



**cockpit**  
IT Service Manager

## **Monitoring engine management - Linux**

**FAQ document**

## Table of contents

Introduction.....	3
I. Object.....	3
II. Architecture.....	3
Prerequisites.....	4
I. Software.....	4
II. External libraries (drivers).....	4
III. Configuration.....	5
A. Operating system.....	5
B. Server specifications.....	5
C. Memory allocation.....	6
IV. Network traffic flows.....	6
A. From Cockpit ITSM - Monitoring Engine to Cockpit ITSM - Portal.....	6
B. From Cockpit ITSM - Monitoring Engine to monitored elements.....	6
Installation.....	8
I. Engine creation.....	8
II. Engine installation.....	9
A. System configuration.....	9
B. Service installation.....	9
III. Engine configuration.....	12
A. Functional settings.....	12
B. SMTP gateway.....	13
C. Local settings.....	13
IV. Start the service.....	14
V. Test.....	14
Administration.....	15
I. File location.....	15
II. Logs.....	15
III. Start/Stop.....	16
IV. Backups.....	16
V. Updates.....	16
VI. Reset.....	17
VII. Monitoring.....	17
A. Status.....	17
B. Synchronization.....	19

# Introduction

## I. Object

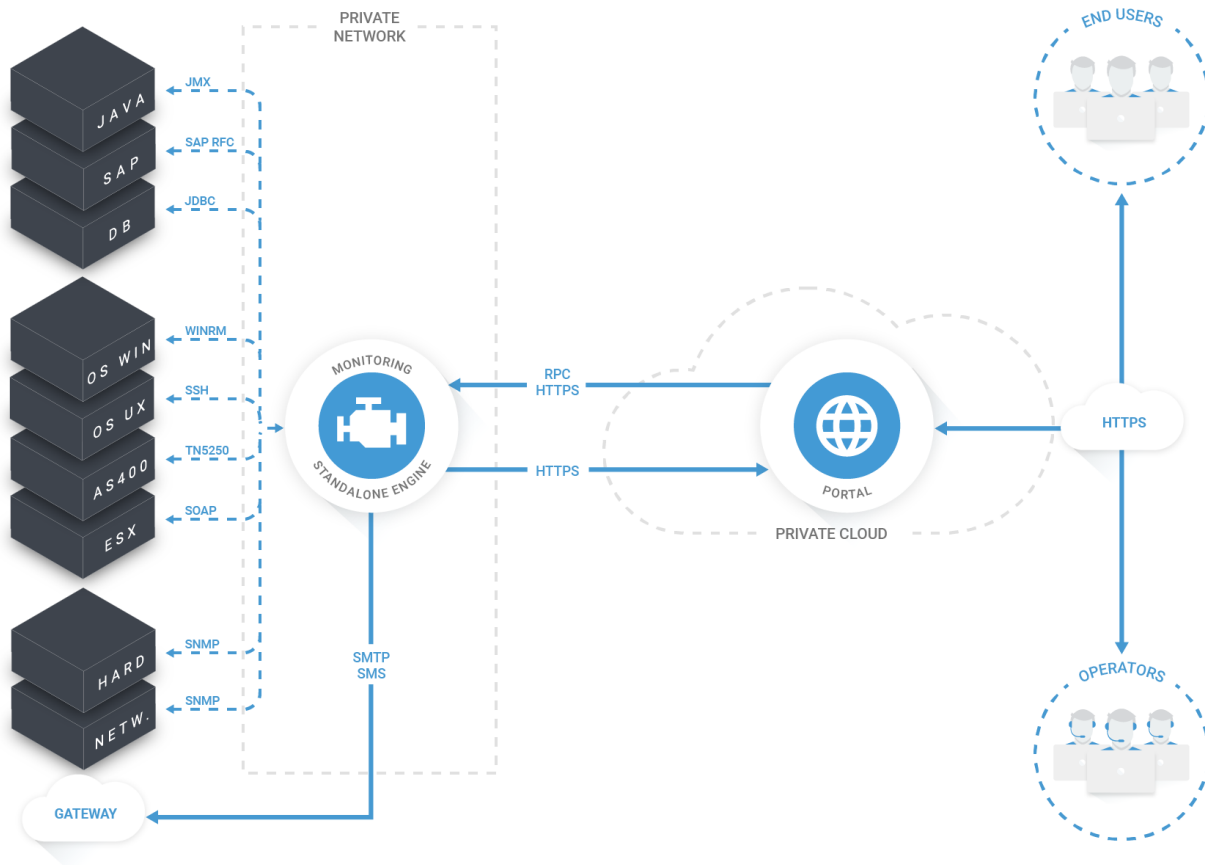
This document describes how to install a Cockpit ITSM - Monitoring Engine on a host running the the Linux operating system.

It describes how to administrate the monitoring engine.

It indicates the configuration files and logs and how to access them.

## II. Architecture

A monitoring engine uses API access to communicate with the portal.



## Prerequisites

### I. Software

Usage	Software	Version
Cockpit ITSM - Monitoring Engine	koaly-exp-engine-vX.Y.Z-setup.bin	<a href="https://download.cockpit-itsm.com/exp/stable/">https://download.cockpit-itsm.com/exp/stable/</a>

### II. External libraries (drivers)

Some libraries (drivers) are required to connect to the elements to be monitored (databases, applications, etc.). These libraries must be downloaded from their respective web sites.

The table below lists the libraries to download according to the elements to monitor.

Element to monitor	Library	Download
ERP - SAP - ABAP	SAP JAVA Connector 3 sapjco3.jar, libsapjco3.so	<a href="https://support.sap.com/swdc">https://support.sap.com/swdc</a>
ERP - SAP - JAVA	sap.com-tc-bl-pj_jmx-api.jar sap.com-tc-exception-impl.jar sap.com-tc-je-clientlib-impl.jar sap.com-tc-je-leanClient.jar sap.com-tc-logging-java-impl.jar	<a href="https://support.sap.com/swdc">https://support.sap.com/swdc</a>
Database - DB2	DB2 connector db2jcc.jar, db2jcc_license_cu.jar	<a href="http://www-01.ibm.com/support/docview.wss?uid=swg21363866">http://www-01.ibm.com/support/docview.wss?uid=swg21363866</a>
Database - MaxDB	MaxDB connector sapdbc.jar	<a href="http://service.sap.com/swdc">http://service.sap.com/swdc</a>
Database - MSSQL	SQL Server connector jtds-X.jar	<a href="http://sourceforge.net/projects/jtds/files/">http://sourceforge.net/projects/jtds/files/</a>
Database - MySQL	MySQL connector mysql-connector-java-5.X-bin.jar	<a href="http://dev.mysql.com/downloads/connector/j/5.0.html">http://dev.mysql.com/downloads/connector/j/5.0.html</a>
Database - Oracle	Oracle JDBC connector ojdbcX.jar	<a href="http://www.oracle.com/technetwork/database/enterprise-edition/jdbc-112010-090769.html">http://www.oracle.com/technetwork/database/enterprise-edition/jdbc-112010-090769.html</a>
Database - PostgreSQL	PostgreSQL connector postgresql-X.jdbc4	<a href="http://jdbc.postgresql.org/download-.html">http://jdbc.postgresql.org/download-.html</a>
Database - SAP HANA	SAP HANA connector ngdbc.jar	<a href="http://service.sap.com/swdc">http://service.sap.com/swdc</a>
Database - Sybase	Sybase connector jtds-X.jar	<a href="http://sourceforge.net/projects/jtds/files/">http://sourceforge.net/projects/jtds/files/</a>
	Sybase secured connector jTDSXd.jar, jconnXd.jar, cryptoj*.jar	<a href="http://service.sap.com/swdc">http://service.sap.com/swdc</a>

### III. Configuration

#### A. Operating system

The supported operating systems are:

- **Ubuntu server last LTS (64 bits)**
- **Debian last stable version (64 bits)**

The system must be installed in **english (US)**.

#### B. Server specifications

Volume	Element	Specifications
Up to 500 monitoring checks Up to 50 monitored equipments	Architecture	Virtual server
	Processor	2 cores - 64 bits
	Memory	4 Gb
	Storage	10 Gb for the engine
Up to 1000 monitoring checks Up to 100 monitored equipments	Architecture	Virtual server
	Processor	2 cores - 64 bits
	Memory	8 Gb
	Storage	10 Gb for the engine
Up to 2000 monitoring checks Up to 200 monitored equipments	Architecture	Virtual server
	Processor	2 cores - 64 bits
	Memory	12 Gb
	Storage	10 Gb for the engine

## C. Memory allocation

Edit the systemd script.

```
sudo vim /etc/systemd/system/koaly-exp-engine.service
```

Update the value of the "RT\_MAX\_HEAP" parameter.

Update the value of the "WorkingDirectory", "ExecStart", "ExecStop" parameter if the engine is not installed in the default directory.

```
RT_MAX_HEAP=xxxxx
ExecStart=/home/koaly/exp/engine/koaly-exp-engine-service -u koalyeng -g koalyeng -p /var/run/koaly-exp-engine.pid -c standalone start
ExecStop=/home/koaly/exp/engine/koaly-exp-engine-service -p /var/run/koaly-exp-engine.pid stop
```

The following table contains the recommended memory allocation for a standard deployment of a monitoring engine on a dedicated machine.

Physical RAM	Engine
4 Gb	3072m
8 Gb	6144m
12 Gb	10240m

## IV. Network traffic flows

### A. From Cockpit ITSM - Monitoring Engine to Cockpit ITSM - Portal

In order to synchronize with the Cockpit ITSM - Portal, the Cockpit ITSM - Monitoring Engine uses the HTTPS protocol (default port: 443).

### B. From Cockpit ITSM - Monitoring Engine to monitored elements

This table makes the inventory of network ports which must be opened between monitored elements and Cockpit ITSM - Monitoring Engine.

Check type	Protocol	Default value
Ping	ICMP	-
Network / SNMP	SNMP	161
System - Unix / Linux	SSH	22
System - Windows	Secured WinRm	5986
	WinRm	5985
System - AS400	TN5250	23
System - ESX	SOAP	443

SAP	JCO	SAP Dispatcher: 32XX (XX = system number)
		SAP Gateway: 33XX (XX = system number)
		SAP Message Server: 36XX (XX = system number)
Database - DB2	JDBC	50000
Database - HANA		3<Instance number>15
Database - MaxDB		7210
Database - MSSQL		1433
Database - MySQL		3306
Database - PostgreSQL		5432
Database - Oracle		1521 or 1527
Database - Sybase		4100

## Installation

### I. Engine creation

Connect to your Cockpit ITSM - Portal.

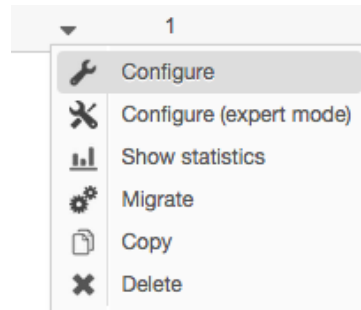
Use "Administration / Sub-systems / Engines" menu.

Add a new engine.

Save.

New engine	
ID:	<input type="text" value="1"/>
Description:	<input type="text" value="Standalone 1"/>

Edit the engine configuration.



Select the tab "Technical settings".

Check option "Standalone".

Choose a password for this engine or generate one using the "magic wand" button.

Remember ID and password for later.

Engine	
ID:	1
Description:	<input type="text" value="Standalone 1"/>
Type:	<input checked="" type="checkbox"/> Standalone
Engine password (standalone mode):	<input type="text" value="lhEXGRYuW8whRK4P"/> 



## II. Engine installation

### A. System configuration

Important: Please make sure the OS is up-to-date prior to this installation and is running the latest kernel. Otherwise, the installation of certain packages may fail as they require package versions not available in your installation.

Connect to the system.

Update the system.

```
sudo aptitude update
sudo aptitude safe-upgrade
sudo reboot
```

If the application is installed on a virtual machine, service startup may be very slow right after the machine has been rebooted. This is due to the random number generator that does not generate enough randomness immediately after a reboot. To avoid this problem, it is recommended to install the `haveged` package.

```
sudo aptitude install haveged
```

To improve security, the engine service will run as an unprivileged user (`koalyeng`).

```
sudo adduser --system --home /dev/null --no-create-home --group koalyeng
```

### B. Service installation

Make the installer executable.

```
chmod +x ./koaly-exp-engine-vX.Y.Z-setup.bin
```

Launch the installer.

```
sudo ./koaly-exp-engine-vX.Y.Z-setup.bin
```

We recommend keeping the default installation directory.

If you do not want to use the default installation directory, specify a directory to use in a File System, example: `/File_System/engine`

Option for very high level security system:

If you want to use a system-specific encryption key, use "Cockpit IT Service Manager - Portal installation - System-specific encryption key" documentation.

1/ Generate the `koaly.key` file

2/ Copy the `koaly.key` file to `"/home/koaly/exp/engine/conf"`

We now need to adjust ownership and permissions for the directory we created. To do so, we recommend using the shell script provided with the application.

```
sudo /bin/sh /home/koaly/exp/engine/bin/post-install.sh
```

If you plan to monitor databases, copy the JDBC drivers corresponding to your databases to the directory `ext/lib`.

If you plan to monitor SAP systems, copy the SAP JCo module to `ext/lib`.

Create the file `"/home/koaly/exp/engine/conf/standalone.config"` if it does not exist.

```
sudo vim /home/koaly/exp/engine/conf/standalone.config
```

Add or adapt the following information:

```
# Engine ID - Unique identifier for each engine in the system
koaly.server.id=0

# Server password - Unique password for each engine in the system
koaly.server.password=password_configured_for_this_engine


# URL to the Cockpit ITSM - Portal to synchronize with
# If you use a SaaS portal, set the URL https://xxxxxxxxxxxxx.cockpit-itsm.com
koaly.portal.url=http://public_URL_of_your_portal/

# Certificate fingerprint
# Uncomment the following line ONLY if you use a non valid SSL certificate
#koaly.portal.cert.fingerprint=xxxxxxxxxxxxxx

# Proxy configuration
# Use these properties to configure a proxy server for auto-update and synchronization.
# Note that the proxy will only be used for connections to the portal and *not* by the monitoring module.
# Host and port are mandatory, username and password are optional.
# Uncomment the following 2 or 4 lines if you want to configure a proxy:
#koaly.proxy.host=replace with host name or IP of proxy server
#koaly.proxy.port=replace with proxy port
#koaly.proxy.username=replace with username
#koaly.proxy.password=replace with password
```

koaly.server.id: must be the same as the engine ID on the Cockpit ITSM - Portal.

koaly.server.password: must be the same as the engine password on the Cockpit ITSM - Portal.

Engine	
ID:	1
Description:	Standalone 1
Type:	<input checked="" type="checkbox"/> Standalone
Engine password (standalone mode):	lhEXGRYuW8whRK4P 

koaly.portal.url: The URL must be reachable from the engine

koaly.portal.cert.fingerprint: If the engine refuses to validate the certificate provided by the server, add the SHA-1 fingerprint of your portal certificate.

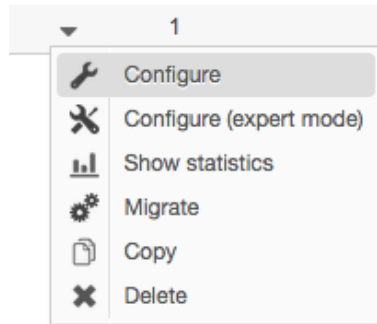
Note: If the certificate is OK, this parameter should be commented out by adding a hash sign (#) at the beginning of the line. The following steps can be skipped in this case.

Proxy configuration: Use these parameters when you have a proxy between the monitoring engine and the portal.

Note: The connections via a proxy have been tested with the proxies Squid 3 and Privoxy.

### III. Engine configuration

Connect to your Cockpit ITSM - Portal.  
 Open the "Administration / Sub-systems / Engines" menu.  
 Edit the engine configuration.



#### A. Functional settings

Select the tab "Functional settings".  
 The engine configuration is reloaded every day.  
 You can select time for this reloading.

Engine	
ID:	1
Description:	Standalone 1
Configuration reload time:	<input type="text" value="12:15"/>

Activate the desired modules and options in the "Monitoring and Infrastructure" section.

Monitoring and Infrastructure			
Module status:	<input checked="" type="checkbox"/> Active		
Server inventory:	<input checked="" type="checkbox"/> Active		
Monitoring - DB:	<input checked="" type="checkbox"/> Active		
Monitoring - Jobs:	<input checked="" type="checkbox"/> Active		
Monitoring - Network:	<input checked="" type="checkbox"/> Active	SNMP trap - Status:	<input checked="" type="checkbox"/> Active
		SNMP trap - Port:	<input type="text" value="16100"/>
		SNMP trap - Community:	<input type="text" value="public"/>
Monitoring - SAP:	<input checked="" type="checkbox"/> Active		
Monitoring - AS400:	<input checked="" type="checkbox"/> Active		
Monitoring - ESX:	<input checked="" type="checkbox"/> Active		
Monitoring - UNIX, Linux, BSD:	<input checked="" type="checkbox"/> Active		
Monitoring - Web:	<input checked="" type="checkbox"/> Active		
Monitoring - Windows:	<input checked="" type="checkbox"/> Active		

Notes:

If you enable "Monitoring - Network - SNMP", your engine will listen for SNMP traps on the specified port. You can send SNMP traps to the engine IP address and port.

If you check "Monitoring - DB" option, you have to copy the JDBC driver corresponding to your database to the directory ext/lib.


If you check "Monitoring - SAP" option, you have to copy the SAP JCo module to ext/lib.

If you check "Monitoring - Windows" option, you have to use WinRM protocol to connect to Windows systems. WMI connections are not possible from a Linux machine.

## B. SMTP gateway

The monitoring engine can use the global settings to send emails. These settings are set in the "Administration / Settings / SMTP gateway" menu. In this case, check the "Use global settings" option.

If you want to use another SMTP gateway (e.g. a local SMTP server), uncheck the "Use global settings" option and provide the necessary configuration data.

Connection settings:	<input type="checkbox"/> Use global settings		
Server:	<input type="text" value="smtp.gateway.net"/>		
Port:	<input type="text" value="465"/>		
Secure connection (TLS):	<input checked="" type="checkbox"/> Enabled		
Authentication:	<input checked="" type="checkbox"/> Enabled	User:	<input type="text" value="myuser"/>
		Password:	<input type="password" value="....."/>
Electronic mailbox:	<input type="text" value="no_answer@itsm-cockpit.com"/>		
Description:	<input type="text" value="ITSM Cockpit - Support"/>		

## C. Local settings

In the configuration of the monitoring engine, the "Local settings" is visible only after the first synchronization.

The "Settings" field allows you to update the "standalone.conf" file from the Cockpit ITSM - Portal.

Update the field "Settings" and save:

- The consistency of the configuration is checked.
- The monitoring engine updates its configuration from the portal and delete the old one, then service is restarted.
- During the restart the engine status is "Update in progress...".
- When the update is complete, the engine status is "Up to date".

**Important: Changes made to the "Configuration" field from the portal take precedence over changes made locally directly to the file.**

So when the "standalone.config" file is modified on the equipment, the modifications can be replaced by the configuration set in the portal during the next synchronization.

Configuration file (standalone.config)	
<b>ID:</b>	0
<b>Status:</b>	Up to date
<b>Configuration:</b>	<pre>##### # Configuration file for the engine - standalone #####  # Engine ID - Unique identifier for each engine in the system koaly.server.id=0 # Server password - Unique password for each engine in the system koaly.server.password=password  # URL of the EXP portal to synchronize with koaly.portal.uri=https://xxxx.cockpit-itsm.com/  # Certificate fingerprint # If the engine refuses the certificate, uncomment the following line # and replace "xxxxxxxxxxxxxx" with the server certificate's SHA-1 fingerprint #koaly.portal.cert.fingerprint=xxxxxxxxxxxxxx</pre>

#### IV. Start the service

Connect to your server and start the service "Koaly EXP Engine".

```
sudo systemctl start koaly-exp-engine.service
```

#### V. Test

Connect to the Cockpit ITSM - Portal.

Select the engine list (Home / Dashboard).

The newly installed engine should be present in this list.

The status must be green after a couple of minutes.

	Description	Type	Status	Last signal
	Standalone 1	Standalone		10/09/2015 20:18

## Administration

### I. File location

Directory	Description
/home/koaly/exp/engine	Application files
/home/koaly/exp/engine/conf	Application configuration files
/home/koaly/exp/engine/logs	Application log files


### II. Logs

You can request the engine log files from the portal.

Open the engine information panel from the engine list.

Request log file.

Engine Information	
ID:	1
Description:	Standalone 1
Type:	Standalone
Version:	2.4.5
Status	
Status:	Engine is OK
Last synchronization:	<span style="color: green;">●</span> 11/09/2015 12:34
Last signal:	<span style="color: green;">●</span> 11/09/2015 12:34
Load:	0,00
Active Checks:	0
Late checks:	0
Latest error log:	
Latest log file:	
Reset pending:	No
Log file requested:	No



It is also possible to assess the log files directly on the monitoring engine server.

Name	Description
engine.log	Messages
warn.log	Messages including "error" and "warning"

error.log	Messages including "error"
mail.log	Messages related to sent mail functionality (SMTP gateway)
sms.log	Messages related to sent SMS functionality (SMS gateway)

### III. Start/Stop

Check the engine status.

```
sudo systemctl status koaly-exp-engine.service
```

Stop the engine.

```
sudo systemctl stop koaly-exp-engine.service
```

Start the engine.

```
sudo systemctl start koaly-exp-engine.service
```

### IV. Backups

The monitoring engine does not store data permanently (temporary storage only), it is not necessary to backup the engine server.

If you use a virtual machine, you can take a snapshot of your server after the installation.

### V. Updates

Monitoring engines are automatically updated.



## VI. Reset


In case of a synchronization error, it is possible to request a reset of the engine.

The action will delete temporary data stored by the engine.

Open the engine information panel from the engine list.

Request a reset.

Engine information	
ID:	1
Description:	Standalone 1
Type:	Standalone
Version:	2.4.5
Status	
Status:	Engine is OK
Last synchronization:	<span style="color: green;">●</span> 11/09/2015 13:09
Last signal:	<span style="color: green;">●</span> 11/09/2015 13:08
Load:	0,00
Active Checks:	0
Late checks:	0
Latest error log:	
Latest log file:	
Reset pending:	No
Log file requested:	No

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## VII. Monitoring

### A. Status

Go to "Home / Dashboard" menu.



Check the engine status table.

You can open engine list to check the status of each engine.

	Description	Type	Status	Last signal
	Standalone 1	Standalone	<span style="color: green;">●</span>	10/09/2015 20:18

You can open the engine information panel.

The "Status" table provides information about engine status, load and synchronization status.

Status	
Status:	Engine is OK
Last synchronization:	 11/09/2015 13:20
Last signal:	 11/09/2015 13:20
Load:	0,00
Active Checks:	0
Late checks:	0
Latest error log:	
Latest log file:	
Reset pending:	No
Log file requested:	No

If you want to check a monitoring engine status automatically, the best way is to check the last signal with the following SQL request.


```
SELECT COUNT(engine_id) FROM gen_engines WHERE (UNIX_TIMESTAMP() - UNIX_TIMESTAMP(engine_alert_heartbeat)) > 7200;
```

This request will return 0 if all engines are available.

## B. Synchronization

From the engine information panel, open the synchronization history.

Engine Information	
ID:	1
Description:	Standalone 1
Type:	Standalone
Version:	2.4.5
Status	
Status:	Engine is OK
Last synchronization:	<span style="color: green;">●</span> 11/09/2015 13:09
Last signal:	<span style="color: green;">●</span> 11/09/2015 13:08
Load:	0,00
Active Checks:	0
Late checks:	0
Latest error log:	
Latest log file:	
Reset pending:	No
Log file requested:	No



A detailed list of synchronizations is displayed.

Timestamp	Alerts	Engine -> Portal				Portal -> Engine					
		Cap. pl.		Inventory		Checks	Jobs	Hosts	Inv. Sched.	Other	Anomalies
		System	Database	Inv. (HW)	Inv. (SW)						
15/05/2019 11:51	0	0	0	0	0	0	0	0	0	0	0
15/05/2019 11:50	0	0	1	0	0	0	0	0	0	0	0
15/05/2019 11:49	0	0	0	0	0	0	0	0	0	0	0
15/05/2019 11:48	0	0	0	0	0	0	0	0	0	0	0

The "Anomalies" column indicates consistency problems when the value is greater than "0". Click on the number to see the details, example with an SAP instance on another engine than the equipment on which the Central Services are declared:

« SAP Check with ID=xx uses a SAP instance (Name\_SAP\_Instance) that is not known by the engine X »

Document end