



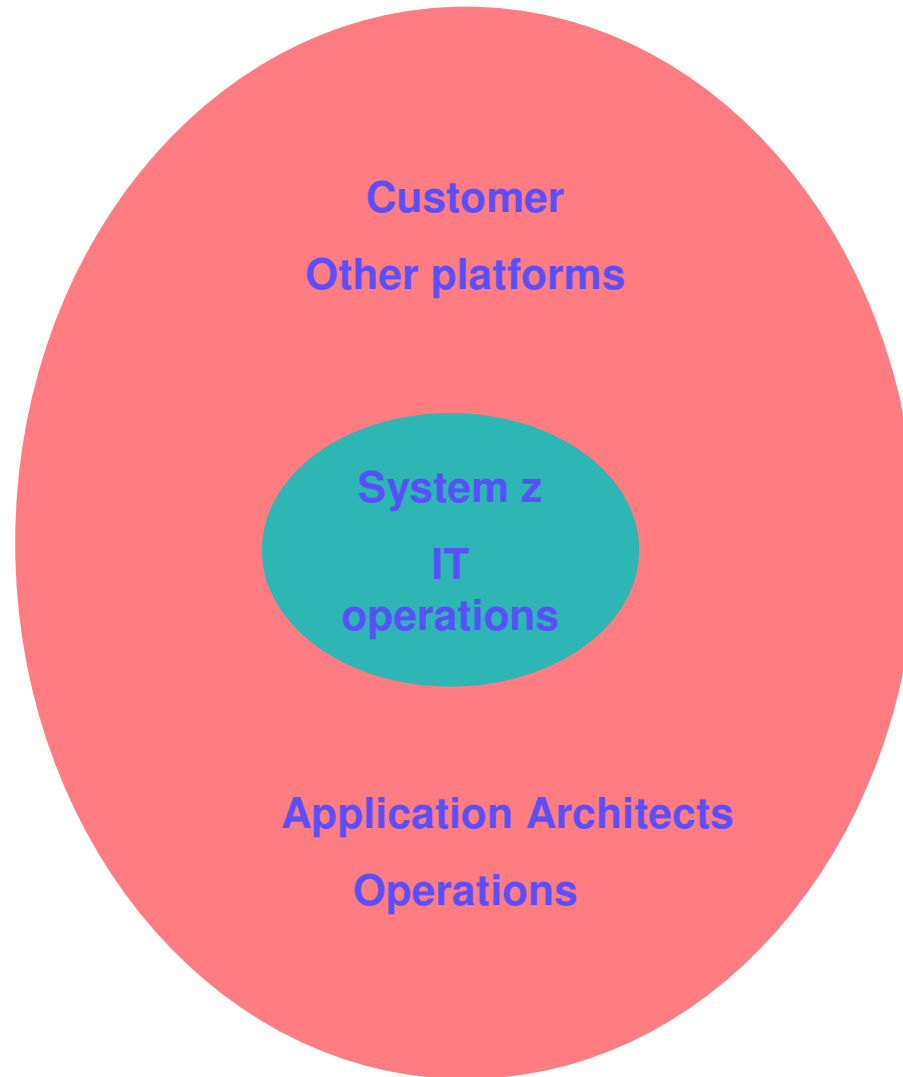
IBM Systems and Technology Group

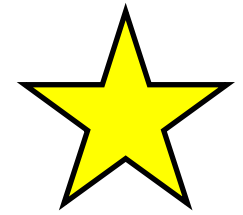
The Value of System z

Jim Porell
IBM Distinguished Engineer
jporell@us.ibm.com



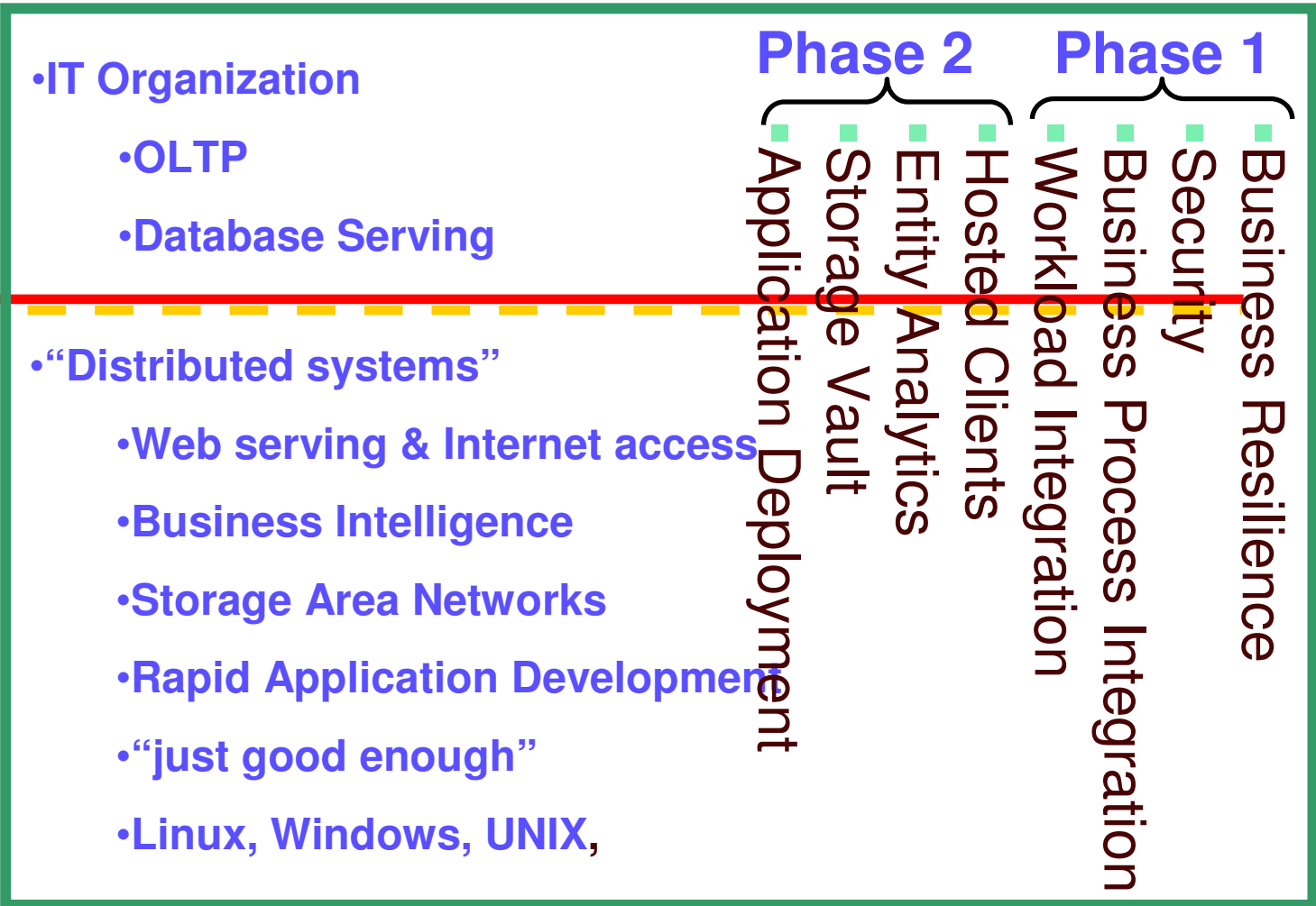
Where is the next gen application?





We need to break down the organizational barriers

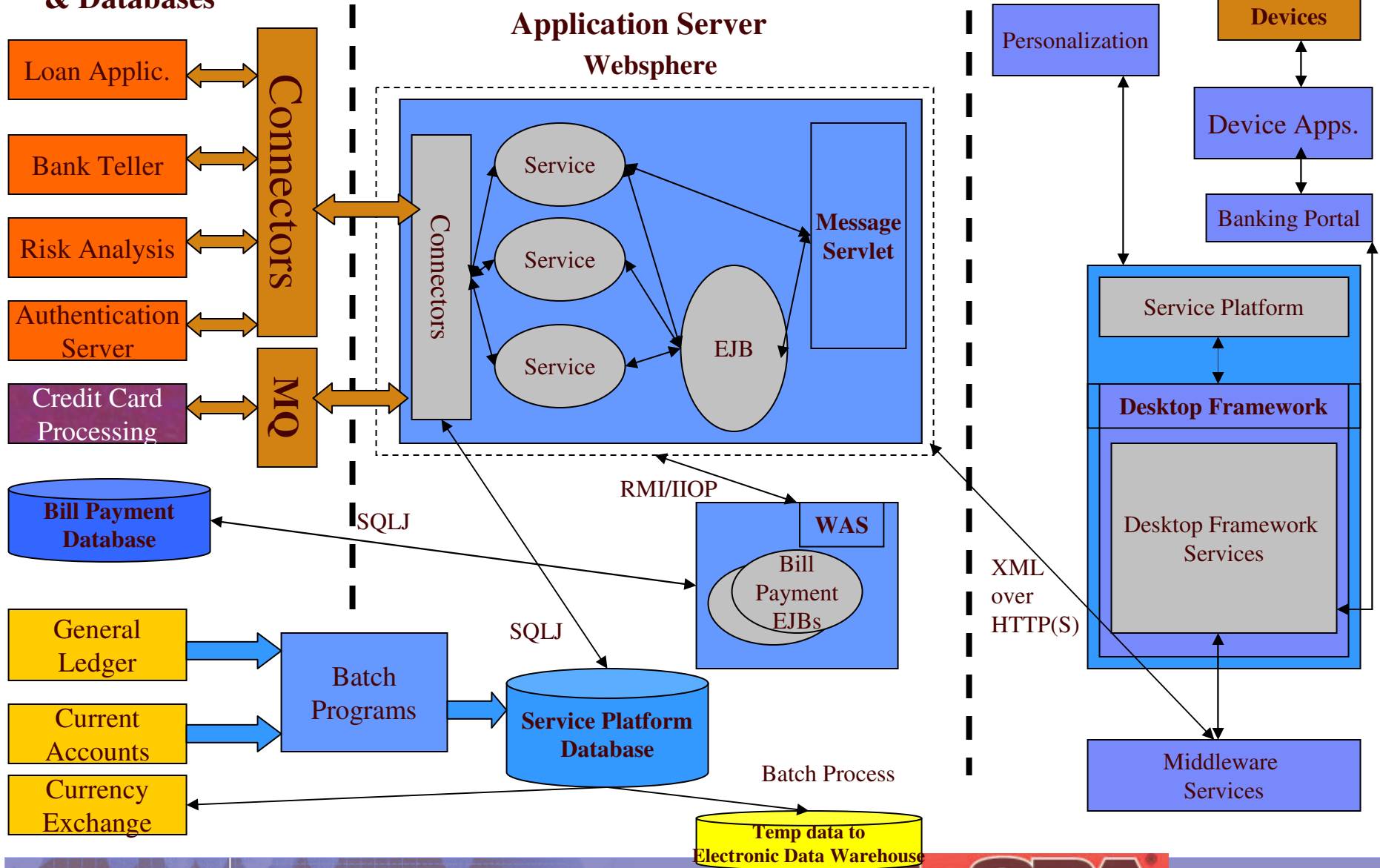
OnDemand Organization



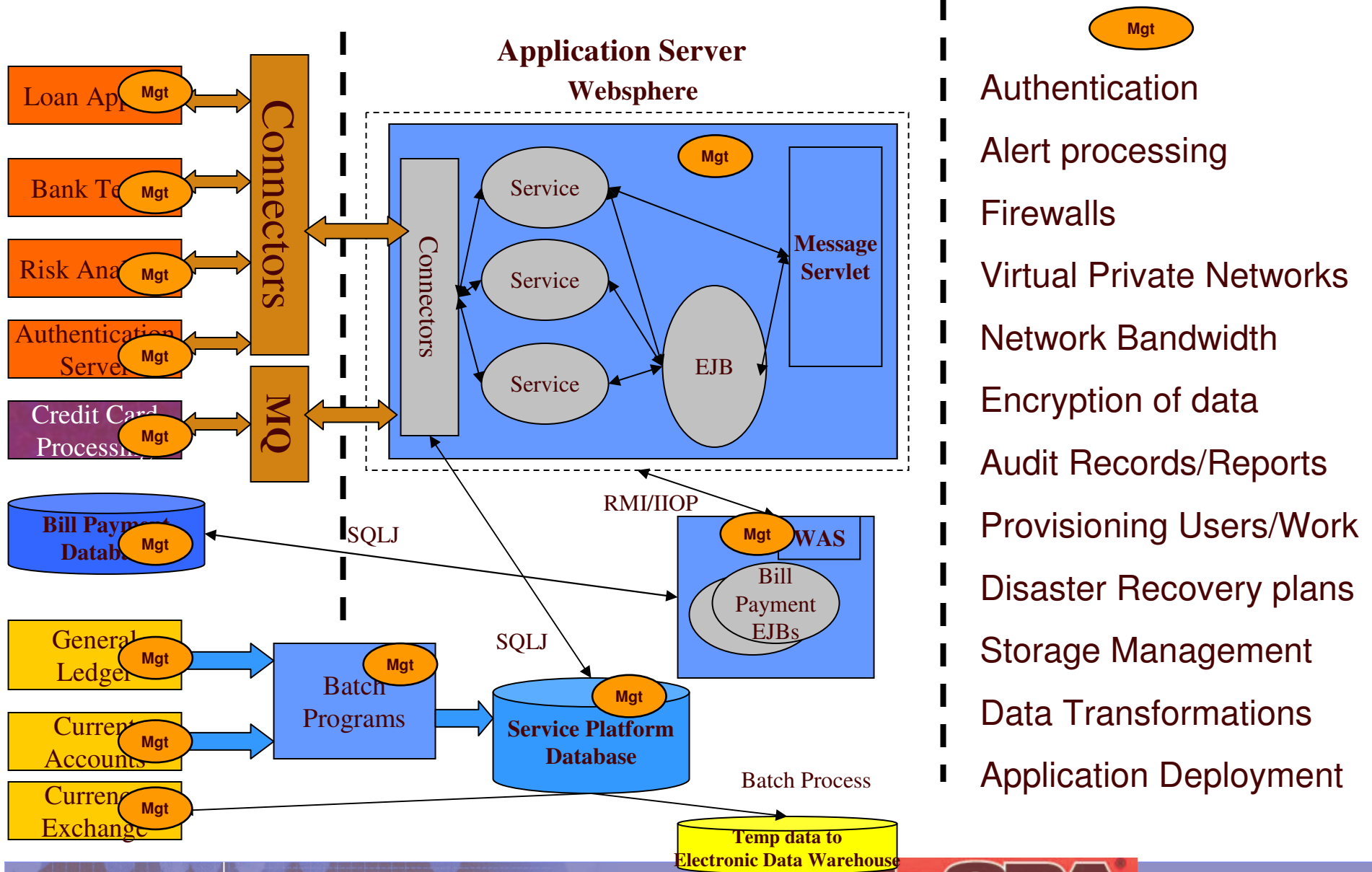
Service Systems & Databases

Application Architecture: A Large Enterprise

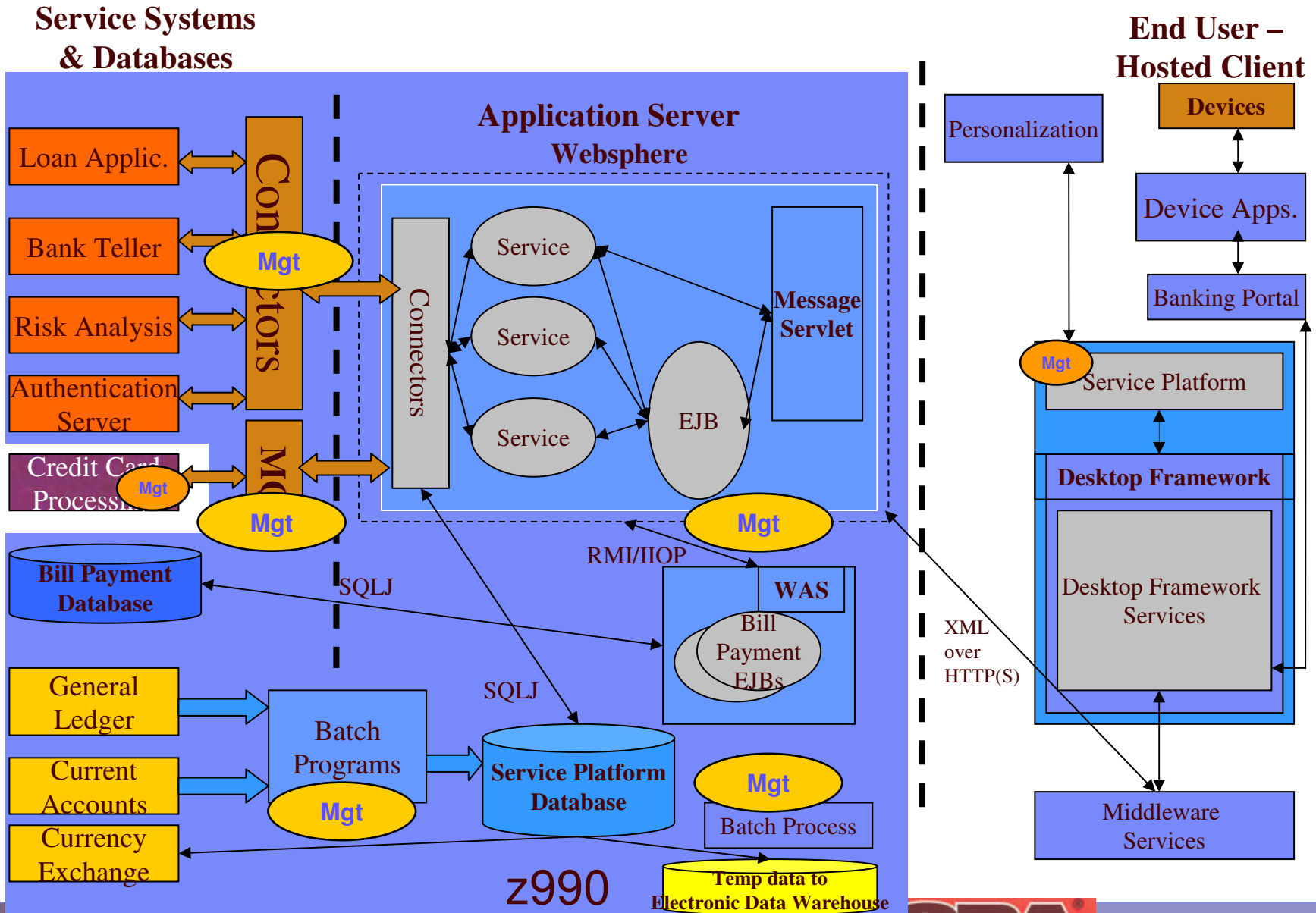
End User – Hosted Client



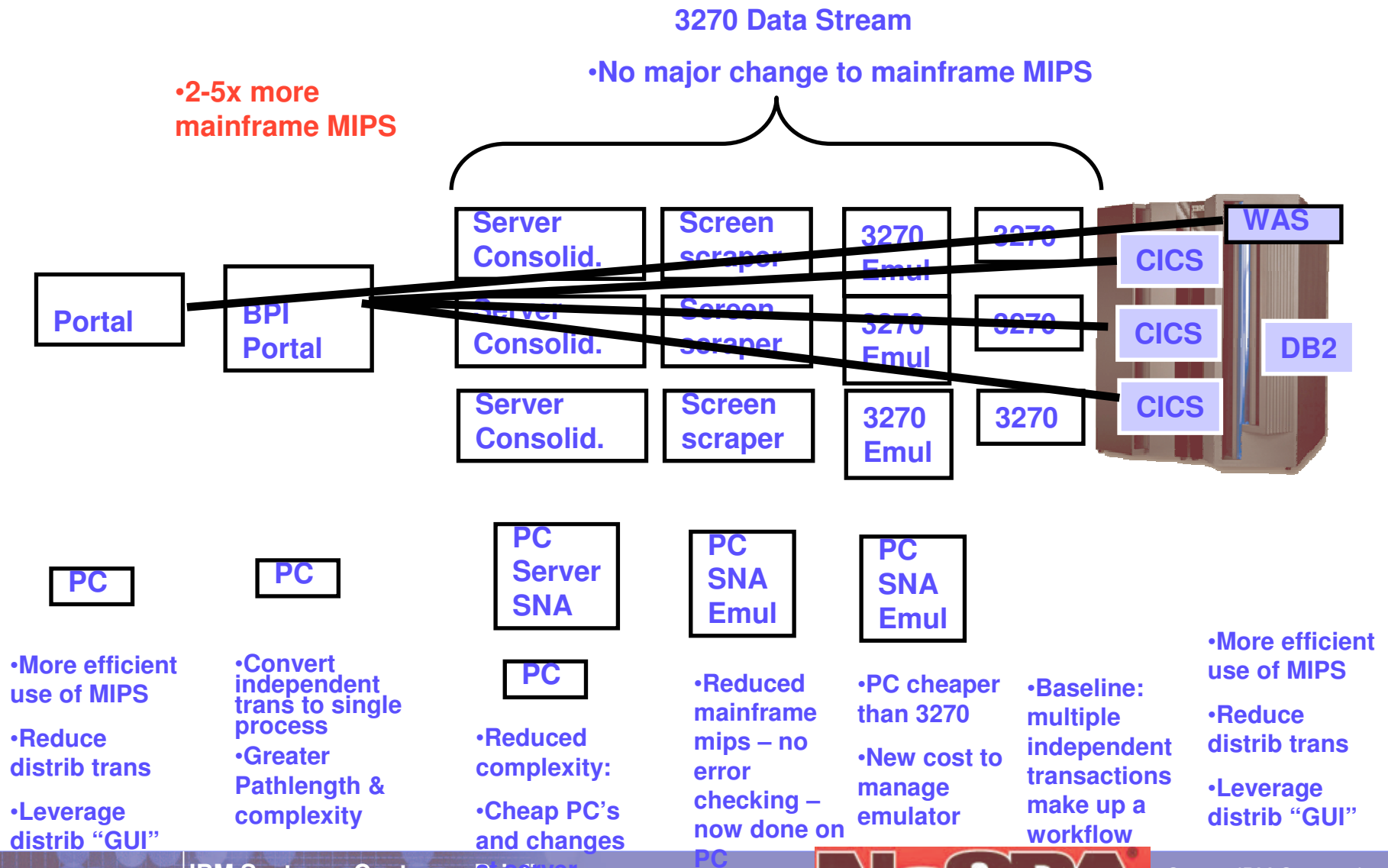
Typical multi-system Design: Numerous Mgmt Domains



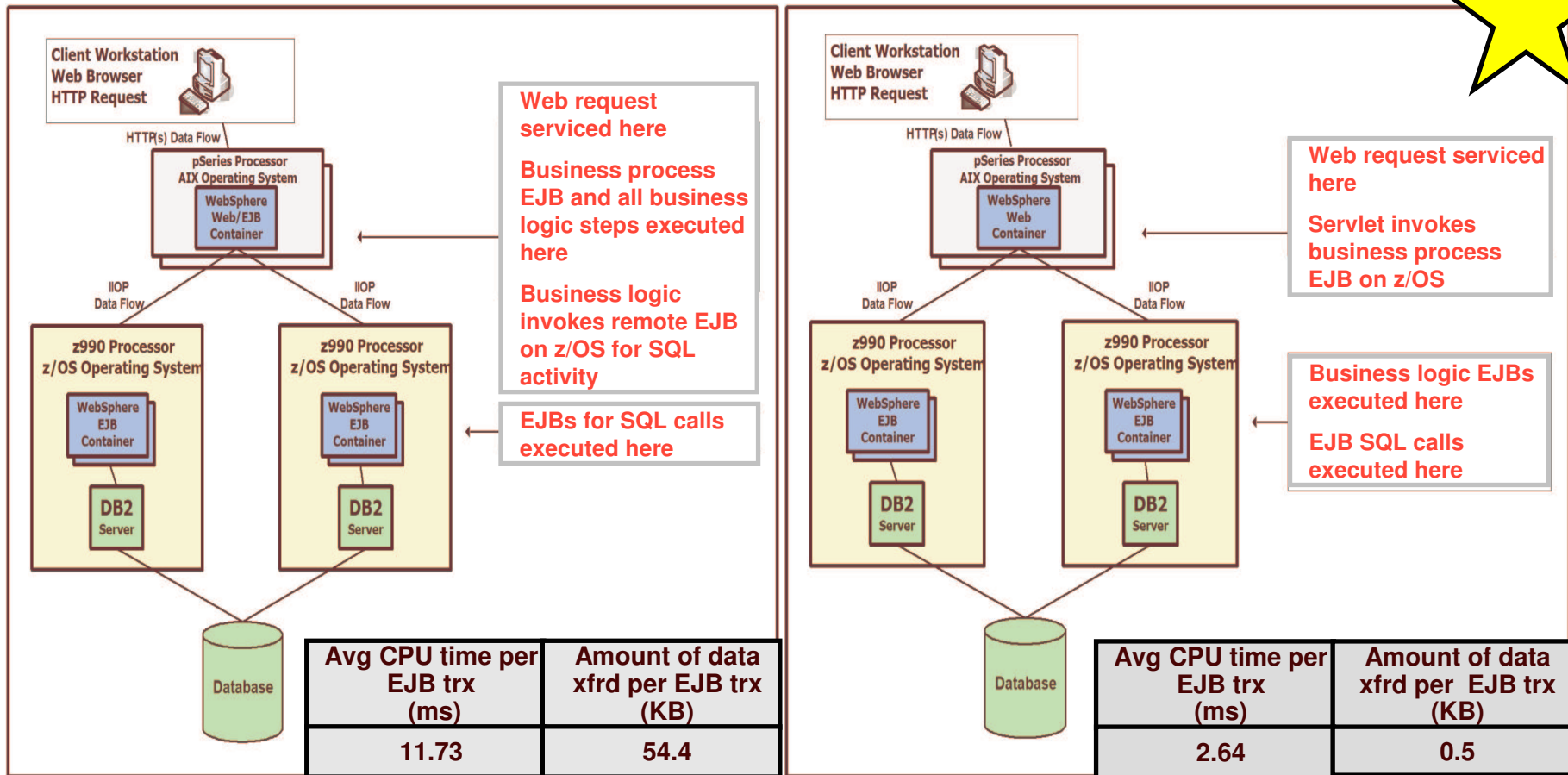
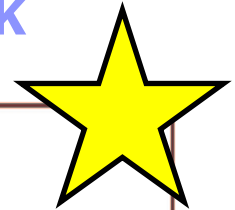
zSeries: Unique Scale-up Design to minimize mgmt domains



Evolution of programming



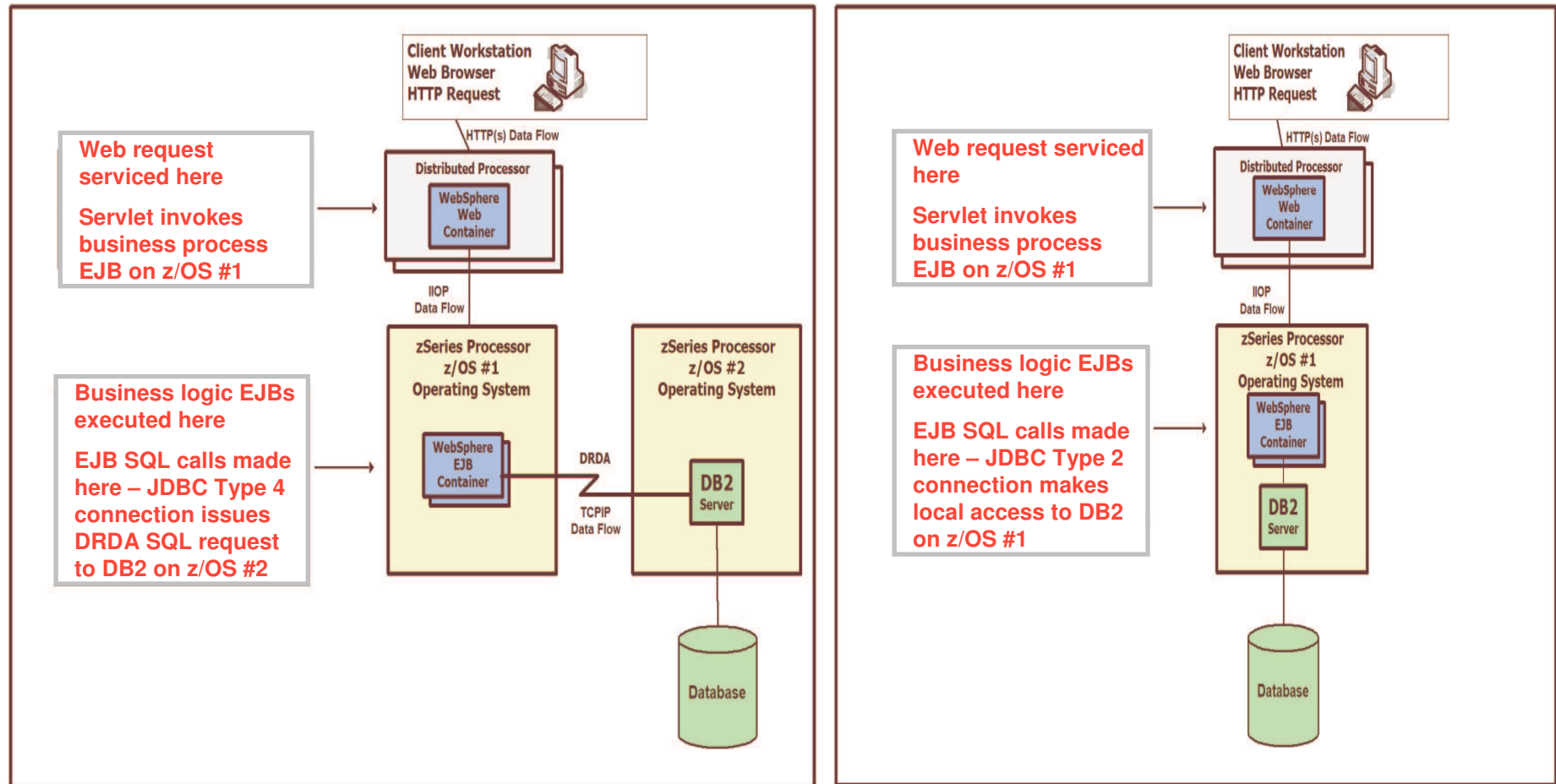
Proximity to data – transportation industry benchmark



Advantages of refactoring business logic to be co-resident with z/OS data

- Average CPU time per EJB transaction was reduced by over 77%
- Number of bytes of data transferred per EJB transaction was reduced by 99%

Proximity to data – large bank benchmark

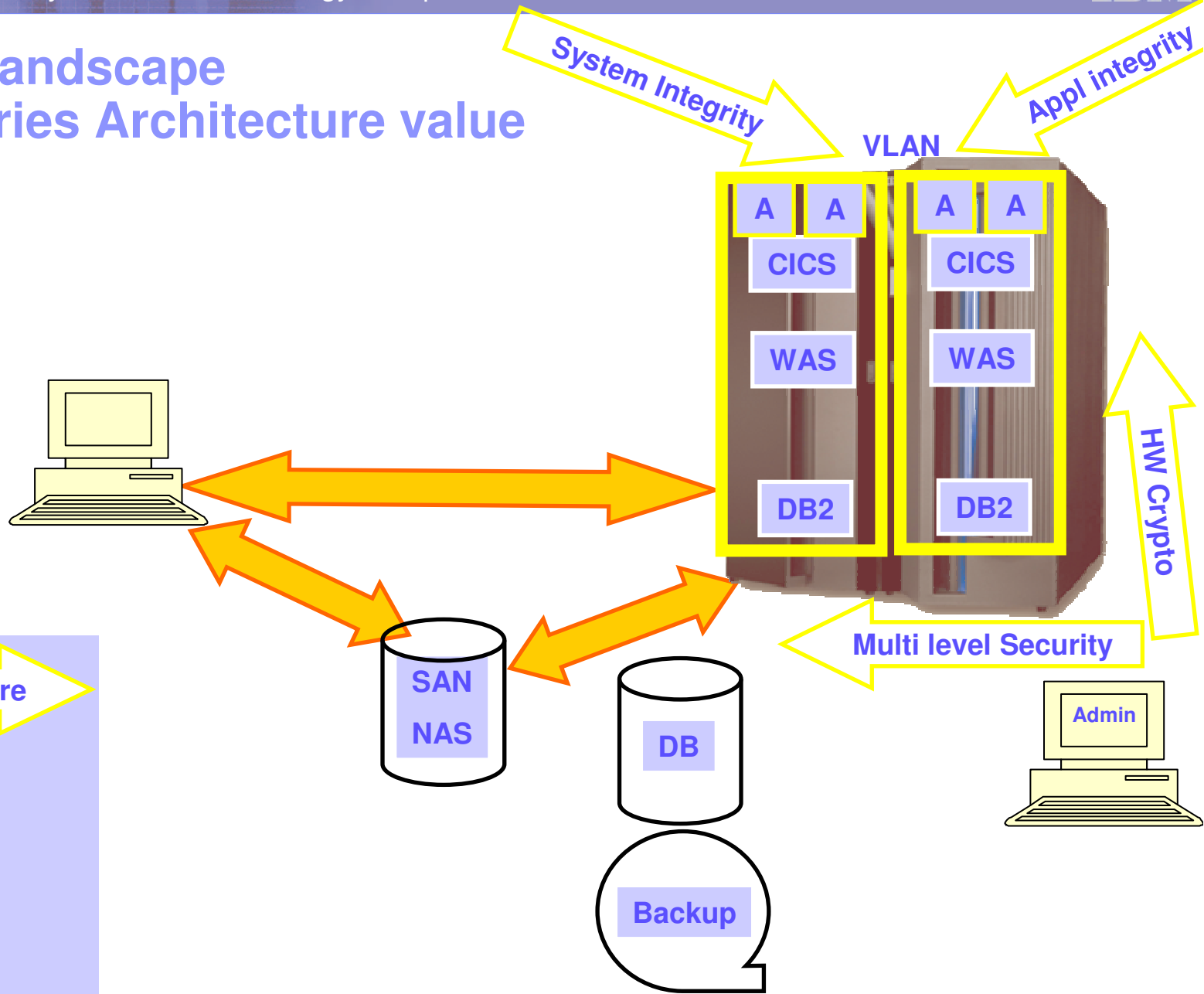


■ **Benefits of Type 2 Local DB2 access vs Remote Type 4 access**

- A 50% reduction in average end (Web) user response times
- Overall CPU requirement was 50% less than the remote (two z/OS) system implementation



Security Landscape zSeries Architecture value



zSeries Architecture

zSeries Architecture Value

- **System & Application Integrity**
 - Preventing trojan horses, worms & viruses via storage protection keys
 - Business Process Integration
 - Business Resilience
- **Compartmentalization of work**
 - Middleware deployment processes
 - Row based security for DB2 and multi level security
 - Logical Partition and zVM guest isolation
 - Virtual LANs reduce Security intrusion points
 - Workload management
- **Data Confidentiality**
 - Hardware encryption services
 - Encryption Key Management

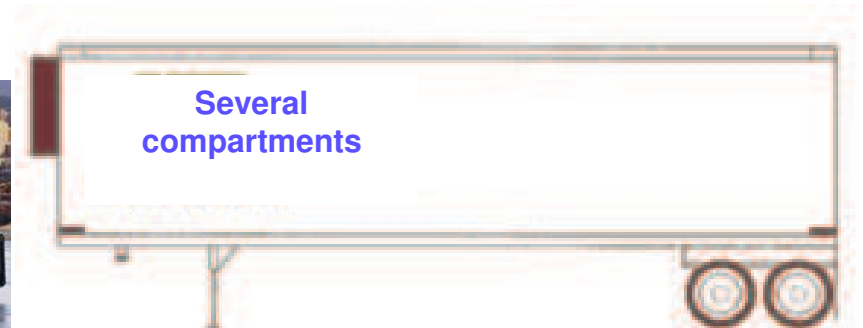
Benchmarks don't always demonstrate the right value



- 40 Miles/gallon
- 7 cubic feet of storage
- 4 passenger
- \$15,000



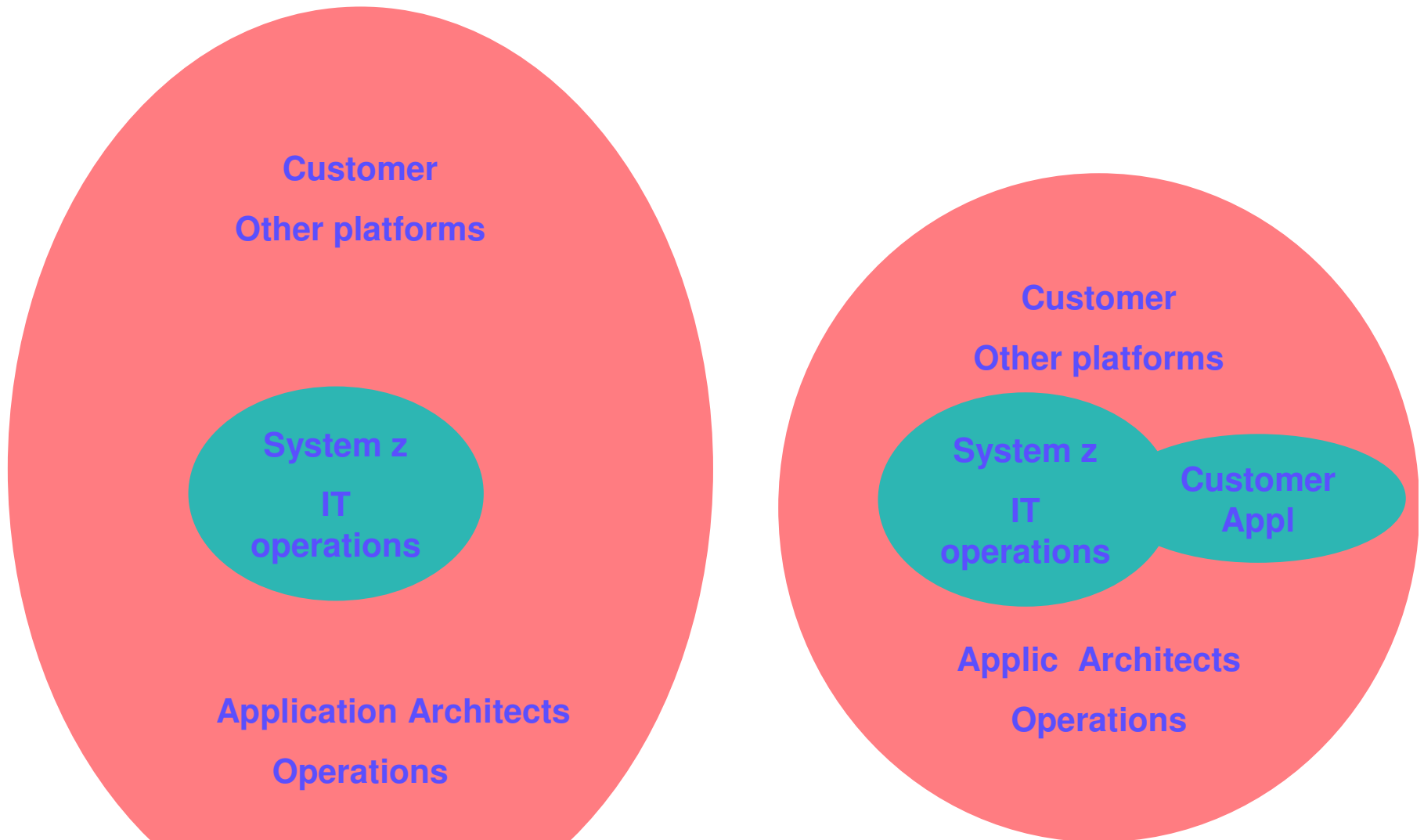
- 10 Miles/gallon
- 7 cubic feet of storage
- 2 passenger
- \$55,000



- If the problem is: You want to move your house:
 - How many vehicles and trips will be required to move?
 - Are extensions, such as the trailer, valuable?
 - How do you get the Grand Piano moved?
- They aren't mutually exclusive either:
 - The family rides in the car, the furniture rides in the truck



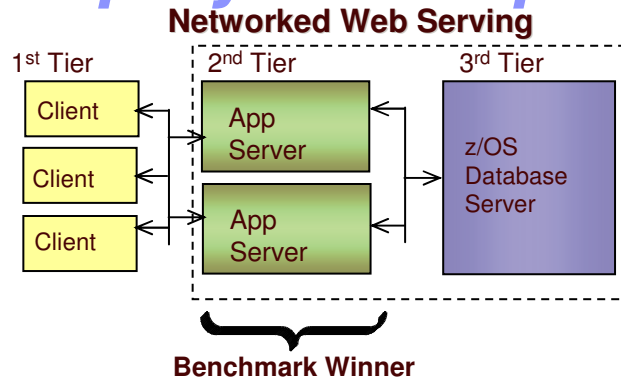
Where is the next gen application?



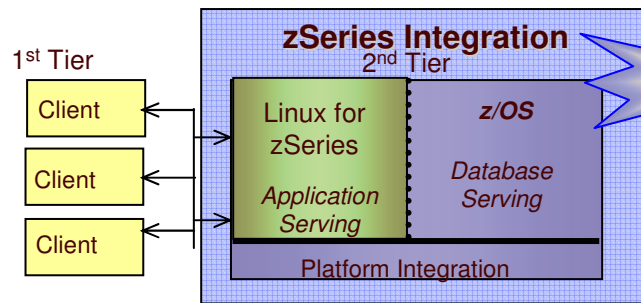
Simplify and improve TCO by integration

Route 9

Parkway



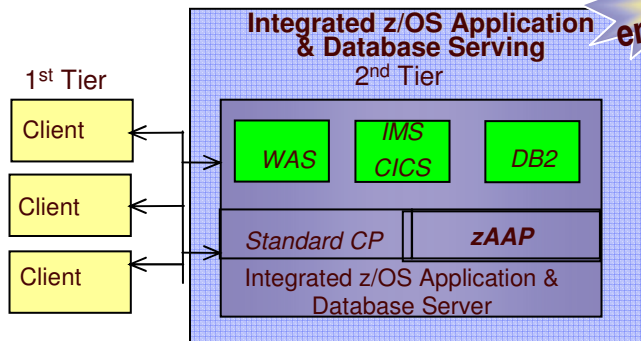
Advantages of consolidating your application and data serving



Better Production Value

- ✓ Security
- ✓ Resilience
- ✓ Performance
- ✓ Operations
- ✓ Environmentals

- Fewer points of intrusion
- Fewer Points of Failure
- Avoid Network Latency
- Fewer parts to manage
- Less Hardware



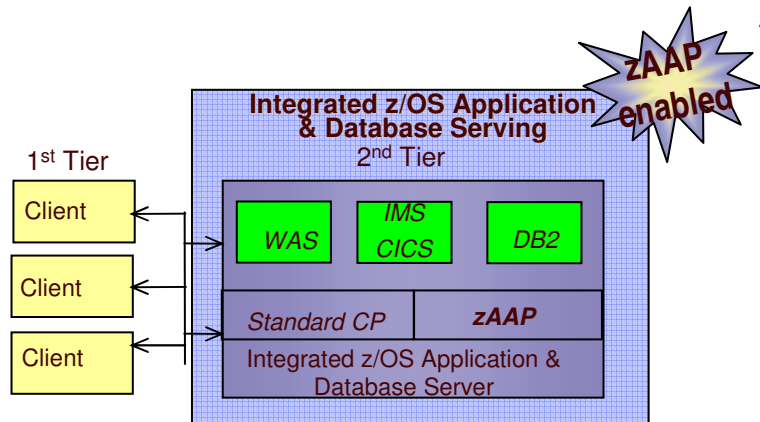
Best Production Value

- ✓ Security
- ✓ Resilience
- ✓ Auditability
- ✓ Performance
- ✓ Utilization
- ✓ Scalability
- ✓ Operations
- ✓ Simplification
- ✓ Transaction Integrity
- ✓ Environmentals

- Fewer points of intrusion
- Fewer Points of Failure
- Consistent identity
- Avoid Network Latency
- Efficient use of resources
- Batch and Transaction Processing
- Fewer parts to manage
- Problem Determination/diagnosis
- Automatic recovery/rollback
- Less Hardware

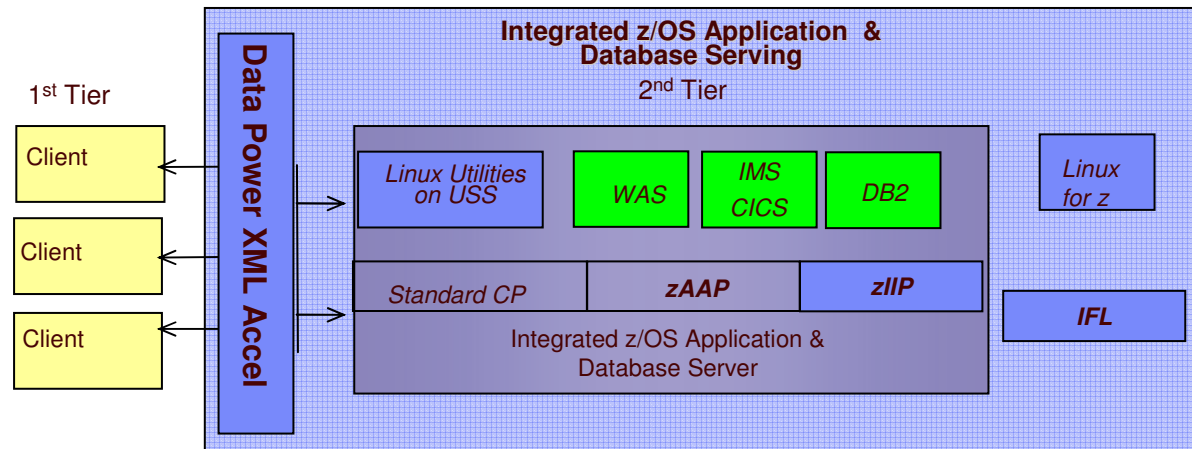
Accelerators Integration Benefits

Advantages of consolidating application and data serving



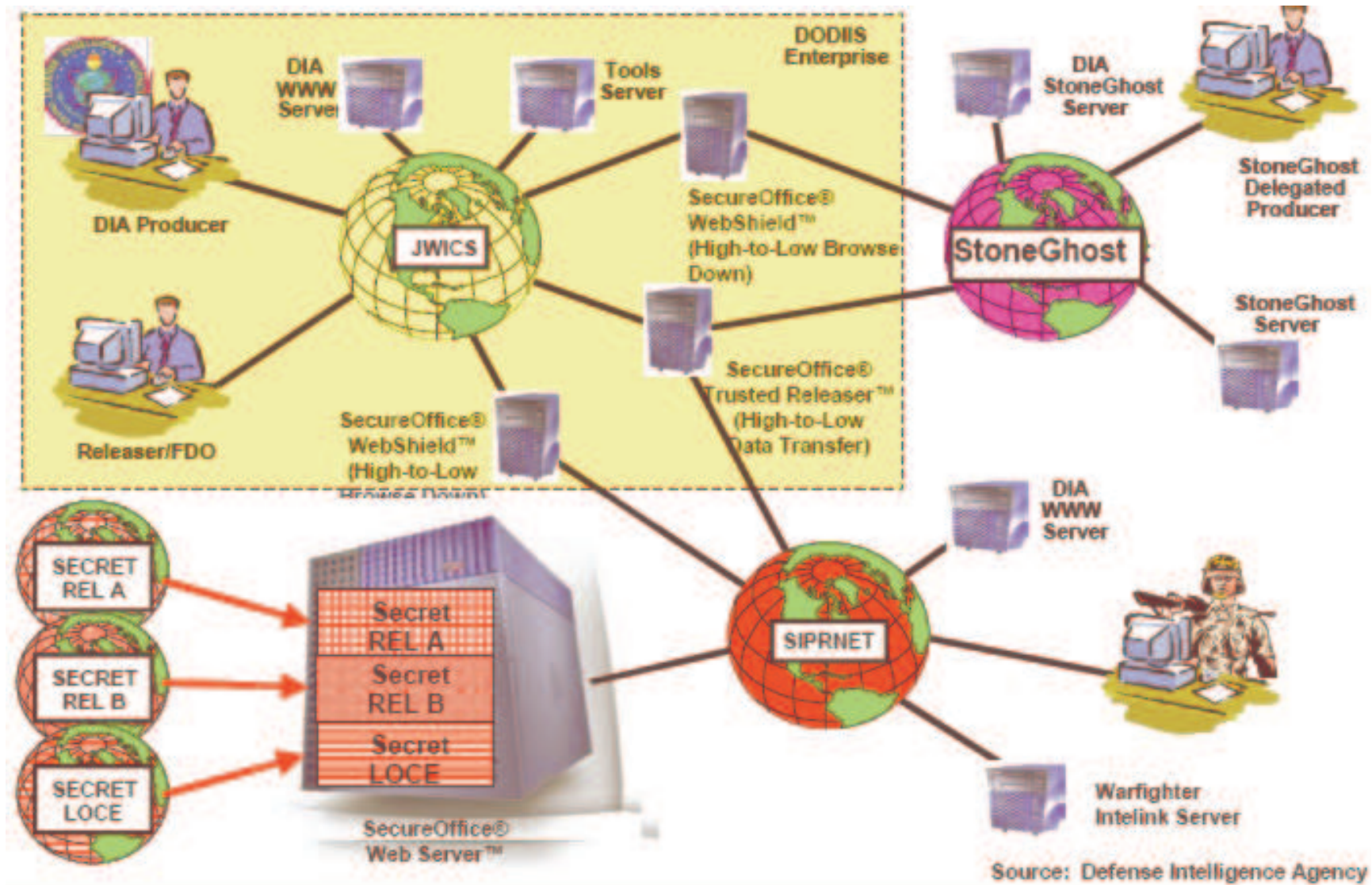
Best Production Value

- ✓ Security
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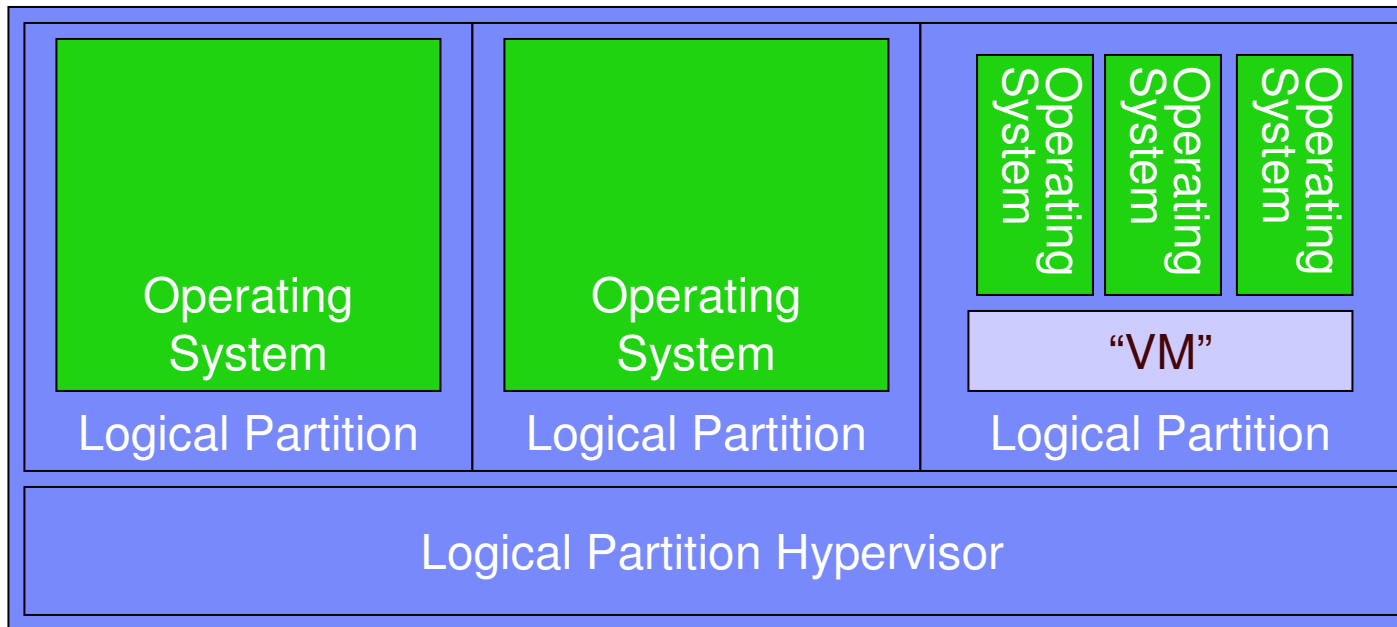


Stand alone servers



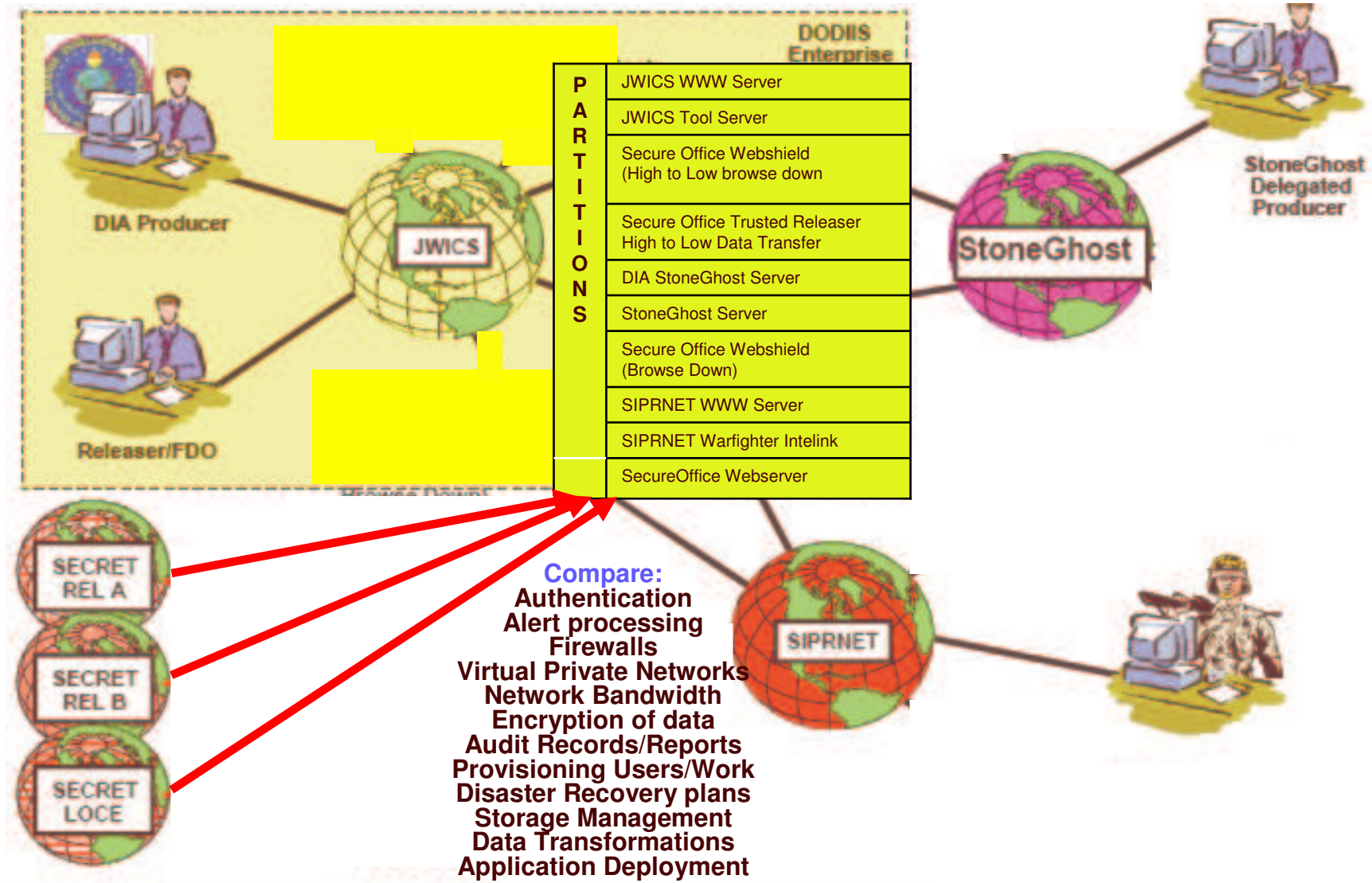
Source: Defense Intelligence Agency

IBM Trusted Server Compartmentalization



Server	Partition Manager	Linux	Other OS	"VM"	Database	Many other middleware
zSeries	EAL5+	CAPP EAL4 LSPP EAL4	z/OS CAPP/LSPP EAL4 Avail	zVM CAPP/LSPP EAL3 Avail	DB2 for z/OS CAPP/LSPP In Eval EAL3	z/OS & Linux

Consolidated Servers



Linux on zSeries: Linux is Linux... *but...*

When a distributed deployment is indicated, zSeries provides unmatched capabilities to Linux workloads

- **Why do customers deploy to zLinux?**
 - Proximity to data
 - Operational simplification
 - Business resiliency
 - Security
- **What are they doing?**
 - 68%: Application Serving for z/OS (hosting multi-tier solutions on zSeries)
 - z/OS as data serving back-end
 - Linux on zSeries hosts all other tiers (application servers, edge servers, etc.)
 - Other multi-tier solutions that benefit from zSeries QoS and/or virtualization
 - 10%: Data serving workloads not appropriate for DB2 on z/OS
 - 10%: Messaging, collaboration and groupware services
 - 10%: Consolidation of infrastructure and network edge services
 - 2%: Application development and deployment leveraging virtualization services
- **Utility Serving for z/OS**
 - zLinux utility “appliance” hosting for z/OS, centrally provisioned and managed

Competitive Positioning: System z Key Differentiators to Attract Linux Workload

- **Inherited System z HW Quality of Services**
 - RAS & security characteristics
 - mixed workload capabilities of System z processor
 - ...
- **Proximity to z/OS by running on the same physical HW**
 - ultra-fast communication between Linux and z/OS via HiperSockets
 - 100% secure data transmission via Guest Lan or HiperSockets
 - integrated disaster recovery thru GDPS
 - ...
- **Unmatched Virtualization Capabilities**
 - Virtual Server Concept based on z/VM
 - Capability to scale-up (dedicated servers) & scale-out (virtual servers)
 - ...

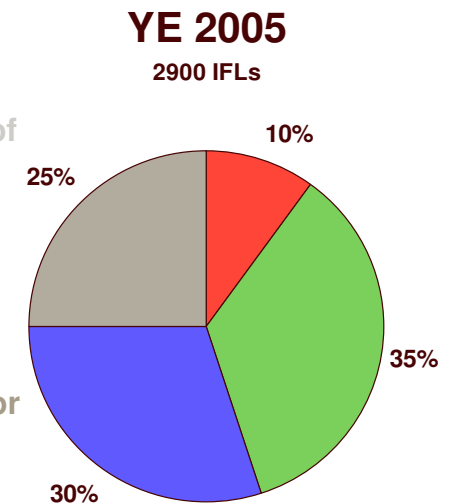
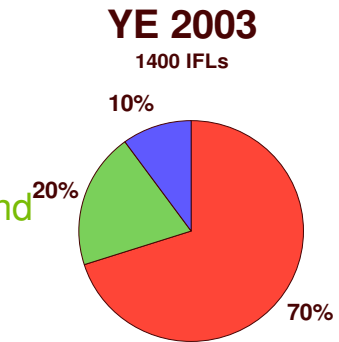
Marketplace Insight... Customer Patterns

1. Consolidation of simple web-, application-, file-, print-serving
 - **Customer objective: “try it out”**
 - very limited z/OS backend integration
 - very small footprint (1 IFL only), no real mission-critical workload deployed
 - All kind of customers types (very small to very large, all sectors)

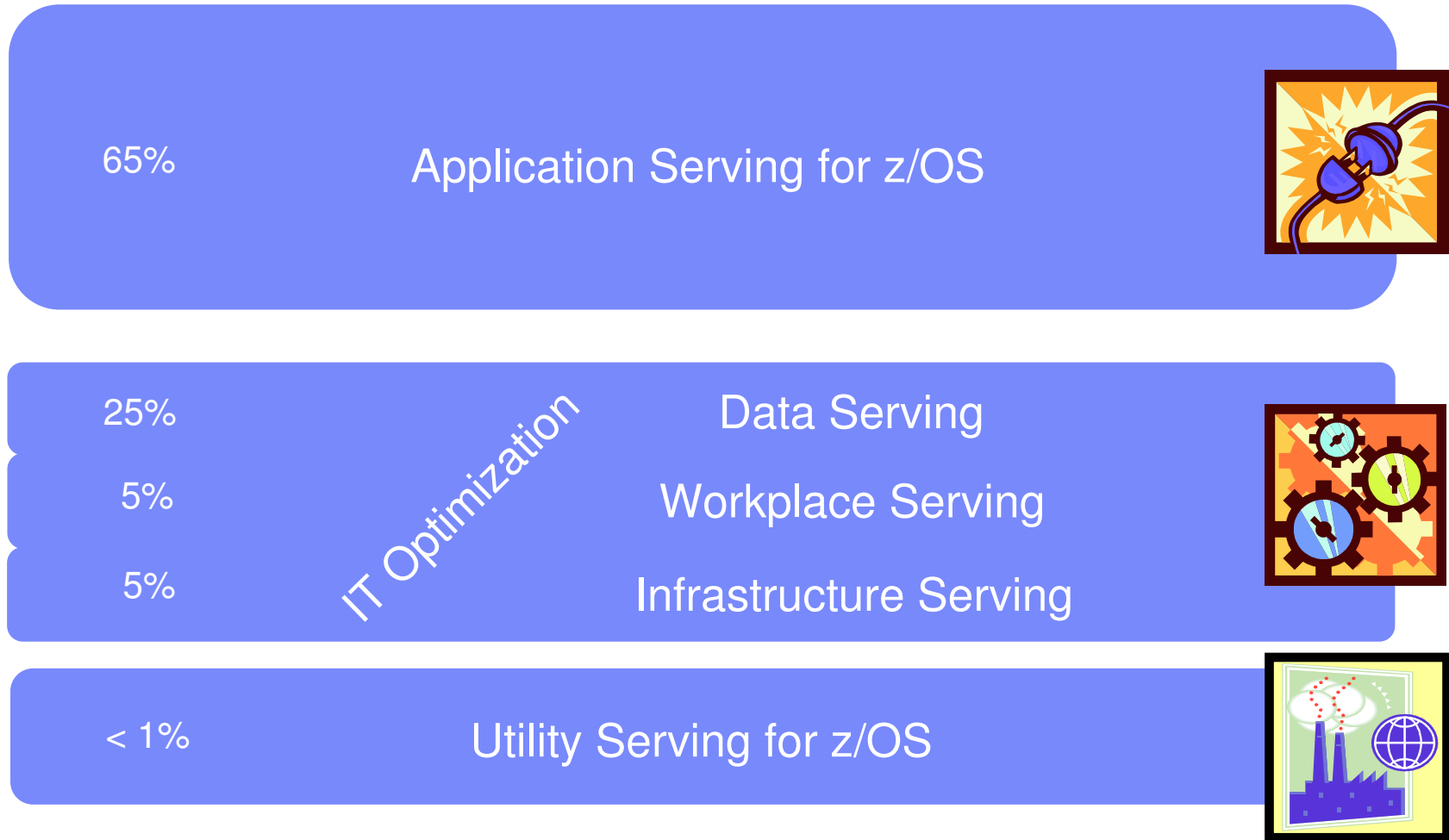
2. Migration of costly distributed Application Server infrastructure for z/OS DB2-backend processing
 - **Customer objective: “reduce my TCO & get better controls”**
 - tight z/OS integration
 - easy to achieve technical benefits (superior transaction rates & RAS characteristics)
 - Immediate Systems Managements benefits thru central point of administration
 - Examples: SAP, WAS, WCS, WPS, S2, BEA WebLogic, IBI WebFocus, ...
 - Primarily FSS and large IND, DIS, COMS customers

3. Consolidation of proliferating distributed infrastructure
 - **Customer objective: “get back on track in handling distributed environment”**
 - indifferent z/OS integration
 - Customers cannot manage constant growth of distributed infrastructure in terms of staff, skills, environmental, controls
 - Primarily SMB, PUB and small other sector customers

4. Migration of mission-critical end-to-end applications
 - **Customer objective: “run it on the most reliable and most secure platform”**
 - no or very limited z/OS integration
 - Current hosting infrastructure for mission critical distributed Apps too unreliable or insecure
 - Scope is on Multi-Tier workload (App Servers + DB Server + Front End Servers + Applications), currently hosted on Unix or Windows platforms
 - Superior RAS, BR & Security characteristics
 - Primarily very large FSS, IND, DIS, COMS customers

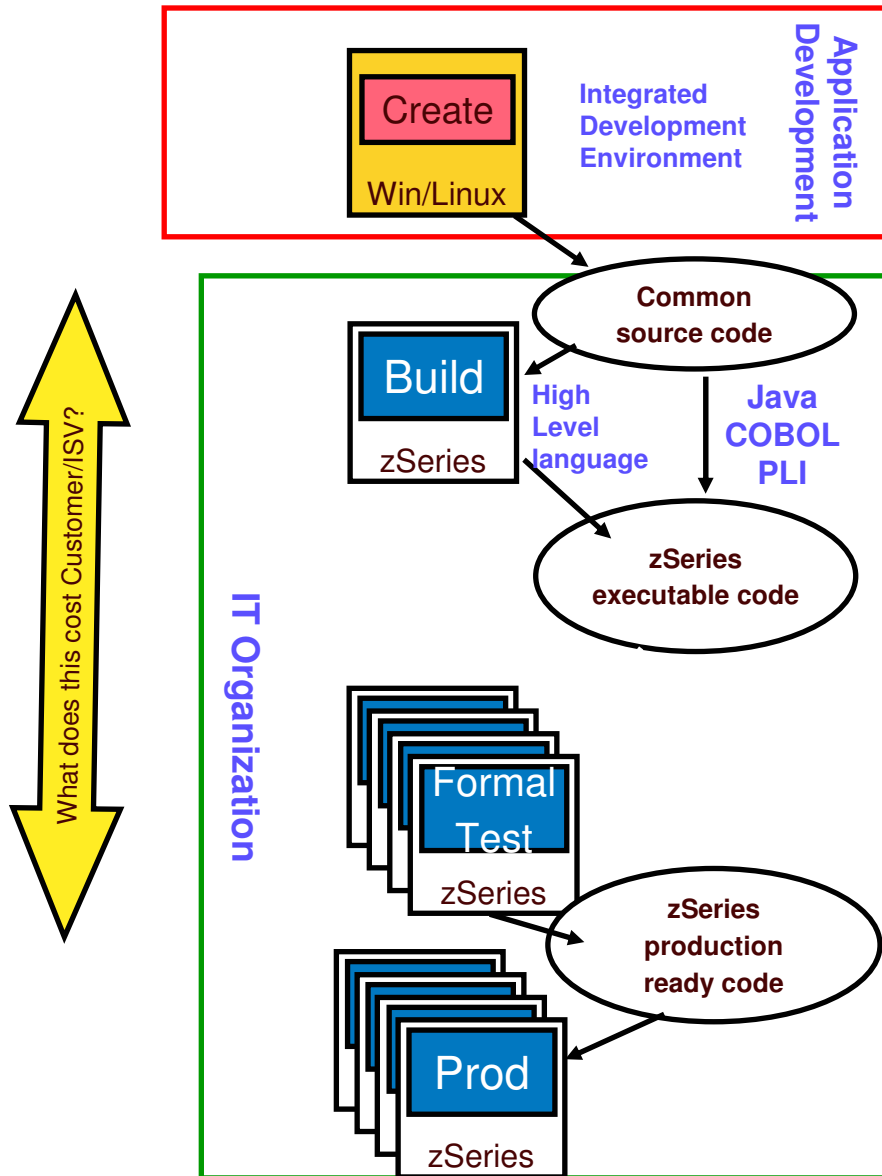


Marketplace Insight: Current Workload Share on utilized IFLs YE2005



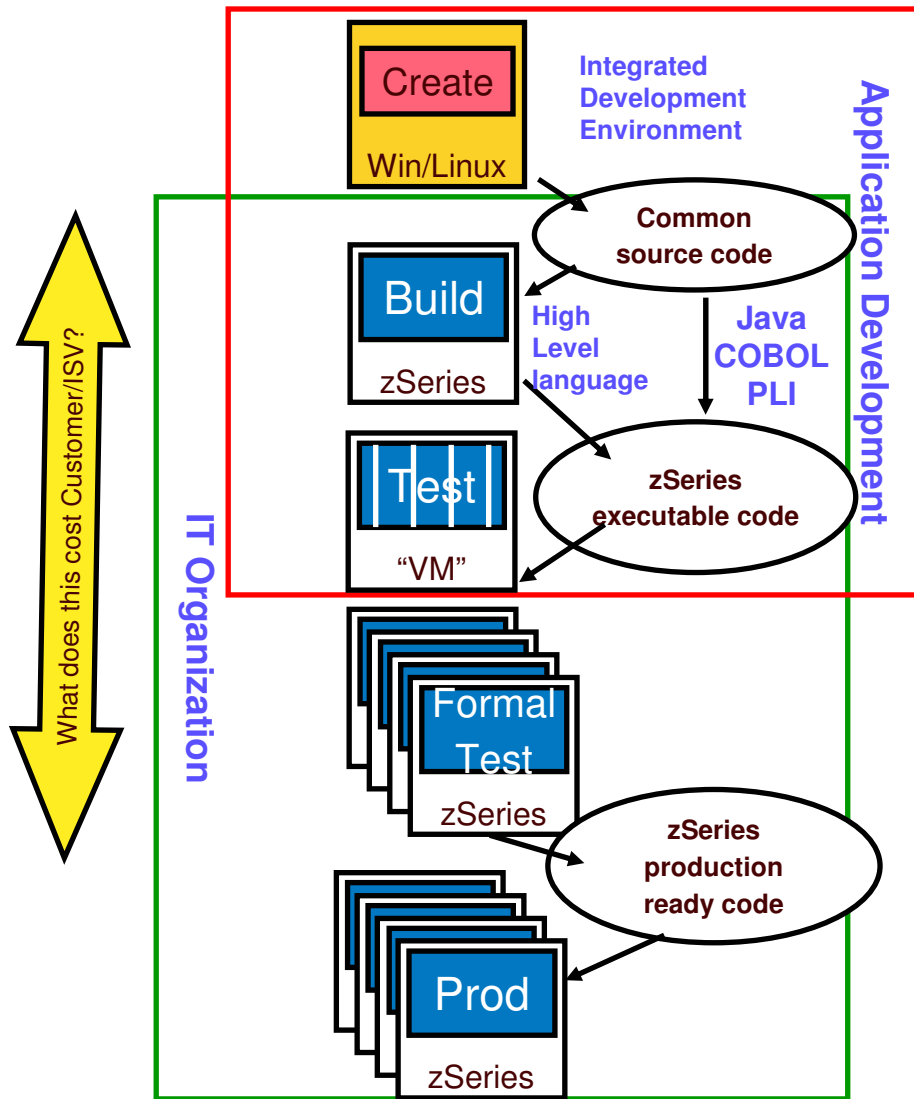
Notes: extrapolation based on analyzing 1/3 of inventory (~ 400 customers with ~ 800 IFLs), mainly deals closed 2H03 to 4Q05, excludes all IBM

Traditional AD roles – Findings



- There is a chasm between the Developers and IT Operations staff
- Tooling doesn't leverage platform unique value
 - The IBM J2EE development tools are very competitive but are agnostic of target platform and do not leverage key unique zOS opportunities.
- Developers don't have access to non-Intel systems
 - The ability to easily configure and deploy an application to the target runtime for testing proves to be very programmer time-consuming task as well as the ability to automatically test the resulting application/service. This is accentuated when considering composite applications consisting of WAS and another platforms' runtime.
- The development environment is unaffordable for zSeries deployment
 - Another aspect of the high costs of development is there is no differentiation of mip costs between development mips vs test mips vs production mips. Development/Test mips should be less expensive since high QOS is not required.

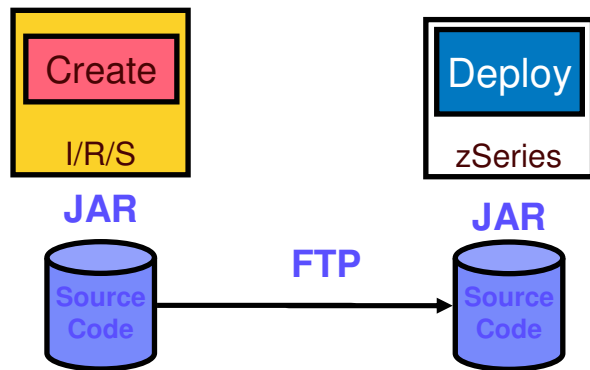
Nextgen Deployment – Actions



- **Competitive Tooling to generate applications on z/OS**
 - **Actions:** Increase programmer productivity by aligning development environments to traditional runtimes (vs HLLs) focusing on CICS, IMS, DB2 with COBOL, PL/I, C/C++.
 - **Finding:** The development tools do not typically leverage/integrate with assets from Rational and/or Tivoli
Actions: Leverage the full lifecycle tools including design, develop, build, assemble, deploy, analyze, diagnose, test, monitor with an emphasis on improved programmer productivity
- **Developers access to z/OS on their desktops**
 - **Actions:** Use virtualization to create ephemeral test environments to easily provision, deploy, analyze and test applications/components/services thus increasing programmer productivity
- **z/OS affordable access to developers**
 - **Actions:** The business of application development tools should support the runtimes and the platforms. The cost barrier must be removed, adopt the 'give to get' approach. The server runtimes should distinguish between build, test and production MIPS costs.

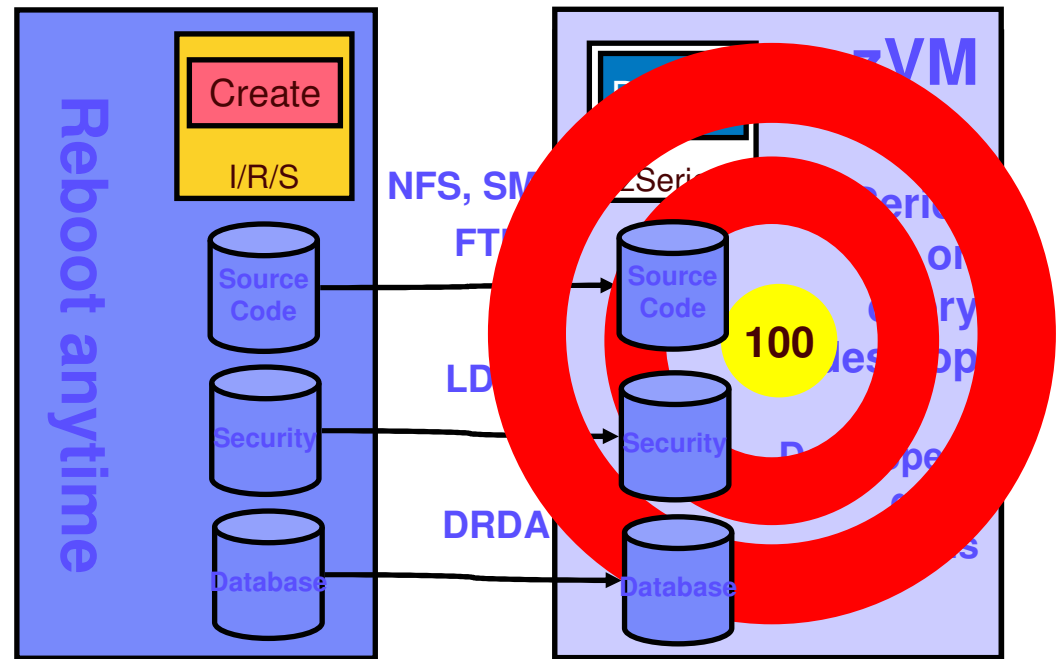
Application Deployment and Migration Experiences

Application Migration



J2EE, Java
C/C++ (with recompile)

Operations Migration



Shared file system
Common Authentication
Common Access Control
Common Database access
A mainframe on every desktop

Without direction,
your Enterprise will suffer.

Give them a target.

Reduce POC costs

Portability of programming and operations is important

<http://www.ibm.com/university/zseries>



IBM Systems and Technology Group

Tying it all Together

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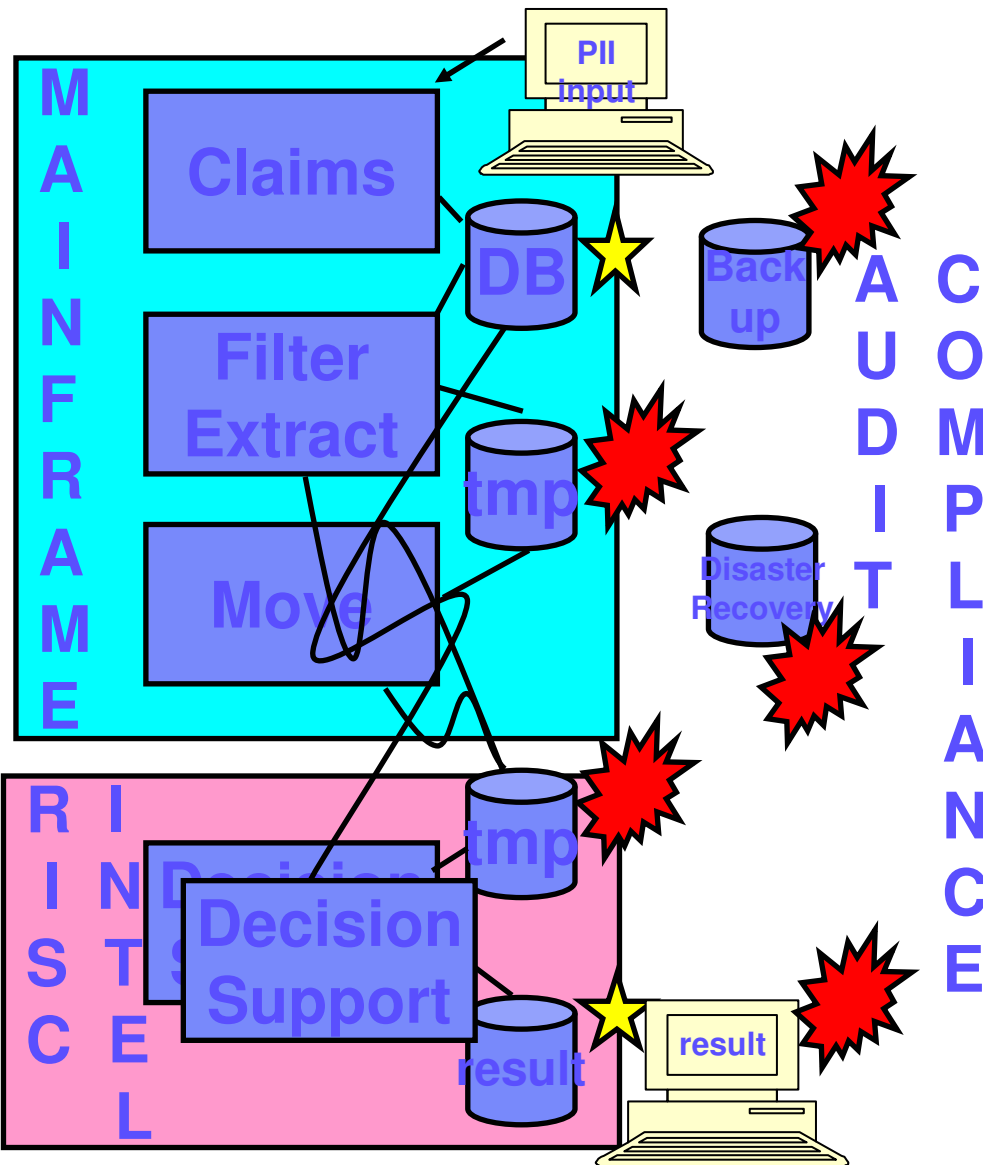


Why does Infrastructure simplification matter? HIPAA, Sarbanes-Oxley

Typical Business Workflow



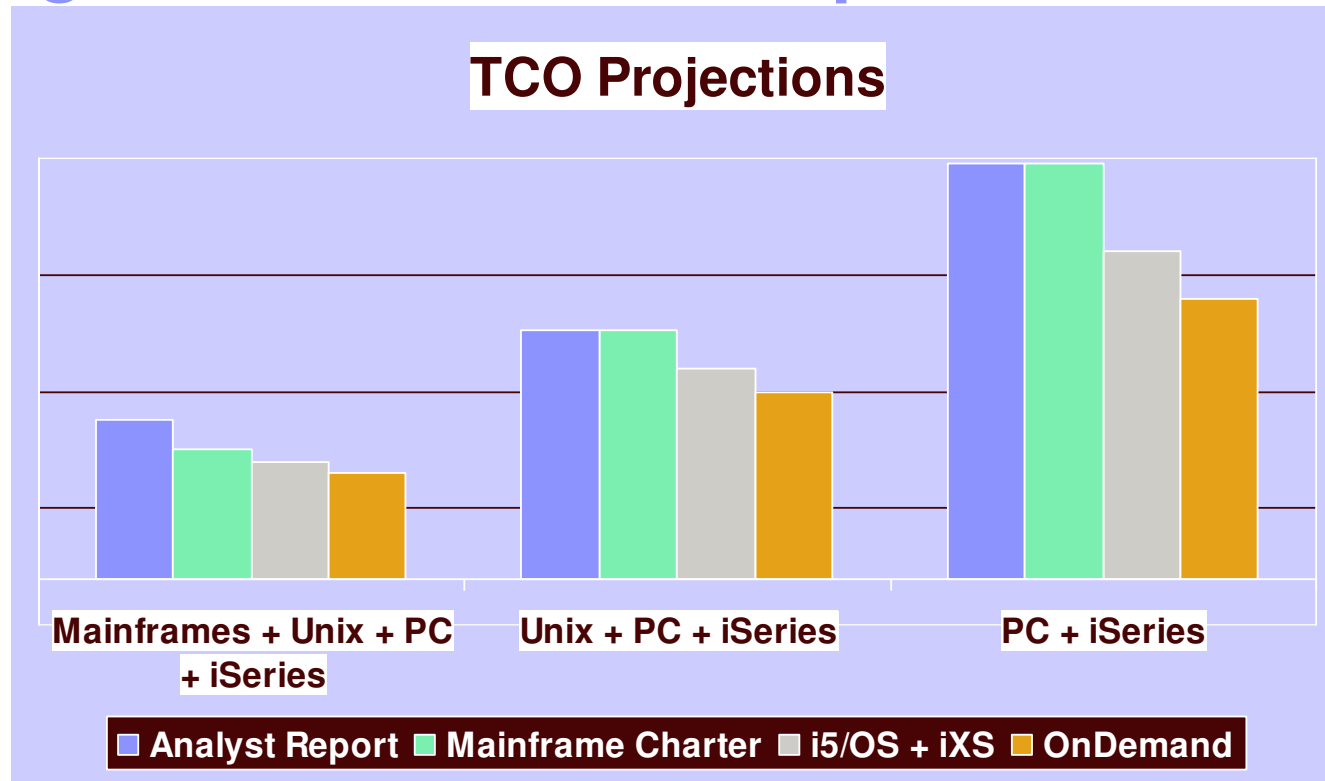
- Do you audit all places with Personally Identifiable Information?
 - Is the process automated?
- Data is easy to replicate
- Policies are not.
 - Reducing the copies will reduce compliance efforts and increase resiliency
 - Leverage a file server to delete copies and reduce data movement
 - Application data proximity
 - Move the applications back to the data source, where practical
 - Plus, able to use WebSphere SOA access facilities, where practical



zSeries: The Data Vault

Addressing the cost of ownership

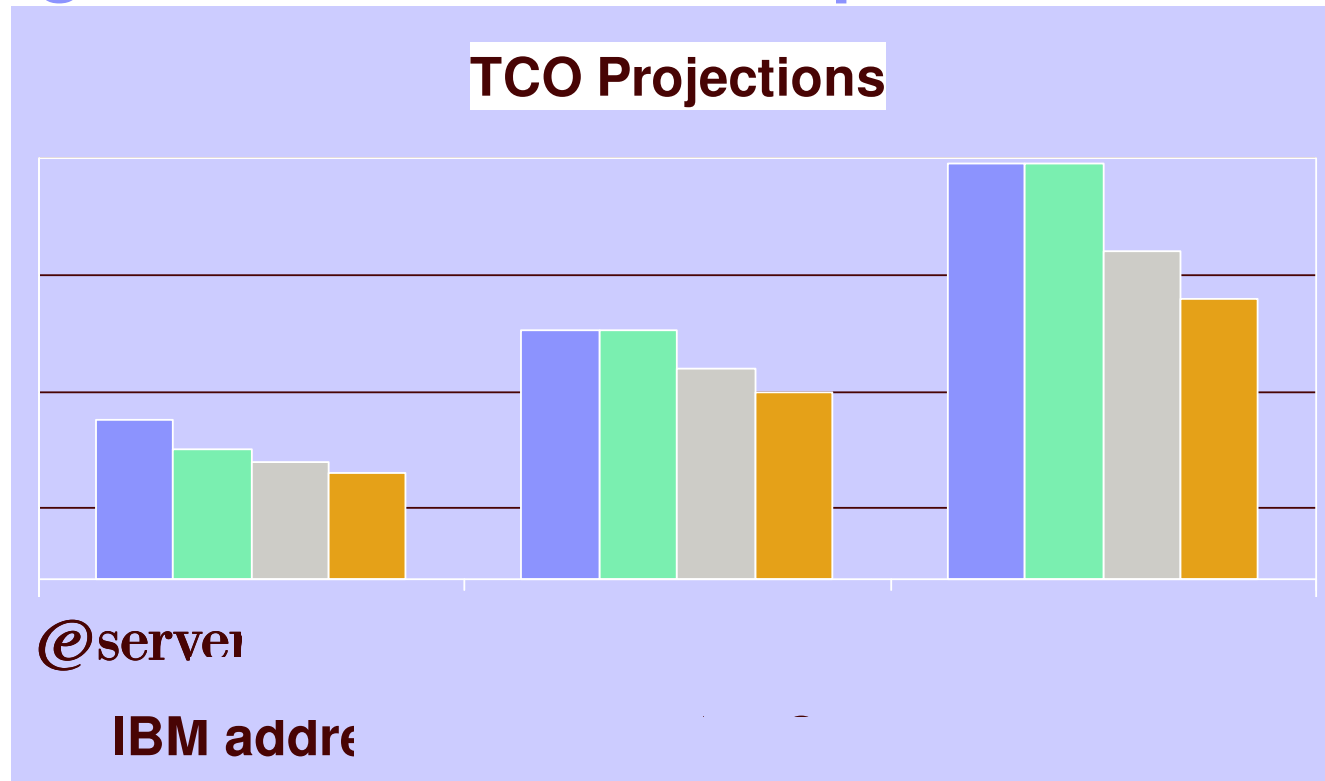
•For printing only



- Several consultants have demonstrated that the 5 year TCO of mainframes is less than alternative platforms
- But the mainframe is never alone in an enterprise, perhaps the measurement should be on Highest Logical Unit (HLU)
- Mainframe Charter works to reduce enterprise costs
- i5/OS and iXS work to reduce Intel server costs
- On Demand initiatives are working to drop the costs across the board

Addressing the cost of ownership

•For screen show only

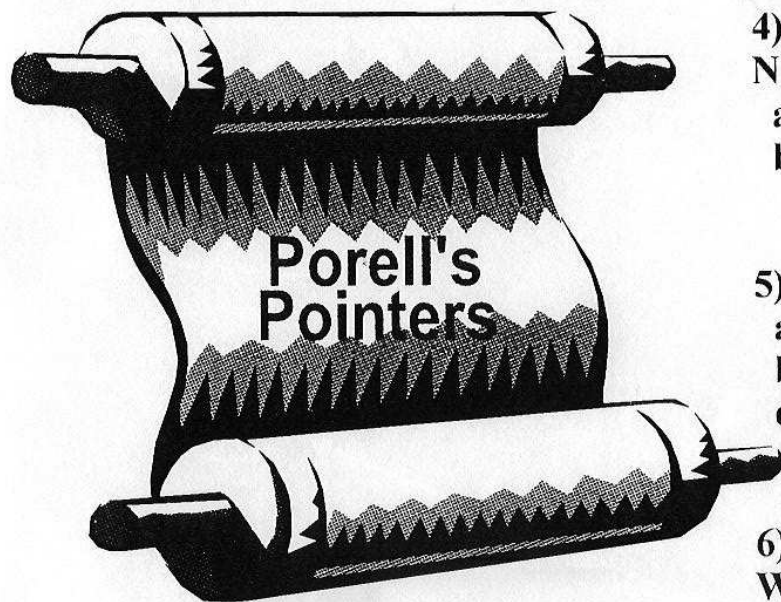


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- On Demand initiatives are working to drop the costs across the board

Enterprise Opportunities with z/OS and zSeries?

- **Business resilience** - leverage zSeries it to help fail over (DR) other servers' data
 - **The vault** - how data can be referenced from zSeries (like DB2) for other servers, but with Integrity, Security and Resilience – simplifying Policy – HIPAA, Sarbanes-Oxley
 - **Trust Authority for the enterprise** - identification and authentication, audit/compliance, Root Certificate Authority (saving real \$) – Consolidating Audit records
 - **Leverage** current assets – build Web services on the mainframe
 - Utilizing the **zAAP, zIIP** – **changing the economics** for deploying on the mainframe
 - **Infrastructure Simplification** – SNA consolidation, sharing applications
 - **SMB** - the scale and managability of the mainframe, but delivered in containers suitable for the SMB (on demand!)
 - **Virtual Blade Center** - Fidelity's experience with provisioning Linux and their TCO vs Intel boxes
 - A z on every **developers desktop** - make the platform accessible to every developer via zVM or zEmulation on a PC.
 - **Unlimited growth** - the answer is 64 bit.....move those old boxes up to z990's to prepare for z/OS 1.6
-
- The mainframe is a weapon, use it wisely

Yea, Verily, Although I walk in a data center full of servers, I shall know no fear - for I have Porell's Pointers to guide and comfort me...



- 1) Look for **TORTURED** data flows.
Reduce the number of data moves, copies, and transforms.
- 2) **COLLOCATE** applications and data. Avoid distributed data.
 - a. Distributed data may be faster to prototype, but
 - b. Distributed applications will be cheaper to operate
 - Avoiding redundant security for data and applications
 - Reducing network bandwidth to move data
 - Reducing points of failure
 - Reducing two-phased commit complexity
- 3) Measure **END-TO-END**, not just one technology slice. Include performance, capital and **OPERATIONS** costs in measurement.
- 4) Understand benchmarks measure **CAPITAL** costs/tran of **NEW** systems.
 - a. They assume **NEW** system/ server **FOR EACH** application.
 - b. They don't include **LEGACY** costs used moving, copying or transforming data to **NEW** servers.
- 5) Consider **INCREMENTAL** growth opportunities.
 - a. How many servers is enough, day 1 to year 5?
 - b. How is growth satisfied, upgrade, replacement or migration?
 - c. What are the hardware, software and operations growth costs?
- 6) Consider **MULTIPLE** applications and databases being **WORKLOAD** managed in a server at reduced operational costs.

THANK
YOU

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IBM

Security Agenda

- **Business Problems requiring secure infrastructure**
- **Traditional Security Models**
- **Infrastructure Simplification – multi system integration**
- **zSeries Architecture Value**
- **Tying it all together**

First things first...well, second actually...

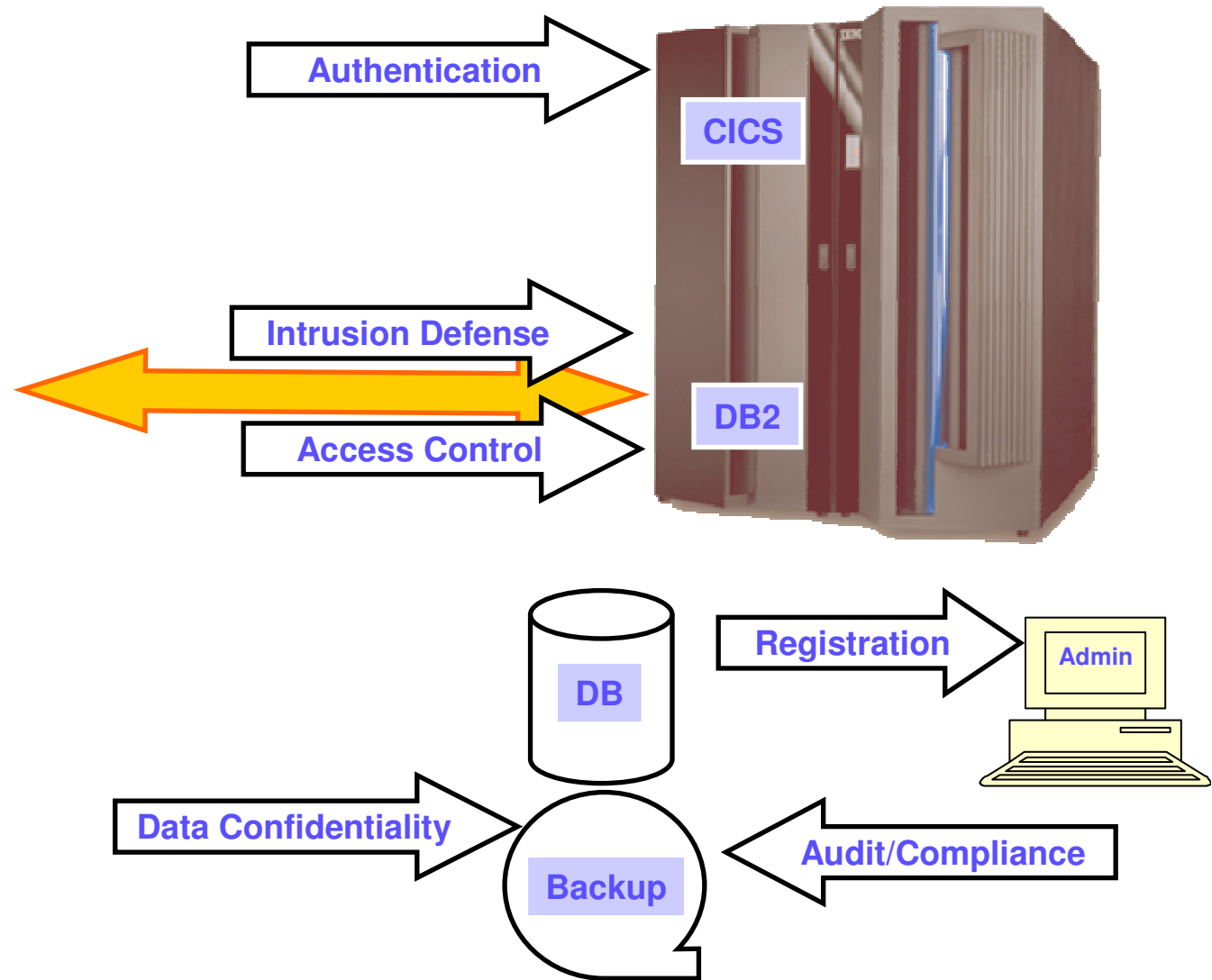
**Security is not
all about
technology!**

(it's really all about people)

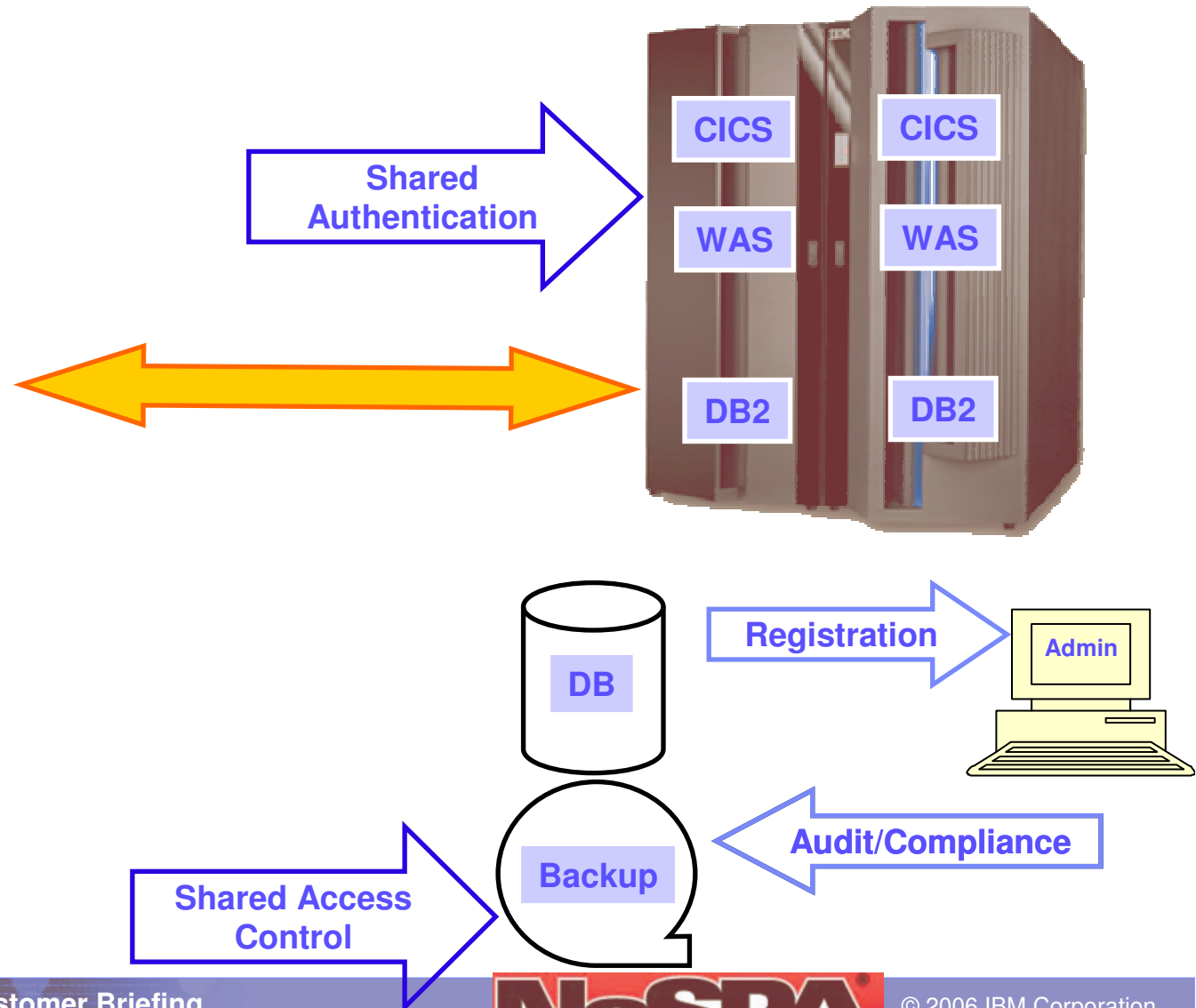
Types of security

- **Leveraging zSeries Architecture – Innovation at work**
- **Building the Castle – Traditional model**
- **Infrastructure Simplification**
 - **zSeries integration**
 - **Multi system integration**

Security Landscape Traditional Model



Security Landscape zSeries component integration



The Power of Encryption

Helping to reduce risk across your value-net



Helping to protect data over the Internet



Helping to protect data leaving your enterprise*

Customer objectives:

- Only intended party is allowed to decrypt
- Availability of the keys and decryption services when you need them



Enterprise-wide Key Management



Helping to protect archived data*

- IBM Encryption Facility for z/OS planned GA dates:
 - Encryption Services – 28 Oct, 2005
 - DFSMSdss Encryption - 2 Dec, 2005

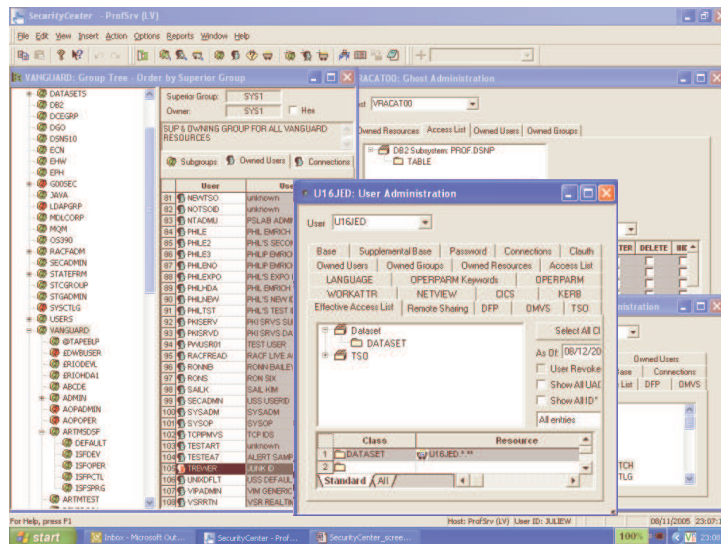
IBM Announces Reseller of Vanguard Security Solutions

IBM strengthens IT Service Management strategy with efficient security administration and compliance management solutions from Vanguard Integrity Professionals

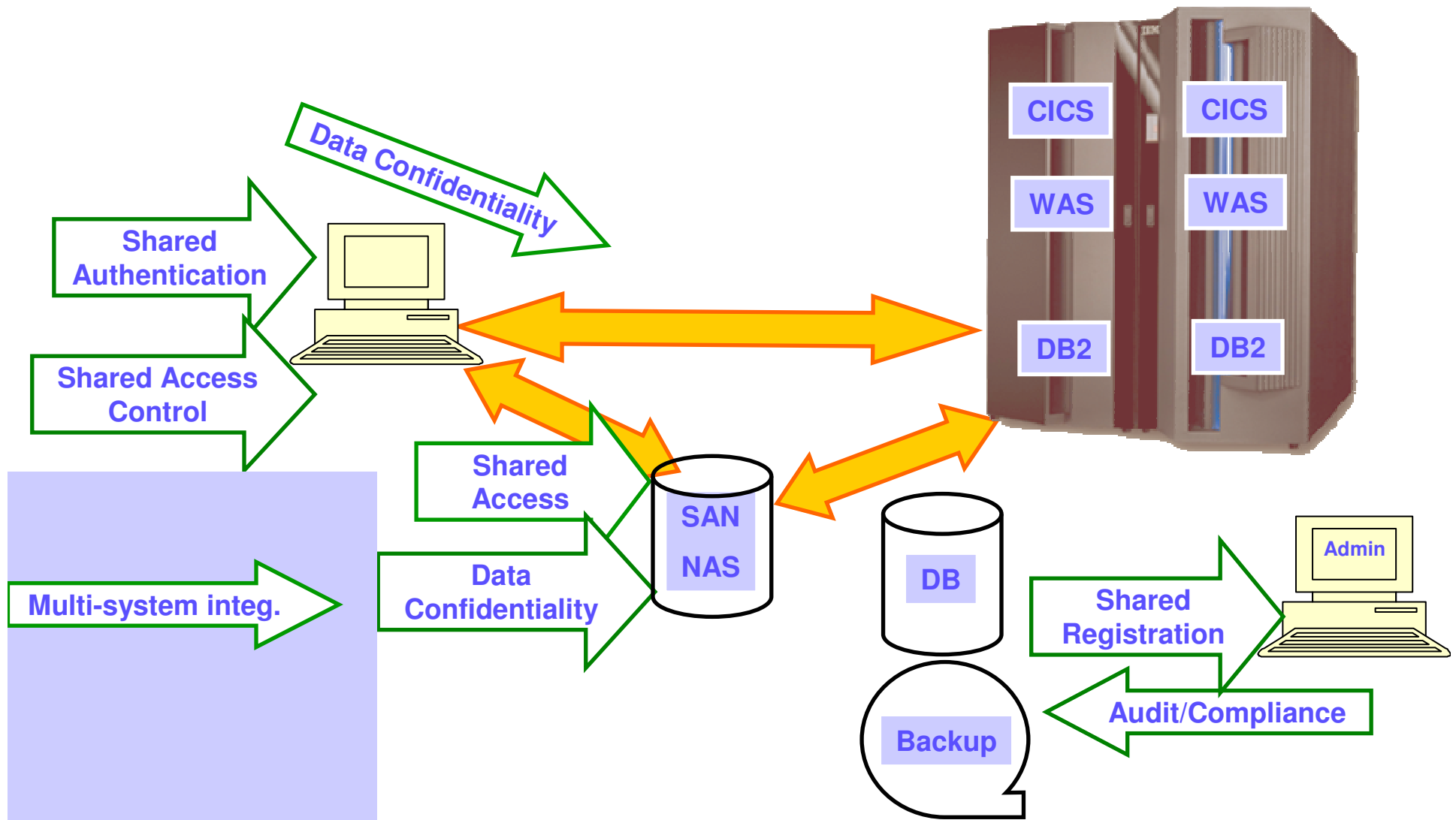
Complete Security Management Solution ■ IBM & Vanguard Security Solutions

- Security administration, integrity auditing, and intrusion detection and management
- Helps address the most stringent security rules and regulations
- Reduce complexities of RACF security administration and enforce best practices

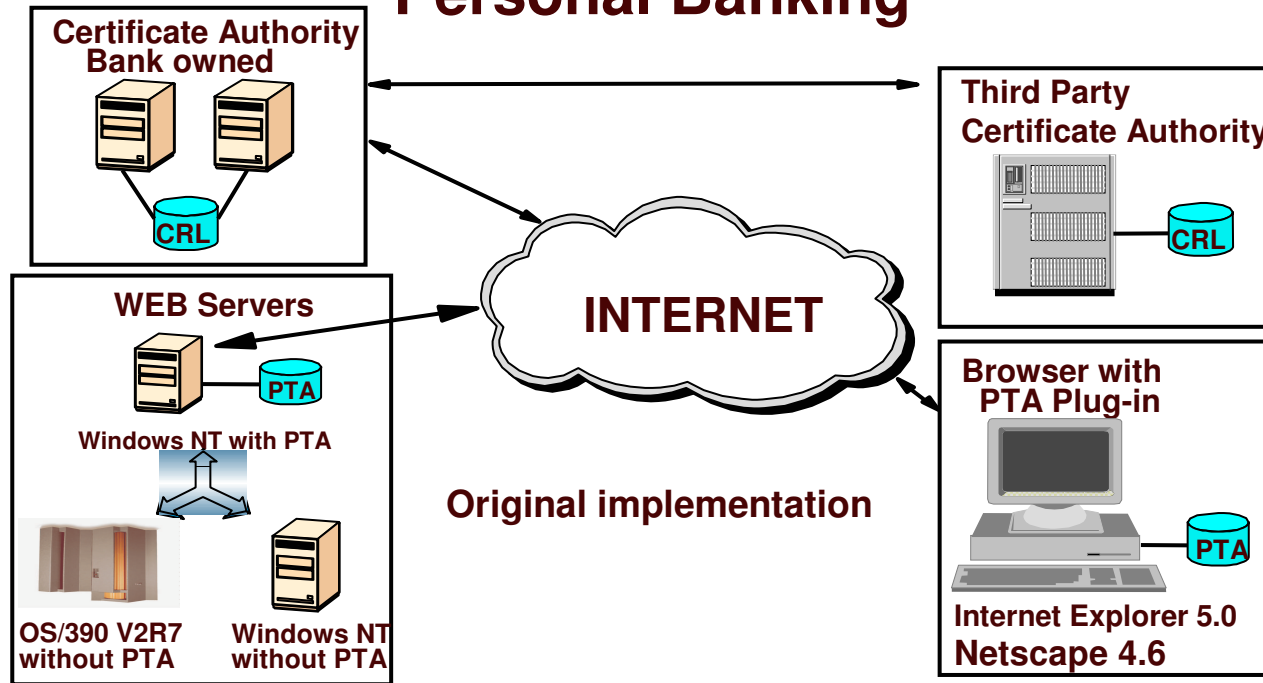
- **Vanguard Security Center** offers ease-to-use graphical user interface for RACF and DB2 security administration on z/OS
- **Vanguard Administrator** provides advanced security server management and analysis with automation and power utilities
- **Vanguard Analyzer** assists with security system snapshots or full-scale System z9 security audits
- **Vanguard Enforcer** manages and enforces security policy in z/OS and RACF
- **Vanguard Advisor** provides event detection, analysis and reporting capabilities for the z/OS and RACF
- **IBM Tivoli Security Administrator for RACF** is designed to provide a low-cost RACF management solution



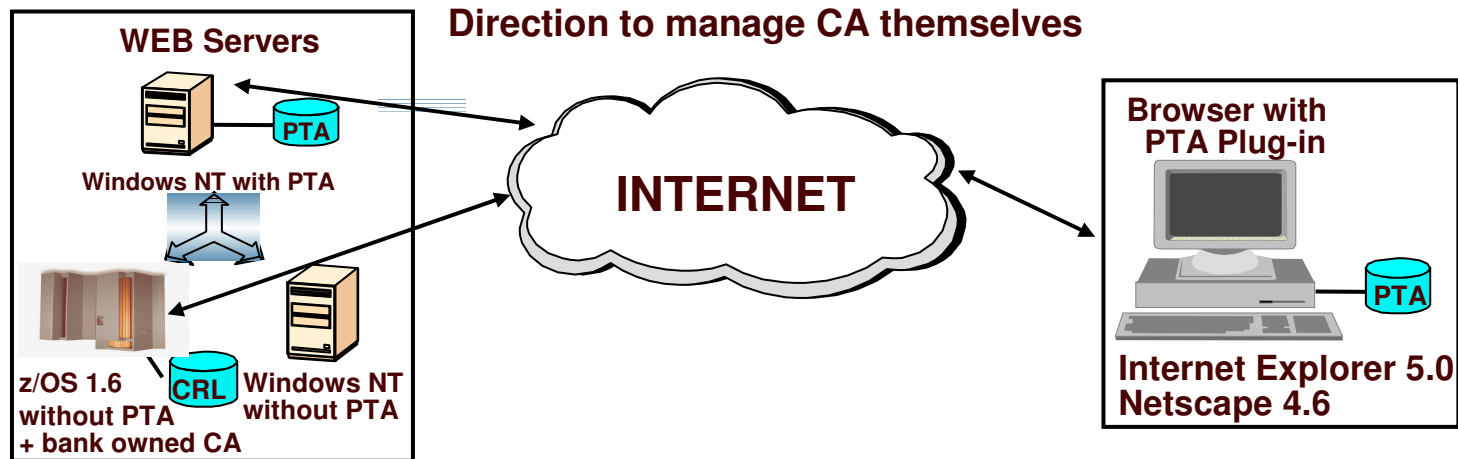
Security Landscape Multi system Integration



Personal Banking



Direction to manage CA themselves



DB2 Identity Resolution Determines “Who is Who?”

DB2 Identity Resolution software helps organizations recognize the single identity who is using multiple identities. So not just “Matching” but beyond “Matching” to finding individuals who are hiding and fraudulent.



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EIN#097376156
DOB 07/08/64
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Mrs. Kate Jones
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Tel#301-654-5404
LIC#1702188364
DOB 07/08/64



SPARCLE Privacy Policy Workbench - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media

Links Search the Web with Lycos Address http://localhost:9080/SPARCLES/transform.jsp Go

Original Rule: Customer service reps and tellers can modify or use account numbers or customer name to confirm identity.
Parsed Rule:

- Customer service reps or tellers can modify use account numbers or customer name to confirm identity.
- Loan officers can use credit history or salary to make loan decisions.
- Marketing reps can use customer mailing address for the purpose of sending marketing information if customer has opted-in.

To create a new rule, click the *Create Rule* button, select the elements of the rule from the categories as desired, and then click *Save Rule* button.
 To modify a rule, select the rule to be modified, then select or deselect elements in the appropriate category and when the rule elements appear as desired, click *Modify Rule* button.
 To delete a rule, select a rule and click the *Delete Rule* button.

User Categories	Actions	Data Categories
<input type="checkbox"/> None Selected	<input type="checkbox"/> None Selected	<input type="checkbox"/> None Selected
<input type="checkbox"/> billing reps	<input type="checkbox"/> collect	<input type="checkbox"/> account numbers
<input checked="" type="checkbox"/> customer service reps	<input type="checkbox"/> delete	<input type="checkbox"/> credit card number
<input type="checkbox"/> financial consultants	<input checked="" type="checkbox"/> modify	<input type="checkbox"/> credit history
<input type="checkbox"/> loan officers	<input type="checkbox"/> use	<input type="checkbox"/> customer mailing address
<input type="checkbox"/> marketing reps		<input checked="" type="checkbox"/> customer name

start Address Go 73%



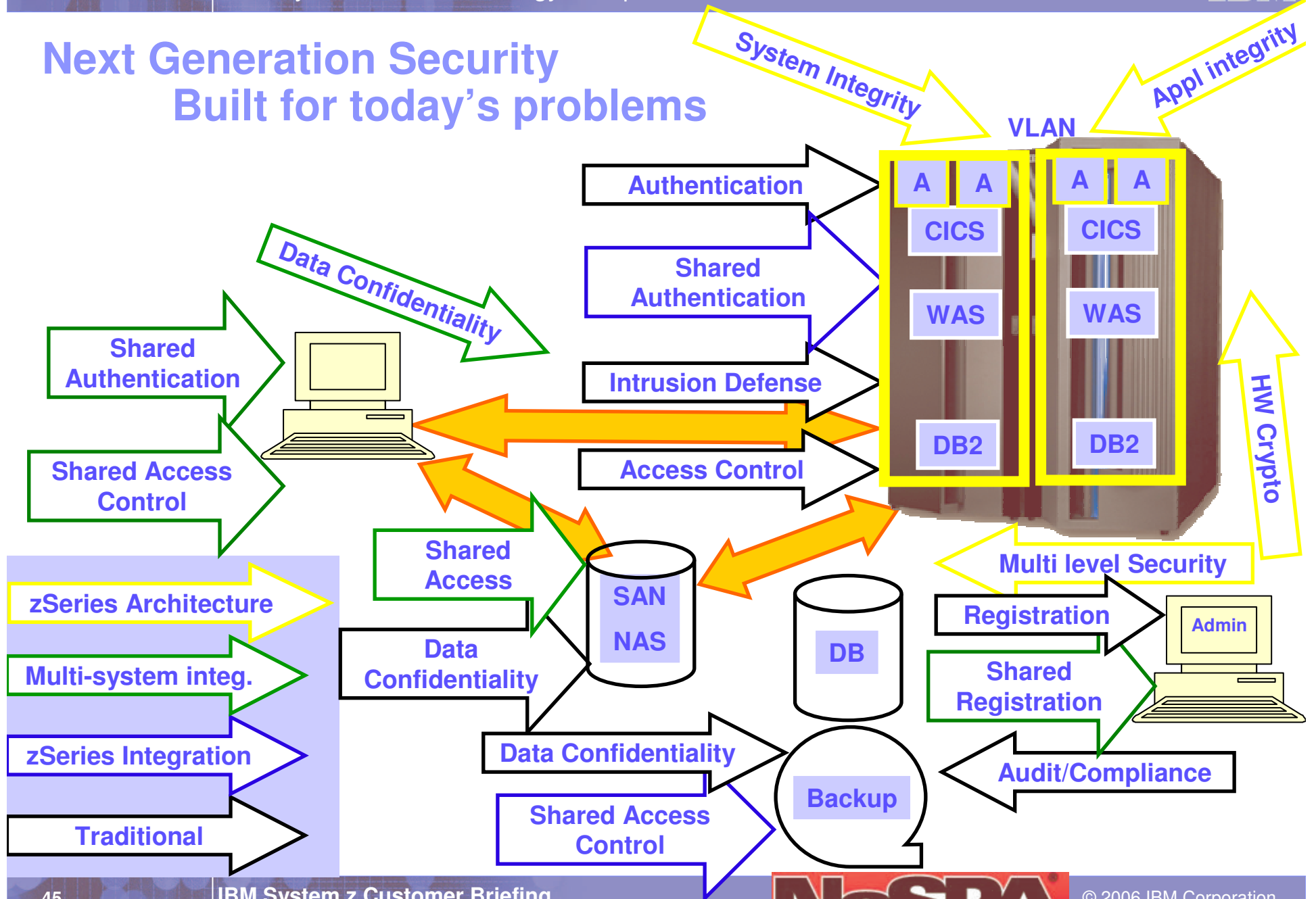
SPARCLE Privacy Policy Workbench - Microsoft Internet Explorer

Address: http://localhost:9080/SPARCLES/view.jsp

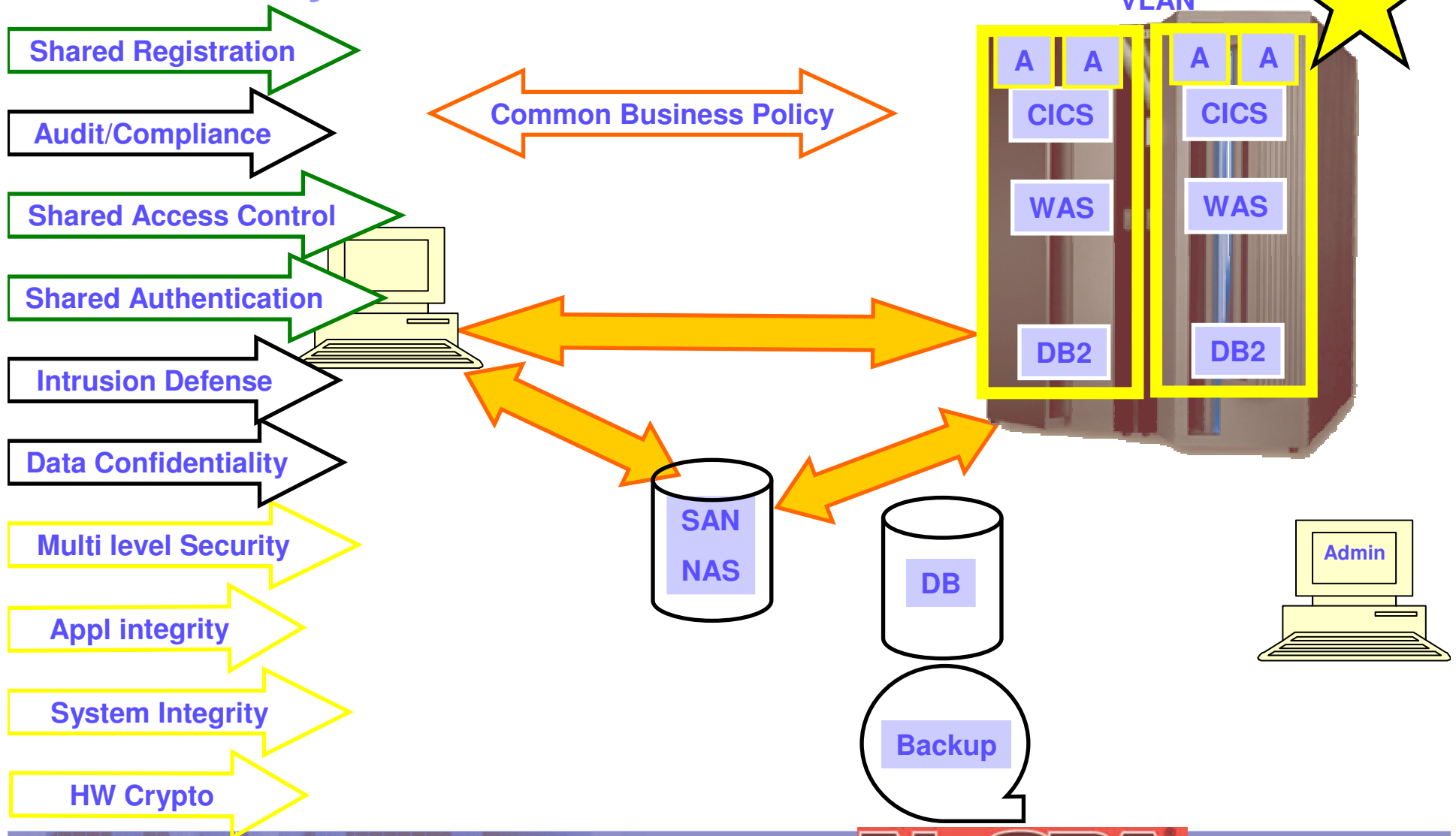
Columns: User Categories Rows: Data Categories

	customer service reps	loan officers	marketing reps	tellers
credit history	No Access Allowed	<ul style="list-style-type: none"> 2. Can use to make loan decisions 	No Access Allowed	No Access Allowed
customer mailing address	No Access Allowed	No Access Allowed	<ul style="list-style-type: none"> 3. Can use for the purpose of send marketing information if customer has opted-in 	No Access Allowed
customer name	<ul style="list-style-type: none"> 1. Can modify to confirm identity 	No Access Allowed	No Access Allowed	<ul style="list-style-type: none"> 1. Can modify to confirm identity
salary	No Access Allowed	<ul style="list-style-type: none"> 2. Can use to make loan decisions 	No Access Allowed	No Access Allowed
use account	<ul style="list-style-type: none"> 1. Can modify to 	No Access Allowed	No Access Allowed	<ul style="list-style-type: none"> 1. Can modify to

Next Generation Security Built for today's problems

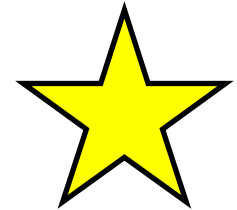


Next Generation Security Goals Policy based Administration



IBM System z9 Security

Protecting an Enterprise



Helping to protect data over the Internet

Governance and Compliance

*Vanguard, Tivoli Compliance
Identrus, Common Criteria, FIPS*

Security Process Management

Vanguard, Tivoli Identity Manager



Helping to protect data leaving your enterprise

Customer objectives:

- Information Integrity
- Simplifying regulatory compliance efforts
- Secure exchange of business critical and sensitive data



Centralized Key Management



Helping to protect data at rest



Helping to protect archived data

Secure Infrastructure

*Data, Transaction & Network protection
PKI, LDAP, RACF, ssh, Cryptography*