

# Migrating Your Agency to Open Systems to Improve Efficiency and Reduce Risks



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## **Moderator:**

Chris Runge

Director, Solutions Architects, Red Hat

## **Panelists:**

Leo Pleiman

Senior Consultant, Global Professional Services, Federal, Red Hat

MaryAnn Becker

AMS Conversions and Migrations, IBM Global Business Services

Daud Santosa

Chief Technology Officer, National Business Center



carahsoft



# Open Source Migration Lessons

Leo J Pleiman

Senior Consultant, Red Hat

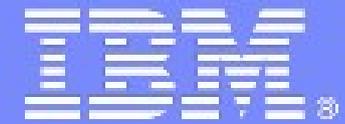
November 5, 2009

# Open Source Migration Motivators

- Consolidate Resources
  - Physical, Personnel, Financial
- Increase Availability
- Leverage Economies of Scale

# Open Source Migration Lessons

- Right-size the Project
- Obtain Customer Buy-in
- Set Expectations
- Capture the Money



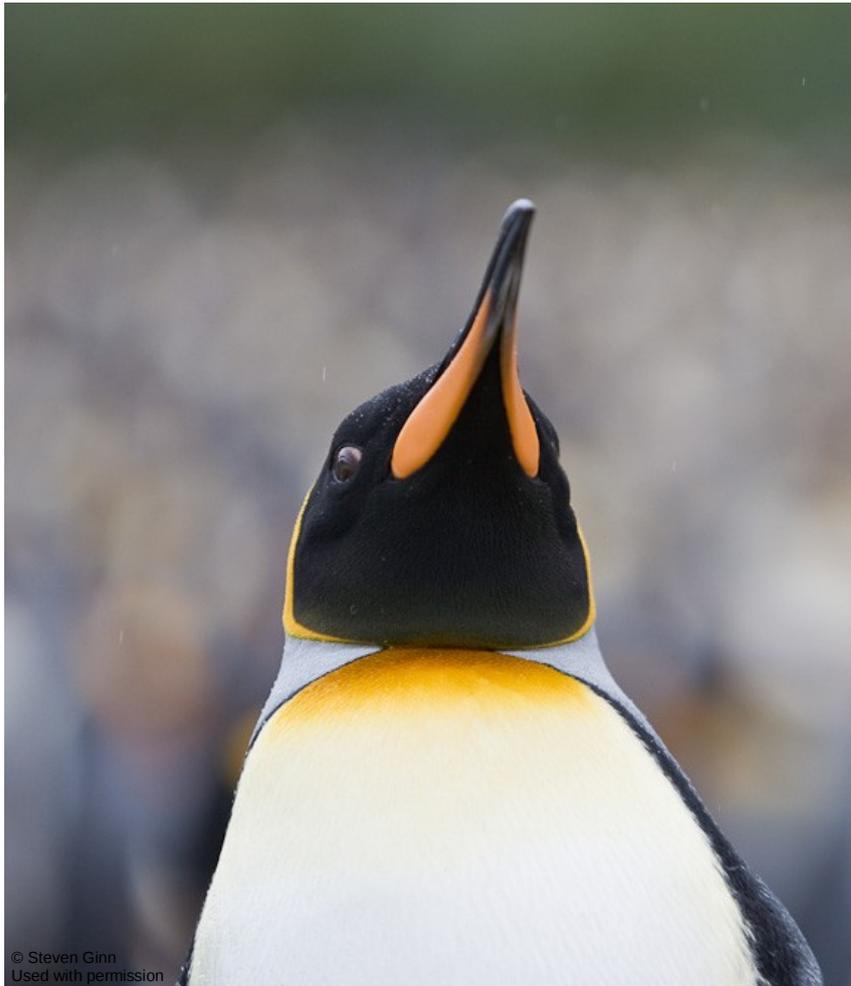
## Why now is the time to migrate from Sun, SPARC and Solaris to Red Hat Enterprise Linux on IBM systems

MaryAnn Becker  
Technical Solution Manager  
Engagement Leader, IBM ECM  
GBS, AS C&M  
Migration Factory



## Why is Linux important in the new global economic reality?

Over 10 years have passed since IBM's initial public commitment to Linux

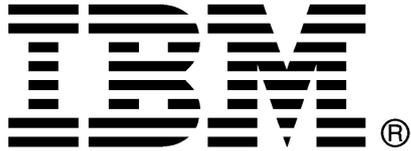


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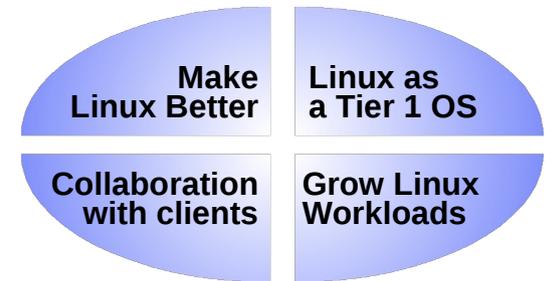
- \* **Linux continues to grow in share, scale, and scope, even in the downturn**
  - According to IDC, in 2Q09 Linux grew in market share, even as all server OS revenues declined<sup>1</sup>
  - Linux continues to gain features that enable it to address broadening market opportunities
  - Robust ecosystem enables lower cost, Linux-based alternatives to proprietary solutions
- \* **Unique attributes of Linux enable novel simplification strategies to reduce cost**
  - Linux enables clients to choose the platform that makes the most sense
  - When consolidating IT operations during M&A activity, Linux can enable asset reuse
  - Consolidating on Linux can reduce OS licensing costs (and CALs), generating savings up to 50%
- \* **Linux is fundamental to the cloud**

<http://www.idc.com/getdoc.jsp?containerId=prUS21989209>

# IBM collaborates with the Linux community



- \* ...has been an active participant since 1999
- \* ...is one of the leading commercial contributors to Linux
- \* ...has over 600 full-time developers working with Linux and open source



Who Has Contributed to Linux?  
(2005 – 2009)

Company Name	Number of Changes	Percent of Total
None	26,644	18.2%
Red Hat	17,981	12.3%
Unknown	11,164	7.6%
IBM	11,151	7.6%
Novell	11,046	7.6%
Intel	7,782	5.3%
Consultant	3,657	2.5%
Oracle	3,513	2.4%
Linux Foundation	2,345	1.6%
SGI	2,317	1.6%
Parallels	1,939	1.3%
Renesas Technology	1,925	1.3%
Academia	1,712	1.2%
Fujitsu	1,592	1.1%
MontaVista	1,564	1.1%
MIPS Technologies	1,537	1.1%
Analog Devices	1,467	1.0%
HP	1,415	1.0%
Freescall	1,375	0.9%
Google	1,261	0.9%

## Linux Kernel & Subsystem Development

Kernel Base Architecture Support  
 GNU  
 Security  
 Systems Management  
 RAS  
 Virtualization  
 Special Projects  
 Filesystems, and more...

## Expanding the Open Source Ecosystem

Apache & Apache Projects  
 Eclipse  
 Mozilla Firefox  
 OpenOffice.org  
 PHP  
 Samba, and more...



## Promoting Open Standards & Community Collaboration

The Linux Foundation  
 Linux Standards Base  
 Common Criteria certification  
 Open Software Initiative, and more...

## Foster and Protect the Ecosystem

Software Freedom Law Center  
 Free Software Foundation (FSF)  
 Open Invention Network, and more...

<http://www.linuxfoundation.org/publications/whowriteslinux.pdf>



## The Oracle/Sun news pulls all the triggers for Sun customers looking to transition off the SPARC/Solaris platform

### 1 - Aging servers and/or unclear hardware product roadmap

- Has Sun's roadmap been reliable, can you count on where they are going?

### 2 - New application requirements

- Do the applications you need run on Solaris? Which Solaris?

### 3 - Vendor stability and viability

- As Sun is acquired, how will SPARC/Solaris change going forward?

### 4 - Increased performance and capacity demands

- Has Sun kept up its price/performance with the leaders in the industry?

### 5 - Budgetary pressures such as higher licensing, management, and energy costs

- What will happen to the cost of staying with Sun/SPARC and Solaris?
- Can they deliver the management/energy savings that IBM/RHEL customers are experiencing? Customer examples at the conclusion of this presentation



## IBM's Sun Migration program gains momentum with Linux

### IBM with Linux

About 40% of IBM wins among Sun's top customers included Linux (since Oracle's announcement of the acquisition)

Almost one third of Sun to IBM assessments by IBM's Migration Factory were for Solaris to Linux on IBM servers in 2Q/Q309

In 2009, on track to double migrations from Solaris to Linux on IBM servers

Top sectors for Linux engagements include: Financial Services and Government

### Overall IBM

1,800+ customers migrated from competitive platforms to IBM, in past three years

400+ Sun wins in Sun accounts year to date 2009

IBM is adding an average of 10 Sun customers every week

During IBM's third quarter 09 earnings conference call, IBM CFO Mark Loughridge told analysts "In hardware, we gained 5 points of share in Power Systems, and 2 points of share in System x. That's lot of share - and we're taking it from both Sun and HP."

## IBM Consolidation Announcement Highlights

*IBM will consolidate thousands of servers onto approximately 30 IBM System z™ mainframes*

*We expect substantial savings in multiple dimensions: energy, software and system support costs*

*Major proof point of IBM's 'Project Big Green' initiative*

*The consolidated environment will use 80% less energy*

*This transformation is enabled by the System z sophisticated virtualization capability*

## ***IBM'S PROJECT BIG GREEN SPURS GLOBAL SHIFT TO LINUX ON MAINFRAME***



*Plan to shrink 3,900 computer servers to about 30 mainframes targets 80 percent energy reduction over five years*

*Optimized environment to increase business flexibility*

**ARMONK, NY, August 1, 2007** – In one of the most significant transformations of its worldwide data centers in a generation, IBM (NYSE: IBM) today announced that it will consolidate about 3,900 computer servers onto about 30 System z mainframes running the Linux operating system. The company anticipates that the new server environment will consume approximately 80 percent less energy than the current set up and expects significant savings over five years in energy, software and system support costs.

At the same time, the transformation will make IBM's IT infrastructure more flexible to evolving business needs. The initiative is part of Project Big Green, a broad commitment that IBM announced in May to sharply reduce data center energy consumption for IBM and its clients.



***Think what we could do for you***



# IBM's Globally Integrated Enterprise Data Centers

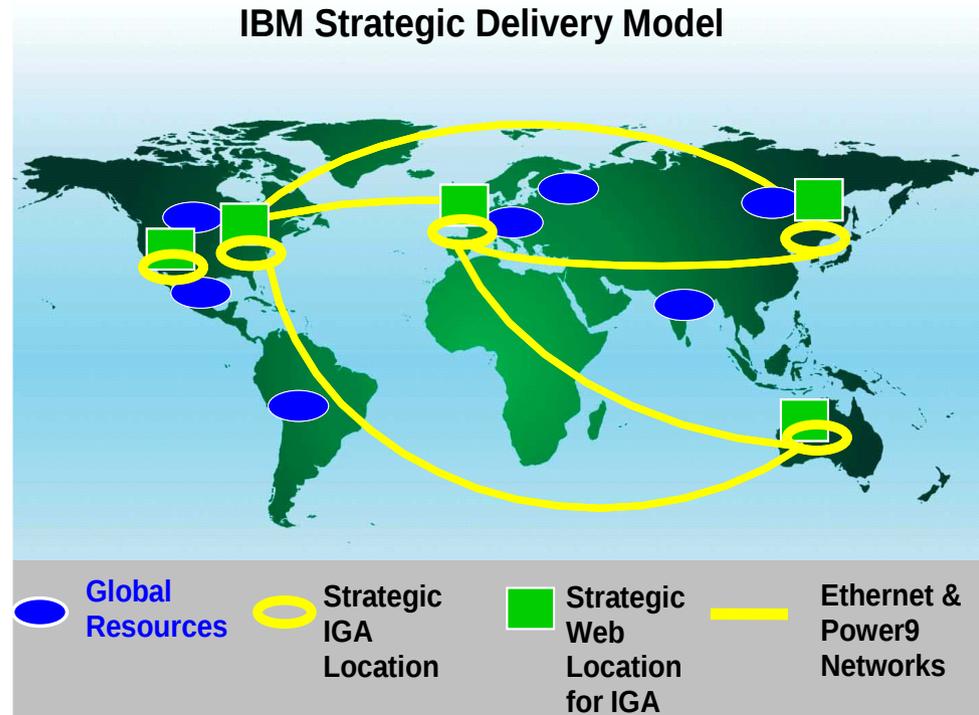
## Data Center Efficiencies Achieved

- Consolidation of infrastructure, applications
- Enterprise architecture optimization
- Global resource deployment

TECHNOLOGY

IBM Metrics	1997	Today
CIOs	128	1
Host data centers	155	7
Web hosting centers	80	5
Network	31	1
Applications	15,000	4,700

## IBM Strategic Delivery Model



## Next Level of Infrastructure Challenge

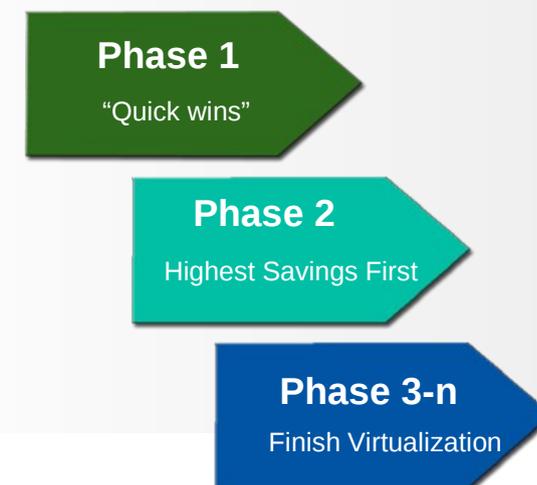
- Floor space challenges in key facilities
- Underutilized assets in outdated Web infrastructure
- Continued infrastructure cost pressure
- Increase % IT spending to transformation initiatives





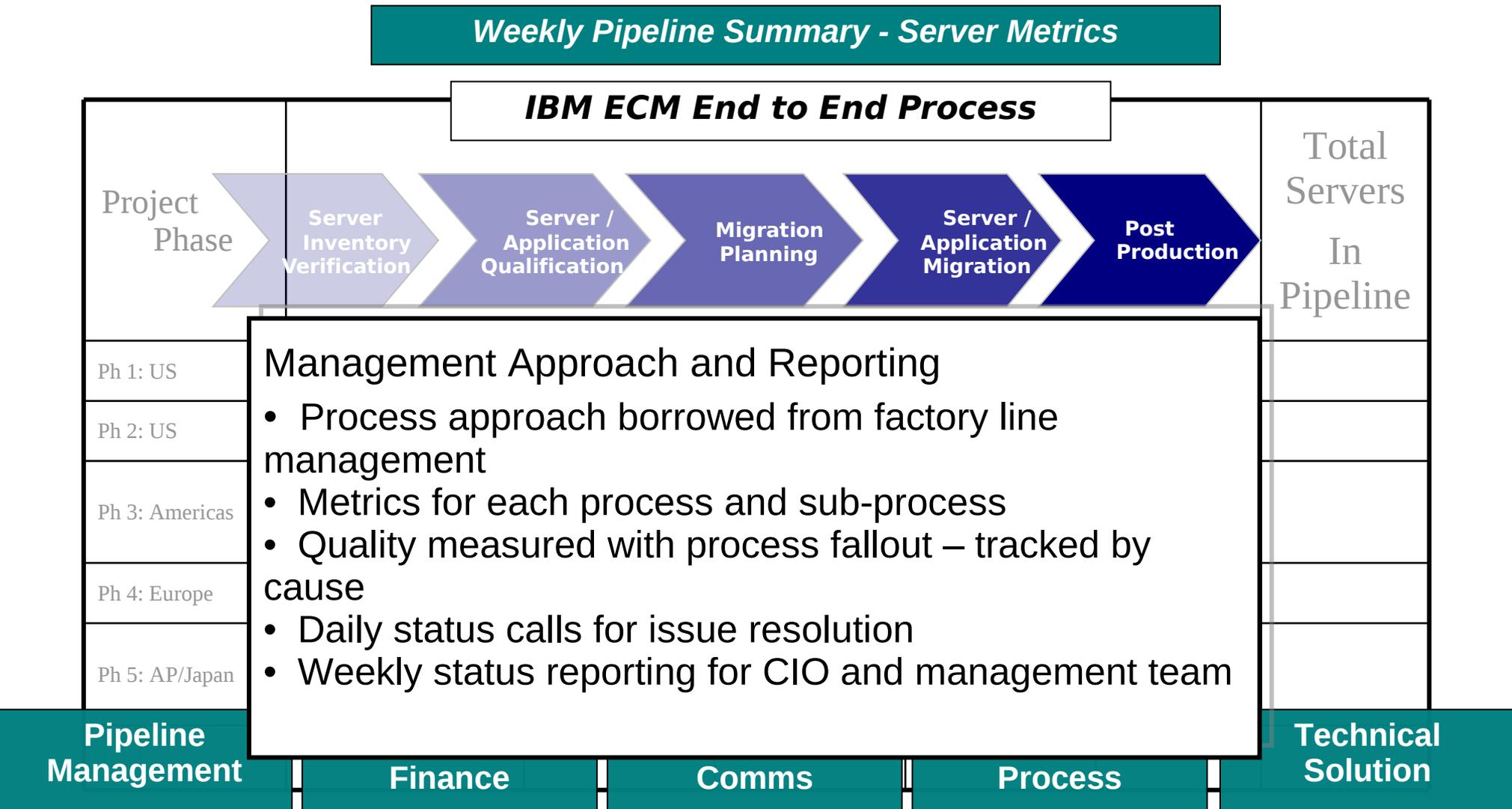
## IBM System z Linux Virtualization Progress

- **Established phased approach for quick wins**
- **Migrated initial servers from early 'wave' teams**
  - Thousands of servers inventoried
  - Multiple successful migrations delivering benefits as expected
  - Decommission pipeline of hundreds of servers for reuse or removal
- **Comprehensive project plan and management system in place**
  - Integrated business priorities with transformational objectives
  - 'Work in progress' approach to maximize server migrations
  - Pipeline, process, technical, finance and communications support
- **Developed internal business case (RACE\*)**
  - Created detailed cash flow and labor analysis, migration expense, iterated
- **Technical solution, education plan and operational plan developed**
  - Built upon IBM prior consolidation/simplification efforts, utilizing IBM offerings and capabilities
- **Highest level of support from IBM senior executive team**



\*Formerly zRace

# IBM is using a 'work in process' approach to manage the migration



# Enterprise Approach to Workload Migration

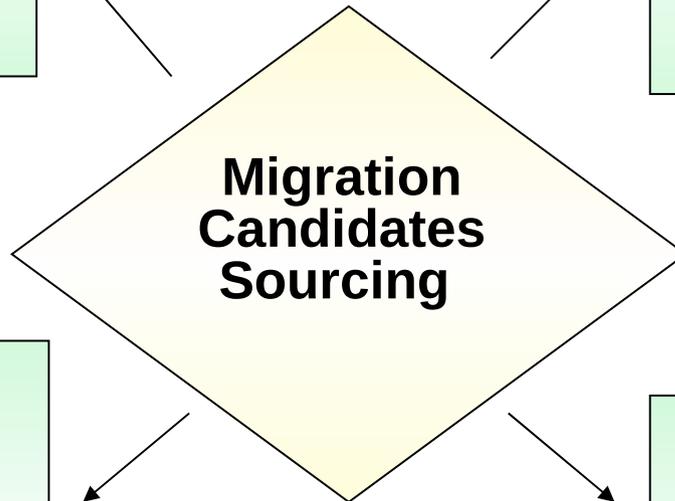
## Location View

- Boulder
- Poughkeepsie
- Portsmouth
- Raleigh
- Rochester
- Southbury



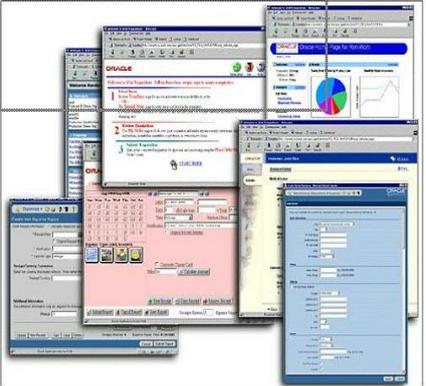
## Environment View

- Managed 'Offerings'
- Development
- Intranet
- BU Environments



## Application View

Business Unit Partnership



## Technology View

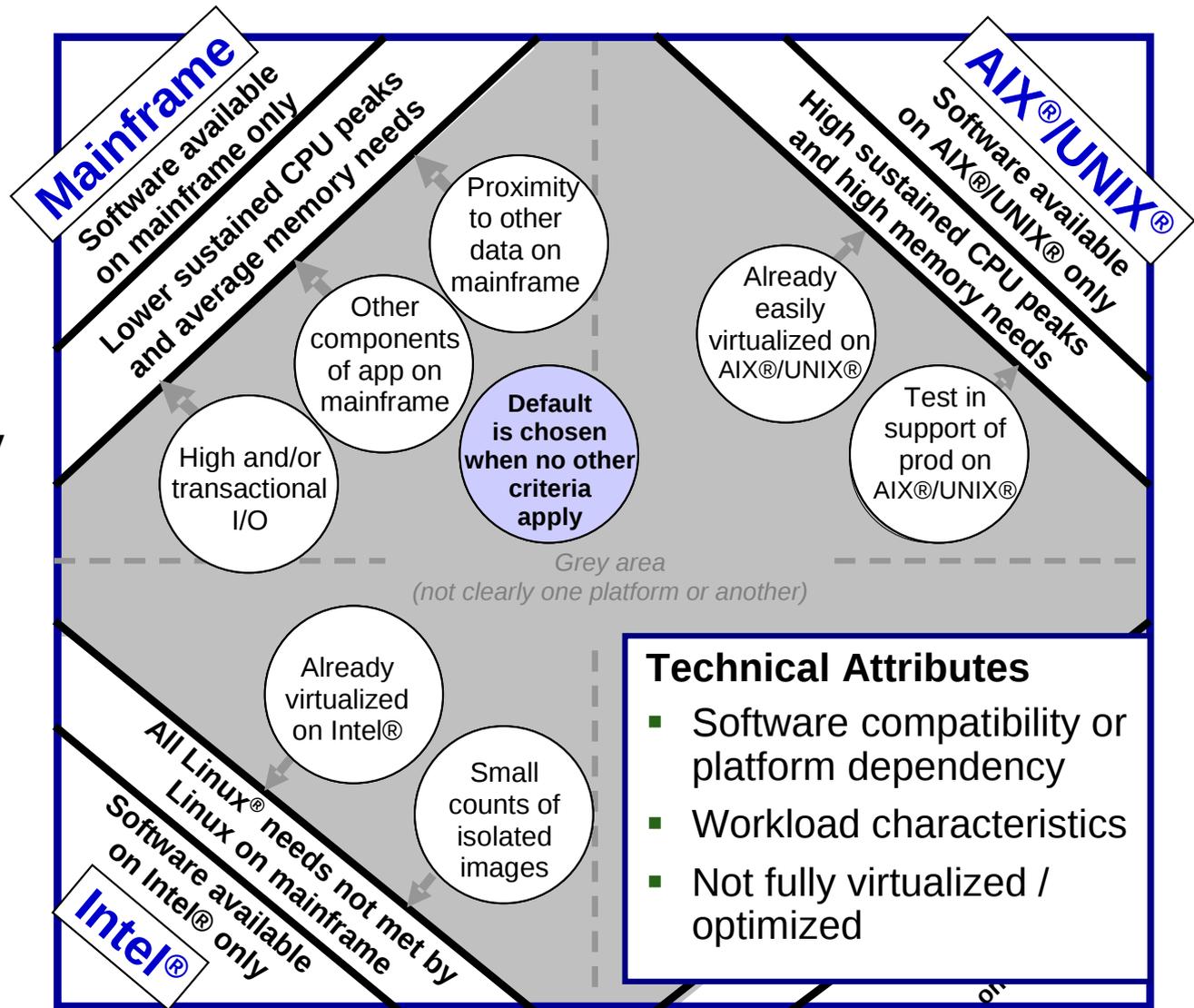
- Domino
- Email
- Static Web
- DB2
- Linux on x86



# Each Workload is Evaluated for Suitability Based on Technical Attributes

## Priority Workloads for Consolidation:

- WebSphere® applications
- Domino® Applications
- Selected tools: Tivoli®, WebSphere® and internally developed
- WebSphere MQ
- DB2® Universal Database™





## Why migrate to Red Hat Enterprise Linux with IBM?

**Proven performance, solid security, migration assistance, lower TCO  
count on from IBM and Red Hat**

**Benefits you can**

- \* RHEL is tuned to support underlying reliability, availability, and serviceability capabilities of IBM hardware
  - RHEL on Power enables a system to attempt recovery if a PCI adapter fails (Extended Error Handling support)
  - RHEL on System z eliminates most I/O-related downtime because it natively utilizes multipath I/O support via z/VM
- \* RHEL takes advantage of IBM servers' built-in performance capabilities
  - RHEL on Power and System z enables dynamic addition and removal of CPU and dynamic addition of memory resources as needed while the OS is running (CPU hot sparing and dynamic memory addition)
  - IBM published highest TPC-C performance result ever achieved by an x86-64 with IBM System x 3950 M2 running DB2 and RHEL
- \* RHEL capitalizes on virtualization, consolidation and scalability capabilities across IBM hardware
  - RHEL on System z enables unmatched levels of workload consolidation in single footprint through sophisticated hypervisor technologies (LPAR, z/VM)
  - RHEL on Power Systems supports advanced virtualization that gives flexibility to allocate from 1/10 of a processor to the entire capacity of the machine to a partition and transfer partitions between Power servers to avoid downtime (Live Partition Mobility)
  - RHEL on System x enables clients to run larger systems and virtualize more efficiently with Linux-exclusive ability to scale up to 96 cores (16 sockets, 6 cores each)



## Why migrate to Red Hat Enterprise Linux with IBM?

**Proven performance, solid security, migration assistance, lower TCO  
can count on from IBM and Red Hat**

**Benefits you**

- \* IBM and Red Hat can reduce risks when migrating from Sun Solaris to RHEL on IBM systems
  - IBM's Migration Factory has a proven process and track record of successfully migrating hundreds of clients from Solaris to RHEL
  - Red Hat offers RHEL migration planning services, Solaris vs. RHEL training guides
- \* Customer can build superior IT infrastructure solutions with IBM and Red Hat
  - DB2/RHEL has lower TCO than Oracle/Solaris and DB2 9.7 has tools that can make migrations from Oracle easier and provide better management
  - DB2/RHEL provides storage savings up to 50% due to compression rates of up to 83%
- \* Both Red Hat and IBM stay at the leading edge of Linux security innovation, with development teams in-house
  - Red Hat was the first distribution to commercially support SELinux, jointly developed by Red Hat and IBM
  - Red Hat and IBM collaborated to obtain full EAL4+ certification on System x, Power, and System z



## Bank of New Zealand

*A bank moves from Sun to System z10 with Red Hat Enterprise Linux to reduce their carbon footprint and address datacenter cost and capacity concerns*

*“Deploying IBM mainframes with Red Hat Enterprise Linux to address our carbon footprint and cost savings concerns was a very big deal, especially at the senior management level.”*

*Lyle Johnston  
Infrastructure Architect  
Bank of New Zealand*

## City of Burbank, CA

*The city reduces costs and risk by replacing a large assortment of Solaris and Windows-based servers with two IBM BladeCenters running RHEL and AIX*

*“ Moving all three tiers of our Oracle EBS solution to BladeCenter enabled cost savings and improved performance. The number of blade and connectivity options available help us to meet future IT challenges.”*

*Mahesh Saraswat  
Database Administrator III  
City of Burbank, CA*

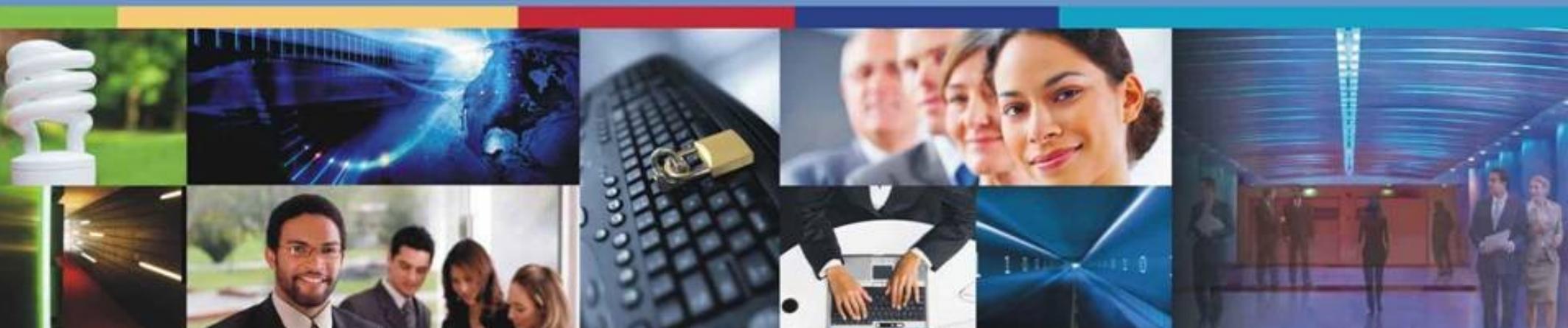
## Critical Success Factors

**Sponsor with an enterprise view**

**Strategic investment for migration**

**Clear goals, dedicated team, inclusive leadership for execution of migration**

**Leveraging talent and capability across all of IBM to drive rapid results**





# QUESTIONS and ANSWERS





# GOVCON DC Migrating Agency to Open System.....

Daud Santosa  
Chief Technical Officer  
National Business Center  
September 28-30, 2009

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Shared Services Provider  
BSI FS 537331





# The National Business Center Business Case for System Z

*A multi-functional Federal Shared Services Center uses Red Hat Enterprise Linux on System z9 and z10 to address significant data center cost and capacity concerns, achieve economies of scale, and enable cloud computing services.*

## • **The Challenge**

As legacy financial applications are gradually retired, the share of the core infrastructure and costs utilized by the payroll application would increase by 40% to 60%.

## • **The Solution**

Upgrade the z9 mainframe to run a modern operating system (z-Linux) on some processors. Continue to run legacy z-OS operating system on other processors for payroll and implement all new enterprise business applications on the z-Linux platform.

## • **The Benefits**

- Significant increase server utilization.
- Reduce power consumption from max levels.
- Lower operations costs by more than 30%.
- Considerable reduction in cycle times for provisioning.
- Extend economies of scale by increasing infrastructure leverage.



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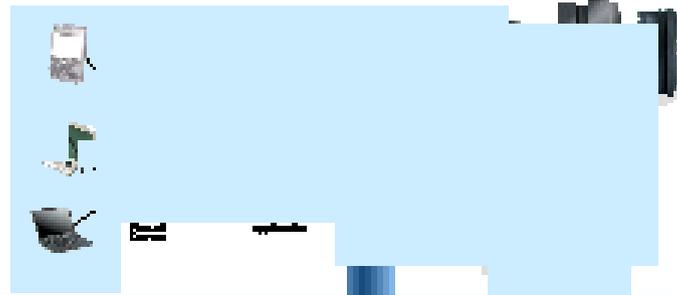




# The National Business Center Data Center & Infrastructure Evolution

The NBC Data Center gradually evolved into a Cloud Computing approach that is Internet based, dynamic, scalable, efficient, and abstracted.

Flexible Delivery Models



Security Management Services

## Services Oriented Architecture

- Business process management standards
- Data translation and synchronization
- Standard Web Services protocols
- Simplified software architecture & integration

## Virtualization

- Significant increase in asset utilization
- Dynamic provisioning
- Virtual support and management
- Single management and policy framework
- Enable software migration

## Cloud Computing

- Authentication as a Service (Q4 '09)
- Infrastructure as a Service (Q4 '09)
- Platform as a Service (Q4 '09)
- Software as a Service (Q4 '09)

ORGANIZATION CULTURE  
GOVERNANCE



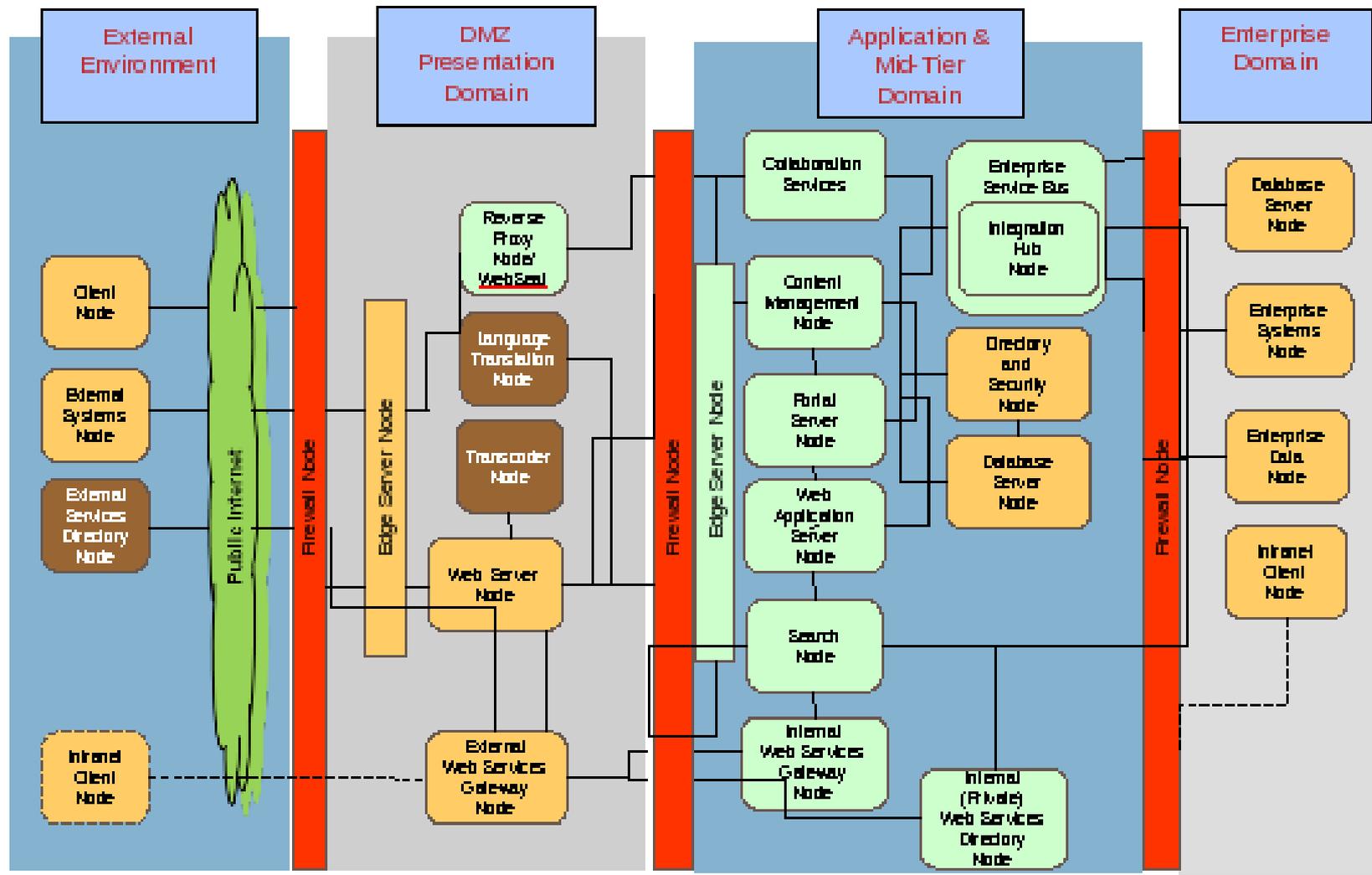
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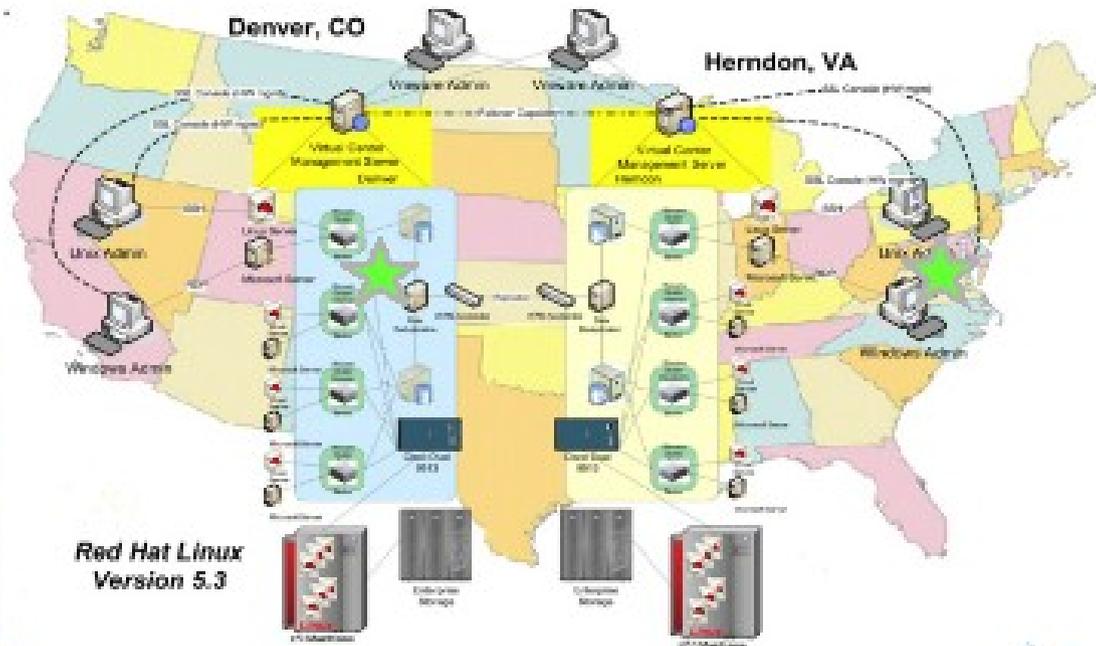
# The National Business Center

## Reference Architecture (Pattern Based architecture)





# The National Business Center Dual Operating Environments



## Business Economic Value

- Simplified policy and management domains across the multi-tier architecture
- Highly reliable and highly available platform
- Leverage current NBC resources and skill sets
- End-to-end management view of distributed application components
- Support multi-tenancy including provisioning, metering and cost by usage
- Consolidated disaster recovery
- Proven economies of scale and efficiency

## Support for Green IT Objectives

- Increase in server utilization reduces power consumption
- Reduction in physical servers frees up precious floor space
- Provides additional capacity for continued business growth

## Cloud Infrastructure and Scalability

- Dynamic allocation in NBC Cloud environments
- Support for both upward and downward scalability
- Significantly reduce cycle times for provisioning
- Support for dynamic CPU and memory allocation

## Increased Security

- Combine with zLinux Mainframe and Red hat O/S, NBC Cloud infrastructure has increased



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# Panel Discussion

# Questions?

Tell us what you think:  
Complete the survey