



cockpit
IT Service Manager

Cockpit ITSM installation - Linux

Technical specification

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Introduction

I. Object

This document describes the stages to be followed in order to install a Cockpit IT Service Manager instance on a host running the Linux operating system.

A Cockpit IT Service Manager instance is composed of several elements.

- One database
- One or several portals
- Eventually one or several monitoring engines

II. Assumptions

This installation guide has been written under certain assumptions.

- Database engine will be MariaDB, it will be listening to the default port (3306)
- Search engine will be Solr, it will be listening to the default port (8983)
- Cockpit ITSM - Portal will be listening to the port 80 or 443 (SSL)
- Cockpit ITSM - Manager will be listening to the port 8081

III. Installation order

The Cockpit IT Service Manager components must be installed in a certain order.

1. Database (only one)
2. Manager (one on each server running Portal)
3. Portal (one or several)
4. Search engine (only one)

Prerequisites

I. Software to download

Usage	Software	Download
Database server	MariaDB Server 10 (64 bits)	Repository
Search engine	Apache Solr	https://archive.apache.org/dist/lucene/solr
Cockpit ITSM - Database	SQL file	https://download.cockpit-itsm.-com/exp/stable/
Cockpit ITSM - Portal	koaly-exp-portal-service-XXX-setup	
Cockpit ITSM - Manager	koaly-management-interface-XXX-setup	

II. 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)**.

The **database** and the **portals** need to be installed on machines configured in the same time zone and with system clocks differing less than one minute.

B. Server specifications

Volume	Element	Specifications
Up to 10 operators Up to 200 monitored equipments Up to 3 monitoring engines	Architecture	Single virtual server (Portal + Database)
	Processor	2 cores - 64 bits
	Memory	6 Gb
	Storage	120 Gb
Up to 30 operators Up to 1000 monitored equipments Up to 20 monitoring engines	Architecture	Single virtual server (Portal + Database)
	Processor	4 cores - 64 bits
	Memory	8 Gb
	Storage	160 Gb
Up to 100 operators Up to 5000 monitored equipments Up to 100 monitoring engines	Architecture	Single virtual server (Portal + Database)
	Processor	6 cores - 64 bits
	Memory	16 Gb
	Storage	320 Gb

C. Memory allocation

This installation manual is based on a default deployment: All necessary components are installed on a single machine with 4Gb of physical RAM.

For larger deployments, you will need to adapt the memory allocation for each component according to the total physical RAM of the machine.

To customize memory allocation, you will need to update the configuration of each component individually as described in the following table.

Component	File	Parameter	Default value
Database	/etc/mysql/conf.d/koaly.cnf	innodb_buffer_pool_size	512M
Portal	/etc/init.d/koaly-exp-portal	MAX_HEAP	2048m

The following table contains recommended memory allocation for a standard deployment of all components on a single machine.

Physical RAM	Database	Portal
4 Gb	512M	2048m
6 Gb	1024M	3072m
8 Gb	2048M	6144m
16 Gb	4096M	10240m

Note: For larger deployments, it is recommended to install each component on a separate machine. In this case, the memory allocation should be adapted according to the specific workload of each component.

If your deployment differs from the default setup on a single machine, please contact the support team for sizing recommendations adapted to your specific workload and architecture.

System configuration

I. System update

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.

Update the system.

```
sudo apt-get update
sudo apt-get dist-upgrade
sudo reboot
```

Make sure the local hostname is configured correctly.

```
ping `hostname`
```

If you encounter problems, you may have to add your local hostname to the file `/etc/hosts`.

II. Installation on a virtual machine

If the application is installed on a virtual machine, service startup may be very slow right after the machine as been rebooted. This is due to the random generator that does not generate enough randomness immediately after a reboot.

To avoid this problem, it is recommended to install the `haveged` package.

```
sudo apt-get install haveged
```

III. Groups and users

To improve security, we will take the following precautions.

- The portal service service will run as an unprivileged user (`koalyprt`)
- We need to add this user to the group `koalydoc` to be able to access the documents directory

```
sudo addgroup --system --group koalydoc
sudo adduser --system --home /dev/null --no-create-home --group koalyprt
sudo usermod -a -G koalydoc koalyprt
```

IV. Directories

A. Document

Create the directory `/home/koaly/exp/documents`.

```
sudo mkdir -p /home/koaly/exp/documents/alert/mib
sudo mkdir -p /home/koaly/exp/documents/doc/online
sudo mkdir -p /home/koaly/exp/documents/doc/archive
sudo mkdir -p /home/koaly/exp/documents/report/attachment
sudo mkdir -p /home/koaly/exp/documents/report/specific
sudo mkdir -p /home/koaly/exp/documents/ticket/attachment
sudo mkdir -p /home/koaly/exp/documents/ticket/msg_attachment
```

This directory will contain documents, reports, ticket attachments and SNMP MIB files.

To improve security, we restrict access to this directory to the group "koalydoc".

```
sudo chown -R root:koalydoc /home/koaly/exp/documents/
sudo chmod -R 770 /home/koaly/exp/documents/
```

If you restore files from an existing portal, you will need to update the file permissions as follows:

```
sudo chown -R koalyprt:koalyprt /home/koaly/exp/documents/alert/mib/
sudo chown -R koalyprt:koalyprt /home/koaly/exp/documents/doc/online/
sudo chown -R koalyprt:koalyprt /home/koaly/exp/documents/doc/archive/
sudo chown -R koalyprt:koalyprt /home/koaly/exp/documents/report/attachment/
sudo chown -R koalyprt:koalyprt /home/koaly/exp/documents/report/specific/
sudo chown -R koalyprt:koalyprt /home/koaly/exp/documents/ticket/attachment/
sudo chown -R koalyprt:koalyprt /home/koaly/exp/documents/ticket/msg_attachment/
sudo chmod 644 /home/koaly/exp/documents/alert/mib/*
sudo chmod 644 /home/koaly/exp/documents/doc/online/*
sudo chmod 644 /home/koaly/exp/documents/doc/archive/*
sudo chmod 644 /home/koaly/exp/documents/report/attachment/*
sudo chmod 644 /home/koaly/exp/documents/report/specific/*
sudo chmod 644 /home/koaly/exp/documents/ticket/attachment/*
sudo chmod 644 /home/koaly/exp/documents/ticket/msg_attachment/*
```

B. Update source

If you install Cockpit IT Service Manager instance on a single machine, create the following directories.

- `/home/koaly/update/koaly-exp-db`
- `/home/koaly/update/koaly-exp-engine/ext/lib`
- `/home/koaly/update/koaly-exp-portal/lib`

```
sudo mkdir -p /home/koaly/update/koaly-exp-db
sudo mkdir -p /home/koaly/update/koaly-exp-portal/lib
```

Important: If you install Cockpit IT Service Manager on several machines, you can use a single shared directory or website to store new versions of Cockpit IT Service Manager and external libraries. Cockpit IT Service Manager will connect to this shared directory or website to update current Cockpit IT Service Manager Portals and Engines.

V. Tools and system libraries

During the installation procedure, we will use the following tools and system libraries which may not be installed by default.

- unzip
- authbind
- libfontconfig1

sudo apt-get install unzip authbind libfontconfig1

Database

Note: MariaDB is a binary-compatible replacement for MySQL. The use of MySQL instead of MariaDB is supported - the only difference lies in the name of the package to be installed (mysql-server instead of mariadb-server).

I. Package installation

MariaDB is not (yet) available in the default repositories for all distributions. Hence, we need to register the MariaDB repository with your package manager.

Ubuntu

The package is available in the universe repository.

Debian

```
sudo apt-get install python-software-properties
sudo apt-key adv --recv-keys --keyserver keyserver.ubuntu.com 0xc9cb082a1bb943db
sudo add-apt-repository 'ddeb http://ftp.igh.cnrs.fr/pub/mariadb/repo/10.0/debian wheezy main'
sudo apt-get update
```

Note: If you get a warning that the repository does not exist, please check the following URL for an updated list of mirrors: <https://downloads.mariadb.org/mariadb/repositories/>

Install the MariaDB server packages.

Ubuntu

```
sudo apt-get install mariadb-server
```

Note: If you encounter problems with MariaDB version, verify the presence of a mariadb.list file in the /etc/apt/sources.list.d directory. If necessary edit the mariadb.list file and comment the "deb" and "deb-src" lines

Debian

```
sudo apt-get install mariadb-server
```

Note: If the installation fails due to dependency problems, you might want to try to fix the version of the offending packages. For example, if a specific version of mysql-common (5.5.34+maria-1~precise in our example) is needed.

```
sudo apt-get install mariadb-server libmysqlclient18=5.5.34+maria-1~precise mysql-common=5.5.34+maria-1~precise
```

Note: Alternatively, you can use `apt-get` instead which will propose possible solutions to choose from.

```
sudo apt-get install mariadb-server
```

Start/Stop MariaDB to make sure it starts and stops correctly.

```
sudo systemctl stop mysql
sudo systemctl start mysql
```

Connect to MariaDB to test its availability.

Ubuntu

```
sudo mysql
```

Debian

```
mysql -u root -p
```

II. Configuration

Note: The location and structure of the MariaDB configuration file (`my.cnf`) may vary with different versions of the package and between different distributions. We use the default configuration and override only certain parameters.

```
sudo vim /etc/mysql/mariadb.conf.d/99-cockpit.cnf
```

Add the following text, then save the file.

```
[mysqld]
# Set default character set
character-set-server = utf8mb4
character_set_server = utf8mb4
collation_server = utf8mb4_unicode_ci
collation-server = utf8mb4_unicode_ci

# Try number of CPU's*2 for thread_concurrency
thread_concurrency = 4

# Instead of skip-networking the default is now to listen only on
# localhost which is more compatible and is not less secure.
bind-address = 127.0.0.1

# Fine Tuning
max_connections = 800
optimizer_search_depth=5

# InnoDB

# InnoDB is enabled by default with a 10MB datafile in /var/lib/mysql/.
```

```
# Read the manual for more InnoDB related options. There are many!
default_storage_engine = InnoDB

# you can't just change log file size - this requires a special procedure
innodb_log_file_size = 256M
innodb_buffer_pool_size = 512M
innodb_log_buffer_size = 32M
innodb_file_per_table = 1

# Binary logs
log-bin = mysql-bin
expire_logs_days = 10
log_bin_trust_function_creators = 1

# Replication

# For the master server
# server-id = 1

# For the slave server
# log-bin
# server-id = 2
# master-host =
# master-port = 3306
# master-user = replication
# master-password =
```

As we have changed the log file size, we need to stop the server and delete the current log files first.

```
sudo systemctl stop mysql
sudo rm /var/lib/mysql/ib_logfile*
```

Restart the MariaDB server and test the configuration.

```
sudo systemctl start mysql
```

Ubuntu

```
sudo mysql
```

Debian

```
mysql -u root -p
```

Check the log file of MariaDB for errors.

```
sudo cat /var/log/syslog
```

III. Creation of the Cockpit ITSM - Database

Connect to the database server.

Ubuntu

```
sudo mysql
```

Debian

```
mysql -u root -p
```

Create the "koalyexp" database.

```
CREATE DATABASE koalyexp CHARSET utf8 COLLATE utf8_unicode_ci;
```

Create the database user "koalymgr" for the Cockpit ITSM - Manager.

```
CREATE USER 'koalymgr'@'localhost' IDENTIFIED BY 'your_password';  
GRANT SELECT, INSERT, UPDATE, DELETE, CREATE, DROP, INDEX, ALTER, CREATE TEMPORARY TABLES,  
CREATE VIEW, SHOW VIEW, CREATE ROUTINE, ALTER ROUTINE, EXECUTE ON 'koalyexp' . * TO 'koalymgr'@'localhost';
```

Create the database user "koalyprt" for the Cockpit ITSM - Portal.

```
CREATE USER 'koalyprt'@'localhost' IDENTIFIED BY 'your_password';  
GRANT SELECT, INSERT, UPDATE, DELETE, CREATE, EXECUTE, CREATE TEMPORARY TABLES ON 'koalyexp' . * TO 'koalyprt'@'localhost';
```

Important: If you install Cockpit IT Service Manager on several machines, create the database users with 'user'@'%' parameter.

Copy the dump file "koalyexp.sql" to the current working directory.

Restore the SQL dump file.

```
use koalyexp;  
source koalyexp.sql;
```

Quit the SQL client.

```
Exit
```

Restart MariaDB.

```
sudo systemctl restart mysql
```

Check the MySQL log file.

```
sudo systemctl status mysql
```

The file koalyexp.sql is no longer needed and can be removed.

Cockpit ITSM - Manager

I. Prerequisites

The database must be installed and configured before installing Cockpit ITSM - Manager.

II. Service installation

Execute the setup program (administration rights necessary)

```
sudo unzip ./koaly-management-interface-vXXX-setup.zip -d /home/koaly/management-interface
```

Modify the default installation directory (/home/koaly/management-interface) if necessary.

Copy the init script koaly-management-interface in init.d/debian/ to the directory /etc/init.d/.

```
sudo cp /home/koaly/management-interface/init.d/debian/koaly-management-interface /etc/init.d/  
sudo chmod a+x /etc/init.d/koaly-management-interface
```

Note: If you previously modified the default installation directory, you have to modify the path in the init script (/etc/init.d/koaly-management-interface)
APP_DIR=/home/koaly/management-interface

Install the service using the default settings specified in the init script.

```
sudo update-rc.d koaly-management-interface defaults
```

Start the service.

```
sudo service koaly-management-interface start
```

III. Service configuration

Open a web browser.

Navigate to the following address: <https://localhost:8081/> or https://your_server:8081/.

Accept the security exception.

Use the default password (admin123) to connect.

Enter the database connection parameters (configure the database user "koalymgr").

Hit "Next".

Specify the directory or URL that will contain future updates of the Cockpit IT Service Manager components (default is /home/koaly/update).

Specify the client library directory (default: /home/koaly/update).

Note: The update files for each service need to be provided in specific sub-directories.
These are displayed on this screen for your information.

Specify the HTTP port the management server shall listen on (default: 8081)

Hit "Next".

Modify the current password.

Hit "Save".

The configuration is now saved but not active yet.

Hit "Restart".

Wait until the page is refreshed.

| *Note: Do not reload the page at this stage.* |

Once the page is refreshed, the management service is fully operational. You can review its configuration in the "Parameters" section.

IV. Change password of user koalyadm

In the main menu, choose "Tools" and set a password for the user "koalyadm".

Cockpit ITSM - Portal

I. Prerequisites

Cockpit ITSM - Manager must be installed on the server before Cockpit ITSM - Portal.

II. Service installation

Make the installer executable.

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

Launch the installer.

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

Notes:

You may modify the default installation directory (/home/koaly/exp/portal) if necessary.

If you previously modified the default installation directory, you have to modify the path in the init script (/etc/init.d/koaly-exp-portal)

```
APP_DIR=/home/koaly/exp/portal
```

III. Setup without SSL

By default, the portal listens for (unencrypted) HTTP connections on port 80. If you want to listen to another port, replace the port 80 with the desired port in the following instructions.

Register port 80 with authbind and make it available for the portal user (koalyprt).

```
sudo touch /etc/authbind/byport/80
sudo chmod 500 /etc/authbind/byport/80
sudo chown koalyprt /etc/authbind/byport/80
```

IV. Setup with SSL

By default, the portal is not configured for SSL. To switch to SSL, you can use the following procedure.

A. Portal configuration

Open the file /home/koaly/exp/portal/conf/server.xml.

```
sudo vi /home/koaly/exp/portal/conf/server.xml
```

Replace the following lines.


```
<!-- HTTP (No SSL): Uncomment the following 4 lines -->
<Connector executor="tomcatThreadPool" URIEncoding="UTF-8" server="Koaly EXP Portal"
  port="80" protocol="HTTP/1.1"
  compressableMimeType="text/html,text/xml,text/plain,text/css,text/javascript,application/
json,application/xml"
  compression="on"
  connectionTimeout="20000"/>

<!-- HTTP (SSL): Uncomment the following 7 lines -->
<!--
<Connector executor="tomcatThreadPool" URIEncoding="UTF-8" server="Koaly EXP Portal"
  port="443" protocol="HTTP/1.1" SSLEnabled="true"
  scheme="https" secure="true"
  compressableMimeType="text/html,text/xml,text/plain,text/css,text/javascript,application/
json,application/xml"
  compression="on"
  clientAuth="false" sslProtocol="TLS"
  keystoreType="PKCS12"
  keystoreFile="{catalina.base}/conf/tomcat.p12"
  keystorePass="koaly2009"/>
-->
```

with.

```
<!-- HTTP (No SSL): Uncomment the following 4 lines -->
<Connector executor="tomcatThreadPool" URIEncoding="UTF-8" server="Koaly EXP Portal"
  port="80" protocol="HTTP/1.1"
  compressableMimeType="text/html,text/xml,text/plain,text/css,text/javascript,application/
json,application/xml"
  compression="on"
  connectionTimeout="20000"
  redirectPort="443"/>

<!-- HTTP (SSL): Uncomment the following 7 lines -->
<Connector executor="tomcatThreadPool" URIEncoding="UTF-8" server="Koaly EXP Portal"
  port="443" protocol="HTTP/1.1" SSLEnabled="true"
  scheme="https" secure="true"
  compressableMimeType="text/html,text/xml,text/plain,text/css,text/javascript,application/
json,application/xml"
  compression="on"
  clientAuth="false" sslProtocol="TLS"
  keystoreType="PKCS12"
  keystoreFile="{catalina.base}/conf/tomcat.p12"
  keystorePass="{password}"/>
```

Note: The {catalina.base} is the installation directory (ex: /home/koaly/exp/portal)

Note: The {password} is the password of your PKCS12 keystore (see section Keystore file generation for details)

Note: The port 80 (HTTP) is configured to provide automatic redirection to port 443 (HTTPS)

Open the file "/home/koaly/exp/portal/conf/web.xml" in a text editor.

Replace the following lines.

```
<!-- ===== Built In Filter Definitions ===== -->
<!-- NOTE: An SSI Servlet is also available as an alternative SSI -->
```

With.

```
<security-constraint>
  <web-resource-collection>
    <web-resource-name>Protected Context</web-resource-name>
    <url-pattern>/*</url-pattern>
  </web-resource-collection>
  <!-- auth-constraint goes here if you require authentication -->
  <user-data-constraint>
    <transport-guarantee>CONFIDENTIAL</transport-guarantee>
  </user-data-constraint>
</security-constraint>
<!-- ===== Built In Filter Definitions ===== -->
<!-- NOTE: An SSI Servlet is also available as an alternative SSI -->
```

Note: This insures HTTP requests are redirected to the HTTPS port.

B. Keystore file generation

In the next step, we need to create a PKCS12 keystore for use by the portal. If your SSL certificate authority does not provide PKCS12 keystore files, you can generate it with the following procedure.

1. Prerequisites

We assume the following files are present in the current working directory.

- server.crt - PEM format file of CAs
- server.key - private key
- server.ca-bundle - CA bundle file

2. Procedure

The following command will ask you for a keystore password. Please use the same password each time you are asked for it. Don't forget to update the file server.xml with this password if you have not done so already (see section Portal configuration for details).

```
sudo cat server.key server.crt server.ca-bundle | openssl pkcs12 -export -nodes -name tomcat -out /home/koaly/exp/portal/conf/tomcat.p12
```

C. Authbind setup

Register ports 80 and 443 with authbind and make it available for the portal user (koalyprt).

```
sudo touch /etc/authbind/byport/80
sudo chmod 500 /etc/authbind/byport/80
sudo chown koalyprt /etc/authbind/byport/80
sudo touch /etc/authbind/byport/443
sudo chmod 500 /etc/authbind/byport/443
sudo chown koalyprt /etc/authbind/byport/443
```

V. Permissions

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 bash /home/koaly/exp/portal/bin/post-install.sh
```

Notes:

If you want to change the default user/group (koalyprt/koalyprt) to something else, you need to adjust the variables USER and GROUP in the file /home/koaly/exp/portal/bin/setenv.sh as well as the init script accordingly.

The script post-install.sh will be called each time you update the portal through the management interface. It may also be updated as part of the update process - do not edit it.

If the script issues a warning about a missing file Uninstall, this can be safely ignored

VI. Database configuration

Connect to the Manager in a web browser (default address: <https://localhost:8081/>).

In the main menu, choose "Portals".

Hit "Add".

Enter the required information.

Notes:

The portal ID is a unique identifier (0-N) for each portal in a Cockpit IT Service Manager instance.

The description is a unique name for each portal in a Cockpit IT Service Manager instance (easier to remember than an ID).

Hit "Save".

VII. Technical settings

Select the tab "Technical settings".

Enter the required information.

Notes:

Configure the database user "koalyprt" in the database connection parameters

Storage: Please enter the document directory you created earlier

The default directory is /home/koaly/exp/documents

JMS parameters: If this portal is the main portal:

Check the option "Main portal"

Specify a listen address:

if you use a single server for your Cockpit IT Service Manager instance you can use local address (127.0.0.1)

if you use several servers for your Cockpit IT Service Manager instance you must use a public address

if you want to listen on all interfaces, use the address 0.0.0.0

Specify a listen port (default: 61616)

JMS parameters: If this portal is not the main portal:

Uncheck the option "Main portal"

Specify the main portal's listen address

Specify the main portal's listen port

VIII. Functional settings

Select the tab "Functional settings".

Activate the desired modules and options

Hit "Save".

You will be redirected to the list of portals installed on this machine. Note that portals installed on other machines will be displayed but can only be modified by their respective Manager.

IX. Start the service

In the portal list, click on the "Control" action for the newly installed portal.

Select the tab "Control".

The status should be "STOPPED".

Hit "Start".

The status should be "STARTED".

Select the tab "Logs".

Select the file "koaly_exp_error.log". If it does not appear immediately, you may need to re-open the control panel and try again.

There should not be any errors at this point.

There should not be any errors at this point.

X. License

A license file is needed for each Cockpit IT Service Manager instance. This license contains a list of physical addresses of servers authorized to run the portal.

For each portal, get the physical network address.

ifconfig

```
en1: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    ether b8:8d:12:39:d8:72
    inet6 fe80::ba8d:12ff:fe39:d872%en1 prefixlen 64 scopeid 0x4
    inet 192.168.0.50 netmask 0xfffff00 broadcast 192.168.0.255
    media: autoselect
    status: active
```

Send the list of physical addresses to license@cockpit-itsm.com. Cockpit ITSM support will send you a system-specific license file.

XI. Test

Connect to the Cockpit ITSM - Portal.

<http://yourserver>

User: koalyadm

Password: *****

Once connected, you will be redirected to the license management panel.

License management

Current licence	
No licence	

Current values	
Active operators	0
MAC addresses	08:00:27:20:1B:D7, 08:00:27:88:0C:A6
License status	Invalide

Statistics	
Contacts	0
Checks	0
Documents	0
Equipment	0
Passwords	0
Reports	0
Structures	1
Tasks	0
Teams	1
Tickets	0



1.

Upload the license file.

Search engine - Solr

I. Prerequisites

Cockpit ITSM - Portal must be installed on the server before the search engine.

II. Service installation

A. If the server accesses the internet

Execute the installation script.

```
sudo bash /home/koaly/exp/portal/solr/install_solr.sh
```

The script downloads, installs and starts Solr.

B. If the server does not access the internet

Check the Solr version to install.

```
sudo less /home/koaly/exp/portal/solr/solr_version.txt
```

Download the version on "https://archive.apache.org/dist/lucene/solr/X.X.X/solr-X.X.X.tgz".

Transfer and copy the "solr-X.X.X.tgz" file on the directory "/home/koaly/exp/portal/solr/".

Execute the installation script.

```
sudo bash /home/koaly/exp/portal/solr/install_solr.sh -f /home/koaly/exp/portal/solr/solr-X.X.X.tgz
```

III. Service status

Connect the portal.

Go to "Administration > Indexing".

Check the status, it must be "Online".

Document end