Cristal-ISE WP4

D4.1. Domain Appplication Design

Agilium NG

Version DRAFT 1.2 du 10 novembre 2014

DRAFT 1.0	30/01/2014	Création du document
DRAFT 1.1	17/10/2014	Big picture
DRAFT 1.2	10/11/2014	Enhancements and translation

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1 Objet

1.1 Contexte

AGILIUM est une suite logicielle de BPM qui permet aux entreprises de modéliser puis de gérer l'exécution et l'évolution de leur processus métier.

AGILIUM est utilisé dans différents secteur d'activité pour gérer tant des processus de production industrielle que des processus administratifs

AGILIUM est extensible : dans le cadre des projets d'intégration chez les clients, il est possible de lui adjoindre de nouveaux comportements spécifiques pour les utiliser depuis des activités des processus métier.

Il est possible d'ajouter par exemple un client OPC pour permettre à une activité une processus métier d'interroger directement un serveur SCADA pour lire des des données de production

Le moteur d'orchestration d'AGILIUM qui exécute les instances de processus métier est basé sur le « framework Cristal » créé dans le cadre de la conception et fabrication de l'expérience CMS du LHC au CERN.

Ce moteur d'orchestration est transactionnel, chaque changement d'état est persistant, ce qui permet de garantir le redémarrage en l'état après une interruption inopinée.

1.2 Etat de la suite logicielle

La suite logicielle AGILIUM v3 est composé de trois logiciels majeurs :

- AGILIUM Factory : C'est l'atelier de modélisation des processus d'AGILIUM développé en Java en utilisant la technologie Eclipse RCP

- AGILIUM Web : C'est le moteur de l'interface graphique d'Agilium avec laquelle les utilisateurs interagissent

- AGILIUM Server : c'est la pièce maîtresse d'AGILIUM qui intègre le moteur d'orchestration et plusieurs sous-système spécialisés comme le « REST server » ou encre le « timeout manager » en charge d'exécuter les activités automatiques et les alarmes.

Le logiciel AGILIUM Server est une application Java monolithique, les différents sous-système qu'il abrite s'exécutent dans des threads concurrents.

1.2.1 Sensibilité aux erreurs

Comme certain de ces threads sont en charge d'exécuter du code tiers, les dysfonctionnements de ce code induisent des arrêts complet du serveur avec des conséquences lourdes pour les utilisateurs.

Deux cas réels d'erreurs induites par du code tiers :

- Une société d'expédition utilisant AGILIUM pour gérer un processus de facturation mensuelle a vu le server s'arrêter de fonctionner suite à une augmentation du nombre de facture (cf. facteur 20). Cette augmentation de charge non prévue a causé un dysfonctionnement du code tiers non protégé (cf. OutOfMemory)

- Une administration a vu son server AGILIUM s'arrêter de fonctionner suite à la mise à jour du logiciel de production de documents bureautique appelé depuis une activité d'un de ses processus métier. La librairie cliente n'ayant pas été mise à jour en regard de son serveur, elle a provoqué une erreur généralisé du process (SegmentFault)

Dans les deux cas, les personnels en charge de l'exploitation d'AGILIUM n'ont pu redémarrer leur serveur car son architecture monolithiques induisait un blocage total : les services d'accès aux descriptions étant indisponibles, il était impossible de modifier les instances de processus intégrant les activité incriminées pour empêcher le code tiers de s'exécuter à nouveau et de reproduire l'incident.

1.2.2 Tenue à la charge

Le serveur AGILIUM monolithique actuel n'a pas la capacité à répartir la charge induite par des activités qui consomment beaucoup de ressource.

Dans de tels cas, c'est la totalité des temps de réponse du serveur qui augmentent fortement.

1.3 Eclatement et isolation

Les problèmes décrits ci-avant, inhérents à l'architecture monolithique du serveur AGILIUM, nous conduisent à vouloir les solutionner en isolant les différents sous-systèmes du serveur pour limiter la propagation des dysfonctionnements et pour être en mesure d'attribuer des quotas de ressources par sous-système.

Pour un logiciel développé en java deux modèles d'isolation existent :

- « in-process » : les sous-système sont répartis dans des isolats gérés par la JVM et interagissent en utilisant des canaux de messages. Ce modèle est spécifié dans la JSR-121[1].

- « by-process » : les sous système sont répartis dans des instances de machines virtuelles distinctes et interagissent en utilisant un protocole de communication.

1.3.1 Isolation in-process

Il n'existe pas de machines virtuelles java destinées aux serveurs d'entreprise, de qualité industrielles et implémentant la JSR-121. Les implémentations de Sun (MVM[2], MVM2[3], Sqwak[4]) sont restées expérimentales et les travaux d'IBM portant sur les JVM destinées à supporter les applications « Multi-tenant[5] » basées sur l'isolement ne sont pas encore finalisés.

De plus petits acteurs (ex : Waratek) ont des offres d'isolation destiné au déploiement de WebApplications dans le Cloud pour optimiser leurs consommations des ressources. Ces offres ne

1.3.2 Isolation « by-process »

C'est le modèle d'isolement retenu en s'appuyant sur un outillage de gestion de composition.

L'outil retenu est capable de prendre en charge automatiquement la répartition des composants dans des isolats suivant les critères comme par exemple :

- le langage de développement

- la consommation de ressource

- la qualité (cf. composant tiers)

1.4 Component Based Refactoring

L'outillage utilisé pour mettre en œuvre l'isolation « by-process » impose de concevoir la nouvelle version du serveur Agilium comme un ensemble de composants interagissant entre eux en publiant et consommant des services.

La conception de ces composants est régie par les règles des d'ingénierie suivantes :

- Component-based software engineering[6]

- Software Communications Architecture[7]

---

1   JSR 121: Application Isolation API Specification https://jcp.org/en/jsr/detail?id=121
2   The Multi-Tasking Virtual Machine: Building a Highly Scalable JVM http://www.oracle.com/technetwork/articles/javase/mvm-141094.html
3   https://labs.oracle.com/projects/barcelona/papers/usenix03.pdf
4   Squawk Project Kenai squawk.java.net/
5   http://fr.slideshare.net/Graeme_IBM/jvm-multitenancy-javaone-2012
6   http://en.wikipedia.org/wiki/Component-based_software_engineering
7   http://en.wikipedia.org/wiki/Software_Communications_Architecture

2 Design

2.1 Big picture

The objectives :

Distribution of the the sub-systems of the agilium server in a set of isolates to achieve the objectives :

- limit the complexity of the Agilium Server
- suppress the circular dependencies
- protect the other sub-systems of the crash of one of them
- allow the starting of several instances of a sub-system to accept more load

The Agilium NG server is a set of compnents designed using the sca methodology.

At runtime, the obtained composition is brought to life by a composer which determine the number of isolates to be launched according the constrains defined in the composition.
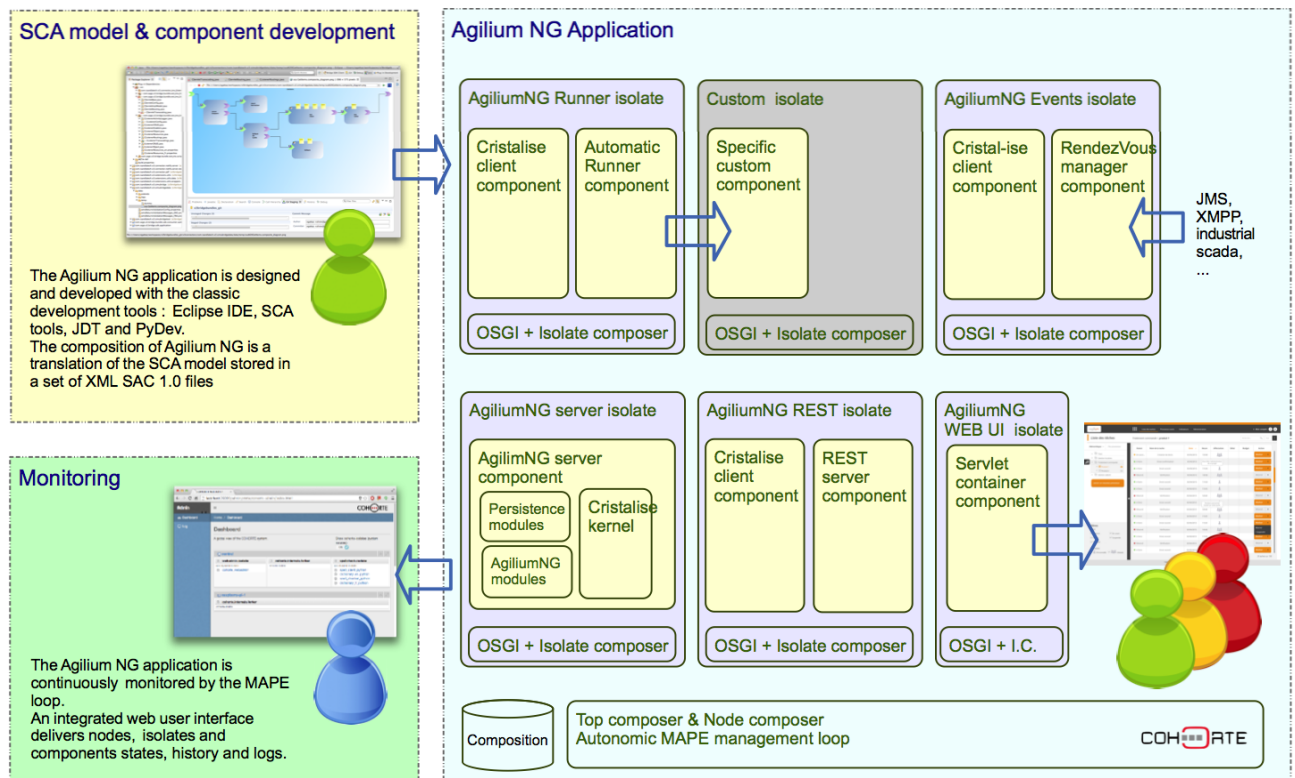
2.2 The main components:

2.2.1 The isolate "server"

AgiliumNG server

- this component wraps the AgiliumNG server sub-system.
- To be validated, It requires services provided by the LookUp manager and the xmldb storage manager

LookUp manager

- This component wraps the LDAP sub-system

- To be validated,it requires ths service provided by the ldap controler component

LDAP controler

- This component wraps the LDAP server implementation (Apache DS 2.0)

Xmldb storage manager

- This component wraps the XmlDB sub-system
- To be validated,it requires ths service provided by the xmldb controler component

Xmldb controler

- This component wraps the XmlDB server implementation (BaseX 7.9)

2.2.2 The isolate "Runner"

Cristalise Client

- This component wraps the Cristalise client library
- It provides serveral services allowing acces to the items manager by the AgiliumNG server

TimeOut manager

- This component manage the alarmes defined

Automatic Runner

- This component execute the focused activities associated to the rôle "Agl-automatic"

2.2.3 The isolate "Events"

Cristalise Client

Rendez-vous manager

- This component manage the execution of the activities associated to the rôle "Agl-events"

2.2.4 The isolate "REST"

Cristalise Client

REST server

- This component is based on an http server provided by the Apache Http components 4 library

2.2.5 The isolate "WEB UI"

Servel Container component

- This component is based on a Servlet container provided by Jetty

3 The REST API

3.1 Design

The aim of the REST API is to provide, in a loose coupled way, a mean to manage Items and their view points from third party applications.

This API is the main entry point used by Agilium NG client applications like the WEB UI server, mobile clients or the factory.

The Representational state transfer[8] (REST) API is delivered by a dedicated isolate.

The definition of the REST API follow the "rest patterns[9]" recommandations.

Pragmatic RESTful API [10]

3.2 HTTP Verbs usage

http://micheltriana.com/2013/09/30/http-verbs-in-a-rest-web-api/

Resource Sample		GET (aka Read)	POST (aka insert)	PUT (aka update)	DELETE (aka delete)	PATCH (aka partial update)
api/users	Action	Gets a list of users	Creates a user	Batch Update	Errors out	Batch Update the users only with the attributes present in the request
	Return	List of users	New user	No payload, only HTTP Status Code	Error HTTP Status Code	No payload, only HTTP Status Code
api/users/123	Action	Gets a single user	Errors out	Updates the user	Deletes the user	Partially updates the user only with the attributes present in the request
	Return	Single user	Error HTTP Status Code	Updated user	No payload, only HTTP Status Code	Updated full user object

3.3 Proposal

Synthesis of the proposed URIs according the recomandation[11] :

- GET (to get an instance or a list of instances)
  - users/{UUID}
  - users
  - roles/{UUID}

---

8   https://en.wikipedia.org/wiki/Representational_state_transfer
9   http://restpatterns.org.
10   http://www.vinaysahni.com/best-practices-for-a-pragmatic-restful-api#hateoas
11   http://restpatterns.org/Articles/Designing_URIs

- ○ roles
- ○ processes/{UUID}
- ○ processes (return a collection of processes)
  - ▪ { "processes":[{ "uri":"/process/uuidx" }, {...}] }
- ○ patterns/{UUID}
- ○ patterns/{UUID}?xsd
- ○ patterns
- HEAD (obtenir l'entête d'un objet)
  - ○ users/{UUID}
  - ○ catalogs/{UUID}
  - ○ ...
- PUT (update an identified object)
  - ○ eg. users/{UUID}
- PATCH (update partialy an identified object)
  - ○ eg. users/{UUID}
- POST (create an identified object)
  - ○ eg. users/{UUID}
- DELETE (delete an identified object)
  - ○ eg. users/{UUID}

Standard response : a JSON Object

3.4 Errors

Standard response when error : a JSON object

```
{
  "message": "Exception throwing test",
  "duration": " 0,232",
  "class": "java.lang.Exception",
  "stack": [
    {
      "line": 152,
      "class": "com.sage.x3.bridge.bundle.ext.jms.jlistener.rest.CServletConfig",
      "method": "doGet"
    },
    {
      "line": 735,
      "class": "javax.servlet.http.HttpServlet",
      "method": "service"
    },
    {
      "line": 848,
      "class": "javax.servlet.http.HttpServlet",
      "method": "service"
    },
    ...
    {
      "line": 744,
      "class": "java.lang.Thread",
      "method": "run"
    }
  ]
```

```
        }
```

3.5 Authentication

The REST API requests use the standard HTTP Authorization header to pass authentication information using an HMAC function [12] [13]

The difference between this method and PKI is that this method is RESTful, allowing a minimum number of exchanges between the clients and the servers.

The HMAC mechanism for message authentication using cryptographic hash functions is documented by the RFC 2104 : Keyed-Hashing for Message Authentication[14]

POST https://agilium-server:8000/api/login

{   "userid":"zyzyzyzyz",

      "key":"xyxyxyxyxy",

      "secretkey":"yuyuyuyu" }

Response

{   "sessionid":"UUID" }

3.6 Technical choices

Jersey + jdk httpd server + OAuth

JAX-RS with embedded server[15]

Jersey supports the OAuth (v1 and v2)[16]

3.6.1 HTTP servers

Java based HTTP servers represent a minimalistic and flexible way of deploying Jersey application.

The HTTP servers are usually embedded in the application and configured and started programmatically. In general, Jersey container for a specific HTTP server provides a custom factory method that returns a correctly initialized HTTP server instance.

https://jersey.java.net/documentation/latest/deployment.html#deployment.http

Exemple using the JdkHttpServerFactory, which is available in the jersey-container-jdk-http-2.0.jar:

```java
package test.jersey;

import java.net.URI;
import com.sun.net.httpserver.HttpServer;
import org.glassfish.jersey.jdkhttp.JdkHttpServerFactory ;
import org.glassfish.jersey.server.ResourceConfig;

public class ConsoleServerV2 {

    static final String BASE_URI = "http://localhost:9099/";

    public static void main(String[] args) throws Exception {
        HttpServer server = null ;
```

---

12 http://stackoverflow.com/questions/2674445/how-do-api-keys-and-secret-keys-work
13 http://docs.aws.amazon.com/AmazonS3/latest/dev/RESTAuthentication.html
14 http://www.ietf.org/rfc/rfc2104.txt
15 http://stackoverflow.com/questions/8277409/jax-rs-with-embedded-server
16 https://jersey.java.net/documentation/latest/security.html

```java
        ResourceConfig rc = new ResourceConfig(rest.Service.class);
        URI endpoint = new URI(BASE_URI);

        server = JdkHttpServerFactory.createHttpServer(endpoint,rc);
        System.out.println("console v2.0 : Press Enter to stop the server. ");
        System.in.read();
        server.stop(0);

    }
}
```

4 XMLDB server

The XMLDB server used by the Cristal-ISE Kernel is delivered by an instance of BaseX 7.9[17] wrapped in an component instanciated in the Agilium XML Server Isolate.

4.1 The tests with eXistDB

The tests for validation were done using an instance of eXistDB server.

Configuration sample :

```
# XMLDB config (eXist-db or BaseX)
# Attention : "URI","root","user" & "password" are used by :
#   - com.c2kernel.persistency.xmldb.XMLDBClusterStorage
#   - org.cristal.osgi.server.cristaldev.ExistClusterStorageImpl
#
XMLDB.driver=org.exist.xmldb.DatabaseImpl
XMLDB.URI=xmldb:exist://localhost:8080/exist/xmlrpc/db
XMLDB.root=cristalosgiroot
XMLDB.user=admin
XMLDB.password=root
XMLDB.password64=basic:cm9vdA==
XMLDB.existdb.ports=8080,8443
XMLDB.existdb.home=/Applications/eXist-db.app/Contents/Resources/eXist-db
XMLDB.existdb.data=/Users/ogattaz/workspaces/Cristal-eXist-db/webapp/WEB-INF/data
XMLDB.existdb.sudo.password64=basic:UkRGRW9na2ExExOTYy
```

View of the items stored in eXist-db
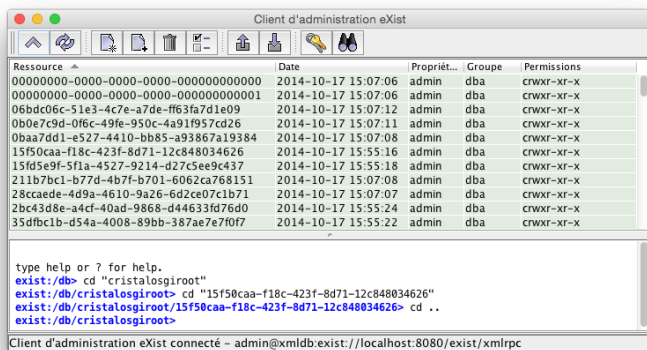
View of one item stored in eXist-db

---

17 http://basex.org/
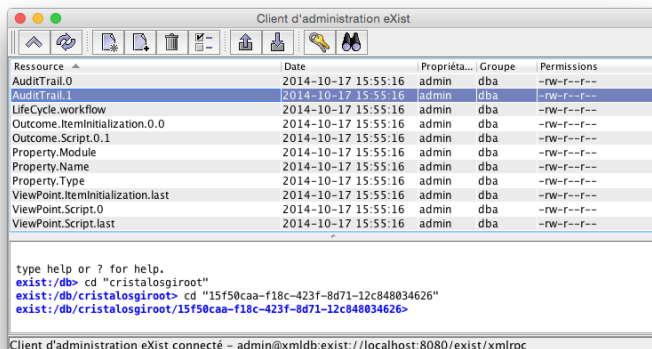
4.2 BaseX : Les raisons de notre choix

Deux retours d'expérience qui résument nos constations :

4.2.1 [basex-talk] BaseX and eXist XML database differences

https://mailman.uni-konstanz.de/pipermail/basex-talk/2012-August/003722.html

```
* BaseX is light-weight, small and still feature rich
* The dev team is responsive
* the codebase is coherent, slim and can be compiled without any external
dependencies
* BaseX in general yields excellent overall performance
* the BSD license is very permissive
* our XQuery implementation has a high level of conformance to the standard
* we are usually very quick in implementing features that are added to the
standard
* we have a increasing number of modules for all kinds of purposes and
participate in the EXPath [2] Community efforts
* our Open Source developments are backed by a company since April 2012 to make
sure that BaseX will (a) stay Open Source and (b) become even better :-)
```

https://mailman.uni-konstanz.de/pipermail/basex-talk/2012-August/003726.html

```
I use BaseX for a project where users search for idiomatic phrases in
a large collection of TEI-annotated texts. The search results are
inspected and then marked for further annotation for which we also use
BaseX.

As BaseX does not allow to search in mixed-content structures---like
TEI data---but eXist does, I gave eXist a try. And yes, eXist gives
better results for a single query, execution time is almost the same.

However, I found some negative points, too:

- Creating the index for a 4GB collection takes some minutes with
BaseX, but some hours with eXist.
- eXist (not used in a web application, though), crashes from time to
time resulting in deleting the index of the respective collection. And
then you have to index again ...  BaseX used in a web application did
not crash so far, we only had some issues with server time outs.

As an experiment showed that my users can overcome the mixed-contente
issue in BaseX by always trying various searches for finding evidence
of one idiomatic phrase and that in the end they where able to collect
as much valid results by using eXist as by using BaseX, we stick with
BaseX.
```

4.3 BaseX

4.3.1 L'isolat "Agilium XML Server" .

Les stories de ce sous projet du WP4 :

1. Analyse technique, spécification des

2. Application de test l'api XQJ

3. Création du/des bundle BaseX

4. intégration Agilium

5. intégration Agilium NG

6. outillage de conversion

4.3.2 L'Application de test l'api XQJ

La préparation :

- Clone du dépôt git de BaseX depuis https://github.com/BaseXdb/basex.git
- Création d'un nouveau workspace "Cristal-basax-db"
- import des 4 projets maven de BaseX
- import du projet "org.cohorte.utilities"
- création du projet "org.cristalise.simpleapp.basex.test" et partage dans le dépôt "validations"

La vue du workspace "Cristal-basax-db"
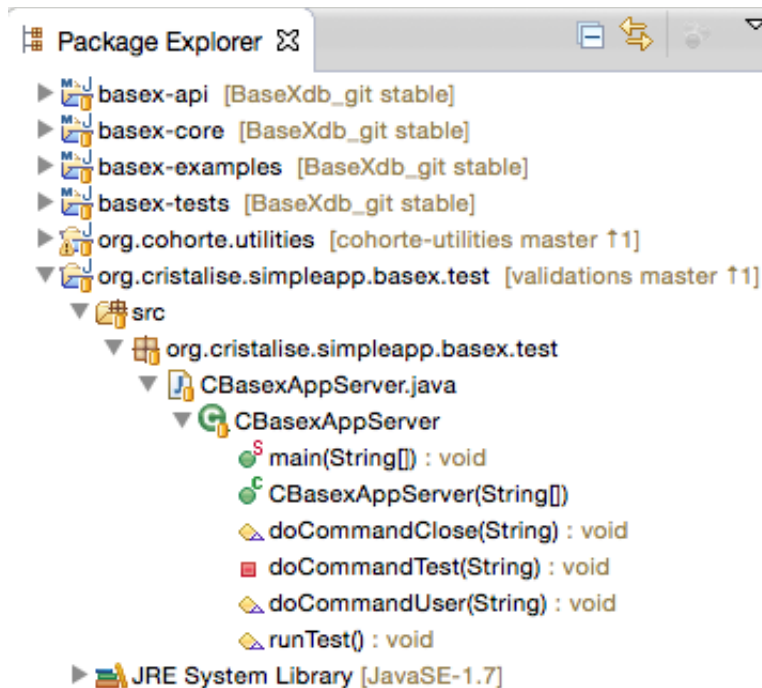
La trace d'exécution de l'application de test dans la console d'Eclipse :

```
;                       doTest; begin
;                       doTest;
;        waitForUserCommand; START Stdin console. Wait for a close command to stop the
server.
;               waitForStop; =>
?
;               waitForStop; Stdin console command line: [?]

             close(  c): Close the tester
             help(  ?): Help
             quit(  q): Close the testerc
;               waitForStop; Stdin console command line: [c]
;            doCommandClose; begin aCmdeLine=[c]
;        waitForUserCommand; END
;                       doTest; end
;                      destroy; close the logger
;                         close; An instance of CActivityLoggerBasicConsole is not closable.
```

5 LDAP server

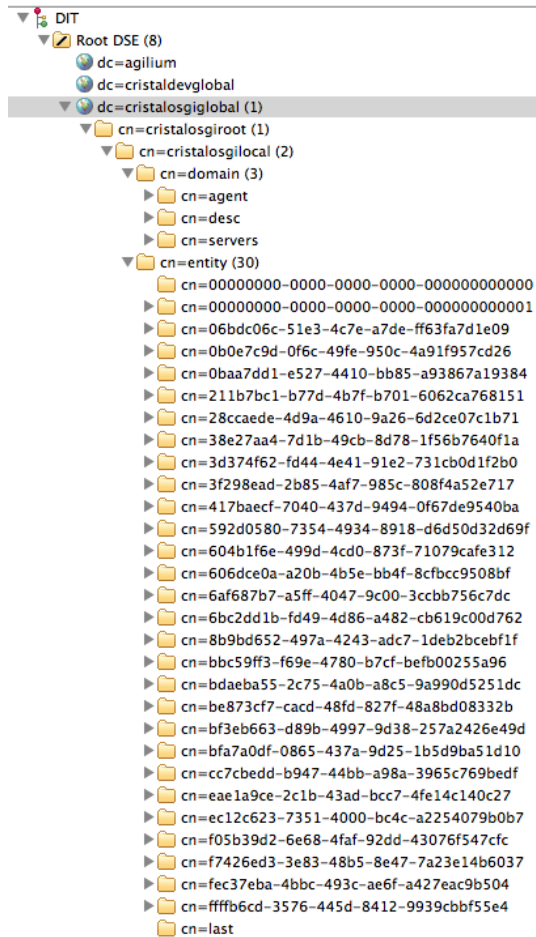The LDAP server used by the Cristal-ISE Kernel is delivered by an instance of Apache DS 2.0[18] wrapped in an component instanciated in the Agilium Server Isolated.

Configuration sample:

```
# LDAP Lookup config
# use the ApacheDS 2.0.0 M15 available using the port 10389
# DN: cn=cristalosgilocal,cn=cristalosgiroot,dc=cristalosgiglobal
#
LDAP.GlobalPath=dc=cristalosgiglobal
LDAP.RootPath=cn=cristalosgiroot
LDAP.LocalPath=cn=cristalosgilocal
LDAP.port=10389
LDAP.host=localhost
LDAP.user=uid=admin,ou=system
LDAP.password=secret
```

View of the partition "cristalosgiglobal" after the bootstrap initialization

```
▼ DIT
  ▼ Root DSE (8)
      dc=agilium
      dc=cristaldevglobal
    ▼ dc=cristalosgiglobal (1)
      ▼ cn=cristalosgiroot (1)
        ▼ cn=cristalosgilocal (2)
          ▼ cn=domain (3)
            ▶ cn=agent
            ▶ cn=desc
            ▶ cn=servers
          ▼ cn=entity (30)
              cn=00000000-0000-0000-0000-000000000000
            ▶ cn=00000000-0000-0000-0000-000000000001
            ▶ cn=06bdc06c-51e3-4c7e-a7de-ff63fa7d1e09
            ▶ cn=0b0e7c9d-0f6c-49fe-950c-4a91f957cd26
            ▶ cn=0baa7dd1-e527-4410-bb85-a93867a19384
            ▶ cn=211b7bc1-b77d-4b7f-b701-6062ca768151
            ▶ cn=28ccaede-4d9a-4610-9a26-6d2ce07c1b71
            ▶ cn=38e27aa4-7d1b-49cb-8d78-1f56b7640f1a
            ▶ cn=3d374f62-fd44-4e41-91e2-731cb0d1f2b0
            ▶ cn=3f298ead-2b85-4af7-985c-808f4a52e717
            ▶ cn=417baecf-7040-437d-9494-0f67de9540ba
            ▶ cn=592d0580-7354-4934-8918-d6d50d32d69f
            ▶ cn=604b1f6e-499d-4cd0-873f-71079cafe312
            ▶ cn=606dce0a-a20b-4b5e-bb4f-8cfbcc9508bf
            ▶ cn=6af687b7-a5ff-4047-9c00-3ccbb756c7dc
            ▶ cn=6bc2dd1b-fd49-4d86-a482-cb619c00d762
            ▶ cn=8b9bd652-497a-4243-adc7-1deb2bcebf1f
            ▶ cn=bbc59ff3-f69e-4780-b7cf-befb00255a96
            ▶ cn=bdaeba55-2c75-4a0b-a8c5-9a990d5251dc
            ▶ cn=be873cf7-cacd-48fd-827f-48a8bd08332b
            ▶ cn=bf3eb663-d89b-4997-9d38-257a2426e49d
            ▶ cn=bfa7a0df-0865-437a-9d25-1b5d9ba51d10
            ▶ cn=cc7cbedd-b947-44bb-a98a-3965c769bedf
            ▶ cn=eae1a9ce-2c1b-43ad-bcc7-4fe14c140c27
            ▶ cn=ec12c623-7351-4000-bc4c-a2254079b0b7
            ▶ cn=f05b39d2-6e68-4faf-92dd-43076f547cfc
            ▶ cn=f7426ed3-3e83-48b5-8e47-7a23e14b6037
            ▶ cn=fec37eba-4bbc-493c-ae6f-a427eac9b504
            ▶ cn=ffffb6cd-3576-445d-8412-9939cbbf55e4
              cn=last
```

---

18 http://directory.apache.org/apacheds/

6 Annexes

6.1 Références isolation

6.1.1 JSR 121

Should Isolates be given a second chance?

- http://www.javalobby.org/java/forums/t105978.html

From MVM to Multi-Tenant JVM

- http://soa-biz.blogspot.ch/2012/09/from-mvm-to-multi-tenant-jvm.html

Barcelona project

- https://labs.oracle.com/projects/barcelona/
- Sun had a couple of reference implementations (MVM, MVM2). For a complete list of related papers, visit Project Barcelona https://labs.oracle.com/projects/barcelona/.)

6.1.2 sécurité

Waratek CloudVM for Java

- http://www.waratek.com/product/cloudvm
- This JVM extends OpenJDK (HotSpot VM) with a virtualization layer that isolates applications in Java Virtual Containers. In addition to application isolation,

6.2 Références RestFull

JAX-RS (JSR 311 & JSR 339)

in French : REST en JAVA avec la JSR-311 : http://blog.octo.com/rest-en-java-avec-la-jsr-311/

6.3 Tests for Agilium NG

See below, the trace of a complete startup of the OSGI modules « CristalLDAP », « CristalXMLDB » and « OsgiCristalDev » on top of the cristal-ise kernel 3.0

```
startServers: Posted=[true] What=[start] Who=[all] Topic=[org/cristalise/osgi/event/topic/managment]
g! OSGiLogFactory.<init>: instanciated
SimpleTCPIPServer: Created server for org.cristalise.kernel.scripting.ScriptConsole on port 15023
SimpleTCPIPServer: Created server for org.cristalise.kernel.entity.proxy.ProxyClientConnection on port 1655
Gateway.init() - ORB initialised. ORB is com.sun.corba.se.impl.orb.ORBImpl
Proxy Client: flagging shutdown.
Server 'localhost' initialised.
Bootstrap.run() setContextClassLoader=[org.cristalise.osgi.lib.kernel.core [40]]
Connected to proxy server on localhost:1655
SimpleTCPIPServer: Connection to Proxy Client Connection from /127.0.0.1
Bootstrap.run() - Verifying kernel boot data items
Bootstrap.run() - Initialising Server Item Workflow
Registering module CristalLDAP
Module CristalLDAP registered
Registering module CristalXMLDB
Module CristalXMLDB registered
Registering module OsgiCristalDev
Bootstrap.verifyResource() - Item NewDevObjectDef exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Schema v0 to Schema NewDevObjectDef
Bootstrap.verifyResource() - Schema ChooseWorkflow not found. Creating new.
ERROR  : Module resource workflow ManageSchema not found. Using empty.
Bootstrap.verifyResource() - Item ChooseWorkflow exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Schema v0 to Schema ChooseWorkflow
Bootstrap.verifyResource() - ElementaryActivityDef CreateNewLocalObjectDef not found. Creating new.
ERROR  : Module resource workflow ManageElementaryActDef not found. Using empty.
Bootstrap.verifyResource() - Item CreateNewLocalObjectDef exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef CreateNewLocalObjectDef
Bootstrap.verifyResource() - ElementaryActivityDef EditPropertyDescription not found. Creating new.
ERROR  : Module resource workflow ManageElementaryActDef not found. Using empty.
Bootstrap.verifyResource() - Item EditPropertyDescription exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef EditPropertyDescription
Bootstrap.verifyResource() - ElementaryActivityDef CreateItem not found. Creating new.
ERROR  : Module resource workflow ManageElementaryActDef not found. Using empty.
Bootstrap.verifyResource() - Item CreateItem exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef CreateItem
Bootstrap.verifyResource() - ElementaryActivityDef SetInstanceWorkflow not found. Creating new.
ERROR  : Module resource workflow ManageElementaryActDef not found. Using empty.
Bootstrap.verifyResource() - Item SetInstanceWorkflow exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef SetInstanceWorkflow
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Bootstrap.verifyResource() - Script CreateNewNumberedVersionFromLast not found. Creating new.
ERROR  : Module resource workflow ManageScript not found. Using empty.
Bootstrap.verifyResource() - Item CreateNewNumberedVersionFromLast exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Script v0 to Script CreateNewNumberedVersionFromLast
Bootstrap.verifyResource() - ElementaryActivityDef AssignNewVersionFromLast not found. Creating new.
ERROR  : Module resource workflow ManageElementaryActDef not found. Using empty.
Bootstrap.verifyResource() - Item AssignNewVersionFromLast exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef AssignNewVersionFromLast
Bootstrap.verifyResource() - Script SetLastNumberedVersionToLast not found. Creating new.
ERROR  : Module resource workflow ManageScript not found. Using empty.
Bootstrap.verifyResource() - Item SetLastNumberedVersionToLast exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Script v0 to Script SetLastNumberedVersionToLast
Bootstrap.verifyResource() - ElementaryActivityDef MoveLatestVersionToLast not found. Creating new.
ERROR  : Module resource workflow ManageElementaryActDef not found. Using empty.
Bootstrap.verifyResource() - Item MoveLatestVersionToLast exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef MoveLatestVersionToLast
Bootstrap.verifyResource() - ElementaryActivityDef EditDefinition not found. Creating new.
ERROR  : Module resource workflow ManageElementaryActDef not found. Using empty.
Bootstrap.verifyResource() - Item EditDefinition exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef EditDefinition
Bootstrap.verifyResource() - CompositeActivityDef ManageCompositeActDef not found. Creating new.
ERROR  : Module resource workflow ManageCompositeActDef not found. Using empty.
Bootstrap.verifyResource() - Item ManageCompositeActDef exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ManageCompositeActDef
Bootstrap.verifyResource() - CompositeActivityDef ManageElementaryActDef not found. Creating new.
Bootstrap.verifyResource() - Item ManageElementaryActDef exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ManageElementaryActDef
Bootstrap.verifyResource() - CompositeActivityDef ManageScript not found. Creating new.
Bootstrap.verifyResource() - Item ManageScript exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ManageScript
Bootstrap.verifyResource() - CompositeActivityDef ManageSchema not found. Creating new.
Bootstrap.verifyResource() - Item ManageSchema exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ManageSchema
Bootstrap.verifyResource() - CompositeActivityDef ManageStateMachine not found. Creating new.
Bootstrap.verifyResource() - Item ManageStateMachine exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ManageStateMachine
Bootstrap.verifyResource() - CompositeActivityDef CompositeActivityFactory not found. Creating new.
Bootstrap.verifyResource() - Item CompositeActivityFactory exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef CompositeActivityFactory
Bootstrap.verifyResource() - CompositeActivityDef ElementaryActivityFactory not found. Creating new.
Bootstrap.verifyResource() - Item ElementaryActivityFactory exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ElementaryActivityFactory
Bootstrap.verifyResource() - CompositeActivityDef SchemaFactoryWf not found. Creating new.
Bootstrap.verifyResource() - Item SchemaFactoryWf exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef SchemaFactoryWf
Bootstrap.verifyResource() - CompositeActivityDef ScriptFactoryWf not found. Creating new.
Bootstrap.verifyResource() - Item ScriptFactoryWf exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ScriptFactoryWf
Bootstrap.verifyResource() - CompositeActivityDef StateMachineFactoryWf not found. Creating new.
Bootstrap.verifyResource() - Item StateMachineFactoryWf exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef StateMachineFactoryWf
Bootstrap.verifyResource() - CompositeActivityDef ItemDescriptionWf not found. Creating new.
Bootstrap.verifyResource() - Item ItemDescriptionWf exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ItemDescriptionWf
Bootstrap.verifyResource() - CompositeActivityDef ItemDescriptionFactoryWf not found. Creating new.
Bootstrap.verifyResource() - Item ItemDescriptionFactoryWf exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ItemDescriptionFactoryWf
Bootstrap.verifyResource() - CompositeActivityDef ReadOnlyItemDescriptionWf not found. Creating new.
Bootstrap.verifyResource() - Item ReadOnlyItemDescriptionWf exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ReadOnlyItemDescriptionWf
Bootstrap.verifyResource - Script LocalObjectDefCreator not found. Creating new.
Bootstrap.verifyResource() - Item LocalObjectDefCreator exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Script v0 to Script LocalObjectDefCreator
Bootstrap.verifyResource() - Script InstantiateItem not found. Creating new.
Bootstrap.verifyResource() - Item InstantiateItem exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Script v0 to Script InstantiateItem
Bootstrap.verifyResource() - Script SetWorkflow not found. Creating new.
Bootstrap.verifyResource() - Item SetWorkflow exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Script v0 to Script SetWorkflow
Bootstrap.verifyResource() - CompositeActivityDef ModuleFactory not found. Creating new.
Bootstrap.verifyResource() - Item ModuleFactory exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ModuleFactory
Bootstrap.verifyResource() - Schema ModuleExportPath not found. Creating new.
Bootstrap.verifyResource() - Item ModuleExportPath exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Schema v0 to Schema ModuleExportPath
Bootstrap.verifyResource() - ElementaryActivityDef ExportModule not found. Creating new.
Bootstrap.verifyResource() - Item ExportModule exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef ExportModule
Bootstrap.verifyResource() - Schema ModuleAgents not found. Creating new.
Bootstrap.verifyResource() - Item ModuleAgents exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Schema v0 to Schema ModuleAgents
Bootstrap.verifyResource() - ElementaryActivityDef EditModuleAgents not found. Creating new.
Bootstrap.verifyResource() - Item EditModuleAgents exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef EditModuleAgents
Bootstrap.verifyResource() - Schema ModuleProperties not found. Creating new.
Bootstrap.verifyResource() - Item ModuleProperties exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new Schema v0 to Schema ModuleProperties
Bootstrap.verifyResource() - ElementaryActivityDef EditModuleConfiguration not found. Creating new.
Bootstrap.verifyResource() - Item EditModuleConfiguration exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new ElementaryActivityDef v0 to ElementaryActivityDef EditModuleConfiguration
Bootstrap.verifyResource() - CompositeActivityDef ModuleDevWorkflow not found. Creating new.
Bootstrap.verifyResource() - Item ModuleDevWorkflow exists but version 0 not found! Attempting to insert new.
Bootstrap.verifyResource() - Writing new CompositeActivityDef v0 to CompositeActivityDef ModuleDevWorkflow
Module.importAll() - Role 'User' not found. Creating.
Module.importAll() - Role 'User/SubUser' not found. Creating.
Module.importAll() - User 'dev' not found. Creating.
Module.importAll() - User 'user' not found. Creating.
Module OsgiCristalDev registered
Bootstrap.run() - Bootstrapping complete


starter:stop
startServerXmldb: Posted=[true] What=[stop] Who=[cristalise] Topic=[org/cristalise/osgi/event/topic/managment]
g! Transaction Manager: Closing storages
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ProxyManager.shutdown() - flagging shutdown of server connections
Proxy Client: flagging shutdown.
SimpleTCPIPServer: Closing server for org.cristalise.kernel.entity.proxy.ProxyClientConnection on port 1655
ProxyClientConnection 0 closing.
SimpleTCPIPServer: Server closed for org.cristalise.kernel.entity.proxy.ProxyClientConnection on port 1655
SimpleTCPIPServer - Servers still running: 1
SimpleTCPIPServer: Closing server for org.cristalise.kernel.scripting.ScriptConsole on port 15023
SimpleTCPIPServer: Server closed for org.cristalise.kernel.scripting.ScriptConsole on port 15023
SimpleTCPIPServer - Servers still running: 0
```