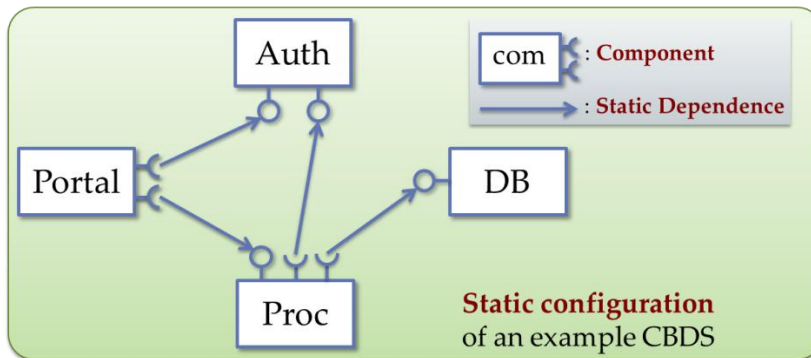


The following figure shows the static configuration of our component-based sample system:



To Run samples in our distribution (tuscanysca-2.0-DU/samples) in your virtual machine, you need to make sure the following things:

1. Setup your environment path

```
set PATH=%PATH%:/home/nju/tuscanysca-2.0-DU/bin
```

2. use NAT network, and make sure your virtual machine's ip address is 10.0.2.15, because our binding uri is this ip.
3. Start all four nodes in your terminals like the following figures.

```
artemis@ubuntu:~$ tuscanysca.sh ~/Documents/20121225-distribution/tuscanysca-2.0-DU/samples/db/conup-sample-db.jar
```

```
artemis@ubuntu:~$ tuscanysca.sh ~/Documents/20121225-distribution/tuscanysca-2.0-DU/samples/auth/conup-sample-auth.jar
```

```
artemis@ubuntu:~$ tuscanysca.sh ~/Documents/20121225-distribution/tuscanysca-2.0-DU/samples/proc/conup-sample-proc.jar
```

```
artemis@ubuntu:~$ tuscanysca.sh ~/Documents/20121225-distribution/tuscanysca-2.0-DU/samples/portal/conup-sample-portal.jar
```

4. After all nodes are started, we can type **installed** in terminal to see which nodes we have started

```
Dec 27, 2012 1:46:45 PM org.apache.tuscanysca.registry.hazelcast.HazelcastDomainRegistry entryAdded
INFO: Remote endpoint added: (@1883954431)Endpoint: URI = AuthComponent#service-binding(TokenService/TokenService)
Dec 27, 2012 1:46:45 PM org.apache.tuscanysca.registry.hazelcast.HazelcastDomainRegistry entryAdded
INFO: Remote endpoint added: (@1123230449)Endpoint: URI = AuthComponent#service-binding(VerificationService/VerificationService)
Dec 27, 2012 1:46:48 PM org.apache.tuscanysca.registry.hazelcast.HazelcastDomainRegistry entryAdded
INFO: Remote endpoint added: (@1752899213)Endpoint: URI = ProcComponent#service-binding(ProcService/ProcService)
installed
conup-sample-proc
conup-sample-portal
conup-sample-auth
conup-sample-db
```

5. Invoke services

- a. Invoke PortalComponent's PortalService

invoke PortalComponent/PortalService execute BEGIN nju cs

"execute" is the service method name; "BEGIN, nju, cs" are the three parameters that are required by this method. In our example, we will display all execution path in our result string.

INFO: aa2cbb89-ec24-4074-a4a6-d07660f99b1d:BEGINPortalComponent.execute.version.1, AuthComponent.getToken.version.1, ProcComponent.process.version.1, AuthComponent.verify.version.1, DBComponent.dbOperation.version.1

The Green color string is root transaction id; the blue color string is our input parameter which is used to identify the start of execution; the black color string is our execution path, in the execution path we will also display the implementation's version

```
default> invoke PortalComponent/PortalService execute BEGIN nju cs
Dec 25, 2012 1:54:10 PM cn.edu.nju.moon.conup.ext.tx.manager.TxDepMonitorImpl r
otTxEnd
INFO: aa2cbb89-ec24-4074-a4a6-d07660f99b1d:BEGINPortalComponent.execute.version
1, AuthComponent.getToken.version.1, ProcComponent.process.version.1, AuthComp
onent.verify.version.1, DBComponent.dbOperation.version.1
```

In every component implementation, we have added a variable which was used to identify implementation's version number. We use this number to test whether our algorithm is right or not.

- b. Ondemand Setup

if you want to set up these dynamic dependencies, you can use our configuration client to set up.

```
artemis@ubuntu:~$ tuscany.sh ~/Documents/20121225-distribution/tuscany-sca-2.0-DU/sam
ples/config/conup-sample-configuration-client.jar
```

invoke ConfigComponent/ConfService ondemand

For simplicity, here we send ondemand command to AuthComponent. When finish ondemand setup, the following figure will be display in your terminal.

```
current compstatus=ondemand, before send req ondemand to parent
-----ondemand setup is done, now notify all.....-----
```

- c. Update your component. in paper example, we update AuthComponent, we put our new version of the component implementation in one folder like following figure:



Attention: here the new version of the component implementation is in the form of a .class file with its package name sub-folder.

invoke ConfigComponent/ConfService update

/home/artemis/Documents/20121225-distribution/tuscany-sca-2.0-DU/samples/update

For simplicity, here we send update command to AuthComponent. when you finish updating, you can invoke Portal service to test whether your update is right(In Portal terminal).

```
invoke PortalComponent/PortalService execute BEGIN nju cs
Dec 25, 2012 3:53:43 PM cn.edu.nju.moon.conup.ext.tx.manager.TxDepMonitorImpl ro
otTxEnd
INFO: 478a0224-4b7f-4cd8-9e82-ff096e33180f:BEGINPortalComponent.execute.version.
1, AuthComponent.getToken.version.2, ProcComponent.process.version.1, AuthCompon
ent.verify.version.2, DBComponent.dbOperation.version.1
```