

This is a short description of the newly introduced additional metrics for Ganglia running on AIX.

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The following additional metrics are defined for AIX:

- capped
- cpu\_entitlement
- cpu\_in\_lpar
- cpu\_in\_machine
- cpu\_in\_pool
- cpu\_pool\_idle
- cpu\_used
- disk\_read
- disk\_write
- kernel64bit
- lpar
- lpar\_name
- lpar\_num
- oslevel
- serial\_num
- smt
- splpar
- weight

Despite the fact that most of these metrics are mostly only useful for AIX 5L v5.3 running in a Shared Processor LPAR, some “reasonable” values must be returned if not running in that scenario. The metrics are now discussed in more detail.

**Metric:**        **capped**

**Return type:**

- GANGLIA\_VALUE\_STRING

**Notion:**

- This metric either returns “yes” if the system is a POWER5 Shared Processor LPAR which is running in capped mode or “no” otherwise.

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 or later this must be “ifdefed” appropriately as libperfstat on earlier AIX versions doesn't contain this information.
  - If we are running on AIX 5L v5.3 or later a distinction must be made whether this is a Shared Processor LPAR or not.
  - If libperfstat returns an error code an appropriate error message is returned.
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**Metric:**        **entitlement**

**Return type:**

- GANGLIA\_VALUE\_FLOAT

**Notion:**

- This function returns the Capacity Entitlement of the system in units of physical CPUs.

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 and above this must be “ifdefed” appropriately as libperfstat on earlier AIX versions doesn't contain this information.
- If we are running on AIX 5L v5.3 or later a distinction must be made whether this is a Shared Processor LPAR or not as otherwise the number of online CPUs is returned.
- On AIX versions before v5.3 the number of available CPUs is returned.
- If libperfstat returns an error code a value of 0.0 is returned.

**Metric:**        **cpu\_in\_lpar**

**Return type:**

- GANGLIA\_VALUE\_INT

**Notion:**

- This metric returns the number of CPUs the OS sees in the system.
- In a POWER5 Shared Processor LPAR this returns the number of virtual CPUs.
- When SMT is enabled this number is doubled.

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 or later above this must be “ifdef’ed” appropriately as libperfstat on earlier AIX versions doesn't contain this information.
  - If we are running on AIX 5L v5.3 or later the number of online CPUs is returned.
  - On AIX versions before v5.3 the number of configured CPUs is returned.
  - If libperfstat returns an error code a value of -1 is returned.
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**Metric:**        **cpu\_in\_machine**

**Return type:**

- GANGLIA\_VALUE\_INT

**Notion:**

- This metric returns the number of physical CPUs in the whole system.

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 or later above this must be “ifdef’ed” appropriately as libperfstat on earlier AIX versions doesn't contain this information.
- If we are running on AIX 5L v5.3 or later the number of online physical CPUs is returned.
- On AIX versions before v5.3 the number of CPUs is returned.
- If libperfstat returns an error code a value of -1 is returned.

**Metric:**        **cpu\_in\_pool**

**Return type:**

- GANGLIA\_VALUE\_INT

**Notion:**

- This metric returns the number of physical CPUs in the Shared Processor Pool.

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 or later above this must be “ifdef’ed” appropriately as libperfstat on earlier AIX versions doesn't contain this information.
  - On AIX versions before v5.3 the number of CPUs is returned.
  - If libperfstat returns an error code a value of -1 is returned.
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**Metric:**        **cpu\_pool\_idle**

**Return type:**

- GANGLIA\_VALUE\_FLOAT

**Notion:**

- This metric returns in fractional numbers of physical CPUs how much the Shared Processor Pool is idle.
- For example, if 7 physical CPUs are in the Shared Processor Pool, a value of 4.69 might be returned meaning that only an amount of  $(7 - 4.69) = 2.31$  physical CPUs were used since the last time this metric was measured.

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 or later above this must be “ifdef’ed” appropriately as libperfstat on earlier AIX versions doesn't contain this information.
- For good numerical results the time stamps are measured in  $\mu$ -seconds.
- The Shared Processor Pool idle time is returned in nano-seconds from libperfstat.
- On AIX versions before v5.3 no Shared Processor Pool exists and thus a value of 0.0 is returned.
- If libperfstat returns an error code a value of 0.0 is returned.

**Metric:**      **cpu\_used**

**Return type:**

- GANGLIA\_VALUE\_FLOAT

**Notion:**

- This metric returns in fractional numbers of physical CPUs how much compute resources this shared processor has used since the last time this metric was measured.
- For example, if the LPAR is running in uncapped mode and has a Capacity Entitlement of 0.2 physical CPUs and a value of 0.5 is measured then this LPAR has used  $2.5 \times$  its entitled capacity since the last time this metric was measured (i.e., basically using 250% of its entitled CPU resources for this measured time interval).

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 or later above this must be “ifdef’ed” appropriately as libperfstat on earlier AIX versions doesn't contain this information.
  - For good numerical results the time stamps are measured in  $\mu$ -seconds.
  - The CPU used metric value is returned in nano-seconds from libperfstat.
  - If we are running on AIX 5L v5.3 or later a distinction must be made whether this is a Shared Processor LPAR or not as otherwise the number of online CPUs is returned.
  - On AIX versions before v5.3 the number of configured CPUs is returned.
  - If libperfstat returns an error code a value of 0.0 is returned.
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**Metric:**      **disk\_read**

**Return type:**

- GANGLIA\_VALUE\_FLOAT

**Notion:**

- This metric returns in units of kB the total read I/O of the system.

**Remarks:**

- For good numerical results the time stamps are measured in  $\mu$ -seconds.
- The total disk read I/O of the system is returned in 512 byte blocks from libperfstat.
- If libperfstat returns an error code a value of 0.0 is returned.

**Metric:**      **disk\_write**

**Return type:**

- GANGLIA\_VALUE\_FLOAT

**Notion:**

- This metric returns in units of kB the total write I/O of the system.

**Remarks:**

- For good numerical results the time stamps are measured in  $\mu$ -seconds.
  - The total disk write I/O of the system is returned in 512 byte blocks from libperfstat.
  - If libperfstat returns an error code a value of 0.0 is returned.
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**Metric:**      **kernel64bit**

**Return type:**

- GANGLIA\_VALUE\_STRING

**Notion:**

- This metric either returns “yes” if the running AIX kernel is a 64-bit kernel or “no” otherwise.

**Remarks:**

- none
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**Metric:**      **lpar**

**Return type:**

- GANGLIA\_VALUE\_STRING

**Notion:**

- This metric either returns “yes” if the system is a LPAR or “no” otherwise.

**Remarks:**

- none

**Metric:**      **lpar\_name**

**Return type:**

- GANGLIA\_VALUE\_STRING

**Notion:**

- This metric returns the name of the LPAR as defined on the Hardware Management Console (HMC) or some reasonable message otherwise.

**Remarks:**

- If we are running on AIX 5L v5.3 or later libperfstat can be used to obtain that information.
  - On AIX versions before v5.3 unfortunately libperfstat doesn't contain that information and therefore this must be obtained via the uname command.
  - If libperfstat or uname return an error code an appropriate error message is returned.
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**Metric:**      **lpar\_num**

**Return type:**

- GANGLIA\_VALUE\_INT

**Notion:**

- This metric returns the partition ID of the LPAR as defined on the Hardware Management Console (HMC) or some reasonable message otherwise.

**Remarks:**

- If we are running on AIX 5L v5.3 or later libperfstat can be used to obtain that information.
- On AIX versions before v5.3 unfortunately libperfstat doesn't contain that information and therefore this must be obtained via the uname command.
- If libperfstat or uname return an error code a value of -1 is returned.

**Metric:**        **oslevel**

**Return type:**

- GANGLIA\_VALUE\_STRING

**Notion:**

- This metric returns the version string as provided by the AIX command 'oslevel'.

**Remarks:**

- The AIX command 'oslevel' must be used to obtain that metric.
  - Since AIX 5L v5.3 Technology Level 04 the oslevel command has an additional switch “-s”. First, we try to run 'oslevel -s' and if that fails then we try to run 'oslevel -r'.
  - This metric is retrieved only once and then “cached” for subsequential calls.
  - If oslevel return an error code an appropriate error message is returned.
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**Metric:**        **serial\_num**

**Return type:**

- GANGLIA\_VALUE\_STRING

**Notion:**

- This metric returns the serial number of the system as provided by the AIX command 'uname'.

**Remarks:**

- The AIX command 'uname' must be used to obtain that metric.
- This metric is retrieved only once and then “cached” for subsequential calls.
- If uname return an error code an appropriate error message is returned.



**Metric:**        **smt**

**Return type:**

- GANGLIA\_VALUE\_STRING

**Notion:**

- This metric either returns “yes” if SMT is enabled or “no” otherwise.

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 or later this must be “ifdefed” appropriately as libperfstat on earlier AIX versions doesn't contain this information.
  - If libperfstat returns an error code an appropriate error message is returned.
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**Metric:**        **splpar**

**Return type:**

- GANGLIA\_VALUE\_STRING

**Notion:**

- This metric either returns “yes” if the system is running in a shared processor LPAR or “no” otherwise.

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 or later this must be “ifdefed” appropriately as libperfstat on earlier AIX versions doesn't contain this information.
- If libperfstat returns an error code an appropriate error message is returned.

**Metric:**        **weight**

**Return type:**

- `GANGLIA_VALUE_INT`

**Notion:**

- This metric returns the weight of the LPAR running in uncapped mode.

**Remarks:**

- As this functionality is only available with AIX 5L v5.3 or later this must be “`ifdef`” appropriately as `libperfstat` on earlier AIX versions doesn't contain this information.
- On AIX versions before v5.3 a value of -1 is returned.
- If `libperfstat` returns an error code a value of -1 is returned.