



IBM IT Education Services

L02

Klaus Goebel  
kgoebel@de.ibm.com

**New News about Linux on zSeries**

**zSeries Expo**

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# Agenda

- **Mainframe Charter and Linux**
- **IBM @server™ Integrated Platform for e-business on zSeries**
- **Linux Distribution Partners**
- **IBM Middleware**
- **ISV Products & Solutions**
- **Miscellaneous Topics**



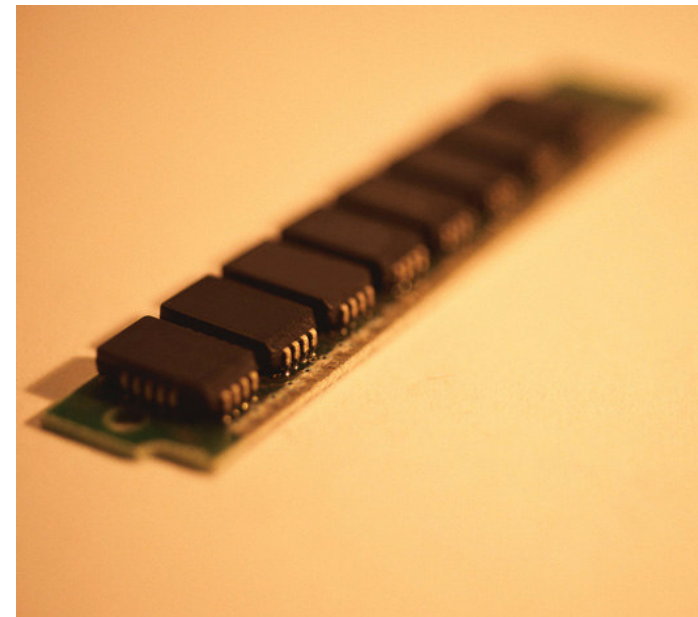
## August 2003 Announcement

	Announced	Planned Implementation
<b>Mainframe Charter</b>	Now	8/22
<b>Pricing Initiatives</b>		
<ul style="list-style-type: none"> <li>■ Memory Pricing</li> </ul>	Now	8/22
<ul style="list-style-type: none"> <li>■ IFL Pricing</li> </ul>	Now	8/22
<ul style="list-style-type: none"> <li>■ Base Configuration Changes</li> </ul>	Now	9/8
<ul style="list-style-type: none"> <li>■ Daily On/Off CoD Software Charges</li> </ul>	Now	9/15
<ul style="list-style-type: none"> <li>■ Software Price/Performance Improvements for z990</li> </ul>	Now	10/1
<ul style="list-style-type: none"> <li>■ WLC Pricing Enhancements</li> </ul>	Now	10/1
<ul style="list-style-type: none"> <li>■ NALC Price Reduction</li> </ul>	Now	10/1
<ul style="list-style-type: none"> <li>■ On/Off CoD for z990 IFL Engines</li> </ul>	Now	10/31
<ul style="list-style-type: none"> <li>■ WebSphere® Sub-Capacity SOD</li> </ul>	Now	Planned By Year-End 2003
<b>z990 On Demand Business Investment Promotion</b>	Now	Planned for 8/26



## zSeries Memory Pricing

- **IBM announces memory price of \$10K/GB to enhance cost of ownership.**
- **IBM announcement on memory spans across entire zSeries family (z800, z900, z990).**
- **zSeries memory prices are competitively positioned in the marketplace with key zSeries differentiators.**
  - ▶ **Triple redundancy in DRAMs.**
  - ▶ **Storage keys on high-speed DRAM.**
  - ▶ **Power management on each card.**
  - ▶ **Extended burn-in and testing.**

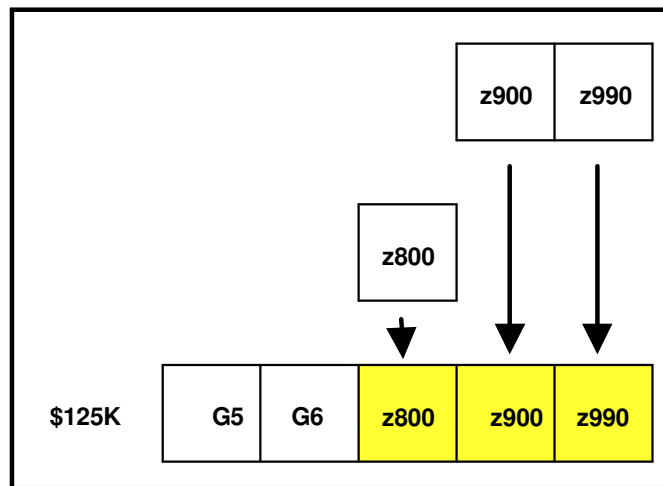


\*Prices based on US dollars. Similar price benefits expected in other countries.



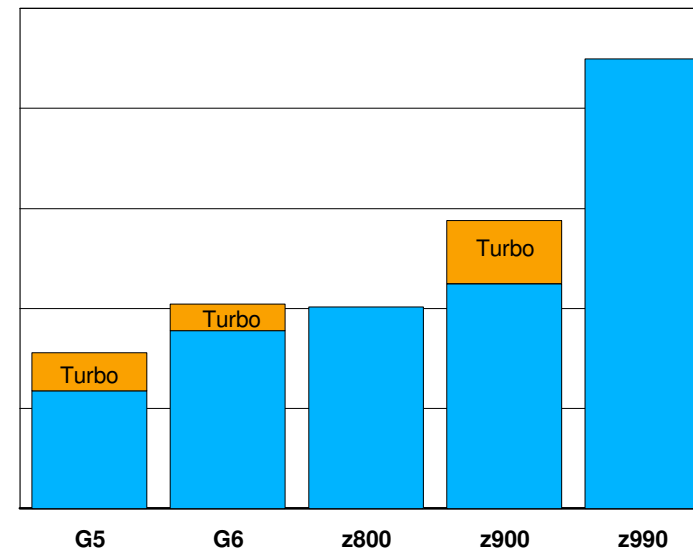
## zSeries IFL Pricing

- IBM delivers price/performance improvements with each new technology generation.
- IBM resets price on zSeries IFLs to \$125k – consistent across generations.



Revised IFL Pricing strategy  
Common price across all technology generations

Uniprocessor Engine Capacity



### Bottom Line:

z990 gives you greater than 50% more IFL capacity than a z900 for the same price  
and  
more than double the capacity of the IFL of an S/390 Parallel Enterprise Server™ (9672)

\*Prices based on US dollars. Similar price benefits expected in other countries.

## On/Off Capacity on Demand (CoD) for IFL Engines

- Extends zSeries capacity on demand offerings to the next level of flexibility
- Helps match cost with capacity utilization
- Manages periodic business spikes
- Helps provide a low-risk way to deploy new pilot applications
- Enables a customer to grow capacity smartly and proportionately with market demand
- Helps provide a low-cost solution for:
  - ▶ Unpredictable revenue opportunities
  - ▶ Boom and bust business cycles



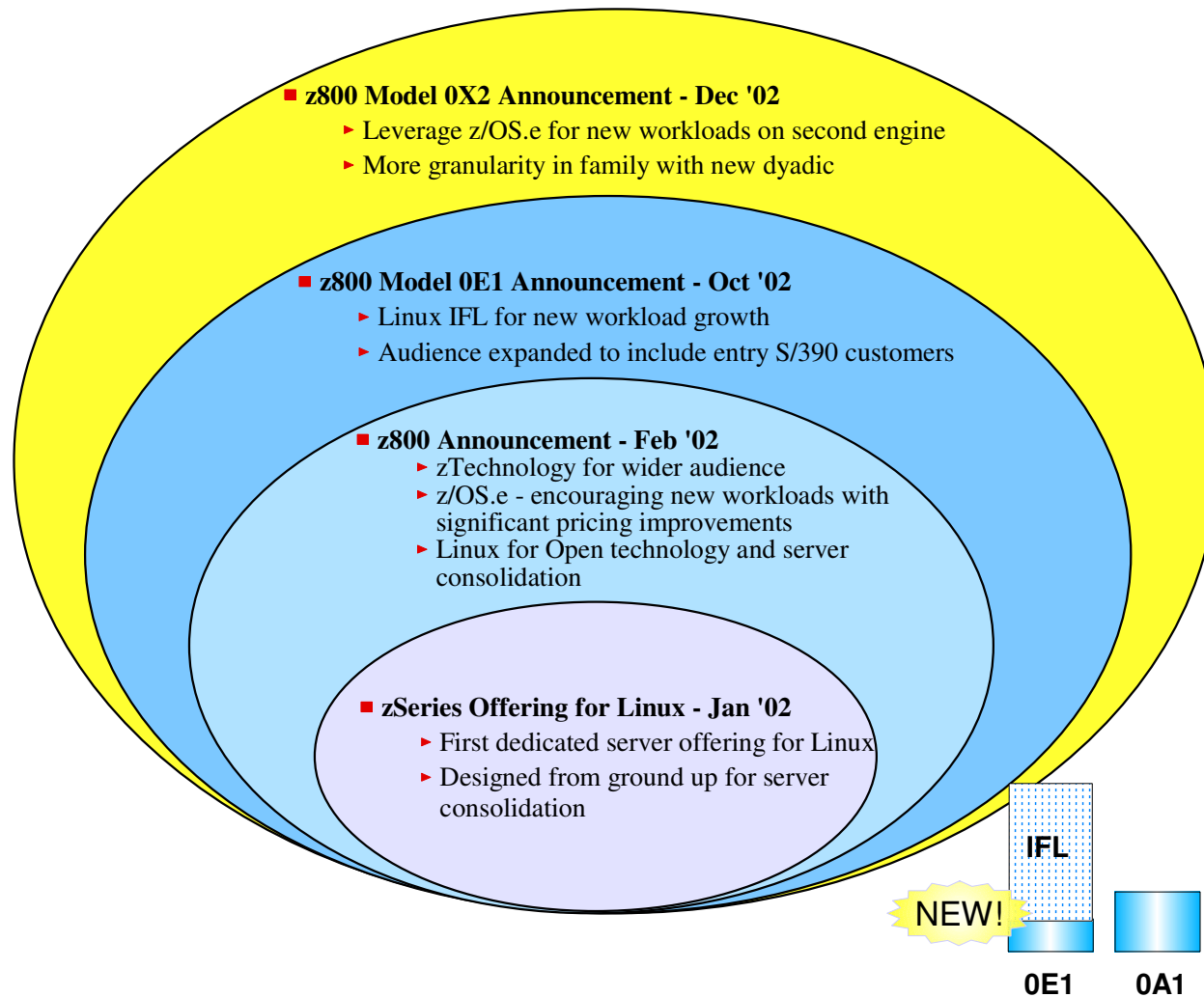
### Hardware Pricing

- Available by engine and by processor day
- For Standard CP and IFL (no ICF)
- Capacity turned on (from original configuration ) and off as needed
  - ▶ Customer activated and deactivated
  - ▶ Billed for the period that capacity was turned on
- Charges consist of a daily usage charge (on a 24-hour basis) when activated
  - ▶ No upfront activation fees
- Requirements
  - ▶ Base hardware purchase (z990 only)
  - ▶ 1:1 temporary to permanent max.
  - ▶ CIU contract with On/Off CoD terms
  - ▶ Daily Engine-Measurement via Call Home

### Software Pricing

- Standard PSLC / WLC pricing
- Processor day pricing for IPLA products

## Two new general purpose additions to z800 family



### ■ z800 Model 0E1

- ▶ Relative performance up to 50% vs z800 model 0A1
- ▶ Comes with a standard Integrated Facility for Linux (IFL)
- ▶ Upgradeable to z800 model 0A1 plus IFL
- ▶ Great for smaller workloads - only 7 MSUs

### ■ z800 Model 0X2

- ▶ New entry sub-dyadic model
- ▶ Relative performance up to 2 times vs z800 model 0A1
- ▶ Upgradeable to model 001 and above



## z800 Model 0E1 - GA 10/2002

- ▶ **New General Purpose Model of z800**
- ▶ **Two engines**
  - One 40 MIPS traditional engine
  - One standard IFL engine
- ▶ **Upgrade to 0A1 with microcode**
- ▶ **Downgrade from 0A1 with microcode**
- ▶ **zELC Software pricing**
- ▶ **Mainframe Charter 08/2003**
  - Reduced memory pricing
  - \$10,000 per GB
  - <http://www-1.ibm.com/servers/eserver/zseries/announce/charter/pricing.html>



optional: optional:  
z/VM z/VM

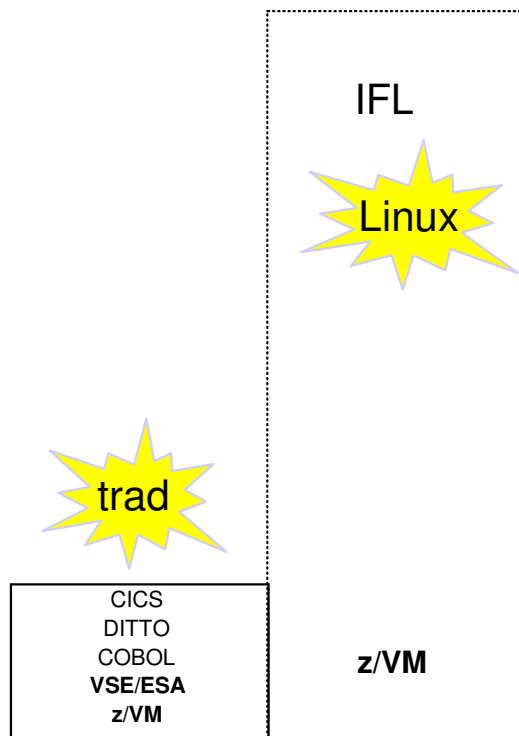
## zELC - zSeries Entry License Charge

### ■ zELC delivers Model based Pricing

- Software price/performance improvements

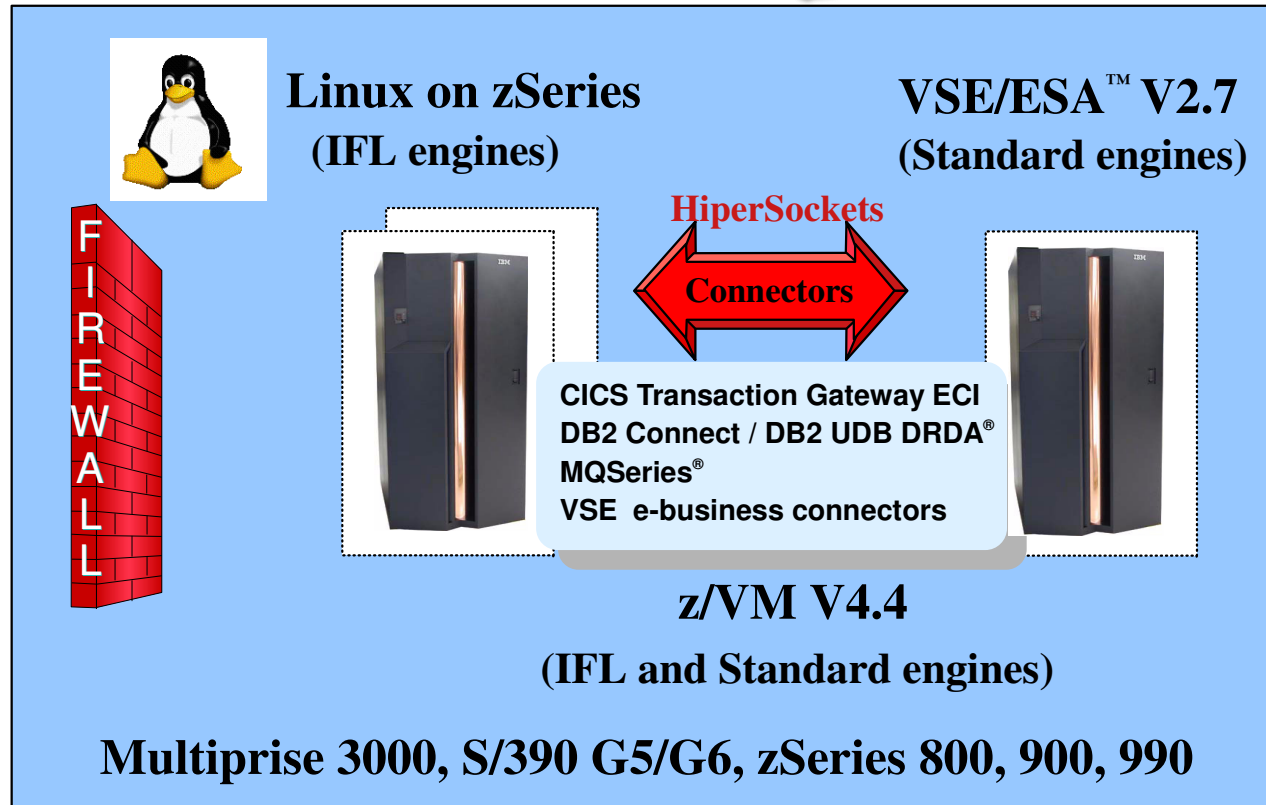
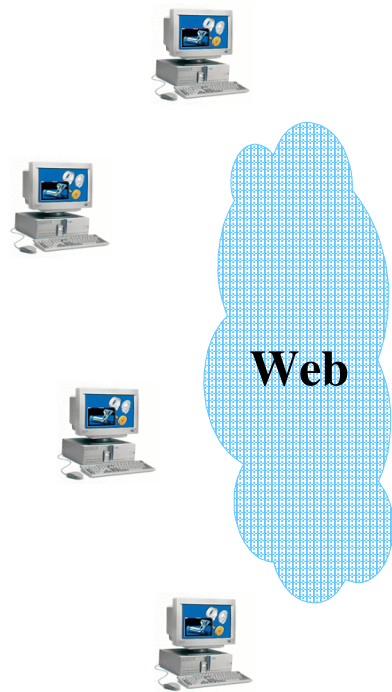
### ■ Comparing equal Software Stacks:

- Model 0E1 zELC pricing is less than MP3000-H30 GOLC pricing
- Model 0E1 zELC pricing is less than SW group 35 (i.e. 2003-207) MLC pricing



z800 model	Number of engines	Rated MSUs
0E1	1 + IFL	7
0A1	1	13
0B1	1	20
0C1	1	25
001	1	32
0A2	2	44
002	2	60
003	3	84
004	4	108

# .... a perfect Fit to VSE's Strategy



**Clients**

**Business Services**

**Tran/Data Services**

# Agenda

- Mainframe Charter and Linux
- **IBM @server™ Integrated Platform for e-business on zSeries**
- Linux Distribution Partners
- IBM Middleware
- ISV Products & Solutions
- Miscellaneous Topics





## Customers' Pain Points

- Recommended e-business topology
  - ▶ e-business yes, but how to do it?
- Integration with existing workload
  - ▶ Connection to core apps on traditional IBM @server™ zSeries™
- Time to solution, time to market
  - ▶ Faster application deployment required
- Total Cost of Ownership
  - ▶ High pressure on IT cost savings
- Commitment on Linux® strategy
  - ▶ Is Linux enterprise ready?

*Multiple vendors!*

*Support?*

*Services?*

*Test effort!*

*e-business*

*Solution  
Ownership?*



## Integrated Platform for e-business on zSeries

- **Optimized e-business topology**
  - ▶ Integration with traditional workload
  - ▶ Internet and intranet solution
- **Expertly integrated by IBM**
  - ▶ Integrated ... yet easy to tailor
- **Best-of-breed components:**
  - ▶ zSeries hardware
  - ▶ zSeries virtualization technology
  - ▶ Linux operating system\*
  - ▶ Web Application server
  - ▶ Directory and security services
- **Competitive price**
- **Standards-based for the future**
- **Comprehensive Services and Support from IBM**



\* Customer obtains from distributor

## IPeB V1.1 - Component Details (GA 02/2003)

<b>Software Package</b>	<ul style="list-style-type: none"> <li>▶ z/VM V4.3</li> <li>▶ SuSE Linux Enterprise Server 7 for S/390 and zSeries</li> <li>▶ WebSphere Application Server AE V4.0.4</li> <li>▶ IBM Directory Server (LDAP) V4.1</li> <li>▶ Installation and customization assistance (documented instructions and scripts, available from the Web)</li> <li>▶ Support for z/VM, WebSphere App. Server, LDAP (1 yr)</li> <li>▶ IGS Linux SupportLine (1 yr)</li> </ul>
<b>Hardware Package</b>	<ul style="list-style-type: none"> <li>▶ IFL(s) for z900/z800</li> <li>▶ IFL warranty (1 yr)</li> <li>▶ OSA-Express card(s) for z900/z800</li> <li>▶ 2, 4, or 8 GB Memory for z900</li> </ul>

<b>Optional Add-ons:</b> <ul style="list-style-type: none"> <li>■ Integrated Products</li> <li>■ Services</li> <li>■ Financing</li> </ul>	<b>Combinable with all configurations:</b> <ul style="list-style-type: none"> <li>▶ DB2 Connect V7.2</li> <li>▶ Support for DB2 Connect</li> <li>▶ IGS Installation and Customization</li> <li>▶ IGS Education Courses</li> <li>▶ IBM Global Financing Options</li> </ul>
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## IPeB V2.2 - Component Details (GA 08/2003)

<b>Software components</b>	<ul style="list-style-type: none"> <li>▶ SuSE Linux Enterprise Server 8 for S/390*</li> <li>▶ IBM z/VM V4.4</li> <li>▶ IBM WebSphere Application Server V5.0.2</li> <li>▶ IBM Directory Server (LDAP) V5.1**</li> <li>▶ Installation documentation and scripts***</li> <li>▶ One year IBM software support:             <ul style="list-style-type: none"> <li>- IBM support for Linux, also support for the Scripts</li> <li>- IBM z/VM Subscription &amp; Support</li> <li>- IBM Passport Advantage Support for WebSphere Application Server and Directory Server</li> </ul> </li> </ul> <p><i>Optional software components</i></p> <ul style="list-style-type: none"> <li>▶ IBM DB2 UDB V8.1</li> <li>▶ IBM DB2 Connect™ V8.1</li> <li>▶ IBM Passport Advantage Support for selected optional comp.</li> </ul>
<b>Hardware components</b>	<ul style="list-style-type: none"> <li>▶ IFL(s) for z800/z900/z990</li> <li>▶ Memory: 2, 4 or 8 GB for z900, 8 GB for z990, optional 8 GB for z800</li> <li>▶ OSA Express cards for z800/z900/z990 (optional)</li> </ul>



The offering can consist of software components only or software and hardware components; the additional options may be added.

<b>Additional Options</b> <ul style="list-style-type: none"> <li>■ Services</li> <li>■ Financing</li> <li>■ Storage</li> </ul>	<b>Combinable with all configurations:</b> <ul style="list-style-type: none"> <li>▶ IBM Global Services: installation, customization, education</li> <li>▶ IBM Global Financing options</li> <li>▶ IBM TotalStorage Enterprise Storage Server</li> </ul>
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\* delivered directly by SuSE Linux AG    \*\* downloadable from the Web    \*\*\* downloadable from the Web - Resource Link

## IPeB - Available zSeries Configurations

	1 IFL	2 IFL	3 IFL
Software components only	X	X	X
<b>z800</b> : Software comp.	X	X	X
<b>z800</b> : 8 GB Memory + Software comp.	X	X	X
<b>z900</b> : 2 GB Memory + Software comp.	X	X	X
<b>z900</b> : 4 GB Memory + Software comp.	X	X	X
<b>z900</b> : 8 GB Memory + Software comp.	X	X	X
<b>z990</b> : 8 GB Memory + Software comp.	X	X	X



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- **Linux Distribution Partners**
- IBM Middleware
- ISV Products & Solutions
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## Linux Distribution Partners

Distribution	GA	EoMaint	EoS	Comments
SUSE SLES 7 K 2.4.7, 31bit	10/31/2001	06/30/2004	06/30/2006	05/2002: major refresh for IBM middleware
SUSE SLES 7 K 2.4.17, 64bit	04/30/2002	06/30/2004	06/30/2006	
SUSE SLES 8 K 2.4.19, 31/64bit	11/18/2002	11/30/2005	11/30/2007	United Linux 1.0 (SUSE, TurboLinux, Connectiva), latest SP2: 6/2003
SUSE SLES 8 SP3 K 2.4.21, 31/64bit	11/14/2003			z990 exploitation (major part of 6/2003 code drop)
Red Hat 7.2 K 2.4.9, 31bit	12/17/2001		12/31/2003	6/28/2002: IBM certified Errata 2.4.9.37
Red Hat 7.1 K 2.4.9, 64bit	06/14/2002		12/31/2003	6/28/2002: IBM certified Errata 2.4.9.37
Red Hat RHEL 3 K 2.4.21, 31/64bit	10/15/2003			Includes parts of IBM's 6/30/03 code drop; SCSI multipathing and HW crypto moved to Update 1



Novell





## SUSE SLES 8 / UnitedLinux 1.0

- **SUSE SLES 8 / UnitedLinux 1.0 delivers significant enhancements over previous product levels**
  - ▶ **Scalability**
    - Scheduler enhancements to improve process scheduling on SMP systems to avoid bottlenecks
  - ▶ **Reliability**
    - POSIX-compliant event logging
    - Dynamic Probes to enhance profiling, debugging, and application tuning
  - ▶ **Security**
    - UL 1.0 includes Kerberos and Bastille
  - ▶ **Commonly deployed packages**
    - LVM
    - Range of journaling file systems including Ext3, ReiserFS, XFS, JFS

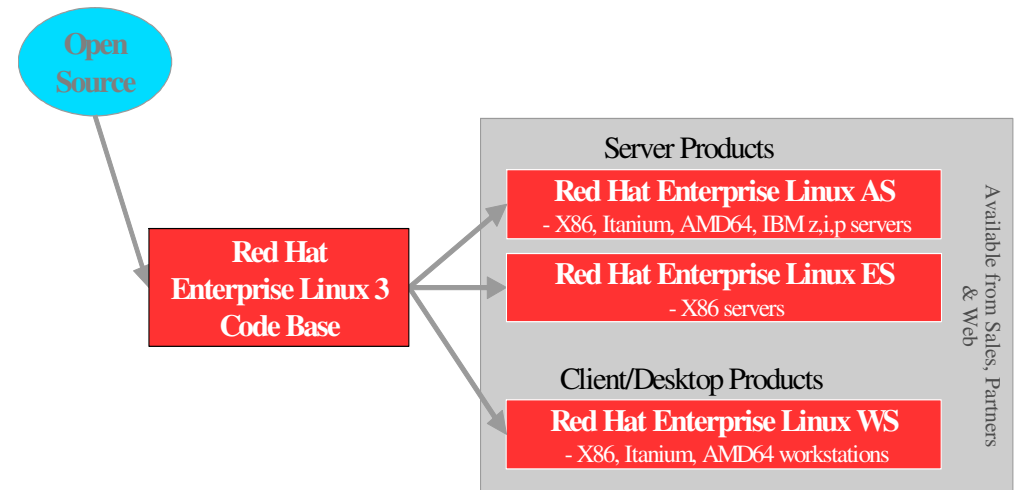


**Novell**



## Red Hat Enterprise Linux 3

- ▶ The Red Hat Enterprise Linux 3 product family shipped in October 2003
- ▶ Includes a large number of new features
  - ▶ Over 100 Prio1 features; over 350 general enhancements
  - ▶ Requests from OEM and ISV partners, and customers
  - ▶ Back-ported features from the Linux 2.5/2.6 kernel trees
- ▶ A single source code base is used for all architectures
  - ▶ Greatly improves code stability and maintainability
  - ▶ 5 new architectures; 64-bit clean implementation
  - ▶ Eliminates feature skew; simplifies ISV application support
  - ▶ Available in 10 languages
- ▶ Key Features for zSeries and S/390
  - ▶ Graphical installation
  - ▶ Kick Start support
  - ▶ Logical Volume Manager
  - ▶ LCS and QETH drivers are part of distribution
  - ▶ Single code base for all architectures



Focus on performance, scalability, availability, application development & standards support. Major new features include:

- ▶ Kernel based on 2.4.21 with numerous 2.5/2.6 features
- ▶ Better support for large SMP, memory and I/O configurations
- ▶ Forward compatibility between RHEL 2.1 and RHEL 3
- ▶ Greatly improved desktop environment
- ▶ 4GB-4GB Kernel/User Memory Split
- ▶ Enhanced standards support
- ▶ Enhanced security features
- ▶ Native Posix Threading Library
- ▶ GCC 3.2 tool chain environment
- ▶ Logical Volume Manager
- ▶ Diskless system support

# Linux Open Source Code Drop 06/2003

- **Kernel (kernel 2.4.21, gcc 3.3)**
  - ▶ Support for z990 features
  - ▶ QETH driver in open source
  - ▶ VIPA load-balancing
  - ▶ Linux router enhancements for fast path routing under z/VM
- **Hardware Exploitation**
  - ▶ z990 Architecture
    - Superscalar scheduling
    - Long displacements
    - Architecture I/O adaptations (STIDP)
  - ▶ OSA Express Enhancements
    - DHCP and broadcast support
    - Checksum offload
  - ▶ HiperSockets Enhancements
    - VLAN (IEEE 802.1q) support
- **Usability**
  - ▶ Fullscreen ANSI/ASCII Terminal for SE/HMC supported systems (G5, G6, z800, z900, z990)
- **RAS and High Availability**
  - ▶ Linux Image Control
    - API for VM and LPAR remote image management like STONITH, (re)IPL, quiesce, shutdown, etc.
- **Security**
  - ▶ Symmetric Encryption
    - HW acceleration for SHA-1, DES and Triple-DES encryption
- **Virtual Servers**
  - ▶ Virtual Network Enhancements
    - VM/Linux handshaking
- **SCSI**
  - ▶ FCP IPL and Dump
  - ▶ Platform Loader
- **Compiler Enhancements**



## Linux on zSeries - Development Focus Areas 2003/04

- **New Hardware support & exploitation**
  - **Virtual Server Environments**
  - **Systems Management**
  - **Workload Management**
  - **Security**
  - **High Availability**
  - **Networking**
  - **SCSI/FCP and SAN considerations**
  - **Compiler enhancements**
  - **Performance & Scalability**
  - **RAS**
- **Linux Kernel 2.6 technology**
    - ▶ Updated I/O and memory management for faster throughput and scalability
    - ▶ Faster, more scalable O(1) scheduler
    - ▶ Faster, POSIX compliant threading library
    - ▶ User-mode Linux to allow multiple system images running on the same box to aid server consolidation and application separation
    - ▶ Asynchronous I/O and completion events - a big improvement for Web servers and databases
    - ▶ Support for disks larger than 2 TB and for SGI's XFS enterprise file system
    - ▶ ext3 with ACL support





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## IBM Middleware for Linux on zSeries

### 2.4 Kernel, 31bit

- DB2 UDB (incl. DB2 Connect)
- Websphere Application Server
  - Commerce Suite Bus Edition
  - Portal Enable
  - Network Deployment
- Java JDK
- CICS Transaction Gateway
- IMS Connector for Java
- MQ Client (C) / Server (S)
- IBM Directory
- Tivoli TSM Client (C) / Server (S)
- Tivoli Access Manager
- Tivoli System Automation for Linux
- Lotus Domino

2002

1H03

3Q03

V8.1

V5.0.2

V5.5

V5

V5.0.2

V1.4.1

V5

V1.2

V5.3

V5.1

V5.2

V4.1

V1.1

V6.5

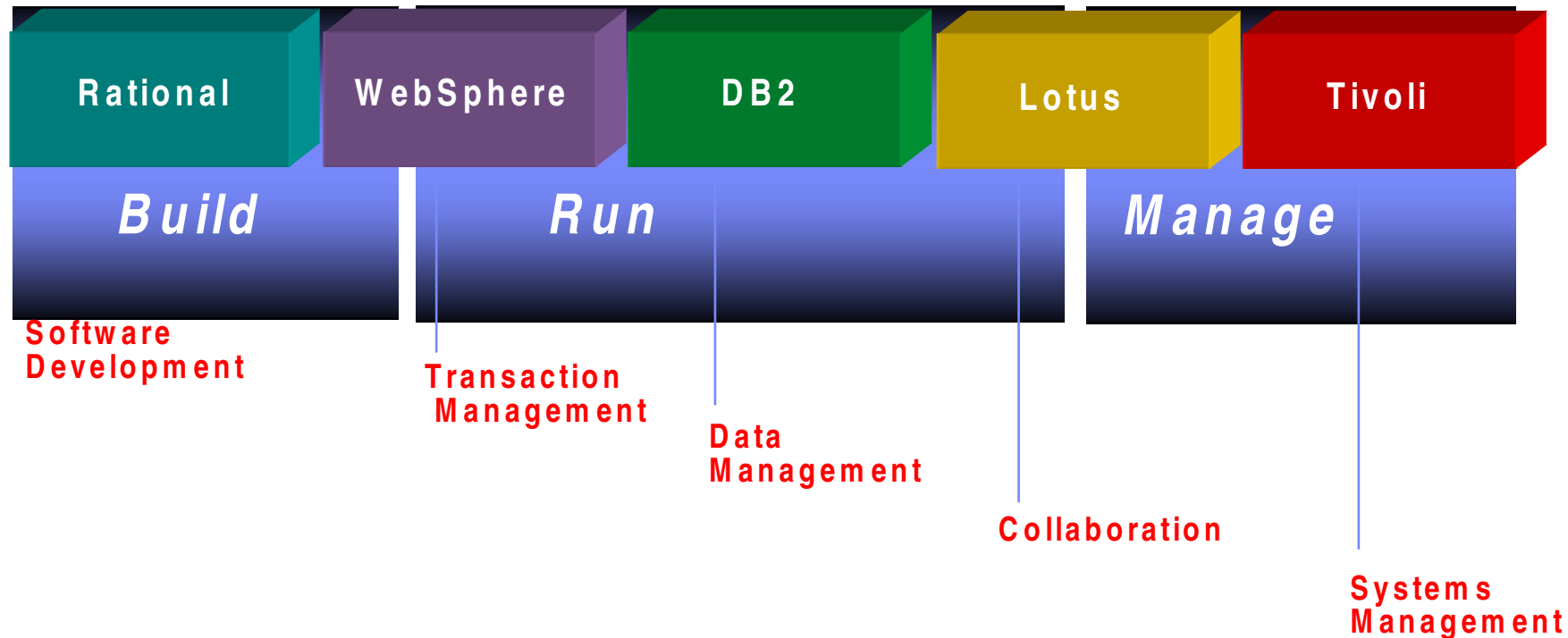
### 2.4 Kernel, 64bit

- Java JDK

V1.4.1



## IBM Middleware: A Foundation for the On Demand Era



Evaluation copies of IBM middleware can be downloaded from:

[ibm.com/developerworks/offers/linux-speed-start/download-z.html](http://ibm.com/developerworks/offers/linux-speed-start/download-z.html)

Linux Product Matrix can be downloaded from:

[ibm.com/software/os/linux/software/index.jsp](http://ibm.com/software/os/linux/software/index.jsp)

# Rational

## SW Configuration Mgmt for Linux on zSeries

- **Rational ClearCase V5.0**
  - ▶ is available for SUSE SLES 7
  - ▶ is planned to be supported on Red Hat Enterprise Server 3
- **ClearCase desktop can:**
  - ▶ Use Linux on zSeries as a repository
    - Server consolidation, central administration, and disaster recovery
  - ▶ Build applications on the zSeries Linux partition
  - ▶ Integrate with IDEs such as WebSphere Studio and VS.NET
- **ClearCase Remote Build lets any ClearCase desktop build applications on z/OS MVS and USS**
  - ▶ ClearCase desktop integration with IDEs such as WebSphere Studio








## WebSphere for Linux on zSeries

- **WebSphere Application Server (incl. Network Deployment) V5.0.2**
  - **WebSphere Commerce Suite Business Edition V5.5**
  - **WebSphere Portal Enable V5**
  - **WebSphere Business Integration Message Broker (MQSI V2.2)**
- New*
- New*
- New*
- **WebSphere Host on Demand V7**
  - **WebSphere MQ Everywhere**
  - **WebSphere MQ Client/Server V5.3**
  - **WebSphere Personalization Server**
- New*



## Data Management for Linux on zSeries

- **DB2 Connect Application Server Edition V8.1** 
- **DB2 Connect Enterprise Edition V8.1** 
- **DB2 Connect Unlimited Edition V8.1** 
- DB2 Intelligent Miner Modeling
- DB2 Intelligent Miner Scoring
- DB2 Intelligent Miner Visualization
- DB2 Net Search Extender
- DB2 Net.Data
- DB2 Personal Developer's Edition
- DB2 Runtime Client
- DB2 Spatial Extender
- DB2 Universal Developer's Edition
- **DB2 Universal Database Enterprise Server Edition V8.1** 
- **Informix Dynamic Server V9.4** 
  - ▶ IDS (Database)
  - ▶ 4GL (Development tools)
  - ▶ CSDK (Client SW Dev Kit)
  - ▶ ISA (Informix Server Administrator management tool)
- U2 Unidata

## DB2 Connect

- DB2 Connect Enterprise Edition
  - ▶ Priced per server PLUS per user (not Web applications)
- DB2 Connect Unlimited Edition
  - ▶ Priced per DB2 host sysplex PLUS per MSU
- **DB2 Connect Application Server Edition V8.1**
  - ▶ DB2 Connect Application Server Edition license charges are based on the number of processors available to web or application servers that use DB2 Connect
- DB2 Connect includes
  - ▶ DB2 Application Development Client
  - ▶ DB2 Administration Client
  - ▶ DB2 Run-Time Client
  - ▶ WebSphere Studio Site Developer Edition
  - ▶ WebSphere MQSeries


## IDS 9.4 for Linux on zSeries



- **Informix Dynamic Server V9.4**
  - ▶ The most scalable and highest performing IDS ever produced
- **Provides an excellent upgrade path for:**
  - ▶ Linux customers needing a high-performance, Internet-scalable data management system
  - ▶ Customers wishing to consolidate or centralize their data processing environments
- **Fully implemented 64-bit architecture**
  - ▶ Removes the 31-bit limitations from files, file systems, and applications
  - ▶ Reduces the work of the application programmer by removing the design constraints inherent in 31-bit architectures
- **ISA (Informix Server Administrator)**
  - ▶ Component of IDS
  - ▶ Front-end administrative tool
- **CSDK (Client SW Development Kit)**
  - ▶ Run time version included in IDS
  - ▶ Offers a single packaging of several APIs needed to develop applications for Informix servers
- **4GL and ISQL**
  - ▶ Rapid application development tool suited for 7 to 9 upgrades
  - ▶ The majority of IDS applications are written in 4GL



<http://www-3.ibm.com/software/data/informix/linux4zs/>

## Lotus Domino for Linux on zSeries

- **Domino V6.5 for Linux on zSeries**
  - ▶ Announced at LinuxWorld 2003 with availability in 2H03
  - ▶ Same version as offered on z/OS
  - ▶ Runs natively on Linux on zSeries or as a guest under z/VM®
  - ▶ Supports a range of end-user clients
    - Lotus Notes 6.5 and earlier versions
    - Lotus Domino Web Access (browser access using Internet Explorer and Mozilla)
    - Lotus Domino Access for Microsoft Outlook
  - ▶ Based on United Linux V1.0 Service Pack 2
    - 2.4.19 Kernel
    - 2.2.5 glibc
    - gcc 3.2 compiler
  - ▶ Working with Red Hat for support
  - ▶ Generally available since
    - September 30, 2003, for electronic delivery
    - November 7, 2003, on media and with documentation
- **Offers Integration with IBM Lotus Instant Messaging (Sametime)**
- **Domino for Linux on zSeries is the most scalable Domino Linux solution**
  - ▶ Using sys\_epoll based Domino Thread Pools; this Domino Thread Pool support by Linux for zSeries is a scalability enhancement over Domino on Intel solutions 
    - Developed by IBM Linux Technology Center
    - Approved for 2.6 Kernel Standard
    - Backported to 2.4 Kernel (available to major distributors)
    - Overcomes barrier to single instance Intel Linux scalability

New

## Tivoli for Linux on zSeries

- Tivoli Access Manager for e-business V4.1
- Tivoli Access Manager for Operating Systems V4.1
- Tivoli Configuration Manager V4.2
- Tivoli Management Framework V4.1
- Tivoli Enterprise Console V3.8
- Tivoli Identity Manager (client) V1.1
- Tivoli Provisioning Manager V1.1
- Tivoli Monitoring V5.1.1
- Tivoli Risk Manager (client) V4.1
- Tivoli Software Distribution
- **Tivoli Storage Manager V5.2**
  - ▶ Client available now
  - ▶ Server available now (Open FCP support) 
- Tivoli Switch Analyzer
- **Tivoli System Automation for Linux V1.1** 
- Tivoli Workload Scheduler V8.1



# IBM Tivoli System Automation for Linux

Tivoli

Provides Policy-based Application and Resource Self-healing

- **Powerful and flexible cluster-wide policy can reduce complexity, implementation time, coding, and support effort**
  - ▶ System heart-beat; monitor, start, stop, and recover resources like processes, applications, network adapters, file systems, ...
  - ▶ Grouping of resources into business applications (SAP)
  - ▶ Comprehensive relationships include collocation / anti-collocation
- **Manages business application availability by:**
  - ▶ Fast detection of outage through monitoring
  - ▶ Sophisticated knowledge about application components and their relationships
  - ▶ Quick and consistent recovery of failed resources and whole applications either in place or on another system in a Linux cluster
- **Rollout**
  - ▶ Linux on IBM @server xSeries™ and zSeries in 2/2003
  - ▶ Full z/VM and SAP 64-bit support in 4/2003
  - ▶ Future e2e automation of IBM @server -wide e-business applications
  - ▶ Integration of existing automation via open adapters

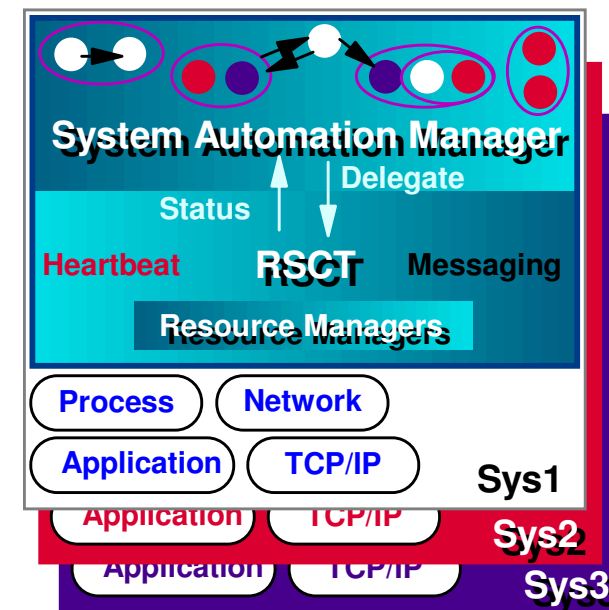


Tivoli

# IBM Tivoli System Automation for Linux

## Application Areas

- IBM Tivoli System Automation for Linux can provide HA for all applications on the Linux for zSeries platform
- Key application areas, with high need for HA are:
  - ▶ Enterprise Resource Planning (such as SAP)
  - ▶ Web Application Servers (such as WebSphere, BEA WebLogic)
  - ▶ Financial Applications (such as Sanchez)
- Other application areas, depending on customer specific needs are:
  - ▶ File/Print Server
  - ▶ Mail Server
  - ▶ Other Infrastructure Servers
- [ibm.com/software/tivoli/products/sys-auto-linux](http://ibm.com/software/tivoli/products/sys-auto-linux)



# Agenda

- Mainframe Charter and Linux
- IBM @server™ Integrated Platform for e-business on zSeries
- Linux Distribution Partners
- IBM Middleware
- **ISV Products & Solutions**
- Miscellaneous Topics



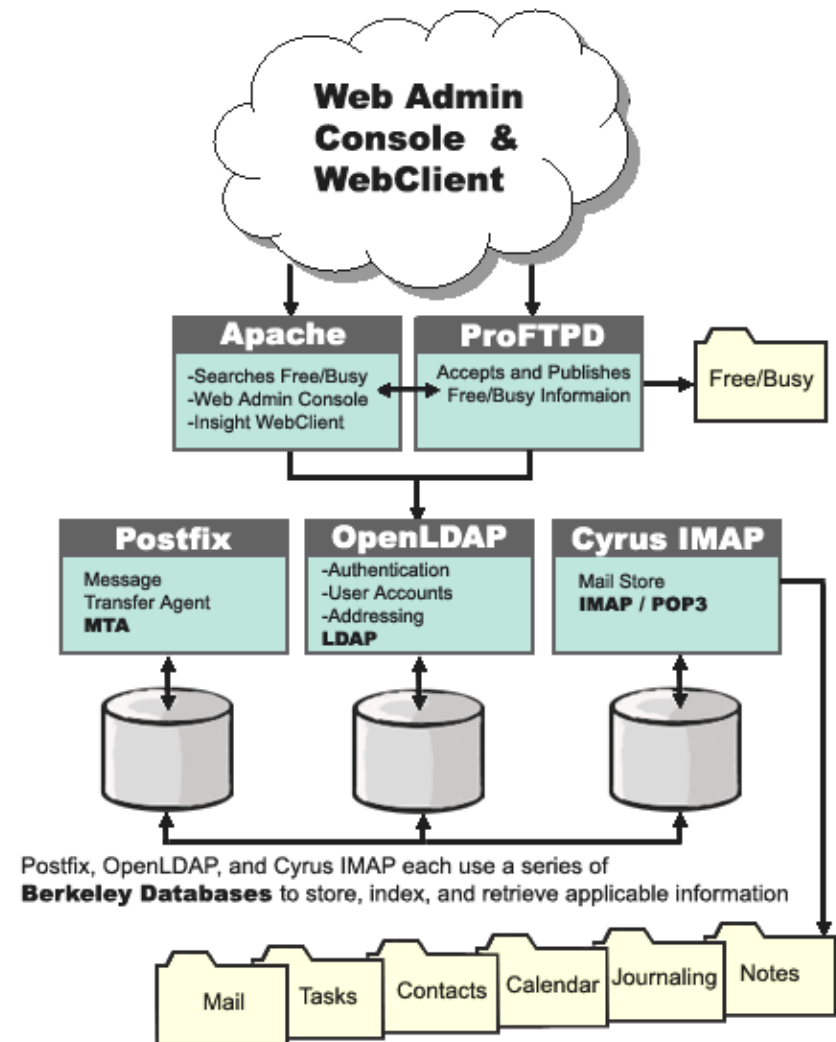
## ISVs supporting Linux on zSeries



- **353 applications available from 171 vendors**
  - ▶ [ibm.com/servers/eserver/zseries/solutions/s390da/linuxisv.html](http://ibm.com/servers/eserver/zseries/solutions/s390da/linuxisv.html)

## Bynari InsightServer

- ▶ **Insight Server**
  - ▶ facilitates complete messaging and collaboration capabilities on all IBM platforms
- ▶ **InsightConnector**
  - ▶ is an MS Exchange client extension that allows MS Outlook to use InsightServer to store messages, calendar events, contacts and other Outlook groupware functions
- ▶ **Insight AddressBook client**
  - ▶ the address book for Outlook provides functionality similar to the Exchange Global Address List.
- ▶ **Insight WebClient**
  - ▶ is a Web browser client that integrates with Outlook clients and provides groupware functions like calendaring, contacts, and public folders, over the Web.

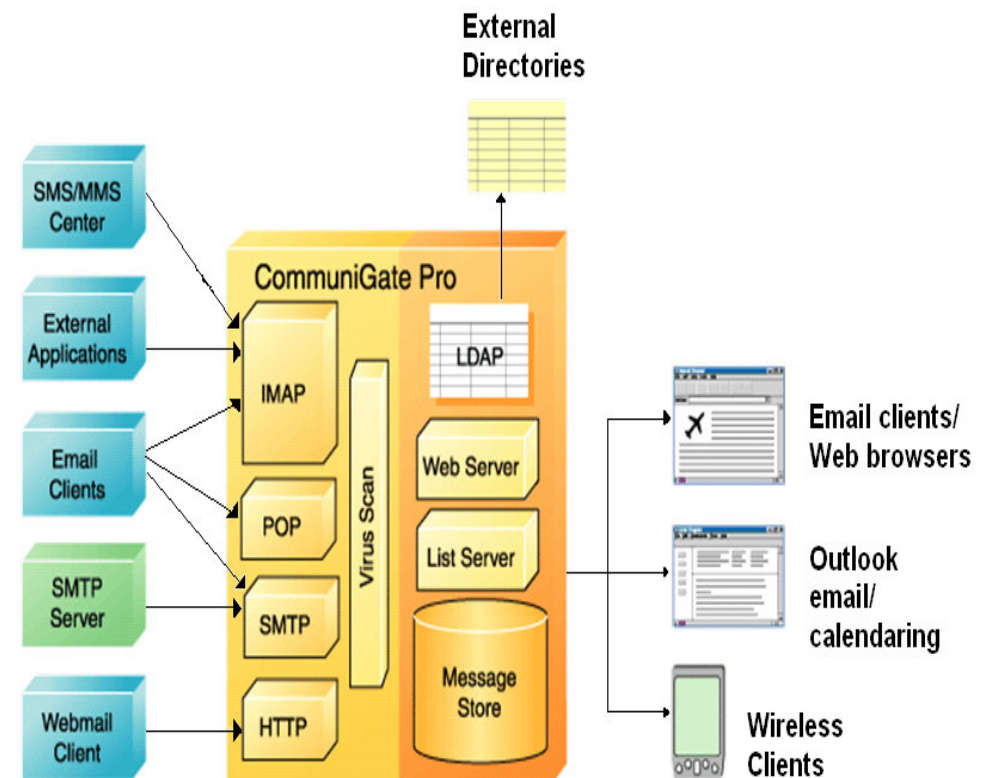






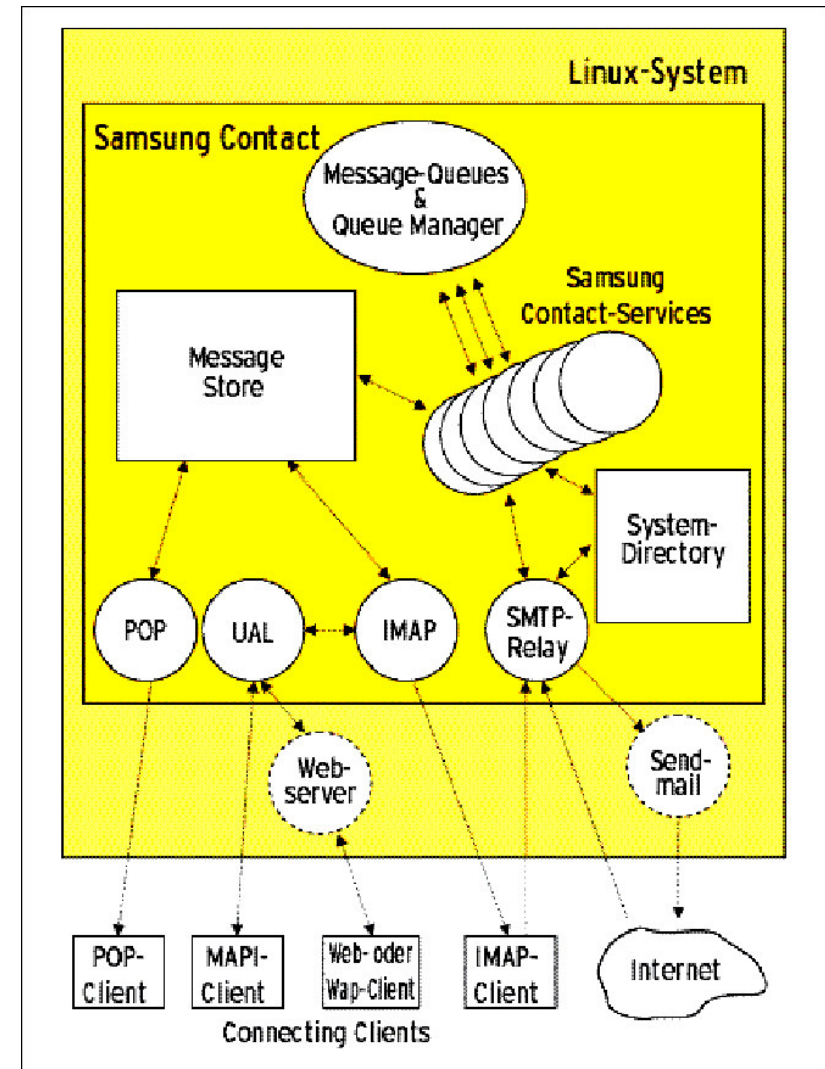
## Stalker CommuniGate Pro

- ▶ **CommuniGate Pro**
  - ▶ supports messaging standards such as SMTP, POP, and IMAP
  - ▶ offers the functionality of shared folders, WebMail, LDAP directory, personal Web pages, mailing lists, and anti-spam / anti-virus protection
- ▶ **CommuniGate Pro with Groupware**
  - ▶ released October 2002
  - ▶ supports e-Mail, C&S and group scheduling using Microsoft Outlook's advanced functionality, and via its integrated Web-based interface
- ▶ **CommuniGate Pro MAPI Connector**
  - ▶ should be installed on Microsoft Outlook client workstations in order to use CommuniGate Pro Groupware Server as the "service provider"



## Samsung Contact

- ▶ **Samsung Contact**
  - ▶ released in March 2003
  - ▶ based on Hewlett Packard (HP) OpenMail
  - ▶ the messaging server is an e-mail and general communications solution that runs on Linux, IBM AIX, HP-UX, and Sun Solaris
  - ▶ offers the same level of access through Web, Windows, and Linux clients
  - ▶ provides server level calendar and PIM (Personal Information Manager – e.g. handheld PC or Palm) access

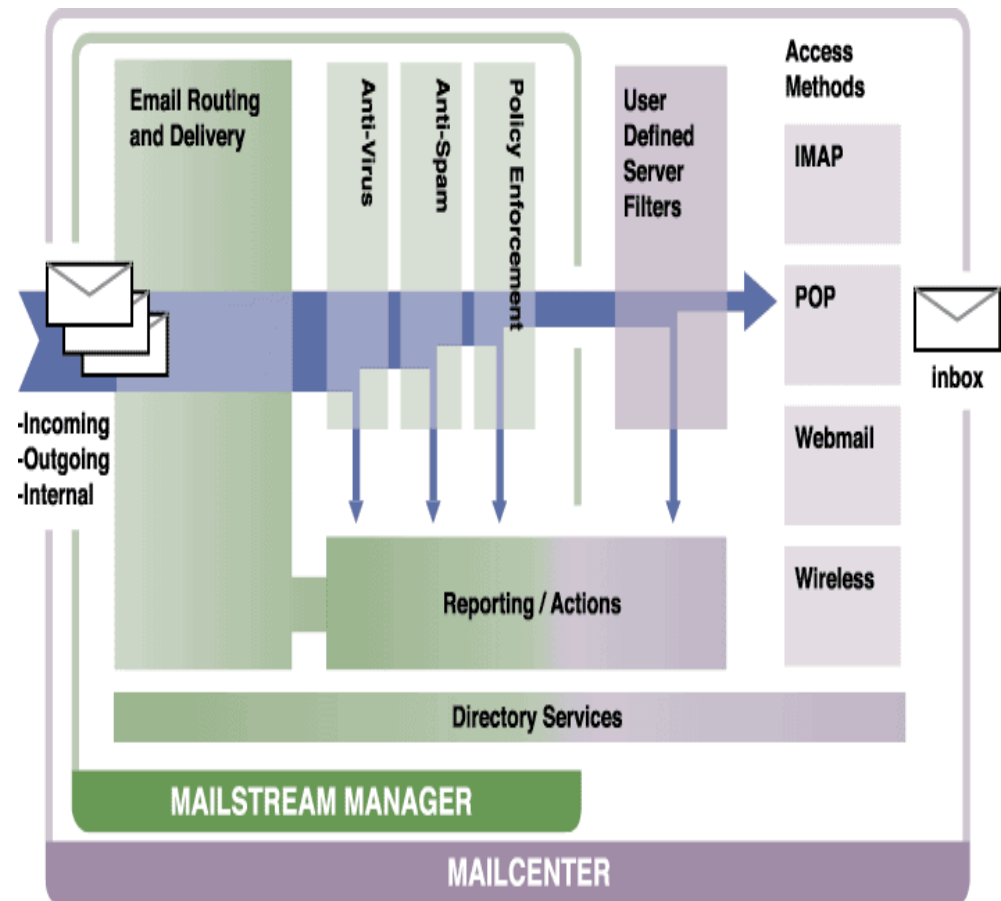


# Sendmail Mailcenter



SENDMAIL®

- ▶ **Sendmail Mailcenter**
  - ▶ combines all the components necessary to deploy a complete or extend an existing e-Mail system of any size
- ▶ **Sendmail Advanced Message Server (SAMS)**
  - ▶ the sophisticated indexing and caching capabilities of SAMS' fast, multithreaded POP and IMAP access servers optimize performance and maximize concurrency
- ▶ **Sendmail Mobile Message Server (SMMS)**
  - ▶ carrier-class, flexible scalable Webmail and wireless solution providing users the freedom to access messages from anywhere anytime







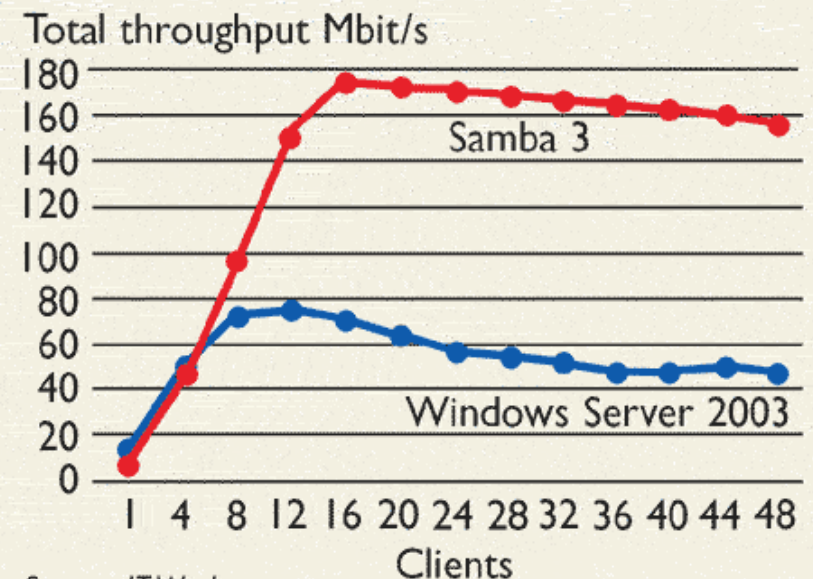
## SAMBA V3

- **Active Directory Services support**
  - ▶ Samba can join Active Directory domain as member server
  - ▶ Authenticate users using LDAP / Kerberos
  - ▶ No support for trees and forests
- **Unicode and multibyte character support**
- **Full Windows NT 4.0 PDC support**
  - ▶ NT Domain trusts support - Samba V3 includes 2 Security Account Manager (SAM) solutions
  - ▶ NT 4 style domain trust relationship
- **Better Windows 2000/XP/2003 printing support**
  - ▶ Includes publishing printer attribute in AD

Linux for zSeries Distribution	Kernel level	Samba level
SuSE 7.0	2.2.16	2.0.7
SuSE SLES-7	2.4.7	2.2.0a
SuSE SLES-8	2.4.19	2.2.5
Red Hat 7.2	2.4.9	2.2.1a
Red Hat Linux Server 3 Beta 1	2.4.21	3.0 Beta
Debian 3.0	2.4.17	2.2.3a

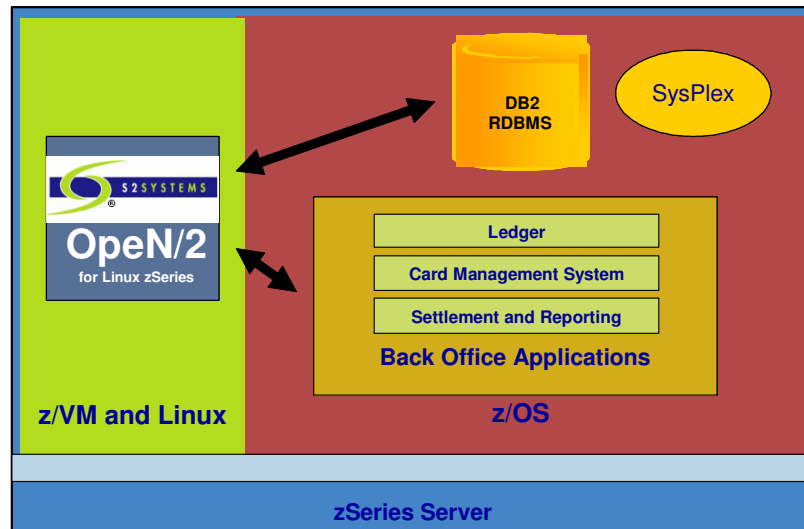
## GA since September 2003

### SAMBA OUTPERFORMS WIN2003



(1) <http://www.samba.org/>

## S2 Systems OpenN/2



### Citi US Merchant

- ▶ Replaced 4 Tandem/Base24 systems with zSeries OpenN/2 for Linux
- ▶ TCO went from \$12M on Tandem/Base24 to \$3.7M on zSeries/Open/2 implementation, 70% savings “No Brainer” (Citi quote)
- ▶ Resulted in activity within Citi EMEA
- ▶ Generic case study available with no-name – however, contact S2 and they can arrange one on one customer call with Citibank

### Why OpenN/2 ?

- ▶ Finance industry has been in a hold status for 10 years, Tandem (ACI) ruled the market, followed by Stratus (ON/2) with regards to Front Office applications (i.e. the EFT processing software)
- ▶ New standards (e.g. Smart Card) and technologies (i.e. Triple DES) require changes in the Front Office solutions
- ▶ FUD around future of Tandem and TCO of Tandem and Stratus solutions cause strain on the dramatically reduced budgets
- ▶ Current (Cobol) technology prohibits rapid development of new business requirement, the industry demands a faster time to market
- ▶ OpenN/2 for Linux on zSeries provides an optimal synergy with the RAS characteristics of the zSeries platform

### American First Credit Union

- ▶ Replaced OCM24 on VSE/ESA with OpenN/2 for Linux on zSeries
- ▶ Justified the purchase and existence of z800-001
- ▶ Back office will remain under VSE/ESA, Front Office will be OpenN/2 for Linux and DB2 for Linux



## IBM Linux Community Development System (LCDS)

- **Opened May 22, 2002**
- **Averaging 15,000 hits per month on the registration page**
- **Over 2,000 registration approvals to date**
- **Currently over 670 active Linux instances**
- **Worldwide Community**
- **Over 80 countries represented**
- **Industries represented include:**
  - ▶ **Film Production**
  - ▶ **Aerospace**
  - ▶ **Pharmaceutical**
  - ▶ **Insurance**
  - ▶ **Banking**
- **To register or review the T&C's:**
  - ▶ **[ibm.com/eserver/zseries/os/linux/lcds/](http://ibm.com/eserver/zseries/os/linux/lcds/)**



**LCDS System:  
9672 G6 Model ZX7  
(10 way processor)  
Memory 32GB**

# Agenda

- Mainframe Charter and Linux
- IBM @server™ Integrated Platform for e-business on zSeries
- Linux Distribution Partners
- IBM Middleware
- ISV Products & Solutions
- **Miscellaneous Topics**



# IBM's and LDP's Linux Support



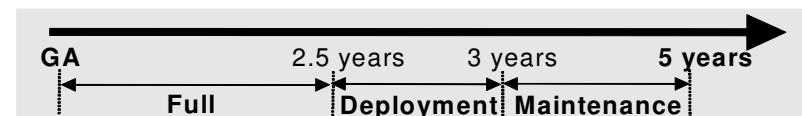
- **IGS Linux Maintenance**
  - ▶ Pro-active
  - ▶ Linux refresh on a quarterly basis
  - ▶ Available for SUSE only
- **IGS Linux Support Line**
  - ▶ Re-active
  - ▶ Problem resolution
  - ▶ "How to" support
  - ▶ Integration into IBM's support structures
  - ▶ Available for SUSE, Red Hat, TurboLinux
- **Wide variety of support options**
  - ▶ Prime shift support
  - ▶ 24x7 support
  - ▶ Voice contact or electronic contact
  - ▶ Inclusion of z/VM, CP, TCP/IP, etc.
- **Dramatically reduced prices for Support Line in North America**

## ■ SUSE Support

- ▶ Need to distinguish between 'Professional Edition' and SLES
- ▶ With SLES 7/8, SuSE maintenance is included in the package
- ▶ Maintenance is good for base CDs only, not for add-on packages
- ▶ Pricing for support contracts depends on # of processors and # of Linux images

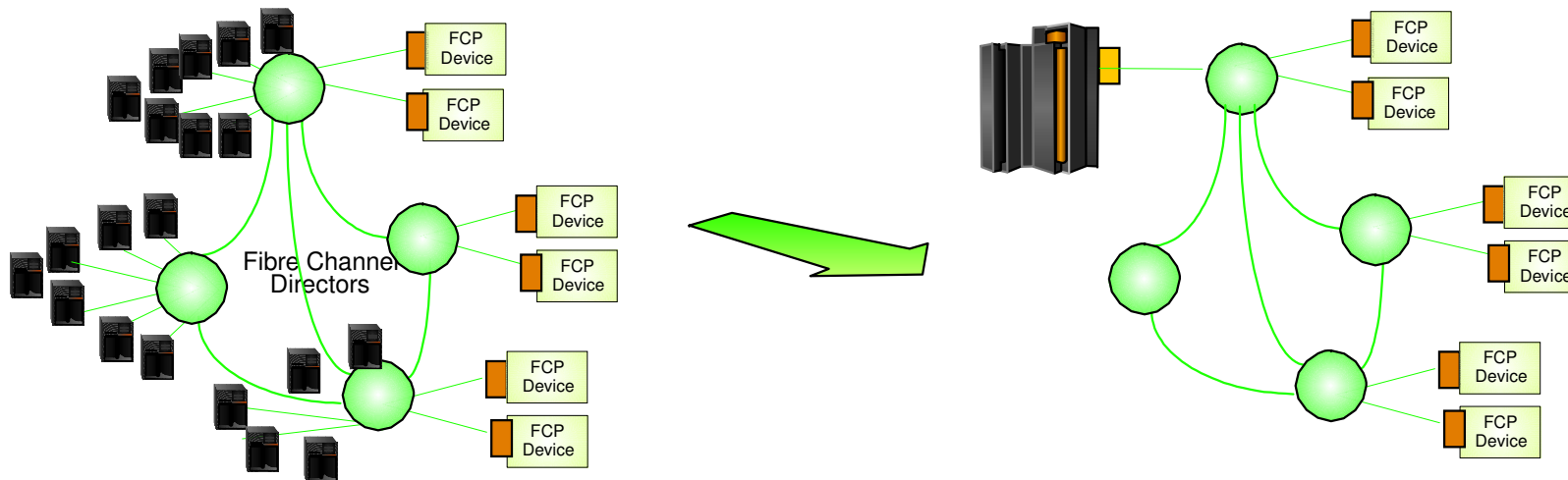
## ■ Red Hat Support

- ▶ RHEL 3 is supported for a full 5 years from product release date
- ▶ There are 3 phases of support:
  - Maintenance: includes security and selected bug fixes
  - Deployment: includes security and bug fixes
  - Full Support: includes security, bug fixes, and hardware updates

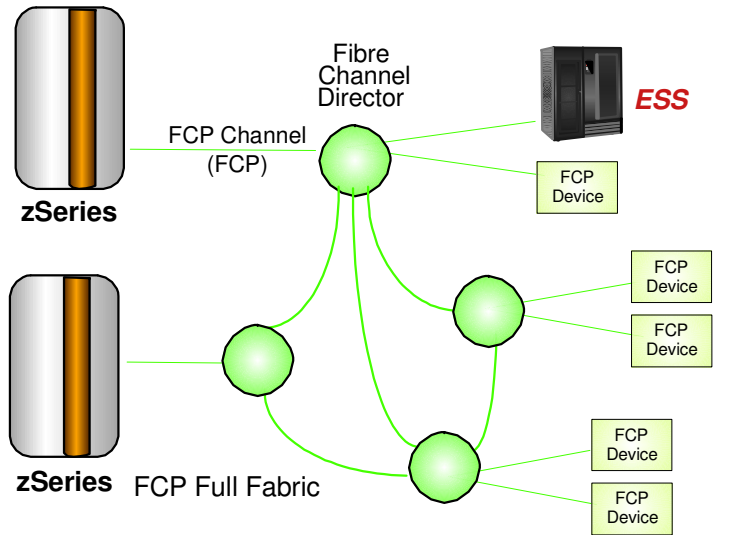


# FCP/SCSI Support for Linux on zSeries

- **More choices for storage solutions for Linux**
  - ▶ In the future many FCP/ SCSI devices to choose from
- **Helps reduce Total Cost of Ownership**
  - ▶ Use existing investment in FCP/ SCSI devices for server consolidation
  - ▶ Use existing fiber cabling and storage network
- **More Info**
  - ▶ <http://www.ibm.com/zseries/connectivity/index.html#fcp>
  - ▶ <http://www.ibm.com/zseries/connectivity/fcp.html>
  - ▶ for FICON see [http://www.ibm.com/zseries/connectivity/ficon\\_linux.html](http://www.ibm.com/zseries/connectivity/ficon_linux.html)



# zSeries FCP/SCSI Attachment Options

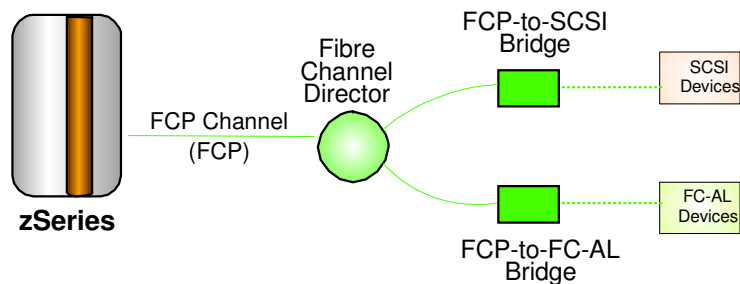


## ■ FCP Full Fabric Connectivity

- ▶ Single vendor fabric
- ▶ Fibre Channel Directors
  - Inrange
  - Brocade
  - McData

## ■ Devices

- ▶ IBM TotalStorage Enterprise Storage Server™
  - IBM 2105 F10 / F20 / 800 (SX, LX)
- ▶ IBM TotalStorage Enterprise Tape System
  - IBM 3590
  - IBM 3494 Tape Library
  - IBM 3583
  - IBM 3584



## ■ FCP to SCSI Bridge

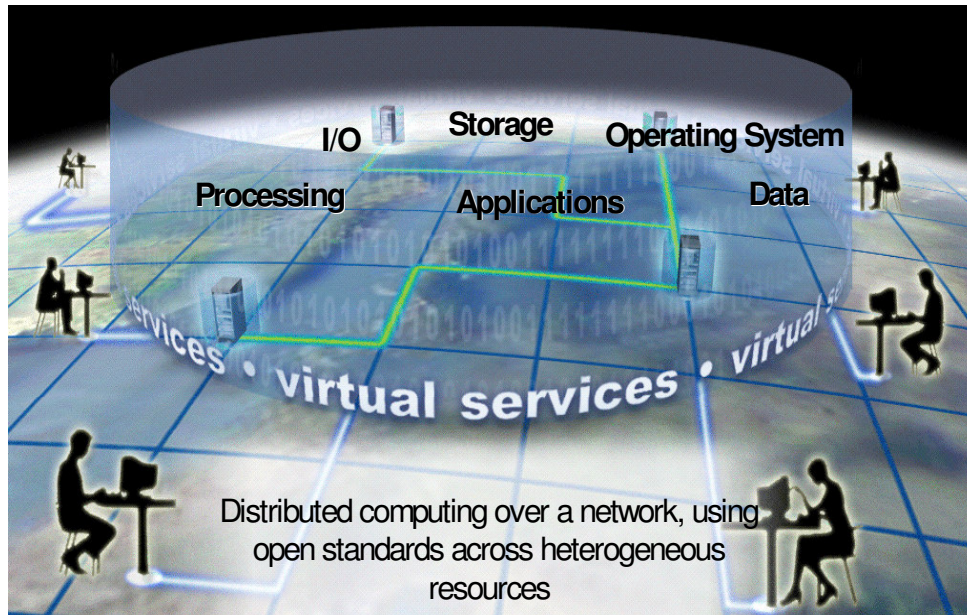
- ▶ FCP-to-SCSI Bridge (via Director)
  - IBM 2108-G07 SAN Data Gateway

No direct attachment to controllers/devices or bridges



# Grid Computing

The first step towards e-Business on Demand



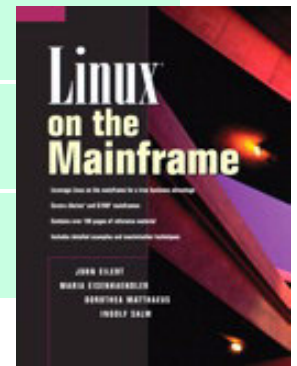
- zSeries can expand the value of the Grid operating environment by providing:
  - High availability and business continuity for Grid infrastructures
  - On demand processing power for applications, new workloads or back-ups
  - Extended reach to mission critical data and transaction resources
  - Quicker deployment of applications because the mainframe is an ideal platform for development, testing and application prototyping

- Middleware offerings supporting Grid Computing on Linux on zSeries:

- DataSynapse LiveCluster 3G™
- Platform LSF
- Platform MultiCluster
- Platform JobScheduler
- Globus™ Toolkit
- IBM Grid Toolbox

## Worthwhile Readings

<b>Success Stories</b>	<a href="http://www.ibm.com/servers/eserver/zseries/os/linux/stories.html">www.ibm.com/servers/eserver/zseries/os/linux/stories.html</a>
<b>Aberdeen Group</b>	InSight, July 2001: "Linux is on the move - Up!" <a href="http://www.aberdeen.com/2001/research/07010008.asp">www.aberdeen.com/2001/research/07010008.asp</a>
<b>Gartner Group</b>	Carl Claunch & John Phelps, March 2002: "Gaining the Non-TCO Benefits of Server Consolidation"
<b>Giga Group</b>	Tony Nievera, July 2002: "Mainframe Linux: What's now, what's next, where to"
<b>Sageza</b>	Clive Longbottom, October 2002: "What's the fuss about ... server consolidation?"
<b>IDC</b>	Damon Kovelsky, December 2002: "Linux in the Capital Markets"
<b>Bloor Research</b>	December 2002: "Linux now Enterprise ready"
<b>IBM White Paper</b>	White paper on Linux on zSeries TCO: <a href="http://www.ibm.com/zseries/library/whitepapers/linux_trilogy.html">www.ibm.com/zseries/library/whitepapers/linux_trilogy.html</a>
<b>IBM Book</b>	Prentice Hall, published in May 2003, ISBN: 0-13-101415-3 "Linux on the Mainframe"



## ITSO Redbooks (1 of 2)

- **ITSO redbooks** ([www.redbooks.ibm.com](http://www.redbooks.ibm.com))
  - ▶ **Linux for S/390, SG24-4987-00**
  - ▶ **Linux for IBM eServer zSeries and S/390: Distributions, SG24-6264-00**
  - ▶ **Linux on IBM eServer zSeries and S/390: ISP/ASP Solutions, SG24-6299-00**
  - ▶ **e-Business Intelligence: Leveraging DB2 for Linux on S/390, SG24-5687-00**
  - ▶ **Business Intelligence: Data Mart Solutions with DB2 for Linux on zSeries, SG24-6294-00**
  - ▶ **Linux on IBM eServer zSeries and S/390: Systems Management, SG24-6820-00**
  - ▶ **Linux on IBM eServer zSeries and S/390: Application Development, SG24-6807-00**
  - ▶ **S/390 Partners in Development: ThinkPad Enabled for S/390, SG24-6507-00**
  - ▶ **Technical Introduction: IBM eServer zSeries 800, SG24-6515-00**
  - ▶ **zSeries HiperSockets, SG24-6816-00**



## ITSO Redbooks (2 of 2)



- **ITSO redbooks** ([www.redbooks.ibm.com](http://www.redbooks.ibm.com))
  - ▶ **Linux on IBM eServer zSeries and S/390: Large Scale Linux Deployment, SG24-6824-00**
  - ▶ **SAP on DB2 UDB for OS/390 and z/OS: Implementing Application Servers on Linux for zSeries, SG24-6847-00**
  - ▶ **zSeries Crypto Guide Update, SG24-6870-00**
  - ▶ **SAP on DB2 UDB for OS/390 and z/OS: High Availability Solution Using System Automation, SG24-6836-00**
  - ▶ **IBM eServer zSeries 990 Technical Introduction, SG24-6863-00**
  - ▶ **Linux Handbook - A Guide to IBM Linux Solutions and Resources, SG24-7000**
  - ▶ **Experiences with Oracle for Linux on zSeries, SG24-6552-00**
  - ▶ **Linux on IBM eServer zSeries and S/390: Performance Measurement and Tuning, SG24-6926-00**
  - ▶ **IBM eServer zSeries Connectivity Handbook, SG24-5444-03**
  - ▶ **IBM eServer zSeries 990 Technical Guide, SG24-6947-00**
  - ▶ **Linux with zSeries and ESS: Essentials, SG24-7025-00**
  - ▶ **IBM Lotus Domino 6.5 for Linux on zSeries Implementation, SG24-7021-00**





## ITSO Redpapers (1 of 2)

- **ITSO redpapers (www.redbooks.ibm.com)**
  - ▶ **High Availability for z/VM and Linux for zSeries**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp0221.pdf>
  - ▶ **Linux on IBM zSeries and S/390: Securing Linux for zSeries with a Central z/OS LDAP Server (RACF)**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp0220.pdf>
  - ▶ **Building Linux Systems Under IBM VM**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp0120.pdf>
  - ▶ **Getting Started with zSeries Fibre Channel Protocol**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp0205.pdf>
  - ▶ **Dimensional Insight Business Intelligence Tool for Linux on zSeries**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp0171.pdf>
  - ▶ **Linux on IBM eServer zSeries and S/390: Cloning Linux Images in z/VM,**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp0301.pdf>
  - ▶ **Linux on IBM eServer zSeries and S/390: Porting LEAF to Linux on zSeries**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp3627.pdf>
  - ▶ **Linux on IBM eServer zSeries and S/390: TCP/IP Broadcast on z/VM Guest LAN** <http://www.redbooks.ibm.com/redpapers/pdfs/redp3596.pdf>





## ITSO Redpapers (2 of 2)



- **ITSO redpapers (www.redbooks.ibm.com)**
  - ▶ **Linux Systems Management Using Aduva Director**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp3599.pdf>
  - ▶ **Linux on IBM eServer zSeries and S/390: Managing a Samba Server from z/VM**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp3604.pdf>
  - ▶ **Tivoli NetView Performance Monitor for TCP/IP 1.4 Using Linux as the Web Server**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp3602.pdf>
  - ▶ **WebSphere Portal installation on Linux for zSeries**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp3699.pdf>
  - ▶ **Linux on IBM eServer zSeries and S/390: VSWITCH and VLAN Features of z/VM 4.4**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp3719.pdf>
  - ▶ **Linux on IBM zSeries and S/390: z/VM Configuration for WebSphere Deployments**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp3661.pdf>
  - ▶ **Linux on IBM eServer zSeries and S/390: Virtual Router Redundancy Protocol on VM Guest LANs**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp3657.pdf>
  - ▶ **Linux on IBM eServer zSeries and S/390: Building SuSE SLES8 Systems under z/VM**  
<http://www.redbooks.ibm.com/redpapers/pdfs/redp3687.pdf>

## ITSO Hints and Tips

- **ITSO hints and tips** ([www.redbooks.ibm.com](http://www.redbooks.ibm.com))
  - ▶ Dynamic management of DASD devices in Linux running on zSeries
  - ▶ Useful TCP/IP and FTP Commands
  - ▶ Linux on IBM eServer zSeries: Configuring gcc as a cross-compiler
  - ▶ Avoiding the PROFILE EXEC when IPLing CMS
  - ▶ Defining a New CP Command Privilege Class
  - ▶ Configuring Logical Volume Management (LVM) on Linux for zSeries
  - ▶ IBM zSeries Linux Fibre Channel Adapter Device Driver Configuration for Tape Devices
  - ▶ Linux on IBM eServer zSeries: Configuring gcc as a cross-compiler
  - ▶ Partitioning DASD for Linux Guests Running under z/VM



## Other good sources of information/tools

- **Samba fileserving on IBM eServer zSeries servers with z/VM, GM13-0250-00**
- **Large Scale Web Serving Consolidation with zSeries servers running Linux and z/VM**  
[http://ibm.com/servers/eserver/zseries/library/whitepapers/large\\_scale\\_web\\_serving.html](http://ibm.com/servers/eserver/zseries/library/whitepapers/large_scale_web_serving.html)
- **Mainframe Linux solutions mature with mySAP.com for IBM eServer zSeries**  
<http://ibm.com/servers/eserver/zseries/library/whitepapers/gigamar19mysaplinuxonz.html>
- **Porting UNIX Applications to Linux - Hints and Tips**  
<http://ibm.com/servers/eserver/zseries/library/techpapers/pdf/gm130115.pdf>
- **Linux for S/390 and zSeries porting hints and tips**  
[http://ibm.com/servers/esdd/articles/linux\\_s390/index.html](http://ibm.com/servers/esdd/articles/linux_s390/index.html)
- **Linux for zSeries Performance Hints and Tips**  
[http://www10.software.ibm.com/developerworks/opensource/linux390/perf\\_hints\\_tips.shtml](http://www10.software.ibm.com/developerworks/opensource/linux390/perf_hints_tips.shtml)



## Where to Start Looking

- **Linux for Big Iron page**
  - ▶ <http://www.linuxvm.org/>
- **LINUX-390 listserv archives**
  - ▶ <http://www.marist.edu/htbin/wlvindex?linux-vm>
  - ▶ <http://www.mail-archive.com/linux-390@vm.marist.edu/index.html>
- **IBM developerWorks for Linux on zSeries**
  - ▶ <http://www10.software.ibm.com/developerworks/opensource/linux390/index.shtml>
- **IBM alphaWorks**
  - ▶ <http://www.alphaworks.ibm.com>
- **IBM Linux on zSeries home page**
  - ▶ <http://www-1.ibm.com/servers/eserver/zseries/os/linux/>  
library, porting tips, ISV software list, links to other relevant sites
- **IBM Portal to begin your planning**
  - ▶ <http://www.ibm.com/servers/enable/linux>
- **IBM Software available by series**
  - ▶ <http://www.ibm.com/software/is/mp/linux/software/pdfs/IBMSoftwareOnLinux.pdf>
- **IBM Linux Education**
  - ▶ <http://www.ibm.com/services/learning/us/catalog/linux>

A pink starburst graphic with the word "New" written inside in yellow text.

New