

# APS OpenJPA Provider

User Guide

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# 1 APSJPAService

This provides JPA to services and applications. It has a slightly more OSGi friendly API than the `org.osgi.service.jpa.EntityManagerFactoryBuilder`. The `APSOpenJPAProvider` however returns an `APSJPAService` instance that also implements `EntityManagerFactoryBuilder`. For some reason I haven't figured out yet, it cannot be registered as a service with the `EntityManagerFactoryBuilder` interface! The bundle fails to deploy if that is done.

The provided service is using OpenJPA. The service works partly as an extender inspecting deployed bundles for a `META-INF/persistence.xml` file. When found this is read and some setup is done already there. The `persistenceUnitName` from the `persistence.xml` file is used to connect the client later with its configuration. When a JPA using bundle is shut down its JPA setup is automatically cleaned.

Here is an example of usage:

```
private APSJPAEntityManagerProvider emp = null;
...
private APSJPAEntityManagerProvider getEMP() {
    if (this.emp == null || !this.emp.isValid()) {
        DataSourceDef dsDef = this.dataSourceDefService.lookupByName("MyDS");
        if (dsDef == null) {
            throw new SomeException("Could not find an 'MyDs' in
'persistence/datasources' configuration!");
        }
        Map<String, String> props = new HashMap<String, String>();
        props.put("javax.persistence.jdbc.user", dsDef.getConnectionUserName());
        props.put("javax.persistence.jdbc.password",
dsDef.getConnectionPassword());
        props.put("javax.persistence.jdbc.url", dsDef.getConnectionURL());
        props.put("javax.persistence.jdbc.driver",
dsDef.getConnectionDriverName());
        this.emp = this.jpaService.initialize(this.bundleContext,
"myPersistenceUnitName", props);
    }
    return this.emp;
}
...
EntityManager em = getEMP().createEntityManager();
em.getTransaction().begin();

try {
    RoleEntity role = new RoleEntity(id);
    role.setDescription(description);
    em.persist(role);
    em.getTransaction().commit();
}
catch (RuntimeException re) {
    em.getTransaction().rollback();
    throw re;
}
finally {
    em.close();
}
```

This code example handles the `APSJPAService` having been restarted or redeployed. When `emp.isValid()` returns false then all you need to do is to call `.jpaService.initialize(...)` again. The rest is just POJPA (Plain Old JPA :-)).

## 1.1 APIs

```
public interface APSJPAService [se.natusoft.osgi.aps.api.data.jpa.service] {
```

This service allows an JPA *EntityManager* to be gotten for a persistent unit name.

So why is this done this way ? Why is not an *EntityManagerFactory* returned?

The answer to that is that the *EntityManagerFactory* is internal to the service who is responsible for creating it and for closing it at sometime (stopping of bundle). The client only needs an *EntityManager* for which the client is responsible after its creation.

The creation of the *EntityManagerFactory* is delayed until the call to *initialize(...)*. Creating the EMF along with the persistence provider at persistence bundle discovery would limit database connection properties to the persistence.xml file which is less than optimal to put it mildly. This way a client can make use of the *APSDDataSourceDefService* to get the JDBC properties which it can pass along to this service.

The default provider implementation of this service uses OpenJPA which provides its own connection pooling.

**APSJPAEntityManagerProvider initialize(BundleContext bundleContext, String persistenceUnitName, Map<String, String> props) throws APSResourceNotFoundException**

Initializes and returns a provider from the specified properties.

*Returns*

*A configured EntityManager.*

*Parameters*

*bundleContext* - The context of the client bundle. It is used to locate its persistence provider.

*persistenceUnitName* - The name of the persistent unit defined in persistence.xml.

*props* - Custom properties to configure database, etc.

```
public static interface APSJPAEntityManagerProvider [se.natusoft.osgi.aps.api.data.jpa.service] {
```

Once you get this it is valid until the *APSJPAService* is stopped (which will happen if the service is redeployed!).

**public boolean isValid()**

Returns true if this instance is valid. If not call *APSJPAService.initialize(...)* again to get a new instance. It will be invalid if the *APSJPAService* provider have been restarted.

**EntityManager createEntityManager()**

Creates a new *EntityManager*. You are responsible for closing it!

Please note that the *EntityManager* caches all referenced entities. If you keep and reuse it for a longer time it can use more memory. For example at [http://docs.jboss.org/ejb3/app-server/tutorial/extended\\_pc/extended.html](http://docs.jboss.org/ejb3/app-server/tutorial/extended_pc/extended.html) it says that "Usually, an *EntityManager* in JBoss EJB 3.0 lives and dies within a JTA transaction". This indicates how long-lived the *EntityManager* should preferably be.

*Returns*

*A configured EntityManager.*

**EntityManagerFactory getEntityManagerFactory()**

Returns the underlying *EntityManagerFactory*. This will return null if `isValid()` return false!

Be very careful what you do with this! It is managed by this service!

}

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