



Selecting Projects for Linux on zEnterprise

It's all about Workloads: Cloud consolidation, smart analytics and optimization



Competitive Considerations

§ Are your customers doing these 5 things?

1. Virtualization and server management
2. Security services for entire enterprise
3. Database and warehouse services
4. Cloud and cloud management
5. Application development and test

§ These projects are not only what your customer is doing, they are projects that are very well suited to zEnterprise

Manage your enterprise from one machine, the only server manager you need!



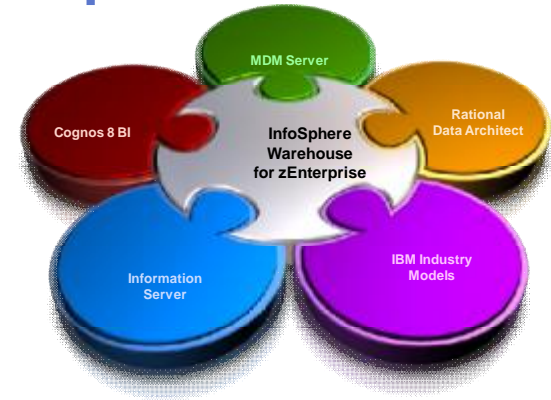
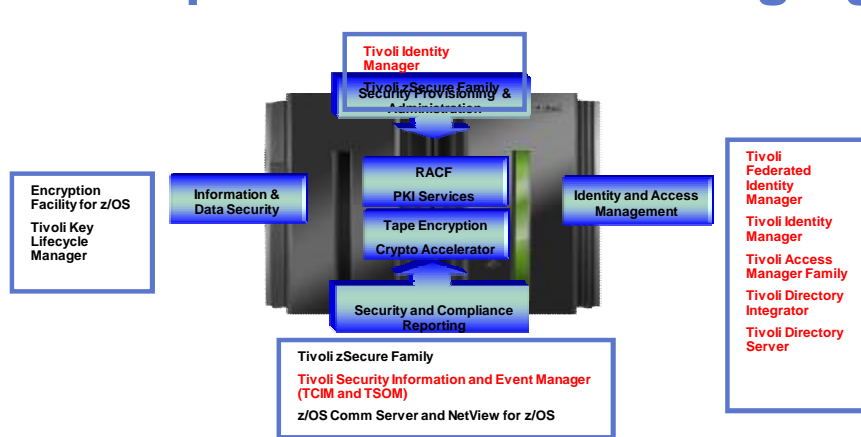
Manage:

- § Security
- § Deployment
- § Development
- § Disaster Recovery
- § Administration
- § Monitoring



1. Multiple Hypervisor methods
2. Multiple management platforms
3. Disaster recovery methods

zEnterprise Software Managing the Entire Enterprise



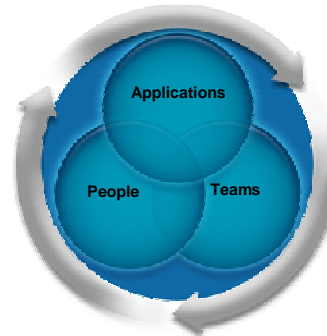
IBM Rational Enterprise Modernization

Connecting applications and people across teams to improve business and IT flexibility

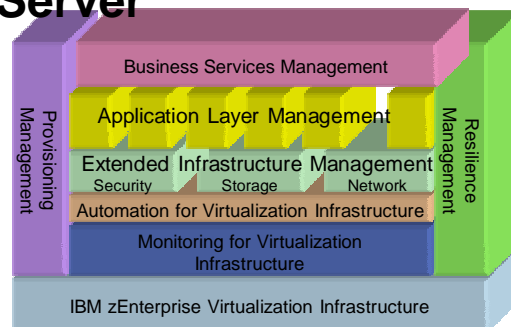
§ zEnterprise as security server

§ Keys Server

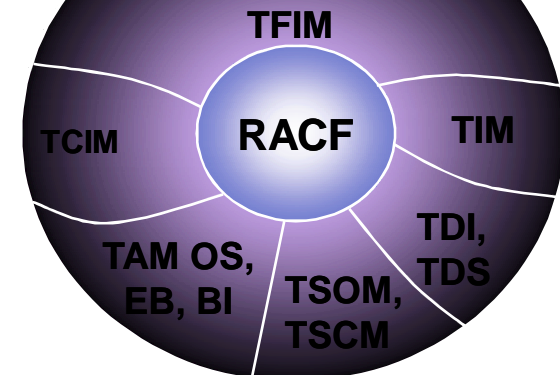
§ Identity Server



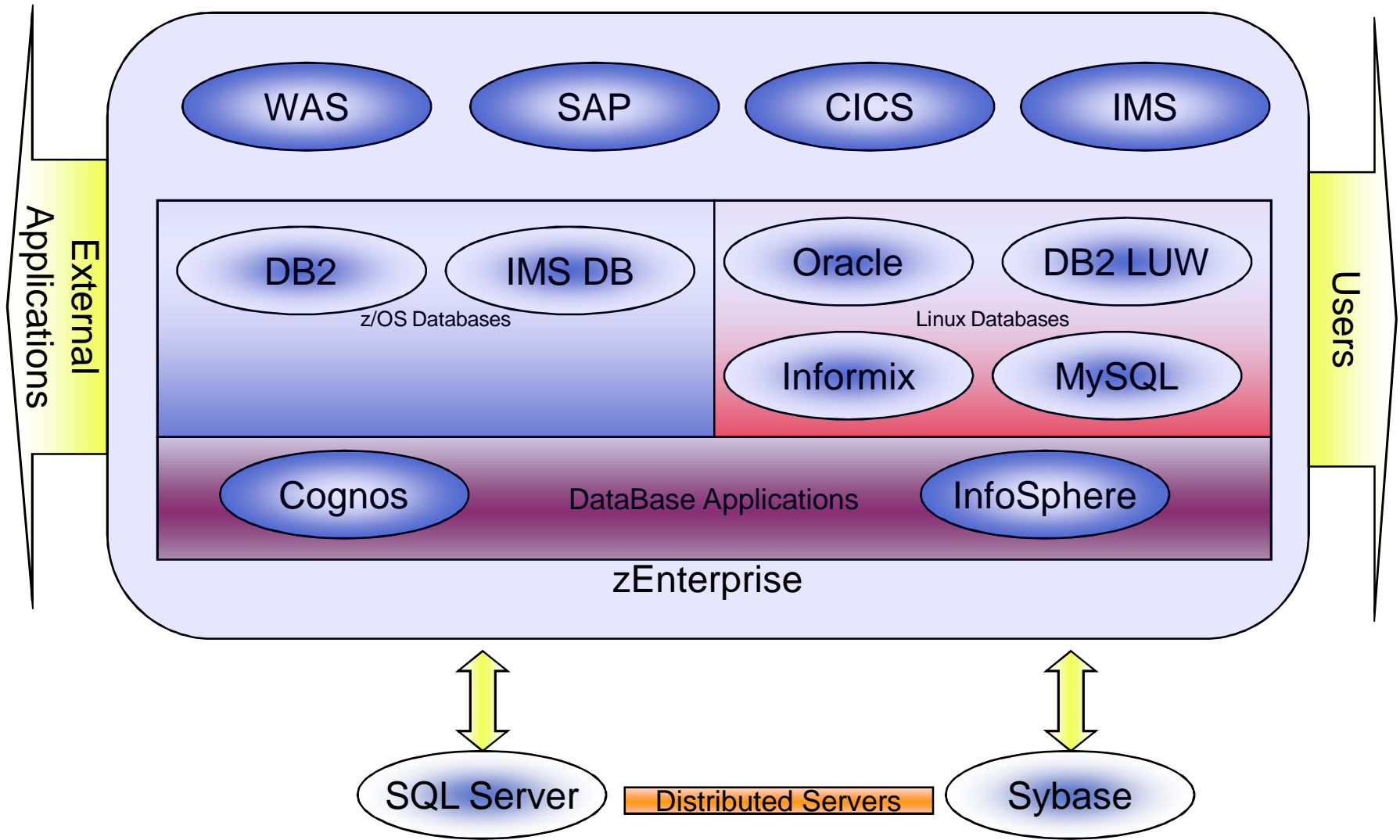
Helping Clients Manage and Control Their Virtualized IT Infrastructure



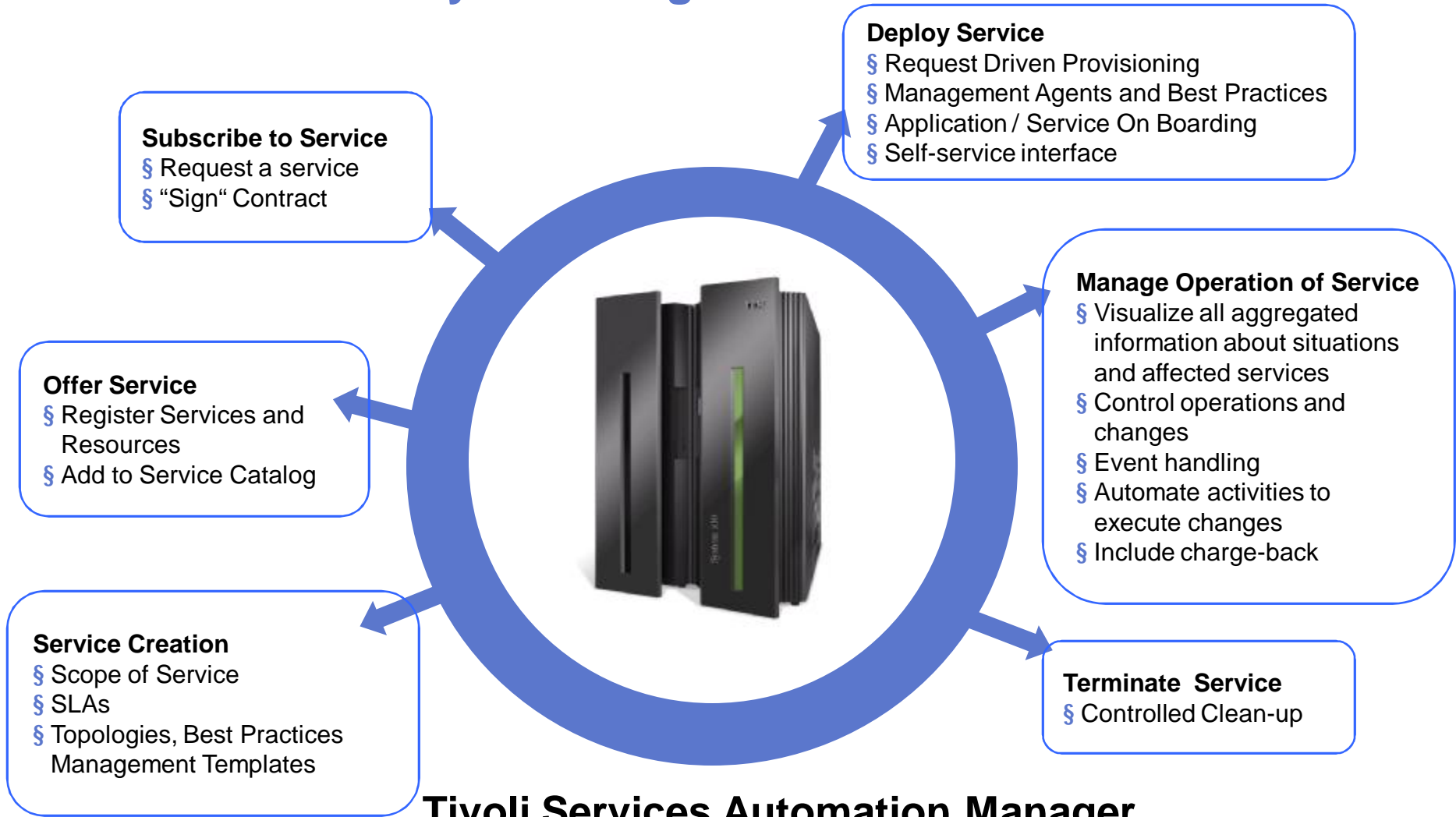
z/OS and Linux on zEnterprise



zEnterprise – THE Database and Warehouse Engine



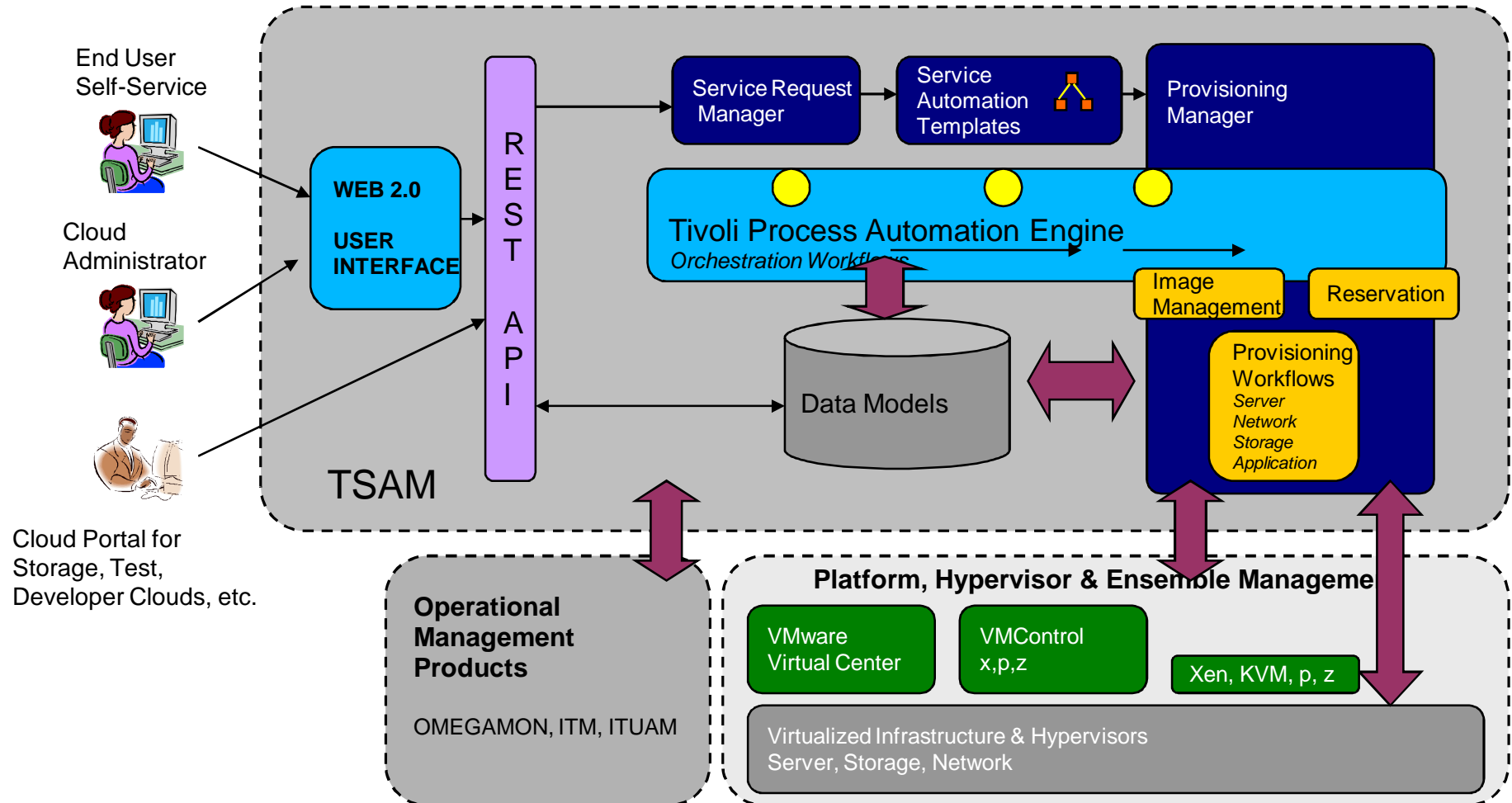
Cloud Service Lifecycle Management



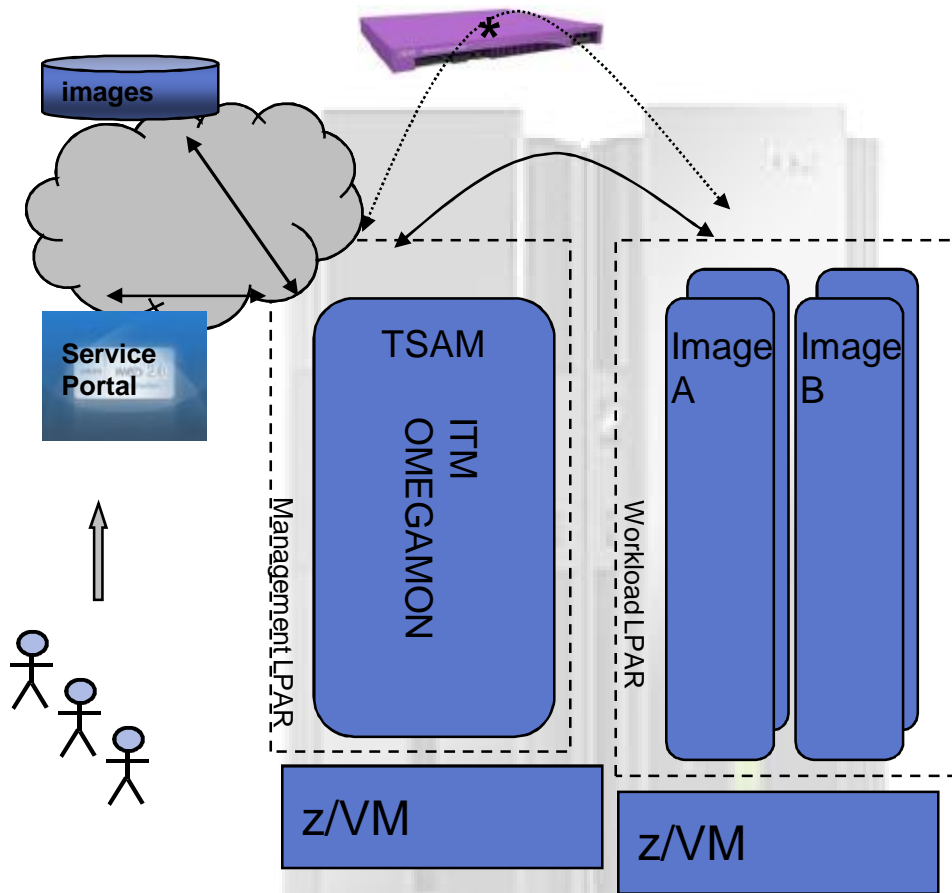
Tivoli Services Automation Manager
 Supports z/VM and Linux

Management services from Tivoli

Converged service delivery platform for cloud computing



Architecture overview for the Solution Edition for Cloud Computing

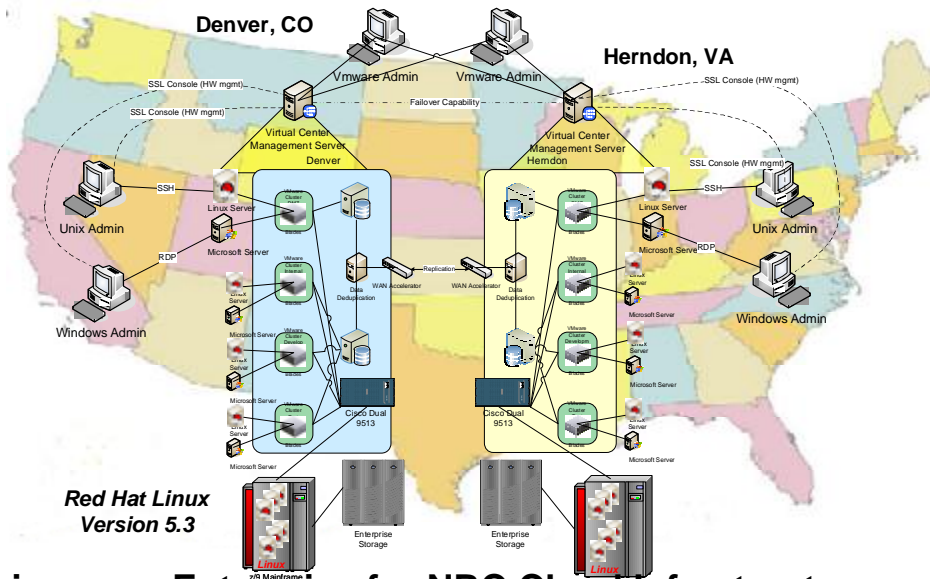


* 1H2010 addition

- § Management from LPAR for rapid provisioning/de-provisioning and services lifecycle management
- § The workload LPAR supports the customer defined cloud images
 - Linux and z/OS under z/VM
 - A sample workload is provided by eyeOS
- § Coming soon!
 - WS Cloudburst appliance can be used for rapid provisioning of best practice WebSphere workloads
 - IBM Systems Director with VMControl provides a consistent cross platform approach to cloud

The National Business Center

Dual operating environments



§ Linux on zEnterprise for NBC 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

§ Linux on zEnterprise for Increased Security

- Combined with Linux on zEnterprise Mainframe and Red Hat OS, NBC Cloud infrastructure has increased Controlled Access Protection Profile Level 5 and Level 4+ Common Criteria
- Centralize security access control using NBC EACS

§ Linux on zEnterprise for Business Economic Values

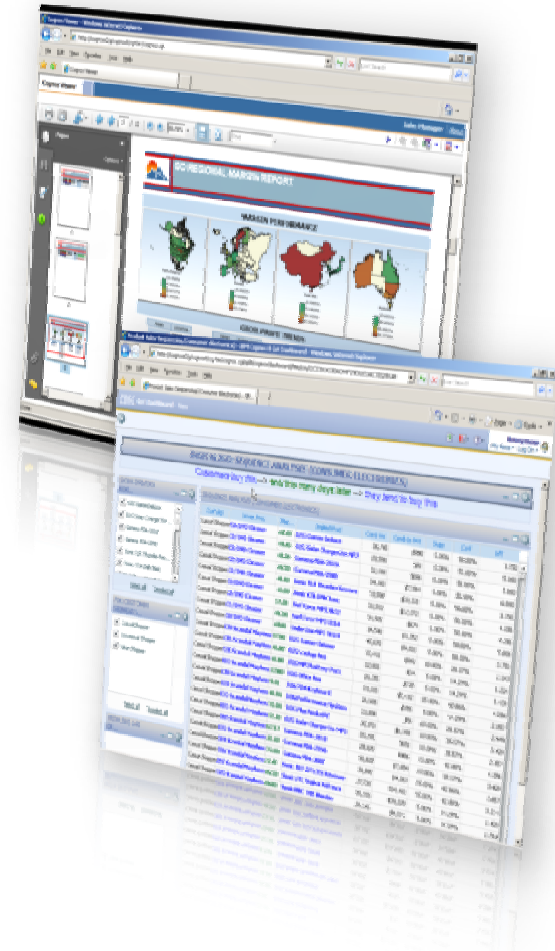
- Simplified policy and management domains across the multi-tier architectures
- Support on highly reliable and highly available platforms
- Leverage current NBC resources and skill sets
- End-to-end management view of distributed application components, Provisioning and Cost by usage.
- Consolidated disaster recovery
- Improved economies of scale and efficiency

§ Linux on zEnterprise for Green IT

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

IBM Smart Analytics System

A Broad Range of Analysis, Dashboards & Reporting

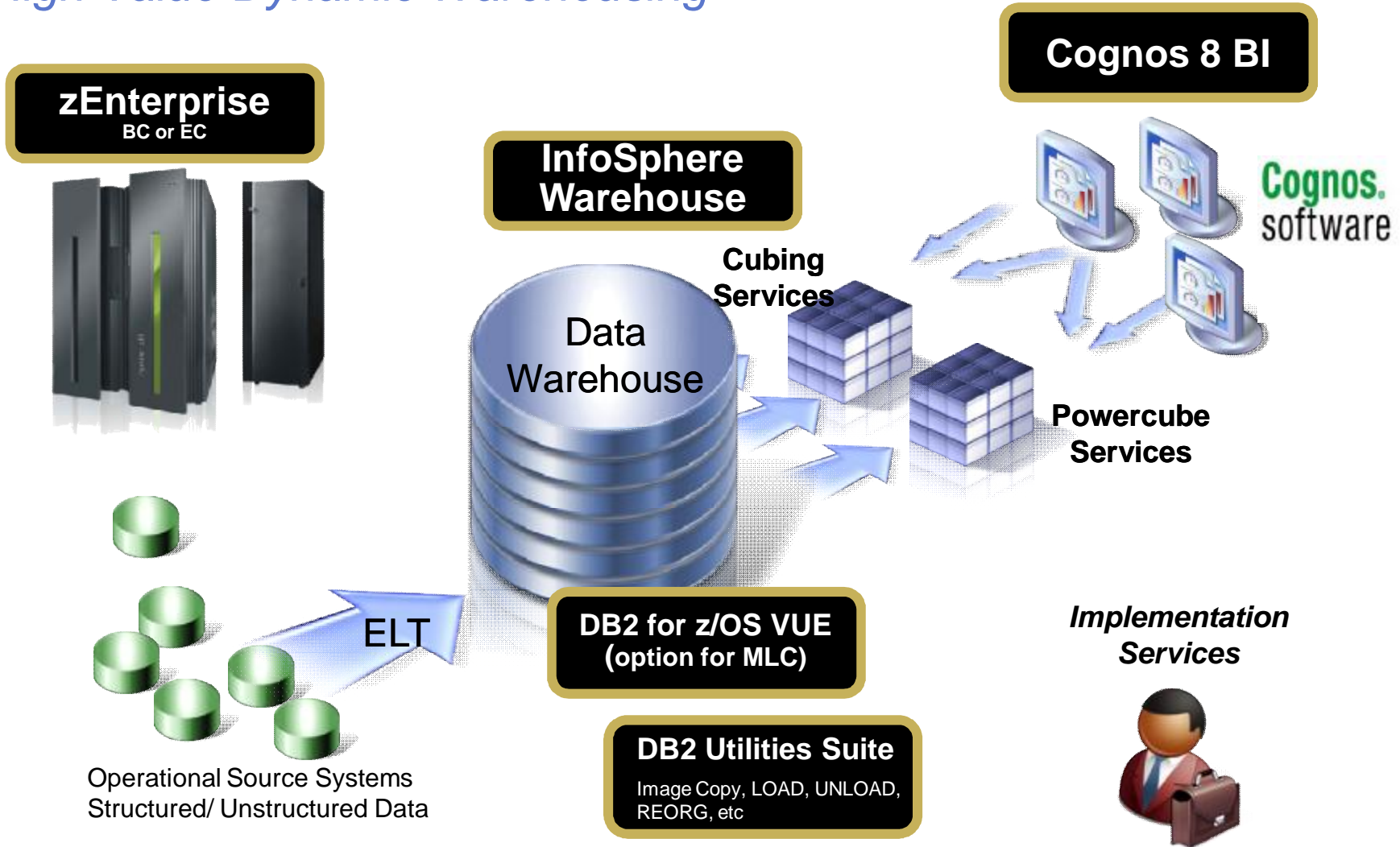


Pre-optimized Business Intelligence Software triples out of the box performance*

* Based on IBM Laboratory Tests. Actual results may vary depending on specific environment and configuration.

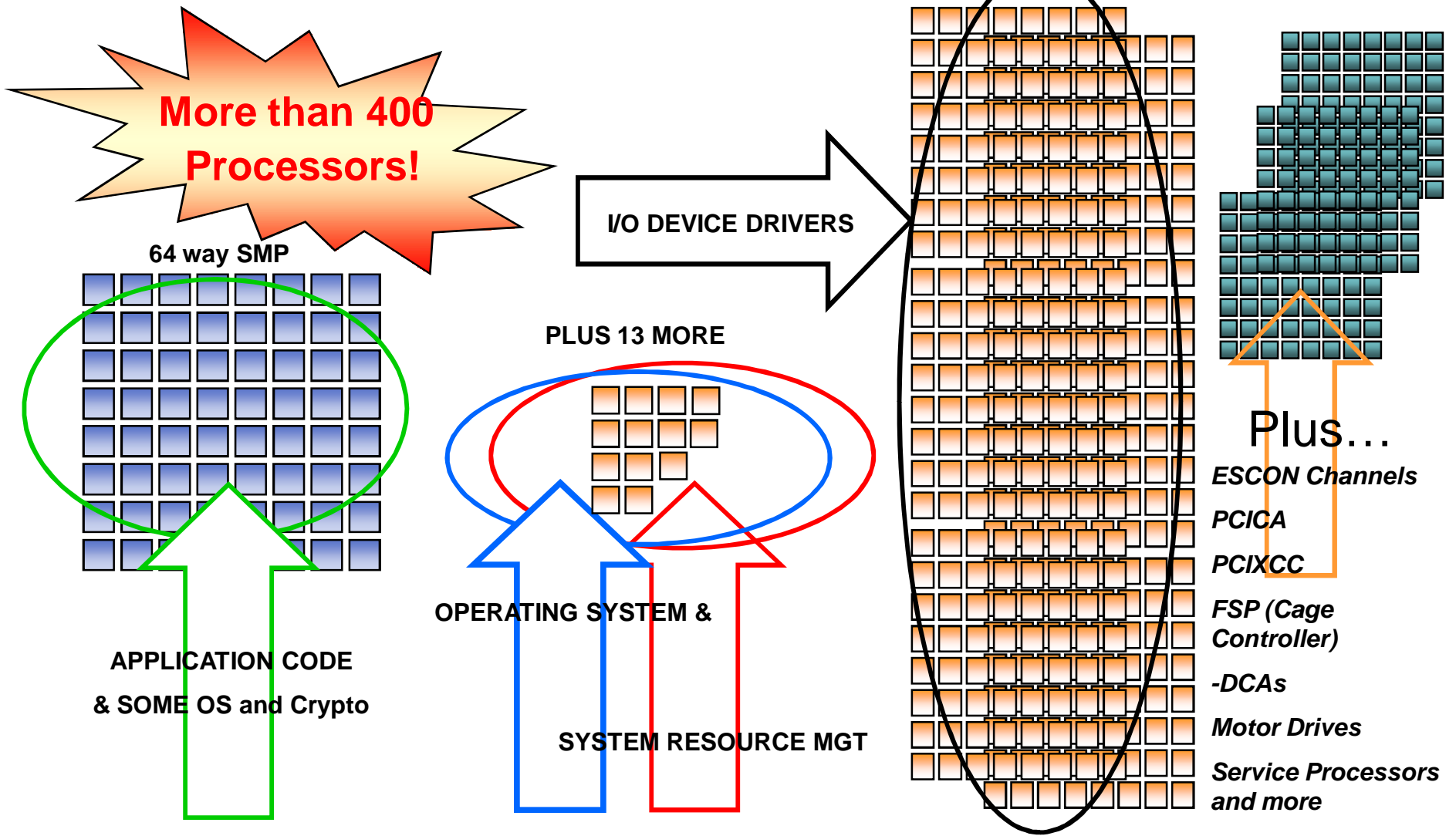
IBM Smart Analytics System 9600

High Value Dynamic Warehousing

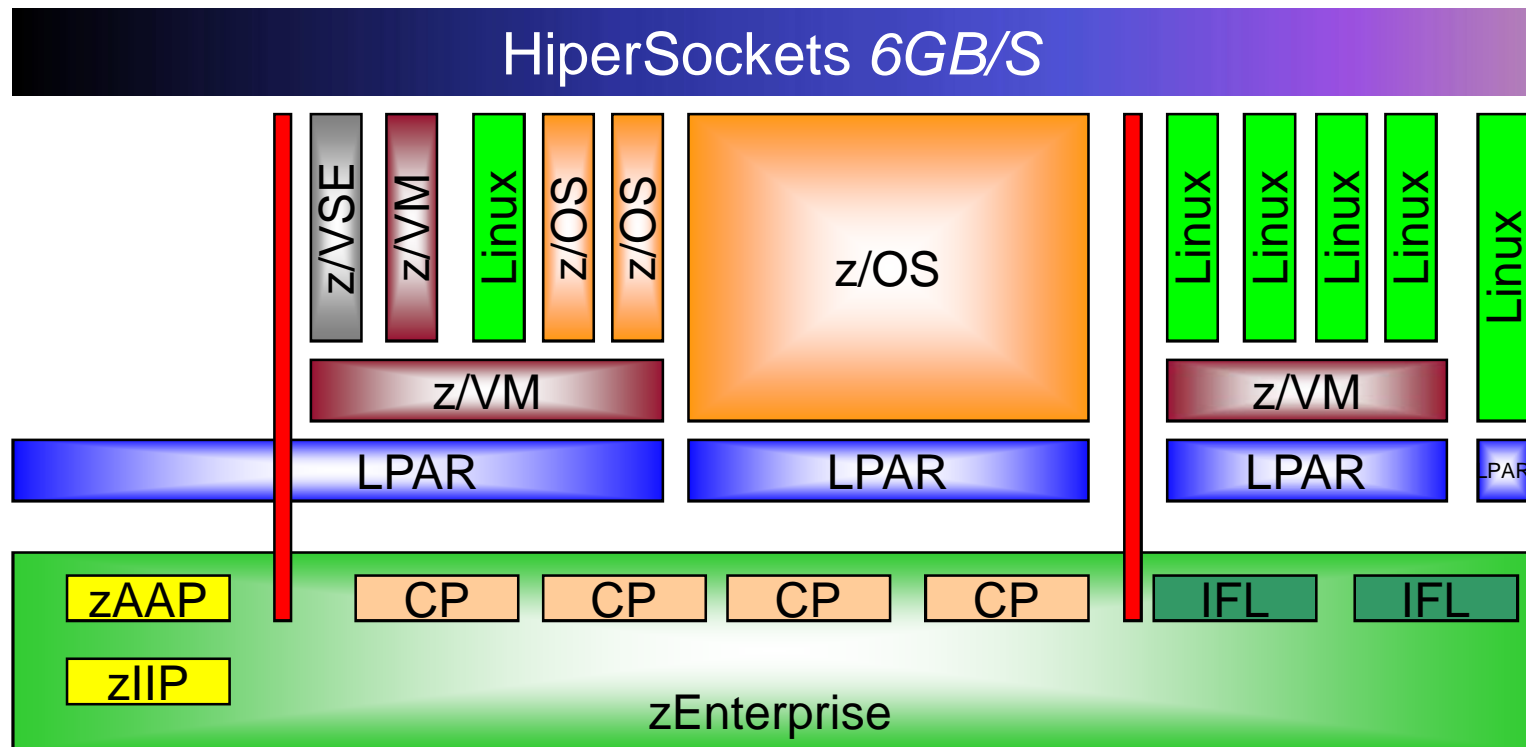


zEnterprise10 Implementation

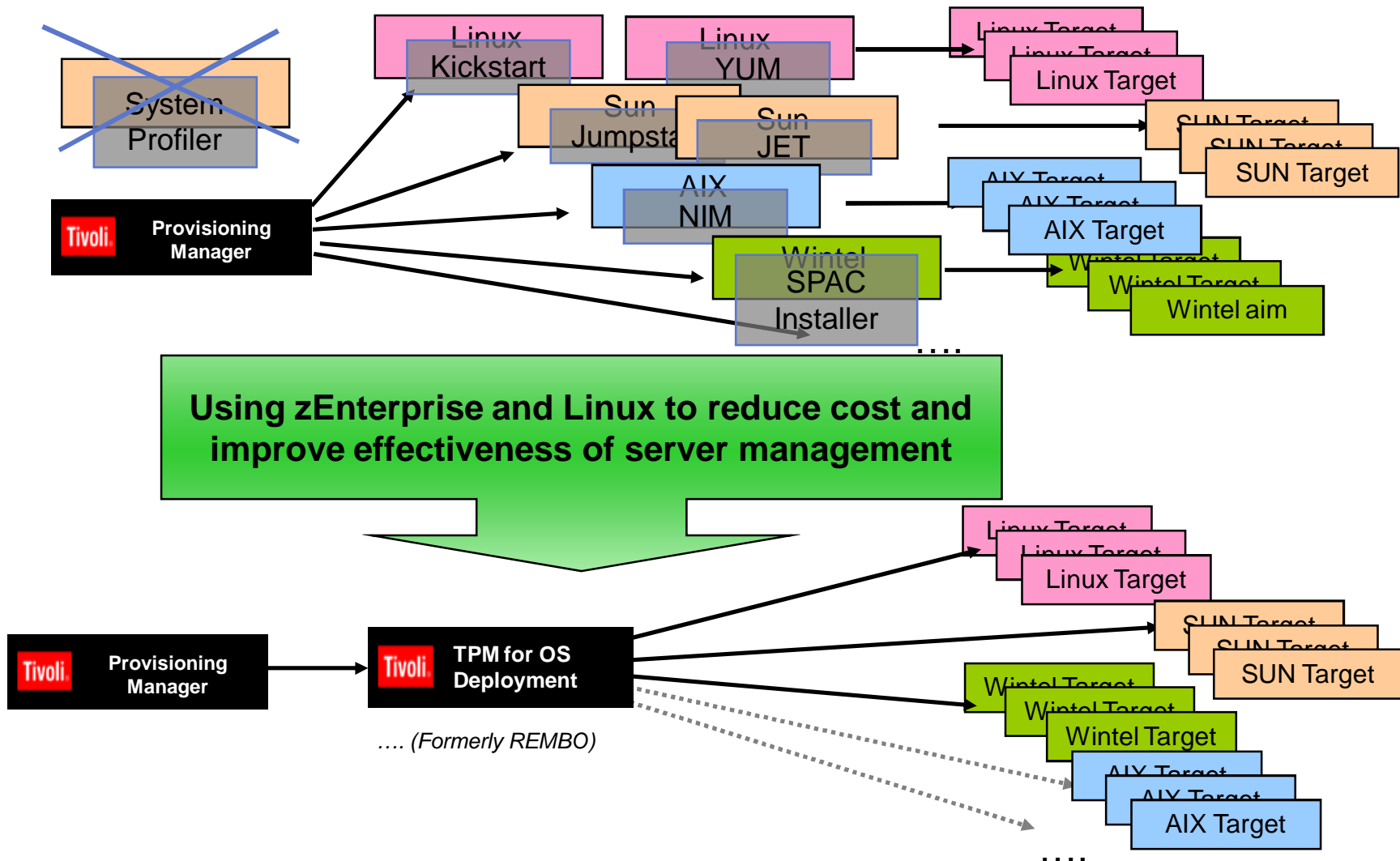
"How to build a 64-WAY Mainframe"

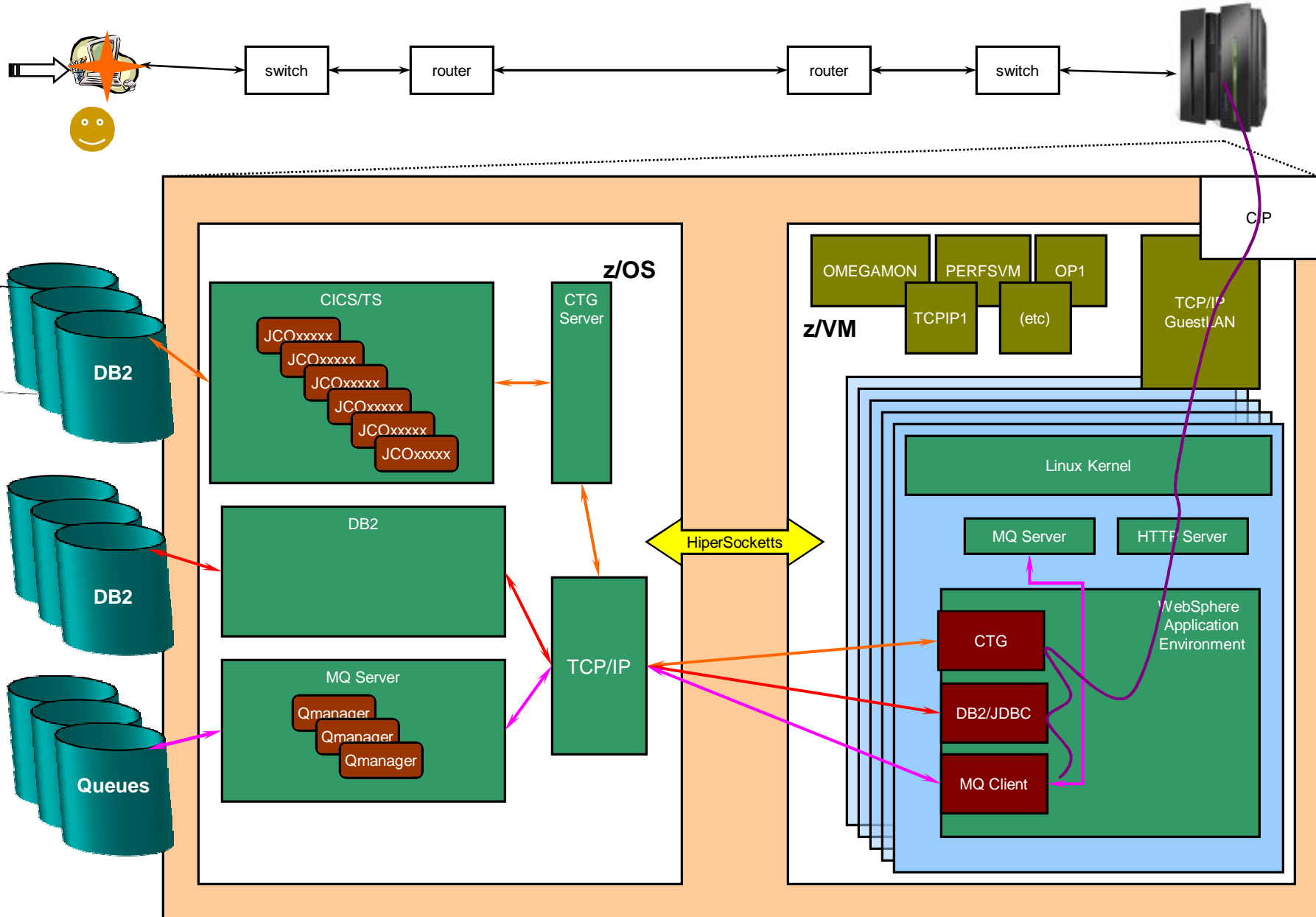


Linux on zEnterprise Choices

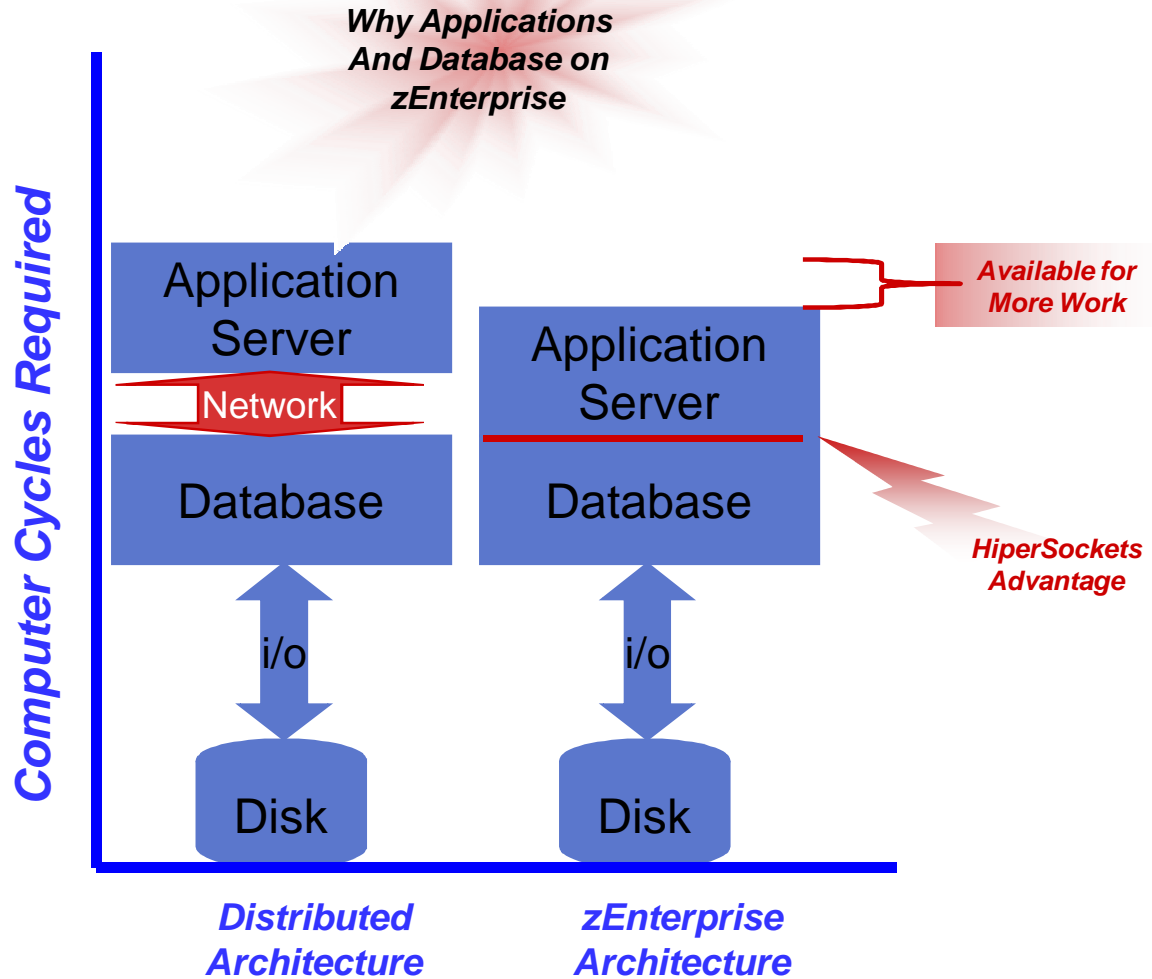


Phase one simplification and administrative cost reduction





Application Layer Performance



§ ISV application server options

- WebSphere
- IBI WebFOCUS
- SAP
- INFORMS
- Java
- Oracle E-Business Suite

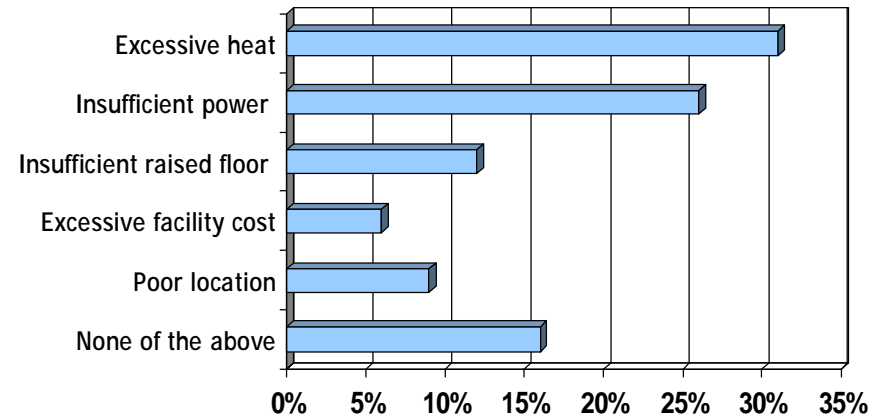
What is the greatest facility problem with your primary data center?

§ **“Power and cooling will be a top 3 issue with all CIO’s in the next 6-12 months”**

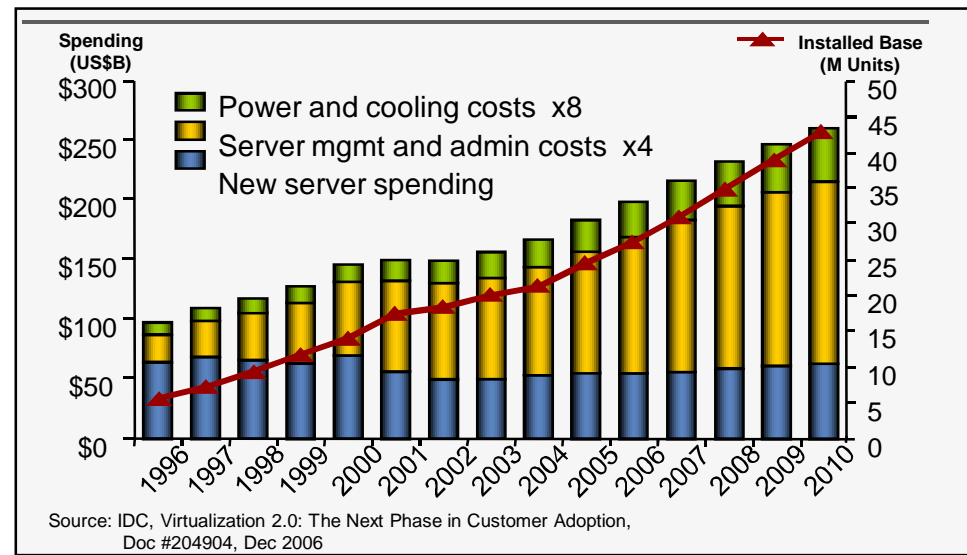
– Michael Bell – Gartner Group

§ **“Power and cooling costs will increase to more than one-third of the total IT budget”**

– Robert Frances Group, January 2006



Gartner 2006



Source: IDC, Virtualization 2.0: The Next Phase in Customer Adoption, Doc #204904, Dec 2006

IDC 2006

What makes the best fit

§ Leverage classic strengths of the zEnterprise

- High availability
- High i/o bandwidth capabilities
- Flexibility to run disparate workloads concurrently
- Requirement for excellent disaster recovery capabilities
- Security

§ 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

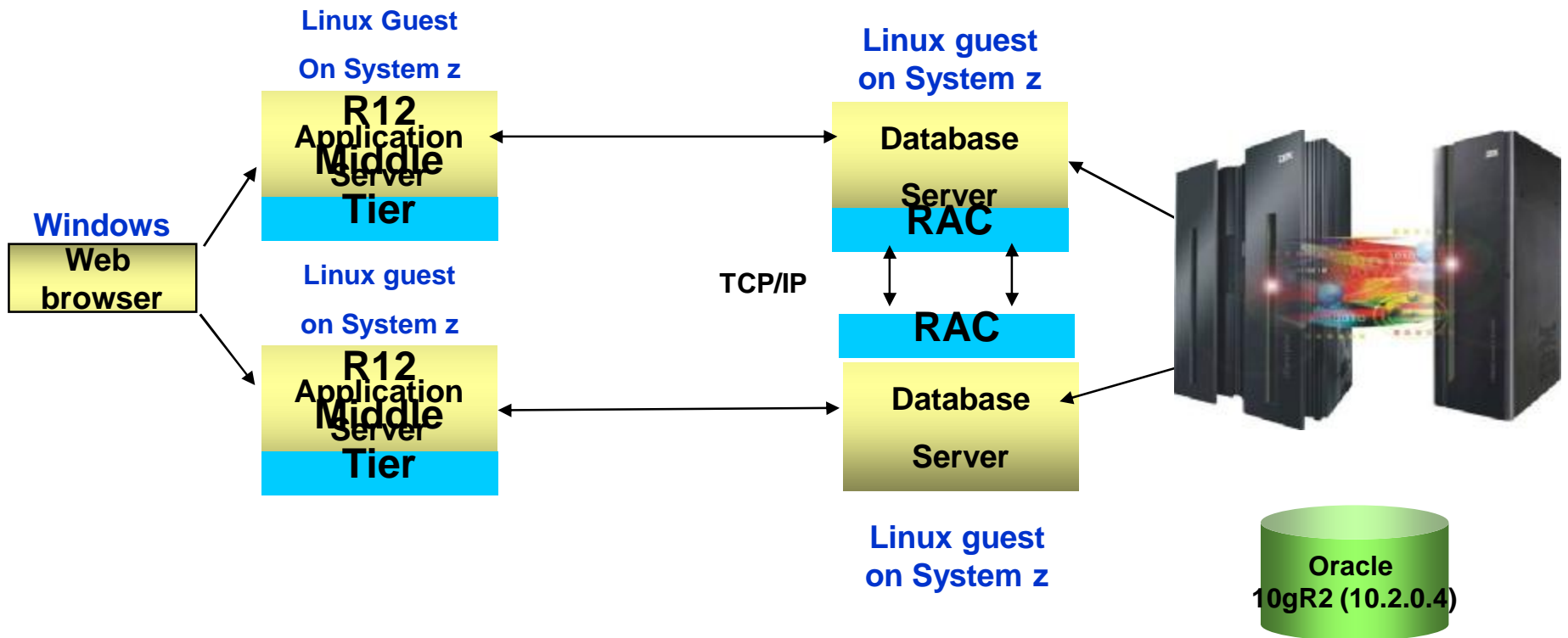
§ Consolidation Effect

- Power requirements
- Software costs
- People Costs
- Real Estate
- Workloads requiring EXTREME Flexibility

Best fit application workloads

- § **WebSphere MQ**
- § **DB2 Connect**
- § **CICS Transaction Gateway , IMS Connect for Java**
- § **SAP**
- § **WebSphere and JAVA applications development**
- § **WebSphere Application Server (WAS), Portal**
- § **Domino**
- § **Network Infrastructure, FTP, NFS, DNS, ...**
- § **Oracle Database**
- § **Applications requiring top end disaster recovery model**
- § **Communications Server and Communications Controller for Linux**
- § **Virtualization and Security Services**
- § **InfoSphere**
- § **Cognos**
- § **CommuniGate Pro (VoIP)**

Oracle E-Business Suite R12 Architecture with Middle Tier and Database tier on Linux on IBM System z 2010

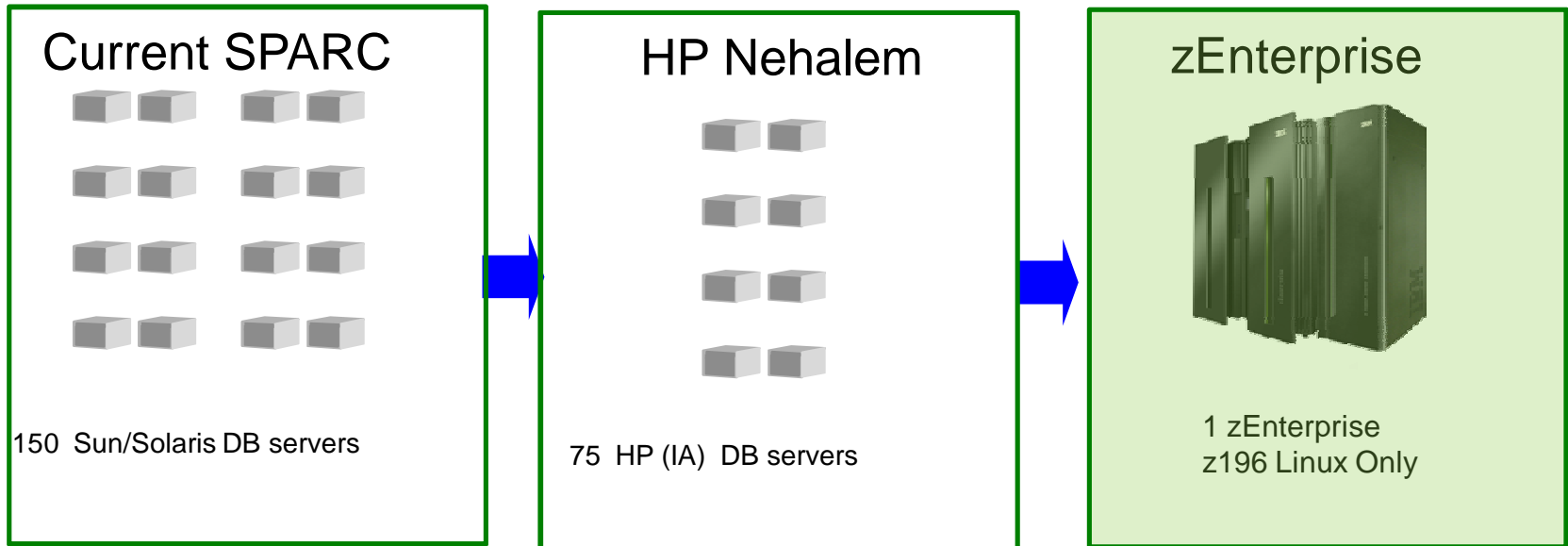


with RAC option

“One Box is Enough” -- zEnterprise



System Overview



Tangible Benefits (5 Year TCO Comparison)

	Existing SPARC (4800 Cores)	Proliant BL 460c (600 Cores)	Purchase z196 (80 Cores))
Hardware (Purchase)	17,441,235	1,101,315	2,280,000
Hardware Maintenance	6,976,494	440,526	1,414,950
Software Licenses		14,774,250	3,429,698
Software (S&S)	127,761,150	17,645,625	5,702,486
Total	152,178,879	33,961,716	12,827,133

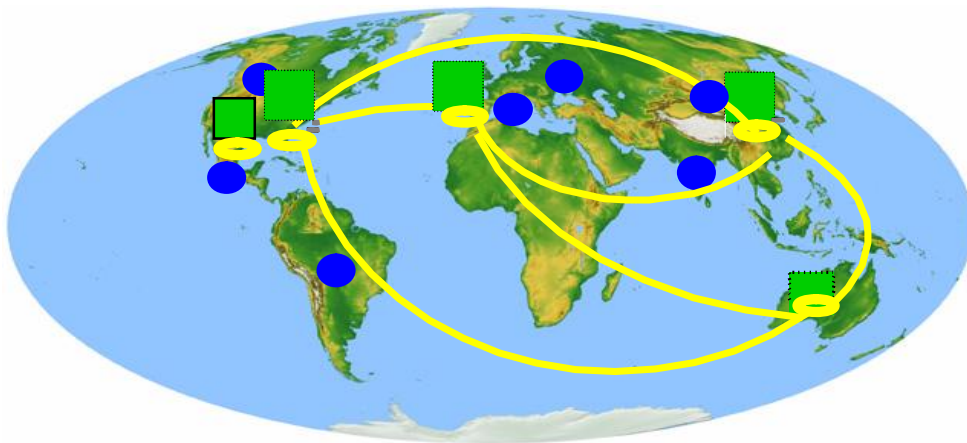
Prices based on US market prices, local pricing and conditions will vary

Intangible Benefits

- Improved security – no information leak during data copy between servers
- End to End disaster recovery – simplified, single switchover
- Improved availability – no network routers or switches

IBM's Transformation: An ongoing journey

IBM Strategic Delivery Model



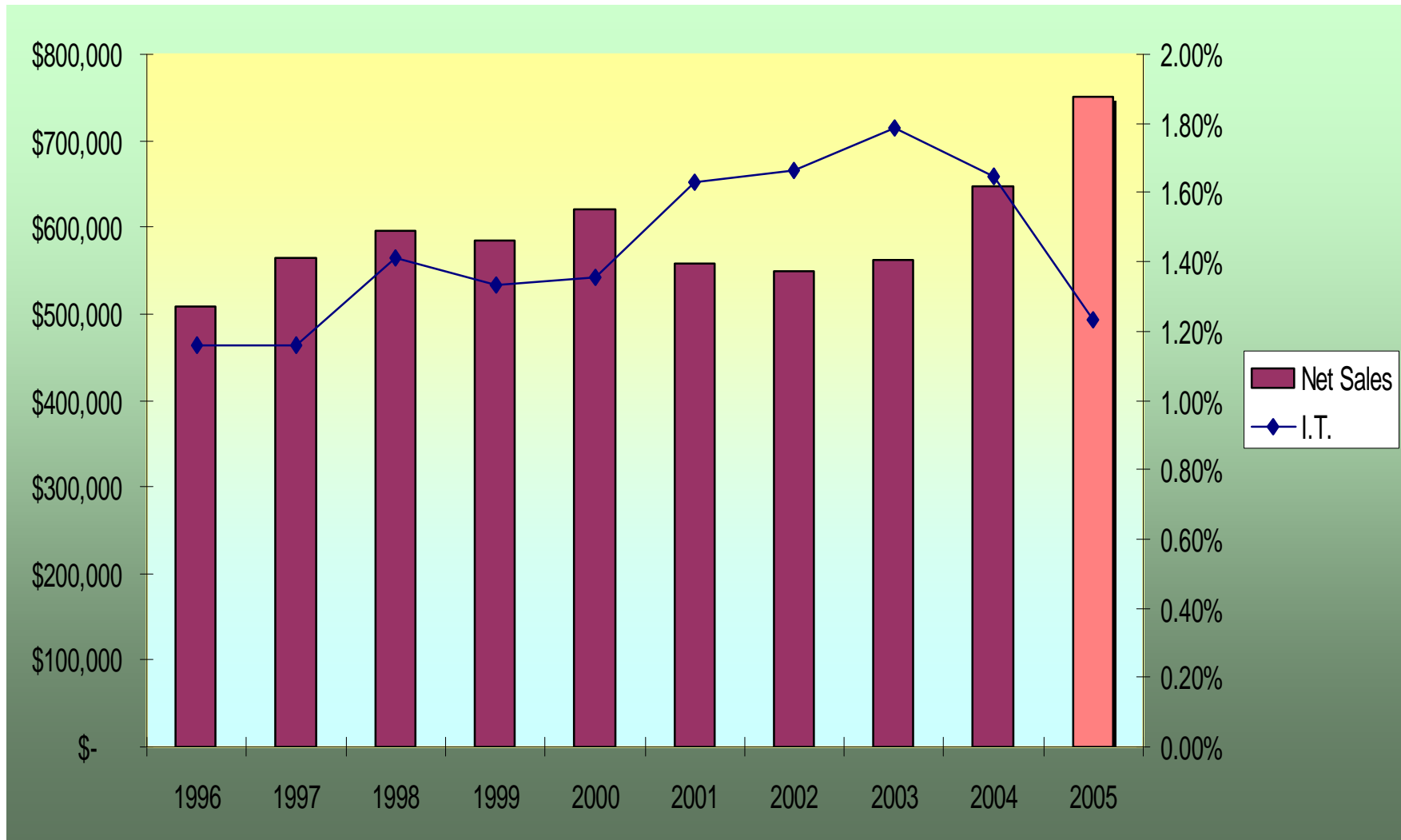
- Global Resources
- Strategic IGA location
- Strategic Web location for IGA
- Ethernet and Power9 Networks

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

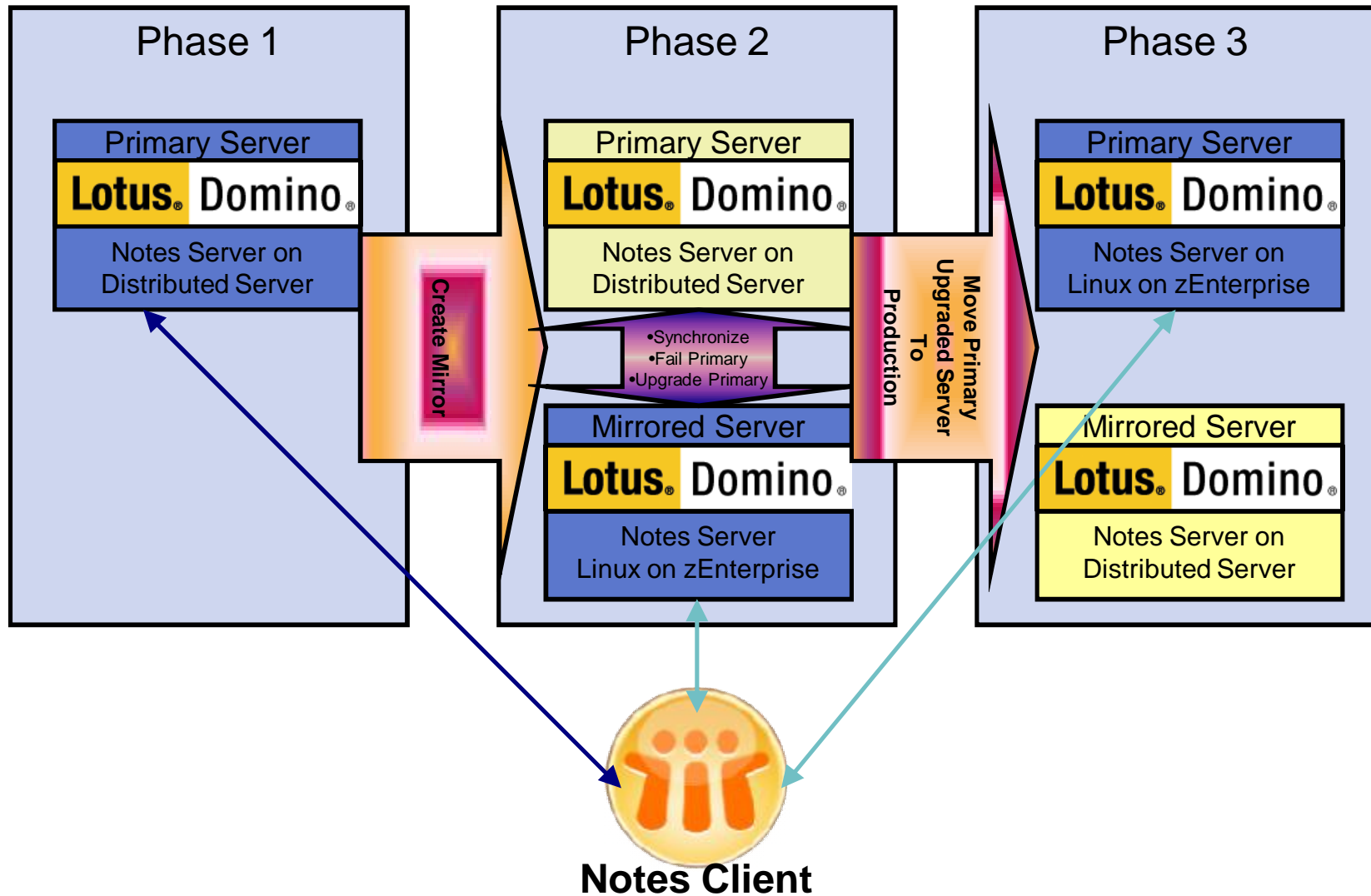
Tactical and operational efficiencies

- § Consolidation of infrastructure
- § Application consolidation/reduction
- § Global resource deployment
- § Enterprise end-to-end architecture optimization

Net Sales vs. IT Percentage of Sales – SAP Customer



Domino for Linux on zEnterprise, Imagine the Possibilities



What makes a good fit

§ Evaluate server choices

- Correct application availability,
- Supporting applications,
- Total Cost of Ownership (TCO)
- **Politics** within the organization.
- Porting issues

§ 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

§ Consolidation Effect

- Power requirements
- Software costs
- People Costs
- Real Estate
- Workloads requiring EXTREME flexibility

Good fit application workloads

- § **DB2 (LUW)**
- § **Informix (IDS)**
- § **Apache web serving**
- § **SAMBA**
- § **TIM/TAM (LDAP Services)**
- § **TSM**
- § **Existing Linux Workloads**

Linux on x86 or z/Architecture?

- § **Application end to end path length considerations**
- § **Is there application processor affinity for portions of the architected solution?**
- § **Do the various applications have a lot of cross talk between themselves?**
- § **Many of the control programs are running natively on zEnterprise, such as Systems Director**
- § **System Assist Processors and Failover processors are only on the zEnterprise frame**
- § **Linux on zEnterprise, offloads the network and I/O workload and are not as likely to get bound up in contention**

Questions?

