

Making the railway system  
work better for society.

Compliance report  
Oracle Service Bus TAF CI  
ČD – Informační Systémy, a.s.

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Valenciennes, 16<sup>th</sup> September 2022

**TAF TSI Compliance Resultc – your Oracle Service Bus (OSB) as the TAF TSI Common Interface (CI)  
alternative implementation**

To whom it may concern,

I confirm and certify herewith that the following TAF TSI Common Interface functionality implemented by the company ČD – Informační Systémy, a.s. (Czech Republic), is compliant with the appropriate provisions of the TAF-TSI Regulation 2021/541 and its Technical Documents.

The detailed results of the verification process are concluded as follows:

ČD – Informační Systémy, a.s. has sent to the European Union Agency for Railways on 11 August 2022, for verification, the document “CDIS request for OSB as CI alternative v1.pdf” – see details in Annex.

In addition, ČD Cargo has sent an explanatory note to the European Union Agency for Railways on 15 September 2022 for point g. „ handling the single common access to various databases“ of above document.

ERA has verified the compliance of the document and of the explanatory note for the following points:

- a. message formatting of outgoing messages according to the metadata,
- b. signing and encryption of outgoing messages,
- c. addressing of the outgoing messages,
- d. authenticity verification of the incoming messages,
- e. decryption of incoming messages,
- f. conformity checks of incoming messages according to metadata,
- g. handling the single common access to various databases.

The applicant has demonstrated, that above functions of the OSB are in line with chapter “4.2.11.5. Common Interface” of the TAF/TAP TSI regulation.

For above point g. it should be mentioned additionally, that the OSB is not used for the time being for connection to any database. The only existing TAF TSI database is CRD. The partners of CD IS have access to CRD via web and this fulfills all their needs. The so-called Rolling Stock Reference Database (RSRD) is distributed - with GCU Broker as connecting central point. The partners of CD IS are connected to the so-called GCU Broker in both ways via web services, thus, no need to use the Common Interface necessarily. So there is no functional requirement to use the CI for this purpose. On the other hand, CD IS and its partners plan to use CI for several other use-cases (Train Composition Messages, Train Ready Messages, Train running, Path Request) soon.

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**Annex:**

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# Request for Certification of the Oracle Service Bus as the Common Interface alternative implementation

We, ČD-Informační systémy, a.s. are IT provider for our sister company ČD Cargo, a.s (CDC). and as well for České dráhy, a.s (CD) as a parent company. They entrusted us to implement the TAF Common Interface for them using the existing Oracle Service Bus (so not using the Common Interface software from RNE).

One of their data exchange partners (Správa železnic, SZ, Czech IM) requests certification that this CI implementation fulfils the TAF CI requirements. Therefore we issue this request to EUAR and we ask you to kindly evaluate our arguments and issue an TAF CI compliance certificate.

Our implementation uses standard functions and features of the Oracle Service Bus (OSB), which is used for (almost) all internal and external communications of CDC and CD. This system was configured to act as the TAF CI and it was successfully tested to Exchange TAF messages with the (RNE) CI of Správa železnic. To prove and evident correct functioning, sending of Train Composition Messages was implemented from system PRIS of CDC to system COMPOST of SZ (via OSB-CI at CDC and RNE-CI at SZ).

## 1 EUAR requirements

The requester submits to ERA elements or screen shots demonstrating that your Common Interface is able to handle:

- a. *message formatting of outgoing messages according to the metadata,*
- b. *signing and encryption of outgoing messages,*
- c. *addressing of the outgoing messages,*
- d. *authenticity verification of the incoming messages,*
- e. *decryption of incoming messages,*
- f. *conformity checks of incoming messages according to metadata,*
- g. *handling the single common access to various databases.*

Your CI should be able to be configured to exchange TAF compliant messages with your partners / databases according to the specifications in the Technical Document "TAF TSI — Annex A.5: Figures and Sequence Diagrams of the TAF TSI messages".

Please indicate which TAF TSI functions are supported by your CI. Please send for these functions the messages / datasets from your legacy system and the corresponding TAF compliant messages which have been generated by your CI. Please give us some information about the IT solution you use for this CI and the linked IT Systems within ČD.

The other TAF Technical Document "TAF TSI - ANNEX D.2: APPENDIX E - COMMON INTERFACE" gives you further requirements about CI2CI communication too.

Please indicate us which EU funding you have received to realise this project. If this is not the case please indicate that you have not received EU funding.

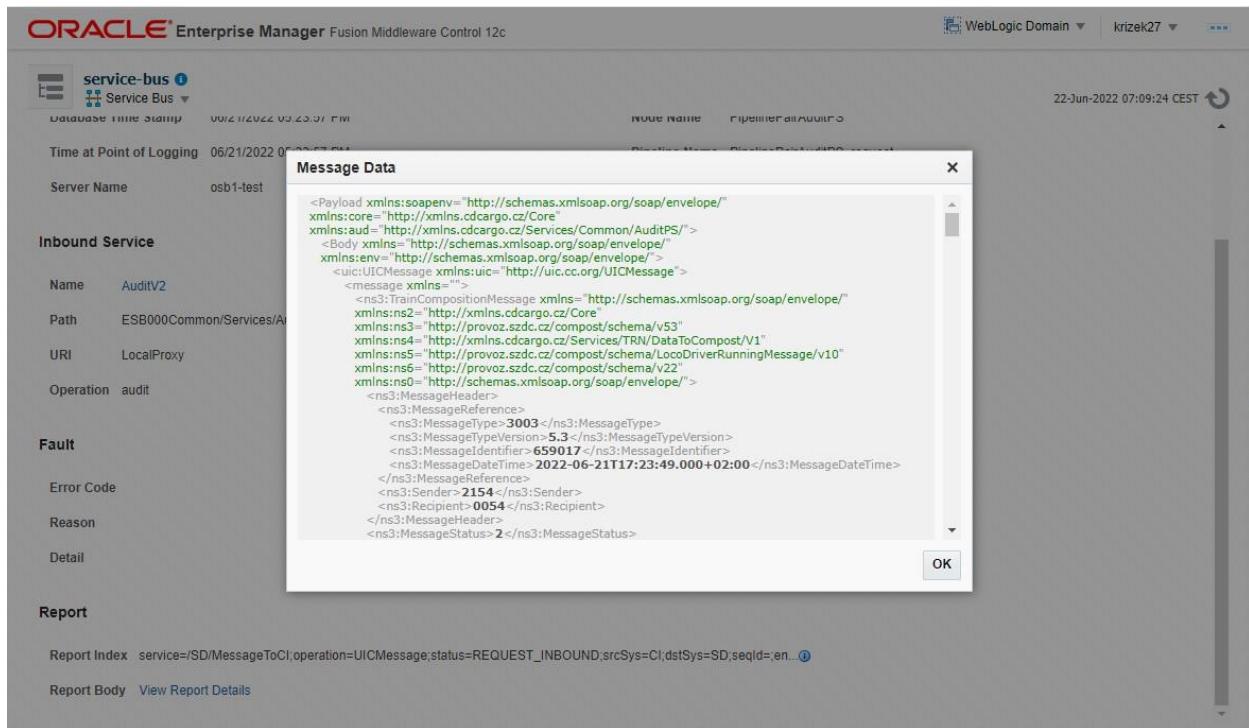
## 2 Fulfilment of the requirements

### a. Message formatting of outgoing messages according to the metadata

Source information systém of ČD Cargo – PRIS (Production Information Systém) generates Train Composition messages based on the TAF standard and same time fulfils the validation requirements defined on the side of the Common Interface. So created messages are natively generated in source system in valid format, as requested by the TAF TCM xsd schema.

Message TO CI

Request (example)



The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. A modal dialog box titled "Message Data" is open, displaying an XML payload. The XML content is as follows:

```
<Payload xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  xmlns:core="http://xmlns.cdcargo.cz/Core"
  xmlns:aud="http://xmlns.cdcargo.cz/Services/Common/AuditPS/"
  <Body xmlns="http://schemas.xmlsoap.org/soap/envelope/">
    xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
      <uci:UICMessage xmlns:uci="http://uic.cc.org/UICMessage">
        <message xmlns="">
          <ns3:TrainCompositionMessage xmlns="http://schemas.xmlsoap.org/soap/envelope/">
            xmlns:ns2="http://xmlns.cdcargo.cz/Core"
            xmlns:ns3="http://provoz.szdcc.cz/compost/schema/v53"
            xmlns:ns4="http://xmlns.cdcargo.cz/Services/TRN/DataToCompost/V1"
            xmlns:ns5="http://provoz.szdcc.cz/compost/schema/LocoDriverRunningMessage/v10"
            xmlns:ns6="http://provoz.szdcc.cz/compost/schema/v22"
            xmlns:ns0="http://schemas.xmlsoap.org/soap/envelope/">
            <ns3:MessageHeader>
              <ns3:MessageReference>
                <ns3:MessageType>3003</ns3:MessageType>
                <ns3:MessageTypeVersion>5.3</ns3:MessageTypeVersion>
                <ns3:MessageIdentifier>659017</ns3:MessageIdentifier>
                <ns3:MessageDateTime>2022-06-21T17:23:49.000+02:00</ns3:MessageDateTime>
                </ns3:MessageReference>
                <ns3:Sender>2154</ns3:Sender>
                <ns3:Recipient>0054</ns3:Recipient>
              </ns3:MessageHeader>
              <ns3:MessageStatus>2</ns3:MessageStatus>
            </ns3:MessageHeader>
          </ns3:TrainCompositionMessage>
        </message>
      </uci:UICMessage>
    </Body>
  </soapenv:Envelope>
</Payload>
```

The dialog box has an "OK" button at the bottom right. The background of the main interface shows various service bus details like "AuditV2", "osb1-test", and "AuditV2".

## Response (example):

**ORACLE® Enterprise Manager Fusion Middleware Control 12c**

WebLogic Domain krizek27

22-Jun-2022 07:09:24 CEST

**Message Detail**

**General**

Message ID	uuid:d8cde93
Database Time Stamp	06/21/2022 0
Time at Point of Logging	06/21/2022 0
Server Name	osb1-test

**Inbound Service**

Name	AuditV2
Path	ESB000Common/Services/AuditV2
URI	LocalProxy
Operation	audit

**Message Data**

```

<Payload xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <ns1:Body xmlns:uicmh="http://uic.cc.org/UICMessage/Header">
    <ns1:uicm="http://uic.cc.org/UICMessage" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
      <ns1:xsi="http://www.w3.org/2001/XMLSchema-instance" />
      <ns1:soap="http://schemas.xmlsoap.org/soap/envelope/" />
      <ns1:uicmr="http://uic.cc.org/UICMessage" />
    </ns1:uicm>
  </ns1:Body>
  <return>
    <ns1:TechnicalAck>
      <ns1:ResponseStatus>ACK</ns1:ResponseStatus>
      <ns1:AckIdentifier>ACKID659017</ns1:AckIdentifier>
      <ns1:MessageReference>
        <ns1:MessageIdentifier>TrainCompositionMessage</ns1:MessageIdentifier>
        <ns1:MessageIdentifierVersion>5.3</ns1:MessageIdentifierVersion>
        <ns1:MessageIdentifier>659017</ns1:MessageIdentifier>
        <ns1:MessageDateTime>2022-06-21T17:23:57.107</ns1:MessageDateTime>
        <ns1:MessageReference>
          <ns1:Sender>2154</ns1:Sender>
          <ns1:Recipient>0054</ns1:Recipient>
          <ns1:RemoteName>test.ci.spravazeznic.cz</ns1:RemoteName>
          <ns1:RemoteInstanceNumber>05</ns1:RemoteInstanceNumber>
          <ns1:MessageTransportMechanism>WEBSERVICE</ns1:MessageTransportMechanism>
        </ns1:MessageReference>
      </ns1:MessageReference>
    </ns1:TechnicalAck>
  </return>

```

**Fault**

Error Code  
Reason  
Detail

OK

## Message From CI

### Request

**ORACLE® Enterprise Manager Fusion Middleware Control 12c**

WebLogic Domain krizek27

22-Jun-2022 07:09:24 CEST

Database Time Stamp 06/21/2022 07:23:09 PM

Time at Point of Logging 06/21/2022 07:23:09 PM

Server Name osb3-test

**Inbound Service**

Name	AuditV2
Path	ESB000Common/Services/AuditV2
URI	LocalProxy
Operation	audit

**Message Data**

```

<Payload xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <ns1:Body xmlns:uicmh="http://uic.cc.org/UICMessage/Header">
    <ns1:uicm="http://uic.cc.org/UICMessage" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
      <ns1:xsi="http://www.w3.org/2001/XMLSchema-instance" />
      <ns1:soap="http://schemas.xmlsoap.org/soap/envelope/" />
      <ns1:uicmr="http://uic.cc.org/UICMessage" />
    </ns1:uicm>
  </ns1:Body>
  <ns1:message>
    <ns1:ErrorMessage xmlns:ns1="http://provoz.szdc.cz/compost/schema/v53">
      <ns1:MessageHeader>
        <ns1:MessageReference>
          <ns1:MessageIdentifier>9000</ns1:MessageIdentifier>
          <ns1:MessageIdentifierVersion>5.3</ns1:MessageIdentifierVersion>
          <ns1:MessageIdentifier xmlns="http://provoz.szdc.cz/compost/schema/v53">2c1e9805-f176-11ec-9ead-001dd8b71f85</ns1:MessageIdentifier>
          <ns1:MessageDateTime xmlns="http://provoz.szdc.cz/compost/schema/v53">2022-06-21T17:23:59.059+02:00</ns1:MessageDateTime>
        </ns1:MessageReference>
      </ns1:ErrorMessage>
    </ns1:message>
    <ns1:Sender>0054</ns1:Sender>
    <ns1:Recipient>2154</ns1:Recipient>
    <ns1:MessageHeader>
      <ns1:MessageStatus>1</ns1:MessageStatus>
      <ns1:AdministrativeContactInformation>
        <ns1:Name>COMPOST</ns1:Name>
      </ns1:AdministrativeContactInformation>
    </ns1:MessageHeader>
  </ns1:message>

```

**Fault**

Error Code  
Reason  
Detail

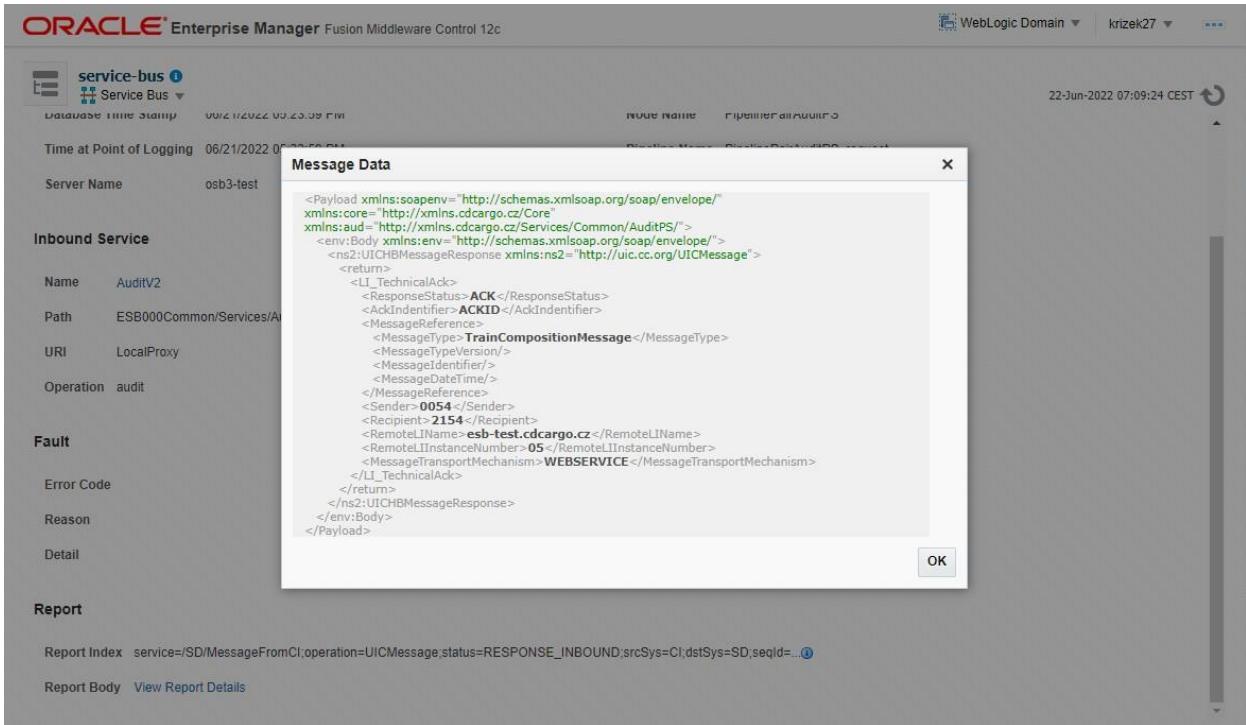
**Report**

Report Index service=/SD/MessageFromCI;operation=UICMessage;status=REQUEST\_INBOUND;srcSys=CI;dstSys=SD;seqId=...[?](#)

Report Body [View Report Details](#)

OK

## Response



The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. A modal dialog box titled "Message Data" is open, displaying an XML payload. The XML content is as follows:

```

<Payload xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  xmlns:core="http://xmlns.cd cargo.cz/Core"
  xmlns:aud="http://xmlns.cd cargo.cz/Services/Common/AuditPS/"
  <env:Body xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
    <ns2:UICBMessageResponse xmlns:ns2="http://uic.cc.org/UICMessage">
      <L1_TechnicalAck>
        <ResponseStatus>ACK</ResponseStatus>
        <AckIdentifier>ACKID</AckIdentifier>
        <MessageReference>
          <MessageType>TrainCompositionMessage</MessageType>
          <MessageTypeVersion>
            <MessageIdentifier/>
            <MessageDateTime/>
            <MessageReference>
              <Sender>0054</Sender>
              <Recipient>2154</Recipient>
              <RemoteLName>esb-test.cd cargo.cz</RemoteLName>
              <RemoteLInstanceNumber>05</RemoteLInstanceNumber>
              <MessageTransportMechanism>WEBSERVICE</MessageTransportMechanism>
            </MessageReference>
            <return>
              </ns2:UICBMessageResponse>
            </env:Body>
          </Payload>
        </L1_TechnicalAck>
      </return>
    </ns2:UICBMessageResponse>
  </env:Body>
</Payload>

```

## b. Signing and encryption of outgoing messages

### Certificate

According to the document „era\_technical\_document\_taf\_d\_2\_appendix\_e.pdf“ are both encryption and authentication optional features. Since the communication between CDC and SŽ is performed only in shared intranet, it is accepted and agreed between CDC and SŽ to exchange messages without these features.

Anyhow, for future purposes (eventual move to Internet) and communication with other partners, CD Cargo, a.s., as well as ČD a.s., concluded CCS Agreement with RNE and purchased and obtained the X.509 security certificate (for non-RNE CI implementation).

Secured communication (using https) will be tested.

It is not currently required by ČD Cargo, a.s., or ČD a.s.

## c. Addressing of the outgoing messages

We have received needed URL from SŽ for transmission of the Train Composition messages, which we set into the OSB.

General

**Transport**

Transport Details

Message Handling

Performance

Policies

**Transport Configuration**

Use this page to configure the transport information for this service

Protocol: http

Load-balancing Algorithm: round-robin

Endpoint URLs:	Endpoint Weight
http://host:port/someService	
http://test.ci.spravazeznic.cz:8080/LIMessageProcessing/http/UICCCMessageProcessing/UICCCMessageProcessingInboundWS	

#### d. Authenticity verification of the incoming messages

For the purpose of communication and possible setup of signature verification are in OSB imported keys into standardized keystore, it means root certificate. From there is the key used by OSB when communicating with Common Interface – through encrypted https channel.

```
[root@osb4-test ~]# /usr/java/latest/bin/keytool -list -v -alias mykey -keystore /usr/java/latest/jre/lib/security/cacerts -st
Alias name: mykey
Creation date: Feb 25, 2022
Entry type: trustedCertEntry

Owner: C=AT, ST=Vienna, L=Vienna, O=RNE, OU=Common Components System, CN=CA CCS 1
Issuer: C=AT, ST=Vienna, L=Vienna, O=RNE, CN=Root CA
Serial number: 4351629bfe8a095
Valid from: Wed Nov 29 11:53:28 CET 2017 until: Tue Nov 29 11:53:28 CET 2022
Certificate fingerprints:
    SHA1: F5:5A:1A:D2:79:03:70:8A:C4:68:F3:75:50:BF:74:D2:5C:FA:8D:F6
    SHA256: 10:7C:3F:BD:D0:64:B1:8F:7C:93:7A:88:C6:93:AD:91:41:D2:E6:C9:9F:D9:9A:81:B5:AA:B3:31:7D:F3:D5:D2
Signature algorithm name: SHA256withRSA
Subject Public Key Algorithm: 4096-bit RSA key
Version: 3

Extensions:

#1: ObjectId: 2.5.29.35 Criticality=false
AuthorityKeyIdentifier [
KeyIdentifier [
0000: 4F 6E AE 18 71 95 DE 3F A0 1D F5 AA 24 E7 99 11 On..q..?....$...
0010: CE BC DA B6 ....
]
]

#2: ObjectId: 2.5.29.19 Criticality=true
BasicConstraints:[
  CA:true
  PathLen:2147483647
]

#3: ObjectId: 2.5.29.31 Criticality=false
CRLDistributionPoints [
  [DistributionPoint:
    [URIName: http://rootca.rne.eu/publicweb/webdist/certdist?cmd=crl&issuer=CN=Root%20CA,O=RNE,L=Vienna,ST=Vienna,C=AT]
    CRLIssuer:[C=AT, ST=Vienna, L=Vienna, O=RNE, CN=Root CA]
  ]
]

#4: ObjectId: 2.5.29.32 Criticality=false
CertificatePolicies [
  [CertificatePolicyId: [1.3.6.1.4.1.500887.1.2]
  ]
]

#5: ObjectId: 2.5.29.46 Criticality=false
FreshestCRL [
  [DistributionPoint:
    [URIName: http://rootca.rne.eu/publicweb/webdist/certdist?cmd=deltacrl&issuer=CN=Root%20CA,O=RNE,L=Vienna,ST=Vienna,C=AT]
  ]
]

#6: ObjectId: 2.5.29.15 Criticality=true
KeyUsage [
  DigitalSignature
  Key_CertSign
  Crl_Sign
]

#7: ObjectId: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
KeyIdentifier [
0000: 35 F9 00 2D 44 B1 1C D0 A4 DE AD 33 12 A5 C2 23 5..-D.....3...#
0010: E0 4D B0 B0 .M..
]
]
```

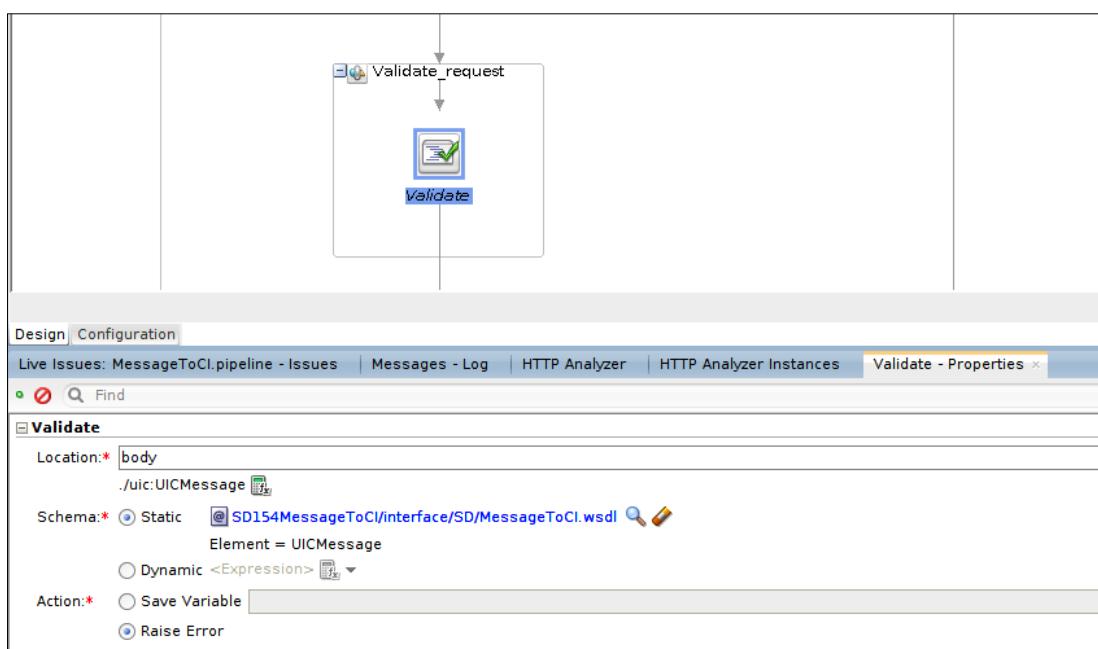
---

**e. Decryption of incoming messages**

Please see the comments in chapter b.

**f. Conformity checks of incoming messages according to metadata**

Flow for automated validation of messages against defined XSD was used as part of the implementation.



*Example of validity check and example of validation error:*

Invalid message (in OSB environment)

 Request Document

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Header xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
</soap:Header>
<soapenv:Body>
<uic:UICMessage xmlns:uic="http://uic.cc.org/UICMessage1">
<!--Optional:-->
<message>anyType</message>
<!--Optional:-->
<signature>anyType</signature>
<!--Optional:-->
<senderAlias>anyType</senderAlias>
<!--Optional:-->
<encoding>anyType</encoding>
</uic:UICMessage>
</soapenv:Body>
</soapenv:Envelope>
```

Message validity check and following error alert response

 Response Document

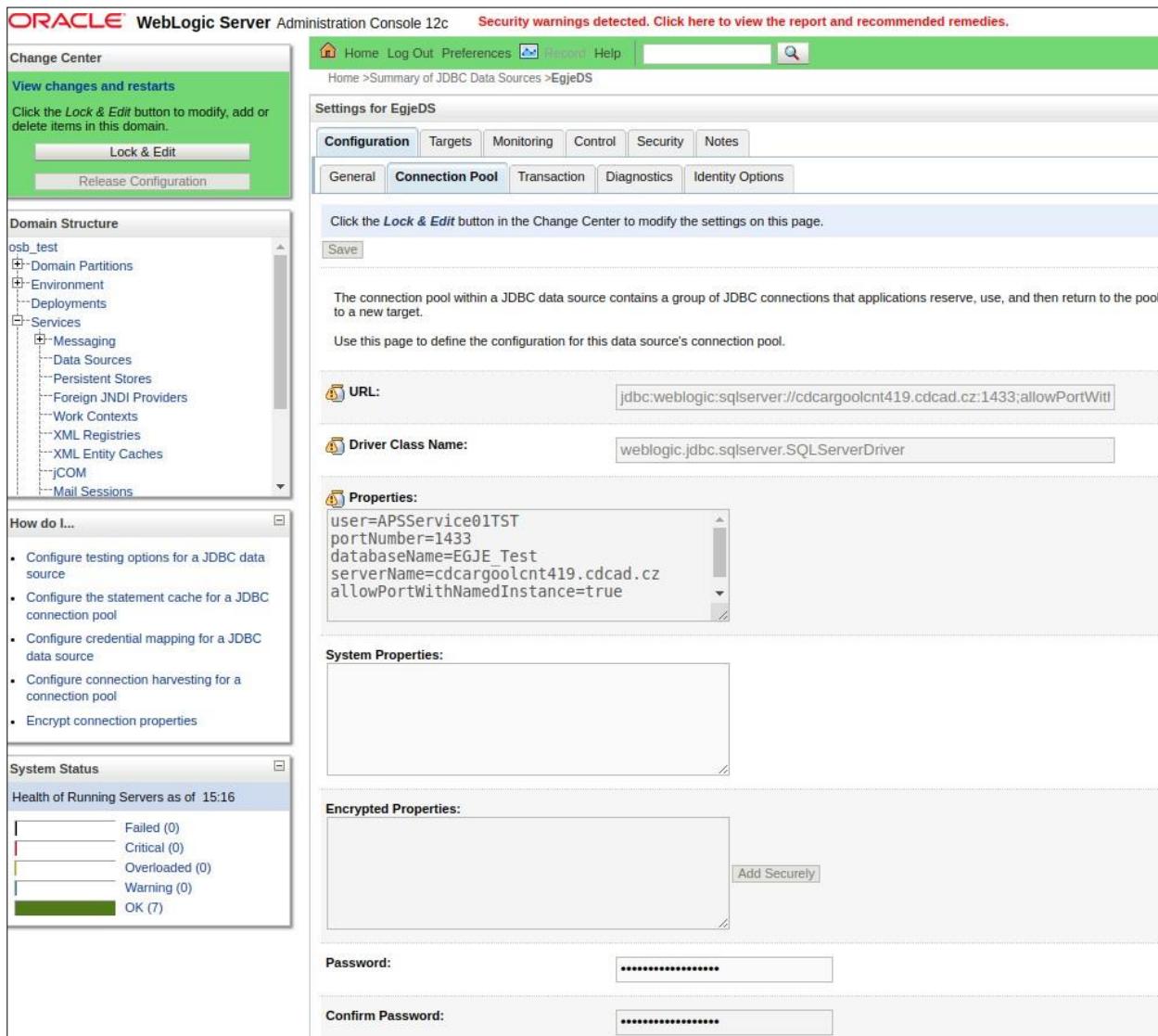
 The invocation resulted in an error: .

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
<soapenv:Body>
<soapenv:Fault>
<faultcode>soapenv:Server</faultcode>
<faultstring>
OSB-382505: OSB Validate action failed validation
</faultstring>
<detail>
<con:fault xmlns:con="http://www.bea.com/wli/sb/context">
<con:errorCode>OSB-382505</con:errorCode>
<con:reason>OSB Validate action failed validation</con:reason>
<con:details>
<con1:ValidationFailureDetail xmlns:con1="http://www.bea.com/wli/sb/stages/transform/config">
<con1:message>
XPath statement produced no nodes to validate
</con1:message>
<con1:xmlLocation/>
</con1:ValidationFailureDetail>
</con:details>
<con:location>
<con:node>Pipeline</con:node>
<con:pipeline>
request-7f000001.Nc0661cd.0.15ba9c1a690.N8000
</con:pipeline>
<con:stage>Validate_request</con:stage>
<con:path>request-pipeline</con:path>
</con:location>
</con:fault>
</detail>
</soapenv:Fault>
</soapenv:Body>
</soapenv:Envelope>
```

Validation error report

## g. Handling the single common access to various databases

OSB system with its components enables connection to various databases. Examples of connection Oracle SQL, MS SQL a Postgre databases are given below.



**ORACLE WebLogic Server Administration Console 12c** Security warnings detected. Click here to view the report and recommended remedies.

Change Center View changes and restarts Click the Lock & Edit button to modify, add or delete items in this domain. Lock & Edit Release Configuration

Domain Structure osb\_test + Domain Partitions Environment Deployments Services + Messaging - Data Sources Persistent Stores Foreign JNDI Providers Work Contexts XML Registries XML Entity Caches jCOM Mail Sessions

How do I... • Configure testing options for a JDBC data source • Configure the statement cache for a JDBC connection pool • Configure credential mapping for a JDBC data source • Configure connection harvesting for a connection pool • Encrypt connection properties

System Status Health of Running Servers as of 15:16 Failed (0) Critical (0) Overloaded (0) Warning (0) OK (7)

Settings for EgjeDS Home >Summary of JDBC Data Sources >EgjeDS

Configuration Targets Monitoring Control Security Notes General Connection Pool Transaction Diagnostics Identity Options

Click the Lock & Edit button in the Change Center to modify the settings on this page. Save

The connection pool within a JDBC data source contains a group of JDBC connections that applications reserve, use, and then return to the pool to a new target. Use this page to define the configuration for this data source's connection pool.

URL: jdbc:weblogic:sqlserver://cdcad.cz:1433;allowPortWithNamedInstance=true

Driver Class Name: weblogic.jdbc.sqlserver.SQLServerDriver

Properties:

```
user=APSService01TST
portNumber=1433
databaseName=EGJE_Test
serverName=cdcad.cz
allowPortWithNamedInstance=true
```

System Properties:

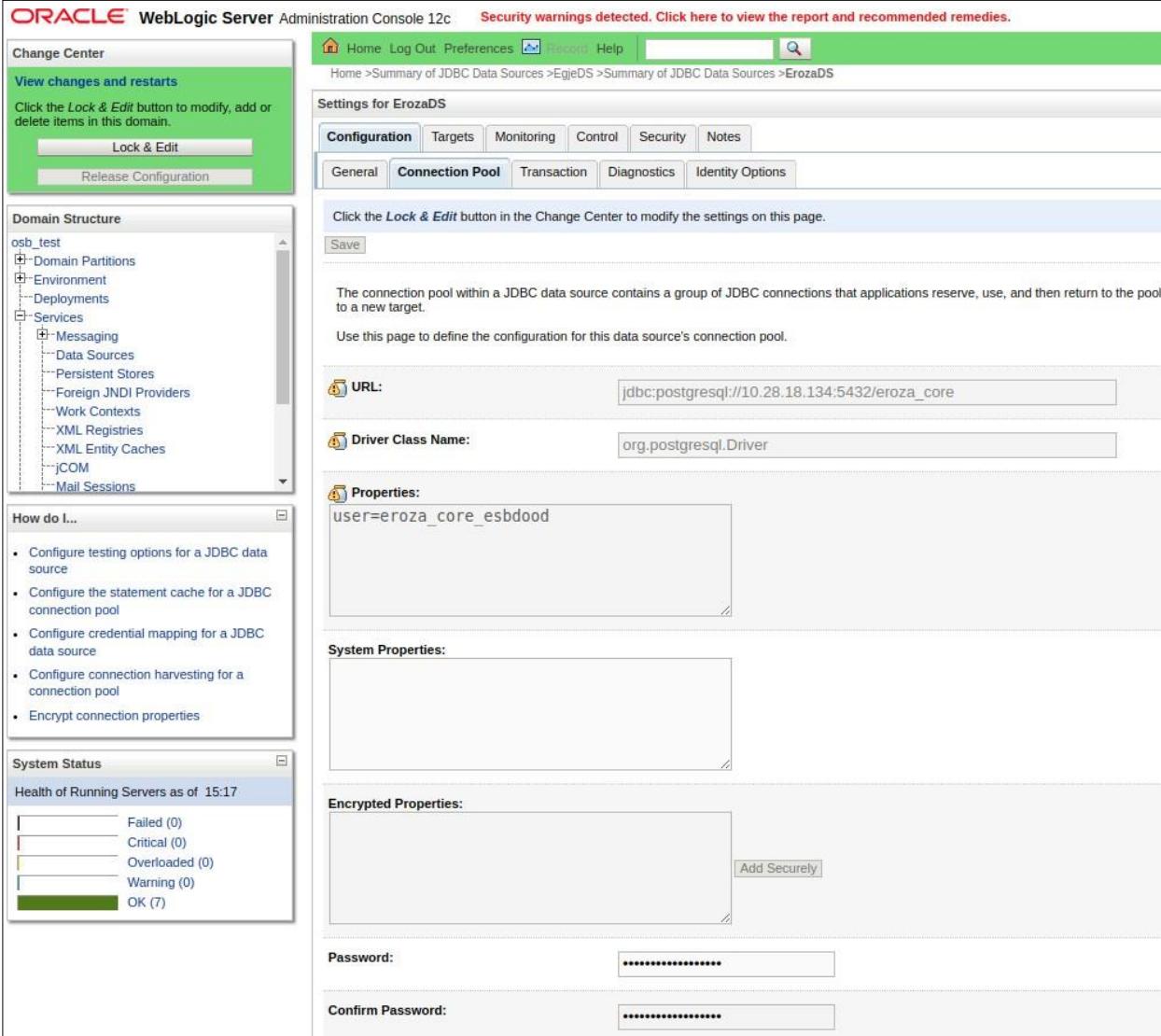
Encrypted Properties: Add Securely

Password: \*\*\*\*\*

Confirm Password: \*\*\*\*\*

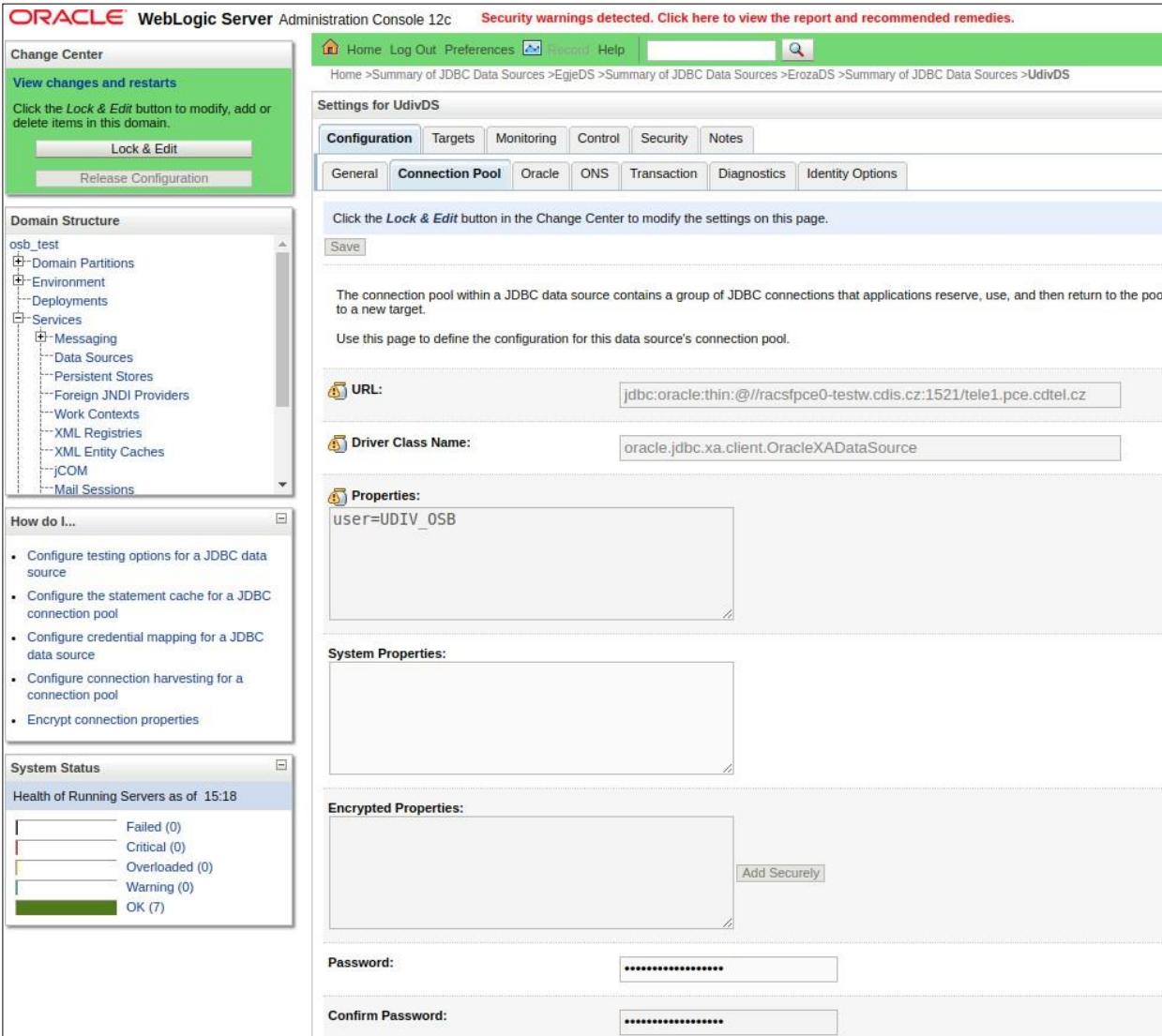
*MS SQL connect*





The screenshot shows the Oracle WebLogic Server Administration Console interface. The top navigation bar includes links for Home, Log Out, Preferences, Help, and a search bar. The main title is "Settings for ErozaDS". The "Connection Pool" tab is selected. A message at the top right says "Security warnings detected. Click here to view the report and recommended remedies." On the left, there's a "Change Center" section with "View changes and restarts" and "Lock & Edit" and "Release Configuration" buttons. Below it is the "Domain Structure" tree, which includes "osb\_test", "Domain Partitions", "Environment", "Deployments", "Services" (with sub-options like Messaging, Data Sources, Persistent Stores, etc.), and "jCOM". There's also a "How do I..." section with a list of tasks and a "System Status" section showing the health of running servers (7 OK, 0 Warning, 0 Overloaded, 0 Critical, 0 Failed). The main configuration area has tabs for General, Connection Pool, Transaction, Diagnostics, and Identity Options. It displays the URL as "jdbc:postgresql://10.28.18.134:5432/eroza\_core" and the Driver Class Name as "org.postgresql.Driver". Under Properties, there's a field with "user=eroza\_core\_esbdoood". The System Properties and Encrypted Properties sections are currently empty. At the bottom, there are fields for Password and Confirm Password, both containing masked text.

*Postgre connect*



The screenshot shows the Oracle WebLogic Server Administration Console interface. The top navigation bar indicates "ORACLE WebLogic Server Administration Console 12c" and "Security warnings detected. Click here to view the report and recommended remedies". The main content area is titled "Settings for UdivDS" under "Connection Pool". The URL is set to "jdbc:oracle:thin:@//racspc0-testw.cdis.cz:1521/tele1.pce.cdtel.cz" and the Driver Class Name is "oracle.jdbc.xa.client.OracleXADataSource". A properties section contains "user=UDIV\_OSB". Below this is a "System Properties" section which is currently empty. In the bottom right corner of the configuration panel, there is a "Save" button. On the left side of the screen, there is a "Domain Structure" tree view showing nodes like "osb\_test", "Domain Partitions", "Environment", "Deployments", "Services", "Messaging", "Data Sources", "Persistent Stores", "Foreign JNDI Providers", "Work Contexts", "XML Registries", "XML Entity Caches", "JCOM", and "Mail Sessions". There is also a "How do I..." section with links for configuring testing options, statement cache, credential mapping, connection harvesting, and encrypting connection properties. At the bottom left, there is a "System Status" section showing the health of running servers as of 15:18, with 7 servers marked as OK.

Oracle SQL connect

### 3 Information about our environment

#### TAF TSI functions supported, exchange of TAF compliant messages

Our OSB-Common Interface is able to transmit TAF compliant messages.

As first TAF function implemented, it supports the Train Preparation function.

It was configured to send TAF Train Composition and Train Ready messages to Správa železnic (SŽ), the Czech IM and to receive confirmation messages from SŽ (both message receipts and processing results messages).

Examples of the TAF Train Composition and Train Ready messages are attached to this Request.

These messages are generated by the source application PRIS as TAF messages so the CI does not need to make any translation of format.

PRIS is the main production system od CDC, where all transported wagons are registered and all train consists are captured.

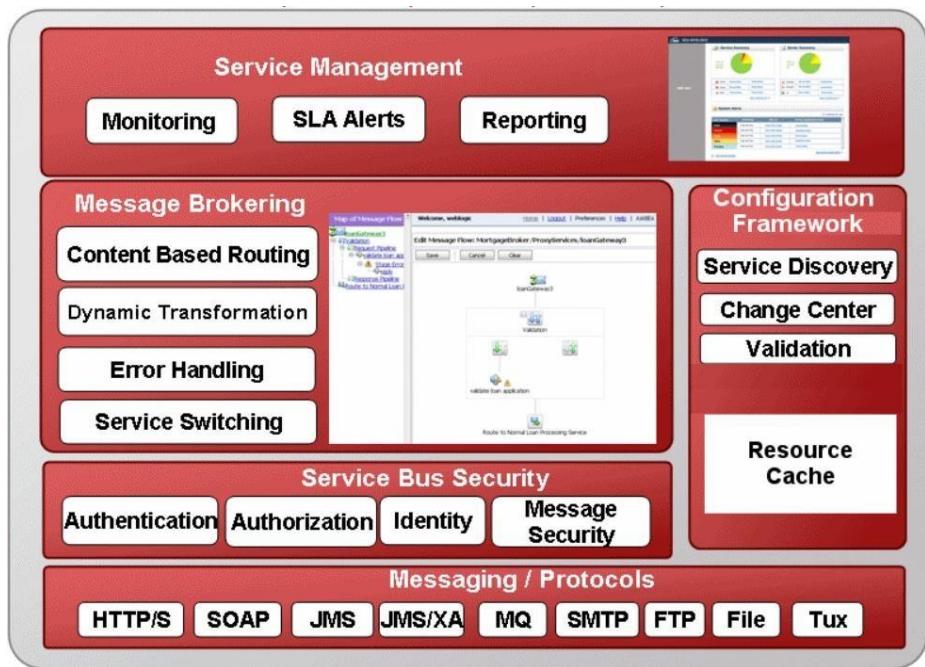
#### OSB description

Both ČDC and ČD uses the Oracle service bus (OSB) for communication between its own systems. Both ČDC and ČD also use OSB to communicate with other companies' systems. ČDC and ČD currently operate dozens of integrations on this platform.

OSB is an enterprise integration platform that provides a number of functionalities in the field of Service management, Security, Message brokering, many types of messages and protocols. The functionalities required in a. - g. Are described in the documentation for the specified url.

[https://docs.oracle.com/cd/E14571\\_01/doc.1111/e15020/architecture\\_overview.htm#OSBCA140](https://docs.oracle.com/cd/E14571_01/doc.1111/e15020/architecture_overview.htm#OSBCA140)



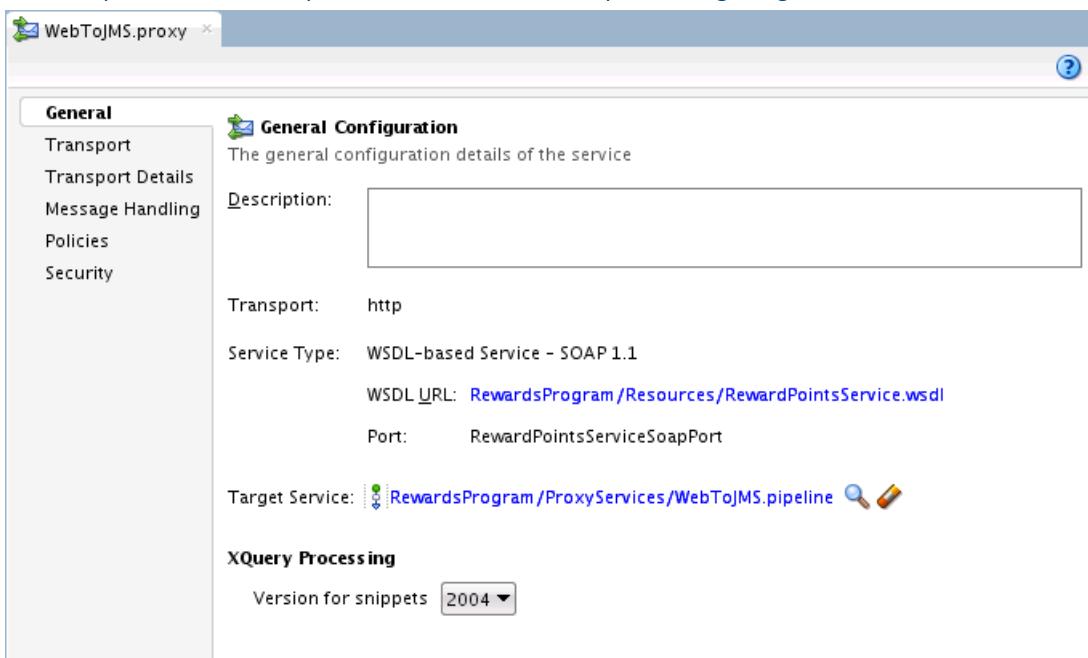


Picture 1 Oracle service bus architecture

All integrations (including TAF messages) are implemented in the Configuration Framework, which is part of the OSB.

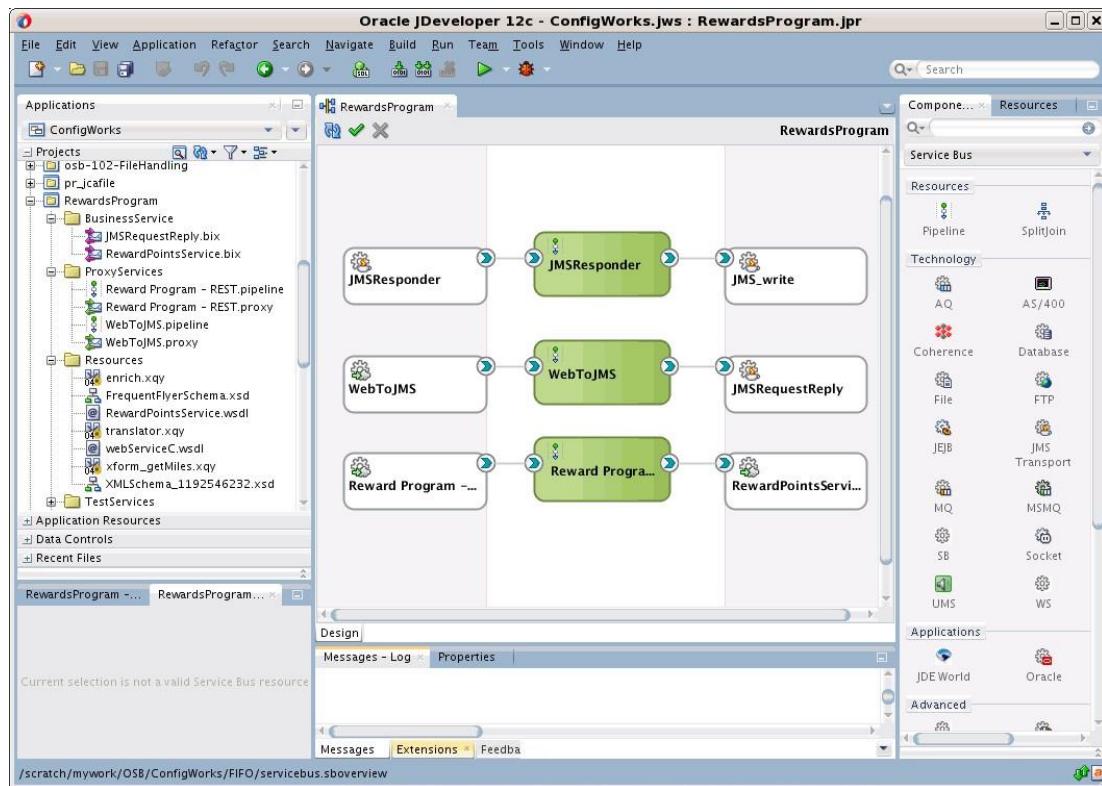
The OSB integration platform is in principle intended for the implementation of communication between business services as well as between different communication platforms.

Below are some printscreens development environments for implementing integrations.

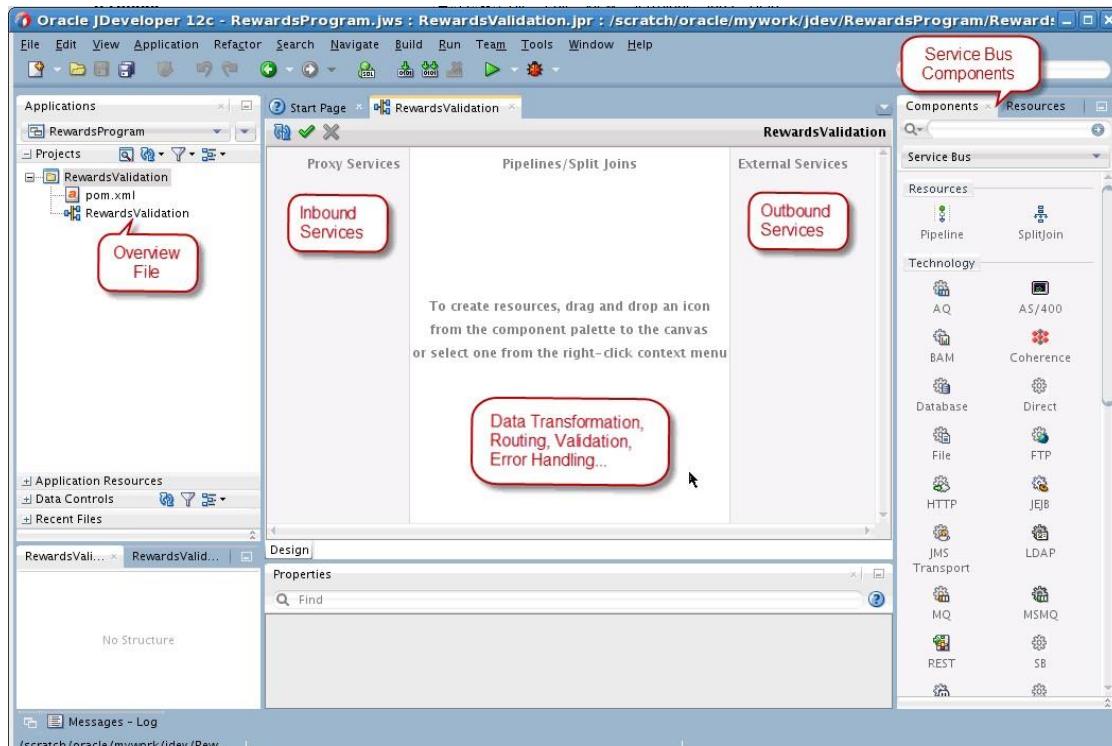


Picture 2 Proxy Service Definition Editor in JDeveloper





Picture 3 Oracle Service Bus in JDeveloper



Picture 4 Service Bus Overview Editor



ČD-Informační systémy already operates several OSB instances within the holding. In ČD cargo, TAF already uses messages integrated via OSB for communication between its own systems or for communication with systems of Infrastructure Manager (IM). As an example, we enclose the TAF Train composition message and Train ready message.

### **EU Funding used**

EU funding (through Czech state Ministry of Transport funding program „Operational Programme Transport, Interoperability in rail transport, part Implementation of telematics subsystem – TSI telematic applications in freight transport“) was used in 2014 for implementation of the TAF functions within ČD Cargo. ČD a.s. did not use any funds for their OSB.

### **3.1 Train composition message:**

```
<Payload xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"  
xmlns:aud="http://xmlns.cdcargo.cz/Services/Common/AuditPS/"  
xmlns:core="http://xmlns.cdcargo.cz/Core">  
<Body xmlns="http://schemas.xmlsoap.org/soap/envelope/" xmlns:soap-  
env="http://schemas.xmlsoap.org/soap/envelope/">  
<SendMessag...>
```

```
<TransportOperationalIdentifiers>
<ObjectType>TR</ObjectType>
<Company>XX</Company>
<Core>DISCO055617C</Core>
<Variant>00</Variant>
<TimetableYear>2020</TimetableYear>
<StartDate>2020-10-20</StartDate>
</TransportOperationalIdentifiers>
<OperationalTrainNumberIdentifier>
<OperationalTrainNumber>05XX</OperationalTrainNumber>
</OperationalTrainNumberIdentifier>
<OperationalTrainNumber>05XX</OperationalTrainNumber>
<TrainCompositionJourneySection>
<JourneySection>
<JourneySectionOrigin>
<CountryCodeISO>CZ</CountryCodeISO>
<LocationPrimaryCode>XX</LocationPrimaryCode>
</JourneySectionOrigin>
<JourneySectionDestination>
<CountryCodeISO>CZ</CountryCodeISO>
<LocationPrimaryCode>XX</LocationPrimaryCode>
</JourneySectionDestination>
<ResponsibilityActualSection>
<ResponsibleRU>XX</ResponsibleRU>
<ResponsibleIM>XX</ResponsibleIM>
</ResponsibilityActualSection>
<ResponsibilityNextSection>
<ResponsibleRU>XX</ResponsibleRU>
<ResponsibleIM>XX</ResponsibleIM>
</ResponsibilityNextSection>
</JourneySection>
<TrainRunningData>
<TrainRunningTechData>
<TrainType>2</TrainType>
<TrainWeight>172</TrainWeight>
<TrainLength>35</TrainLength>
<TrainMaxSpeed>90</TrainMaxSpeed>
<BrakeType>P</BrakeType>
<NumberOfVehicles>2</NumberOfVehicles>
```

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```
<NumberOfAxles>8</NumberOfAxles>
</TrainRunningTechData>
<ExceptionalGaugingInd>false</ExceptionalGaugingInd>
<DangerousGoodsIndicator>false</DangerousGoodsIndicator>
<Activities>
<TrainActivityType>0012</TrainActivityType>
<ActivityLocationIdent>
<CountryCodeISO>CZ</CountryCodeISO>
<LocationPrimaryCode>XX</LocationPrimaryCode>
</ActivityLocationIdent>
</Activities>
</TrainRunningData>
<LocoIdent>
<TractionType>91</TractionType>
<LocoTypeNumber>XX</LocoTypeNumber>
<TractionMode>11</TractionMode>
</LocoIdent>
<LocoIdent>
<TractionType>91</TractionType>
<LocoTypeNumber>XX</LocoTypeNumber>
<TractionMode>31</TractionMode>
</LocoIdent>
<LivestockOrPeopleIndicator>0</LivestockOrPeopleIndicator>
</TrainCompositionJourneySection>
</TrainCompositionMessage>
</CZ_CompostMessage>
</Payload>
</SendMessageV53Request>
</Body>
</Payload>
```

### 3.2 Train ready message.:

```
<Payload xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"  
xmlns:aud="http://xmlns.cdcargo.cz/Services/Common/AuditPS/"  
xmlns:core="http://xmlns.cdcargo.cz/Core">  
<Body xmlns="http://schemas.xmlsoap.org/soap/envelope/" xmlns:soap-  
env="http://schemas.xmlsoap.org/soap/envelope/">  
<SendMessageV53Request xmlns="http://xmlns.cdcargo.cz/Services/TRN/DataToCompost/V1"  
xmlns:ns0="http://xmlns.cdcargo.cz/Services/TRN/DataToCompost/V1">  
<DMHeader xmlns="http://xmlns.cdcargo.cz/Core">  
<IntegrationID>IS016</IntegrationID>  
<SrcSystem>DISCOR</SrcSystem>  
<DstSystem/>  
<Timestamp>2020-10-20T12:56:00</Timestamp>  
<CorrelationID>OSB_osb1-prod_20201020125651841_459017535</CorrelationID>  
</DMHeader>  
<Payload xmlns="">  
<CZ_CompostMessage xmlns="http://provoz.szdc.cz/compost/schema/v53"  
xmlns:ns1="http://provoz.szdc.cz/compost/schema/v53">  
<User>  
<Login>discor1</Login>  
<Password>*****</Password>  
</User>  
<TrainReadyMessage>  
<MessageHeader>  
<MessageReference>  
<MessageType>3006</MessageType>  
<MessageTypeVersion>5.3</MessageTypeVersion>  
<MessageIdentifier>0a5e5b2d-a583-XX-312bc0204f67</MessageIdentifier>  
<MessageDateTime>2020-10-20T12:56:50+02:00</MessageDateTime>  
</MessageReference>  
<SenderReference>0a5e5b2d-a583-4500-XX</SenderReference>  
<Sender>2154</Sender>  
<Recipient>0054</Recipient>  
</MessageHeader>  
<MessageStatus>2</MessageStatus>  
<TransportOperationalIdentifiers>  
<ObjectType>TR</ObjectType>  
<Company>XX</Company>  
<Core> --- 0061032A</Core>
```

```
<Variant>00</Variant>
<TimetableYear>2020</TimetableYear>
<StartDate>2020-10-20</StartDate>
</TransportOperationalIdentifiers>
<OperationalTrainNumberIdentifier>
<OperationalTrainNumber>XX</OperationalTrainNumber>
</OperationalTrainNumberIdentifier>
<ResponsibleRU>XX</ResponsibleRU>
<TrainContactDetails>GSM-R; TRS; TESLA; +XX</TrainContactDetails>
<TrainLocation>
<CountryCodeISO>CZ</CountryCodeISO>
<LocationPrimaryCode>35575</LocationPrimaryCode>
<PrimaryLocationName>Otrokovice</PrimaryLocationName>
</TrainLocation>
<TrainReadyStatus>
<TrainReady>1</TrainReady>
</TrainReadyStatus>
<TrainStartTime>2020-10-20T12:56:50+02:00</TrainStartTime>
<TrainReadyTime>2020-10-20T12:56:50+02:00</TrainReadyTime>
</TrainReadyMessage>
</CZ_CompostMessage>
</Payload>
</SendMessageV53Request>
</Body>
</Payload>
```

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