ACBM Solutions

Real Time Asset Data with EnterpriseOne Orchestrator

About Us

- Larry Furino (Founder) – JDE Consultant with over 11 years of experience
- Headquarters in Berkeley Heights, New Jersey
- Oracle Gold Partner
- Oracle Validated Integration – JDE EnterpriseOne 9.1 & 9.2

ORACLE Gold Partner

ACBM

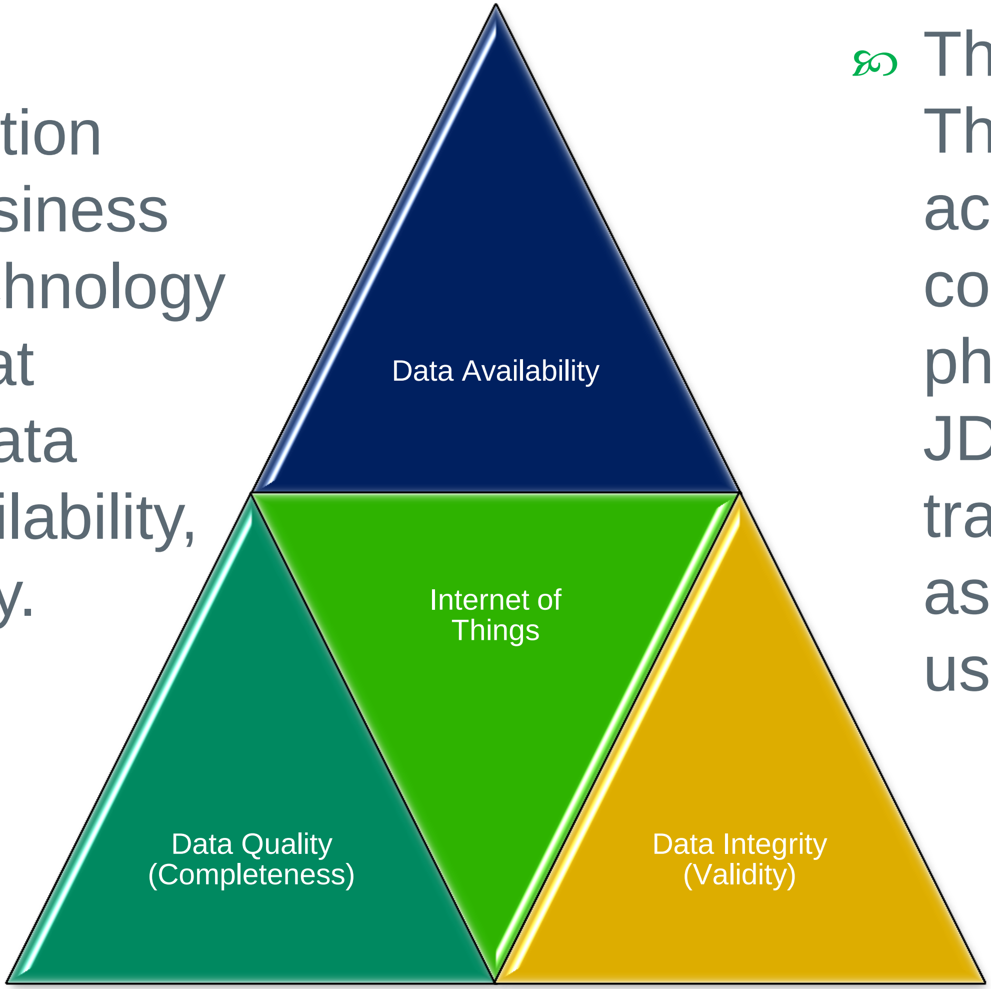
ORACLE
Validated Integration
JD Edwards
EnterpriseOne

Agenda

- Digital Transformation and IoT
- Benefits of IoT
- How Does it Work?
- Common Use Cases
- Implementation Considerations
- Data Transmission & Integration Method Comparison
- EnterpriseOne Orchestrator Overview
- Demo
- Questions???

Digital Transformation and IoT

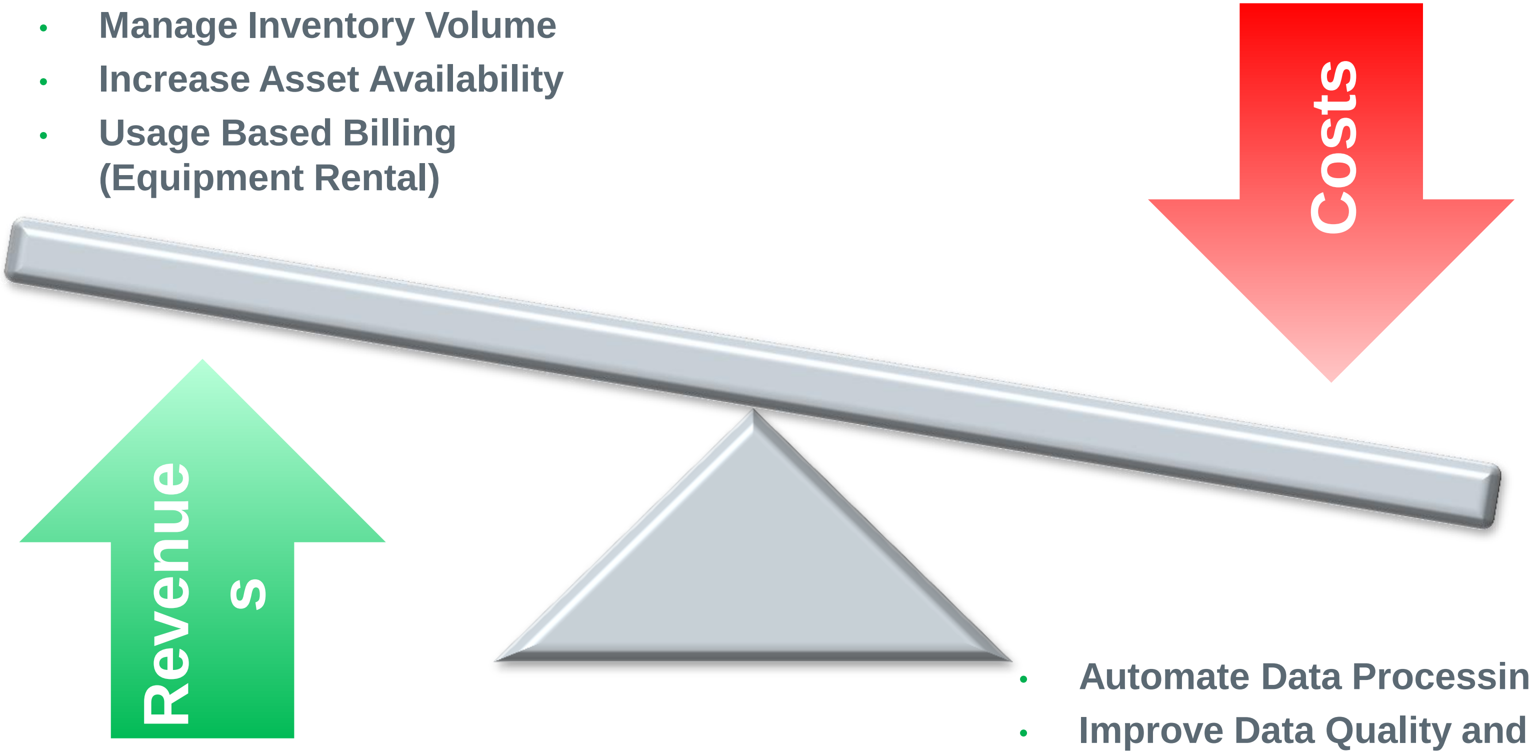
- Digital Transformation enables business to apply technology in a way that improves data quality, availability, and integrity.



- The Internet of Things (IoT) achieves this by connecting the physical world with JD Edwards and transforming your assets into smart users.

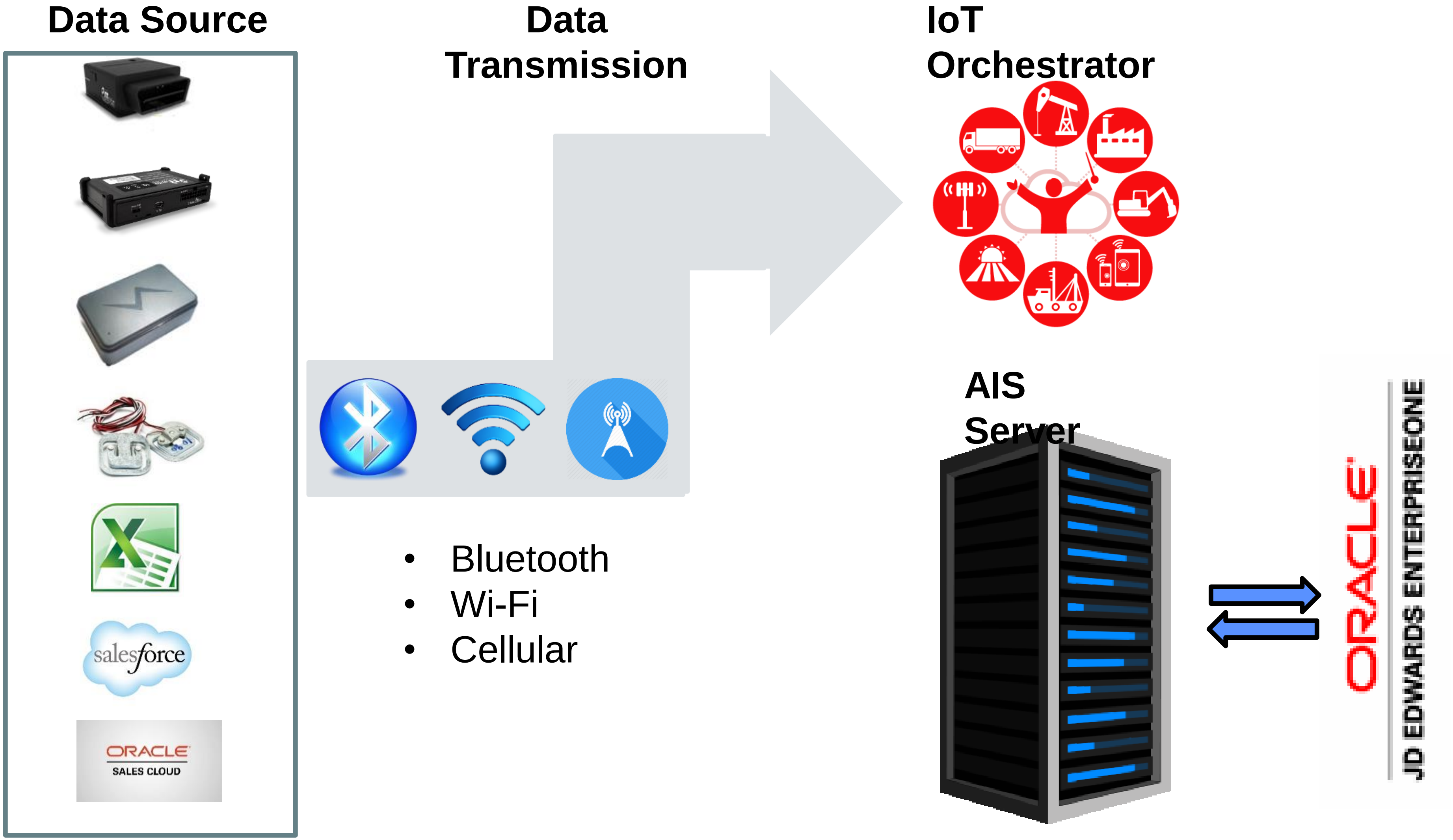
Benefits of IoT

- Manage Inventory Volume
- Increase Asset Availability
- Usage Based Billing (Equipment Rental)



- Automate Data Processing
- Improve Data Quality and Availability
- Lower Maintenance Costs
- Reduced Overtime/Labor costs

How Does it Work?



Data Source

Data Transmission

IoT Orchestrator

AIS Server

- Bluetooth
- Wi-Fi
- Cellular

Use Case: Inventory Management

Summary

- Inventory availability is critical to the success of manufacturing & distribution companies
- Failure to proactively monitor inventory of raw materials will result in unnecessary losses
- Corrective action occurs after losses maintenance occurs after equipment failure
- Preventative maintenance relies on time and meter readings to schedule maintenance
- Condition based maintenance continuously monitors operating conditions and triggers alerts when defined thresholds are violated

Traditional Limitations

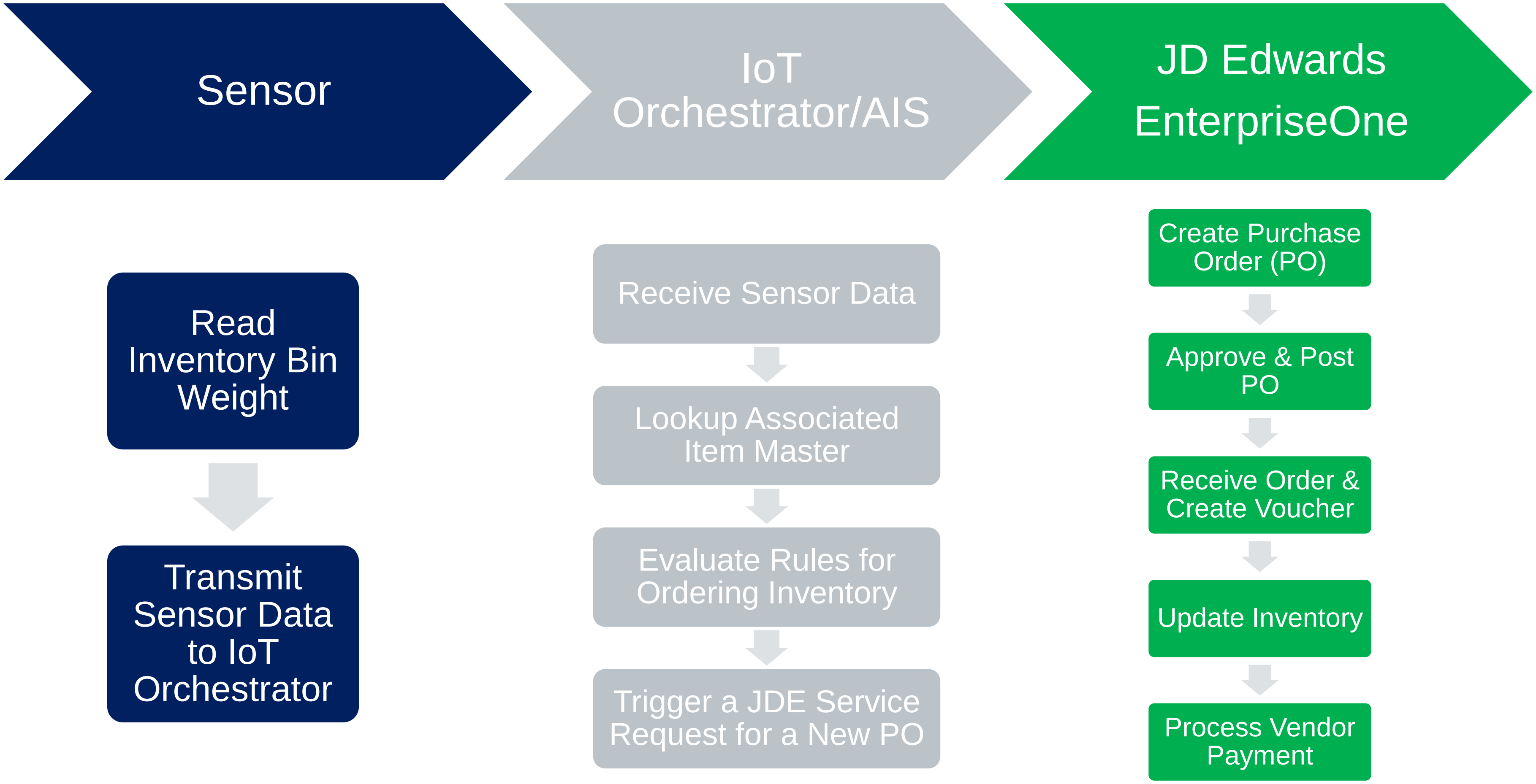
- There is a delay between when items are picked and when inventory is reduced
- Bar codes are better but still have human error
- Production can stop if parts are not available

IoT Advantages

- Physical inventory is always accurate
- Quantities are updated in real time when picked
- Dynamic Reorder Points (ROP) and Order Quantities can be achieved

IoT Process Flow

Inventory Management



Sensor

Read Inventory Bin Weight

Transmit Sensor Data to IoT Orchestrator

IoT Orchestrator/AIS

Receive Sensor Data

Lookup Associated Item Master

Evaluate Rules for Ordering Inventory

Trigger a JDE Service Request for a New PO

JD Edwards EnterpriseOne

Create Purchase Order (PO)

Approve & Post PO

Receive Order & Create Voucher

Update Inventory

Process Vendor Payment

Use Case: Fleet Management

Summary

- Asset Maintenance – Asset Availability and usability is critical to the success of asset intensive companies. Failure to proactively maintain and monitor assets will result in unnecessary losses
- Location/Usage Based Billing - Equipment rental is traditionally done based on the number of days a piece of equipment is rented without regard to actual usage.

Traditional Limitations

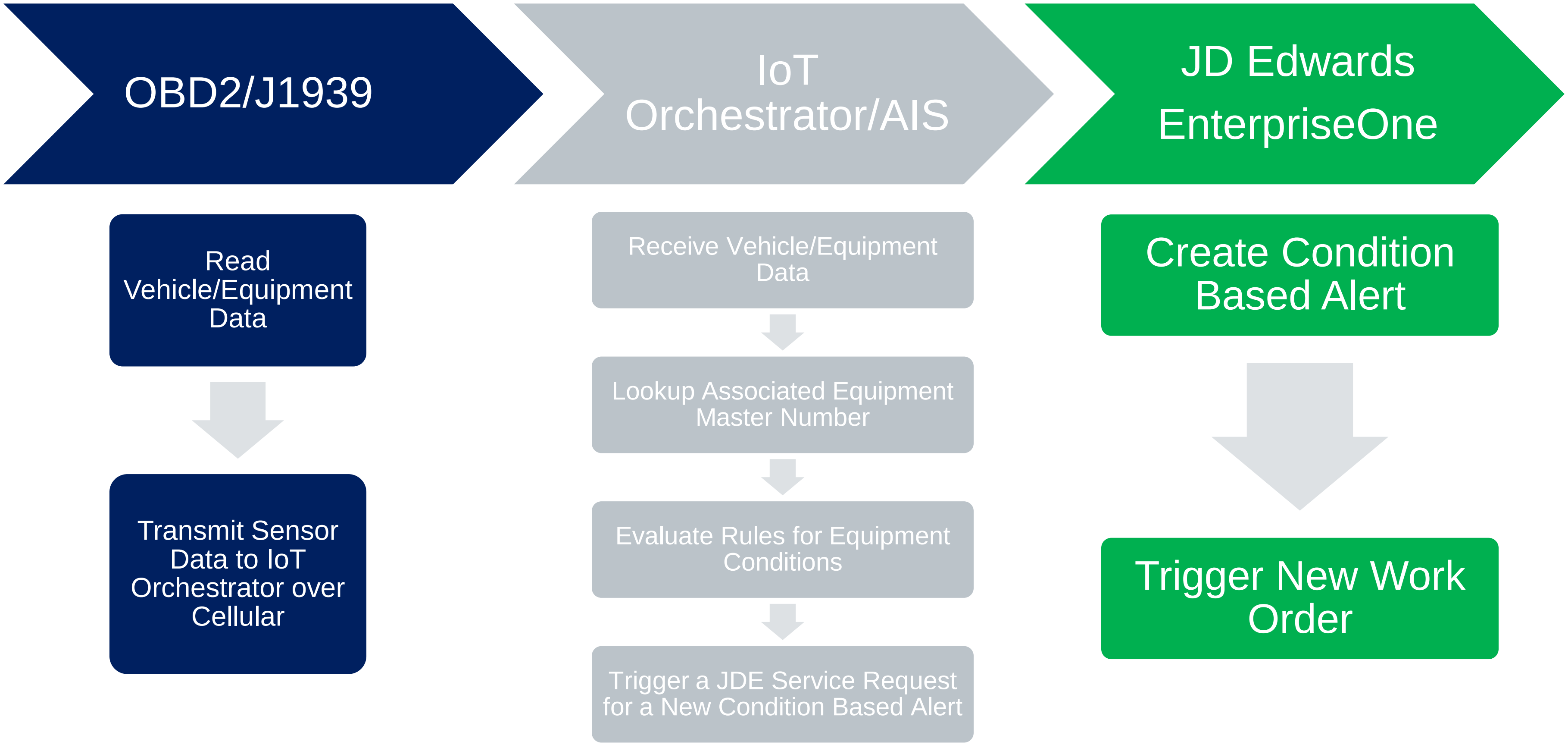
- Manual data entry is time consuming and error prone
- Corrective maintenance is expensive and results in unnecessary downtime
- Preventative maintenance requires meter readings to trigger PM schedules
- Condition based maintenance requires real time monitoring
- Billing is based on estimates or time as a proxy for usage

IoT Advantages

- Meter readings are automatically entered directly from assets
- Real time condition monitoring and location tracking for assets
- Improved maintenance and monitoring reduces unexpected failures and downtime
- Usage and location based billing and cost tracking

IoT Process Flow

Fleet Management (Condition Based Alert)



OBD2/J1939

Read Vehicle/Equipment Data

Transmit Sensor Data to IoT Orchestrator over Cellular

IoT Orchestrator/AIS

Receive Vehicle/Equipment Data

Lookup Associated Equipment Master Number

Evaluate Rules for Equipment Conditions

Trigger a JDE Service Request for a New Condition Based Alert

JD Edwards EnterpriseOne

Create Condition Based Alert

Trigger New Work Order

Use Case: Virtual "Things" (Software)

Summary

- CRM and Sales – Real time billing data can be updated and invoices generated in JDE when customer orders are placed
- Procurement and AP – Real time procurement data can be integrated and vouchers generated in JDE when purchases are made
- Excel – Data can be loaded directly in JDE from Excel even when no import functionality exists

Traditional Limitations

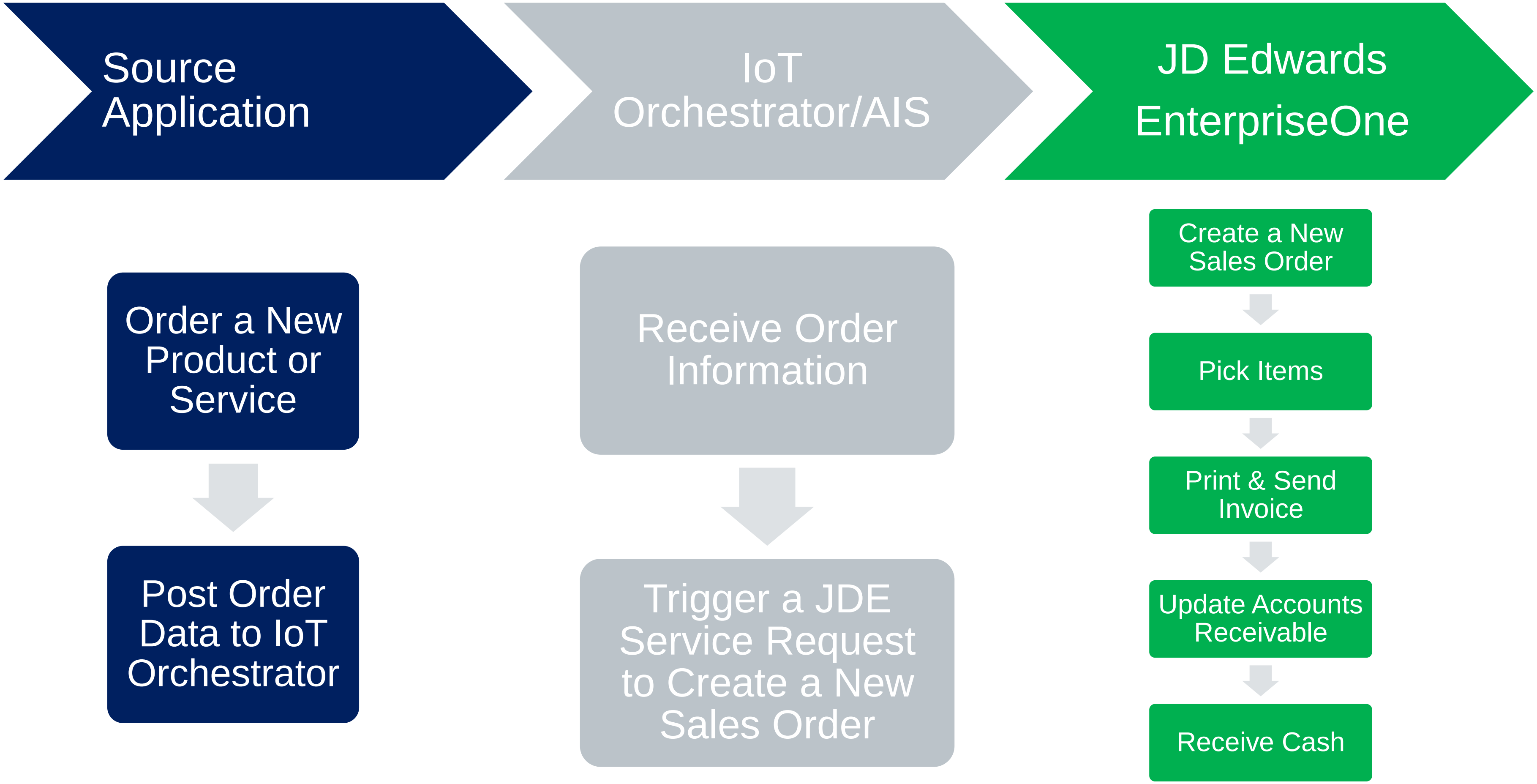
- Z-Files are not real time and not always available
- BSSV and AIS require a developer resource and a full SDLC
- Little to no error handling

IoT Advantages

- Users can build and maintain complex Orchestrations in a few minutes
- No need to specify every field on a screen
- Receive the same error messages that other users see

IoT Process Flow

Real Time Billing Software Integration



Source Application

Order a New Product or Service

Post Order Data to IoT Orchestrator

IoT Orchestrator/AIS

Receive Order Information

Trigger a JDE Service Request to Create a New Sales Order

JD Edwards EnterpriseOne

Create a New Sales Order

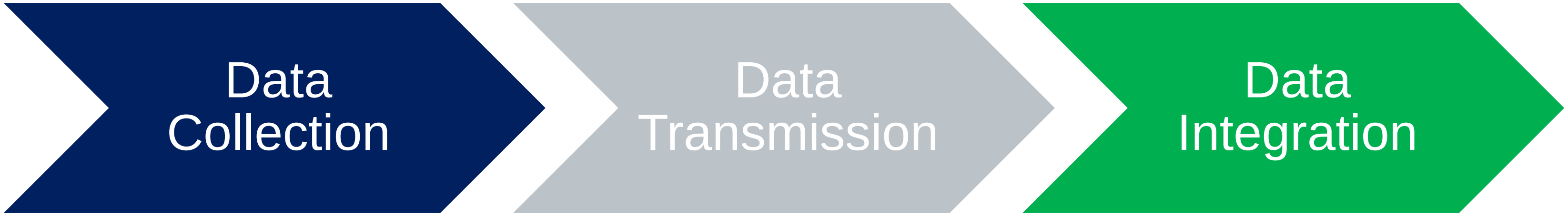
Pick Items

Print & Send Invoice

Update Accounts Receivable

Receive Cash

Implementation Considerations



Data Collection

Data Transmission

Data Integration

- Sensors (weight, light/distance, liquid volume)
- OBD2 (Vehicle)
- 9-Pin Deutsch Connector (Equipment)
- GPS Tracker
- Software (Excel, SalesForce, Oracle Sales Cloud, etc.)

- Wired Connection (USB)
- Wi-Fi
- Bluetooth
- Cell (2G, 3G, 4G)

- SQL
- Z-Files
- Business Services (BSSV)
- AIS
- IoT Orchestrator

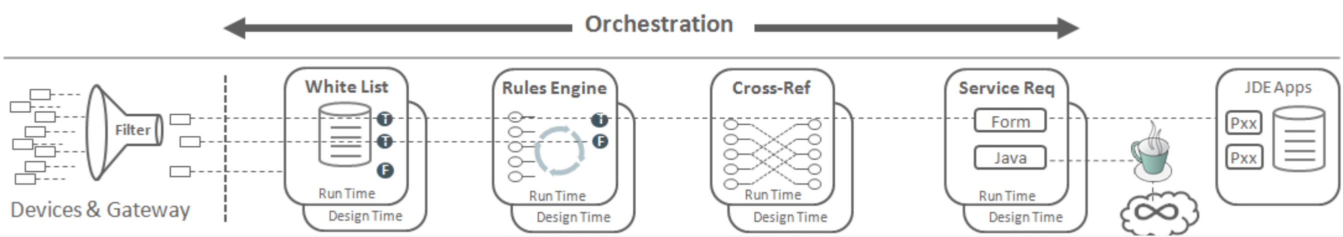
Data Transmission Comparison

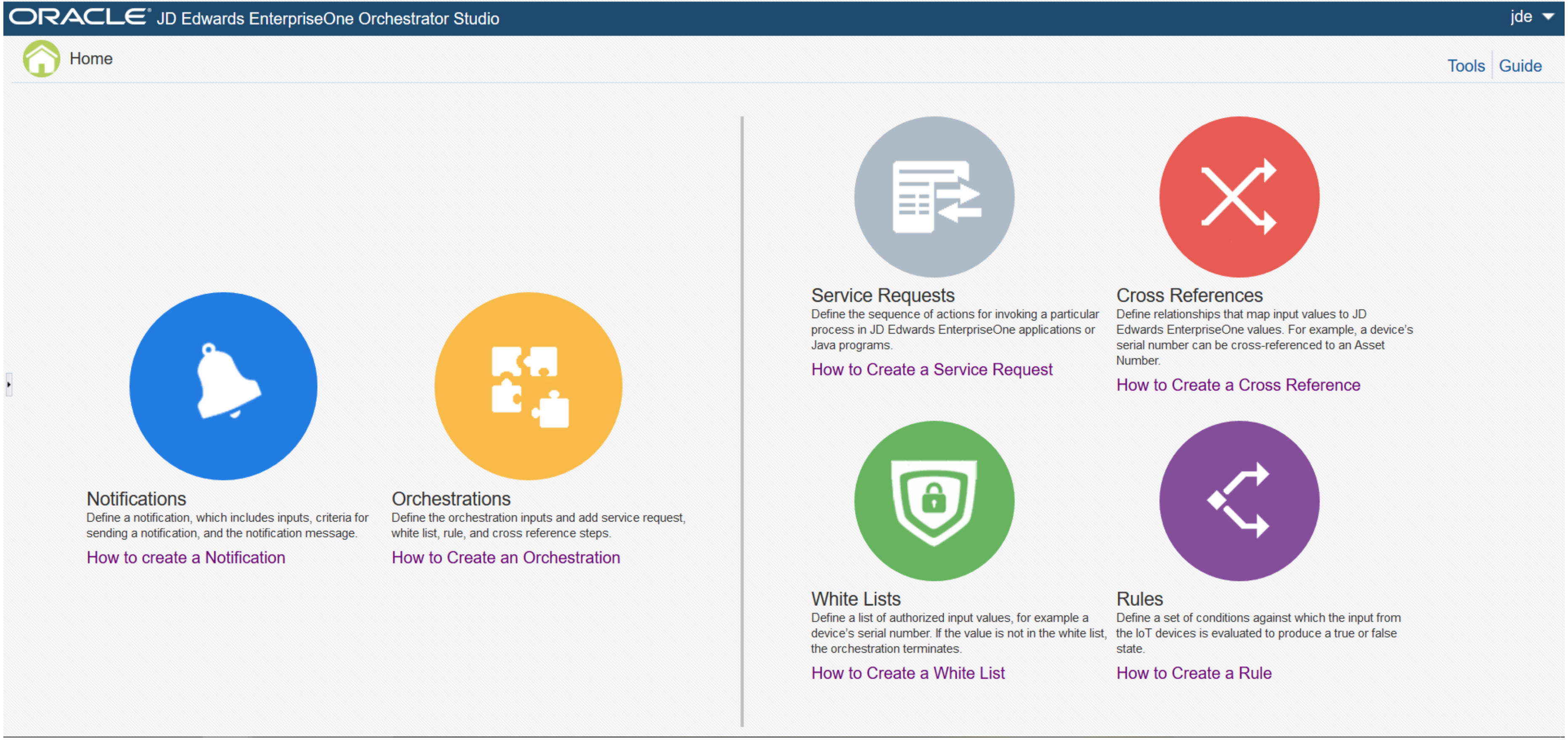
Method	Price	Installation	Range
Wired	Low	Difficult	Short
Bluetooth	Low	Easy	Medium
Wi-Fi	Low	Easy	Medium
Cellular	High	Easy	Long

Integration Method Comparison

Attribute	SQL	Z-Files	Business Services	AIS	IoT Orchestrat or (AIS)
Real Time Integratio n	✗	✗	✓	✓	✓
Data Validation	✗	✓	✓	✓	✓
Optimized For	NA	NA	Applicatio n Logic	Data Operations	Data Operations
Web Service	NA	NA	SOAP	REST	REST
Developer Resource Not Required	✗	✗	✗	✗	✓

IoT Orchestrator Studio





Notifications
Define a notification, which includes inputs, criteria for sending a notification, and the notification message.
How to create a Notification

Orchestrations
Define the orchestration inputs and add service request, white list, rule, and cross reference steps.
How to Create an Orchestration

Service Requests
Define the sequence of actions for invoking a particular process in JD Edwards EnterpriseOne applications or Java programs.
How to Create a Service Request

Cross References
Define relationships that map input values to JD Edwards EnterpriseOne values. For example, a device's serial number can be cross-referenced to an Asset Number.
How to Create a Cross Reference

White Lists
Define a list of authorized input values, for example a device's serial number. If the value is not in the white list, the orchestration terminates.
How to Create a White List

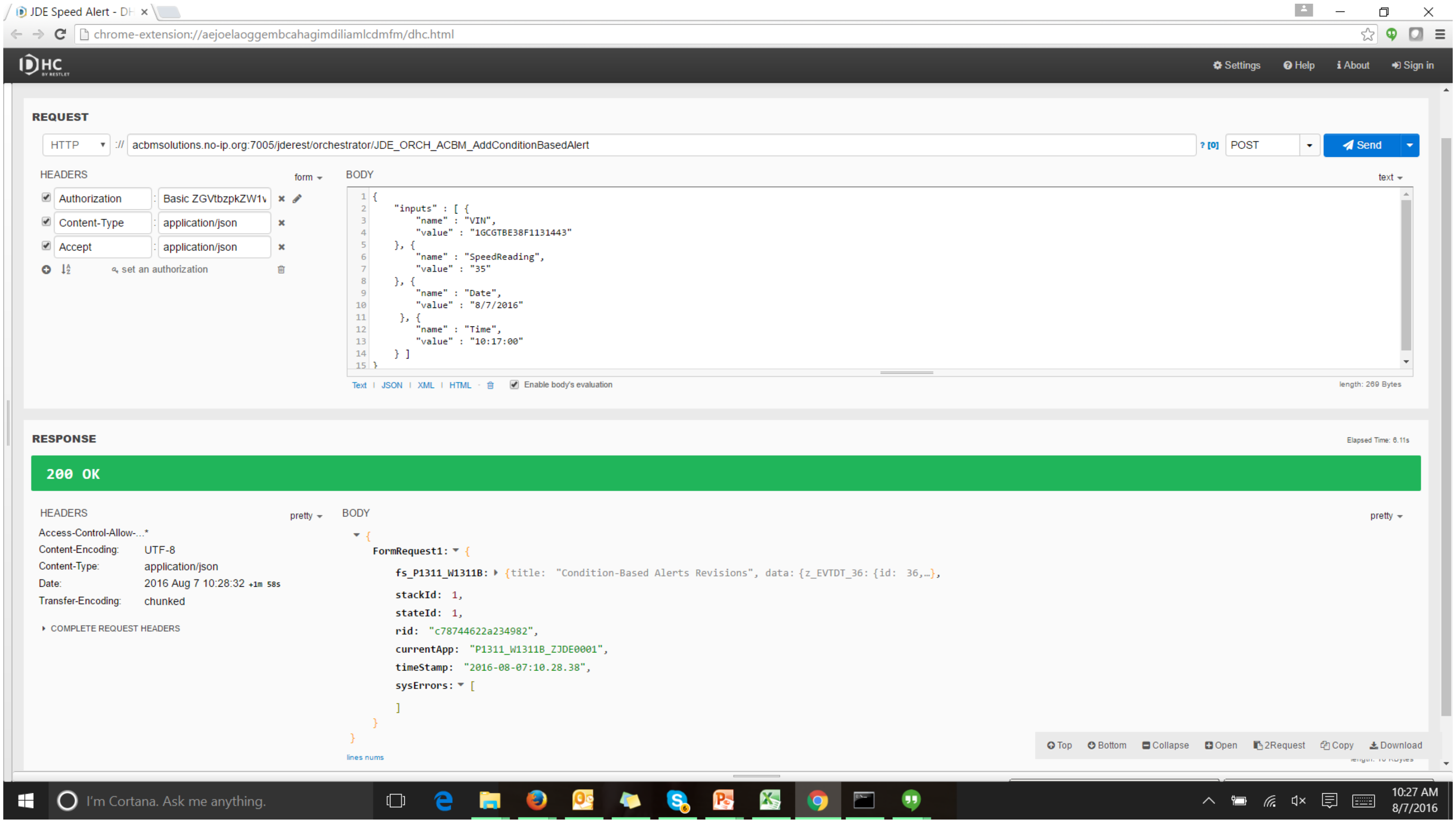
Rules
Define a set of conditions against which the input from the IoT devices is evaluated to produce a true or false state.
How to Create a Rule

Questions??

Demo

Appendix

Sample Post Request



JDE Speed Alert - DH
chrome-extension://aejoelaoggembcahagimdiliamlcdmfm/dhc.html
DHC BY RESTLET
Settings
Help
About
Sign in

REQUEST

HTTP :// acbmsolutions.no-ip.org:7005/jderest/orchestrator/JDE_ORCH_ACBM_AddConditionBasedAlert — POST — Send

HEADERS

- ☑ Authorization: Basic ZGVtbzpkZW1v
- ☑ Content-Type: application/json
- ☑ Accept: application/json

set an authorization

BODY

```
{
    "inputs" : [ {
        "name" : "VIN",
        "value" : "1GCGTBE38F1131443"
    }, {
        "name" : "SpeedReading",
        "value" : "35"
    }, {
        "name" : "Date",
        "value" : "8/7/2016"
     }, {
        "name" : "Time",
        "value" : "10:17:00"
    } ]
}
```

Text | JSON | XML | HTML — ☑ Enable body's evaluation — length: 269 Bytes

RESPONSE

Elapsed Time: 6.11s

200 OK

HEADERS

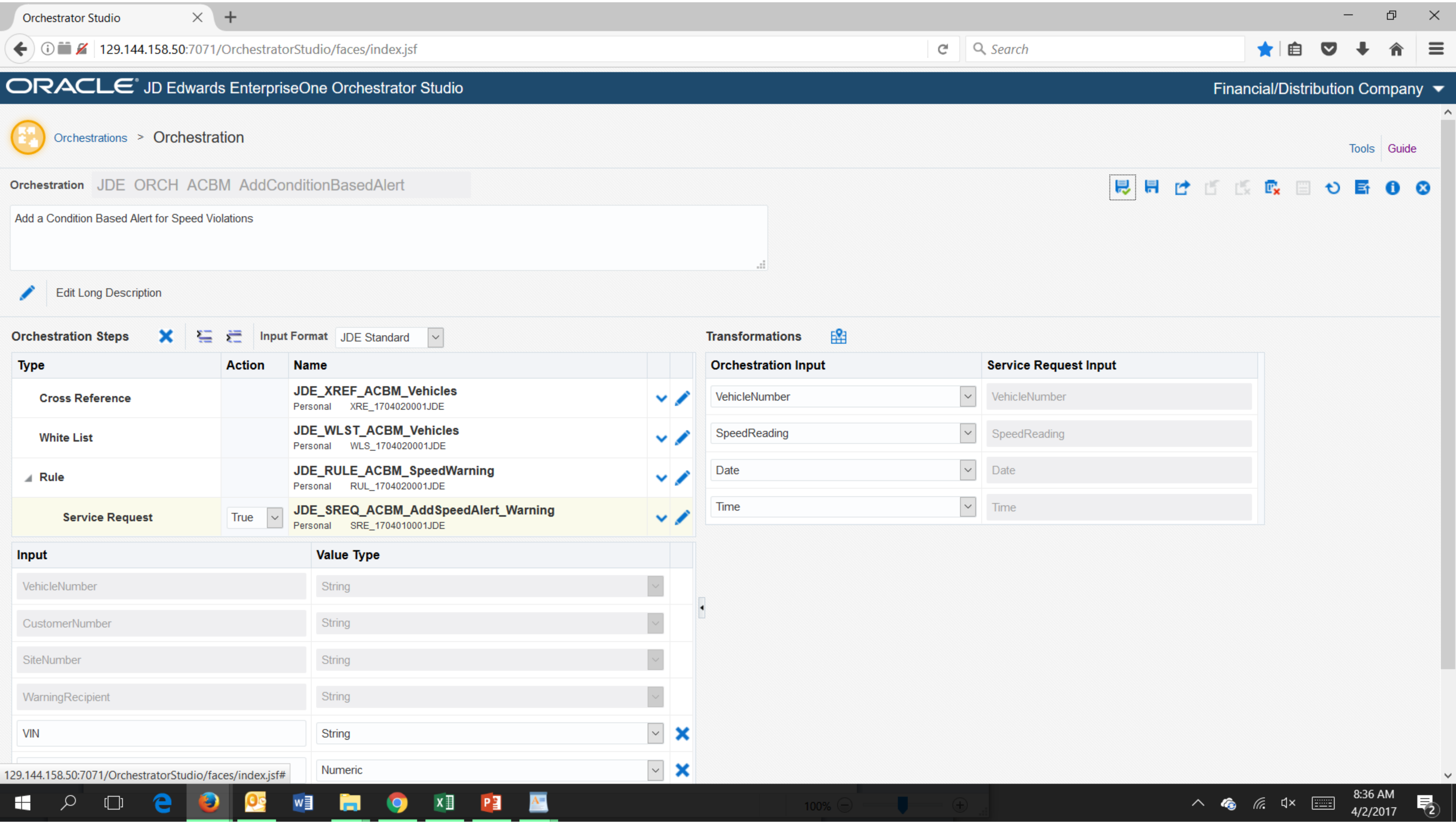
Access-Control-Allow-...*
Content-Encoding: UTF-8
Content-Type: application/json
Date: 2016 Aug 7 10:28:32 +1m 58s
Transfer-Encoding: chunked

COMPLETE REQUEST HEADERS

BODY

```
{
    FormRequest1: {
        fs_P1311_W1311B: {title: "Condition-Based Alerts Revisions", data: {z_EVTDT_36: {id: 36,…},
        stackId: 1,
        stateId: 1,
        rid: "c78744622a234982",
        currentApp: "P1311_W1311B_ZJDE0001",
        timeStamp: "2016-08-07:10.28.38",
        sysErrors: [
        ]
    }
}
```

Orchestrations



Orchestrator Studio
129.144.158.50:7071/OrchestratorStudio/faces/index.jsf
Search
ORACLE JD Edwards EnterpriseOne Orchestrator Studio
Financial/Distribution Company
Orchestrations > Orchestration
Tools
Guide

Orchestration JDE ORCH ACBM AddConditionBasedAlert

Add a Condition Based Alert for Speed Violations

Orchestration Steps

Input Format: JDE Standard

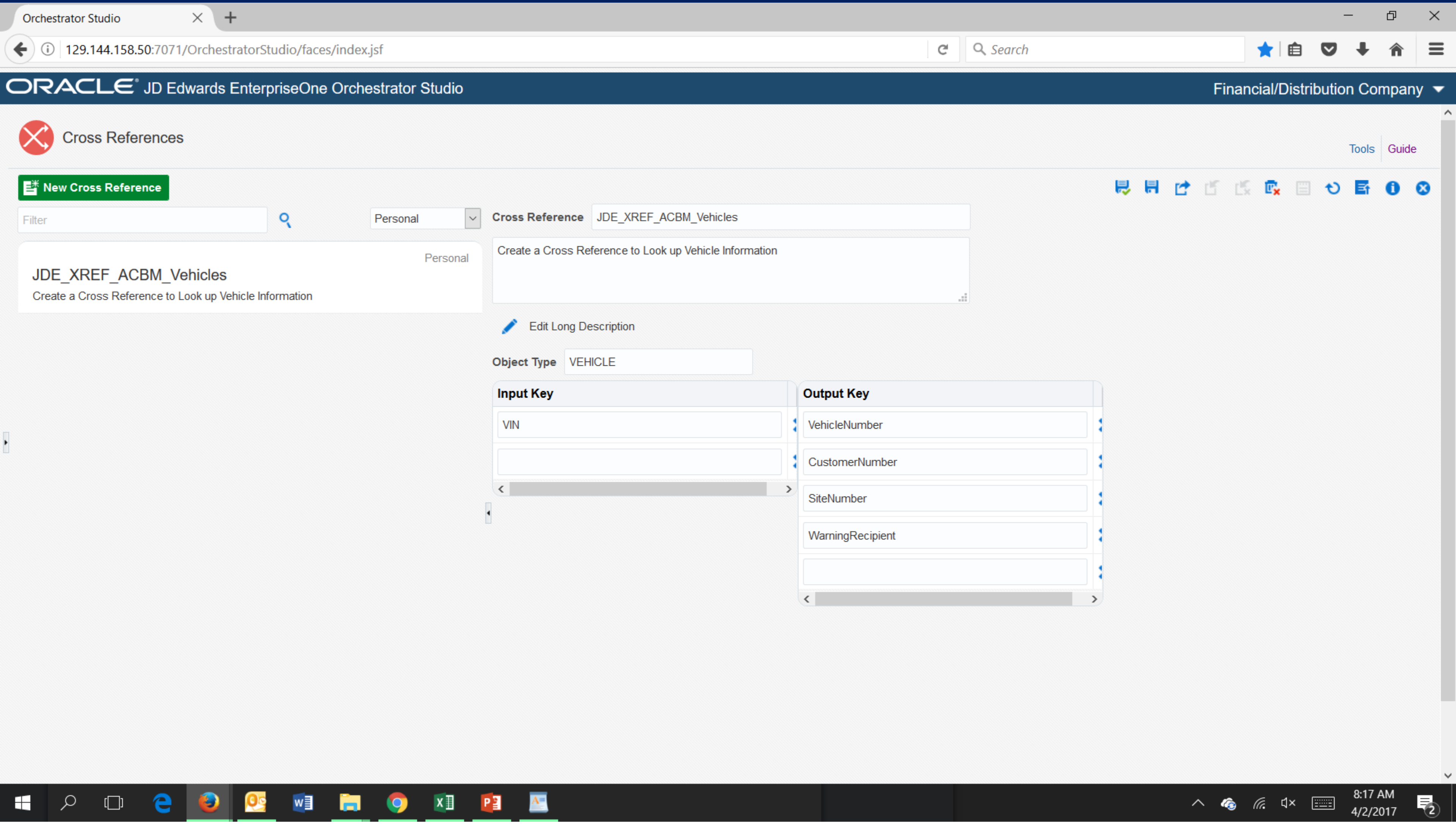
Type	Action	Name
Cross Reference		JDE_XREF_ACBM_Vehicles Personal XRE_1704020001JDE
White List		JDE_WLST_ACBM_Vehicles Personal WLS_1704020001JDE
Rule		JDE_RULE_ACBM_SpeedWarning Personal RUL_1704020001JDE
Service Request	True	JDE_SREQ_ACBM_AddSpeedAlert_Warning Personal SRE_1704010001JDE

Input	Value Type
VehicleNumber	String
CustomerNumber	String
SiteNumber	String
WarningRecipient	String
VIN	String
	Numeric

Transformations

Orchestration Input	Service Request Input
VehicleNumber	VehicleNumber
SpeedReading	SpeedReading
Date	Date
Time	Time

Cross Reference



Orchestrator Studio
129.144.158.50:7071/OrchestratorStudio/faces/index.jsf
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ORACLE JD Edwards EnterpriseOne Orchestrator Studio
Financial/Distribution Company
Cross References
Tools
Guide
New Cross Reference
Filter
Personal

Personal

JDE_XREF_ACBM_Vehicles

Create a Cross Reference to Look up Vehicle Information

Cross Reference JDE_XREF_ACBM_Vehicles

Create a Cross Reference to Look up Vehicle Information

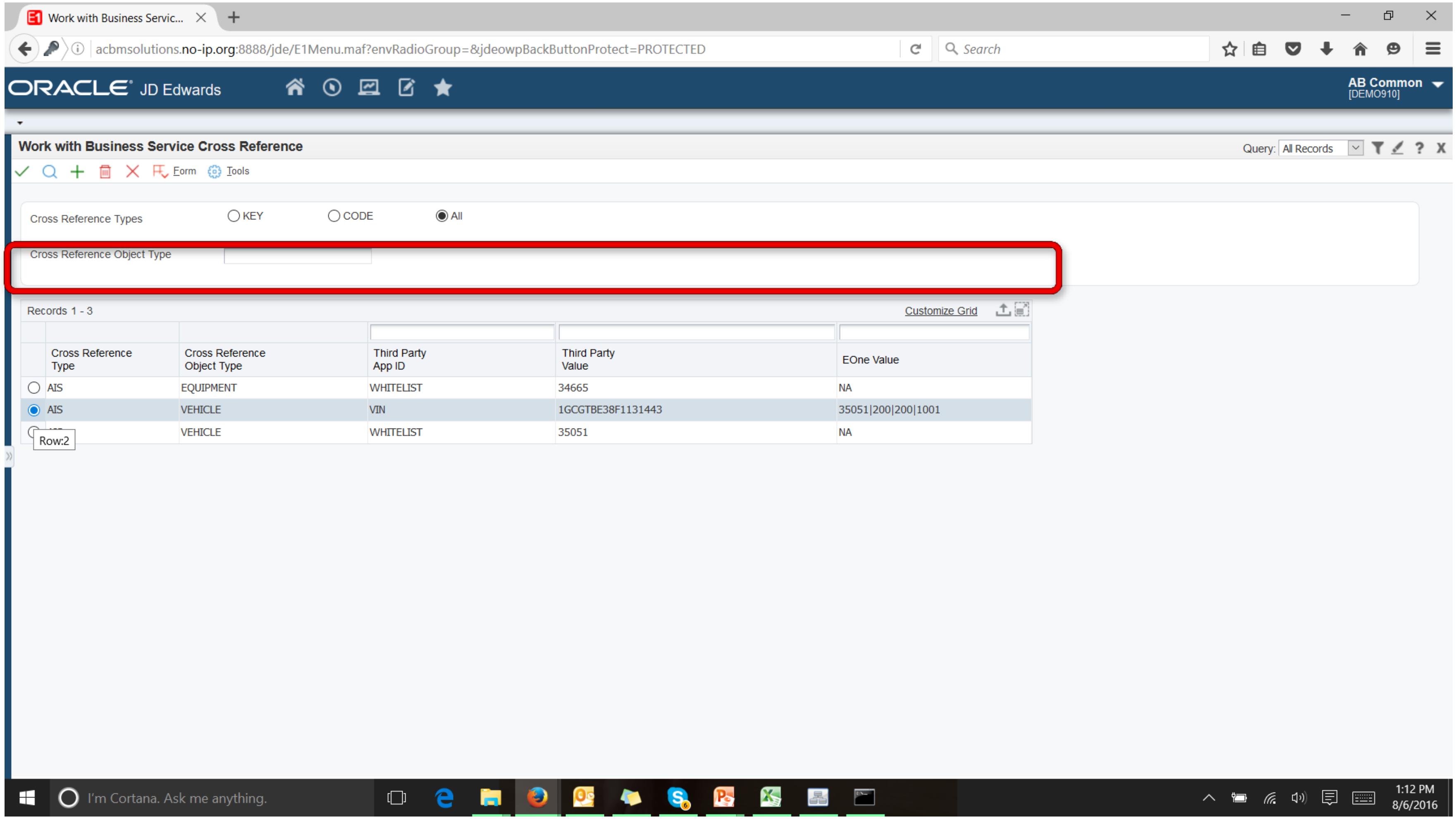
Edit Long Description

Object Type VEHICLE

Input Key
VIN

Output Key
VehicleNumber
CustomerNumber
SiteNumber
WarningRecipient

JDE Cross Reference Configuration



Work with Business Servic...
acbmsolutions.no-ip.org:8888/jde/E1Menu.maf?envRadioGroup=&jdeowpBackButtonProtect=PROTECTED
Search
ORACLE JD Edwards
AB Common
[DEMO910]
Query: All Records
Form
Tools
Customize Grid
Row:2
I'm Cortana. Ask me anything.
1:12 PM
8/6/2016

Work with Business Service Cross Reference

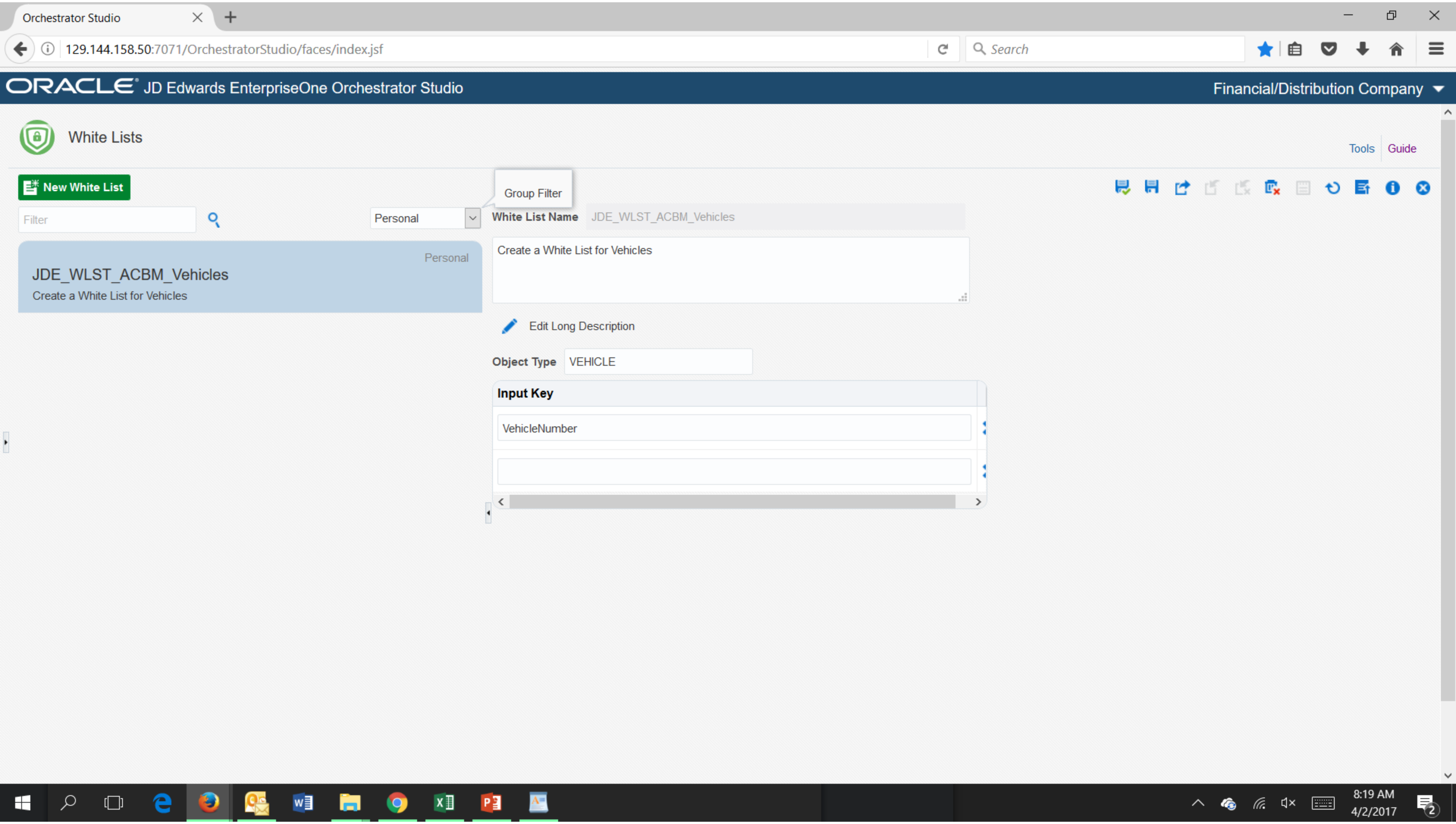
Cross Reference Types ○ KEY ○ CODE ● All

Cross Reference Object Type

Records 1 - 3

	Cross Reference Type	Cross Reference Object Type	Third Party App ID	Third Party Value	EOne Value
○	AIS	EQUIPMENT	WHITELIST	34665	NA
●	AIS	VEHICLE	VIN	1GCGTBE38F1131443	35051|200|200|1001
○	AIS	VEHICLE	WHITELIST	35051	NA

White Lists



Orchestrator Studio
129.144.158.50:7071/OrchestratorStudio/faces/index.jsf
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New White List
Filter
Group Filter

White Lists

Personal

JDE_WLST_ACBM_Vehicles Personal
Create a White List for Vehicles

White List Name: JDE_WLST_ACBM_Vehicles

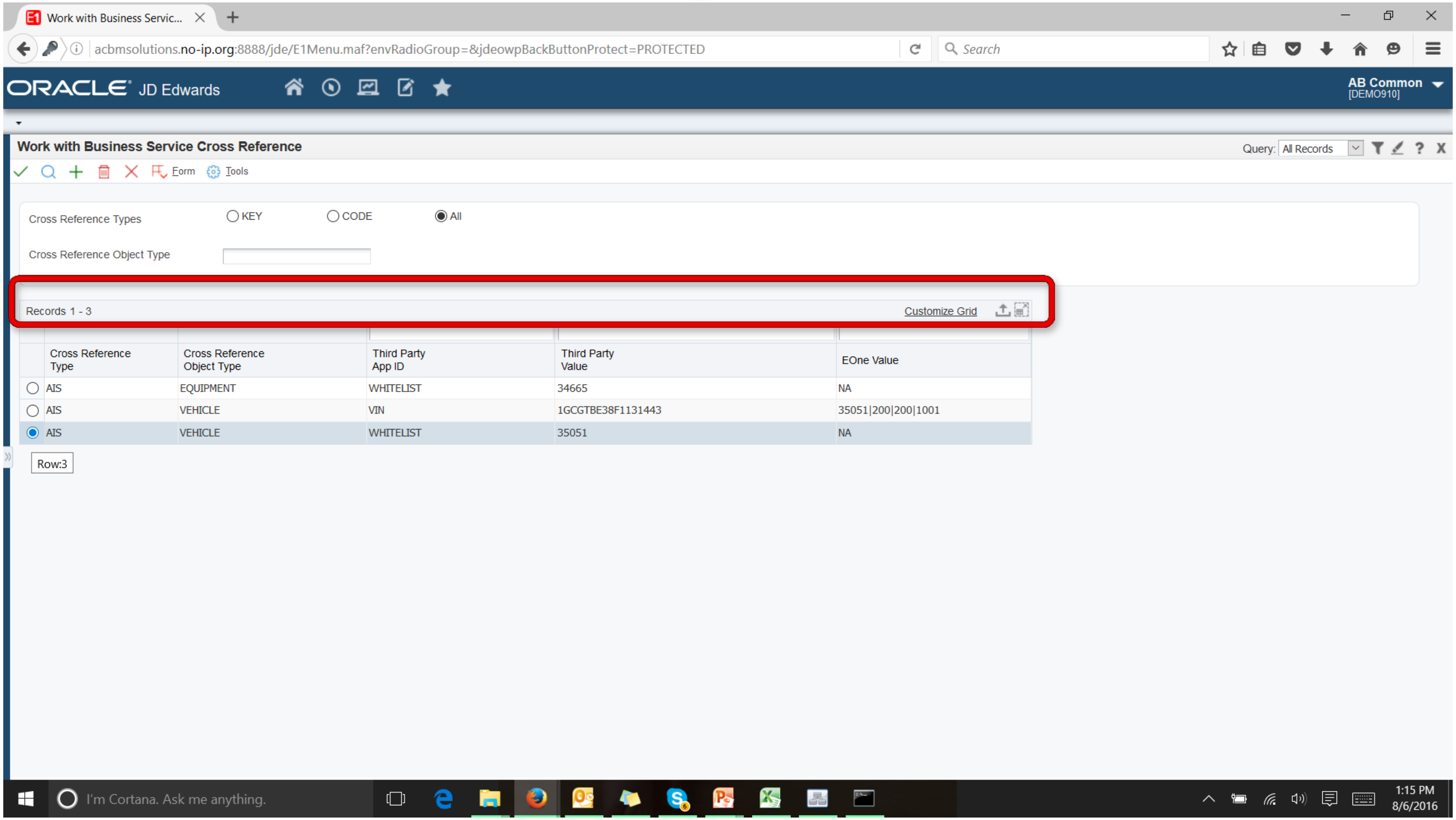
Create a White List for Vehicles

Edit Long Description

Object Type: VEHICLE

Input Key
VehicleNumber

JDE Whitelist Configuration



Work with Business Servic...
acbmsolutions.no-ip.org:8888/jde/E1Menu.maf?envRadioGroup=&jdeowpBackButtonProtect=PROTECTED
Search
ORACLE JD Edwards
AB Common
[DEMO910]
Query: All Records
Form
Tools
Customize Grid
I'm Cortana. Ask me anything.
1:15 PM
8/6/2016

Work with Business Service Cross Reference

Cross Reference Types ○ KEY ○ CODE ● All

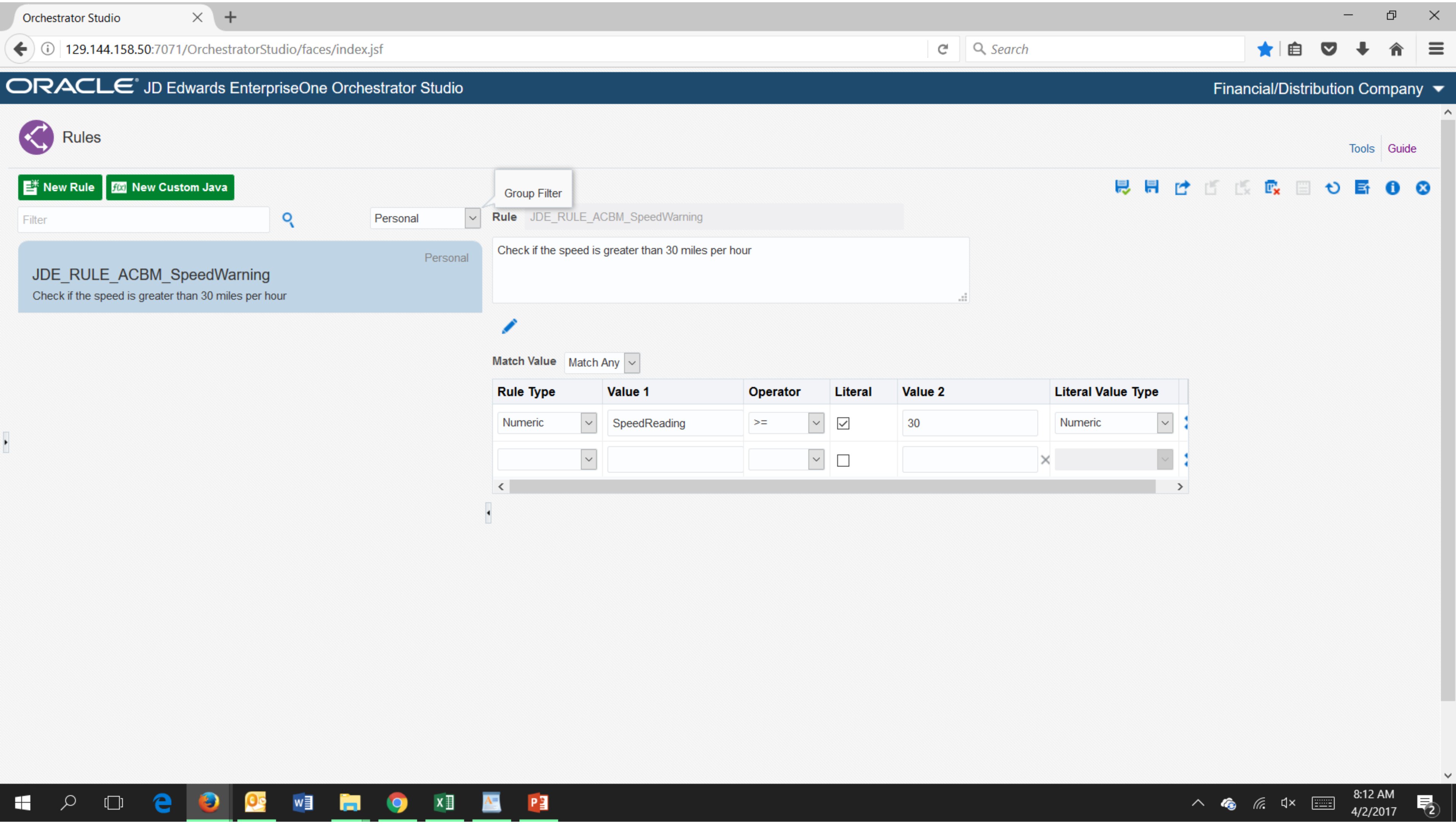
Cross Reference Object Type

Records 1 - 3

	Cross Reference Type	Cross Reference Object Type	Third Party App ID	Third Party Value	EOne Value
○	AIS	EQUIPMENT	WHITELIST	34665	NA
○	AIS	VEHICLE	VIN	1GCGTBE38F1131443	35051|200|200|1001
●	AIS	VEHICLE	WHITELIST	35051	NA

Row:3

Rules



Orchestrator Studio
129.144.158.50:7071/OrchestratorStudio/faces/index.jsf
Search
ORACLE JD Edwards EnterpriseOne Orchestrator Studio
Financial/Distribution Company
Rules
Tools
Guide
New Rule
New Custom Java
Filter
Personal
Group Filter

Personal

JDE_RULE_ACBM_SpeedWarning
Check if the speed is greater than 30 miles per hour

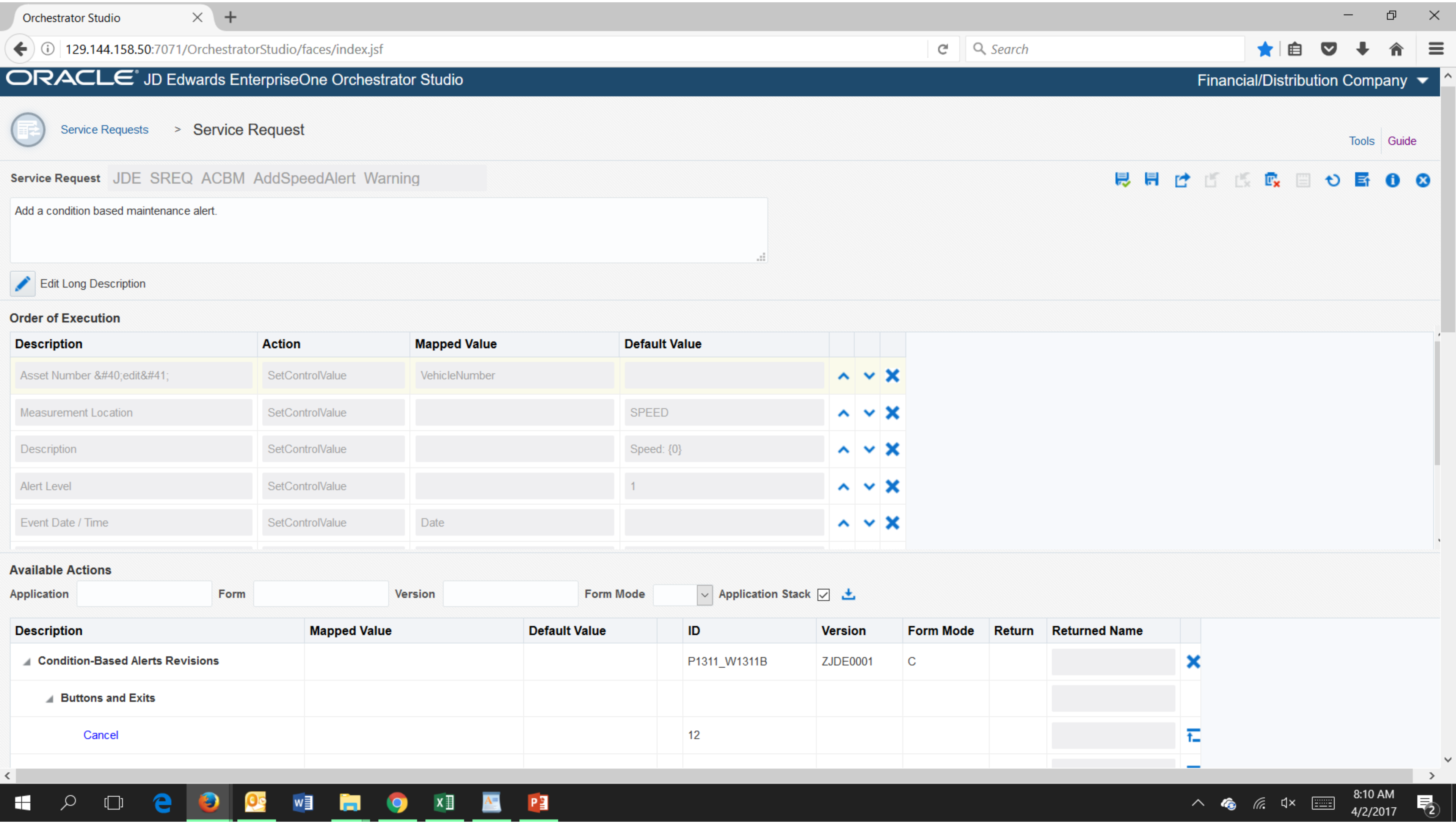
Rule: JDE_RULE_ACBM_SpeedWarning

Check if the speed is greater than 30 miles per hour

Match Value: Match Any

Rule Type	Value 1	Operator	Literal	Value 2	Literal Value Type
Numeric	SpeedReading	>=	☑	30	Numeric
			□		

Service Requests


Orchestrator Studio
129.144.158.50:7071/OrchestratorStudio/faces/index.jsf
Search
ORACLE JD Edwards EnterpriseOne Orchestrator Studio
Financial/Distribution Company
Service Requests > Service Request
Tools
Guide
Edit Long Description

Service Request JDE SREQ ACBM AddSpeedAlert Warning

Add a condition based maintenance alert.

Order of Execution

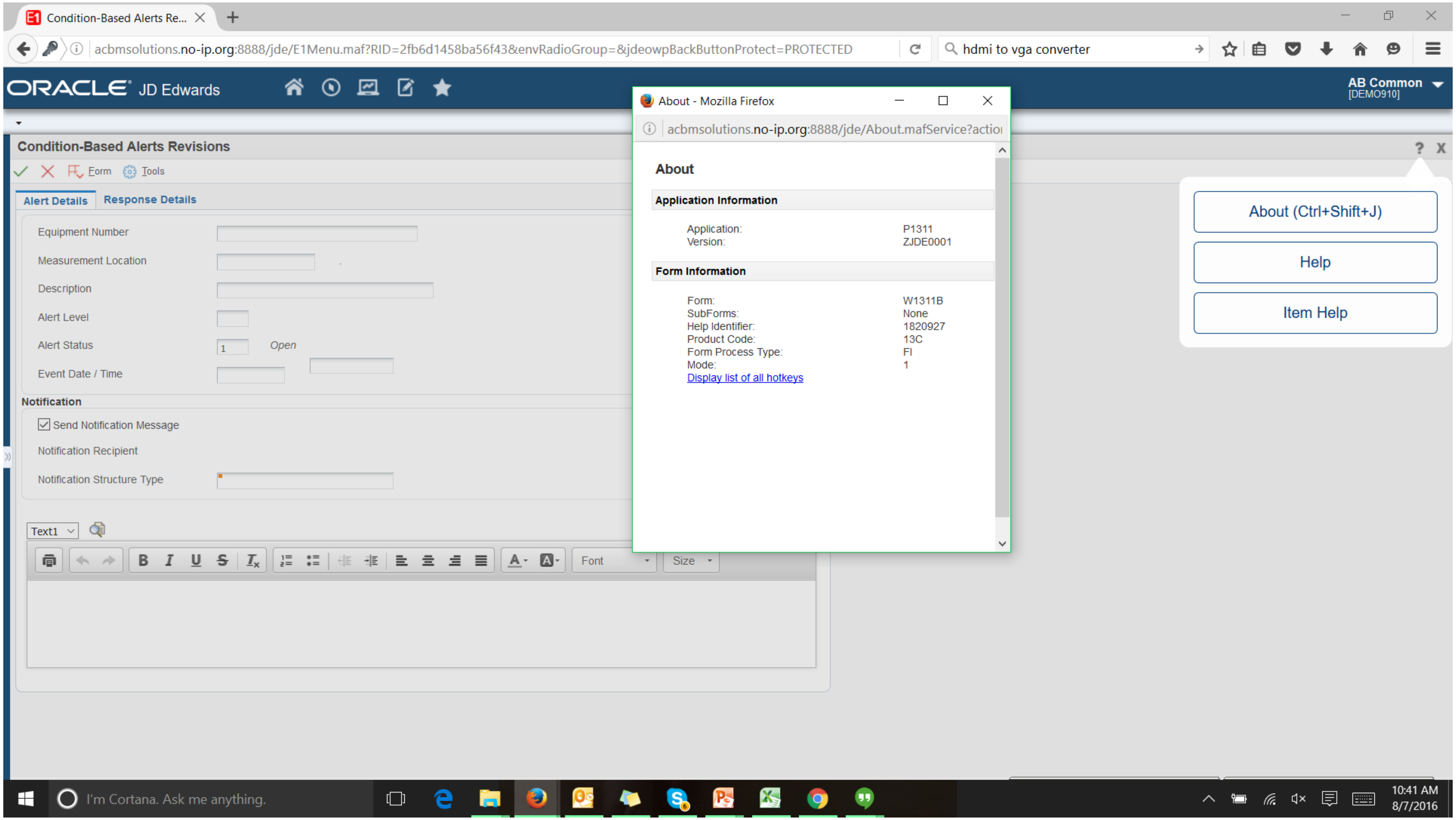
Description	Action	Mapped Value	Default Value
Asset Number &#40;edit&#41;	SetControlValue	VehicleNumber	
Measurement Location	SetControlValue		SPEED
Description	SetControlValue		Speed: {0}
Alert Level	SetControlValue		1
Event Date / Time	SetControlValue	Date	

Available Actions

Application: Form: Version: Form Mode: Application Stack ☑

Description	Mapped Value	Default Value	ID	Version	Form Mode	Return	Returned Name
Condition-Based Alerts Revisions			P1311_W1311B	ZJDE0001	C		
Buttons and Exits							
Cancel			12				

JDE Service Request Example


Condition-Based Alerts Re...
acbmsolutions.no-ip.org:8888/jde/E1Menu.maf?RID=2fb6d1458ba56f43&envRadioGroup=&jdeowpBackButtonProtect=PROTECTED
hdmi to vga converter
ORACLE JD Edwards
AB Common
[DEMO910]
Form
Tools
Alert Details
Response Details
Text1
Font
Size
About (Ctrl+Shift+J)
Help
Item Help
About - Mozilla Firefox
acbmsolutions.no-ip.org:8888/jde/About.mafService?actio
I'm Cortana. Ask me anything.
10:41 AM
8/7/2016

Condition-Based Alerts Revisions

Equipment Number
Measurement Location
Description
Alert Level
Alert Status 1 *Open*
Event Date / Time

Notification

☑ Send Notification Message
Notification Recipient
Notification Structure Type

About

Application Information

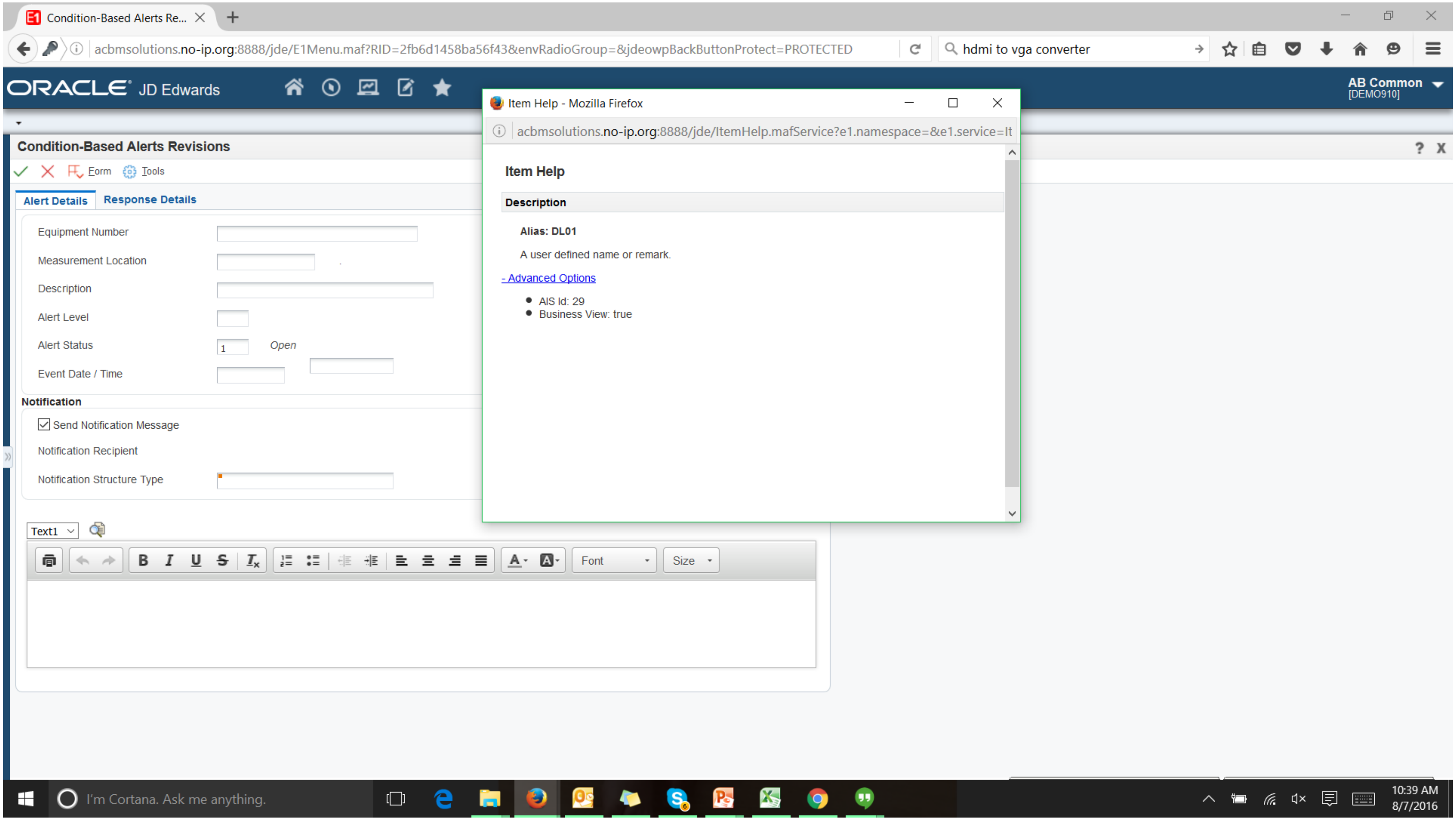
Application:	P1311
Version:	ZJDE0001

Form Information

Form:	W1311B
SubForms:	None
Help Identifier:	1820927
Product Code:	13C
Form Process Type:	FI
Mode:	1

Display list of all hotkeys

JDE Service Request Example (Contd.)


Condition-Based Alerts Re...
acbmsolutions.no-ip.org:8888/jde/E1Menu.maf?RID=2fb6d1458ba56f43&envRadioGroup=&jdeowpBackButtonProtect=PROTECTED
hdmi to vga converter
ORACLE JD Edwards
AB Common
[DEMO910]
Form
Tools
Text1
Font
Size
I'm Cortana. Ask me anything.
10:39 AM
8/7/2016

Condition-Based Alerts Revisions

Alert Details | Response Details

Equipment Number

Measurement Location

Description

Alert Level

Alert Status 1 *Open*

Event Date / Time

Notification

☑ Send Notification Message

Notification Recipient

Notification Structure Type

Item Help - Mozilla Firefox

acbmsolutions.no-ip.org:8888/jde/ItemHelp.mafService?e1.namespace=&e1.service=It

Item Help

Description

Alias: DL01

A user defined name or remark.

- Advanced Options

- AIS Id: 29
- Business View: true

Use Case: Asset Maintenance

Summary

- Asset availability and usability is critical to the success of asset intensive companies
- Failure to proactively maintain and monitor the assets will result in unnecessary losses
- Corrective maintenance occurs after equipment failure
- Preventative maintenance relies on time and meter readings to schedule maintenance
- Condition based maintenance continuously monitors operating conditions and triggers alerts when defined thresholds are violated

Traditional Limitations

- Condition based maintenance requires real time monitoring
- Preventative maintenance requires meter readings to trigger PM schedules
- Corrective maintenance is expensive and results in unnecessary downtime

IoT Advantages

- Real time condition monitoring for assets
- Meter readings are automatically entered directly from assets
- Improved maintenance and monitoring reduces unexpected failures and downtime

Use Case: Equipment Rental & Project Costing

Summary

Equipment Rental

- **Equipment rental is traditionally done based on the number of days a piece of equipment is rented without regard to actual usage.**

Project Costing

- **Equipment and resource costs shared between multiple projects are allocated based on estimates and don't provide an accurate record of actual expenses.**

Traditional Limitations

- **Manual data entry is time consuming and error prone**
- **Location or usage based billing is difficult to record and requires significant effort**

IoT Advantages

- **Equipment becomes "Smart" system users ensuring data is entered accurately and in a timely manner**
- **Billing can be automated and generated by actual usage or location**

Use Case: Facilities & Service Management

Summary

- Facilities and service management is achieved through managing distributed repair services
- Work order assignment is critical to the success of providing timely responses
- Service locations are needed to dispatch qualified resources

Traditional Limitations

- Defined service routes are not updated which ignores changes in factors of route optimization
- On demand service routes may be assigned using a priority queue instead of optimal assignment

IoT Advantages

- Location tracking enables real time optimization of service routes
- Better route management improves labor costs through a reduction in overtime
- Monitoring driver behavior reduces fraud