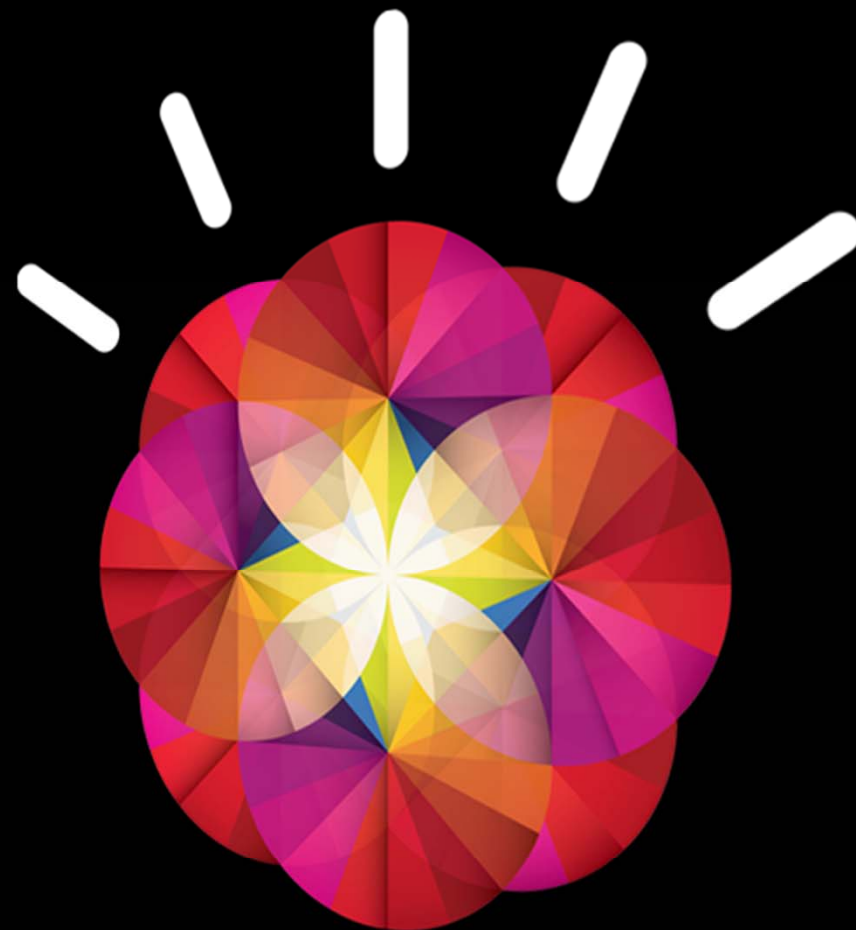# Transforming @ IBM
*The Journey to Smarter Computing*

**Leslie L. Gordon**

Vice President

Application and Infrastructure Services Management

IBM

# IBM Transformation:  The Journey to Smarter Computing

**Foundation** → **Optimization** → **Innovation**

- *Foundation*

  — IBM Transformation Strategy

  —

- *Optimization*

  — Virtualization – Enterprise Computing Model (ECM)

- *Innovation*

  — Cloud Computing

**IBM**

# IBM's strategy

*A decade ago we saw change coming and took decisive actions that have enabled IBM to turn today's disruption into opportunity.*

**Changes in world markets**

**Changes in information technology**

**Changes in client needs**

Become the premier Globally Integrated Enterprise

Focus on open technologies and high-value solutions

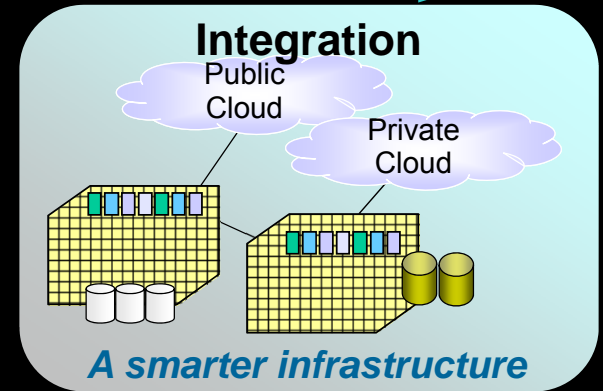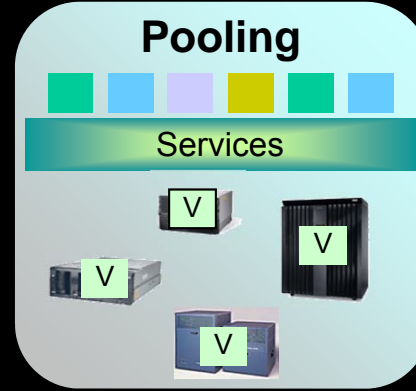Deliver integration and innovation to clients
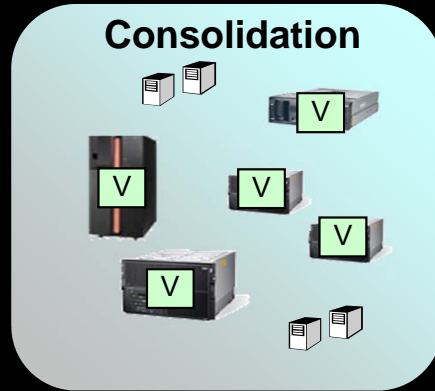
**IBMers Value**

Dedication to every client's success.

Innovation that matters—for our company and for the world.

Trust and personal responsibility in all relationships.

IBM

# IT Infrastructure Evolution

**IT Simplification**



**Sprawl**

**Consolidation**

**Pooling**

Services

**Integration**

Public Cloud
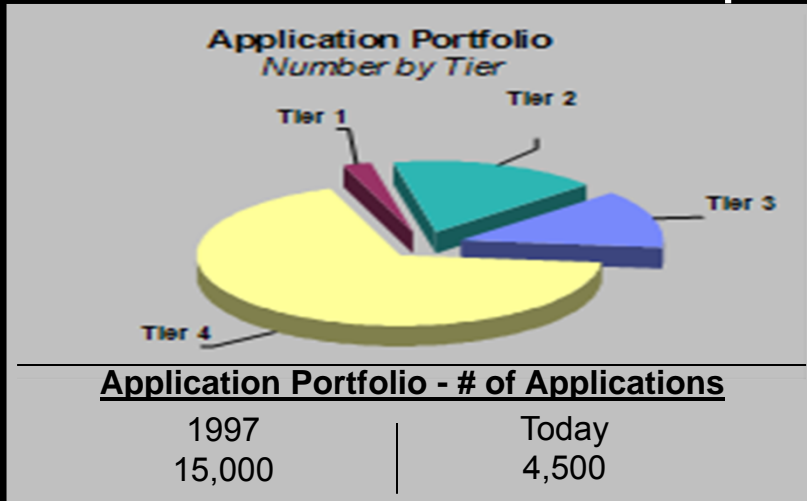
Private Cloud

*A smarter infrastructure*

## Top IT Requirements

- *Agility*
- *Resiliency*
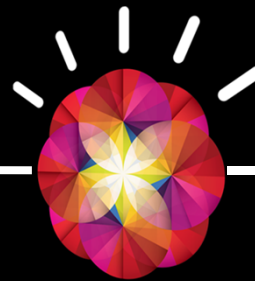- *Security*
- *Greenness*
- *Low Cost*

## Key Technologies

- *Service oriented architecture*
- *End-to-end service mgmt*
- *Comprehensive virtualization*
- *Ensembles & scalable server*
- *Converged networks*
- *Cloud computing services*

**IBM**

# CIO Run Portfolio – Composition and Trends

**Application Portfolio**
*Number by Tier*

Tier 1
Tier 2
Tier 3
Tier 4

| Application Portfolio - # of Applications | |
|---|---|
| 1997 | Today |
| 15,000 | 4,500 |

*Continued cost take-down requires transformational change*

*Leveraging virtualization, standardization/automation and integrated service management*

**"Shifting the Mix"**

2003  2004  2005  2006  2007  2008  2009  2010

■ Run  ☐ Transform  ■ IBM E/R

IBM
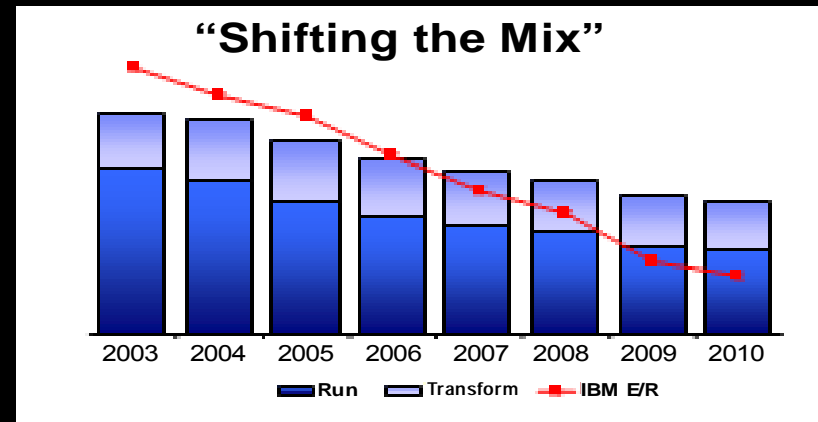
# Project "Big Green" – Server Virtualization
## *IBM's Enterprise Computing Model program is yielding significant benefits for the corporation*

### Progress

Servers consolidated
**over 5,700**

Current migration pace
**2000 servers/year**

Energy savings –
**>20k MWh saved**

Reduction in floor space -
**47,000 square feet**

Dramatic Simplification
**Software Licenses reduced by 93%**

**Physical Network Connections
reduced by 55%**

### *Benefits Realized*

**Business Case**

- Energy savings
- Reduced IT costs
- Reduced capital req'ts
- HW/SW refresh

**Standards and Simplification**

- Inventory hygiene
- Application mapping
- Faster provisioning

**Service Quality**

- Improved security
- Increased resiliency
- Simple, stable, available

# Client View of TCO Comparison for Similar Distributed Workload vs. System z Linux results in Potential 60-75% Gross Cost Savings / 5 years
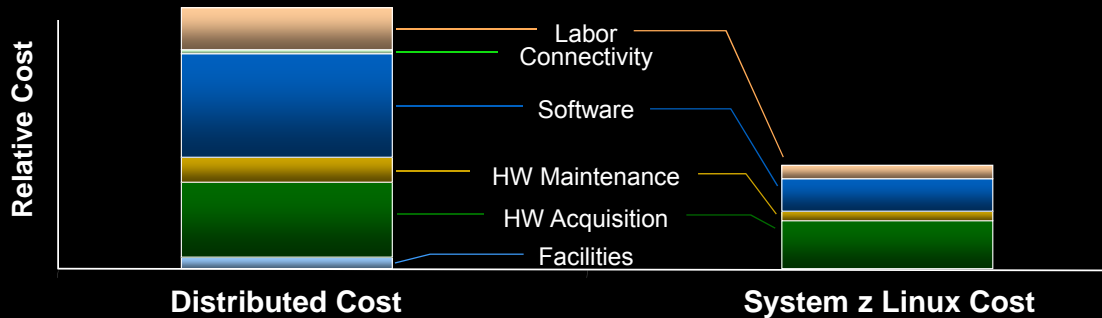
**Operating Cost: Distributed vs. Mainframe**



**Potential Savings: Categories as a % of Gross Savings**
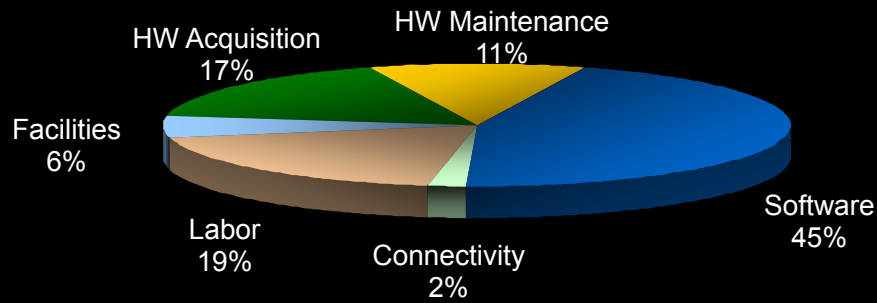


**Dramatic Simplification**

| Unit | Distributed | System z Linux | % Reduction |
|---|---|---|---|
| Software Licenses | 26,700 | 1,800 | 93% |
| Ports | 31,300 | 960 | 97% |
| Cables | 19,500 | 700 | 96% |
| Physical Network Connections | 15,700 | 7,000 | 55% |

# Managing the Migration – A "work in process" approach

## *Management Approach and Reporting*



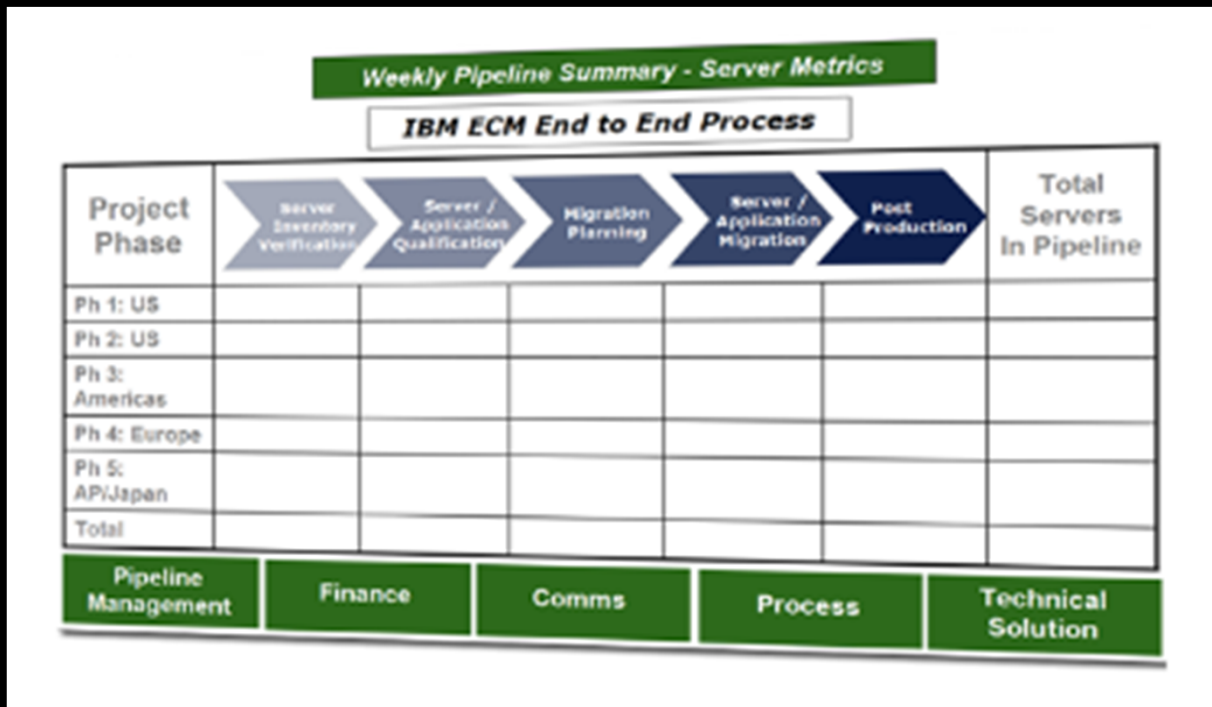**Weekly Pipeline Summary - Server Metrics**

IBM ECM End to End Process

| Project Phase | Server Inventory Verification | Server / Application Qualification | Migration Planning | Server / Application Migration | Post Production | Total Servers In Pipeline |
|---|---|---|---|---|---|---|
| Ph 1: US | | | | | | |
| Ph 2: US | | | | | | |
| Ph 3: Americas | | | | | | |
| Ph 4: Europe | | | | | | |
| Ph 5: AP/Japan | | | | | | |
| Total | | | | | | |

| Pipeline Management | Finance | Comms | Process | Technical Solution |
|---|---|---|---|---|

- Process approach borrowed from factory line management
- Metrics for each sub-process
- Process fallout – tracked by cause
- Daily status calls issue resolution
- Weekly management review cadence

# Enterprise view enables workload selection and migration success

### Location View
Southbury GWA consolidation –
sunset of first-generation Web Architecture

### Environment View
Development and Test Environments
allowing for iterative development and
better application quality

**Migration
Candidates
Sourcing**

### Application View
Portfolio analysis and
"workload" selection –
OnDemand Workplace, e-mail, Supply Chain

### Technology View
Bulk Moves –
sunset of first-generation Web Architecture

# Workload Complexity influences Migration Cost
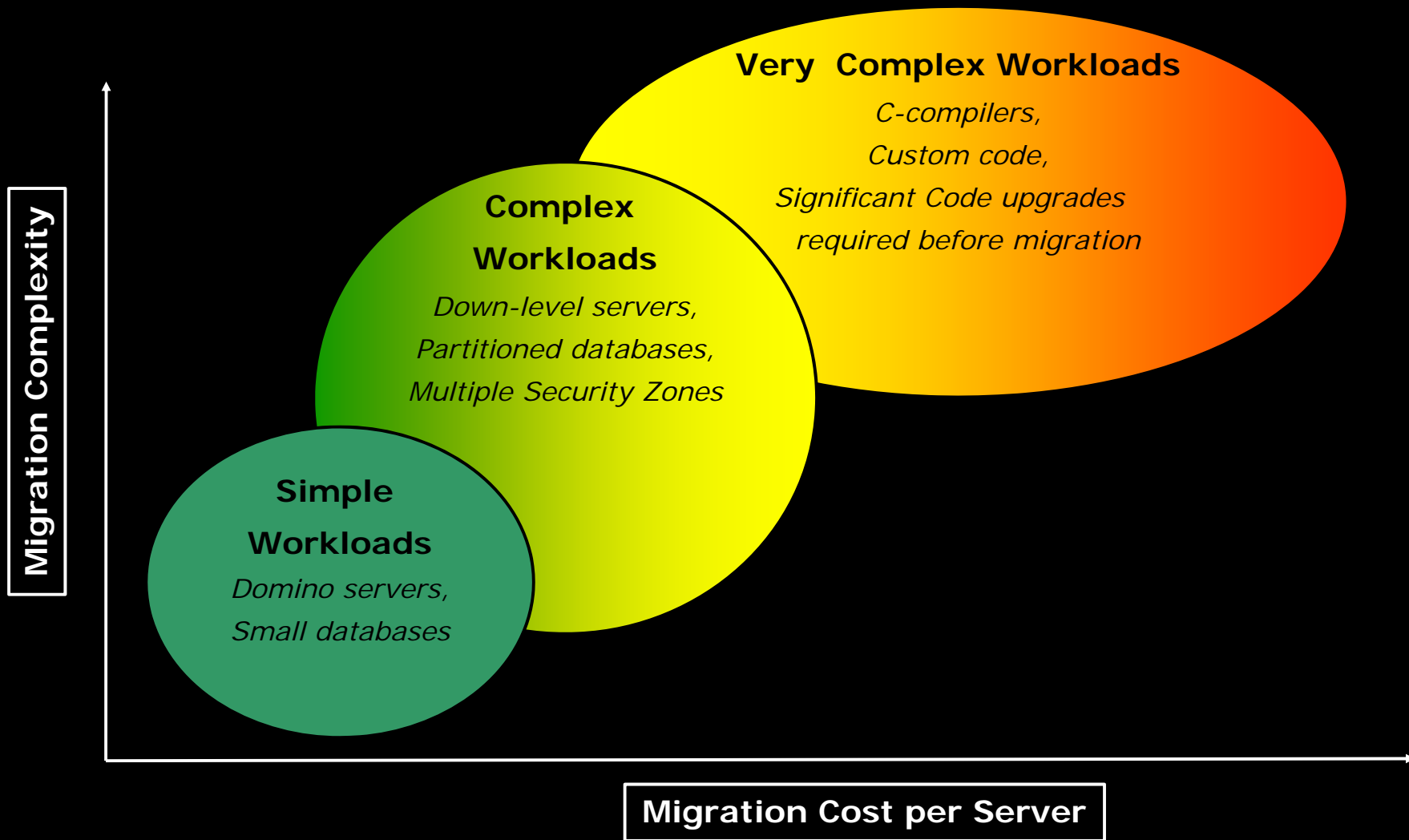
**Very Complex Workloads**

*C-compilers,*

*Custom code,*

*Significant Code upgrades*

*required before migration*

**Complex Workloads**

*Down-level servers,*

*Partitioned databases,*

*Multiple Security Zones*

**Simple Workloads**

*Domino servers,*

*Small databases*

**Migration Complexity**

**Migration Cost per Server**

# IT Infrastructure Evolution

**IT Simplification**

## Sprawl

## Consolidation

## Pooling

Services

## Integration

Public Cloud

Private Cloud

*A smarter infrastructure*

**Manage IT Services**

## Inconsistent

**IBM's Most Important Applications**
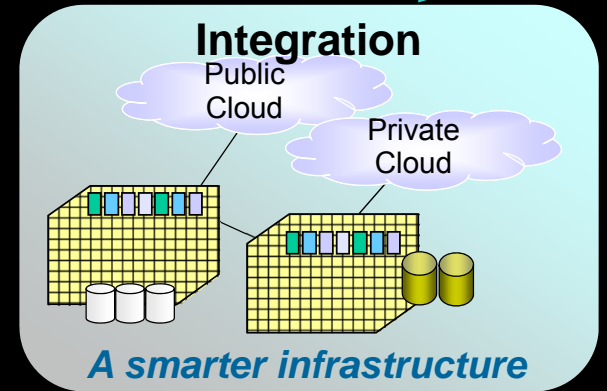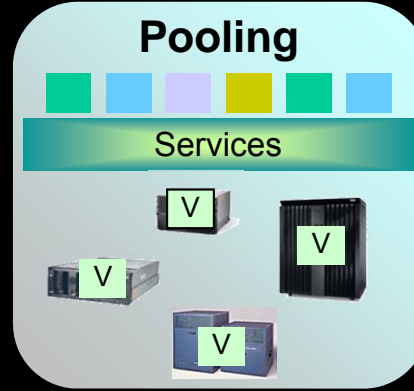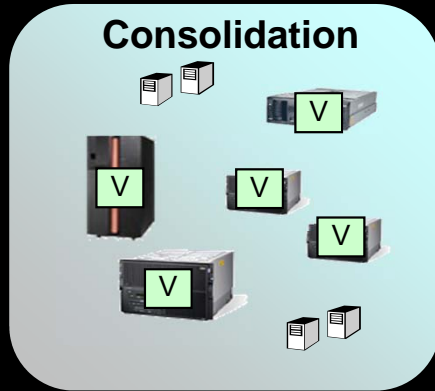
## Rationalized

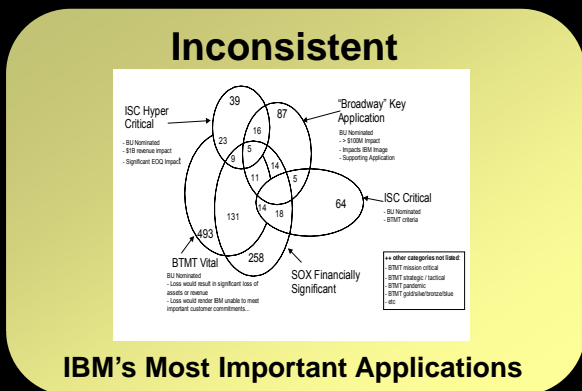| Application Class | Tier 1 | Tier 2 | Tier 3 | Tier 4 |
|---|---|---|---|---|
| | Key – Most Critical | Strategic & Mission Critical | Strategic & Not Mission Critical | Not Strategic or Mission Critical |
| Apps | 4 % | 20 % | 19 % | 57 % |
| Availability | Very High | High | Medium | Low |
| Support | 24 x 7 | 24 x 7 | M-F 12 x 5 | Best Effort |
| Monitoring | App Level | Infra | Basic Server | No Monitoring |

**Service Catalog**

## Integrated

**E2E Business Service Mgmt**

# IBM is applying Cloud across several key domains

*IBM's internal Cloud implementations move resources to more agile, cost-effective platforms*

| Analytics | Collaboration | Develop/Test | Desktop | Storage | Prod Support |
|---|---|---|---|---|---|
| **Blue Insight** | **LotusLive** | **Develop/Test Cloud** | **Workplace Cloud** | **Storage Cloud** | **Production Cloud** |
| • Large, private analytics cloud powered by Cognos<br><br>• Expanded insight; cost savings | • Collaboration tools—web conferencing<br><br>• Standard platform supporting global, virtual workforce | • Self-service computing capacity for development<br><br>• Rapid provisioning' increased agility and flexibility; standard platform | • Roles-based, virtual work environments<br><br>• Greater agility; increased security | • File storage cloud in place; block storage cloud in progress<br><br>• Maximized utilization through automated provisioning and tiering | • Cloud-supported environment for production applications<br><br>• Standardized services by tier; lower labor costs for support; optimized |

# Journey to Smarter Computing – Critical Success Factors

**Foundation** → **Optimization** → **Innovation**

- **Enterprise view and sponsorship**

- **Strategic investment**

- **Clear goals with a dedicated team**

- **Inclusive leadership**

- **Continuity of leadership**

- **Leverage talent and capability to drive results**
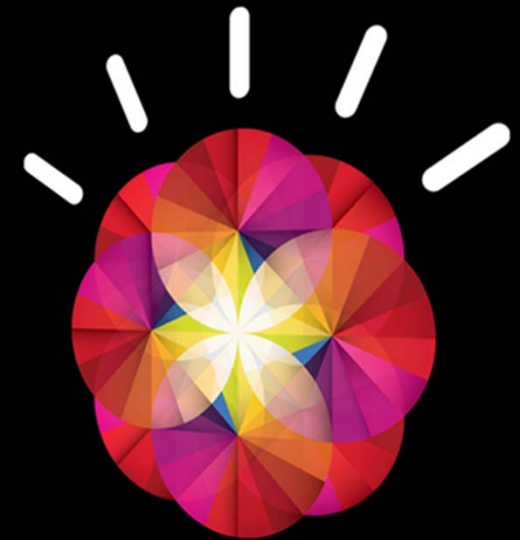
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| HiperSockets | System I | | |

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