IBM Systems and Technology Group University 2005

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IBM Systems and Technology Group University 2005

Why zSeries for Financial Services and Communication Sectors !

Course #: Z25

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ON DEMAND BUSINESS™

Agenda

FINANCIAL Sector (Banking and Insurance)

- **what's going on**
- **FSS Proofpoints benchmark**
- **Customer(s) example(s)**

COMMUNICATION Sector (Utilities, Telco)

- **what are the challenges**
- **Customer(s) example(s)**
- **SAP IS/U-CCS full zSeries performance test.**

Financial Sector: Marketplace - Customer

Customer Trends Shaping Need for New Products and Advice

Changing demographics

General population and traditional wealth management segment are aging

Number of high net worth and mass affluent individuals has grown significantly in the last ten years

Dissatisfaction with current offerings

Frustrated by lack of a single point of relationship contact

Looking for access to alternative investments

Wary of poor advice, bad performance and high charges

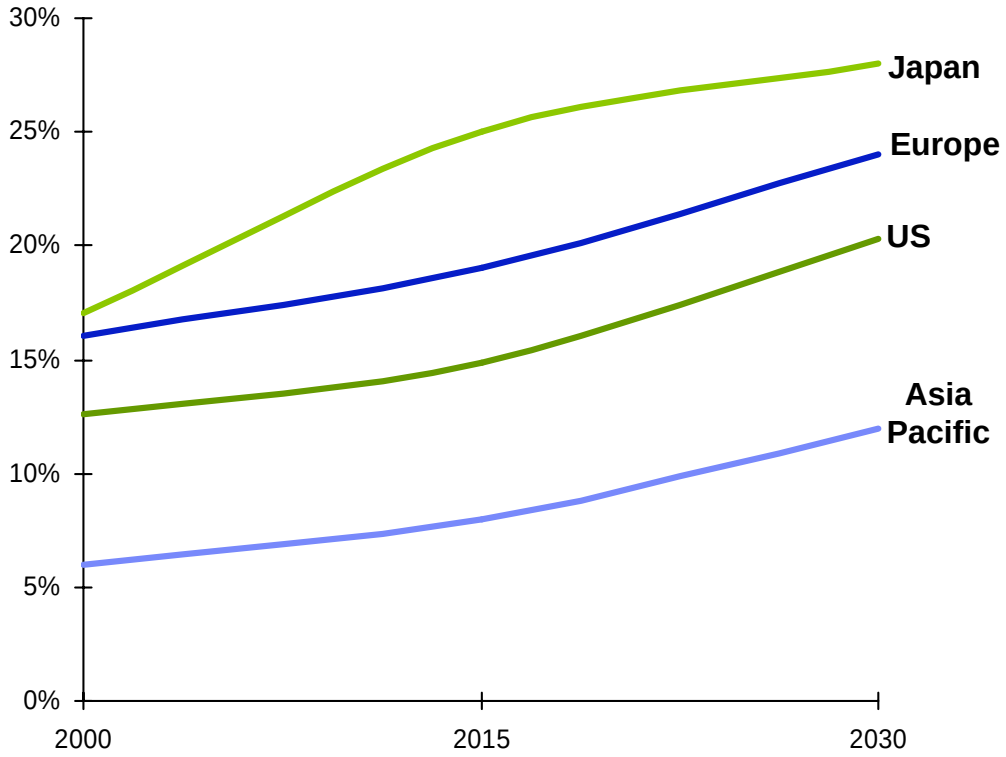
Growing demand for advice and products that meet specific needs

Increase in the number of products available

Increase in the complexity of products

Shifting responsibility of managing retirement plans from corporation to the individual

Proportion of Population Above 65 Years of Age, Select World Regions , 2000 – 2030



Source: UN Population Division; U.S. Census Bureau: " An Aging World", 2001; CSIS: "Global Retirement Report", 2001; Canadian Social Trends: "Canada's Population"; IBM IBV analysis

Financial Sector: Marketplace – Competitive Situation

Key Developments	Description
Increased Merger & Acquisition Activity	Leveraging higher share prices to acquire banks in an effort to increase geographic and product diversity and combat slow internal growth
Distribution Network Transformation	Reinventing bank distribution networks and increasing reliance on brick-and-mortar outlets through innovative branch designs and alliances with non-financial services providers
Focus on Core Business	Selling-off and discontinuing non-core and unprofitable businesses and outsourcing and global sourcing front- and back-office processes to reduce fixed costs and increase flexibility
Non-Banking Entrants	Emerging non-banking competitors, including retailers and brokerages, that are providing traditional banking services through existing non-bank channels

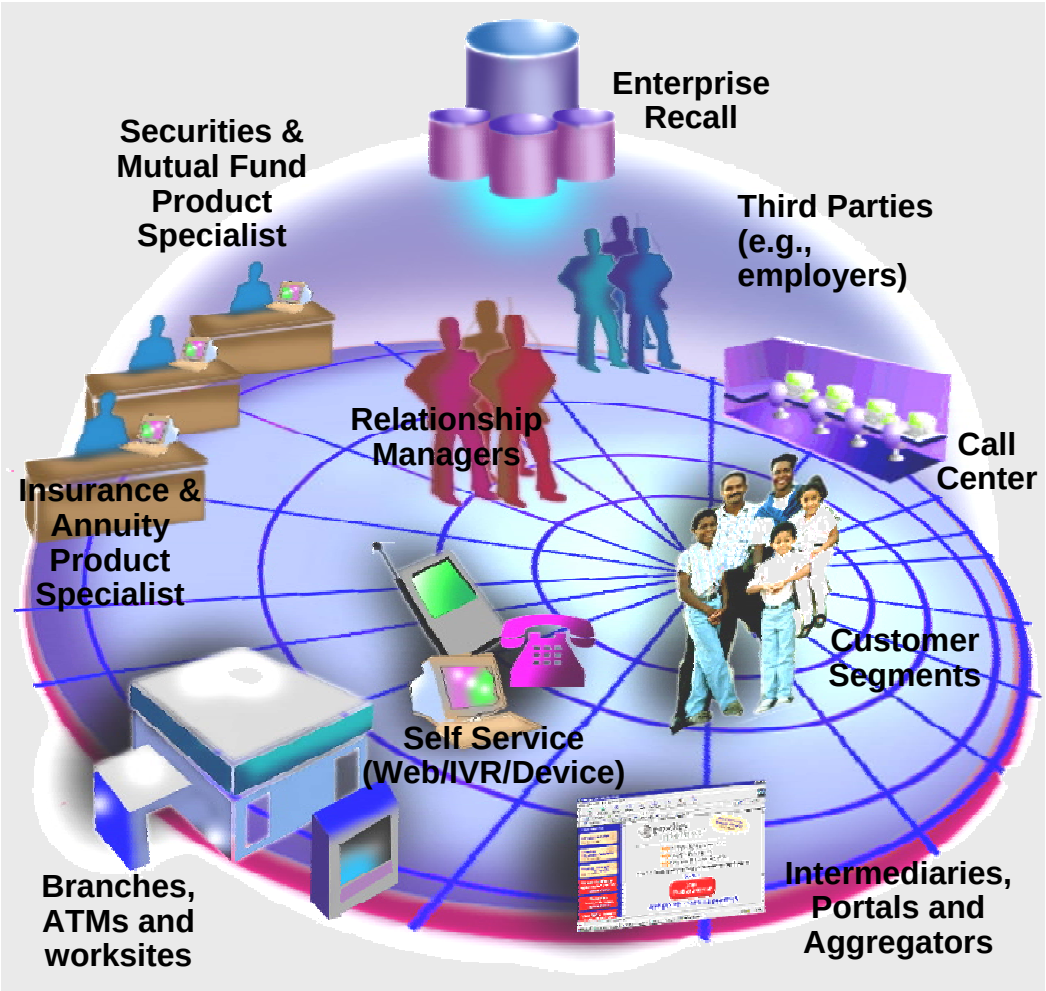
Financial Sector

Need to meet the demands of a different business environment

Banks' New Business Environment

- Emergence of complex, highly interdependent products and relationships with increased risk management.
- Enable financial products to be constructed in a competitive way in order to respond to market pressures.
- The need of consistency of information across multiple channels with a personalized and customized service.
- More complex, multi-dimensional management information and reporting requirements on a near real time basis, leveraging on new technologies

New Financial Services Business Model



Source: IBM Institute for Business Value

Financial Sector: CIOs face many issues today

Support the business demands

- Enable Enterprise re-construction
- Align IT spend to business value
- Allow for future business demands
- Appealing to the users
- Business innovation

IT Simplification and Optimisation

- Skills shortages
- Governance of IT change
- Managing technical complexity
  - Batch, Mainframe, Unix, Windows, Unisys, Java, J2EE,.Net, WSDL……
- Providing future flexibility and change
- Escalating costs
  - Especially maintenance, low server utilisation…
- Maintenance burden limiting ability to respond

Financial Sector

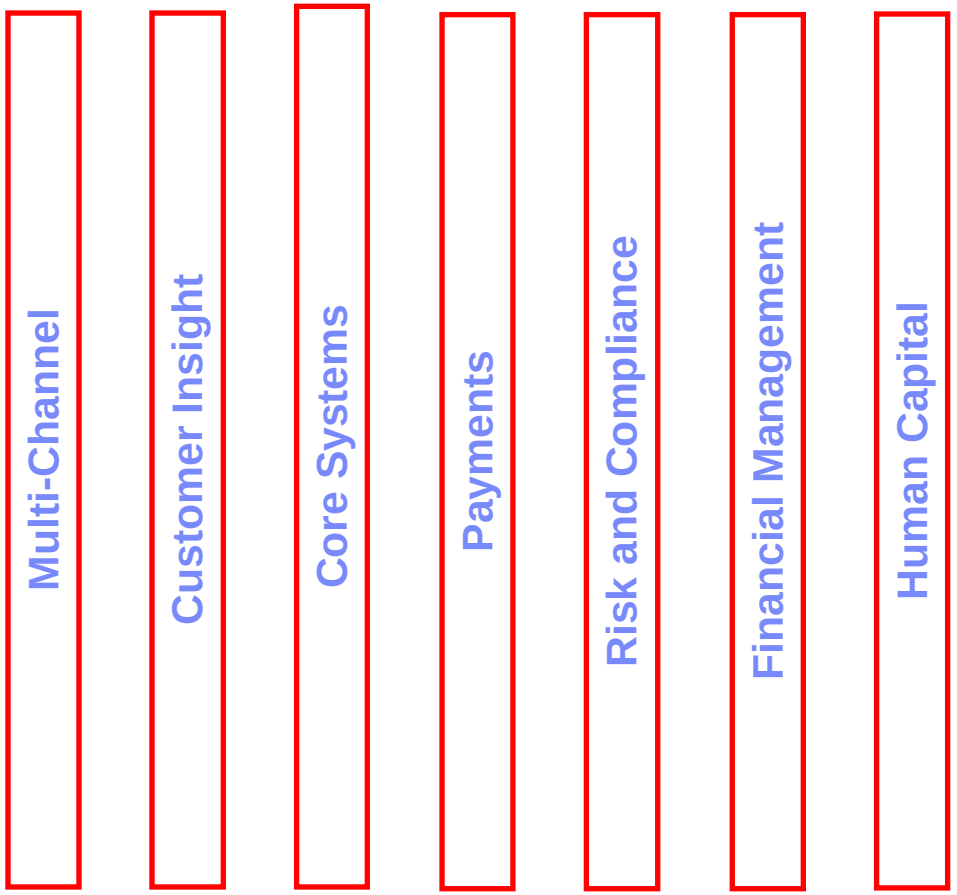
This drives towards an On Demand Operating environment.

System access to support your current role whenever and wherever you need it	Enterprise User Domain
Connections for your business processes to all the services and information they need	Enterprise Process Domain
All of your business information brought together to satisfy your usage needs	Enterprise Information Domain
A dependable, cost effective, and flexible platform that is bought as you need it	Enterprise Infrastructure Management Domain
Innovative tools to rapidly create or adapt solutions to your business demands	Enterprise Development Domain

Financial Sector

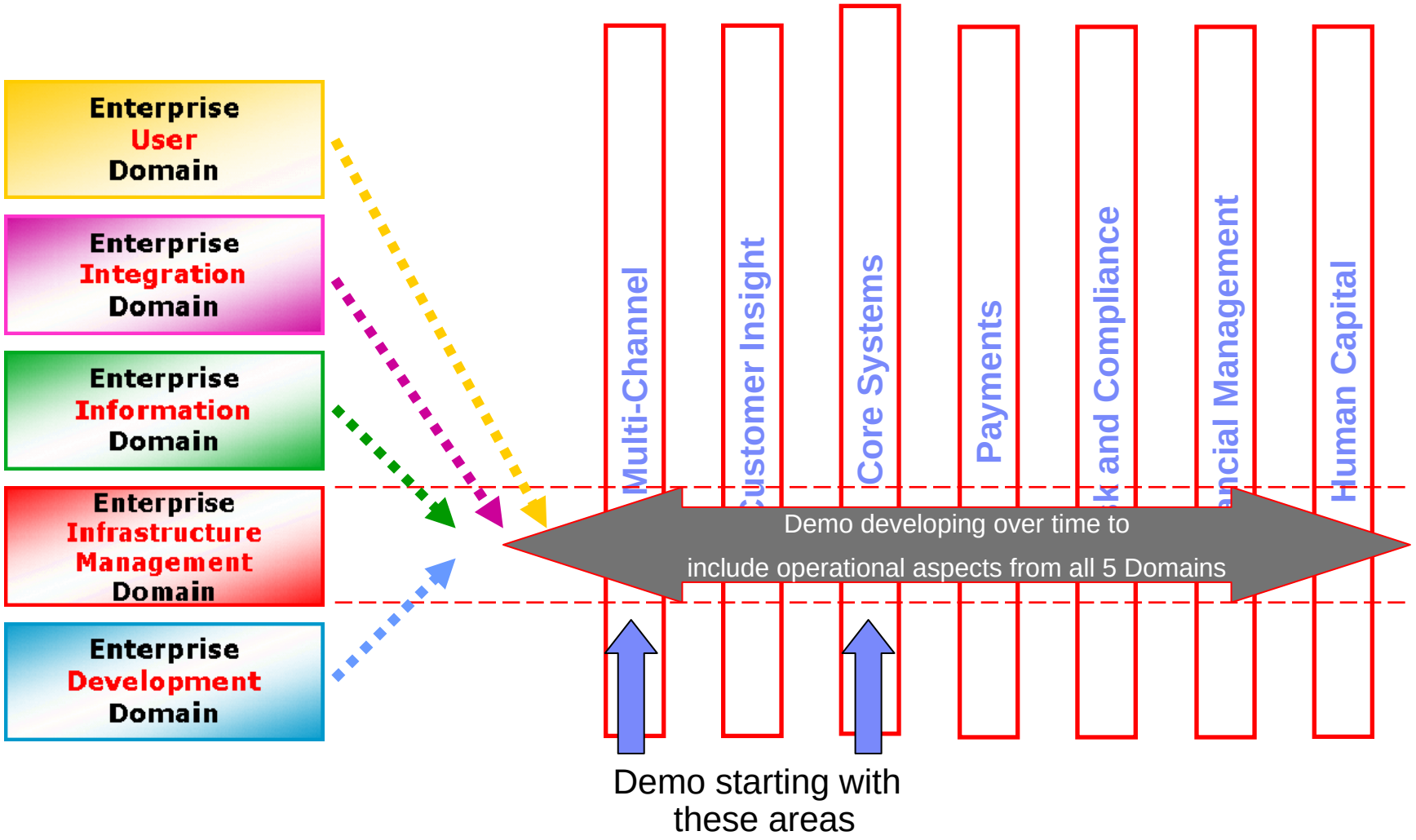
IBM Business Solutions (IIS)

- **Multi-channel – integrating and transforming the channels; more on this later**
- **Customer Insight – knowing and serving the customer; closed loop analytics and actions**
- **Core Systems – modular transformation of the operational retail banking systems**
- **Payments – renovating, simplifying and consolidating wholesale and retail payments processing**
- **Risk and Compliance – sense and respond to changes and threats**
- **Financial Management – enhancing the financial operations that support your business**
- **Human Capital – transforming the support for your people**



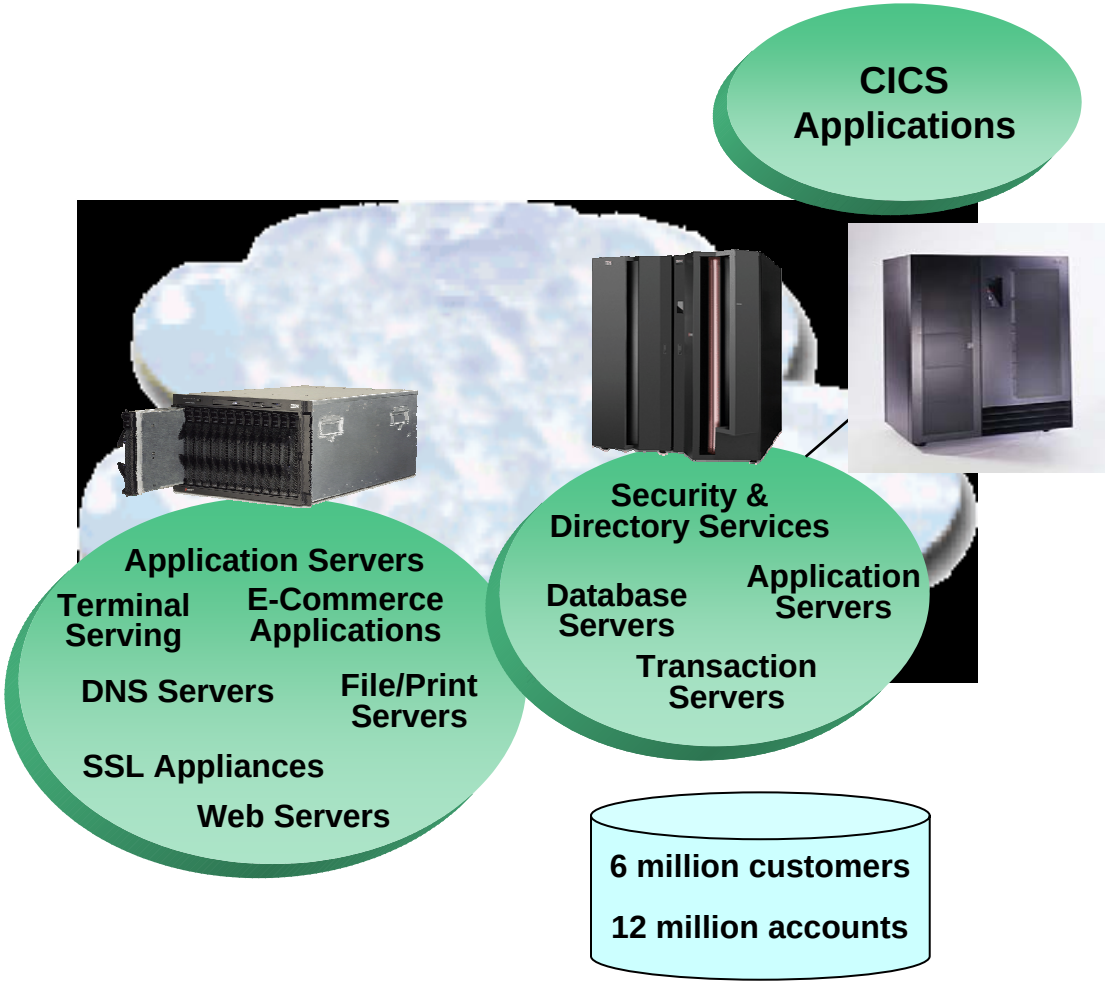
Financial Sector

Demonstrating Banking Infrastructure Management Domain Proof Points

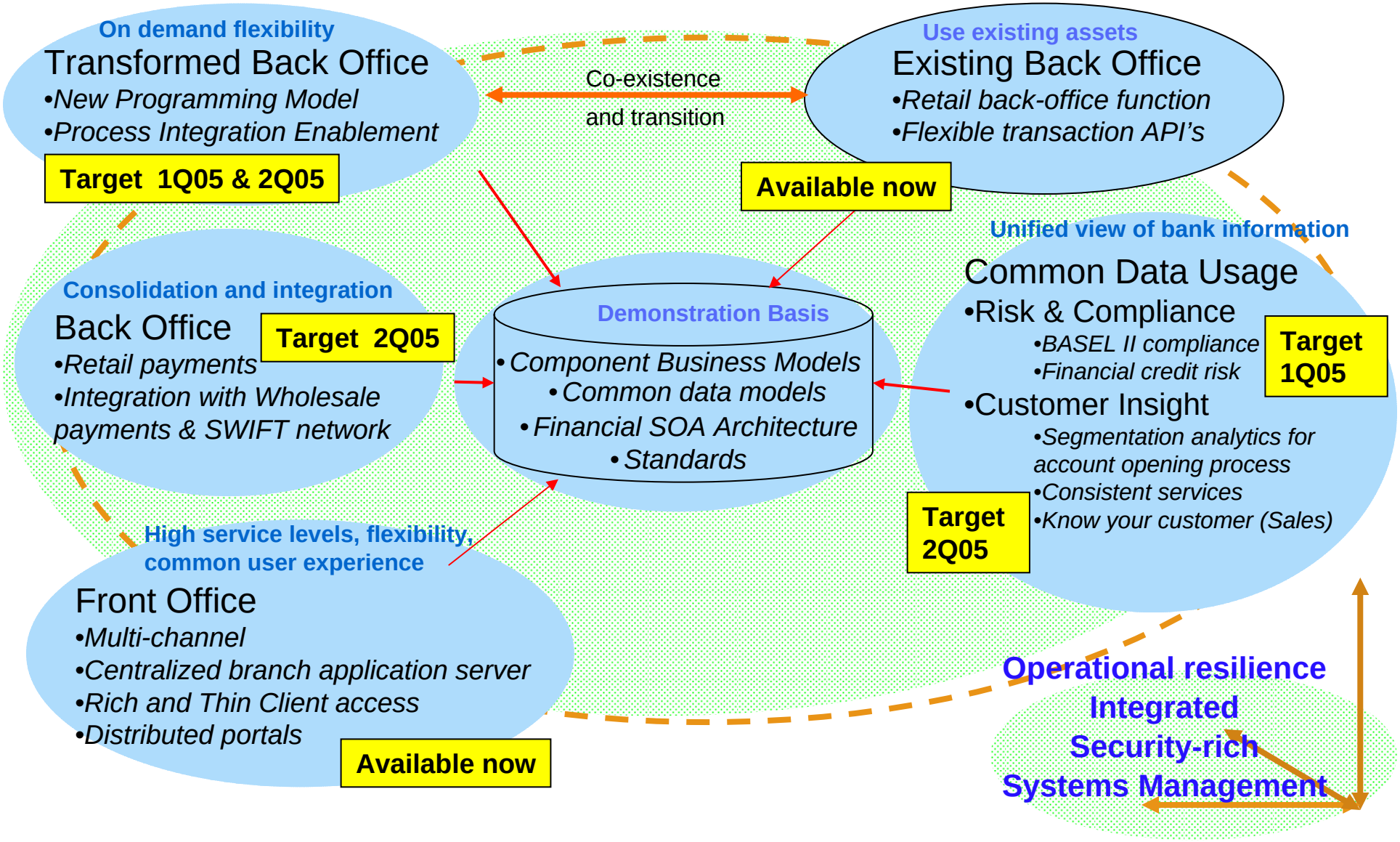


The On Demand FSS proof-point test bed

- Build an **On Demand test bed** for an imaginary bank
- To address FSS strategic initiatives, including multi-channel and core-systems transformation
- Generate:
  - **IT simplification proof-points**
  - Based on an existing CICS banking application
  - In a realistic operational environment, database and workload
- Adopt customer problematics



Banking Infrastructure Roadmap



Replacing a bank branch office system

- **One of Europe's leading financial services groups**
  - Retail & corporate banking, payment services, credit cards etc
  - > 20 million personal customers
  - > 2000 branches
- **Existing banking applications based on CICS and DB2**
  - Current access based on CICS OS/2 and SNA
  - >250 tps (branch and internet banking)
- **Constraints**
  - Minimum changes to applications
  - .Net in branches
  - SLA 95% of response times <2 seconds
- **Infrastructure requirements**
  - Infrastructure capable of 24x7 for indefinite periods of time
  - End to end security based on identification of branch server

Project 1(2003 – 2004)

Partnership to create a new Branch and internet banking infrastructure

Vision

- **zSeries as strategic e-business platform**
- Initial project to replace existing branch and internet banking infrastructure

Challenge

- Review technology choices for new branch infrastructure
- Prove operational readiness of WebSphere V5 on z/OS
- Demonstrate end to end security
- Satisfy scalability and availability requirements

Solution

- Design Workshop highlighted the architectural issues and created the application and infrastructure design
- Benchmark project implemented the design and tested the solution
- Assistance with pre-production testing
- Solution based on WebSphere V5.02 for z/OS, CICS Transaction Gateway V5.01 and CICS Transaction Server V2.2

Value

- Successful production implementation, July 2004
- **Enables platform for future J2EE applications and Services Oriented Architecture**

Project 1 timeframe

Target production -
April/May 2004

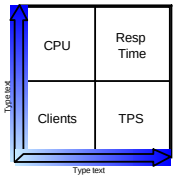
- Ongoing support
- Review of implementation task plans

Implementation

- Performance and scalability tests
- Failure scenarios

Benchmark

June - July 2003



- Prototype development
- Review outstanding design points
- Prepare for benchmark

Prototype

May - June 2003

May 2003

- Review technology and product options
- Application and infrastructure design choice(s)

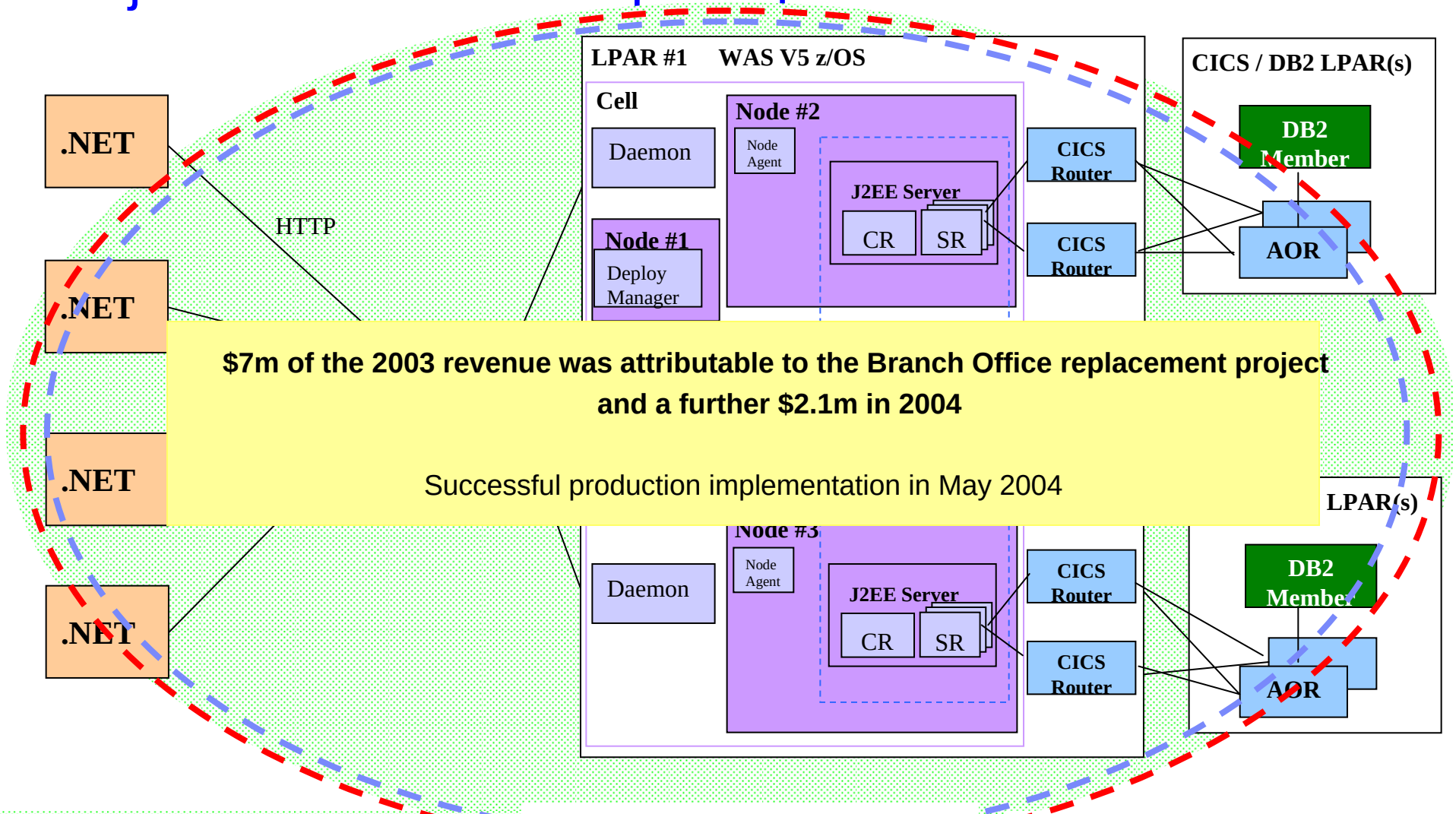
April 2003

eBSA

- Gather detailed requirements

e-business Infrastructure Deployment

Project 1 Infrastructure proof points



$7m of the 2003 revenue was attributable to the Branch Office replacement project and a further $2.1m in 2004

Successful production implementation in May 2004

Optimization proof points e.g workload mgt

Performance and scalability proof points

Security proof points e.g end to end security

Project 2 (2004 – 2005)

Create Services Oriented Architecture on zSeries

Vision

- Build on success of previous project and establish zSeries as platform for deployment of **Web services**

Challenge

- Deploy enterprise services on WAS z/OS
- Interoperability with .Net from WSIF/CICS services through Web Services Gateway
- Web services performance and security best practice
- Systems management of Web services infrastructure against SLAs

Solution

- Design Workshop scheduled for October 4-8
- Benchmark project to follow – first Web services benchmark in Mop
- Joint project with Hursley

Value

- Position zSeries as deployment platform for services and **service flows**
- Initial revenue opportunities estimated by the client IBM team are $500K in 2004 and $3M in 2005.

Context of the benchmark : SUN consolidation

- Customer is currently planning for production a chain of 22 SUN servers (280-2proc) for an authentication process
  - Postal Services and large Bank
  - based on Webseal / LDAP-DB2 / IHS and WAS on Solaris.
  - Plus addt'l servers for High availability, qualification, test, etc
  - Thinking about consolidation on larger SUN servers, or HPs, or …
- Consolidation of SUN servers onto Linux zSeries, running z/VM
  - Benchmark objectives :
    - 60 authentications/sec, for 5K concurrent users,
    - LDAP directory of 1millions entries, (server and repository on Linux zSeries)
- A SUN benchmark run previously in PSSC showed :
  - Very similar resource usage when LDAP has 1M, 5M, or 30M entries when you have an optimum disk config
  - 7 Webseal servers needed to handle the workload.
    - (SUN 280R, 2-way, 30% cpu-utilized, no hw crypto enabled)

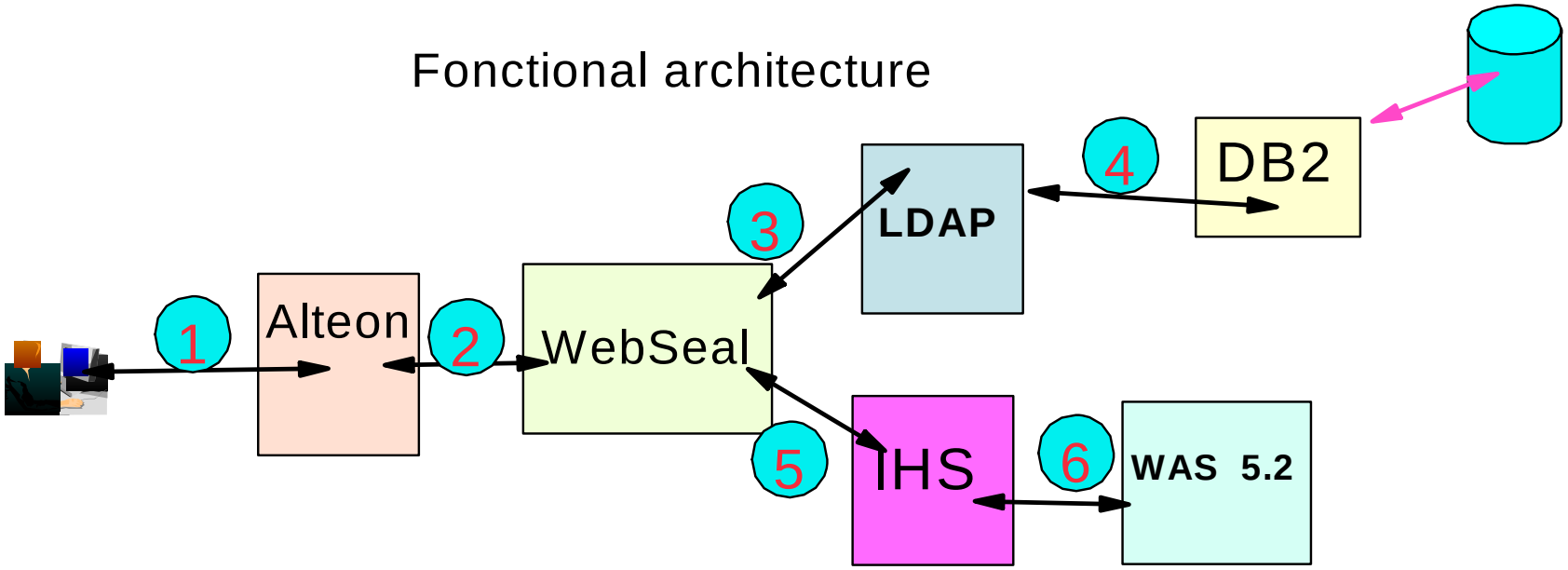
Overall objectives :

- **Not a replay of the SUN benchmark test cases**
  - HA, Failover features will not be exercised in the Linux zSeries benchmark
  - LDAP w/ 1, 10 or 20 million entries has a very limited impact
  - Re-use **same workload generation** for the Linux zSeries tests
  - Re-use same Websphere application (a very simple one)

- **Reach :**
  - 5000 concurrent users, generating the following workload :
  - 60 auth/sec + 60 Web page/sec, -static pages of 10,40KB-
  - With an LDAP directory of up to 1 million records.
  - Measure resource consumption at this workload level.

- **Architecture choices for the customer problematics :**
  - Test with 1 million LDAP entries only.
  - Single instances of TAM components if performance allows
  - SSL enable between end-user (browser) and webseal **only**
  - ESS800 config essential for optimum LDAP operation. (PAV, disk spreading)

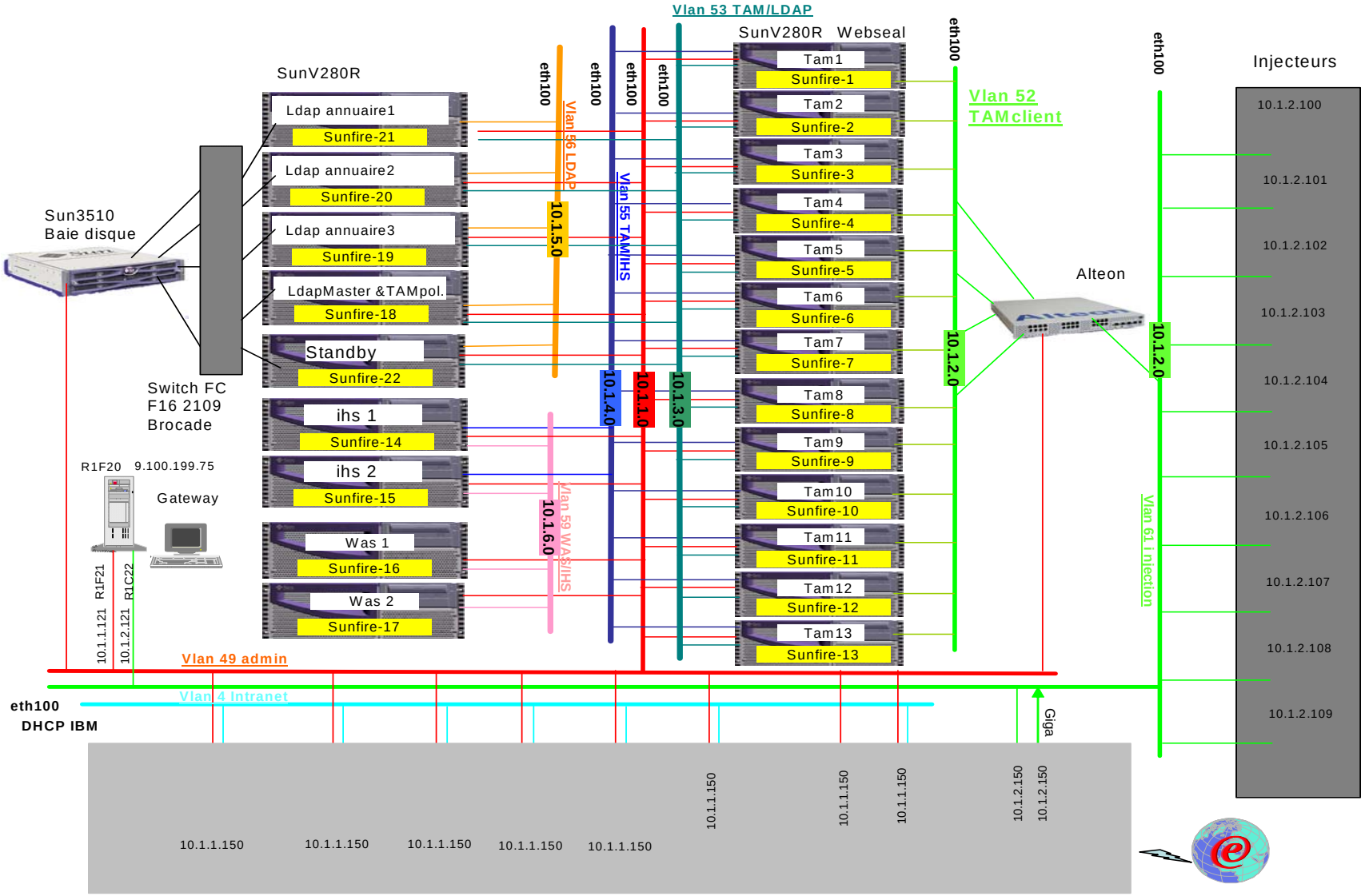
Functional architecture :



1. An alteon or other balancer distibutes requests between multiple webseal.
2. If the user is not authenicated yet, a challenge 404 is returned to the user to identified (userid/password)
3. This information is sent to LDAP server to verify the user is really defined and to validate the password
4. The request is then routed to IHS then to WebSphere. In reality there is no application in WAS. It just returns a HTML page. Remember : the objective is not to scale WebSphere.

Note : Alteon not in the scope of the test

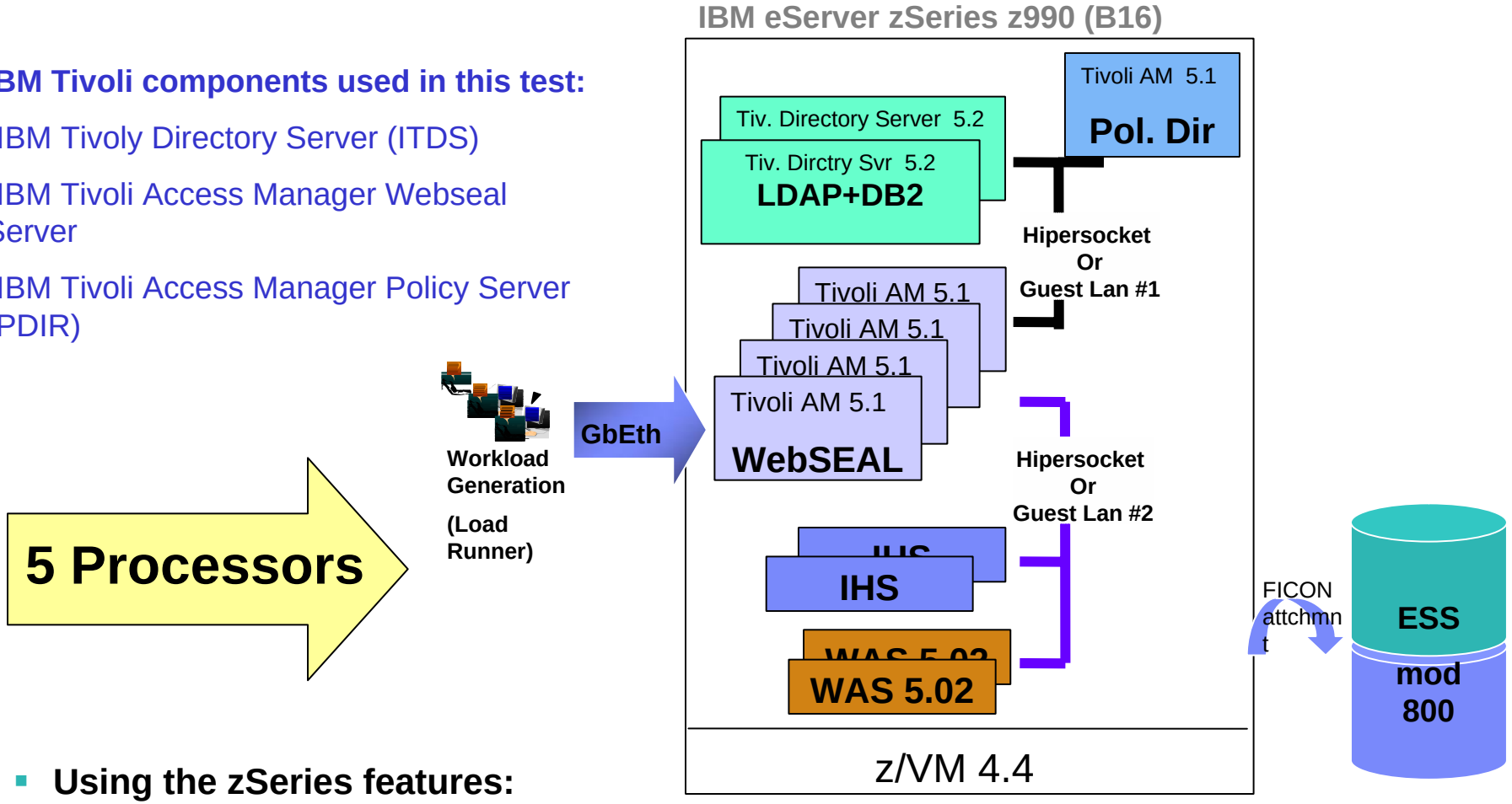
Replace this :



Implementation on zSeries:

IBM Tivoli components used in this test:

- IBM Tivoly Directory Server (ITDS)
- IBM Tivoli Access Manager Webseal Server
- IBM Tivoli Access Manager Policy Server (PDIR)



- **Using the zSeries features:**
  - **Communication between Linux guests via Hipersockets**
  - **Consolidation allowing non-SSL communication between TAM components (Customer choice)**

Agenda

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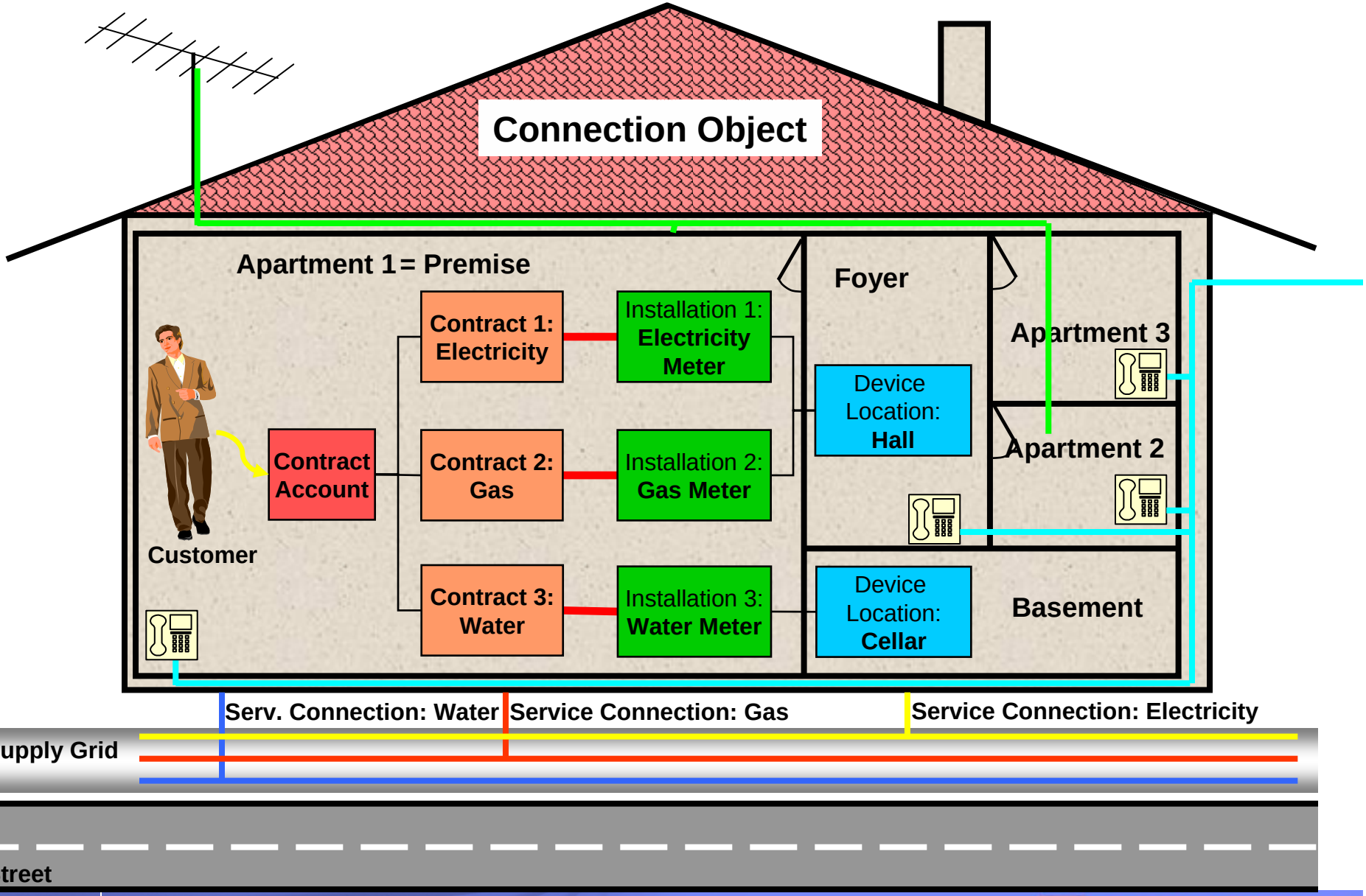
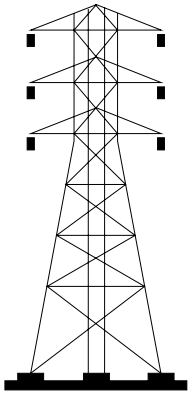
COMMUNICATION Sector (Utilities, Telco)

- **what are the challenges**
- **Customer(s) example(s)**
- **SAP IS/U-CCS full zSeries performance test.**

Utilities, Telco, Communications

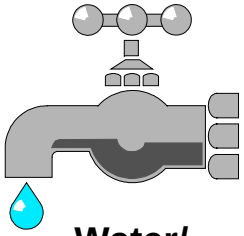


Service Lines

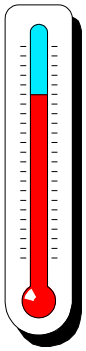


Electricity

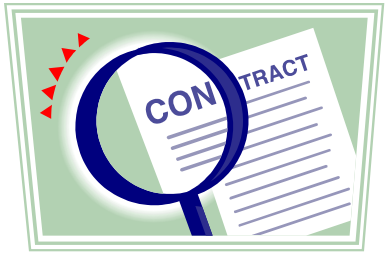
Gas



Water/
Waste Water



District
Heating



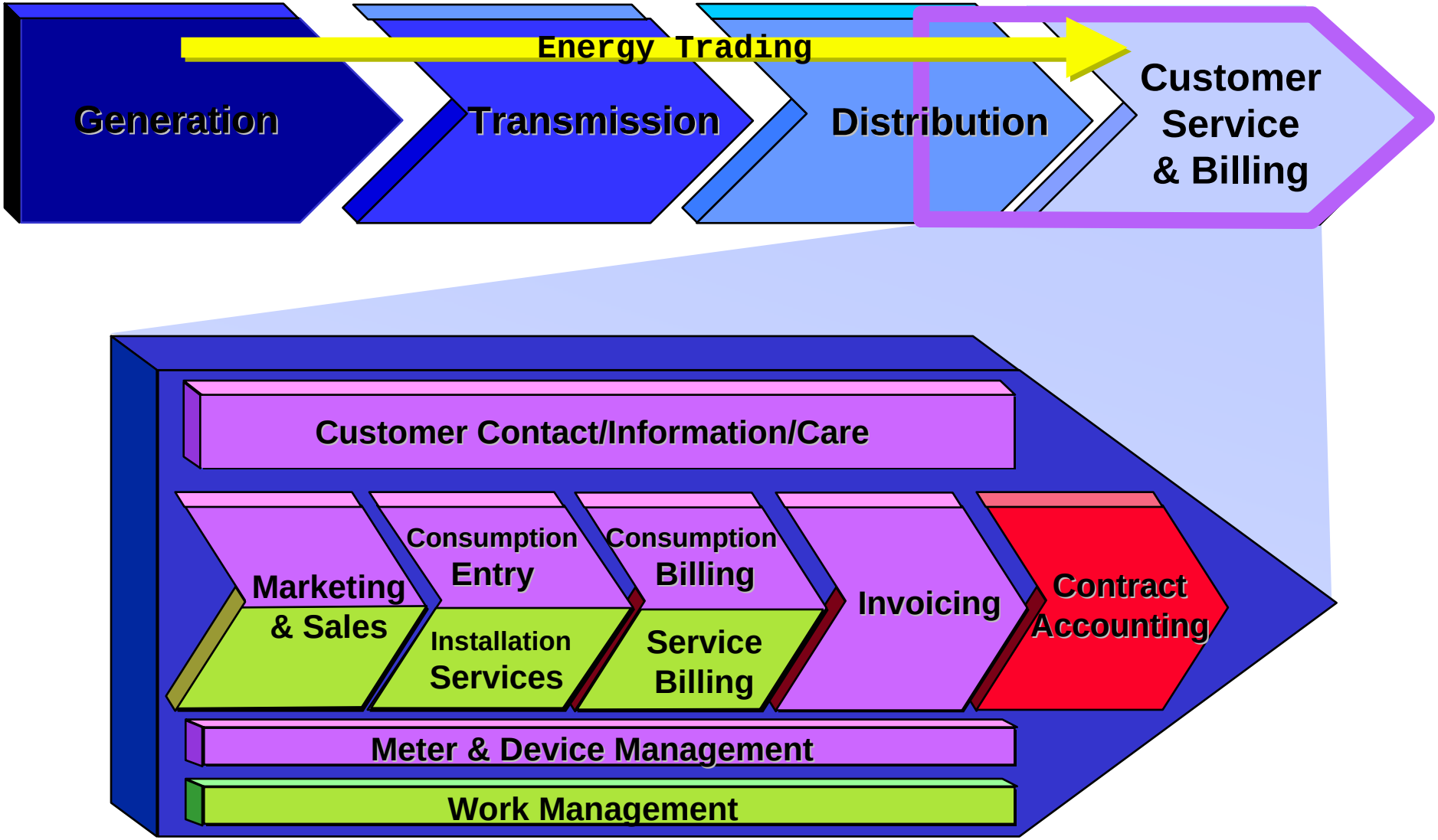
Service Products,Cable
Television
Multimedia,

Charges,
Taxes,
Duties

- **Management of several divisions**
- **Residential and nonresidential customers**
- **Ability to define new divisions**
- **Integration with installation services**
- **… etc**

Telecommonucations

Utilities, Telco, Communications



EDP-EDINFOR (Portugal)

Customer profile:

- Public Utilities company
- Over 6 Millions customers in Portugal

Customer projects:

- SAP R/3 Financial (Internal)
- SAP IS Utilities / Customer Care Services (Business)
- SAP Internet Transaction Server (Web Enablement)
- SAP Business Warehouse

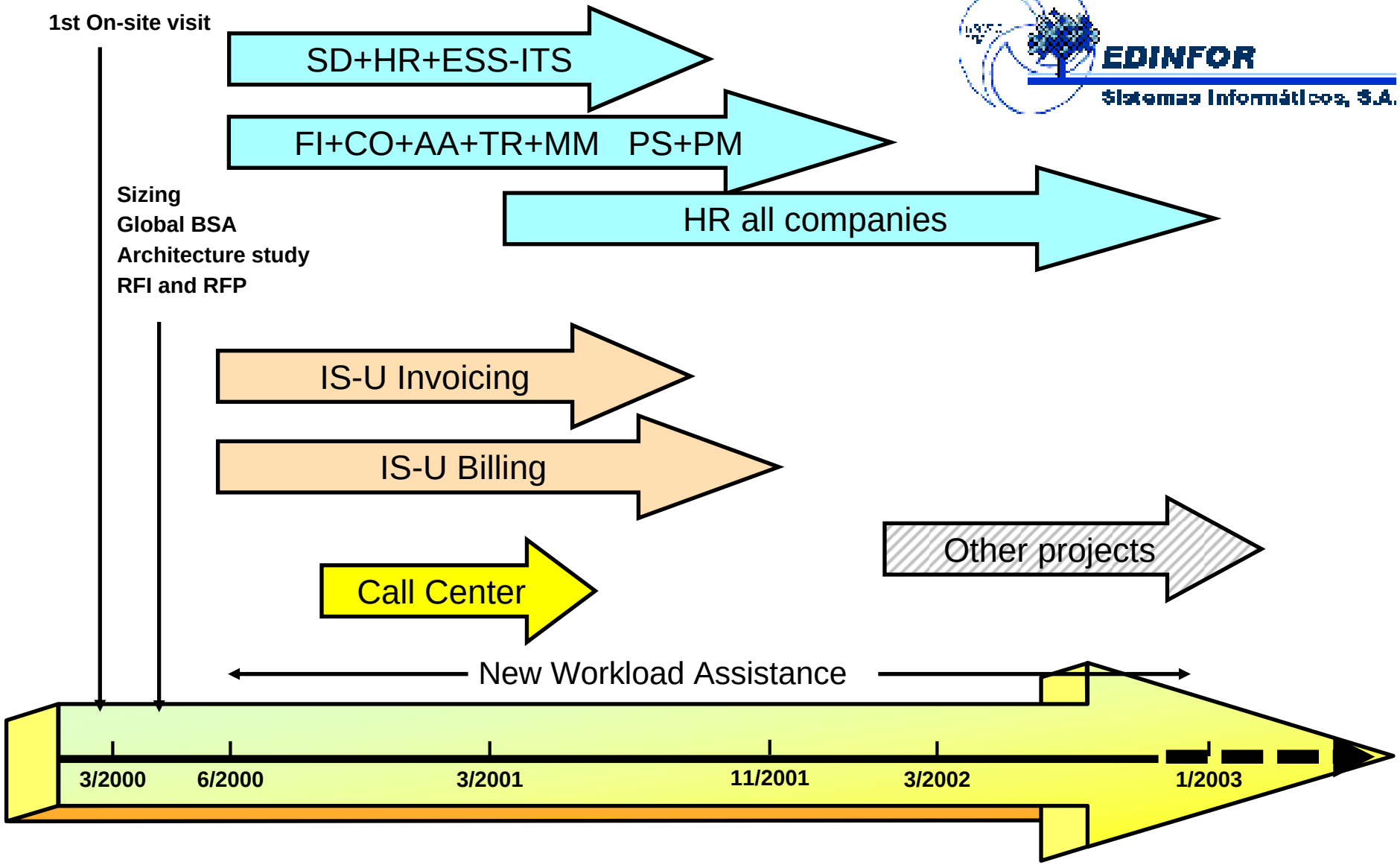
Competition:

- HDS (one system installed in Porto)
- SUN (several systems installed in Lisboa)

In the pipe:

- Implementation on GDPS Architecture
- SAP Strategic Enterprise Mngt + SAP CRM under study
- SAP R/3 application servers on zSeries under evaluation

EDP-EDINFOR (Portugal)

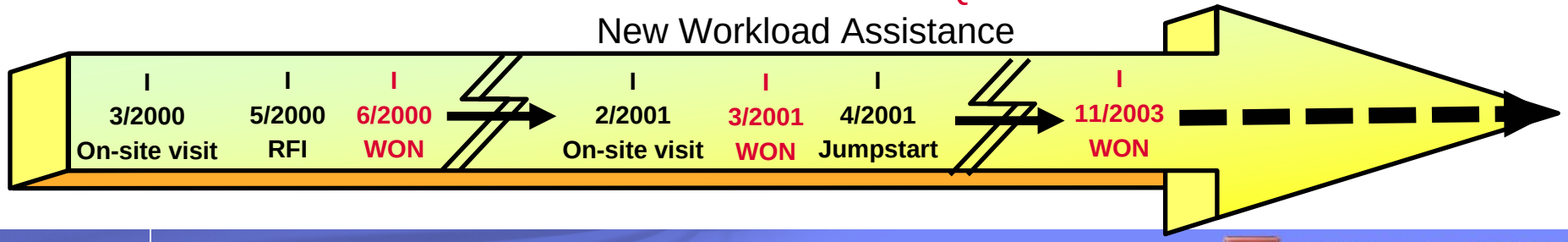


EDP-EDINFOR (Portugal)

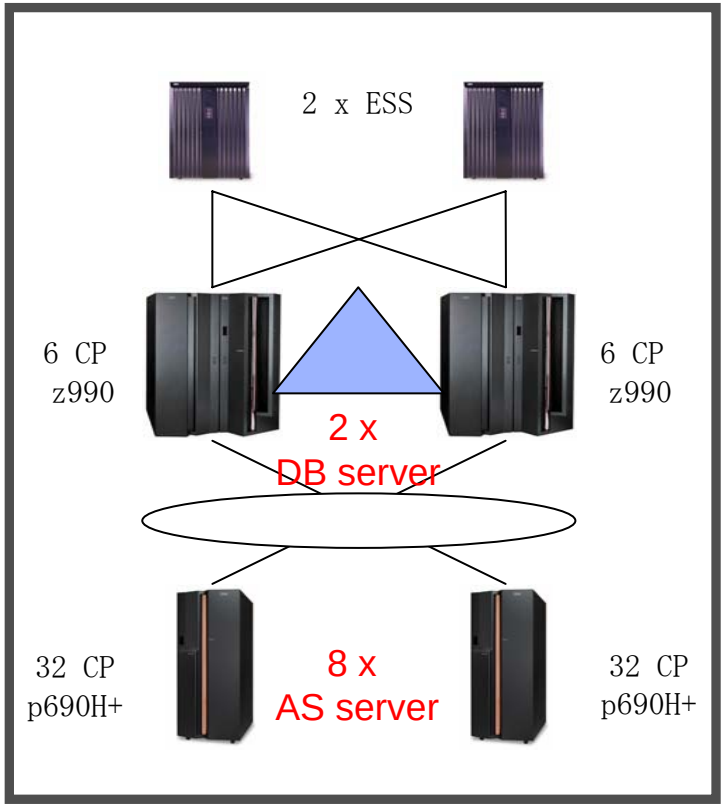
- 6/2000 WON situation against HDS and SUN
  - ✓Z57 upgrade + SP Nodes + S80 + Netfinities + Services
  - ✓Hardware only = 3.3 MUSD
- 3/2001 WON all hardware + NWA nomination
  - ✓z37 + z57 replaced by 2 x 2064-111
  - ✓One additional 2064-111 + 78 SP nodes
  - ✓Hardware Only = 18.6 MUSD

BID for 2001: OVER 32 MUSD

- 11/2003 WON again situation against HPQ and SUN
  - ✓SAP DB servers replaced by 3 x 2084-B16-5W
  - ✓SAP Applications servers replaced by 22 p655
  - ✓A 20 MUSD TCV of which over 10MUSD for Q42003



Reference SAP IS-U test platform configuration



Customer test for:

- **Second largest utility worldwide** in terms of customer base = 30 M accounts

Performance test workload

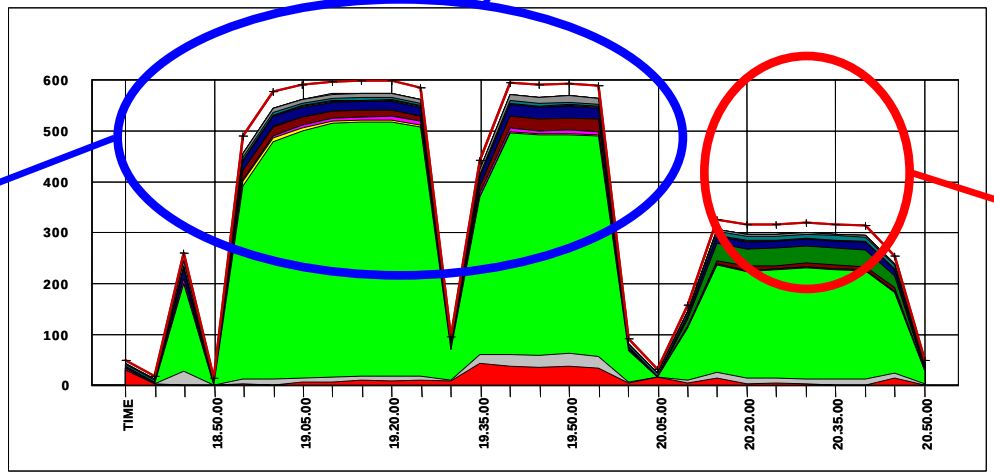
- **900,000 Bills**
- **900,000 Invoices**
- **900,000 Prints**
- **1.200,000 online Transactions**

Objective: Run the performance test workload

(900,000 billing cycles) within 6 hours

Reference SAP IS-U Test Results Analysis

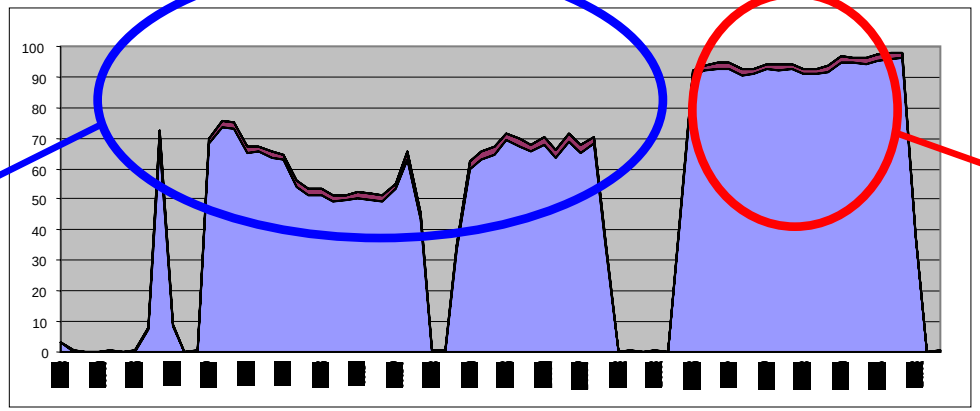
DB Workload limited by **DB server CPU capacity**



DB Workload limited **by insufficient AS throughput**

Billing **Invoicing** **Print**

AS Workload limited by **insufficient DB throughput**



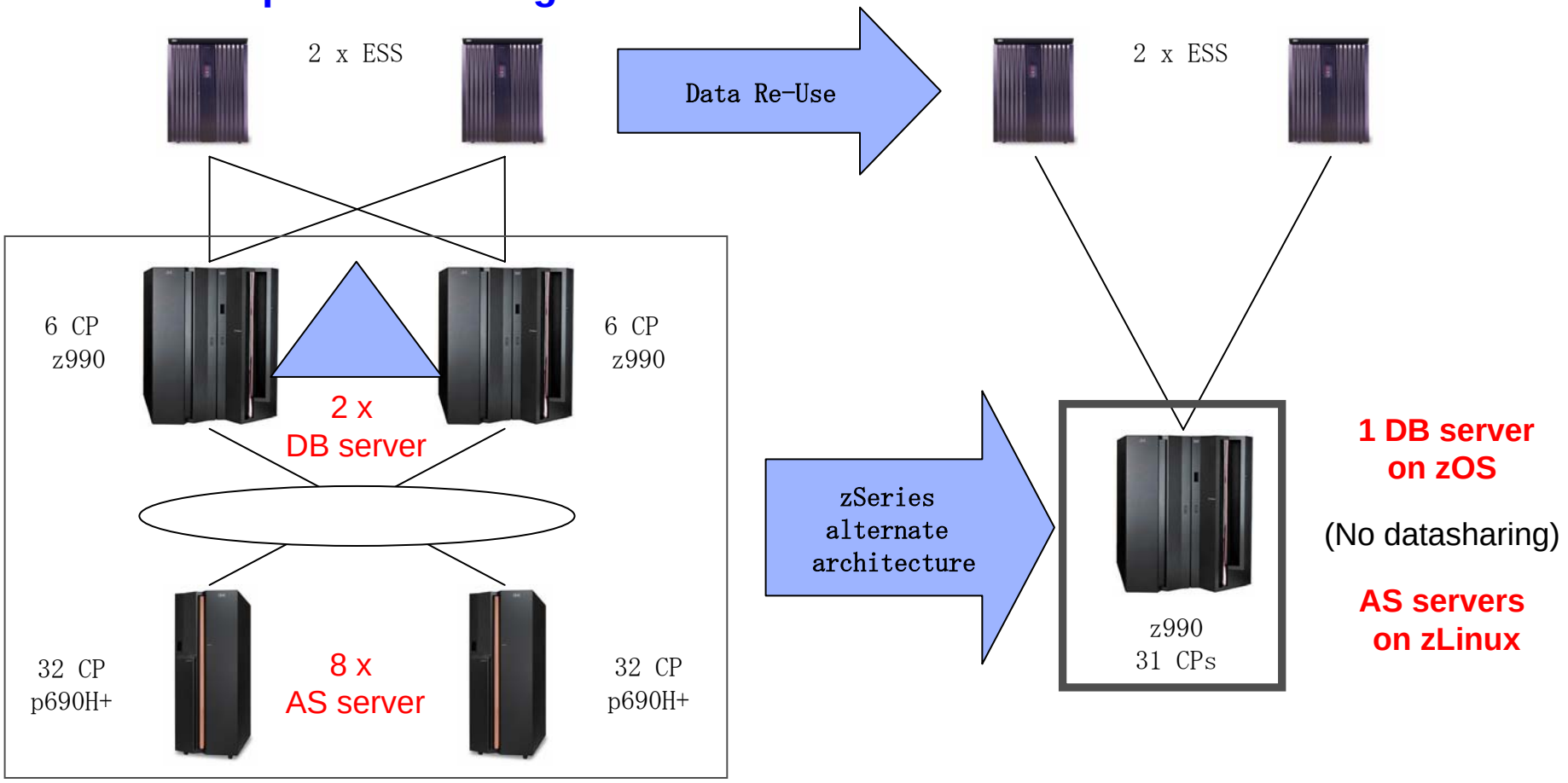
AS Workload limited by **AS CPU Capacity**

It has been a real successful story ! (5h50)

Customer adopted the solution infrastructure !

But ?

SAP IS-U test platform change



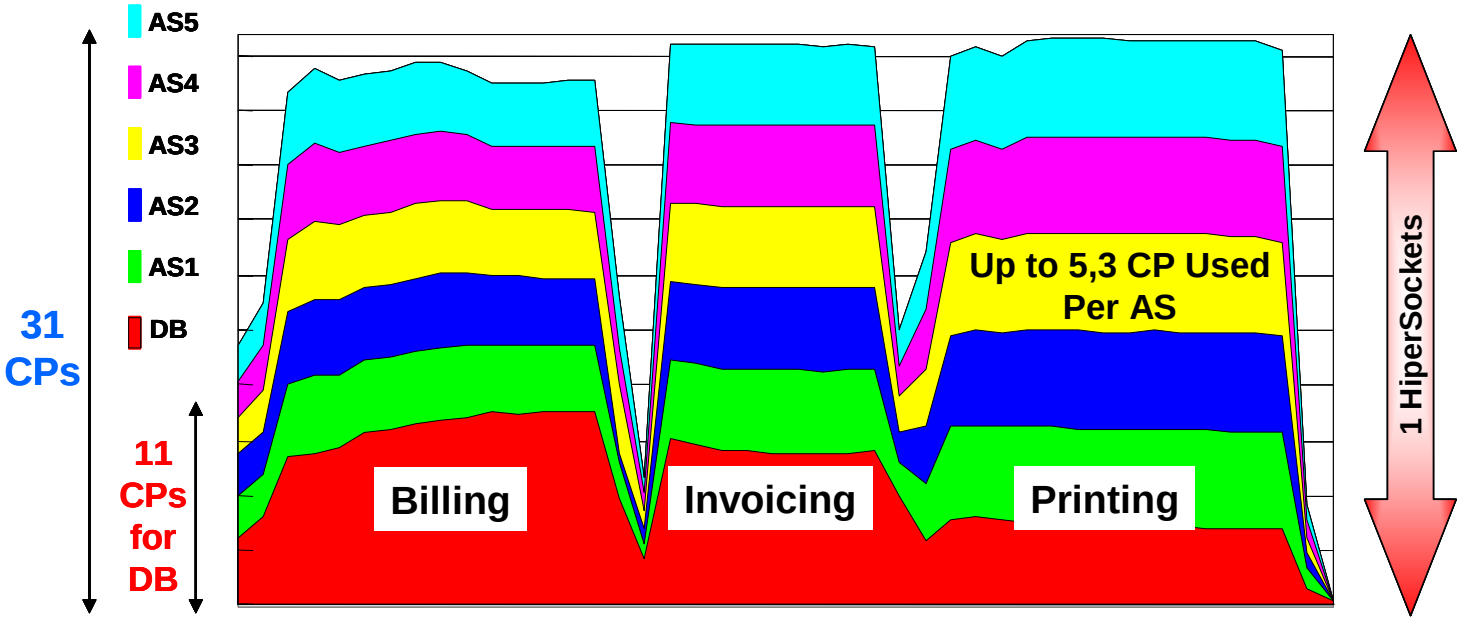
- 900,000 Bills
- 900,000 Invoices
- 900,000 Prints
- 1.200,000 online Transactions

- 900,000 Bills
- 900,000 Invoices
- 900,000 Prints
- ~~1.200,000 online Transactions~~

Highlight zSeries architecture performance capabilities

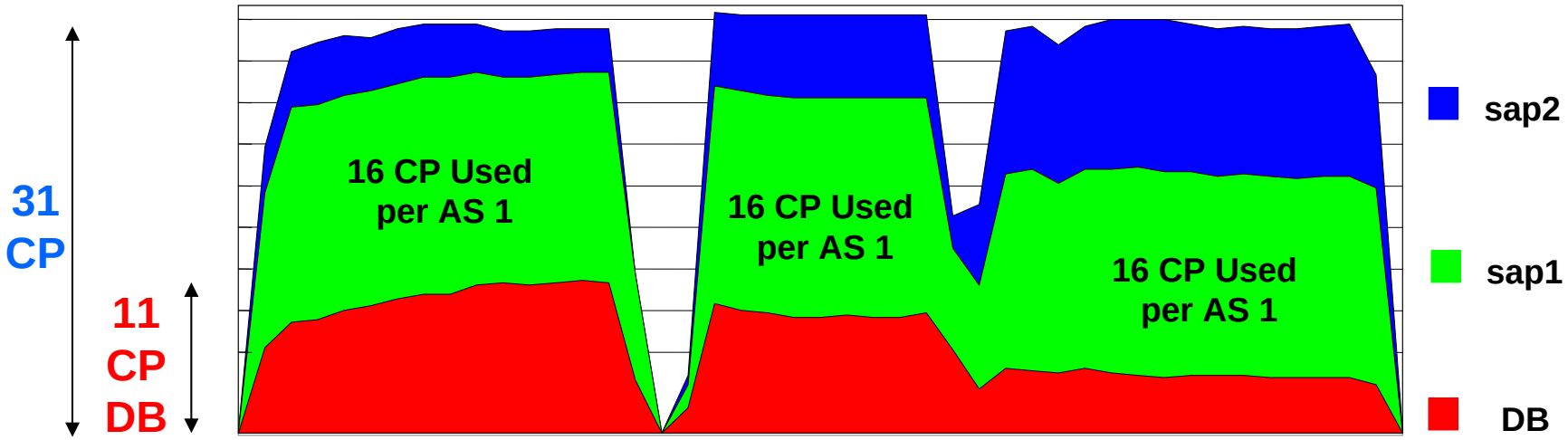
		HiperSockets						
		DB + CI	AS5	AS1	AS2	AS3	AS4	Total
RUN 1	CP log	6CPs	6CPs	6CPs	6CPs	6CPs	6CPs	36 CPs
	CP Phys	6CPs		6CPs	6CPs	6CPs	6CPs	30 CPs
RUN 2	CP log	8CPs	8 CPs	6CPs	6CPs	6CPs	5CPs	39 CPs
	CP Phys	8CPs		6CPs	6CPs	6CPs	5CPs	31 CPs
RUN 3	CP log	11CPs	7 CPs	7 CPs	7 CPs	7 CPs	7 CPs	46 CPs
	CP Phys	31 CPs						31 CPs

8h15	4h40
7h15	4h15
6h30	3h45



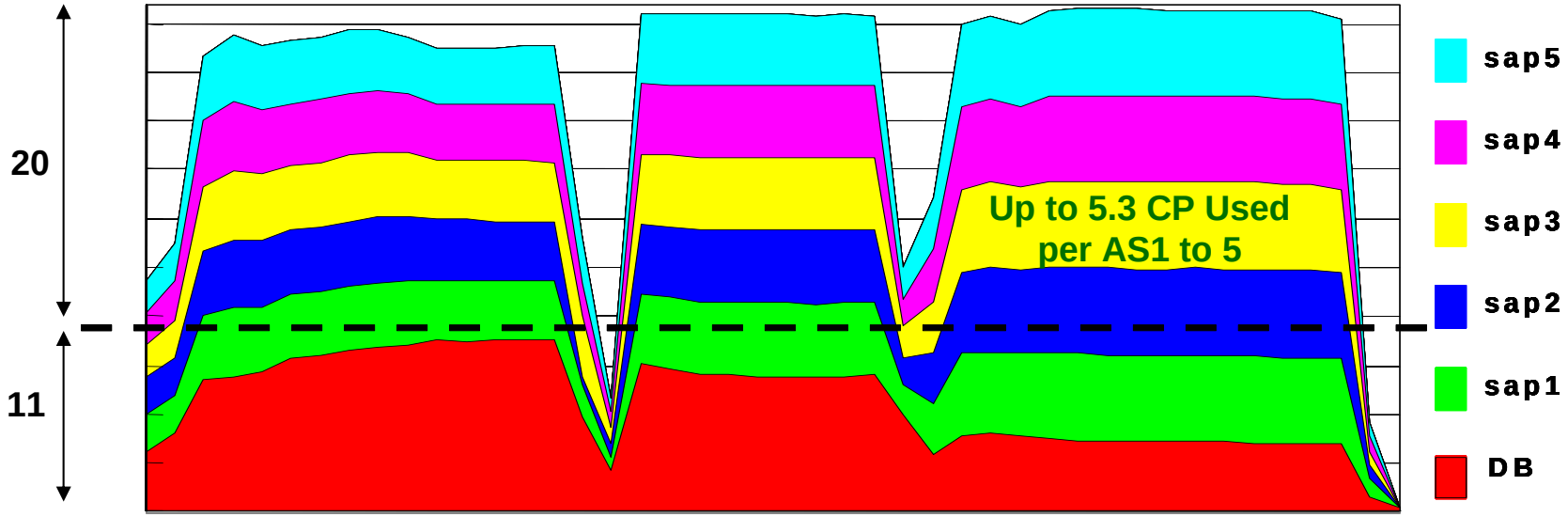
Highlight Linux Scalability for SAP application workload

		DB + CI	AS1	AS2	AS4	AS4	AS5	Total	
RUN 3	CP log	11CP	7 CP	7 CP	7 CP	7 CP	7 CP	46 CP	6h30
	CP Phys	31 CP						31 CP	
RUN 4	CP log	11CP	10 CP	10 CP	10 CP			41 CP	6h42
	CP Phys	31 CP						31 CP	
RUN 5	CP log	11CP	16 CP	16 CP				43CP	6h46
	CP Phys	31 CP						31 CP	
RUN 6 *	CP log	11CP	16 CP ↑	16 CP ↓				43CP	6h44
	CP Phys	31 CP						31 CP	



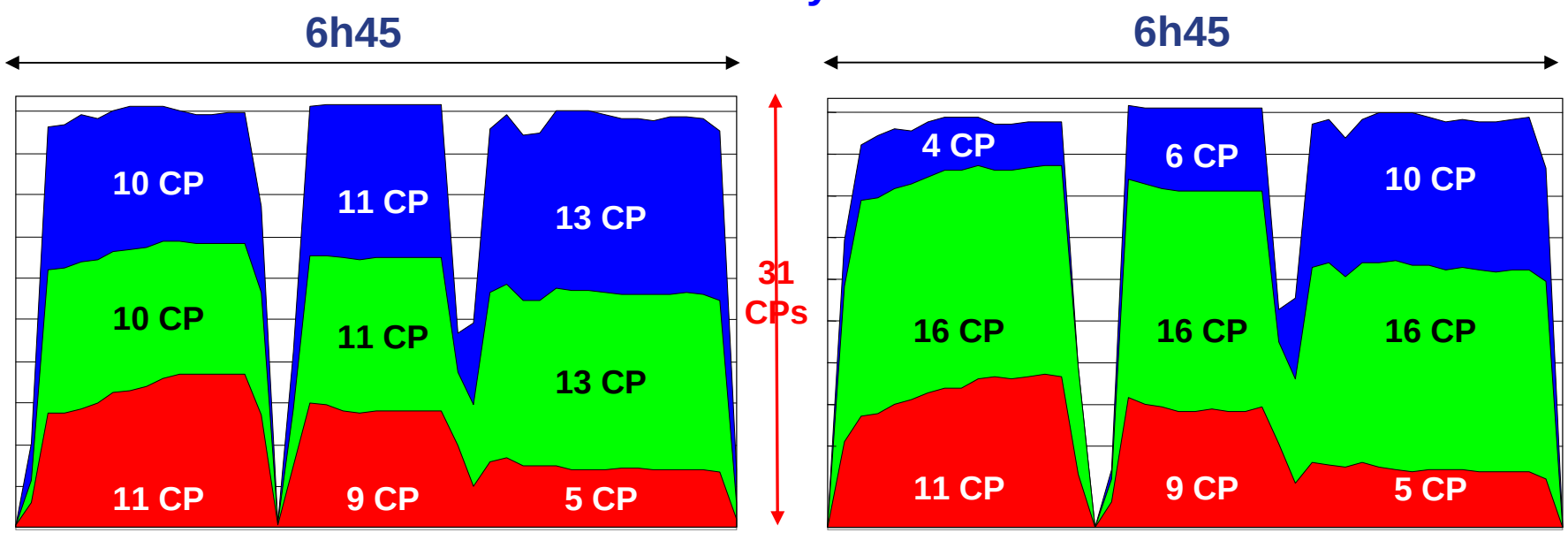
IFL's / regular engines flexible allocation benefit for TCO

		DB + CI	AS1	AS2	AS3	AS4	AS5	Total
RUN 3	CP log	11CP	7 CP	7 CP	7 CP	7 CP	7 CP	46
Tested	CP Phys	31 CP						31



		DB + CI	AS1	AS2	AS3	AS4	AS5	Total
RUN 3'	CP log	11 CP	7 CP	7 CP	7 CP	7 CP	7 CP	50
Assumption	CP Phys	11 CP		20 IFL				31

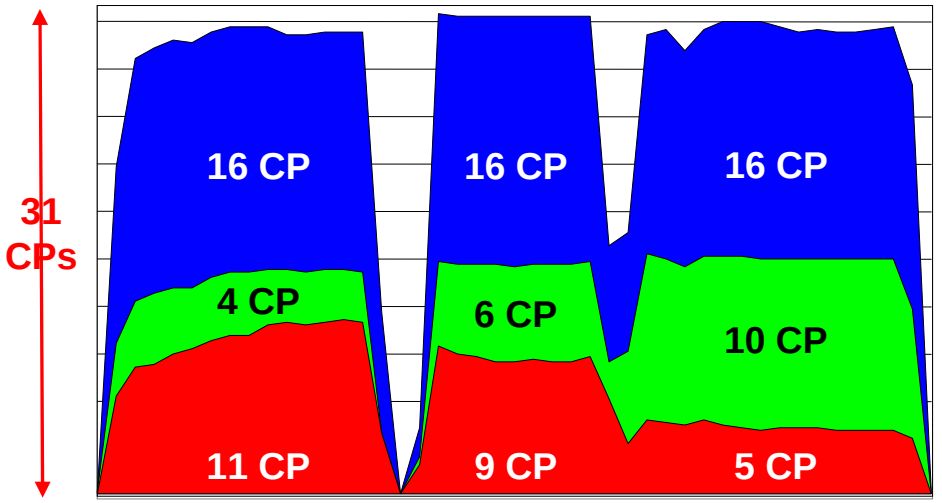
Architecture and infrastructure flexibility for unbalanced workload



Day 1 (Run 5)

Day 2 (Run 6)

- 100% balanced workload happens mainly in lab environment when demonstrating performance.
- Real life is slightly more complex and may rely more on Adaptive Resources rather than component unit performance



Day 3 (Run 6')

Architecture and infrastructure flexibility against Outage

DB server with ➔	6CP	8CP	11CP
1 x z990 32 CP	8h15	? 7h15	? 6h30
2 x z990 32 CP in Sysplex	4h40	4h15 ?	3h45 ?

Sysplex member Outage

Conclusions

- Sizing and Architecting
- PR/SM and IRD efficiency
- Linux on zSeries
  - Flexibility
  - Scalability
  - Workload Balancing
- Architecture flexibility while facing outages

The power and flexibility of the zSeries architecture allows near full capacity utilization, helping to drive TCO reduction through infrastructure simplification

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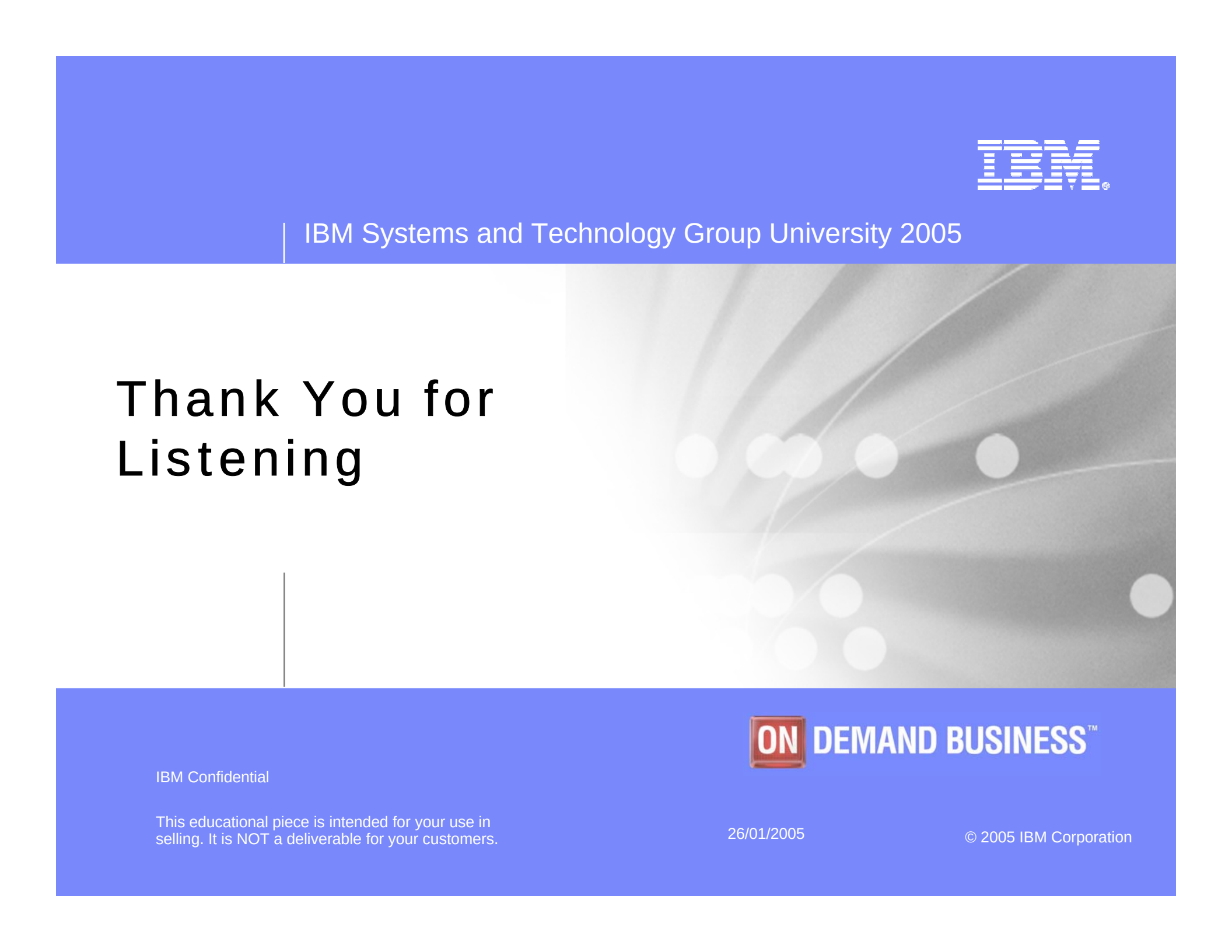

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