Installation

Intallation guides

- Getting started
- System architecture
- Database initialization
  - Initialize database on your server
  - Initialize database using Docker
  - Initialize database on Kubernetes
  - Creating a multimaster MariaDB replica
  - Configuring database cluster
- Installing Soffid on your server
  - Installing IAM Console
  - Install Sync server
  - Configure TLS for IAM Console
  - Linux operator guide
  - Windows operator guide
- Installing Soffid using Docker
  - Installing IAM Console
  - Installing Sync server
- Installing Soffid using Docker Compose
  - Installing Soffid
  - How to make a Mariadb Backup?
- Installing Soffid on Kubernetes
  - Installing IAM Console
  - Installing Sync server

    - How to copy to Kubernetes Secrets?
    - How to copy Sync Server Kube Conf to Database table?

- High Availability
- Customice logging
- Local configuration properties
- Upgrade Soffid3

Getting started

> Soffid support **Windows** or **Linux** (Ubuntu are the most used)

To succesfully install Soffid IAM, please, choose your installatin and follow the next steps:

Server

1. Initialize database on your server
2. Installing Soffid IAM on your own server
3. Configure TLS for IAM Console

Docker

1. Initialize database using Docker
2. Installing Soffid IAM on Docker

Kubernetes

1. Initialize database on Kubernetes
2. Installing Soffid IAM on Kubernetes

> We also recommend reading the Soffid architecture section before proceeding with the installation.

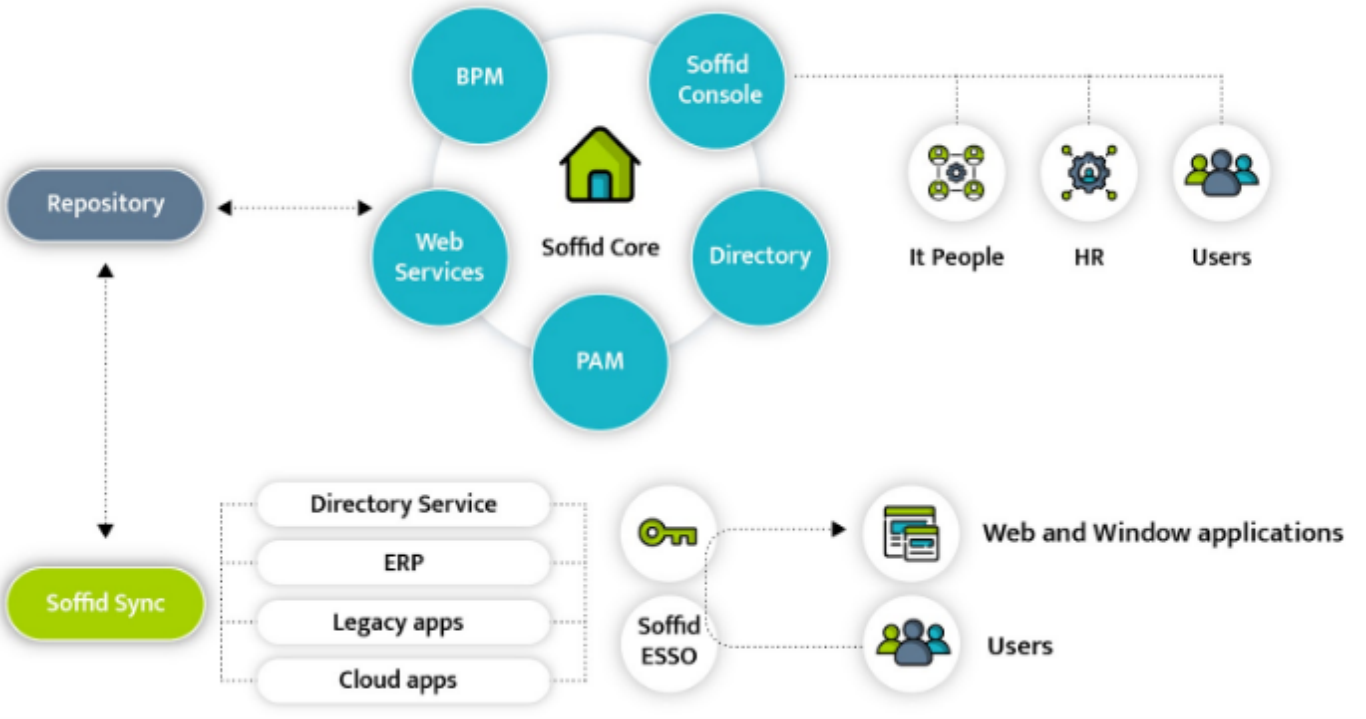
> Soffid is not currently compatible with Podman.

System architecture

Soffid Architecture

Soffid 3 system is composed of up to five different components:

- IAM console
- Sync server
- Repository
- PAM Jump server (optional)
- LDAP Directory server (optional)
- Enterprise SSO (optional)



IAM Console

Is the portal used by administrators to manage identity management objects and by end-users to use the self service portal. It's 100% web and can be deployed in any Windows or Linux server. Kubernetes and Docker deployments are supported as well.

Repository

Is a relational database that stores all the information about configuration, policies and identity objects, including users, accounts and permissions.

Any of the following repositories are supported:

- Maria DB
- My SQL
- Oracle
- SqlServer
- PostgreSQL

Sync server

Is the responsible for connecting the repository with the managed systems. The integration can be in both ways, fetching changes from managed system and pushing changes from Soffid repository.

The sync server can be deployed in many different ways, allowing central, distributed and hybrid deployments, both on cloud or on premise.

PAM Jump server

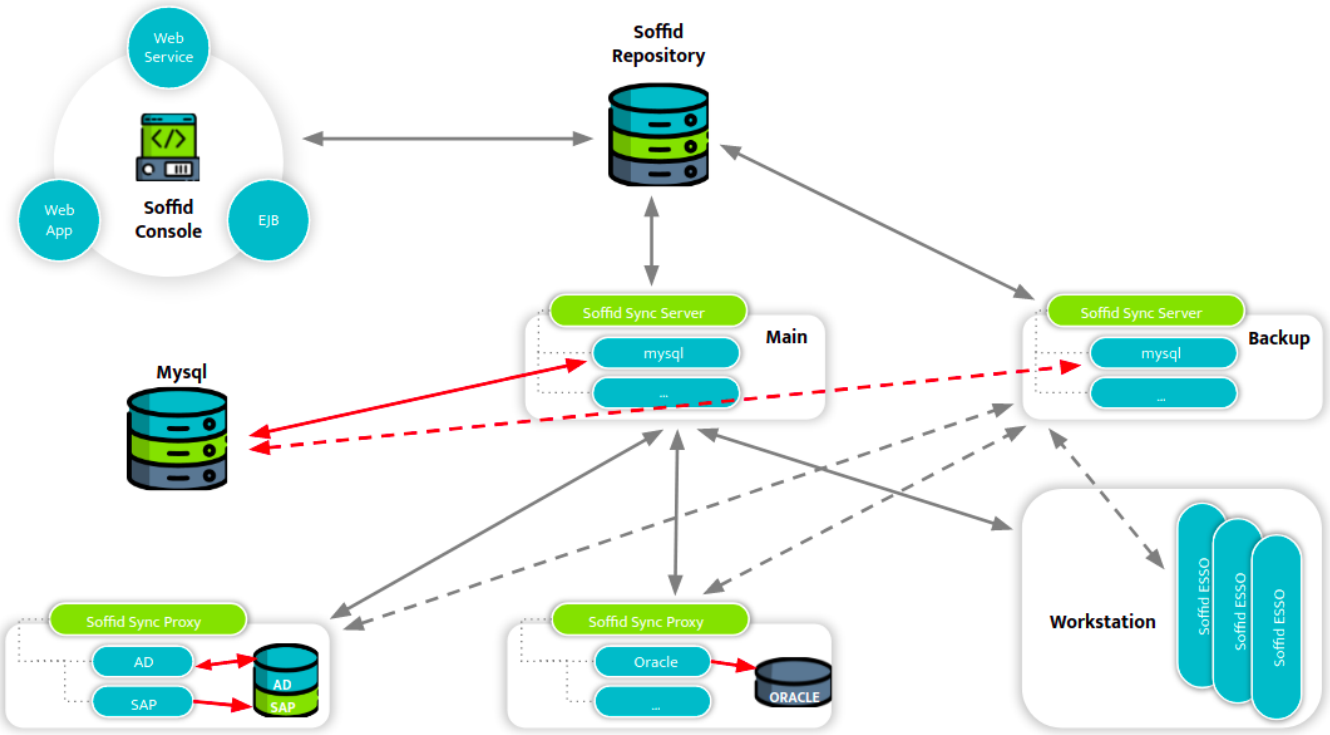
Is a piece used to allow access to privileged accounts, recording the screen and every keystroke, file or clipboard transfer.

Directory server

Is a directory server based on OpenLDAP. It can only be installed on a Linux server with Docker.

Mixed architecture

In the following image you can view an example of the architecture with a mysql database managed directly from the main servers and an Active Directory and an Oracle database managed through a sync proxy installed on the same host as the managed system.


Web Service
Web App
Soffid Console
EJB
Soffid Repository
Soffid Sync Server
mysql
...
Main
Soffid Sync Server
mysql
...
Backup
Mysql
Soffid Sync Proxy
AD
SAP
AD
SAP
Soffid Sync Proxy
Oracle
...
ORACLE
Workstation
Soffid ESSO
Soffid ESSO
Soffid ESSO

Database initialization

How to install and initialize database

Initialize database on your server

> The purpose of this tutorial is to show how to initialize a database required for Soffid IAM installation.

Prerequisites

First of all, you sould install a database required in the Soffid IAM installation.

The supported databases are:

- MySQL
- MariaDB
- PostgreSQL
- Oracle
- Microsoft SqlServer

MySQL/MariaDB

In order to configure MySQL database you need access to the database administration tool (mysql) with superuser permissions using a TCP/IP connection. If needed, please create a user for the Soffid installation. If you don't have such a user, or don't know its password, please access MySQL as root, execute the **mysql** tool and create the user with **grant command** *(where ADMIN_USER is the user to be used during the installation process to create the soffid repository database and ADMIN_PASSWORD is the required password).*

```
create database soffid;
use soffid;
grant all privileges on *.* to ADMIN_USER@localhost identified by 'ADMIN_PASSWORD' with grant option;
```

In addition, in order to be able to manage big files, like process definitions or software add-ons, we have to modify the **max_allowed_packet** parameter on MySQL. This parameter is commonly located on the **/etc/mysql/my.cnf** file.

> You can find the default option file locations on Linux, Unix, Mac or Windows following this link.

```
[mysqld]
max_allowed_packet=128M
```

> If the version of MariaDB is 10.1.38, or newer, the recommended value for max_allowed_packet is 512M

Note: in the case, we will obtain the next '*The size of BLOB/TEXT data inserted in one transaction is greater than 10% of redo log size. Increase the redo log size using innodb_log_file_size*.' error when trying to upload an addon, we may update the default value of this mysql/mariadb parameter. This parameter is commonly allocated on the /etc/mysql/my.cnf file.

```
[mysqld]
innodb_log_file_size=256M
```

If you are installing on a Ubuntu 18.04 server, the default character set is set to utf8mb4. Using this character set can cause problems, as many index sizes will exceed the maximum key size of 767 bytes. To prevent this problem, change the following settings:

```
[mysqld]
character-set-server  = Latin1
collation-server      = Latin1_general_ci
```

Alternatively, if UTF character set is required, write the following settings:

```
[mysqld]
character-set-server  = utf8mb4
collation-server      = utf8mb4_general_ci
innodb_large_prefix   =  1
innodb_file_format    = Barracuda
innodb_file_per_table =  1
```

> Following this link you will find the steps to set up a two nodes database cluster.

Oracle

A new database instance should be created. Optionally two tablespaces should be created (SOFFID_DATA and SOFFID_INDEX) to separate soffid tables and indexes.

```
CREATE TABLESPACE SOFFID_DATA DATAFILE '/app/oracle/oradata/project/soffid_data.dbf' SIZE 200M EXTENT MANAGEMENT LOCAL AUTOALLOCATE
```

To create the tablespace is necessary to provide the full path name, its size and MANAGEMENT AUTOALLOCATE option. The autoallocate option is needed because the tables are not sized by database creation scripts. Also, the Oracle Listener must have a TCP/IP port accepting connections.

Microsoft SQLServer

You must enable the SQL Server Browser Service at startup and the authentication method have to be set to “SQL Server and Windows Authentication mode”.

In addition, you must ensure that 'READ_COMMITTED_SNAPSHOT" parameter is enabled, you can do so with the following command:

```
ALTER DATABASE [database_name] SET READ_COMMITTED_SNAPSHOT ON
```

Initialize database using Docker

> The purpose of this tutorial is to show how to initialize a database **MariaDB** required for Soffid IAM installation using Docker.

Prerequisites

1. Install docker (https://docs.docker.com/install/)

2. Create a docker network, that network allows you to connect containers to the same bridge network to communicate:

```
sudo docker network create -d bridge NETWORKNAME
```

> For the correct installation of Soffid it is recommended not to use the underline character _ in the network name.

sudo docker exec -i -t ID_CONTAINER /bin/bashMySQL/MariaDB

First step will be initialize MariaDB with Docker, in this case we attach the container to an exist network:

```
sudo docker run -d --name mariadb-service  --network=NETWORKNAME -e "MYSQL_ROOT_PASSWORD=ADMIN_PASSWORD" mariadb
```

Second, you can check the deployed containers:

```
sudo docker ps
```

Then, you must connect to the created container:

```
sudo docker exec -i -t mariadb-service  /bin/bash
```

In order to configure MySQL database you need access to the database administration tool (mysql) with superuser permissions using a TCP/IP connection. If needed, please create a user for the Soffid installation. If you don't have such a user, or don't know its password, please access MySQL as root, execute the **mysql** tool and create the user with **grant command** *(where ADMIN_USER is the user to be used during the installation process to create the soffid repository database and ADMIN_PASSWORD is the required password).*

Coonect to MySQL:

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

Create database and grant permissions:

```
create database soffid;
use soffid;
grant all privileges on *.* to ADMIN_USER@'%' identified by 'ADMIN_PASSWORD' with grant option;
```

In addition, in order to be able to manage big files, like process definition or software addons, we have to modify **max_allowed_packet** parameter on MySQL. This parameter is commonly allocated on the /etc/mysql/my.cnf file.

```
[mysqld]
max_allowed_packet=128M
```

> If the version of MariaDB is 10.1.38, or newer, the recommended value for max_allowed_packet is 512M

Note: in the case we will obtain the next '*The size of BLOB/TEXT data inserted in one transaction is greater than 10% of redo log size. Increase the redo log size using innodb_log_file_size*.' error trying to upload an addon, we may update the default value of this mysql/mariadb parameter. This parameter is commonly allocated on the /etc/mysql/my.cnf file.

```
[mysqld]
innodb_log_file_size=256M
```

If you are installing on a Ubuntu 18.04 server, default character set is set to utf8mb4. Using this character set can cause problems, as many index sizes will exceed maximum key size of 767 bytes. To prevent this problem, change following settings:

```
[mysqld]
character-set-server  = Latin1
collation-server      = Latin1_general_ci
```

Alternatively, if UTF character set is required, write the following settings:

```
[mysqld]
character-set-server  = utf8mb4
collation-server      = utf8mb4_general_ci
innodb_large_prefix   =  1
innodb_file_format    = Barracuda
innodb_file_per_table =  1
```

Following this link you will find the steps to setup a two nodes database cluster.

Video Tutorial

MariaDB initialization using Docker

https://www.youtube.com/embed/mDJeSRbrn7w

Initialize database on Kubernetes

> The purpose of this tutorial is to show how to initialize a **MariaDB** database required for Soffid IAM installation on Kubernetes.

MySQL/MariaDB

To initialize MariaDB on Kubernetes first of all you must create a Persistent Volume. Storage in the cluster will be provisioned using Storage Classes.

```
apiVersion: v1
kind: PersistentVolume
metadata:
  name: local-pv3
spec:
  capacity:
    storage: 10Gi
  accessModes:
  - ReadWriteOnce
  persistentVolumeReclaimPolicy: Retain
  storageClassName: local-storage
  local:
    path: /home/ulocal/kubernetes-disk3
  nodeAffinity:
    required:
      nodeSelectorTerms:
      - matchExpressions:
        - key: kubernetes.io/hostname
          operator: In
          values:
          - soffid123
```

```
---
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: mariadb-claim3
spec:
  storageClassName: local-storage
  accessModes:
    - ReadWriteOnce
  resources:
    requests:
      storage: 5Gi
```

> Path "/home/ulocal/kubernetes-disk3" must be exists.

Then you must define the MariaDB deployment:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: mariadb3
  labels:
    app: soffid
    instance: "Soffid-3"
    type: database
spec:
  strategy:
    rollingUpdate:
      maxSurge: 0
      maxUnavailable: 1
    type: RollingUpdate
  replicas: 1
  selector:
    matchLabels:
      app: soffid
      instance: "Soffid-3"
      type: database
  template:
    metadata:
      labels:
```

```
    app: soffid
    instance: "Soffid-3"
    type: database
spec:
  restartPolicy: Always
  containers:
    - name: mariadb3
      image: mariadb
      resources:
        limits:
          memory: 2Gi
        requests:
          memory: 400Mi
      args:
        - "--max-allowed-packet=175M"
        - "--innodb-log-file-size=256M"
        - "--character-set-server=utf8"
        - "--collation-server=utf8_bin"
        - "--net-read-timeout=3600"
        - "--net-write-timeout=3600"
        - "--innodb-buffer-pool-size=100M"
      ports:
        - containerPort: 3306
          name: db-port
      env:
        - name: MYSQL_ROOT_PASSWORD
          valueFrom:
            secretKeyRef:
              name: mariadb
              key: root_password
        - name: MYSQL_USER
          valueFrom:
            secretKeyRef:
              name: mariadb
              key: username
        - name: MYSQL_PASSWORD
          valueFrom:
            secretKeyRef:
              name: mariadb
              key: password
```

```
            - name: MYSQL_DATABASE
              value: soffid
          volumeMounts:
          - name: mysql-persistent-storage3
            mountPath: /var/lib/mysql

      volumes:
        - name: mysql-persistent-storage3
          persistentVolumeClaim:
            claimName: mariadb-claim3
---
apiVersion: v1
kind: Service
metadata:
  name: mariadb3-service
  namespace: default
spec:
  clusterIP: None
  ports:
  - name: mariadb
    port: 3306
    protocol: TCP
    targetPort: 3306
  selector:
    app: soffid
    instance: "Soffid-3"
    type: database
  type: ClusterIP
```

Finally you must create resources in a cluster:

```
kubectl apply -f mariadb-pv-file.yaml
kubectl apply -f mariadb-deployment-file.yaml
```

Video Tutorial

MariaDB initialization in Kubernetes

https://www.youtube.com/embed/_F6p8JlurXs?rel=0

Creating a multimaster MariaDB replica

This topic will cover the process to create a two node Maria DB cluster. The cluster will be configured to allow Soffid console to use either database node, which in turn will replicate data changes to the other one.

Node 1 action	Node 2 action
Create and setup a Maria DB in node 1.	
Configure Maria DB to generate binary log files. Add the following lines to /etc/mysql/my.cnf: *server-id = **1*** *log-bin* *binlog-format=row* *expire_logs_days = 15* *max_binlog_size = 1000M* *replicate-ignore-table = soffid.SC_SEQUENCE* *slave-skip-errors = 1032,1053,1062*	
Restart MariaDB: `service mysql restart`	
	Create and setup a Maria DB in node 2.

<table>
<tr><th>Node 1 action</th><th>Node 2 action</th></tr>
<tr><td></td><td>Configure Maria DB to generate binary log files. Add the following lines to /etc/mysql/my.conf:
server-id = 2
log-bin
binlog-format=row
expire_logs_days = 15
max_binlog_size = 1000M
replicate-ignore-table = soffid.SC_SEQUENCE
slave-skip-errors = 1032,1053,1062</td></tr>
<tr><td></td><td>Restart MariaDB:
<code>service mysql restart</code></td></tr>
<tr><td>Dump current database contents:
mysqldump soffid -u soffid -p >soffid.data</td><td>Load current database contents
mysql -u soffid -p < soffid.data</td></tr>
<tr><td></td><td>Create a user for node 1 to fetch data from node 2. From mysql, execute:
grant replication slave on *.* to replication_user@<NODE1-IP>

set password for replication_user@1<NODE1-IP> = password('<NODE1-PASS>')</td></tr>
<tr><td>Create a user for node 2 to fetch data from node 1. From mysql, execute:
grant replication slave on *.* to replication_user@<NODE2-IP>

set password for replication_user@1<NODE2-IP> = password('<NODE2-PASS>')</td><td></td></tr>
<tr><td>Query current binary log position:
MariaDB [(none)]> show master status;

The result should look like this:
<table><tr><th>File</th><th>Position</th><th>Binlog_Do_DB</th><th>Binlog_Ignore_DB</th></tr><tr><td>mysqld-bin.000030</td><td>68175</td><td></td><td></td></tr></table>
The got values will be used on node 2 to start replica process.</td><td></td></tr>
</table>

<table>
<tr><th>Node 1 action</th><th>Node 2 action</th></tr>
<tr><td></td><td>Start replication from node 1 to node 2. From mysql, execute the following sentence, replacing proper values:
CHANGE MASTER TO
MASTER_HOST='<NODE1-IP>',
MASTER_USER='replication_user',
MASTER_PASSWORD='<NODE2-PASS>',
MASTER_PORT=3306,
MASTER_LOG_FILE='<NODE1-FILE>' , /** i.e. mysql-bin.000030 **/
MASTER_LOG_POS=<NODE1-POSITION>, /** i.e. 68175 **/
MASTER_CONNECT_RETRY=10;</td></tr>
<tr><td></td><td>Verify replica is working right, by executing
SHOW SLAVE STATUS \G

Check following lines:
Slave_IO_Running: Yes
Slave_SQL_Running: Yes
Seconds_Behind_Master: 0</td></tr>
<tr><td></td><td>Query current binary log position:
MariaDB [(none)]> show master status;

The result should look like this:<table><tr><th>File</th><th>Position</th><th>Binlog_Do_DB</th><th>Binlog_Ignore_DB</th></tr><tr><td>mysqld-bin.000060</td><td>98325</td><td></td><td></td></tr></table>The got values will be used on node 1 to start replica process.</td></tr>
<tr><td>Now, start replication from node 2 to node 1. From mysql, execute the following sentence, replacing proper values:
CHANGE MASTER TO
MASTER_HOST='<NODE2-IP>',
MASTER_USER='replication_user',
MASTER_PASSWORD='<NODE1-PASS>',
MASTER_PORT=3306,
MASTER_LOG_FILE='<NODE2-FILE>', /** i.e. mysql-bin.000060 **/
MASTER_LOG_POS=<NODE2-POSITION>, /** i.e. 98325 **/
MASTER_CONNECT_RETRY=10;</td><td></td></tr>
</table>

Node 1 action	Node 2 action
Verify replica is working right, by executing *SHOW SLAVE STATUS \G* Check following lines: Slave_IO_Running: Yes Slave_SQL_Running: Yes Seconds_Behind_Master: 0	
Now, create and start SC_SEQUENCE table in node 1. This sequence will generate values 1, 11, 21, 31, 41, and so on: *CREATE TABLE `SC_SEQUENCE` (* *`SEQ_NEXT` bigint(20) NOT NULL,* *`SEQ_CACHE` bigint(20) NOT NULL,* *`SEQ_INCREMENT` bigint(20) NOT NULL* *);* *INSERT INTO SC_SEQUENCE VALUES (1, 100, 10);*	
	Now, create and start SC_SEQUENCE table in node 2. This sequence will generate values 2, 12, 22, 32, 42, and so on:: *CREATE TABLE `SC_SEQUENCE` (* *`SEQ_NEXT` bigint(20) NOT NULL,* *`SEQ_CACHE` bigint(20) NOT NULL,* *`SEQ_INCREMENT` bigint(20) NOT NULL* *);* *INSERT INTO SC_SEQUENCE VALUES (2, 100, 10);*

Now, configure the Console to use the following jdbc URL:

jdbc:mariadb:sequential://mariadb-host-1,mariadb-host-2/soffid

Configuring database cluster

Once the database replica is setup, it's important to guarantee transactianality rules. To achive it, one database instance must be acting as the master and other as the slave.

Using corosync and pacemaker, you can configure a floating IP address that will mark which one is the active one at each moment.

Node 1	Node 2
Install Corosync and Pacemaker. It is recommended to use **apt** or **yum** because these programs will handle dependencies for you, making the process much easier.	Install Corosync and Pacemaker.
Cluster nodes need a key in order to authenticate the packages sent between them by corosync. *sudo corosync-keygen* Once the key has been generated, copy it to the other nodes: *sudo scp /etc/corosync/authkey <user>@<other-cluster-node>:/home/<user>*	
	Once the key has been copied, move the copied key from the */home/<user>* route to */etc/corosync/authkey*
Now we need to tell Corosync which IP to use to communicate with other nodes in the cluster. Open */etc/corosync/corosync.conf* and edit the bindnetaddr field. Set the right IP and save the file. We need to do this in every node in the cluster, although you can use the same file if you set the right name in your hosts file.	
	Configure Corosync with the right IP binding as done in node 1.
Configure the */etc/default/corosync* file to enable Corosync changing START to yes "START=yes". Then we can start Corosync using *sudo service corosync start*.	
	Enable Corosync and start it as in node 1.

Node 1	Node 2
Allow the nodes a few seconds to start, then you can monitor the cluster nodes using sudo crm_mon. The result should be similar to this: ========== *Last updated: Mon Mar 31 14:05:23 2015* *Stack: corosync* *Current DC: yourDC - partition with quorum* *Version: 1.x.x-yourversion* *2 Nodes configured, 2 expected votes* *0 Resources configured.* ========== *Online: [node1 node2]*	
	Check the nodes with sudo crm_mon
Corosync is ready, now we will tell Pacemaker which resources we want it to handle in HA. These will be the database and a virtual IP (VIP) we will use to address the cluster. Add the VIP to the node, and then use this to create the resource: *sudo crm configure primitive FAILOVER-ADDR ocf:heartbeat:IPaddr2 params ip="your.virtual.IP" nic="your.network.device" op monitor interval="10s" meta is-managed="true"* You can check the result using *sudo crm status*, which should look something like: *Last updated: Wed Jan 18 10:21:12 2017 Last change: Tue Jan 17 13:08:25 2017 by hacluster via crmd on nodename* *Stack: corosync* *Current DC: nodename(version 1.1.14-70404b0) - partition with quorum* *2 nodes and 2 resources configured* *Online: [node1 node2]* *Full list of resources:* *Resource Group: my_cluster* *FAILOVER-ADDR (ocf::heartbeat:IPaddr2): Started node2*	
Now we will add the database. We will use: *sudo crm configure primitive FAILOVER-MARIADB lsb::mysql op monitor interval=15s*	

Installing Soffid on your server

Guide to show the installation process os Soffid IAM on your server

Installing IAM Console

Guide to install IAM Console on your own server

Prerequisites

Installing Soffid IAM solution requires the following requirements:

- Windows or Linux (Ubuntu are the most used)
- Java JDK 8 or higher. Java JDK11 recommended
- 8GB RAM
- > 10GB disk space
- Supported database installed

Video Tutorial

Windows

https://www.youtube.com/embed/6c_RuOzb4Y0?rel=0

Linux

https://www.youtube.com/embed/z7YZwb7As74?rel=0

Installation

Download

You can download Soffid 3 components from our website Soffid Download Manager

Depending on your platform, you can download the MSI, RPM or DEB version.

As soon as the *install-x.y.z.sh* file is in your computer, copy the file into a path of your server.

Installing IAM Console

Windows

Open the installation file. It will create the operating system level service and will start it. After some seconds, the installation wizard will be up and running in port 8080.

Linux

We recommend to install the package like:

```
sudo dpkg -i '/your-path/SOFFID 3 Console-Debian_Ubuntu installer-3.0.0.deb'
```

You can ckeck the IAM Console service status:

```
systemctl status soffid-iamconsole.service
```

Configuration

Then, open the web browser pointing to http://localhost:8080

The wizard will ask for the following information:

- **Host name:** enter the name that will be used by end-users to access to the console. To use the fully qualified domain name is suggested. A virtual service name can be used as well. Mind that the web server will work even when you put a wrong host names. This host name will be used in email notifications that contain a link to the console.
- **User name**: Enter the name of a user with permissions to create tables and indexes in the selected database.
- **Password**: Enter the database user password.
- **Database type**: select the right database engine: Maria DB, MySQL, PostgreSQL, MS SQL Server or Oracle.
- **Database URL**: complete the database URL. The default template use to be good enough, but you can use advanced features depending on the selected database driver:
  - Maria DB and MySQL: https://mariadb.com/kb/en/about-mariadb-connector-j/
  - PostgreSQL: https://jdbc.postgresql.org/documentation/80/connect.html
  - MS SqlServer: https://docs.microsoft.com/es-es/sql/connect/jdbc/building-the-connection-url?view=sql-server-ver15
  - Oracle: https://docs.oracle.com/cd/B28359_01/java.111/b31224/urls.htm#BEIJFHHB

The next step, allows you to enter the name and password for the initial Soffid user. You must enter:

- Login name: by default it's admin, but you can use any other naming convention. To change it is good security practice.
- First name: Your first name.
- Last name: Your last name.
- Password: Enter the initial password to use. Write it twice and don't forget it.

Manual Configuration

Configuring service startup

If you are using the RPM, DEB or MSI installers, the service is automatically configured to start up with the computer. If you are using the .tar.gz file, you must enable it manually. Execute these commands as root to start Soffid IAM console service on boot:

```
ln -fs /opt/soffid/iam-console-3/bin/catalina.sh /etc/init.d/soffid-iamconsole
ln -fs /etc/init.d/soffid-iamconsole /etc/rc2.d/S98soffid-iamconsole
```

```
ln -fs /etc/init.d/soffid-iamconsole /etc/rc3.d/S98soffid-iamconsole
ln -fs /etc/init.d/soffid-iamconsole /etc/rc2.d/K10soffid-iamconsole
ln -fs /etc/init.d/soffid-iamconsole /etc/rc3.d/K10soffid-iamconsole
```

If something is not running as expected, please check the log at:

```
root@localhost:~# cd /opt/soffid/iam-console-3/logs
root@localhost:/opt/soffid/iam-console-3/logs# less soffid.YEAR-MONTH-DAY.log
```

> Now you can connect IAM Console http://localhost:8080/soffid The first thing you must do is to configure database parameters and admin user. When the console is created, the password for user admin will be valid for 24 hours.

Install Sync server

Guide to install Synchronization server on your own server

Prerequisites

Soffid IAM sync server requires the following requirements:

- Windows or Linux (Ubuntu are the most used)
- Java JDK 8 or higher
- 8GB RAM
- > 10GB disk space
- Soffid console installed

Video tutorial

Windows

Linux

https://www.youtube.com/embed/rvnzwefwBqs?rel=0

Installation

Download

First of all, open your favorite browser and open the Soffid Download Manager.

Click on *Synchronization server* and download the latest version for your OS.

Installing Sync Server

Windows

Open the installation file. It will install the software and will execute the installation wizard.

The installation wizard will ask if it is the first sync server or not.

Linux

```
sudo dpkg -i '/your-path/SOFFID 3 Sync server-Debian_Ubuntu installer-3.0.0.deb'
```

The installation wizard will ask if it is the first sync server or not.

Installing the first sync server

Automatic wizard

If you answer Y to the first question, the wizard will ask for the following information:

- **Database URL**: Use the same URL used to install the console.
- **Database use**r: The user name to connect to the database. It was used during the console installation
- **Database password**: The database user password
- **Host name**: Enter the fully qualified domain name of the host. IP addresses are not accepted.
- **Port to listen**: Enter a TCP port number. The sync server will receive connections from the console or other sync servers through this port. The suggested value is 1760.

After checking the database status, the wizard will register the sync server and will create a new certification authority, as well as a digital certificate for the brand new sync server.

Manual wizard

If the wizar is not launched automatically, you should launch it manually. To do that, you must follow the next steps:

1. Stop syncserver service: `systemctl stop soffid-iamsync.service`
2. Delete previous configuration: `rm /opt/soffid/iam-sync/conf/*`
3. Launch wizard: `/opt/soffid/iam-sync/bin/configure`
4. Start synserver service: `systemctl start soffid-iamsync.service`

The wizard will request about the database configuration:

```
.....
Is this the first sync server in the network (y/n)? y
Database URL (jdbc:....): jdbc:mariadb://localhost/soffid
Database user: ADMIN_USER
Password: xxxxx
This server host name [soffid.my.lab]: localhost
Port to listen to [1760]: 1760
....
```

Installing the next sync servers

If you answer N to the first question, the wizard will ask for the following information:

- **Cloud service**: You can install an on-premise sync server connected to a cloud instance. In this case, the communication stack works in a slightly different way. If this is the case, enter Y. If you are connecting to an on-premise Soffid deployment, enter N.
- **Server URL**: Enter the URL for the first sync server.

- **Tenant name**: Enter the tenant name. If the sync server is not intended to work with a single tenant, enter master.
- **User name**: Enter an administrator user name.
- **Password**: Enter the administrator password.
- **Host name**: Enter the fully qualified domain name of the host. IP addresses are not accepted.
- **Port to listen**: Enter a TCP port number. The sync server will receive connections from the console or other sync servers through this port. The suggested value is 1760.

The wizard will connect to the sync server and create a sync server connection request. The administrator must open the "My tasks" page and approve the request. Once the request is approved, the wizard will finish.

https://www.youtube.com/embed/1OIwWEBKXKs?rel=0

Running synchronization server in root mode

Sometimes it is necessary to run the sync server in root mode to solve a problem. To do this it is necessary to edit the service, modify some data and finally restart the service.

```
sudo systemctl edit --full soffid-iamsync
```

```
User=root
group=root
protectSystem=false
```

```
sudo systemctl restart soffid-iamsync
```

Manual Configuration

Manual service configuration

If you are using the RPM, DEB or MSI installers, the service is automatically configured to start up with the computer. If you are using the .tar.gz file, you must enable it manually. Execute these commands as root to start Soffid IAM sync server service on boot:

```
ln -fs /opt/soffid/iam-sync/bin/soffid-sync /etc/init.d/soffid-sync
ln -fs /etc/init.d/soffid-sync /etc/rc1.d/K01soffid-sync
```

```
ln -fs /etc/init.d/soffid-sync /etc/rc2.d/S06soffid-sync
ln -fs /etc/init.d/soffid-sync /etc/rc3.d/S06soffid-sync
ln -fs /etc/init.d/soffid-sync /etc/rc4.d/S06soffid-sync
ln -fs /etc/init.d/soffid-sync /etc/rc5.d/S06soffid-sync
ln -fs /etc/init.d/soffid-sync /etc/rc6.d/K01soffid-sync
```

Note that if you are running Centos, Redhat7 o version higher than Ubuntu 16.04, you should enable the service in systemctl

```
sudo systemctl enable soffid-sync
```

Once you have installed and configured Soffid Sync Server as a service, you could manage it with the following operations

```
service soffid-sync status
service soffid-sync restart
service soffid-sync start
service soffid-sync stop
```

First synchronisation server configuration

It is not recommended to install the first sync server on the same host where the database is installed.

To configure the server, please execute the following commands:

On Linux:

```
/opt/soffid/iam-sync/bin/configure -main -hostname [hostname] -port 760 -dbuser [soffid] -dbpass [pass] -dburl [jdbc:mysql://localhost:3306/soffid]
```

On Windows:

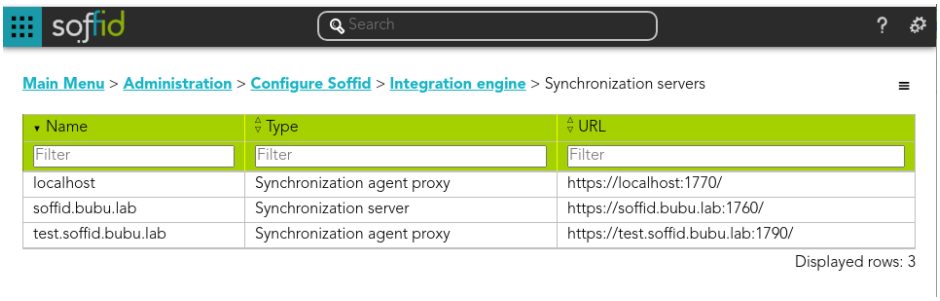
```
%ProgramFiles%\soffid\iam-sync\bin\configure -main -hostname [hostname] -port 760 -dbuser [soffid] -dbpass [pass] -dburl [jdbc:mysql://localhost:3306/soffid]
```

User and password must be the ones created during the installation process.

The hostname value must be a FQDN (fully qualified domain name), for instance, "myhost.mydomain.com" or in a test environment "syncserver.soffid.lab"

Mind the configuration wizard will refuse to register the sync server if this is not really the first sync server. If you really want to register this sync server as the first one, you must open the sync

server management page and remove any already registered sync server.



Next servers configuration

In order to configure the next server syncservers, a two step process is required: first, a normal user installs and configure the sync server software; next, a Soffid administrator allows the sync server to join the sync servers network.

To perform the next step, you do not need to enter the database credentials. Instead, the primary sync server URL and a Soffid console user name and password are required.

For instance, you can execute:

On Linux:

```
/opt/soffid/iam-sync/bin/configure -hostname [hostname] -user [user] -pass [pass] -server
[https://yourserver:760] -tenant [master]
```

On Windows:

```
%ProgramFiles%\soffid\iam-sync\bin\configure -hostname [hostname] -user [user] -pass [pass] -server
[https://yourserver:760] -tenant [master]
```

After executing the command, an approval task will appear in Soffid console. The administrator can take ownership of the task and approve or reject it. After approving the server creation, the server will be configured as a proxy sync server (without database access).

The administrator can open the sync servers configuration page to change the sync server role at any time.

Configure a synchronization server proxy without approval in UI

If you want to bypass the appoval process, there is a configuration setting that allows it:

- Open console and click on *Start → Soffid Configuration → Soffid Parameters*:
- Click on *Add New* and, then, write the parameter **soffid.server.register**, set the value to ***direct*** and *Confirm changes*.

https://www.youtube.com/embed/hpgTVeXmChs?rel=0

- Execute the configuration of a synchronization server proxy as follows:
  On Linux:

  ```
  /opt/soffid/iam-sync/bin/configure -hostname hostname -user usuario -pass pass -server https://<yourserver>
  ```

  On Windows:

  ```
  %ProgramFiles%\soffid\iam-sync\bin\configure -hostname hostname -user usuario -pass pass -server https://<
  ```

  Where **hostname** is the name of the synchronization server proxy, **user** and **pass** are the Soffid console user name and password and, finally, **URL** is the first synchronization server URL.

- In the Soffid console, go to *Start→ Soffid Configuration → Agents* and click on *Synchronization Servers* to check if the synchronization server proxy has been registered.

Thus, you can bypass the standard workflow needed for a sinchronization server to join the synchronization servers security network. Otherwise, the standard approval workflow will be required.

Renaming a sync server

You can rename any sync server at any time by removing the conf directory and executing the configure process again, but the main sync server is a special case. If you remove the conf directory, the certification authority managed by the main sync server will be lost, and every single sync server will be thrown out of the security domain.

Instead, to reconfigure the main sync server you can execute

On Linux:

```
/opt/soffid/iam-sync/bin/configure -main -force -hostname hostname -port port -dbuser soffid -dbpass pass -dburl jdbc:mysql://localhost:3306/soffid
```

On Windows:

```
%ProgramFiles%\soffid\iam-sync\bin\configure -main -force -hostname hostname -port port -dbuser soffid -dbpass pass -dburl jdbc:mysql://localhost:3306/soffid
```

User and password must be the ones created during the installation process.

The Soffid installation process changes console setup to reflect the new sync server name

The url connection parameter depends on the database system:

- For Oracle by SID: jdbc:oracle:thin:@localhost:1571:XXXX
- For Oracle by Service Name: jdbc:oracle:thin:@localhost:1571/XXXX
- For Mysql: jdbc:mysql://localhost:3306/XXXX
- For SQLServer: "jdbc:sqlserver://localhost:1433;databaseName=XXXX"
- For Postglesql: "jdbc:postgresql://localhost:5432/XXXXX

> Now you can connect to the IAM console http://localhost:8080/soffid and chek if Console and Syncserver are connected.

Configure TLS for IAM Console

Introduction

The TLS protection of Soffid IAM Console is applied through the configuration of the Apache TomEE embedded in the installation.

This solution is running under java technology therefore we need a jks file (Java Key Store) or a PKCS#12 file with the information of your certificate.

Once you have the Console installed and your certificate in jks format you can follow this steps to configure it the first time or for an update.

Mind that sometimes, the network encryption algorithm is named SSL, in fact, the configuration file still displays the word SSL. However, SSL protocol is now outdated, and TLSv1.2 is used instead.

Load a PKCS#12 (.PFX) file

There are many standard ways to store and transfer private keys and certificates, but the most common one is the PKCS#12 format. Its main advantage is that it contains, in a single file, both the private key and the public certificate.

To transform the .PFX file to a java key store (.JKS), and can use the next command (you have to adapt it to your system):

```
keytool -v -importkeystore -srckeystore <YOUR_FILE.PFX> -srcstoretype PKCS12 \
  -destkeystore /opt/soffid/iam-console-3/conf/yourcert.jks \
  -deststoretype JKS \
  -destkeypass 123456 -srcstorepass 1234 -deststorepass 123456
```

Next, you will be asked for the PFX encryption password. It must be provided to you along the PFX file.

Next, you will be asked (probably twice) for the password to be used to encrypt the .JKS file. This password must be written down in the server.xml file. At the sample SSL configuration file placed at the top of this page, the sample password is 123456.

Configuration

The configuration file to modify is the following one:

> /opt/soffid/iam-console-3/conf/server.xml

It can contain one or more connectors. Uncomment or add the following one, that enables the TLS configuration:

These are the attributes that you have to configure.

Attribute	Comment
port	You can choose the standard 443 or another custom port
protocols (inside SSLHostConfig tag) **sslEnabledProtocols** (inside Connector tag)	You can configure the protocols allowed. For intance, protocols="TLSv1.3" or sslEnabledProtocols="TLSv1.3"
certificateKeystoreFile	The source by default starts from /opt/soffid/iam-console-3/ (the installation directory)
certificateKeystorePassword	The password used to encrypt the jks file
certificateKeyAlias	The alias to identify your key and certificate

To know the Key Alias, you can run:

```
keytool -list -keystore yourcert.jks
```

Then, copy or replace your jks file into to the file /opt/soffid/iam-console-3/conf/yourcert.jks

After that, you have to restart the iam-console services.

```
sudo systemctl restart soffid-iamconsole
```

>

> If you have some configuration error, you can search for more information in the Console log (the current day log):
> /opt/soffid/iam-console-3/logs/soffid-YYYY-MM-DD.log

Example server.xml

This example only allows protocols TLSv1.3

```
.....
<!-- Define a SSL/TLS HTTP/1.1 Connector on port 8443
        This connector uses the NIO implementation. The default
        SSLImplementation will depend on the presence of the APR/native
        library and the useOpenSSL attribute of the
        AprLifecycleListener.
        Either JSSE or OpenSSL style configuration may be used regardless of
        the SSLImplementation selected. JSSE style configuration is used below.
    -->

    <Connector port="8443" protocol="org.apache.coyote.http11.Http11NioProtocol"
               maxThreads="150" SSLEnabled="true">
        <SSLHostConfig protocols="TLSv1.3">
            <Certificate certificateKeystoreFile="conf/yourcert.jks" certificateKeystorePassword="XXXXXX"
                         certificateKeyAlias="1" type="RSA" xpoweredBy="false" server="Apache TomEE" />
        </SSLHostConfig>
    </Connector>
.....
```

Further information

Additional information can be found at Tomcat website: https://tomcat.apache.org/tomcat-7.0-doc/ssl-howto.html

---

https://es.wikipedia.org/wiki/TLS

Linux operator guide

Startup / Shutdown console

Start Soffid IAM console

```
systemctl start soffid-iamconsole.service
```

Stop Soffid IAM console

```
systemctl stop soffid-iamconsole.service
```

Status

```
systemctl status soffid-iamconsole.service
```

Logs

You can find the console logs at: /opt/soffid/iam-console-3/logs

Startup / Shutdown Synchronization servers

Start Sync server

```
systemctl start soffid-iamsync.service
```

Start Sync server

```
systemctl stop soffid-iamsync.service
```

Status

```
systemctl status soffid-iamsync.service
```

Logs

You can find the console logs at: /opt/soffid/iam-sync/logs

System backup

Soffid relies on a database to store almost every identity data. So, the first step to perform a daily database backup.

- For Maria DB, look at: Backup and restore overview
- For Oracle, look at: Backing Up The Database
- For SQL Server, look at: Create a Full Database Backup (SQL Server)

Soffid console installation directory should be backed up after every installation or upgrade. Once the upgrade or installation has been done, only the log directory needs to be backed up.

Soffid synchronization servers configuration directory (conf) should be backed up just after configuration. In case of system failure, a new synchronization server should be installed and the conf directory can be restored onto it. The conf directory should be backed up on a different media than the database, due to conf directory contains the private keys that can decrypt the data stored in the database.

Windows operator guide

Startup / Shutdown console

Start Soffid IAM console

To start Soffid console, use service manager, or execute:

```
net start soffid-iamconsole
```

Stop Soffid IAM console

To stop Soffid console, use service manager or execute:

```
net stop soffid-iamconsole
```

Logs

You can find the console logs at: /opt/soffid/iam-console-3/logs

Startup / Shutdown Synchronization servers

Start Sync server

To start Soffid Sync server, use service manager or execute:

```
net start SoffidSyncServer
```

Start Sync server

To stop Soffid Sync server, use service manager or execute:

```
net stop SoffidSyncServer
```

Logs

You can find the console logs at: c:\program files\soffid\iam-console-3\logs

System backup

Soffid relies on a database to store almost every identity data. So, the first step to perform a daily database backup.

- For Maria DB, look at: Backup and restore overview
- For Oracle, look at: Backing Up The Database
- For SQL Server, look at: Create a Full Database Backup (SQL Server)

Soffid console installation directory should be backed up after every installation or upgrade. Once the upgrade or installation has been done, only the log directory needs to be backed up.

Soffid synchronization servers configuration directory (conf) should be backed up just after configuration. In case of system failure, a new synchronization server should be installed and the conf directory can be restored onto it. The conf directory should be backed up on a different media than the database, due to conf directory contains the private keys that can decrypt the data stored in the database.

Installing Soffid using Docker

Guide to show the installation process os Soffid IAM using Docker

Installing IAM Console

Guide to install IAM Console using Docker.

There is a public docker image at docker hub: https://hub.docker.com/r/soffid/iam-console/

Prerequisites

- Docker
- 8GB RAM
- > 10GB disk space (50GB recomended)
- Supported database installed

Video Tutorial

https://www.youtube.com/embed/pEP76i7nX2M?rel=0

Installation

To configure IAM console, the following environment variables can be set:

Variable	Description	Example
DB_URL	JDBC URL	jdbc:mariadb://dbcontainer/soffid jdbc:oracle:thin:@HOST:PORT:SID jdbc:oracle:thin:@//HOST:PORT/SERVICENAME
DB_USER	Database user	Soffid
DB_PASSWORD	Database password	5uper5ecret

JAVA_OPT	Java virtual machine options	-Xmx4096m
SECURE	(optional) Enables the Java Security Manager	true
SOFFID_TRUSTED_SCRIPTS	(optional) Allows you to use insecure classes. Available since console version 3.5.6	true false
HIDE_MENU	(optional) Allows you to hide the Console menu options. Available since console version 3.5.6	soffid.admin You can choose the proper option from the Console.yaml file.
AUTH_METHODS	(optional) Allows to force the authentication mechanisms. This configuration overrides the one configured in the authentication option of the Soffid console. Available since console version 3.5.6	Options SAML PASSWORD SAML PASSWORD
EXTERNAL_URL	(optional) Allows to override host name configuration when there are two Consoles. Available since console version 3.5.9.5	https://soffid.lab.internal.com

Additional parameters to configure the database connections. Allows you to establish the min and the max of database connections:

Variable	Description	Example
DBPOOL_MIN_IDLE	The minimum number of connections should be kept in the pool at all times.	1 or 2
DBPOOL_MAX_IDLE	The maximum number of connections should be kept in the pool at all times.	between 10 and 15
DBPOOL_INITIAL	The connection number will be established when the connection pool is started.	3 or 4
DBPOOL_MAX	The maximum number of active connections that can be allocated. If no value is indicated, the default value is 30. The transaction fails if the maximum connections are reached within 30 seconds and no connection is released.	25

The following volumes must be defined by default:

Volume	Usage

/opt/soffid/iam-console-3/logs	Console log files `/opt/soffid/iam-console-3/logs`
/opt/soffid/iam-console-3/index	Text search engine index files. It can be erased at any time. The engine will regenerate the search engine. `/opt/soffid/iam-console-3/index/`
/opt/soffid/iam-console-3/conf	Configuration files, including server.xml and tomee.xml files `/opt/soffid/iam-console-3/conf`

Here you have a sample command to start a docker container running IAM console, in this case the docker will be in a docker network, previously created. MariaDB docker is at the same network.

```
docker run -d \
  -e DB_URL=jdbc:mariadb://mariadb-service/soffid \
  -e DB_USER=soffid \
  -e DB_PASSWORD=soffid \
  --name=iam-console \
  --publish=8080:8080 \
  --network=soffidnet \
  soffid/iam-console
```

To see console log files, execute:

```
docker logs -f iam-console
```

By default, the 8080 port will be exposed. When the TLS connection is going to be configured, add the tag --publish=443:443 to publish the TLS port.

> When the console is created, the password for the user *admin* will be *changeit* and it will be valid for 24 hours.

> Now you can connect the Soffid Console http://localhost:8080/soffid/The first thing you must do is to change the admin user password.

> Next Step: Installing Sync server

Installing Sync server

Guide to install Sync server using Docker.

There is a public docker image at docker hub: https://hub.docker.com/r/soffid/iam-sync

Prerequisites

Soffid IAM sync server requires the following requirements:

- Supported database installed
- Soffid Console Installed

Video Tutorial

Linux

https://www.youtube.com/embed/NHBvdzDWiWA

Installation

Install first Sync server

To configure the first IAM Sync server, the following environment variables can be set for the first server:

Variable	Description	Example

DB_URL	JDBC URL	jdbc:mariadb://dbcontainer/soffid
DB_USER	Database user	Soffid
DB_PASSWORD	Database password	5uper5ecret
SOFFID_HOSTNAME	The hostname used to access the sync server	syncserver01.soffid.com
SOFFID_PORT	TCP port used for incoming connections	760
SOFFID_MAIN	Set to yes for the first sync server, no for the next ones	**yes**

Additional parameters to configure the database connections. Allows you to establish the min and the max of database connections:

Variable	Description	Example
DBPOOL_MIN_IDLE	The minimum number of connections should be kept in the pool at all times.	1 or 2
DBPOOL_MAX_IDLE	The maximum number of connections should be kept in the pool at all times.	between 10 and 15
DBPOOL_INITIAL	The number of connections will be established when the connection pool is started.	3 or 4
DBPOOL_MAX	The maximum number of active connections that can be allocated. If no value is indicated, the default value is 30. The transaction fails if the maximum connections are reached within 30 seconds and no connection is released.	25
DBPOOL_MAX_IDLE_TIME	Number of seconds that a connection to a DB that is not in use is maintained. Available since Sync Server version 3.5.4.3	3600

Install next Sync servers

To configure the next sync servers, the following environment variables can be set:

Variable	Description	Example

SOFFID_SERVER	First sync server url	https://syncserver01.soffid.com:1760
SOFFID_USER	Soffid user to join the security domain. If you are working in a tenant, the user of the tenant.	admin
SOFFID_PASS	Soffid user password. If you are working in a tenant, the user password of the tenant.	changeit
SOFFID_HOSTNAME	The host name used to access to the sync server	syncserver.soffid.com
SOFFID_PORT	TCP port used for incomming connections	760
SOFFID_TENANT	Tenant name	master
SOFFID_MAIN	Set to yes for the first sync server, no for the next ones	**no**

Install Sync server in a private network

To configure a sync server in a private network, not directly accessible from the main sync server, the following environment variables can be set:

Variable	Description	Example
SOFFID_SERVER	First sync server url	https://syncserver01.soffid.com:1760
SOFFID_USER	Soffid user to join the security domain	admin
SOFFID_PASS	Soffid user password	changeit
SOFFID_HOSTNAME	The host name used to access to the sync server	syncserver.soffid.com
SOFFID_TENANT	Tenant name	master
SOFFID_MAIN	Set to yes for the first sync server, no for the next ones	**no**
SOFFID_REMOTE	Flag to enable cloud protocol	**yes**

You can use this configuration when the main sync server is located in the cloud.

The following volumes are defined by default

Volume	Usage

/opt/soffid/iam-sync/conf	Configuration files, including private keys and certificates

Command

Here you have a sample command to start a docker container running IAM sync server. Mind to specify the port number to expose the sync server docker to the outside world. It is not needed when using the cloud connectivity:

```
docker run -d \
  -e DB_URL=jdbc:mysql://mariadb-service/soffid \
  -e DB_USER=soffid \
  -e DB_PASSWORD=soffid \
  -e SOFFID_PORT=1760 \
  -e SOFFID_HOSTNAME=iam-sync.soffidnet \
  -e SOFFID_MAIN=yes \
  --name=iam-sync \
  --publish 1760:1760 \
  --network=soffidnet \
  soffid/iam-sync:latest
```

To see sync server log file, execute:

```
docker logs -f iam-sync
```

You can also view the log files inside the container. To do this, first enter the container, then you should find the log files in the **/var/log/soffid/** directory.

```
root@soffid:~# docker exec -it iam-sync /bin/bash
root@e1a90ff25d99:/# less /var/log/soffid/syncserver.log
```

> Now you can connect to the IAM console http://localhost:8080/soffid and chek if Console and Syncserver are connected.

Installing Soffid using Docker Compose

Installing Soffid

Prerequisites

- Docker compose
- 8GB RAM
- > 10GB disk space (50GB recomended)

Installation

docker-compose.yaml / compose.yaml

```
version: "3.8"
services:
  mariadb:
    image: mariadb:11.4
    environment:
      MYSQL_ROOT_PASSWORD: XXXXX
      MYSQL_DATABASE: soffid01
      MYSQL_USER: soffid
      MYSQL_PASSWORD: XXXXX
    healthcheck:
      test: "/usr/bin/mariadb --user=root --password=XXXXX --execute \"SHOW DATABASES;\""
      interval: 2s
      timeout: 20s
      retries: 10
    command: --max_allowed_packet=128M --innodb_log_file_size=256M --character-set-server=utf8mb4 --
collation-server=utf8mb4_general_ci
    networks:
      - network
    volumes:
      - mariadb_data:/var/lib/mysql
```

```
  console:
    image: soffid/iam-console:3.6.7
    environment:
      DB_URL: jdbc:mariadb://mariadb/soffid01
      DB_USER: soffid
      DB_PASSWORD: XXXXX
    ports:
      - 8080:8080
    networks:
    - network
    healthcheck:
      test: bash -c "(echo 'GET /soffid/anonymous/logo.svg HTTP/1.1' >&0; echo >&0; cat >&2;) <>
/dev/tcp/localhost/8080"
      interval: 10s
      timeout: 20s
      retries: 10
      start_period: 40s
    volumes:
      - console_trust:/opt/soffid/iam-console-3/trustedcerts
      - console_conf:/opt/soffid/iam-console-3/conf
      - console_logs:/opt/soffid/iam-console-3/logs
      - console_index:/opt/soffid/iam-console-3/index
    depends_on:
      mariadb:
        condition: service_healthy

  sync-server:
    image: soffid/iam-sync:3.6.10
    hostname: sync-server
    environment:
      SOFFID_PORT: 1760
      SOFFID_HOSTNAME: sync-server.netcompose
      SOFFID_MAIN: yes
      DB_URL: jdbc:mysql://mariadb/soffid01
      DB_USER: soffid
      DB_PASSWORD: XXXXX
    networks:
      - network
    volumes:
```

```
      - sync_conf:/opt/soffid/iam-sync/conf
    depends_on:
      mariadb:
        condition: service_healthy
      console:
        condition: service_healthy

networks:
  network:
    name: netcompose
    driver: bridge

volumes:
  mariadb_data:
    name: compose_mariadbdata
  console_trust:
    name: compose_console_trustedcerts
  console_conf:
    name: compose_console_conf
  console_logs:
    name: compose_console_logs
  console_index:
    name: compose_console_index
  sync_conf:
    name: compose_sync_conf
```

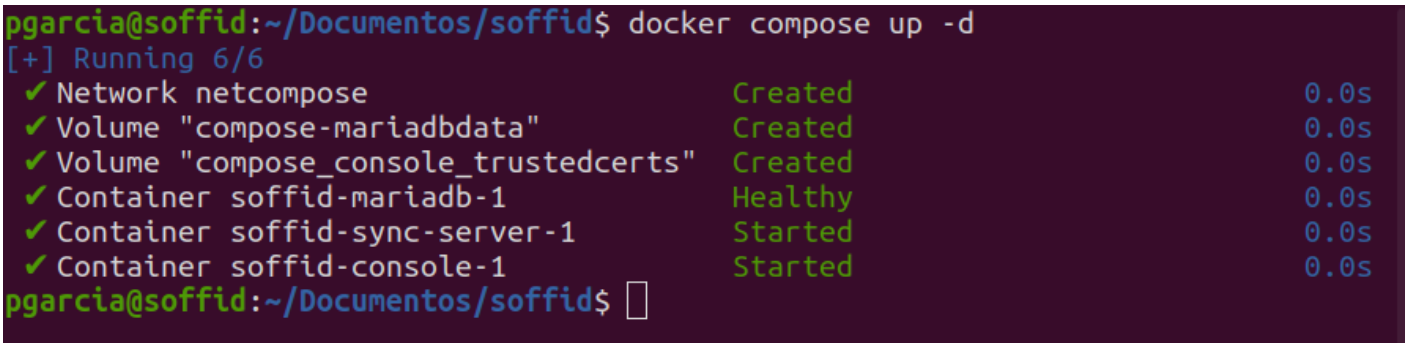
Ubuntu commands

Bear in mind, that the name of the YAML file must be **docker-compose.yaml** And you must execute the docker compose action inside the folder where this file is located.

```
cd /.../.../soffid
```

Apply the YAML:

```
sudo docker compose up -d
```



Check containers

```
sudo docker compose ps
```

View the console log

```
sudo docker compose logs -f console
```

View the Sync Server log

```
sudo docker compose logs -f sync-server
```

> When the console is created, the password for the user *admin* will be *changeit* and it will be valid for 24 hours.

> Now you can connect to Soffid Console http://localhost:8080/soffid The first thing you must do is to change the **admin** user password **changeit**.

Upgrade

You can update the version in the yaml file

```
docker compose up -d
```

How to make a Mariadb Backup?

You can perform Mariadb backup by executing the following command:

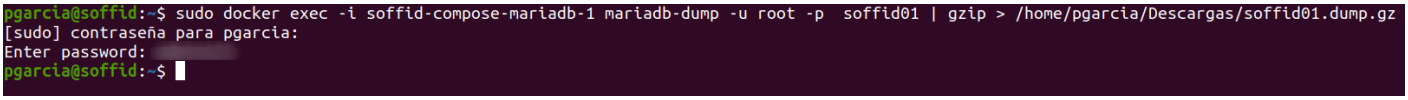
```
sudo docker exec -i MARIADB_CONTAINER_NAME mariadb-dump -u root -p  soffid01 | gzip > /some/path/on/your/host/soffid01.dump.gz
```

This action requires the root password.

You can use:

- `--max-allowed-packet=512M`: sets the maximum packet size to 512MB to handle large databases.
- `--skip-add-locks` and `--skip-lock-tables`: these options are used to improve performance by skipping certain locking mechanisms.

Example



Installing Soffid on Kubernetes

Guide to show le installation process os Soffid IAM in Kubernetes

Installing IAM Console

Guide to install IAM Console on Kubernetes.

Prerequisites

- Kubernetes
- 8GB RAM
- > 10GB disk space
- Supported database installed

Video Tutorial

Linux

https://www.youtube.com/embed/kcMO1DZeD4w?rel=0

Installation

You can use the docker image described at Installing IAM console using Docker. Here you have a sample Kubernets YAML descriptor to deploy it.

Mind that any certificate present in the folder /opt/soffid/iam-console-3/trustedcerts is considered as a trusted certificate. It is important to include the root syncserver certificate or any other certificate the console must connect with.

Another aspect to be aware of is the DNS resolution cache implemented by the java virtual machine. Because pods and service names often change its IP address, it suggested to disable the DNS cache adding the **-Dsun.net.inetaddr.ttl=-1** parameter.

```
apiVersion: v1
kind: Secret
metadata:
  name: trusted-certs
data:
  syncserver:
MIIC+TCCAeGgAwIBAgIGAWwFI+dWMA0GCSqGSIb3DQEBCwUAMDMxDzANBgNVBAMMBlJvb3RDQTEPMA0GA1UE
CwwGbWFzdGVyMQ8wDQYDVQQKDAZTb2ZmaWQwHhcNMTkwNzE3MTMwMjE0WhcNMjkwNzE4MTMwMjE0WjAz
MQ8wDQYDVQQDDAZSb290Q0ExDzANBgNVBAsMBm1hc3RlcjEPMA0GA1UECgwGU29mZmlkMIIBIjANBgkqhkiG9w
0BAQEFAAOCAQ8AMIIBCgKCAQEArkRq5/Kq1a/WlI00xzuxj0CDaH/L3G01dN5tXEFMXnm4VgDaaQXEjxGL0HEO47fl
DWGvJckLxIHSgEtRaHTquLRYLfHwHw3S0CC/DqdYcMZGG7QkCHDfdGunIoRGvWOAYOaV0pSiqBsfXhqG/7R4Ux7kx
7mWoRXHnTyWXZl6tlNl9k2fC47foI5uMsblB3bybNnzLw2JvdwC6I8bbzf1j38r98WevdzQMVYxn10CQjLz2ZN7irYpgH
zaBPoZlwKNVBhf7Tke9TDWuGO5G2UXTpys3euyTFw82TeetNTydcVK8SpdGKMlN95Cj2pgwzzz9d+qaMbN0tJu2Cu
GO+TROwIDAQABoxMwETAPBgNVHRMBAf8EBTADAQH/MA0GCSqGSIb3DQEBCwUAA4IBAQApbPFO3fMlLOdvgx+
O8w7JJyxOJNG+ogV7QH+ipxM6eyCWLI7euJbRSc7skR61Hw0H6Ka+ExFjHOqe0u/ysIg/ITlWTV6olaD8OpT3GKsZqhi
QpBO6dKqPs8JcwMt4gBbQ7YxfYefk3OER6PUG9sk8OPMmdeF+jQu1bWijUNPB0qEPio+NWXc+SF0/lj1DQF2sW9yD
b5LvsbgrkQXewvp6eUJPpwHh+pGqNKKuHkwTCfu5cUtNBMAC6CQjjCm6CUy4BYxRcF3zfzjV2nK3zTeshF7wlK95ZM
aC8IGYbYwZ86qT/x/PxX/qYOjRftSr6/Y58heYvfXLFM1pceQYVW9v
  star_soffid_com:
MIIGcDCCBVigAwIBAgIRAOFY+IkZ+FTddCqKixlQEIMwDQYJKoZIhvcNAQELBQAwgY8xCzAJBgNVBAYTAkdCMRswGQ
YDVQQIExJHcmVhdGVyIE1hbmNoZXN0ZXIxEDAOBgNVBAcTB1NhbGZvcmQxGDAWBgNVBAoTD1NlY3RpZ28gTGlt
aXRlZDE3MDUGA1UEAxMuU2VjdGlnbyBSU0EgRG9tYWluIFZhbGlkYXRpb24gU2VjdXJlIFNlcnZlciBDQTAeFw0xOTA2
MTgwMDAwMDBaFw0yMTA2MTcyMzU5NTlaMFkxITAfBgNVBAsTGERvbWFpbiBDb250cm9sIFZhbGlkYXRlZDEdMBs
GA1UECxMUUG9zaXRpdmVTU0wgV2lsZGNhcmQxFTATBgNVBAMMDCouc29mZmlkLmNvbTCCASIwDQYJKoZIhvcN
AQEBBQADggEPADCCAQoCggEBAKnDKURLcT1XfaMjmIU8QtxdhVe1XG1Oo4LrrEyUVBaAA/5RPcWrvkClf2Kq6/JTBB
xbwvJP1pHAninwTGLam2lNTL2jvlyYXC/oA0hqbRxDCBjkq7e7fj6R2rcFJcAx0jUiyzlfgZmP/QX+ju7KrJ33sR4DPAG47X
nz8XgWJMuXdoSvQ8NeaWNAUjK7Pt3vHB/QD40MAAisXuOq1w11R3MzEJv0nHgNPvxqGvVdHTDX5RwHoVEMEHF7l
QY0Mh2oIejQgN+VPOJNJh6vd7HiVUlVLXop8qhjJQgy2DQS2VGTUBObTFTgD81UPKzZgRzlziU3RWimZMVgHjzDn9M
mzkcCAwEAAaOCAvowggL2MB8GA1UdIwQYMBaAFI2MXsRUrYrhd+mb+ZsF4bgBjWHhMB0GA1UdDgQWBBTPiYcz
qwQVFTogNEQydqg0WGGnwzAOBgNVHQ8BAf8EBAMCBaAwDAYDVR0TAQH/BAIwADAdBgNVHSUEFjAUBggrBgEF
BQcDAQYIKwYBBQUHAwIwSQYDVR0gBEIwQDA0BgsrBgEEAbIxAQICBzAlMCMGCCsGAQUFBwIBFhdodHRwczovL3N
lY3RpZ28uY29tL0NQUzAIBgZngQwBAgEwgYQGCCsGAQUFBwEBBHgwdjBPBggrBgEFBQcwAoZDaHR0cDovL2NydC
5zZWN0aWdvLmNvbS9TZWN0aWdvUlNBRG9tYWluVmFsaWRhdGlvblNlY3VyZVNlcnZlckNBLmNydDAjBggrBgEFBQ
cwAYYXaHR0cDovL29jc3Auc2VjdGlnby5jb20wIwYDVR0RBBwwGoIMKi5zb2ZmaWQuY29tggpzb2ZmaWQuY29tMII
BfgYKKwYBBAHWeQIEAgSCAW4EggFqAWgAdgC72d+8H4pxtZOUI5eqkntHOFeVCqtS6BqQlmQ2jh7RhQAAAWtpdk
7pAAAEAwBHMEUCIQCyc83CoGLtckCrDEtAph3U/+XMqwkEPwqEgi9bu7xNBgIgKachYG2OED40K9pd9byRWUjy+B
eV+5tVeN+I8JD48XoAdQBElGUusO7Or8RAB9io/ijA2uaCvtjLMbU/0zOWtbaBqAAAAWtpdk7+AAAEAwBGMEQCIFqju
u2Q/TTq48nkobC87nRfgE9FQmlUp4PI98U90ygJAiBoFsiy0kz2ZDNz+BeAVjqAj7UsnrNIv8vwG3V7rh6kxgB3AG9Tdq
wx8DEZ2JkApFEV/3cVHBHZAsEAKQaNsgiaN9kTAAABa2l2Tv4AAAQDAEgwRgIhAMLmnVu4rduXSiaC5pfbk6uQsceV
6zEx1fgNjQXNupDwAiEAtCh5VG2IC6iWy0chA/PfC5ejmlgBAmHbYLxsr9uiOWwwDQYJKoZIhvcNAQELBQADggEBAB
```

```
qZ8Stnzkk/abCQTMjOhNsSswSZZ74mszAGrd+emh7/VhLeJ29AaoMiCF5j0uphx/t9id5UmKbqwuapo9E1NuAVQqDO
V1N0wV4Awa2nEivbDcuDCTMX6VtOK3DnCnE9yLMdD6GF9xcwzsgz5wKXu2Dxwt4vw05KIM+4Myy91sEpifa62+q
dzR/Vfbv6SqeL1IzTDyHMzEtBu/4jL189VeSkTVvdKGT1g6eAMHTX562z7jJgTH23c2zolCEj9YPd+KUbt6/OO+Pljsj0Me
TzO1QImj2syqCE/O4tYyHOHOdHJcrVSP951nCu0bkH6MBUhFvgk8a6rjI8tcnZCpsdcNU=
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: soffid-console
  labels:
    app: soffid
    type: console
spec:
  replicas: 1
  selector:
    matchLabels:
      app: soffid
      type: console
  template:
    metadata:
      labels:
        app: soffid
        type: console
    spec:
      containers:
      - name: soffid-console
        image: soffid/iam-console:3.0.0
        imagePullPolicy: Always
        resources:
          limits:
            memory: 4Gi
          requests:
            memory: 2Gi
        volumeMounts:
        - name: trusted-certs-volume
          mountPath: /opt/soffid/iam-console-3/trustedcerts
        ports:
        - containerPort: 8080
        env:
          - name: DB_USER
```

```
            value: soffid
          - name: DB_PASSWORD
            value: 5uper5ecret
          - name: JAVA_OPT
            value: "-Xmx4048m -Dsun.net.inetaddr.ttl=1"
          - name: DB_URL
            value: jdbc:mariadb://mariadb-service:3306/soffid
      imagePullSecrets:
      - name: regcred
      volumes:
      - name: trusted-certs-volume
        secret:
          secretName: trusted-certs
---
apiVersion: v1
kind: Service
metadata:
  name: iam-console-service
spec:
  selector:
      app: soffid
      type: console
  type: loadBalancer
  ports:
  - name: web
    protocol: TCP
    port: 8080
    targetPort: 8080
```

Linux commands

Apply the YAML file with the defining Kubernetes resources

```
kubectl apply -f syncserver.yaml
```

Check deployments

```
kubectl get deployments
```

Check pods: you can check pods and their status

```
kubectl get pods
```

View the IAM console log

```
kubectl logs <your-pod-iamconsole-name>
```

> When the console is created, the password for the user *admin* will be *changeit* and it will be valid for 24 hours.

> Now you can connect to Soffid Console http://<Node-Ip>:<publish-port>/soffid The first thing you must do is to change the admin user password.

> Next Step: Installing Sync server

Installing Sync server

Guide to install Sync server on Kubernetes.

Prerequisites

Soffid IAM sync server requires the following requirements:

- Supported database installed
- Soffid Console Installed

Video Tutorial

Linux

https://www.youtube.com/embed/XZFMLQ0OkAA?rel=0

Installation

You can use the docker image described at Installing Sync server using Docker. Here you have a sample Kubernets YAML descriptor to deploy it.

```
# Secrets to store syncserver configuration
apiVersion: v1
kind: Secret
metadata:
  name: syncserver
type: Opaque
```

```
data:
  config: c3Nva20=
---
# Service account for sync server
apiVersion: v1
kind: ServiceAccount
metadata:
  name: syncserver
---
# Role to access the sync server
kind: ClusterRole
apiVersion: rbac.authorization.k8s.io/v1
metadata:
  name: syncserver
rules:
  - verbs:
      - get
      - update
    apiGroups:
      - ''
    resources:
      - deployments
      - pods/attach
      - secrets
      - secrets/syncserver
---
kind: RoleBinding
apiVersion: rbac.authorization.k8s.io/v1
metadata:
  name: syncserver
  namespace: default
subjects:
  - kind: ServiceAccount
    name: syncserver
roleRef:
  apiGroup: rbac.authorization.k8s.io
  kind: ClusterRole
  name: syncserver
---
apiVersion: apps/v1
```

```
kind: Deployment
metadata:
  name: syncserver01
  labels:
    app: soffid
    type: syncserver
spec:
  replicas: 1
  selector:
    matchLabels:
      app: soffid
      type: syncserver
  template:
    metadata:
      labels:
        app: soffid
        type: syncserver
    spec:
      serviceAccountName: syncserver
      containers:
        - name: syncserver
          image: soffid/iam-sync:3.0.0
          ports:
            - containerPort: 760
              name: syncserver-port
          readinessProbe:
            initialDelaySeconds: 5
            failureThreshold: 1
            httpGet:
              path: /diag
              scheme: HTTPS
              port: 760
          livenessProbe:
            initialDelaySeconds: 5
            timeoutSeconds: 3
            failureThreshold: 3
            httpGet:
              path: /diag
              scheme: HTTPS
              port: 760
```

```
        env:
          - name: DB_USER
            value: soffid
          - name: DB_PASSWORD
            value: 5uper5ecret
          - name: SOFFID_HOSTNAME
            value: syncserver01.cloud.soffid.com
          - name: SOFFID_MAIN
            value: "yes"
          - name: KUBERNETES_CONFIGURATION_SECRET
            value: "syncserver"
          - name: DB_URL
            value: jdbc:mariadb://mariadb-service/soffid
---
apiVersion: v1
kind: Service
metadata:
  name: syncserver
spec:
  externalTrafficPolicy: Local
  type: LoadBalancer
  selector:
    app: soffid
    type: syncserver
  ports:
  - name: syncserver
    protocol: TCP
    port: 760
    targetPort: 760
```

Linux commands

Apply the YAML file with the defining Kubernetes resources

```
kubectl apply -f syncserver.yaml
```

Check deployments

```
kubectl get deployments
```

Chek pods: you can check pods and their status

```
kubectl get pods
```

View Sync server log

```
kubectl logs <your-pod-syncserver-name>
```

> Now you can connect to the IAM console http://<Node-Ip>:<publish-port>/soffid and chek if Console and Syncserver are connected.

How to copy to Kubernetes Secrets?

When making any manual changes to the Sync server configuration files, it will be necessary to copy these changes to the Kubernetes secrets.

Command example:

```
java -cp "/opt/soffid/iam-sync/bin/bootstrap.jar" com.soffid.iam.sync.bootstrap.KubernetesSaver
```

> Soffid version 3.x upgrade automatically the certificates when the certificate end date is close and no manual actions are required.

How to copy Sync Server Kube Conf to Database table?

When you install soffid Sync server in kubernetes, a properties file is generated. If this file is not saved in a permanent storage, it could be lost during the Syns Server upgrade process.

Here you are the steps to copy your Kube config to a data base table

1.-

```
unset KUBERNETES_CONFIGURATION_SECRET
```

2.-

```
export DB_CONFIGURATION_TABLE=syncserver
```

3.-

```
java -cp "/opt/soffid/iam-sync/bin/bootstrap.jar:/opt/soffid/iam-sync/lib/mariadb-java-client-1.8.0.jar:/opt/soffid/iam-sync/lib/ojdbc10-19.18.0.0.jar:/opt/soffid/iam-sync/lib/postgresql-42.2.5.jre7.jar:/opt/soffid/iam-sync/lib/sqljdbc4-3.0.jar" com.soffid.iam.sync.bootstrap.KubernetesSaver
```

High Availability

Introduction

High availability configuration is supported on each layer of the Soffid stack.

Database replication

Soffid supports two kinds of database replication:

- Builtin asymmetric replication
- Database engine replication

Builtin asymmetric database replication

There is an addon available in the download area. This addon lets you define replica databases that will be populated using the sync server engine.

Afterward, you can instruct any sync server to use this replica database upon the master database failover. When the main database is ready, the synchronization server will fall back and use the master database again.

This mechanism provides a simple way to ensure that all the services provided by the synchronization server are alive upon database failure but does not protect the Soffid console. It's useful to ensure single sign-on components work properly upon database failure.

Database engine replication

This is the recommended configuration to achieve database high availability, but the way to configure depends on the selected engine. **There is a special table named SC_SEQUENCE that must not be replicated across instances**. This table contains a single row with the global counter for new object ids: Its columns are:

SEQ_NEXT: Next sequence number to assign.

SEQ_CACHE: How many sequence numbers must be cached by Soffid.

SEQ_INCREMENT: Gap between sequence numbers.

So, this table can have the following values for a two database replicas. So that one replica will generate positive IDs and the other one will generate negative IDs:

Database	SEQ_NEXT	SEQ_CACHE	SEQ_INCREMENT
First	1	100	+1
Second	-1	100	-1

Another possibility, valid for a three database replica would be the following. One replica will generate 1,4,7,..., the second one will generate 2,5,8,... and the third one will generate 3,6,9,... and so on.

Database	SEQ_NEXT	SEQ_CACHE	SEQ_INCREMENT
First	1	100	+3
Second	2	100	+3
Third	3	100	+3

Console high availability

Many consoles can be installed either independently or bound to a load balance appliance. This is the best way to increase architecture scalability.

Synchronization server high availability

Soffid supports the installation of many synchronization servers. The only task that is exclusive to the main (first) synchronization server is the enrolment of new synchronization servers. All the remaining tasks can be performed by any synchronization server

Customice logging

Introduction

Sync server logging can be customized by adding logging.properties file in the conf directory.

Example

Following is a sample configuration file:

```
handlers=java.util.logging.ConsoleHandler
.level=INFO
config=

java.util.logging.ConsoleHandler.level=INFO
java.util.logging.ConsoleHandler.formatter=com.soffid.iam.sync.engine.log.SoffidFormatter

org.hibernate.level=WARNING
org.springframework.level=WARNING
RemoteServiceLocator.level=SEVERE
org.mortbay.log.level=SEVERE
org.springframework.context.support.ClassPathXmlApplicationContext.level=WARNING
```

Local configuration properties

Introduction

seycon.properties file gives administrators a way to customize and improve synchronization server behavior. Some of the following parameters will always be present, some others should be created by the administrator.

Parameter	Description
user	database owner
password	database owner's password (obfuscated)
db	database url
sslkey	obfuscated password used to protect the server private/public key
hostname	host name
serverlist	list of master and backup servers.
java_opt	additional parameters to pass to JVM. Sample value for a high capacity server are: java_opt=-Xmx1024M
broadcast_listen	Set to true to enable the synchronization server to listen on any available IP address. By default, the server will only listen on the IP address that it's host name resolves to.
requestId	it will temporary contain the request number during the certificate enrollment process

Upgrade Soffid3

Upgrade from version 2

These are the steps to upgrade your Soffid 2 deployment to Soffid 3:

1. Stop Soffid 2 console
2. Install and configure Soffid 3 IAM console. It will upgrade the database and perform any upgrading task.
   Have a look and the console log file to check the upgrade process log.
3. Upgrade optional modules. After the console upgrade, most of them will not work as expected. You must upload Soffid 3 compatible versions through the plugins page.
   After uploading them, restart the console
4. Upgrade sync servers. Simply install Soffid 3 sync server on top of current Soffid 2 sync server

To upgrade a docker deployment, docker containers must be dropped and created again, using the same parameters used for the initial setup. Tools like Portainer will help you do this task.

To upgrade a Kubernetes deployment, simply change the version tag in your Kubernetes YAML file. The system will pull the image from the docker hub and will start the service

Upgrade from version 3

To upgrade a Soffid 3 IAM console, simply install the new packages downloaded from our downloads site. It will replace any component and will restart the service.

If it's needed, it will upgrade the database and perform any upgrading task.

In the same way, to upgrade a Soffid 3 Sync server install the new packages downloaded from our download site. It will replay any component and restart the service.

Docker and Kubernetes notes

To upgrade a docker deployment, docker containers must be dropped and created again, using the same parameters used for the initial setup. Tools like Portainer will help you do this task.

To upgrade a Kubernetes deployment, simply change the version tag in your Kubernetes YAML file. The system will pull the image from the docker hub and will start the service