

Tools you can use

By Jaqui Lynch

Introduction

As an administrator you have available to you a wealth of tools that help with managing your AIX and Linux on Power systems. However, in many cases you have to know about them and where to find them. In this article we go over some of the tools that I find incredibly useful and where to find them.

NMON Collection

The nmon collection consists of a series of tools designed to record and provide a view into performance on AIX and Linux on Power. The tools consist of nmon (now integrated with topas), nmon for Linux (is distribution specific), nmon Analyzer (just updated to v5.0.2), nmon Chart and nmon Consolidator.

nmon is the tool developed by Nigel Griffiths to monitor and record performance information for LPARs. Originally you had to download it but if you are running AIX 6.1 or higher it now comes with the system and you should use that version. For AIX v5.3 a version was included at tl12 but I still download the 5.3 nmon from the website as it has a couple of features that were not in the AIX 5.3 integrated version. I run nmon on all LPARs including VIO servers 7/24 using 24 hour reports that I offload later to a storage server. There is also a version of nmon that runs on Linux on Power, x86 and the mainframe and the nmon file produced can be imported into the nmon analyser tool as well.

On AIX or VIO, to run a 45 minute nmon report I use the following:

```
nmon -ft -AOPV^dMLW -s 15 -c 180
```

For a 24 hour report I use:

```
nmon -ft -AOPV^dMLW -s 150 -c 576
```

The flags above are as follows:

- A is async IO
- M is mempages
- t is top processes
- L is large pages
- O is SEA on the VIO
- P is paging space
- V is disk volume group
- d is disk service times
- ^ is fibre adapter stats
- W is workload manager statistics if you have WLM enabled

nmon analyser is the tool that takes nmon output and puts into a spreadsheet format so that you can better analyze your performance data. It has just been updated to v5.0.2 which includes several fixes, especially for large.nmon files.

Additionally, in version 4.7 and higher there is now support for POWER8 and SMT8.

nmon chart is a new ksh script that Nigel Griffiths developed that converts nmon files into a webpage format (.html) so that the data can be viewed online. nmon chart can run on AIX or Linux and it requires use of the korn shell (ksh).

nmon consolidator is an interesting tool but it has not been kept up to date. It allows you to bring in multiple nmon files (same timeframe) from different LPARs and it then produces a consolidated report on what it would look like if those LPARs got combined onto one server. It has not been updated for some time (last was October 2010) so I use it to get a broad brushstroke idea of what the consolidation might look like.

VIOS Performance Analyzer – part

The VIOS Performance Analyzer has now been integrated into AIX and is accessed using the part command. This command provides performance reports on your VIO servers. It looks at key performance metrics with an eye to finding potential problems and recommending configuration changes. It is very simple to run – the following monitors the system for 30 minutes and produces an advisory report in .xml format:

```
part -l 30
```

You can also run it against an nmon file that you have recorded on your VIO server as follows:

```
part -f nameoffile.nmon
```

When part completes it will tell you that it successfully generated the report and what the name is (normally a .tar file). You download the .tar file as binary and expand it on your computer to get to the .xml file which you can open with your browser.

nstress

nstress is a series of tools that come as a package and that were designed by Nigel Griffiths to stress test systems. The modules in the series include:

- ncpu - stresses the cpus
- ndisk64 – stresses the disks. Does read/write tests, also tests use of aio
- nmem and nmem64 – stresses memory
- nipc – tests shared memory, semaphores and shared messages in a ring of processed
- nfile – drives the JFS and JFS2 logs

There are versions of nstress for AIX and the various Linux distributions. Make sure to read the documentation prior to implementing.

IBM Support Collection

FLRT and FLRTVC, Call Home and Call Home Web, Support Portal, Fix Central and Service Management Connect

FLRT (Fix level recommendation tool) is a tool to allow you to check that you are running compatible levels of HMC, firmware, AIX and so on. FLRTVC (FLRT vulnerability checker) is designed to ensure that you are at the latest fixes for security and other HIPER bugs. The web page for FLRT also has links to the latest AIX/VIOS security tables, HIPER tables and a VIOS to NIM Master mapping table that helps you to keep your NIM server current.

In order to run FLRTVC I normally download the wget command into the same directory that I download FLRTVC to. I normally rename the apar.csv file before running FLRTVC so that it will download the latest version. I then run FLRTVC and pipe the output to a file as follows:

```
./flrtvc55.ksh >system-flrtout-date.txt 2>&1
```

I then download the file as ascii and open it in Excel using | as a delimiter. It then formats everything such that I can tell which fixes are installed and which fixes are needed. It also tells me where to go to download the fixes and provides links to the documentation.

IBM Call Home constantly monitors your systems for health and reports back to IBM and your designated person on that status, opening service requests to IBM as necessary. Call Home uses the electronic support agent (ESA) which is installed on the HMC if you have one or on the individual servers. More recently IBM has added a feature called IBM Call Home Web that provides a dashboard into recent events along with a summary that can be exported for later use. The dashboard also provides a summary of the systems associated with your IBM ID in the application. Adding a server to Call Home Web also does an entitlement check which can be very helpful in avoiding entitlement issues when there is a system problem.

The IBM Support Portal is the starting point for IBM Support. You can tailor it for your environment and from here you can open service requests (PMRs), check warranties, connect to fix central and get access to Call Home, contracts and inventory along with many other features. Right now there is a link on the site to take you to the new version of Support Portal. I just looked at it and I find it to be more intuitive to use. This is your chance to check it out and provide IBM with feedback as to how you want it to look – just click on the “Contact and feedback” link at the bottom of the page.

Fix Central is linked to from the Support Portal and is the location for all fixes, updates and drivers along with firmware for the POWER servers. In the references below you will also find a link to the AIX Support Center tools – this is the location for tools IBM may ask you to run during a problem. These tools include snap and perfpmr.

A new site that has just been brought up is Service Management Connect. IT has a number of products on it including POWER plus many of the storage products. The site does not only give you product information but it also provides links to

documentation, forums and communities, downloads for many products and has a number of videos.

Finally, the Entitled Software Website is where you go to check software entitlement and to download copies of entitled software, If you need to download the iso image of PowerVM for your server this is where you will find it.

HMC Scanner

This has to be my second favorite tool (nmon is my favorite). There is no better way to document your systems quickly if they are connected to an HMC. I prefer this to the Systems Planning Tool as it records significantly more information including vSCSI and NPIV mappings. I normally download it and install in on an AIX LPAR and run it from there as follows:

```
./hmcScanner.ksh xxxxxx hscroot -p yyyyy -stats
```

In the above you will need to replace xxxxxx with the HMC name or IP and yyyyy with the password for hscroot.

It is possible to run it from Windows although sometimes Java versions can be a problem:

Edit the hmcScanner.bat in order to make the BASE variable point to the directory where the install ZIP file has been decompressed. Now change into that directory and:

```
hmcScanner.bat xxxxxx hscroot -p yyyyy -stats
```

In the above you will need to replace xxxxxx with the HMC name or IP and yyyyy with the password for hscroot.

This should create a .xls file that contains the report on all servers connected to that HMC. If you ran it on AIX you will need to download the file in binary format in order to view it with Excel.

EZH – the Easy HMC Command Line tool

This is a script created by Brian Smith to simplify command line use on the HMC. Brian created a script called EZH that includes the most common tasks so that you can use shorter commands to make things happen. He also added functions such as the ability to clone an LPAR, something that there is no native HMC command to do. As an example, if you want to power on the aix1 LPAR on the managed system called p520 the HMC command is:

```
chsysstate -r lpar -o on -f aix1 -m p520 -n aix1
```

Using EZH the command is:

```
lparpoweron aix1
```

It is well worth investigating this script to see how it might help with your day to day HMC tasks.

loopmount Command

The loopmount command is an incredibly useful command that allows you to mount iso images in an LPAR. I have a habit of losing install DVDs so I use software to rip them into .iso files and then I upload those .iso files to my NIM server where I store them in an NFS exported directory. That way, from any LPAR I can grab the iso and mount it as if it was on a DVD drive. If you are uploading multiple images give them meaningful names so that you can figure out what they actually are later. I now download all my images from fix central as .iso files wherever I can and use smitty bffcreate to then create the install directory for NIM or just generically. Here is an example of how to mount an iso image – assuming it is called aix71-tlo4sp1-cd1.iso and that it is in /isoimages and I have a mount point called /isomnt

```
loopmount -i /isoimages/aix71-tl04sp1-cd1.iso -o "-V cdrfs -o ro" -m /isomnt
```

I can now use ls on /isomnt and it is as if the CD itself was mounted.

Linux on Power Tools

There are now a significant number of tools available for Linux on Power. Apart from nmon for Linux and nstress there is also the Linux Performance Customer Profiler Utility (lpcpu). This tool gathers performance data from both x86 and Linux on Power systems and is typically what IBM will ask you to run as a perfpmr equivalent on a Linux system when you have problems.

Additionally, IBM provides a site for Linux on Power Service and productivity tools – this is where you will find the Linux installation toolkit, various hardware aids and diagnostic tools and various SDKs (software development kits) for the different distributions. There is also a Linux Tools Repository that provides links to tools regularly used by administrators

Summary

Today's administrators are often overwhelmed with the sheer magnitude of the number of LPARs and servers they have to maintain. Just keeping track of firmware and operating system levels can be a challenge. Although there are many tools out there to assist with many of the tasks it can be difficult to keep track of them. The purpose of this article is to provide information on the ones that I have found useful in the past and to provide the information on them in one location.

References

Nmon Command

https://www.ibm.com/support/knowledgecenter/ssw_aix_72/com.ibm.aix.cmds4/nmon.htm

Nmon Analyzer

<https://ibm.biz/BdDGJZ>

Nmon Chart

<https://ibm.biz/Bd4ZMm>

Nmon Consolidator

https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Power%20Systems/page/nmon_consolidator

Nmon for Linux

<http://nmon.sourceforge.net/pmwiki.php>

Nstress

<https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Power%20Systems/page/nstress>

VIOS Performance Advisor – part command

<https://www.ibm.com/support/knowledgecenter/POWER7/p7hcg/part.htm>

HMC Scanner

<https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Power%20Systems/page/HMC%20Scanner>

EZH – Easy HMC Command Line Tool

https://www.ibm.com/developerworks/community/blogs/brian/entry/ezh_the_easy_hmc_command_line_interface7?lang=en

IBM Support Collection

FLRT

<http://www-304.ibm.com/support/customer/flare/>

FLRTVC

<http://www-304.ibm.com/webapp/set2/flrt/vc>

Call Home and Call Home Web

https://www-947.ibm.com/support/entry/spe_70/shared/html/chwe-help.html#using_dashboard

Fix Central

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

Electronic Support Portal

<http://www-01.ibm.com/support/esa/>

Support portal to view contracts, inventory, heartbeat, etc of your systems

<http://www-01.ibm.com/support/electronicssupport/>

Working with IBM Support

<http://www-01.ibm.com/support/electronicssupport/workwithibm.html>

Service Management Connect

<http://www.ibm.com/developerworks/servicemanagement/>

AIX Support Center Tools – perfpmr, snap, etc

http://www-01.ibm.com/support/docview.wss?uid=aixtools_home

Entitled Software Website

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

loopmount Command

https://www.ibm.com/support/knowledgecenter/ssw_aix_72/com.ibm.aix.cmds3/loopmount.htm

Linux on Power Service and productivity tools

<https://www-304.ibm.com/support/customercare/sas/f/lopdiags/home.html>

Linux Tools Repository

<https://www.ibm.com/support/knowledgecenter/linuxonibm/liaae/liaaetoolsrepository.htm>

Linux on Power lpcpu Utility

https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/W51a7ffc4dfd_4b40_9d82_446ebc23c550/page/Linux+Performance+Customer+Pr+ofiler+Utility+%28lpcpu%29

OTHER

IBM Announcements Website

http://www-01.ibm.com/common/ssi/index.wss?request_locale=en

IBM Techdocs

<http://www-03.ibm.com/support/techdocs/atmastr.nsf/Web/Search>

IBM Redbooks

<http://www.redbooks.ibm.com>

IBM Training

<http://www.training.ibm.com>