

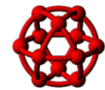
Updating to VIO server v3.1

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<http://www.circle4.com/ptechu/vios31.pdf>

4/11/2019

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Agenda

- Introduction
- VIOS 3.1 Prerequisites
- Installing VIOS 3.1
- Upgrading to VIOS 3.1
- Notes

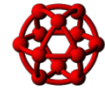


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Introduction



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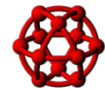
Stay Current

<http://www14.software.ibm.com/webapp/set2/flrt/liteTable?prodKey=vios>

VIOS Lifecycle

Version	GA	EOM	EOS/EOL
1.5	11/07	2008	09/11
2.1	11/08	2010	09/12
2.2.0.0	9/10	2011	09/13
2.2.1	10/11	10/12	04/15
2.2.2	10/12	10/13	09/16
2.2.3	4Q13		11/17
2.2.4	2Q15		12/18
2.2.4.40	4/21/17		12/18
2.2.5	4Q16		11/2019
2.2.5.10	11/12/16		11/2019
2.2.5.20	4/14/17		11/2019
2.2.5.30	11/30/17		11/2019
2.2.5.40	5/2/18		11/2019
CURRENT			
2.2.6	10/27/17	9/30/2020	2021 (all 2.2.6.*)
2.2.6.10	10/27/17		
2.2.6.20		get from ESS	
2.2.6.21	3/20/2018		
2.2.6.23	8/7/2018		
2.2.6.30	9/2018	get from ESS	
2.2.6.31	9/21/2018		
2.2.6.32	11/16/2018		
3.1	11/9/2018	get from ESS	
3.1.0.10	11/9/2018	Fix central	

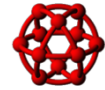
NOTE all levels prior to 2.2.5 are EOS as of December 2018
2.2.5 is end of service November 2019
2.2.6 is end of marketing September 2020 and end of service late in 2021



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VIOS levels



VIOS 3.1 came out 11/9/2018 plus a minipack 3.1.0.10

Download 3.1.0 base from entitled software:

<https://www-05.ibm.com/servers/eserver/ess/ProtectedServlet.wss>

Download 3.1.0.10 update from Fix Central:

<http://www-933.ibm.com/support/fixcentral/>

Readme for 3.1.0.10

<https://www.ibm.com/support/docview.wss?uid=ibm10738523>

NIM Master needs to be at 7200-03-02-1846 at a minimum

Check required HMC and firmware levels

Minimum server level is POWER7+ (D model) and above

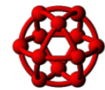
Service strategy: <http://www-304.ibm.com/webapp/set2/sas/f/vios/svcstrategy.html>

Lifecycle: <http://www-01.ibm.com/support/docview.wss?uid=isg3T1023504>

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HMC levels



All HMC levels prior to v8.8.7 went out of service by November 2018

V8.8.7 goes out of service 8/31/2019

V9 goes out of service 3/31/2020

<http://www14.software.ibm.com/webapp/set2/flrt/liteTable?prodKey=hmc>

HMC latest version is v9R1M921 (MH01789) (11/16/2018) – prereq is v9R1.910.0 min.

Can upgrade to v9r1.910.0 from v8.8.6.0 or later

Latest patch is MH01808 for 7042 and MH01809 for 7063

<https://delivery04.dhe.ibm.com/sar/CMA/HMA/07vj1/0/MH01789.readme.html>

<https://delivery04.dhe.ibm.com/sar/CMA/HMA/084s2/0/MH01808.readme.html>

Note - v9.1 is the last HMC release that will support x86 HMCs

V9.1 requires the HMC to be a CR7 or higher if Intel, or the new POWER HMC

V9.1 does not support any server prior to POWER7

Service strategy: <http://www-304.ibm.com/webapp/set2/sas/f/vios/svcstrategy.html>

Lifecycle: <http://www-01.ibm.com/support/docview.wss?uid=isg3T1023504>

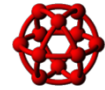
NOTE – once HMC is at v9r1m920 you can upload VIOS and other images from flash drive to the HMC

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VIOS Release Lifecycle

Lists the PowerVM Virtual I/O Server (VIOS) release dates and end of service pack support (EoSPP) dates



Content

VIOS Release	Release Date	End of Service Pack Support (EoSPP)
3.1.0	November 2018	30 November 2021 (estimated)
2.2.6	October 2017	30 September 2020
2.2.5	November 2016	30 September 2019 (estimated)
2.2.4	December 2015	31 December 2018
2.2.3	November 2013	30 November 2017
2.2.2	November 2012	30 November 2015
2.2.1	October 2011	31 October 2014
2.2.0	September 2010	30 November 2013

The End of Service Pack Support (EoSPP) is the date when Fix Packs, Service Packs, MiniPacks, and other fixes will no longer be shipped for a release.

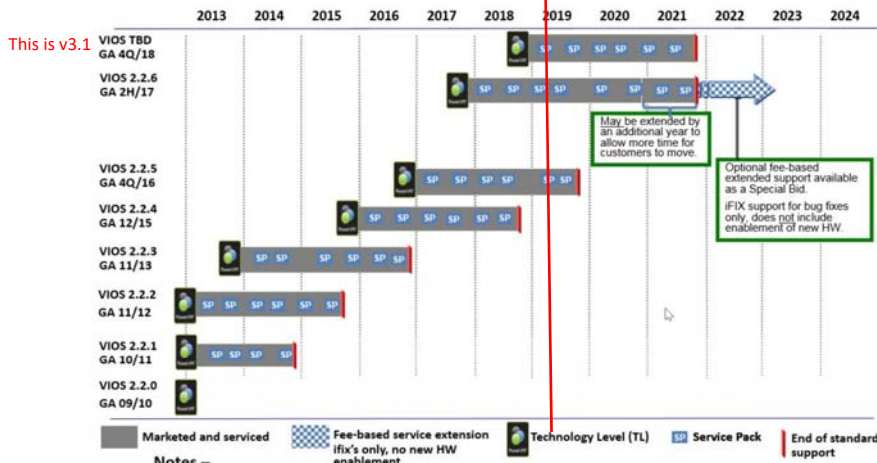
<https://www-01.ibm.com/support/docview.wss?uid=isg3T1023504>

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Service life of VIOS levels

VIOS Release Lifecycle



Notes –

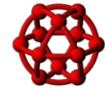
- New VIOS Release / Technology Level is typically released once per year
- Service model is 3 years of standard support, service packs and i-fixes for each VIOS release
- Extended support available for last VIOS release in a V-R family (ie 2.2.6), Special Bid process
- Servicepack icons are intended to depict typical cadence, not actual dates

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

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Use FLRT and check Prereqs



FLRT Home Page:

<http://www14.software.ibm.com/webapp/set2/flrt/home>
<https://www-304.ibm.com/support/customer-care/flrt/>

FLRT Lite

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

VIOS to NIM Master Mapping:

<http://www14.software.ibm.com/webapp/set2/sas/f/flrt/viostable.html>

System Software Maps for VIOS:

<http://www-01.ibm.com/support/docview.wss?uid=ssm1platformvios>

AIX/VIOS Security Tables:

http://www14.software.ibm.com/webapp/set2/sas/f/flrt3/Sec_APARs.html

VIOS Hiper Tables:

http://www14.software.ibm.com/webapp/set2/flrt/doc?page=hiper#vios_hiper

Also check MPIO driver versions as there are specific requirements for each VIO release

AIX Support Lifecycle

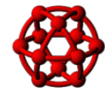
<https://www-01.ibm.com/support/docview.wss?uid=isg3T1012517>



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PowerVm 3.1 Prerequisites

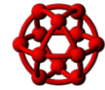


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Minimum NIM Master Levels for VIOS Clients



<http://www14.software.ibm.com/support/customer-care/flr/sas?page=viostable>

If using NIM to backup, install or update a VIOS partition, the NIM master must be greater than or equal to the levels shown below.

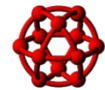
VIOS Release	VIOS Level	Minimum NIM master level		
VIOS 3.1.0	VIOS 3.1.0.10	7200-03-02		
VIOS 2.2.6	VIOS 2.2.6.32	AIX 6100-09-12	7100-05-03	7200-03-02
	VIOS 2.2.6.31	AIX 6100-09-12	7100-05-03	7200-03-01
	VIOS 2.2.6.21	AIX 6100-09-11	7100-05-02	7200-02-02
	VIOS 2.2.6.10	AIX 6100-09-10	7100-05-01	7200-02-01
	VIOS 2.2.6.0	AIX 6100-09-10	7100-05-00	7100-02-00
VIOS 2.2.5	VIOS 2.2.5.40	AIX 6100-09-11	7100-05-02	7200-02-02
	VIOS 2.2.5.30	AIX 6100-09-10	7100-05-01	7200-02-01
	VIOS 2.2.5.20	AIX 6100-09-09	7100-04-04	7200-01-02
	VIOS 2.2.5.10	AIX 6100-09-08	7100-04-03	7200-01-01
	VIOS 2.2.5.0	AIX 6100-09-08	7100-04-03	

For VIOS 3.1 this is AIX 7.2 tl3 sp2

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PowerVM 3.1 Changes

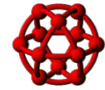


- Just announced and went GA 11/9/2018
- Base order number changes to 5765-G34
- Native compatibility mode for POWER8 and POWER9
- Accelerated secure LPM for E950 and E980
- Based on AIX 7.2 TL3
- USB Flash drive install for VIOS
- IVM is removed so you must install a proper VIO server
- Database changes from Solid to Postgres for SSP management data
- Many old packages removed to clean up image
- Storage multipathing enhancements
- iSCSI support
 - Can export iSCSI disks to client LPARs using vSCSI (min FW860.20)
 - Enables MPIO support for iSCSI
 - iSCSI boot is not supported
 - iSCSI not supported for SSP (shared storage pools)
- http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/6/897/ENUS218-346/index.html&lang=en&request_locale=en

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PowerVM 3.1 Prerequisites

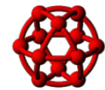


- At least 1 core, 8GB memory (Nigel recommends at least 16GB if SSPs)
- At least 30GB for rootvg (I recommend 100GB)
- Add an extra disk to be used for alternate disk upgrades
- On one VIO it is helpful to have a 3rd disk to use for File Backed Optical if you use it – gets it out of rootvg
- NIM Master must be at AIX 7200-03-02-1846
- Must use VIO server - IVM is removed
- **Only supports Power7+ (D models) and above**
- No blades supported
- If need to have older servers around then use 2.2.6.32 VIO servers for those
- viosupgrade command on VIO becomes available at 2.2.6.30 but if you have SSPs you must go to 2.2.6.32 before trying to upgrade
- V3.1 base is downloaded from ESS and comes as either 2 x DVDs or a flash drive image
- So server must have access to a NIM server, a DVD drive or be able to use a flash drive
- For flash drive install USB drive must be at least 16GB
- Latest link to VIOS Maintenance Strategy
 - <https://www14.software.ibm.com/support/customer/care/sas/f/vios/svcstrategy.html>

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PowerVM 3.1 SSP Important Changes



Important Changes in 3.1.0.X for SSP users

A database manager change has occurred for Shared Storage Pool (SSP). This change will have no direct impacts on behavior, however it does mean that *non-disruptive* upgrades of an SSP cluster to 3.1.0.10 requires that SSP nodes first are updated to the latest 2.2.6.X version available before upgrading to 3.1.0.0 or 3.1.0.10. As of the time of this writing, that is version 2.2.6.31.

Once all VIOS nodes in the cluster have been updated to the latest 2.2.6.X version, double check that rolling upgrade has completed. This can be done by checking the output of "cluster -status -verbose" while logged in as padmin on one of the VIOS nodes in the cluster. Then, check the output for each node, and check for this field:

```
Node Upgrade Status: 2.2.6.31 ON_LEVEL
```

If all nodes have 2.2.6.31 or newer, and all say that they are "ON_LEVEL," then upgrades to the VIOS to 3.1.0.00 or newer can occur without disruption to the SSP cluster.

Additionally, backup and restore can be used to restore older versions of the SSP cluster to 3.1.0.X versions of the VIOS.

The above is from the readme. There are additional limitations spelled out in the readme file

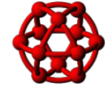
3.1 release notes: <ftp://ftp.software.ibm.com/systems/power/docs/hw/p9/p9eeo.pdf>

3.1.0.10 readme: <https://www-01.ibm.com/support/docview.wss?uid=ibm10738523>

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Installation

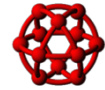


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Get the files

- Latest ISO download is for VIOS 3.1.0
- Flash image ISO is VIOS 3.1.0.10 – use this and save a step



Go to ESS
<https://www-05.ibm.com/servers/eserver/ess/ProtectedServlet.wss>
 Sign in with your userid and password for ibm

At the left click on my entitled software
 Make sure to the right "Brand selection" says AIX

Once it says AIX click on software updates at the left
 It will prompt you for customer number and serial number for a system - use a valid one
 Then you will select Powervm v3.1 (5765-ve3) and click on continue (NOTE v3 has a different program number)
 Click on agree and then select I want to download now

It will take you to software downloads - make sure category says AIX and v7.2 then click on continue
 Check the box that says 5765-ve3 - PowerVM Enterprise ED v3 and click on continue
 Then check the powervm box (this is really repetitive) and click on continue
 On the next page click on I agree and go to the bottom of the next page and click on "click here to use http"

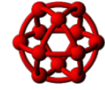
There are 3 images to be downloaded:
 ISO, Virtual I/O Server v3.1.0.0 DVD 1 of 2 (11/2018)
 Virtual_IO_Server_Base_Install_3.1.0.0_DVD_1_of_2_112018.iso
 ISO, Virtual I/O Server v3.1.0.0 DVD 2 of 2 (11/2018)
 Virtual_IO_Server_Base_Install_3.1.0.0_DVD_2_of_2_112018.iso.ZIP
 ISO, Virtual I/O Server v3.1.0.10 Flash (11/2018)
 Virtual_IO_Server_Base_Install_3.1.0.10_Flash_112018.iso

Download all 3 and burn them to DVD
 You can also burn the last one (with flash in its name) to a USB stick

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Install Options



- Download v3.1.0 from ESS
- Download 3.1.0.10 – I used this image
- Download the latest expansion pack from Fix Central

- Fresh install of VIOS 3.1 on a new server
 1. LPM off all LPARS then fresh install of VIOS 3.1 on old server
 2. Install from DVD or USB
 3. Use NIM to do VIO install to an alternate disk
 4. Install VIO from repository on HMC

- Use NIM `viosupgrade` to upgrade current server to an alternate disk
 - If using NIM for `bosinst` install then VIOS IP cannot be on the SEA
 - Can still install to `altdisk` though

- **Use VIO `viosupgrade` to upgrade current server to an alternate disk (my preferred method)**
 1. VIO `viosupgrade` requires VIOS to be at 2.2.6.30+, SSP requires 2.2.6.32
 2. Use `viosupgrade -l -q` to monitor VIO upgrade status

- Read the readme/description files for all levels
- If you are using SSPs pay attention to the restrictions and rules around upgrades with SSPs in place

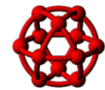
- Note if upgrading versus full install - you cannot use `updatevios` for this upgrade – you must use the `viosupgrade` command

- Check Nigel's AIXpert blog for update
 - <http://tinyurl.com/AIXpert>
 - https://www.ibm.com/developerworks/community/blogs/aixpert/entry/Upgrading_to_VIOS_3_1

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Things to think about for Fresh Install



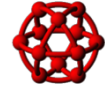
- It is not that different from any other VIO server fresh install
- Use `viosbr` to backup metadata and copy the files to a remote system
- Backup anything outside of `rootvg` on your VIOS to a remote location
 - See next slide
- Backup the VIOS itself or take a clone
- If using SSPs then perform the steps in the README for SSPs
- Install from the v3.1 DVD – for NIM use the combined `mksysb` from the DVDs
- If you can, use the flash image which is at 3.1.0.10
 - I was able to burn this iso to both a DVD and a flash drive
- Fresh Install can be an overwrite of current disk or to an alternate disk
 - Use the alternate disk if at all possible
- Restore the metadata and anything that was outside of `rootvg`
- Perform post install SSP steps

- Before doing any install or upgrade - check for compatibility between HMC, firmware and VIOS levels as well as client operating systems

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Prior to install or Upgrade



- Check on your viosbr backups

```
$ ls -al /home/padmin/cfgbackups
total 56
drwxr-xr-x  2 padmin  staff   256 Mar 27 10:40 .
drwxr-x---  8 padmin  system  4096 Nov 27 13:47 ..
-rw-r--r--  1 padmin  staff  7852 Mar 27 10:40 vio1m.01.tar.gz

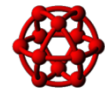
$ viosbr -view -list
vio2m.01.tar.gz
```

- Backup anything outside of rootvg on your VIOS to a remote location
 - FBO library
 - LVs or filebacked disks to clients
 - I have my viosbr setup to run daily and keep the last 7 copies so I only have to copy across the most recent one
 - viosbr --backup --file viosname --frequency daily --numfiles 7
 - The above is run once to setup the copy
- Backup LVs for clients
 - **viosbr does not back these up and viosupgrade does not copy them so back them up**
 - Move LVs to a different VG than rootvg prior to upgrade
 - Migrate after backup then use cplv to copy them after the migration
 - <http://www-01.ibm.com/support/docview.wss?uid=isg3T1000167>
- Backup the VIOS itself or take a clone
 - mount /backups
 - mkdir /backups/vio2
 - umount /var/vio/VMLibrary
 - su - padmin -c "ioscli backupios -file /backups/vio2 --nomedialib"
 - su - padmin -c "ioscli backupios -file /usr/local/backups/vio2-previo31-mar2719.mksysb --nomedialib -mksysb"
 - mount /var/vio/VMLibrary

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Full Install

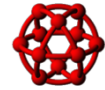


- From DVD or USB – complete install – with PowerVM 3.1 you will be able to use USB
- Basically boot in SMS mode then tell it to boot from DVD, flash, NIM or HMC and follow instructions
- Using NIM
 - <http://www-01.ibm.com/support/docview.wss?uid=isg3T1011386>
 - Minimum NIM levels
 - <http://www14.software.ibm.com/webapp/set2/sas/f/flrt/viostable.html>
- Using HMC - check vios install box
- Commandline - installios:
 - http://www-01.ibm.com/support/knowledgecenter/POWER7/p7hb1/iphb1_vios_configuring_installhmc.htm?cp=POWER7%2F14-8-0-2-2-1-1
- GUI:
 - <http://ibmsystemsmag.blogs.com/aixchange/2013/05/vios-installation-via-gui.html>
 - **Network between HMC and VIO LPAR must be alive and not aggregated (request an access port)**
- From a mksysb
 - http://pic.dhe.ibm.com/infocenter/flexsys/information/index.jsp?topic=%2Fcom.ibm.acc.psm.resources.doc%2Fvios%2Fsdmc_vios_vios_backup_restore_file_nim.html
- **After install fix the page spaces – depending on the version you will have 1 x 512MB and 1 x 1024MB or 2 x 1024MB on the same hdisk. Get rid of paging00 and make hd6 at least 4GB**

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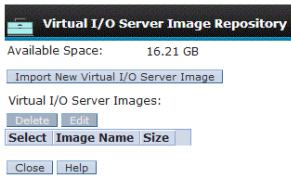
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VIOS and HMC – Import VIOS31 ISO Images

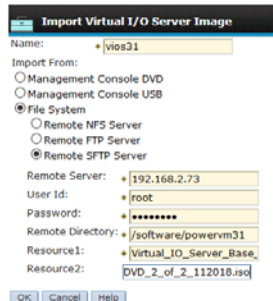


```
aix1nim:/software/powervm31> du -sg *
4.18 Virtual_IO_Server_Base_Install_3.1.0.0_DVD_1_of_2_112018.iso
1.27 Virtual_IO_Server_Base_Install_3.1.0.0_DVD_2_of_2_112018.iso
4.29 Virtual_IO_Server_Base_Install_3.1.0.10_Flash_112018.iso
So need 5.45GB minimum if not using the flash image
```

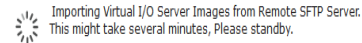
1. Check repository for space



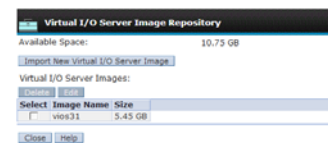
2. Import the ISO images



3. Message importing



4. Import complete

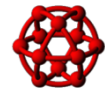


If you want you can just upload the flash image and use that – it is more current (3.1.0.10) and works fine

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VIOS and NIM

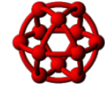


- Use of NIM to back up, install, and update the VIOS is supported.
- **Note:** For install, always create the SPOT resource directly from the VIOS **mksysb** image. Do NOT update the SPOT from an LPP_SOURCE.
- Use of NIM to update the VIOS is supported as follows:
Ensure that the NIM Master is at the appropriate level to support the VIOS image.
- <http://www14.software.ibm.com/webapp/set2/sas/flrt/viostable.html>
- **NIM Master must be at AIX 7200-03-02-1846**
- On the NIM Master, use the operation **updateios** to update the VIOS Server.
- "**nim -o updateios -a lpp_source=lpp_source1**"
- On the NIM Master, use the operation **alt_disk_install** to update an alternate disk copy of the VIOS Server.
- "**nim -o alt_disk_install -a source=rootvg -a disk=target_disk -a fix_bundle=(Value)**"
- If NIM is not used to update the VIOS, only the **updateios** or the **alt_root_vg** command from the pdmin shell can be used to update the VIOS.

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VIOS and NIM



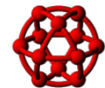
- Add VIOS partition as a NIM client
- Copy the VIOS mksysb image from the CD to your NIM master
 - On VIOS 3.1 media there are 3 images now across the two DVDs
 - Copy all 3 images individually to a directory and then use cat to combine them

```
cat /export/mksysb/vios3.1/mksysb_image /export/mksysb/vios3.1/mksysb_image2 /export/mksysb/vios3.1/mksysb_image3
>/export/mksysb/nim_vios3.1mksysb
```
- OR save yourself time and use the flash image as it is just one mksysb image***
I had a problem with the flash ISO – you can mount it on AIX using loopmount but you can't copy the files
So I opened it on windows, extracted the mksysb and uploaded the mksysb to my NIM server and used it there
- Define mksysb resource to NIM master
- Define spot on NIM master
 - The source for the SPOT will be the combined mksysb
 - The SPOT CANNOT be created from an LPP_Source
- Copy the bosinst.data from the DVD and create a viosbosinst resource
- You can now use bos_inst to do a mksysb install once the partition profile is defined
- <http://www-01.ibm.com/support/docview.wss?uid=isg3T1011386>

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Cloning disks



After installing VIO1, if you have all the disks in VIO1 you can take a clone to build VIO2
 If your server has a split backplane then you can make a clone
 Make sure the 4 disks are split (2 and 2) across the backplane
 VIO1 is using hdisk0 and hdisk1, hdisk2 and 3 are on the other adapter and will be used for VIO2
 Put all the disks into VIO1 (both adapters)
 Install VIO1 on hdisk0 – from NIM, DVD, USB, HMC

Now clone it to hdisk2

```
alt_disk_copy -d hdisk2
```

Remove VIO2 hdisks from VIO1, Shutdown VIO1,
 Remove VIO2 resources from VIO1 profile
 Leave VIO1 down

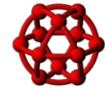
Activate VIO2
 Remove any disks, adapters, networks etc that show as defined on VIO2
 Now cleanup VIO2 (see next slide)

It is best to make the clone before you have the network and fibre adapters attached to VIO1 – it makes the post-clone cleanup much easier

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Cleaning up after cloning VIO



If you do not take these steps you will experience RMC issues

Cleanup VIO2:

```
stopsrc -g rsct_rm; stopsrc -g rsct
```

Clear Nodeid

```
chdev -l cluster0 -a node_uuid=00000000-0000-0000-0000-000000000000
```

OR

```
/usr/bin/odmdelete -o CuAt -q 'attribute=node_uuid'
```

Generate new nodeid

```
/usr/sbin/rsct/bin/mknodeid -f
```

```
lsattr -El cluster0
```

```
/usr/sbin/rsct/bin/lsnodeid
```

```
/usr/sbin/rsct/install/bin/recfgct
```

```
lspartition -dlpar
```

```
lssrc -g rsct_rm; lssrc -g rsct
```

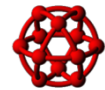
You may have to start ctcas – startsrc –s ctcas

Cleanup old VIO1 resources (next slide)

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Cleaning up after cloning VIO



CLEANUP on VIO2

These will vary depending on the server and I/O drawers, etc

rmdev all devices showing as defined (fcs, ent, hdisk, etc)

```
rmdev -dp hdisk0
```

```
rmdev -dl hdisk0
```

```
rmdev -dp pdisk0
```

```
rmdev -dl pdisk0
```

```
rmdev -dp sissas0
```

```
rmdev -dl sissas0
```

```
rmdev -dp pci0
```

```
rmdev -dp pci1
```

```
rmdev -dp pci2
```

```
rmdev -dp pci3
```

```
rmdev -dp pci4
```

```
rmdev -dl pci0
```

```
rmdev -dl pci1
```

```
rmdev -dl pci2
```

```
rmdev -dl pci3
```

```
rmdev -dl pci4
```

If ethernet adapters were in VIO1 when cloned then you may need to remove all those as well

Once VIO2 is cleaned up reboot it

Then activate VIO1

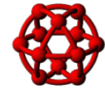
Clean up VIO1 removing any extra hdisks, pdisks, pci, sissas1, etc that now show as defined. Also remove the adapter definitions for them.

Reboot VIO1 to ensure changes are good

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Maintenance and Upgrades



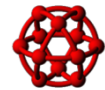
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Upgrading VIOS

Run lsvopt and make sure no one is using the FBO devices
 If using NPIV tape drives make sure they are not in use (or activated on IBM i)

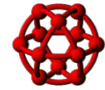
1. Normally upgrade HMC first then firmware then VIOS and then AIX
2. BUT – check the readme for all of the above first to make sure there is not a different required order
3. Download the updates and cross-check compatibility using FLRT
4. Read the readmes again
5. Run errprt to check for problems, check there are no stale partitions, missing disks or paths, etc
 - lsvg rootvg checks for stale PPs and physical volumes.
 - lsvg -p rootvg looks for missing disks.
 - lspath - checks for missing paths.
 - errprt checks for errors.
6. Ensure all paths on clients are redundant so LPARs will stay up when this VIOS is rebooted
7. Run HMC Scanner or sysplan to document prior to changes
8. Backup the VIOS
9. Mount the NFS filesystem or DVD or FBO image to be used for update
10. If using SSPs there are specific additional steps outlined in the README
11. After upgrading and rebooting the first VIOS check that all your LPARs are back to dual paths (lspath)
12. Only after that should you upgrade the second VIOS



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Things to think about when Upgrading

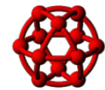


- Migrating to VIO 3.1 is an upgrade not an update. You cannot use updateios
- Use viosbr to backup metadata and copy the files to a remote system
- Backup anything outside of rootvg on your VIOS
 - FBO library
 - LVs for filebacked disks to clients
- Backup the VIOS itself or take a clone
- If using SSPs then perform the steps in the README for SSPs
- Perform the upgrade
- Restore the metadata and anything that was outside of rootvg
- Perform post upgrade SSP steps

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Upgrade



- Find a spare disk and clean it off
- As root use lspv -Ccdisk

```
$ lspv
NAME          PVID                VG          STATUS
hdisk0        00f95d3a1b679a90    fbovg       active
hdisk2        00f95d3a42550d49    fbovg       active
hdisk3        00f95d3a0de356cd    altinst_rootvg
hdisk1        00f95d3a42550ec9    rootvg      active
```

```
$ lspv -size | head
NAME          PVID                SIZE(megabytes)
hdisk0        00f95d3a1b679a90    51200
hdisk2        00f95d3a42550d49    51200
hdisk3        00f95d3a0de356cd    102400
hdisk1        00f95d3a42550ec9    102400
```

- Then as padmin look for free or unused disks
- ```
$ lspv -unused
$lspv -free
```

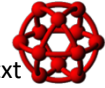
- Check for mappings
- ```
$ lsmmap -all | grep hdisk
```

In the above nothing is mapped and all disks are assigned (none unused or free)
We also have altinst_rootvg which is not allowed

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Forgot to clear the disk (VIO viosupgrade)



```
viosupgrade -l -i /usr/local/soft/nim_powervm31_basemksysb -a hdisk3 -g /home/padmin/filestosave.txt
```

Welcome to viosupgrade tool.

Operation triggered for given node(s).

Broadcast message from root@vio2 (pts/0) at 15:59:29 ...

WARNING!!! VIOS Upgrade operation is in progress. Kindly Refrain from making any configuration changes...

Please wait for completion..

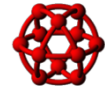
The provided disk 'hdisk3' is in use.

Go back and make sure lspv -free and lspv -unused show the disk you want to use as available

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Get a disk



```
altinst_rootvg cannot exist so either export and reimport with a new name or delete it
#exportvg altinst_rootvg
importvg -y rootvgcopy hdisk3
OR delete it:
exportvg altinst_rootvg
OR delete it:
alt_rootvg_op -X altinst_rootvg
```

AFTER export:

```
# lspv
hdisk0    00f95d3a1b679a90    fbovg    active
hdisk2    00f95d3a42550d49    fbovg    active
hdisk3    00f95d3a0de356cd    None     active
Hdisk1    00f95d3a42550ec9    rootvg   active
```

Need to clear the ownership from it

```
# chpv -C hdisk3
```

```
# lspv
hdisk0    00f95d3a1b679a90    fbovg    active
hdisk2    00f95d3a42550d49    fbovg    active
hdisk3    00f95d3a0de356cd    None     active
Hdisk1    00f95d3a42550ec9    rootvg   active
```

```
$ lspv -free
```

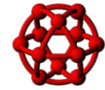
```
NAME      PVID          SIZE(megabytes)
hdisk3    00f95d3a0de356cd    102400
```

OK NOW we can use hdisk3 for our upgrade

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Images



My base install mksysb file is the mksysb file that I grabbed from the flash image iso file

My filestosave.txt consists of:

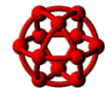
```
/etc/motd
/etc/netsvc.conf
/etc/inetd.conf
/etc/hosts
/etc/environment
/etc/profile
/etc/inittab
/etc/resolv.conf
/etc/ntp.conf
/etc/group
/etc/passwd
/etc/security/passwd
/etc/security/limits
/etc/security/login.cfg
/etc/tunables/nextboot
/etc/tunables/rc-tunevio.sh
```

These will get saved to /home/padmin/backup_files

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Backing up VIOS

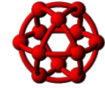


- The VIO server version of viosupgrade will take an extra viosbr backup for you
- You may also want to use snap to grab other critical data
- Mount NFS filesystem to backup to (in my case /backups)
- mkdir /backups/viosa
- Unmount /var/vio/VMLibrary if you are using the media library or your mksysb will be huge
- Then as padmin run backupios which automatically calls savevgstruct:
- **backupios -file {File name} [-mksysb] [-nopak] [-nosvg] [-nomedialib]**
- backupios -file /backups/viosa
- The above creates a nim_resources.tar package in that directory and it can be used to clone or restore VIO servers by NIM or installios (from HMC)
- You can also back it up as a mksysb file that is easy to restore
- backupios -file /backups/viosa.mksysb -mksysb
- When the **-mksysb** flag is used, the NIMOL resources are not saved in the image.
- If the media library is large and is on rootvg, then you can add the -nomedialib flag but still unmount it

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Backup



If you have set the system up to automatically do a daily viosbr backup then you don't need to do it here

```
Create a daily backup once a day and keep up to 7 in /home/padmin/cfgbackups
su - padmin -c "ioscli viosbr -backup -file viobkup -frequency daily numfiles 7"
```

I usually do 2 backups

A regular mksysb

A backup that is for NIM

Both are done to an NFS mount

If you are using the file backed optical (media repository) there seems to be a bug where specifying nomedialib does not stop it backing up the media library. Since mine is over 100GB that is a problem so here is what I do

(vio2dir is a directory)

```
umount /var/vio/VMLibrary
```

```
su - padmin -c "ioscli backupios -file /usr/local/backups/vio2-previo31-mar2719.mksysb -mksysb -nomedialib"
```

```
su - padmin -c "ioscli backupios -file /usr/local/backups/vio2dir -nomedialib"
```

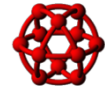
My backups are around 19GB but during the backup they can need as much as 32GB – don't ask me why ☹

Once you are done you can mount /var/vio/VMLibrary

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Check the virtual backup



```
viosbr -backup -file vio2m -frequency daily -numfiles 7
```

Backup of this node (vio2) successful

```
$ viosbr -view -list
```

```
vio2m.01.tar.gz
```

```
$ ls -al /home/padmin/cfgbackups
```

```
total 72
```

```
drwxr-xr-x  2 padmin  staff      256 Mar 27 10:55 .
```

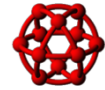
```
drwxr-x---  7 padmin  system    4096 Nov 27 12:51 ..
```

```
-rw-r--r--  1 padmin  staff    6960 Mar 27 10:55 vio2m.01.tar.gz
```

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Document VIO Information – save-viostuff.sh



```

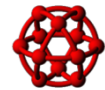
• #! /bin/sh
• #
• day="/bin/date +%d"
• month="/bin/date +%m"
• year="/bin/date +%y"
• set -- Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
• shift $month
• lmonth="$1"
• machine=uname -n
• directory="/bin/date +%m%d%Y_%H%M"
• machine_directory=printf "%s_%s" $machine $directory
• mkdir /home/padmin/saveit
• cd /home/padmin/saveit
• logit="/home/padmin/saveit/$machine"
• logit1="/home/padmin/saveit/$machine"
• su - padmin -c "ioscli ioslevel" >>$logit1.ioslevel.txt
• su - padmin -c "ioscli lsdev -type disk" >>$logit1.viodisk.txt
• su - padmin -c "ioscli lsdev -type adapter" >>$logit1.vioadapter.txt
• su - padmin -c "ioscli lsdev -vpd" >>$logit1.viovpd.txt
• su - padmin -c "ioscli lsdev -slots" >>$logit1.vioslots.txt
• su - padmin -c "ioscli lsmmap -all" >>$logit1.violsmmapall.txt
• su - padmin -c "ioscli lsmmap -all -npiv" >>$logit1.violsmmapall.npiv.txt
• su - padmin -c "ioscli lsdev -virtual" >>$logit1.violsedev.txt
• su - padmin -c "ioscli cfgnamesrv -ls" >>cfgname.txt
• su - padmin -c "ioscli entstat -all ent9" >entstat.txt
• su - padmin -c "ioscli hostmap -ls" >hostmap.txt
• su - padmin -c "ioscli lsuser" >user.txt
• su - padmin -c "ioscli netstat -routinfo" >routinfo.txt
• su - padmin -c "ioscli optimize -list" >optimize.txt
• su - padmin -c "ioscli viosecure -firewall view" >firewall.txt
• su - padmin -c "ioscli viosecure -view -nonint" >view.txt
• oslevel -s >$logit1.oslevel.txt
• getvodm -C > $logit1.disktmp.txt
• while read label line
• do
• echo "\n" >>$logit1.viodisks.txt
• echo "Hdisk is $label" >>$logit1.viodisks.txt
• echo "" >>$logit1.viodisks.txt
• su - padmin -c "ioscli lsdev -dev $label -attr" >>$logit1.viodisks.txt
• done <"$logit1.disktmp.txt"
• #
• exit 0

```

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Continue upgrade Backup



```

Back it up:
# ./save-viostuff.sh
mkdir: 0653-358 Cannot create /home/padmin/saveit.
/home/padmin/saveit: Do not specify an existing file.

```

```

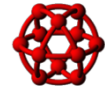
# ls -l /home/padmin/saveit
total 824
-rw-r--r-- 1 root staff 118 Jul 22 12:33 b740vio2.disktmp.txt
-rw-r--r-- 1 root staff 24 Jul 22 12:33 b740vio2.ioslevel.txt
-rw-r--r-- 1 root staff 16 Jul 22 12:33 b740vio2.oslevel.txt
-rw-r--r-- 1 root staff 8038 Jul 22 12:33 b740vio2.vioadapter.txt
-rw-r--r-- 1 root staff 4528 Jul 22 12:33 b740vio2.viodisk.txt
-rw-r--r-- 1 root staff 59593 Jul 22 12:33 b740vio2.viodisks.txt
-rw-r--r-- 1 root staff 8800 Jul 22 12:33 b740vio2.violsedev.txt
-rw-r--r-- 1 root staff 11967 Jul 22 12:33 b740vio2.violsmmapall.npiv.txt
-rw-r--r-- 1 root staff 19363 Jul 22 12:33 b740vio2.violsmmapall.txt
-rw-r--r-- 1 root staff 4595 Jul 22 12:33 b740vio2.vioslots.txt
-rw-r--r-- 1 root staff 227944 Jul 22 12:33 b740vio2.viovpd.txt
-rw-r--r-- 1 root staff 37 Jul 22 12:33 cfgname.txt
-rw-r--r-- 1 root staff 0 Jul 22 12:33 entstat.txt
-rw-r--r-- 1 root staff 240 Jul 22 12:33 firewall.txt
-rw-r--r-- 1 root staff 652 Jul 22 12:33 hostmap.txt
-rw-r--r-- 1 root staff 5970 Jul 22 12:33 optimize.txt
-rw-r--r-- 1 root staff 713 Jul 22 12:33 routinfo.txt
-rw-r--r-- 1 root staff 240 Jul 22 12:33 user.txt
-rw-r--r-- 1 root staff 15071 Jul 22 12:33 view.txt

```

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Upgrading VIOS to V3.1



You need to have your VIO at 2.2.6.30 or higher to use the VIO server viosupgrade command
 If you are using SSPs then you have to be at 2.2.6.32
 I recommend going to 2.2.6.32 regardless and use that as a starting point

As padmin run "updateios -commit" to ensure any uncommitted updates are committed
 Check to ensure there are no missing filesets prior to updates
 Check repository has nothing loaded

```
$ ioslevel
2.2.6.32
$cat /usr/ios/cli/ios.level
2.2.6.32
```

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

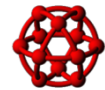
```
$ oem_setup_env
# /usr/sbin/emgr -P
There is no efix data on this system.
If there are any ifixes remove them
```

Now run checks

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Upgrade – get the code



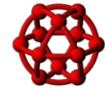
- You should already have downloaded the flash image for 3.1.0.10 from ESS (entitled software)
- It came down as H52175995.iso
- Open it on your windows desktop and extract the mkysyb image
- Upload the mkysyb image as binary to your VIO or NIM server
- I put it in /usr/local/soft/

• **Normally I copy the files locally to the VIO in case I lose the network during the install**

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What does the VIO viosupgrade command do?



It does the config backup for you

It builds vios 3.1 on the new disk

It migrates the config

It sets the bootlist

It will then reboot – you have 60 seconds to stop it

```
viosupgrade -l -i /usr/local/soft/vios31-flash-mksysb_image -a hdisk3 -g /home/padmin/filestosave.txt
```

Below is the syntax

```
viosupgrade -l -q
```

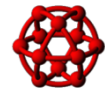
Flags:

- l Specifies local Node Installation.
- i Specifies image file for the alternate disk installation.
- a Specifies alternate disk to install the provided image.
- c Specify if the node is part of the cluster.
- g Specifies the filename having the list of files to be copied to newly installed rootvg.
- q Queries the status of VIOS restore operation after booting the VIOS with newly installed image.

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Upgrade 1



Now on the VIO:
\$updateios -commit

My first attempt at the upgrade:

```
viosupgrade -l -i /usr/local/soft/nim_powervm31_basemksysb -a hdisk3 -g /home/padmin/filestosave.txt
```

Welcome to viosupgrade tool.

Operation triggered for given node(s).

Broadcast message from root@vio2 (pts/0) at 16:04:34 ...

WARNING!!!! VIOS Upgrade operation is in progress. Kindly Refrain from making any configuration changes...

Please wait for completion..

Initiating VIOS configuration backup..

VIOS configuration backup successful.

Initiating installation on alternate disk(s)..

Installation on alternate disk(s) failed.

I checked the log at: /var/adm/ras/ioslogs/viosupg_global.log

Restoring mksysb image to alternate disk(s).

restore: 0511-110 There is an unpacking error.

restore: 0511-708 There is an internal unpacking error: decode failure

restore: 0511-108 There was an error during the unpacking of ./opt/IBM/ldap/V6.4/lib64/libibmldapn.a

Turns out I had messed up my mksysb image (initially I concatenated the 3 images on the 3.1.0 DVDs)

This is when I went and got the single image from the Flash ISO

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Upgrade 2

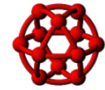
```
viosupgrade -i /usr/local/soft/vios31-flash-mkxsysb_image -a hdisk3 -g /home/padmin/filestosave.txt
```

```
Welcome to viosupgrade tool.
Operation triggered for given node(s).
Broadcast message from root@vio2 (pts/0) at 13:46:39 ...
WARNING!!! VIOS Upgrade operation is in progress. Kindly Refrain from making any configuration changes...
Please wait for completion..
Initiating VIOS configuration backup..
VIOS configuration backup successful.
Initiating installation on alternate disk(s)..
Installation on alternate disk(s) successful.
Copying files to altinst_rootvg.
Waking up altinst_rootvg successful.
Putting volume group altinst_rootvg to sleep ...
forced unmount of /alt_inst/var/adm/ras/livedump
forced unmount of /alt_inst/var/adm/ras/livedump
forced unmount of /alt_inst/var
forced unmount of /alt_inst/var
forced unmount of /alt_inst/usr
forced unmount of /alt_inst/usr
forced unmount of /alt_inst/tmp
forced unmount of /alt_inst/tmp
forced unmount of /alt_inst/opt
forced unmount of /alt_inst/opt
forced unmount of /alt_inst/home
forced unmount of /alt_inst/home
forced unmount of /alt_inst/admin
forced unmount of /alt_inst/admin
forced unmount of /alt_inst
forced unmount of /alt_inst
Fixing LV control blocks...
Fixing file system superblocks...
VIOS will be rebooted after '60' seconds to boot from the newly installed disk.
```

Press ctrl+c to terminate.

VIOS metadata restore (viosbr -restore) will be automatically resumed after the reboot.
VIOS may be rebooted once during this restore process. Refrain from making any changes to the VIOS virtual configurations during the restore process.
You can verify the restore status using 'viosupgrade -i -q' command and resume your operation after the completion of the restore process.

I hit ctrl -c to stop the reboot



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Check status

```
$ viosupgrade -i -q
Welcome to viosupgrade tool.
Getting status of node(s):
```

viosupgrade is in progress

Please see the vioupgrade status:

```
=====
Thu Mar 28 13:46:39 2019|STARTED
Thu Mar 28 13:51:14 2019|TRIGGERED
```

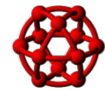
Please see the viosbr restore status:

```
=====
$ viosbr -view -list
vio2_13303902.tar.gz
vio2_13959382.tar.gz
vio2m.01.tar.gz
vio2m.02.tar.gz
```

\$ ls -alt cfbackups

```
total 120
drwxr-x-- 7 padmin system 4096 Mar 28 13:50 ..
drwxr-xr-x 2 padmin staff 256 Mar 28 13:47 .
-rw-r--r- 1 padmin staff 6925 Mar 28 13:47 vio2_13959382.tar.gz
-rw-r--r- 1 padmin staff 6913 Mar 28 00:00 vio2m.02.tar.gz
-rw-r--r- 1 padmin staff 6922 Mar 27 16:05 vio2_13303902.tar.gz
-rw-r--r- 1 padmin staff 6960 Mar 27 10:55 vio2m.01.tar.gz
```

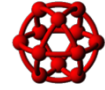
this is the image created by the upgrade I just did



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Hold off on reboot



I was not ready to boot the upgrade until my maintenance window when I planned to completely redo the upgrade, so I did the following:

```
# bootlist -m normal -o
hdisk3 blv=hd5 pathid=0
hdisk3 blv=hd5 pathid=1
hdisk3 blv=hd5 pathid=2
hdisk3 blv=hd5 pathid=3
```

Set it back to the current disk:

```
# lspv
hdisk0      00f95d3a1b679a90      fbovg      active
hdisk2      00f95d3a42550d49      fbovg      active
hdisk3      00f95d3a0de356cd      altinst_rootvg
hdisk1      00f95d3a42550ec9      rootvg     active
```

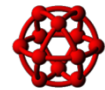
```
# bootlist -m normal hdisk1
```

```
# bootlist -m normal -o
hdisk1 blv=hd5 pathid=0
hdisk1 blv=hd5 pathid=1
hdisk1 blv=hd5 pathid=2
hdisk1 blv=hd5 pathid=3
```

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After reboot



I reran the process during my maintenance window to make sure I was up to date

A broadcast message is sent out

WARNING!!! VIOS Upgrade operation is in progress.

Kindly Refrain from making any configuration changes...

Then it reboots from the alternate disk

After the reboot it will require you to change your password (remember this is an overwrite install even if you upgrade)

Then you have to accept the license:

Indicate by selecting the appropriate response below whether you

accept or decline the software maintenance terms and conditions.

Accept (a) | Decline (d) | View Terms (v) > a

Now run the `viosupgrade -l -q` to check what happened

You should see started, triggered, restore, restore and then completed and it then shows the `viosbr restore status`

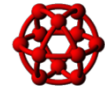
It shows the restore that happened and provides information on devices it could not restore

Now run all your post upgrade checks

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Post Upgrade or install (after reboot)

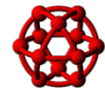


- Fix page spaces if you have not already done so
- Update Java7 to 7.0.0.640 or the latest
- Install ssl-1.0.2.1601 or higher
- Install ssh 7.5.102.1600 or higher
- If you have Java6 then update it to 6.0.0.655 or the latest
- You get the Java updates from Fix Central
 - Run `lspp -l | grep ava` to find out what you have installed
- SSH and SSL are obtained from the Web Download Pack which has moved to:
 - <https://www-01.ibm.com/marketing/iwm/iwm/web/pickUrxNew.do?source=aixbp>

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POST Install Checks



```
$ ioslevel
3.1.0.10
```

```
$ oem_setup_env
```

```
# oslevel -s
Should show: 7200-03-02-1846
7200-03-02-1846
```

```
# instfix -i | grep ML
All filesets for 7.2.0.0_AIX_ML were found.
All filesets for 7200-00_AIX_ML were found.
All filesets for 7200-01_AIX_ML were found.
All filesets for 7200-02_AIX_ML were found.
All filesets for 7200-03_AIX_ML were found.
```

```
# lppchk -v
# lppchk -vm3
# oslevel -s -l 7200-03-02-1846
#errpt | more - check there are no errors
```

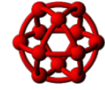
You should run `flrtvc` and will probably have to upgrade your `openssl`, `openssh` and `Java` to resolve security issues

**Once all checks are passed and VIO2 is back up check your client LPARs that they see all their paths again
Then go do the same upgrade to VIO1**

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Log Files



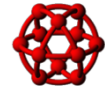
On VIOS after viosupgrade command from VIOS

- viosupgrade command logs: `/var/adm/ras/ioslogs/*`
Look at the viosupg_global.log
- viosupgrade restore logs: `/home/ios/logs/viosupg_restore.log`
- viosupgrade restore logs: `/home/ios/logs/viosupg_status.log`
- viosbr backup logs: `/home/ios/logs/backup_trace*`
- viosbr restore logs: `/home/ios/logs/restore_trace*`

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Updating - VIOS Problems



```
oem_setup_env
oslevel -s
6100-00-00-0000
Or 7100-00-00-0000
instfix -i | grep ML
All filesets for 6100-07_AIX_ML were found.
All filesets for 6.1.0.0_AIX_ML were found.
Not all filesets for 6100-08_AIX_ML were found.
This means there are missing filesets
```

Using vios 2.2.6 examples as so far no problems with 3.1 upgrade but this will give you the idea

```
# oslevel -sq
Known Service Packs
-----
Top one should be: 6100-09-11-1810

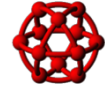
# oslevel -s -l 6100-09-11-1810
Fileset          Actual Level   Service Pack Level
-----
bos.alt_disk_install.boot_images  6.1.8.0       6.1.8.15
bos.loc.utf8_ES  6.1.7.15      6.1.8.15
DirectorCommonAgent  6.3.3.1       6.3.5.0
DirectorPlatformAgent 6.3.3.1       6.3.5.0
adde.v2.common.ddk   6.1.9.0       6.1.9.100
adde.v2.ethernet.ddk 6.1.9.15      6.1.9.300
adde.v2.rdma.ddk     6.1.9.100     6.1.9.300
```

These filesets should be corrected prior to updating
Either use updateios to update them or to remove them

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Remove or update problem filesets



DO NOT USE SMITTY – use updateios

Issues with bos.suma
updateios –remove bos.suma

```
# oslevel -s -l 6100-09-11-1810
```

Fileset	Actual Level	Service Pack Level
bos.alt_disk_install.boot_images	6.1.8.0	6.1.8.15
bos.loc.utf.ES_ES	6.1.7.15	6.1.8.15

```
updateios –remove bos.loc.utf.ES_ES
```

Upgrade alt disk
Copy images to be updated into a directory (/usr/local/soft/missing)
Run inutoc .

```
updateios –commit
Updateios -accept -install -dev /usr/local/soft/missing
```

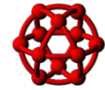
Also remove efixes prior to updates:
/usr/sbin/emgr -P lists them

To remove:
/usr/sbin/emgr -r -L <EFIX label>
emgr -r -L IV46869m3a

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Notes on latest ISO download and SPs

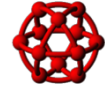


- Latest ISO download is for VIOS 3.1.0
- Flash image ISO is VIOS 3.1.0.10
- Don't forget to clean up inetd.conf and other files and then remirror rootvg once you are committed

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Efixes and ifixes



Many security patches are put on using efixes or ifixes
The VIO server also needs these to be applied – **use FLRTVC to determine what fixes are needed**

If you run emgr -l and there are no fixes listed then you most likely have security holes that need patching, specifically Java, openssl and openssl. Use FLRTVC to determine if there are any patches you need.

You should see something like:

```
emgr -l shows:
1 S 102m_ifix 04/11/18 22:44:25      IFIX for Openssl CVE on 1.0.2m
2 S  IJ02915s9a 04/11/18 22:45:46      IJ02915 for AIX 6.1 TL9 SP09
```

It will vary by O/S level and SP. This was for 2.2.6.21

You can find out what fixes you need by downloading and running FLRTVC

<https://www-304.ibm.com/webapp/set2/sas/f/flrt/flrtvc.html>

You should do this on AIX LPARs too

`/usr/sbin/emgr -l` lists them

To apply a fix change into the directory it is in and then:

```
emgr -p -e 102m_ifix_180105.epkg.Z
```

Remove the `-p` and run again if it is successful

To remove:

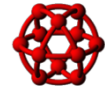
```
# /usr/sbin/emgr -r -L <EFIX label>
```

```
emgr -r -L IV46869m3a
```

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Thank you for your time



If you have questions please email me at:

jaqui@circle4.com or jlynch@flagshipsg.com

Also check out:

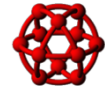
<http://www.circle4.com/movies/>

And the Virtual User Group

<http://www.bit.ly/powersystemsvug>

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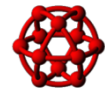


USEFUL COMMANDS

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Useful Commands



Command History

```
$ fc -l
725 lsrep
726 backupios -file /usr/local/backups/b750viobkp
727 exit
728 lsmmap -vadapter vhost0
729 fc -l
```

Global command log

```
$ lsgcl | grep "Aug 9 2013"
Aug 9 2013, 08:25:35 root ioslevel
Aug 9 2013, 08:59:22 padmin license
Aug 9 2013, 09:00:29 padmin lsmmap -vadapter vhost0
Aug 9 2013, 09:01:29 padmin lsgcl
```

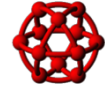
Redirecting output when running as padmin

```
lsmmap -all -npiv | tee npivdata.txt
```

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Useful Commands



vSCSI Commands

```
mkvdev -vdev hdisk2 -vadapter vhost0
mkvdev -fbo -vadapter vhost0
```

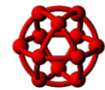
NPIV

```
Setup NPIV mappings
vfcmap -vadapter vfchost0 -fcp fcs0
lsmap -npiv -all
lsmap -vadapter vfchost0 -npiv
lsdev -virtual
lsnports
lsdev -slots
lscfg -vpl vfchost0
```

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Useful Commands



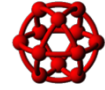
\$ lsdev -virtual

name	status	description
ent5	Available	Virtual I/O Ethernet Adapter (I-lan)
ent6	Available	Virtual I/O Ethernet Adapter (I-lan)
ent7	Available	Virtual I/O Ethernet Adapter (I-lan)
vasi0	Available	Virtual Asynchronous Services Interface (VASI)
vbsd0	Available	Virtual Block Storage Device (VBSD)
vfchost0	Available	Virtual FC Server Adapter
vfchost1	Available	Virtual FC Server Adapter
vhost0	Available	Virtual SCSI Server Adapter
vhost1	Available	Virtual SCSI Server Adapter
vsa0	Available	LPAR Virtual Serial Adapter
b740ios1_rv1	Available	Virtual Target Device - Logical Volume
b740l1_rv1	Available	Virtual Target Device - Logical Volume
vtopt0	Available	Virtual Target Device - File-backed Optical
vtopt1	Available	Virtual Target Device - File-backed Optical
vtscsi0	Available	Virtual Target Device - Disk
vtscsi1	Available	Virtual Target Device - Disk
vtscsi2	Available	Virtual Target Device - Disk
vtscsi3	Available	Virtual Target Device - Disk
ent8	Available	Shared Ethernet Adapter

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Useful Commands



\$ Ismap -vadapter vhost0

SVSA	Physloc	Client Partition ID
vhost0	U8205.E6B.1093XXX-V1-C21	0x00000003

VTD	b740l1_rv1
Status	Available
LUN	0x8300000000000000
Backing device	lv_b740l1
Physloc	
Mirrored	N/A

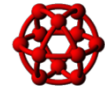
VTD	vtopt0
Status	Available
LUN	0x8200000000000000
Backing device	
Physloc	
Mirrored	N/A

VTD	vtopt1
Status	Available
LUN	0x8100000000000000
Backing device	
Physloc	
Mirrored	N/A

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Useful Commands



\$ Ismap -vadapter vfchost0 -npiv

Name	Physloc	ClntID	ClntName	ClntOS
vfchost0	U8205.E6B.1093XXX-V1-C31	3		

Status:NOT_LOGGED_IN
 FC name:fcs0 FC loc code:U78AA.001.WZSG8XX-P1-C5-T1
 Ports logged in:0
 Flags:<NOT_LOGGED>
 VFC client name: VFC client DRC:

\$ Ismap -vadapter vfchost4 -npiv

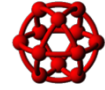
Name	Physloc	ClntID	ClntName	ClntOS
vfchost4	U8205.E6B.1093XXX-V1-C36	8	b740nl1	AIX

Status:LOGGED_IN
 FC name:fcs0 FC loc code:U78AA.001.WZSG8XX-P1-C5-T1
 Ports logged in:3
 Flags:<LOGGED_IN,STRIP_MERGE>
 VFC client name:fcs0 VFC client DRC:U8205.E6B.1093XXX-V8-C36

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Useful Commands



\$ Isnports

name	physloc	fabric	tports	aports	swwpns	awwpns
fcs0	U78AA.001.WZSG8XX-P1-C5-T1	1	64	63	2048	2041

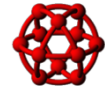
\$ Isdev -slots

# Slot	Description	Device(s)
HEA 1	Logical I/O Slot	lhea0 ent0
U8205.E6B.1093XXX-V1-C0	Virtual I/O Slot	vsa0
U8205.E6B.1093XXX-V1-C11	Virtual I/O Slot	ent5
U8205.E6B.1093XXX-V1-C12	Virtual I/O Slot	ent6
U8205.E6B.1093XXX-V1-C13	Virtual I/O Slot	ent7
U8205.E6B.1093XXX-V1-C21	Virtual I/O Slot	vhost0
U8205.E6B.1093XXX-V1-C22	Virtual I/O Slot	vhost1
U8205.E6B.1093XXX-V1-C23	Virtual I/O Slot	vhost2
U8205.E6B.1093XXX-V1-C31	Virtual I/O Slot	vfchost0
U8205.E6B.1093XXX-V1-C32	Virtual I/O Slot	vfchost1
U8205.E6B.1093XXX-V1-C33	Virtual I/O Slot	vfchost2
U8205.E6B.1093XXX-V1-C32769	Virtual I/O Slot	vasi0
U8205.E6B.1093XXX-V1-C32773	Virtual I/O Slot	vasi1
U8205.E6B.1093XXX-V1-C32774	Virtual I/O Slot	vasi2
U8205.E6B.1093XXX-V1-C32775	Virtual I/O Slot	vasi3
U8205.E6B.1093XXX-V1-C32776	Virtual I/O Slot	vasi4

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Useful Links and Documentation

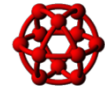


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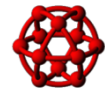
Documentation on VIOS 3.1 upgrades



- What's new in Virtual I/O Server commands
- https://www.ibm.com/support/knowledgecenter/en/9040-MR9/p9hcg/p9hcg_whatsnew.htm
- Virtual I/O Server release notes – include USB Memory/Flash key install
- https://www.ibm.com/support/knowledgecenter/en/9040-MR9/p9eeo/p9eeo_ipeeo_main.htm
 - USB Memory/Flash key install
 - Duff minimum size for a VIOS
- **VIOS viosupgrade** command in VIOS 2.2.6.30
- https://www.ibm.com/support/knowledgecenter/en/9009-42A/p9hcg/p9hcg_viosupgrade.htm
- **NIM viosupgrade** command on the NIM AIX 7.2 TL3 + sp
- https://www.ibm.com/support/knowledgecenter/en/ssw_aix_72/com.ibm.aix.cmds6/viosupgrade.htm
 - This one is buried in the AIX commands reference for AIX Commands of AIX 7.2

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Useful Links



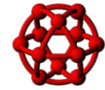
- Jaqui Lynch Articles
 - <http://www.circle4.com/jaqui/eserver.html>
- Nigel Griffiths AIXpert Blog
 - <https://www.ibm.com/developerworks/community/blogs/aixpert?lang=en>
- Nigel Griffiths Twitter – mr_nmon
 - https://twitter.com/mr_nmon
- Gareth Coates Twitter – power_gaz
 - https://twitter.com/power_gaz
- Jaqui's Movie Replays
 - <http://www.circle4.com/movies>
- IBM US Virtual User Group
 - <http://www.tinyurl.com/ibmaixvug>
- Power Systems UK User Group
 - <http://tinyurl.com/PowerSystemsTechnicalWebinars>

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Useful Links



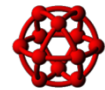
- HMC Scanner
 - <https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Power%20Systems/page/HMC%20Scanner>
- Performance Tools Wiki
 - AIX Performance Tools and Commands
 - <https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Power%20Systems/page/AIX%20Performance%20Commands>
 - Performance Monitoring Tips and Techniques
 - <https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Power%20Systems/page/Performance%20Monitoring%20Tips%20and%20Techniques>
 - Other Performance Tools
 - <https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Power+Systems/page/Other+Performance+Tools>
 - Includes new advisors for Java, VIOS, Virtualization
- VIOS Advisor
 - <https://www.ibm.com/developerworks/community/wikis/home?lang=en#/wiki/Power%20Systems/page/VIOS%20Advisor>
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References



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