

Maximo / Cognos Integration

A Technical Deep Dive of the Maximo – Cognos Integration

Brian Garrett – Advisory Software Engineer – Business Intelligence and Analytics

11/05/2019



Authentication Options

Integration Points

Troubleshooting Tips



Authentication Options

Agenda

Authentication Options

Maximo Custom Security Provider (MXCSP)

LDAP



MXCSP: Maximo has the password!

- Using the MXCSP assumes that Maximo controls the user authentication credentials.
- When Maximo first connects to Cognos, the MXCSP must receive all of the correct credential information to grant an access visa.
- Cognos uses the Maximo REST API to confirm the user credentials are valid when logging in directly through the Cognos Analytics portal.
- Cognos uses the Maximo token-based authentication to confirm the user has come from a valid and active Maximo session.
- New SSL algorithm setting in `mx CognosDataSources.properties`.
 - `maximoDataSource.sslprotocol=TLSv1.2`



LDAP: Maximo does not have the password!

- Using LDAP assumes that the application server hosting Maximo controls the user authentication credentials.
- When Maximo first connects to Cognos, you will be presented with a login screen unless you've configured single sign-on.
- Maximo system properties are the settings that ensure successful communication between Maximo and Cognos.



Integration Points

Agenda

Integration Points

Cognos Administration

Cognos Analytics

Reporting Object Structures (Publishing)

CQM vs. DQM



Cognos Administration

Report Administration

Find Report File Name

Find Navigation Item

Go To Applications

Available Queries

All Records

All Bookmarks

Reports with Limit Records Enabled

Ad Hoc Reports

Common Actions

New Report

Create Report

More Actions

View Library File

Import Library File

Export Library

Run Reports

Cognos Analytics

Launch Cognos Administration

Report File Name	Description
gaps_overlaps.rptdesign	Linear Gaps and Overlaps
assetmove_history.rptdesign	Asset Move History
oee_kpi_by_asset.rptdesign	Overall Equipment Effectiveness By Asset
oee_kpi_by_location.rptdesign	Overall Equipment Effectiveness By Location
oee_kpi_by_site.rptdesign	Overall Equipment Effectiveness By Site
asset_measurehist.rptdesign	Asset Measurement History
asset_subassembly.rptdesign	Assets by Subassembly Items
asset_detail.rptdesign	Asset Details
calibration_error.rptdesign	Calibration Error
asset_reverse_traceability.rptdesign	Asset Reverse Traceability
asset_drift.rptdesign	Asset Drift

IBM Cognos Administration

Status Security Configuration Library Multitenancy

Current Activities

Past Activities

Upcoming Activities

Dynamic Cubes

System

Schedules

Filter

Run by: Any Select a user...

Status: Any

Priority: Any

Advanced options

Reset to default

Current Activities - Background activities

Total: 0

Suspended

Waiting

Executing

Pending

0 5

Name

Last refresh time: November 1, 2019 8:18:31 AM

- Configure Cognos data sources
- Manage the privileges of the users.
- Launch Point: Report Administration application



Cognos Analytics

Assets

Find Asset

Find Navigation Item

Go To Applications

Available Queries

All Records

All Bookmarks

All Assets

Assets with devices

Common Actions

New Asset

Change Status

Move/Modify Assets

Swap Assets

More Actions

Associate Time Zone

Run Reports

Cognos Analytics

Advanced Search

Save Query

Bookmarks

Assets

Filter

Asset

Description

12710	30 Hp Drive Motor- Conveyor System #2
23972	Motor- 10hp/1750rpm/TEFC/254T Frame/440v/3ph/60hz
13120	Bottom Sealing System
52300	Electrical Service Pole #300/Wood/45 ft/Class 5
A8011	Standard Desktop Computer
13142	Carton Escapement Assembly #2
11211	Motor Starter- Size 2/440v/3ph/60cy
13141	Elevator Rails And Drainpan Assembly
13143	Chain Wash Assembly
12510	Brake System- Overhead Crane #2

IBM Cognos Analytics

Home

Search

My content

Team content

Recent

Manage

New

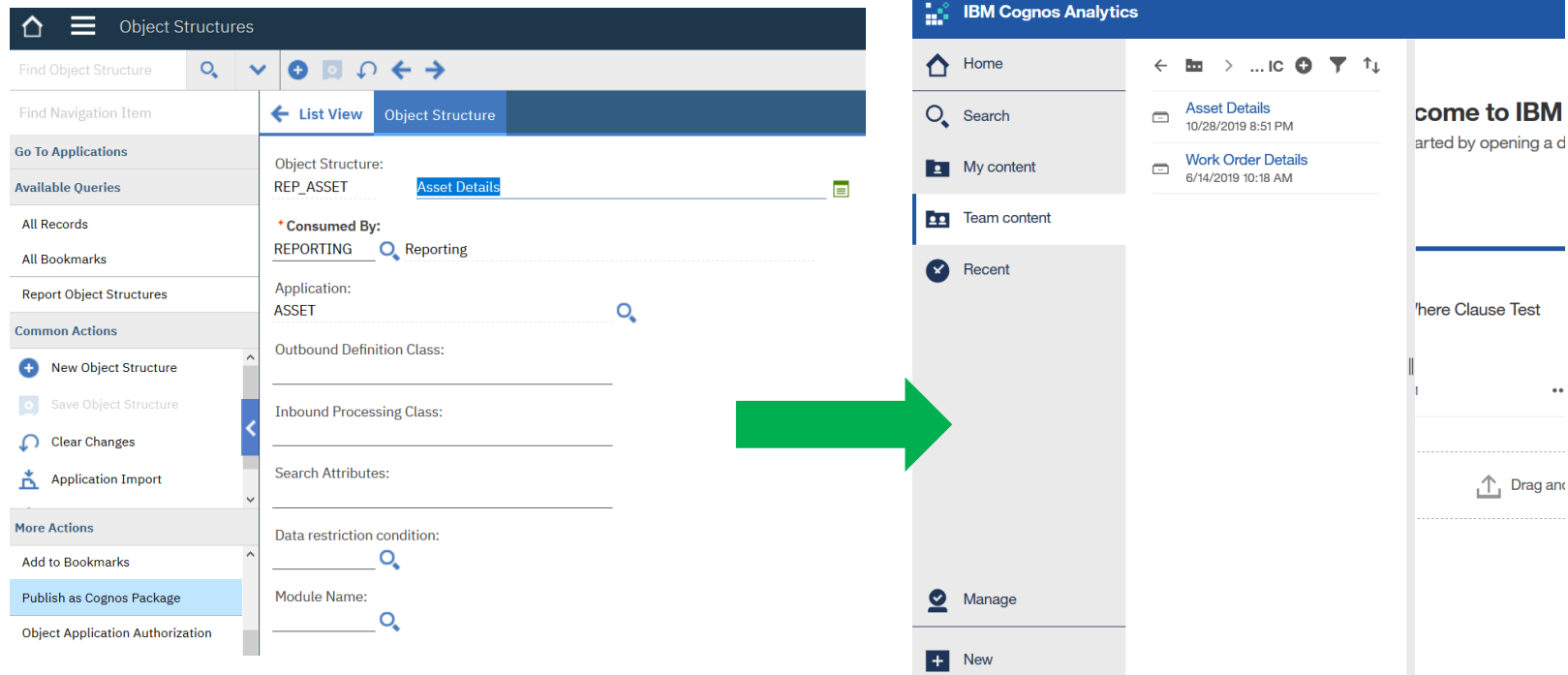
Team content

PUBLIC

4/10/2019 3:51 PM

- Manage Cognos packages
- Develop new reports.
- Launch Point: Any Maximo Application

Reporting Object Structures (Publishing)




- Exports Maximo meta data into an XML format readable by Cognos.
- Creates Cognos packages for report development.
- Launch Point: Maximo Object Structures application.



CQM vs. DQM

- Compatible Query Mode (CQM)
 - Requires report server execution mode set to 32-bit.
 - The Cognos data source will use a native database connection.
- Dynamic Query Mode (DQM)
 - Requires report server execution mode set to 64-bit.
 - The Cognos data source will use a JDBC database connection.
- By default, Maximo 7.6.1.X and Cognos 11 will be setup for DQM connections.

Dispatcher Settings		
* External dispatcher URI		http://localhost:9300/p2pd/servlet/dispatch
* Internal dispatcher URI		http://localhost:9300/p2pd/servlet/dispatch
Dispatcher password		*****
External JMX port		0
External JMX credential		*****
* Report Server execution mode		64-bit



Troubleshooting Tips

Agenda

Troubleshooting Tips

MXCSP Logging

Report Administration Logging

From Reporting Object Structures to Cognos Packages



MXCSP Logging

```
#log4j.rootLogger=ERROR, A1, A2
log4j.rootLogger=ERROR

# /
# ~~ Output destinations or appenders
#
# A1 is set to be a ConsoleAppender which outputs to System.out.
log4j.appender.A1=org.apache.log4j.ConsoleAppender
log4j.appender.A1.layout=org.apache.log4j.PatternLayout
log4j.appender.A1.layout.ConversionPattern=%d{dd MMM yyyy HH:mm:ss:SSS} [%-2p] %m%n

# A2 is set to be a RollingFileAppender which outputs to maximo.log file
log4j.appender.A2=org.apache.log4j.RollingFileAppender
log4j.appender.A2.File=C:\\temp\\log\\JDBCSample.log
log4j.appender.A2.MaxFileSize=5MB
log4j.appender.A2.MaxBackupIndex=20
log4j.appender.A2.layout=org.apache.log4j.PatternLayout
log4j.appender.A2.layout.ConversionPattern=%d{dd MMM yyyy HH:mm:ss:SSS} [%-2p] %m%n

log4j.logger.log4jLoader=DEBUG
```

- The MXCSP has the ability to provide detailed user authentication logging (No Passwords Allowed!).
- Setting up the logger is easy, but you'll need to modify the CAM_AAA_MXCSP.jar file.
- The file **logging.properties** contains all of the logger settings.
- The Cognos server must be at a full stop in order to access and update the jar file.



Report Administration Logging

The screenshot displays the Maximo Logging application interface. The top navigation bar shows the 'Logging' title and the user 'Mike Wilson'. The left sidebar contains navigation options: 'Find Navigation Item', 'Go To Applications', 'Available Queries', 'All Records', 'Common Actions' (with 'Save Logger' and 'Clear Changes' buttons), and 'More Actions' (with 'Manage Maximo Root Logger', 'In session logs', 'Manage Appenders', and 'List Logging Properties' options).

The main content area is divided into two sections. The top section, titled 'Root Loggers', shows a table with one entry:

Logger	Log Level	Key	Active?
application	ERROR	log4j.logger.maximo.application	<input checked="" type="checkbox"/>

Below this table is a 'New Row' button. The bottom section, titled 'Loggers', shows a table with one entry:

Logger	Log Level	Key	Active?
REPORT	DEBUG	log4j.logger.maximo.application.REPORT	<input checked="" type="checkbox"/>

- Setting up the Maximo Report Administration application logger can be done in the Logging application.
- Filter for application loggers and create a new logger.
- The application name of the Report Administration application is REPORT.
- Set the logger to DEBUG and remember to apply settings.



From Reporting Object Structures to Cognos Packages

- Publishing Maximo ROS's involve the most complex integration points between Maximo and Cognos.
- The End Point MXCOGNOS contains “most” of the settings required for successful publishing.
- Understanding an ROS's path can help solve the point of error.
- The more detailed information you provide during a case submission, the quicker the turnaround or escalation.





Thank You!