

# Setting up Linux for a Oracle Data Warehouse Environment and Oracle E-Business Suite Environment

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# Agenda

Setting up Linux Guests for Oracle Development

Challenging rpms

Setting up a minimum size Linux Guest

Database

Fusions Middleware

Setting up for a Large DB or DW environment

Setting up for E-Business Suite

Resources

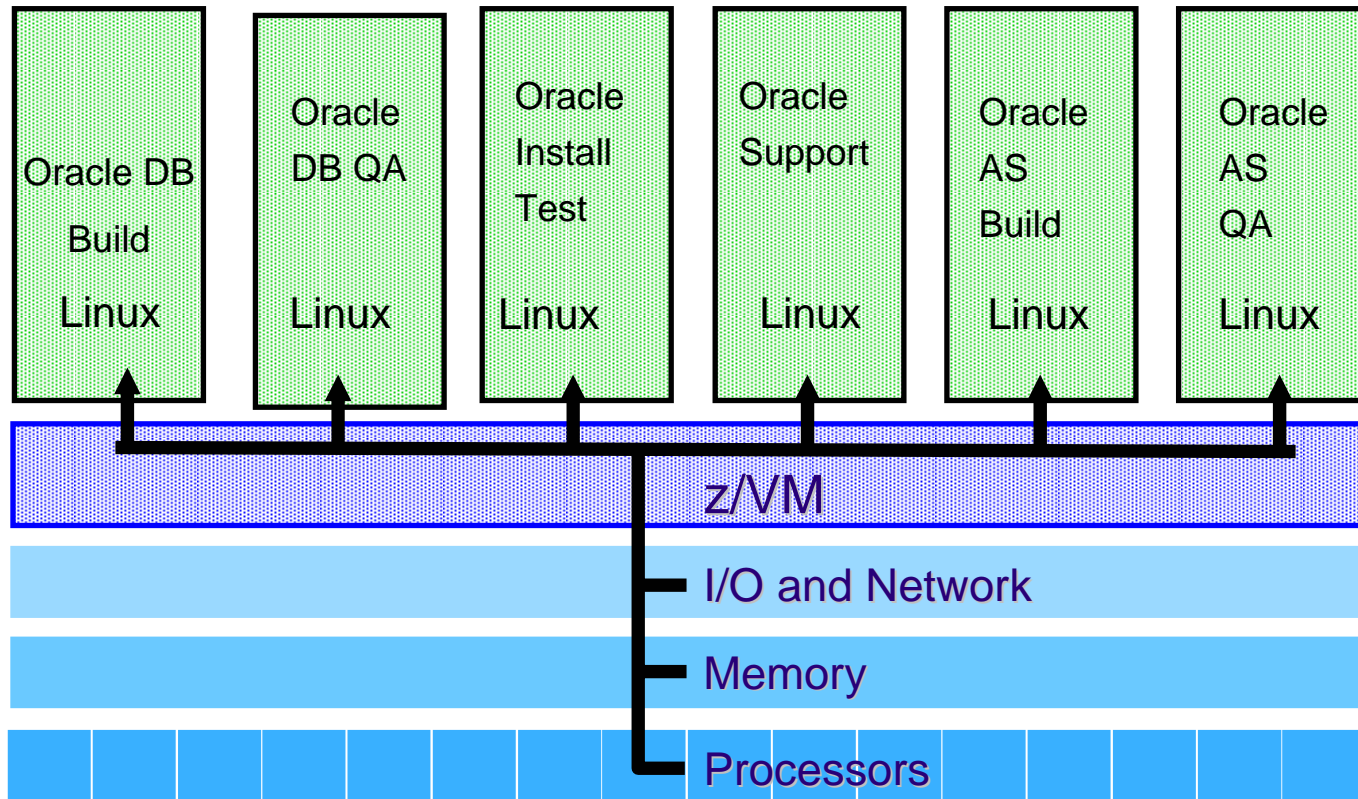
Contacts

# Virtual Machine Partitioning for Oracle DB Development at Oracle

## Efficiently Exploiting the Entire Mainframe Complex

A *Virtual Machine* simulates the existence of a dedicated real machine, including processor functions, storage, and input/output resources.

Up to  
200 guests  
Same  
Specs



Easy to create new images, easy to manage

# Setting up Linux Guest for Oracle

All versions of Linux, SLES9,SLES10, RedHat 4 or RedHat 5

Practice at Oracle is to install all rpms on a

27 GB CKD disk with Linux code

Generally 2 CPUs, 4 GB of memory

Some exception for Build (compile) and stress testing

Few issues with missing rpms

Master guest – clone for the others

Customers want smaller images to save disk space

Recommendations for DB, AS10g, FMW(WebLogic) and EBS now documented in support notes (Metalink)

# Experiences building a minimal size Linux guest

Start with base default installation plus rpms

Can be a painful process if adding rpms one at a time

Hard to locate missing rpms on distro media

RedHat provides packages of rpms to choose from

SLES can more easily choose unique rpms

Need extra rpm and symbolic link

# SLES 10 - libstdc

Filter: Search

**Search:**

libstdc++

Search

Search in

- Name
- Summary
- Description
- RPM "Provides"
- RPM "Requires"

Search Mode:

Contains

Package	Summary	Size
<input checked="" type="checkbox"/> compat-libstdc++	The Old stdc++ Library	1.7
<input checked="" type="checkbox"/> libstdc++	The standard C++ shared library	2.1
<input checked="" type="checkbox"/> libstdc++-devel	Include Files and Libraries mandatory for Development 70.0	70.0
<input type="checkbox"/> libstdc++-doc	Documentation for the GNU C++ standard library	3.9

# SLES 10 – openmotif

Filter: Search

**Search:**  
openmotif Search

Search in:

- Name
- Summary
- Description
- RPM "Provides"
- RPM "Requires"

Search Mode:  
Contains

Package	Summary
<input type="checkbox"/> openmotif	Open Motif
<input checked="" type="checkbox"/> openmotif21-libs-32bit	Open Motif 2.1.30 Libraries
<input type="checkbox"/> openmotif-demo	Open Motif Demo Programs
<input type="checkbox"/> openmotif-devel	Include Files and Libraries mandatory for Development.
<input type="checkbox"/> openmotif-devel-32bit	Include Files and Libraries mandatory for Development.
<input checked="" type="checkbox"/> openmotif-libs	Open Motif Runtime Libraries
<input checked="" type="checkbox"/> openmotif-libs-32bit	Open Motif Runtime Libraries

# SLES 10 - libaio

Filter: Search

**Search:**

libaio

Search

Search in

- Name
- Summary
- Description
- RPM "Provides"
- RPM "Requires"

Search Mode:

Package	Summary
<input checked="" type="checkbox"/> libaio	Linux-Native Asynchronous I/O Access Library
<input checked="" type="checkbox"/> libaio-32bit	Linux-Native Asynchronous I/O Access Library
<input checked="" type="checkbox"/> libaio-devel	Development Files for Linux-native Asynchronous I/O Access
<input checked="" type="checkbox"/> libaio-devel-32bit	Development Files for Linux-native Asynchronous I/O Access



# SLES 10 - gcc

YaST2@DSCVG027

File Package Extras Help

Filter: Search

**Search:**

gcc

Search

Search in

- Name
- Summary
- Description
- RPM "Provides"
- RPM "Requires"

Search Mode:

Contains

Case Sensitive

Name	Disk Usage	Used	Free	Total
/	<div style="width: 15%;"></div> 15%	2.1 GB	11.4 GB	13.5 GB
/scratch	<div style="width: 0%;"></div> 0%	198.4 MB	393.5 GB	393.7 GB

Package	Summary	Size	Avail. Ver.
<input checked="" type="checkbox"/> <b>cpp</b>	The GCC Preprocessor	4.9 M	4.1.2_200
<input checked="" type="checkbox"/> gcc	The GNU C Compiler and Support Files	1.7 M	4.1.2_200
<input checked="" type="checkbox"/> gcc-c++	The GNU C++ Compiler	5.6 M	4.1.2_200
<input type="checkbox"/> gcc-fortran	The GNU Fortran Compiler and Support Files	7.4 M	4.1.2_200
<input type="checkbox"/> gcc-info	GNU Info-Pages for GCC	977.4 K	4.1.2_200
<input type="checkbox"/> gcc-java	The GNU Java Compiler	5.2 M	4.1.2_200
<input type="checkbox"/> gcc-locale	Locale Data for the GNU Compiler Collection	4.9 M	4.1.2_200
<input type="checkbox"/> gcc-objc	GNU Objective C Compiler	5.2 M	4.1.2_200
<input type="checkbox"/> gcc-obj-c++	GNU Objective C++ Compiler	5.4 M	4.1.2_200
<input checked="" type="checkbox"/> libgcc	C compiler runtime library	114.7 K	4.1.2_200
<input type="checkbox"/> libgcj	Java Runtime Library for gcc	40.6 M	4.1.2_200
<input type="checkbox"/> libgcj-32bit	Java Runtime Library for gcc	22.4 M	4.1.2_200

Description    Technical Data    Dependencies    Versions    File List    C

**cpp** - The GCC Preprocessor

This Package contains just the preprocessor that is used by the X11 packages.

Check     Autocheck    Cancel    Accept

# SLES 10 - glibc

Filter: Search
▼

**Search:**

Search in

- Name
- Summary
- Description
- RPM "Provides"
- RPM "Requires"

Search Mode:

Package	Summary	Size
<input checked="" type="checkbox"/> glibc	Standard Shared Libraries (from the GNU C Library)	5.5
<input checked="" type="checkbox"/> glibc-32bit	The 32-bit shared libraries (from the c-library-package)	3.0
<input checked="" type="checkbox"/> glibc-devel	Include Files and Libraries Mandatory for Development	14.0
<input checked="" type="checkbox"/> glibc-devel-32bit	32bit Libraries for the C Compiler	4.8
<input type="checkbox"/> glibc-html	HTML Documentation for the GNU C Library	5.4
<input checked="" type="checkbox"/> glibc-i18ndata	Database Sources for 'locale'	9.1
<input type="checkbox"/> glibc-info	Info Files for the GNU C Library	861.1
<input checked="" type="checkbox"/> glibc-locale	Locale Data for Localized Programs	62.8
<input checked="" type="checkbox"/> glibc-locale-32bit	Locale Data for Localized Programs	5.8
<input type="checkbox"/> glibc-profile	Libc Profiling and Debugging Versions	6.5
<input type="checkbox"/> glibc-profile-32bit	32-bit Libc Profiling and Debugging Versions	4.9

# RHEL 5 - packages



# RHEL 5 - development

Red Hat Enterprise Linux Server 5 installation on host pazxxq01.us.oracle.com

**RED HAT ENTERPRISE LINUX 5**

**Packages In Legacy Software Development**

Some packages associated with this group are not required to be installed but may provide additional functionality. Please choose the packages which you would like to have installed.

- compat-gcc-34 - 3.4.6-4.s390x** - Compatibility GNU Compiler Collection
- compat-gcc-34-c++ - 3.4.6-4.s390x** - C++ support for compatibility compil
- compat-gcc-34-g77 - 3.4.6-4.s390x** - Fortran 77 support for compatibility c
- compat-glibc - 1:2.3.4-2.26.s390x** - Compatibility C library
- compat-libgcc-295 - 2.95.3-85.s390x** - Compatibility 2.95.3 libgcc library
- compat-libstdc++-295 - 2.95.3-85.s390x** - Standard C++ libraries for Red
- compat-libstdc++-33 - 3.2.3-61.s390x** - Compatibility standard C++ librar

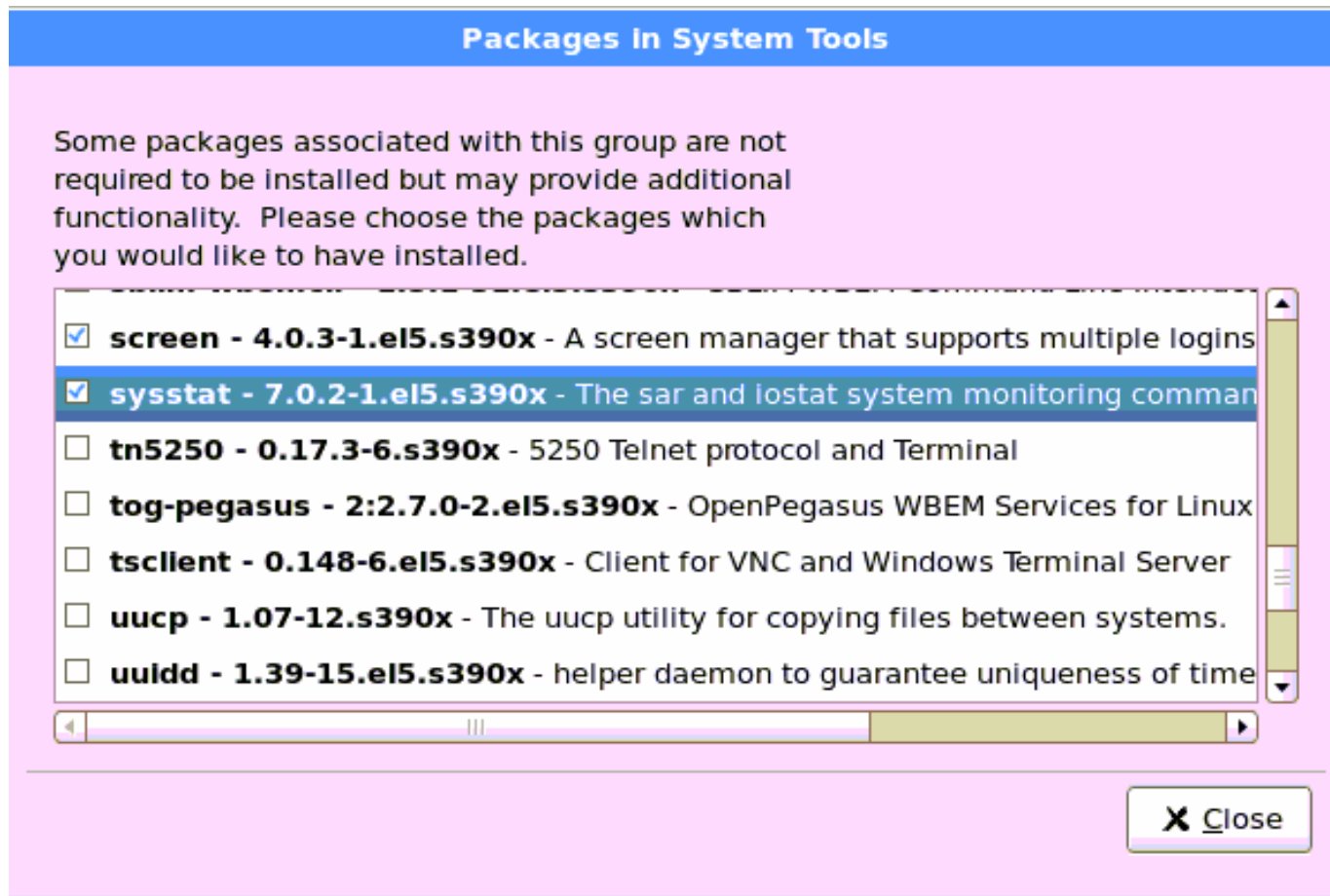
Close

Optional packages

Release Notes

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## RHEL 5 - sysstat



# Challenging to locate rpms

- Special instructions
  - openmotif 2.1
  - libsd.so.2
- Special rpms – might not be used by other solutions
  - gcc
  - libstd
  - 31 bit and 64 bit libraries
  - compat libraries
  - sysstat
- Level of JDK (WebLogic)

# OPENMOTIF for SLES 10

- Older version required
- Available at <http://oss.oracle.com/projects/compat-oracle> ]
- The required RPM is:
  - openmotif21-libs-32bit-2.1.30MLI4-143.2
- As root, you can install this RPM package by issuing the following command:
- `# rpm -i openmotif21-libs-32bit-2.1.30MLI4-143.2.rpm`

# OPENMOTIF for Red Hat

- Available at <http://oss.oracle.com/projects/compat-oracle>
- The required RPMs are :
  - openmotif21-debuginfo-2.1.30-11.RHEL5.s390.rpm
  - openmotif21-2.1.30-11.RHEL5.s390.rpm
- As root, you can install this RPM package by issuing the following command:
- `# rpm -i openmotif21-debuginfo-2.1.30-11.RHEL5.s390.rpm`



# libsd.so.2 file

- Use a symbolic link to provide this library
  - `# ln -s /usr/lib64/libgdbm.so.2.0.0 /usr/lib64/libdb.so.2`
  
- The same was done on the 32 bit lib folder once we found that the 64 bit solution works, so as to make it look identical.
  - `#ln -s /usr/lib/libgdbm.so.2.0.0 /usr/lib/libdb.so.2`
  
- This solution is found under the AS10G certification on X86 and X86-64 platforms documents on metalink Doc ID 564174.1
  
- On SLES 10 we installed the db1-1.85-101.2.s390x.rpm,

# Oracle Support notes for DB rpms

- Note 556906.1 Requirements for Installing Oracle 10gR2 RDBMS on SLES 10 on zLinux (s390x)
- Note 431443.1 Requirements for Installing Oracle 10gR2 RDBMS on SLES 9 on zLinux (s390x)
- Note 741646.1 Requirements for Installing Oracle 10gR2 RDBMS on RHEL 5 on zLinux (s390x)
- Note 420382.1 Requirements for Installing Oracle 10gR2 RDBMS on RHEL 4 on zLinux (s390x)
- Note 420382.1 Requirements for Installing Oracle 10gR2 RDBMS on RHEL 4 on zLinux (s390x)
- Note 401705.1 "Linux x86 and Linux x86-64 Requirements Reference List" includes a pointer to each of these for all platforms.

# DB 10gR2 rpms - RH

- Note 741646.1 Requirements for Installing Oracle 10gR2 RDBMS on RHEL 5 on zLinux (s390x)
- **RHEL 5 Operating System Requirements**

The following packages (or later versions) must be installed on your Linux on System x after a default rpm installation:

- glibc-devel-2.5-24.s390.rpm <<< This "s390" is the 31-bit ARCH. Both ARCH's are required.
- libaio-0.3.106-3.2.s390x.rpm <<< This "s390x" is the 64-bit ARCH. Both ARCH's are required.
- sysstat-7.0.2-1.el5.s390x.rpm
- java-1.4.2-gcj-compat-src-1.4.2.0-40jpp.115.s390x.rpm
- compat-gcc-34-c++-3.4.6-4.s390x.rpm
- compat-gcc-34-3.4.6-4.s390x.rpm
- compat-libstdc++-33-3.2.3-61.s390x.rpm
- compat-libstdc++-295-2.95.3-85.s390x.rpm

# Oracle Support notes for AS rpms

- Oracle Application Server 10g Release 2 (10.1.2) Install Certifications on Linux Platforms [ID 947193.1]
- Two Links in this document list the Linux on z rp,ms
- <https://support.oracle.com/CSP/main/article?cmd=show&type=ATT&id=947193.1:1012-RHEL5-zlin-2>
- <https://support.oracle.com/CSP/main/article?cmd=show&type=ATT&id=947193.1:1012-sles10-zlin-2>

# AS 10g rpms - RH

- Document ID 947193.1 - Oracle Application Server 10g Release 2 (10.1.2) on IBM s390x Z Series (zLinux) with Red Hat Enterprise Linux (RHEL) 5
- **RHEL 5 Operating System Requirements**

The following packages (or later versions) must be installed on your zLinux system:

- binutils-2.16.91.0.5-23.4.s390.rpm
- gcc-4.1.0-28.4.s390.rpm
- gcc-c4.1.0-28.4.s390.rpm
- glibc-devel-2.4-31.2.s390.rpm
- libgcc-4.1.0-28.4.s390.rpm
- libstdc-devel-4.1.0-28.4.s390.rpm
- libstdc4.1.0-28.4.s390.rpm
- make-3.80-202.2.s390.rpm
- compat-db 4.1.25-9.s390.rpm

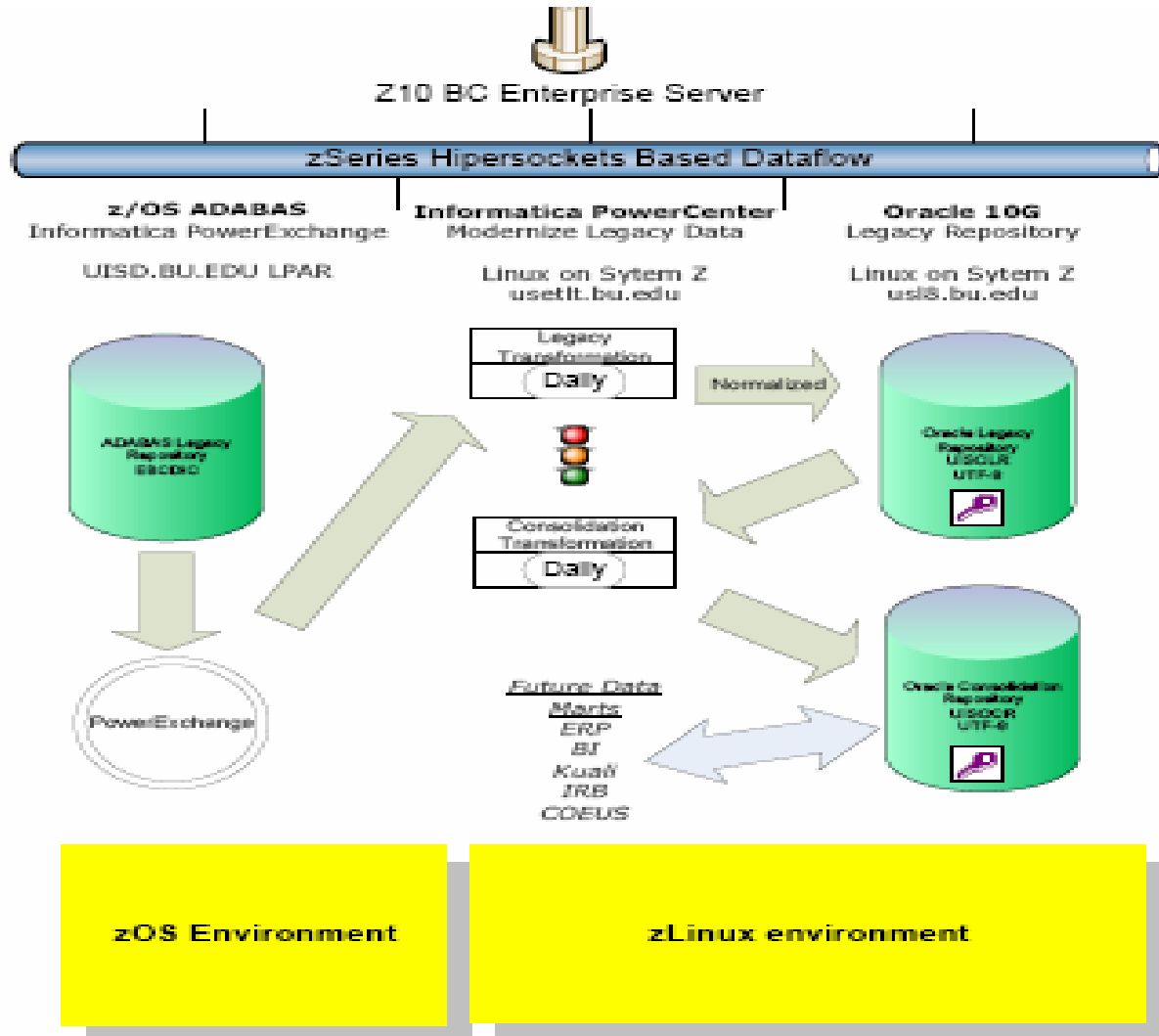
# AS 10g rpms - SLES

- Document ID 947193.1 - Oracle Application Server 10g Release 2 (10.1.2) on IBM s390x Z Series (zLinux) with SUSE Linux Enterprise Server (SLES) 10
- **SLES10 Operating System Requirements**
  - The following packages (or later versions) must be installed on your zLinux system:
    - gcc-4.1.0-28.4.s390.rpm
    - glibc-devel -2.4-31.2.s390.rpm
    - gcc-c++-4.1.0-28.4.s390.rpm
    - libgcc-4.1.0-28.4.s390.rpm
    - libstdc++-devel-4.1.0-28.4.s390.rpm
    - libstdc++-4.1.0-28.4.s390.rpm
    - binutils-2.16.91.0.5-23.4.s390.rpm
    - compat-libstdc++-5.0.7-22.2.s390.rpm
    - compat-2006.1.25-11.2.s390.rpm
    - make-3.80-202.2.s390.rpm

# Set up for a large DB or DW

- Increase values for Linux parameters
  - kernel settings in /etc/sysctl.conf
  - /etc/security/limits.conf set higher number for nproc and nofile
  - /etc/pam.d/login file
  - Set ulimit parameter in Oracle user profile
- Increase values for initora parameters
  - Increase sessions and processes values
- Distribute the data as much as possible on disks, especially the redo logs files
- Continue to monitor the performance of the workload with nmon and find the bottlenecks if there are any through AWR reports.
- Larger tables or fact tables should be partitioned
- Use common sense to apply parallelism only where it will help performance and not hinder it
- Always have accurate Optimizer statistics
- Set only the initialization parameters that you need to
- Avoid undocumented parameters

# Example of large DW





# Oracle E-Business Suite Certification

- Oracle E-Business 11i and R12 are certified for System z Linux in a mixed architecture configuration
- Only most current release of E-Business Suite
  - EBS 11i - 11.5.10.2
  - EBS R12 – 12.0 and 12.1
- Certified on the following Linux Distributions
  - Novell SuSE SLES9 and SLES10
  - Red Hat Enterprise EL4 and EL5
- Full port Status
  - E-Business R12.x will be available in 2010 to run fully on Linux on IBM System z with 10.2.0.4 Database

# Setting up Linux Guest on z for E-Business full implementation

This solution will be available in CY2010 – this information is available to help you prepare for using this solution.

Choices are SLES10 or RedHat 5

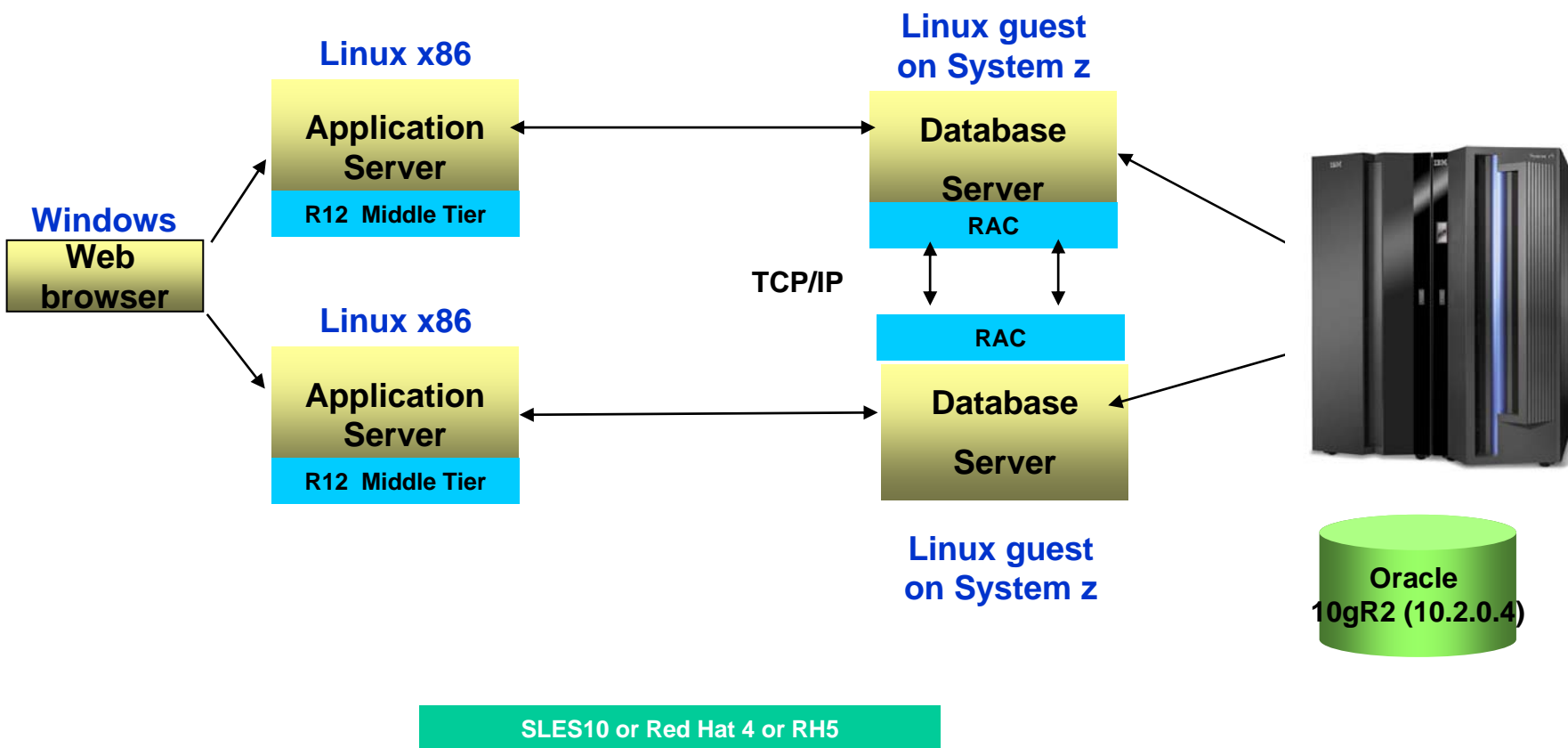
E-Business uses the DB tier and the FMW tier and EBS so extra rpms are required

Base default installation plus rpms

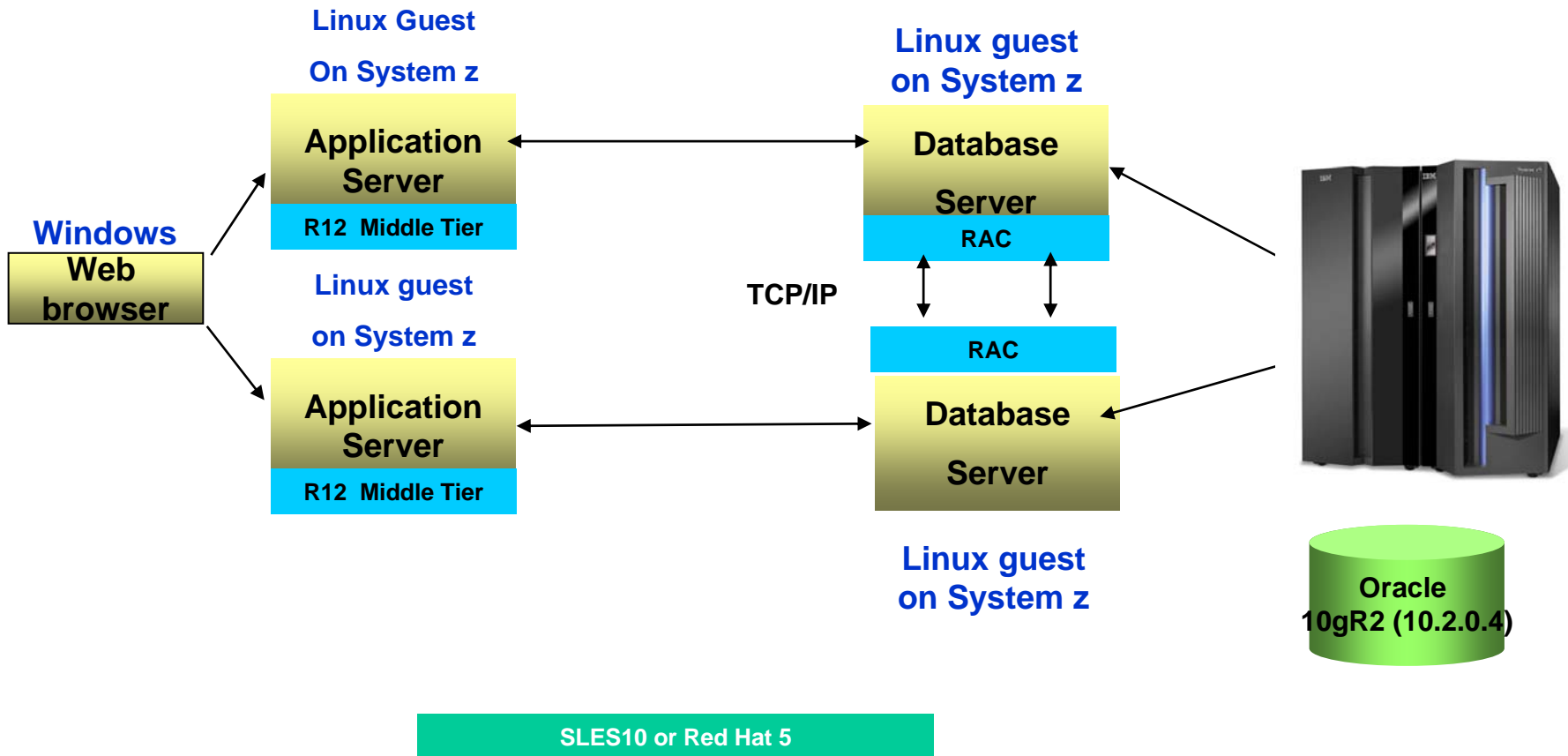
# Oracle Set up for EBS

- Support notes being developed
- E-Business uses DB and AS so both sets of rpms will be required
- Red Hat 5 installation documented in
- SG24-7634-00 Experiences with Oracle Solutions on Linux for IBM System z at [www.redbooks.ibm.com](http://www.redbooks.ibm.com)
- SLES 10 installation being documented for redpiece for 3Q

# Oracle E-Business Suite R12 Mixed Architecture with DB RAC on Linux on IBM System z

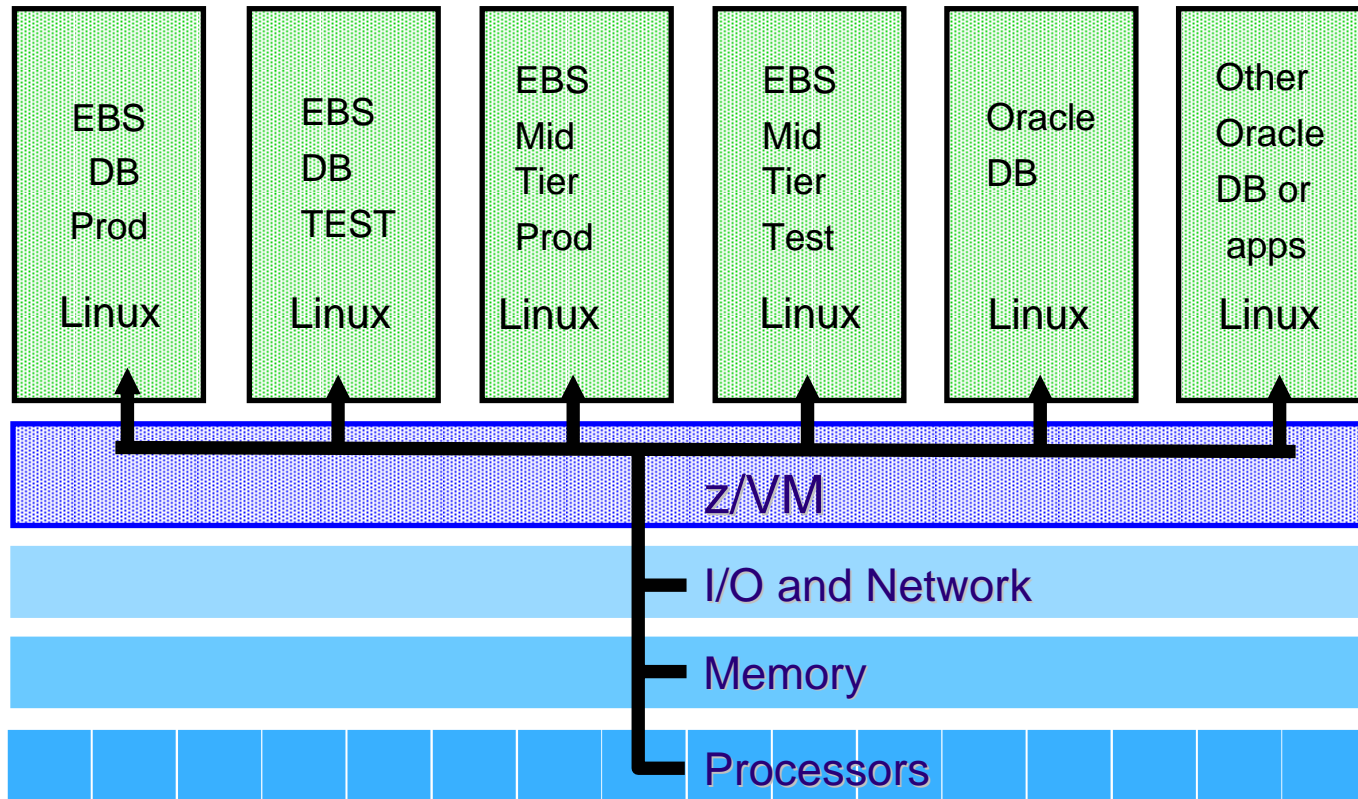


# Oracle E-Business Suite R12 Architecture with Middle Tier on Linux on IBM System z Later in 2010



# Virtual Machine Partitioning for EBS

Efficiently Exploiting the Entire Mainframe Complex



Easy to create new images, easy to manage

# Sizing for E-Business Suite on z

- Sizing
  - If this is an existing implementation, use the server consolidation method
  - If this is a new implementation, Techline can provide the sizing questionnaire and give guidelines on resources required

# Resources

- <http://www.ibm.com/redbooks>
  - SG24-6482-00 Experiences with Oracle Database 10g on Linux for zSeries
  - SG24-7191-00 Experiences with Oracle 10gR2 Solutions on Linux for System z
  - SG24-7573-00 Using Oracle Solutions on Linux on System z
  - SG24-7634-00 Experiences with Oracle Solutions on Linux for IBM System z



# IBM Technical and Sales Resources at Collaborate

- Sales
  - Gaylan Braselton, [gbrasel@us.ibm.com](mailto:gbrasel@us.ibm.com)
- Technical Sales
  - Tom Kennelly, [kennelly@us.ibm.com](mailto:kennelly@us.ibm.com)
- International Competency Center
  - Kathryn Arrell [kathryns@us.ibm.com](mailto:kathryns@us.ibm.com)
- North American Technical Support
  - Sam Amsavelu – [samvelu@us.ibm.com](mailto:samvelu@us.ibm.com)
  - David Simpson – [simpson.dave@us.ibm.com](mailto:simpson.dave@us.ibm.com)
  - Tim Thompson (Mgr) – [timt@us.ibm.com](mailto:timt@us.ibm.com)

Questions???