

# Business Analytics **Forum**

The Premier Conference for Information and Analytics

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## System Management Methodology

Barnaby Cole

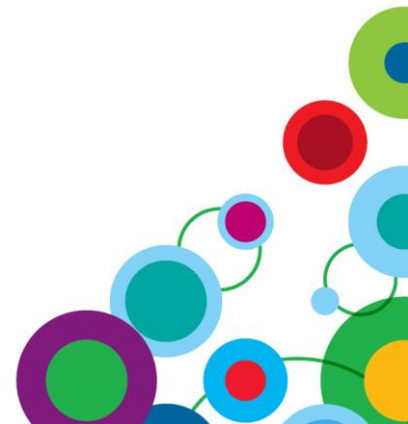
IBM – Cognos Technical Services



# System Management Methodology



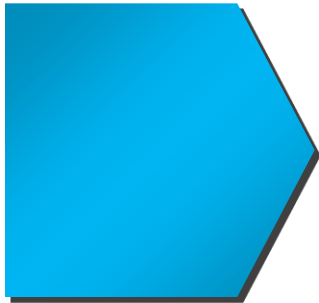
- What is the SMM?
  - Framework upon which to build a solid administrative practice
  - Based on IBM Cognos functionality, it extends the current offering to provide additional ROI
  - Evolving collection of best practices, techniques, reports, dashboards, & SDK apps ...
  - Provides consistency moving forward to new releases
- What the SMM isn't
  - Mandatory
  - The end of System Management investment



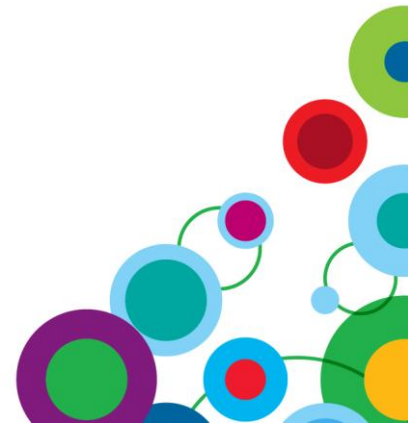
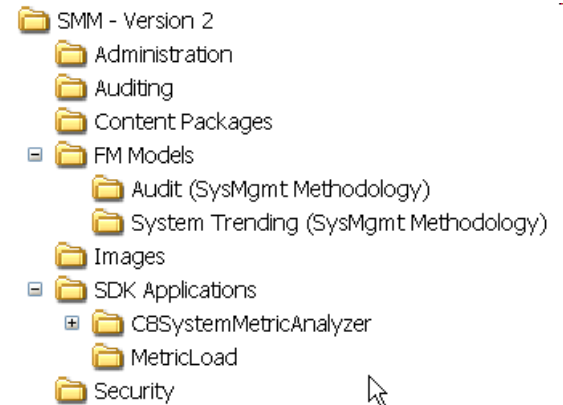


# Overview of 'System Management Methodology'

- IBM Cognos System Management Methodology contains



- Documents
- SDK Applications
- Framework manager Models
- Cognos 8 Reports
- Dashboards

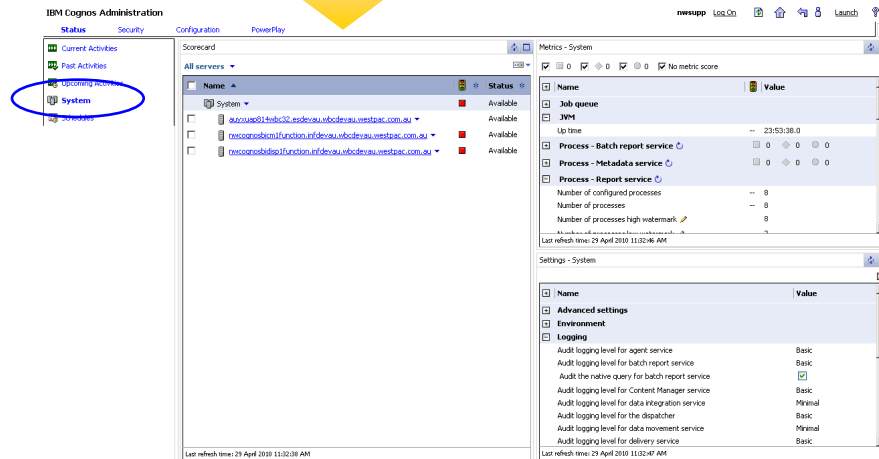




# Introduction to System Metrics - Overview

- Viewing Real Time Metrics
  - Metrics are divided into three fragments

**Scorecard**  
A summary of overall health



**Metrics**  
List all of the metrics and their score

**Settings**  
Shows a read only view of configuration parameters



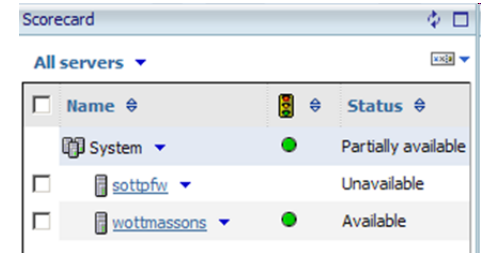


# Introduction to System Metrics - Scorecards

- Viewing Scorecards

- Standard Scorecard

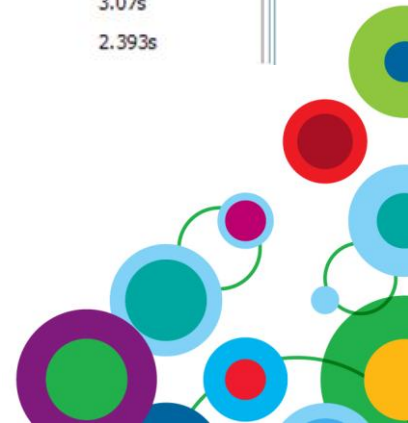
- Navigate System Topology to verify health of Server, Dispatchers, Services and Metrics



- Comparative Scorecard

- Watch predefined metrics as they relate to similar objects

Name	Status	Number of processes	Latency	Queue length	Number of processed requests	Percentage of successful requests	Successful requests per minute	Seconds per successful request
System	Available	--/--	--	--	--	--	--	--
ReportService	Available	1/2	0.344s	1	9	88.89%	19	3.07s
ReportService	Available	1/2	0.375s	1	5	100%	25	2.393s





# Introduction to System Metrics – Metrics Fragment

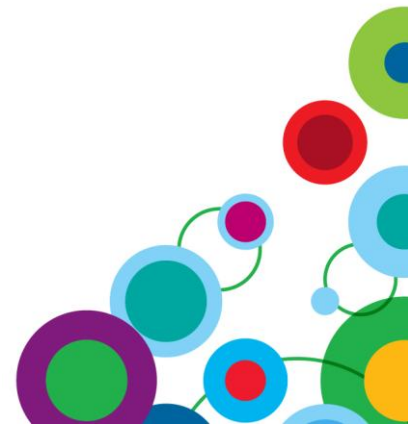
- **Viewing Metrics**

- Empower Administrators to effectively monitor an environment
- Display metrics that correspond to the object in the scorecard frame that is in context
- Summary bar to indicate total amount of each threshold indication
  - Also acts as a filter

The screenshot shows a window titled "Metrics - System". At the top, there is a summary bar with the following indicators: a red square with the number 1, a yellow diamond with the number 1, a green circle with the number 3, and a checkbox labeled "No metric score" which is checked. Below this is a table with two columns: "Name" and "Value". The table lists various system components and their corresponding values, each with a set of three colored icons (red, yellow, green) representing different threshold levels.

Name	Value
Job queue	
JVM	
Process - Batch report service	0 0 1
Process - Report service	0 1 0
Queue - Report data service	0 0 1
Queue - Report service	0 0 0
Request	0 0 0
Request - Agent service	0 0 0
Request - Batch report service	0 0 0
Request - Content Manager service	0 0 0
Request - Data integration service	0 0 0

At the bottom of the window, it says "Last refresh time: January 30, 2008 5:29:32 PM".





# Introduction to System Metrics – Settings

- **Settings Fragment**

- Read Only, Displays all Configuration Parameters and Values
- Provide contextual information regarding the metric
- Option to change values using “Edit Properties”

Settings - ReportService

Name	Value
<b>Advanced settings</b>	
WEB.GATEWAY_URI	http://localhost:8080/cognos/dashboard/html/
<b>Logging</b>	
Audit logging level for report service	Minimal
Audit the native query for report service	<input type="checkbox"/>
<b>Tuning</b>	
Number of high affinity connections for the report service during non-peak period	1
Number of low affinity connections for the report service during non-peak period	4
Maximum number processes for the report service during non-peak period	2
Queue time limit of the report service (seconds)	240
Maximum execution time for the report service (seconds)	0
Number of hotspots generated in a chart by the report service	Unlimited
Number of high affinity connections for the Report service during peak period	1
Number of low affinity connections for the report service during peak period	4
Maximum number of processes for the report service during peak period	2
PDF Character Encoding for report service	Auto

Last refresh time: 8 October 2010 1:15:55 AM



# Setting Thresholds for Metric Values for System Alerting



- Set thresholds on individual metrics for alerting via Event Studio
  - Setting threshold values generates a scorecard
  - Drilling down on services reveals a detailed view of metrics
  - Threshold definition is viewed by clicking the pencil icon

Name	Status
http://wottmassons:9300/p2pd	Available
AgentService	Available
BatchReportService	Available
ContentManagerService	Available
DataMovementService	Available
DeliveryService	Available
EventManagerService	Available
JobService	Available
LogService	Available
MonitorService	Available
PresentationService	Available
ReportDataService	Available
ReportService	Available
SystemService	Available

Metrics - LogService

5 0 3 No metric score

Name	Value
Request	
Current time	-- January 18, 2008 8:51:44 PM
Last response time	0.016s
Number of failed requests	0
Number of processed requests	222
Number of successful requests	222
Percentage of failed requests	0%

Set threshold for metric: Request - Number of processed requests

Select the performance pattern and specify the threshold values to calculate the score for this metric.

Performance pattern:

None

High values are good

Middle values are good

Low values are good

Threshold values

Values	Score
Maximum value: 34	Red
33	Yellow
Minimum value: -	Green





# Configure the Agent and Report for Threshold Violation Notification



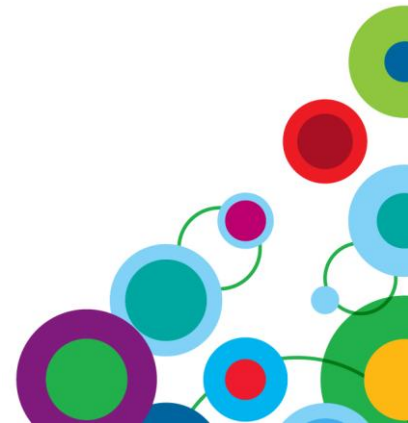
cast([Time stamp], date) = current\_date and [Metric health] in ('Average', 'Poor')

Time stamp	Resource type	Metric name	Metric value	Metric health
Jan 31, 2008 12:54:21 PM	presentationService	SuccessfulRequestPercent	0.0	Poor
Jan 31, 2008 2:05:01 PM	presentationService	MillisecondsPerSuccessfulRequest	634	Average
Jan 31, 2008 2:29:25 PM	contentManagerService	ServiceTimeSuccessfulRequests	20034	Average

The screenshot shows the 'Specify the email to send' task configuration in Event Studio. The 'To:' field is empty, and the 'Subject:' field contains 'Daily metric exception report'. The 'Body:' field contains the following text:

Administrator,  
The daily summary report for all threshold violations has been created. For your convenience, the report output has been attached to this email.

Below the text, there is an attachment icon for 'Event list (HTML, en-au)'. The interface also includes a 'To:' field with a 'New' button, a 'Cc:' field, and a 'Subject:' field. The 'Body:' field has a rich text editor with various formatting options.



# Business Problems – Knowing the BI System

- IBM Cognos system administration capabilities allow IT to address five areas required to meet and surpass service commitments:



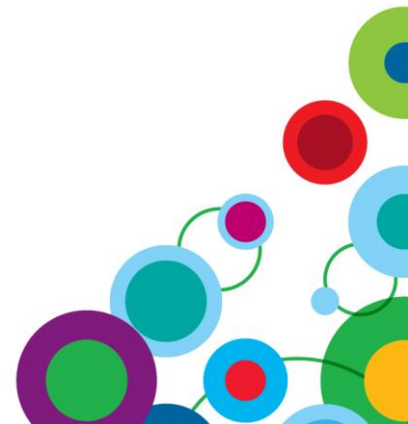
## — Knowing the BI system

- Understand usage patterns
- Understand the BI system environment
- Understand business expectations



## — Resolving and Preventing Issues

- Addressing Thresholds
- Track and Evolve over Time



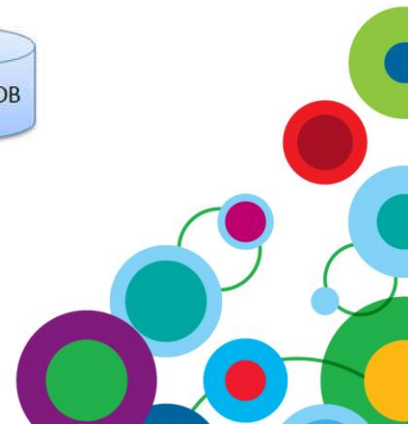
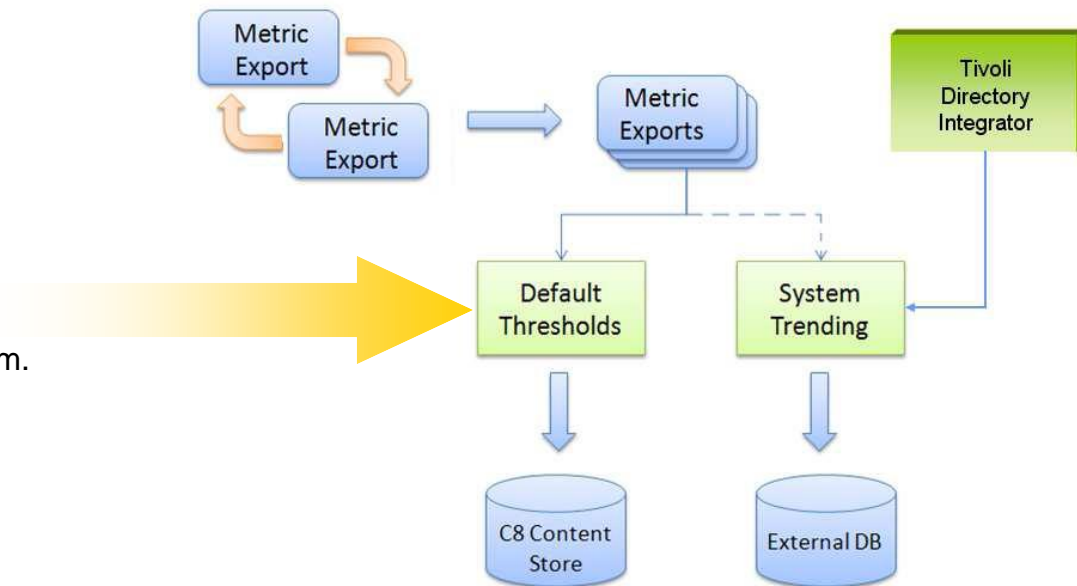


# Resolving and Preventing Issues - Business Drivers

- Addressing Thresholds

- Default thresholds are too limiting
- SMM includes a threshold calculation tool to assist with threshold parameters.

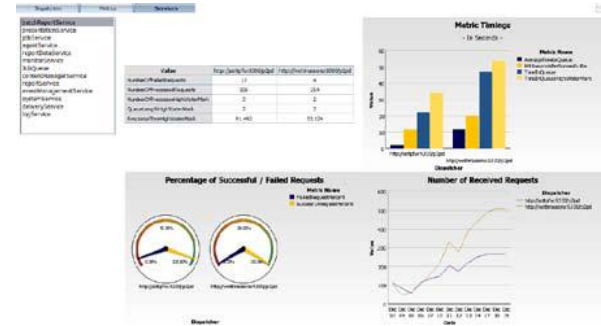
The tool consolidates live metric data for a period of time and automatically generates the thresholds for your system.



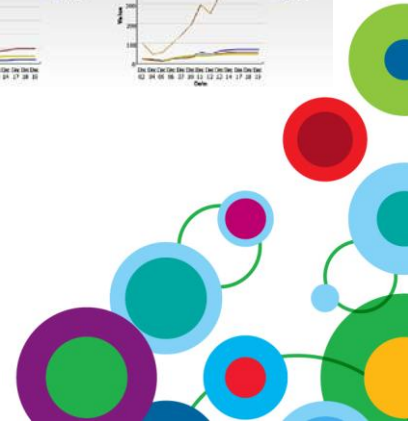
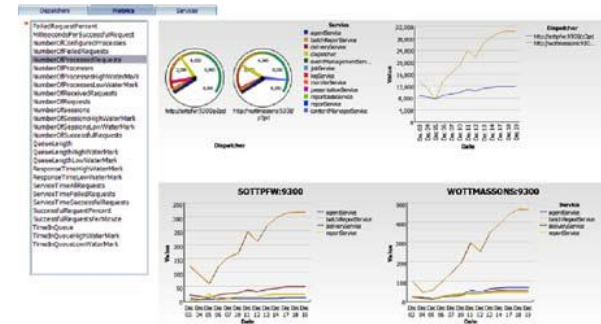


# Resolving and Preventing Issues – Evolving Metrics

- **Evolving Metrics over Time**
  - Insight into changing usage patterns
  - Report on system information and trends
    - Dashboards, scorecards, Reports, Analysis and Alerts
  - Sample Framework manager Model and Reports



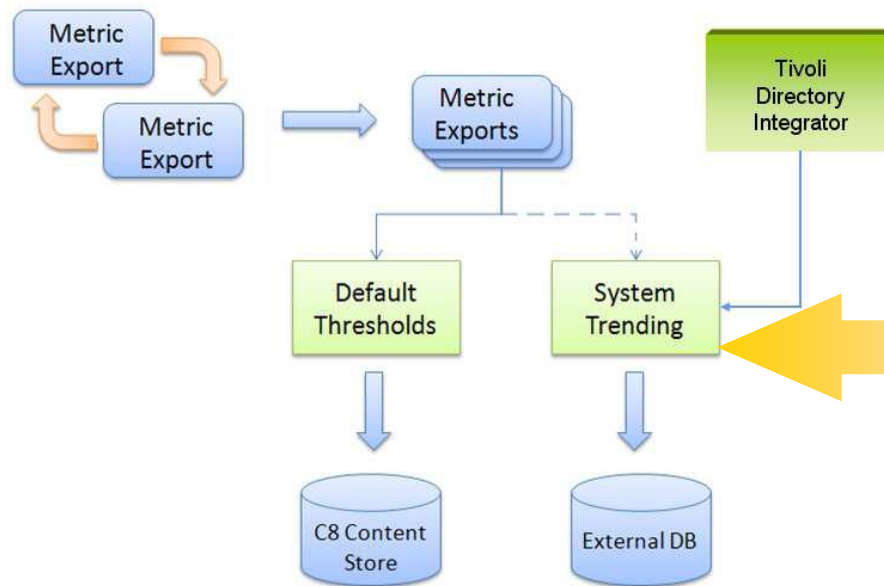
- **Viewing the Metric Data**
  - Once data has been loaded into a relational database
    - Use provided dashboards to view data
    - New reports and dashboards can be built to display trends over time



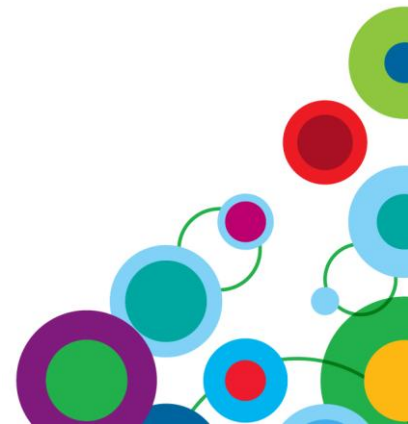
# Collecting Metric Values for System Trending



- Metrics viewed in the Admin Console are dynamic, IBM Cognos BI 8.4 provides a mechanism to export the metrics to a flat file for:
  - System Trending
  - Setting Default Thresholds
  - Archiving



The dynamic metrics are maintained by the dispatcher within the JAVA environment. Because the metrics are live, there is no historical view of what the metric values were for a given point in time.

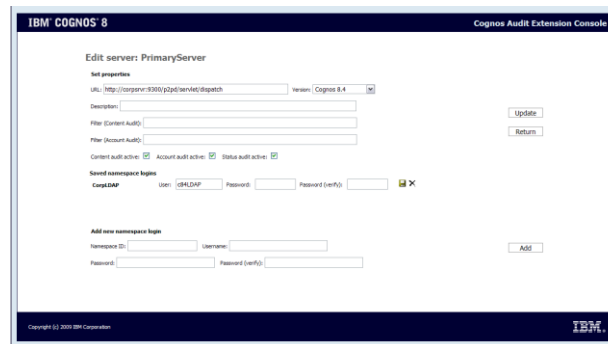




# Auditing

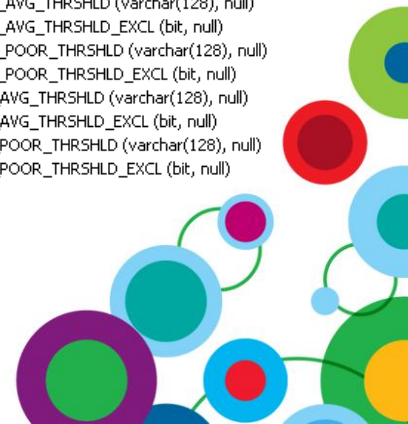
- Use auditing to view information about user and report activity
- Use the Audit Extension for additional auditing in

- Account Audit
- Content Audit
- Status Audit



```
dbo.COGIPF_THRESHOLD_VIOLATIONS
Columns
COGIPF_HOST_IPADDR (varchar(15), null)
COGIPF_HOST_PORT (int, null)
COGIPF_PROC_ID (int, null)
COGIPF_LOCALTIMESTAMP (datetime, null)
COGIPF_TIMEZONE_OFFSET (int, null)
COGIPF_COMPONENTID (varchar(64), null)
COGIPF_BUILDNUMBER (int, null)
COGIPF_LOG_LEVEL (int, null)
COGIPF_OPERATION (varchar(128), null)
COGIPF_TARGET_TYPE (varchar(255), null)
COGIPF_TARGET_PATH (nvarchar(1024), null)
COGIPF_TARGET_NAME (nvarchar(512), null)
COGIPF_RESOURCE_TYPE (varchar(128), null)
COGIPF_RESOURCE_PATH (nvarchar(512), null)
COGIPF_METRIC_NAME (varchar(255), null)
COGIPF_METRIC_VALUE (varchar(128), null)
COGIPF_METRIC_HEALTH (varchar(128), null)
COGIPF_LOWER_AVG_THRSHLD (varchar(128), null)
COGIPF_LOWER_AVG_THRSHLD_EXCL (bit, null)
COGIPF_LOWER_POOR_THRSHLD (varchar(128), null)
COGIPF_LOWER_POOR_THRSHLD_EXCL (bit, null)
COGIPF_UPPER_AVG_THRSHLD (varchar(128), null)
COGIPF_UPPER_AVG_THRSHLD_EXCL (bit, null)
COGIPF_UPPER_POOR_THRSHLD (varchar(128), null)
COGIPF_UPPER_POOR_THRSHLD_EXCL (bit, null)
```

- Thresholds are stored within the COG\_THRESHOLD\_VIOLATIONS table

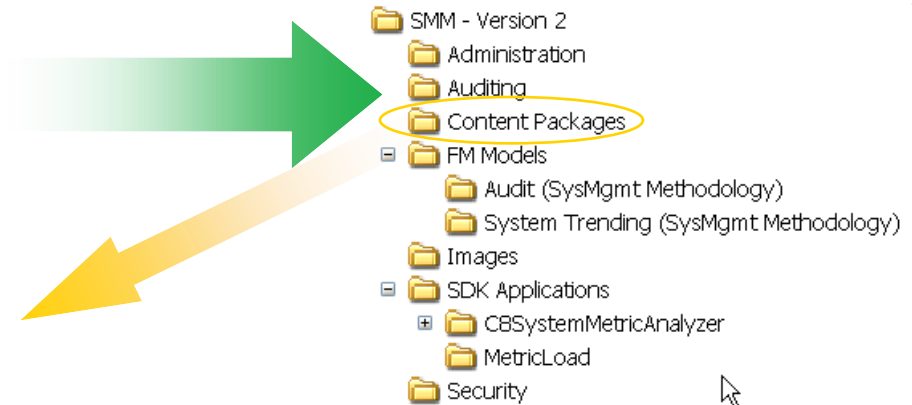






# System Management Methodology - Implementation

- Download from:  
<http://www.ibm.com/developerworks/data/library/cognos/page258.html>
- The methodology in its entirety is contained within a ZIP file called SMMVersion\_2

- Installation: Extract  SMM-Version\_2.zip



- Deploy:  System Management Methodology.zip  
 System Management Dashboard.zip





# System Management Methodology - Configuration

- **Metric Dump Flat File Generation and Processing**

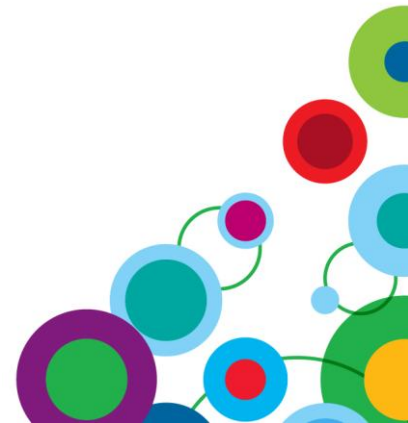
- Exporting is based on a control file `metricdumpconfiguration.xml`

- Controlled by 
  - <Filename>
  - <MBeans>
  - <Interval>
  - <ResetafterDump>
  - <Limit>

- **Server Parameter**

- Enable via Server Administration: Dispatcher Settings

<input type="checkbox"/> Parameter	Value
<input type="checkbox"/> DISP.MetricDumpEnabled	http://wottmassons:9300/p2pd
<input type="checkbox"/> DISP.MetricDumpEnabled	http://sottpfw:9300/p2pd







# Metrics Flat File Processing Script

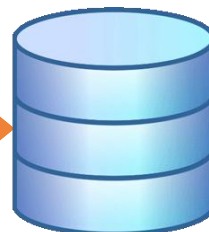
- Metrics Files are generated in XML format
- Load Files into a Relational Database
  - Convert XML to Tab Delimited
  - Use an XSLT Processor and Custom Control File

```
<?xml version="1.0" encoding="utf-8" ?>
- <dumps dispatcher="http://nwcognosbidisp1function.infdevau.wbdevau.westpac.com.au:9300/p2pd">
- <dump time="Wed Apr 28 11:40:05 EST 2010">
- <mbean name="com.cognos:type=Metrics,dispatcher="http://nwcognosbidisp1function.infdevau.wbdevau.westpac.com.au:9300/p2pd"/>
- <attributes>
- <attribute name="SuccessfulRequestsPerMinute">
  <value>999999999</value>
</attribute>
- <attribute name="SuccessfulRequestPercent">
  <value>1.0</value>
</attribute>
- <attribute name="AverageTimeInQueue">
  <value>0</value>
</attribute>
```

```
<?xml version="1.0" encoding="utf-8" ?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output encoding="utf-8" method="text"/>
  <xsl:variable name="dispatcher" select="/dumps/@dispatcher" />
  <xsl:variable name="dumptime" select="/dumps/@time" />
  <xsl:template match="/">
  <!-- OPTIONAL HEADER -->
  <!--<xsl:value-of select="'Dispatcher#09;Date_Stamp#09;Services#09;Attributes#09;Value#10;'" /-->
  <xsl:for-each select="dumps/dump/mbean">
    <xsl:variable name="mbean" select="@name" />
    <xsl:for-each select="attributes/attribute">
      <xsl:if test="string(number(value))!='NaN'">
        <xsl:value-of select="@dispatcher"/>
        <xsl:text>#09;</xsl:text>
        <xsl:value-of select="@dumptime"/>
        <xsl:text>#09;</xsl:text>
        <xsl:value-of select="@mbean"/>
        <xsl:text>#09;</xsl:text>
        <xsl:value-of select="@name"/>
        <xsl:text>#09;</xsl:text>
        <xsl:value-of select="normalize-space(value/text())"/>
        <xsl:text>#10;</xsl:text>
      </xsl:if>
    </xsl:for-each>
  </xsl:template>
</xsl:stylesheet>
```

http://nwcognosbidisp1function.infdevau.wbdevau.westpac.com.au:9300/p2pd	Wed Apr 28 11:40:05 EST 2010	com.cognos:type=Metrics, service=dataIntegrationService	ResponseTimeLowWaterMark	0
http://nwcognosbidisp1function.infdevau.wbdevau.westpac.com.au:9300/p2pd	Wed Apr 28 11:40:05 EST 2010	com.cognos:type=Metrics, service=dataIntegrationService	LastResponseTime	0
http://nwcognosbidisp1function.infdevau.wbdevau.westpac.com.au:9300/p2pd	Wed Apr 28 11:40:05 EST 2010	com.cognos:type=Metrics, service=dataIntegrationService	ResponseTimeHighWaterMark	0
http://nwcognosbidisp1function.infdevau.wbdevau.westpac.com.au:9300/p2pd	Wed Apr 28 11:40:05 EST 2010	com.cognos:type=Metrics, service=dataIntegrationService	ServiceTimeFailedRequests	0
http://nwcognosbidisp1function.infdevau.wbdevau.westpac.com.au:9300/p2pd	Wed Apr 28 11:40:05 EST 2010	com.cognos:type=Metrics, service=dataIntegrationService	ServiceTimeSuccessfulRequests	0
http://nwcognosbidisp1function.infdevau.wbdevau.westpac.com.au:9300/p2pd	Wed Apr 28 11:40:05 EST 2010	com.cognos:type=Metrics, service=dataIntegrationService	ThreadQueueLengthLowWaterMark	0
http://nwcognosbidisp1function.infdevau.wbdevau.westpac.com.au:9300/p2pd	Wed Apr 28 11:40:05 EST 2010	com.cognos:type=Metrics, service=dataIntegrationService	NumberOfThreadRequests	0

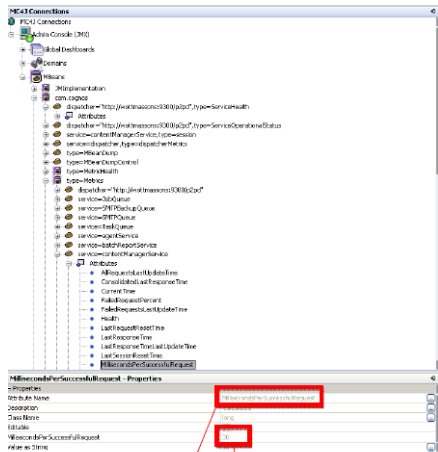
```
MetricsDumpFileProcessor_oracle_sqldr.ctf - Notepad
File Edit Format View Help
LOAD DATA
APPEND
INTO TABLE METRICS
FIELDS TERMINATED BY 'X'09'
(DISPATCHER, DATE_STAMP, SERVICE, ATTRIBUTE, VALUE)
```



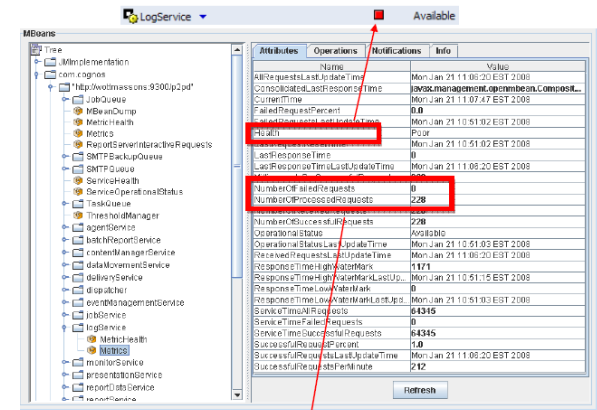


# External Consumption of Metrics

- Connect to Metrics using Java JConsole

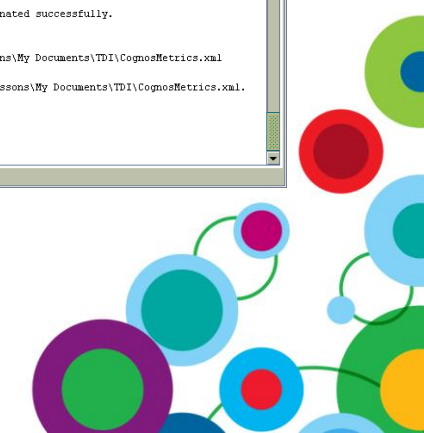
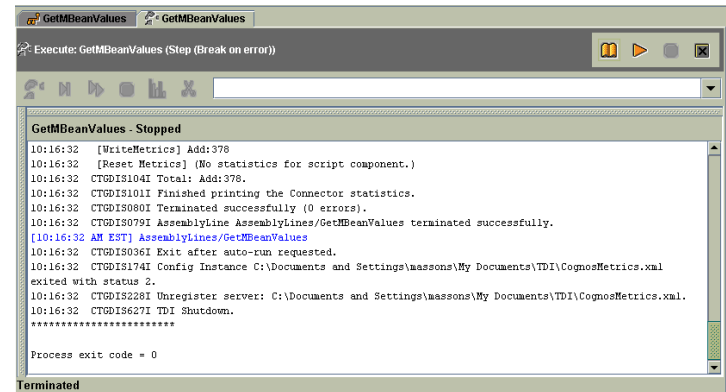


- Connect to Metrics using MC4J Management Console

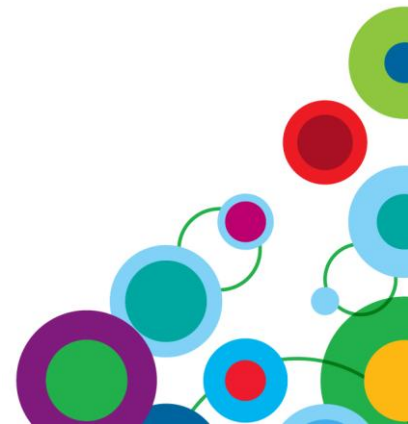


Name	Value
Request	January 21, 2008 11:07:29 AM
Last response time	0.0s
Number of failed requests	0
Number of processed requests	228
Number of successful requests	228
Percentage of failed requests	0%

- Connect to Metrics using IBM Tivoli Directory Integrator (TDI)



# Questions



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Please remember to complete your session evaluation online at the Communication Station or point your Smart Phone browser to:

[www.spss.com/goldcoast](http://www.spss.com/goldcoast)



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