

AIX 7.2 Technology Level 4

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If you are running any level of AIX prior to AIX 7.1 TL05 then it is time for you to consider upgrading your AIX. All releases prior to AIX 7.1 TL05 are now out of support. Additionally for AIX 7.2, TL01 went out of support 11/30/2019 and TL02 goes out of support 10/31/2020. So this is a good time to start looking at AIX 7.2 TL04. TL04 was announced 11/15/2019 along with the associated service pack SP1. It does not go out of support until 11/30/2022 according to the tables at FLRTLite.

Why bother

Aside from the support issues mentioned above AIX 7.2 TL04 includes support for new technologies and some new features. 7200-04-01 is also the minimum release required for NIM to support the latest VIO server level of 3.1.1.10. TL4 includes new workload scalability options, new levels of OS security, updates to AIX Live Update, new I/O features and storage enhancements as well as improvements to file systems. There are also enhancements to the associated AIX Toolbox.

For scalability, IBM has introduced xgzip in the Web Download Pack. When combined with the new zlibNX library in the AIX expansion pack this program can take advantage of the POWER9 NX GZIP accelerator to improve compression speeds. Additionally, VMM lock scaling can be used to improve workload performance and native support is now available for XIVE (eXternal Interrupt Virtual Engine).

Live Update has been enhanced to support active AutoFS mounts and to work with the IBM Network Authentication Service (NAS) Kerberos client and server. It is also now Oracle certified for AIX 7.2 with Oracle 12c, 18c and 19c.

The new I/O features include support for Serial over ethernet (SoE) as well as Enhanced Transmission Selection (eTS) on certain network adapters. The iSCSI initiator has also been enhanced to improve performance.

There are also enhancements to multipath I/O (MPIO). Improvements have been made to AIXPCM path health check and the `lsmPIO` command has a new `-o` flag. The `-o` flag tells the AIX disk driver to attempt to access MPIO that are associated with the specified MPIO disks. This includes accessing paths that were marked as failed when the MPIO disk was last closed. Effectively, it provides an up-to-date status about the MPIO path. Output from the command is no different to a regular `lsmPIO` if there are no failed disks and will look something like:

```
#lsmPIO -l hdisk1 -o
name  path_id status  path_status parent connection
```

hdisk1 0	Enabled	Non	fscsi0	500507680d048ef6,1000000000000
hdisk1 1	Enabled	Sel,Opt	fscsi0	500507680d048ef7,1000000000000
hdisk1 2	Enabled	Non	fscsi1	500507680d088ef6,1000000000000
hdisk1 3	Enabled	Sel,Opt	fscsi1	500507680d088ef7,1000000000000

Additional enhancements include I/O timeout detection improvements for fibre channel drivers, performance improvements for 100GB network adapters, improvements to file systems and JSF2 support for large extents.

Finally there have been enhancements to the Web Download Pack and the AIX Toolbox. SMB v2.1 support is now available through programs in the Web Download Pack. The current version of Samba provided is 4.3.8. This is also where you will find the latest versions of OpenSSH and OpenSSL. The AIX Toolbox has been updated to include many new packages as well as new versions of packages. As an example the Samba there is currently 4.10.13. It is recommended that you download yum.sh from the AIX Toolbox homepage and run it so that you can use yum to install and manage AIX Toolbox software.

Server Support

AIX 7.2 will run on POWER7, POWER8 or POWER9 systems. It will not run on the POWER8 L or LC models. It is important to check the announcement letter or redbook for the specific server model you are installing or upgrading as they all have minimum requirements. As an example, using the E950 with virtualized I/O (VIO servers), the minimum AIX levels are listed as:

E950

7.2 TL03

7.2 TL02 SP1

7.2 TL01 SP1

7.1 TL05 SP1

7.1 TL04 SP2

6.1 TL09 SP7 with service extension

If VIO servers are not being used then the minimum levels are higher.

Once you have determined that your server is supported then you can download the software.

Implementation

AIX 7.2 TL04 (7200-04-00-1937) and AIX 7.2 TL04 SP1 (7200-04-01-1939) can both be downloaded from IBM's Fix Central. You can then install them directly onto the LPAR or use NIM or other methods you normally use to update the operating system. I normally use alt_disk_copy to backup rootvg as well as my regular mkysyb prior to the install. You can also use alternate disk install methods as well.

AIX 7.2 TL04 SP1

This service pack was delivered concurrently with AIX 7.2 TL04 and is still the current service pack. It fixes a number of problems including issues with AIO,

LPM and diag. Once SP1 is installed there are still several outstanding fixes to be installed using emgr as well as updates to Java, SSH and SSL. The levels of Java, OpenSSH and openSSL on the updates are not the most current. In order to be at the most secure levels you will want to go to Fix Central and download the latest Java for your system. The OpenSSH and openSSL are downloaded from the Web Download Pack. The latest levels recommended are:

```
lspp -l | grep ava
Java7_64.jre          7.0.0.660 COMMITTED Java SDK 64-bit Java Runtime
Java8_64.jre         8.0.0.605 COMMITTED Java SDK 64-bit Java Runtime
```

```
lspp -l | grep ssl
openssl.base         1.0.2.2001 COMMITTED Open Secure Socket Layer
```

```
lspp -l | grep ssh
openssh.base.client  7.5.102.2000 COMMITTED Open Secure Shell
Commands
```

Prior to updating OpenSSH I would recommend you take a copy of /etc/ssh/sshd_config and compare it after the update.

FLRTVC also identified multiple patches to go on this level (as it does with all other levels). For AIX 7.2 TL04 SP1 it identified the following:

On my current AIX NIM server oslevel -s shows: 7200-04-01-1939 and these fixes were identified and applied:

```
emgr -l
ID STATE LABEL INSTALL TIME UPDATED BY ABSTRACT
1 S IJ20786s1a 02/29/20 22:38:31 tcpdump CVEs fixed
2 S IJ21527s1a 02/29/20 22:49:09 EEH and data integrity issue
3 S IJ22290s1a 02/29/20 22:51:18 IJ22290 - io hang by sli-4 adapter
4 S IJ22714s1a 02/29/20 22:51:55 HIPER IJ22714 I/O NOT COMPLETING
```

My VIO server is at 3.1.1.10 and oslevel -s shos: 7200-04-01-1939. On the VIO server the following fixes were identified and applied:

```
emgr -l
ID STATE LABEL INSTALL TIME UPDATED BY ABSTRACT
1 S IJ20786s1a 02/29/20 23:12:52 tcpdump CVEs fixed
2 S IJ21527s1a 03/18/20 10:26:50 EEH and data integrity issue
3 S IJ22714s1a 03/18/20 10:27:15 HIPER IJ22714 I/O NOT COMPLETING
4 S IJ22290s1a 03/18/20 10:27:38 IJ22290 - io hang by sli-4 adapter
5 S IJ21564s1a 03/18/20 10:28:22 Fix for IJ21564
```

Java and OpenSSH and openSSL were also updated on the VIO servers.

Finally, as part of the update I always check Fix Central for I/O adapter and disk firmware that may need to go on. These were also applied and the system was rebooted.

Summary

AIX 7.2 TL04 SP1 has been out now for 4 months and is very stable. It sets your system up for new enhancements moving forward and also provides performance and software updates that are very beneficial. At a minimum your NIM server should be updated to this level so it can support any systems you want to update as well as the latest VIO server software.

References

FLRTLite for AIX

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

FLRTVC

<https://www14.software.ibm.com/support/customercare/sas/f/flrt/flrtvc.html>

Fix Central

<https://www.ibm.com/support/fixcentral/>

Web Download Pack

<https://www-01.ibm.com/marketing/iwm/iwm/web/pickUrxNew.do?source=aixbp>

AIX Toolbox

<https://www-03.ibm.com/systems/power/software/aix/linux/toolbox/alpha.html>

AIX Version Hardware Support

<https://www.ibm.com/downloads/cas/6NZDRMPA>

Links to the fixes for AIX 7.2 TL04 SP1 and VIOS 3.1.1.10

<http://aix.software.ibm.com/aix/ifixes/ij22714>

<http://aix.software.ibm.com/aix/ifixes/ij21580>

<http://aix.software.ibm.com/aix/ifixes/ij21527>

<http://aix.software.ibm.com/aix/ifixes/ij22290>

<http://aix.software.ibm.com/aix/ifixes/ij21564>