastructure
Scale up and out

Web, Collaboration and Infrastructure

Highly Threaded
Throughput-oriented
Lower Quality of Service
Scale out mainly

**System Z
(next);
Unix;
Linux;
Windows**

*....Choice of “Silicon-Through-Services Stack” based on
“best fit” and its associated cost*

Life Cycle Cost of Ownership Replaces TCO

The New Metrics, The New Math

- CTO/CIO cost of ownership scrutiny will shift.
 - From traditional 3 year TCO models to 4 to 6 year models, driven by longer enterprise computing footprint refresh cycles
- Vendors that can demonstrate how their technology or services can improve the life cycle costs of an enterprise computing footprint over a longer duration of the need to refresh that footprint will be significantly advantaged, inclusive of the 3 cost stages:
 - Cost of acquisition (Stage 1)
 - Cost of ongoing operation (Stage 2)
 - Cost of incremental change (Stage 3)
- In some cases, CTO/CIO may selectively favor bundles of “good enough” hardware, software, and/or services (instead of always choosing best of breed in a technology category)
 - Especially if the “good enough” alternative significantly reduces life cycle costs over time.

Measuring Life-Cycle Cost of Enterprise Footprints

The New Model, The New Math

Forrester's "C3" Life Cycle Cost of Ownership Matrix

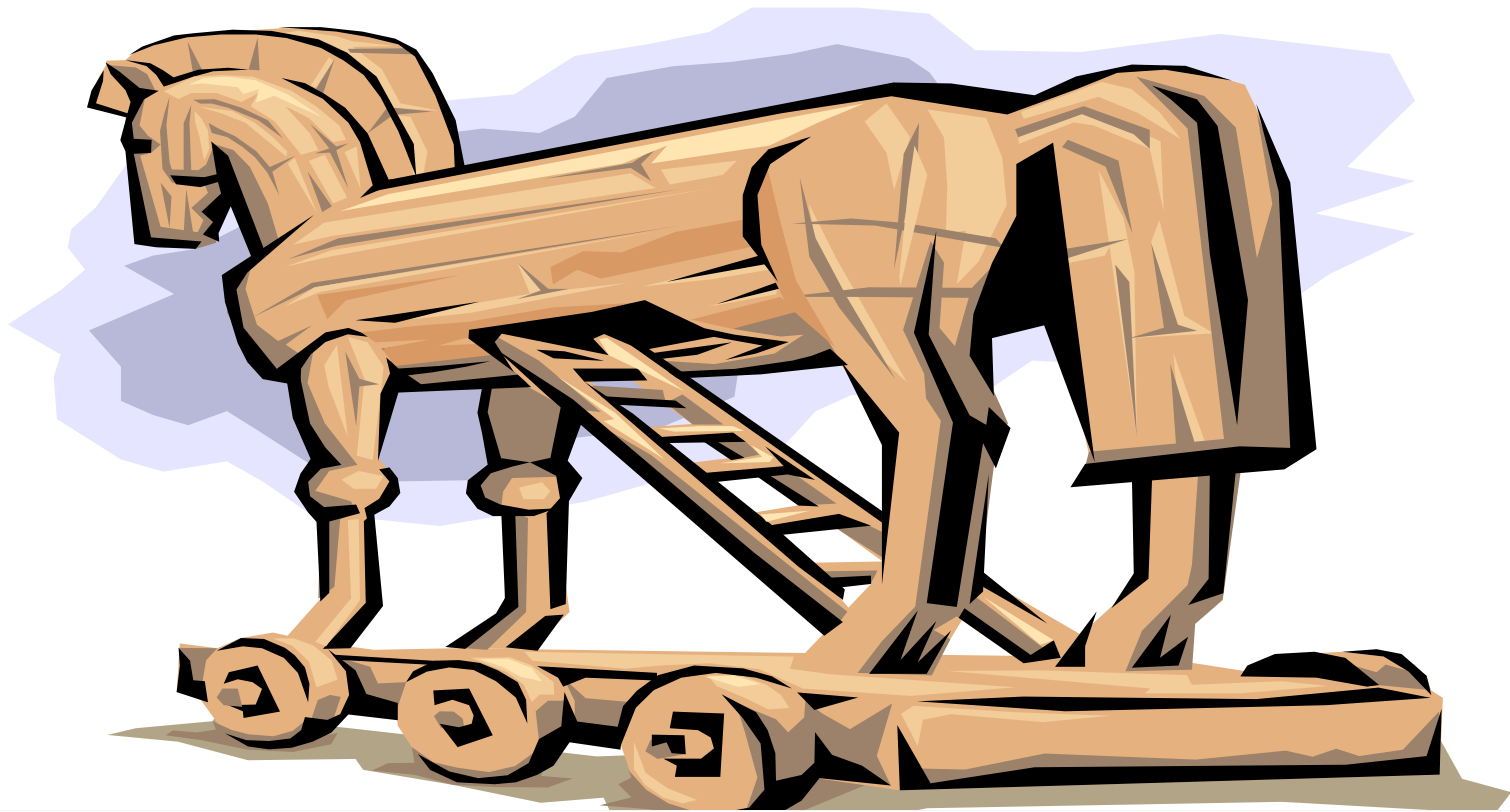
Computing Footprint Cost Stages

		Cost of acquisition	Cost of Ongoing Operations	Cost of Incremental Change
Computing Footprint Cost Categories	Systems architecture			
	Operating system environment			
	System software			
	Application software			
	Human resource			
	Facilities			

... how to optimize to where the real costs lie

Trojan Horse Winners In Next Gen Enterprise

It's A Very Short List



Vendors with a broad and deep investment in a “silicon through services” competency that equally support a Linux ecosystem will continue to be greatly advantaged

Redefining what's a mission critical system *when "good enough" is not acceptable*

... For Z mainframe customer – ironically, it's back to the future.

The real battle for strategic systems architecture choice will remain.

1. Power and cooling systems efficiency and sustainability (inside the racks, but also within the data center four walls)
2. RAS extensions (in system, and out through the app. stack, with different pricing options)
3. HA/clustering (in system, and out through the app. Stack, with different pricing options)
4. Advanced virtualization stack with supporting automation tools and efficient management
5. Better integration and optimization of client devices
6. Creative financing options based on virtualization granularity toward lower overall life cycle costs

Thank you

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