OpenESB Enterprise Edition V3.x

Web admin console

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Abstract:

This document explains how to manage OpenESB Enterprise Edition with the web console. It provides a guide to install components and shared libraries, deploy service assemblies and monitor your instance.

Status:

This Document is in version 1.0

ABOUT PYMMA CONSULTING

Pymma Services is a technical architect bureau founded in 1999 and headquartered in London, United Kingdom. It provides expertise in service integration systems design and implementation. As leader of the OpenESB project, Pymma is recognised as one of the main actors in the integration landscape. To reply to its customers' requirement, Pymma develops OpenESB Enterprise Edition, which implements Enterprise features such as a Horizontal Scalability, Monitoring, IoT, Big Data Access and takes advantage of professional technical support.

Pymma is a European company based in London with regional offices in France, Belgium and Canada. (contact@pymma.com or visit our website at www.pymma.com)

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Contents

1 Introduction

OpenESB Enterprise edition embedded a light and smart web admin console. Fast, it allows the administrator to manage an OpenESB instance and install, deploy, start, stop components or service assemblies.

In this document, we provide a summary of OpenESB component life cycles. This knowledge is essential to manage OpenESB. Likewise, we recommend you read JBI specifications and understand how components or service assemblies interact with the bus.
http://download.oracle.com/otndocs/jcp/jbi-1.0-fr-eval-oth-JSpec/

1.1 OpenESB entities

OpenESB defines 5 entities to manage. They are:

1. Shared library
2. Service Engine
3. Binding component
4. Service unit
5. Service assemblies

In the next paragraphs, we explain in brief what these entities in OpenESB are and what their roles are. If you know these concepts, jump to the next chapter.

1.1.1 Shared Library

Shared libraries are Java libraries that can be shared by many components. By default, OpenESB components use 3 shared libraries.

- wsdlsl.jar
- wsdlextlib.jar
- encoderlib.jar

The two first libraries are helpful to process WSDL documents. The last one encoderlib.jar allows components to support encoding features. It is up to the OpenESB administrator to decide which shared library must be installed regarding the component he wants to install later. We advise you to install wsdlextlib.jar and encoderlib.jar before installing the components.

1.1.2 Components

OpenESB supports two kinds of components: Service Engines and Binding Components. OpenESB only distinguishes between these two kinds through a flag; the model and API are otherwise identical. However, by convention, Service Engines and Binding Components implement different functionalities in OpenESB.

1.1.2.1 Binding component

Binding components are used to send and receive messages via particular protocols and transports. They serve to isolate the OpenESB environment from the particular protocol by providing normalisation and denormalisation from and to the protocol-specific format, allowing the OpenESB environment to deal only with normalised messages.

1.1.2.2 Service engines

Service Engines are the business logic drivers of the OpenESB. Engines can orchestrate service consumption and provision, in the course of, for example, executing long-lived business processes. Other engines can provide simple services, such as data transformation. Other engines may provide sophisticated routing or EDI services such as message collation / de-collation facilities. Service Engines can create new services by aggregating other services. SEs can serve as service providers, service consumers, or both.

1.1.3 Service unit

A "Service Unit" or SU is a single deployment package, destined for a single component. The contents of an SU are opaque to JBI (other than a single descriptor file) but are transparent to the component to which it is being deployed, as well as the design-time tooling that produced the artefacts contained by the SU. The service unit must contain a single JBI-defined descriptor file that defines the static services produced and consumed by the service unit.

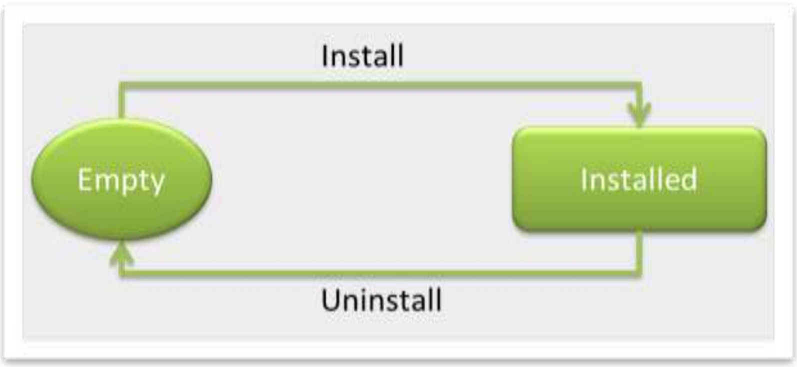
1.1.4 Service assembly

Often multiple deployments are required to create a new service or consumer application within an OpenESB environment. To support this directly, OpenESB provides a composite deployment capability, where deployments meant for different components can be grouped into a Service Assembly, or SA. Such an assembly includes a composite service deployment descriptor, detailing to which component each Service Unit contained in the SA is to be deployed. Note that this service assembly concept is sometimes termed "composite service description", or CSD. A service assembly represents a composite service. Because of this interrelationship, OpenESB provides management functions to control the life cycles of the individual units of a service assembly collectively, rather than individually.

2 OpenESB life cycles

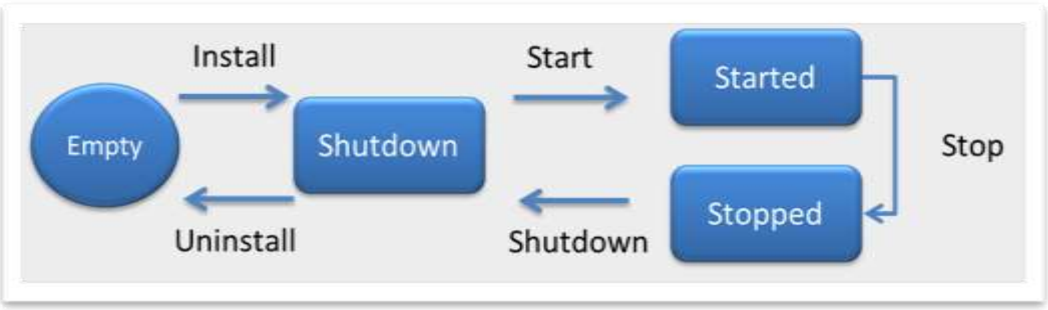
OpenESB web admin console does not offer the same life cycles than the ones defined in JBI specifications. We make it simpler and more accurate to production tasks.

2.1 Shared library life cycle



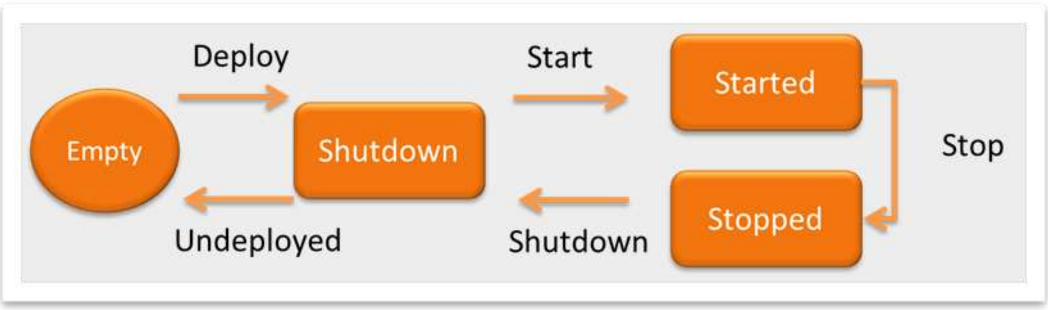
A shared library can have 2 states: Empty (or not installed) and Installed. When a shared library is installed, it becomes available for the components to be deployed.

2.2 Component lifecycle



A component can have 4 states: Empty (or not installed), Shutdown (Installed but not started), Started and Stopped. Stopped stated means that a component does not accept any new message but run for the message already in process. OpenESB web console does not offer a Shutdown to Stopped transition.

2.3 Service assembly life cycle



A service assembly can have 4 states: Empty (or not deployed), Shutdown (deployed but not started), Started and Stopped. OpenESB web console does not propose a Shutdown to Stopped transition.

2.4 Service Unit lifecycle

OpenESB web admin console does not offer a way to manage Service Unit lifecycle as detailed in JBI specifications since Service Unit and Service Assembly are synchronised.

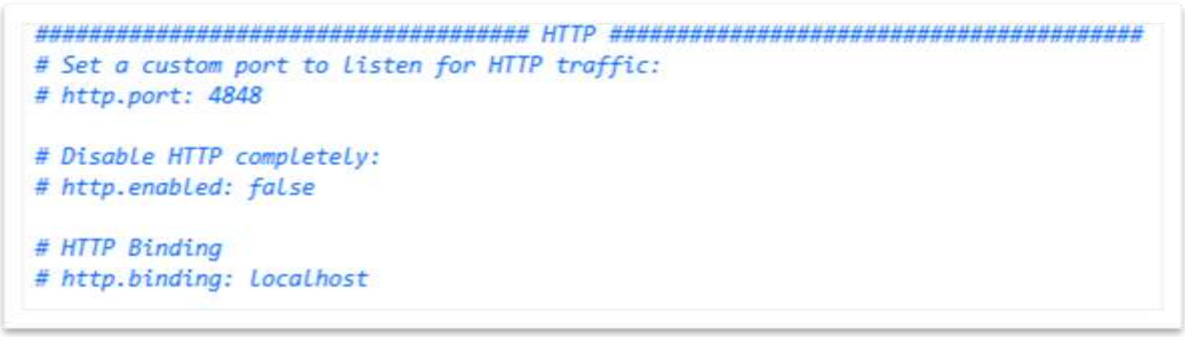
3 Web admin console overview

3.1 Console configuration

By default, OpenESB web admin console is listening on the port 4848. To access to the console check if the OpenESB instance, you want to manage is running. Open a browser and type the address with the following pattern:

HTTP://${host}${host}/webui where ${host} is the host where OpenESB instance is running and ${port} the listening port for the console. By default the address to access to the console is **http://localhost/4848/webui**.

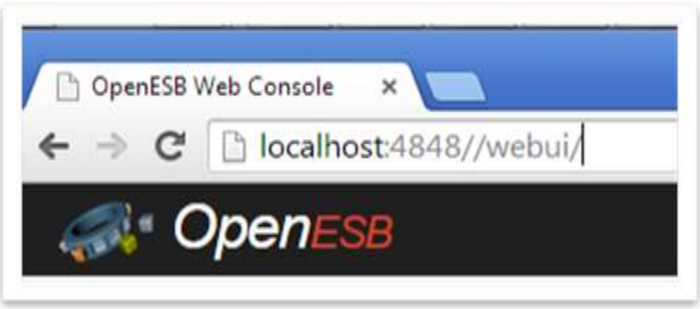
Default port can be changed to set up a more accurate port. To do it, modify the content of ${OESE-HOME}\OE-Instance\config\openesb.yaml.



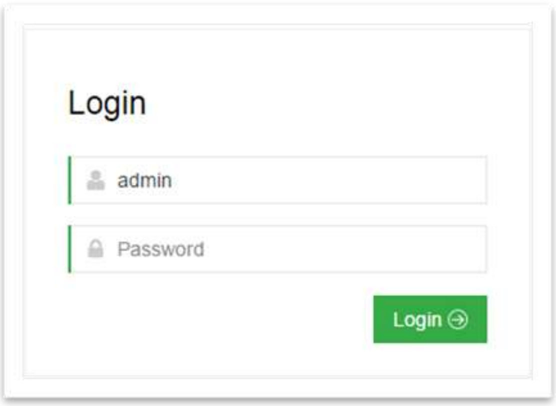
```
######################################## HTTP ##########################################
# Set a custom port to listen for HTTP traffic:
# http.port: 4848

# Disable HTTP completely:
# http.enabled: false

# HTTP Binding
# http.binding: localhost
```

3.2 Browser

OpenESB web admin console has been tested with the latest versions of Firefox, Chrome and Safari. Exhaustive tests have not been made with Internet Explorer.



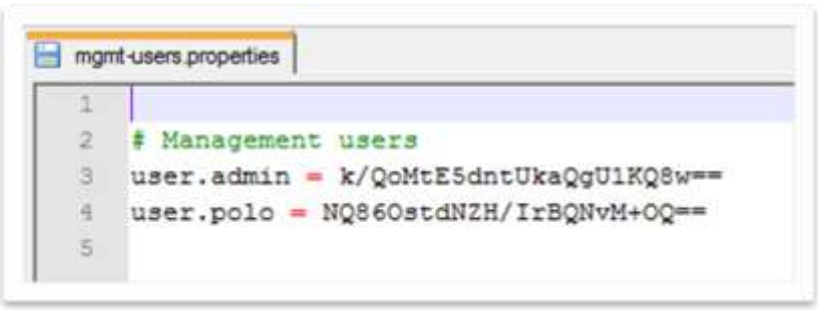
3.3 Log to the console



OpenESB web console access is protected by a login/password screen. By default, login = admin and password = admin. You can change the admin password or add new users. There is not a user hierarchy with rights in the web admin console. You have the right to access the console or not.

3.3.1 Create a new user

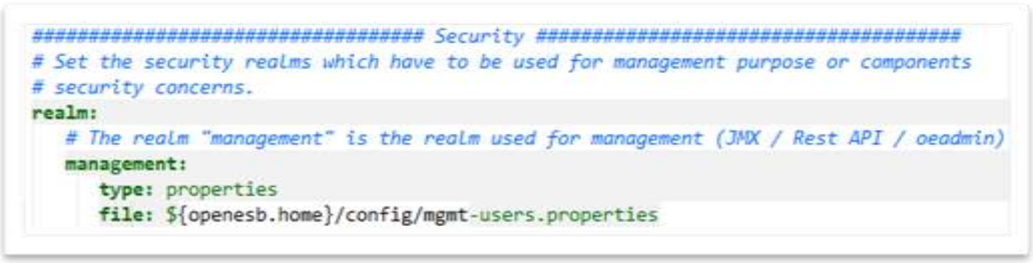
OpenESB web admin console users are stored in the following file ${OESE-HOME}\OE-Instance\config\mgmt-users.properties.



```

# Management users
user.admin = k/QoMtE5dntUkaQgU1KQ8w==
user.polo = NQ86OstdNZH/IrBQNvM+OQ==

```

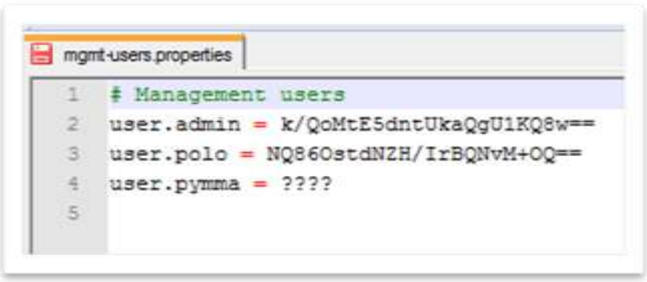
Login and password are stored in the users.properties file. Passwords are encrypted for security purposes. So, the administrator can provide access to the console to new users by adding new properties in this file.

You can use any other properties files to store the users and their passwords. The properties file used by OpenESB is defined in the ${OESE-HOME}\OE-Instance\config\openesb.yaml.



```
##################################### Security ########################################
# Set the security realms which have to be used for management purpose or components
# security concerns.
realm:
   # The realm "management" is the realm used for management (JMX / Rest API / oeadmin)
   management:
      type: properties
      file: ${openesb.home}/config/mgmt-users.properties
```

Let's add a new user "pymma" with the password "Services". In the mgmt.-users.properties file, add the user pymma:

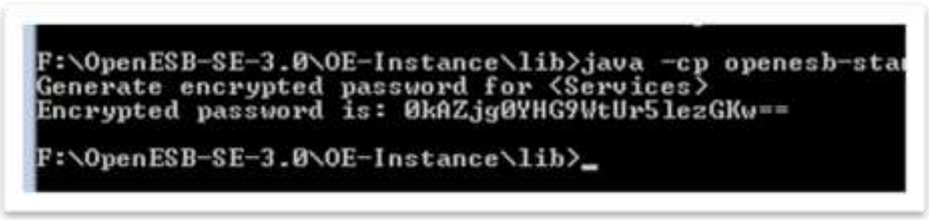

mgmt-users.properties

```
# Management users
user.admin = k/QoMtE5dntUkaQgU1KQ8w==
user.polo = NQ86OstdNZH/IrBQNvM+OQ==
user.pymma = ????
```

To encrypt the password, OpenESB proposes you a simple tool to it. This tool is the Java class PasswordManagement found in the jar file ${OESE-HOME}\OE-Instance\lib\openesb-Enterprise-container- XXXX, where XXXX is the version or the build number.

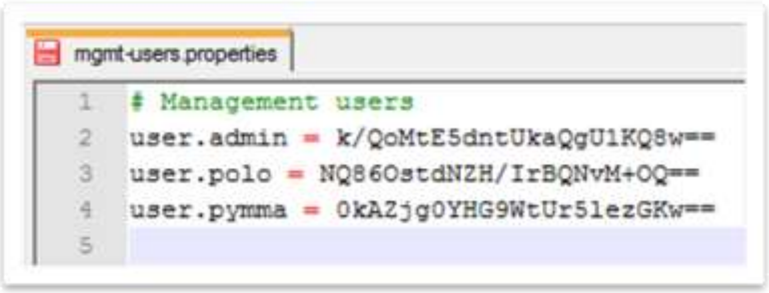
Open a console and execute the following command where my_password is the password you want to encrypt:

```
java -cp lib/openesb-Enterprise-container-xxxxx.jar
net.openesb.Enterprise.security.utils.PasswordManagement my_password
```



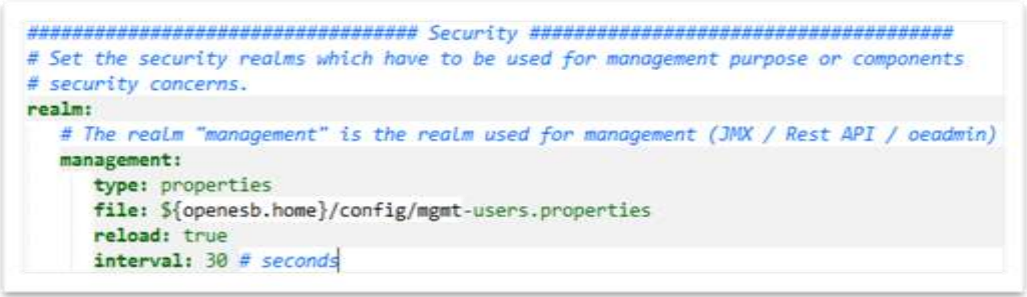
```
F:\OpenESB-SE-3.0\OE-Instance\lib>java -cp openesb-sta
Generate encrypted password for <Services>
Encrypted password is: 0kAZjg0YHG9WtUr5lezGKw==

F:\OpenESB-SE-3.0\OE-Instance\lib>_
```

Copy and paste the password to the properties files.


mgmt-users.properties

```
# Management users
user.admin = k/QoMtE5dntUkaQgU1KQ8w==
user.polo = NQ86OstdNZH/IrBQNvM+OQ==
user.pymma = 0kAZjg0YHG9WtUr5lezGKw==
```

Save the file, reset OpenESB instance to take into account the new user. OpenESB offers an option to avoid an OpenESB reset. To do it, add the options reload and interval in the file ${OESE-HOME}\OE-Instance\config\openesb.yaml as display below.

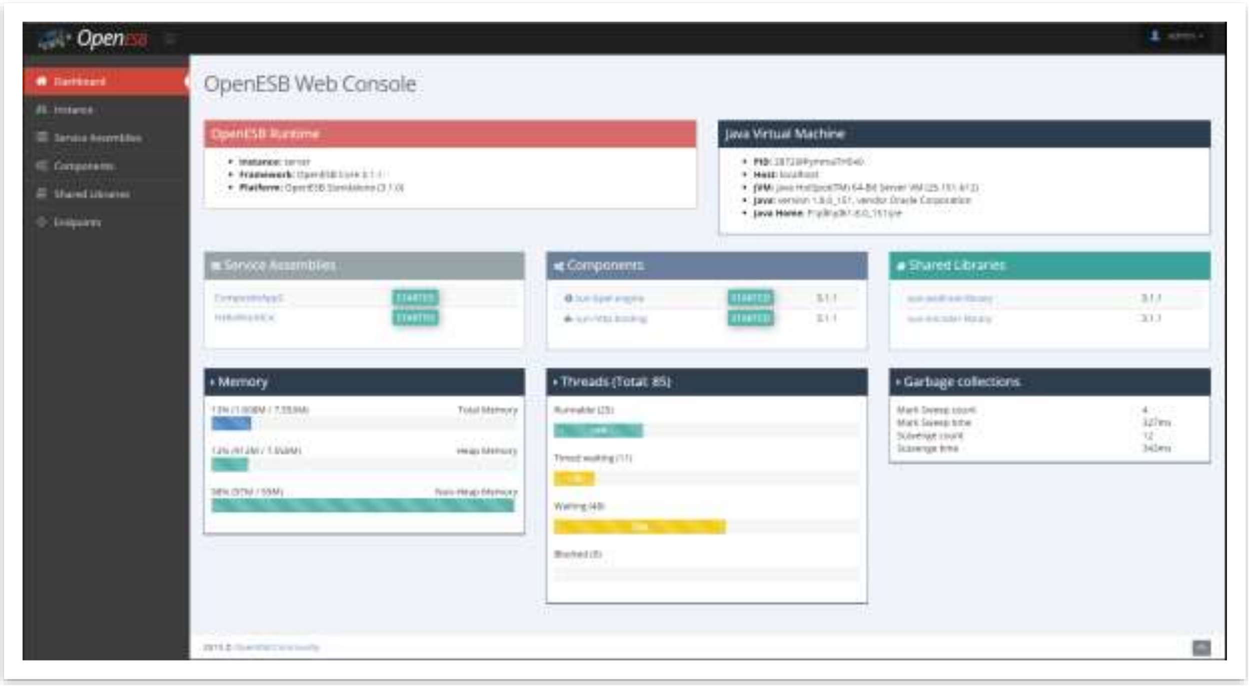


```
##################################### Security #######################################
# Set the security realms which have to be used for management purpose or components
# security concerns.
realm:
   # The realm "management" is the realm used for management (JMX / Rest API / oeadmin)
   management:
      type: properties
      file: ${openesb.home}/config/mgmt-users.properties
      reload: true
      interval: 30 # seconds
```

3.3.2 Change a password

To change an existing password, replace the old password with the new one in the user management file (by default: ${OESE-HOME}\OE-Instance\config\mgmt-users.properties).

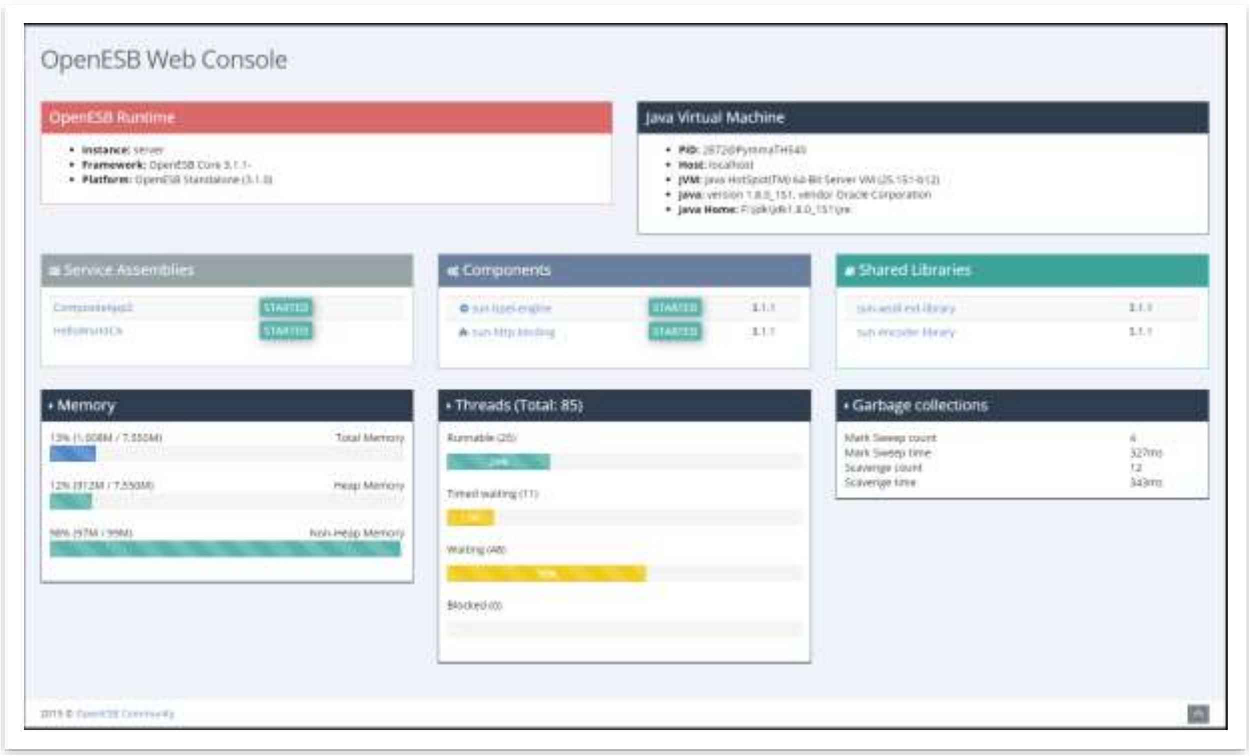
3.4 Console overview



The console is divided in two parts, the main menu on the left and the details on the right. On the top right user name is displayed, click on it to log out.

During the console design, we tried to keep it simple, straightforward and fast. You can use the web admin console to monitor OpenESB instances, install components and deploy service assemblies.

4 Dashboard



OpenESB Web Console

OpenESB Runtime

- **Instance:** server
- **Framework:** OpenESB Core 3.1.1-
- **Platform:** OpenESB Standalone (3.1.0)

Java Virtual Machine

- **PID:** 2872@PymmaTH540
- **Host:** localhost
- **JVM:** Java HotSpot(TM) 64-Bit Server VM (25.151-b12)
- **Java:** version 1.8.0_151, vendor Oracle Corporation
- **Java Home:** F:\jdk\jdk1.8.0_151\jre

Service Assemblies

CompositeApp2	STARTED
HelloWorldCA	STARTED

Components

sun-bpel-engine	STARTED	1.1.1
sun-http-binding	STARTED	1.1.1

Shared Libraries

sun-wsdl-ext-library	1.1.1
sun-encoder-library	1.1.1

Memory

13% (1,008M / 7,550M) Total Memory

12% (912M / 7,550M) Heap Memory

98% (97M / 99M) Non-Heap Memory

Threads (Total: 85)

Runnable (25)

Timed waiting (11)

Waiting (48)

Blocked (0)

Garbage collections

Mark Sweep count	4
Mark Sweep time	327ms
Scavenge count	12
Scavenge time	343ms

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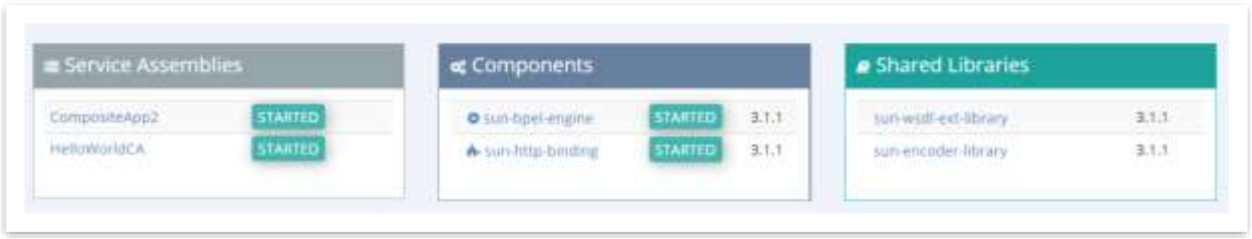
Overview		
Key	**Value**	**Comment**
Instance	Server	Name of the server instance
Framework	OpenESB Core 3.1.1	Core name and version
Platform	OpenESB Standalone Core 3.1.0	Platform name and version
PID	8884@PymmaTH510	Instance unique ID. The machine where the instance runs is PymmaTH510
JVM	Java HotSpot (TM) 64-Bit Server VM (24.51-b03)	JVM version used to run the instance
Java	Version 1.7.0_51, vendor Oracle Corporation	Java version used to run the instance
Java_Home	F:\jdk\jdk1.7.0_51_64\jre	Java Home defined in the OE instance environment

Memory

Key	Explanation
Total Memory	Memory used by OE instance
Heap memory	Memory used to store Java objects used by OE instance
Non Heap Memory	Memory used to store loaded classes and other meta-data. JVM code itself, JVM internal structures, loaded profiler agent code and data, etc.



Service Assemblies

CompositeApp2	STARTED
HelloWorldCA	STARTED

Components

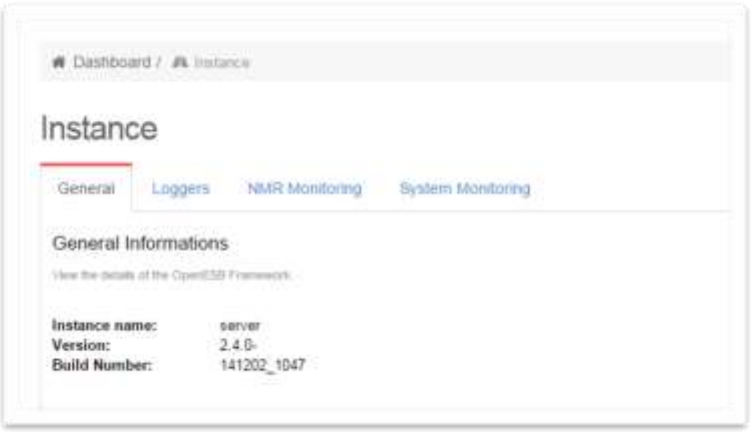
sun-bpel-engine	STARTED	3.1.1
sun-http-binding	STARTED	3.1.1

Shared Libraries

sun-wsdl-ext-library	3.1.1
sun-encoder-library	3.1.1

These pictures give you an overview of the elements installed in OE instances.

5 Instances



Instance

General Informations

View the details of the OpenESB Framework.

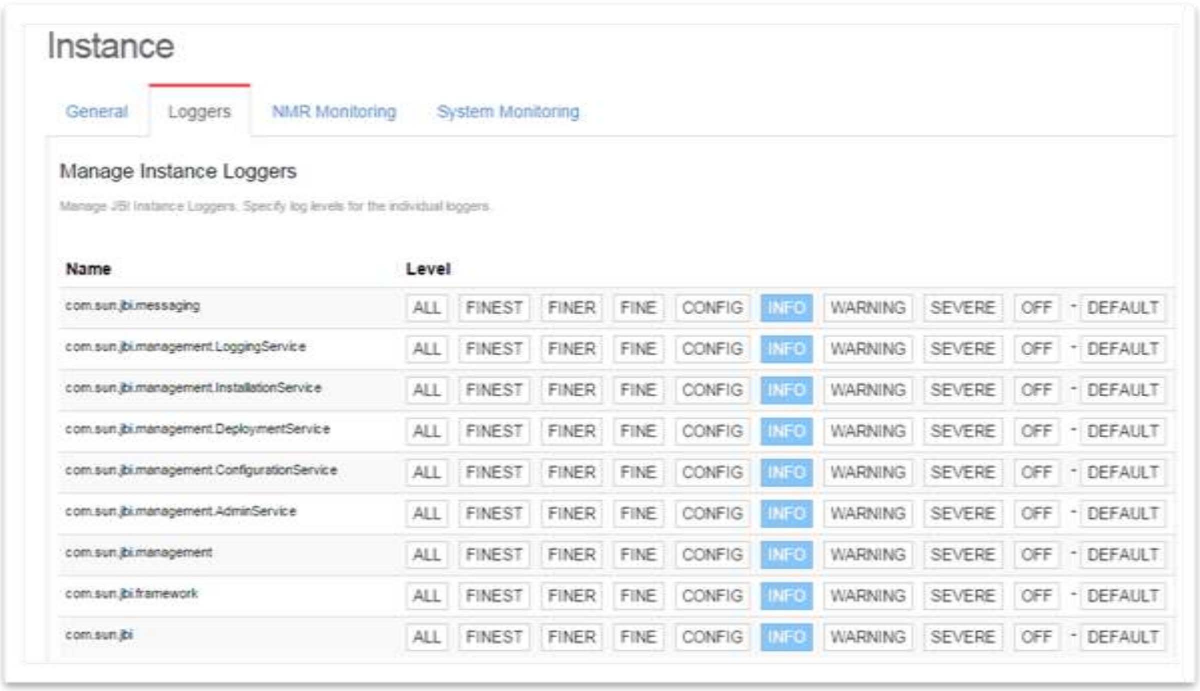
Instance name:	server
Version:	2.4.0-
Build Number:	141202_1047

Instance screen provides more details of the instance itself.

5.1 General

General information		
Key	**Value**	**Comment**
Instance name	Server	"Server" is the default instance name. This name can be set up in the file ${OESE-HOME}\OE-Instance\config\openesb.yaml. You can give a more significant name to the instance, such as "production", "Finance"…
Version	2.4.0-	Instance version. Please note that OpenESB and Instance versions are not synchronised
Build Number	141202_1047	Build number of the instance

5.2 Logger



Instance

General | Loggers | NMR Monitoring | System Monitoring

Manage Instance Loggers

Manage JBI Instance Loggers. Specify log levels for the individual loggers.

Name	Level
com.sun.jbi.messaging	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.management.LoggingService	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.management.InstallationService	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.management.DeploymentService	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.management.ConfigurationService	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.management.AdminService	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.management	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.framework	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT

OE instance offers a complete set of loggers to monitor, trace and debug instance behaviour. A logger is associated with the classes which have the same package than the Logger name.

Each logger can be set individually.

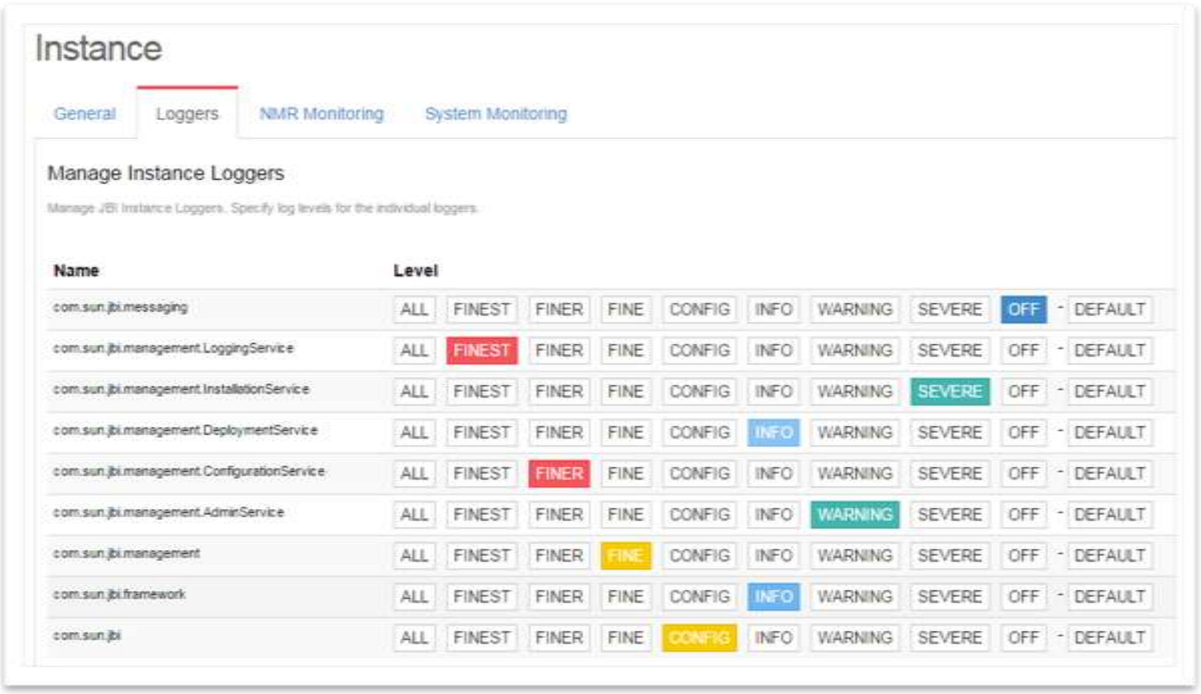
- ALL: indicates that all messages should be logged.
- FINEST: Maximum verbosity
- FINER: Moderate verbosity
- FINE: Minimal verbosity
- CONFIG: Messages related to the server configuration
- INFO: Messages related to server configuration or server status, excluding errors
- WARNING: Warnings, including exceptions
- SEVERE: Events that interfere with normal program execution
- DEFAULT: revert to the parent logger level or INFO if none
- OFF: is a special level that can be used to turn off logging

During development and testing time, log level can be set from INFO to FINEST. Sometimes, FINER and FINEST are too verbose and can confuse log analysis.

For performance testing and production, log level can be set from SEVERE to INFO. We recommend you set up your loggers to INFO since higher levels can miss significant messages.

5.2.1 Set up log level

To set up a log level, just click on the selected level. You don't need to reset the instance to take into account the new setting.


Instance

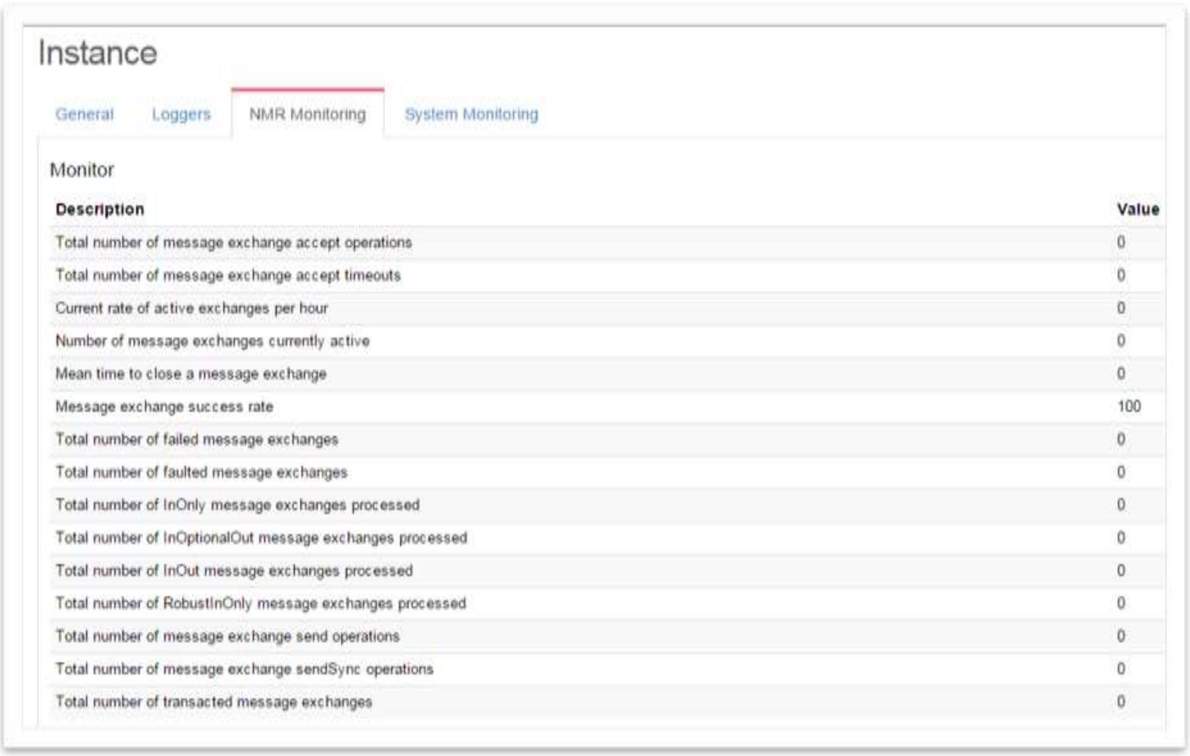
Manage Instance Loggers

Manage JBI Instance Loggers. Specify log levels for the individual loggers.

Name	Level
com.sun.jbi.messaging	ALL FINEST FINER FINE CONFIG INFO WARNING SEVERE [✓ OFF] - DEFAULT
com.sun.jbi.management.LoggingService	ALL [✓ FINEST] FINER FINE CONFIG INFO WARNING SEVERE OFF - DEFAULT
com.sun.jbi.management.InstallationService	ALL FINEST FINER FINE CONFIG INFO WARNING [✓ SEVERE] OFF - DEFAULT
com.sun.jbi.management.DeploymentService	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.management.ConfigurationService	ALL FINEST [✓ FINER] FINE CONFIG INFO WARNING SEVERE OFF - DEFAULT
com.sun.jbi.management.AdminService	ALL FINEST FINER FINE CONFIG INFO [✓ WARNING] SEVERE OFF - DEFAULT
com.sun.jbi.management	ALL FINEST FINER [✓ FINE] CONFIG INFO WARNING SEVERE OFF - DEFAULT
com.sun.jbi.framework	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi	ALL FINEST FINER FINE [✓ CONFIG] INFO WARNING SEVERE OFF - DEFAULT

5.3 NMR Monitoring

NMR is the acronym of the Normalized Message Router. The NMR can be seen as a bus where messages pass through (For more information on the NMR, have a look at JBI specifications). Many statistics are generated from the NMR and reported on this screen. Initial time for the statistics is the time OpenESB starts up. Statistics are reset when the instance is reset.



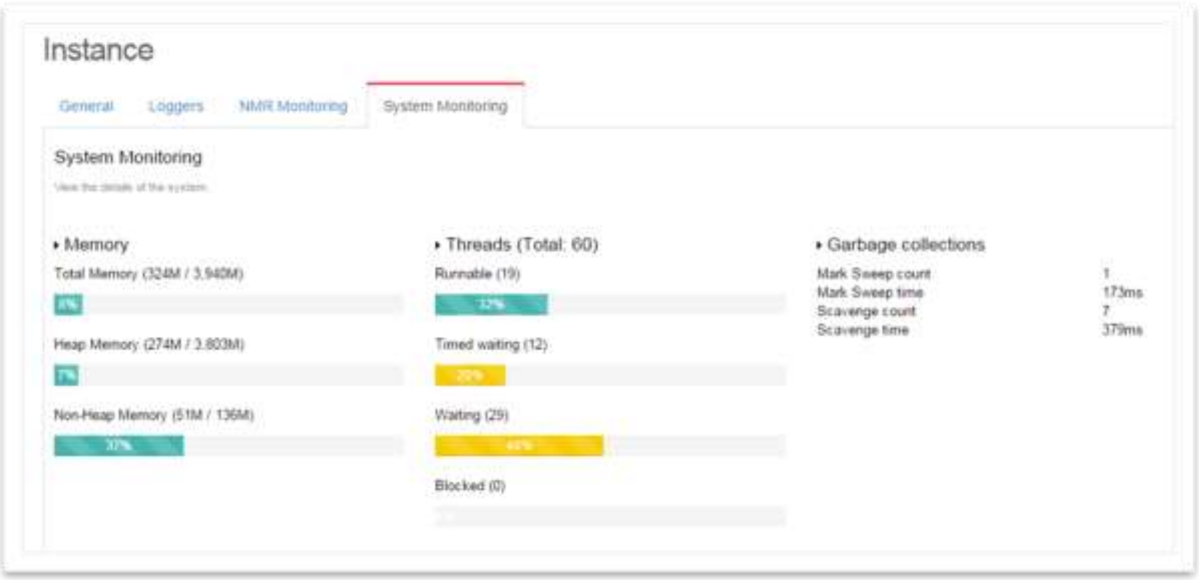
Instance

General | Loggers | NMR Monitoring | System Monitoring

Monitor

Description	Value
Total number of message exchange accept operations	0
Total number of message exchange accept timeouts	0
Current rate of active exchanges per hour	0
Number of message exchanges currently active	0
Mean time to close a message exchange	0
Message exchange success rate	100
Total number of failed message exchanges	0
Total number of faulted message exchanges	0
Total number of InOnly message exchanges processed	0
Total number of InOptionalOut message exchanges processed	0
Total number of InOut message exchanges processed	0
Total number of RobustInOnly message exchanges processed	0
Total number of message exchange send operations	0
Total number of message exchange sendSync operations	0
Total number of transacted message exchanges	0

5.4 System Monitoring



Instance

General | Loggers | NMR Monitoring | System Monitoring

System Monitoring

View the details of the system

▸ Memory

Total Memory (324M / 3,940M) — 8%

Heap Memory (274M / 3,803M) — 7%

Non-Heap Memory (51M / 136M) — 37%

▸ Threads (Total: 60)

Runnable (19) — 32%

Timed waiting (12) — 20%

Waiting (29) — 48%

Blocked (0)

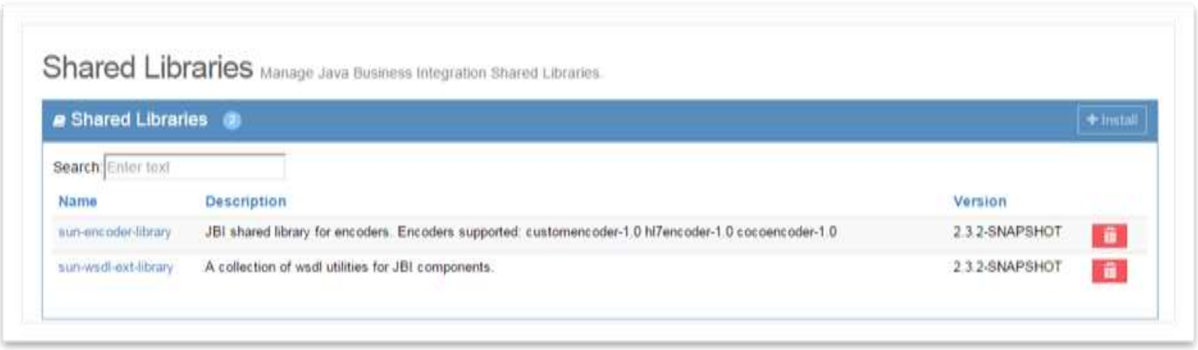
▸ Garbage collections

Mark Sweep count	1
Mark Sweep time	173ms
Scavenge count	7
Scavenge time	379ms

System monitoring displays additional statistic on the OE instance. These elements (Memory, Thread and Garbage Collecting) can be useful for optimising your instance and improving its scalability.

6 Shared Libraries

Shared libraries are Java libraries that can be shared by many components. The difference between a Java library and a shared library comes from a jbi.xml file added to the shared library jar file. For more details on jbi.xml, have a look at JBI specifications.



Shared Libraries Manage Java Business Integration Shared Libraries

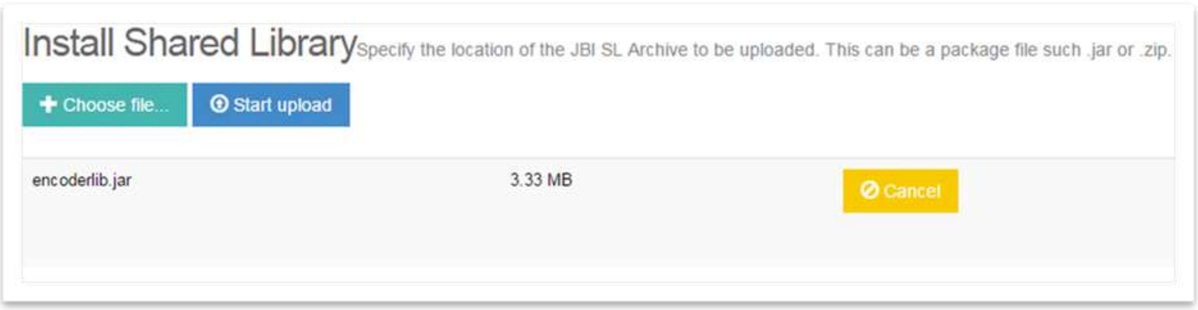
Shared Libraries | + Install

Search: Enter text

Name	Description	Version	
sun-encoder-library	JBI shared library for encoders. Encoders supported: customencoder-1.0 hl7encoder-1.0 cocoencoder-1.0	2.3.2-SNAPSHOT	🗑
sun-wsdl-ext-library	A collection of wsdl utilities for JBI components.	2.3.2-SNAPSHOT	🗑

6.1 Install a shared library

To install a new shared library, click on the install button + Install then chose the file you want to install + Choose file...



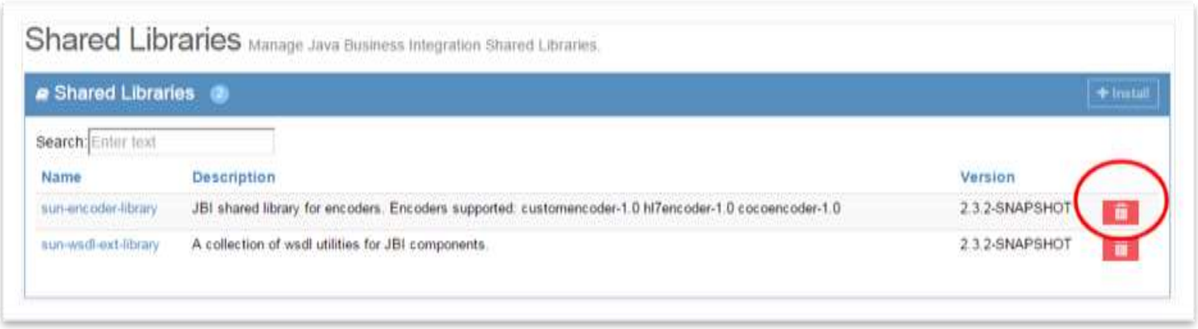
Install Shared Library Specify the location of the JBI SL Archive to be uploaded. This can be a package file such .jar or .zip.

+ Choose file... | Start upload

encoderlib.jar	3.33 MB	Cancel

Once the file is chosen, click on Start upload or Cancel if you want to cancel the installation.

6.2 Uninstall a shared library



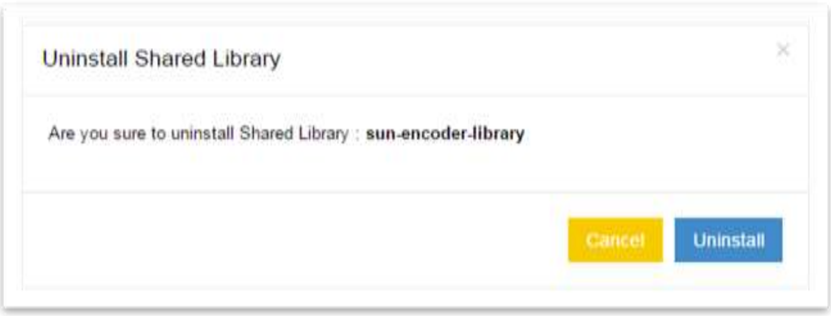
Shared Libraries Manage Java Business Integration Shared Libraries

Shared Libraries | + Install

Search: Enter text

Name	Description	Version	
sun-encoder-library	JBI shared library for encoders. Encoders supported: customencoder-1.0 hl7encoder-1.0 cocoencoder-1.0	2.3.2-SNAPSHOT	🗑
sun-wsdl-ext-library	A collection of wsdl utilities for JBI components.	2.3.2-SNAPSHOT	🗑

To uninstall a shared library, click on the associated bin icon and confirm it.

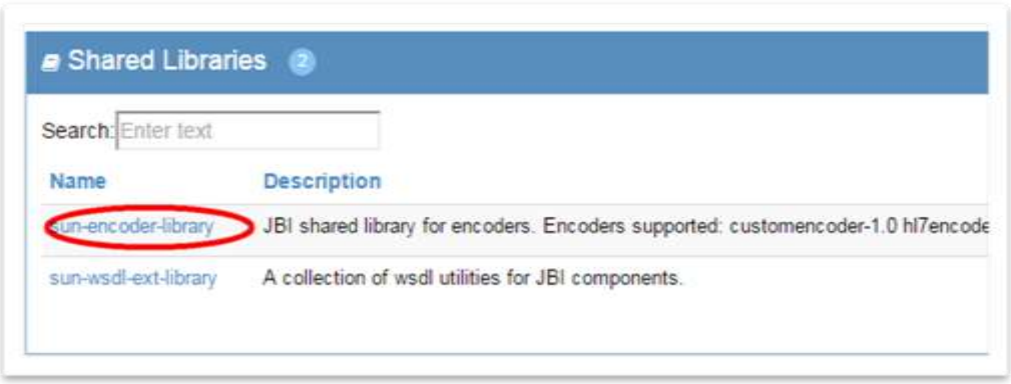


Uninstall Shared Library

Are you sure to uninstall Shared Library : **sun-encoder-library**

6.3 Shared library details

Click on a shared library name to display Shared Library details.

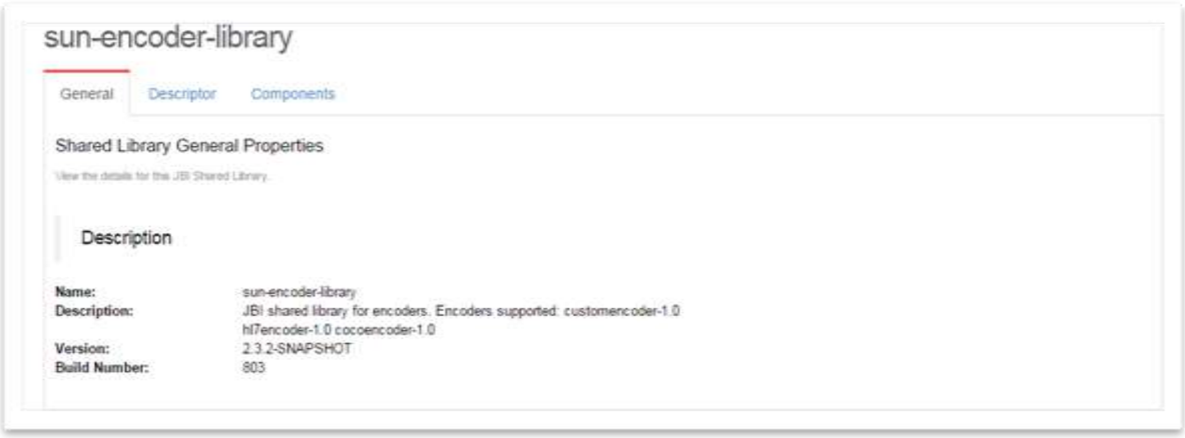


Shared Libraries 2

Search: Enter text

Name	Description
sun-encoder-library	JBI shared library for encoders. Encoders supported: customencoder-1.0 hl7encode
sun-wsdl-ext-library	A collection of wsdl utilities for JBI components.

A detailed screen opens with three tabs: General, Descriptor and Components



sun-encoder-library

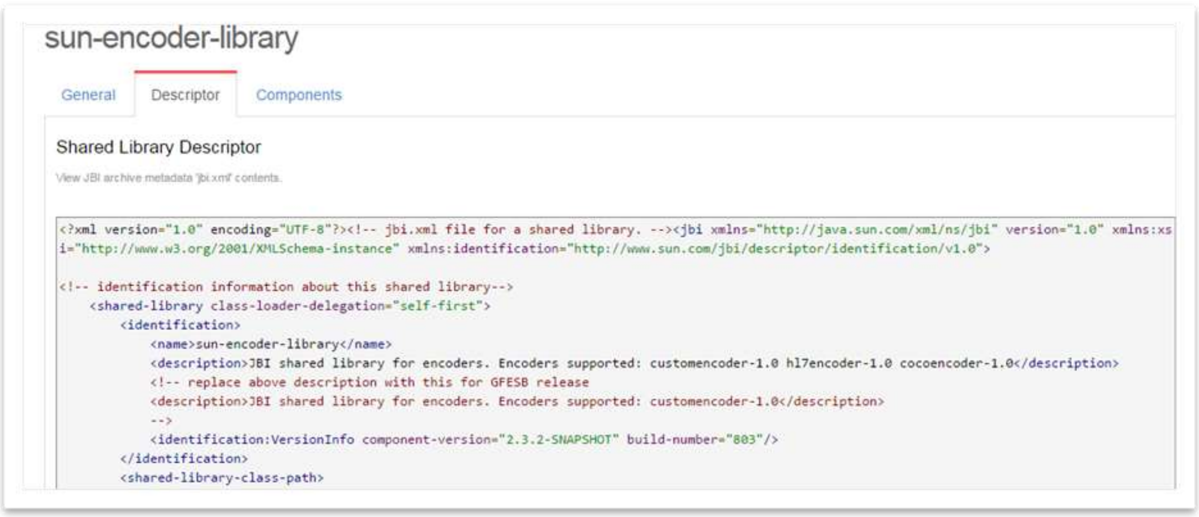
Shared Library General Properties

View the details for the JBI Shared Library.

Description

Name:	sun-encoder-library
Description:	JBI shared library for encoders. Encoders supported: customencoder-1.0 hl7encoder-1.0 cocoencoder-1.0
Version:	2.3.2-SNAPSHOT
Build Number:	803

The General screen provides General elements of the shared library such as Name or Version.


sun-encoder-library

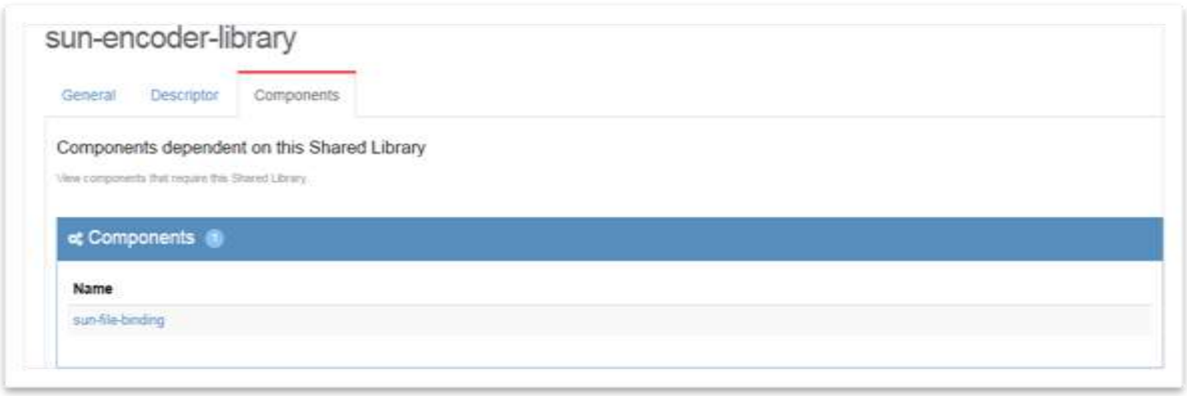
Shared Library Descriptor

View JBI archive metadata 'jbi.xml' contents.

```
<?xml version="1.0" encoding="UTF-8"?><!-- jbi.xml file for a shared library. --><jbi xmlns="http://java.sun.com/xml/ns/jbi" version="1.0" xmlns:xs
i="http://www.w3.org/2001/XMLSchema-instance" xmlns:identification="http://www.sun.com/jbi/descriptor/identification/v1.0">

<!-- identification information about this shared library-->
    <shared-library class-loader-delegation="self-first">
        <identification>
            <name>sun-encoder-library</name>
            <description>JBI shared library for encoders. Encoders supported: customencoder-1.0 hl7encoder-1.0 cocoencoder-1.0</description>
            <!-- replace above description with this for GFESB release
            <description>JBI shared library for encoders. Encoders supported: customencoder-1.0</description>
            -->
            <identification:VersionInfo component-version="2.3.2-SNAPSHOT" build-number="803"/>
        </identification>
        <shared-library-class-path>
```

The Descriptor screen displays the content of the descriptor jbi.xml associated with the shared library.


sun-encoder-library

Components dependent on this Shared Library

View components that require this Shared Library

Components 1

Name
sun-file-binding

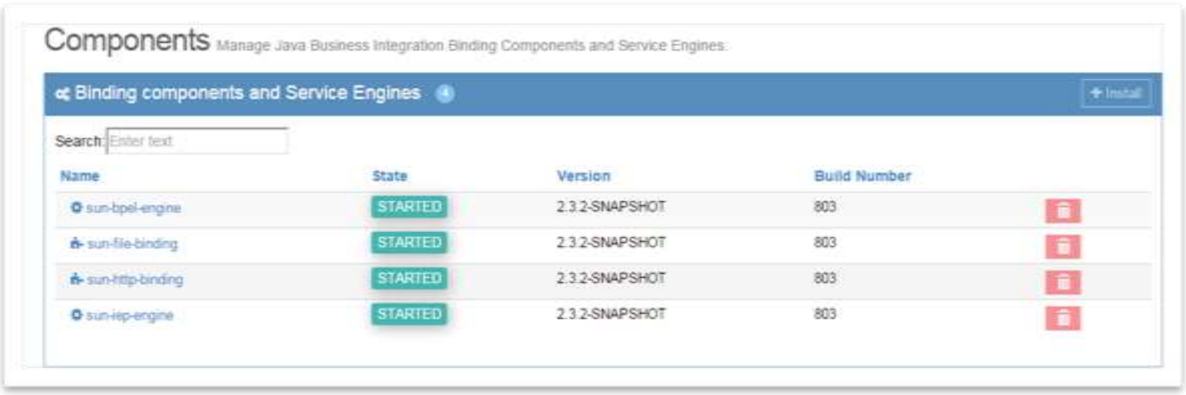
The Components screen lists the components which use the shared library.

7 Components

OpenESB supports two kinds of components, Service Engines and Binding Components. OpenESB only distinguishes between the two kinds through a flag; the model and API are otherwise identical. However, by convention, Service Engines and Binding Components implement different functionality in OpenESB.

Binding components are used to send and receive messages via particular protocols and transports. They serve to isolate the OpenESB environment from the particular protocol by providing normalisation and denormalisation from and to the protocol-specific format, allowing the OpenESB environment to deal only with normalized messages.

Service Engines are the business logic drivers of the OpenESB. Engines can orchestrate service consumption and provision, in the course of, for example, executing long-lived business processes. Other engines can provide simple services, such as data transformation. Other engines may provide sophisticated routing or EDI services such as message collation / de-collation facilities. Service Engines can create new services by aggregating other services. SEs can serve as service providers, service consumers, or both.


Components Manage Java Business Integration Binding Components and Service Engines.

Name	State	Version	Build Number
sun-bpel-engine	STARTED	2.3.2-SNAPSHOT	803
sun-file-binding	STARTED	2.3.2-SNAPSHOT	803
sun-http-binding	STARTED	2.3.2-SNAPSHOT	803
sun-iep-engine	STARTED	2.3.2-SNAPSHOT	803

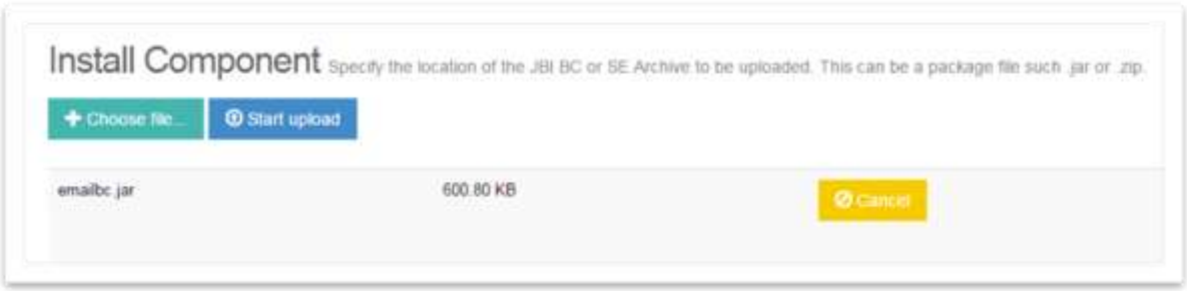
The Component main screen lists OpenESB components installed in an OE instance. Component state, Version and Build number are provided as well.

States can be:

Component states	
State	**Description**
Shutdown	The component is installed but does not consume any message for processing
Stop	The component is installed and does not consume any new message but process the current messages already consumed.
Start	The component is installed. It consumes new messages and processes them.
Unknown	This state indicates the console is not able to determine the component state.

7.1 Install a new component

To install a new component, click on the install button **+ Install** then chose the file you want to install **+ Choose file...**



Install Component Specify the location of the JBI BC or SE Archive to be uploaded. This can be a package file such .jar or .zip.

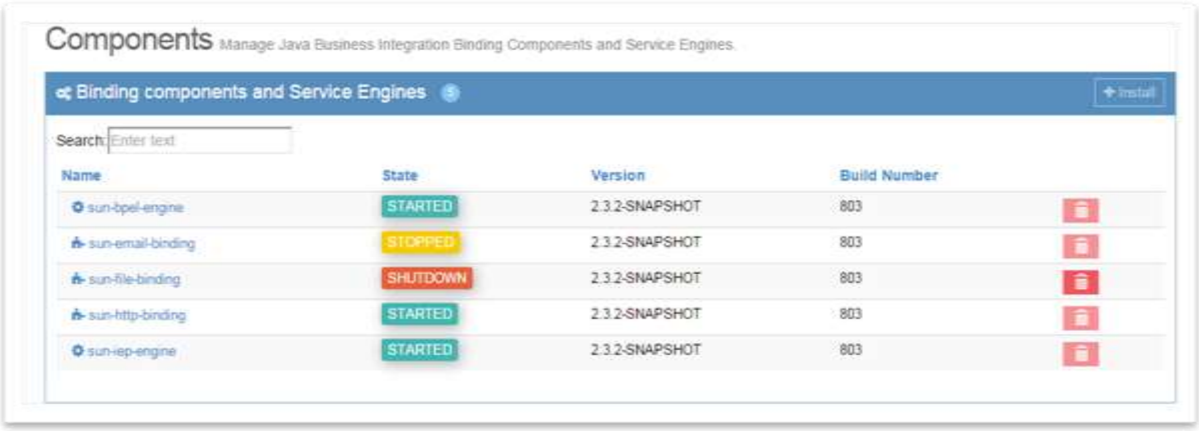
emailbc.jar	600.80 KB	Cancel

Once the file is chosen, click on **Start upload** or **Cancel** if you want to cancel the installation.

There is no difference between a Service engine and a Binding component installation.

7.2 Uninstall a component

You can uninstall a component in the state shutdown only.



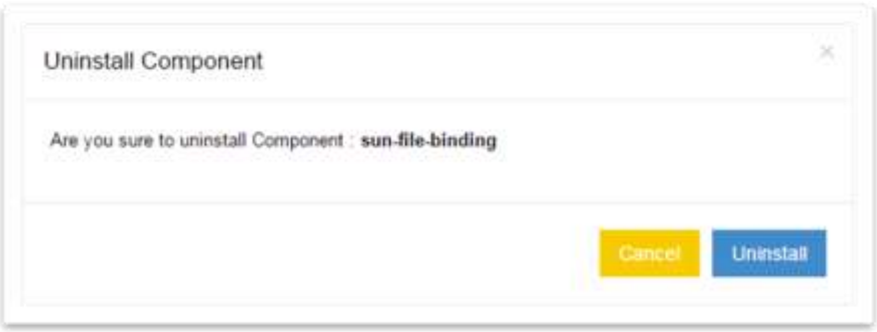
Components Manage Java Business Integration Binding Components and Service Engines.

Binding components and Service Engines 5

Search: Enter text

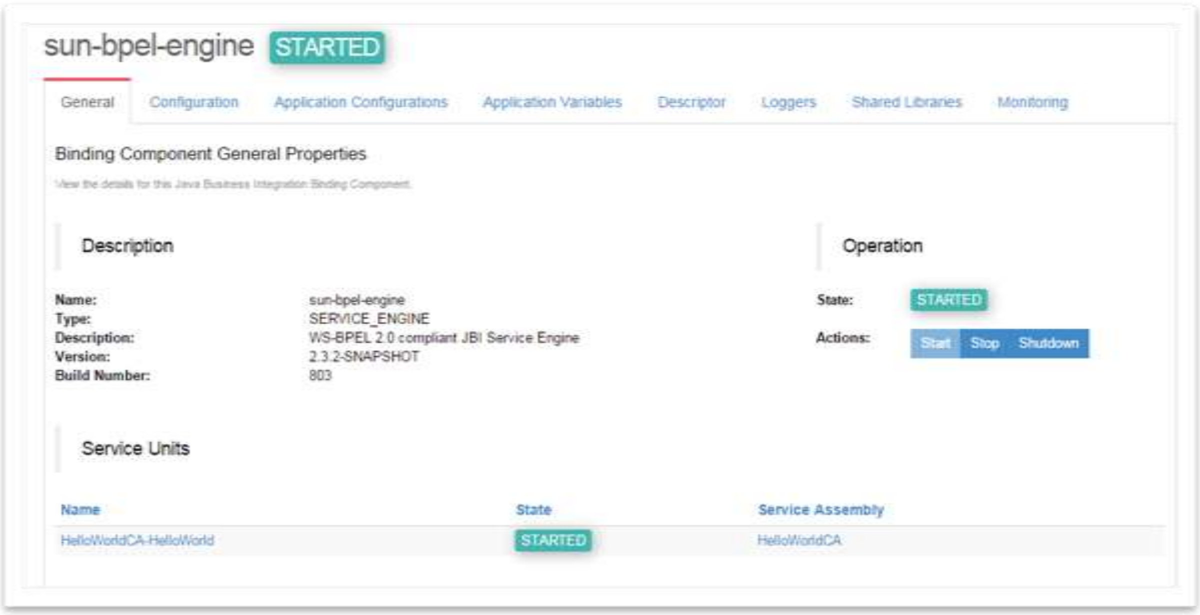
Name	State	Version	Build Number	
sun-bpel-engine	STARTED	2.3.2-SNAPSHOT	803	🗑
sun-email-binding	STOPPED	2.3.2-SNAPSHOT	803	🗑
sun-file-binding	SHUTDOWN	2.3.2-SNAPSHOT	803	🗑
sun-http-binding	STARTED	2.3.2-SNAPSHOT	803	🗑
sun-iep-engine	STARTED	2.3.2-SNAPSHOT	803	🗑

To uninstall a shutdown component, click on the associated bin icon 🗑 and confirm it.


Uninstall Component

Are you sure to uninstall Component : **sun-file-binding**

7.3 Component detail


sun-bpel-engine STARTED

Binding Component General Properties

View the details for this Java Business Integration Binding Component.

Description

Name:	sun-bpel-engine
Type:	SERVICE_ENGINE
Description:	WS-BPEL 2.0 compliant JBI Service Engine
Version:	2.3.2-SNAPSHOT
Build Number:	803

Operation

State: STARTED

Actions:

Service Units

Name	State	Service Assembly
HelloWorldCA-HelloWorld	STARTED	HelloWorldCA

Component detail screen displays 8 tabs

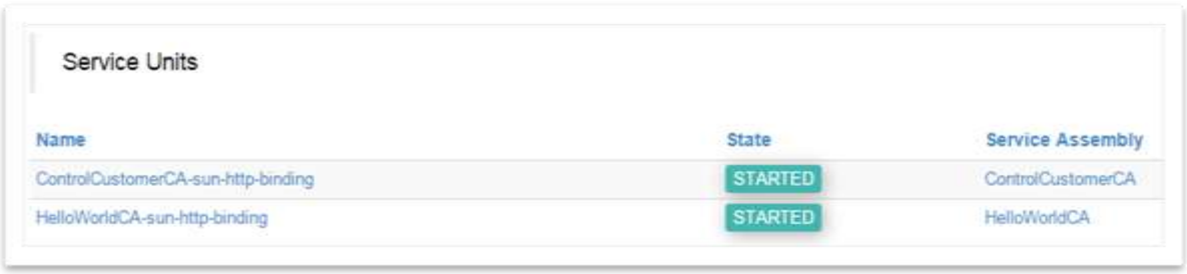
Tab	Comment
General	Provides general information on the component
Configuration	Configures the component dynamically. The configuration is available when the component is started.
Application configuration	Component Application Configurations are named collections of properties that allow Service Assemblies to configure a target component. There is no application configuration for the Service Engine component.
Application Variable	Application variables allow you to define a list of variable names and values along with their type. The application variable name can then be used as a token in a WSDL extensibility element attribute of the component
Descriptor	Displays 'jbi.xml' contents associated with the component.

Logger	Manages component loggers. Each logger can be Set individually.
Shared libraries	Lists the shared libraries used by the component
Monitoring	Provides monitoring metrics such as active endpoints and message number.

7.3.1 General

General tab displays general information on the component such as Name, Type, Version, Build number…

This tab can be used to manage component state. (See Component lifecycle chapter above).



Service Units

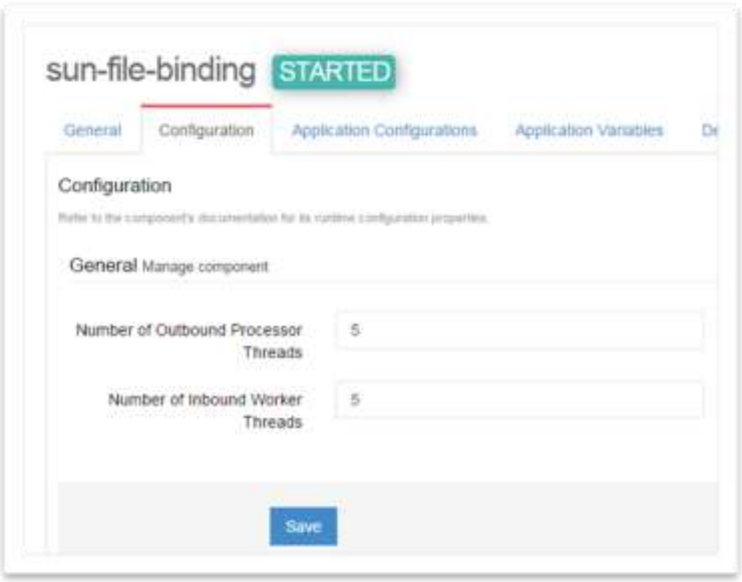
Name	State	Service Assembly
ControlCustomerCA-sun-http-binding	STARTED	ControlCustomerCA
HelloWorldCA-sun-http-binding	STARTED	HelloWorldCA

General tab lists the Service Units associated with the component. For OpenESB new joiners, a Service Unit can be seen as a component configuration. An HTTP Service unit defines a port, an endpoint and interface for the HTTP component.

When a component state changes, the state of the Services Units linked to the component changes as well.

7.3.2 Configuration

Each component has its configuration. Some can be very simple to Configure (Ex: file) but some can be trickier to optimise (FTP, BPEL). It depends on component's complexity.



sun-file-binding STARTED

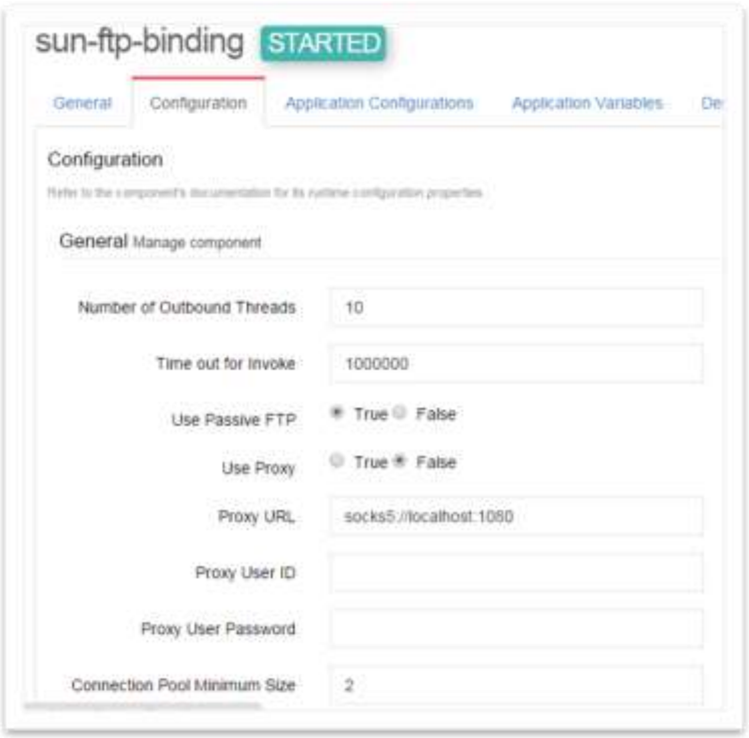
Configuration

Refer to the component's documentation for its runtime configuration properties.

General Manage component

Number of Outbound Processor Threads: 5

Number of Inbound Worker Threads: 5



Configuration

Refer to the component's documentation for its runtime configuration properties

General Manage component

Number of Outbound Threads	10
Time out for Invoke	1000000
Use Passive FTP	[✓ True] False
Use Proxy	True [✓ False]
Proxy URL	socks5://localhost:1080
Proxy User ID	
Proxy User Password	
Connection Pool Minimum Size	2

Please refer to the component configuration guide for more details on the component.

The configuration setup can be done only when the component has been started.

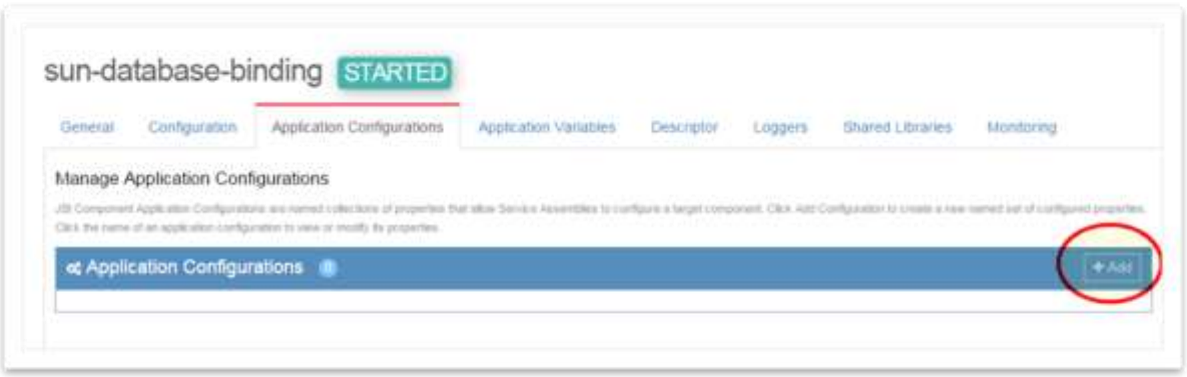
7.3.3 Application configuration

Application Configurations allow you to configure the external connectivity parameters for a JBI application and, without changing or rebuilding the application, deploy the same application to a different system. For example, if you have an application that is running in a test environment, you can deploy it to a production environment using new connectivity parameters without rebuilding the application.

The connectivity parameters for OpenESB Binding Component are normally defined in the WSDL service extensibility elements. When you create and apply application configurations for these parameters, the values defined in the application configuration override the values defined in the WSDL elements. You apply the configurations to the Composite Application by entering the application configuration name in the Config Extension Name property for the appropriate endpoint in the Service Assembly.

For more detail, please read our document: **770-006: OpenESB Multiple Environments**

7.3.3.1 Create an application configuration

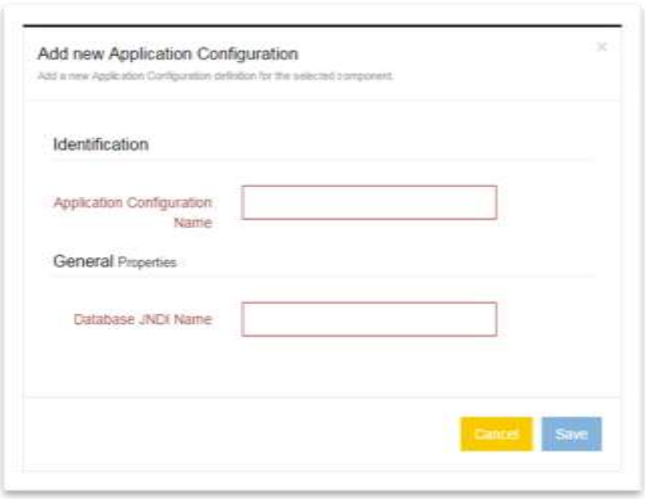


Manage Application Configurations

JBI Component Application Configurations are named collections of properties that allow Service Assemblies to configure a target component. Click Add Configuration to create a new named set of configured properties. Click the name of an application configuration to view or modify its properties.

Application Configurations

Select the tab Application Configurations and click on the Add button. Each binding component has its configuration and the form to fill to create a configuration is different for each component.



Add new Application Configuration

Add a new Application Configuration definition for the selected component.

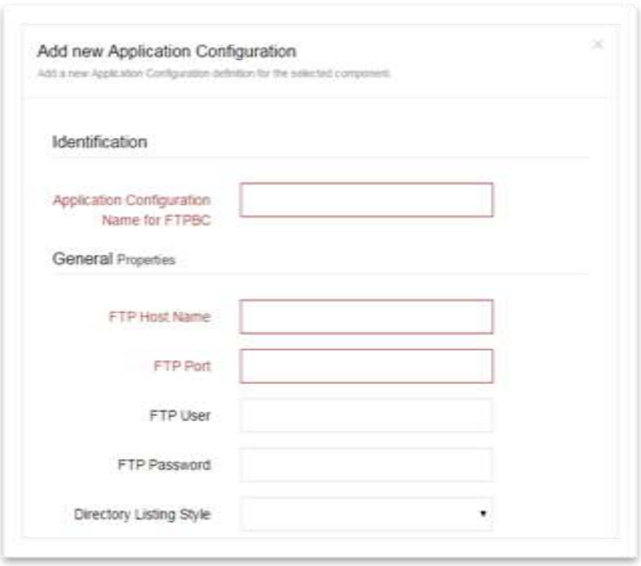
Identification

Application Configuration Name	

General Properties

Database JNDI Name	

Database BC Application Configuration form



Add new Application Configuration

Add a new Application Configuration definition for the selected component.

Identification

Application Configuration Name for FTPBC	

General Properties

FTP Host Name	
FTP Port	
FTP User	
FTP Password	
Directory Listing Style	

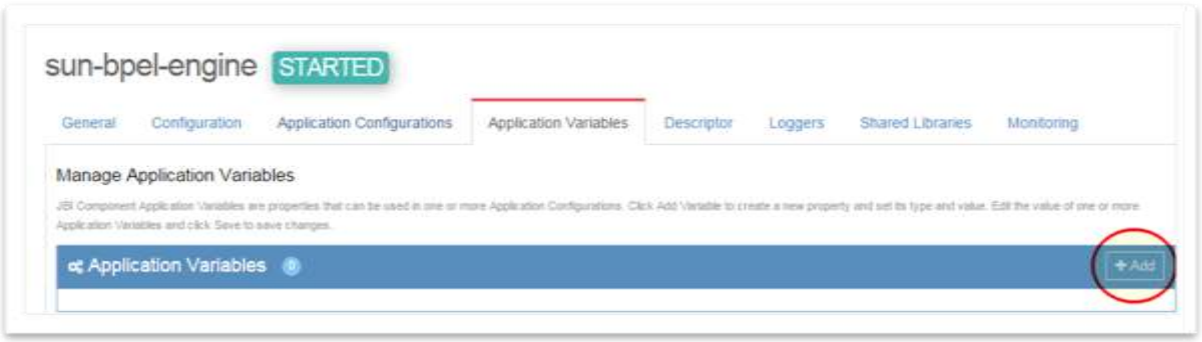
FTP BC Application Configuration form

7.3.4 Application variables

Application variables allow you to define a list of variable names and values along with their type. The application variable name can then be used as a token in a WSDL extensibility element attribute of the component. For example, you could define a string variable named **ServerName** with a value of **MyHost.com**. To reference this in the WSDL document, you would enter **${ServerName}**. When you deploy an application that uses application variables, any variable that is referenced in the application's WSDL document is loaded automatically.

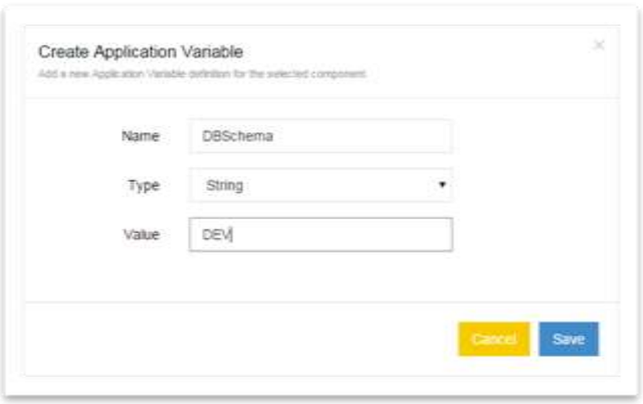
For more detail, please have a look at our document: 770-006: OpenESB Multiple Environments

7.3.4.1 Create Application variable



Manage Application Variables

JBI Component Application Variables are properties that can be used in one or more Application Configurations. Click Add Variable to create a new property and set its type and value. Edit the value of one or more Application Variables and click Save to save changes.



Create Application Variable

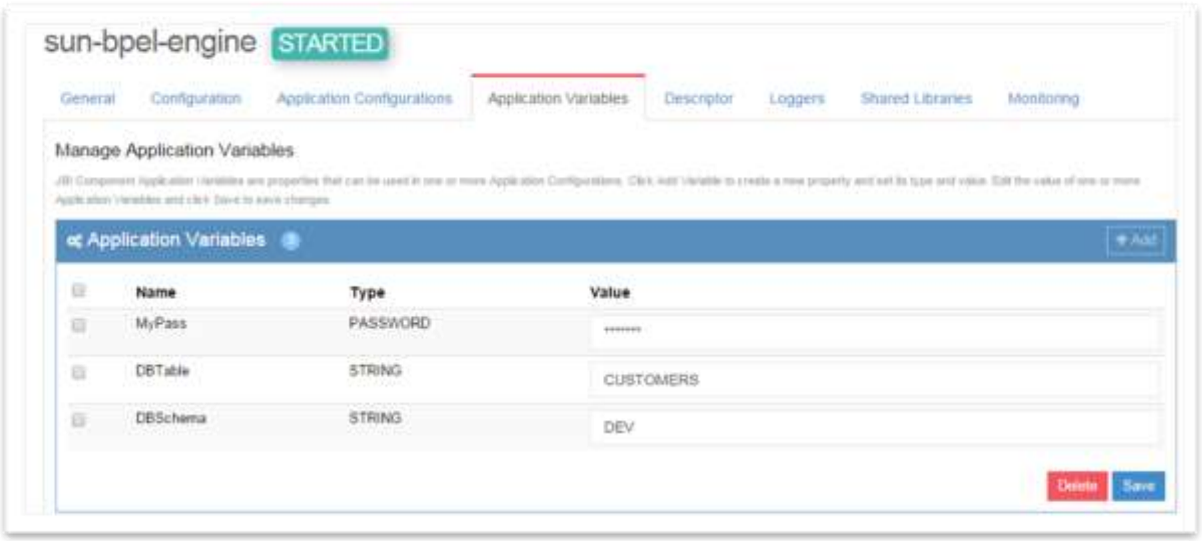
Add a new Application Variable definition for the selected component

Name: DBSchema

Type: String

Value: DEV

Enter the variable name, select the type (String, Number, Boolean, Password) and the value.


sun-bpel-engine STARTED

General | Configuration | Application Configurations | Application Variables | Descriptor | Loggers | Shared Libraries | Monitoring

Manage Application Variables

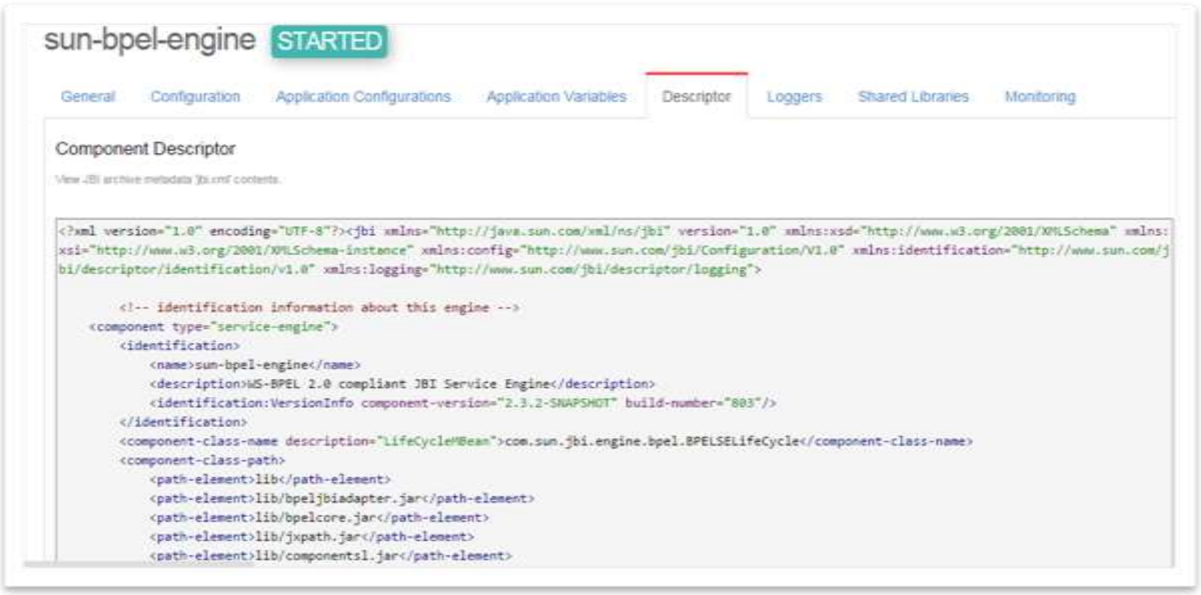
JBI Component Application Variables are properties that can be used in one or more Application Configurations. Click Add Variable to create a new property and set its type and value. Edit the value of one or more Application Variables and click Save to save changes.

Application Variables

	Name	Type	Value
☐	MyPass	PASSWORD	*******
☐	DBTable	STRING	CUSTOMERS
☐	DBSchema	STRING	DEV

Values can be changed directly in the list.

7.3.5 Descriptor


sun-bpel-engine STARTED

General | Configuration | Application Configurations | Application Variables | Descriptor | Loggers | Shared Libraries | Monitoring

Component Descriptor

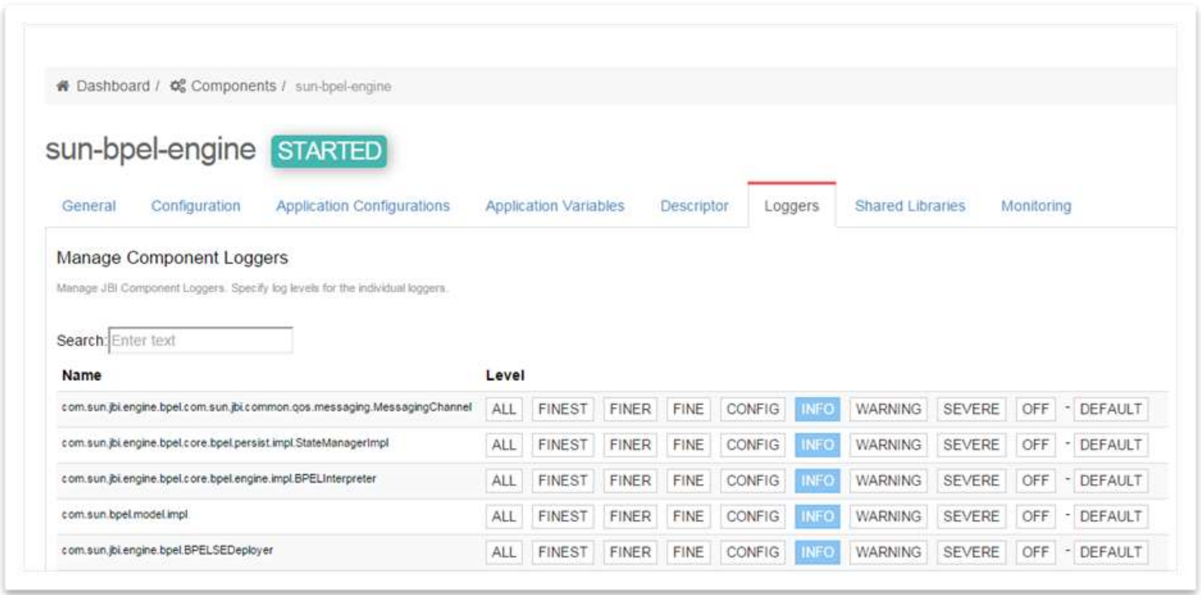
View JBI archive metadata jbi.xml contents.

```
<?xml version="1.0" encoding="UTF-8"?><jbi xmlns="http://java.sun.com/xml/ns/jbi" version="1.0" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:
xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:config="http://www.sun.com/jbi/Configuration/V1.0" xmlns:identification="http://www.sun.com/j
bi/descriptor/identification/v1.0" xmlns:logging="http://www.sun.com/jbi/descriptor/logging">

        <!-- identification information about this engine -->
    <component type="service-engine">
        <identification>
            <name>sun-bpel-engine</name>
            <description>WS-BPEL 2.0 compliant JBI Service Engine</description>
            <identification:VersionInfo component-version="2.3.2-SNAPSHOT" build-number="803"/>
        </identification>
        <component-class-name description="LifeCycleMBean">com.sun.jbi.engine.bpel.BPELSELifeCycle</component-class-name>
        <component-class-path>
            <path-element>lib</path-element>
            <path-element>lib/bpeljbiadapter.jar</path-element>
            <path-element>lib/bpelcore.jar</path-element>
            <path-element>lib/jxpath.jar</path-element>
            <path-element>lib/components1.jar</path-element>
```

Descriptor tab displays the component descriptor jbi.xml. It cannot be modified from the console.

7.3.6 Loggers


Dashboard / Components / sun-bpel-engine

sun-bpel-engine STARTED

General | Configuration | Application Configurations | Application Variables | Descriptor | Loggers | Shared Libraries | Monitoring

Manage Component Loggers

Manage JBI Component Loggers. Specify log levels for the individual loggers.

Search: Enter text

Name	Level
com.sun.jbi.engine.bpel.com.sun.jbi.common.qos.messaging.MessagingChannel	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.engine.bpel.core.bpel.persist.impl.StateManagerImpl	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.engine.bpel.core.bpel.engine.impl.BPELInterpreter	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.bpel.model.impl	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT
com.sun.jbi.engine.bpel.BPELSEDeployer	ALL FINEST FINER FINE CONFIG [✓ INFO] WARNING SEVERE OFF - DEFAULT

The Logger tab is used to set up component loggers. They are numerous and provide complete information on component behaviour.

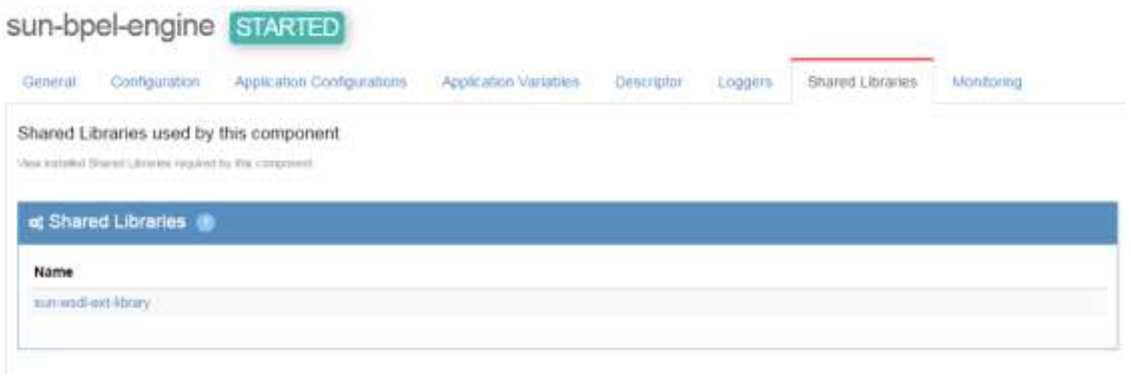
Each logger can be set individually.

- ALL: indicates that all messages should be logged.
- FINEST: Maximum verbosity
- FINER: Moderate verbosity
- FINE: Minimal verbosity
- CONFIG: Messages related to component configuration
- INFO: Messages related to server configuration or server status, excluding errors
- WARNING: Warnings, including exceptions
- SEVERE: Events that interfere with normal program execution
- DEFAULT: revert to the parent logger level or INFO if none
- OFF: is a special level that can be used to turn off logging

During development and testing time, log level can be set from INFO to FINEST. FINER and FINEST are verbose and can confuse log analysis.

For performance testing and production, log level can be set from SEVERE to INFO. We recommend you set up the logger to INFO since higher level can miss significant messages.

7.4 Shared libraries


sun-bpel-engine STARTED

General | Configuration | Application Configurations | Application Variables | Descriptor | Loggers | Shared Libraries | Monitoring

Shared Libraries used by this component

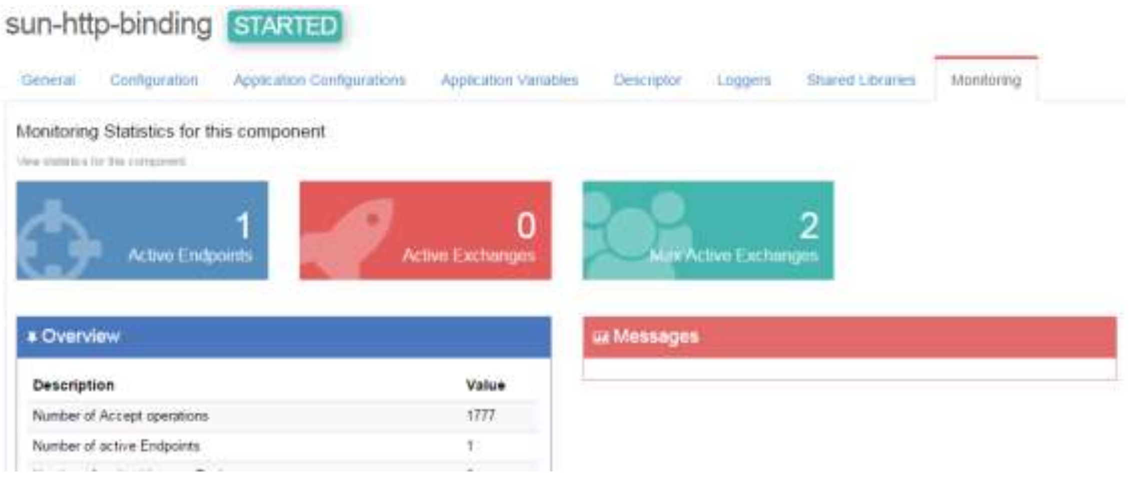
View installed Shared Libraries required by this component

Shared Libraries

Name
sun-wsdl-ext-library

Shared libraries tab lists the shared library used by the component.

7.5 Monitoring


sun-http-binding STARTED

General | Configuration | Application Configurations | Application Variables | Descriptor | Loggers | Shared Libraries | Monitoring

Monitoring Statistics for this component

View statistics for this component

1 Active Endpoints

0 Active Exchanges

2 Max Active Exchanges

Overview

Description	Value
Number of Accept operations	1777
Number of active Endpoints	1

Messages

Monitoring provides metrics on the component. Message part of the screen will be used by the next versions.

Description	Comments
Number of Accept operations	In each OpenESB component an endless loop checks id a message is available for processing. This loop is named Accept Operation. It can be used to check if the component is alive.
Number of active Endpoints	Active point associated with the component
Number of active MessageExchanges	Message currently in process
Number of waits that didn't find any work	
Number of active MessageExchanges Max	Number of messages max processed parallel by the component
Number of queued MessageExchanges Max	Number of messages max waiting for component processing

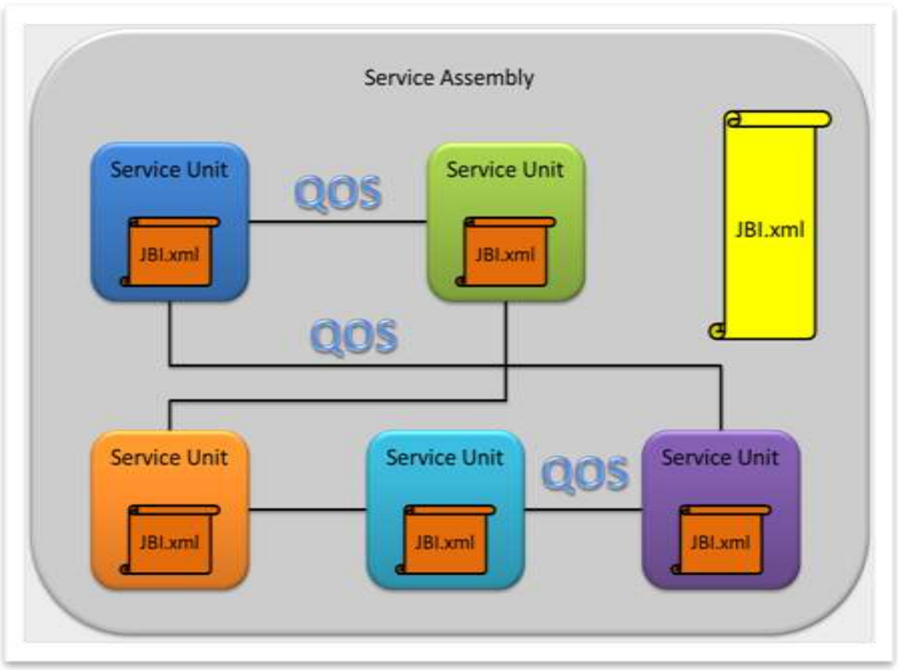
Number of queued MessageExchanges	Number of messages waiting for component processing
Number of DONE requests received	Number of messages completely processed since the component started.
Number of ERROR requests received	Error means non happy path not defined by the contract of service. Ex: Java exception
Number of faults received	Fault means non-happy path not defined by the contract of service.
Number of replies received	No comment
Number of requests received	No comment
Number of Send operations	No comment
Number of DONE requests sent	Number of requests successfully received by the addressee.
Number of ERROR requests sent	Error means non-happy path not defined by the contract of service. Ex: Java exception
Number of faults sent	Fault means non-happy path not defined by the contract of service.
Number of replies sent	No comment
Number of requests sent	No comment
Number of SendSync operations	Number of requests sent in a synchronous mode

8 Services assemblies

A service assembly is the unit of deployment for OpenESB. You install components and shared libraries, but you deploy service assemblies.

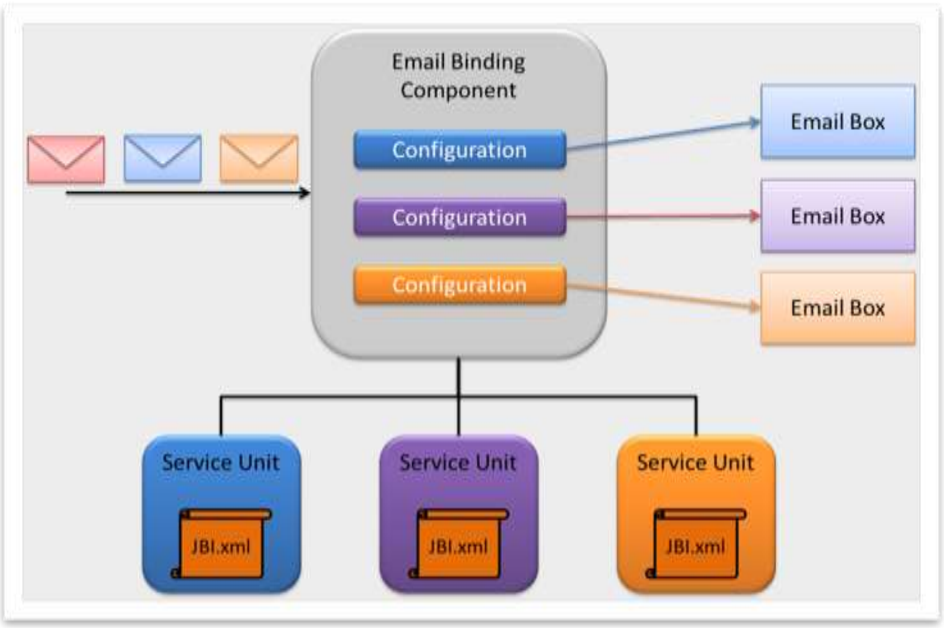
8.1 Service unit overview

Service assembly architecture is detailed below



A service assembly is the element to be deployed on OpenESB; it contains one or more service units. A service unit is a configuration for a component. The configuration is also named an endpoint. When the service unit is deployed, the component reads the service unit jbi.xml and creates a configuration by using jbi.xml parameters. So, a component supports many endpoints or many configurations at the same time.

Let’s take an example with Email Binding Component.



Email BC and Service Units configuration

During design time when creating Service Units, we associate them with a component type (Ex: BPEL or Email BC). Then, during deployment, the component reads service unit configurations (jbi.xml), creates internal configurations and declares this configuration or endpoint to OpenESB.

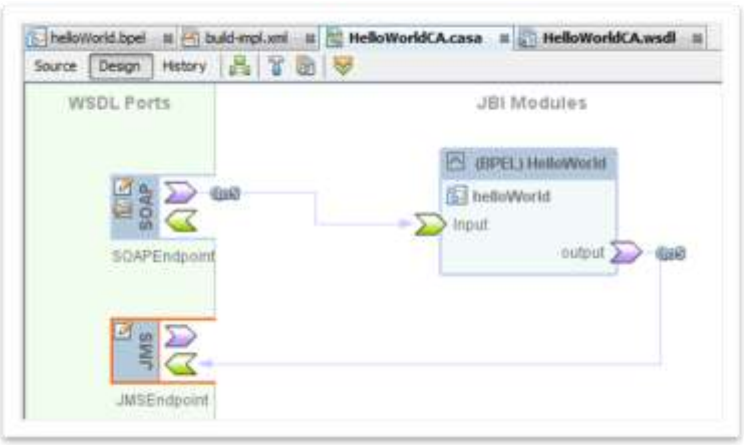
In the example above:

1. We deploy three service units linked at design time with Email BC. Each SU (service Unit) defines a connection to an email box.
2. Email BC creates 3 configurations and creates 3 connections to the email boxes and declare 3 endpoints to OpenESB.
3. A partner wants to send a message to an email box. In the message, a destination endpoint is added in the message header. Note that the partner does not know that Email BC deals with these endpoints but he just knows the endpoint that provides the email box services.
4. OpenESB knows the relationship between the endpoint and Email BC and routes the message to Email BC.
5. When Email BC receives a message, it introspects jbi.xml to find a relationship between the endpoint and the email box.
6. Then Email BC sends the message to the email box corresponding to the endpoint.

This mechanism is well described in JBI specifications.

8.2 Service assembly overview

Generally, an OpenESB application is made up of many service units.



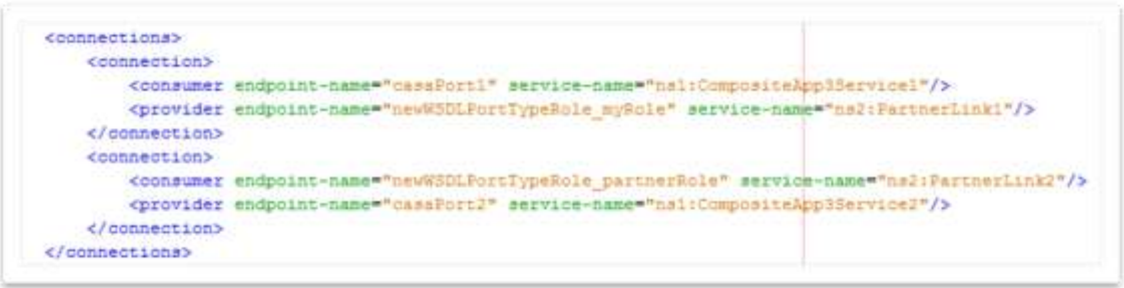
The example above displays a simple service assembly with 3 service units.

1. SOAP SU
2. BPEL SU
3. JMS SU

OpenESB beginners frequently ask the question: Why do we have to deploy a service assembly and not the BPEL SU, the JMS SU and the SOAP SU separately. The reason is easy to understand. If you had to deploy a Service Unit separately, you would have to define its connection with the other SUs and the external world as well.

A service assembly is more than a set of service units. A service assembly manages the relationship (connections) between service units and between the service units and the outside world. This is simply the reason the unit of deployment is the Service Assembly.

Connections definitions are stored in the jbi.xml of the service assembly.

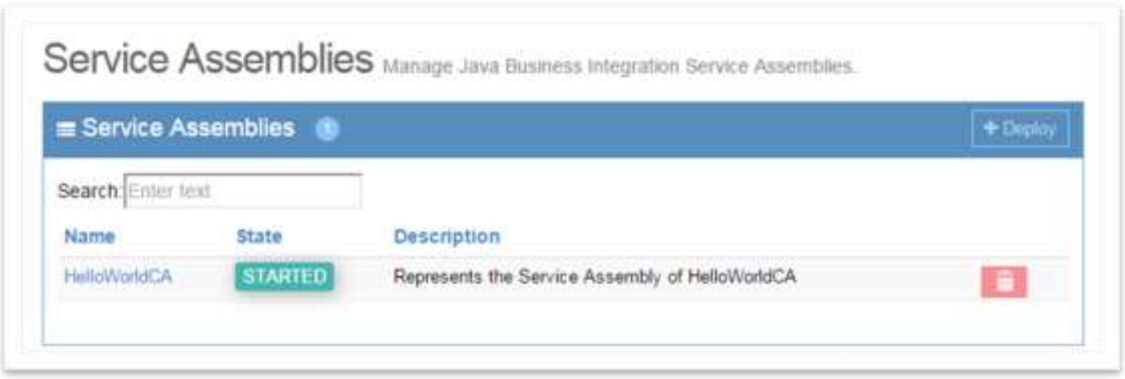


```
<connections>
    <connection>
        <consumer endpoint-name="casaPort1" service-name="ns1:CompositeApp3Service1"/>
        <provider endpoint-name="newWSDLPortTypeRole_myRole" service-name="ns2:PartnerLink1"/>
    </connection>
    <connection>
        <consumer endpoint-name="newWSDLPortTypeRole_partnerRole" service-name="ns2:PartnerLink2"/>
        <provider endpoint-name="casaPort2" service-name="ns1:CompositeApp3Service2"/>
    </connection>
</connections>
```

Connection set in JBI.xml

8.2.1 Deploy a new service assembly

Select Service Assemblies in the main menu.

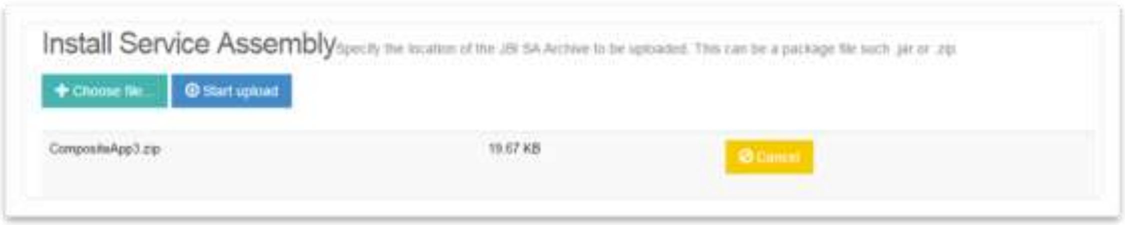

Service Assemblies Manage Java Business Integration Service Assemblies.

Service Assemblies — + Deploy

Search: Enter text

Name	State	Description
HelloWorldCA	STARTED	Represents the Service Assembly of HelloWorldCA

Click on the button deploy + Deploy then chose the file you want to deploy. + Choose file...

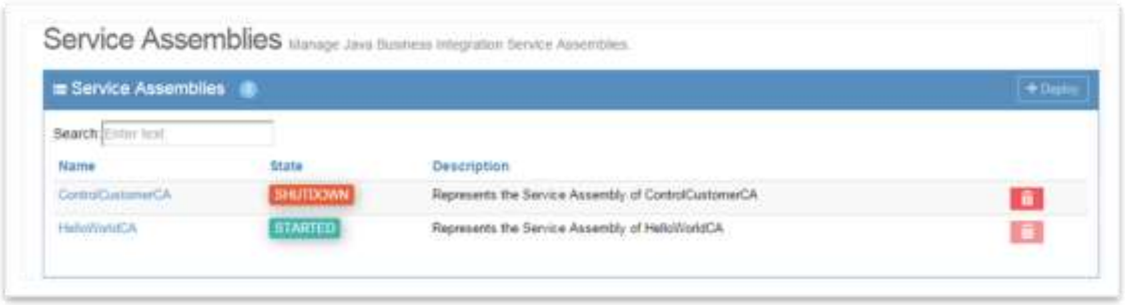

Install Service Assembly Specify the location of the JBI SA Archive to be uploaded. This can be a package file such .jar or .zip

CompositeApp3.zip 19.67 KB Cancel

Once you choose the file, click on Start upload or Cancel if you want to cancel the deployment.

8.3 Undeploy a service assembly

You can undeploy a Service Assembly in a state shutdown only.


Service Assemblies Manage Java Business Integration Service Assemblies.

Service Assemblies — + Deploy

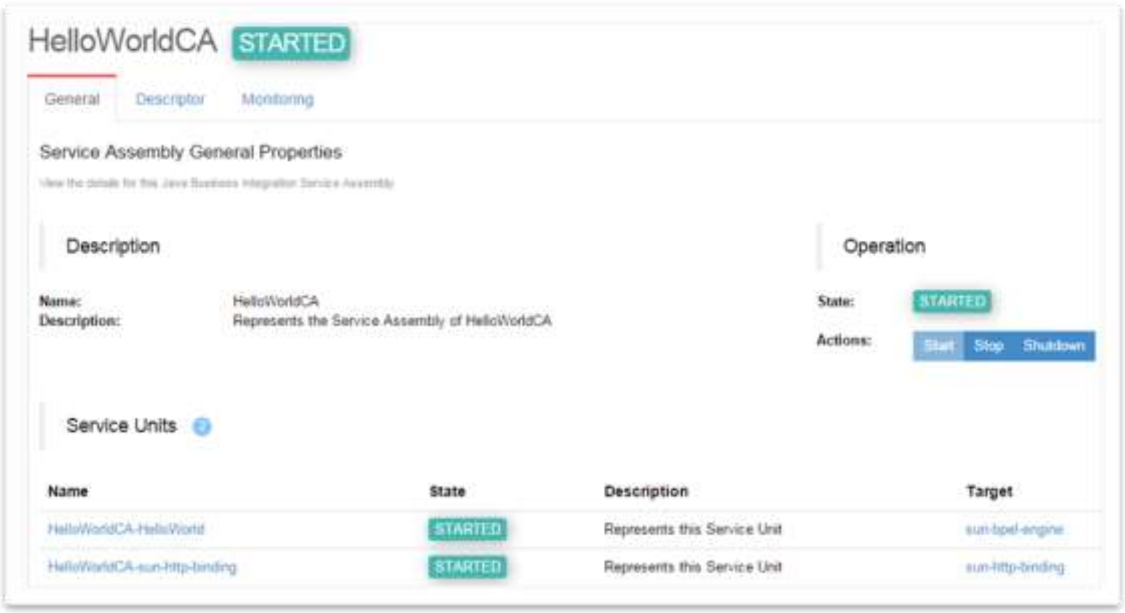
Search: Enter text

Name	State	Description
ControlCustomerCA	SHUTDOWN	Represents the Service Assembly of ControlCustomerCA
HelloWorldCA	STARTED	Represents the Service Assembly of HelloWorldCA

To undeploy a shutdown SA, click on the associated bin icon and confirm it.

8.4 Service assembly detail

8.4.1 General



Service Assembly General Properties

View the details for this Java Business Integration Service Assembly

Description

Name:	HelloWorldCA
Description:	Represents the Service Assembly of HelloWorldCA

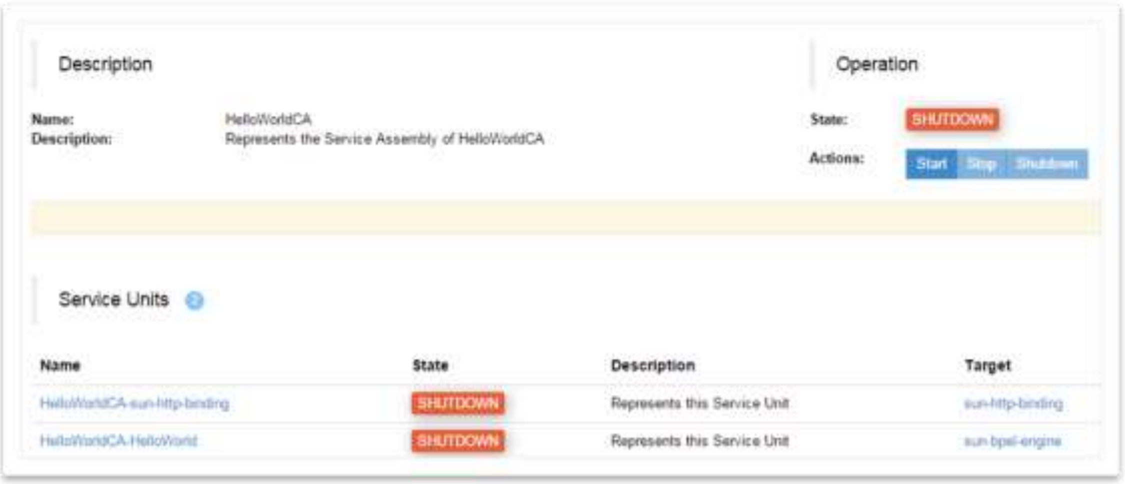
Operation

State:	STARTED
Actions:	Start Stop Shutdown

Service Units

Name	State	Description	Target
HelloWorldCA-HelloWorld	STARTED	Represents this Service Unit	sun-bpel-engine
HelloWorldCA-sun-http-binding	STARTED	Represents this Service Unit	sun-http-binding

The General tab is used to manage the Service Assembly life cycle. To start, stop or shutdown the Service Assembly, just click on the relevant button.



Description

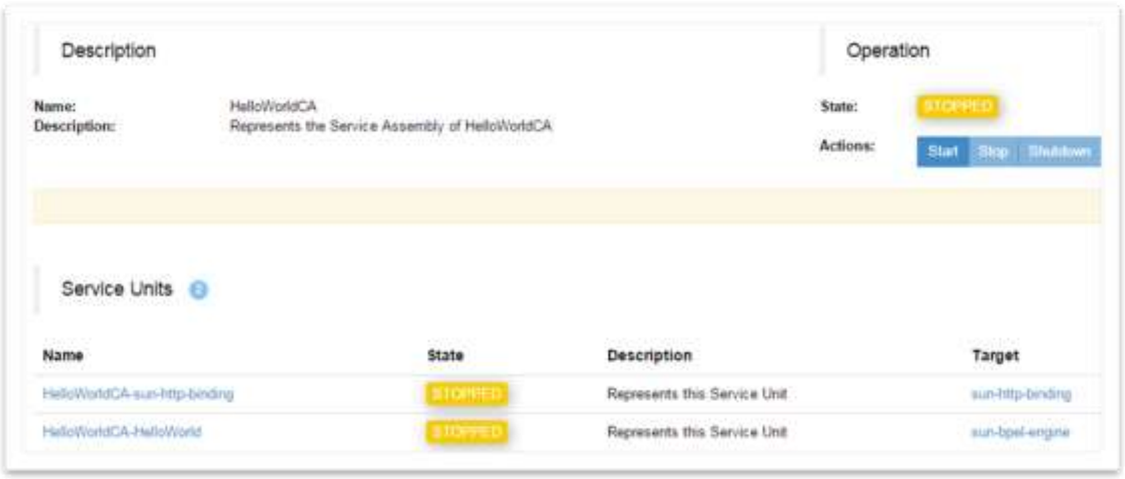
Name:	HelloWorldCA
Description:	Represents the Service Assembly of HelloWorldCA

Operation

State:	SHUTDOWN
Actions:	Start Stop Shutdown

Service Units

Name	State	Description	Target
HelloWorldCA-sun-http-binding	SHUTDOWN	Represents this Service Unit	sun-http-binding
HelloWorldCA-HelloWorld	SHUTDOWN	Represents this Service Unit	sun-bpel-engine



Description

Name: HelloWorldCA
Description: Represents the Service Assembly of HelloWorldCA

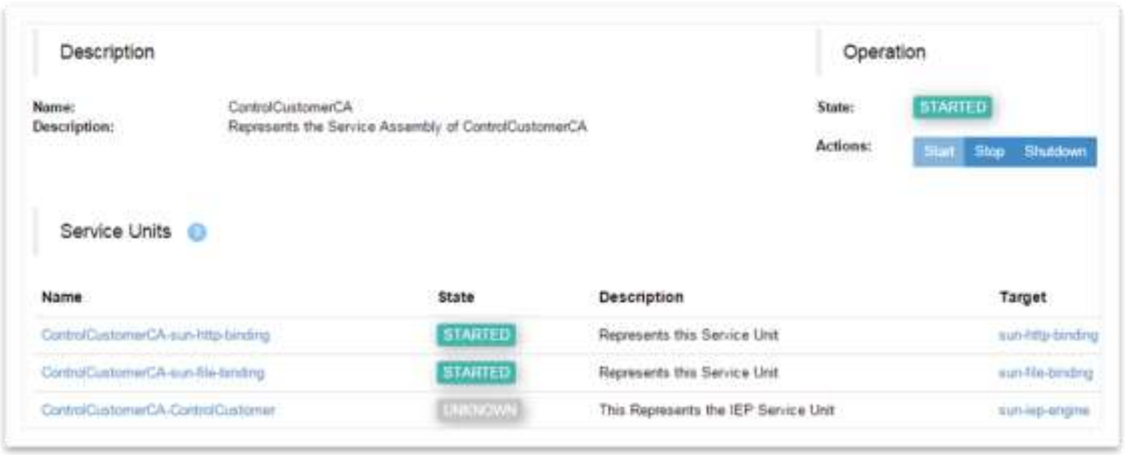
Operation

State: STOPPED
Actions: Start | Stop | Shutdown

Service Units

Name	State	Description	Target
HelloWorldCA-sun-http-binding	STOPPED	Represents this Service Unit	sun-http-binding
HelloWorldCA-HelloWorld	STOPPED	Represents this Service Unit	sun-bpel-engine

Note the service unit states are identical to the SA state. Nevertheless, it can happen in some cases that the console is unable to ascertain the state of a service unit. It is a sign that something wrong happened during SU deployment.



Description

Name: ControlCustomerCA
Description: Represents the Service Assembly of ControlCustomerCA

Operation

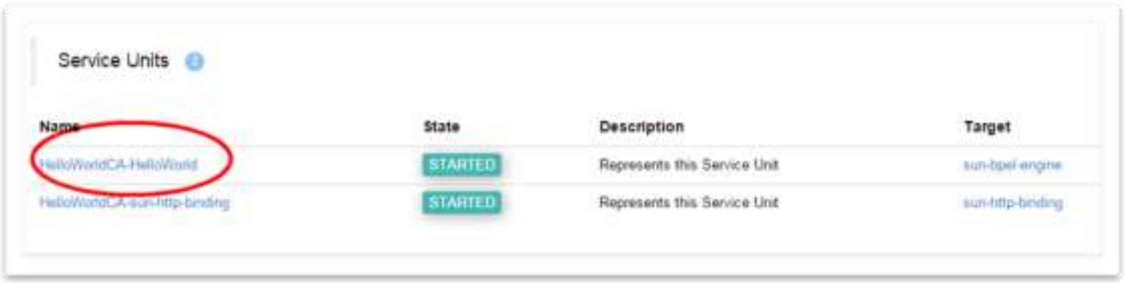
State: STARTED
Actions: Start | Stop | Shutdown

Service Units

Name	State	Description	Target
ControlCustomerCA-sun-http-binding	STARTED	Represents this Service Unit	sun-http-binding
ControlCustomerCA-sun-file-binding	STARTED	Represents this Service Unit	sun-file-binding
ControlCustomerCA-ControlCustomer	UNKNOWN	This Represents the IEP Service Unit	sun-iep-engine

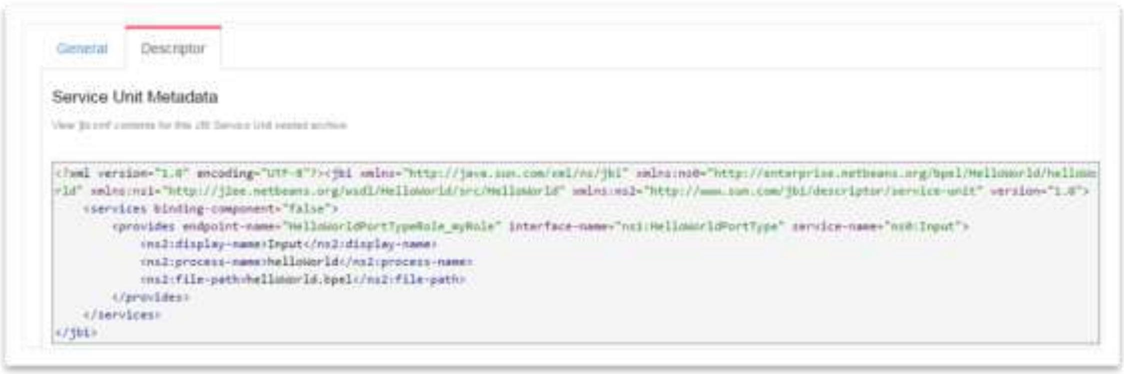
In the Service Unit list, note the target name is corresponding to the component that deploys the service unit.

8.4.2 Service Unit overview



Service Units

Name	State	Description	Target
HelloWorldCA-HelloWorld	STARTED	Represents this Service Unit	sun-bpel-engine
HelloWorldCA-sun-http-binding	STARTED	Represents this Service Unit	sun-http-binding



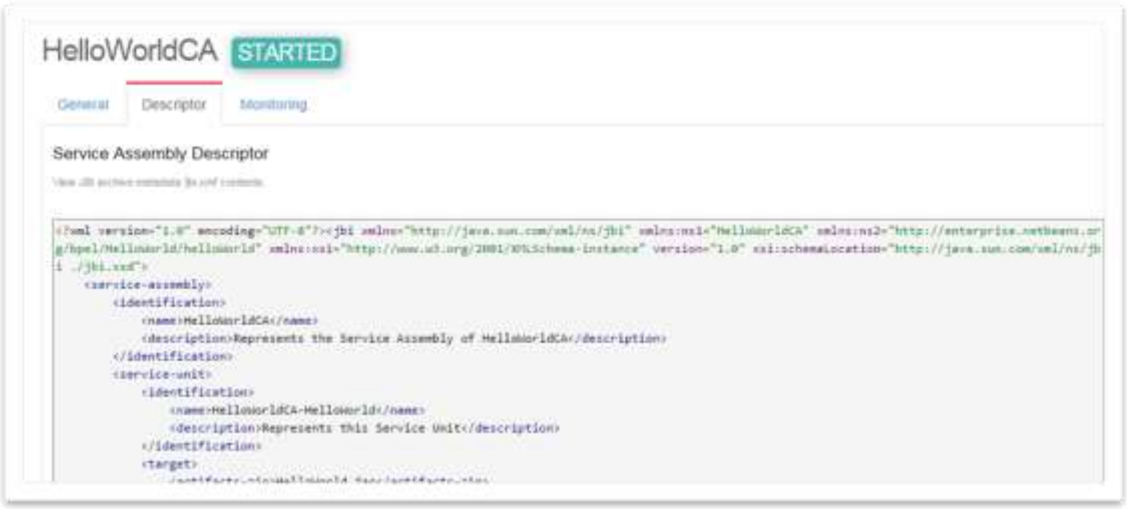
Service Unit Metadata

View jbi.xml contents for this JBI Service Unit nested archive

```
<?xml version="1.0" encoding="UTF-8"?><jbi xmlns="http://java.sun.com/xml/ns/jbi" xmlns:ns0="http://enterprise.netbeans.org/bpel/HelloWorld/hellowo
rld" xmlns:ns1="http://j2ee.netbeans.org/wsdl/HelloWorld/src/HelloWorld" xmlns:ns2="http://www.sun.com/jbi/descriptor/service-unit" version="1.0">
    <services binding-component="false">
        <provides endpoint-name="HelloWorldPortTypeRole_myRole" interface-name="ns1:HelloWorldPortType" service-name="ns0:Input">
            <ns2:display-name>Input</ns2:display-name>
            <ns2:process-name>helloWorld</ns2:process-name>
            <ns2:file-path>helloWorld.bpel</ns2:file-path>
        </provides>
    </services>
</jbi>
```

The descriptor tab displays the jbi.xml of the Service Unit.

8.4.3 Service assembly descriptor



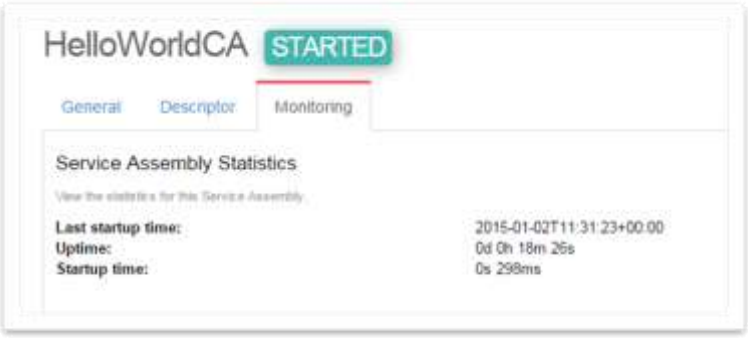
Service Assembly Descriptor

View JBI archive metadata jbi.xml contents.

```
<?xml version="1.0" encoding="UTF-8"?><jbi xmlns="http://java.sun.com/xml/ns/jbi" xmlns:ns1="HelloWorldCA" xmlns:ns2="http://enterprise.netbeans.or
g/bpel/HelloWorld/helloWorld" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" version="1.0" xsi:schemaLocation="http://java.sun.com/xml/ns/jb
i ./jbi.xsd">
    <service-assembly>
        <identification>
            <name>HelloWorldCA</name>
            <description>Represents the Service Assembly of HelloWorldCA</description>
        </identification>
        <service-unit>
            <identification>
                <name>HelloWorldCA-HelloWorld</name>
                <description>Represents this Service Unit</description>
            </identification>
            <target>
```

The tab service assembly displays the file jbi.xml associated with the service assembly.

8.4.4 Service assembly monitoring



Service Assembly Statistics

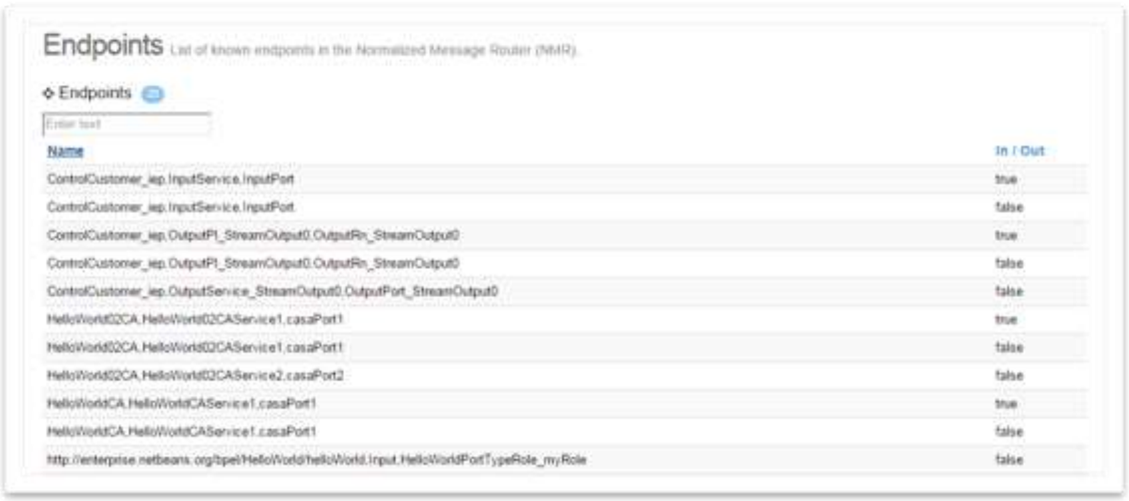
View the statistics for this Service Assembly

Last startup time:	2015-01-02T11:31:23+00:00
Uptime:	0d 0h 18m 26s
Startup time:	0s 298ms

Monitoring the service assembly provides time statistic on the service assembly.

9 Endpoints

Provides the endpoint list registered in OpenESB.



Endpoints List of known endpoints in the Normalized Message Router (NMR)

Endpoints

Enter text

Name	In / Out
ControlCustomer_iep.InputService.InputPort	true
ControlCustomer_iep.InputService.InputPort	false
ControlCustomer_iep.OutputPl_StreamOutput0.OutputRn_StreamOutput0	true
ControlCustomer_iep.OutputPl_StreamOutput0.OutputRn_StreamOutput0	false
ControlCustomer_iep.OutputService_StreamOutput0.OutputPort_StreamOutput0	false
HelloWorld02CA.HelloWorld02CAService1.casaPort1	true
HelloWorld02CA.HelloWorld02CAService1.casaPort1	false
HelloWorld02CA.HelloWorld02CAService2.casaPort2	false
HelloWorldCA.HelloWorldCAService1.casaPort1	true
HelloWorldCA.HelloWorldCAService1.casaPort1	false
http://enterprise.netbeans.org/bpel/HelloWorld/helloWorld.Input.HelloWorldPortTypeRole_myRole	false

In/ Output indicates if the endpoint is an inbound or outbound endpoint.

Comment: Some endpoints names finish by the word “redeliveryLoopback”, for example http://www.sun.com/jbi/qos/redelivery,sun-http-binding,redeliveryLoopback.

These endpoints are generated by OpenESB for “Quality of Services” purposes.

10 What's next?

For a better understanding of component and Service assembly, please have a look at JBI specifications.

OpenESB installation and deployment can be defined by script too. Please have a look on the document 770-004 OpenESB Admin commands CLI.

For Application configurations and application variables, please have a look at our document 770-006 OE Multiple environments.

11 Help and support

Pymma is deeply involved in the community and offers services and consulting on OpenESB. Pymma has professional services that can assist you with the development of your service design, implementation and ongoing management. All our skills and background are based on our extensive first-hand experience and industry-leading methods.

Pymma releases an OpenESB Enterprise Edition with many additional enterprise features and professional support.

In addition to OpenESB development, Pymma designed a new service-based development process named Rebecca to help business, architect and development team during the design and the implementation of their service-oriented projects with OpenESB or any other service-based development tool.

Feel free to contact us by email at contact@pymma.com for any further information on our OpenESB Services.