



IBM eServer™

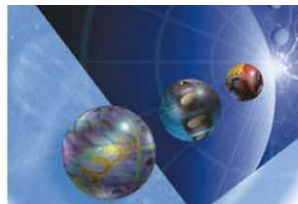
zSeries . . .
What's new!



Agenda

- Hardware Update
 - ▶ Introducing the IBM eServer™ zSeries® 890 (z890)
 - ▶ IBM TotalStorage® Enterprise Storage Server® 750 (ESS)
 - ▶ IBM eServer zSeries 990 (z990) Enhancements
 - ▶ zSeries Application Assist Processor (zAAP)
- Operating system update
 - ▶ z/OS®
 - ▶ z/VM®
 - ▶ z/VSE* Preview
- Middleware update
 - ▶ WebSphere® V5
 - ▶ Tools and Utilities

* z/VSE can execute in 31-bit mode only. It does not implement z/Architecture™, and specifically does not implement 64-bit mode capabilities. z/VSE is designed to exploit selected features of IBM zSeries hardware.



Introducing the z890

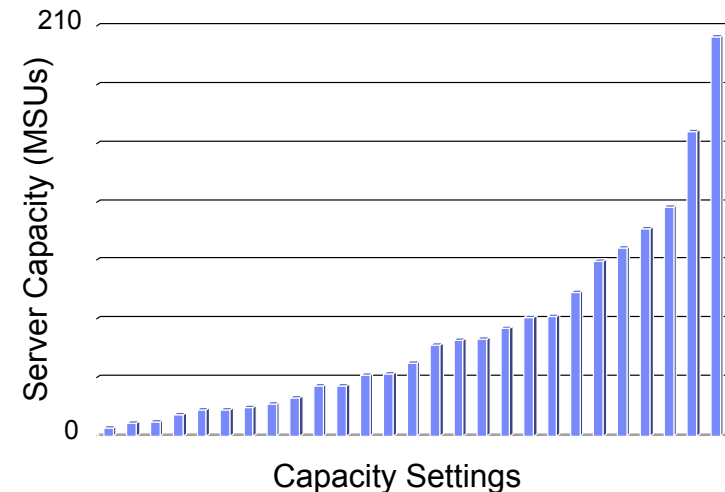
The z890 . . . the mainframe built,
sized, and priced to suit the
needs of the mid-sized
enterprise.



z890 Highlights

- Based on the latest IBM eServer zSeries 990 (z990) on demand technology
 - ▶ Includes the new zSeries Application Assist Processor (zAAP)
- One model with 28 capacity settings provide flexibility and granular growth
 - ▶ Specially designated workload processors available for Coupling, Linux and Java™ workloads
- Full on demand upgradeability in the family*
 - ▶ Upgrades can be temporary or permanent
 - ▶ Plus select versions of z890 are upgradeable to z990
- Parallel Sysplex® Support
- New and improved Networking and Connectivity Options
- zSeries Availability
- Entry Workload License Charging (EWLC) and EWLC Tiered Price Structure

*Terms and conditions apply



z890 on demand – An innovative way to think about granularity

- Single Model: z890 - A04
- A dramatic new way to consider upgrading.
- One MCM per model with 5 Processor Units (PUs)
 - ▶ Four PUs available for characterization
 - CPs
 - Integrated Facility for Linux (IFLs)
 - Internal Coupling Facility (ICFs)
 - zSeries Application Assist Processor (zAAPs)
 - ▶ One PU standard as an SAP

Capacity Settings

1-WAY	2-WAY	3-WAY	4-WAY
110	210	310	410
120	220	320	420
130	230	330	430
140	240	340	440
150	250	350	450
160	260	360	460
170	270	370	470

- Standard CPs
 - ▶ Four full capacity processors *each* with 7 capacity settings
 - Entry point (4 MSUs) is approximately 32% less capacity than z800-0E1
 - z890 full-capacity 1-way is 1.98 – 2.09* times the capacity of the z800-001
 - z890 full-capacity 4-way is 2.19 – 2.28* times the capacity of the z800-004
 - ▶ Upgrades can be horizontal, vertical, diagonal, to best fit your needs **

* Preliminary estimates.

** No mixing of standard CP capacity sizes in multi-engine machines, and zAAPs cannot outnumber standard CPs in any configuration.

Think of the possibilities...
Define the processor the way your business requires!

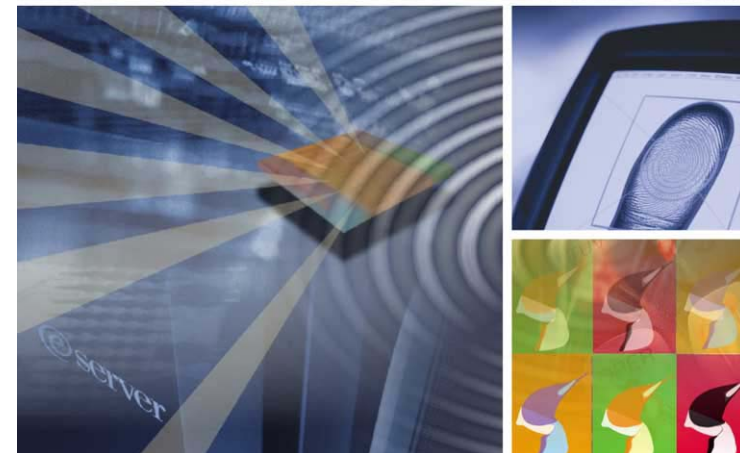
z890 – Technology Features



- Memory
 - ▶ 8 GB Standard
 - ▶ 8 GB increments to 32 GB (8, 16, 24, 32 GB)
 - ▶ One concurrent memory upgrade path (24 – 32 GB)
- Support for up to 30 LPARs
 - ▶ Capacity setting 110 supports 15 LPARs
- Cryptographic coprocessor optional
- New packaging for I/O with Two Logical Channel SubSystems (LCSS)
 - ▶ 28 slot I/O cage supports up to 420 ESCON® channels
 - z890 110 capacity setting only has 16 I/O slots available
 - ▶ OSA-Express – Gigabit Ethernet, 1000BASE-T Ethernet, Token-Ring, Integrated Console Controller
 - ▶ Open Fibre Channel Protocol (FCP)
 - ▶ Quadrupled HiperSockets™ support (16) compared to z800
- Single frame
 - ▶ One and three phase options
 - ▶ Raised floor recommended but not required
 - ▶ Internal Battery Option

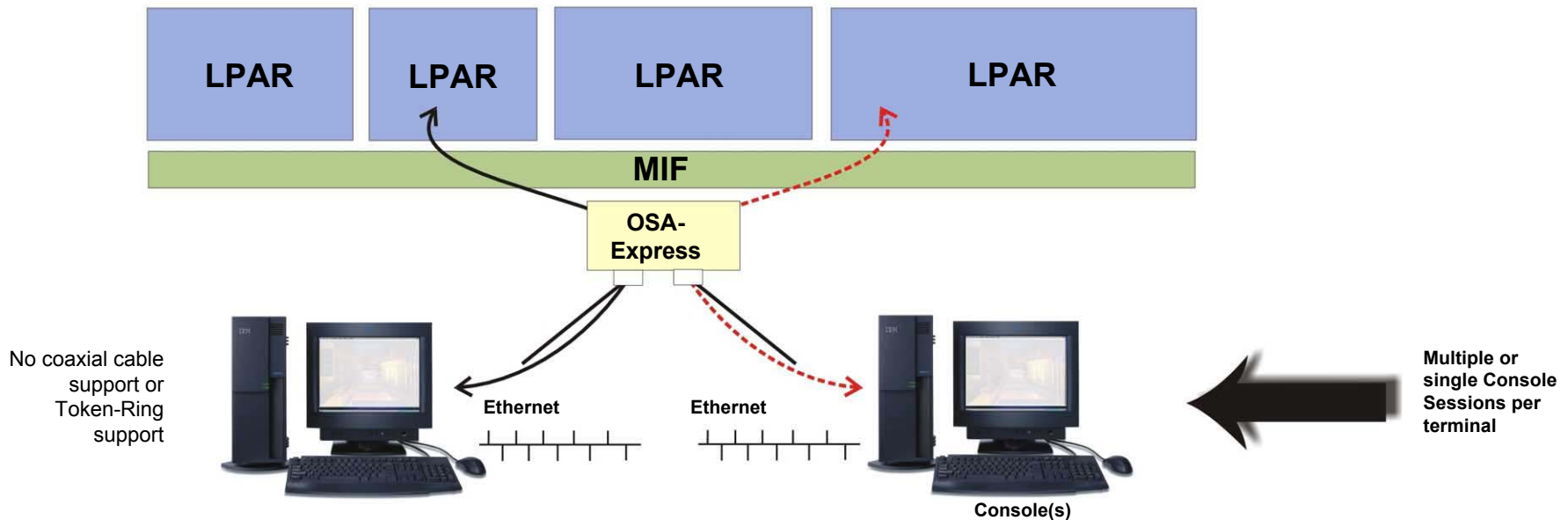
Specially designated Workload Processors on z890 – at FULL capacity

- **Integrated Facility for Linux (IFL)**
 - ▶ IFL – dedicated exclusively to Linux workloads
 - ▶ Uses PR/SM™ technology
 - ▶ Can be configured with all IFLs
 - ▶ Full processor functionality, same as regular processor
 - ▶ Cost benefits
 - Attractively priced at \$125,000 (USD) per IFL
 - IBM's traditional zSeries software charges unaffected
- **zSeries Application Assist Processor (zAAP)**
 - ▶ zAAP – dedicated exclusively for z/OS Java workloads
 - ▶ Based on PR/SM technology
 - ▶ Enables integration of new Java based Web applications with z/OS back-end for high performance, reliability, availability, security and lower total cost of ownership.
 - Attractively priced at \$125,000 (USD) per zAAP
 - IBM's traditional zSeries software charges unaffected
 - Java programming to be executed on zAAPs



OSA-Integrated Console Controller (OSA-ICC)

- **Console Controller for z990 and z890**
 - System Console (IPL) and operations support for multiple LPARs
- **Exclusive to OSA-Express 1000BASE-T Ethernet**
- **Minimum software:**
 - z/OS V1.3, z/VM V4.4, VSE/ESA™ V2.6, TPF 4.1
- **Supports Ethernet-attached TN3270E emulated sessions**
- **Can coexist in configurations using prior IBM 2074 models and older 3174 controllers**



Enhanced multi-session LPAR control capability provides operational flexibility

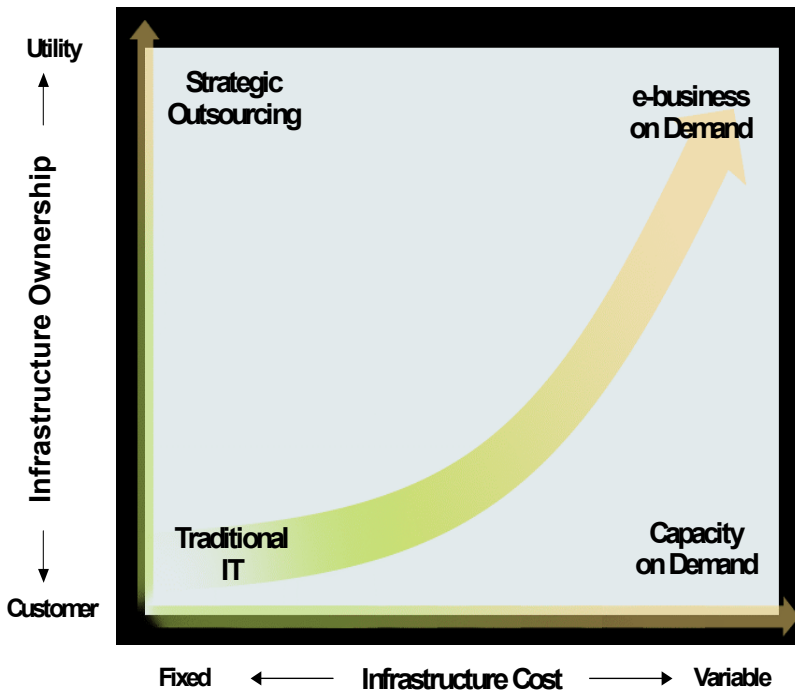
Price/Performance and Investment Flexibility for On Demand Computing



- **New IBM eServer zSeries 890 delivered with price/performance and technology-driven business value.**
 - ▶ Lower cost design points and granular capacity levels improve pricing flexibility
 - ▶ Entry point at 4 MSUs and 28 capacity settings can help you to better manage software costs
 - ▶ Up to 2X I/O throughput vs. IBM eServer zSeries 800 (z800)
 - ▶ New zSeries Application Assist Processor (zAAP) at same price as Integrated Facility for Linux (\$125K per zAAP) and no additional capacity-based IBM software license charges
 - ▶ Up to 140% price/performance improvement for Linux IFLs and Internal Coupling Facilities (ICFs) over z800
 - ▶ Up to 10% price/performance improvement on Maintenance over z800
 - ▶ Up to 50% price improvement for On/Off Capacity on Demand versus initial pricing methodology introduced last year on IBM eServer zSeries 990 (z990).
- **Couple this with new offers on software, solutions, and financing to help fully optimize your investment**

z890 Price/Performance and Investment Flexibility

More choices for buying capacity when and how you want it



- Flexible Software Pricing helps you leverage the most value from the z890 and zSeries technology
 - ▶ Lower cost LPAR-based pricing on key Monthly License Charge (MLC) products delivers price/performance
 - ▶ Entry Workload License Charge (EWLC) allows you to pay for capacity you use
 - ▶ Cost-effective EWLC Tiered Price Structure introduced for flat charged products
 - ▶ Sub-capacity Value Unit Pricing for key e-business middleware, i.e. WebSphere
 - ▶ Low cost z/OS.e for enterprise and e-business applications on z890
 - ▶ New cost effective z/VM V5.1 with engine-based pricing
- Variable pricing for traditional and new workloads with On/Off Capacity on Demand on z990 and z890 at a new, more cost-effective daily charge.
- IBM Global Financing Total Solution Financing designed to make the acquisition easier and more affordable

Objective: Ongoing Price/Performance Improvement

z890 Supported Operating System Software

Operating System	ESA/390 (31-bit)	z/Arch (64-bit)	Notes
z/OS Version 1 Release 2, 3, 4, 5	No*	Yes	1.3: OSA-ICC 1.4: 30 LPAR, 2 LCSS
z/OS.e Version 1 Release 3, 4, 5	No	Yes	(same as above)
OS/390® Version 2 Release 10	Yes	Yes	9/04 End of Service
Linux, 64-bit distribution	No	Yes	
Linux, 31-bit distribution	Yes	No	
z/VM Version 5	No	Yes	ALS
z/VM Version 4 Release 3, 4	Yes	Yes	4.4; exploitation
z/VM Version 3 Release 1	Yes	Yes	
VSE/ESA Version 2 Release 6, 7	Yes	No	
z/VSE** Version 3 Release 1	Yes	No	Preview
TPF Version 4 Release 1 (ESA mode only)	Yes	No	

* IBM Bimodal Accommodation Offering is available for z/OS 1.2, 1.3, and 1.4. This offering will not be provided for z/OS 1.5

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ESS Model 750 – ESS Functionality at Mid Range Disk Prices

Enterprise Disk Storage Complements zSeries 890 and Open Systems Servers

- Designed to offer outstanding price performance for moderate capacity requirements
 - Expandable from 1.1 up to 4.6TB physical capacity
 - Designed to offer lower TCO than ESS Model 800
 - Designed to support 24 X 7 operations
 - Exceptional investment protection
 - ▶ Can be upgraded to ESS Model 800
 - ▶ Designed to offer nondisruptive upgrades
 - Offers advanced metropolitan and global distance copy services for business continuance
 - Supports zSeries performance enablers - PAV, Priority I/O Queuing, Multiple Allegiance
 - Includes popular ESS functionality
 - ▶ SDD, ESS Management functions
 - ▶ 3 year warranty
 - Optimized for entry enterprise requirements
 - ▶ 1.1TB up to 4.6TB disk physical capacity
 - ▶ 8 GB Cache, 2-way Processor
 - ▶ 2 Gb Fibre channel/FICON™, ESCON®
 - 2 to 6 adapters
- New Member in ESS “3rd generation” evolution
 - Designed to eliminate single point of failure/repair
 - Redundant, "failoverable" hardware
 - Up to 64 non-arbitrated paths to disk
 - 72.8 GB (10K rpm), 145.6 GB (10K rpm) physical HDDs
 - Intermixable disk capacities
 - RAID-5, RAID-10 (intermixable)
 - Support for z/OS, S/390®, IBM eServer iSeries™, Linux, UNIX, AIX®, Windows NT/2K
 - Browser, command line and open (ESS API) management options
 - FlashCopy®, V1/V2 / NOCOPY point in time copy efficiencies, Dataset FlashCopy
 - PPRC V1/V2 disaster recovery solutions for open and z/OS
 - Standby Capacity on Demand



IBM eServer™

IBM eServer zSeries 990 (z990) Enhancements

*Designed for Strategic Applications,
Business Flexibility, and
Infrastructure Management*



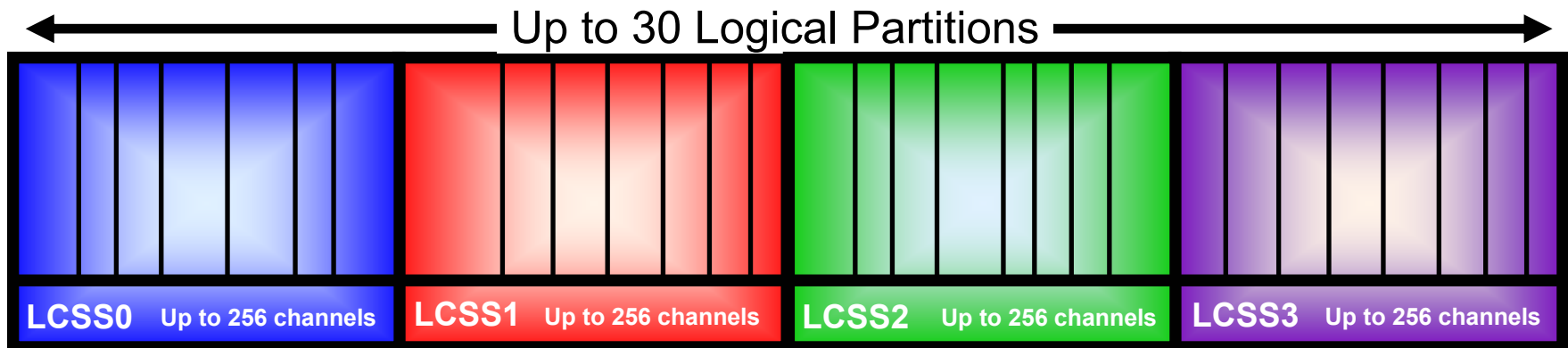
New z990 Highlights



- Integrate strategic J2EE workloads with z/OS back end for outstanding qualities of service and improved price performance benefits.
 - ▶ zSeries Application Assist Processor (zAAP)
- Continue to set world-class standards that strengthen the zSeries set of core values, and help keep the platform competitive
 - ▶ EAL5 Certification (z800 and z900 servers; awaiting formal certificate for z990)
 - ▶ Cryptography extensions
 - ▶ Parallel Sysplex clustering enhancements
- Help customers simplify infrastructure complexity as a further step toward achieving an on demand business model.
 - ▶ Expanded z/Architecture
 - 4 Logical Channel Subsystems
 - Up to 1024 channels
 - ▶ Improved Networking and Connectivity features
 - OSA-Integrated Console Controller
 - FICON Performance Improvement
 - ▶ On/Off Capacity on Demand enhancements
 - IFLs, ICFs and zAAPs
 - Increased flexibility with Capacity BackUp (CBU) and On/Off Capacity On Demand together

Expanding z/Architecture – Four Logical Channel SubSystems

- Up to 4 Logical Channel SubSystems (LCSS) **NEW**
- Up to 15 Logical Partitions per Logical Channel SubSystem
- Up to 1,024 channels **NEW**
- A Logical Partition uses I/O from a single LCSS



Helps accommodate larger infrastructure simplification requirements.

Getting Connected with the z990

WITHIN THE SERVER

- HiperSockets
 - 16 available

TO THE NETWORK

- OSA-Express 2-port
 - GB Ethernet
 - 1000BASE-T Ethernet
 - OSA-ICC **NEW**
 - Token-Ring
 - Maximum of 48 ports available

TO THE DATA

- Up to 120 FICON channels
 - Native FICON
 - FCP
 - FICON Bridge
- FICON performance boost **NEW**
- Up to 1024 ESCON channels **NEW**

PARALLEL SYSPLEX

- Max number of links - 64
 - ICB-2
 - ICB-3
 - ICB-4 – 2GB/Sec
 - ISC-3 – up to 48 **NEW**
 - IC

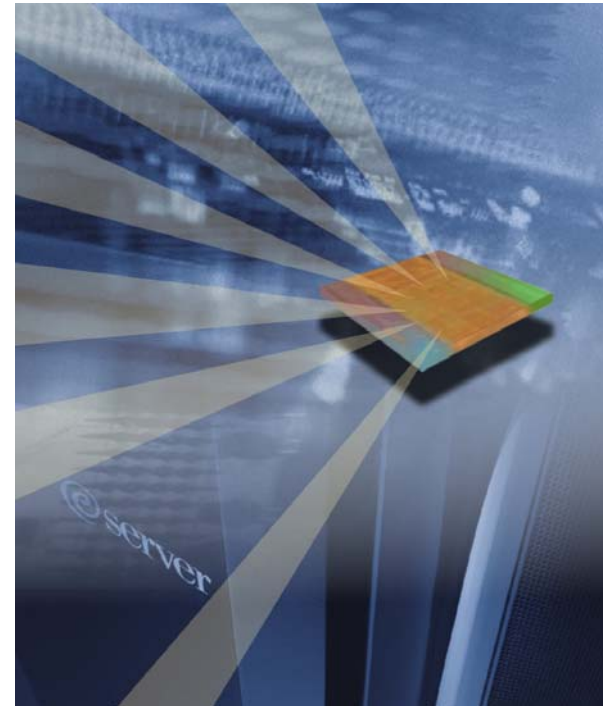




IBM eServer™

Introducing the New zSeries Application Assist Processor (zAAP)

*Delivering a specialized z/OS Java execution environment
with the traditional qualities of service and integration
advantages of zSeries*



New Workload Deployment Realities

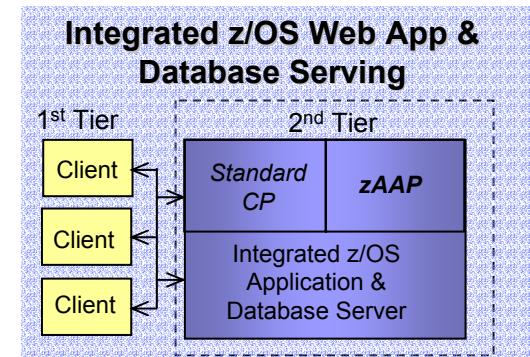
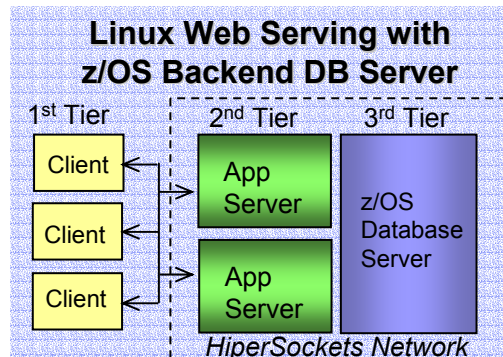
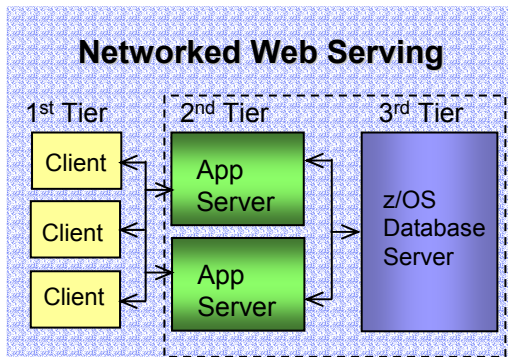
Marketplace Insight:

- Strategic Web-based Application exploitation is increasing at exponential rates.
- Much of this technology is driven by Java
- Web-based Applications can be a source of Competitive Advantage

Challenges:

- Java applications require more resources than traditional applications (up to 2-3x more)
- Web-based Application workloads are often unpredictable
- Desire to deploy applications within a tightly integrated operating environment that delivers superior qualities of service

Deployment Options:



Objective: Enable integration of new Java technology-based Web applications on z/OS for high performance, reliability, availability, security, and lower total cost of ownership

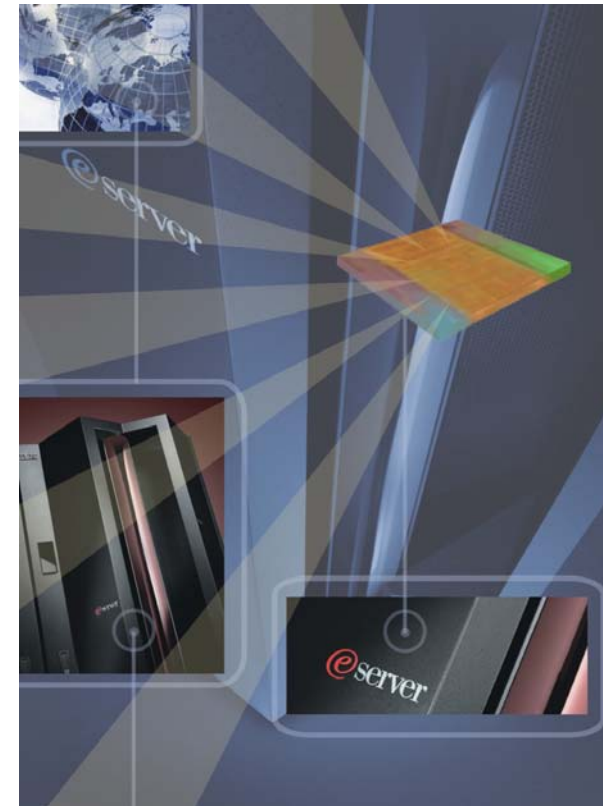
Introducing the zAAP

zSeries Application Assist Processor

New specialty assist processor dedicated exclusively to execution of Java cycles under z/OS

- **zAAP for e-business Integration and Infrastructure Simplification**
 - ▶ Leveraged by workloads with Java cycles (i.e., WebSphere, DB2®)
 - ▶ Can help simplify and reduce server infrastructure and improve operational efficiencies
 - ▶ Enables integration of e-business applications with mission-critical database workloads
 - ▶ Potential operational advantages over distributed multi-tier solutions

- **Available on z990 and z890 and future zSeries servers only**
 - ▶ Executes Java cycles with no changes to applications
 - ▶ Priced at \$125K (USD) per zAAP engine
 - ▶ Traditional IBM zSeries software charges unaffected
 - ▶ Sub-capacity eligible IBM software charges can be reduced
 - ▶ zAAP feature planned availability for June 30, 2004; software exploitation planned for September 24, 2004 with z/OS 1.6



April Announcement

▪ 40th Anniversary of System/360

- ▶ Celebrating 40 years of mainframe technology innovation and leadership
- ▶ zSeries core values – the foundation that differentiates the platform

▪ Mainframe Charter – continued commitment to *Innovation, Value and Community*

- ▶ Bridging 40 years of core values to the platform's future.
- ▶ Positioning zSeries strategically for modern workloads, infrastructure simplification, and on demand.

– zSeries Application Assist Processor (zAAP)

- Helps enable strategic integration of new Java technology-based Web applications with core business databases by providing a more cost-effective, specialized z/OS Java execution environment.
- z890 and z990 planned availability: June 30, 2004
- z/OS 1.6 support planned availability: September 2004

– z990 Enhancements

- New Innovation and Value that position the z990 competitively.
- Innovations that help further simplify infrastructure complexities.
- General availability May 28, 2004.

▪ Introducing the z890...

- ▶ Latest-generation, z990-class technology sized for the mid-sized enterprise
- ▶ Highly granular growth and flexible configurations
- ▶ Improved hardware and software price/performance
- ▶ Versatility to help simplify your infrastructure and reduce costs
- ▶ General availability May 28, 2004

▪ Introducing TotalStorage Enterprise Storage Server, Model 750

- ▶ Bringing world-class capabilities of IBM's ESS storage system to a new audience

Interconnect Points

- z/OS 1.5 and z/OS 1.6
- Preview z/VSE re-branding
- z/VM 5.1 enhancements for Linux
- zSeries Community Enrichment
- Strong synergy with SWG Tools Strategy
- Investment Flexibility

**zSeries Core Values are at the heart of Infrastructure Simplification and On Demand.
zSeries... Continuing to be the Foundation for Innovation.**

z/OS 1.6 - Innovation for New Workloads

- z/OS 1.6 – Next major positioning release for customers
 - ▶ z/OS 1.4 is expected to be the most popular “MVS™” release ever
 - ▶ Over 70% of z/OS licenses are on z/OS 1.4
 - ▶ z/OS 1.6 requires z/Architecture (zSeries server)
- Innovation for new workloads (planned features)
 - ▶ Performance and scale: 64-bit C++ and Java (SOD*)
 - ▶ TCO: IBM eServer zSeries Application Assist Processor (zAAP)
 - ▶ Scale: single image up to 24-way (CPs + zAAPs)
 - ▶ Performance and RAS improvements for WebSphere
- Continued enhancements in core values

* All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

z/OS – The flagship mainframe operating system

- High volume transaction and Web serving
- Automatic sense and respond features
- Outstanding versatility and efficiency
- High resiliency and security
- High availability
- Robust disaster recovery

Preview: February 10, 2004

Planned Availability: September 24, 2004

z/OS 1.6

NEW

Announcing in April:

- Support for up to 24 processors in a single z/OS image
 - ▶ 24 is the sum of CPs and zAAP processors

Statement of Direction

IBM intends to support greater than 24 CPs, or combined CPs and zAAPs, in a single LPAR in the future on appropriate releases of z/OS and z/VM in combination with designated zSeries server(s).

- Support for zSeries Application Assist Processor (zAAP)
- Support for up to 4 Logical Channel SubSystems (1.4)
- Support for Integrated Console Controller (1.3)

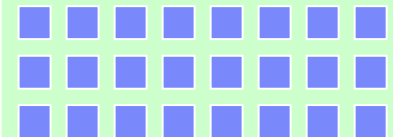
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Single z/OS image

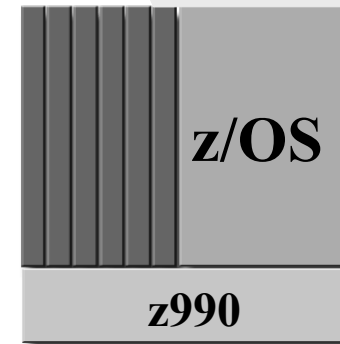
24 logical CPs

128 GB Real

256 Channels



1.6



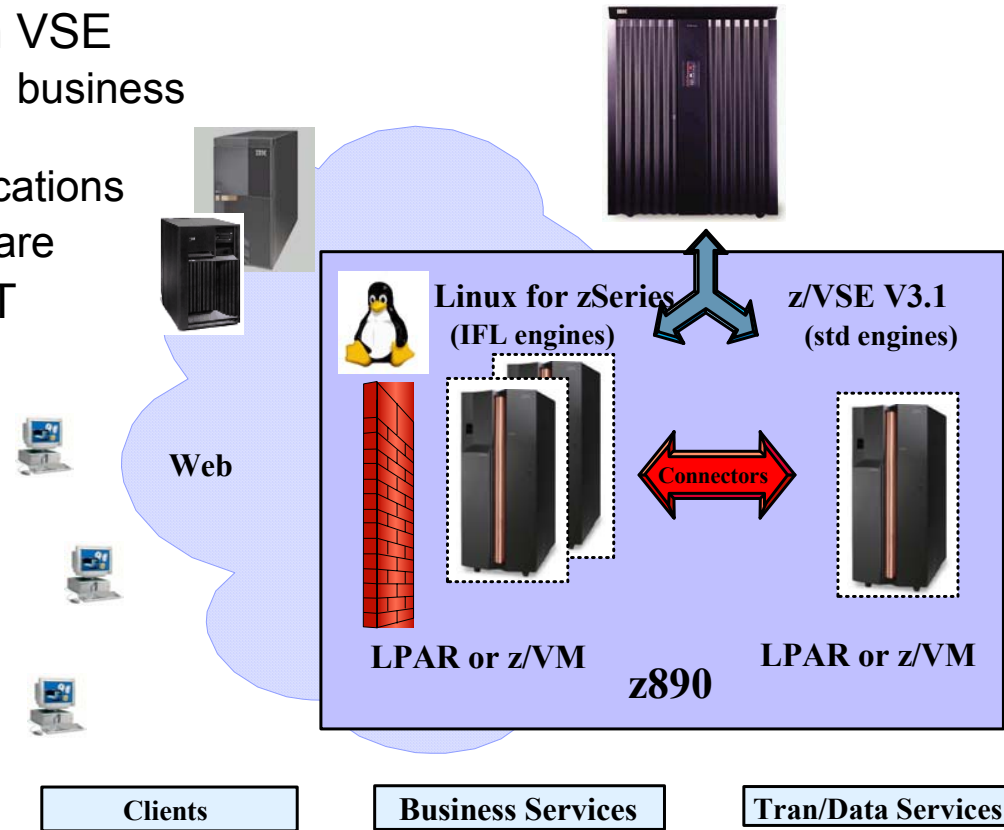
Up to 32 Central Processors
 Up to 256 Real memory
 Up to 1024 Channels
 Up to 30 Partitions

Previewing z/VSE* 3.1

- **Protect** existing client investments in VSE
 - ▶ Programs, data, equipment, IT skills, business processes, end user training, etc.
 - ▶ Modernize, Web-enable CICS® applications
 - ▶ z890 servers, IBM storage and software
- **Integrate** VSE with the rest of your IT
 - ▶ VSE connectors and Web services
 - ▶ IBM middleware
- **Extend** with Linux on zSeries
 - ▶ New applications
 - ▶ Infrastructure simplification

NEW Planned for z/VSE 3.1

- ▶ Fibre Channel Protocol (FCP)
Channel-attached SCSI disk



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Preview: April 2004

Availability not announced

z/VSE* V3R1 Preview

- Protect investments in your core VSE assets – z890 support
 - ▶ Fibre Channel Protocol (FCP) Channel-attached SCSI disk (z/VSE V3R1)
 - ▶ HiperSockets, including spanned (VSE/ESA V2R7 and later)
 - ▶ PCICA (V2R7 and later)
 - ▶ Adapter interrupts for OSA-Express (V2R7 and later)
 - ▶ OSA-Express, including Ethernet and Token-Ring (V2R6 and later)
 - ▶ OSA-Integrated Console Controller (V2R6 and later)
 - ▶ Up to 30 LPARs (V2R6 and later)
 - ▶ Up to 2 LCSSs - 4 on z990 (V2R6 and later)
 - ▶ FICON Express™ (V2R6 and later)
- Integrate VSE into your network
 - ▶ VSE Connectors and Web services
 - ▶ IBM middleware
- Leverage your VSE investments with Linux on zSeries

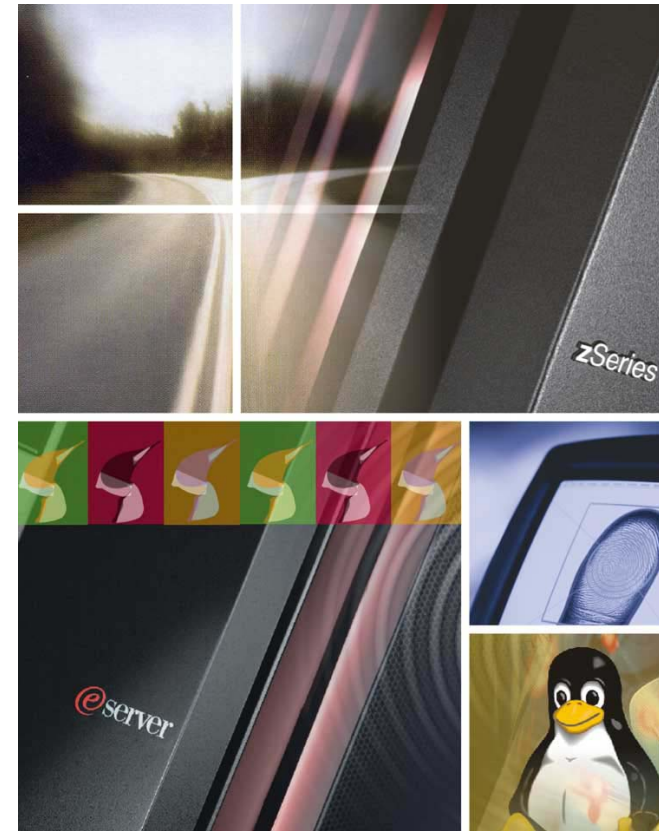


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zSeries Virtualization for Linux on zSeries

z/VM V5.1 – The innovation continues

- **Virtualization advances to help provide more cost-effective and robust virtual Linux servers**
 - ▶ Requirement for ECKD™ disks for Linux servers lifted – SCSI only environments supported
 - ▶ Improved cryptographic performance with PCIXCC support
- **Virtual Networks and Integrated Security streamline deployment**
 - ▶ Enhanced network recovery and virtual switch failover support
 - ▶ z/VM security manager (RACF®) support for authorization control of virtual server access to Guest LANs and virtual switches
- **Technology exploitation**
 - ▶ Support for the OSA-Express Integrated Console Controller
 - ▶ Support for external spanned channels
 - ▶ Enhancement for IPv6 routing and applications
- **Systems Management**
 - ▶ Performance Toolkit for VM™ Enhancements
 - ▶ Additional System Management API support for server provisioning solutions
- **Architectural Level Set requires z/Architecture server**



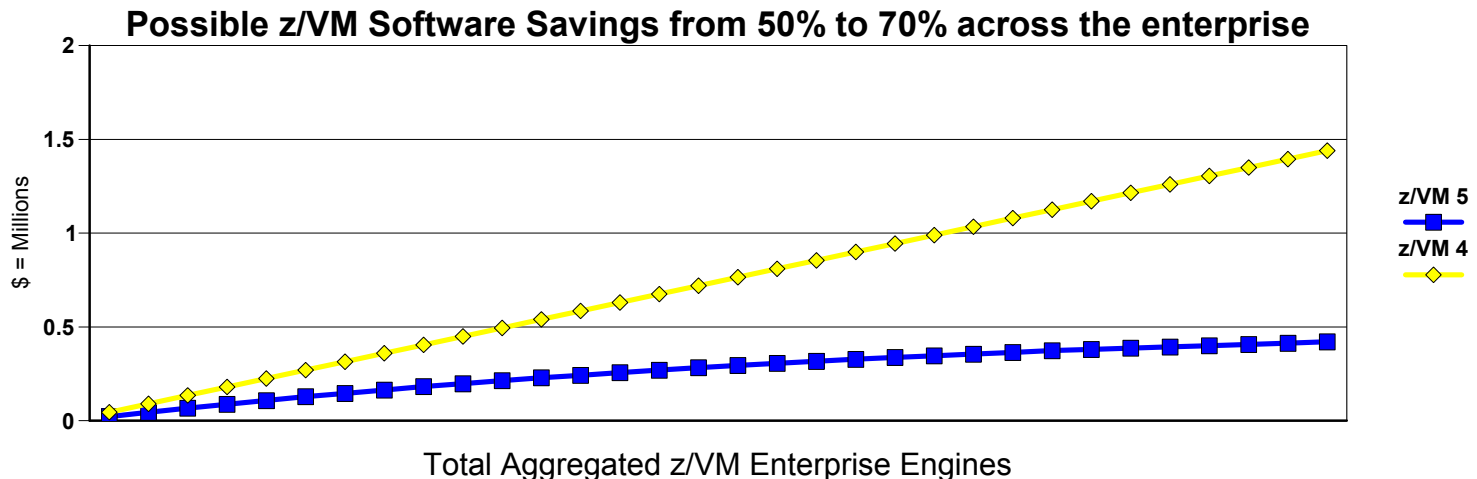
**zSeries virtualization – robust,
comprehensive, and
security-rich.**

Announcement: April 2004

Planned Availability: September 24, 2004

Possible z/VM 5.1 software savings across the enterprise

- z/VM V5.1 with engine-based pricing
 - ▶ Provides a lower entry point at \$22,500 per engine
 - ▶ Delivers a Lower Cost of incremental growth versus z/VM V4
 - ▶ Pricing is based on number of engines
- Allows the Aggregation of engines across the enterprise for worldwide economies of scale
- Price discounts applied with larger installed volumes



zSeries Software: Evolution, not Revolution.

Modernizing applications

DB2 for z/OS V8

- More than 100 new features and functions in areas such as fault tolerance, business intelligence, security and Java
- Reductions in planned outages
- SQL consistency with DB2 UDB
- 64-bit for flexible system growth

IMS	36 Years
CICS	35 years
DB2	21 years
WebSphere	Modernize applications
zSeries Tools	Utilities and application development

zSeries Tools

- >140 competitively priced tools
- Thousands of customer win-backs and migrations
- New fixed price services
- Extending the portfolio with Candle acquisition

WebSphere for z/OS

- Extensive integration with z/OS
- Functional equivalence with WebSphere multiplatform

WebSphere Business Integration Server for z/OS

- Support for the execution of business processes
e.g.: loan approval
- Coordination across platforms

Application Development Suite

- Modernize application suite and processes
- Integrate with WebSphere programming model
- Leverage Rational capabilities into zSeries (creation and testing of applications end-to-end)
- Reduce cost of development (reuse, increase productivity)

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BACKUP

z890 on demand – An innovative way to think about granularity

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- A dramatic new way to consider upgrading.
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 - ▶ Four PUs available for characterization
 - CPs
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 - ▶ One PU standard as an SAP

z890 MSU Rating at each Capacity Setting

1-WAY	2-WAY	3-WAY	4-WAY
4	8	11	15
7	13	20	26
13	26	38	49
17	32	47	62
26	50	74	97
32	62	91	119
56	107	158	208

- Standard CPs
 - ▶ Four full capacity processors *each* with 7 capacity settings
 - Entry point (4 MSUs) is approximately 32% less capacity than z800-0E1
 - z890 full-capacity 1-way is 1.98 – 2.09* times the capacity of the z800-001
 - z890 full-capacity 4-way is 2.19 – 2.28* times the capacity of the z800-004
 - ▶ Upgrades can be horizontal, vertical, diagonal, to best fit your needs **

* Preliminary estimates.

** No mixing of standard CP capacity sizes in multi-engine machines, and zAAPs cannot outnumber standard CPs in any configuration.

Think of the possibilities...
Define the processor the way your business requires!

Getting Connected with the z890

WITHIN THE SERVER

- HiperSockets
 - 16 available
- Integrated Console Controller

TO THE DATA

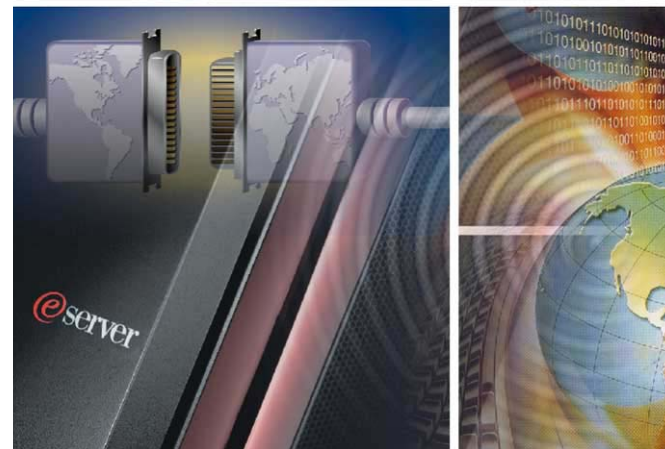
- Up to 40 FICON channels -
32 FICON channels available
on Capacity Setting 110
 - Native FICON
 - FCP
- Up to 420 ESCON channels
– 240 ESCON available on
Capacity Setting 110

TO THE NETWORK

- OSA-Express 2-port
 - GB Ethernet
 - 1000BASE-T Ethernet
 - Token-Ring
- Maximum of 40 ports available –
24 on Capacity Setting 110

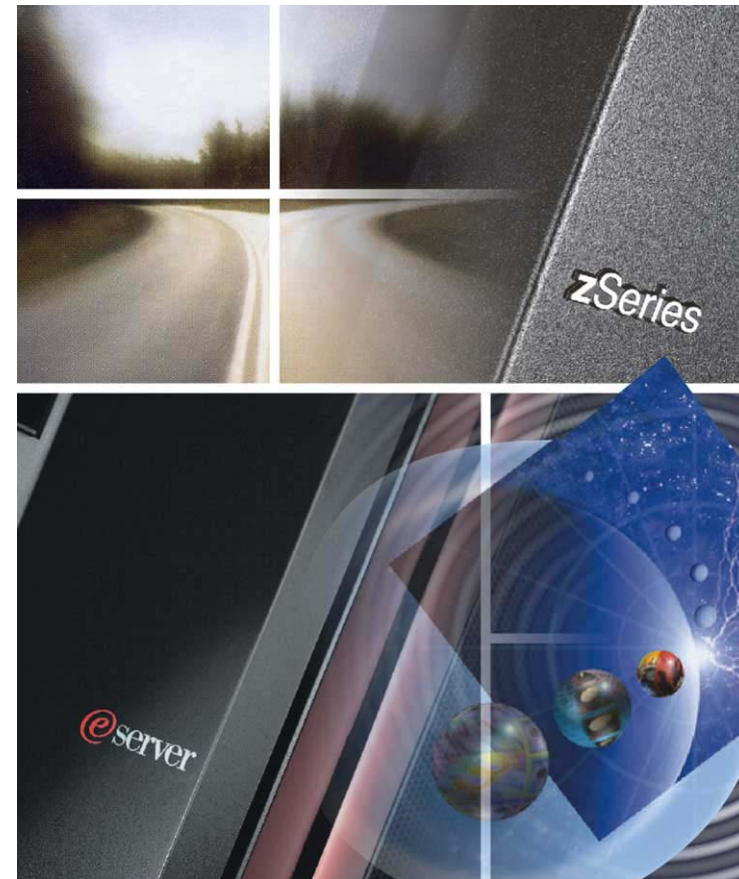
PARALLEL SYSPLEX

- Max number of links - 64
 - ICB-3
 - ISC-3, IC
 - New ICB-4 – 2 GB/Sec
- Standalone Coupling Facility when
you configure all engines as ICFs



WebSphere Application Server for z/OS, V5.1

- **Programming Model Convergence with WebSphere Application Server Network Deployment**
- **SDK (JDK) 1.4.1 / J2SE 1.4.1 Support**
 - ▶ Server-side support, not just client-side support (as in V5.02).
 - ▶ Security improvements related to encryption and decryption, SSL, authentication and authorization, and more.
- **Performance Enhancements**
 - ▶ EJB-specific improvements
- **Additionally –**
 - ▶ Fully leverages the new zSeries Application Assist Processor (zAAP), planned to be available on the IBM z990 and z800, for greater flexibility in deployment and to help reduce total cost of ownership



zSeries Software – On Demand with zSeries Qualities of Service



Major Investments for 2004

- Increases in zSeries Software technical support resources
- Continued investments in new middleware in all portfolio areas
- Significant investments in alternative low-cost tools portfolio
 - More than 140 tools in all major requirement areas
 - Packaged SMB offering
 - Packaged Migration Services

The image shows a close-up, angled view of a server rack. The rack is dark grey or black with several horizontal slots. In the center, the IBM logo is printed in white, consisting of its characteristic eight horizontal stripes. Below the logo, the text '@server' is visible in a smaller font, with the '@' symbol in red and 'server' in white. To the right, a perforated metal grille is partially visible. The lighting is dramatic, highlighting the textures and lines of the server hardware.

IBM

@server

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Notes:

Performance is in Internal Throughput Rate (ITR) ratio based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput improvements equivalent to the performance ratios stated here.

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