What's all the Hype on System z?

Linux – System z
Why Linux experts are choosing the System z platform.

What makes System z an outstanding choice for Linux workloads.

Why IT organizations are turning to System z to solve common problems.

Bill Reeder
Linux for System z
Sales and Strategy
206-587-2152
breeder@us.ibm.com
IBM System z  Workload Growth Worldwide

Source: IBM Market Research
What z10 brings to Linux Customers

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

More than 400 Processors!

64 way SMP

I/O DEVICE DRIVERS

336 Power PC processors to control Ficon

Operating System &

PLUS 13 MORE

ESCON Channels
PCICA
PCIXCC

FSP (Cage Controller)
-DCAs
Motor Drives
Service Processors and more

APPLICATION CODE
& SOME OS and Crypto

SYSTEM RESOURCE MGT

Plus…
**Unique Value of IFL, zAAP and zIIP**

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

![IFL Value Increase Chart]

1100% over G5
55% over z9BC

IFL Value Increase

Machine Type

- IFL Capacity
- %IFL Increase
IBM’s Transformation: An Ongoing Journey

IBM Strategic Delivery Model

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

IBM Metrics

<table>
<thead>
<tr>
<th>TECHNOLOGY</th>
<th>1997</th>
<th>Today</th>
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<tbody>
<tr>
<td>CIOs</td>
<td>128</td>
<td>1</td>
</tr>
<tr>
<td>Host data centers</td>
<td>155</td>
<td>7</td>
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<tr>
<td>Web hosting centers</td>
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<td>5</td>
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<tr>
<td>Network</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>Applications</td>
<td>15,000</td>
<td>4,700</td>
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</tbody>
</table>
Applications moving to System z tend to be strategic and mission critical

Application View

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

Linux for System z Choices

Hipersockets 6GB/S

z/VSE  z/VM  Linux  z/OS  z/OS  z/OS

z/VM  LPAR  z/VM  LPAR  LPAR  LPAR

zAAP  CP  CP  CP  CP  IFL  IFL

zIIP  z10
Flexible and Robust Linux Installation

System z (up to 60 partitions)

Examples of Prod Servers
- DB2
- Oracle WebSphere
- Apache
- eMail
- Firewall
- File/Print

Internet

Prod 1 -> Srv1, Srv2, Srv3, Srv4, Srv5, ...
Prod 2
RedHat -> Dev1, Dev2
SUSE
Debian
OSA 1
OSA 2
OSA 3
Firewall
Tape
Internet
Extreme Virtualization and Server Management Leadership

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

• Limited automation
• Labor intensive

*Local Implementation (per site)*
Phase one simplification and administrative cost reduction

Using System z and Linux
To:
Reduce Cost and Improve Effectiveness of Server Management

….. (Formerly REMBO)
eyeOS hosted on System z
Logon screens follow accepted interface rules
Customize it just like your home PC
And all your tools are here
IBM Director for Linux on System z V5.20
With z/VM Center and Software Distribution Premium Edition

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

z/VM Center
• Utility Service Configuration Manager
• z/VM Virtual Server Deployment
• z/VM Server Complexes

Software Distribution Premium Edition
• Software package distribution
Application Layer Performance

Why Applications And Database on System z

Computer Cycles Required

Distributed Architecture

System z Architecture

Application Server

Network

Database

Disk

i/o

Available for More Work

Hypersockets Advantage

Application Server

Database

Disk

i/o

ISV Application Server Options

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

Why Applications And Database on System z

Web Sphere

IBI Web Focus

SAP

INFORMS

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

Michael Bell – Gartner Group

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

Robert Frances Group, January 2006
What Makes Best Fit

- Leverage classic strengths of the System z
  - High availability
  - High i/o bandwidth capabilities
  - Flexibility to run disparate workloads concurrently
  - Requirement for excellent disaster recovery capabilities
  - Security

- Shortening end to end path length for applications
  - Collocation of applications
  - Consolidation of applications from distributed servers
  - Reduction in network traffic
  - Simplification of support model

- Consolidation Effect
  - Power requirements
  - Software costs
  - People Costs
  - Real Estate
  - Workloads requiring EXTREME Flexibility
Best Fit Application Workloads

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

What’s Missing? ‡ Support Infrastructure!

Internet

Intranet

Security Server

Backup Server

Web Server

eMail Server

Application Server

Database Server

This configuration contains 50+ levels of infrastructure
In this configuration, 14+ levels of infrastructure have been eliminated
Net Sales vs. I.T. Percentage of Sales SAP Customer

- Net Sales
- I.T.


Net Sales range from $500,000 to $800,000.

I.T. Percentage of Sales range from 0.00% to 2.00%.
Enabling Technology
Visual MainWin for J2EE, Enterprise & Portal Editions

Mainsoft software has been validated on System z & other eServer platforms.
Domino for Linux on System z, Imagine the Possibilities

**Phase 1**
- **Primary Server**
  - Lotus Domino®
  - Notes Server 6.5
  - Linux System z

**Phase 2**
- **Primary Server**
  - Lotus Domino®
  - Notes Server 6.5
  - Linux System z
- **Mirrored Server**
  - Lotus Domino®
  - Notes Server 6.0
  - z/OS

**Phase 3**
- **Primary Server**
  - Lotus Domino®
  - Notes Server 7.02
  - Linux System z

- Create Mirror
- Synchronize
- Fail Primary
- Upgrade Primary

Move Primary
Upgraded Server To Production

**Notes Client**
System z THE Database and Warehouse Engine
Client Layer
• Design and admin client
• BI / Reporting tools and apps

Application Server

Data Warehouse Server

Source Systems

DB2 for z/OS
IMS
VSAM
RDBMS

MQT
Cube Metadata
Control DB

WebSphere App Server

Admin Console

DB2 for z/OS
IMS
VSAM
RDBMS

Excel
Cognos 8 BI for System z

Design Studio

Cubing Services Engine

SQW Runtime

Linux on System Z Partition / IFL

Windows / Linux

MDX

SQL

JDBC/DB2 Connect

JDBC/DB2 Connect
IBM Cognos 8 BI Architecture
A comunicação entre o CommuniGate Pro e o Web Server da Mcash é feita por meio de socket seguro (SSH Tunnel) com o envio e recebimento de informações programado em API do CommuniGate Pro disponível para Java, Perl ou PHP.
What Makes Good Fit

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

Shortening end to end path length for applications
- Collocation of applications
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- Consolidation Effect
  - Power requirements
  - Software costs
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  - Real Estate
  - Workloads requiring EXTREME flexibility
Good Fit Application Workloads

- UDB (DB2)
- Informix, (IDS)
- Apache web serving
- SAMBA
- TIM/TAM (LDAP Services)
- TSM
- Existing Linux Workloads
DB2, Imagine the Possibilities on Linux for System z

UDB 8.1
UDB V8.2
DB2 V9.1 Native XML

• Spatial Extenders
• Archive Expert
• Test Database Generator
• Net Search Extender
Potentially Difficult Candidates

- ISV and IBM applications that have not yet ported their application to run on Linux on System z
- Applications that by design run at VERY High sustained utilization which I will define here as >95%.
- Stand-Alone single applications as the only Linux for System z applications
- Applications that are to internally sensitive to try and move
  

  This URL is a link to the IBM software running and supported to run under Linux on System z.


- Call and ask if the software is not on one of the two lists above. Call Jeff Noel (POK), Ray Smith (POK), or Bill Reeder (Seattle).
System z ISV Ecosystem as of 1Q 2009

- Over 6,000 applications, from over 1,600 ISVs enabled on the System z platform
  - Over 2,000 applications on z/OS 1.8 and above
    - More than 3,800 for all z/OS releases
  - Over 2,900 applications on Linux on z
    - More than 500 new Linux applications added in 2008
      - Represents 18% growth from 2007
    - Over 150 already added in 2009
IBM Multi-Architecture Virtualization

Federated Hypervisor Support with System z

Enabling “Fit for Purpose” Application Hosting

System z futures: hosting a federation of platform management functions, including:
- Resource monitoring
- Workload management
- Availability management
- Image management
- Energy management

Integrates with hardware management and virtualization functions

Controls hypervisors and management agents on blades

Open integration to enterprise-level management software

= Code that interfaces with hardware control code
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