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Today

Power Systems Configuration Best Practices
Starting at 10:00 am UK time by Tom Watts

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Previous Sessions:
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Monitoring with ITM
Whole Machine Monitoring
Electric Server Agent
RDX Removable disks
Dynamic Platform Optimiser
PowerSC
POWER Advisors
POWER7 Affinity and Perf.
Updating Power, I/O & HMC
VPM for IBM i
ISD VMControl -Cap&Dep
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Future Sessions →

- 8th Jan - VIOS Shared Storage Pools Phase4
  - 5th Feb – PowerVP – wow!
    - 5th Mar – PowerVC
  - Suggestions Welcome

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POWER Systems Configuration and Best Practices

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Initial System Setup…

What NOT to do…

- Start up a new HMC and plug it into your new server straight away
  - Always start up a new HMC on its own (no servers attached) and check the software versions and perform all upgrades / mandatory patching first. Only then should you plug it into a server and start managing. If you have more than one new HMC do the software checks, upgrades and initial configuration on all of them before plugging any of them into a server.

- Use the single pre-defined partition that is on the server
  - It is possible to use a POWER server with a single operating system instance on it however always delete the pre-defined partition and create a new one from scratch before installing any operating system.

- Use a single Virtual I/O Server partition
  - Always use dual VIO Servers (or more) to split work between and provide redundancy, using a single VIO Server partition for all the work creates a single point of failure and stops you from performing live maintenance of the virtual infrastructure.

What you SHOULD to do…

- Plan first….use IBM tools to help you with that, like the System Planning Tool, or your own spreadsheet or other function to plan out the resources.
  - Having it all documented will help in future changes, diagnosing set up problems, mapping virtual slot numbers etc.
  - ***This point will be repeated over and over!***

- Perform all firmware and software maintenance *before* creating new partitions
  - Update the HMC code, update the system firmware, check for any adapter firmware and update it if necessary (using the VIO partitions).

- Delete any pre-defined partitions on the system
  - Always best to start from scratch and not try to re-use a partition that plant may have created for testing.

- Install the very latest available Virtual I/O Server software
  - Don't be tempted to just use the same version you have on other servers, brand new kit will normally require up to date software to make best use of it.

Creating partitions…

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What NOT to do…

- Use the minimal amount of processor resource and assume higher virtual processor values will make up for the shortfall (during peak loading).
  - What this will do is increase hypervisor time and resource usage trying to schedule virtual processors onto real cores, this causes performance problems that are hard to diagnose.

- Use a 'desired' memory value that is 'just enough' and leaves little or no head room.
  - While it is very tempting to allocate 'just enough' and DLPAR in additional memory when needed, this can have the side effect of fragmenting memory regions and slow down database/OLTP style transactions noticeably.

- Only create one virtual disk or adapter path (per VIOS) to multiple disks
  - In other words if you have many disks to present to a partition don't do it down a single path per VIO Server, always balance a number of disks across multiple adapters.

- Not work out some form of application baseline target to aim for!!
  - Otherwise how will you really know things are not quite right? (Meaningful values).

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What you SHOULD to do…

- Plan first….use IBM tools to help you with that, like the System Planning Tool, or your own spreadsheet or other function to plan out the resources.
  - Having it all documented will help in future changes, diagnosing set up problems, mapping virtual slot numbers etc.
  - *I will keep repeating this over and over and over….*

- Allocate a reasonable amount of processor and memory.
  - 0.1 cpu is good for tiny workloads but not much else, 0.5 is a good starting point with appropriate virtual processor values, for example rounding up to the nearest whole number so 0.5 has 1 virtual processor (which is the minimum anyway!), 1.5 has 2 virtual processors.

- Create suitable i/o maps – vscsi or NPIV based – multiple connections
  - Work out before creating anything how many adapters and disks will be needed to service i/o requests.

- Before changing anything once the partition is running benchmark and record i/o, processor and application transaction numbers.
  - Otherwise how will you really know things are improving or not?

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Migrations…

What NOT to do…(if you want best performance…)

- Use Live Partition Mobility to move partitions and not do anything else
  - Moving partitions from POWER6 servers onto POWER7 is a great "quick" way to migrate and carry on with minimal service disruption….however if you don't do additional work to update the operating system, applications and re-configure the moved partition to use POWER7 mode you will most certainly see performance problems with busy partitions.

- Use the "unplug and re-plug" method without planning
  - Defining an empty partition and just plugging in the old disks will not make a performing partition go any faster – if anything it should perform just slightly quicker than before but nothing to shout about.
  - **ALWAYS** ensure the operating system is up to date, ensure the applications are up to date and supported on the new hardware, the disk and network infrastructure is reasonably up to date and when defining the new target partition use sensible values for memory and resource – don't just copy the original partition and hope for the best.

- Leave AIX at an unsupported level and pray all goes well
  - Out of support and extended support versions of AIX are not optimised for POWER7 and beyond, do not stay on those levels.

What you SHOULD to do…

- Plan first….use IBM tools to help you with that, like the System Planning Tool, or your own spreadsheet or other function to plan out the resources.
  - Having it all documented will help in future changes, diagnosing set up problems, mapping virtual slot numbers etc.
  - *Told you this would repeat….how many of you noticed?*

- Prepare the source partition as much as possible with updates
  - Get the source partition as close to the latest software levels as possible before the migration.

- Create (AIX) mksysb copies of the source partition and then use one copy to use for the migration.
  - Once the source partition is updated, use the mksysb migration method via a NIM server and test the target partition is installed and running properly.
  - Use the baseline benchmarks you took before remember?

- Ensure existing optimisations are suitable for the target platform
  - In some cases tuning in the os and/or application can have adverse effects so make sure those settings are documented and tested once migrated and back some out if necessary.

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Any questions?

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Revised September 26, 2006

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Revised February 9, 2010

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Next Time

8th Jan
VIOS Shared Storage Pools Phase4
with Nigel Griffiths

Previous Sessions:
Monitoring with ITM
Whole Machine Monitoring
Electric Server Agent
RDX Removable disks
Dynamic Platform Optimiser
PowerSC
POWER Advisors
POWER7 Affinity and Perf.
Updating Power, I/O & HMC
VPM for IBM i
ISD VMControl
- Capture & Deploy
SSP3

Future Sessions
- 5th Feb – PowerVP – wow!
  - 5th Mar – PowerVC
- Suggestions Welcome

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