



Selecting Projects for Linux on System z

Linux – System z

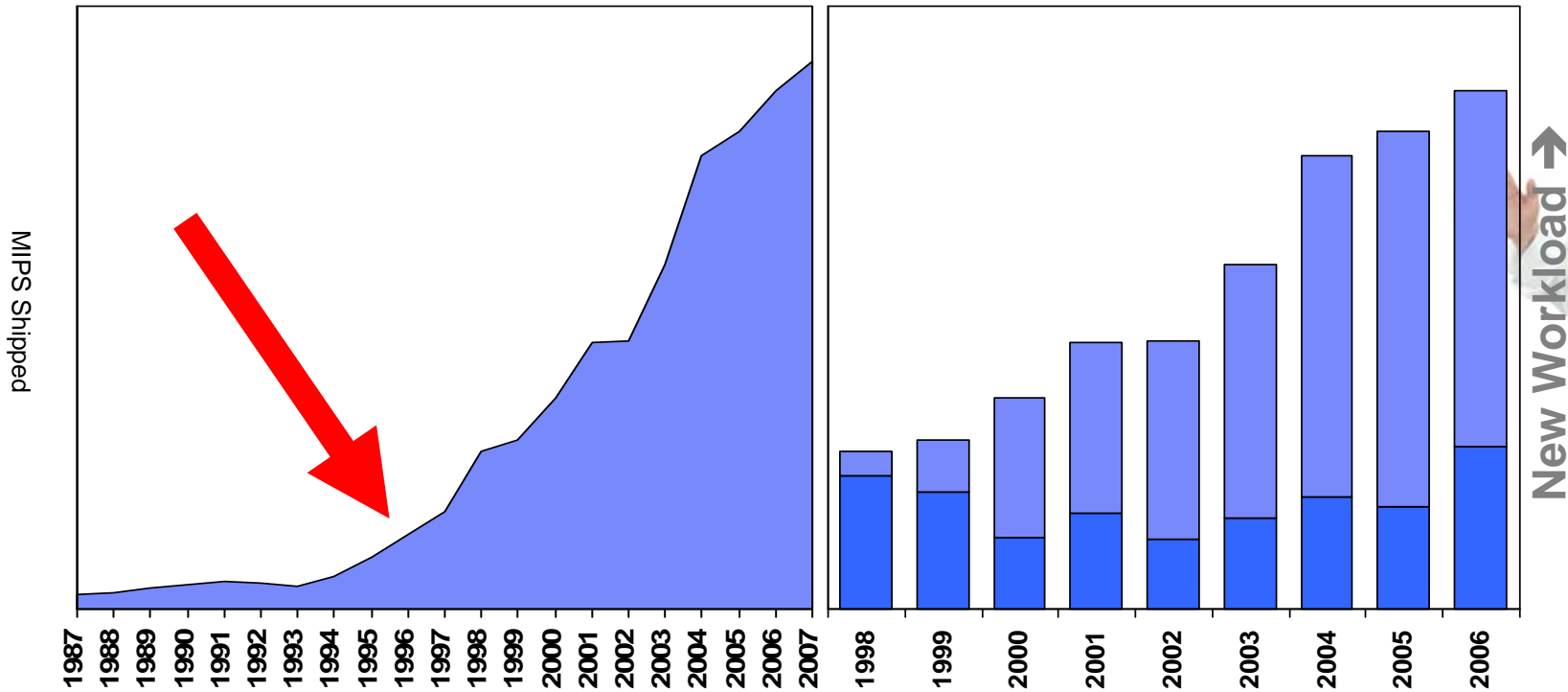


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WELCOME

IBM System z Workload Growth Worldwide



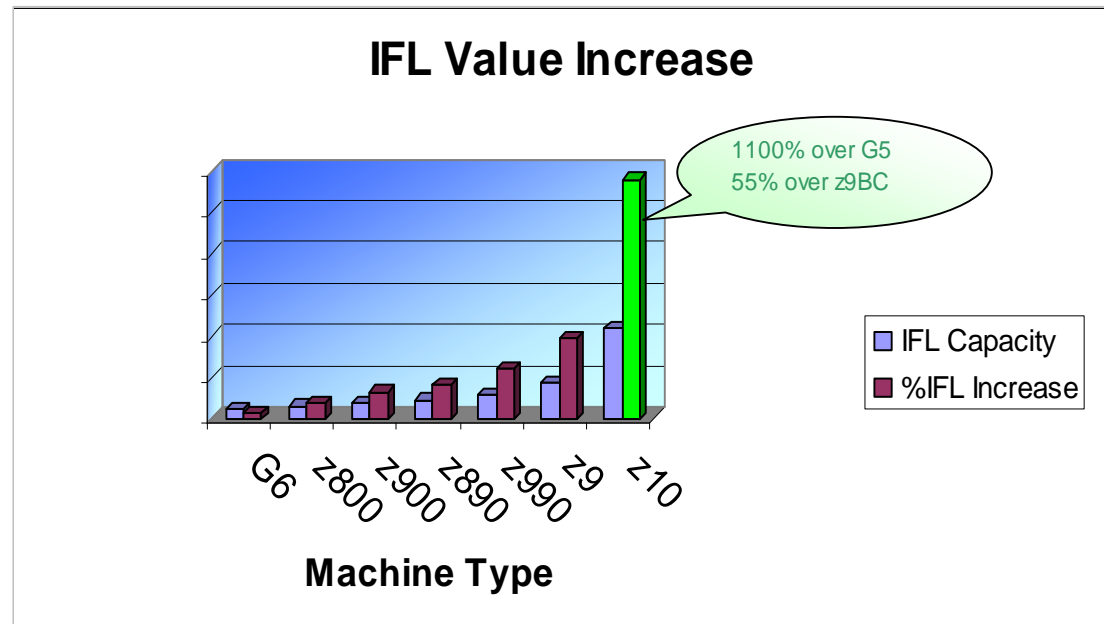
What z10 brings to Linux Customers

- **4.4 GHz... Quad Core Processor Up to 64 IFLs**
- **Up to 1.5 TB memory**
- **Large Page Support**
- **Hardware Decimal Floating Point**
- **Just in Time Deployment for capacity offerings – permanent and temporary**
- **6.0 GBps HiperSockets**
- **SCSI IPL**
- **OSA-Express3 10 Gbps**
- **HiperSockets Layer 2 Support**



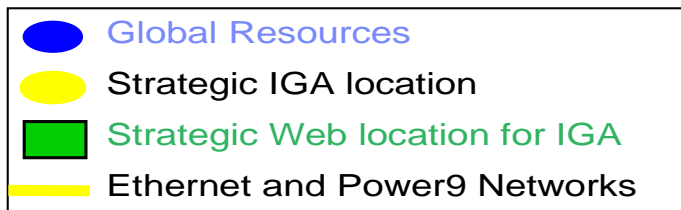
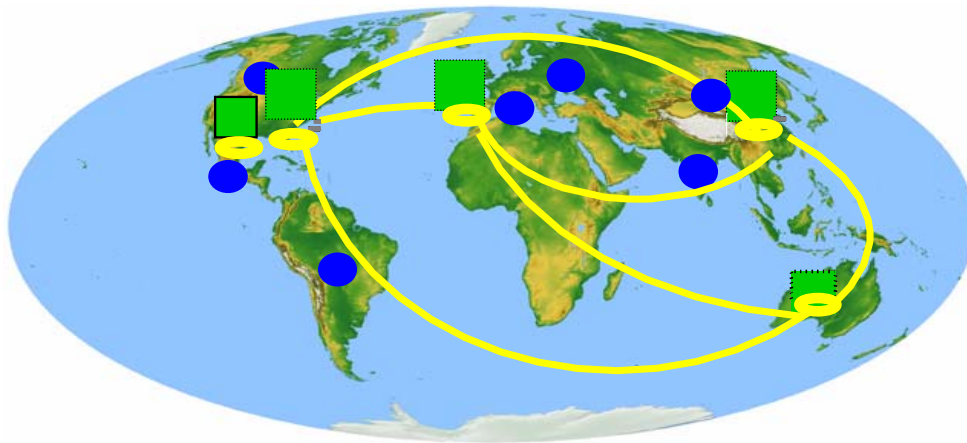
Unique Value of IFL, zAAP and zIIP

- 55% more capacity from previous generation!!!
- IFL, zAAP and zIIP Price has remained constant
- Customer upgrading to new machine can migrate IFL, zAAP and zIIP to new machine
- Specialty Engines run at FULL speed even on sub-capacity machines



IBM's Transformation: An Ongoing Journey

IBM Strategic Delivery Model



	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

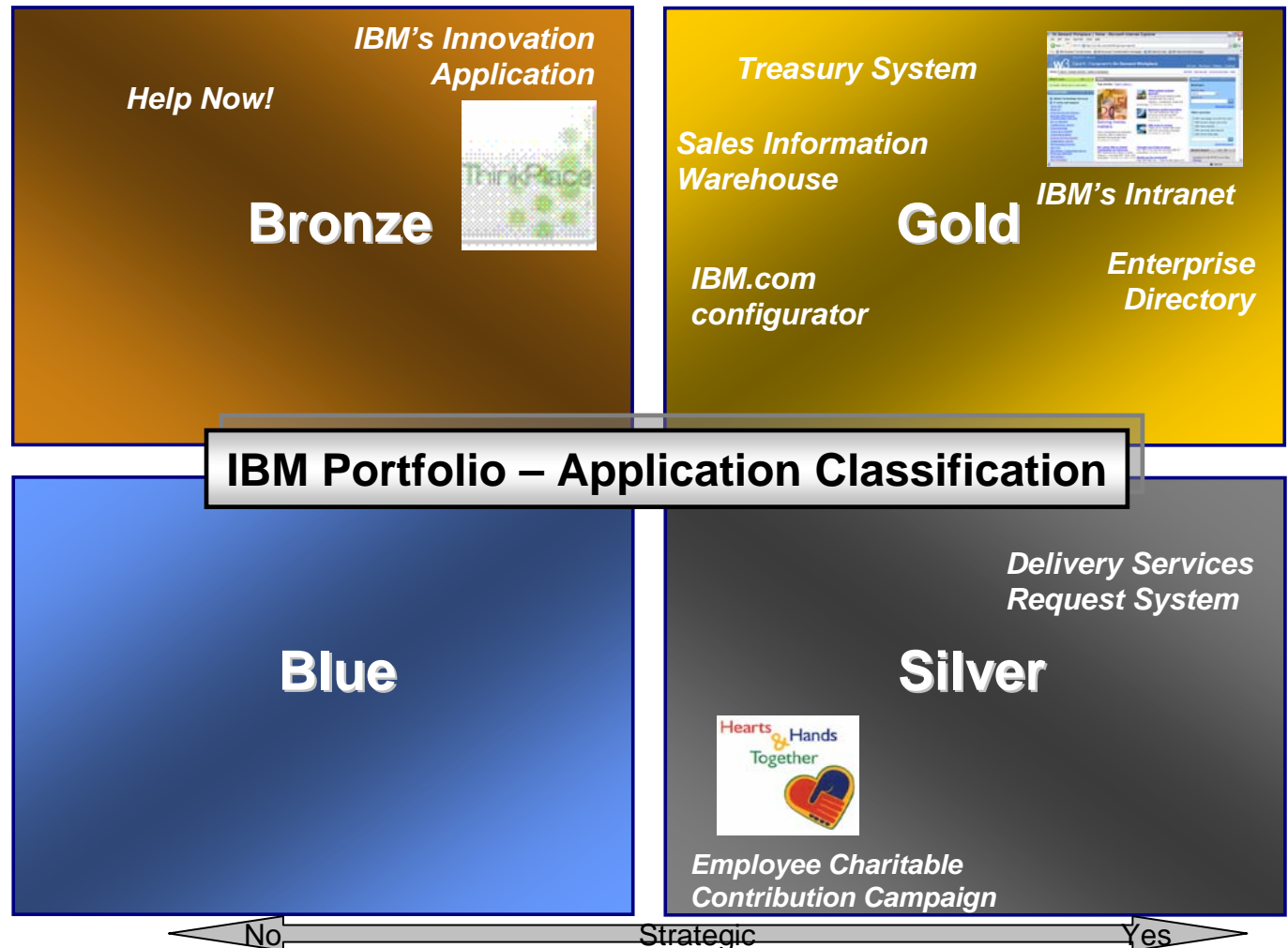
- Consolidation of infrastructure
- Application consolidation/reduction
- Global resource deployment
- Enterprise end-to-end architecture optimization

Applications moving to System z tend to be strategic and mission critical

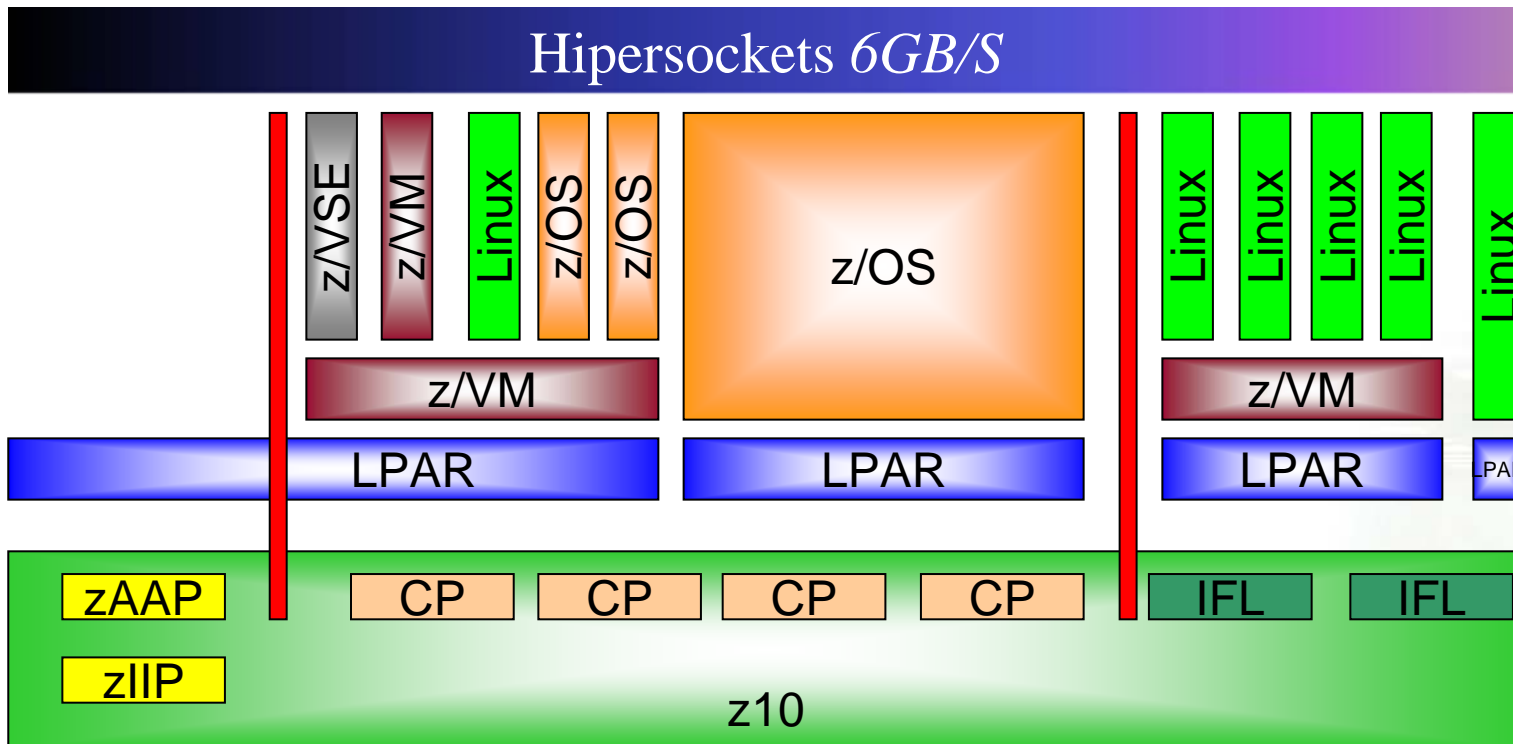
Application View

- Includes all business units, a cross-section of business functions
- Most are internally developed web and domino-based
- Tend to be complex with multiple servers and interfaces
- Almost 50% of initial applications are classified as "Gold"

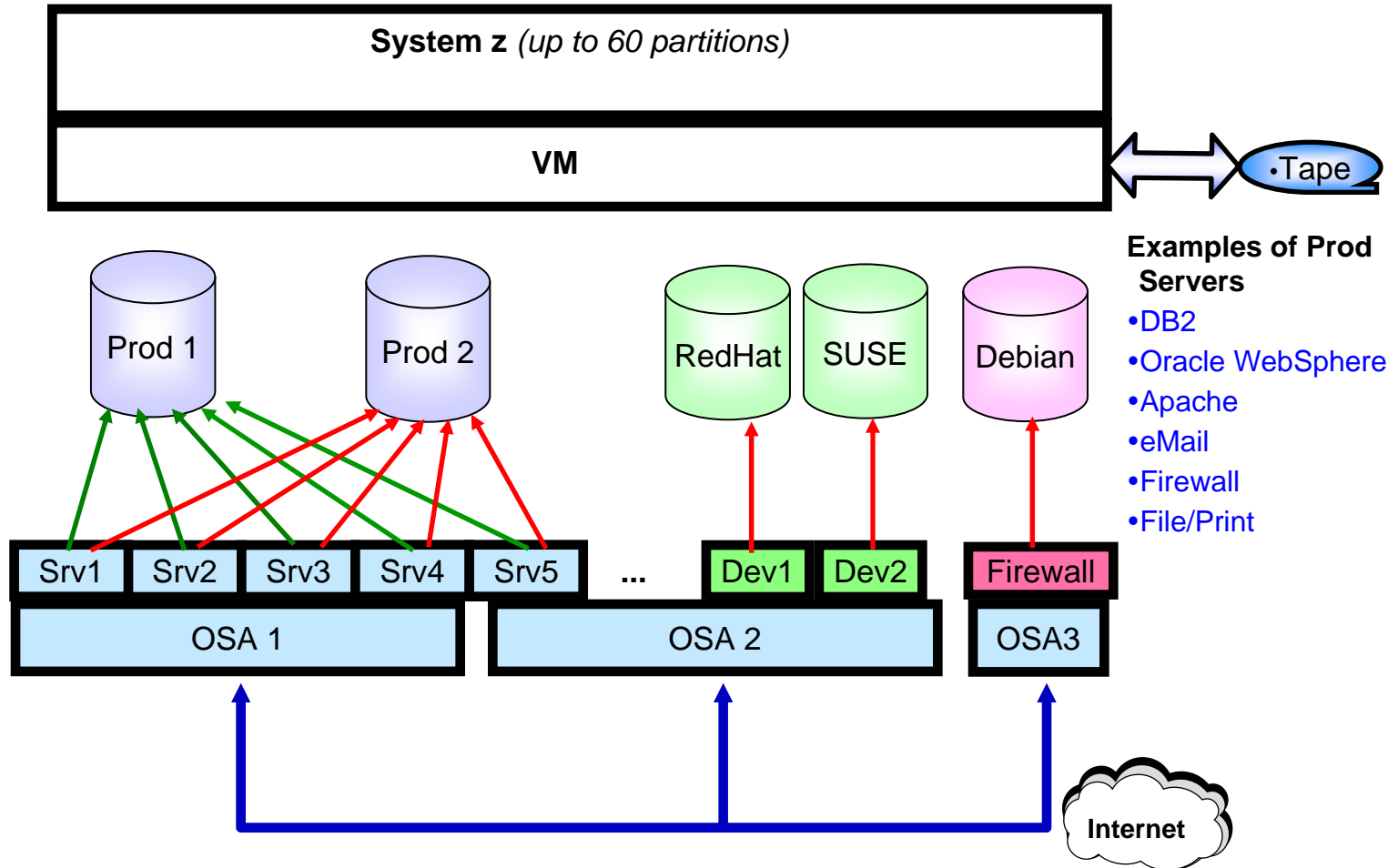
<http://ecm.bluehost.ibm.com/success/iga.htm>



Linux for System z Choices

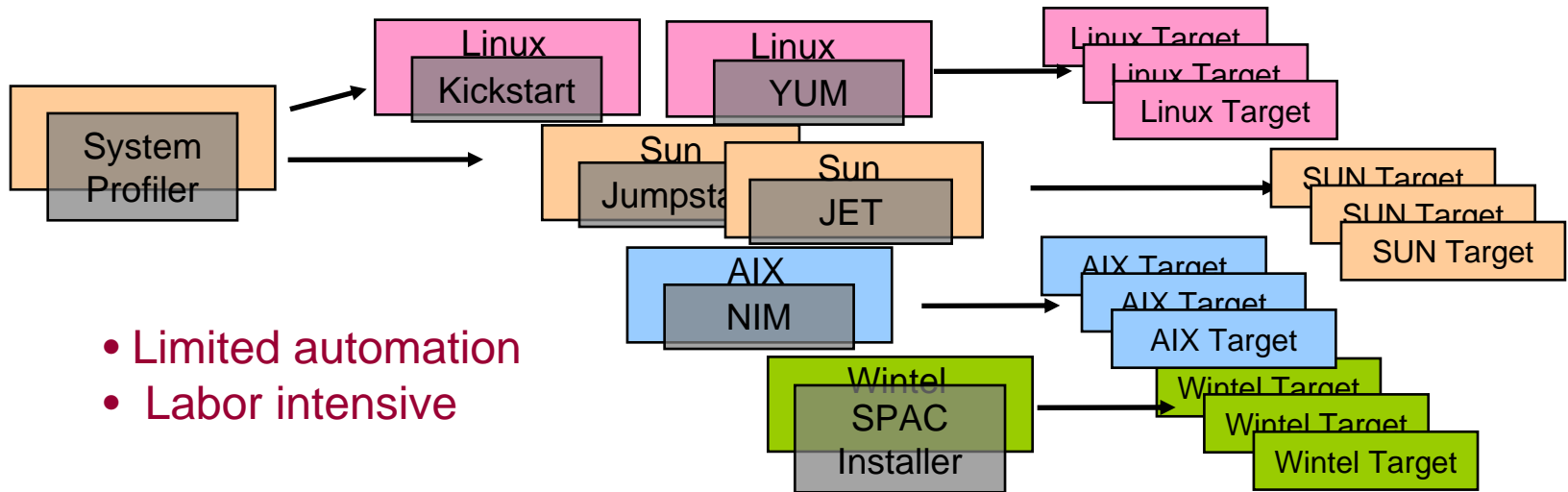


Flexible and Robust Linux Installation



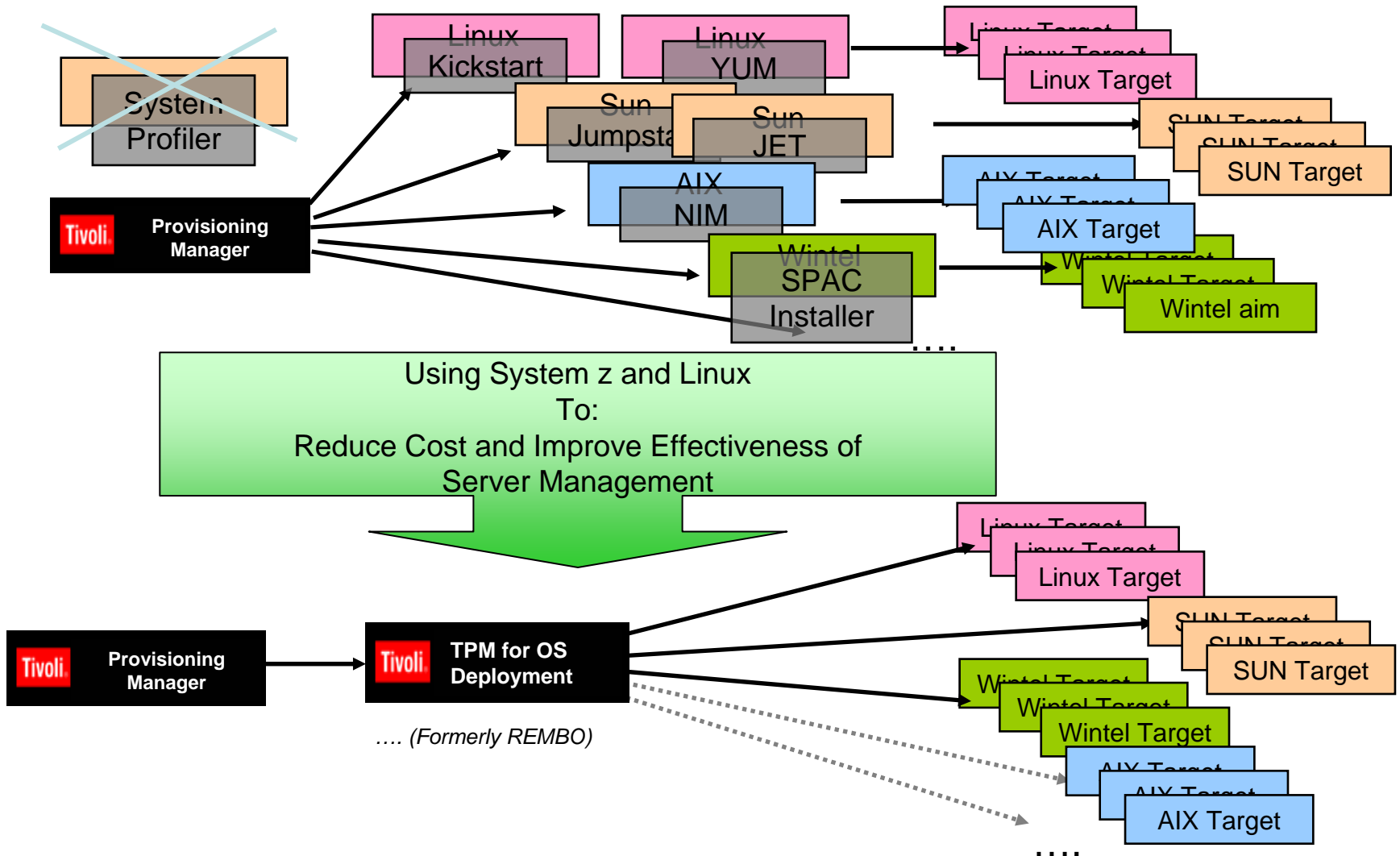
Extreme Virtualization and Server Management Leadership

- 32% of Server farm for distributed servers are for administration , managing and provisioning servers
 - Real Customer example.. Managing 37,300 servers world wide would take 26 IFLs on a z990.



Local Implementation (per site)

Phase one simplification and administrative cost reduction



IBM Director for Linux on System z V5.20

With z/VM Center and Software Distribution Premium Edition

IBM Director Base Functions

- Discovery
- Group Management
- Inventory
- Basic Resource Monitor
- Event Action Plan (EAP)
- Process Management
- Remote Session
- File Transfer
- Network Configuration
- Software Distribution
- SNMP Browser

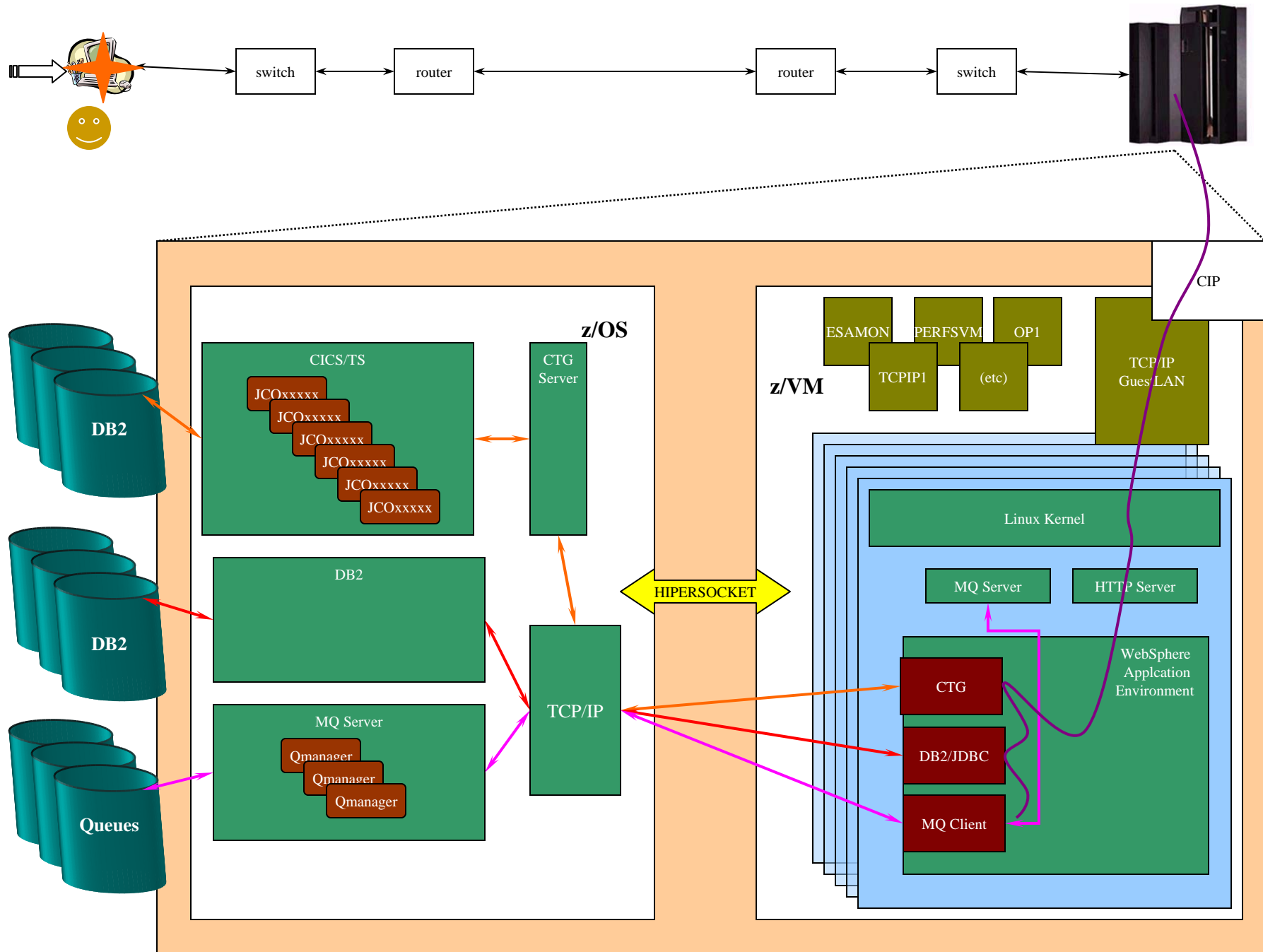
z/VM Center

- Utility Service Configuration Manager **New**
- z/VM Virtual Server Deployment
- z/VM Server Complexes

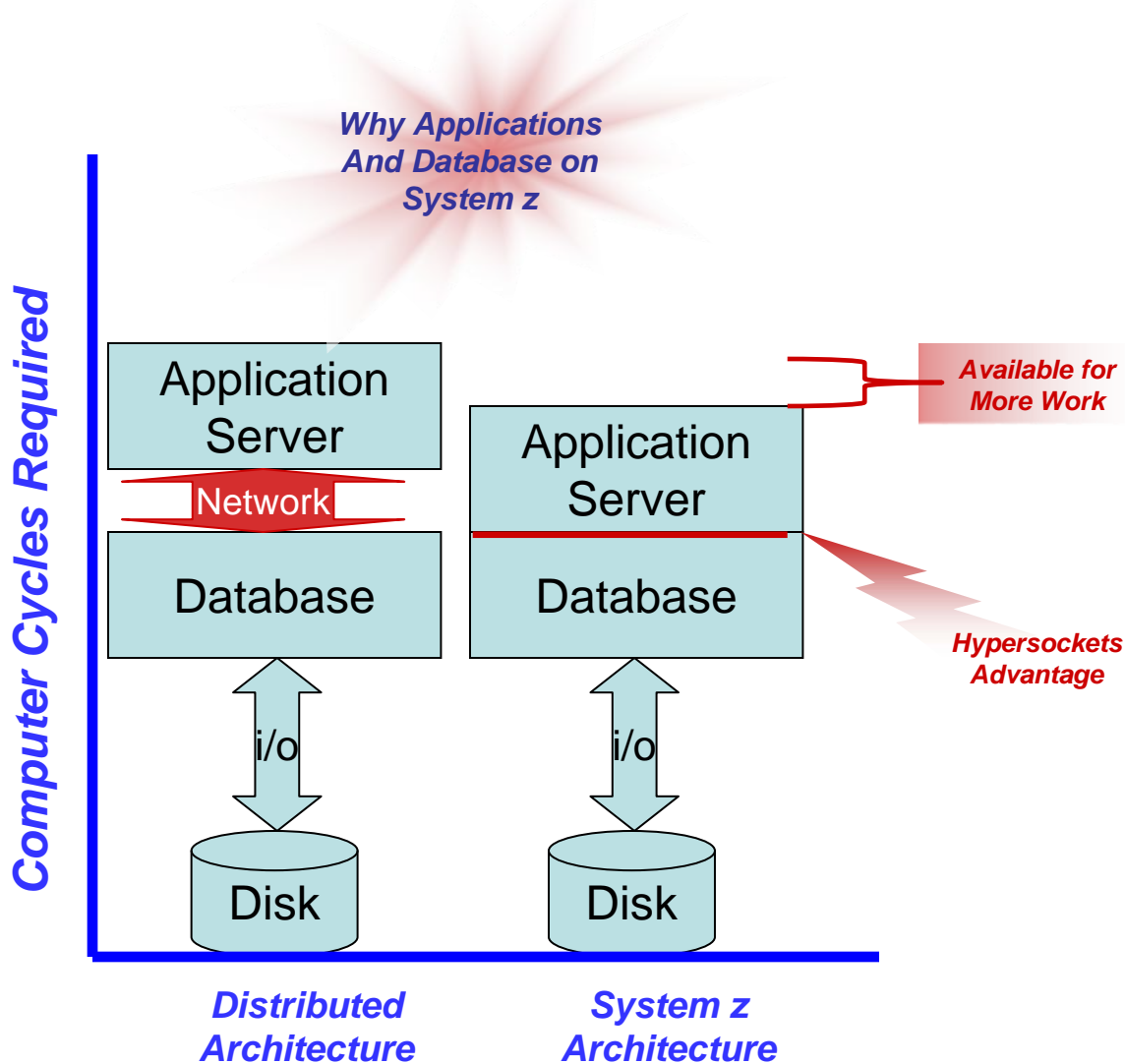
Software Distribution Premium Edition **New**

- Software package distribution

The screenshot displays the IBM Director Console interface. The main window is titled "IBM Director Console" and has a menu bar with "Console", "Tasks", "Associations", "View", "Options", "Window", and "Help". Below the menu bar is a toolbar with various icons. The main content area is divided into two panes. The left pane, titled "Level 2: IBM Director Agents", shows a tree view of agents with columns for "Name" and "TCP/IP Address". The right pane, titled "Tasks", shows a list of tasks including "Asset ID", "CIM Browser", "Configure SNMP Agent", "Event Action Plans", and "Event Log". A red box highlights the "z/VM Center" node in the tree view, which is expanded to show its sub-nodes: "Utility Service Configuration Manager", "z/VM Server Complexes", and "z/VM Virtual Server Deployment". Another red box highlights the "z/VM Center" node in the "Tasks" pane, which also shows its sub-nodes: "Utility Service Configuration Manager", "z/VM Server Complexes", and "z/VM Virtual Server Deployment". A red arrow points from the "z/VM Center" node in the "Tasks" pane to the "z/VM Center" node in the tree view. The status bar at the bottom of the console shows "IBM Ready", "Host: 9.152.24.178", "User ID: root", and "24 objects".



Application Layer Performance



ISV Application Server Options

- ✓ Web Sphere
- ✓ IBI Web Focus
- ✓ SAP
- ✓ INFORMS
- ✓ Java

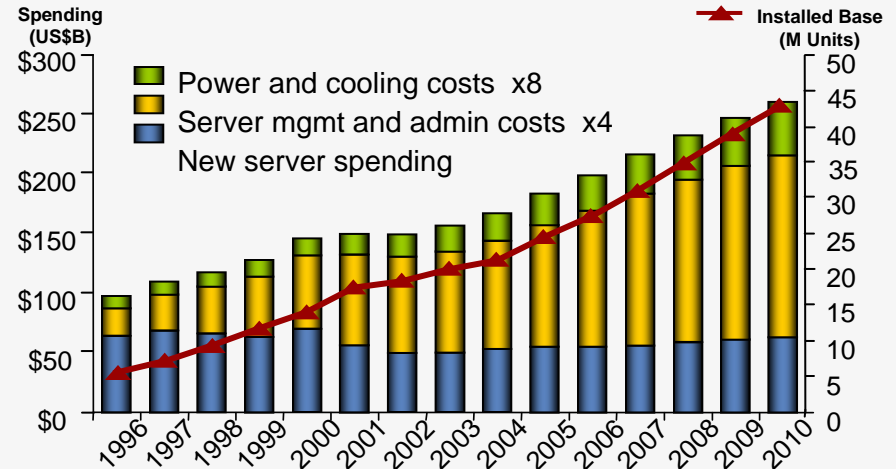
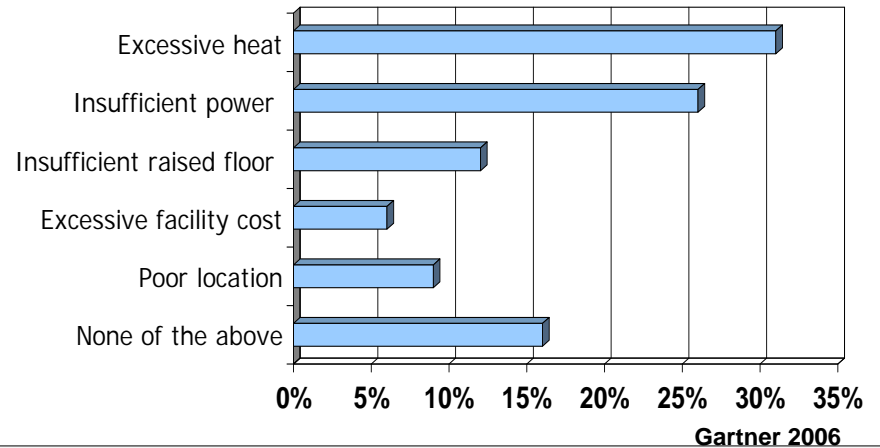
What is the greatest facility problem with your primary data center?

“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



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

What Makes Best Fit

- Leverage classic strengths of the System z
 - 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



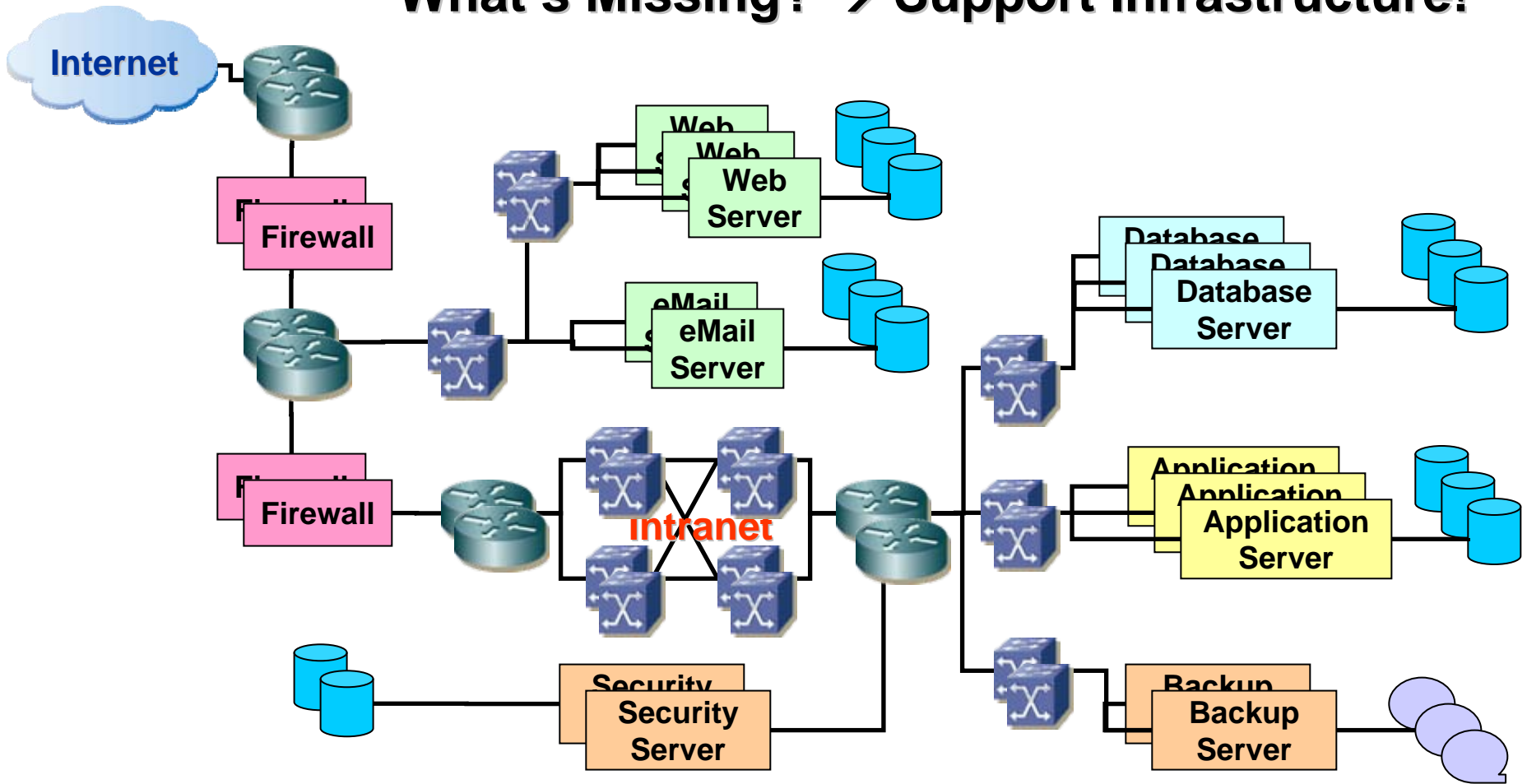
Best Fit Application Workloads



- WebSphere MQ Series
- DB2 Connect
- CICS Transaction Gateway , IMS Connect for Java
- SAP
- WebSphere and JAVA applications development
- WebSphere Application Server (WAS)
- Domino
- Network Infrastructure, FTP, NFS, DNS etc..,
- Oracle Database
- Applications requiring top end disaster recovery model
- ComServer and Communications Controller for Linux
- Virtualization and Security Services
- IBI Web Focus
- Communigate Pro (VoIP)

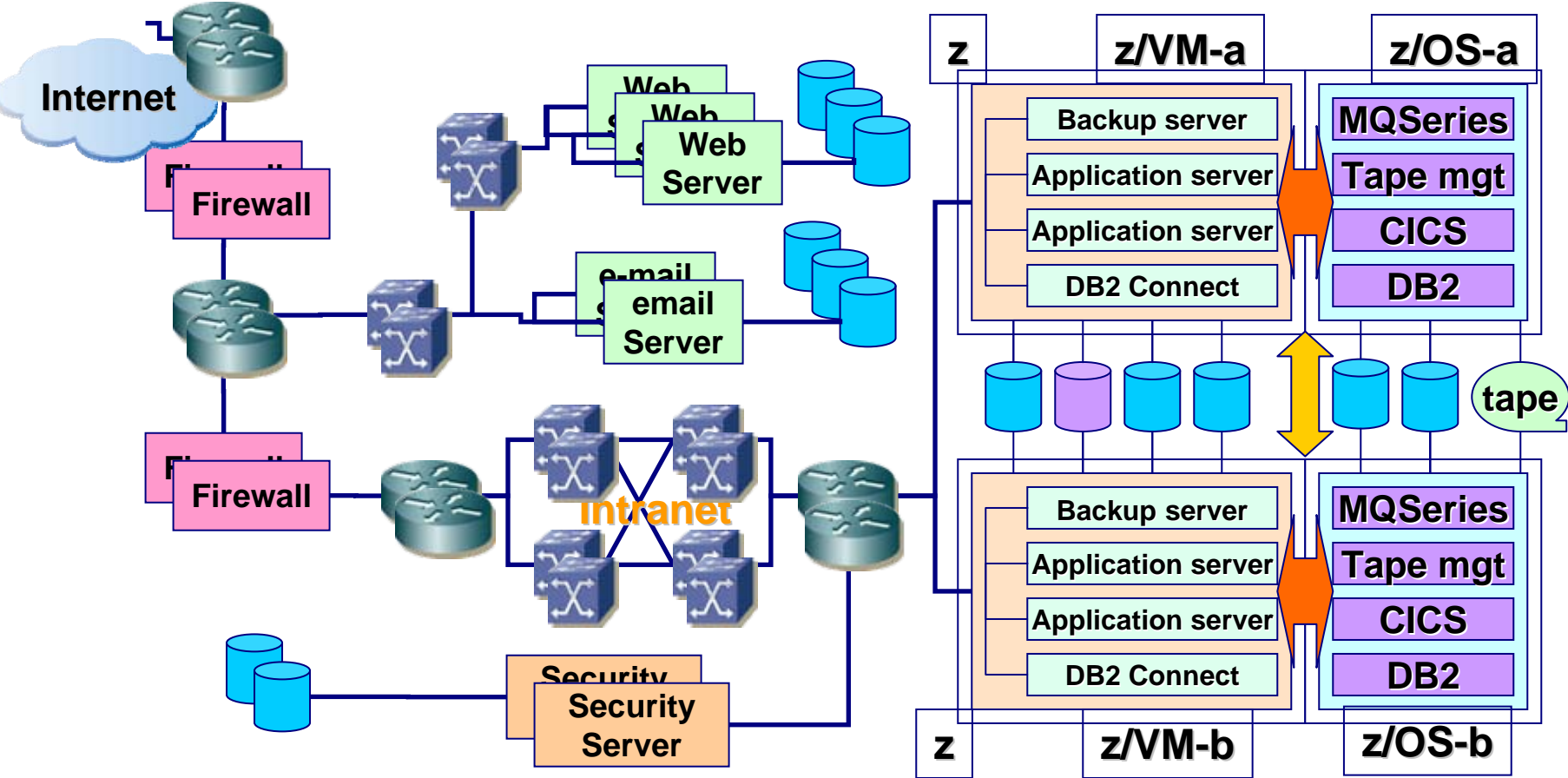
Infrastructure Reduction

What's Missing? → Support Infrastructure!



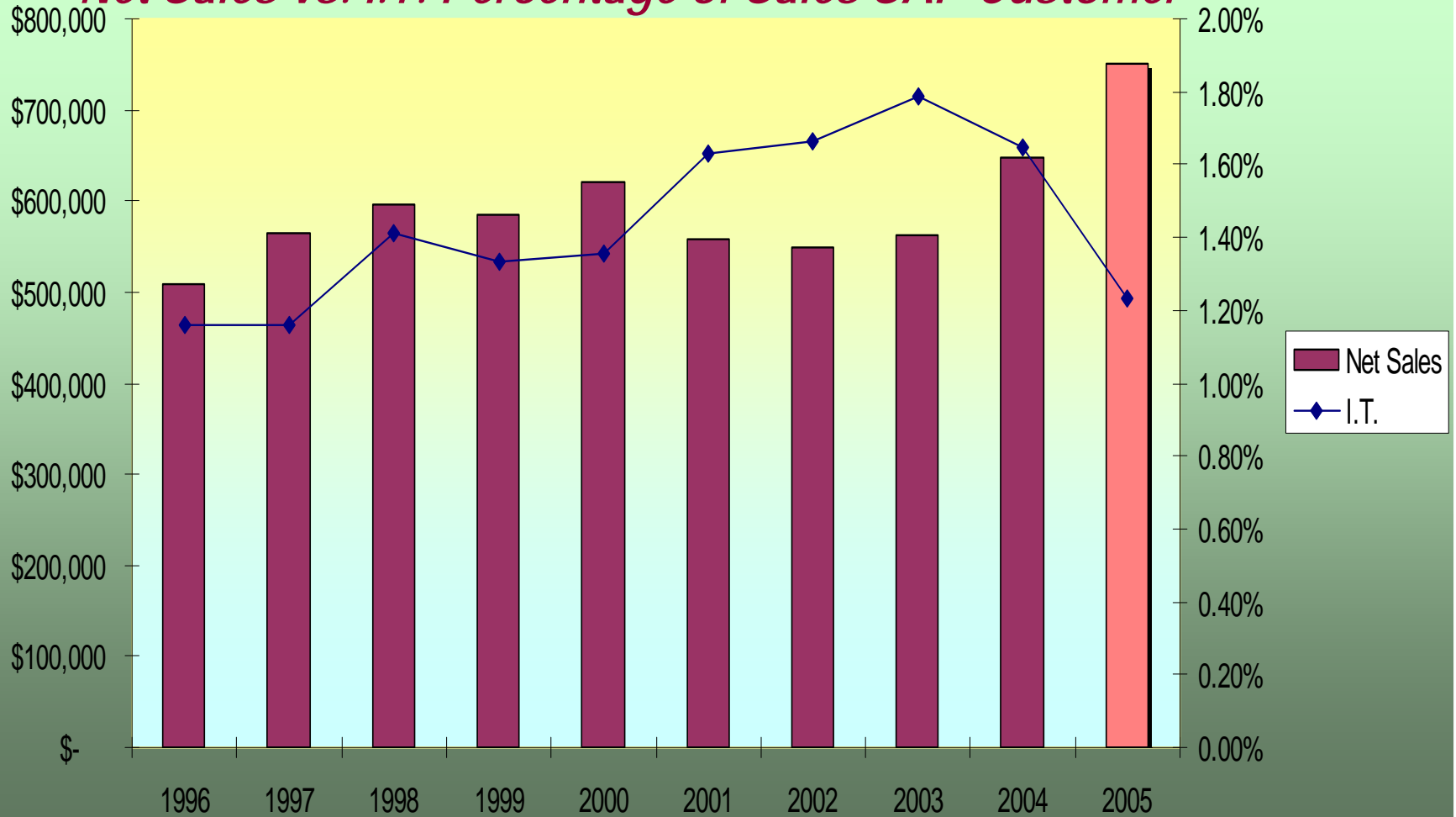
This configuration contains 50+ levels of infrastructure

Reduce Infrastructure with Linux on System z



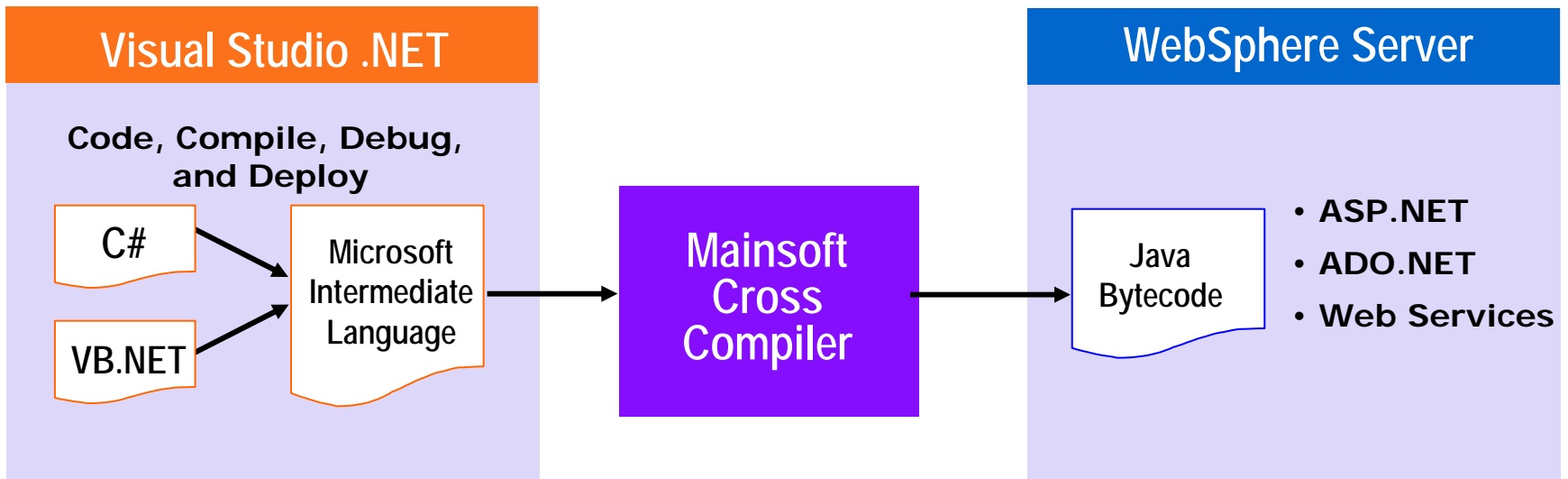
In this configuration, 14+ levels of infrastructure have been eliminated

Net Sales vs. I.T. Percentage of Sales SAP Customer



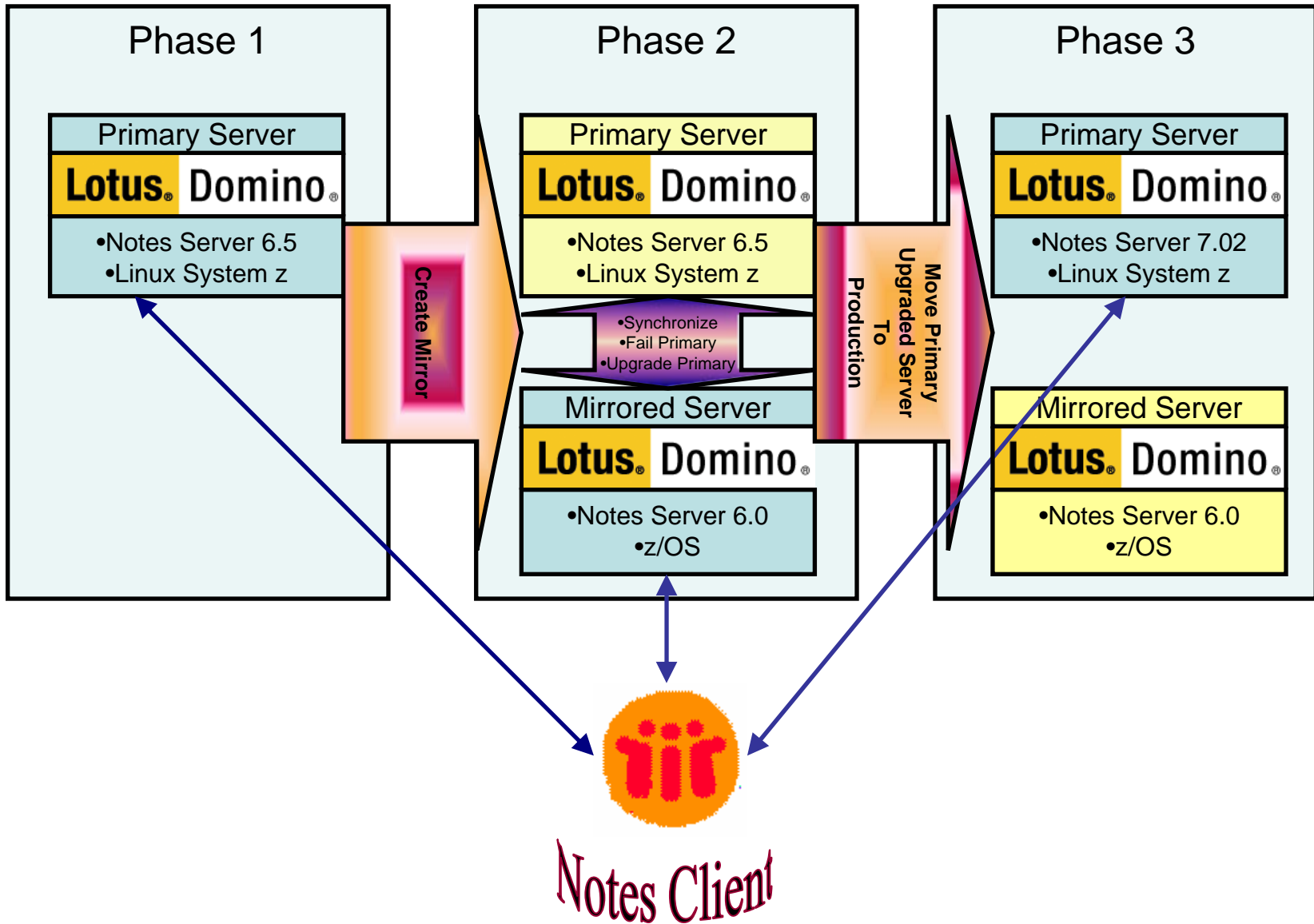
Enabling Technology

Visual MainWin for J2EE, Enterprise & Portal Editions



Mainsoft software has been validated ^{IBM} Server *Proven*[™] on System z & other eServer platforms.

Domino for Linux on System z, Imagine the Possibilities



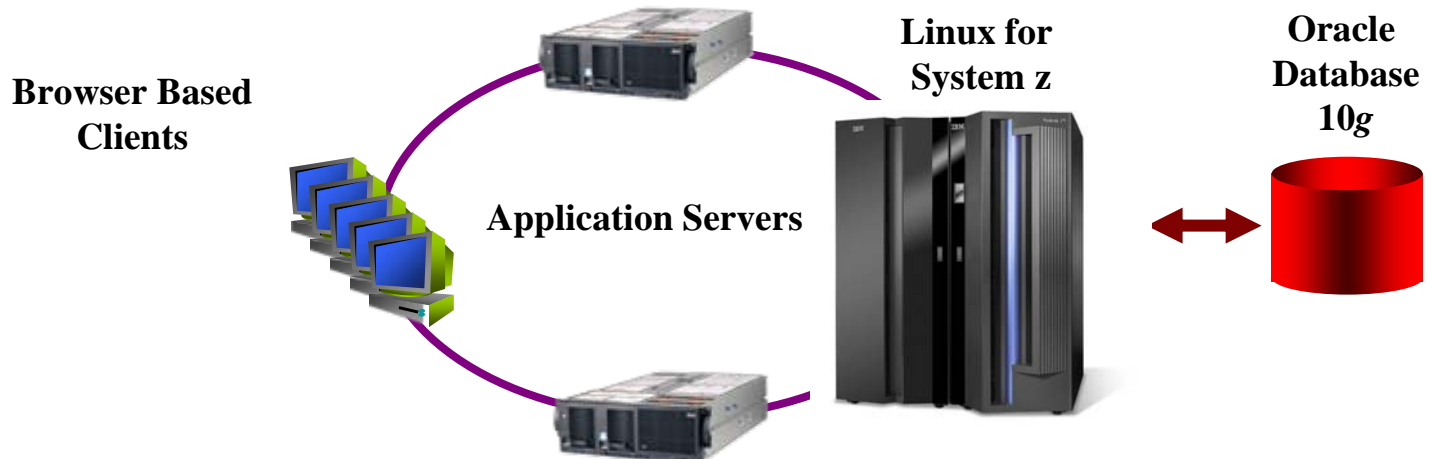
Oracle Applications Available for Linux on System z

Oracle Applications

- PeopleSoft Enterprise 8.48
- Siebel CRM 8.0
- Oracle EBusiness Suite 11i (11.5.10.2)
 - EBS 12 - 3Q07

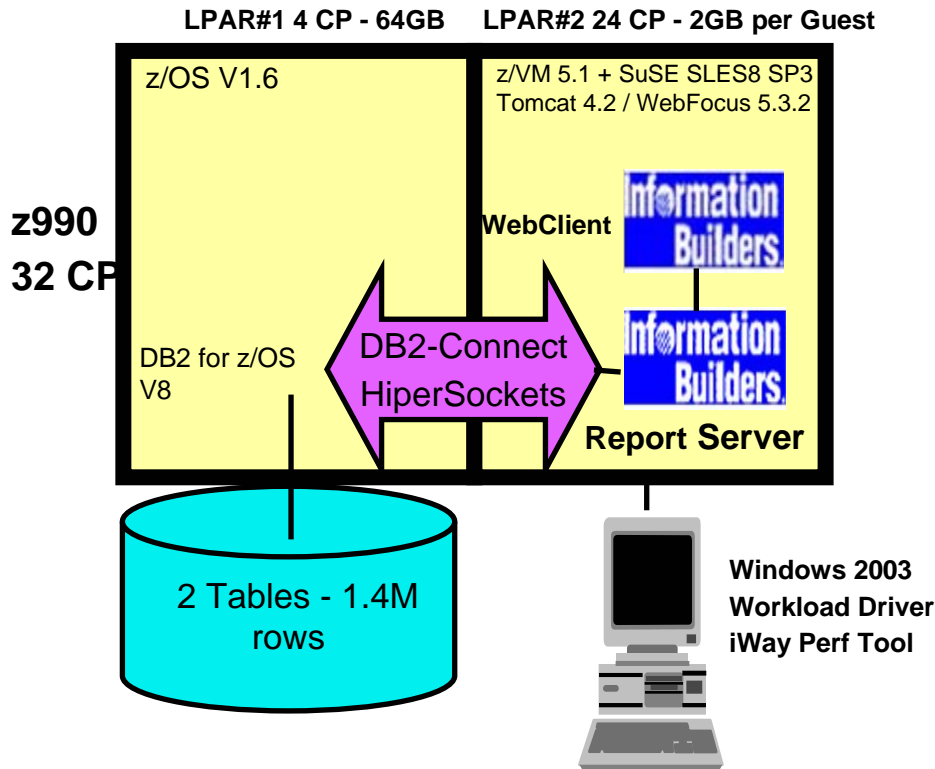
All the applications are a Mixed Platform Architecture

- Only Oracle Database 10gR2 certified for above applications with Linux on System z
- The middle tier, regardless of application server, must be implemented on a platform other than System z



IBI Web Focus, Best Fit Linux for System z

Benchmark Architecture



Benchmark Results - Performance

- **System z sets record for best performance of any hardware platform!**
 - ▶ includes most UNIX and Intel vendors
- Case-in-point: SunFire 6800
 - ▶ 1 GHz engine / 32 GB Memory
 - ▶ SunOne App Server + Oracle DBMS
 - ▶ zSeries Average Response Times is less than **one-tenth** that of Sun
 - Based on the System z high performance architecture
 - Hipersockets - insures best data access/transfer
 - L1/L2 Cache - consistently keeps engines busy

	2 CP	4 CP	8 CP	16 CP
UNIX	28.49	15.41	9.17	7.68
z990	2.46	1.56	0.855	0.494

Average Response Time (seconds) for 3000 row data retrieval

Web Focus Business Value

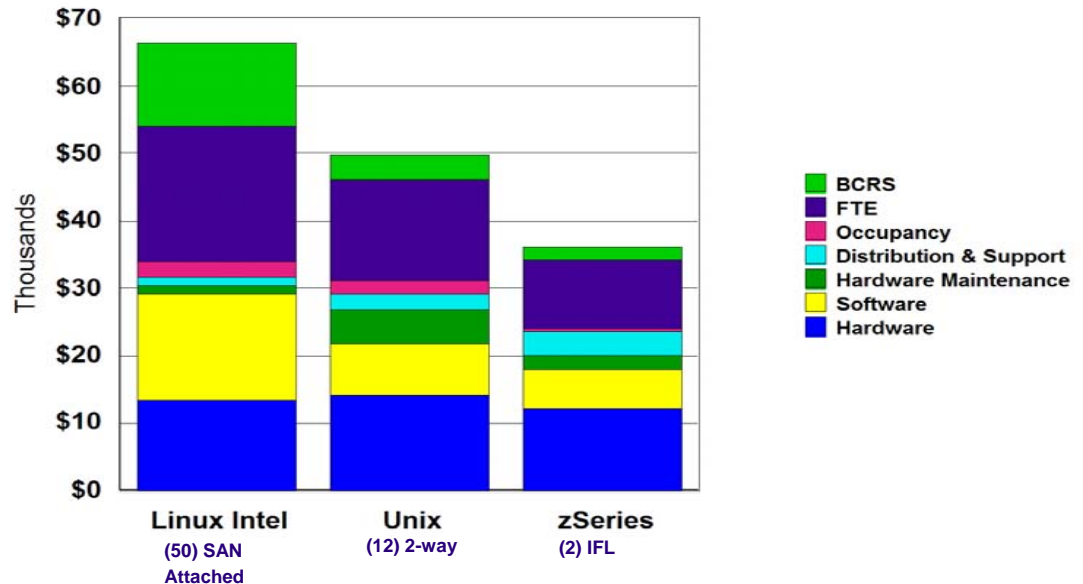
Factors In TCO - Websphere Server Consolidation

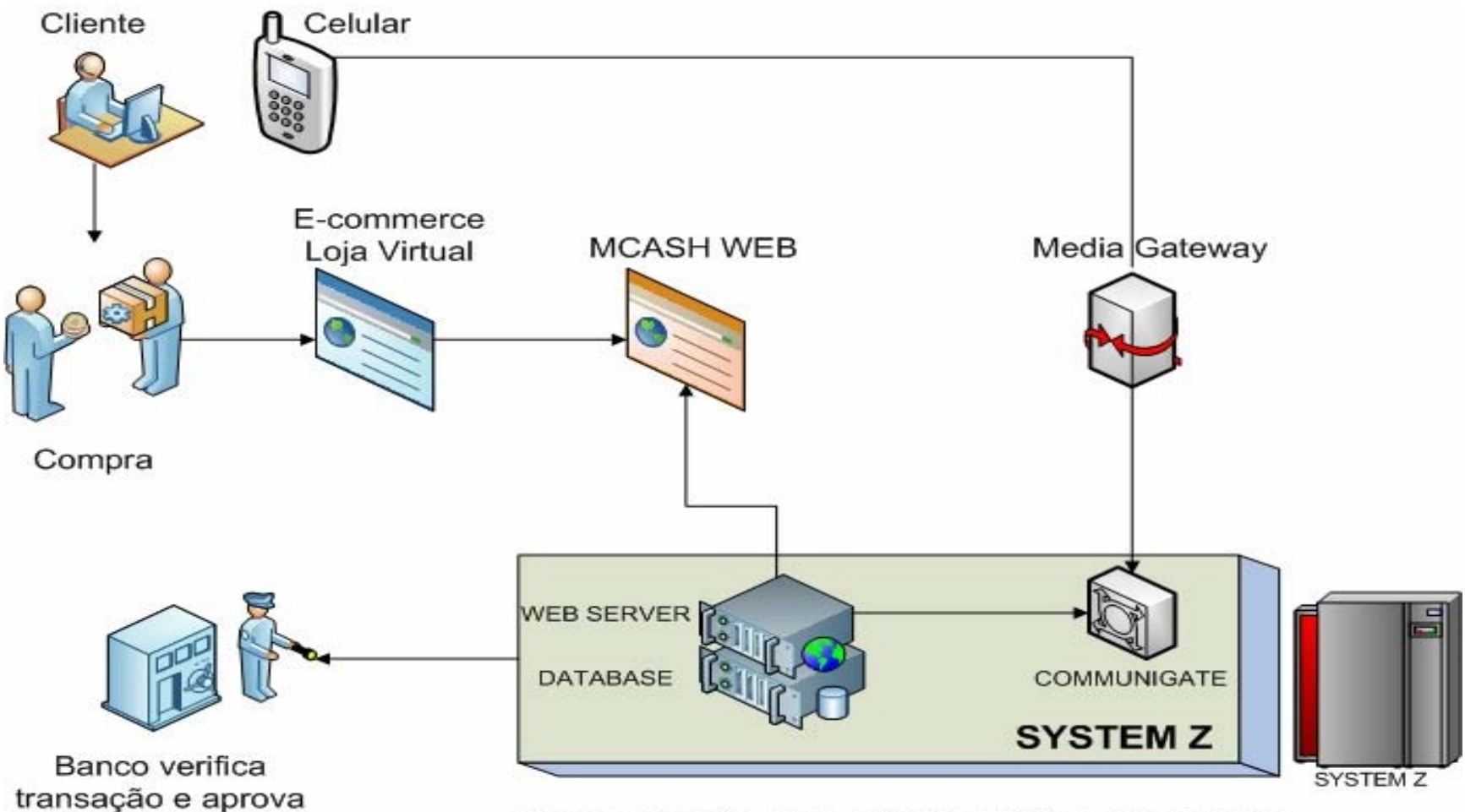
- 20 Web Servers running @ 10% peak busy on Sun 20 SPARC II CP's
- All peaks are concurrent
- 4:1 HA Configuration = 5 HA Servers (& Engines)
- z990 will run DOUBLE the web workload as compared with Sun
- 25 Sun engines consolidate onto a SINGLE z990 engine @ 100% busy

THEREFORE -

- ✓ 1 CP instead of 25
- ✓ 1 software seat instead of 25
 - ✓ ripple effect for maintenance & support
- ✓ Occupancy costs dramatically reduced
- ✓ No additional cabling costs
- ✓ Centralized Staffing Model

Monthly Cost of Servers - Customer Study





A comunicação entre o CommuniGate Pro e o Web Server da Mcash é feita por meio de socket seguro (SSH Tunnel) com o envio e recebimento de informações programado em API do CommuniGate Pro disponível para Java, Perl ou PHP.

What Makes 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



- UDB (DB2)
- Informix, (IDS)
- Apache web serving
- SAMBA
- TIM/TAM (LDAP Services)
- TSM
- Existing Linux Workloads



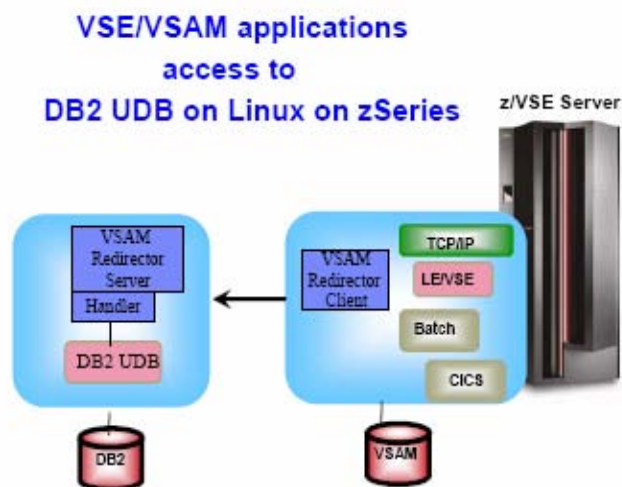
DB2, Imagine the Possibilities on Linux for System z

UDB 8.1

UDB V8.2

DB2 V9.1 Native XML

- Spatial Extenders
- Archive Expert
- Test Database Generator
- Net Search Extender



Potentially Difficult Candidates

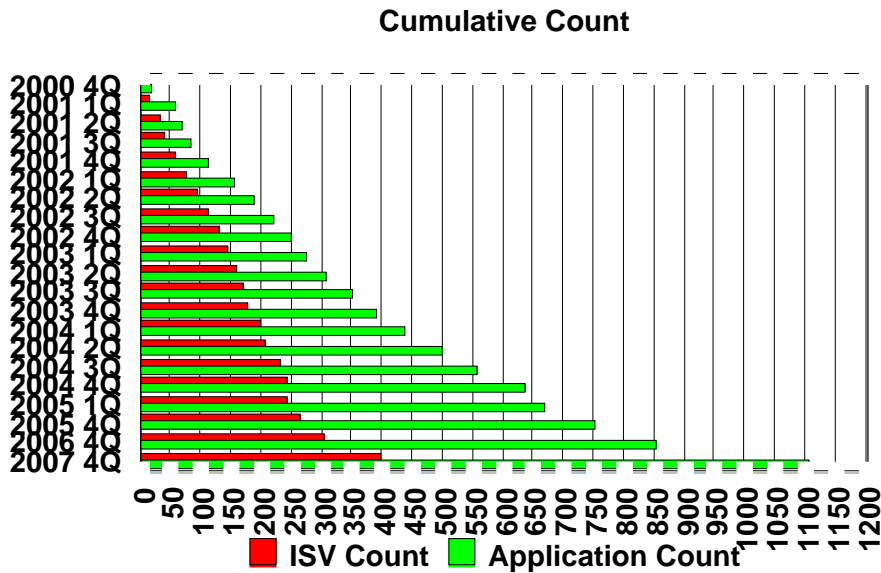
- ISV and IBM applications that have not yet ported their application to run on Linux on System z
 - Applications that by design run at VERY High sustained utilization which I will define here as >95%.
 - Stand-Alone single applications as the only Linux for System z applications
 - Applications that are too internally sensitive to try and move
- <http://www-1.ibm.com/servers/eserver/zseries/os/linux/apps/all.html>
- This URL is a link to the IBM software running and supported to run under Linux on System z.
- <http://www-1.ibm.com/servers/eserver/zseries/os/linux/software.html>
- Call and ask if the software is not on one of the two lists above. Call Jeff Noel (POK), Ray Smith (POK), or Bill Reeder (Seattle).



ISVs supporting Linux on System z

Now listing 401 ISV's with 1109 applications!

<http://ibm.com/servers/eserver/zseries/solutions/s390da/linuxproduct.html>



CIO Update: IBM Aims to Make Mainframe Linux More Than a Niche Offering

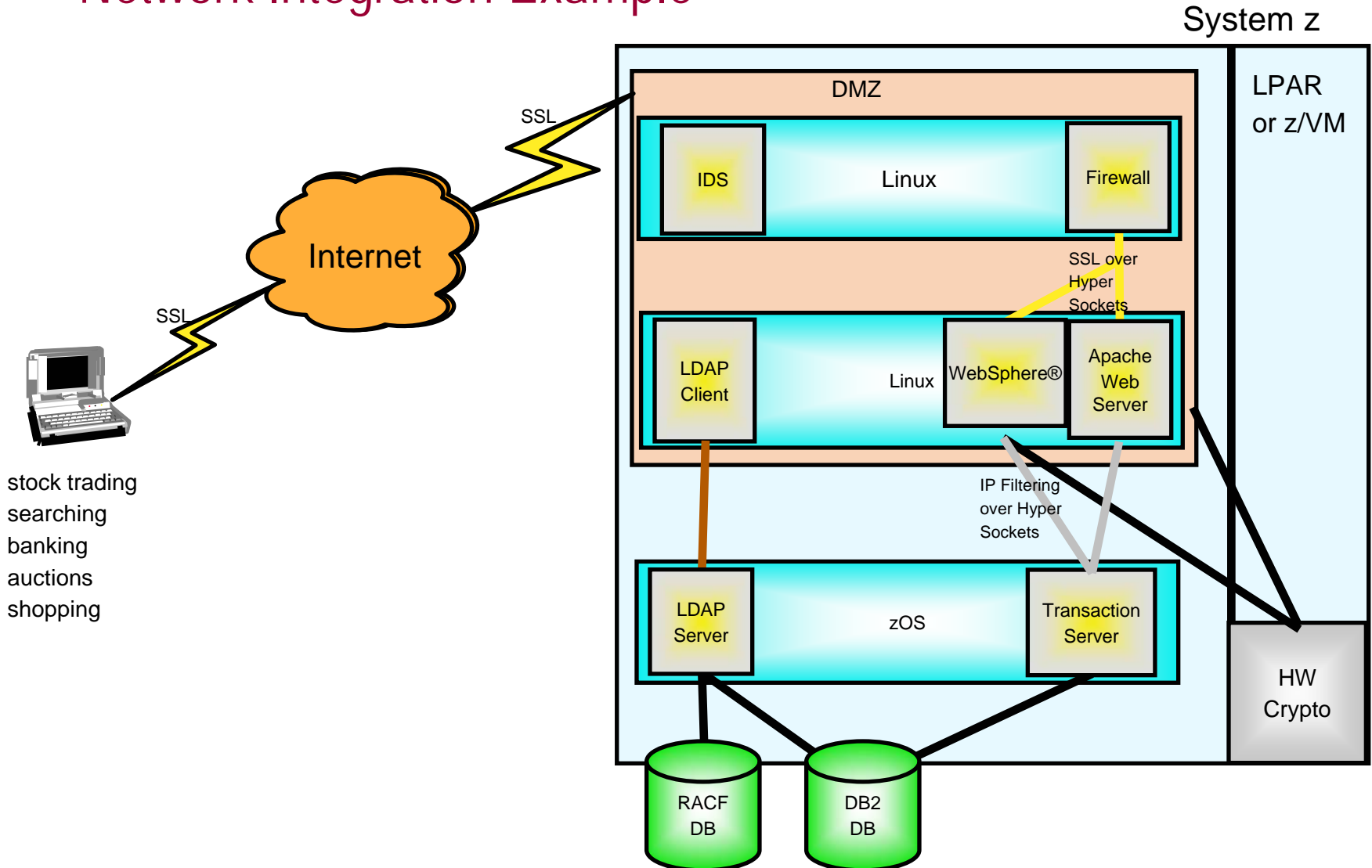
"Linux on the IBM mainframe has gone from being a novelty (a free download generating no revenue) to a product that IBM reports contributed 18 percent to 2004 zSeries hardware revenue. *The growing number of applications supported by zSeries Linux has spurred growth*, as has enhanced price/performance."

Gartner Research, 25 May 2005, John R. Phelps, Mike Chuba. G1282117

Questions ????



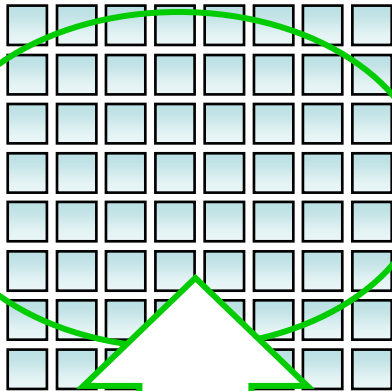
Network Integration Example



Implementation "How to build a 64-WAY Mainframe"

**More than 400
Processors!**

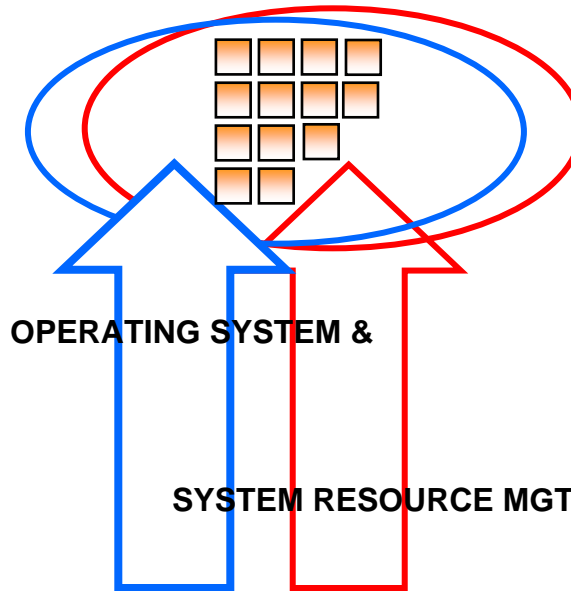
64 way SMP



APPLICATION CODE
& SOME OS and Crypto

I/O DEVICE DRIVERS

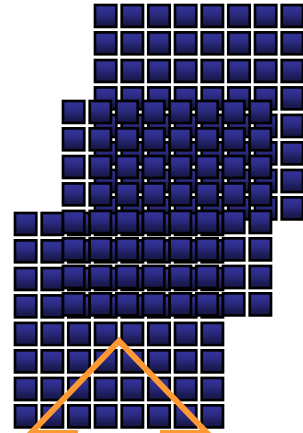
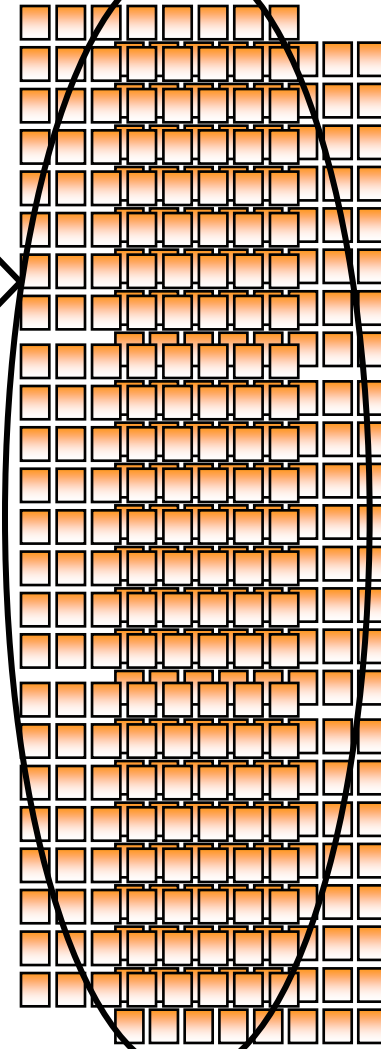
PLUS 13 MORE



OPERATING SYSTEM &

SYSTEM RESOURCE MGT

336 Power PC processors to control
Ficon



Plus...

ESCON Channels

PCICA

PCIXCC

FSP (Cage
Controller)

-DCAs

Motor Drives

Service Processors
and more