



## Dual VIOS Upgrade walk-through

### PowerVM technical webinar #12 for customers/BPs/IBMerS



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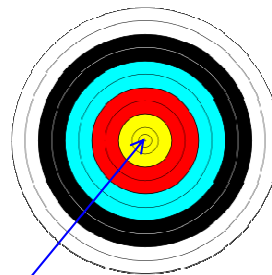
Presentation Version 5

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## Aim of this session

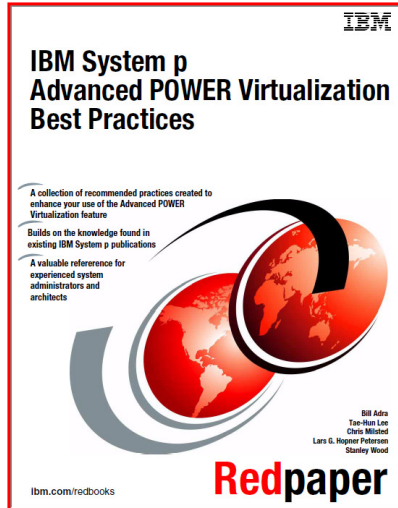
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- Upgrade both VIOS
  - in a Dual VIOS system
  - Non disruptively
- References
- Tips



## Download this Redbook

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### Table of contents

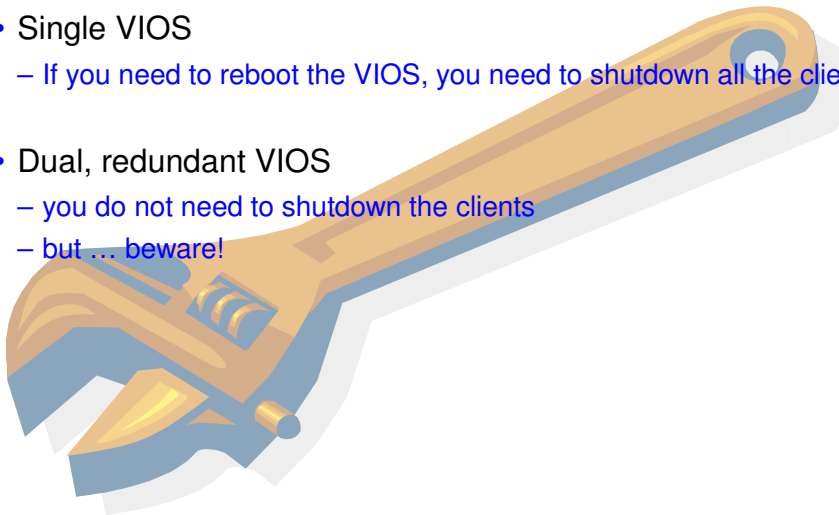
- Chapter 1. Introduction
- Chapter 2. Administration, backup, and restore
- Chapter 3. Networking
- Chapter 4. Storage
- Chapter 5. Performance and planning

<http://www.redbooks.ibm.com/abstracts/redp4194.html>

## Updating a VIOS

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- Single VIOS
  - If you need to reboot the VIOS, you need to shutdown all the clients
- Dual, redundant VIOS
  - you do not need to shutdown the clients
  - but ... beware!



## Updating a VIOS

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- updates are available from FixCentral
  - <http://www-933.ibm.com/support/fixcentral/>
- DO READ THE INSTALLATION INSTRUCTIONS
- Ensure compatibility of HMC, FW, VIOS, AIX/IBM i/Linux
  - Fix Level Recommendation Tool (FLRT)
  - <http://www14.software.ibm.com/webapp/set2/flrt/home>

## Updating a VIOS

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- You cannot necessarily upgrade directly from all releases to the latest
- It may be necessary to go through more than one step
- You need to keep your dual VIOS at compatible levels
  - so carry out each step to each VIOS in turn.
  - ensure that all paths are redundant before starting the other VIOS
  - eg: LVM mirrors are in sync

## Updating a VIOS

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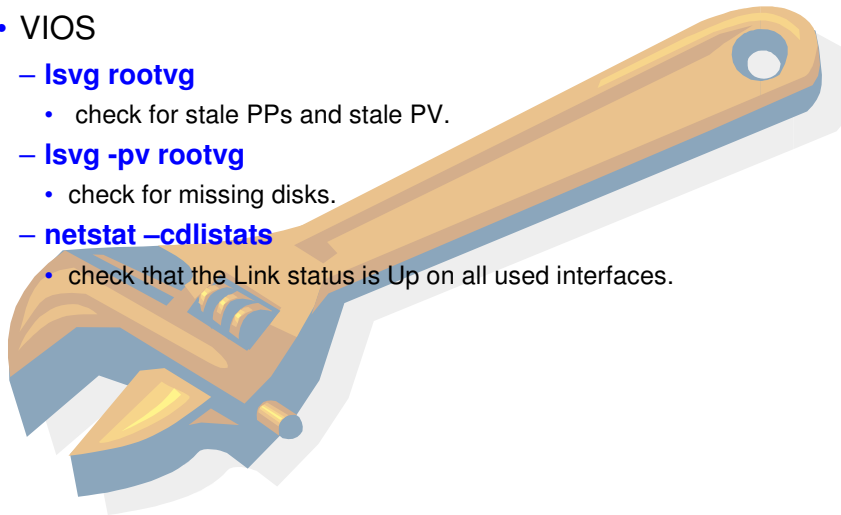
- Avoid complication
- Check/document the environment before upgrading
- Useful commands:



## Updating a VIOS

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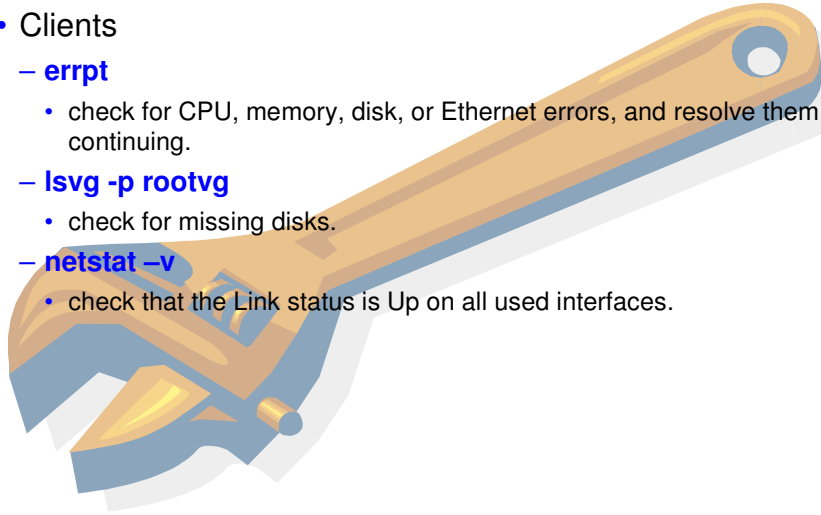
- VIOS
  - **lsvg rootvg**
    - check for stale PPs and stale PV.
  - **lsvg -pv rootvg**
    - check for missing disks.
  - **netstat -cdlistats**
    - check that the Link status is Up on all used interfaces.



## Updating a VIOS

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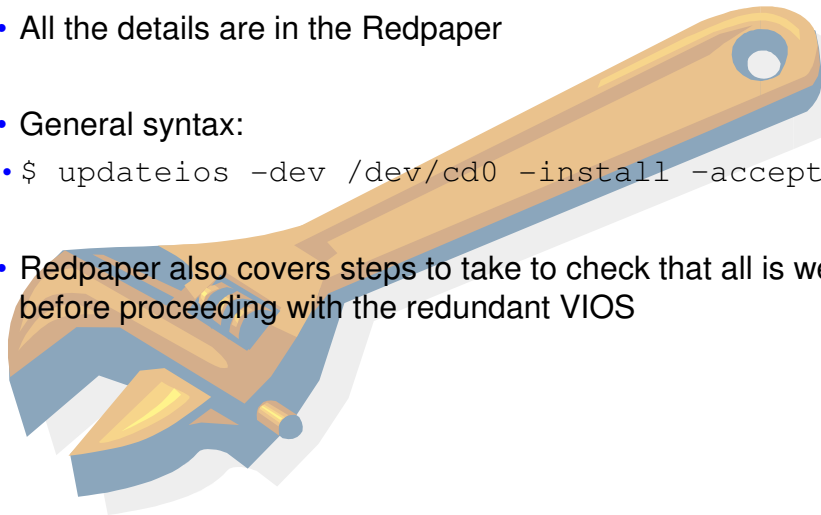
- Clients
  - **errpt**
    - check for CPU, memory, disk, or Ethernet errors, and resolve them before continuing.
  - **lsvg -p rootvg**
    - check for missing disks.
  - **netstat -v**
    - check that the Link status is Up on all used interfaces.



## Updating a VIOS

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- All the details are in the Redpaper
- General syntax:
  - `$ updateios -dev /dev/cd0 -install -accept`
- Redpaper also covers steps to take to check that all is well before proceeding with the redundant VIOS



# System

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- IBM Power 750
- 8233-E8B
- 8 cpus
- 16GB RAM
- I/O drawer



Select	Name	Status	Available Processing Units	Available Memory (GB)	Reference Code
<input type="checkbox"/>	diamond-8233-E8B-SN100271P	Operating	3.4	0.375	
<input type="checkbox"/>	gold-8203-SN10E0A11	Operating	2	6.25	
<input type="checkbox"/>	peach-8233-E8B-SN100272P	Operating	5	8.875	
<input type="checkbox"/>	red-8203-E4A-SN10E0A41	Operating	3.3	10.375	
<input type="checkbox"/>	Server-8231-E1C-SN0659FDR	Operating	0	0	0c31

# LPARs

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Select	Name	ID	Status	Processing Units	Memory (GB)	Active Profile	Environment	Reference Code
<input type="checkbox"/>	peachvio1	15	Running	2	2	normal	Virtual I/O Server	
<input type="checkbox"/>	peachvio2	16	Running	2	2	normal	Virtual I/O Server	
<input type="checkbox"/>	peach3	23	Running	2	2	normal	ADX or Linux	



# VIOS

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```
$ hostname
peachvios1

$ ioslevel
2.1.2.13-FP-22.1 SP-02

$ lsmmap -all -net
SVEA Physloc
-----
ent0 U8233.E8B.100272P-V15-C62-T1

SEA ent3
Backing device ent2
Status Available
Physloc U78A0.001.DNWHG1A-P1-C6-T1

SVEA Physloc
-----
ent1 U8233.E8B.100272P-V15-C99-T1

SEA NO SHARED ETHERNET ADAPTER FOUND

$
```

```
$ hostname
peachvios2

$ ioslevel
2.1.2.13-FP-22.1 SP-02

$ lsmmap -all -net
SVEA Physloc
-----
ent0 U8233.E8B.100272P-V16-C62-T1

SEA ent3
Backing device ent2
Status Available
Physloc U78A0.001.DNWHG1A-P1-C6-T4

SVEA Physloc
-----
ent1 U8233.E8B.100272P-V16-C99-T1

SEA NO SHARED ETHERNET ADAPTER FOUND

$
```

# VIOS

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```
$ lsmmap -all
SVSA Physloc Client Partition ID
-----
vhost0 U8233.E8B.100272P-V15-C23 0x00000017

VTD peach3_1_vtd
Status Available
LUN 0x8100000000000000
Backing device peach3_1_lv
Physloc

$
```

```
$ lsmmap -all
SVSA Physloc Client Partition
ID
-----
vhost0 U8233.E8B.100272P-V16-C23 0x00000017

VTD peach3_0_vtd
Status Available
LUN 0x8100000000000000
Backing device peach3_0_lv
Physloc

$
```

## Client

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```
# hostname
peach3.aixncc.uk.ibm.com
#

# ifconfig -a
en0:
  flags=1e080863,480<UP,BROADCAST,NOTRAILERS,RUNNING,SIMPLEX,MULTICAST,GR0UPRT,64
  BIT,CHECKSUM_OFFLOAD(ACTIVE),CHAIN>
    inet 9.137.62.43 netmask 0xff19ff00 broadcast 9.239.62.255
    tcp_sendspace 262144 tcp_recvspace 262144 rfc1323 1
lo0:
  flags=e08084b,c0<UP,BROADCAST,LOOPBACK,RUNNING,SIMPLEX,MULTICAST,GR0UPRT,64BIT,
  LARGESEND,CHAIN>
    inet 127.0.0.1 netmask 0xff000000 broadcast 127.255.255.255
    inet6 ::1%1/0
    tcp_sendspace 131072 tcp_recvspace 131072 rfc1323 1

# oslevel -s
7100-01-03-1207
#
```



## Client

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```
# lscfg -vpl hdisk0
hdisk0          U8233.E8B.100272P-V23-C15-T1-L810000000000000 Virtual SCSI
Disk Drive

PLATFORM SPECIFIC

Name: disk
Node: disk
Device Type: block

# lscfg -vpl hdisk1
hdisk1          U8233.E8B.100272P-V23-C16-T1-L810000000000000 Virtual SCSI
Disk Drive

PLATFORM SPECIFIC

Name: disk
Node: disk
Device Type: block
#
```





# Client

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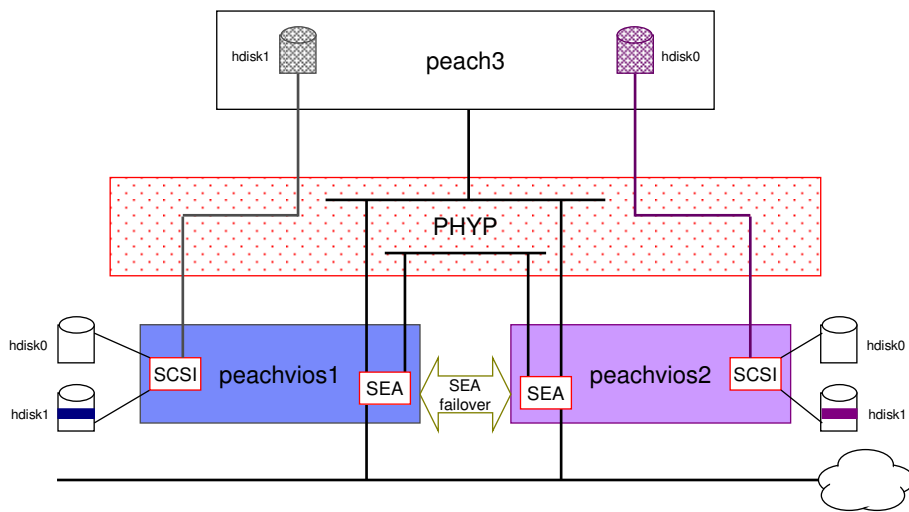
```
# bootlist -m normal -o
hdisk0 blv=hd5 pathid=0
hdisk1 blv=hd5 pathid=0
#

# lsvg -l rootvg
rootvg:
LV NAME          TYPE      LPs    PPs    PVs  LV STATE    MOUNT POINT
hd5              boot      1      2      2    closed/syncd  N/A
hd6              paging    16     32     2    open/syncd    N/A
hd8              jfs2log   1      2      2    open/syncd    N/A
hd4              jfs2      39     78     2    open/syncd    /
hd2              jfs2      128    256    2    open/syncd    /usr
hd9var           jfs2      14     28     2    open/syncd    /var
hd3              jfs2      132    264    2    open/syncd    /tmp
hd1              jfs2      1      2      2    open/syncd    /home
hd10opt          jfs2      11     22     2    open/syncd    /opt
hd11admin        jfs2      4       8      2    open/syncd    /admin
livedump         jfs2      8      16     2    open/syncd    /var/adm/ras/livedump
lg_dumplv        sysdump   32     32     1    closed/syncd  N/A
#
```

```
lsvg -l rootvg | awk '{print $1}' | while read LV
do
lslv -m $LV
done
```

# A picture paints a kiloword

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## Updating a VIOS

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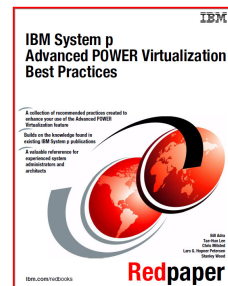
**BACK UP  
THE VIOS  
FIRST**



## BACKUP

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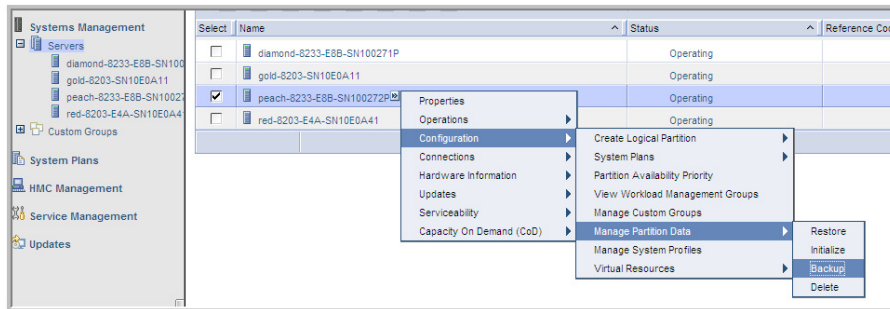
- **All your clients**
  - However you normally do it
- **Resources defined on the Hardware Management Console**
  - Profiles
  - HEA information
- **The VIO Server operating systems (both of them)**
  - backupios
    - tape device
    - optical device
    - file system (local or nfs mounted File System)
  - Client data is not backed up.
- Full details in the **Redbook**



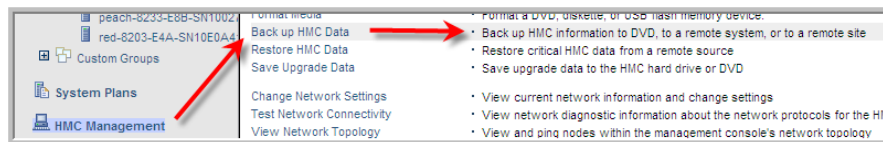
## Backup - Resources defined on the HMC

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- backup the partition information on the HMC



- Save Critical Console Data



## Backing up the Virtual I/O Server to DVD-RAM

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```
$ backupios -cd /dev/cd0 -udf -accept
```

```
Creating information file for volume group volgrp01.
Creating information file for volume group storage01.
Backup in progress. This command can take a considerable amount of time
to complete, please be patient...
Initializing mkcd log: /var/adm/ras/mkcd.log...
Verifying command parameters...
Creating image.data file...
Creating temporary file system: /mkcd/mksysb_image...
Creating mksysb image...
Creating list of files to back up.
Backing up 44933 files.....
44933 of 44933 files (100%)
0512-038 mksysb: Backup Completed Successfully.
Populating the CD or DVD file system...
Copying backup to the CD or DVD file system...
.....
.....
.....
.....
.....
Building chrp boot image...
```

Bootable 😊

## Backing up the VIOS operating system to file

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- **backupios**
- will result in either:
  - A tar file that contains all of the information needed for a restore
  - A **mksysb** image
- Both methods depend on an installation server for restoration.

## tar

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```
$ backupios -file /mnt
Creating information file for volume group storage01.
Creating information file for volume group volgrp01.
Backup in progress. This command can take a considerable amount of time
to complete, please be patient...
$
```



## tar

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- A full backup tar file package
  - including all of the resources that the **installios** command will need to install a Virtual I/O Server
    - **mksysb**,
    - bosinst.data,
    - Network
    - Bootimage
    - SPOT
  - from an HMC using the **installios** command.
- In this example the command argument is a directory
  - the file name will be **nim\_resources.tar**.

## mksysb

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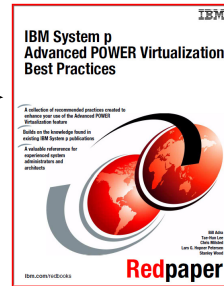
```
$ backupios -file /mnt/VIOS_BACKUP_27Jun2006_1205.mksysb -mksysb
/mnt/VIOS_BACKUP_27Jun2006_1205.mksysb doesn't exist.
Creating /mnt/VIOS_BACKUP_27Jun2006_1205.mksysb
Creating information file for volume group storage01.
Creating information file for volume group volgrp01.
Backup in progress. This command can take a considerable amount of time
to complete, please be patient...
Creating information file (/image.data) for rootvg.
Creating list of files to back up...
Backing up 45016 files.....
45016 of 45016 files (100%)
0512-038 savevg: Backup Completed Successfully.
$
```



## Backing up for DR

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- Many more things to consider
  - or it could be exactly the same ;-)
- Disks and network adapters
  - may be in different slots etc
- The recovery machine could be very different
  - eg: compare p710, p770, p795
- See the **Redbook**



## Restoring

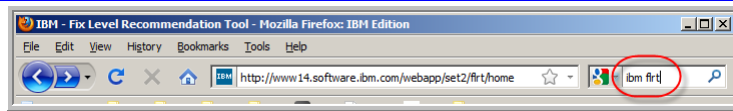
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- Depends on type of backup
- Covered in Redbook
- Similar to doing an install
- An install is actually a restore of a mksysb

Hopefully you will never need to do this

## OK – Let's do it

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### Fix Level Recommendation Tool

The Fix Level Recommendation Tool (FLRT) provides cross-product compatibility information and fix recommendations for IBM products. Use FLRT to plan upgrades of key components or to verify the current health of a system. Enter your current levels of firmware and software to receive a recommendation. When planning upgrades, enter the levels of firmware or software you want to use, so you can verify levels and compatibility across products before you upgrade.

#### OS family

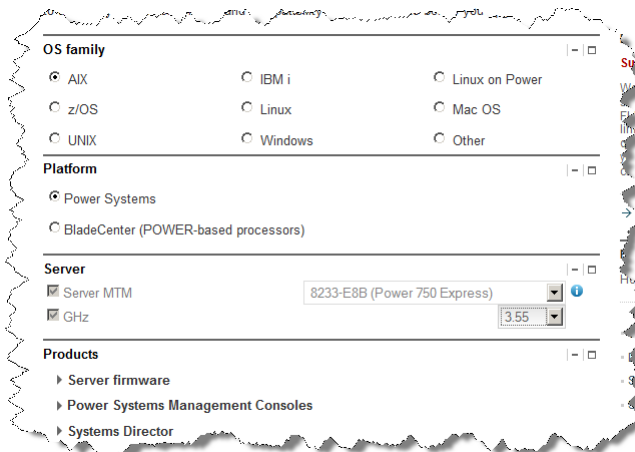
- AIX  IBM i  Linux on Power  
 z/OS  Linux  Mac OS  
 UNIX  Windows  Other

Products supported by this service include software products that run on AIX, IBM i, Linux on Power, select Linux distributions, Windows, z/OS, and select UNIX distributions.

<http://www14.software.ibm.com/webapp/set2/flrt/home>

## FLRT

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**OS family**

AIX  IBM i  Linux on Power  
 z/OS  Linux  Mac OS  
 UNIX  Windows  Other

**Platform**

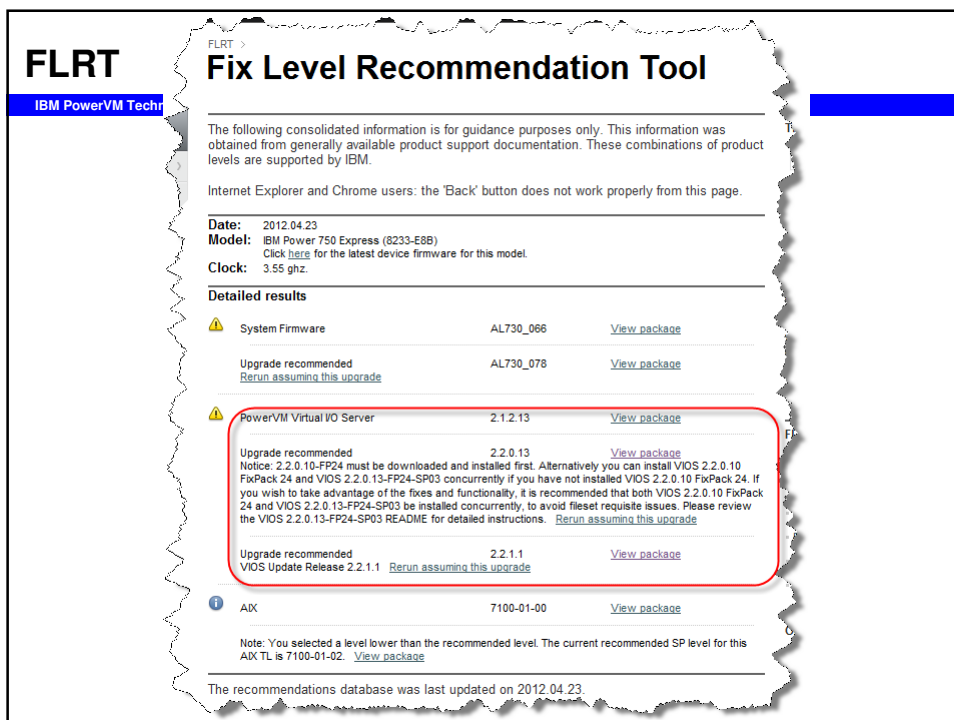
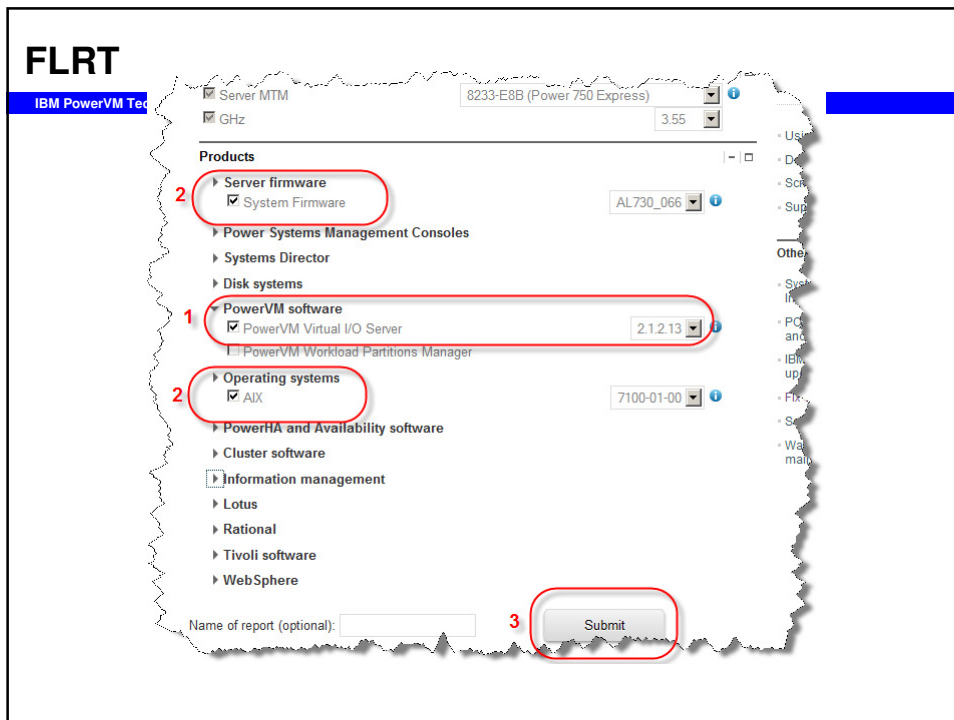
Power Systems  
 BladeCenter (POWER-based processors)

**Server**

Server MTM   
 GHz

**Products**

- ▶ Server firmware
- ▶ Power Systems Management Consoles
- ▶ Systems Director





## Possibly several steps to latest levels

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Upgrade recommended 2.2.0.13 [View package](#)

Notice: 2.2.0.10-FP24 **must be downloaded and installed first.**

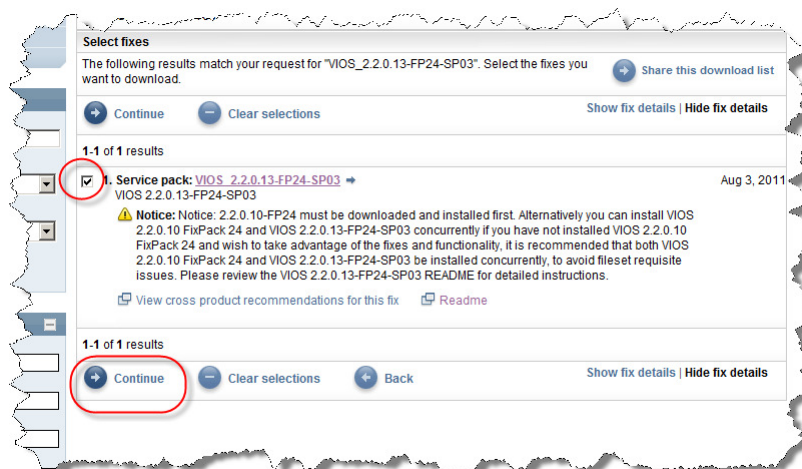
Alternatively you can install VIOS 2.2.0.10 FixPack 24 and VIOS 2.2.0.13-FP24-SP03 concurrently if you have not installed VIOS 2.2.0.10 FixPack 24. If you wish to take advantage of the fixes and functionality, it is recommended that both VIOS 2.2.0.10 FixPack 24 and VIOS 2.2.0.13-FP24-SP03 be installed concurrently, to avoid fileset requisite issues.

**Please review the VIOS 2.2.0.13-FP24-SP03 README for detailed instructions.** [Rerun assuming this upgrade](#)

Upgrade recommended 2.2.1.1 [View package](#)

## Upgrade recommended 2.2.0.13

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## readme - - - PLEASE DO READ IT ALL

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### Installation procedure for combine FP24 and SP03

To install this combined Fix Pack 24 and Service Pack 03, log in to VIOS as *padmin*, and then follow these steps, entering the specified commands.

```
Check the ioslevel
$ ioslevel
```

To apply this Service Pack, the ioslevel must be:

```
2.1.0.0
THROUGH
2.2.0.0
```

We are starting at:  
2.1.2.13-FP-22.1 SP-02

After Fix Pack 24 and Service Pack 03 have been downloaded to the **same** directory, enter the following commands:

```
$ updateios -commit
$ oem_setup_env
# /usr/lib/ppmgr -d <Directory_path> -u -r
# exit
$ updateios -install -accept -dev <Directory_path >
```

If you are upgrading to FP24 + SP03 from VIOS level 2.1.3, run the following command. (Skip to then next step if you are upgrading from a prior level of the VIOS.)

```
$ swrole - PAdmin
```

To load all changes, reboot the VIOS as User **padmin**.

```
$ shutdown -restart
```

After the reboot is complete, verify the correct IOS level by entering the following command:

```
$ ioslevel
2.2.0.13-FP-24 SP-03
```

## Download and copy the two sets together

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```
# ls -l
total 256
drwxr-xr-x  2 root  system   57344 23 Apr 22:26 both
drwxr-xr-x  2 root  system   28672 23 Apr 06:17 VIOS_2.2.0.10-FP24
drwxr-xr-x  2 root  system   36864 23 Apr 06:48 VIOS_2.2.0.13-FP24-SP03
# du -sg both
7.92  both
#
```

```
$ df -gP
Filesystem      GB blocks   Used Available Capacity Mounted on
/dev/hd4         0.25      0.07      0.18      29% /
/dev/hd2         3.25      2.60      0.65      80% /usr
/dev/hd9var      0.75      0.19      0.56      26% /var
/dev/hd3         3.50      0.00      3.50      1% /tmp
/dev/hd1        10.00      3.22      6.78      33% /home
/dev/hd11admin   0.25      0.00      0.25      1% /admin
/proc            -          -          -          - /proc
/dev/hd10opt     1.25      0.88      0.37      71% /opt
/dev/livedump    0.25      0.00      0.25      1% /var/adm/ras/livedump
/dev/VMLibrary   32.00     3.35     28.65     11% /var/vio/VMLibrary
$
```

## Check there is enough room

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```
$ oem_setup_env
# chfs -a size=+10G /home
Filesystem size changed to 41943040
# exit
$

$ df -gP .
Filesystem      GB blocks      Used Available Capacity Mounted on
/dev/hdl         20.00          3.22      16.78      17% /home
$
$ mkdir both
$
```

Then copy the files across – I used scp

## Follow the readme (overcoming the bugs in it ☹ )

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```
$ updateios -commit
There are no uncommitted updates.

$
$ oem_setup_env
# /usr/lib/lppmgr -d /home/padmin/both -u -r
ksh: /usr/lib/lppmgr: not found.
# type lppmgr
lppmgr not found.
# find / -name \*lppm\*
/usr/lib/inst1/lppmgr
#
```

## Use the real command

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```
# /usr/lib/instl/lppmgr -d /home/padmin/both -u -r
lppmgr: Source table of contents location is /home/padmin/both/.toc
lppmgr: Building table of contents in /home/padmin/both ..
lppmgr: Building table of contents completed.
lppmgr: Generating duplicate list..

Results:
===== start list =====
U831382.bff
U832126.bff
===== end list =====

rm: removing /home/padmin/both/U831382.bff
rm: removing /home/padmin/both/U832126.bff
lppmgr: Building table of contents in /home/padmin/both ..
lppmgr: Building table of contents completed.
# exit
$
```

## updateios

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```
$ updateios -install -accept -dev /home/padmin/both
*****
installp PREVIEW: installation will not actually occur.
*****

+-----+
|                               |
|           Pre-installation Verification...           |
|-----+-----+
| Verifying selections...done |
| Verifying requisites...done |
| Results...                  |
|                               |
| WARNINGS                   |
|-----+-----+
| Problems described in this section are not likely to be the source of any |
| immediate or serious failures, but further actions may be necessary or   |
| desired.                      |
|                               |
| Already Installed         |
|-----+-----+
| The following filesets which you selected are either already installed    |
| or effectively installed through superseding filesets.                   |
|                               |
| tpc.rte 4.1.0.97                # TPC Runtime Install Files              |
| tivoli.tsm.client.msg.ZH_TW 6.1.0.0 # TSM Client Messages - Chines...  |
| . . . .                          |
|-----+-----+
|                               |
+-----+
```

## Check conflicts

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### Conflicting Versions of Filesets

The following filesets are conflicting versions of filesets for which there are multiple versions on the installation media. **Since a specific version was not selected, the newest installable version has been selected.**

```
tivoli.tivguid 1.3.3.1           # IBM Tivoli GUID on AIX
sysmgt.cimserver.pegasus.rte 2.9.0.20 # Pegasus CIM Server Runtime E...
. . . . .
```

### Superseded Fileset Updates

Fileset updates listed in this section will not be installed. Newer updates which supersede (replace) these were selected instead (either by you or automatically by the installation program). Make sure that the superseding updates listed passed pre-installation verification.

```
bos.rte.install 6.1.6.1           (Superseded by 6.1.6.15)
```

<< End of Warning Section >>

## Successes

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### SUCSESSES

Filesets listed in this section passed pre-installation verification and will be installed.

#### Mandatory Fileset Updates

```
(being installed automatically due to their importance)
bos.rte.install 6.1.6.15           # LPP Install Commands
```

<< End of Success Section >>

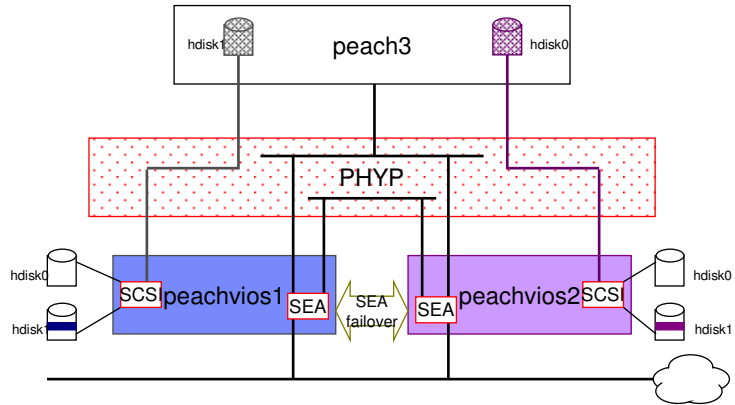




## Reboot the VIOS

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- Start a ping on the client
- \$ shutdown - restart
- The ping continues



## Mirrors go stale

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```
# lsvg -l rootvg
rootvg:
LV NAME          TYPE      LPs    PPs    PVs    LV STATE      MOUNT POINT
hd5              boot     1      2      2      closed/syncd  N/A
hd6              paging   16     32     2      open/syncd    N/A
hd8              jfs2log  1      2      2      open/stale    N/A
hd4              jfs2     7      14     2      open/stale    /
hd2              jfs2     64     128    2      open/stale    /usr
hd9var           jfs2     14     28     2      open/stale    /var
hd3              jfs2     4      8      2      open/stale    /tmp
hd1              jfs2     1      2      2      open/syncd    /home
hd10opt          jfs2     11     22     2      open/syncd    /opt
hd11admin        jfs2     4      8      2      open/syncd    /admin
lg_dumplv        sysdump  32     32     1      open/syncd    N/A
livedump         jfs2     8      16     2      open/syncd    /var/adm/ras/livedump
#
```



## So fix them

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```
# varyonvg rootvg
#

# lsvg -l rootvg
rootvg:
LV NAME          TYPE      LPs    PPs    PVs  LV STATE  MOUNT POINT
hd5              boot      1      2      2    closed/syncd  N/A
hd6              paging    16     32     2    open/syncd   N/A
hd8              jfs2log   1      2      2    open/syncd   N/A
hd4              jfs2      39     78     2    open/syncd   /
hd2              jfs2      128    256    2    open/syncd   /usr
hd9var           jfs2      14     28     2    open/syncd   /var
hd3              jfs2      132    264    2    open/syncd   /tmp
hd1              jfs2      1      2      2    open/syncd   /home
hd10opt          jfs2      11     22     2    open/syncd   /opt
hd11admin        jfs2      4       8     2    open/syncd   /admin
livedump         jfs2      8      16     2    open/syncd
/var/adm/ras/livedump
lg_dump1v       sysdump   32     32     1    closed/syncd  N/A
#
```

## Then do the following

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- Upgrade the second VIOS
- Reboot it
- Resynch the mirrors again in the client (all of them)
- `rm -rf ~padmin/both`
  
- That completes *this* upgrade

## So, I downloaded

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PowerVM Virtual I/O Server	2.1.2.13	<a href="#">View package</a>
Upgrade recommended	2.2.0.13	<a href="#">View package</a>
Notice: 2.2.0.10-FP24 must be downloaded and installed first. Alternatively you can install VIOS 2.2.0.10 FixPack 24 and VIOS 2.2.0.13-FP24-SP03 concurrently if you have not installed VIOS 2.2.0.10 FixPack 24. If you wish to take advantage of the fixes and functionality, it is recommended that both VIOS 2.2.0.10 FixPack 24 and VIOS 2.2.0.13-FP24-SP03 be installed concurrently, to avoid fileset requisite issues. Please review the VIOS 2.2.0.13-FP24-SP03 README for detailed instructions. <a href="#">Rerun assuming this upgrade</a>		
Upgrade recommended	2.2.1.1	<a href="#">View package</a>
VIOS Update Release 2.2.1.1 <a href="#">Rerun assuming this upgrade</a>		

- And followed the same basic process to upgrade both VIOS
- But it was more simple this time
  - Only one upgrade per VIOS rather than two concurrent ones

```
$ ioslevel  
2.2.1.1
```

## Don't forget

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```
$ updateios -commit  
All updates have been committed.  
  
$
```

- DO read the readme
  - eg: you need 30GB in rootvg
- swrole - PAdmin

## Not needed

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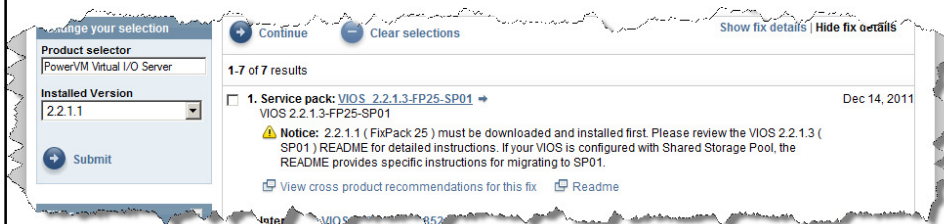
- The following errors can be ignored during installation; these requisites are not required on the VIOS.

MISSING REQUISITES: The following filesets are required by one or more of the selected filesets listed above. They are not currently installed and could not be found on the installation media.

```
X11.loc.fr_FR.base.lib 4.3.0.0          # Base Level Fileset
X11.samples.apps.clients 6.1.0.0       # Base Level Fileset
X11.samples.lib.Core 6.1.0.0          # Base Level Fileset
bos.INed 6.1.6.0                      # Base Level Fileset
bos.mls.rte 6.1.7.0                   # Base Level Fileset
bos.mls.rte 6.1.1.0                   # Base Level Fileset
devices.tmiscsw.rte 6.1.0.0           # Base Level Fileset
rsct.exp.cimrm 2.5.4.0                 # Base Level Fileset
```

## Then Fixcentral told me:

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- Which brought me up to the latest level

## tips

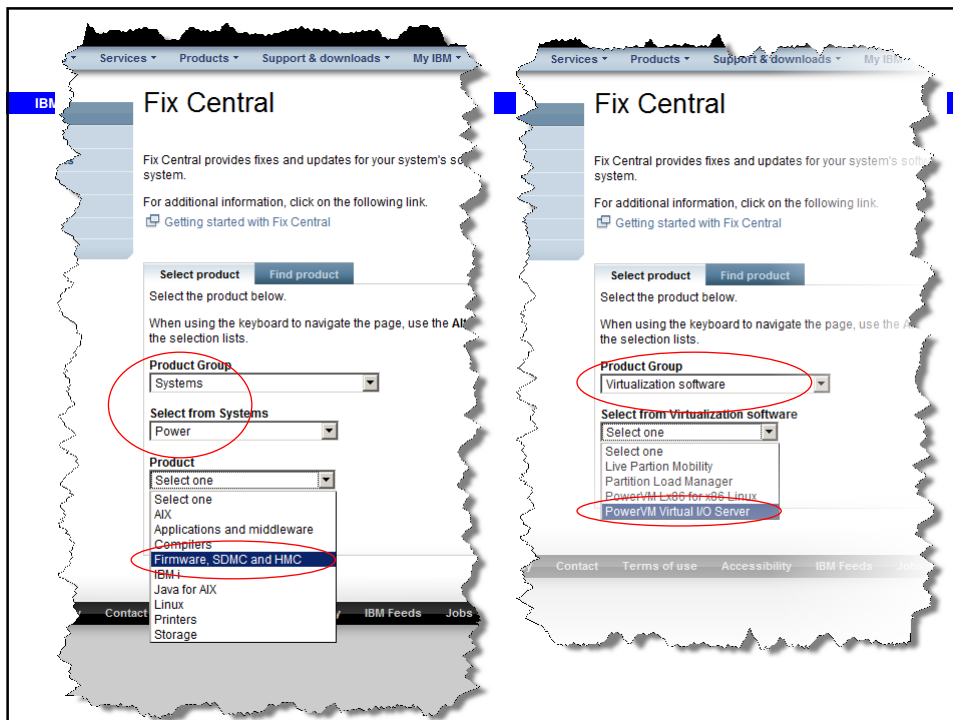
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- Do it in a console window (not a telnet/ssh to the VIOS)
  - On AIX, run `script filename` to keep a log
  - Use ssh to connect to HMC
  - Then run `vtmenu`
- Only use `oem_setup_env` when you **absolutely** must !
- DLPAR in more RAM and cpu for the upgrade
- `updateios -cleanup`
- If you use one or more File Backed Optical Media Repositories, you need to unload media images before you apply the Fix Pack.

## Check there is no vOptical loaded

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- To check for loaded images, run `lsvopt`  
The **Media** column lists any loaded media.
- To unload media images, run the following commands on all VTDs that have loaded images.  
`unloadopt -vtd <file-backed_virtual_optical_device >`
- To verify that all media are unloaded, run `lsvopt` again.  
The command output should show **No Media** for all VTDs.



## Further Information

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- There are many sources of information for PowerVM
  - Including
    - Infocenter
    - Wikis
    - Movies
    - Redbooks
- You can always **Read The Fine Manual**
  - `padmin` can use the `man` command
- Formal Training
  - <http://ibm.com/training>

IBM Training worldwide  
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# AIXpert Blog

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• <http://tinyurl.com/AIXpert>

The screenshot shows the AIXpert Blog interface. At the top, there's a navigation bar with 'developerWorks', 'Technical topics', 'Evaluation software', 'Community', and 'Events'. Below that, a search bar is visible. The main content area shows a search for 'powervm' with 41 entries found. A red circle highlights the search results. The first entry is titled 'Shared Storage Pools 2 - Thin provisioning, monitoring free space + Alerts'. To the right, there's a profile picture of the author and a list of tags including 'aix', 'aix6', 'aix7', 'eme', and 'oee'.

# AIXmovies

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• <http://tinyurl.com/AIXmovies>

The screenshot shows the AIXmovies website. The top navigation bar includes 'Home', 'Solutions', 'Services', 'Products', 'Support & downloads', and 'My IBM'. The main content area features a 'Movies' section with a red circle around the 'Attachments (102)' link. Below this, there's a section titled 'Welcome to the POWER6/POWER7 and AIX6 Hands-On Technical Product Demos'. The text explains the purpose of the demos and provides instructions on how to watch them. A list of notes on the right side provides additional details about the video files and how to handle them.

The screenshot shows the IBM Redbooks search interface. At the top, it says "Redbooks" and "IBM PowerVM Technical Webinars 2011-2012". Below that is a search bar with "powervm" entered. A red circle highlights the search term, and a red arrow points from it to the search results. The search results show 42 results in Redbooks, Redpapers, Drafts and Technote. Several book covers are displayed, including "IBM PowerVM Virtualization Managing and Monitoring", "IBM PowerVM Virtualization Introduction and Configuration", "PowerVM Migration from Physical to Virtual Storage", and "IBM System p Advanced POWER Virtualization Best Practices".

## Summary

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- Don't use oem\_setup\_env for general admin
- Document your setup
- Backup properly and regularly
- Keep up to date
- Read the readme – in full
- If you need multiple upgrades to each VIOS, then you must upgrade both to each level, in turn.
- Plenty of Redbooks