* **Enhance metric collectors to dump all available JMX and PMI metrics to a file to make it   
  easier to configure new JMX/PMI metrics in metrics.config**

Background: Chapters 20-22 of the Installation and Configuration Guide explains to the user how to customize the JMX/PMI metrics collectors.   Part of the configuration for this metrics collector is to modify the etc/metrics.config file and add metric information to this file for Diagnostics to collect.

The difficulty of doing this is that the user must get the metric names exactly right for it to work. This was error prone and frustrating for the user.

Description: In order to make this configuration somewhat easier, a feature was added to dump all the available metrics for each JMX collector into a file.  When the following property in the probe etc/metrics.config file is set to true, the probe will dump the available metrics of each JMX/PMI collector to text files in the probe log directory. This property can be changed at runtime. It is recommended that the property is only set to true temporarily to dump the available JMX/PMI metrics. After the metrics   
are dumped, the property can be set back to false (or comment out) to avoid the overhead when the probe periodically dumping the metrics. The dump file is at <probe-dir>/log/<probe-id>/jmx\_metrics\_<collector-name>.txt.

default.dump.available.metrics = true

In each dump file, the available MBean ObjectNames and their collectable attributes are listed as shown below:

======= MBean ObjectNames and Available Attributes =======

MBean ObjectName:

WebSphere:J2EEServer=server1,JDBCProvider=Derby JDBC Provider,JDBCResource=Derby JDBC   
Provider,Server=server1,cell=yli87Node01Cell,diagnosticProvider=true,j2eeType=JDBCDataSource,mbe  
anIdentifier=cells/yli87Node01Cell/nodes/yli87Node01/servers/server1/resources.xml#DataSource\_12442  
31364323,name=WST\_PriceGen,node=yli87Node01,platform=dynamicproxy,process=server1,spec=1.0,  
type=DataSource,version=6.1.0.0

Available Attributes:

name: loginTimeout, type: int

name: statementCacheSize, type: int

name: testConnectionInterval, type: java.lang.Integer

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Users may use this info to add a JMX metric config in the probe etc/metrics.config file. For example:

WebSphere6/WebSphere\:type\=DataSource,\*.statementCacheSize = JDBC Statement Cache Size|bytes|JDBC DataSource

Or, they may use the optional GROUPBY modifier to create a separate metric for each matched group of MBean ObjectNames with the same value of the key specified by GROUPBY.

WebSphere6/GROUPBY[name]/WebSphere\:type\=DataSource,\*.statementCacheSize = JDBC Statement Cache Size|bytes|JDBC DataSource

For WebSphere JMX collectors, besides the above generic MBean JMX metrics, the available WebSphere specific PMI metrics are also dumped to the WebSphere collector's dump file. This includes the PMI tree instance paths and their available statistics, and the PMI module config info. For example:

======= PMI Tree and Available PMI Statistics =======

connectionPoolModule

Available Statistics:

CreateCount, CloseCount, AllocateCount, ReturnCount, PoolSize, FreePoolSize, WaitingThreadCount,   
FaultCount, PercentUsed, PercentMaxed, UseTime, WaitTime, ManagedConnectionCount,   
ConnectionHandleCount, PrepStmtCacheDiscardCount, JDBCTime

connectionPoolModule->Derby JDBC Provider

Available Statistics:

CreateCount, CloseCount, AllocateCount, ReturnCount, PoolSize, FreePoolSize, WaitingThreadCount,   
FaultCount, PercentUsed, PercentMaxed, UseTime, WaitTime, ManagedConnectionCount,   
ConnectionHandleCount, PrepStmtCacheDiscardCount, JDBCTime

connectionPoolModule->Derby JDBC Provider->jdbc/ALBUM

Available Statistics:

CreateCount, CloseCount, AllocateCount, ReturnCount, PoolSize, FreePoolSize, WaitingThreadCount,   
FaultCount, PercentUsed, PercentMaxed, UseTime, WaitTime, ManagedConnectionCount,   
ConnectionHandleCount, PrepStmtCacheDiscardCount, JDBCTime

Users may use the above PMI info to add new PMI metric/statistic configs to the probe etc/metrics.config   
file. For example:

WebSphere6/connectionPoolModule.CreateCount = JDBC Connection Creates|count|JDBC ConnectionPools

WebSphere6/[connectionPoolModule][Derby\ JDBC\ Provider][jdbc/ALBUM].AllocateCount = JDBC  
Connection Allocates|count|JDBC ConnectionPools

* **Enhance probe metric collector to support GROUPBY like functionality for PMI**

Background: In the probe's etc/metrics.config file, for JMX metrics that describes an MBean object name pattern there is an optional modifier GROUPBY that can be added, which tells a JMX-based collector to treat the metric\_config as multi-instance expression:

collector\_name/GROUPBY[oname\_key]/metric\_config = ...

The collector will find all MBeans matching the metric\_config and create a corresponding metric for each of them using the object name key oname\_key to provide unique naming by appending it to category\_id.

Description: Starting with 8.02, it is now possible to group PMI metrics in a similar as JMX metrics. For PMI, the EXPAND\_PMI modifier is specified to expand the PMI tree from the given module or StatDescriptor branch by the specified level. The expansion level "n" can be 1, 2, ..., or \*, with the default level of 1 and \* means expand all:

collector\_name/EXPAND\_PMI[n]/metric\_config = ...

For example,

WebSphere6/EXPAND\_PMI[\*]/connectionPoolModule.AllocateCount = JDBC Connection   
Allocates|count|JDBC ConnectionPools

will create "JDBC Connection Allocates" metric for each JDBC connection pool provider and for each DataSource of the provider.