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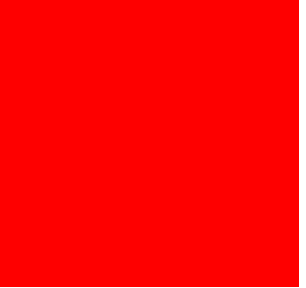
Session 254 Installing and Tuning Oracle 11.2.0.3 on RedHat 6 on Linux on IBM System z

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Damian Gallagher

Senior Technical Lead, Linux on IBM System Z Support

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Agenda

- Linux prerequisites
- Oracle Installation
- Tuning
- Q&A
- Close



Essential Reading

Experiences with Oracle 11gR2 on Linux on System Z

<http://www.redbooks.ibm.com/abstracts/sg248104.html?Open>

Everything you need to install, operate, tune, migrate... All in one place, written by a joint IBM and Oracle team from real world experiences

Free !!

Essential Reading

Note 1306465.1 - Getting Started - 11gR2 Grid Infrastructure, ASM and DB (IBM: Linux on System z)

Note 1290644.1 - Requirements for Installing Oracle 11gR2 on SLES11 on IBM: Linux on System z (s390x)

Also review note: OHASD fails to start on SuSE 11 SP2 on IBM: Linux on System z [ID 1476511.1]

Note 1470834.1 - Requirements for Installing Oracle 11gR2 on RHEL 6 on IBM: Linux on System z (s390x)

Note 1086769.1 - Ensure you have prerequisite rpms to install Oracle Database and AS10g(midtier) on IBM: Linux on System z (s390x)

Essential Reading

Note 1377392.1 - How to Manually Configure Disk Storage devices for use with Oracle ASM 11.2 on IBM: Linux on System z Red Hat 6

Note 1459030.1 - 11.2.0.3 Grid Installer Hangs at 75% When Using DASD Softlink Device

Note 1514012.1 - runcluvfy stage -pre crsinst generates reference data is not available for verifying prerequisites for RHEL 6

Determine infrastructure

Determine which Oracle Infrastructure you'll be using:

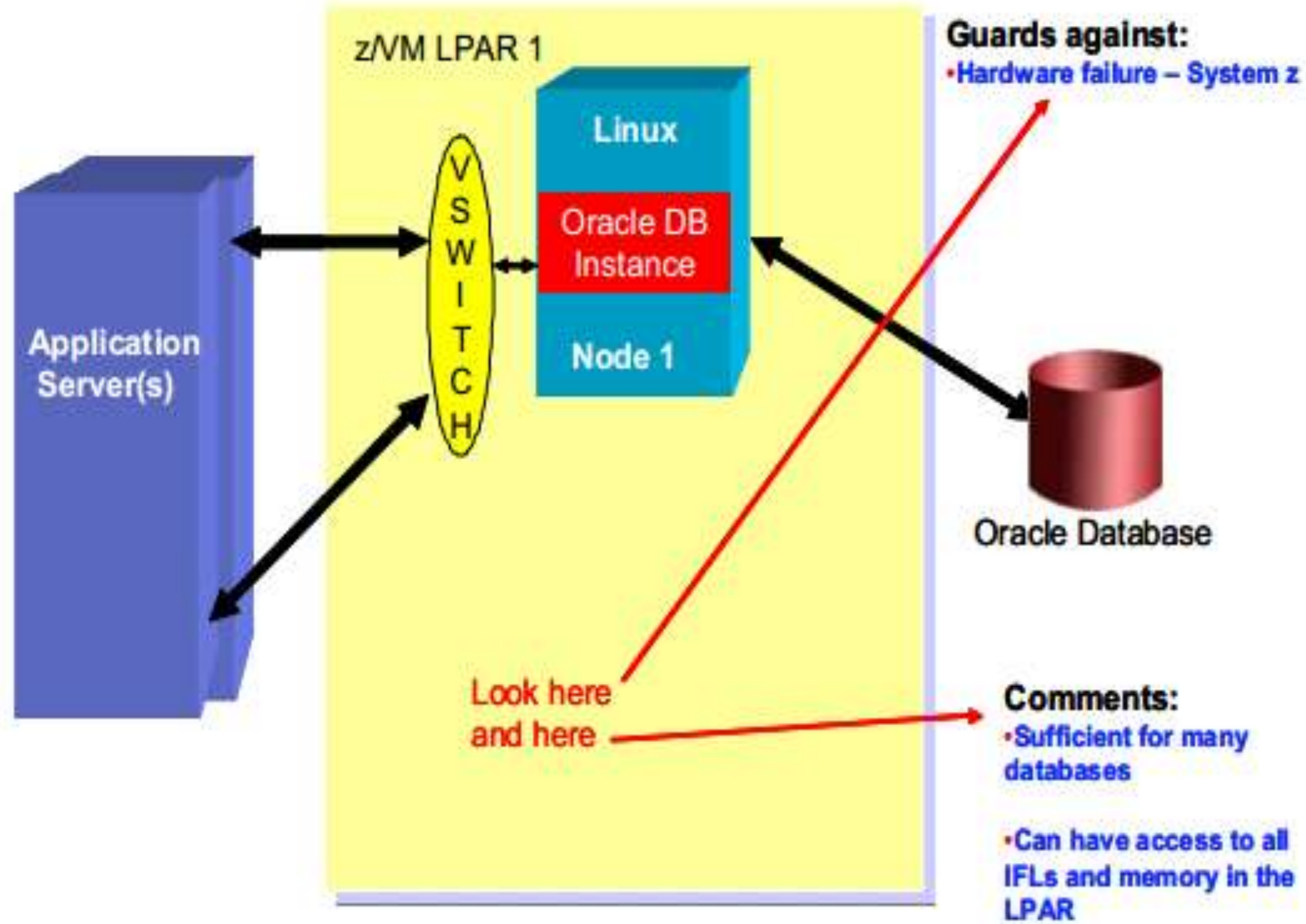
Single Instance

RAC

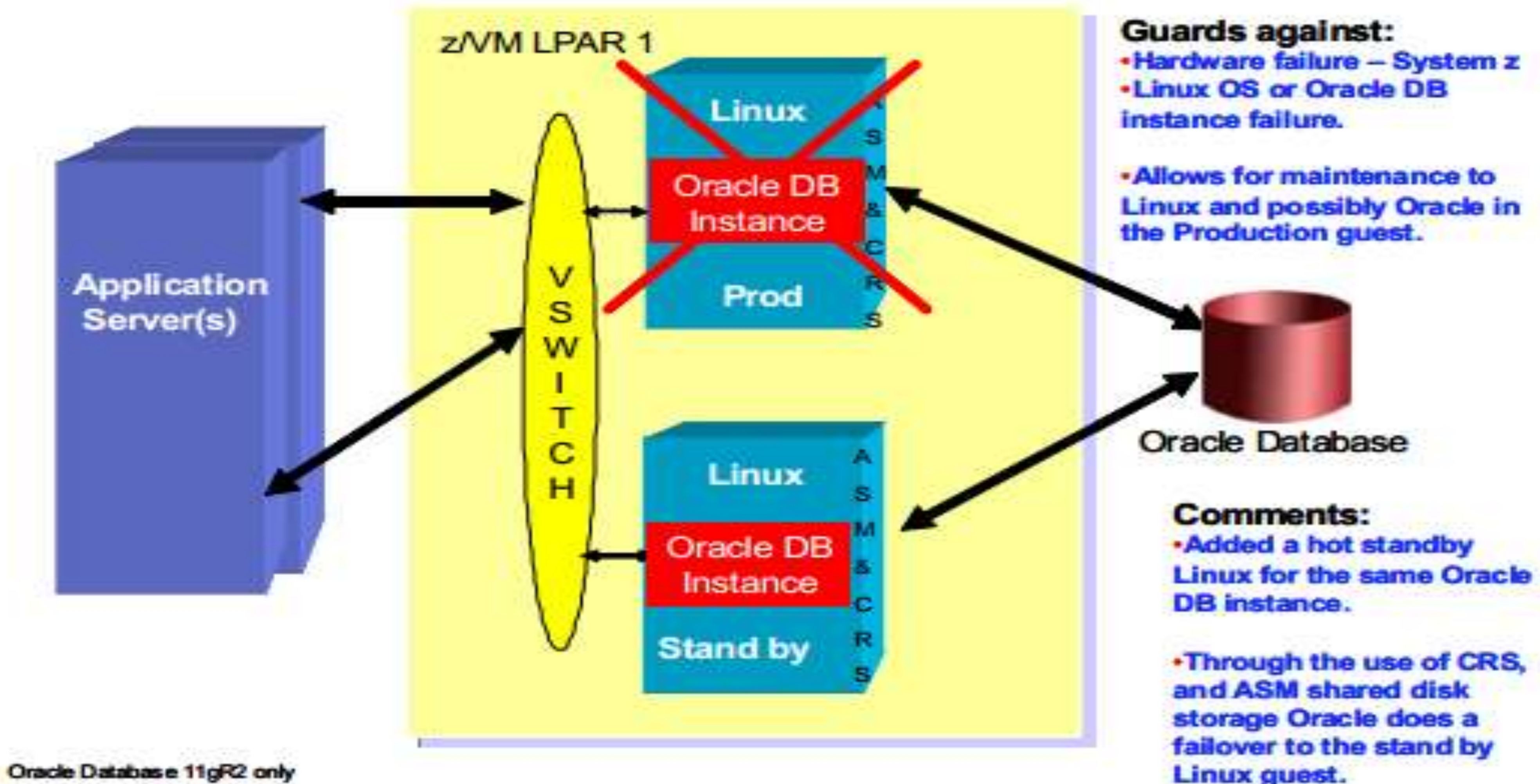
DataGuard

Here are a couple of example

Single Instance



Single Instance with CRS or RAC One-Node



Infrastructure Selection

Full infrastructure discussion has been the subject of a previous presentation

These examples serve to permit you to decide before you start the installation.

I will discuss in detail single instance installation

Linux Prerequisites

- Red Hat 6.2 and above – 6.4 is current
- For 6.3, you should install recommended errata published at
 - <http://rhn.redhat.com/errata/RHSA-2012-1156.html>
- Install additional prerequisite RPMs (see Notes references)
 - `yum install ora-val-rpm-EL6-DB-11.2.0.3-1.s390x.rpm`
- Install a VNC server
- Configure or disable iptables

Modifying the kernel

```
# echo "kernel.shmmni=4096" >>/etc/sysctl.conf
# echo "kernel.sem=250 32000 100 128" >>/etc/sysctl.conf
# echo "fs.file-max=65536" >>/etc/sysctl.conf
# echo "net.ipv4.ip_local_port_range=1024 65000" >>/etc/sysctl.conf
# echo "net.core.rmem_default=1048576" >>/etc/sysctl.conf
# echo "net.core.rmem_max=1048576" >>/etc/sysctl.conf
# echo "net.core.wmem_default=262144" >>/etc/sysctl.conf
# echo "net.core.wmem_max=262144" >>/etc/sysctl.conf
to make these changes take effect issue the following command:
# sysctl -p
```

Modifying the kernel

- Similar changes are required for other kernel configuration files:
- pam.d/login
- limits.conf

- Finally, create the oracle user and the installation groups

Modifying the NTP configuration

- Edit the `/etc/sysconfig/ntp` file and add the `-x` flag
- `#NTPD_OPTIONS="-g -u ntp:ntp"`
- `NTPD_OPTIONS="-x -g -u ntp:ntp"`
- Restart the network time protocol daemon after you complete this task by issuing the following command as the root user:
- `# /sbin/service ntp restart`

Verify SELinux is Permissive or Disabled

Oracle 11gR2 on a RHEL 6 system must have SELinux disabled or set to permissive or else sqlplus will not work properly. To verify your SELinux setting, check the /etc/selinux/config file and ensure the SELinux setting is not set to Enforcing, otherwise specify SELINUX=permissive and reboot:

```
# cat /etc/selinux/config
SELINUX=permissive
SELINUXTYPE=targeted
```

To change dynamically you can run the getenforce command as root to change the SELinux security mode:

```
# getenforce (returns "Enforcing")
# setenforce 0
# getenforce (returns "Permissive")
```


Oracle Installation



Steps

- Obtain the Oracle code
- Install the Oracle code
- Install the latest patch set update
- Create a database - or migrate an existing one

Obtain the Oracle code

- Download Oracle 11.2.0.3 for Linux on System z from <http://support.oracle.com>. You need these two files:

p10404530_112030_Linux-zSer_1of6.zip 1.4 GB

p10404530_112030_Linux-zSer_2of6.zip 1.0 GB

- Oracle Database 11.2.0.3 is a complete replacement for the 11.2.0.2 version so you do not need to perform an upgrade for a fresh install.

Install the Oracle code

- **`./runInstaller -ignoreSysPrereqs`**
 - The code package was built before RH6 was available, so doesn't know it exists ☹️ so we must bypass the environmental checks
 - This is why the RPM Checker install phase is so important – we know we can run without installer checks quite happily
 - You'll still get an 'are you sure', but you can sail on by with impunity

Upgrade to the latest patch set update level

- As a best practice, the next step should be to install the latest patch set update to ensure the Oracle Database code is the current version.
- As of 4Q 2102, the latest DATABASE PATCH SET UPDATE is 11.2.0.3.4 which includes CPUOCT2012. The patch set number is 14275605.

Tuning

- General recommendations only
- Your mileage may vary
- More in my Support Update presentation

Tuning

- Be aware of, install, and use the available tools
- Establish 'normal'
- Tune to a goal

Tuning

- Use AWR judiciously
- Remember that databases are expected to use CPU and perform I/O
- Only tune unacceptable waits

Tuning

- Separate REDO from data
 - Separate disk
 - Separate channel
 - Separate subsystem

Tuning

- Use Hugepages
 - This should be your default
 - Not using it should be an exception

Tuning

- Use session concentrators
 - Shared Servers
 - Middle tier thread multiplication

Tuning

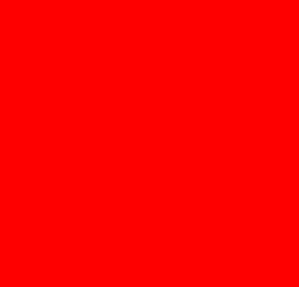
- Use Direct and Asynchronous I/O by setting the Oracle parameters:

`filesystemio_options = SETALL`

`disk_asynch_io = TRUE`

Tuning

- Use the noop or deadline I/O scheduler
- Use I/O calibration or Orion to determine IO bandwidth
- Drive the I/O subsystem hard



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- Bullets