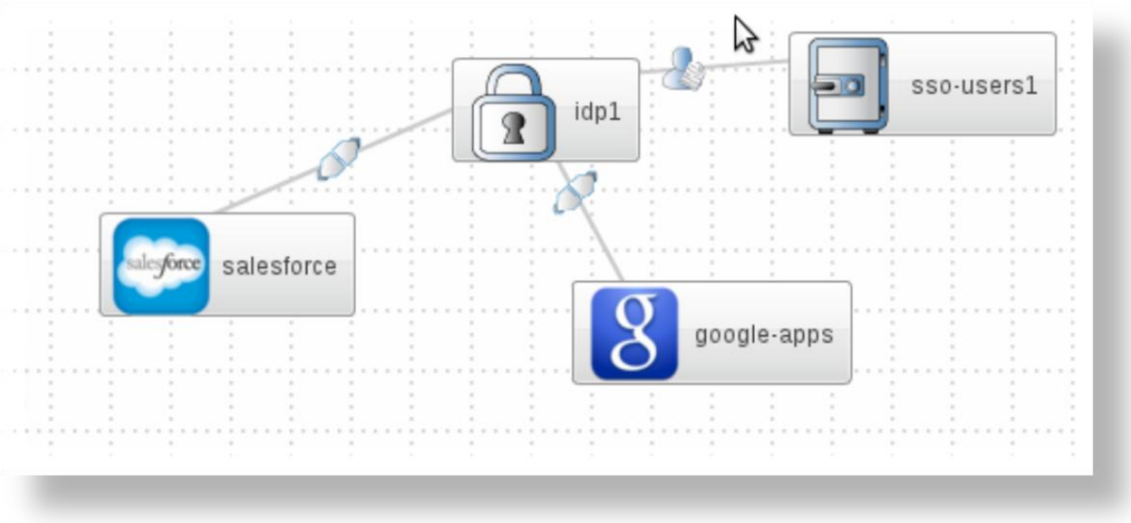
University of Piraeus Department of Digital Systems M.Sc. Security in Digital Systems

Master Thesis: Single Sign-On (JOSSO)



Tzani Adamantia (MTE:1068)

Supervisor Professor: Dr. Xenakis Christos

December 2012

Contents

Pictures

Abstract

The purpose of the present assignment is to describe JOSSO which is a Java-Based SSO solution for web applications. The scope of this assignment is to give an overall knowledge of JOSSO. More particularly, there will be described the installation steps for JOSSO C.E. and JOSSO E.E. Also it will be analyzed the entire screen interface that JOSSO has. Finally it will be described, through steps, an example of how JOSSO creates simple Single Sign-On environment. Furthermore it will be described an example of a Single Sign-On solution in combination with Cloud computing and finally it will be given an example with a two factor authentication solution with the use of WiKID Strong Authentication System. It would be gratifying that this paper might be useful to anyone that wants to use JOSSO as Single Sign-On solution.

The author,

Tzani Adamantia

1. Introduction

Nowadays, where the common web users' needs for web services are rising in a high rate day by day, and he is obliged to keep a number of different identities for a corresponding number of applications, Single Sign-On is the solution for this redundancy. When SSO is introduced into systems user experience could be much better. User does not have to remember many different logins and passwords. He needs to remember only one identity and has to login once in order to access all his preferred web applications. There are many SSO solutions available, others commercial and others open source. One of the most prominent is JOSSO. It is an open source Internet SSO solution for standardized Internet-scale SSO implementations, allowing secure Internet access to the Web-based applications or services of customers, suppliers, and business partners. It is one of most preferred SSO options due to its easy deployment that does not require proficient technological expertise.

2. What is JOSSO

JOSSO, also mentioned as Java Open Single Sign-On, is a SSO solution for web applications. It is an open source software based on Java EE for user authentication and authorization. It is released under the GNU Lesser General Public License (LGPL). With the Single Sign-On property of JOSSO a user logs in once and gains access to all systems without being prompted to log in again at each of them.

A deployment of a Single Sign-On solution often means the waste of significant resources for enabling the Single Sign-On applications and setting up the providers of identity that grand user authorization. JOSSO solves that drawback. By using the agent architecture we can apply these capabilities in a transparent mode. Another feature is that it can support third-party applications that are not open source in order to enable a Single Sign-On solution.

More specifically, JOSSO support the following features:

- Federated Single Sign-On: Establishment of inbound Identity Provider and outbound Service Provider.
- SAML Support: JOSSO is designed to support SAML 2.0, a standard for exchanging authentication and authorization data between security domains.
- Bundled with Graphical User Console: The Atricore Console provides a complete visual setup in order to facilitate the user interaction.
- Transparent: It supports an immediate Single Sign-On establishment for applications like Java EE, Windows.NET, PHP, Perl, and others.
- Wide Application Server Support: It can run under web containers such as JBoss, Apache Tomcat, Weblogic, Windows IIS and others.

- Standards-based: It is based on the SAML, WS-Trust, SPML, Java EE and OSGi standards.
- Pluggable Framework: It provides an infrastructure that allows the support of already existing authentication mechanisms and identity repositories.
- Seamless Integration with Spring Security: It collaborates with Spring Security, which is a Java EE framework that provides authentication, authorization and other security features for enterprise applications.
- Multiple Authentication Mechanisms: It uses client certificate authentication, Windows authentication, LDAP authentication and others in order to support identity establishment.
- Support for Self-Services: It supports password recovery functionality.

Another important thing that we should mention is that JOSSO is running on Apache Karaf which is a small OSGi based runtime that provide a lightweight container onto which various components and applications can be deployed. The features that Apache Karaf has are:

Hot deployment: Karaf supports hot deployment of OSGi bundles by monitoring jar files inside the [home]/deploy directory. Each time a jar is copied in this folder, it will be installed inside the runtime.

Dynamic configuration: Its services are usually configured through the ConfigurationAdmin OSGi service. Such configuration can be defined in Karaf using property files inside the [home]/etc directory.

Logging System: using a centralized logging back end supported by Log4J, Karaf supports a number of different APIs (JDK 1.4, JCL, SLF4J, Avalon, Tomcat, OSGi)

Provisioning: The provisioning of libraries and applications is done through a number of different ways, by which they will be downloaded locally, installed and executed.

Native OS integration: Karaf can be integrated into our own Operating System as a service so that the lifecycle will be bound to our Operating System.

Extensible Shell console: Karaf features a text console where we can manage the services, install new applications or libraries and manage their state.

Remote access: We can use any SSH client to connect to Karaf and issue commands in the console.

Security framework: It is based on JAAS which is the Java implementation of the standard Pluggable Authentication Module (PAM) information security framework.

Managing instances: Karaf provides simple commands for managing multiple instances. We can create, delete, start and stop instances of Karaf through the console.

3. JOSSO Editions

JOSSO comes in two different editions. The first is the Community Edition (CE) and the second the Enterprise Edition (EE). The JOSSO CE main feature is that it is frequently updated with new versions and comes with LPGL open source license. On the other hand, JOSSO EE is designed for enterprise use, which is fully supported. It comes with a subscription and support package that permits enterprises to configure their own Single Sign-On settings over an extended period. The support period for JOSSO EE is four years.

More specifically JOSSO CE has the following features:

- It is free.
- It supports unlimited number of users.
- It has only one node thought it cannot run in cluster.
- It is designed to run on open source platforms.
- It provides an SAML connection setup for linking SSO and Cloud Providers, but it refers to technically advanced users.

On the contrary JOSSO EE has the following features:

- For small organizations it supports maximum 2000 users with two nodes and for big organizations it supports maximum 10000 users with four nodes.
- It runs on open source platforms but also commercial platforms like Oracle, Windows IIS, MS SQL Server and others.
- It provides scalability, high availability and clustering.
- It provides system monitoring through advanced JMX tools.
- It offers cloud-ready multi-tenant architecture.
- It is set up for Windows Single Sign-On.
- The manufacturer provides technical support through Service Level Agreements (SLAs) along with stress testing.
- It supports embedded cloud SaaS services like Google Apps, Saleseforce and others.
- It also provides automatic upgrades and maintenance, like Service Packs and updates.

4. JOSSO Versions

JOSSO version 1 is the first application that was created. Due to its long period of usage and development it is a stable and reliable solution for transparent SSO focused in introducing End-to-End SSO features.

The transparency capability is achieved due to the compliance with standards such as the ones that Java EE platform offers. This feature enables the applications which rely on the platforms' security contracts to execute Single Sign-On operations with no integration effort.

Because JOSSO supports a big variety of application vendors it is an attractive solution to interconnect applications designed for different platforms. Furthermore, it is extensible in a way that offers variability within the access management layer.

One drawback of JOSSO1 is that it cannot interact with third-party Single Sign-On applications that exist on external domains. For example, there is no support in providing SaaS provider its security context.

From the usability point of view, the setup process requires technologically high advanced users that are able to handle configuration descriptors and to understand SSO components along with the basic infrastructure.

Subsequently, JOSSO1 is extensible in a way to support mainstream application platforms, authentication mechanisms and identity stores, but its SSO protocol is compatible only with the application and cannot incorporate SAML or OpenID functionalities. Another disadvantage is that it cannot operate in order to offer Multitenancy.

Furthermore, is designed only for SSO services leaving accounting, entitlement management and storage to third-party software, resulting in bigger efforts and investment in order to fill in the gaps.

JOSSO2 is the next generation of the JOSSO products. It is an all-in-one solution providing end-to-end distribution of Federated Single Sign-On settings, based on a model-driven approach, enabling the limited time-to-value. It supports accounting, entitlement management and storage on an internal RDBMS store.

It can deliver Single Sign-On solutions on an Internet scale by communicating and collaborating with other external or cloud providers that have their own Single Sign-On backbone infrastructure.

In case that the setup scenario is based on custom user settings, for example the implementation of a custom Single Sign-On plug-in that supports identity sources or authentication mechanisms that are not common, first generation JOSSO might be more appropriate solution.

For more usability and productivity, JOSSO utilizes the Atricore Console Rich Internet Application or RIA. The user is working in an architecture level by designing own Single Sign-On settings.

5. Provision and analysis of High-availability and Scalability

In JOSSO EE exist two major high-availability elements. These are the System Failover and the Session Failover. With the combination of these two key elements it is guaranteed that does not exist any point of failure in the deployment and that JOSSO EE applications is available anytime.

5.1 System Failover

System failures are common in computer systems. The main reasons are hardware, process or load balancer malfunctions. The recommended action is that there must be installed an adequate number of JOSSO EE servers along with load balancers in order to act as backups or to fail over to. This action guarantees that there are no single points of failure that can compromise the proper function of the application.

5.2 Session Failover

This feature ensures that the session data are accessible from the JOSSO EE servers. In order to deter data loss, the service requests are routed to an alternative failover server. This enables JOSSO EE Service to maintain the sessions into an authenticated state and continue to process new user’s requests that follow the failure. If this feature did not exist, the user should re-authenticate. The session failover has less significance in the case where users need to have read but not write data.

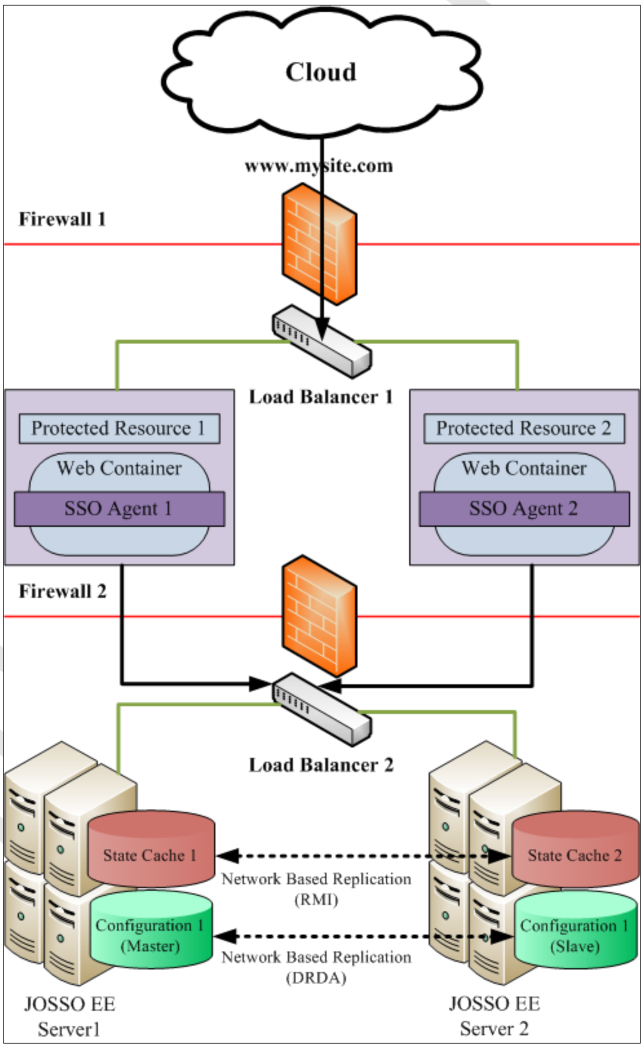
5.3 Failover Mechanism Architecture

In the following diagram it is visible the required elements for the system and session failover feature in JOSSO EE deployment, and these elements are the following:

- A number of JOSSO SSO agents that serve as backups in case of a system failure.
- A load balancer that delivers the workload to the JOSSO EE agents.

- A number of JOSSO EE servers with an embedded state cache that act as system backups in case of system failure. The embedded state cache feature ensures that the replicated state is present during a system failure.
- A number of load balancers that can deliver the workload between the JOSSO EE servers.
- If the JOSSO EE is adjusted for session failover, the configuration and session data are replicated between the servers. In case of a system failure the replicated data are always available.
- A number of Apache Derby DBs in order to store configuration data. These DBs are adjusted for configuration failover.

In the following example the load balancers represent the only access points to JOSSO EE servers.



Picture.1 Failover Mechanism Architecture

5.4 Enabling Clustering

The JOSSO EE needs its OSGi bundles to be active in order to support clustering. This is achieved by replacing the "featureBoot" property in the following file org.apache.karaf.features.cfg in the $JOSSO_HOME/etc/ folder, with the following string:

featuresBoot=atricore-branding,config,ssh,management,spring,spring-dm,josso-ee-ha

The difference is that it is activated the josso-ee-ha feature instead of the josso-ee. Next, the XML descriptor $JOSSO2_HOME/etc/ehcache-ha.xml adds the following data:

```
<cacheManagerPeerProviderFactory
            class="net.sf.ehcache.distribution.RMICacheManagerPeerProviderFactory"
            properties="hostName=node1.acme.com,peerDiscovery=automatic,
            multicastGroupAddress=230.0.0.1,
            multicastGroupPort=4446, timeToLive=32"
            propertySeparator=","
            />
```

5.5 Configuration Replication

The implementation of clustering support enables the functionality of state replication, but it does not encompass the replicated configuration data. There are three basic ways in order to approach the synchronization of configuration data, the manual, the managed automatic and the non-managed automatic configurations.

Manual Configuration Replication: This feature enables the user to control the Identity Appliance Import and Export functionalities keeping them synchronized.

Managed Automatic Configuration Replication: This feature is based on the Apache Derby's failover capabilities. These are:

- One master, one slave.
- Roll-forward shipped log.
- Asymmetry.
- Asynchronicity.
- Shared nothing.
- Replication granularity.

In order to enable data failover using the Apache Derby replication for a JOSSO EE server it must be referred to the descriptor located at $JOSSO2_HOME/etc/ folder in the com.atricore.idbus.console.db.cfg file.

Non-Managed Automatic Configuration Replication: The third option must be considered when it is needed a highly available database to store configuration data. To achieve that, the high availability features are moved from the JOSSO EE server to the external repository. In order to do that the file com.atricore.idbus.console.db.cfg place in the $JOSSO_HOME/etc/ folder must be updated with the details of the used JDBC driver.

6. Security Identity & Access Management Services

The communication channels on which an Identity Appliance can provide network services are the browser-facing and application-facing channels. The existence of browser-facing channels helps the message exchange between users behind some web browser. An example is when a user submits his credentials to an Identity Provider or when a SAML2 authentication is initiated on a Service Provider. On the other hand, the application-facing communication channels are serving as means for message exchange between application-based users, conducting Application-to-Application communication. The role of external consumers that utilize application-facing channels is played by the JOSSO Agents. For example, the usage of SOAP service innovation helps the user details to pass from the JOSSO Agents to a server-side service that handles requests on an application-facing channel. Continuing, there are followed certain steps in order to enable SSL support for JOSSO2.

6.1 Creating a server certificate with keytool

Using the command below, a key pair and a certificate are generated into the Java keystore by the usage of keytool. The command can be run from the command line.

```
keytool -keystore jetty.keystore -alias jetty -genkey -keyalg RSA
Enter keystore password: secret
What is your first and last name?
[Unknown]: sso.acme.com
What is the name of your organizational unit?
[Unknown]: it
What is the name of your organization?
[Unknown]: acme
What is the name of your City or Locality?
[Unknown]:
What is the name of your State or Province?
[Unknown]:
What is the two-letter country code for this unit?
[Unknown]:
Is CN=sso.acme.com, OU=it, O=acme,
L=Unknown, ST=Unknown, C=Unknown correct?
```

```
[no]: yes
Enter key password for <jetty>
(RETURN if same as keystore password): secret1
```

Then the generated keystore file named jetty.keystore is copied in the folder named $JOSSO2_HOME/etc. It must be noted that in order for JOSSO2's web server to get the server certificate, the key alias must be in "jetty" format.

6.2 Enabling SSL in the Web Server used by JOSSO

Secure Sockets Layer (SSL), is a cryptographic protocol that provide communication security over the Internet. SSL encrypt the segments of network connections at the Application Layer for the Transport Layer, using asymmetric cryptography for key exchange, symmetric encryption for confidentiality, and message authentication codes for message integrity.

Here the user must edit the org.ops.pax.web.cfg file located in $JOSSO2_HOME/etc, uncommenting the following lines:

```
.ops4j.pax.web.ssl.keystore=/opt/atricore/josso-ee-2.2.2/etc/jetty.keystore
org.ops4j.pax.web.ssl.password=secret
org.ops4j.pax.web.ssl.keypassword=secret1
org.osgi.service.http.port.secure=8443
org.ops4j.pax.web.ssl.clientauthwanted=false
org.ops4j.pax.web.ssl.clientauthneeded=false
```

6.3 Exporting Web Server SSL Certificate

With this command, can be extracted a JOSSO Web module server certificate, which is in DER format:

```
keytool -exportcert -alias jetty -keystore jetty.keystore -file josso-der.crt
```

The next action is to convert it into a PEM format, which is the most common file used by applications like OpenSSL in order to make the PKCS12 conversion.

```
openssl x509 -out josso-pem.crt -outform pem -in josso-der.crt -inform der
```

This will result a certificate that can be used by agents in order to access through HTTPS the JOSSO2 web services.

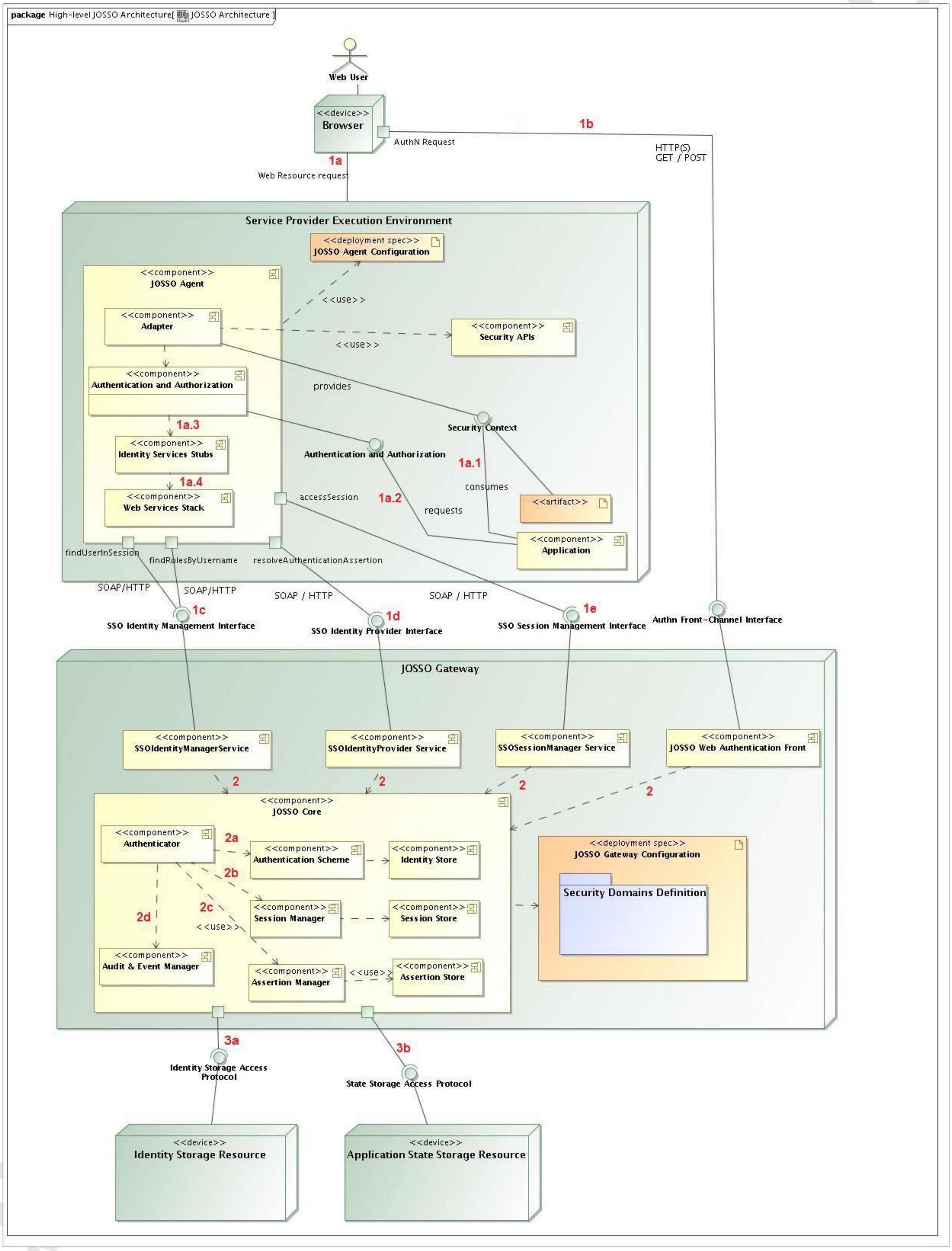
6.4 Agents connection to Web Services over SSL in JOSSO

In the case where the usage of HTTPs protocol in the Identity Appliance is needed the JOSSO Web Server certificate must be marked as trusted, unless the communication is made through a reverse proxy and in that case the proxy certificate must be marked as trusted.

During the Identity Appliance set up, it is possible that the generated agent configuration file could be edited in order to include SSL information. In the following example, form the Java Agents side; it is necessary that the server certificate must be added to the trusted certificates keystore.

```
# Set to 'On' to enable secure SOAP clients with HTTPS/SSL
GatewayEndpointSSLEnable : On
# Path to server certificate file that stores trusted certificates (needed to verify server)
SSLServerCertFile : /opt/atricore/josso-ee-2.2.2/etc/josso-pem.crt
```

7. High Level Architecture of JOSSO



Picture.2 High Level Architecture of JOSSO

<u>Steps:</u>

1a) The user through its browser requests a web service from the Service provider Execution Environment.

1b) In the same time the browser sends an authentication request through the HTTP method GET-POST to the JOSSO Web Authentication Front of the JOSSO Gateway, through Auth Front-Channel Interface.

The Service Provider Execution Environment consists of the following components:

- JOSSO Agent
    - Adapter
    - Authentication & Authorization
    - Identity Services Stubs
    - Web Services Stack
- Security APIs
- Application

Internally in the Service Provider Execution Environment we have the following steps:

1a.1) The Adapter sub-component of JOSSO Agent component uses the JOSSO Agent configuration and Security APIs in order to provide the Security Context that is consumed by the Application.

1a.2) Then the Application requests Authentication & Authorization from the Authentication & Authorization component.

1a.3) If the previous step is executed then the Identity Services Stubs component is executed. Identity Services Stubs is a program when executed provides linking and joining information about an entry across multiple identity management systems.

1a.4) The previous step, if successful, leads to the Web Services Stack component which is the sum of certain technologies such as the Extensible Markup Language (XML) or the Service-Oriented Access Protocol (SOAP).

1c) In this step the JOSSO Agent component after the establishment of the user and his role, sends his credentials in SOAP/HTTP format through the SSO Identity Management Interface to the SSO Identity Management Service, which is a component of the JOSSO Gateway.

1d) At the same time JOSSO Agent sends an Authentication Assertion of the user to SSO Identity Provider Service component through the SSO Identity Provider Interface.

1e) Next, an access session is sent from the JOSSO Agent to the SSO Session Manager Service component thought the SSO Session Manager Interface.

2) The four components are then integrated into the single component named JOSSO Core. The main sub-component of JOSSO Core is the Authenticator from which they derive the following sub-components that are described in the following steps.

2a) The Authentication Scheme component that leads to the Identity Store component, in which are all the identities of the users.

2b) The Session Manager that leads to the Session Store component which controls each session that a user has requested.

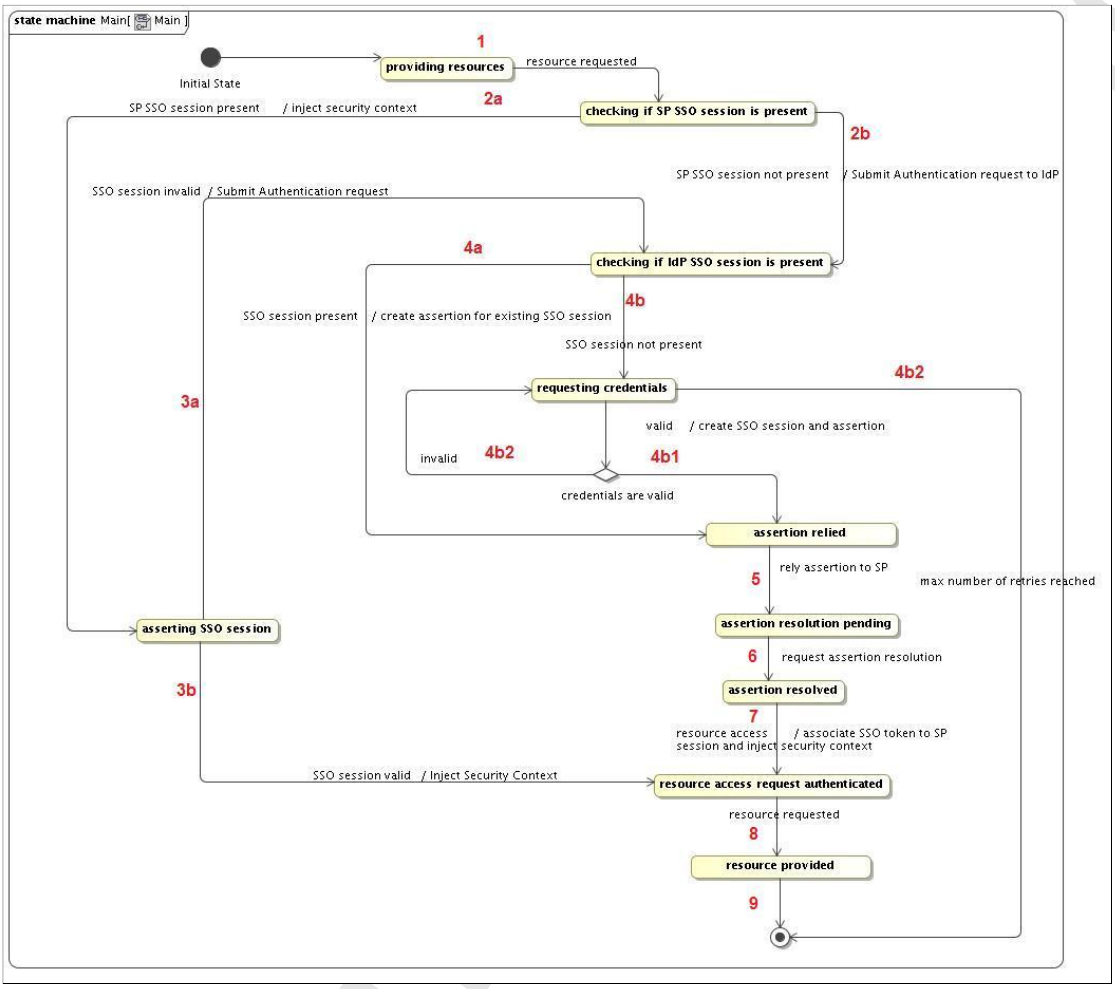
2c) The Assertion Manager component that is used by the Authenticator in order to access the Assertion Store which consists of the aggregate of all the Authentication Assertions (SAML, SOAP, XML) that exist in JOSSO.

2d) The Audit & Event Manager component, that it is used for monitoring information and logging history.

3a) When all the processes within the JOSSO Core component are completed, it sends an Identity Storage Access Protocol to the Identity Storage Resource and finally

3b) a State Storage Access Protocol to the Application State Storage Resource.

8. Activity Diagram (State Machine)


state machine Main[Main]
1
Initial State
providing resources
resource requested
2a
SP SSO session present / inject security context
checking if SP SSO session is present
2b
SP SSO session not present / Submit Authentication request to IdP
SSO session invalid / Submit Authentication request
4a
checking if IdP SSO session is present
4b
SSO session present / create assertion for existing SSO session
SSO session not present
4b2
requesting credentials
3a
valid / create SSO session and assertion
invalid
4b2
4b1
credentials are valid
assertion relied
rely assertion to SP
5
max number of retries reached
asserting SSO session
assertion resolution pending
6
request assertion resolution
3b
assertion resolved
7
resource access session and inject security context / associate SSO token to SP
SSO session valid / Inject Security Context
resource access request authenticated
resource requested
8
resource provided
9

Picture.3 State Machine

Steps:

1) The requested resources are initially provided in order to be checked if a Service Provider SSO is present.

2a) If it is present, they advance to the asserting SSO session.

2b) If not, an Authentication Request is submitted in order to check if the Identity Provider Session is present.

3a) The same procedure as in the previous step (2a) is executed is the SSO session is invalid.

3b) If the session is valid, the Security Context is injected in the simple state where the resource access request is authenticated.

4a) If the SSO session is present, it is created an assertion for the existing SSO session, in order to be relied.

4b) If the SSO session is not present the credentials are requested.

4b1) If these credentials are valid a SSO session is created in order to be relied.

4b2) In the case that they are invalid they return to the previous state for checking. If despite the repeated checks are still in the invalid state, after a maximum number of retries is reached, the program ends.

5) If the assertion is relied is sent to the Service Provider where this request is pending.

6) Then the assertion request is resolved.

7) After that step, the resource accesses and associates with a SSO token to the Service Provider session in order to inject the security context and to be authenticated.

8) In the next step the resource is requested.

9) After the provision of the resource the program exits.

9. How to install JOSSO2

Prior to the description of the installation process of JOSSO2, it is imperative to refer to its directory structure as it is shown below:

```
-<JOSSO_HOME>/ - the path of our JOSSO installation.
   |-- appliances
   |-- bin
   |-- data
   | |-- cache
   | |-- derby
   | |-- generated-bundles
   | |-- log
   | |-- port
   | |-- work
   |      | |-- repository
   |      | |”,-- config
   |-- lib
   |-- lock
   |-- system
```

The appliances folder contains identity appliances managed by JOSSO. The layout of its content follows the same one used for Apache Maven repositories.

The bin folder contains the starting scripts.

The data folder contains files that inform about the application state, like the OSGi bundle cache, database files, log files and temporary artifacts as a result of transformation procedures.

The lib folder contains the libraries for the OSGi Microkernel Implementation on top of which JOSSO builds.

The lock folder is used to support fail-over settings when more than one JOSSO instance is used.

The system folder contains the libraries that determine the JOSSO distribution. Its layout is based on the Apache Maven repository.

10. Installation steps for JOSSO2

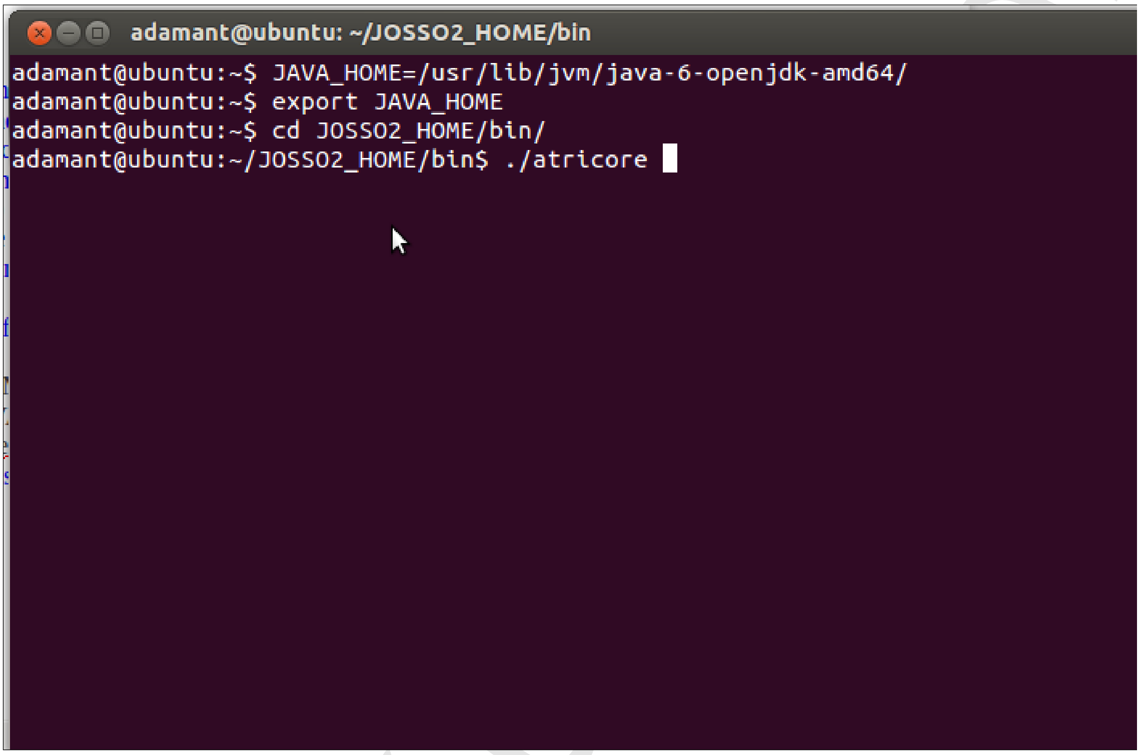
First we should mention that we will install JOSSO2 in Ubuntu 11.04 64bit OS. JOSSO2 is compatible also with Microsoft Windows OSs. The prerequisites are JDK 6 or later version and JOSSO2 Community Edition or Enterprise Edition which is a .jar file.

We download JDK and josso-ce-2.2.2-unix.jar respectively. Finally as JOSSO2 Community and Enterprise Edition incorporates the Atricore Console Rich Internet Application (RIA) we need to install in our computer the Adobe Flash player in order to view the Atricore Console.

When we have all the prerequisites we create a folder with the name JOSSO2_HOME. The reason why we choose this name for the folder is because, as the JOSSO2 is running, the Karaf server “sees” that home folder. The next step that we have to do to is to run the josso-ce-2.2.2-unix.jar file with JDK 6 and then we have to follow the instruction windows as it is illustrated in pictures 9 to 15. In these instruction windows we will choose to install JOSSO into the JOSSO2_HOME folder. The difference in installation between JOSSO CE and JOSSO EE is that in JOSSO EE we have to agree with the license terms and to upload the Activation license file.

Furthermore, after the installation of JOSSO we open a command line console and type the following commands:

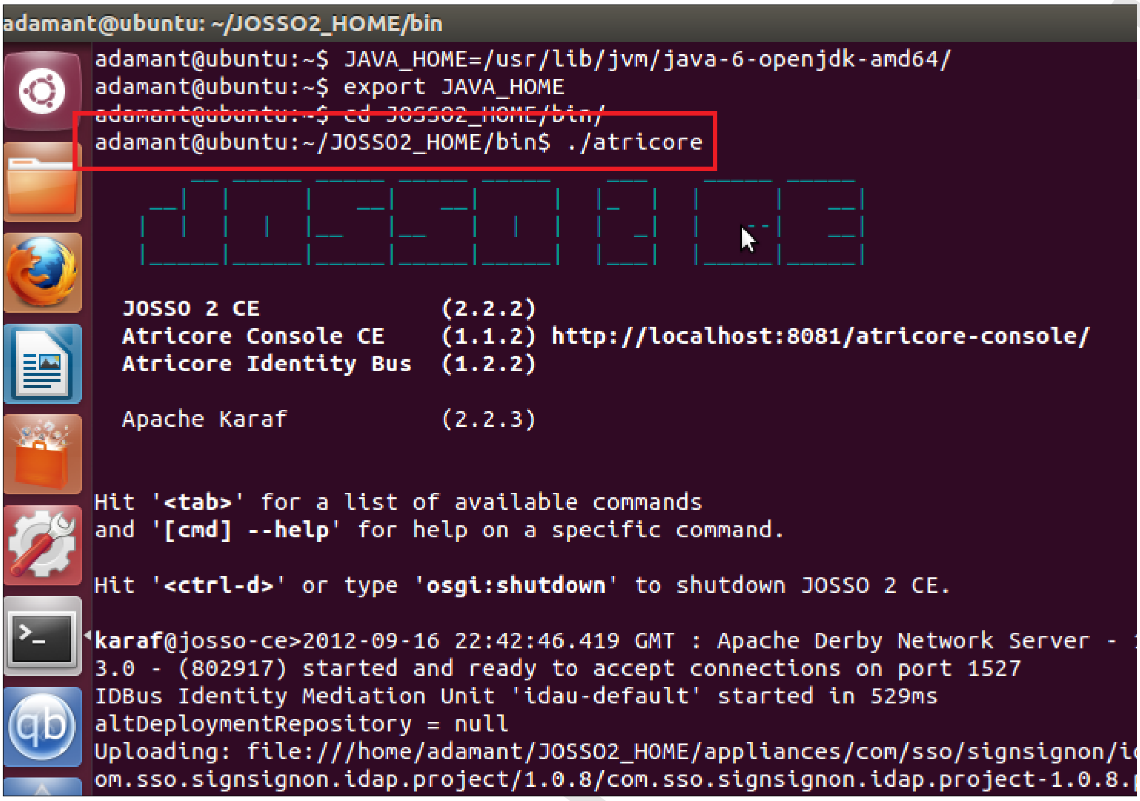
1. *JAVA_HOME=/usr/lib/jvm/java-java-6-openjdk-amd64/*
2. *export JAVA_HOME*


```
adamant@ubuntu:~/JOSSO2_HOME/bin
adamant@ubuntu:~$ JAVA_HOME=/usr/lib/jvm/java-6-openjdk-amd64/
adamant@ubuntu:~$ export JAVA_HOME
adamant@ubuntu:~$ cd JOSSO2_HOME/bin/
adamant@ubuntu:~/JOSSO2_HOME/bin$ ./atricore
```

Picture.4 Install JOSSO

We type the above commands because without them the Java CLASSPATH will not be updated and **java** or **javac** commands will not be recognized.

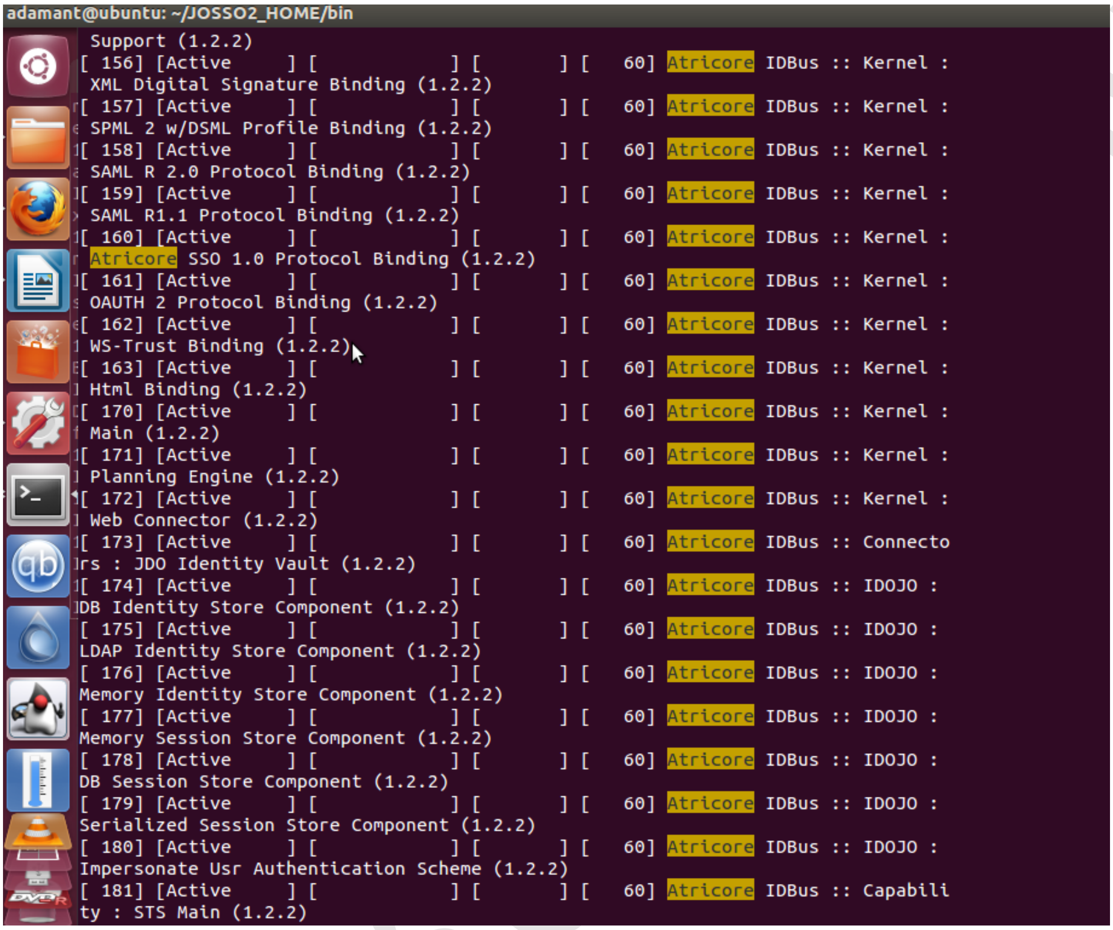
Then we go to the bin folder, which is into the JOSSO2_HOME folder and type the command ./atricore. With this command JOSSO2 starts running. Before we type this command we have to choose the Atricore executable to run as a program, by right clicking it and selecting the "Run as a program" checkbox from the properties tab.



```
adamant@ubuntu: ~/JOSSO2_HOME/bin
adamant@ubuntu:~$ JAVA_HOME=/usr/lib/jvm/java-6-openjdk-amd64/
adamant@ubuntu:~$ export JAVA_HOME
adamant@ubuntu:~$ cd JOSSO2_HOME/bin/
adamant@ubuntu:~/JOSSO2_HOME/bin$ ./atricore

 JOSSO 2 CE               (2.2.2)
 Atricore Console CE      (1.1.2) http://localhost:8081/atricore-console/
 Atricore Identity Bus    (1.2.2)

 Apache Karaf             (2.2.3)


Hit '<tab>' for a list of available commands
and '[cmd] --help' for help on a specific command.

Hit '<ctrl-d>' or type 'osgi:shutdown' to shutdown JOSSO 2 CE.

karaf@josso-ce>2012-09-16 22:42:46.419 GMT : Apache Derby Network Server - 
3.0 - (802917) started and ready to accept connections on port 1527
IDBus Identity Mediation Unit 'idau-default' started in 529ms
altDeploymentRepository = null
Uploading: file:///home/adamant/JOSSO2_HOME/appliances/com/sso/signsignon/i
om.sso.signsignon.idap.project/1.0.8/com.sso.signsignon.idap.project-1.0.8.
```

Picture.5 Running JOSSO

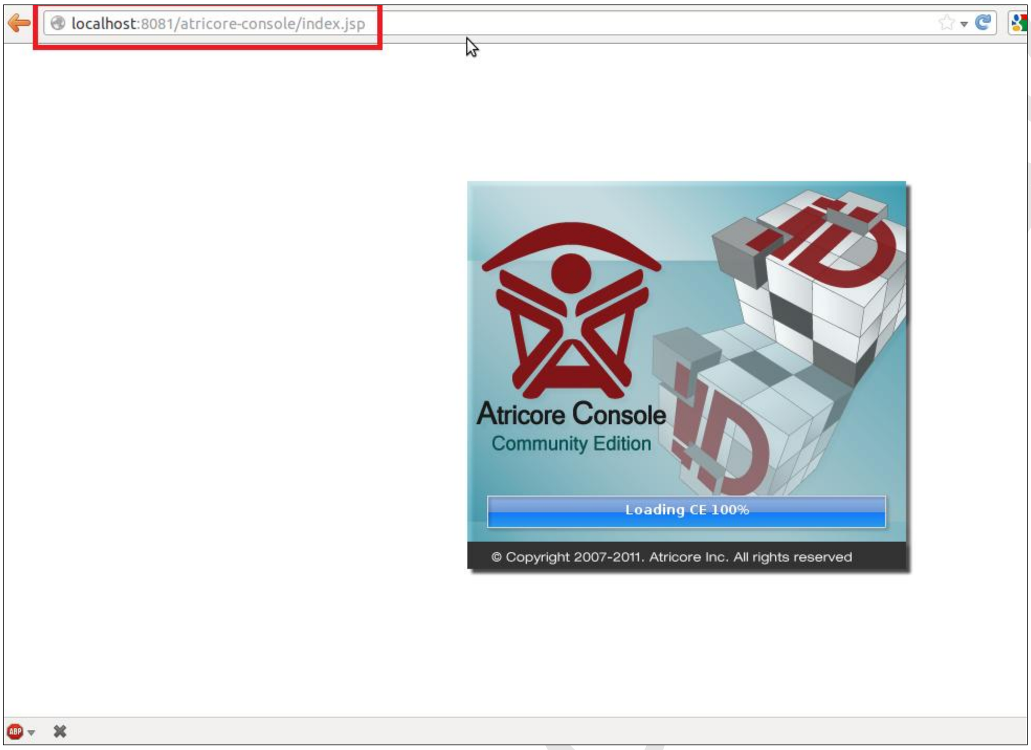
Furthermore we can use the following command to determine that all JOSSO modules are up and running: *osgi:list | grep Atricore* as illustrated in the following picture.



```
adamant@ubuntu: ~/JOSSO2_HOME/bin
 Support (1.2.2)
[ 156] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 XML Digital Signature Binding (1.2.2)
[ 157] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 SPML 2 w/DSML Profile Binding (1.2.2)
[ 158] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 SAML R 2.0 Protocol Binding (1.2.2)
[ 159] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 SAML R1.1 Protocol Binding (1.2.2)
[ 160] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 Atricore SSO 1.0 Protocol Binding (1.2.2)
[ 161] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 OAUTH 2 Protocol Binding (1.2.2)
[ 162] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 WS-Trust Binding (1.2.2)
[ 163] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 Html Binding (1.2.2)
[ 170] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 Main (1.2.2)
[ 171] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 Planning Engine (1.2.2)
[ 172] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Kernel :
 Web Connector (1.2.2)
[ 173] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Connecto
rs : JDO Identity Vault (1.2.2)
[ 174] [Active     ] [            ] [       ] [   60] Atricore IDBus :: IDOJO :
DB Identity Store Component (1.2.2)
[ 175] [Active     ] [            ] [       ] [   60] Atricore IDBus :: IDOJO :
LDAP Identity Store Component (1.2.2)
[ 176] [Active     ] [            ] [       ] [   60] Atricore IDBus :: IDOJO :
Memory Identity Store Component (1.2.2)
[ 177] [Active     ] [            ] [       ] [   60] Atricore IDBus :: IDOJO :
Memory Session Store Component (1.2.2)
[ 178] [Active     ] [            ] [       ] [   60] Atricore IDBus :: IDOJO :
DB Session Store Component (1.2.2)
[ 179] [Active     ] [            ] [       ] [   60] Atricore IDBus :: IDOJO :
Serialized Session Store Component (1.2.2)
[ 180] [Active     ] [            ] [       ] [   60] Atricore IDBus :: IDOJO :
Impersonate Usr Authentication Scheme (1.2.2)
[ 181] [Active     ] [            ] [       ] [   60] Atricore IDBus :: Capabili
ty : STS Main (1.2.2)
```

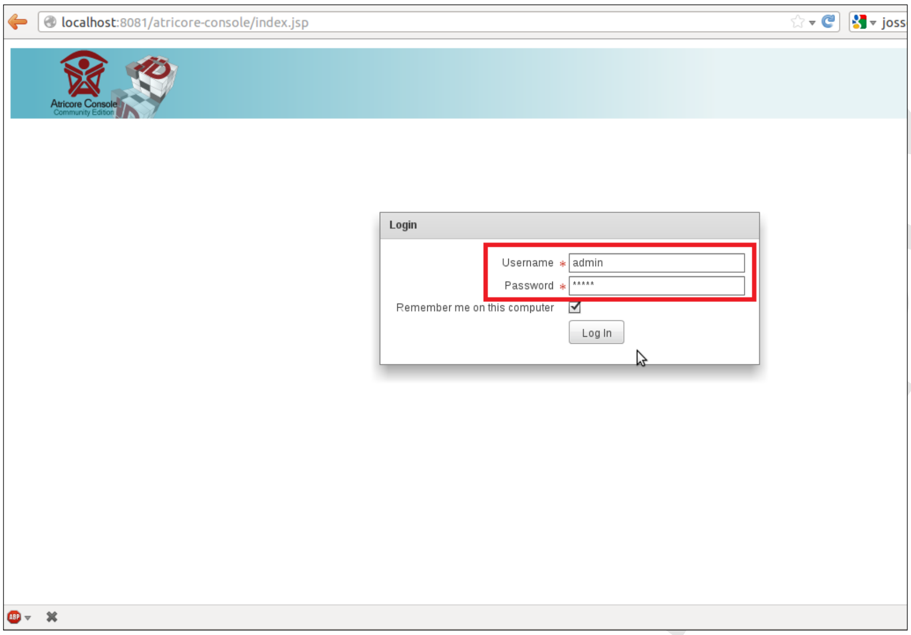
Picture.6 osgi:list | grep Atricore

As JOSSO2 Community Edition is running, we open a browser (Firefox) and navigate to the Atricore page. Atricore is running in 8081 port. To open the Atricore page we type on the browser *localhost:8081/atricore-console/index.jsp*


localhost:8081/atricore-console/index.jsp
Atricore Console
Community Edition
Loading CE 100%
© Copyright 2007-2011. Atricore Inc. All rights reserved

Picture.7 Loading JOSSO

Then we login to the Atricore Console with *Username:* admin and *Password:* admin and the Atricore console window is loaded.



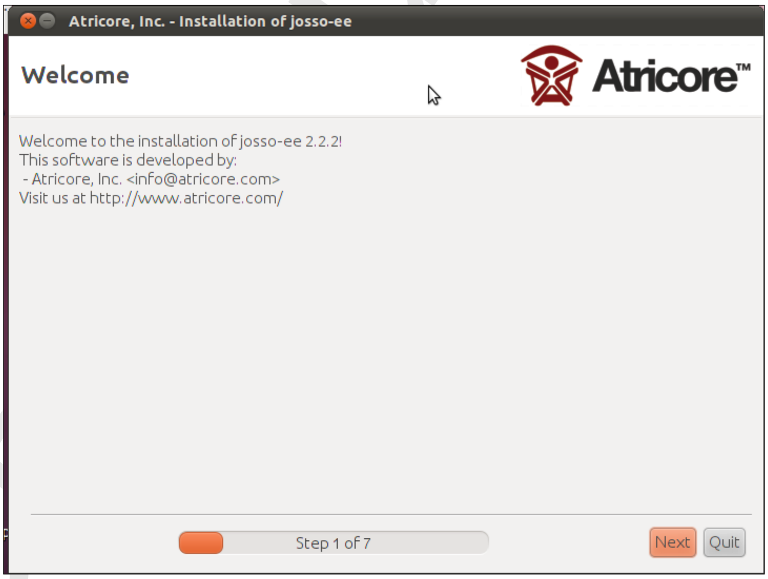
Username * admin

Password * *****

☑ Remember me on this computer

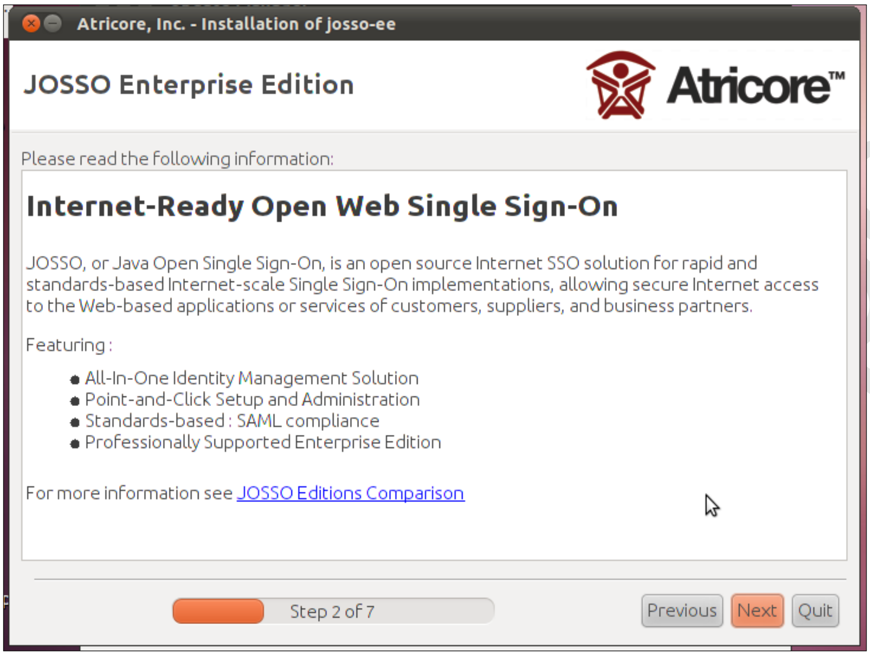
Picture.8 Login Page

The following windows illustrate the installation of JOSSO EE.



Welcome to the installation of josso-ee 2.2.2!
This software is developed by:
- Atricore, Inc. <info@atricore.com>
Visit us at http://www.atricore.com/

Picture.9 Step1 of JOSSO EE Installation



JOSSO Enterprise Edition

Please read the following information:

Internet-Ready Open Web Single Sign-On

JOSSO, or Java Open Single Sign-On, is an open source Internet SSO solution for rapid and standards-based Internet-scale Single Sign-On implementations, allowing secure Internet access to the Web-based applications or services of customers, suppliers, and business partners.

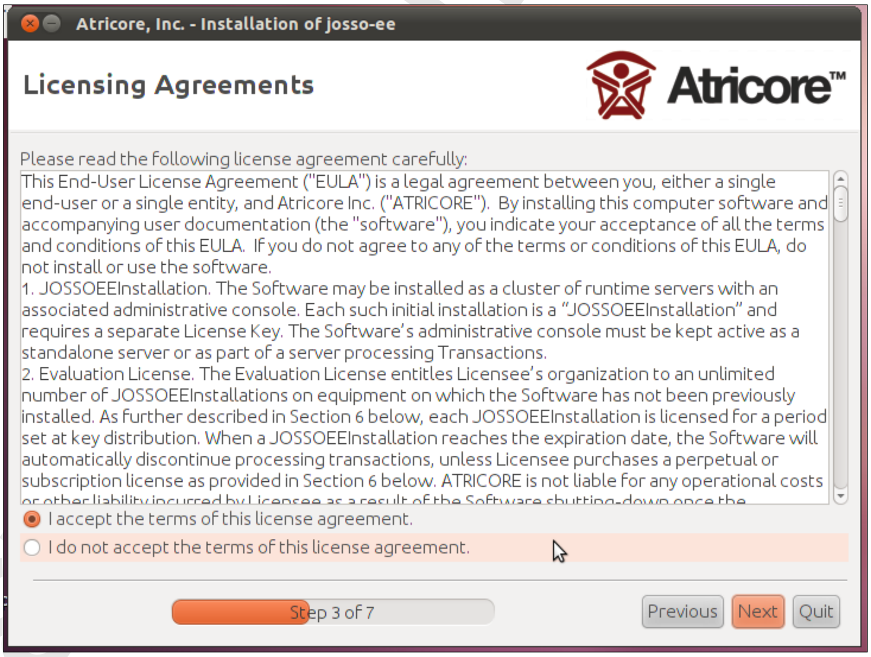
Featuring :

- All-In-One Identity Management Solution
- Point-and-Click Setup and Administration
- Standards-based : SAML compliance
- Professionally Supported Enterprise Edition

For more information see JOSSO Editions Comparison

Step 2 of 7

Picture.10 Step 2 of JOSSO EE Installation



Licensing Agreements

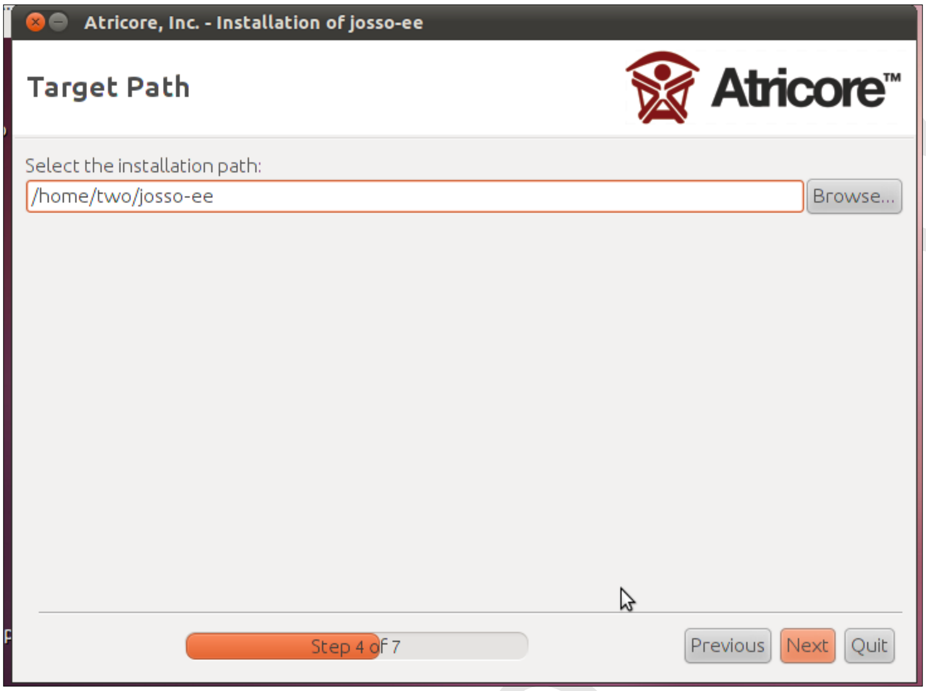
Please read the following license agreement carefully:

This End-User License Agreement ("EULA") is a legal agreement between you, either a single end-user or a single entity, and Atricore Inc. ("ATRICORE"). By installing this computer software and accompanying user documentation (the "software"), you indicate your acceptance of all the terms and conditions of this EULA. If you do not agree to any of the terms or conditions of this EULA, do not install or use the software.
1. JOSSOEEInstallation. The Software may be installed as a cluster of runtime servers with an associated administrative console. Each such initial installation is a "JOSSOEEInstallation" and requires a separate License Key. The Software's administrative console must be kept active as a standalone server or as part of a server processing Transactions.
2. Evaluation License. The Evaluation License entitles Licensee's organization to an unlimited number of JOSSOEEInstallations on equipment on which the Software has not been previously installed. As further described in Section 6 below, each JOSSOEEInstallation is licensed for a period set at key distribution. When a JOSSOEEInstallation reaches the expiration date, the Software will automatically discontinue processing transactions, unless Licensee purchases a perpetual or subscription license as provided in Section 6 below. ATRICORE is not liable for any operational costs or other liability incurred by Licensee as a result of the Software shutting-down once the

● I accept the terms of this license agreement.
○ I do not accept the terms of this license agreement.

Step 3 of 7

Picture.11 Step 3 of JOSSO EE Installation



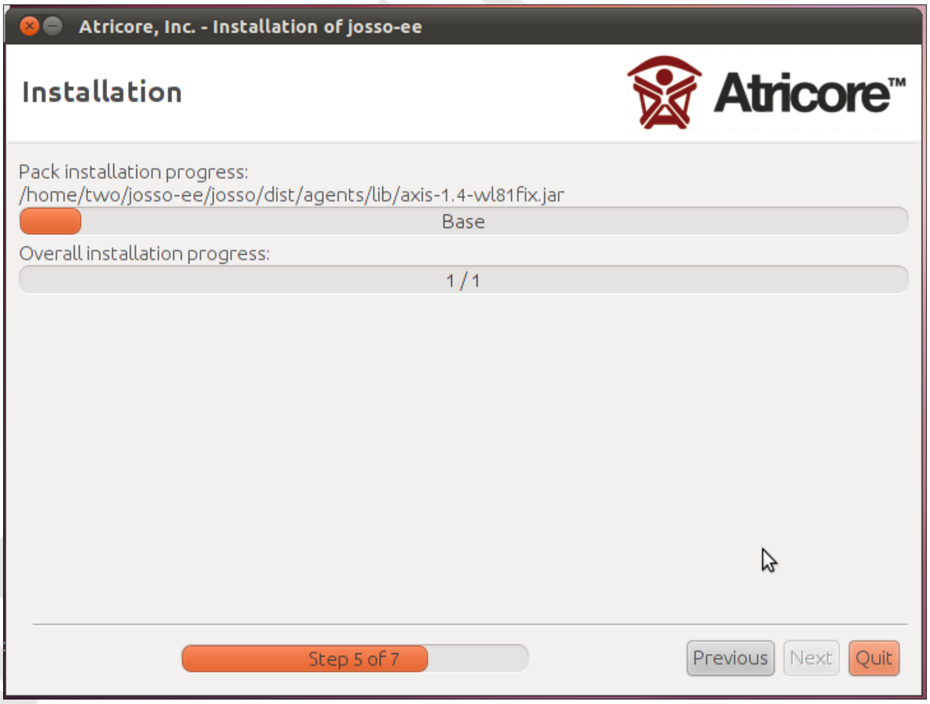
Atricore, Inc. - Installation of josso-ee

Target Path

Select the installation path:

/home/two/josso-ee

Picture.12 Step 4 of JOSSO EE Installation



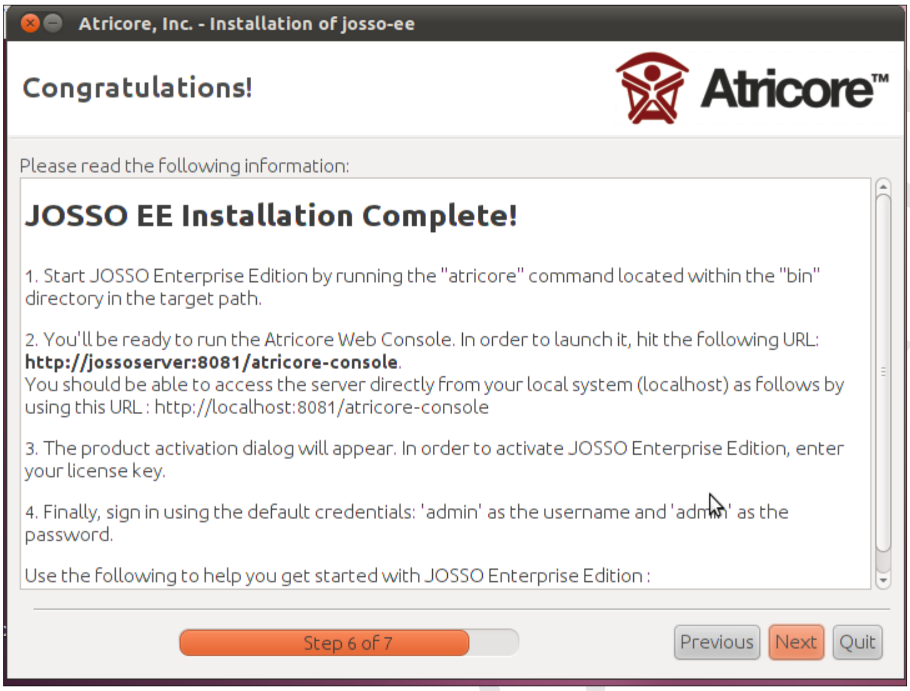
Atricore, Inc. - Installation of josso-ee

Installation

Pack installation progress:
/home/two/josso-ee/josso/dist/agents/lib/axis-1.4-wl81fix.jar
Base

Overall installation progress:
1 / 1

Picture.13 Step 5 of JOSSO EE Installation



Congratulations!

Please read the following information:

JOSSO EE Installation Complete!

1. Start JOSSO Enterprise Edition by running the "atricore" command located within the "bin" directory in the target path.

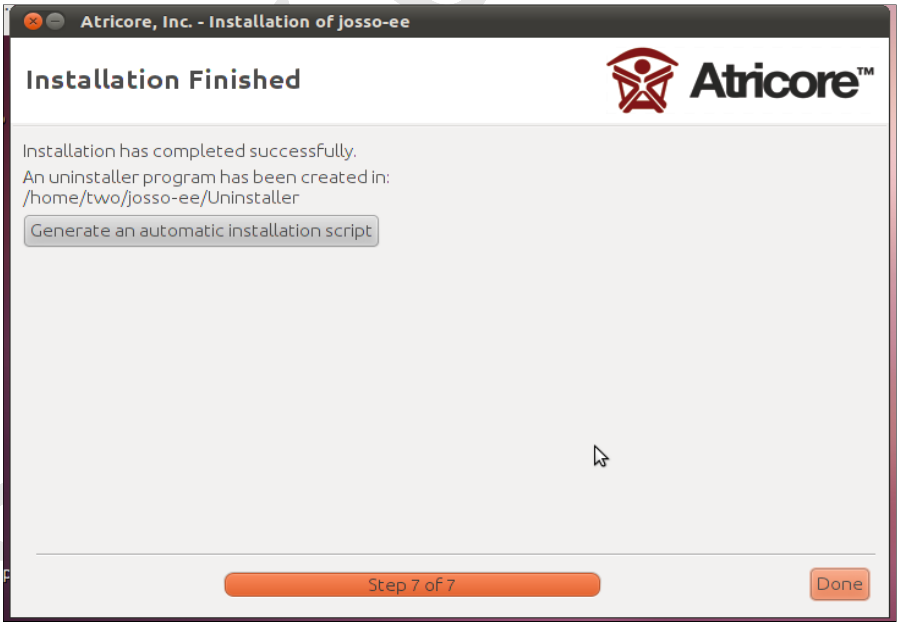
2. You'll be ready to run the Atricore Web Console. In order to launch it, hit the following URL: **http://jossoserver:8081/atricore-console**.
You should be able to access the server directly from your local system (localhost) as follows by using this URL : http://localhost:8081/atricore-console

3. The product activation dialog will appear. In order to activate JOSSO Enterprise Edition, enter your license key.

4. Finally, sign in using the default credentials: 'admin' as the username and 'admin' as the password.

Use the following to help you get started with JOSSO Enterprise Edition :

Picture.14 Step 6 of JOSSO EE Installation

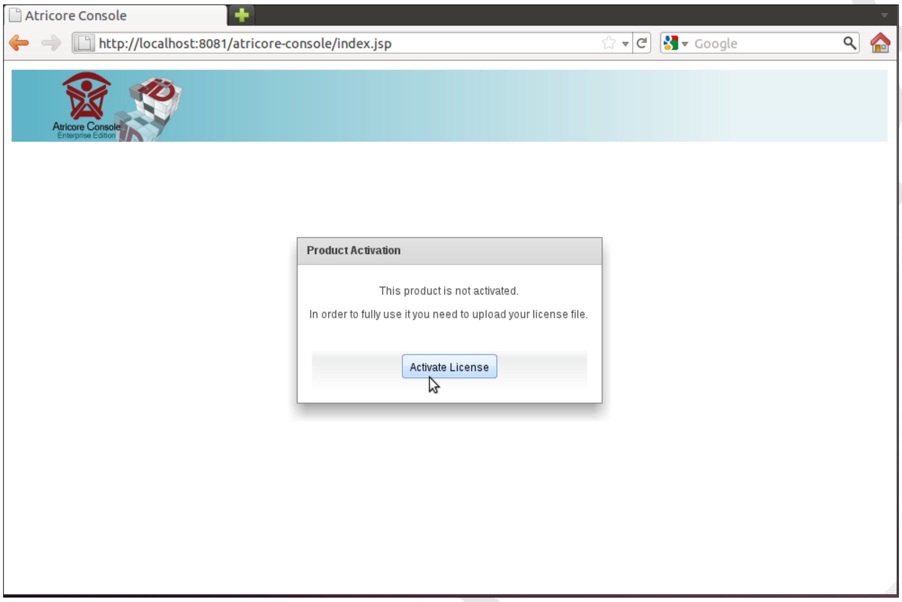

Atricore, Inc. - Installation of josso-ee
Atricore™
Generate an automatic installation script
Step 7 of 7
Done

Installation Finished

Installation has completed successfully.
An uninstaller program has been created in:
/home/two/josso-ee/Uninstaller

Picture.15 Step 7 of JOSSO EE Installation

After we finished the installation, we open a browser (Firefox) and navigate to the Atricore page in the same way as in JOSSO CE. The only difference is that the first time that we will try to login we have to browse and find the activation file, as it is illustrated in the following picture.

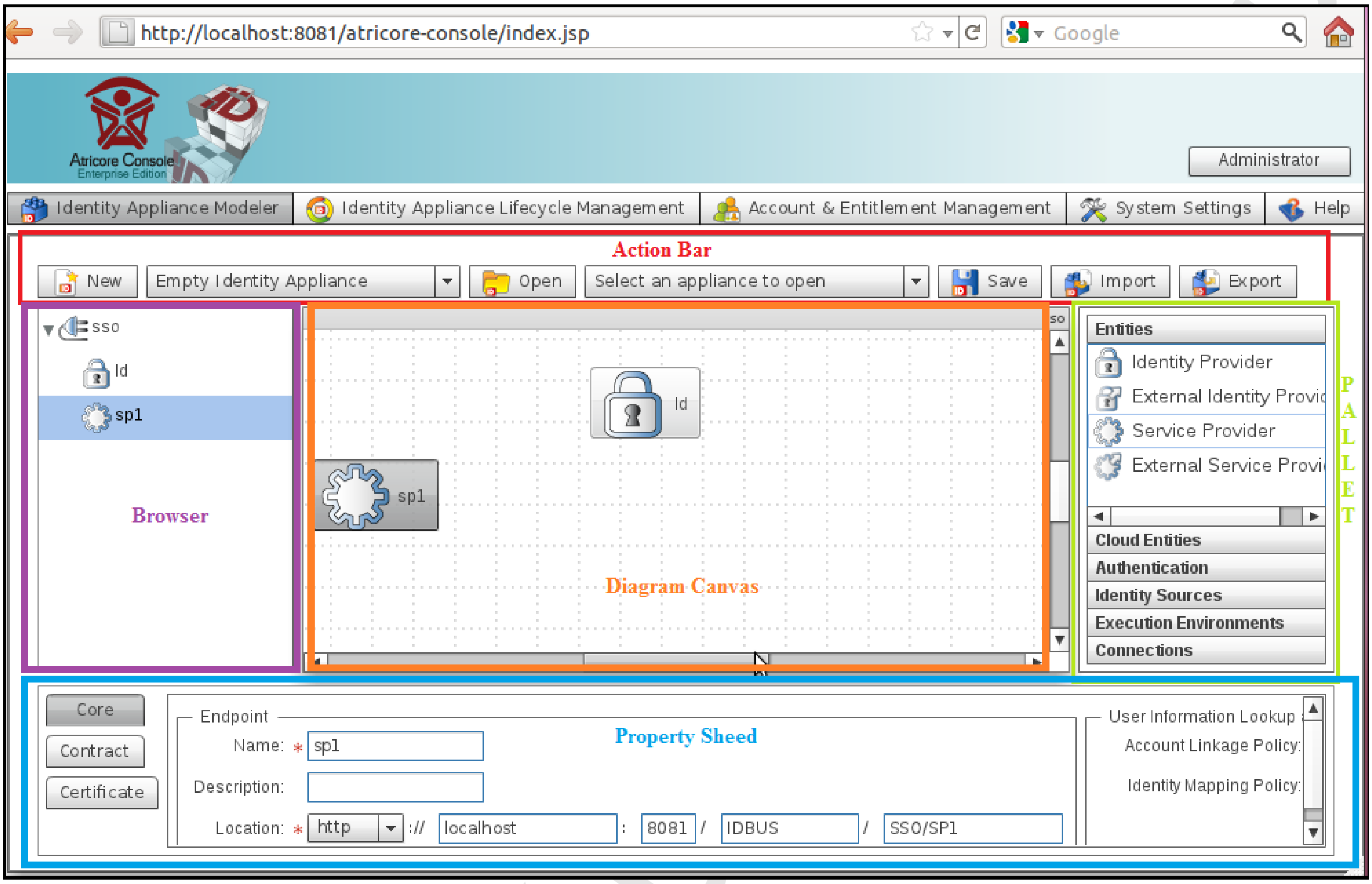


This product is not activated.

In order to fully use it you need to upload your license file.

Picture.16 Activation License Window

After that step, we press the log in button the Atricore Console loads and we see the Identity Appliance Modeler screen as illustrated in the following picture.

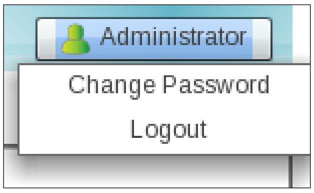


http://localhost:8081/atricore-console/index.jsp

Endpoint
Name: * spl
Description:
Location: * http :// localhost : 8081 / IDBUS / SSO/SP1

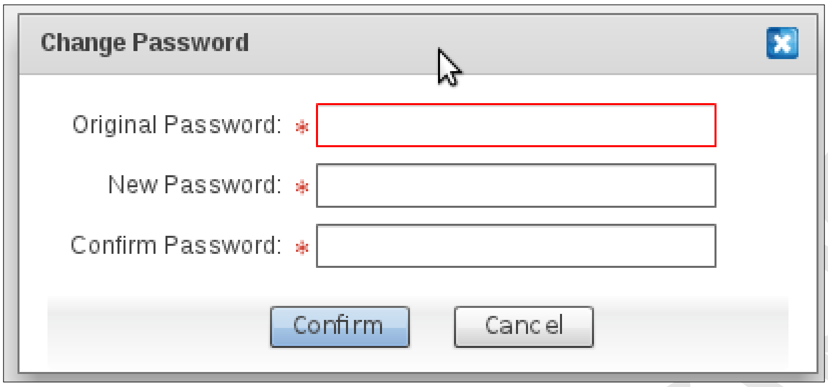
Picture.17 Identity Appliance Modeler Screen

At the beginning we are logged in the Atricore Console as an administrator. Being an administrator, we also have the ability to change the password.



Picture.18 Administrator Window

By clicking on “Change Password” option it appears the “Change Password” window as shown in the following picture:



Change Password

Original Password: *

New Password: *

Confirm Password: *

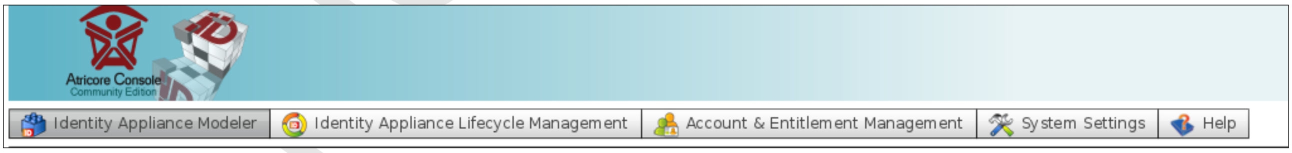
Picture.19 Change Password

In this window we can enter the password that we have in “Original Password” field, and then enter the new Password in “New Password” field and renter the new Password in “Confirm Password” field in order to confirm that the new Password is correct. As we have filled in the entire field correctly we click on “Confirm” button in order to apply the changes or the “Cancel” button if we want to abort changes.

Moving on, it is time to describe the Atricore Console as it is illustrated in Picture: 17

As we observe in Picture: 20 we see that it consists of a bar with five options

- Identity Appliance Modeler
- Identity Appliance Lifecycle Management
- In Account & Entitlement Management
- System Setting
- Help



Atricore Console
Community Edition
Identity Appliance Modeler
Identity Appliance Lifecycle Management
Account & Entitlement Management
System Settings
Help

Picture.20 Five tabs of Atricore

Firstly we will describe the Identity Appliance Modeler. In the Identity Appliance Modeler window we draw our Identity Appliance. This console is consists of the:

1. Action Bar
2. Diagram Canvas

3. Pallet
4. Property Sheed
5. Browser

The Action Bar has buttons like open, new, save that gives us the opportunity to open an existing Identity Appliance or to create a new one or to save our work. In the Diagram Canvas we will draw our model using the principal entities from the Pallet. In Property Sheed we can see the detail of each principal entity that we have in our model in the Diagram Canvas. Finally in Browser we can see the Identity Appliance with more details in a form of a tree diagram.

One of the most important parts of JOSSO2 is the Identity Appliance Modeler screen in which we draw our Identity model.

In the following section we are going to describe first what an Identity Appliance is and then we are going to describe the principals and the entities that we can use to create the Identity Appliance.

11. Identity Appliance

Internet SSO solutions are known within JOSSO as "Identity Appliances". An Identity Appliance is a component which encloses the necessary definitions that instantiate the SSO services, in order to apply particular identity architecture.

For example, during the deployment of an Identity Appliance, predefined SSO endpoints are enabled. Each endpoint displays a specific behavior for a particular authentication service or identity data streams from an arbitrary identity store corresponding to a specific user schema.

The Identity Appliances can be defined either by using the Atricore Console or directly, using a textual notation based on XML descriptors.

Identity Appliances are standard OSGi Bundles, as are all the artifacts that make up JOSSO. A bundle is a file that contains all the information about a given component. This file is in "jar" format, resembling the "jar archives" that Java developers use to distribute libraries of code. The bundle is composed of a MANIFEST.MF file which specifies its identity and the bundles upon which it depends, as well as what is visible for other bundles to use.

Apache Maven is the preferred system for packaging an Identity Appliance. Apache Maven is a build automation tool typically used for Java projects. It is based on the concept of a project object model (POM).

Moreover, the Identity Appliances generated by the Atricore Console include an incorporated descriptor named, pom.xml, for packaging the Identity Appliance in an out-of-the-box way with the usage of Apache Maven version 3. Furthermore, the layout used only by JOSSO2 to define Identity Appliances, is that used by Apache Maven.

A Maven repository is used to hold build artifacts and dependencies of varying types. There are strictly only two types of repositories: local and remote. The local repository refers to a copy on your own installation that is a cache of the remote downloads, and also contains the temporary build artifacts that you have not yet released. Remote repositories refer to any other type of repository, accessed by a variety of protocols such as file:// and http://. These repositories might be a truly remote repository set up by a third party to provide their artifacts for downloading (for example, repo.maven.apache.org and uk.maven.org house Maven's central repository). Other "remote" repositories may be internal repositories set up on a file or HTTP server within an organization, used to share private artifacts between development teams and for releases.

JOSSO2 hosts two internal Maven Repositories which are accessed when an OSGi bundle is to be installed.

The first is located in $JOSSO_HOME/system folder that contains the executable artifacts JOSSO2. Here we can find also both JOSSO2 artifacts and their dependencies.

The second is located in $JOSSO_HOME/appliances folder that contains the Identity Appliances. Each time an Identity Appliance is generated and packaged using the lifecycle management provided in the Atricore Console, it is dropped into this folder location.

The feature descriptors are utilized to simplify the provisioning of capabilities within JOSSO2. This mechanism is provided by a set of commands available in the features shell. JOSSO2 features are stored in the $JOSSO_HOME/features directory which complies with the Maven repository layout.

For example, the main features descriptor for the JOSSO2 distribution looks like this, as we can see below:

```
   <?xml version="1.0" encoding="UTF-8"?>
 <features  name="atricore-josso-ce-2.2.0">
    <!-- JOSSO CE -->
    <feature name="josso-ce" version="2.2.0">
        <feature version="1.1.0">common</feature>
        <feature version="2.2.0">josso-ce-svcs</feature>
        <feature version="1.1.0">atricore</feature>
        <feature version="1.1.0">atricore-management</feature>
        <feature version="2.2.0">josso-ce-console</feature>
    </feature>
    <!-- JOSSO CE Servies -->
    <feature name="josso-ce-svcs" version="2.2.0">
        <!-- License Manager service -->
        <bundle start-level="35">mvn:com.atricore.idbus.console.licensing/com.atricore.idbus.console.licensing.josso2-license-v1_0/1.0.0</bundle>
        <bundle start-level="35">mvn:com.atricore.idbus.console.licensing/com.atricore.idbus.console.licensing.main/1.0.0</bundle>
        <bundle start-level="35">mvn:com.atricore.idbus.console.licensing/com.atricore.idbus.console.licensing.command/1.0.0</bundle>
        <bundle>mvn:org.atricore.josso/org.atricore.josso.services/2.2.0</bundle>
    </feature>
    <!-- JOSSO CE Console -->
    <feature name="josso-ce-console" version="2.2.0">
        <feature version="2.2.0">josso-ce-console-svcs</feature>
        <feature version="2.2.0">josso-ce-console-web</feature>
    </feature>
    <!-- JOSSO CE Console Services -->
    <feature name="josso-ce-console-svcs" version="2.2.0">
        <bundle>mvn:com.atricore.idbus.console.appliance/com.atricore.idbus.console.appliance.console-default-idau/1.0.0</bundle>
        <bundle>mvn:com.atricore.idbus.console.appliance/com.atricore.idbus.console.appliance.console-jaas/1.0.0</bundle>
        <bundle>mvn:com.atricore.idbus.console.activation/com.atricore.idbus.console.activation.protocol/1.0.0</bundle>
        <bundle>mvn:com.atricore.idbus.console.activation/com.atricore.idbus.console.activation.main/1.0.0</bundle>
        <bundle>mvn:com.atricore.idbus.console.activation/com.atricore.idbus.console.activation.command/1.0.0</bundle>
```

```
            <bundle>mvn:com.atricore.idbus.console.lifecycle/com.atricore.idbus.console
.lifecycle.main/1.0.0</bundle>
            <bundle>mvn:com.atricore.idbus.console.lifecycle/com.atricore.idbus.console
.lifecycle.command/1.0.0</bundle>
        </feature>
        <!-- JOSSO CE Console Web -->
        <feature name="josso-ce-console-web" version="2.2.0">
            <bundle>mvn:com.atricore.idbus.console/com.atricore.idbus.console.web/1.0.
0/war/ce</bundle>
            <bundle>mvn:com.atricore.idbus.console/com.atricore.idbus.console.docs/1.0.
0/war</bundle>
        </feature>
    </features>
```

As we have described what is the Identity Appliance we will continue with the description of the principals and the entities that we can use from the “Pallet” to create our model.

12. Entities

The nature of the providers is twofold. They can be internal or external providers. The internal are hosted locally and are build in JOSSO in order to provide Identity and Access Management (IAM) services. The external are hosted remotely, e.g. on a Cloud provider, and they are bases on third-party solutions, independent from JOSSO. Moreover, because the internal providers are hosted within the user’s organization, their installation, setup and lifecycle can be fully monitored and managed. On the other hand, the external providers can be monitored by establishing Federated SSO connections, with the exception that the user has no right to have access to their detailed specifications, their behavior or the management back-end, due to the fact that they are part of the remote host.

In order to create an Identity Appliance first of all, we have to choose from the “Entities” the Identity Provider and Service Provider.

The Identity Provider is responsible for authentication and authorization and also is responsible to create a relationship of confidence with another Service Provider through a federated connection.

The Identity Provider definition according to OASIS[1] is that it "Creates, maintains, and manages identity information for principals, and provides principal authentication to other Service Providers within a federation."

The Identity Provider (IdP) entity is essential in order to set up the Single Sign On function. This entity is entrusted to manage the user's identity, to deliver security tokens (SAML) and to provide authentication services for client applications. The security tokens mentioned above include the user's identity and claims. These tokens are forwarded to the relying parties of the Identity Providers which are known as Service Providers (SP). These new entities can give authorization and access privileges to a user based on the claims that have received from the Identity Providers.

An Identity Provider can be associated with one or more Service Providers. This means that the Service Providers will depend on the requirements provided by the trusted Identity Provider. Their association will be a federation connection or an identity lookup connection. The difference among those two connections is that the federation identity connection establishes a trust relationship between the Identity Provider and the Service Provider, while the identity lookup is not. The SSO exchange system of a federation connection is based on digital signature. This method ensures message authentication, integrity and non-repudiation. On the other hand an identity lookup connection points to the Identity Provider to a specific identity store that provides user and entitlement information.

13. Configuration and installation of the Identity Provider's Identity Store

JOSSO provides four different options of Identity Stores for the Identity Provider. These can be found in the "Identity Sources" drawer from the Palette, and are the Identity Vault Authoritative Source, the DB Identity Source, the LDAP Identity Source and the XML Identity Source.

If the Identity Vault option is selected, firstly it must be defined for the Identity Appliance. When it is defined, the Identity Lookup connection is used from the "Connections" drawer, in order to connect the Identity Vault with the Identity Provider.

In the case that the LDAP Identity Source is selected, as before, it must be defined for the Identity Appliance. After that step, the Identity Lookup connection is used in order to connect the LDAP Identity Source with the Identity Provider.

[1] https://www.oasis-open.org/

Another option is the usage of the DB Identity Source. As in the two previous components, an RDBMS Identity Source element needs to be defined for the Identity Appliance. In order to connect the RDBMS Identity Source with the Identity Provider the Identity Lookup connection is chosen.

Finally, in the last option, which is the XML Identity Source as described before, needs to be defined. Also at this Identity Source option the connection that is used is the Identity Lookup

14. Execution Environments

An execution environment is a service where Service Providers run in order to offer services to users and applications.

An execution environment can be a Web container, an Application Server, a Web portal or an Application Platform. The characteristics of an execution environment are defined in the Identity Appliance and are made the bindings between the Service Provider and itself in order to activate the SSO support that extends to the subjacent applications.

An activation connection is implemented in order to bind the Service Provider with the execution environment.

The role of the Service Providers is to offer applications and services to end-users. In order to accomplish that feature Service Providers are based on third-party software which plays the role of supporting infrastructure considering security, connectivity and communication. For instance, if it is needed to support web applications, there are used web containers[2]. The execution environments that are compatible with JOSSO are the Alfresco, the Apache Web Server, the JavaEE, the JBoss Portal, the Liferay Portal, the phpBB, the Web Server, the WebLogic Server, the Websphere Community Edition (WASCE), the Windows IIS, the Apache Tomcat and the JBoss platform.

Alfresco is a Free/Libre enterprise content management[3] system for Microsoft Windows and Unix-like operating systems.

The Apache HTTP Server is the most popular open source, standard, secure, efficient and extensible HTTP server for modern operating systems, including UNIX and Windows NT. An Apache Server can run all types of web applications, written in PHP, Perl, Ruby and Python among many others.

Java EE is Oracle's enterprise Java computing platform. The platform provides an API

[2] A Web container (also known as a Servlet container) is the component of a web server that interacts with Java servlets.

[3] Enterprise content management (ECM) is a formalized means of organizing and storing an organization's documents, and other content, that relate to the organization's processes.

and runtime environment for developing and running enterprise software, including network and web services, and other large-scale, multi-tiered, scalable, reliable, and secure network applications.

JBoss Portal provides an open source platform for hosting and serving a portal's Web interface, publishing and managing its content, and customizing its experience. It delivers the benefits of a zero-cost open source license combined with a flexible and scalable underlying platform.

Liferay Portal is a free and open source enterprise portal[4] written in Java and distributed under the GNU Lesser General Public License and proprietary licenses. It is primarily used to power corporate intranets and extranets.

The phpBB is an Internet forum package written in the PHP scripting language. The name phpBB is an abbreviation of PHP Bulletin Board. phpBB is free and open source software. Features of phpBB include support for multiple database engines (PostgreSQL, SQLite, MySQL, Oracle, and Microsoft SQL Server), flat message structure, hierarchical subforums, topic split/merge/lock, user groups, and multiple attachments per post, full-text search, plugins and various notification options.

A web server execution environment represents a generic web server (or container) hosting web applications or resources.

Oracle WebLogic Server is an application server for cloud and conventional environments and consists of a Java EE platform product-family that includes a Java EE application server, an enterprise portal, WebLogic Portal, an Enterprise Application Integration platform, a transaction server and infrastructure, WebLogic Tuxedo, a telecommunication platform, a WebLogic Communication Platform and a HTTP web server.

WebSphere Application Server Community Edition (WASCE) is a free, certified Java EE 6 application server for building and managing Java applications. It is IBM's supported distribution of Apache Geronimo that uses Tomcat for servlet container and Axis 2 for web services.

Internet Information Services (IIS) is a web server application and set of feature extension modules created by Microsoft for use with Microsoft Windows. The 7.5 edition supports HTTP, HTTPS, FTP, FTPS, SMTP and NNTP.

Apache Tomcat is an open source web server and servlet container. Tomcat implements the Java Servlet and the JavaServer Pages (JSP) specifications from Oracle Corporation, and provides a HTTP web server environment for Java code to

[4] An enterprise portal, also known as an enterprise information portal (EIP) or corporate portal, is a framework for integrating information, people and processes across organizational boundaries.

run. It includes tools for configuration and management, but can also be configured by editing XML configuration files.

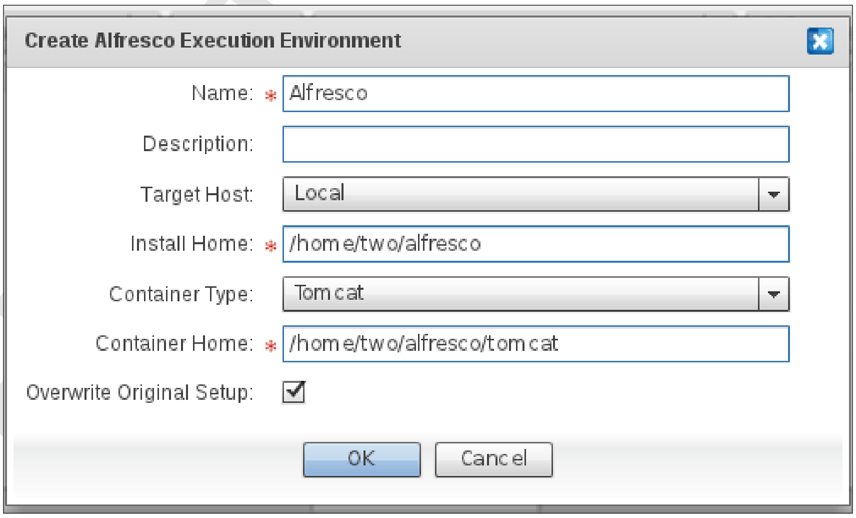
JBoss Application Server is an application server that implements the Java Platform, Enterprise Edition (Java EE). It is written in Java and it is usable on any operating system that supports Java.

15. Configuration and installation of the Service Provider’s Execution Environment

As we have already mentioned, there are a number of execution environments that can be used by the Service Provider. These exist in the “Execution Environments” drawer where they can be dragged to a desirable place in the Palette. The connection between the execution environment and the Service Provider is achieved by the usage from the “Connections” drawer the “Activation” connection. Here it will be analyzed the setup dialog window of each environment. The execution environments that JOSSO supports are the following:

15.1 Alfresco Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown in the following picture. The fields that are marked with the red asterisk are mandatory.



Create Alfresco Execution Environment

Name: * Alfresco

Description:

Target Host: Local

Install Home: * /home/two/alfresco

Container Type: Tomcat

Container Home: * /home/two/alfresco/tomcat

Overwrite Original Setup: ☑

Picture.21 Alfresco Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of Alfresco Execution Environment exist.

Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Container Type: Here the type of the Web container[5] is chosen where the Alfresco Execution Environment is deployed.

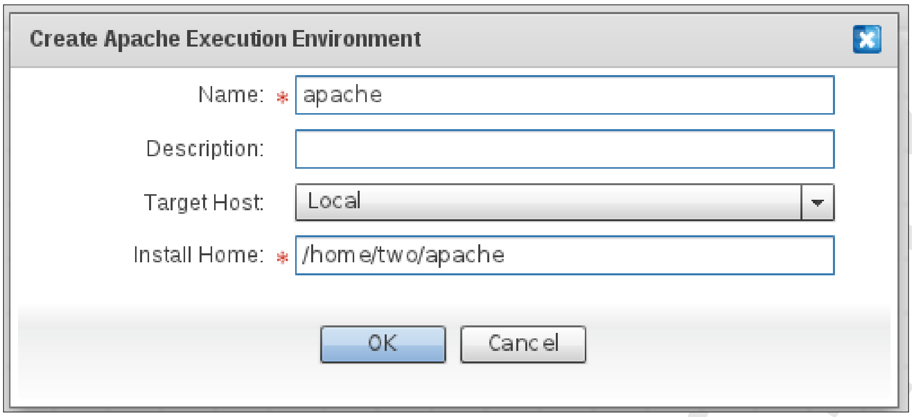
Container Home: There is defined the folder where the Web container exist that Alfresco Execution Environment is executing.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

15.2 Apache Web Server Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory.

[5] **Web container** (also known as a Servlet container) is the component of a web server that interacts with Java servlets.



Create Apache Execution Environment

Name: * apache

Description:

Target Host: Local

Install Home: * /home/two/apache

Picture.22 Apache Web Server Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of Apache Execution Environment exist.

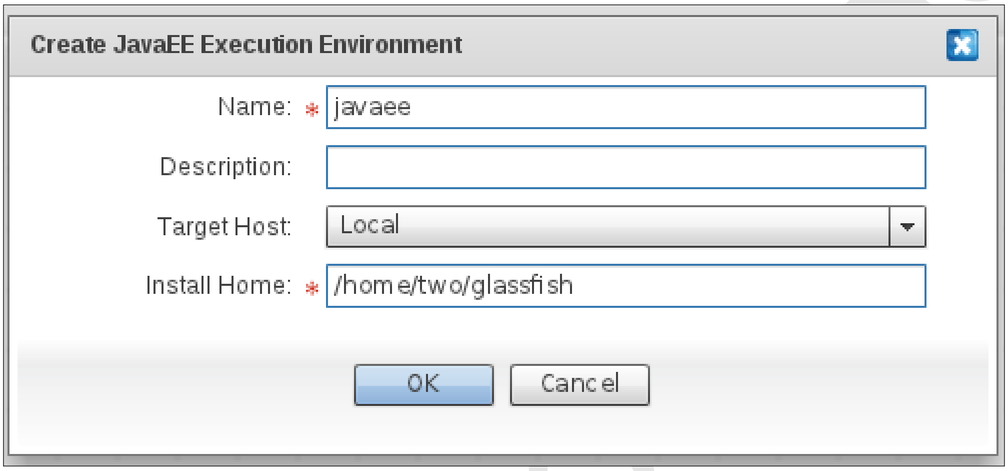
Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

Install Demo Applications: If this checkbox is selected a JOSSO example web application is deployed on the execution environment. If it is needed a verification that the setting of the Single Sign-On is working properly, this checkbox must be selected.

15.3 Java EE Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory.



Create JavaEE Execution Environment

Name: * javaee

Description:

Target Host: Local

Install Home: * /home/two/glassfish

Picture.23 Java EE Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

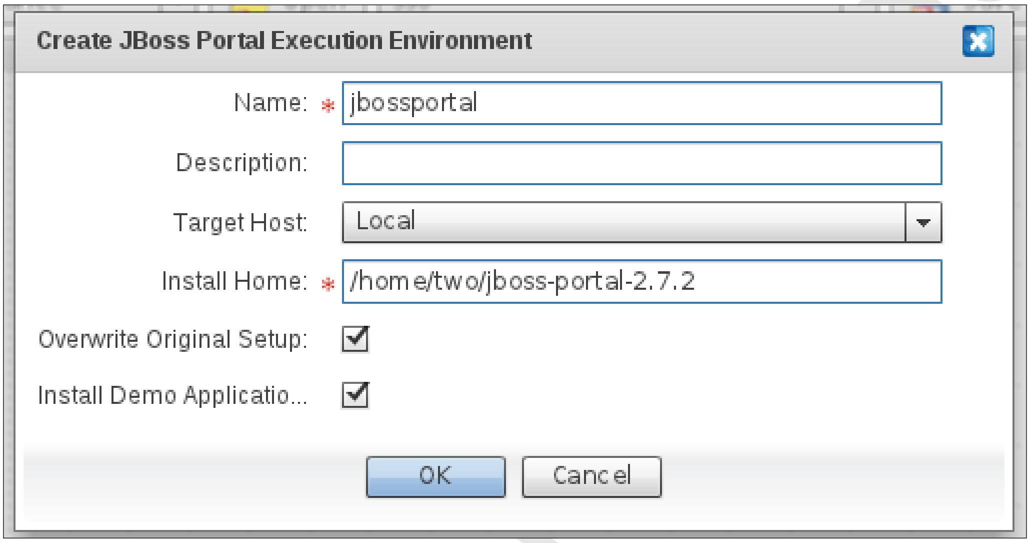
Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of JavaEE Execution Environment exist.

Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

15.4 JBoss Portal Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory.



Create JBoss Portal Execution Environment

Name: * jbossportal

Description:

Target Host: Local

Install Home: * /home/two/jboss-portal-2.7.2

Overwrite Original Setup: ☑

Install Demo Applicatio... ☑

Picture.24 JBoss Portal Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of JBoss Portal Execution Environment exist.

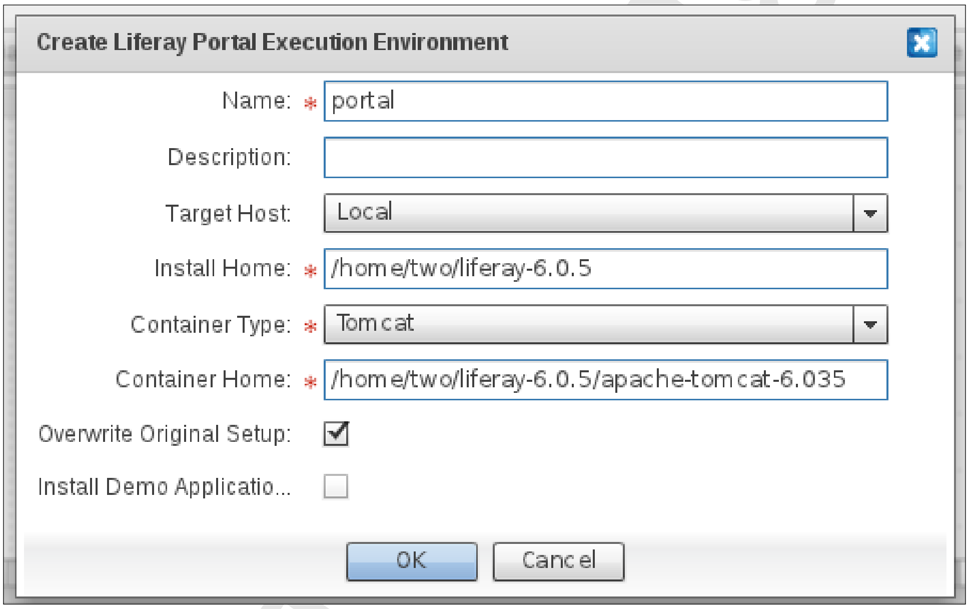
Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

Install Demo Applications: If this checkbox is selected a JOSSO example web application is deployed on the execution environment. If it is needed a verification that the setting of the Single Sign-On is working properly, this checkbox must be selected.

15.5 Liferay Portal Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory.



Create Liferay Portal Execution Environment

Name: * portal

Description:

Target Host: Local

Install Home: * /home/two/liferay-6.0.5

Container Type: * Tomcat

Container Home: * /home/two/liferay-6.0.5/apache-tomcat-6.035

Overwrite Original Setup: ☑

Install Demo Applicatio... □

Picture.25 Liferay Portal Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of Liferay Portal Execution Environment exist.

Remote JOSSO2 URL: This field is only visible when the "Remote" option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Container Type: Here the type of the Web container is chosen where the Liferay Portal Execution Environment is deployed.

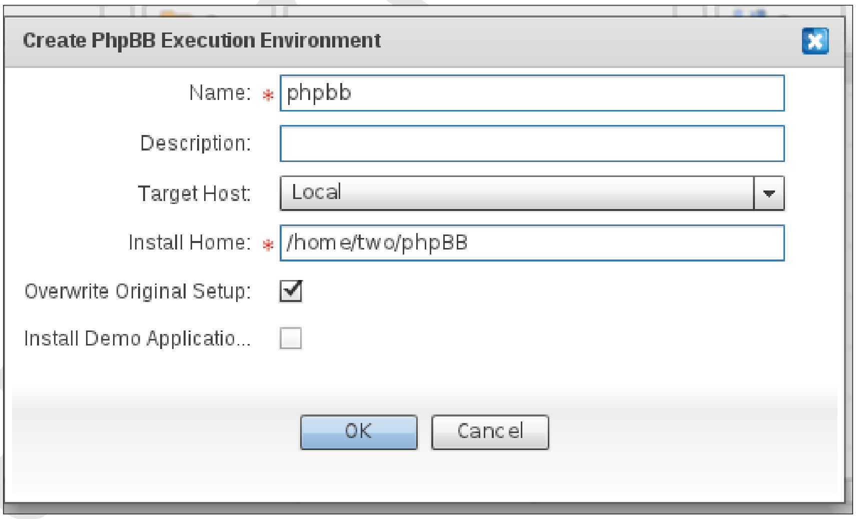
Container Home: There is defined the folder where the Web container exist that Liferay Portal Execution Environment is executing.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

Install Demo Applications: If this checkbox is selected a JOSSO example web application is deployed on the execution environment. If it is needed a verification that the setting of the Single Sign-On is working properly, this checkbox must be selected.

15.6 PhpBB Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory.



Create PhpBB Execution Environment

Name: * phpbb

Description:

Target Host: Local

Install Home: * /home/two/phpBB

Overwrite Original Setup: ☑

Install Demo Applicatio... □

Picture.26 PhpBB Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of phpBB Execution Environment exist.

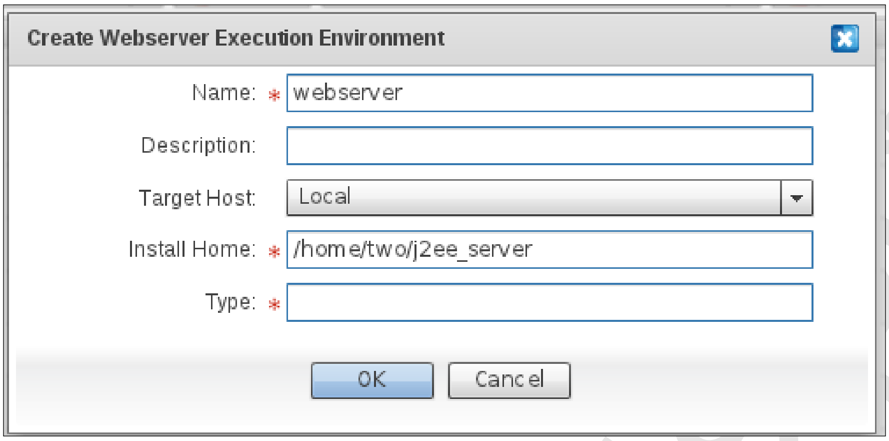
Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

Install Demo Applications: If this checkbox is selected a JOSSO example web application is deployed on the execution environment. If it is needed a verification that the setting of the Single Sign-On is working properly, this checkbox must be selected.

15.7 Webserver Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory



Create Webserver Execution Environment

Name: * webserver

Description:

Target Host: Local

Install Home: * /home/two/j2ee_server

Type: *

Picture.27 Webserver Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

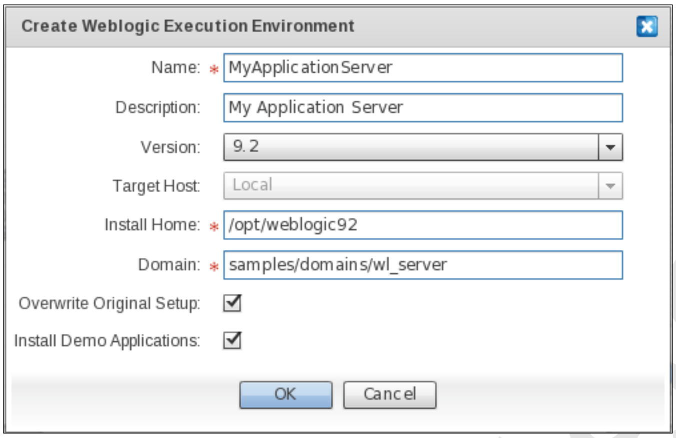
Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of phpBB Execution Environment exist.

Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

15.8 Oracle Weblogic Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory



Create Weblogic Execution Environment

Name: * MyApplicationServer

Description: My Application Server

Version: 9.2

Target Host: Local

Install Home: * /opt/weblogic92

Domain: * samples/domains/wl_server

Overwrite Original Setup: ☑

Install Demo Applications: ☑

Picture.28 Oracle Weblogic Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Version: Here the version of the execution environment based on the Oracle Weblogic is chosen.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of Weblogic Execution Environment exist.

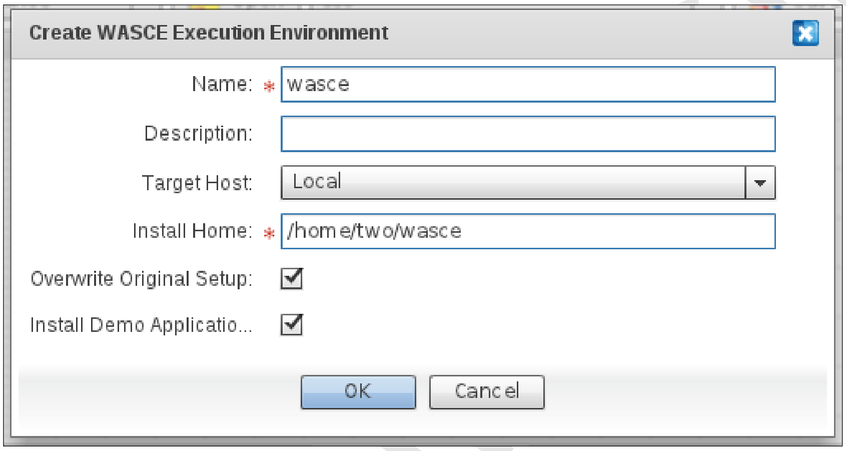
Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

Install Demo Applications: If this checkbox is selected a JOSSO example web application is deployed on the execution environment. If it is needed a verification that the setting of the Single Sign-On is working properly, this checkbox must be selected.

15.9 Websphere Community Edition (WASCE) Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory.



Create WASCE Execution Environment

Name: * wasce

Description:

Target Host: Local

Install Home: * /home/two/wasce

Overwrite Original Setup: ☑

Install Demo Applicatio... ☑

Picture.29 Websphere Community Edition (WASCE) Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of Websphere Execution Environment exist.

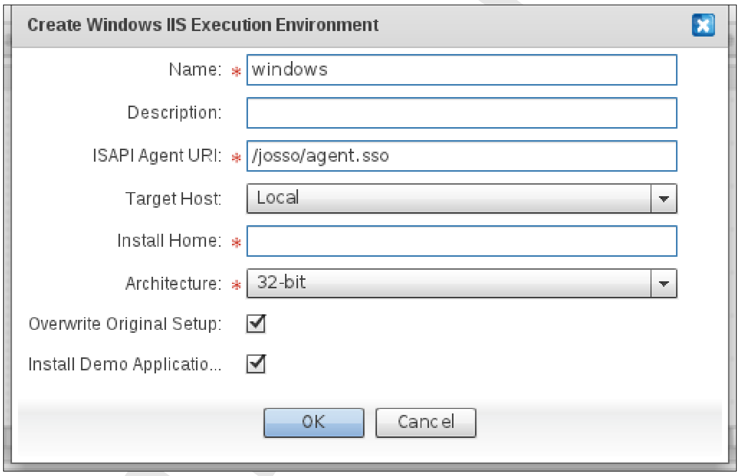
Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

Install Demo Applications: If this checkbox is selected a JOSSO example web application is deployed on the execution environment. If it is needed a verification that the setting of the Single Sign-On is working properly, this checkbox must be selected.

15.10 Windows IIS Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory.



Create Windows IIS Execution Environment

Name: * windows

Description:

ISAPI Agent URI: * /josso/agent.sso

Target Host: Local

Install Home: *

Architecture: * 32-bit

Overwrite Original Setup: ☑

Install Demo Applicatio... ☑

Picture.30 Windows IIS Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of Windows IIS Execution Environment exist.

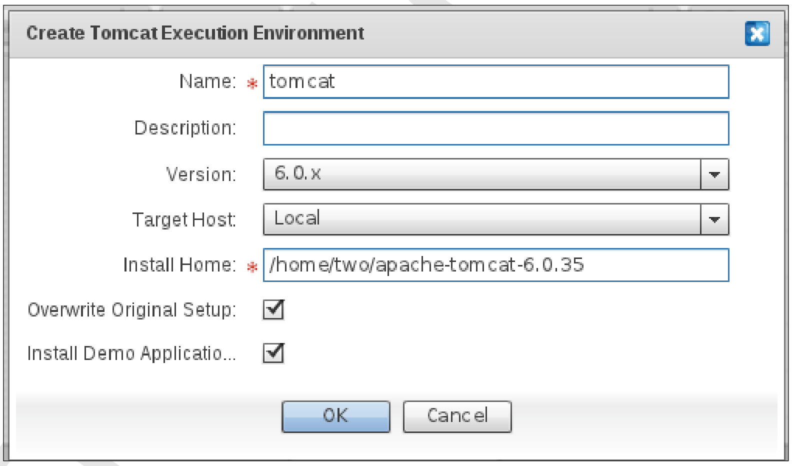
Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

Install Demo Applications: If this checkbox is selected a JOSSO example web application is deployed on the execution environment. If it is needed a verification that the setting of the Single Sign-On is working properly, this checkbox must be selected.

15.11 Apache Tomcat Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory.



Create Tomcat Execution Environment

Name: * tomcat

Description:

Version: 6.0.x

Target Host: Local

Install Home: * /home/two/apache-tomcat-6.0.35

Overwrite Original Setup: ☑

Install Demo Applicatio... ☑

Picture.31 Apache Tomcat Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Version: Here the version of the execution environment Apache Tomcat is chosen.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of Apache Tomcat Execution Environment exist. The value for this field should correspond to that of the CATALINA_HOME environment variable.

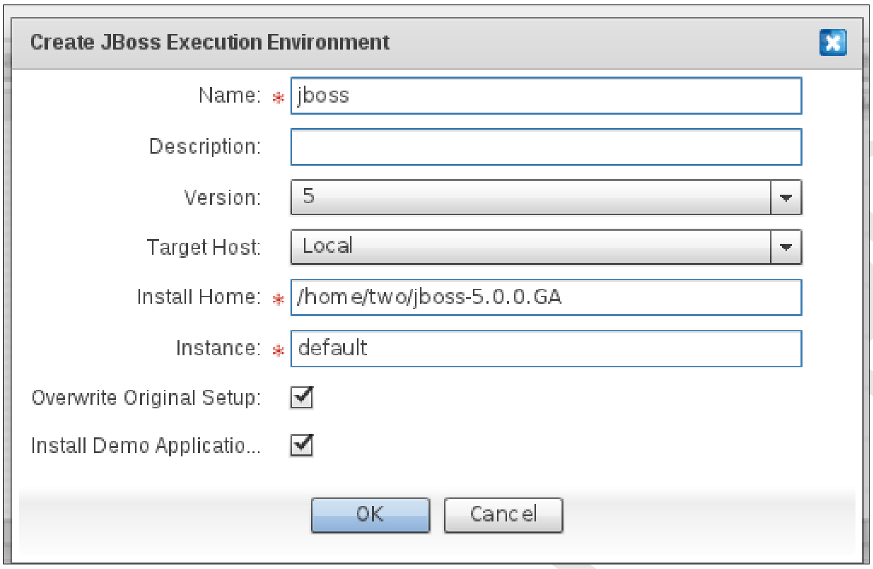
Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

Install Demo Applications: If this checkbox is selected a JOSSO example web application is deployed on the execution environment. If it is needed a verification that the setting of the Single Sign-On is working properly, this checkbox must be selected.

15.12 JBoss Execution Environment

The window that opens when the execution environment is deployed on the canvas is as it is shown on the following picture. The fields that are marked with the red asterisk are mandatory.



Create JBoss Execution Environment

Name: * jboss

Description:

Version: 5

Target Host: Local

Install Home: * /home/two/jboss-5.0.0.GA

Instance: * default

Overwrite Original Setup: ☑

Install Demo Applicatio... ☑

Picture.32 JBoss Execution Environment

Field description:

Name: Here the name of the execution environment is specified.

Description: Some description for the execution environment.

Version: Here the version of the execution environment JBoss is chosen.

Target Host: There are two options, “Local” and “Remote”. The “Local” option assumes that the execution environment is in the same host that JOSSO is. The “Remote” option assumes that the execution environment is located in a different host.

Install Home: It is the folder where the artifacts of JBoss Execution Environment exist. The value for this field should correspond to that of the JBOSS_HOME environment variable.

Remote JOSSO2 URL: This field is only visible when the “Remote” option is selected. It represents the endpoint of the activation of the web service for the remote JOSSO2 application.

Overwrite Original Setup: If this checkbox is selected the original settings of the execution environment are replaced with new ones.

Install Demo Applications: If this checkbox is selected a JOSSO example web application is deployed on the execution environment. If it is needed a verification that the setting of the Single Sign-On is working properly, this checkbox must be selected.

16. Authentication

Here we can choose among servers that provide authentication services remotely to users and systems. This feature is available only in JOSSO Enterprise Edition. JOSSO cooperates with three different external Authentication servers. These are WiKID, Windows Domain and JOSSO's own directory service.

The WiKID Strong Authentication System is a public-key based two-factor authentication system. It is a flexible, extensible, and secure alternative to tokens, certs and passwords. Application & API support exists for Java, ASP, PHP, Ruby, OpenVPN, TACACS+, etc.

Windows domain is a collection of security principals that share a central directory database. The central database is usually maintained by a proprietary Microsoft product or technology, known as Active Directory. Each person who uses computers within a domain receives his own unique account, or user name. This account can then be assigned access to resources within the domain.

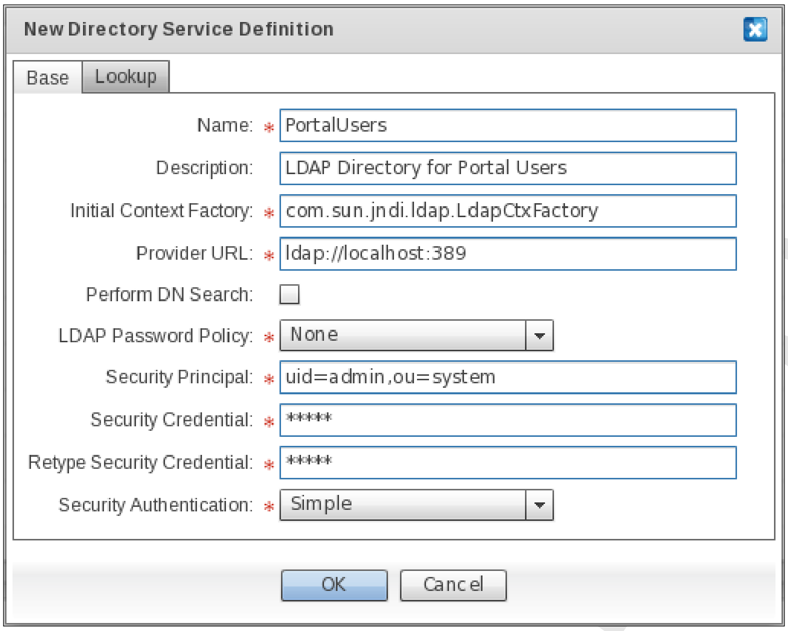
JOSSO's directory-based authentication is built onto the bind operation of the LDAP protocol. It authenticates the client to the server using this operation.

17. Authentication Setup

17.1 Configuration an installation of Directory-based Authentication

The Directory-Based Authentication is based on the LDAP protocol, authenticating a client to a server. The Identity Provider setup for directory-based authentication authorizes an external directory to verify the user credentials remotely through a LDAP Bind request. If this operation is successful the user will be authenticated. In order to build such a directory the next steps are followed.

From the "Authentication" drawer the "Directory Service" entity is chosen and dragged into the Diagram Canvas. This action opens a window named "New Directory Definition" which has two tabs; the "Base" tab and the "Lookup" tab, as it is shown below.



Name: * PortalUsers

Description: LDAP Directory for Portal Users

Initial Context Factory: * com.sun.jndi.ldap.LdapCtxFactory

Provider URL: * ldap://localhost:389

Perform DN Search: □

LDAP Password Policy: * None

Security Principal: * uid=admin,ou=system

Security Credential: * *****

Retype Security Credential: * *****

Security Authentication: * Simple

Picture.33 Authentication Base tab

Field Description:

Name: Here is entered a preferred name for the Directory-based Authentication entity.

Description: A short description for this entity.

Initial Context Factory: In this field is entered the default JNDI[6] environment property which is the following string, com.sun.jndi.ldap.LdapCtxFactory.

Provider URL: Here is entered the provider's URL. The default value for this is ldap://localhost:389.

Perform DN Search: This checkbox, if selected, determines if the DN of a user entry will be used as an identifier. If it is not selected, the user identifier will be put to the common name attribute.

LDAP Security Policy: There are two options, "None" and "RFC Draft". If "None" is selected the LDAP Security Policy is disabled. If "RFC Draft" is selected the security policy that is followed is based on the specifications contained in the draft RFC named draft-behera-ldap-password-policy-09.

Security Principal: Here is entered the security principal for user authentication to a service. The default value is "uid=admin, ou=system".

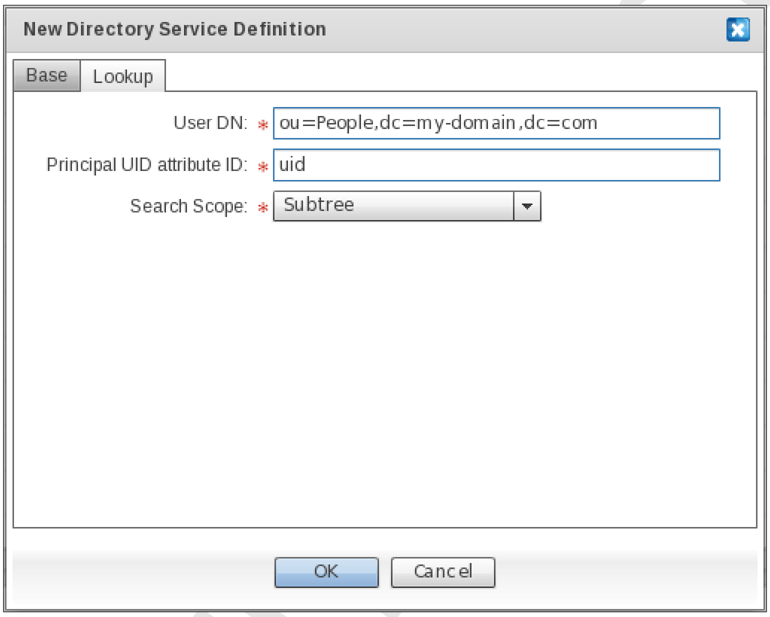
[6] The Java Naming and Directory Interface (JNDI) is a Java API for a directory service that allows Java software clients to discover and look up data and objects via a name.

Security Credential: Here is entered a password for user authentication to a service.

Retype Credential: The password is retyped.

Security Authentication: There are three options. "None" for anonymous binding, "Simple" for password-based authentication and "Strong" for authentication based on X.509 certificates.

The "Lookup" tab is determined how the user and role entries are retrieved. This window is shown below.



User DN: * ou=People,dc=my-domain,dc=com
Principal UID attribute ID: * uid
Search Scope: * Subtree

Picture.34 Authentication Lookup tab

Field Description:

User DN: Here is entered a DN used as a context for user searches. The default value is "ou=People,dc=my-domain,dc=com".

Principal UID attribute ID: Here is entered a LDAP attribute name. The default value is "uid".

Search Scope: There are four strategies used for queering user/role entries in a LDAP directory. There is the "Base" option, where queries are set up within specific boundaries. The other is the "One" option where the LDAP queries are searching the immediate children of the LDAP tree representing user and role DNs. The third is the "Subtree" option, where the whole LDAP subtree directory is queried. The fourth is the “Children” option, where the LDAP queries search one level below from all the direct children of the major entry.

17.2 Configuration and installation of Integrated Windows Authentication

Integrated Windows Authentication (IWA) is a term associated with Microsoft products that refers to the SPNEGO[7], Kerberos[8], and NTLMSSP[9] authentication protocols with respect to SSPI[10] functionality introduced with Microsoft Windows 2000 and included with later Windows NT-based operating systems. The term is used more commonly for the automatically authenticated connections between Microsoft Internet Information Services, Internet Explorer, and other Active Directory aware applications.

The usage of that authentication mechanism enables the user that has an open session to a trusted Windows Domain, to automatically login when he wants to access the resources of a Service Provider. In order to build such a directory the next steps are followed.

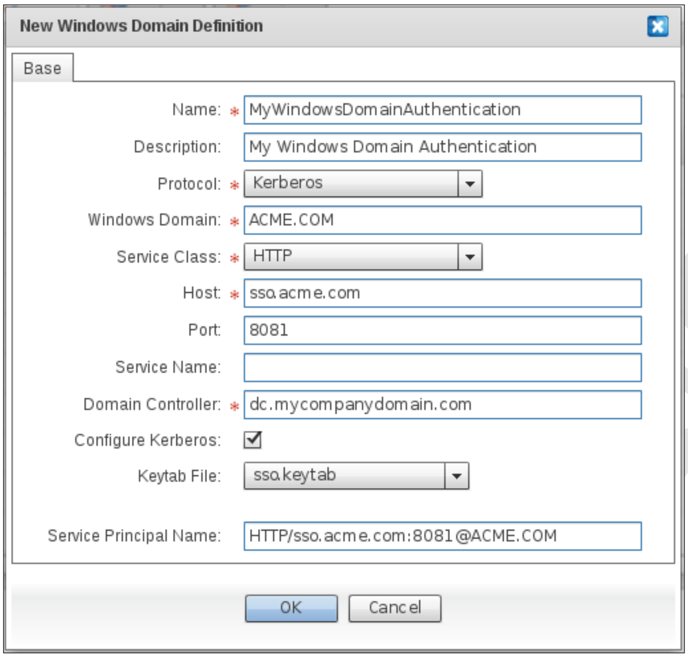
From the “Authentication” drawer the “Windows Domain” entity is chosen and dragged into the Diagram Canvas. This action opens a window named “New Windows Domain Definition”, as it is shown below.

[7] SPNEGO is a "pseudo mechanism" that is used to negotiate one of a number of possible real mechanisms and used when a client application wants to authenticate to a remote server, but neither end is sure what authentication protocols the other supports.

[8] Kerberos is a computer network authentication protocol which works on the basis of "tickets" to allow nodes communicating over a non-secure network to prove their identity to one another in a secure manner.

[9] NTLMSSP (NT LAN Manager Security Support Provider) is a binary messaging protocol used by the Microsoft Security Support Provider Interface (SSPI) to facilitate challenge-response authentication and to negotiate integrity and confidentiality options.

[10] Security Support Provider Interface (SSPI) is an API used by Microsoft Windows systems to perform a variety of security-related operations such as authentication.



New Windows Domain Definition

Base

Name: *	MyWindowsDomainAuthentication
Description:	My Windows Domain Authentication
Protocol: *	Kerberos
Windows Domain: *	ACME.COM
Service Class: *	HTTP
Host: *	sso.acme.com
Port:	8081
Service Name:	
Domain Controller: *	dc.mycompanydomain.com
Configure Kerberos:	☑
Keytab File:	sso.keytab
Service Principal Name:	HTTP/sso.acme.com:8081@ACME.COM

Picture.35 Windows Authentication

Field Description:

Name: Here is entered a preferred name for the Windows Domain Authentication entity.

Description: A short description for this entity.

Protocol: There are two options. The default is “Kerberos” protocol, which enables the usage of negotiating tickets exchanged with a Windows domain controller. The other option is the “NTLM v2” protocol, which is using negotiating tickets exchanged with a Windows domain controller.

Windows Domain: Here is entered the unique identifier of the trusted Windows domain controller.

Service Class: Here is set the application protocol, like HTTP, that is used by JOSSO for servicing requests.

Host: Here is entered the name of the computer that hosts the service. The default value is “localhost”.

Port: Here is entered the number of the port used by JOSSO for servicing requests. The default port number that JOSSO listens to is 8081.

Service Name: In this field is entered the name of the Service Provider.

Domain Controller: Here is entered the appropriate hostname of the Windows domain controller.

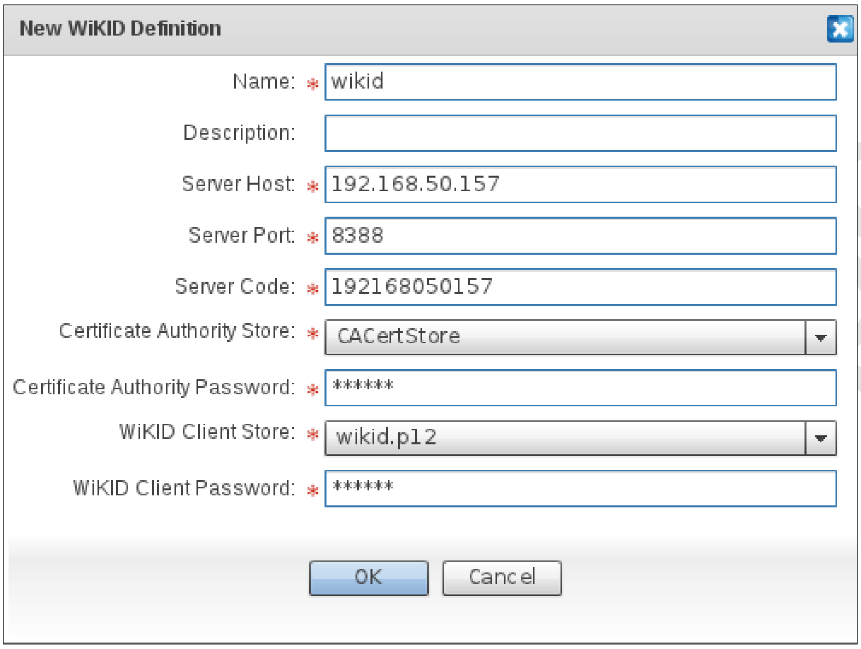
Configure Kerberos: If this checkbox is selected an automatically generating Kerberos configuration is enabled.

Keytab file: This option selects the keytab file from the local file system. This file is used to authenticate the Identity Provider versus the Windows domain controller.

17.3 Configuration and installation Two-Factor Authentication

Two-factor authentication (TFA, T-FA or 2FA) is an approach to authentication which requires the presentation of two or more of the three authentication factors: a knowledge factor "something the user knows", a possession factor "something the user has", and an inherence factor "something the user is". WiKID is such an application and works as follows. A user selects the domain he wishes to use and enters the PIN into his WiKID Two-factor client. The client is encrypted with the WiKID Server's public key - assuring that only that server can decrypt it with its private key. If the server can decrypt the PIN and it is correct and the account is active, it generates the one-time passcode (OTP) and encrypts it with the client's public key. The user then enters his username and the OTP into whatever service they are using, a VPN for instance, which forwards it to the WiKID Server for validation. In order to build such a directory the next steps are followed.

From the "Authentication" drawer the "WiKID 2FA" entity is chosen and dragged into the Diagram Canvas. This action opens a window named "New WiKID Definition", as it is shown below.



New WiKID Definition

Name: * wikid

Description:

Server Host: * 192.168.50.157

Server Port: * 8388

Server Code: * 192168050157

Certificate Authority Store: * CACertStore

Certificate Authority Password: * ******

WiKID Client Store: * wikid.p12

WiKID Client Password: * ******

Picture.36 WiKID Authentication

Field Description:

Name: Here is entered a preferred name for the WiKID Two-Factor Authentication entity.

Description: A short description for this entity.

Server Host: Here is entered the IP address or host name of the WiKID server.

Server Code: Here is entered the server code of the WiKID domain.

Certificate Authority Store: If it is selected, it permits the uploading of the Certificate Authority Keystore of the WiKID server. This keystore file is used for decryption and authentication purposes.

Certificate Authority Password: A password for the Certificate Authority Store.

WiKID Client Store: It uploads the keystore of JOSSO client server, which is used for authenticating and encrypting requests to the WiKID server, to the users' local system.

WiKID Client Password: A password for the WiKID Client keystore.

18. Identity Sources

The Identity Sources are the data layer that providers are based. This layer is required by identity and access management in order to support authentication and SSO.

Furthermore, the Service Provider can be based on an Identity Source in order to connect the Identity Provider's account to a local counterpart and utilize the available user details inside the Identity Provider to increase output claims. The association between a Service Provider and an Identity Source is not obligatory. It is made only when argument claims are forwarded from the trusted Identity Providers with available information for a Service Provider local store. In order to define a local Identity Store for a Service Provider, it is used the "identity lookup" connection from the Connections drawer of the Palette. The Identity Sources for the Service Provides are the same as for the Identity Provider and are the Identity Vault, the LDAP Directory, the RDBMS identity source and the XML identity source.

The Identity Vault is a type of Identity Source which is built into JOSSO. This feature is based on the Apache Derby relational database. This type of Identity source can be linked to an Identity Provider in order to support authentication processes and to a Service Provider in order to support account linkage and Identity Mapping.

The LDAP Identity Source can be accessed through the LDAP protocol, which displays the user entries hierarchically. The LDAP Identity Source can be linked to an Identity Provider in order to imply queries that retrieve user records supplied to authentication and related processes that use the LDAP protocol. It can also link to a Service Provider in order to imply queries that locally authenticate users or to boost Identity Provider claims by a directory accessible through the LDAP protocol.

The RDBMS Identity Source can be accessed by the vendor's Java Database Connectivity driver (JDBC). This driver conceals the internal details of the protocol that it is used to access databases. The user's credentials and other details are stored in tables in the form of rows. The RDBMS Identity Source can be linked to an Identity Provider for executing queries in order to retrieve user records using the supplied JDBC driver. It can also be linked to Service Provider executing queries for user local authentication or boosting Identity Provider claims thought the JDBC driver.

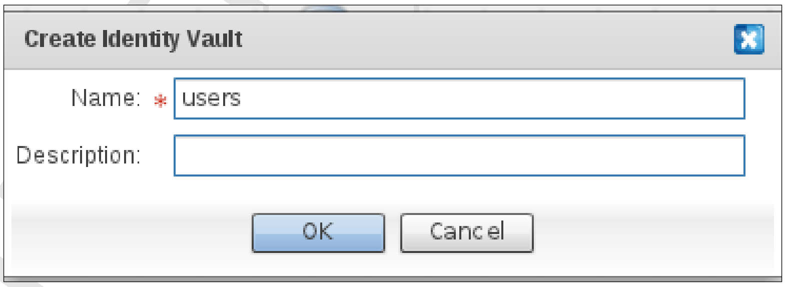
The XML Identity Source is depended on the hierarchical information model. The basic components of are the elements and the attributes. The elements are describing data, while the attributes are the properties of the elements. The semantic structure of the XML documents is defined through XML schemas from which the individual attributes and elements become perceived in order to be assigned by valid types. The XML Identity Source is depending on a single XML document that is referred to a particular schema of JOSSO. This XML is stored in a file system accessible by the JOSSO server. The entitlements and user records are stored in that XML, while the user's credentials are stored in a different file because they constitute sensitive data and must be protected.

18.1 Configuration and installation of an Identity Source

In JOSSO the Identity Sources constitute the basic foundation where the Identity and Service Providers are absorbing data that are used to support authentication processes such as SSO. The properties that characterize an Identity Source are the storage mechanism, the user schema and the access protocol. The first defines the technology involves and the information model (hierarchical or relational) that will be followed. The second defines the structure of the entries. In other words, where the user attributes are referenced and how the semantics of these will be placed. The third determines the messages that the users are going to operate and also the ways of transmitting them over the network.

18.2 Configuration and installation of an Identity Vault

The Identity Vault is an Identity Source that is built in within JOSSO. This Identity Source is based on an Apache Derby relational database and it has the capability to be linked to an Identity Provider as well in a Service Provider. When connected to an Identity Provider it supports authentication processes and when connected to a Service Provider supports identity mapping and account linkage. In order to use this Identity Source, the "Identity Vault" entity is selected from the "Identity Sources" drawer and dragged in the Diagram Canvas. That action opens the following window.



Create Identity Vault

Name: * users

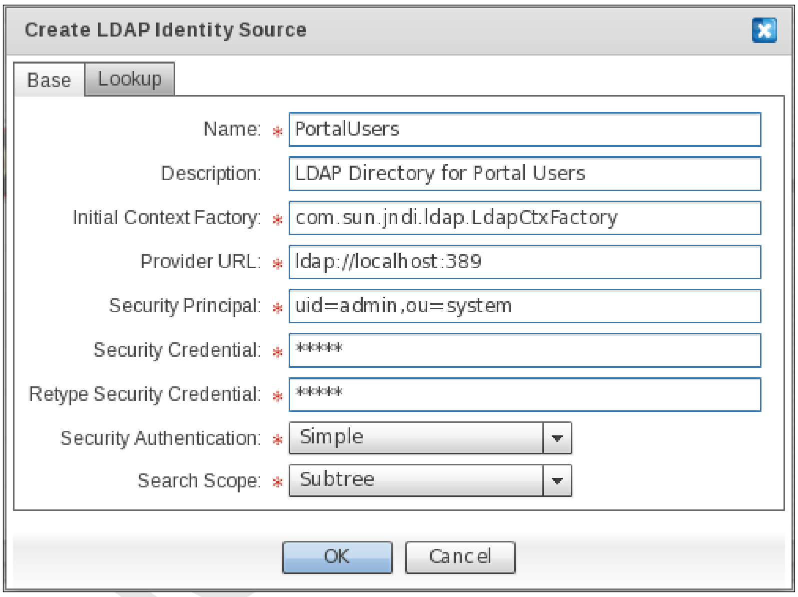
Description:

Picture.37 Create Identity Vault

In the "Name" field, which is obligatory, the name of the Identity source is written. In the "Description" field, a short description for the Identity Vault is written.

18.3 Configuration and installation of an LDAP Directory Identity Source

The Lightweight Directory Access Protocol (LDAP) is an application protocol for accessing and maintaining distributed directory information services over an Internet Protocol (IP) network. The LDAP Identity Source is accessed through the LDAP protocol which distributes the user entries hierarchal. This type of Identity Source can be linked in both Identity and Service Providers. When connected to an Identity Provider the LDAP protocol is used for authentication processes. When connected to a Service Provider the LDAP protocol is used for local authentication of for increase of the claims towards the Identity Provider. In order to use this Identity Source, the "LDAP Identity Source" entity is selected from the "Identity Sources" drawer and dragged in the Diagram Canvas. That action opens the following window named "Create LDAP Identity Source" which contains the "Base" tab and the "Lookup" tab. The "Base" tab is shown below.



Name: * PortalUsers
Description: LDAP Directory for Portal Users
Initial Context Factory: * com.sun.jndi.ldap.LdapCtxFactory
Provider URL: * ldap://localhost:389
Security Principal: * uid=admin,ou=system
Security Credential: * *****
Retype Security Credential: * *****
Security Authentication: * Simple
Search Scope: * Subtree

Picture.38 Create LDAP Identity Source Base tab

Field Description:

Name: The name that is chosen for the Identity Source.

Description: A short description for the Identity Source is written.

Initial Context Factory: The default implementation of the Oracle LDAP provider (com.sun.jndi.ldap.LdapCtxFactory).

Provider URL: The URL for the LDAP Directory Server. The default URL is "ldap://localhost:389".

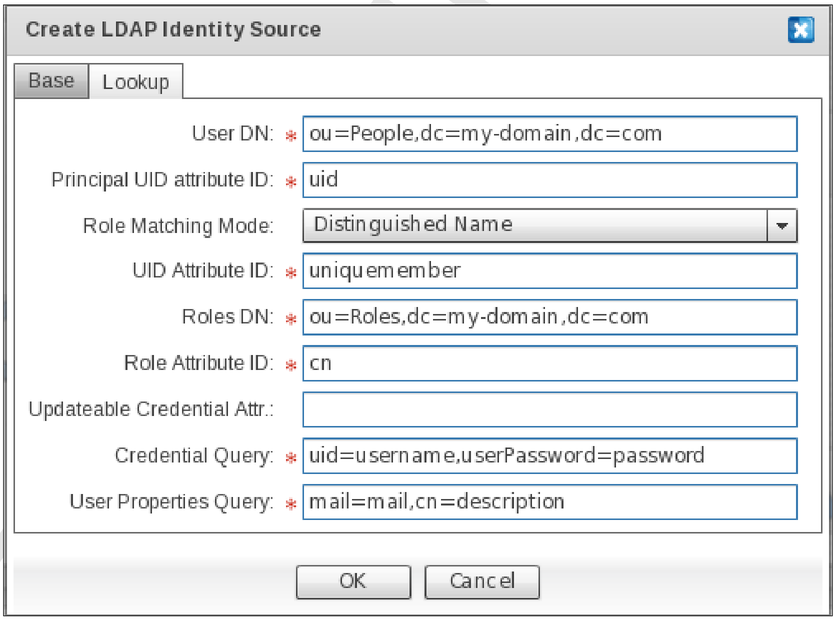
Security Principal: Here is written the security principal for the users' authentication to the service. The default value for the OpenLDAP[11] is "uid=admin, ou=system".

Security Credential: Here is entered the password for the security principal.

Security Authentication: Here it is defined which authentication mechanism will be followed. There are three options. The first one is "None" for anonymous binding, the second is "Simple" for password authentication and the third is "Strong" for X.509 authentication certificates.

Search Scope: Here is entered the search pattern in order to obtain user and role entries in the LDAP directory. There are four options. The first is "Base", where the search queries are limited to the specified contexts. The second is "One", where the LDAP queries search only the immediate children of the LDAP object corresponding to the DN (Distinguished Name) for users and roles. The third is "Subtree", where the LDAP queries will search the whole directory subtree under the baseDN for roles and users. The fourth is "Children", where the LDAP queries search directly below to the base entry children.

The "Lookup" tab is shown below.



User DN: *	ou=People,dc=my-domain,dc=com
Principal UID attribute ID: *	uid
Role Matching Mode:	Distinguished Name
UID Attribute ID: *	uniquemember
Roles DN: *	ou=Roles,dc=my-domain,dc=com
Role Attribute ID: *	cn
Updateable Credential Attr.:	
Credential Query: *	uid=username,userPassword=password
User Properties Query: *	mail=mail,cn=description

Picture.39 Create LDAP Identity Source Lookup tab

[11] OpenLDAP Software is a free, open source implementation of the Lightweight Directory Access Protocol (LDAP) developed by the OpenLDAP Project. It is released under its own BSD-style license called the OpenLDAP Public License

Field Description:

User DN: Here is written the Distinguished Name of the user. The default parameters are “ou=People, dc=my-domain, dc=com”.

Principal UID attribute ID: Here is entered the attribute name that contains the users’ identifier. The default value is “uid”.

Role Matching Mode: Here is selected the mechanism for obtaining roles for users. There are three options. The first is “Distinguished Name”, where the roles are retrieved with the usage of the DN as a key. The second is “User ID”, where roles are retrieved with the usage of the user identity. The third is “User Principal”, where roles are retrieved with the usage of the User Principal Name.

UID Attribute ID: Here is entered the attribute identifier that contains the UID. The default value is “uniquemember”.

Role Attribute ID: Here is entered the attribute identifier that refers to the name of the role. The default value is “cn”.

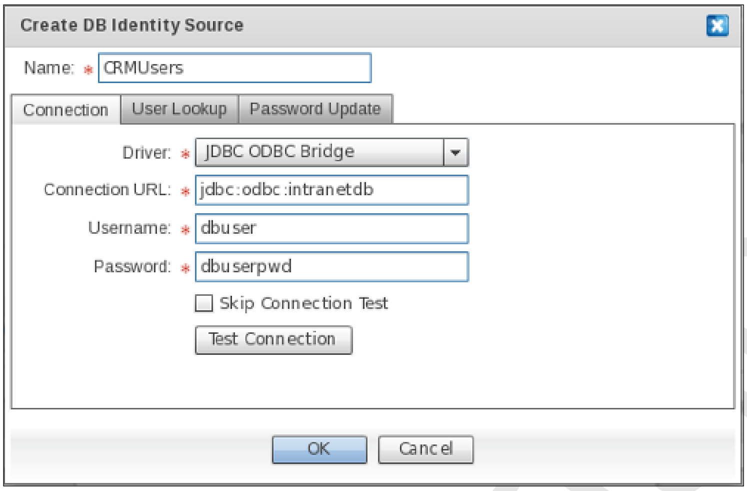
Updatable Credential Attr: In this field is entered the attribute identifier that contains the token value for the Remember-Me authentication method.

Credential Query: Here is entered the query for retrieving the username/password values. The default values are “id=username, userPassword=password”.

User Properties Query: here is entered the query for retrieving the user attributes. The default values are “mail=mail, cn=description”.

18.4 Configuration and installation of a RDBMS Identity Source

A relational database management system (RDBMS) is a database management system (DBMS) that is based on the relational model. The RDBMS Identity Source is accessible through the Java Database Connectivity (JDBC) driver. This Identity Source can be linked with both the Identity and Service Providers. The connection with an Identity Provider allows queries to retrieve user records for authentication purposes using as a foundation the JDBC driver database. The connection with a Service Provider allows queries to authenticate the users in a local level or to increase claims towards the Identity Provider. In order to use this Identity Source, the “DB Identity Source” entity is selected from the “Identity Sources” drawer and dragged in the Diagram Canvas. That action opens the following window named “Create DB Identity Source” which contains the “Connection” tab, the “User Lookup” tab and the “Password Update” tab. In the “Name” field is entered the preferable name of the Identity Source. The “Connection” tab is shown below.


Create DB Identity Source

Name: * CRMUsers

Driver: * JDBC ODBC Bridge

Connection URL: * jdbc:odbc:intranetdb

Username: * dbuser

Password: * dbuserpwd

□ Skip Connection Test

Picture.40 Create DB Identity Source Connection tab

Field Description:

Driver: Here is chosen the JDBC-ODBC driver that connects to the database. In order to use this driver for Linux based systems, the corresponding jar file is copied into the $JOSSO2_HOME/lib/jdbc folder.

Connection URL: It is the string sequence that serves the purpose of establishing a linkage to the preferred database.

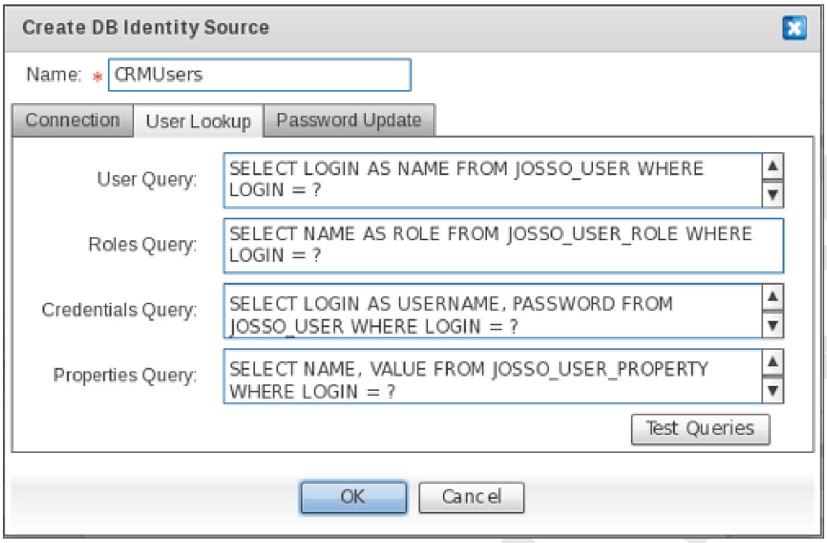
Username: Here is entered the preferred username that will be promoted to the database during its establishment.

Password: Here is entered the preferred password that will be promoted to the database during its establishment.

Skip Connection Test: This checkbox, if selected, verifies the connection to a database.

Test Connection: This button, if clicked, verifies that JOSSO can reach the database with the usage of the appropriate supplied attributes.

Next, there is the “User Lookup” tab, as it is shown below, where the user can provide the appropriate SQL queries used by the Identity Provider for the retrieval of the roles and credentials of the users.



Name: * CRMUsers

User Query: SELECT LOGIN AS NAME FROM JOSSO_USER WHERE LOGIN = ?

Roles Query: SELECT NAME AS ROLE FROM JOSSO_USER_ROLE WHERE LOGIN = ?

Credentials Query: SELECT LOGIN AS USERNAME, PASSWORD FROM JOSSO_USER WHERE LOGIN = ?

Properties Query: SELECT NAME, VALUE FROM JOSSO_USER_PROPERTY WHERE LOGIN = ?

Picture.41 Create DB Identity Source User Lookup tab

Field Description:

User Query: It is an SQL query that selects the record from the table of users. It is automatically filled according to the default schema.

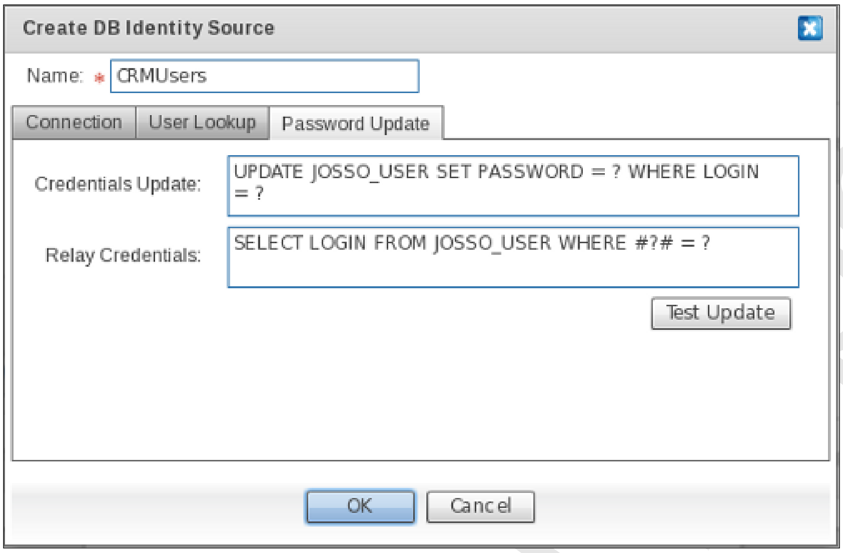
Roles Query: It is an SQL query that selects the roles of the records for the selected user. It is automatically filled according to the default schema.

Credentials Query: It is an SQL query that selects the credential records for the selected user. It is automatically filled according to the default schema.

Properties Query: It is an SQL query that select customized attributes of the user that subsequently will be conveyed as claims in authentication assertions. It is automatically filled according to the default schema.

Test Queries: This button, if clicked, ensures that the SQL queries are that they are written correctly and return the awaited information.

In the third tab, named “Password Update” and is shown below, the user can provide SQL queries that are for self-services.



Name: * CRMUsers

Credentials Update: UPDATE JOSSO_USER SET PASSWORD = ? WHERE LOGIN = ?

Relay Credentials: SELECT LOGIN FROM JOSSO_USER WHERE #?# = ?

Picture.42 Create DB Identity Source Password Update tab

Field Description:

Credentials Update: It is an SQL update query that allows the change of the users' credentials. It is automatically filled according to the default schema.

Relay Credentials: It is an SQL update query that updates the users' credentials based on the Remember Me functionality. It is automatically filled according to the default schema.

Test Update: This button, if clicked, ensures that the SQL update queries are written correctly and return the awaited information.

18.5 Configuration and installation of a XML Identity Source

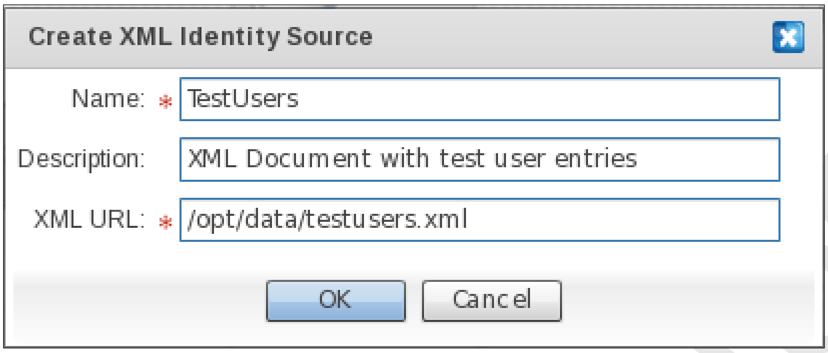
Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. It is defined in the XML 1.0 Specification produced by the W3C, and several other related specifications, all gratis open standards. The XML identity source is one that is based on a hierarchical information model and its basic components are elements and attributes, where elements describe data and attributes are the properties of elements. The XML identity source needs to be based on a XML document that corresponds to a schema specified for JOSSO, and must be in a folder accessible by the JOSSO server. Such a XML document is shown below.

```
<josso-users>
 <users>
  <user>
   <name>
    user1
   </name>
   <properties>
    <property>
     <name>
      user.name
     </name>
     <value>
      User 1 Name
     </value>
    </property>
    <property>
     <name>
      user.lastName
     </name>
     <value>
      User 1 Last Name
     </value>
    </property>
    <property>
     <name>
      user.registrationDate
     </name>
     <value>
      2004/09/11
     </value>
    </property>
   </properties>
   <roles>
    role1 , role2
   </roles>
  </user>
  <roles>
   <role>
    <name>
     role1
    </name>
   </role>
   <role>
    <name>
     role2
    </name>
   </role>
  </roles>
</josso-users>
```

And next is an XML document that contains the users’ credentials.

```
<josso-credentials>
 <credential-set>
  <key>
   user1
  </key>
 <credential>
  <name>
   username
  </name>
  <value>
   user1
  </value>
 </credential>
 <credential>
  <name>
   password
  </name>
  <value>
   7ea2bd72bfc7dabdfecc0b5760ebcf52
  </value>
 </credential>
 <credential>
  <name>
   userCertificate
  </name>
  <value>
    -----BEGIN CERTIFICATE-----
    MIIDjjCCAvegAwIBAgIBAjANBgkqhkiG9w0BAQQFADCBijELMAkGA1UEB
    hMCVVMx
    DDAKBgNVBAgTA04vQTEMMAoGA1UEBxMDTi9BMRswGQYDVQQKExJ
    KT1NTTyBPcmdh
    bmlzYXRpb24xETAPBgNVBAsTCFNlY3VyaXR5MRIwEAYDVQQDEwlqb3N
    zby5vcmcx
    GzAZBgkqhkiG9w0BCQEWDGNhQGpvc3NvLm9yZzAeFw0wNDExMTExOT
    Q3MTFaFw0w
    NTExMTExOTQ3MTFaMHUxCzAJBgNVBAYTAlVTMQwwCgYDVQQIEwN
    OL0ExGzAZBgNV
    BAoTEkpPU1NPIE9yZ2FuaXNhdGlvbjELMAkGA1UECxMCSVQxDjAMBgN
    VBAMTBXVz
    ZXIxMR4wHAYJKoZIhvcNAQkBFg91c2VyMUBqb3Nzby5vcmcwgZ8wDQYJ
    KoZIhvcN
    AQEBBQADgY0AMIGJAoGBAKvwai6JYYycNRHfLyJNMehfUiv9tgEJcejTns
    R1AwMS
    TFlk95RY09/T7vmDNaWw+aupFVu3yg+UOwc4lrh0nIR74HXbnCwBftyVYnqv
    0TJu
    VwFakOoRuwTnFyUw7WvzLkDzgqddoiua5f4jVpHCAeq8KuCDXmE9v6BUi2
    QPrbTZ
    AgMBAAGjggEWMIIBEjAJBgNVHRMEAjAAMCwGCWCGSAGG+EIBDQQf
    Fh1PcGVuU1NM
    IEdlbmVyYXRlZCBDZXJ0aWZpY2F0ZTAdBgNVHQ4EFgQUK9fZV0osJ85BR
    SQSAIZx
    tQZO9oUwgbcGA1UdIwSBrzCBrIAU+L2IUzRQ67GsKyNKdBK7nW5TsDuhgZ
    CkgY0w
    gYoxCzAJBgNVBAYTAlVTMQwwCgYDVQQIEwNOL0ExDDAKBgNVBAcT
    A04vQTEbMBkG
    A1UEChMSSk9TU08gT3JnYW5pc2F0aW9uMREwDwYDVQQLEwhTZWN1c
    ml0eTESMBAG
    A1UEAxMJam9zc28ub3JnMRswGQYJKoZIhvcNAQkBFgxjYUBqb3Nzby5vcm
    eCAQAw
    DQYJKoZIhvcNAQEEBQADgYEAaWaZypRdY7mZyKGOmJI32ElBlAmyLN+
    AN3TOMmg2
    oi9Pgf7xCGoQ6nsuz52pwPAfL+zhfroCz2ZgY7wMf3BT5dVnZKF97b3KDwMA
    BvTT
    5wt3DcNSmhVCQDRkXDoTfclAeMNg7MXSy7E6XWhCwenu2P4llBCktAlclY
    FEzKkR
    sXY=
    -----END CERTIFICATE-----
  </value>
 </credential>
</credential-set>
</josso-credentials>
```

In order to use this Identity Source, the “XML Identity Source” entity is selected from the “Identity Sources” drawer and dragged in the Diagram Canvas. That action opens the following window, named “Create XML Identity Source”.



Name: * TestUsers

Description: XML Document with test user entries

XML URL: * /opt/data/testusers.xml

Picture.43 Create XML Identity Source

Field Description:

Name: Here is entered the name of the XML identity source

Description: A short description for the XML identity source is written.

XML URL: Here is entered the folder location of the XML document that possesses the details and entitlement entries of the user.

19. Connections

A Connection is the chain that puts together all Identity Appliance elements that are needed in order to create and execute the Identity Appliance. Connections are used to join two Identity Appliance elements. Each connection enables a flow of data and control from one Identity Appliance element to another, creating a contract between the two elements.

The connection types that JOSSO uses are described subsequently.

19.1 Federated connection

A Federated connection is used to connect an Identity Provider with a Service Provider and create a Circle of Trust. This circle of trust provides users with enhanced operational efficiency.

19.2 Activation

Activation is a connection used to connect the Service Provider to an execution environment, such as Apache Tomcat or JBoss, applying SSO semantics to execution environments hosting Service Providers for a specific Identity Appliance. The execution environment element defines the SSO agent that will be provisioned for bringing forward the SSO capabilities for the associated Service Provider.

19.3 Identity Lookup

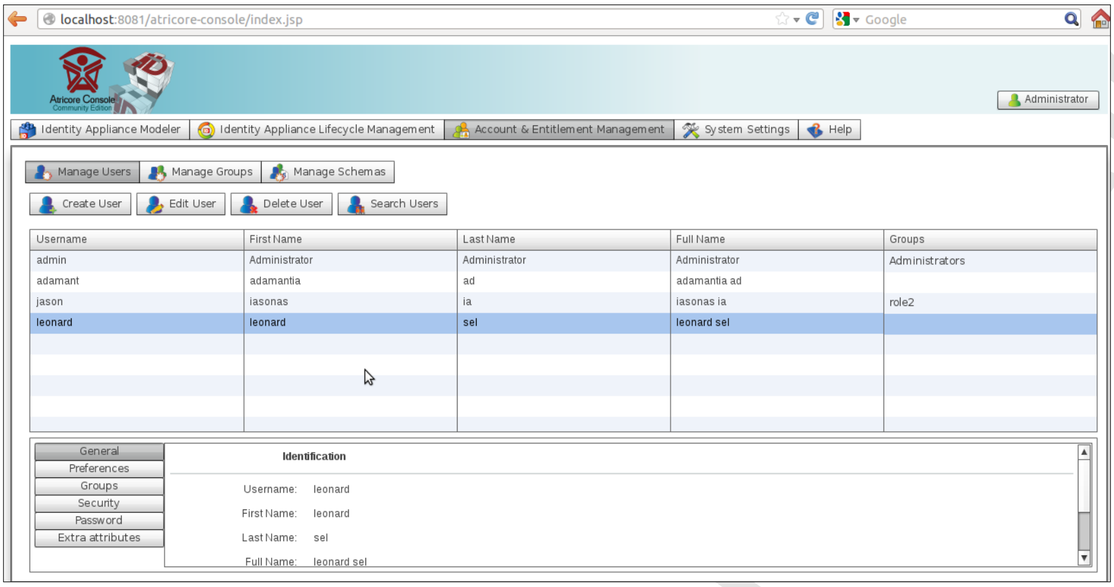
The Identity Lookup connection defines, as an entity, whether the Identity Source is an Identity Provider or a Service Provider. It supports identity and access management processes such as authentication and authorization processes. An Identity Lookup that connects an Identity Provider with an Identity Source defines which Identity Source meant for authorization will be used, and what ways will be implemented in order to access the source to obtain the user credentials that are necessary for the authentication. Furthermore, it specifies the authorization source from which user and entitlement details will be obtained. An identity lookup that connects a Service Provider with an Identity Source determines which local Identity Source, that is used for authorization purposes, is going to be executed and with what means it will access it.

19.4 Identity Verification

The Identity Verification connection is used to pass the authentication process of an Identity Provider to an authorized third party entity. Such an entity could be an Authentication Server that can be associated with an Identity Provider.

20. Privilege and Account Management

In this section we are going to describe how we can create users and groups that are stored for usage from the Identity Vault element. Both accounts and groups can be provisioned. Accounts can also be associated to one or more groups in order to serve as the input for Role-Based Access Control (RBAC). We can create groups and users after we have firstly created the Identity Appliance. Users and groups are being created through the Account and Entitlement Management screen. This screen gives us the opportunity to work with users and groups.



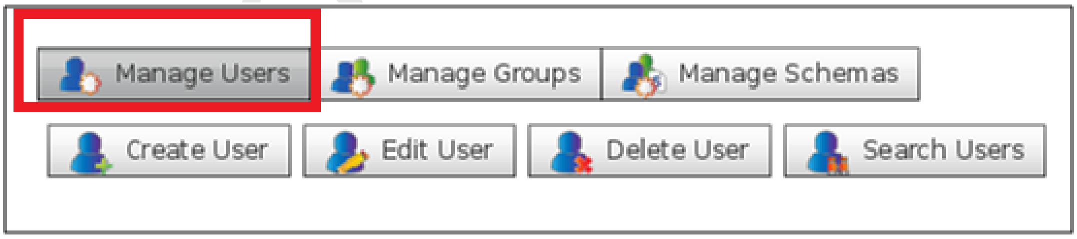
Username	First Name	Last Name	Full Name	Groups
admin	Administrator	Administrator	Administrator	Administrators
adamant	adamantia	ad	adamantia ad	
jason	iasonas	ia	iasonas ia	role2
leonard	leonard	sel	leonard sel	

Identification

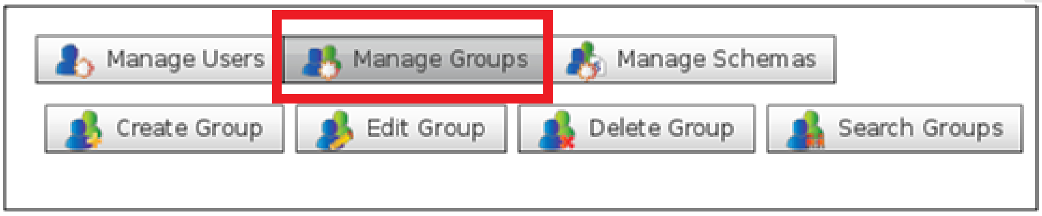
Username: leonard
First Name: leonard
Last Name: sel
Full Name: leonard sel

Picture.44 Account & Entitlement Management Screen

If we want to create a user or a group we have to follow the same steps with a small difference, when we want to create a user we choose from the options that we have available from the Manage Users button, as illustrated in Picture: 45, additionally, when we want to create or edit a group we choose the Manage Group button as it is illustrated in Picture: 46.



Picture.45 Manage Users

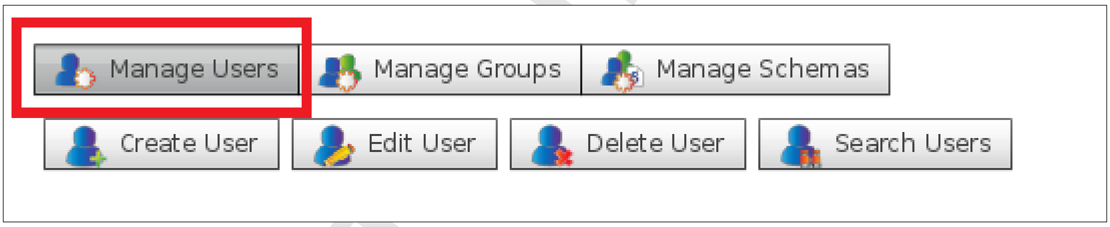


Picture.46 Manage Groups

20.1 User Creation

Step 1

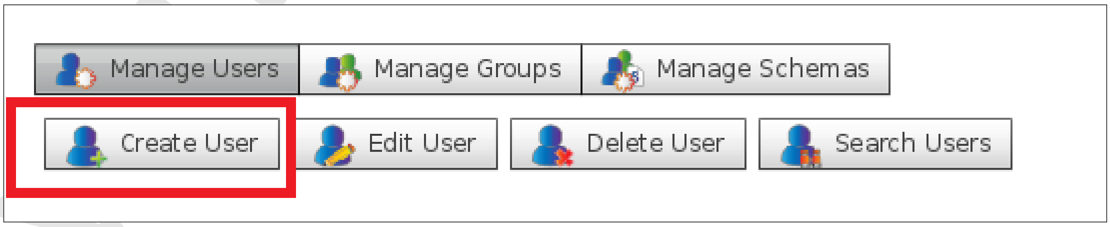
Click on Manage Users button. Clicking Manage User button brings all the options that we have for working out with users. The options that we have, as they are illustrated in the following picture, are create, edit, delete or search a user.



Picture.47 Create User1

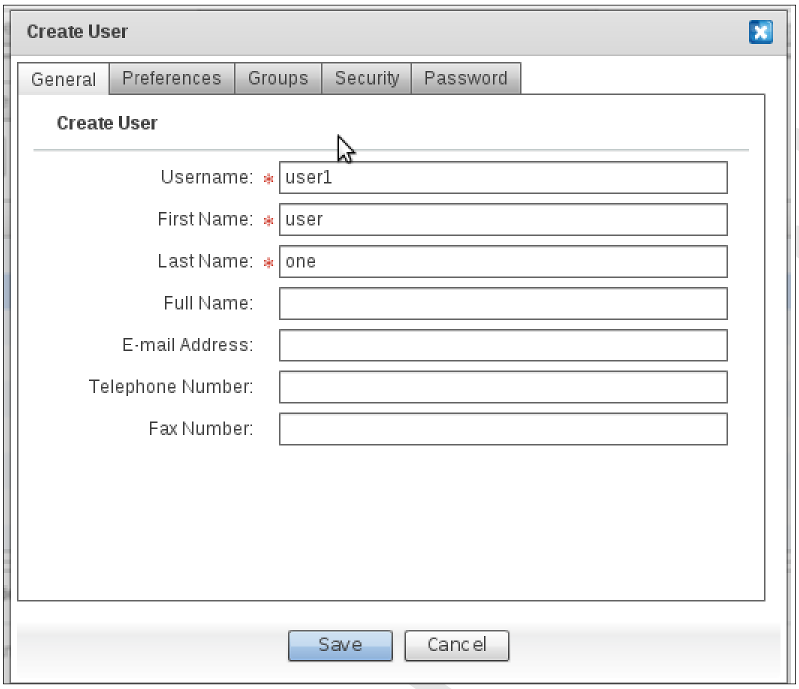
Step 2

Click on Create User button.



Picture.48 Create User Button

After clicking on this button it appears the window that is illustrated in the following picture:

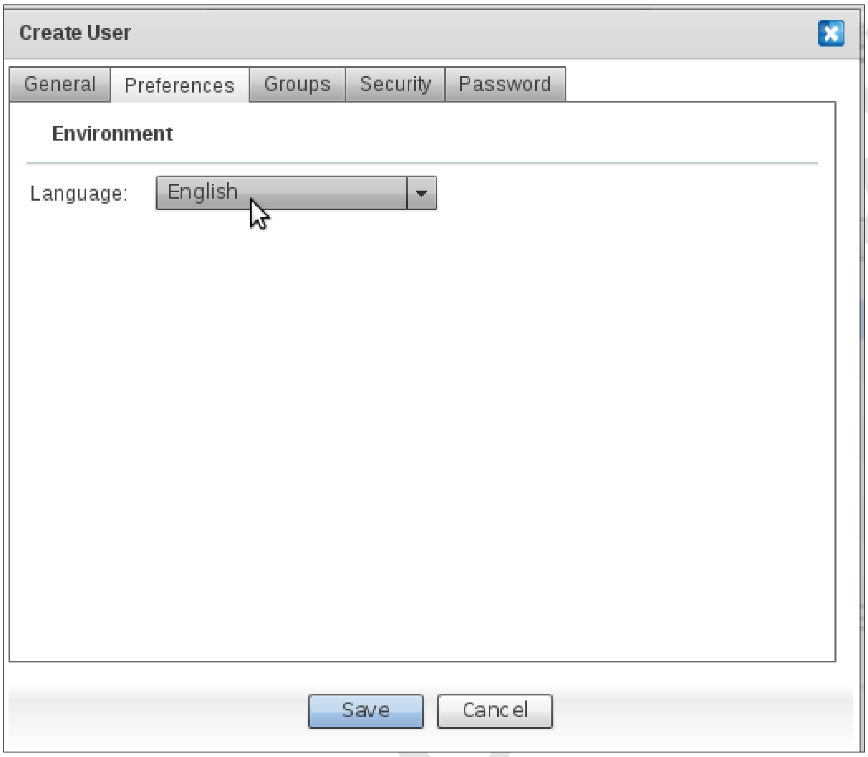


Username: * user1
First Name: * user
Last Name: * one
Full Name:
E-mail Address:
Telephone Number:
Fax Number:

Picture.49 Create User General tab

As we can see in Picture: 49, the "Create User window" consists of the following tabs General, Preferences, Groups, Security and Password. In the first tab, "General", which is the first tab we see we have to fill in elements that will characterize our user. The elements Username, First Name and Last Name which have a red asterisk are mandatory, the other elements as for example E-mail Address are optional.

In the second tab "Preferences", as illustrated in Picture: 50, we can choose the language.

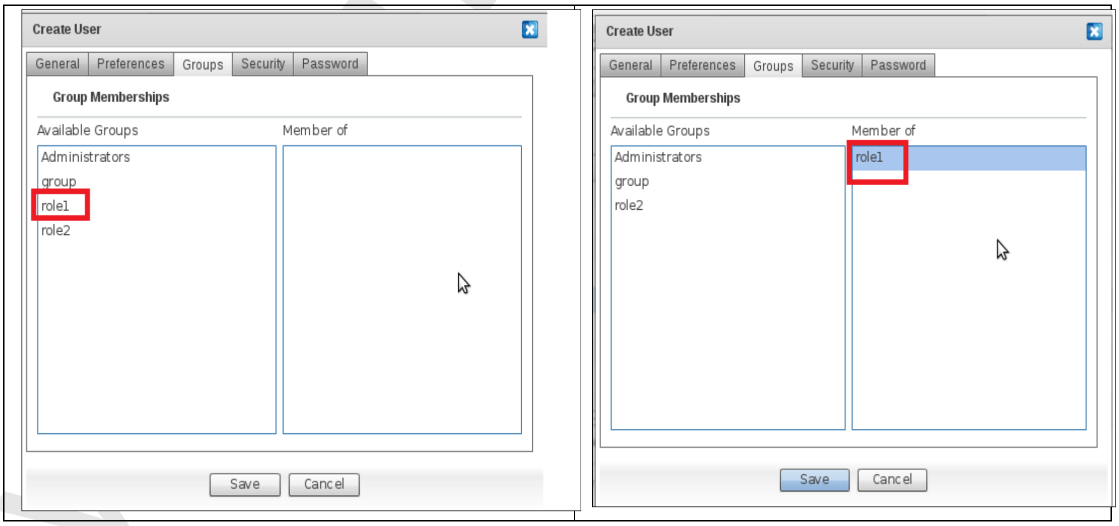


Environment

Language: English

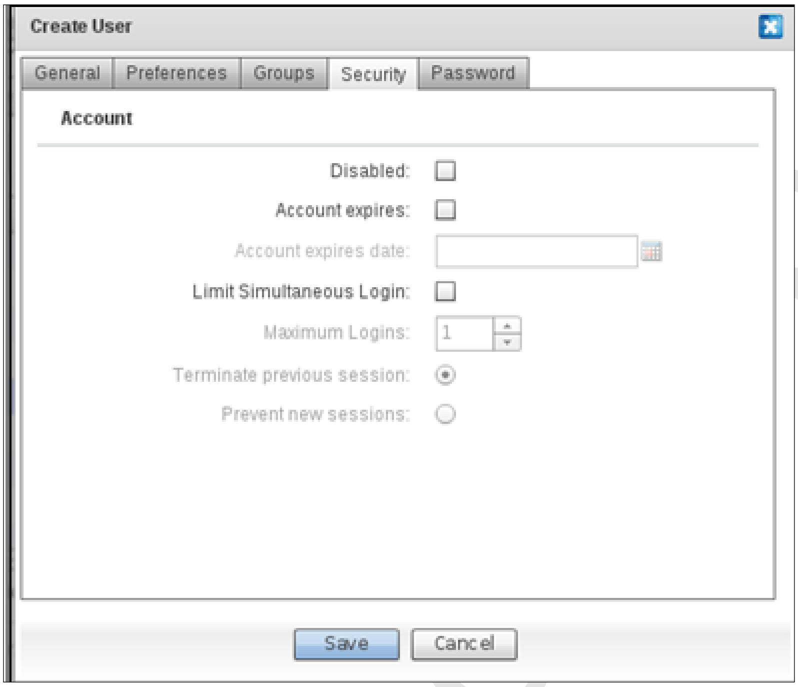
Picture.50 Create User Preferences tab

In the third tab “Group” if we want the user that we have created to be a member of a group we can choose the group we want for him from “Available Groups” list and drop it in the Member of list, as illustrated in Picture : 51.



Picture.51 Create User Group 1 tab

The forth tab “Security” is illustrated in Picture: 52



Account

Disabled: □

Account expires: □

Account expires date:

Limit Simultaneous Login: □

Maximum Logins: 1

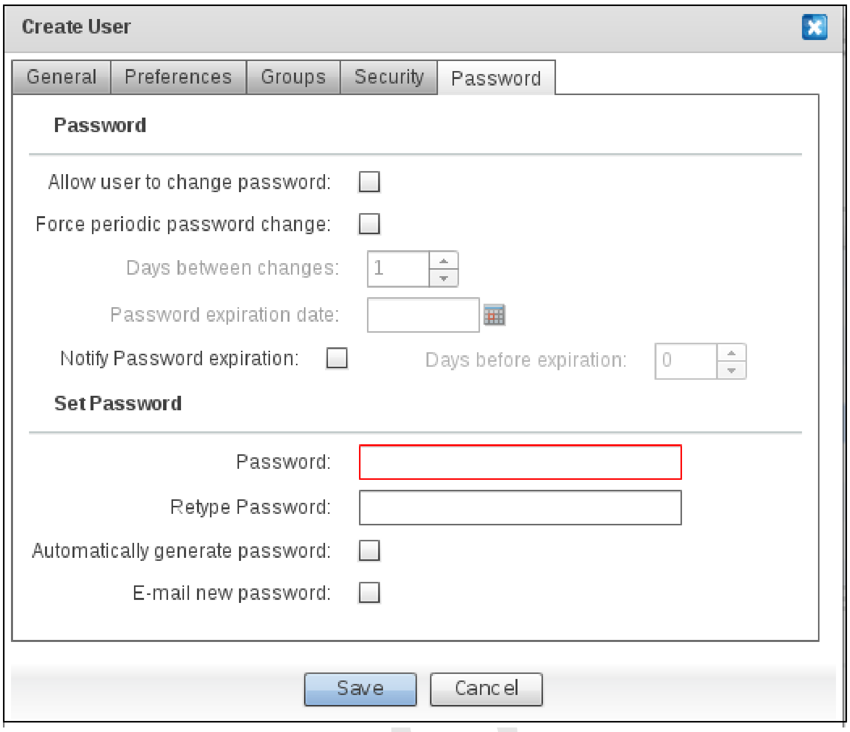
Terminate previous session: ●

Prevent new sessions: ○

Picture.52 Create Group tab

In this window we can choose options that are related with the security of the user, for example we can choose the expire account checkbox in order to define the expiration date of his credentials, or after a limited simultaneous login tries, the user will not have access in his account.

The last tab “Password” is illustrated in Picture: 53



Create User

General | Preferences | Groups | Security | Password

Password

Allow user to change password: □

Force periodic password change: □

Days between changes: 1

Password expiration date:

Notify Password expiration: □ Days before expiration: 0

Set Password

Password:

Retype Password:

Automatically generate password: □

E-mail new password: □

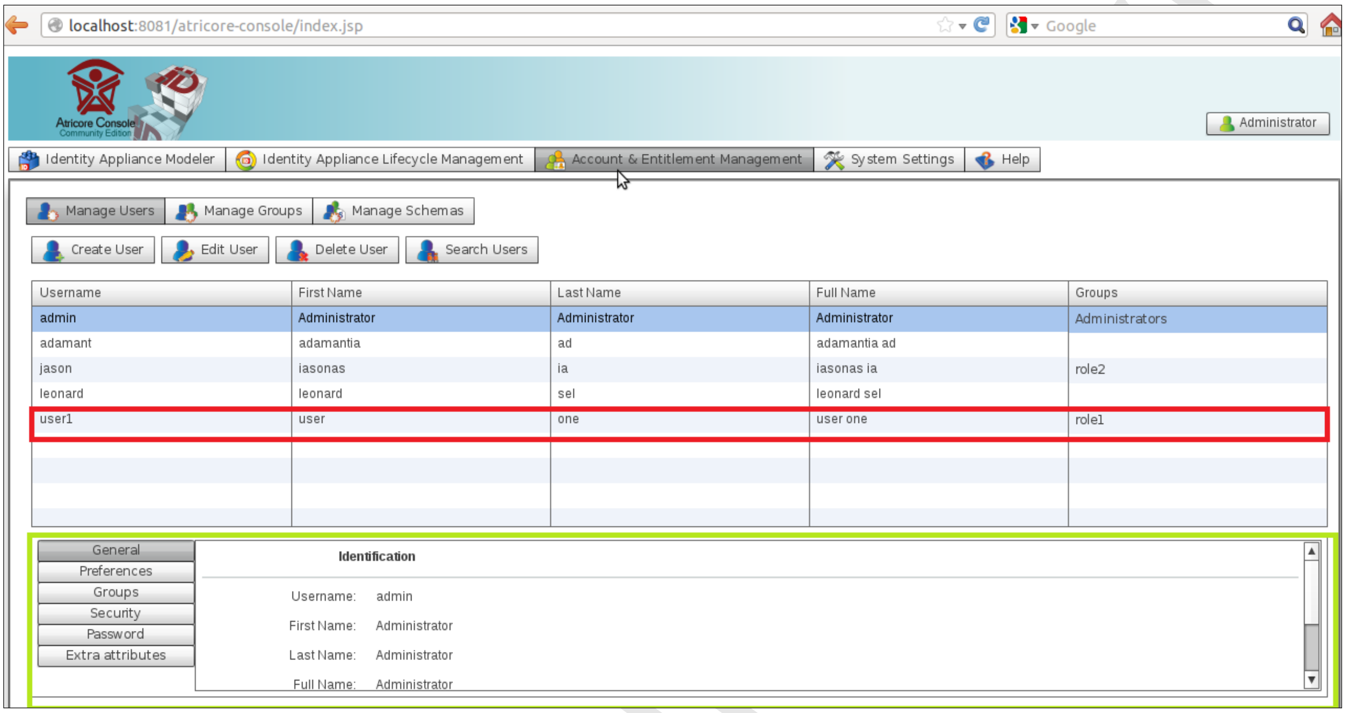
Picture.53 Create User Password tab

In this tab we have the opportunity to give to the user a password with which he will have access to his account. Furthermore through this tab we can determine the rights that the user will have according with his password. More specifically we can give to the user the opportunity to change his password by himself and the most important from the security point of view is that we can define how often the user should change his password. Moreover we can choose to generate automatically a password if we will not choose one by ourselves and finally we can choose if we want to disclose the user from getting his new password through email.

After we fill in all the elements that we want we click on save button and we have easily created our user.

Picture.54 Save Button

The user that was just created will appear in the Account & Entitlement Management console as illustrated in the following picture:



Username	First Name	Last Name	Full Name	Groups
admin	Administrator	Administrator	Administrator	Administrators
adamant	adamantia	ad	adamantia ad	
jason	iasonas	ia	iasonas ia	role2
leonard	leonard	sel	leonard sel	
user1	user	one	user one	role1

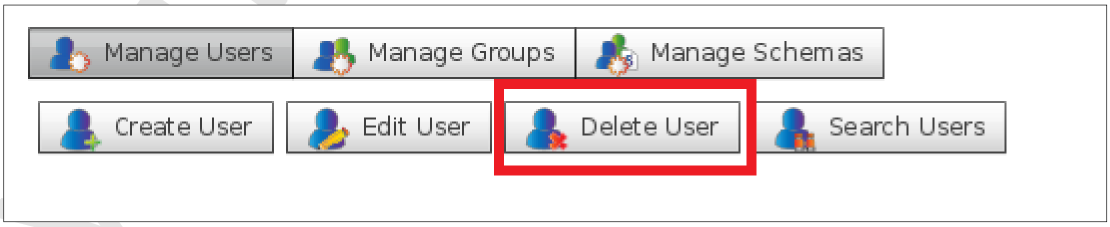
Identification

Username: admin
First Name: Administrator
Last Name: Administrator
Full Name: Administrator

Picture.55 Account & Entitlement Management 1 Screen

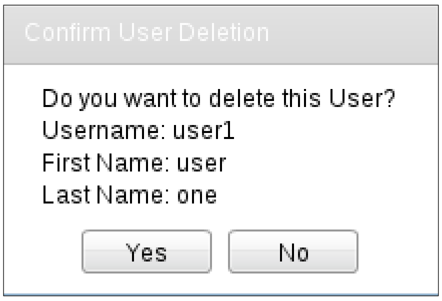
At the bottom of this window is the "Identification" menu. If we select a user that we have already created in this field we can see all the elements that we have chosen for this particular user by clicking in the right the tab we want to see.

Furthermore in this screen, as already we have mentioned, we can delete or modify a user. If we want to delete a user we have to click on this particular user so as to be selected and then we have to click on Delete User button.



Picture.56 Delete User

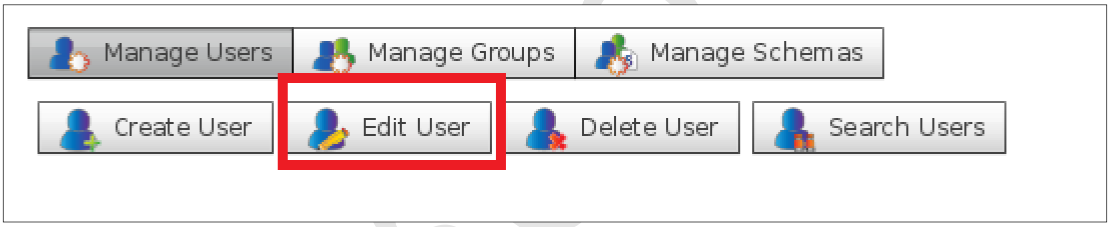
Then will appear the window that is illustrated in Picture 57 which applying for confirmation of deletion of this particular user.



Do you want to delete this User?
Username: user1
First Name: user
Last Name: one

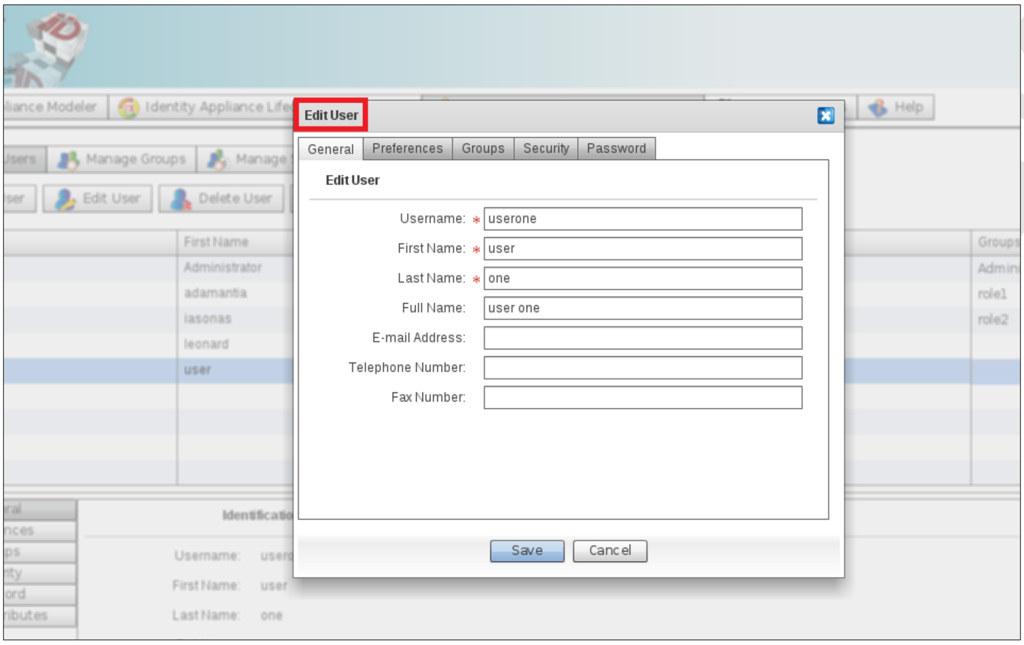
Picture.57 Confirmation of Deletion Window

In the same way if we want to modify a user we click on the particular user so as to be selected and then we click on Edit User button.



Picture.58 Edit User Button

After clicking this button it is appearing the window that illustrated in Picture: 59. In this window we can make any changes we want in this particular user.

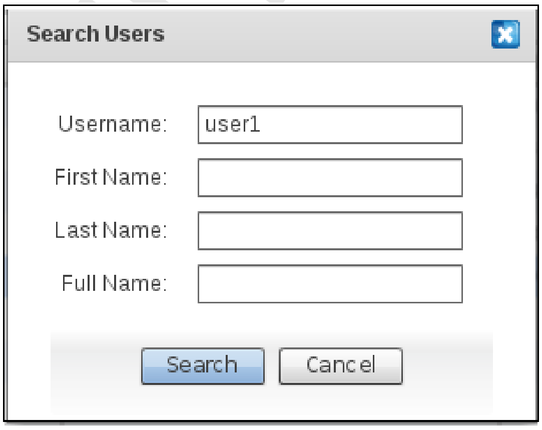


Edit User

Username: * userone
First Name: * user
Last Name: * one
Full Name: user one
E-mail Address:
Telephone Number:
Fax Number:

Picture.59 Edit User Window

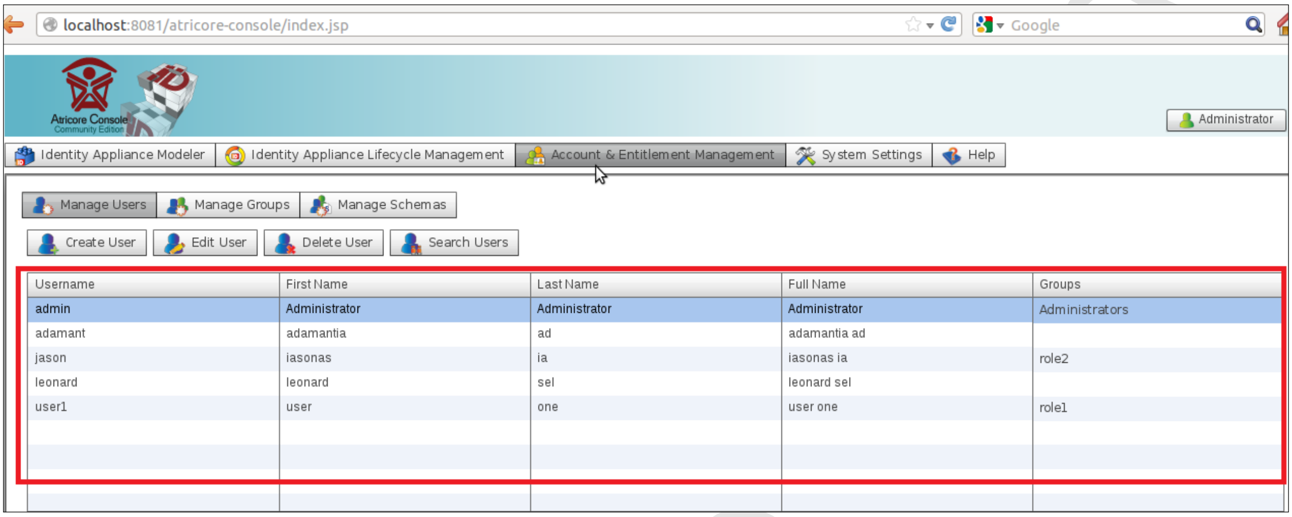
The last button, that will be mentioned, is the Search button. This button gives us the opportunity to find easily a user that we have created. This option will be useful if we have created many users. If we click on Search button is appearing the window that is illustrated in Picture: 60.



Username: user1
First Name:
Last Name:
Full Name:

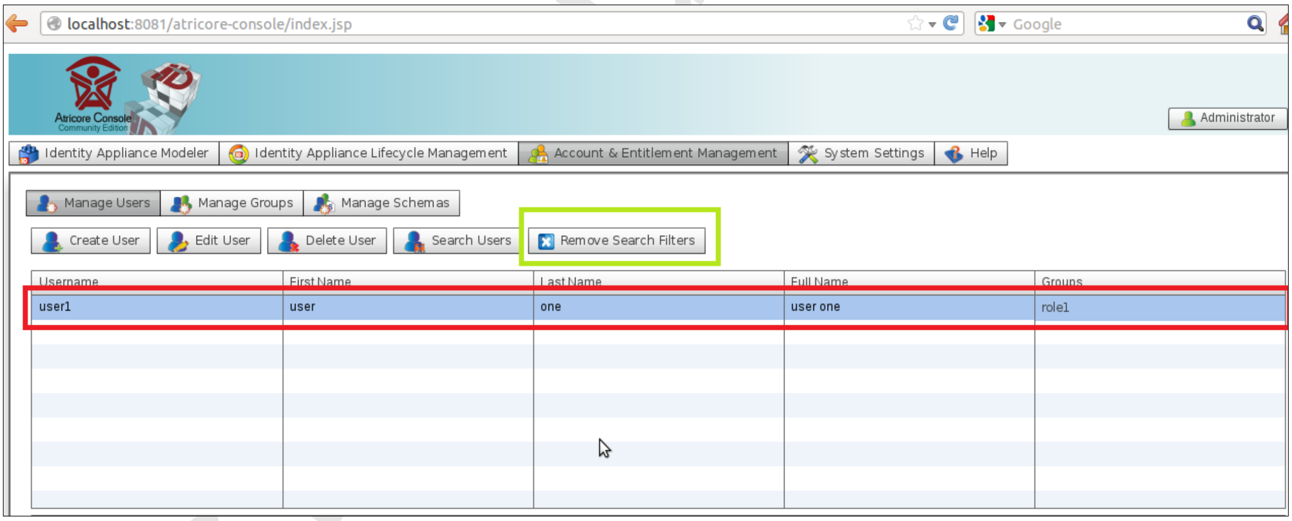
Picture.60 Search for a User

In this window we have to fill in the field that characterizes the user that we want to search, for example his Username, by clicking on the Search button. In this way will appear only this user in the Account & Entitlement Management screen. After we find the user that we want, we can click on the Remove search filters button and all the users that we have created will reappear.



Username	First Name	Last Name	Full Name	Groups
admin	Administrator	Administrator	Administrator	Administrators
adamant	adamantia	ad	adamantia ad	
jason	iasonas	ia	iasonas ia	role2
leonard	leonard	sel	leonard sel	
user1	user	one	user one	role1

Picture.61 Account & Entitlement Management 2 Screen

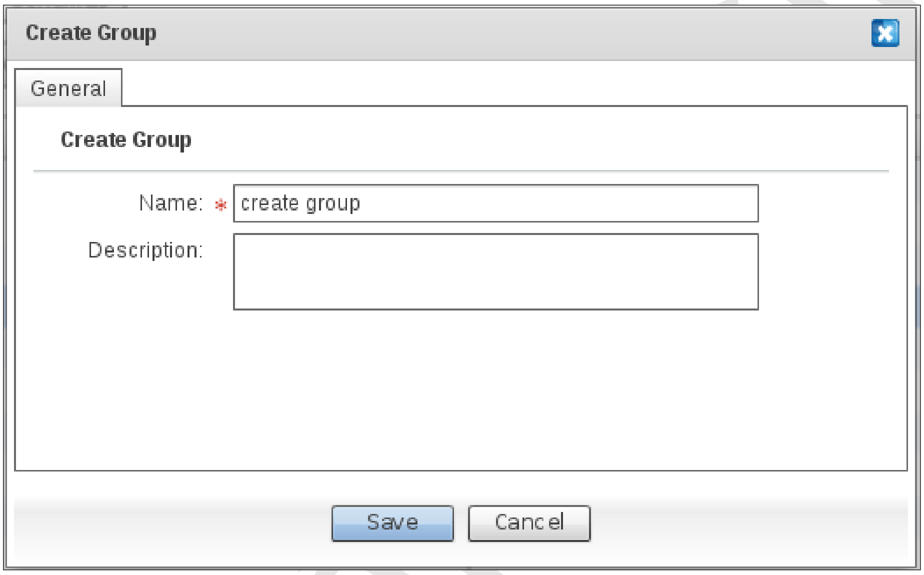


Username	First Name	Last Name	Full Name	Groups
user1	user	one	user one	role1

Picture.62 Remove Search Filters Button

20.2 How to create a Group

As we have already mentioned, through the Account & Entitlement Management screen, apart from creating Users we can also create in the same way Groups in which a user can be a member. The main difference is that we have to click on the Manage Group button, when we click on this button it brings all the options that we have for working with groups. The options that we have, as they are illustrated in Picture: 46 are creating, modify, delete or search for a group. As we want to create a new group we click on Create Group button and appear the following window.



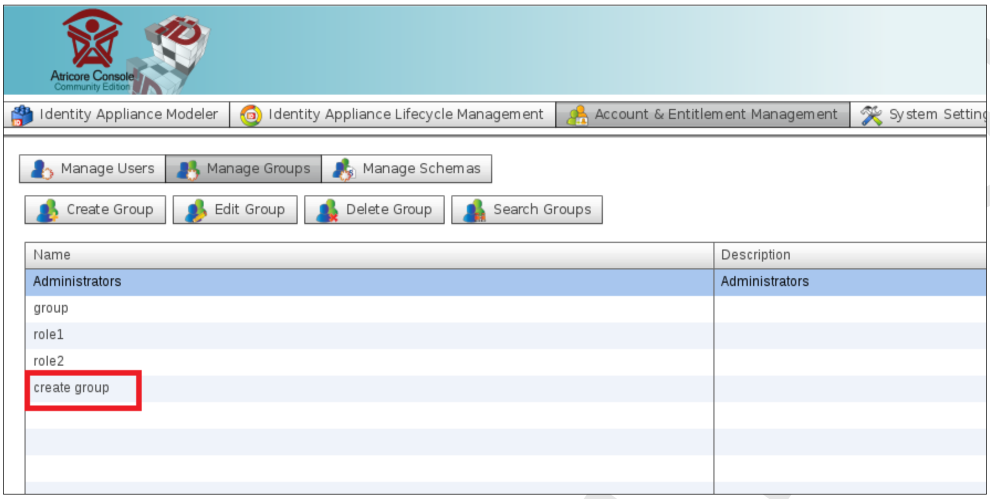
Create Group

Name: * create group

Description:

Picture.63 Create Group

In this window we have to fill in a name for our Group. The “Name” element is mandatory but if we want we can write additionally a description for the Group that is going to be created, this element is optional. After that we click on save button and our Group is created and is appears in Account & Entitlement Management screen as is illustrated in Picture: 64.

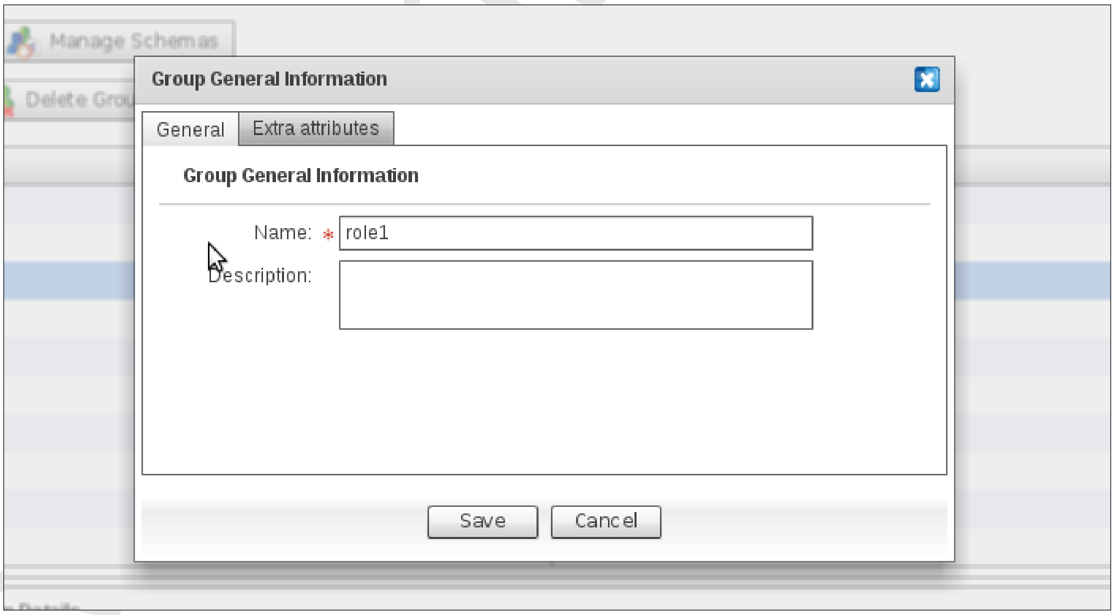


Name	Description
Administrators	Administrators
group	
role1	
role2	
create group	

Picture.64 Create Group1

Furthermore as we already have mentioned, we have also the ability to modify, delete or search for a Group that we have already created.

If we select a Group and click on Edit Group button is appears the window illustrated in Picture: 65. In this window we can make changes in this particular Group.



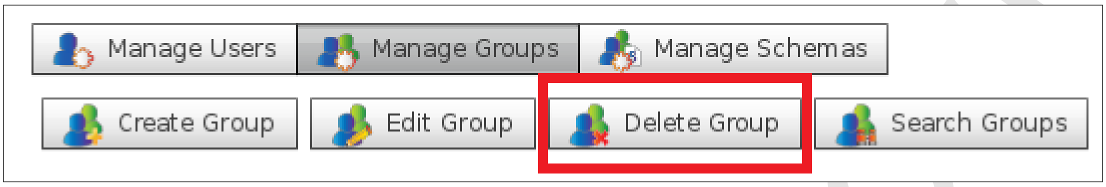
Group General Information

Name: * role1

Description:

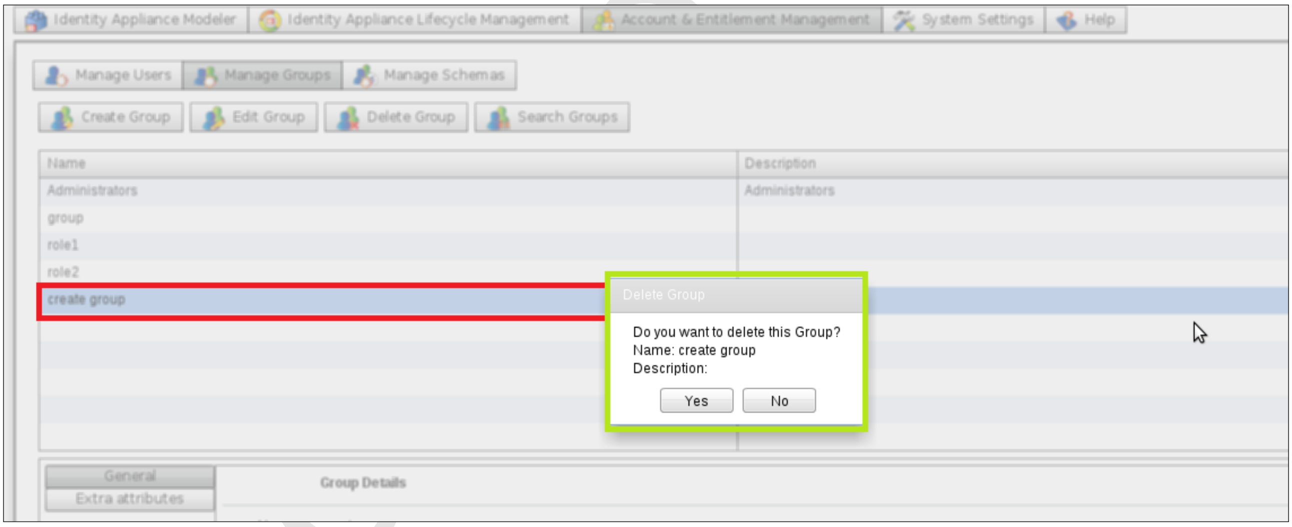
Picture.65 Edit Group Window

In the same way, if we want to delete a Group we have to select the specific Group and click on Delete Group button.



Picture.66 Delete Group

Then it will appear a window, as is illustrated in the following picture, in which we have to confirm the deletion of our choice.



Name	Description
Administrators	Administrators
group	
role1	
role2	
create group	

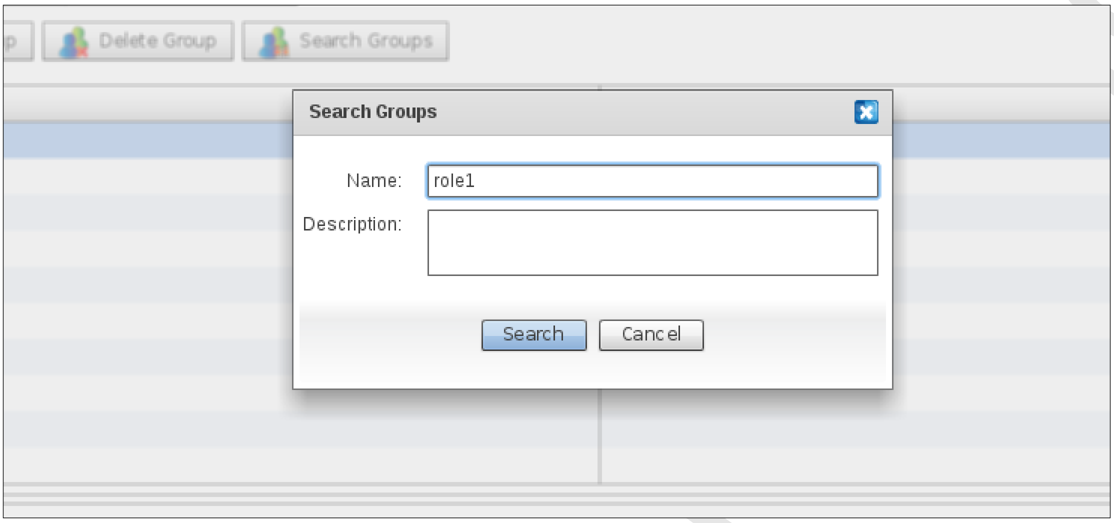
Delete Group

Do you want to delete this Group?
Name: create group
Description:

Picture.67 Confirms Deletion of a Group Window

In conclusion if we want to search for a Group we click on Search button. This button gives us the ability to find easily a Group that we have created. This will be useful if we have created many Groups. If we click on Search button it appears the window that is illustrated in Picture: 68

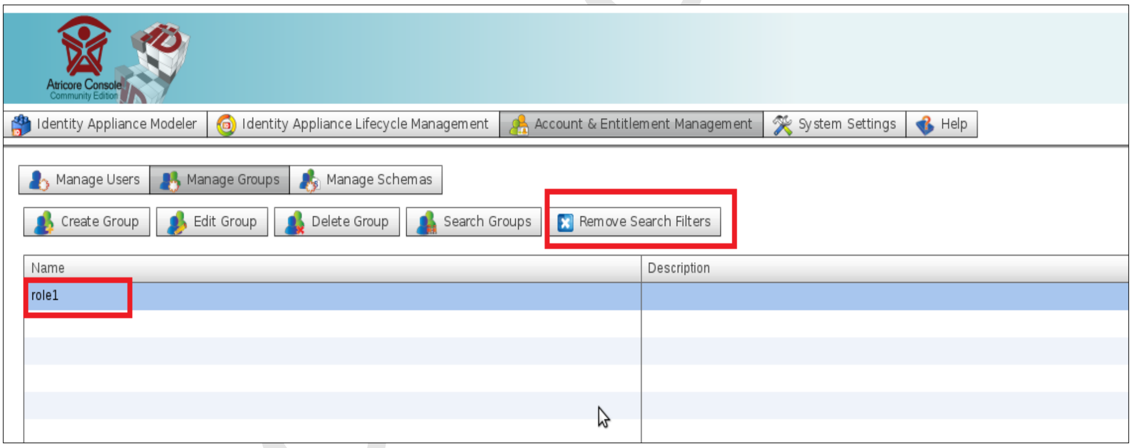
In this window we have to fill in a field that characterizes the Group that we want to search for, as for example “Name”, and click on Search button, in this way will appear only the specific Group in Account & Entitlement Management screen.



Name: role1

Description:

Picture.68 Search Group Window



Name	Description
role1	

Picture.69 Search Group Results

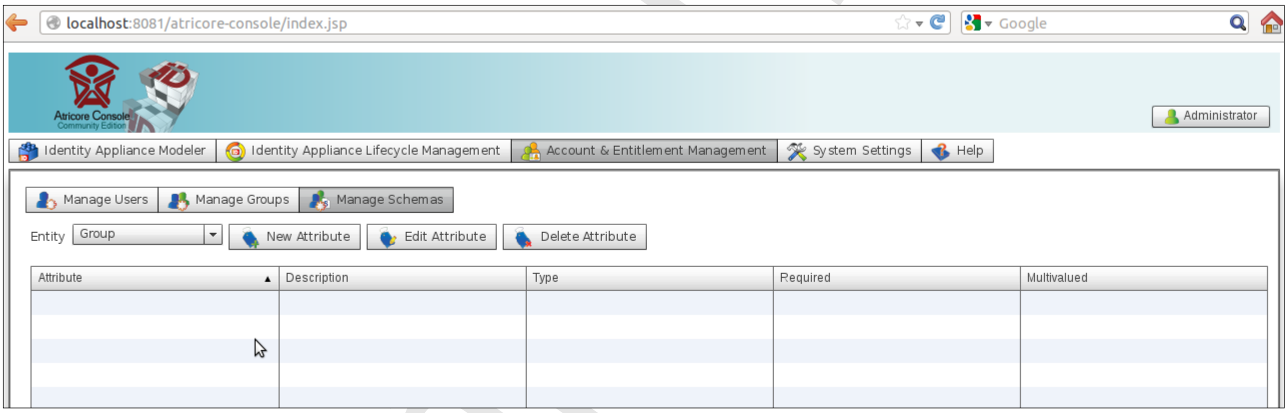
After we find the Group that we want we can click on Remove search filters button and all the Groups that we have created will appear again.

20.3 How to add an extra attribute

The last button that we can use in the Account & Entitlement Management screen is the Manage Schemas button. This button gives us the ability to add an extra attribute that we want for a User or a Group to have and is not included by default. In the following example it will be described how we can add the extra attribute “Email” in a Group. In the same way we can add an extra attribute in a user.

Firstly we choose between User and Group options, after that it appears the proportionate options which are create, modify or delete an attribute. If we click on "New" attribute button it appears the window that is illustrated in Picture: 72 in this window we have to:

- Give a "Name"
- Select the type of the new attribute as for example: string
- Select if we want this attribute to be mandatory and
- Select if we want this attribute to be multivalued

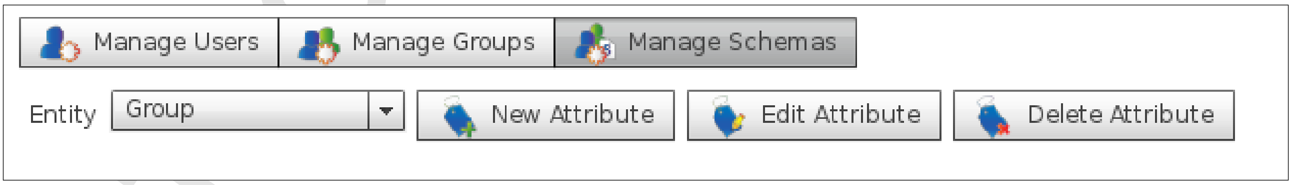


localhost:8081/atricore-console/index.jsp

Entity: Group

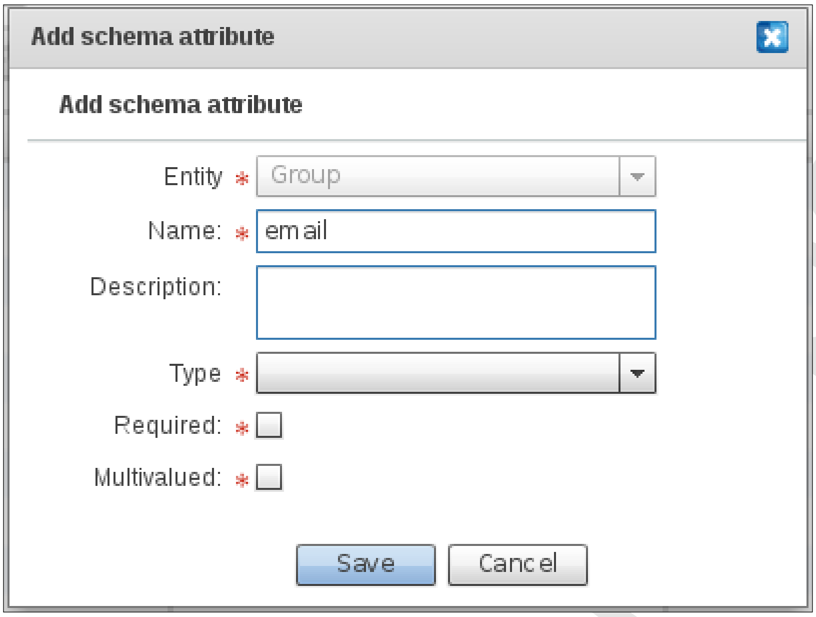
Attribute	Description	Type	Required	Multivalued

Picture.70 Add an Extra Attribute



Entity: Group

Picture.71 Manage Schemas



Add schema attribute

Add schema attribute

Entity * Group

Name: * email

Description:

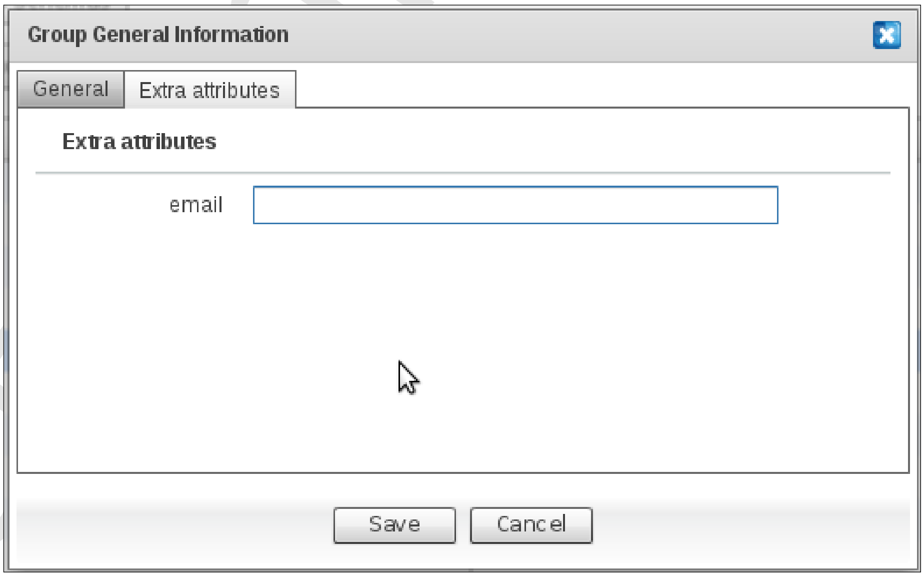
Type *

Required: * □

Multivalued: * □

Picture.72 Add Schemas Attribute

Then we click on save button and the new attribute is appearing as a new tab in the Group entity and as a new field in User entity as illustrated in Picture: 73.



Group General Information

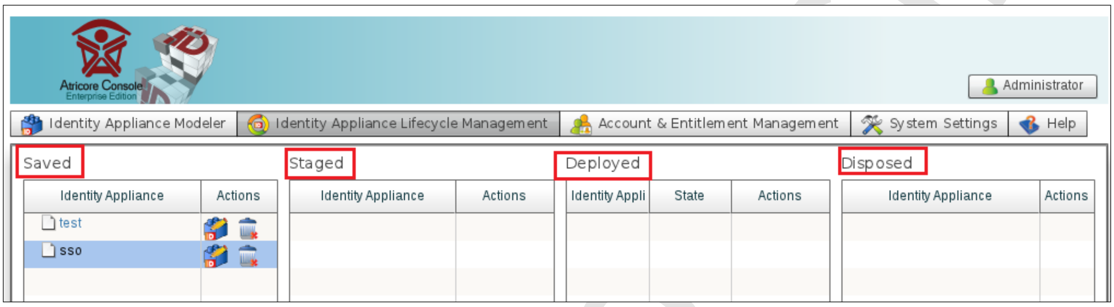
Extra attributes

email

Picture.73 Extra Attribute

21. Identity Appliance Lifecycle Management Screen

When the Identity Appliance is created the next step is to bring this Identity Appliance to life. We can achieve that through the Identity Appliance Lifecycle Management screen. This screen as it is shown in the following picture is consisting of four columns: Saved, Staged, Deployed, and Disposed.

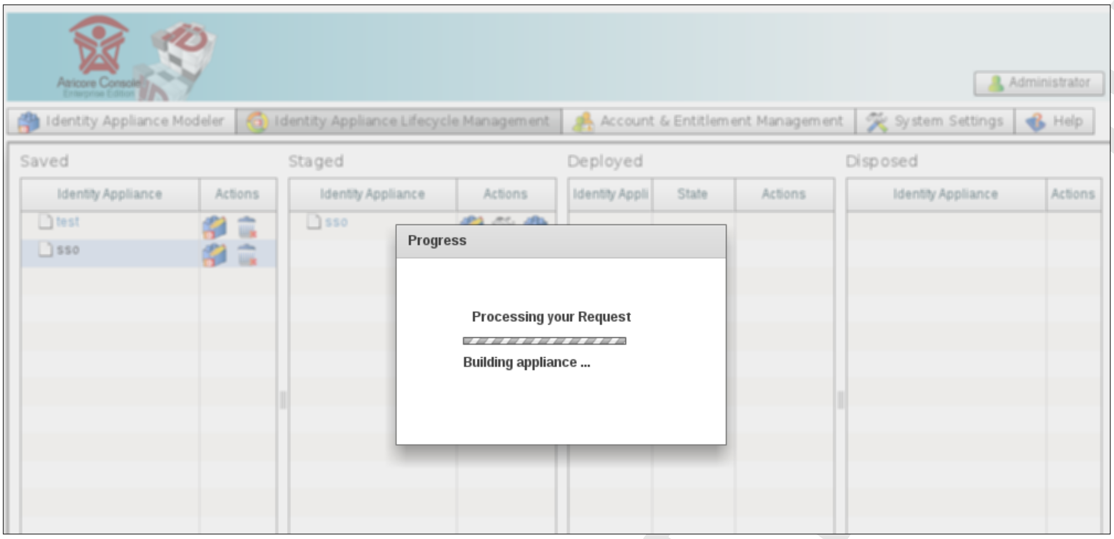


Picture.74 Identity Appliance Lifecycle Management Screen

Each column represents the different state that the Identity Appliance artifact can be in. To activate our Identity Appliance we have to drag and drop the Identity Appliance gradually from each column to the other so that finally to place it in the Deployed column.

The first column is Saved, and inside it are available all the Identity Appliances that we have created. Furthermore in this state we have the ability to modify or remove the Identity Appliance using the following buttons ✎ , 🗑 respectively.

If we want to continue we have to drag and drop the Identity Appliance in the second column which is called Staged.

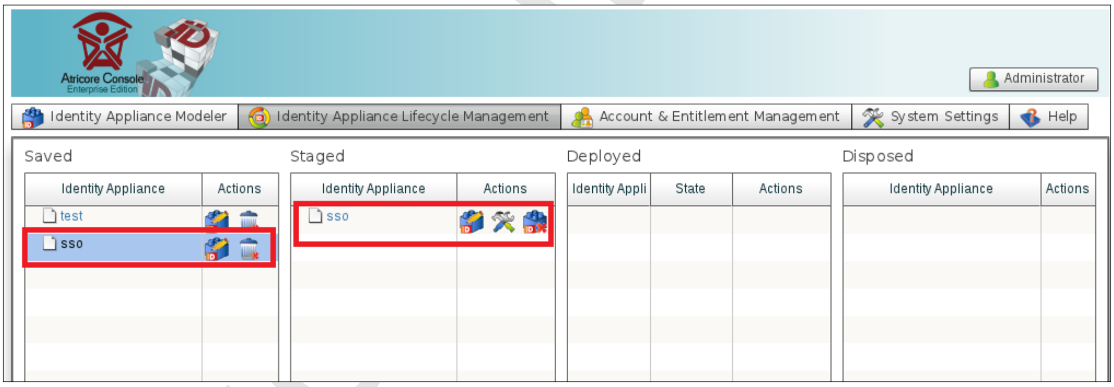


Processing your Request

Building appliance ...

Picture.75 Moving to the next Column

If the building operation is successful, the target Identity Appliance will appear in the Staged column as we can see in the following picture.

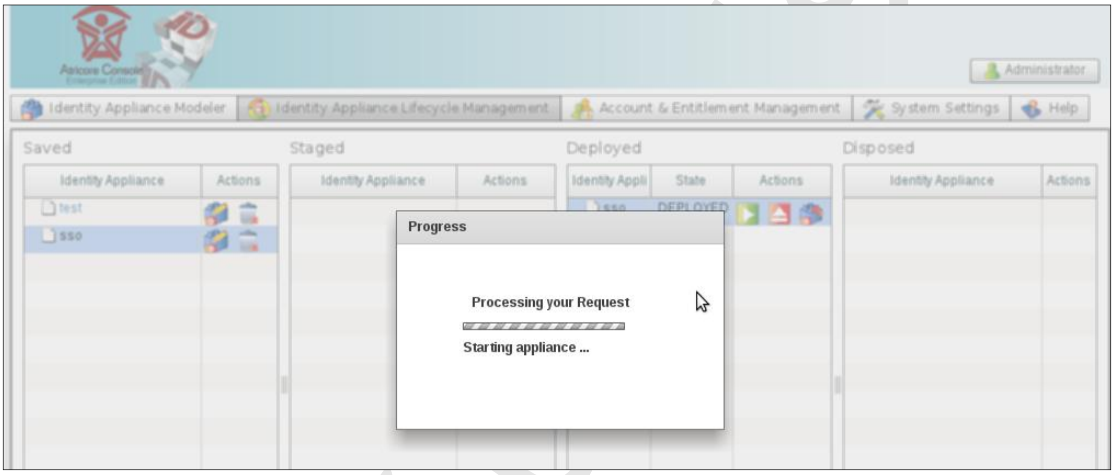


Picture.76 Staged Column

The Staged column keeps entries for the Identity Appliances that have been successfully compiled. In Staged column we have the ability to edit, rebuild and delete the Identity Appliance. If we click on edit button we automatically transferred in the Identity Appliance Modeler screen in which we can make changes in this Identity Appliance. If the changes are made we can save them and then click on rebuild button . Finally if we click on delete button the Identity Appliance will automatically transferred into the Disposed column.

In order to deploy an Identity Appliance, we select and drag the row for the target Identity Appliance item from the Staged column and drop it onto the Deployed column. Then the Identity Appliance appears in the Deployed column of the Lifecycle Management Window.

As the Identity Appliance is in Deployed column we can click on Start button ▶ so the Identity Appliance will be executed or click on stop button ⏏ to stop the execution for Identity Appliance as we can see below.

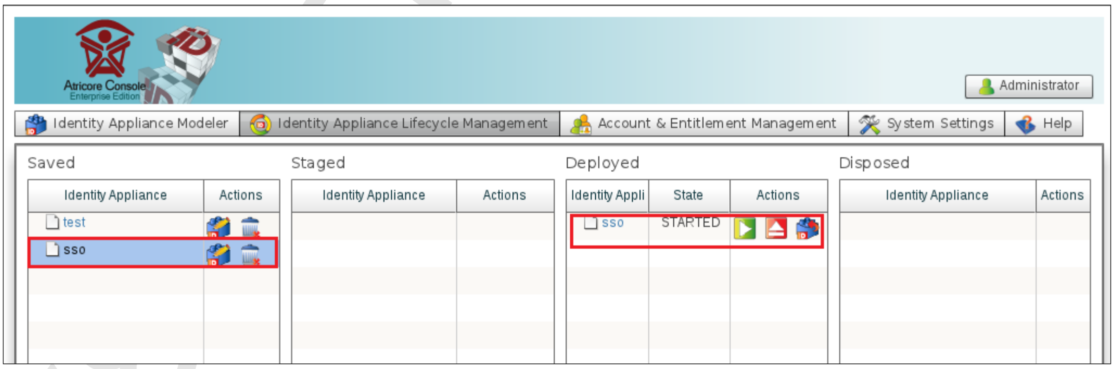


Progress

Processing your Request

Starting appliance ...

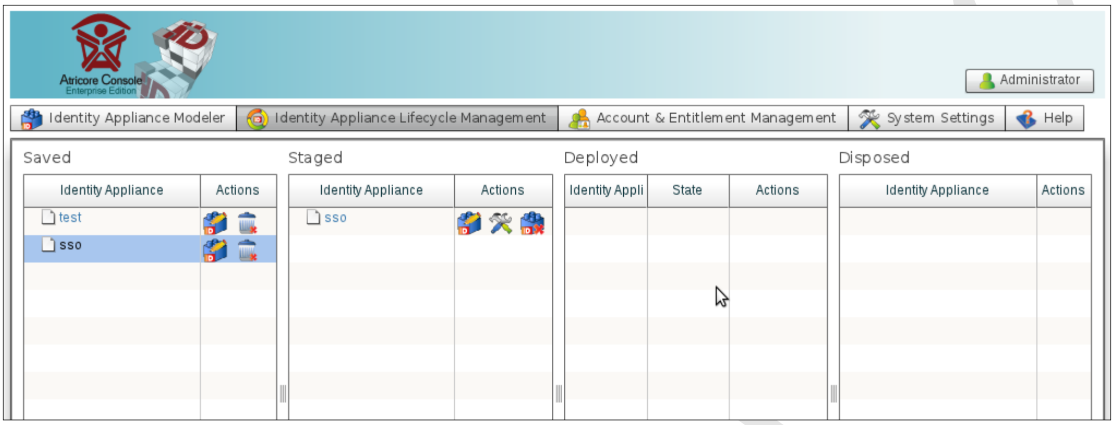
Picture.77 Starting appliance



Picture.78 Deployed Column

An important issue which it should be referred to is that we can have more than one Identity Appliances to executing at the same time.

Another action that we can do in Deployed column is to delete the Identity Appliance by clicking on delete button . If we delete the Identity Appliance it is transferred automatically in the Staged column, as it is shown below.


Atricore Console
Enterprise Edition
Administrator
Identity Appliance Modeler
Identity Appliance Lifecycle Management
Account & Entitlement Management
System Settings
Help

Saved

Identity Appliance	Actions
test	
sso	

Staged

Identity Appliance	Actions
sso	

Deployed

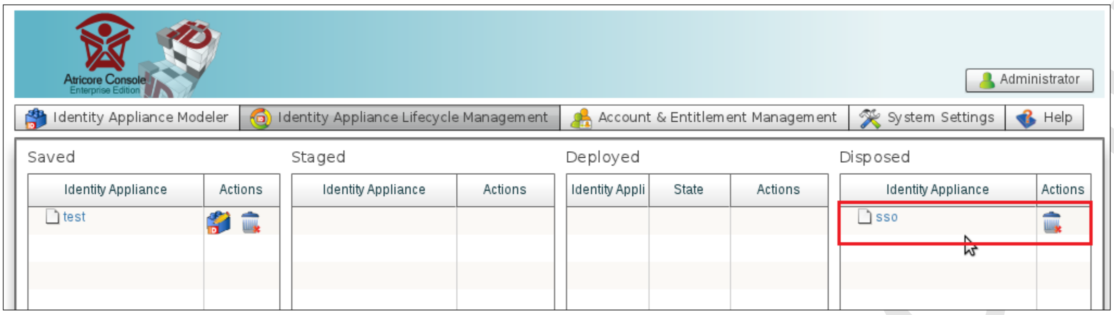
Identity Appli	State	Actions

Disposed

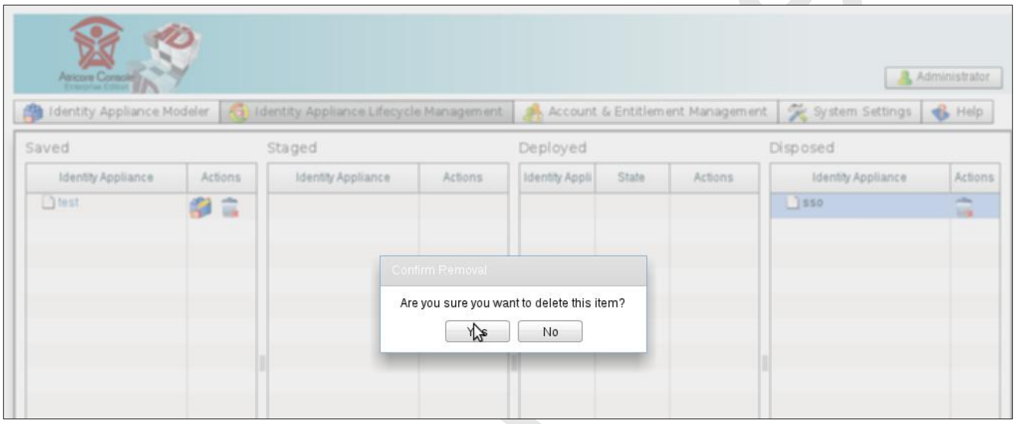
Identity Appliance	Actions

Picture.79 Return to the Staged Column

If we delete it also from the Staged column then the Identity Appliance is transferred automatically in the Disposed column. In this column exist the Identity Appliances that we have deleted and the only action button that we have is delete, if we click on this button the Identity Appliance will be permanently deleted, as we can see below.

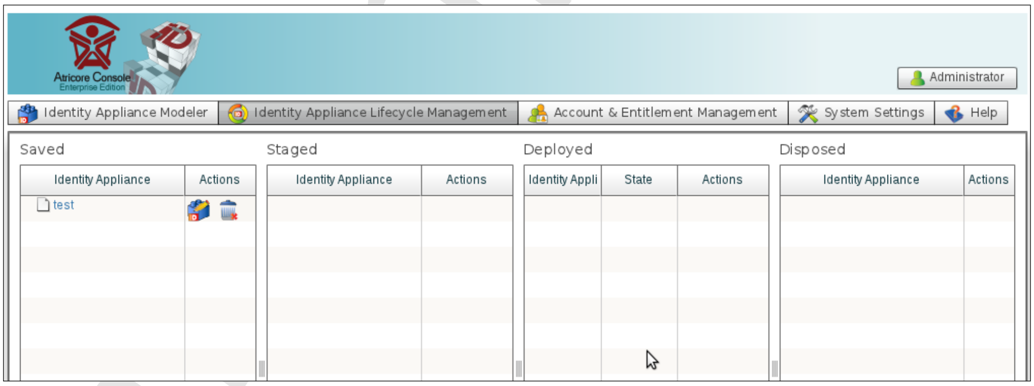


Picture.80 Disposed Column



Are you sure you want to delete this item?

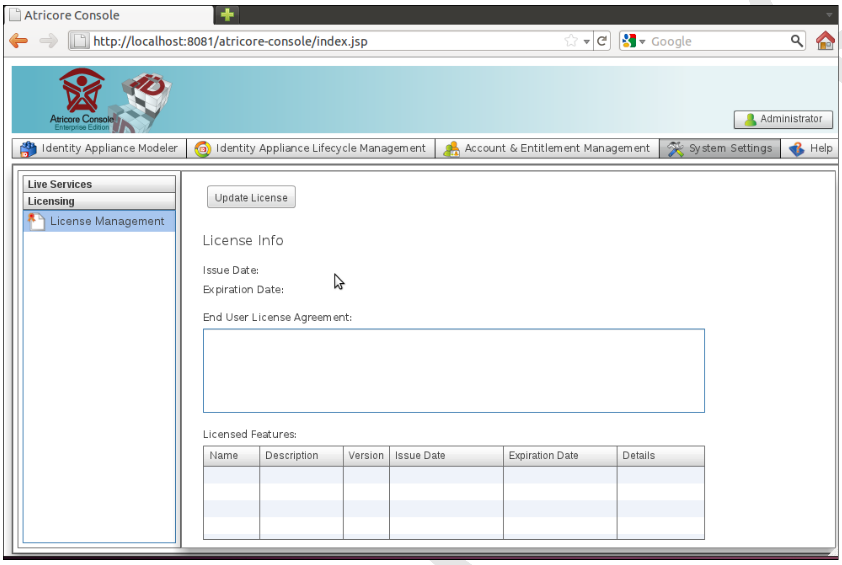
Picture.81 Delete the Identity Appliance



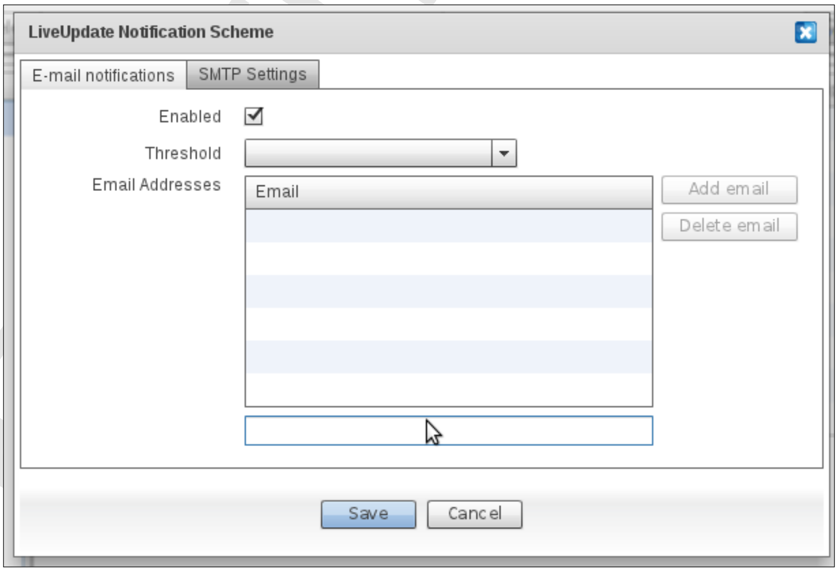
Picture.82 Identity Appliance Lifecycle Management 1

22. System Setting

In system setting screen we can see only the user’s license if we are using JOSSO C.E., but if we use JOSSO E.E., through this screen we can download new updates. Furthermore we can create our notification scheme, for example we can define in which email we will receive warnings. Finally through this screen we can configure the SMTP settings.



Picture.83 System Settings



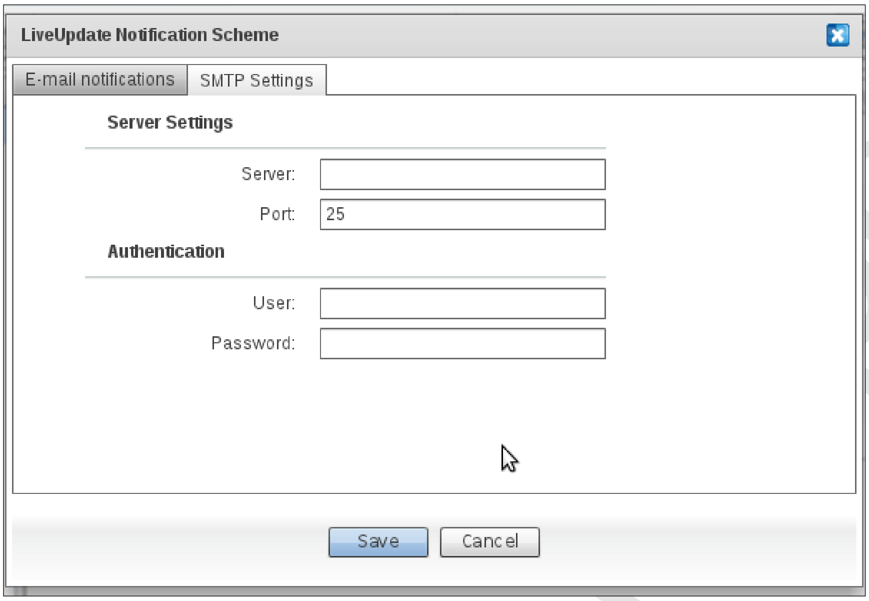
Enabled ☑

Threshold

Email Addresses

Email

Picture.84 E-mail notification tab



LiveUpdate Notification Scheme

Server Settings

Server:

Port: 25

Authentication

User:

Password:

Picture.85 SMTP tab

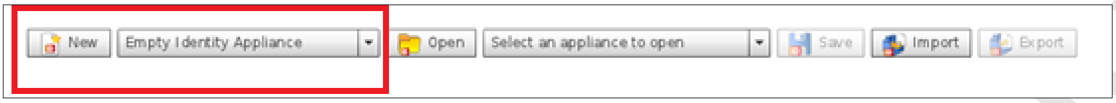
23. Creating an Identity Appliance for SSO

In the following example we are going to describe how we can create an Identity Appliance, which will provide SSO services. To achieve SSO we should have an Identity Appliance which will consist of an Identity Provider which will be connected with at least two Service Providers. Each service Provider should trust the Identity Provider, which is why we have to connect them with a Federation connection. Furthermore in the following example we will use an Identity Vault which will be connected with Identity Appliance with an Identity Lookup connection. Finally each Service Provider will be executed in an execute environment. In this example we are going to use Apache Tomcat and JBoss but JOSSO gives us others environment solutions as well. It is important to mention that in order to run correctly the Identity Appliance that we going to create, we should download Apache Tomcat and JBoss web containers, which should run in parallel with the Identity Appliance.

Step 1

Create the Identity Appliance

Choose an Empty Identity Appliance on the action bar and then click on “New” button.



Picture.86 Action Bar

At this point we have to mention that we have another choice in the drop list which is “Federated SSO baseline”. If we choose this option it opens a window that we can give names in the entities that we want to use and the Identity Appliance is ready. We do not have to drag and drop the items from Pallet to Diagram Pallet and connect them all with each other. But in the following example we choose to use the “Empty Identity Appliance” option as we have already mentioned.

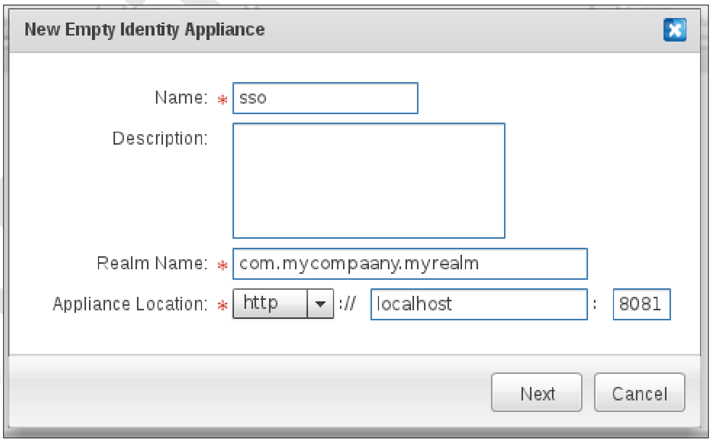
After we click on “New” button it appears the “New Empty Identity Appliance” window. The “New Empty Identity Appliance” window is consisting of the following fields:

Name: a unique identifier for the identity appliance

Description: a description for the identity appliance

Realm Name: provides a unique name for the elements that exist in the Identity Appliance

Appliance Location: it defines the host name and port where identity endpoints for the Identity Appliance are going to be bound


New Empty Identity Appliance

Name: * sso

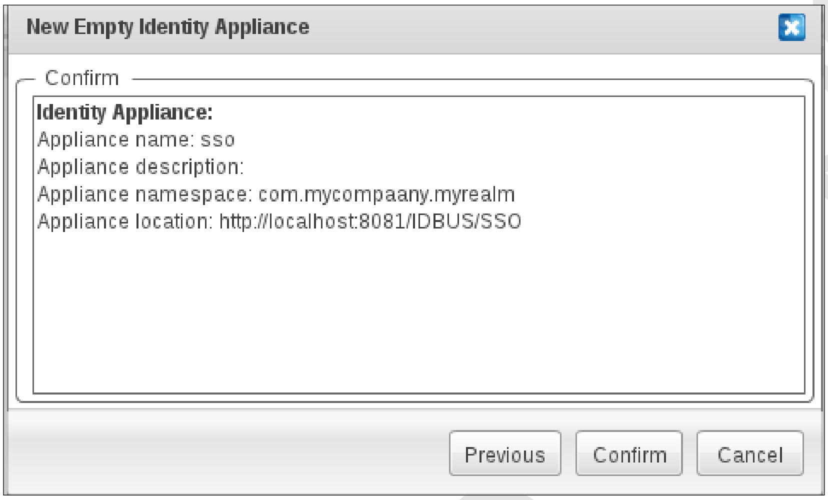
Description:

Realm Name: * com.mycompaany.myrealm

Appliance Location: * http :// localhost : 8081

Picture.87 Create the Identity Appliance

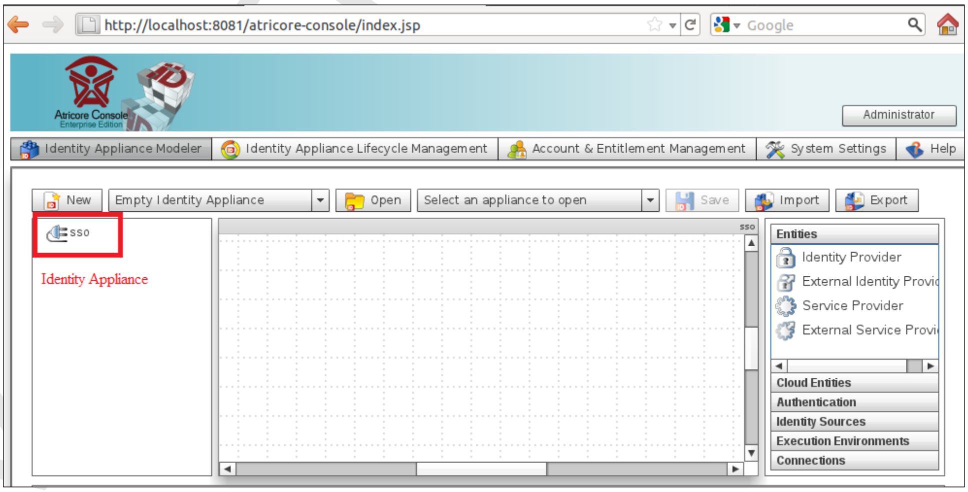
As we have filled in all the mandatory fields we click on Next button and appear the “New Empty Identity Appliance” window that illustrated in the following picture:



Identity Appliance:
Appliance name: sso
Appliance description:
Appliance namespace: com.mycompaany.myrealm
Appliance location: http://localhost:8081/IDBUS/SSO

Picture.88 Confirm Identity Appliance Window

In this window we can see the options that we have made in the previous step. In this window we have three options. We can click on, “Confirm” button that creates the Identity Appliance or click on “Previous” button and return to the previous window to make changes or click on “Cancel” button which canceled each action that we do. So we click “Confirm” button and the Identity Appliance is created.



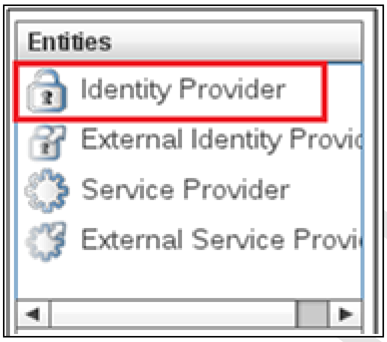
http://localhost:8081/atricore-console/index.jsp

Picture.89 Identity Appliance Modeler Window

Step 2

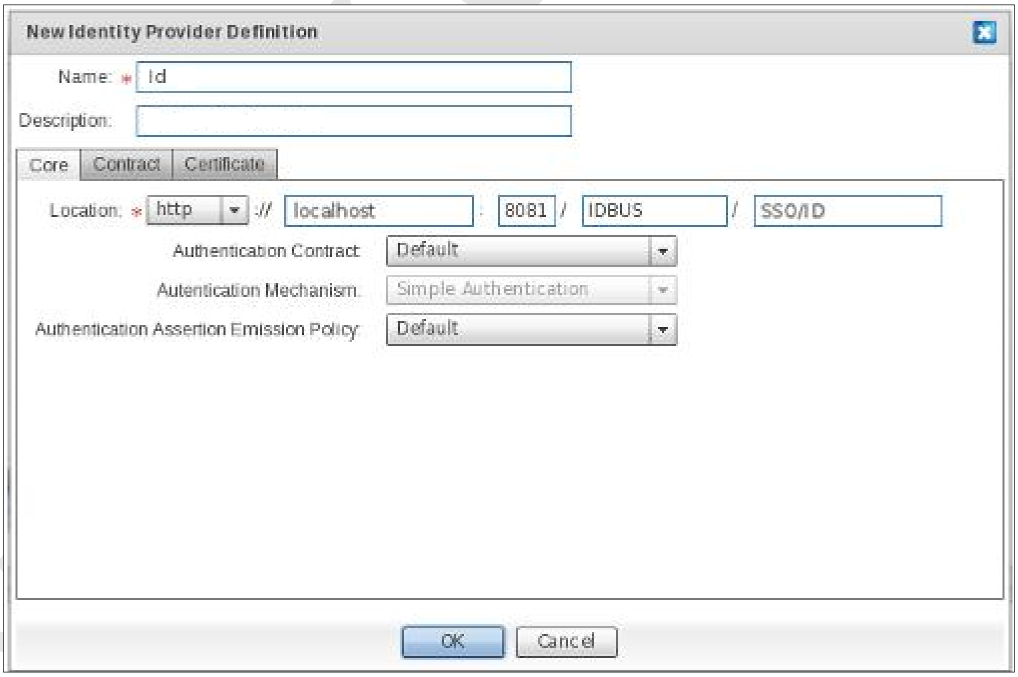
Create the Identity Provider.

In order to create the Identity Provider we drag from Pallet the Identity Provider entity and drop it into Diagram Canvas.



Picture.90 Entities

As we drop the Identity Provider into the Diagram Canvas it appears the "New Identity Provider Definition" window, were we can choose the name of the Identity Provider and to give a short description.



Name: * Id

Description:

Location: * http :// localhost : 8081 / IDBUS / SSO/ID

Authentication Contract: Default

Autentication Mechanism: Simple Authentication

Authentication Assertion Emission Policy: Default

Picture.91 Identity Provider Care tab

As we can see from picture: “New Identity Provider Definition” window consists of three tabs:

- Core
- Contract
- Certificate

In “Core” tab we can specify the reachable Identity Provider endpoints for the users. A default location is created based on attributes given at the creation time of the appliance. It is recommended that this location must stay as-is in order to avoid inconsistencies later on. In “Core” tab we have to fill in the following fields:

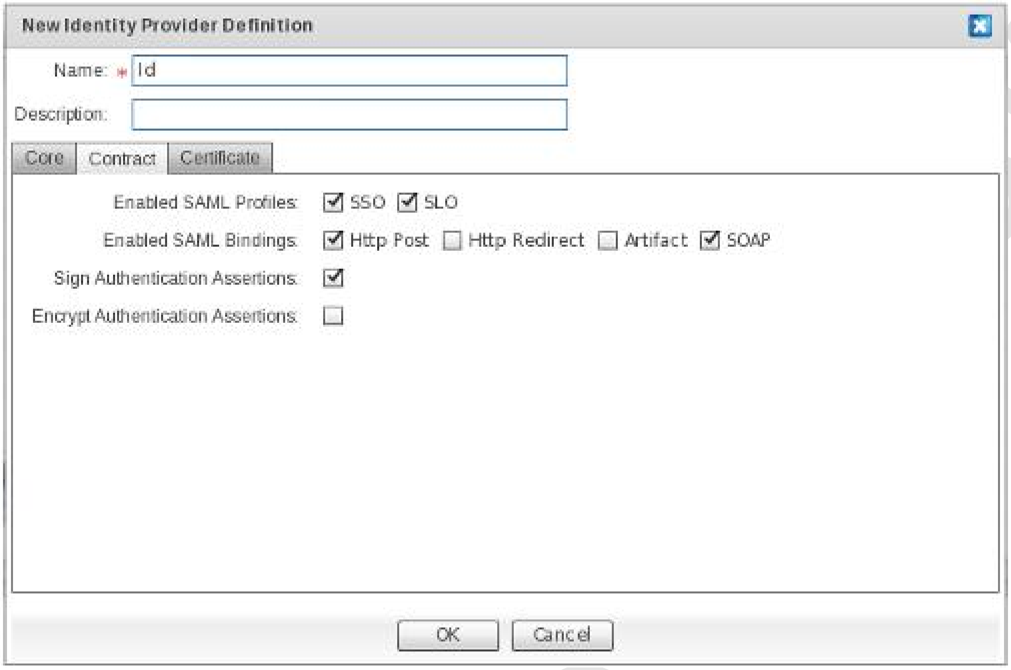
Location: Here there are determined the access protocol (http or https), the host name, the port and the path that bonds the endpoints of the Identity Provider.

Authentication Contract: This is the mean for submitting claims to the Identity Provider. It is based on specific predefined JOSSO parameters, that are submitted when it is attempted a web-based authentication method.

Authentication Mechanism: It describes the authentication process of the users. It has only one option, the “Simple Authentication” mechanism which is based on the username – password method.

Authentication Assertion Emission Policy: This option defines the way assertions are issued during a successful authentication process. These assertions are transferred through security tokens to the relying parties.

The next tab is the “Contact” tab. Here there are determined the SAML Profiles and Bindings, but also the security level of the artifacts that are exchanged between the Identity Provider and the Service Provider. The “Contact” tab is shown below.



Name: * Id

Description:

Enabled SAML Profiles: ☑ SSO ☑ SLO

Enabled SAML Bindings: ☑ Http Post □ Http Redirect □ Artifact ☑ SOAP

Sign Authentication Assertions: ☑

Encrypt Authentication Assertions: □

Picture.92 Identity Provider Contract tab

The following fields we see on "Contract" tab:

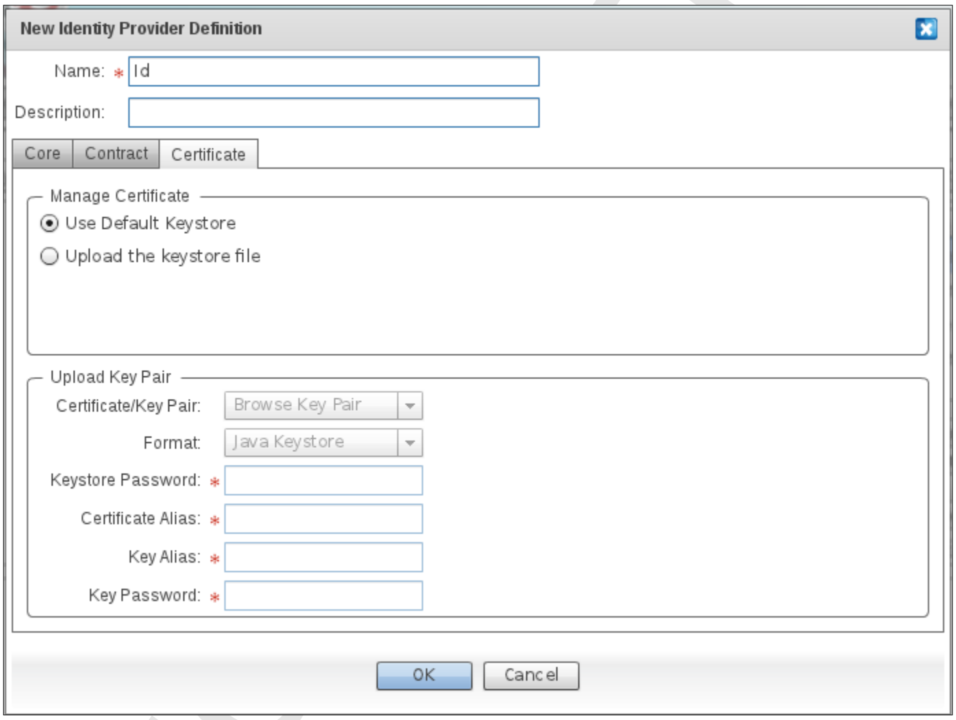
Enabled SAML Profiles: The SSO checkbox represents the "Web Browser Single Sign-On Profile". This is the most important SAML profile. The SLO checkbox enables the Single Logout Support option.

Enabled SAML Bindings: Here it is determined the schema of the SAML protocol based on standard formats and other communication protocols. The Http Post checkbox relays the SAML messages through a HTTP POST method. The Http Redirect checkbox relays SAML messages through a HTTP GET method. The Artifact checkbox relays SAML messages through the SAML Artifact Binding, which is based on HTTP Redirect and SOAP bindings. Its purpose is to facilitate the exchange of SAML messages. The SOAP checkbox relays SAML messages through the SOAP protocol over HTTP/HTTPS.

Sign Authentication Assertions: In this field it is decided whether the SAML Authentication Assertions are digitally signed or not. The digital signing provides guarantees of integrity and identity of the Service Provider towards the Identity provider.

Encrypt Authentication Assertions: If this checkbox is chosen it means that the SAML Authentication Assertions are encrypted. This feature provides confidentiality to the exchangeable SAML messages, prohibiting eavesdropping attempts.

Third and last tab is the “Certificate” tab. Here the user can select between the default JOSSO keystore and an uploaded one, in order to keep the private and public key pairs that are used to secure the exchange of the SAML messages among the Identity Provider and the Service Provider. If the Uploaded keystore file option is chosen, the user must set up the components of the trust system himself, which is based on the public key infrastructure (PKI). This system allows provisioning of confidentiality, integrity, authentication and non-repudiation. This tab is demonstrated below.



New Identity Provider Definition

Name: * Id

Description:

Core | Contract | Certificate

Manage Certificate

● Use Default Keystore

○ Upload the keystore file

Upload Key Pair

Certificate/Key Pair: Browse Key Pair

Format: Java Keystore

Keystore Password: *

Certificate Alias: *

Key Alias: *

Key Password: *

Picture.93 Identity Provider Certificate tab

The following fields we see on “Certificate” tab:

Use Default Keystore: This option is recommended only for sandbox settings where security is not an issue.

Use the keystore file: Usage of a customized keystore file.

Certificate Key Pair: This option gives the ability of uploading a keystore file from the user’s local file system.

Format: This indicates the format of the keystore file. In JOSSO the only supported format is Java Keystore (JKS).

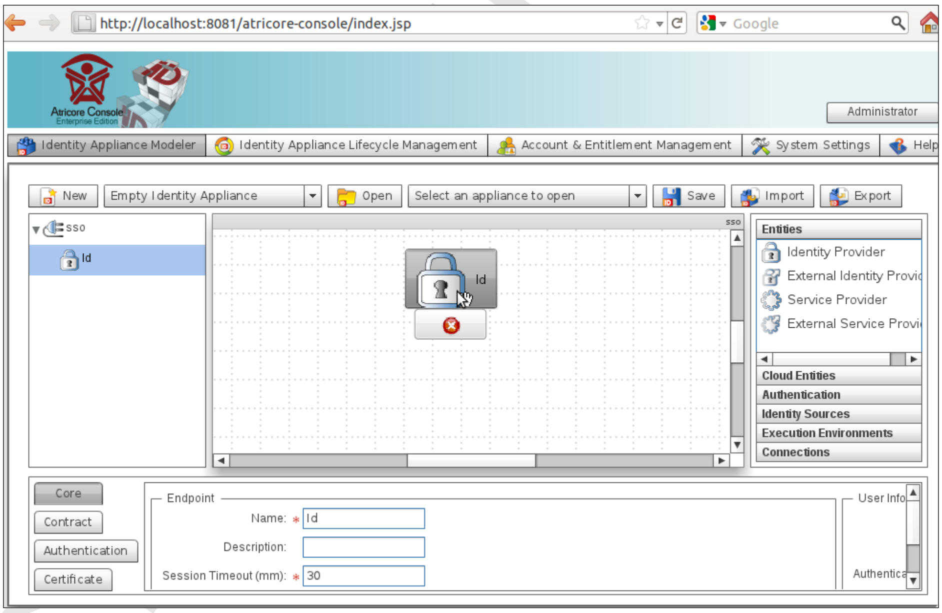
Keystore Password: In this field a password is typed that the Identity Provider will use in order to decrypt the keystore and gain access to the key pair entities.

Certificate Alias: It is the identifier of the keystore entry for the Identity Provider's public key.

Key Alias: It is the identifier of the keystore entry for the Identity Provider's public key.

Key Password: It is the password field for obtaining the keystore entry which keeps the Identity Provider's private key.

If the above steps and the corresponding fields are selected accordingly, the user clicks on the OK button to create the Identity Provider entity.



http://localhost:8081/atricore-console/index.jsp

Endpoint

Name: * Id

Description:

Session Timeout (mm): * 30

Picture.94 Identity Appliance Modeler with Identity Provider

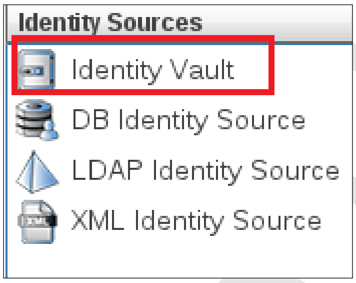
As we have created the Identity Appliance we can delete it by clicking on the delete button. ⊗

In this example we do not make any changes in the default.

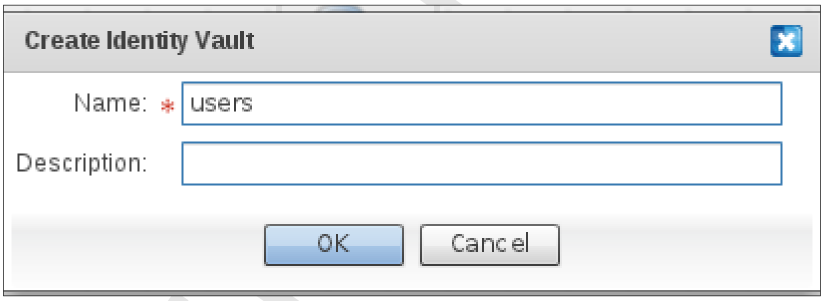
<u>Step 3</u>

<u>Create Identity Vault.</u>

In order to create Identity Vault we drop “Identity Vault” item from Identity Sources from Pallet and we drop it into the Diagram Canvas. Then appears the “Create Identity Vault” window in which we have to fill in the Name that will be the identifier for the Identity Vault and if we desire we can give a description.



<u>Picture.95 Identity Vault</u>

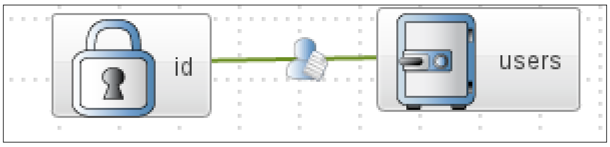


Name: * users

Description:

<u>Picture.96 Create Identity Vault</u>

As we have chosen Identity Vault we will use the Identity Lookup connection from the “Connections” drawer, in order to connect the Identity Vault with the Identity Provider.

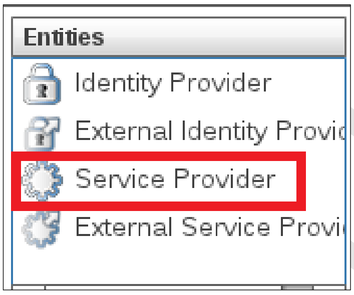


<u>Picture.97 Identity Lookup Connection</u>

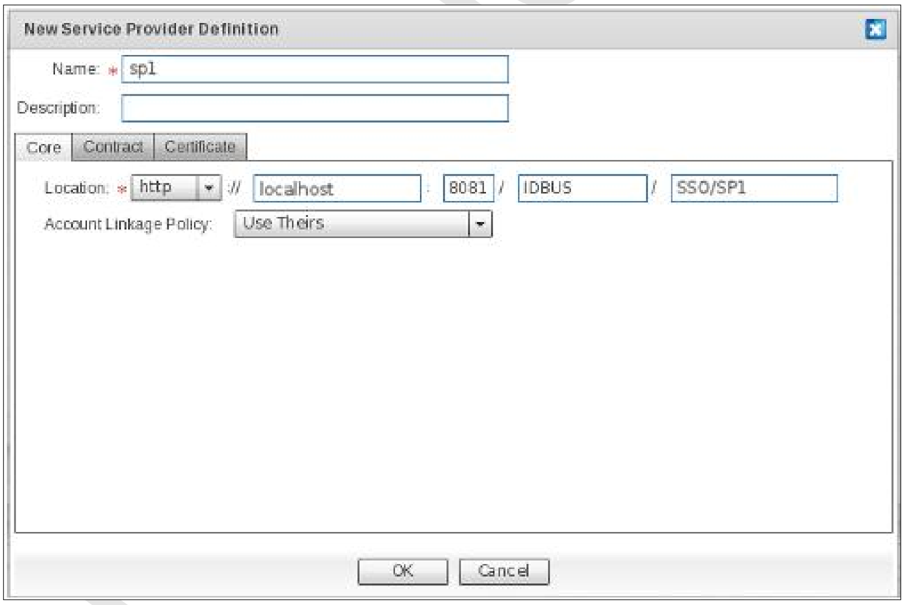
Step 4

Create the Service Provider.

From the “Entities” drawer we click on the “Service Provider” entity. Then we drag it to the preferred place in the Diagram Canvas. This action opens a window named “New Service Provider Definition”, as it is shown below, where the name of the Service Provider can be putted.



Picture.98 Service Provider



Name: * spl

Description:

Location: * http :// localhost : 8081 / IDBUS / SSO/SP1

Account Linkage Policy: Use Theirs

Picture.99 Create a Service Provider Core tab

The “New Service Provider Definition” window is consisting of three tabs:

- Core
- Contract
- Certificate

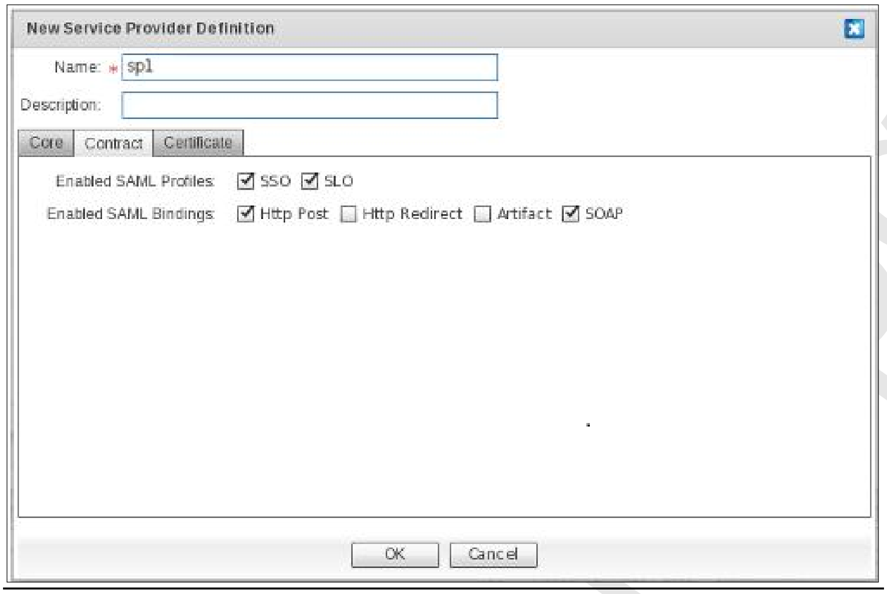
At the “Core” tab is specified the location of the Service Providers’ endpoints that the users will use. This location is created using attributes provided during the creation of the Identity Appliance. It is recommended not to change them for consistency reasons.

Core tab has the following fields:

Location: Here the access protocol is defined. It is either http or https. Moreover, there are defined the host name and the context path of the Service Providers’ endpoints. The users can access the desired services of the Service Provider using URIs capable of using this location value. It is advised the usage of a valid host name in order to allow the Identity Appliance services to be disconnected from a physical host.

Account Linkage Policy: This option gives the means that will be used from the input claims in order to be transmitted in the security token and to be mapped to output claims, which then are issued and submitted by the Identity Provider. After that step, the claims are outlaid by the relevant party in order to grand access to the authorized users. The Account Linkage Policy has three alternative options. The first is the “Use Theirs” option where it is used to connect Identity Provider and Service Provider accounts utilizing the given name identifier and mapping input to output claims one to one. The second is the “Use Ours”, where is again used to connect Identity Provider and Service Provider accounts utilizing the given name identifier but the output issued claims are based only on the user details that are disposable in the Identity Source linked to the Service Provider. The third is the “Aggregate” option, where the Identity Provider and Service Provider are linked as before but the output claims are merged in the user details transmitted in the security token and to those that are acquired from the linked Identity Source to the Service Provider.

The next tab is the “Contract” tab. Here the SAML profiles and SAML bindings are enabled used to interact with the Identity Provider. It is also possible to check the level of security the artifacts use that are responsible for the exchanged messages between the Identity and Service provider, as it is shown below.



New Service Provider Definition

Name: * spl

Description:

Enabled SAML Profiles ☑ SSO ☑ SLO

Enabled SAML Bindings ☑ Http Post □ Http Redirect □ Artifact ☑ SOAP

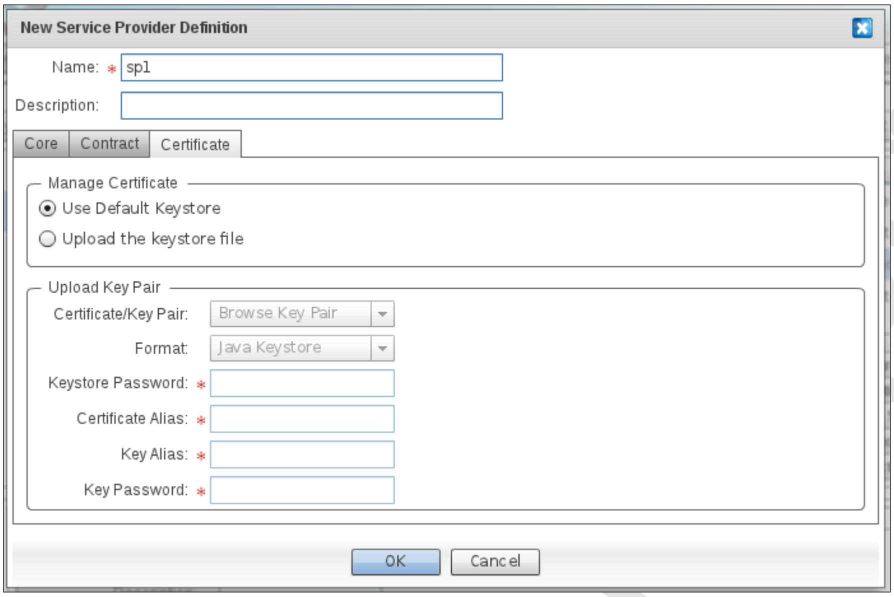
Picture.100 Create a Service Provider Contract tab

Contract tab has the following fields:

Enabled SAML Profiles: The SAML profile that is most significant, is the "Web Browser Single Sign On Profile", which is enabled by selecting the SSO checkbox. If the Single Support Logout option is required, it is enabled by checking the SLO checkbox.

Enabled SAML Bindings: This option specifies the mapping of the SAML protocol message, towards standardized message formats and other communication protocols. If the Http Post checkbox is selected the SAML messages are transmitted through the HTTP POST method. If the Http Redirect checkbox is selected the SAML messages are transmitted through the HTTP GET method. If the Artifact is selected the SAML messages are transmitted through the SAML Artifact Binding, which is based on HTTP Redirect and SOAP bindings in order to exchange SAML messages. The last checkbox is the SOAP checkbox. If selected the SAML messages are transmitted through the SOAP protocol over HTTP/HTPPS.

The third screen is the "Certificate" tab. Here the keystores of the private – public key pairs are selected that secure the exchange of the SAML messages among the Identity and Service Provider. A trust system is created based on the public key infrastructure (PKI), providing confidentiality, integrity, authentication and non-repudiation among the trusted entities. The "Certificate" tab is shown below.



New Service Provider Definition

Name: * spl

Description:

Core | Contract | Certificate

Manage Certificate

● Use Default Keystore

○ Upload the keystore file

Upload Key Pair

Certificate/Key Pair: Browse Key Pair

Format: Java Keystore

Keystore Password: *

Certificate Alias: *

Key Alias: *

Key Password: *

Picture.101 Create a Service Provider Certificate tab

Certificate tab has the following fields:

Use Default Keystore: This option is recommended only for sandbox settings where security is not important. In computer security, a sandbox is a security mechanism for separating running programs. It is often used to execute untested code, or untrusted programs from unverified third-parties, suppliers, untrusted users and untrusted websites.

Upload the keystore file: This option exists if the user has a customized key pair and wants to use it instead the default keystore.

Certificate/Key Pair: This option grants the user to select a desired keystore file from his local file system.

Format: In this option the only supported keystore format in JOSSO is the Java Keystore (JKS).

Keystore Password: The required password that is needed to open the keystore files in order to obtain the necessary key pair for secure SSO message exchanges.

Certificate Alias: It plays the role of an identifier of the keystore entry for the public key.

Key Alias: Here is the name of the keystore entry that is used to acquire the corresponding private key.

Key Password: It is the necessary password for acquiring the private key.

As we have created the Service Providers we have to connect each one separately with Identity Provider through a Federation Connection which will create a trust relationship between the Identity Provider and the Service Providers.

The Federation Connection can be found in the “Connection” drawer from the Palette.

As we drag the item from Pallet and drop it into Diagram Pallet it appears the “Create Federated Connection” window. This window consists of two tabs:

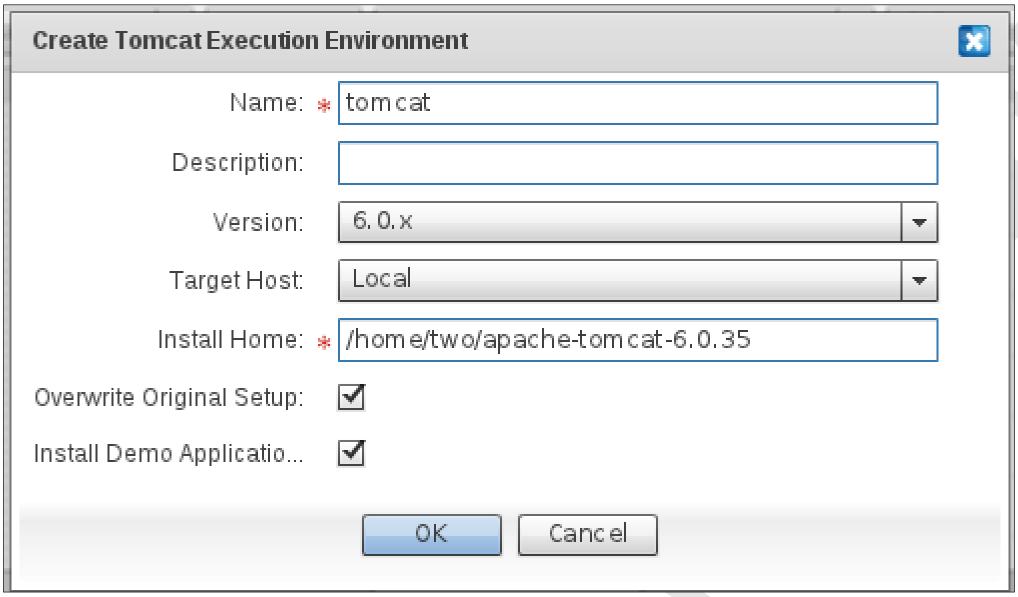
- Identity Provider Channel
- Service Provider Channel

By default when it appears the “Create Federated Connection” window it has already a Name although we can add a description if we desire.

Identity Provider Channel has the choices that we have already made when we create the Identity Provider and Service Provider Channel has the choices that we have already made when we created the Service Provider.

As we have created the Service Provider and established a circle of trust with the Identity Provider the last thing that we have to do is to choose an execution environment where Service Providers will run in order to offer services to end users and applications. In this example we are going to use the Tomcat 6.0.35 and JBoss 5.0.0.

Tomcat and JBoss web containers can be found in “Execution Environment” from Pallet. As we drop it to Diagram Canvas it appears the “Create Tomcat Execution Environment” window and “Create JBoss Execution Environment” that illustrated in the following pictures.



Create Tomcat Execution Environment

Name: * tomcat

Description:

Version: 6.0.x

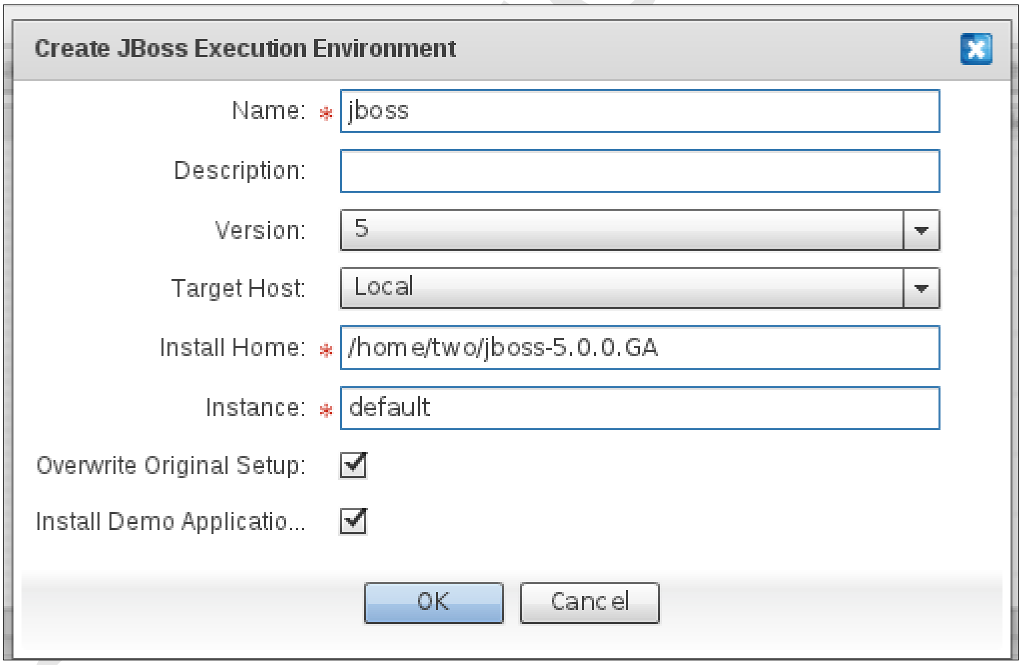
Target Host: Local

Install Home: * /home/two/apache-tomcat-6.0.35

Overwrite Original Setup: ☑

Install Demo Applicatio... ☑

Picture.102 Create Tomcat



Create JBoss Execution Environment

Name: * jboss

Description:

Version: 5

Target Host: Local

Install Home: * /home/two/jboss-5.0.0.GA

Instance: * default

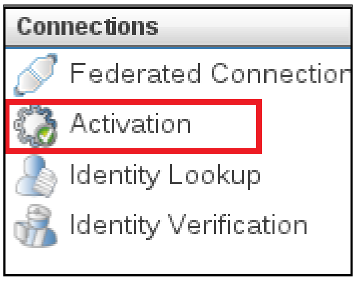
Overwrite Original Setup: ☑

Install Demo Applicatio... ☑

Picture.103 Create JBoss

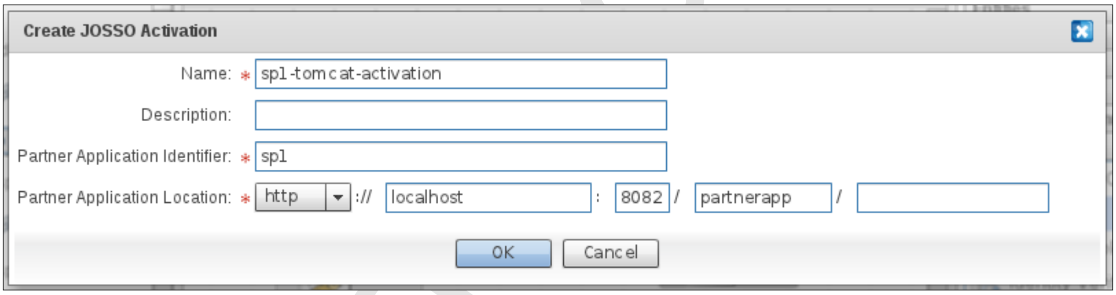
In the above windows we have to fill in the mandatory fields and to select the check boxes (for more information look on chapter 15.11 and 15.12 respectively).

.



Picture.104 Activation

The last thing that we have to do is to activate Tomcat and JBoss, so in order to perform the activation we click on "Activation" item from "Connections" in Pallet and then we click on Tomcat and the Service Provider in which we want to connect, and it appears the "Create JOSSO Activation" window, illustrated in the following picture:


Create JOSSO Activation

Name: * spl-tomcat-activation

Description:

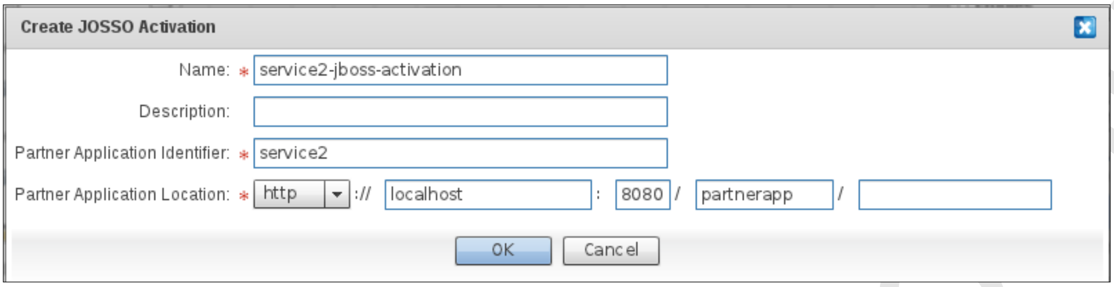
Partner Application Identifier: * spl

Partner Application Location: * http :// localhost : 8082 / partnerapp /

Picture.105 Activate Tomcat

In these windows the mandatory fields which are Name, Partner Application Identifier and Partner Application Location are supplemented. The only change that may be needed is in the port and to add partnerapp which is the location that SSO will be take place.

As it is illustrated in Picture: 106 the same window appears when we are going to connect JBoss with a Service Provider.



Create JOSSO Activation

Name: * service2-jboss-activation

Description:

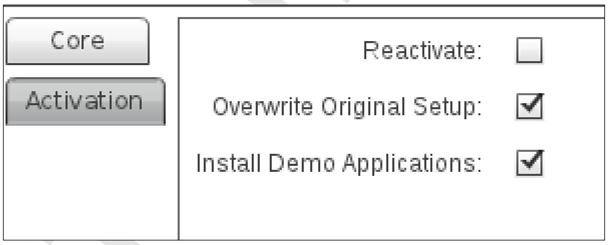
Partner Application Identifier: * service2

Partner Application Location: * http :// localhost : 8080 / partnerapp /

Picture.106 Activate JBoss

In this example Tomcat uses port 8082 and JBoss 8080.

It is important to mention that after completing the activation we have to reactive Tomcat and JBoss. To make this action we have to click on Tomcat and JBoss separately each time and click on the Activate button, after we have checked the Reactivation check box. With this action we "Reactivate" the execution environments and all the previous set up is been deleted.



Reactivate: □

Overwrite Original Setup: ☑

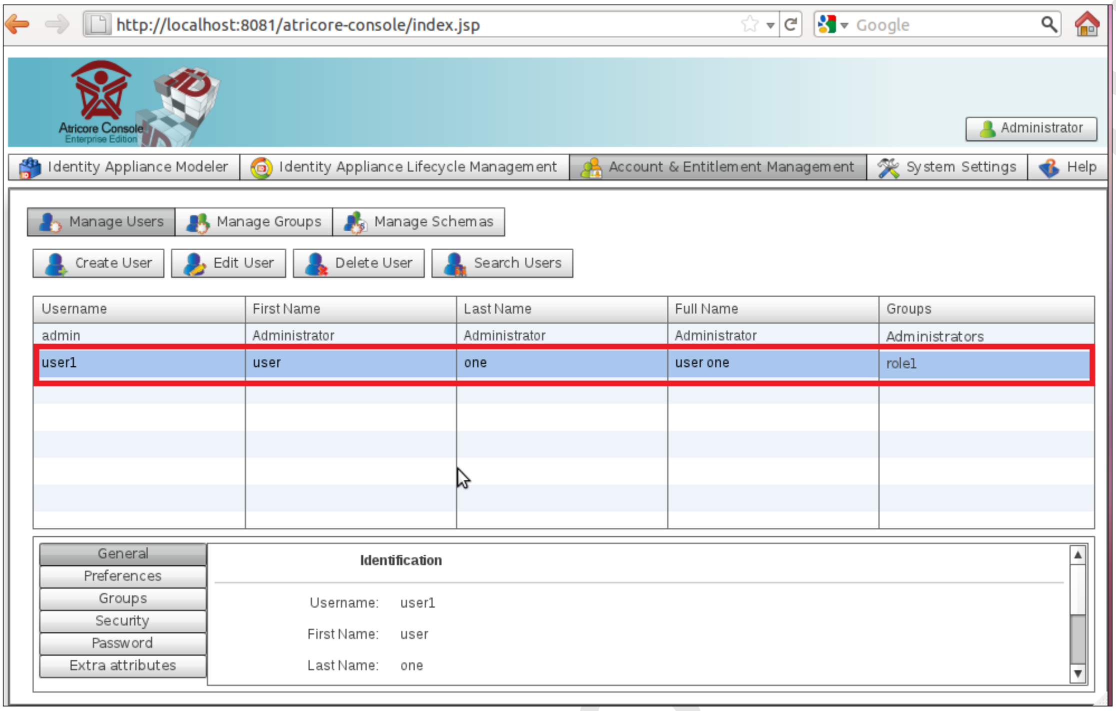
Install Demo Applications: ☑

Picture.107 Reactivate window

Step 5

Create User and Group.

We create a user with the username: user1 which will be part of role1 group as illustrated in the following picture:



Username	First Name	Last Name	Full Name	Groups
admin	Administrator	Administrator	Administrator	Administrators
user1	user	one	user one	role1

Identification

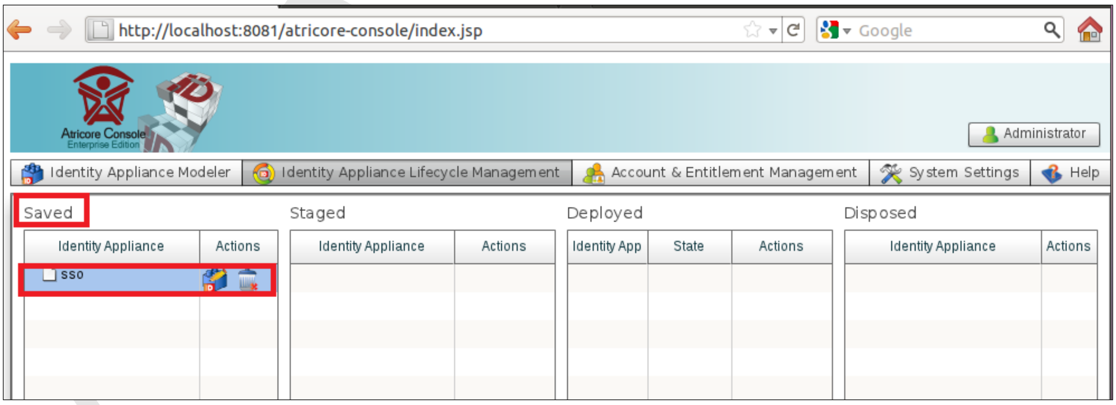
Username: user1

First Name: user

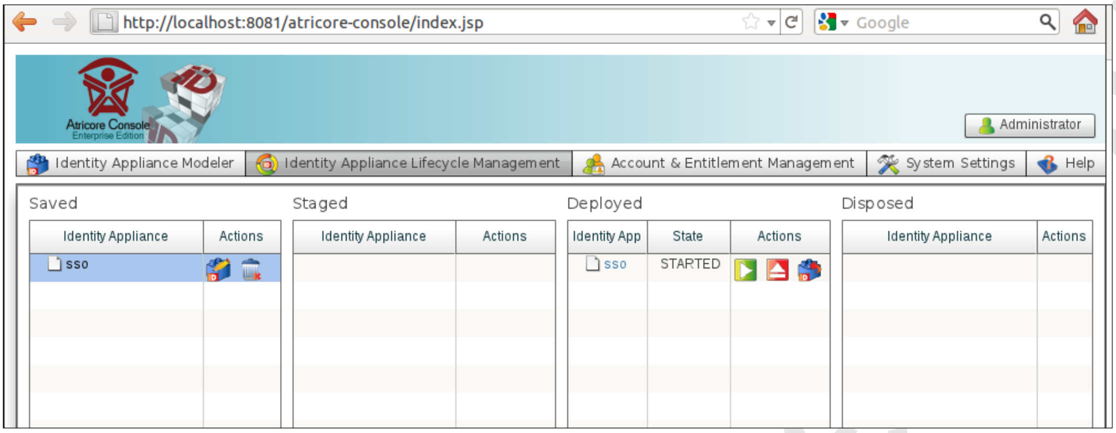
Last Name: one

Picture.108 Users and Groups

As the Identity Appliance was designed in the "Identity Appliance Modeler" the next step is to bring the Identity Appliance into life through the "Identity Appliance Lifecycle Management" window. In this window we have to drag and drop our Identity Appliance from Saved Column into Staged Column and finally in Deployed column and click on start button so the Identity Appliance run.



Picture.109 Bring Identity Appliance into Life Saved Column



http://localhost:8081/atricore-console/index.jsp

Atricore Console
Enterprise Edition
Administrator
Identity Appliance Modeler
Identity Appliance Lifecycle Management
Account & Entitlement Management
System Settings
Help

Saved

Identity Appliance	Actions
sso	

Staged

Identity Appliance	Actions

Deployed

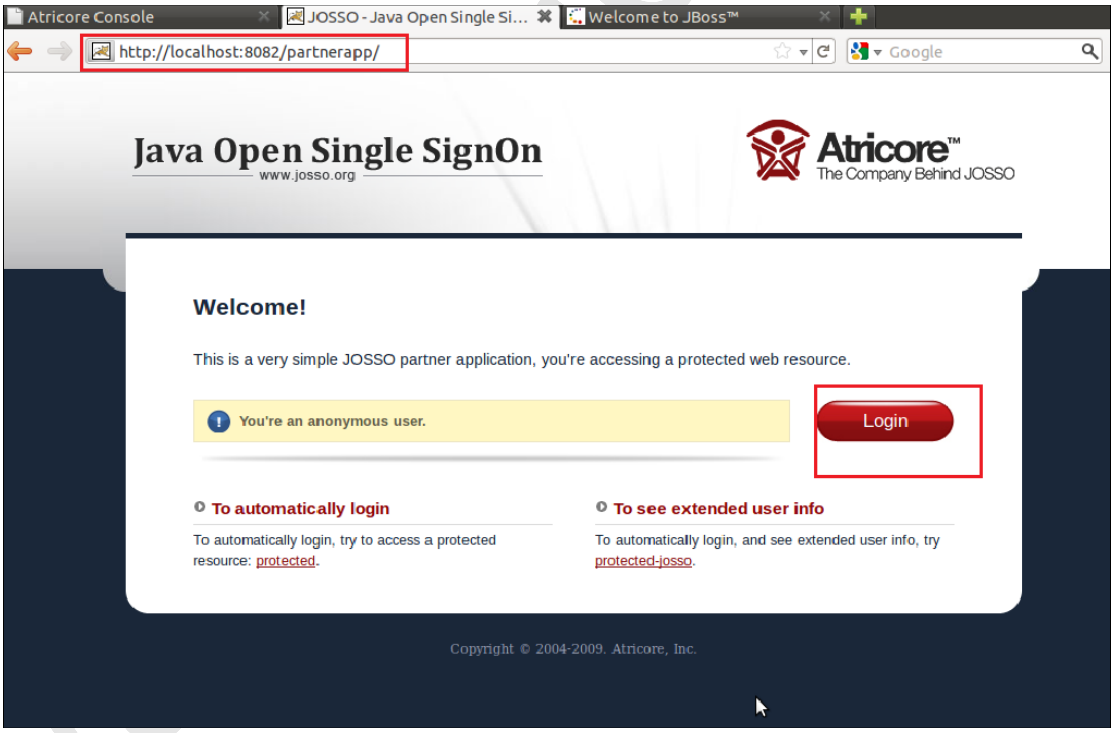
Identity App	State	Actions
sso	STARTED	

Disposed

Identity Appliance	Actions

Picture.110 Bring Identity Appliance into Life Deployed Column

While the Identity Appliance is running we open a browser and we type the location from Service Provider which is: http://localhost:8082/partnerapp as it is illustrated in the following picture:



http://localhost:8082/partnerapp/

Java Open Single SignOn
www.josso.org

Atricore™
The Company Behind JOSSO

Welcome!

This is a very simple JOSSO partner application, you're accessing a protected web resource.

You're an anonymous user.

Login

To automatically login

To automatically login, try to access a protected resource: protected.

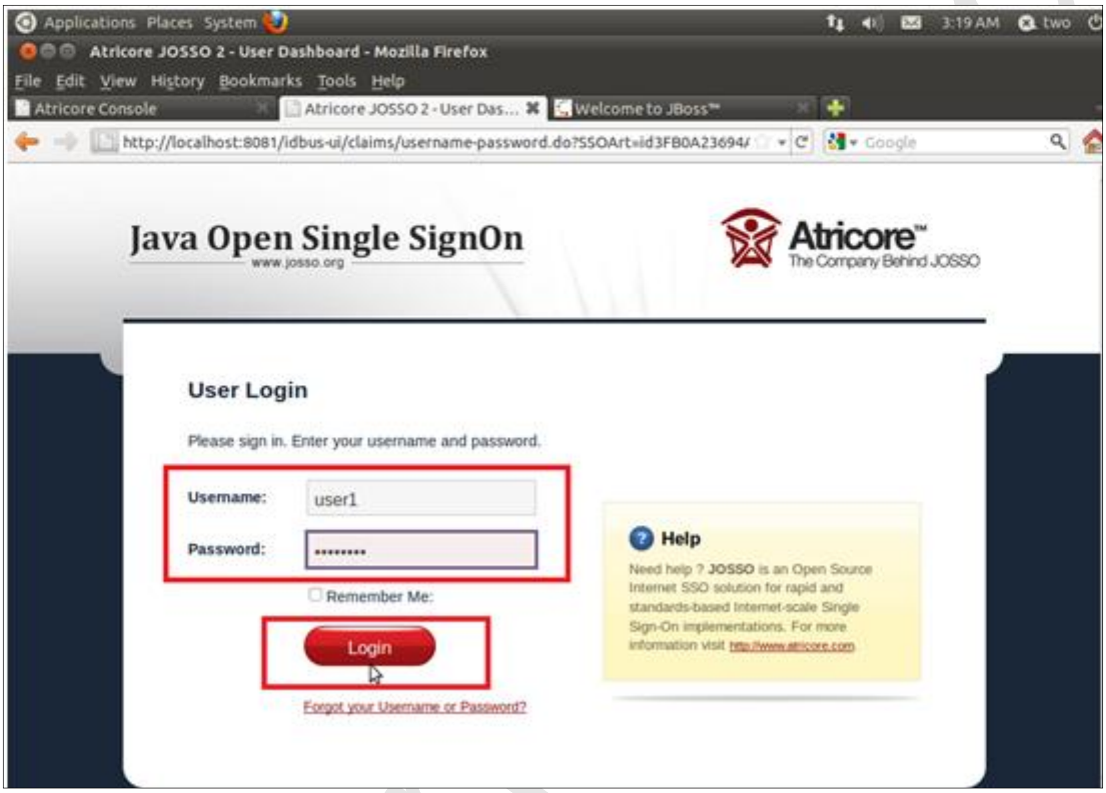
To see extended user info

To automatically login, and see extended user info, try protected-josso.

Copyright © 2004-2009. Atricore, Inc.

Picture.111 Atricore Login window

As the page is loaded it appears the site of Atricore, which is stored locally, and we click on “Login” button. After that it appears the field Username and Password. In these fields we type in the username and password of the user that we have already created in Atricore and click on login button.


Applications Places System
3:19 AM two
Atricore JOSSO 2 - User Dashboard - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Atricore Console
Atricore JOSSO 2 - User Das...
Welcome to JBoss™
Google
Java Open Single SignOn
www.josso.org
Atricore™
The Company Behind JOSSO
Login
Forgot your Username or Password?

http://localhost:8081/idbus-ui/claims/username-password.do?SSOArt=id3FB0A23694/

User Login

Please sign in. Enter your username and password.

Username: user1

Password: ••••••••

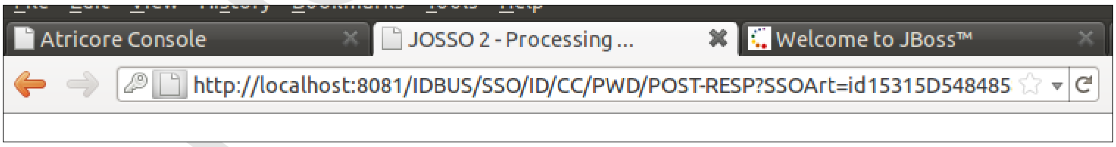
□ Remember Me:

Help

Need help ? **JOSSO** is an Open Source Internet SSO solution for rapid and standards-based Internet-scale Single Sign-On implementations. For more information visit http://www.atricore.com

Picture.112 Fill in Username and Password

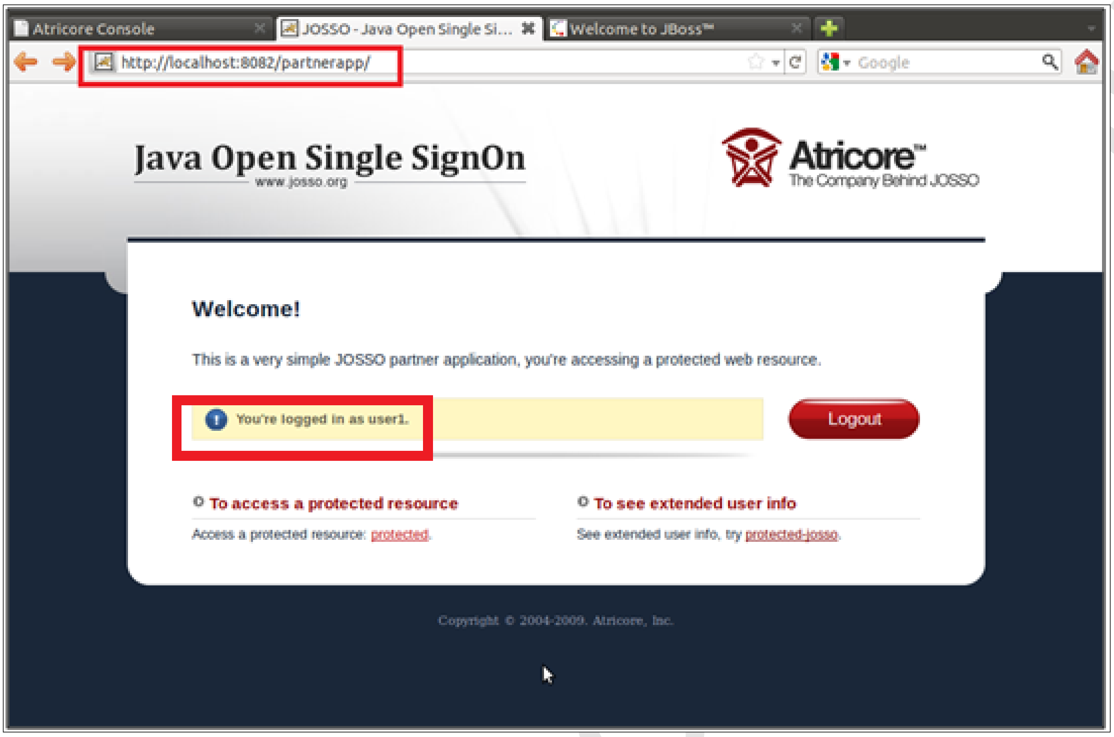
Then it is loaded the login page.



http://localhost:8081/IDBUS/SSO/ID/CC/PWD/POST-RESP?SSOArt=id15315D548485

Picture.113 Loaded the Login Page

After that step, we have logged in and the following picture appears.



Welcome!

This is a very simple JOSSO partner application, you're accessing a protected web resource.

You're logged in as user1.

To access a protected resource

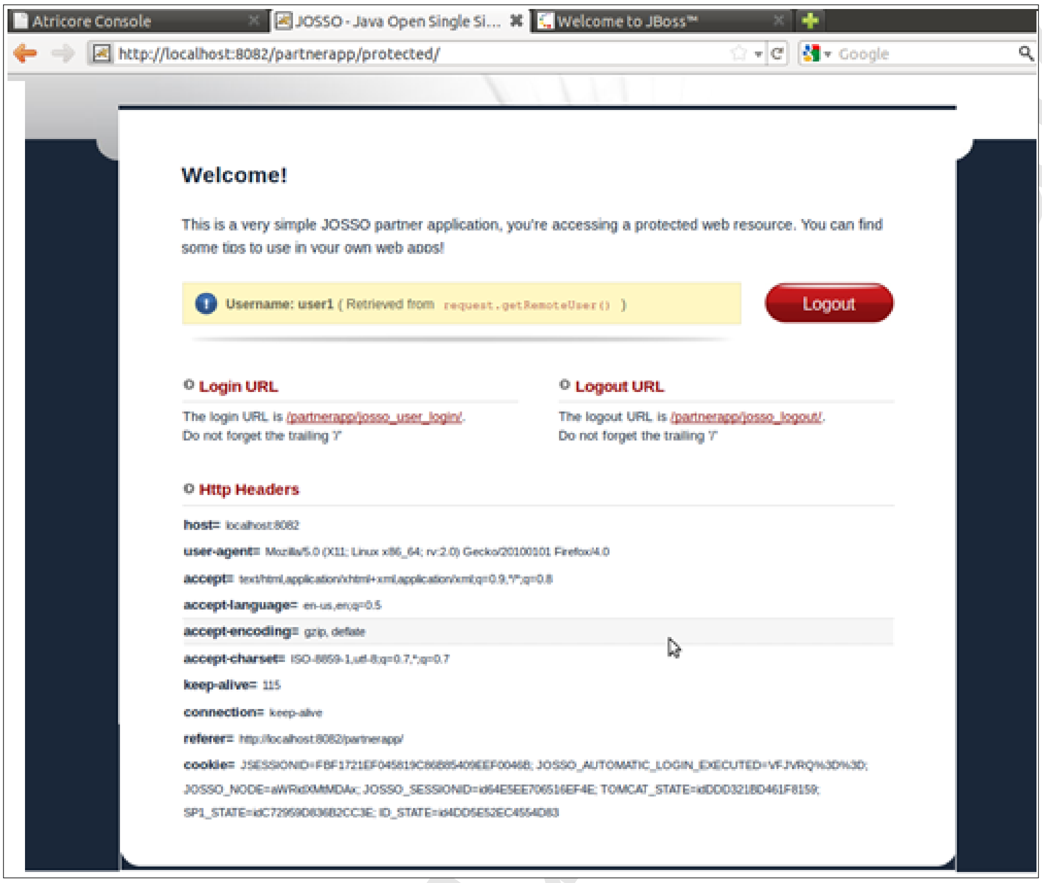
Access a protected resource: protected.

To see extended user info

See extended user info, try protected-josso.

Picture.114 SSO

If we click on “protected” option the following picture appears.



Atricore Console
JOSSO - Java Open Single Si...
Welcome to JBoss™
http://localhost:8082/partnerapp/protected/
Google

Welcome!

This is a very simple JOSSO partner application, you're accessing a protected web resource. You can find some tips to use in your own web apps!

Username: user1 (Retrieved from `request.getRemoteUser()`)

Login URL

The login URL is /partnerapp/josso_user_login/.
Do not forget the trailing '/'

Logout URL

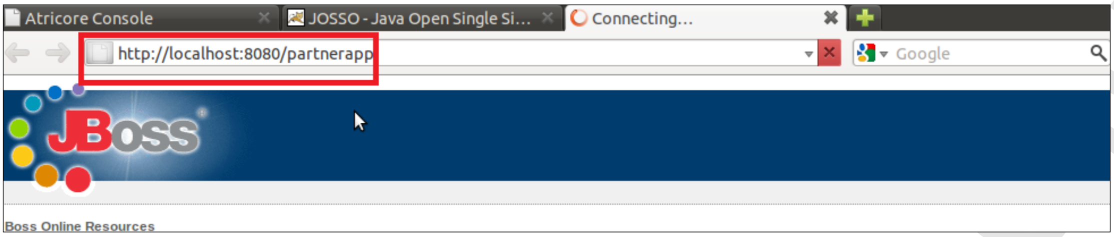
The logout URL is /partnerapp/josso_logout/.
Do not forget the trailing '/'

Http Headers

```
host= localhost:8082
user-agent= Mozilla/5.0 (X11; Linux x86_64; rv:2.0) Gecko/20100101 Firefox/4.0
accept= text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
accept-language= en-us,en;q=0.5
accept-encoding= gzip, deflate
accept-charset= ISO-8859-1,utf-8;q=0.7,*;q=0.7
keep-alive= 115
connection= keep-alive
referer= http://localhost:8082/partnerapp/
cookie= JSESSIONID=FBF1721EF045819C86B85409EEF0046B; JOSSO_AUTOMATIC_LOGIN_EXECUTED=VFJVRQ%3D%3D;
JOSSO_NODE=aWRidXMtMDAx; JOSSO_SESSIONID=id64E5EE706516EF4E; TOMCAT_STATE=idDDD321BD461F8159;
SP1_STATE=idC72959D836B2CC3E; ID_STATE=id4DD5E52EC4554D83
```

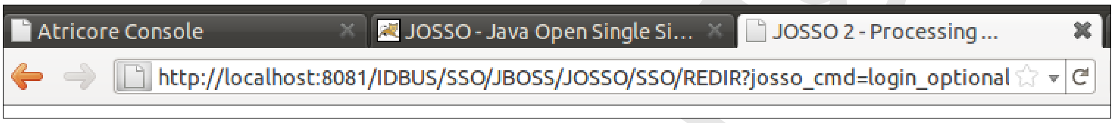
Picture.115 Welcome Page

As we have just logged in the first Service Provider, we open another browser and we type the location of the second Service Provider which is: http://localhost:8080/partnerapp and it is loaded the login page without the need to authenticate the user again.



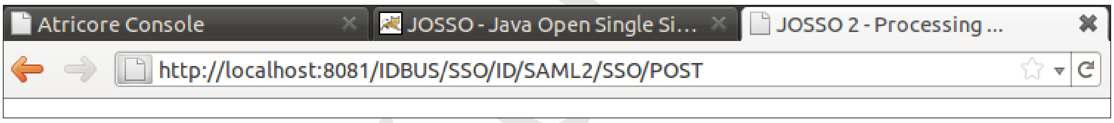
http://localhost:8080/partnerapp

Picture.116 http://localhost:8082/partnerapp



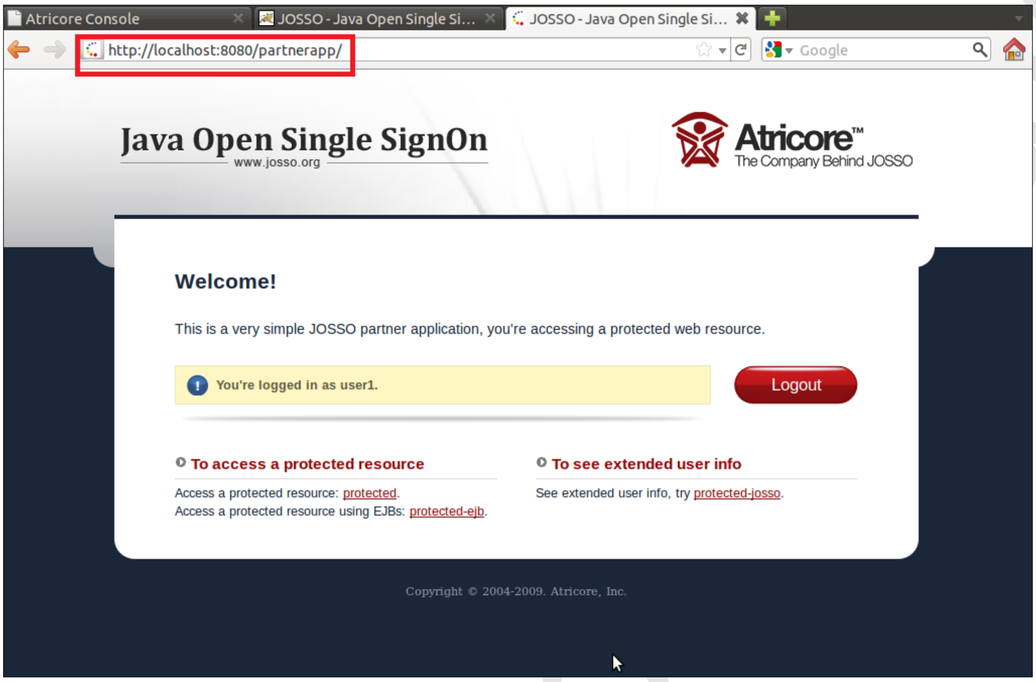
http://localhost:8081/IDBUS/SSO/JBOSS/JOSSO/SSO/REDIR?josso_cmd=login_optional

Picture.117 Loading Page 1



http://localhost:8081/IDBUS/SSO/ID/SAML2/SSO/POST

Picture.118 Loading Page 2


Atricore Console
JOSSO - Java Open Single Si...
JOSSO - Java Open Single Si...
http://localhost:8080/partnerapp/
Google
Java Open Single SignOn
www.josso.org
Atricore™
The Company Behind JOSSO

Welcome!

This is a very simple JOSSO partner application, you're accessing a protected web resource.

You're logged in as user1.

To access a protected resource

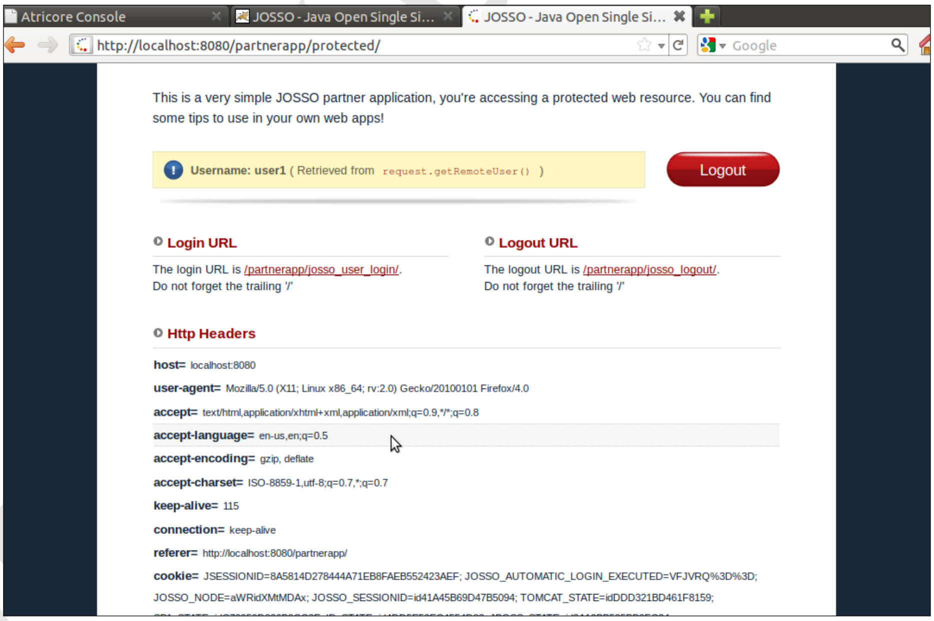
Access a protected resource: protected.
Access a protected resource using EJBs: protected-ejb.

To see extended user info

See extended user info, try protected-josso.

Copyright © 2004-2009. Atricore, Inc.

Picture.119 Login with SSO


Atricore Console
JOSSO - Java Open Single Si...
JOSSO - Java Open Single Si...
http://localhost:8080/partnerapp/protected/
Google

This is a very simple JOSSO partner application, you're accessing a protected web resource. You can find some tips to use in your own web apps!

Username: user1 (Retrieved from `request.getRemoteUser()`)

Login URL

The login URL is /partnerapp/josso_user_login/.
Do not forget the trailing '/'

Logout URL

The logout URL is /partnerapp/josso_logout/.
Do not forget the trailing '/'

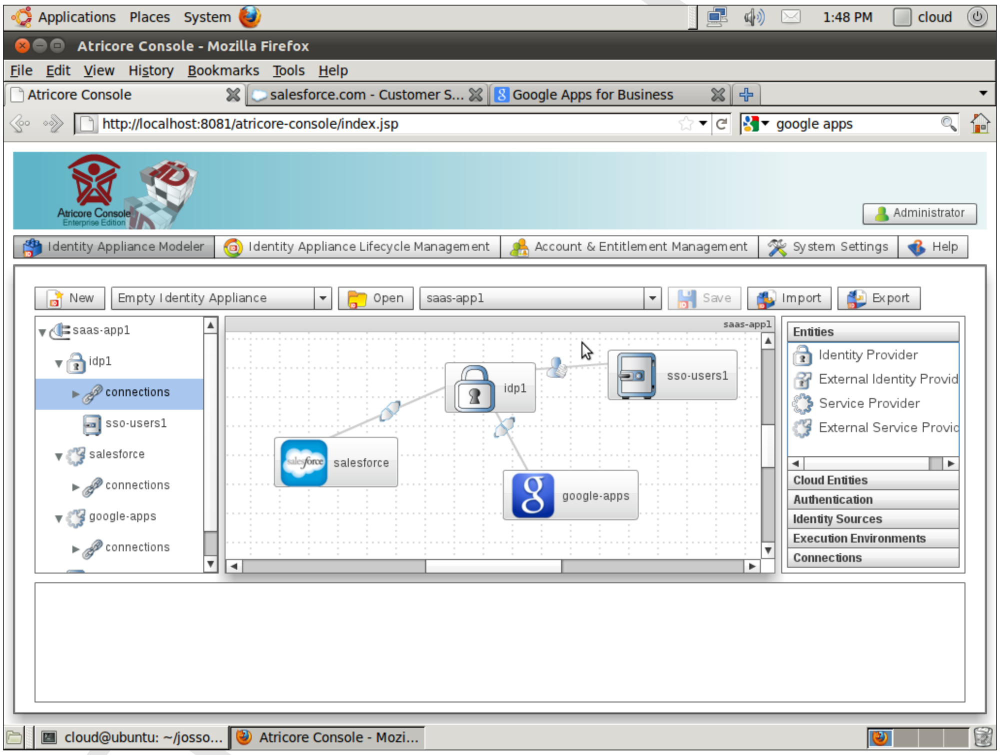
Http Headers

```
host= localhost:8080
user-agent= Mozilla/5.0 (X11; Linux x86_64; rv:2.0) Gecko/20100101 Firefox/4.0
accept= text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
accept-language= en-us,en;q=0.5
accept-encoding= gzip, deflate
accept-charset= ISO-8859-1,utf-8;q=0.7,*;q=0.7
keep-alive= 115
connection= keep-alive
referer= http://localhost:8080/partnerapp/
cookie= JSESSIONID=8A5814D278444A71EB8FAEB552423AEF; JOSSO_AUTOMATIC_LOGIN_EXECUTED=VFJVRQ%3D%3D;
JOSSO_NODE=aWRidXMtMDAx; JOSSO_SESSIONID=id41A45B69D47B5094; TOMCAT_STATE=idDDD321BD461F8159;
```

Picture.120 User Information

24. Cloud computing in JOSSO

JOSSO2 Enterprise Edition (Josso 2 E.E.) supports Cloud with the following applications Google apps, Salesforce and SugarCRM. In the following example it will be used Google apps and Salesforce to demonstrate how the Cloud technology works along with JOSSO2 E.E. To bring the example into life the Domain name: www.cloudjosso.com is created and an account for each application. In both applications it is used the same username which is josso@cloudjosso.com but with different passwords. As long as the prerequisites are defined, the Identity Appliance in JOSSO2 E.E. is created, which consists of an Identity Provider, Google apps and Salesforce from the Cloud Entities and an Identity Vault from Identity Source category as is illustrated in the following picture.



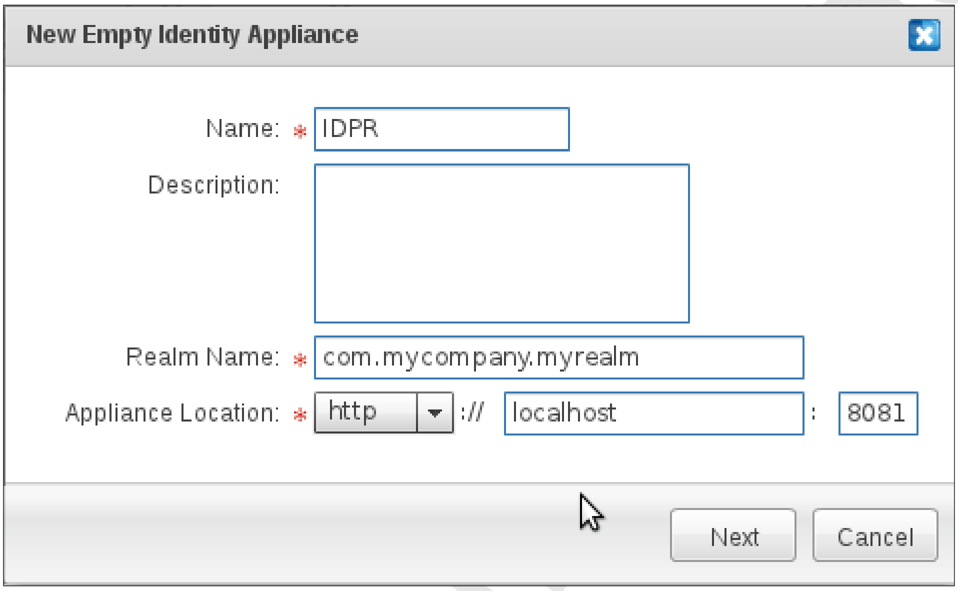
Picture.121 Cloud

Both Cloud Entities and Identity Vault should be connected with the Identity Provider, each Cloud entity will be connected with a Federation connection and Identity Vault will be connected with an Identity Lookup connection. In the following steps it is described the above Identity Appliance.

We should mention that in the following example we will not make any changes into default values.

Step 1

Create an Identity Appliance.



New Empty Identity Appliance

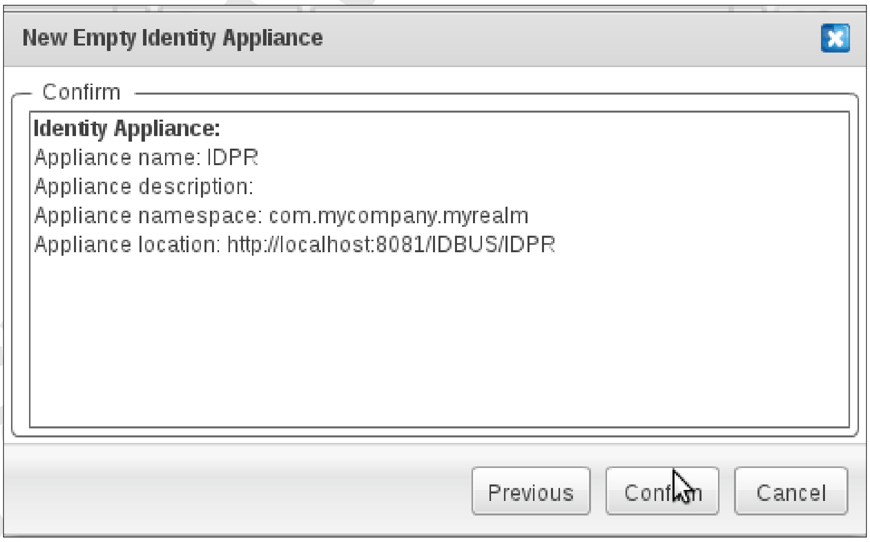
Name: * IDPR

Description:

Realm Name: * com.mycompany.myrealm

Appliance Location: * http :// localhost : 8081

Picture.122 Create Identity Appliance for Cloud Example



New Empty Identity Appliance

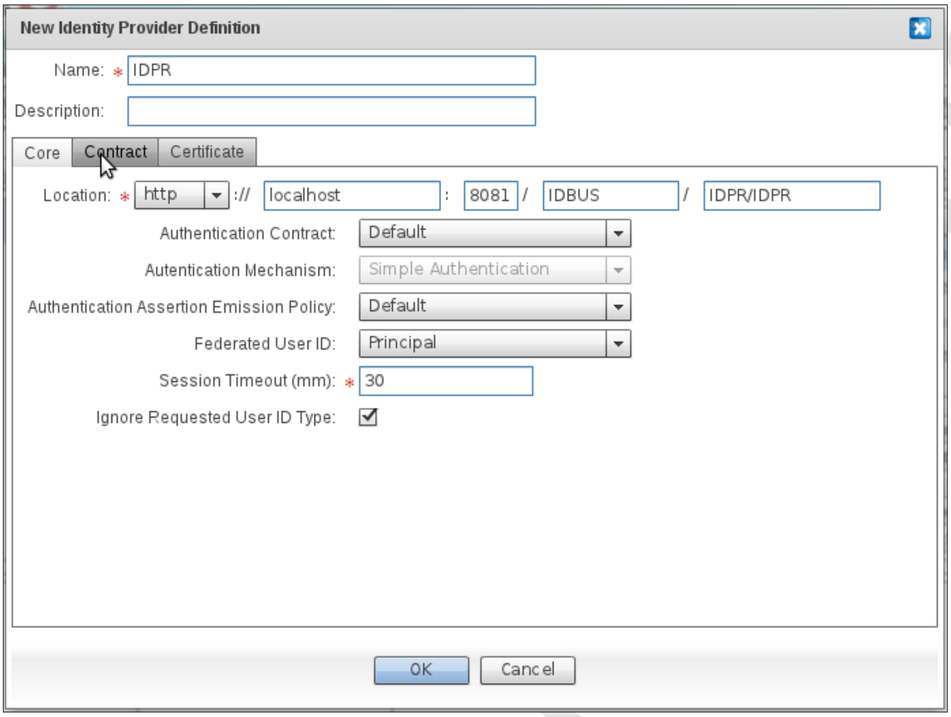
Confirm

Identity Appliance:
Appliance name: IDPR
Appliance description:
Appliance namespace: com.mycompany.myrealm
Appliance location: http://localhost:8081/IDBUS/IDPR

Picture.123 Conform Identity Appliance for Cloud

Step 2

Create the Identity Provider.



New Identity Provider Definition

Name: * IDPR

Description:

Location: * http :// localhost : 8081 / IDBUS / IDPR/IDPR

Authentication Contract: Default

Autentication Mechanism: Simple Authentication

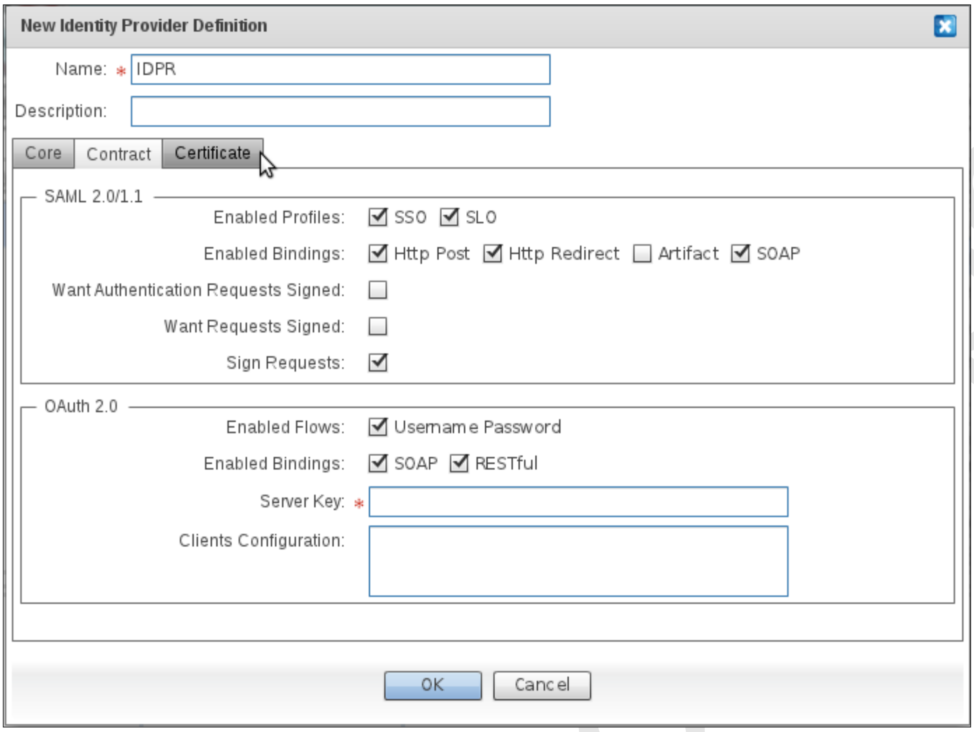
Authentication Assertion Emission Policy: Default

Federated User ID: Principal

Session Timeout (mm): * 30

Ignore Requested User ID Type: ☑

Picture.124 Create Identity Provider for Cloud



New Identity Provider Definition

Name: * IDPR

Description:

SAML 2.0/1.1

Enabled Profiles: ☑ SSO ☑ SLO

Enabled Bindings: ☑ Http Post ☑ Http Redirect □ Artifact ☑ SOAP

Want Authentication Requests Signed: □

Want Requests Signed: □

Sign Requests: ☑

OAuth 2.0

Enabled Flows: ☑ Username Password

Enabled Bindings: ☑ SOAP ☑ RESTful

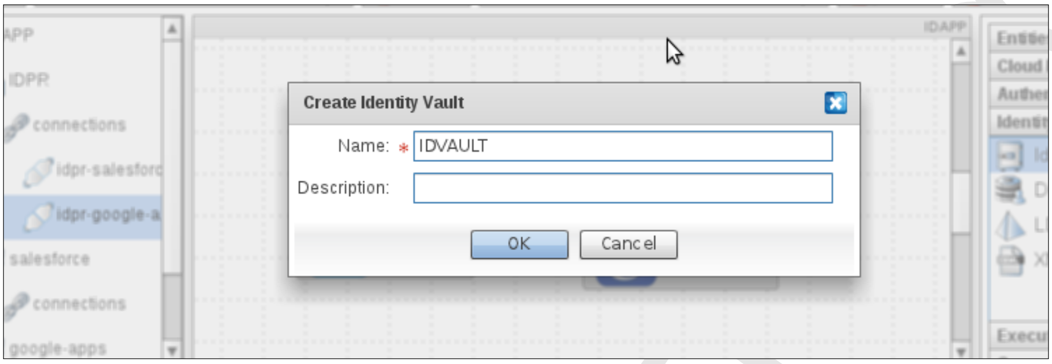
Server Key: *

Clients Configuration:

Picture.125 Identity Provider Contact tab for Cloud

Step 3

Create the Identity Vault.



Create Identity Vault

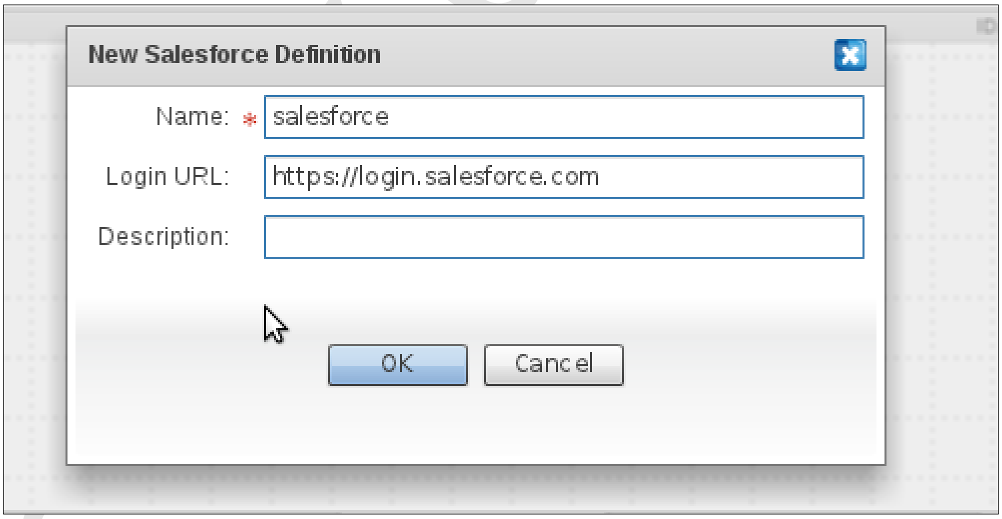
Name: * IDVAULT

Description:

Picture.126 Create Identity Vault for Cloud

Step 4

Create the Salesforce Entity.



New Salesforce Definition

Name: * salesforce

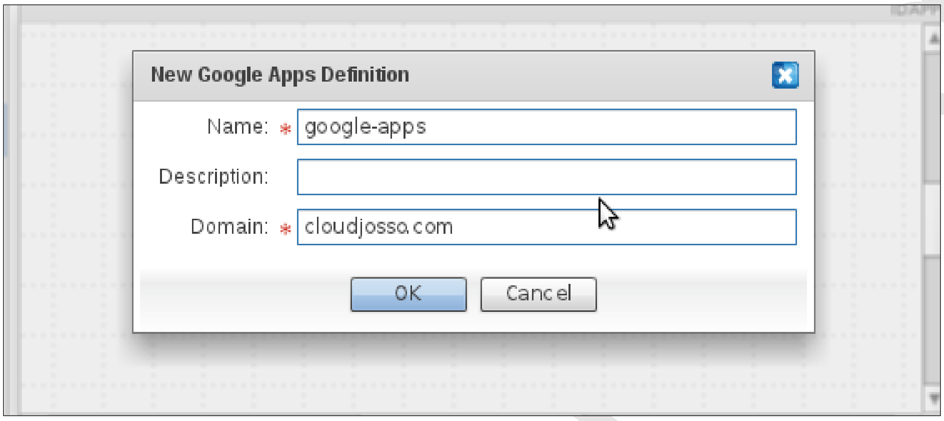
Login URL: https://login.salesforce.com

Description:

Picture.127 Create Salesforce Entity

Step 5

Create Google app Entity.



New Google Apps Definition

Name: * google-apps

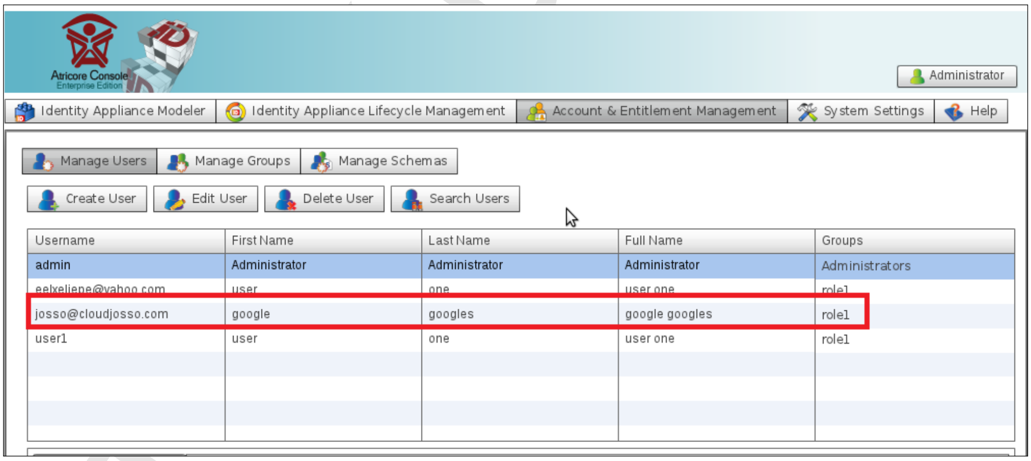
Description:

Domain: * cloudjosso.com

Picture.128 Create Google app Entity

Step 6

Create the user josso@cloudjosso.com which is belongs in the role 1 Group.

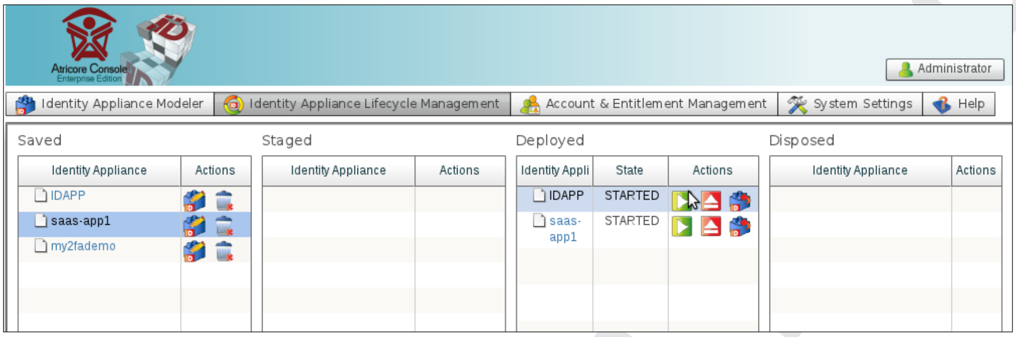


Username	First Name	Last Name	Full Name	Groups
admin	Administrator	Administrator	Administrator	Administrators
eelxeliene@yahoo.com	user	one	user one	role1
josso@cloudjosso.com	google	googles	google googles	role1
user1	user	one	user one	role1

Picture.129 Create the user josso@cloudjosso.com

Step 7

Start executing the Identity Appliance.


Atricore Console
Enterprise Edition
Administrator
Identity Appliance Modeler
Identity Appliance Lifecycle Management
Account & Entitlement Management
System Settings
Help

Saved

Identity Appliance	Actions
IDAPP	
saas-app1	
my2fademo	

Staged

Identity Appliance	Actions

Deployed

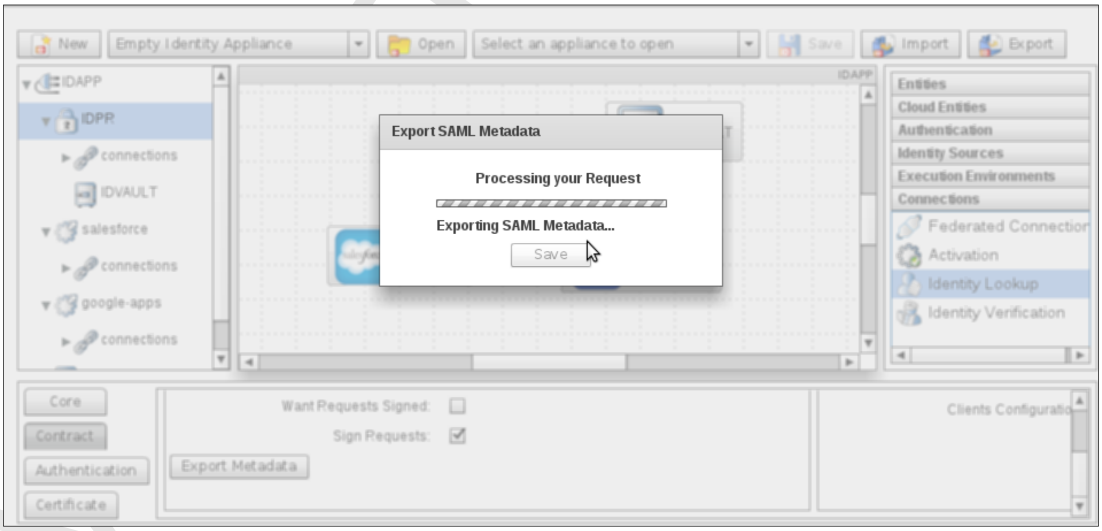
Identity Appli	State	Actions
IDAPP	STARTED	
saas-app1	STARTED	

Disposed

Identity Appliance	Actions

Picture.130 Start Running the Identity Appliance

As the Identity Appliance is ready and it is running the next step is to configure Google Apps and Salesforce to work as Single-Sign On environment. Before logging in Google apps and Salesforce in order to make the configurations, we have to save the Identity Provider certification which is in pem format and the metadata file which is in xml format and contains all the links that will be needed to complete the configuration for the single sign on.



Export SAML Metadata

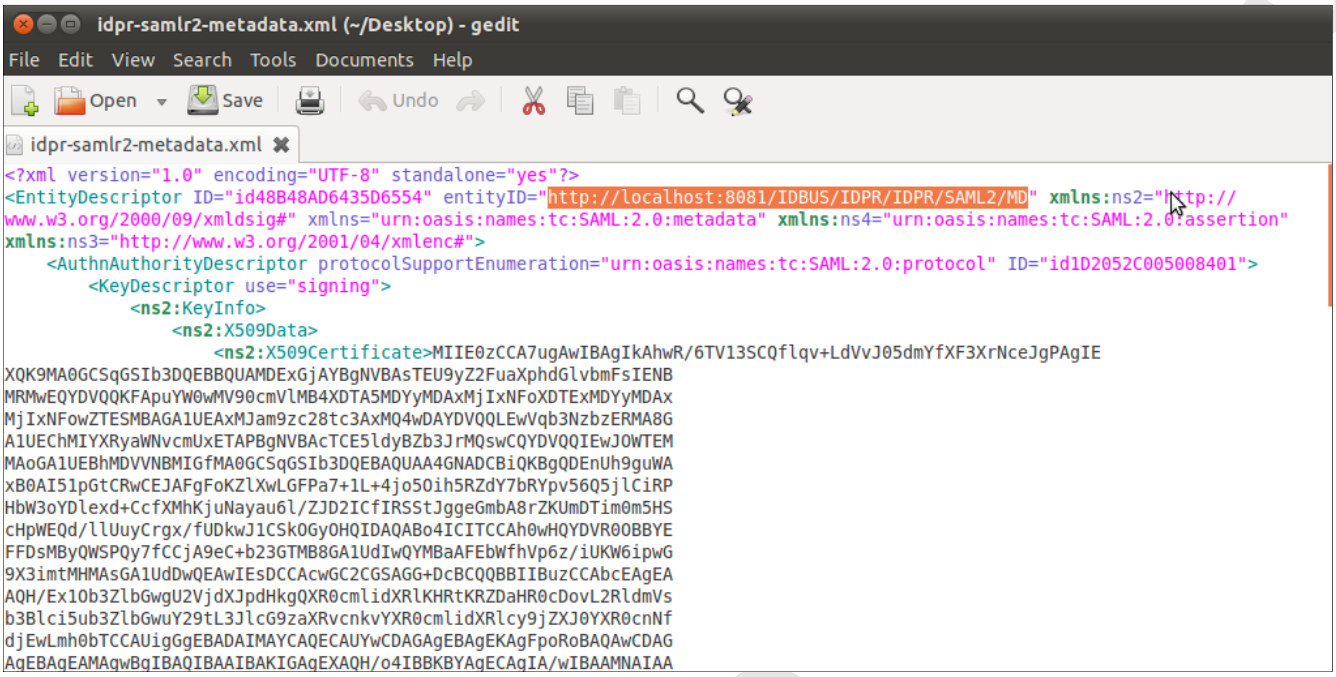
Processing your Request

Exporting SAML Metadata...

Want Requests Signed: ☐

Sign Requests: ☑

Picture.131 Certification


idpr-samlr2-metadata.xml (~/Desktop) - gedit
File Edit View Search Tools Documents Help
Open
Save
Undo
idpr-samlr2-metadata.xml

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<EntityDescriptor ID="id48B48AD6435D6554" entityID="http://localhost:8081/IDBUS/IDPR/IDPR/SAML2/MD" xmlns:ns2="http://
www.w3.org/2000/09/xmldsig#" xmlns="urn:oasis:names:tc:SAML:2.0:metadata" xmlns:ns4="urn:oasis:names:tc:SAML:2.0:assertion"
xmlns:ns3="http://www.w3.org/2001/04/xmlenc#">
    <AuthnAuthorityDescriptor protocolSupportEnumeration="urn:oasis:names:tc:SAML:2.0:protocol" ID="id1D2052C005008401">
        <KeyDescriptor use="signing">
            <ns2:KeyInfo>
                <ns2:X509Data>
                    <ns2:X509Certificate>MIIE0zCCA7ugAwIBAgIkAhwR/6TV13SCQflqv+LdVvJ05dmYfXF3XrNceJgPAgIE
XQK9MA0GCSqGSIb3DQEBBQUAMDExGjAYBgNVBAsTEU9yZ2FuaXphdGlvbmFsIENB
MRMwEQYDVQQKFApuYW0wMV90cmVlMB4XDTA5MDYyMDAxMjIxNFoXDTExMDYyMDAx
MjIxNFowZTESMBAGA1UEAxMJam9zc28tc3AxMQ4wDAYDVQQLEwVqb3NzbzERMA8G
A1UEChMIYXRyaWNvcmUxETAPBgNVBAcTCE5ldyBZb3JrMQswCQYDVQQIEwJOWTEM
MAoGA1UEBhMDVVNBMIGfMA0GCSqGSIb3DQEBAQUAA4GNADCBiQKBgQDEnUh9guWA
xB0AI51pGtCRwCEJAFgFoKZlXwLGFPa7+1L+4jo5Oih5RZdY7bRYpv56Q5jlCiRP
HbW3oYDlexd+CcfXMhKjuNayau6l/ZJD2ICfIRSStJggeGmbA8rZKUmDTim0m5HS
cHpWEQd/llUuyCrgx/fUDkwJ1CSkOGyOHQIDAQABo4ICITCCAh0wHQYDVR0OBBYE
FFDsMByQWSPQy7fCCjA9eC+b23GTMB8GA1UdIwQYMBaAFEbWfhVp6z/iUKW6ipwG
9X3imtMHMAsGA1UdDwQEAwIEsDCCAcwGC2CGSAGG+DcBCQQBBIIBuzCCAbcEAgEA
AQH/Ex1Ob3ZlbGwgU2VjdXJpdHkgQXR0cmlidXRlKHRtKRZDaHR0cDovL2RldmVs
b3Blci5ub3ZlbGwuY29tL3JlcG9zaXRvcnkvYXR0cmlidXRlcy9jZXJ0YXR0cnNf
djEwLmh0bTCCAUigGgEBADAIMAYCAQECAUYwCDAGAgEBAgEKAgFpoRoBAQAwCDAG
AgEBAgEAMAgwBgIBAQIBAAIBAKIGAgEXAQH/o4IBBKBYAgECAgIA/wIBAAMNAIAA
```

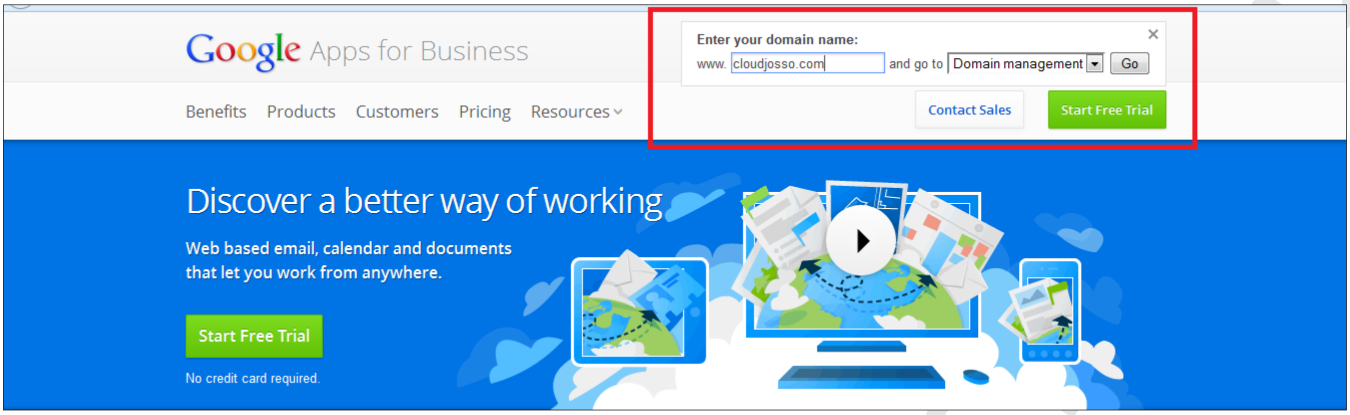
Picture.132 Entity ID

Both files are in Josso Identity Provider. To begin with, Identity Provider certification it is located in certification tab and metadata is located in contract tab. As we have those files we have all the information we need to make the configuration.

Firstly it will be described the configuration of **Google apps** with 6 steps:

Step 1

Login in Google app application (http://www.google.com/enterprise/apps/business)

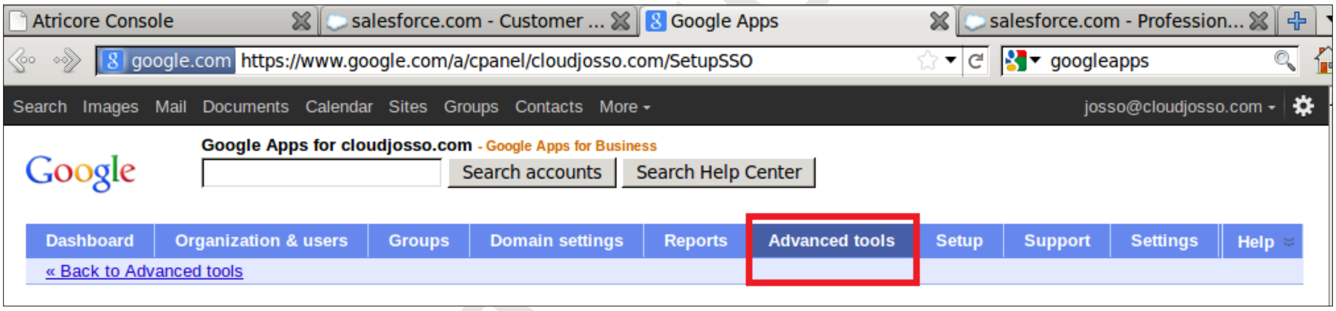


Enter your domain name:
www. cloudjosso.com and go to Domain management

Picture.133 Login in Google app Application

Step 2

Click on Advanced tools menu

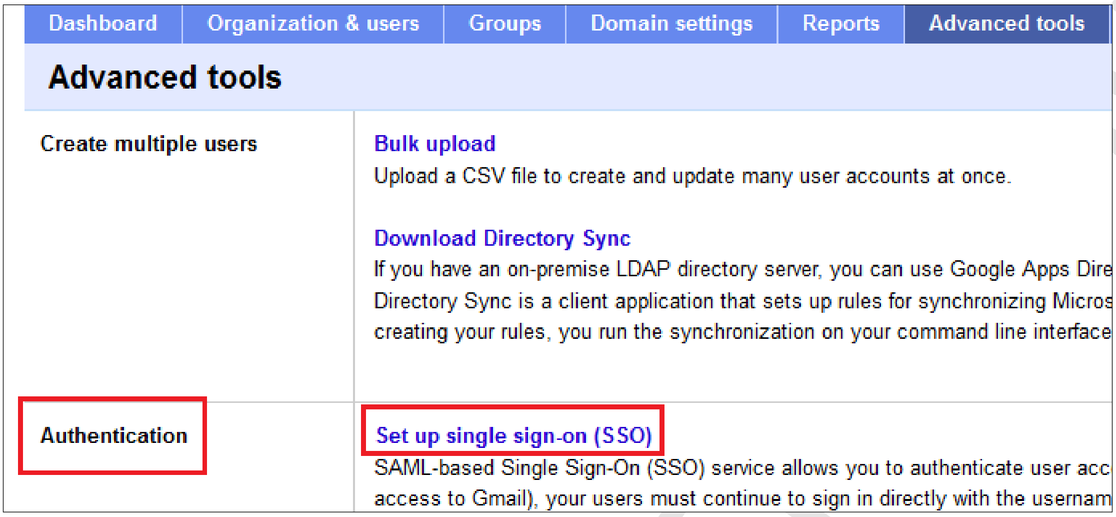


https://www.google.com/a/cpanel/cloudjosso.com/SetupSSO

Picture.134 Advanced Tools Menu

Step 3

Click on Set up Single Sign-On (SSO) option which is on Authentication category



Advanced tools

Create multiple users

Bulk upload
Upload a CSV file to create and update many user accounts at once.

Download Directory Sync
If you have an on-premise LDAP directory server, you can use Google Apps Dire
Directory Sync is a client application that sets up rules for synchronizing Micros
creating your rules, you run the synchronization on your command line interface

Authentication

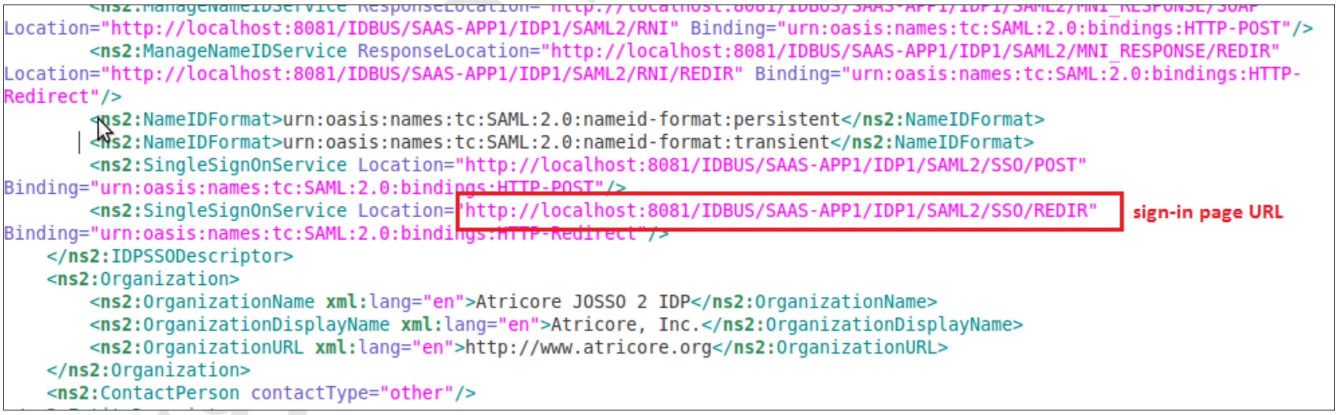
Set up single sign-on (SSO)
SAML-based Single Sign-On (SSO) service allows you to authenticate user acc
access to Gmail), your users must continue to sign in directly with the usernam

Picture.135 Set up Single Sign-On

Step 4

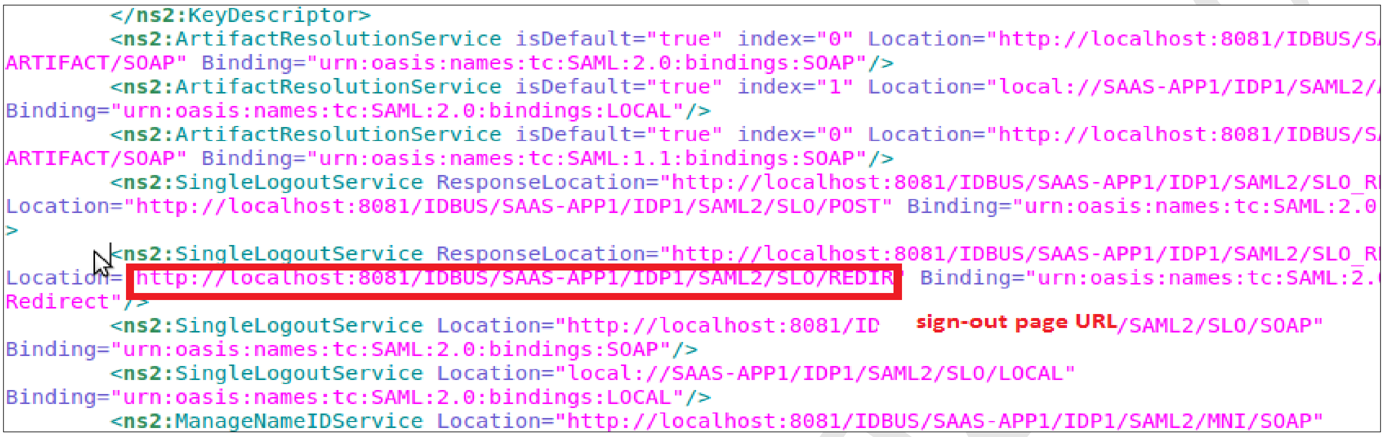
Click on Enable Single Sign-On option and then complete the Sing-in page URL, Sing-out page URL and check the option use a domain specific issuer.

The URL that it is needed is on the metadata file as it is illustrated in the following pictures.



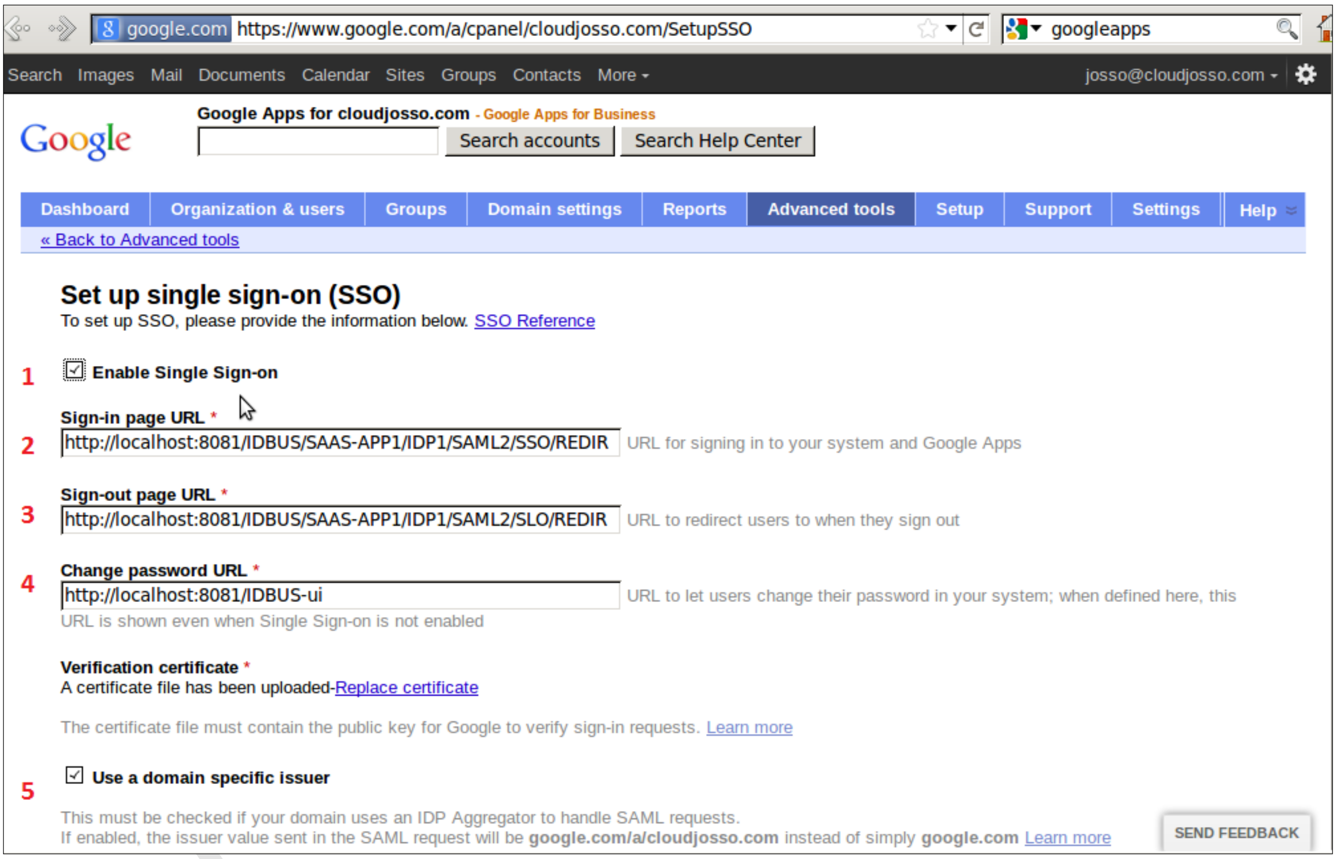
```
        <ns2:ManageNameIDService ResponseLocation="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/MNI_RESPONSE/SOAP"
Location="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/RNI" Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"/>
        <ns2:ManageNameIDService ResponseLocation="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/MNI_RESPONSE/REDIR"
Location="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/RNI/REDIR" Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-
Redirect"/>
        <ns2:NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:persistent</ns2:NameIDFormat>
        <ns2:NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:transient</ns2:NameIDFormat>
        <ns2:SingleSignOnService Location="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/SSO/POST"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"/>
        <ns2:SingleSignOnService Location="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/SSO/REDIR"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"/>
    </ns2:IDPSSODescriptor>
    <ns2:Organization>
        <ns2:OrganizationName xml:lang="en">Atricore JOSSO 2 IDP</ns2:OrganizationName>
        <ns2:OrganizationDisplayName xml:lang="en">Atricore, Inc.</ns2:OrganizationDisplayName>
        <ns2:OrganizationURL xml:lang="en">http://www.atricore.org</ns2:OrganizationURL>
    </ns2:Organization>
    <ns2:ContactPerson contactType="other"/>
```

Picture.136 Metadata



```
        </ns2:KeyDescriptor>
        <ns2:ArtifactResolutionService isDefault="true" index="0" Location="http://localhost:8081/IDBUS/S
ARTIFACT/SOAP" Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"/>
        <ns2:ArtifactResolutionService isDefault="true" index="1" Location="local://SAAS-APP1/IDP1/SAML2/
Binding="urn:oasis:names:tc:SAML:2.0:bindings:LOCAL"/>
        <ns2:ArtifactResolutionService isDefault="true" index="0" Location="http://localhost:8081/IDBUS/S
ARTIFACT/SOAP" Binding="urn:oasis:names:tc:SAML:1.1:bindings:SOAP"/>
        <ns2:SingleLogoutService ResponseLocation="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/SLO_R
Location="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/SLO/POST" Binding="urn:oasis:names:tc:SAML:2.0
>
        <ns2:SingleLogoutService ResponseLocation="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/SLO_R
Location="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/SLO/REDIR" Binding="urn:oasis:names:tc:SAML:2.
Redirect"/>
        <ns2:SingleLogoutService Location="http://localhost:8081/ID          /SAML2/SLO/SOAP"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"/>
        <ns2:SingleLogoutService Location="local://SAAS-APP1/IDP1/SAML2/SLO/LOCAL"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:LOCAL"/>
        <ns2:ManageNameIDService Location="http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/MNI/SOAP"
```

Picture.137 Sign-out Page URL



Google Apps for cloudjosso.com - Google Apps for Business

Search accounts | Search Help Center

« Back to Advanced tools

Set up single sign-on (SSO)

To set up SSO, please provide the information below. SSO Reference

☑ Enable Single Sign-on

Sign-in page URL *
http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/SSO/REDIR URL for signing in to your system and Google Apps

Sign-out page URL *
http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/SLO/REDIR URL to redirect users to when they sign out

Change password URL *
http://localhost:8081/IDBUS-ui URL to let users change their password in your system; when defined here, this URL is shown even when Single Sign-on is not enabled

Verification certificate *
A certificate file has been uploaded-Replace certificate

The certificate file must contain the public key for Google to verify sign-in requests. Learn more

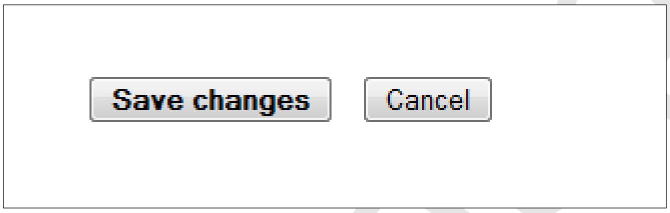
☑ Use a domain specific issuer

This must be checked if your domain uses an IDP Aggregator to handle SAML requests.
If enabled, the issuer value sent in the SAML request will be **google.com/a/cloudjosso.com** instead of simply **google.com** Learn more

Picture.138 Set up Sign-out

Step 5

Click on save change button



Picture.139 Save Changes Button

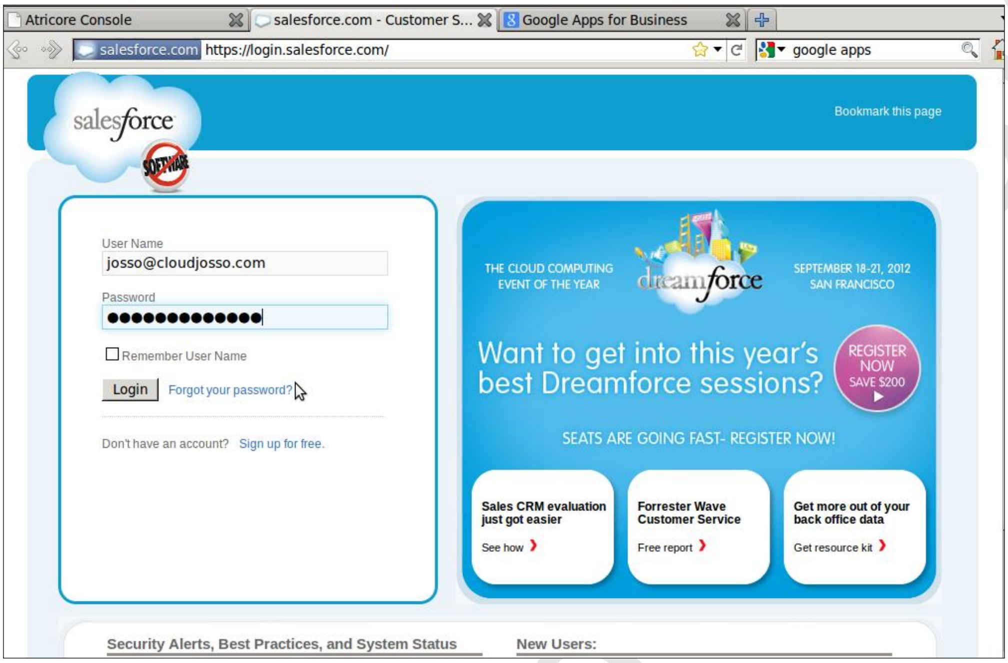
Step 6

Logout of the application

In the same way is configured the Salesforce application.

Step 1

Login in Salesforce application (https://login.salesforce.com/?locale=eu)


Atricore Console
salesforce.com - Customer S...
Google Apps for Business
salesforce.com https://login.salesforce.com/
google apps
salesforce
Bookmark this page
Login
Forgot your password?
Don't have an account? Sign up for free.
THE CLOUD COMPUTING EVENT OF THE YEAR
dreamforce
SEPTEMBER 18-21, 2012 SAN FRANCISCO
Want to get into this year's best Dreamforce sessions?
REGISTER NOW SAVE $200
SEATS ARE GOING FAST- REGISTER NOW!
Sales CRM evaluation just got easier
See how
Forrester Wave Customer Service
Free report
Get more out of your back office data
Get resource kit
Security Alerts, Best Practices, and System Status
New Users:

User Name
josso@cloudjosso.com

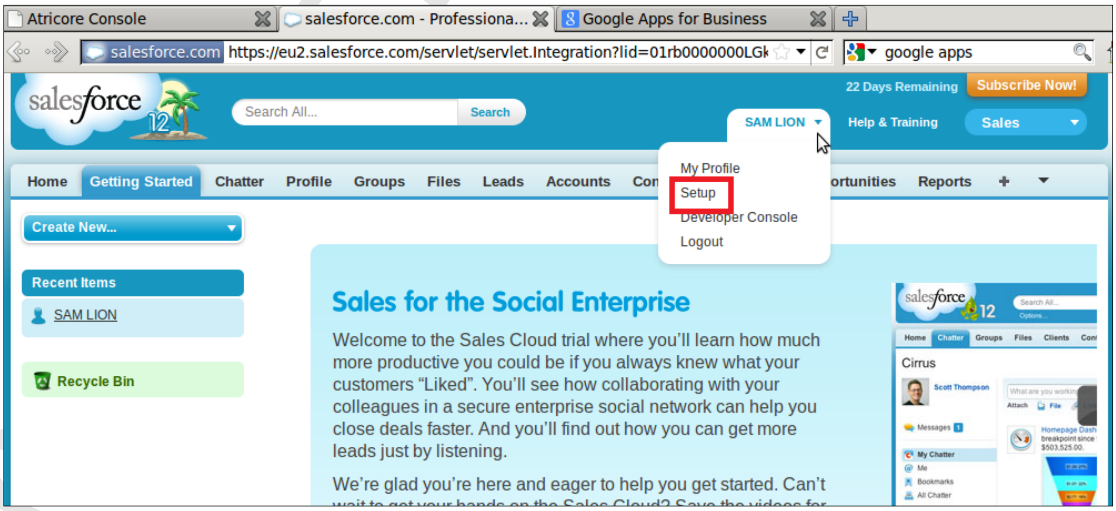
Password
●●●●●●●●●●●●●

☐ Remember User Name

Picture.140 Login in Salesforce Application

Step 2

Click on set up option



Sales for the Social Enterprise

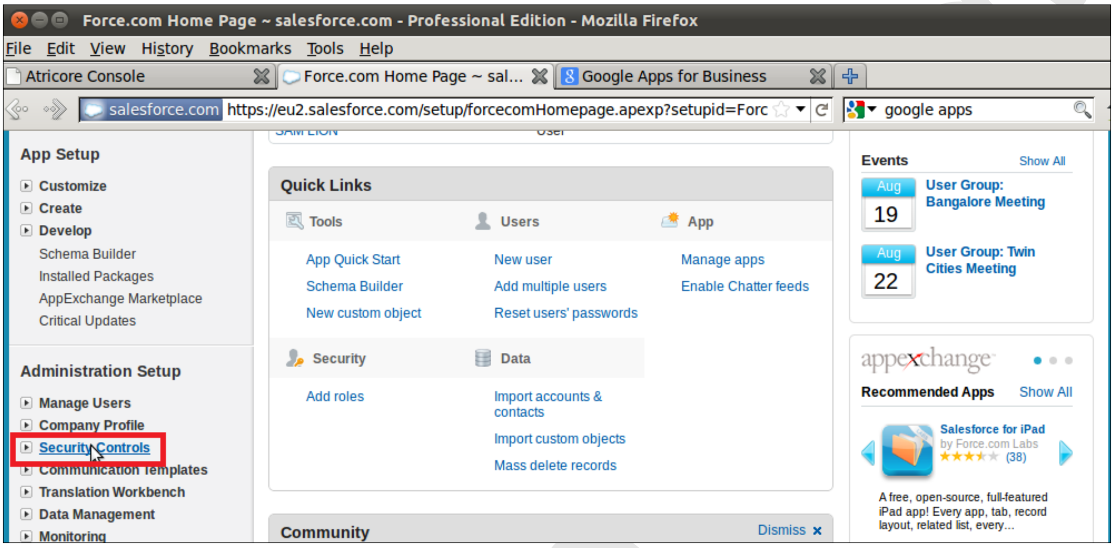
Welcome to the Sales Cloud trial where you'll learn how much more productive you could be if you always knew what your customers "Liked". You'll see how collaborating with your colleagues in a secure enterprise social network can help you close deals faster. And you'll find out how you can get more leads just by listening.

We're glad you're here and eager to help you get started. Can't

Picture.141 Setup Salesforce

Step 3

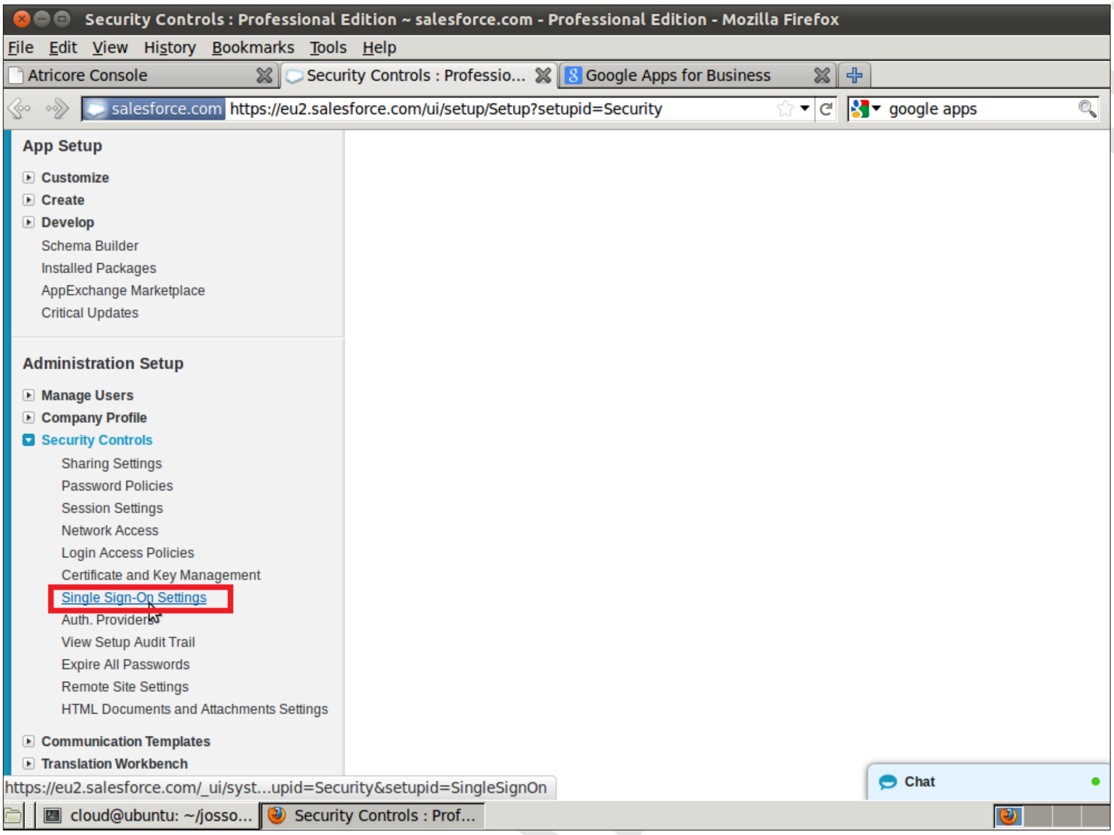
Click on Security controls options which are on Administration set up category.



Picture.142 Security Controls on Salesforce

Step 4

Click on Single Sign-On Setting option.



Security Controls : Professional Edition ~ salesforce.com - Professional Edition - Mozilla Firefox

https://eu2.salesforce.com/ui/setup/Setup?setupid=Security

App Setup
- Customize
- Create
- Develop
  - Schema Builder
  - Installed Packages
  - AppExchange Marketplace
  - Critical Updates

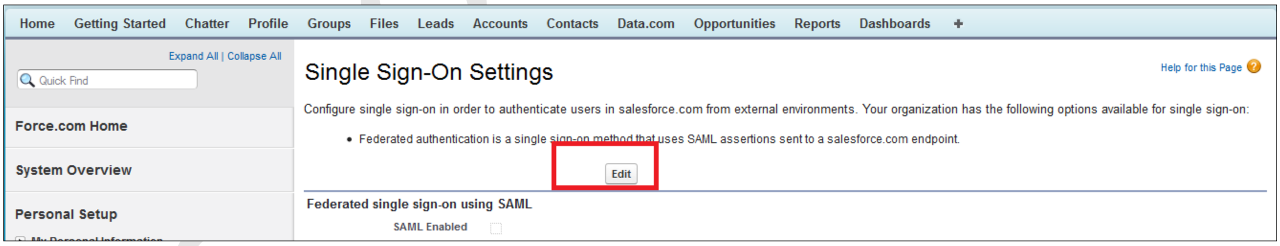
Administration Setup
- Manage Users
- Company Profile
- Security Controls
  - Sharing Settings
  - Password Policies
  - Session Settings
  - Network Access
  - Login Access Policies
  - Certificate and Key Management
  - Single Sign-On Settings
  - Auth. Providers
  - View Setup Audit Trail
  - Expire All Passwords
  - Remote Site Settings
  - HTML Documents and Attachments Settings
- Communication Templates
- Translation Workbench

https://eu2.salesforce.com/_ui/syst...upid=Security&setupid=SingleSignOn

Picture.143 Single Sign-On Setting Option on Salesforce

Step 5

Click Edit Button.



Single Sign-On Settings

Configure single sign-on in order to authenticate users in salesforce.com from external environments. Your organization has the following options available for single sign-on:

- Federated authentication is a single sign-on method that uses SAML assertions sent to a salesforce.com endpoint.

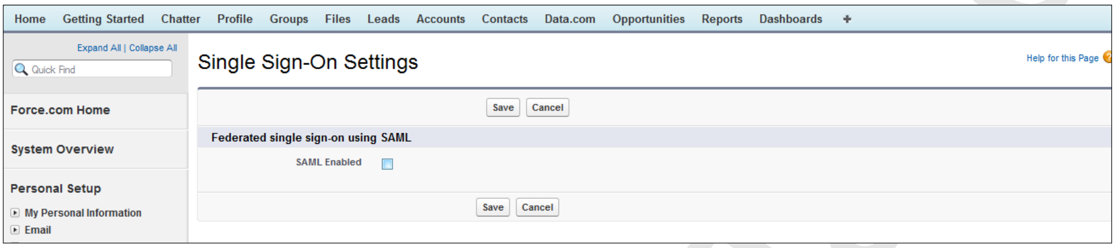
Federated single sign-on using SAML

SAML Enabled □

Picture.144 Edit Button

Step 6

Check SAML Enabled option.



Single Sign-On Settings

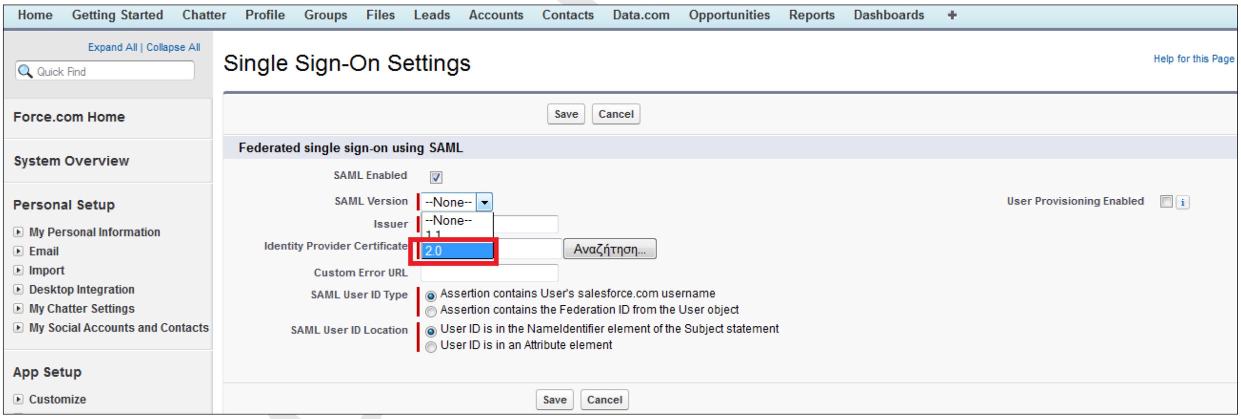
Federated single sign-on using SAML

SAML Enabled □

Picture.145 SAML Enabled Button

Step 7

Choose SAML Version 2.0 from the list.



Single Sign-On Settings

Federated single sign-on using SAML

SAML Enabled ☑

SAML Version --None-- (--None--, 1.1, 2.0)

User Provisioning Enabled □

Issuer

Identity Provider Certificate

Custom Error URL

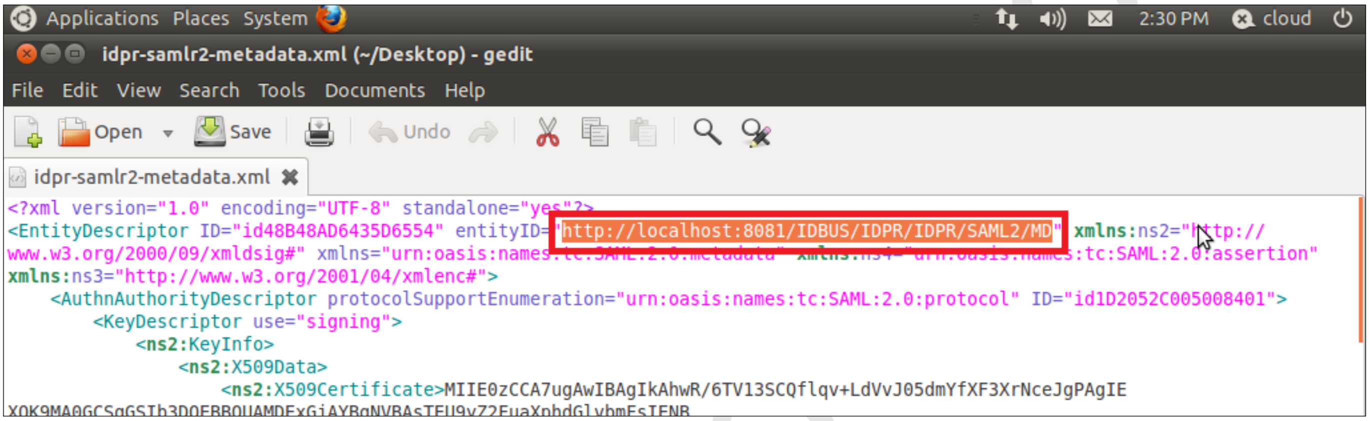
SAML User ID Type ● Assertion contains User's salesforce.com username ○ Assertion contains the Federation ID from the User object

SAML User ID Location ● User ID is in the NameIdentifier element of the Subject statement ○ User ID is in an Attribute element

Picture.146 SAML Version

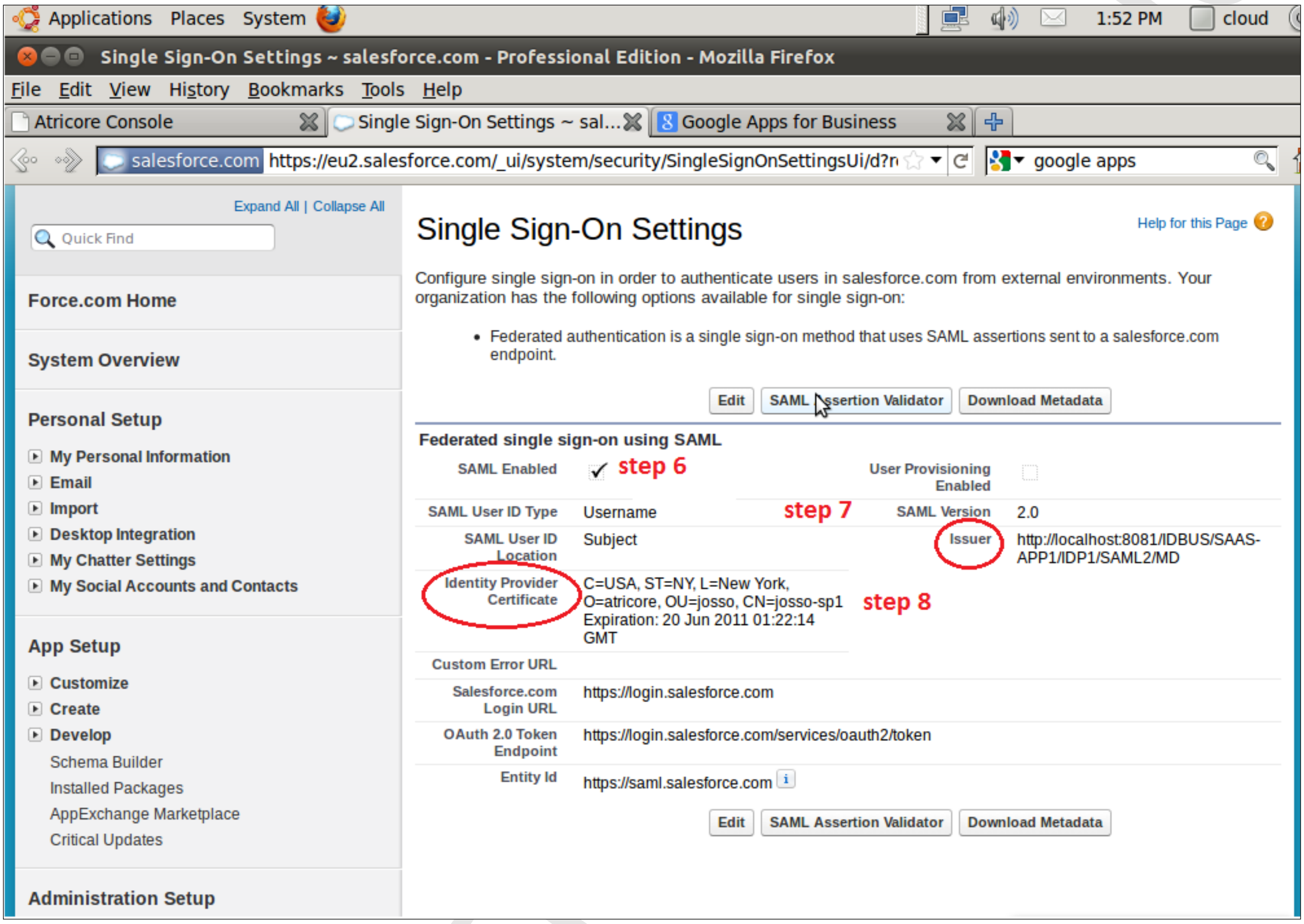
Step 8

Click Choose file button and attach the Identity Provider certification file and in issuer option fill in the link from metadata file as it is illustrated in the following picture.


Applications Places System
2:30 PM cloud
idpr-samlr2-metadata.xml (~/Desktop) - gedit
File Edit View Search Tools Documents Help
Open
Save
Undo
idpr-samlr2-metadata.xml

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<EntityDescriptor ID="id48B48AD6435D6554" entityID="http://localhost:8081/IDBUS/IDPR/IDPR/SAML2/MD" xmlns:ns2="http://
www.w3.org/2000/09/xmldsig#" xmlns="urn:oasis:names:tc:SAML:2.0:metadata" xmlns:ns4="urn:oasis:names:tc:SAML:2.0:assertion"
xmlns:ns3="http://www.w3.org/2001/04/xmlenc#">
    <AuthnAuthorityDescriptor protocolSupportEnumeration="urn:oasis:names:tc:SAML:2.0:protocol" ID="id1D2052C005008401">
        <KeyDescriptor use="signing">
            <ns2:KeyInfo>
                <ns2:X509Data>
                    <ns2:X509Certificate>MIIE0zCCA7ugAwIBAgIkAhwR/6TV13SCQflqv+LdVvJ05dmYfXF3XrNceJgPAgIE
XOK9MA0GCSqGSIb3DQEBBQUAMDExGjAYBgNVBAsTEU9vZ2FuaXphdGlvbmFsIENB
```

Picture.147 Identity Provider Certification



Single Sign-On Settings

Configure single sign-on in order to authenticate users in salesforce.com from external environments. Your organization has the following options available for single sign-on:

- Federated authentication is a single sign-on method that uses SAML assertions sent to a salesforce.com endpoint.

Federated single sign-on using SAML

SAML Enabled	✓	User Provisioning Enabled	□
SAML User ID Type	Username	SAML Version	2.0
SAML User ID Location	Subject	Issuer	http://localhost:8081/IDBUS/SAAS-APP1/IDP1/SAML2/MD
Identity Provider Certificate	C=USA, ST=NY, L=New York, O=atricore, OU=josso, CN=josso-sp1 Expiration: 20 Jun 2011 01:22:14 GMT		
Custom Error URL			
Salesforce.com Login URL	https://login.salesforce.com		
OAuth 2.0 Token Endpoint	https://login.salesforce.com/services/oauth2/token		
Entity Id	https://saml.salesforce.com		

Picture.148 Single Sign On Salesforce

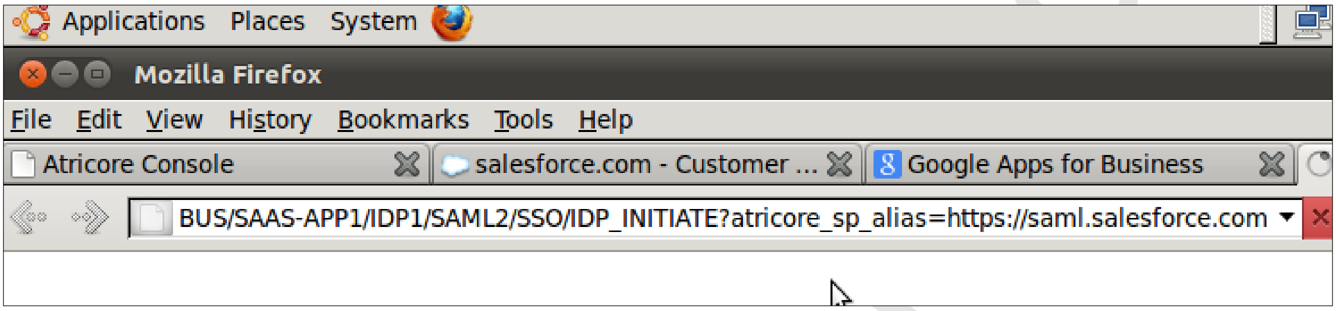
Step 9

Click “Save” button.

Step 10

Logout from the application.

As the applications have been configured it is time to try the Single Sign-On technology. To do that, a new tab on Firefox is opened and it is typed the following URL: *http://localhost:8081/IDBUS/IDPR/SAML2/SSOINITIATE?atricore_sp_alias=https://saml.salesforce.com*

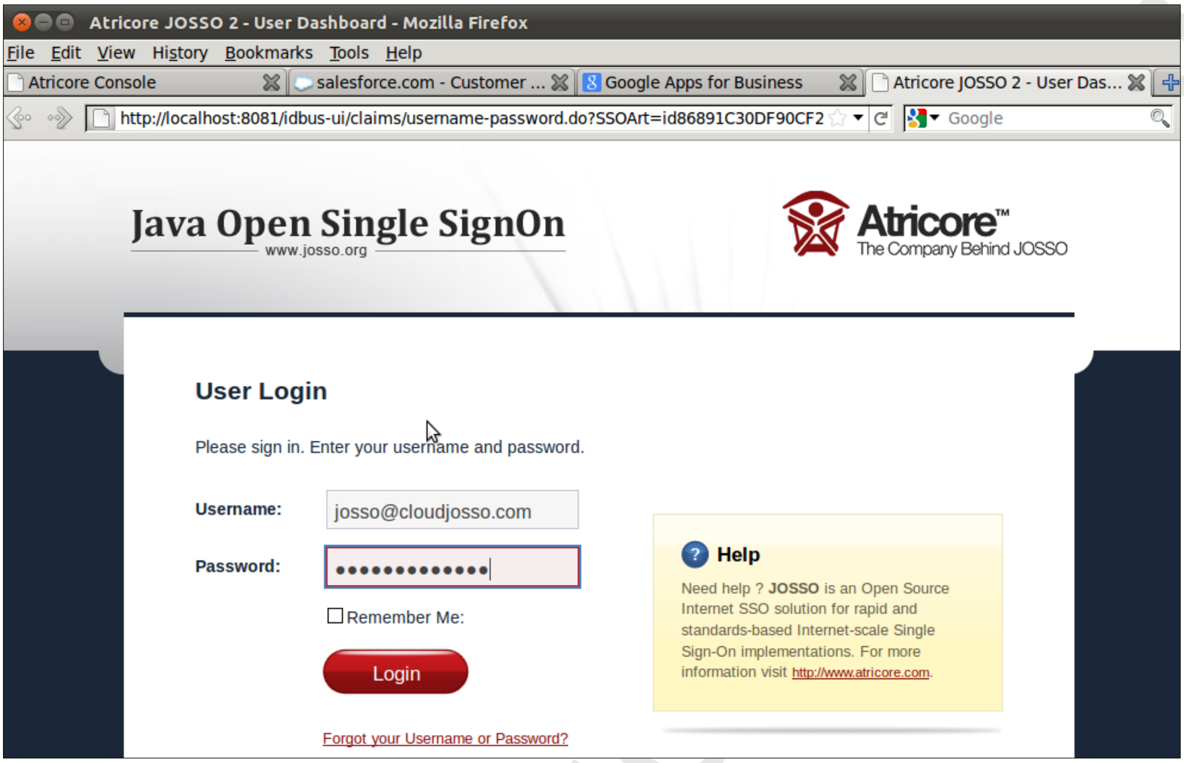

Applications Places System
Mozilla Firefox
File Edit View History Bookmarks Tools Help
Atricore Console
salesforce.com - Customer ...
Google Apps for Business

BUS/SAAS-APP1/IDP1/SAML2/SSO/IDP_INITIATE?atricore_sp_alias=https://saml.salesforce.com

Picture.149 URL

Then it will load the page to login to JOSSO2 E.E as illustrated in Picture: 150

In this page we login with the username and password of the JOSSO user that it had been created in Identity Vault in JOSSO2 E.E. After login button is clicked, it automatically redirects the user in the Salesforce application.


Atricore JOSSO 2 - User Dashboard - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Atricore Console
salesforce.com - Customer ...
Google Apps for Business
Atricore JOSSO 2 - User Das...
Google
Java Open Single SignOn
www.josso.org
Atricore™
The Company Behind JOSSO
Login

http://localhost:8081/idbus-ui/claims/username-password.do?SSOArt=id86891C30DF90CF2

User Login

Please sign in. Enter your username and password.

Username: josso@cloudjosso.com

Password: •••••••••••••

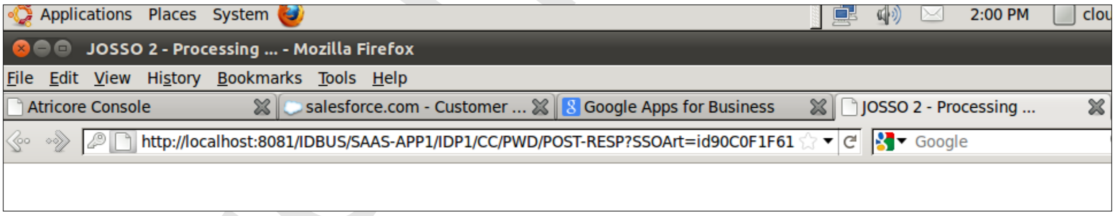
□ Remember Me:

Forgot your Username or Password?

Help

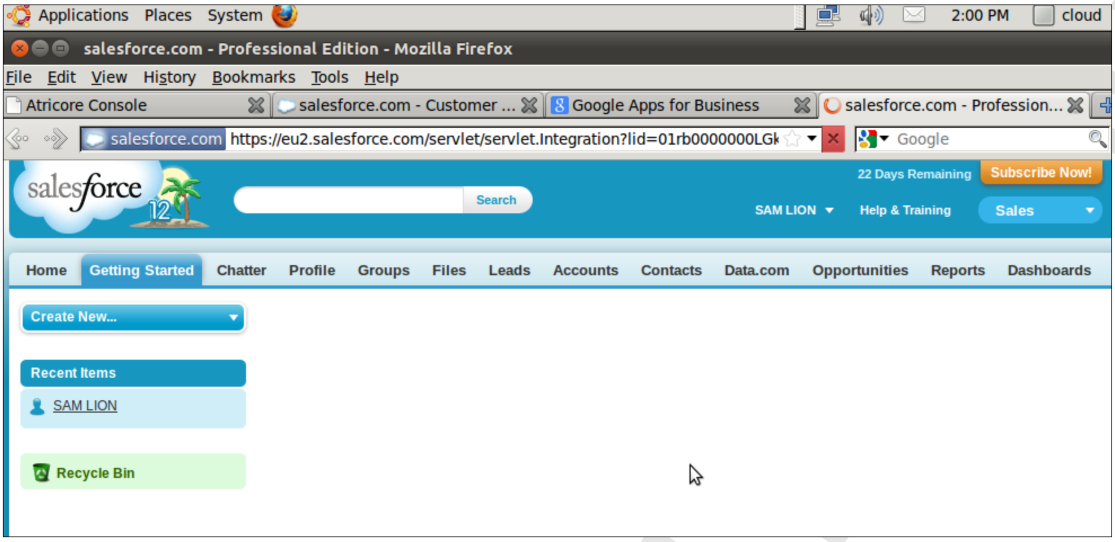
Need help ? **JOSSO** is an Open Source Internet SSO solution for rapid and standards-based Internet-scale Single Sign-On implementations. For more information visit http://www.atricore.com.

Picture.150 Login Page


Applications Places System
2:00 PM
clou
JOSSO 2 - Processing ... - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Atricore Console
salesforce.com - Customer ...
Google Apps for Business
JOSSO 2 - Processing ...
Google

http://localhost:8081/IDBUS/SAAS-APP1/IDP1/CC/PWD/POST-RESP?SSOArt=id90C0F1F61

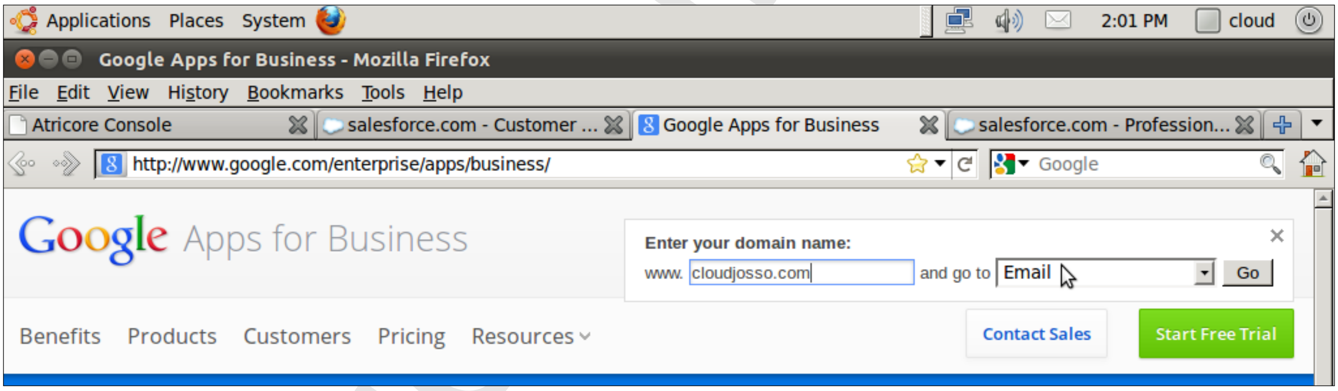
Picture.151 JOSSO Processing



https://eu2.salesforce.com/servlet/servlet.Integration?lid=01rb0000000LGk

Picture.152 Login on Salesforce

After that step, we will try to access Google Apps, so we open a new tab in Firefox and choose to open the email account.



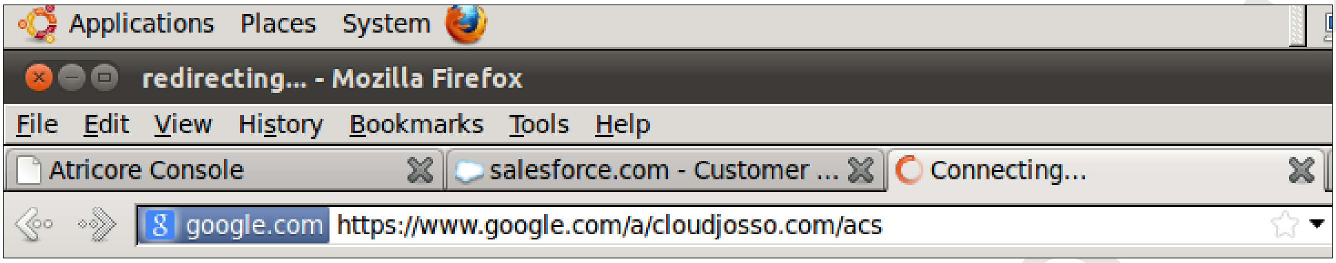
Applications Places System
2:01 PM cloud
Google Apps for Business - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Atricore Console
salesforce.com - Customer ...
Google Apps for Business
salesforce.com - Profession...
Google
Google Apps for Business
Go
Benefits
Products
Customers
Pricing
Resources
Contact Sales
Start Free Trial

http://www.google.com/enterprise/apps/business/

Enter your domain name:
www. cloudjosso.com and go to Email

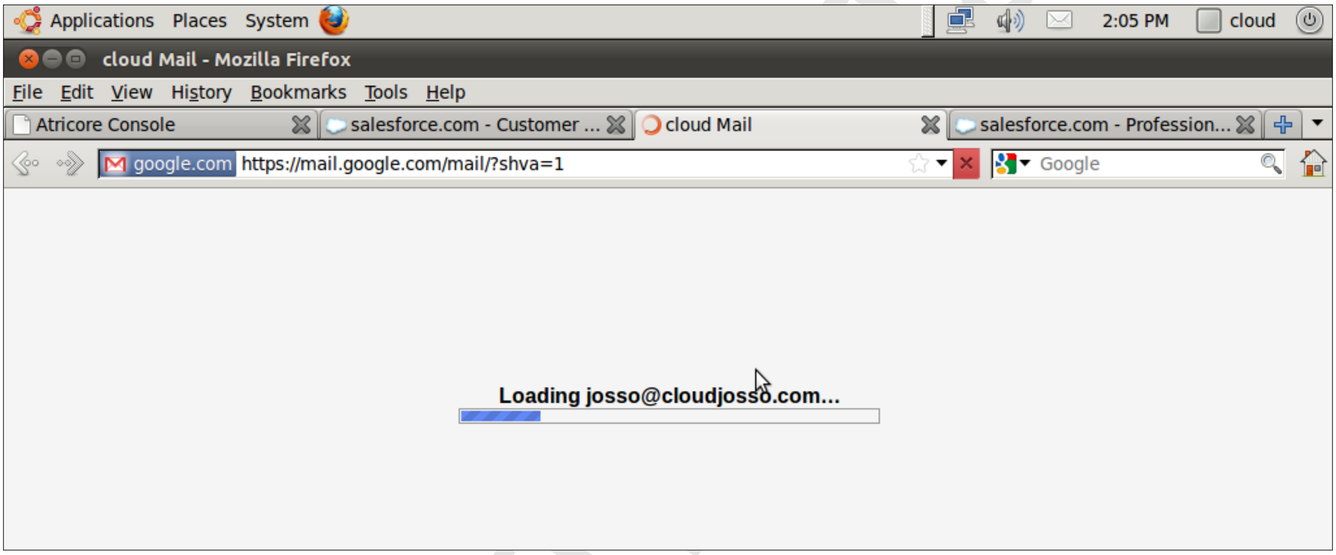
Picture.153 Login in Google apps

As we click on Go button we automatically have access in Google Apps without filling in the username and password.


Applications Places System
redirecting... - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Atricore Console
salesforce.com - Customer ...
Connecting...
google.com

https://www.google.com/a/cloudjosso.com/acs

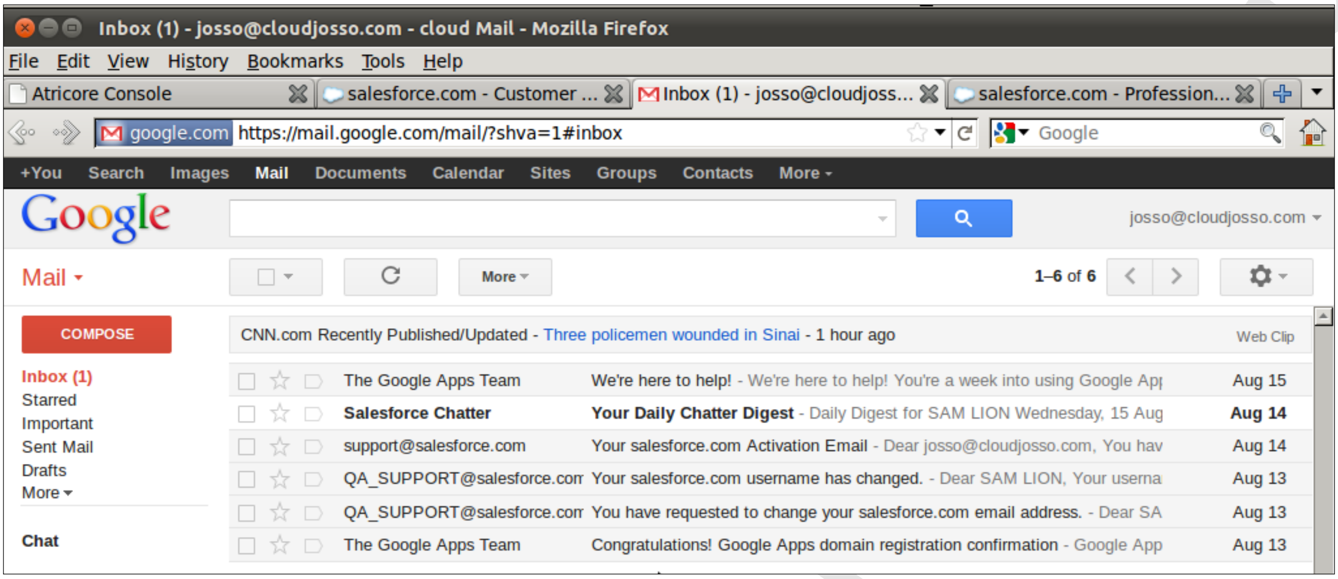
Picture.154 Automatically Login


Applications Places System
2:05 PM cloud
cloud Mail - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Atricore Console
salesforce.com - Customer ...
cloud Mail
salesforce.com - Profession...
google.com
Google

https://mail.google.com/mail/?shva=1

Loading josso@cloudjosso.com...

Picture.155 Login on Cloud mail



Inbox (1) - josso@cloudjosso.com - cloud Mail - Mozilla Firefox

https://mail.google.com/mail/?shva=1#inbox

josso@cloudjosso.com

1–6 of 6

CNN.com Recently Published/Updated - Three policemen wounded in Sinai - 1 hour ago

The Google Apps Team	We're here to help! - We're here to help! You're a week into using Google Ap	Aug 15
Salesforce Chatter	**Your Daily Chatter Digest** - Daily Digest for SAM LION Wednesday, 15 Aug	**Aug 14**
support@salesforce.com	Your salesforce.com Activation Email - Dear josso@cloudjosso.com, You hav	Aug 14
QA_SUPPORT@salesforce.com	Your salesforce.com username has changed. - Dear SAM LION, Your userna	Aug 13
QA_SUPPORT@salesforce.com	You have requested to change your salesforce.com email address. - Dear SA	Aug 13
The Google Apps Team	Congratulations! Google Apps domain registration confirmation - Google App	Aug 13

Picture.156 Gmail

25. Two-Factor Authentication with WiKID

JOSSO2 Enterprise Edition, by default authenticates a user by username and password, although we can choose to use a two factor authentication using WiKID Authentication System. WiKID Strong Authentication System consists of three parts: the WiKID server, the WiKID token client and a network client. The WiKID server is written in Java.

If we want to use WiKID Authentication System in JOSSO2 Enterprise Edition we have to create an Identity Appliance which consists of an Identity Provider and at least two Service Providers, which will be connected with Identity Provider through Federation connection. Furthermore, each Service Provider will use an execution environment like Apache Tomcat or JBoss. Additionally, we will use an Identity Vault which will be connected to the Identity Provider.

In order to use WiKID Authentication System we have to configure first the WiKID Authentication System and then to connected it with JOSSO2 through the Diagram Canvas.

The configuration of WiKID Authentication System is described with the following steps:

Step 1

We download the WiKID Server .deb file from http://www.wikidsystems.com/ and the Software Token Clients.

Step 2

We have to install prerequisite programs with the following Linux commands:

- sudo apt-get install yum
- sudo apt-get install
- ln -s /usr/lib/jvm/java-6-openjdk/jre/bin/keytouls
- export JAVA_HOME=/usr/lib/jvm/java-6-openjdk/
- sudo dpkg -i wikid-server-xxx.deb
- sudo apt-get install postgresql openjdk-6-jdk openjdk-6-jre openssl libwww-perl sudo locate ntpdate

After we have installed WiKID Server we type the following command to continue with the setup

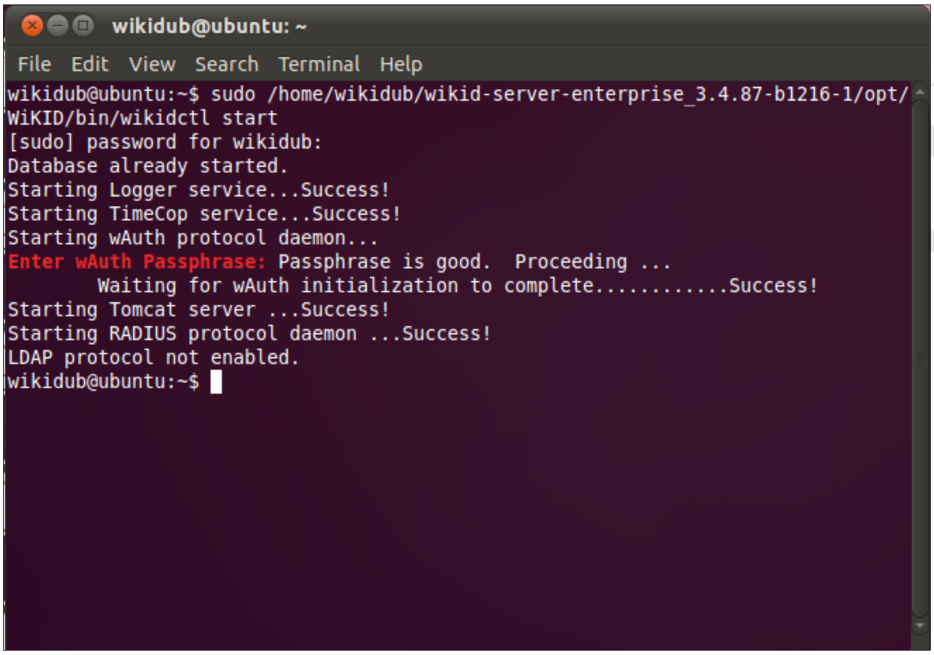
- sudo /opt/WiKID/bin/wikidctl setup[12]

finally we type

- sudo /opt/WiKID/bin/wikidctl start

and the server is executed.

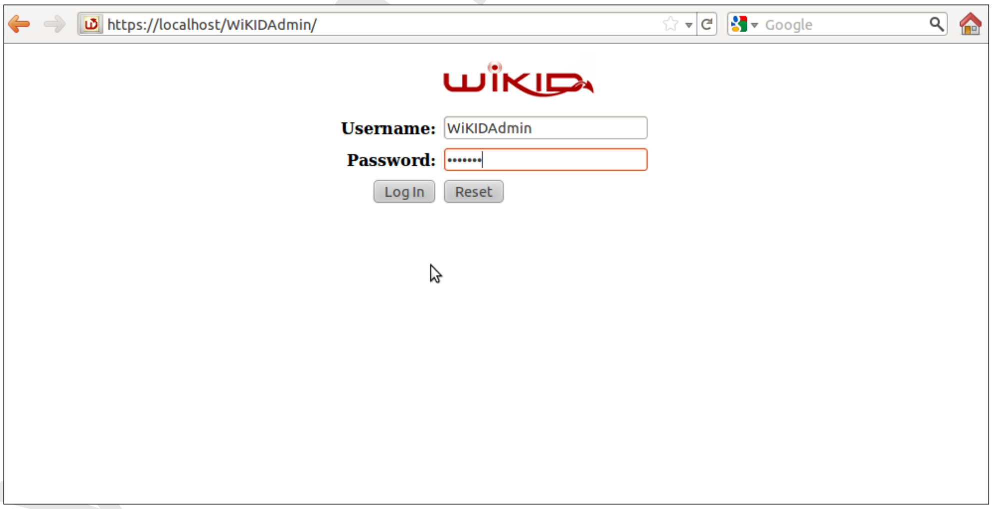
[12] So as to execute this command we have to be on folder which contains wikidctl file



```
wikidub@ubuntu:~$ sudo /home/wikidub/wikid-server-enterprise_3.4.87-b1216-1/opt/
WiKID/bin/wikidctl start
[sudo] password for wikidub:
Database already started.
Starting Logger service...Success!
Starting TimeCop service...Success!
Starting wAuth protocol daemon...
Enter wAuth Passphrase: Passphrase is good.  Proceeding ...
        Waiting for wAuth initialization to complete...........Success!
Starting Tomcat server ...Success!
Starting RADIUS protocol daemon ...Success!
LDAP protocol not enabled.
wikidub@ubuntu:~$
```

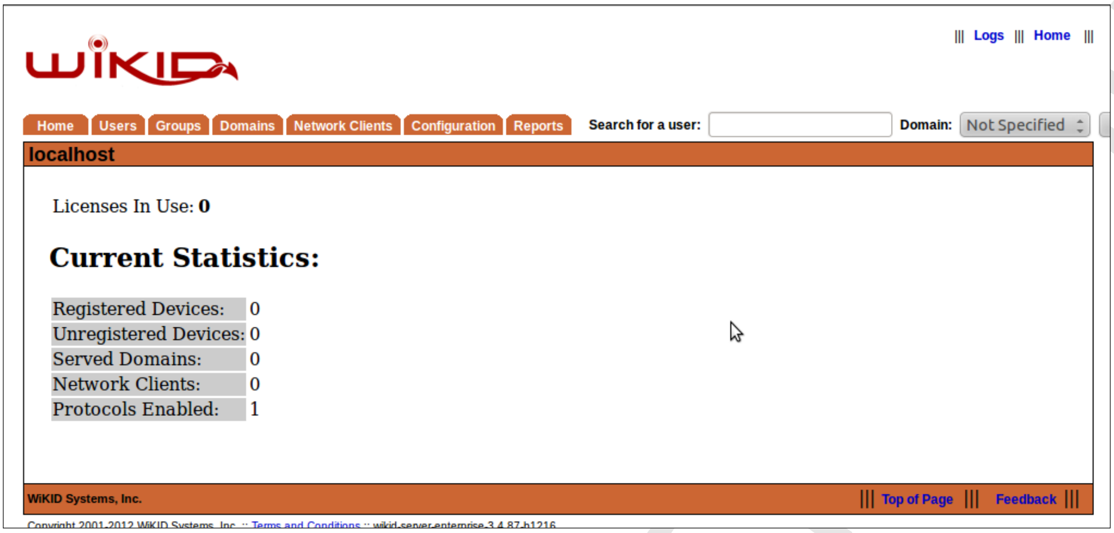
Picture.157 WiKID

As the WiKID server is executed we open a browser and login in WiKID. The default username and Password are WiKIDAdmin and 2Factor respectively. After that we login in on WiKID Server and we can continue with the configuration.



Username: WiKIDAdmin
Password: •••••••

Picture.158 WiKID Login



localhost

Licenses In Use: **0**

Current Statistics:

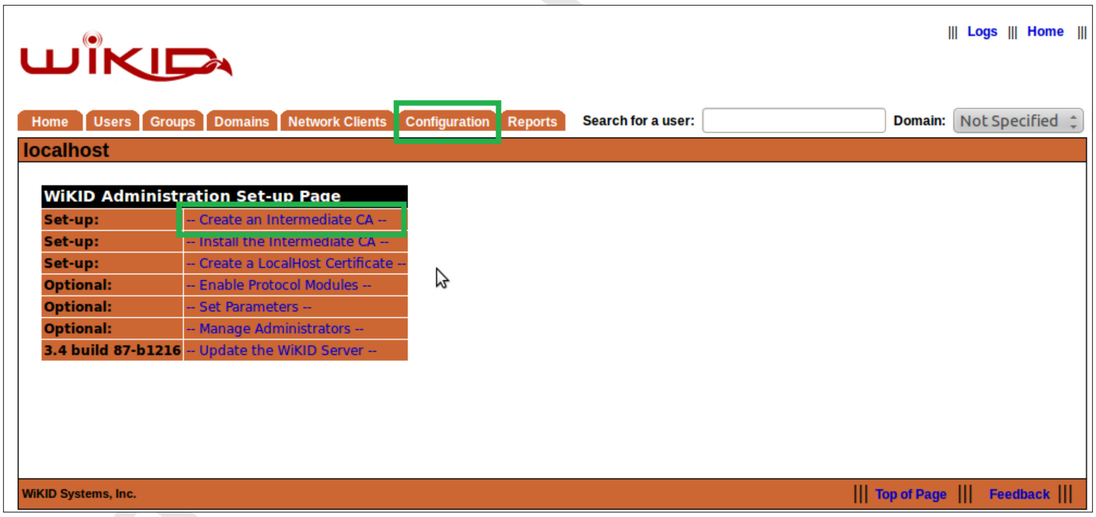
Registered Devices:	0
Unregistered Devices:	0
Served Domains:	0
Network Clients:	0
Protocols Enabled:	1

Copyright 2001-2012 WiKID Systems, Inc. :: Terms and Conditions :: wikid-server-enterprise-3.4.87-b1216

Picture.159 Configure WiKID

Step 3

Create an Intermediate CA clicking on “Create an Intermediate CA” link.

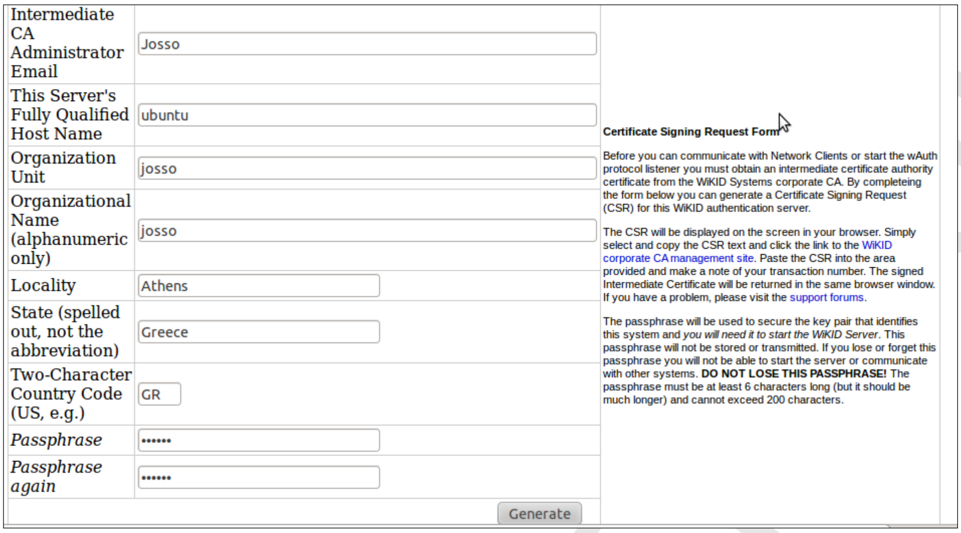


localhost

WiKID Administration Set-up Page	
Set-up:	-- Create an Intermediate CA --
Set-up:	-- Install the Intermediate CA --
Set-up:	-- Create a LocalHost Certificate --
Optional:	-- Enable Protocol Modules --
Optional:	-- Set Parameters --
Optional:	-- Manage Administrators --
3.4 build 87-b1216	-- Update the WiKID Server --

Picture.160 Create an Intermediate CA

In the window that appears we fill in all the fields.



Intermediate CA Administrator Email	Josso
This Server's Fully Qualified Host Name	ubuntu
Organization Unit	josso
Organizational Name (alphanumeric only)	josso
Locality	Athens
State (spelled out, not the abbreviation)	Greece
Two-Character Country Code (US, e.g.)	GR
Passphrase	••••••
Passphrase again	••••••

Certificate Signing Request Form

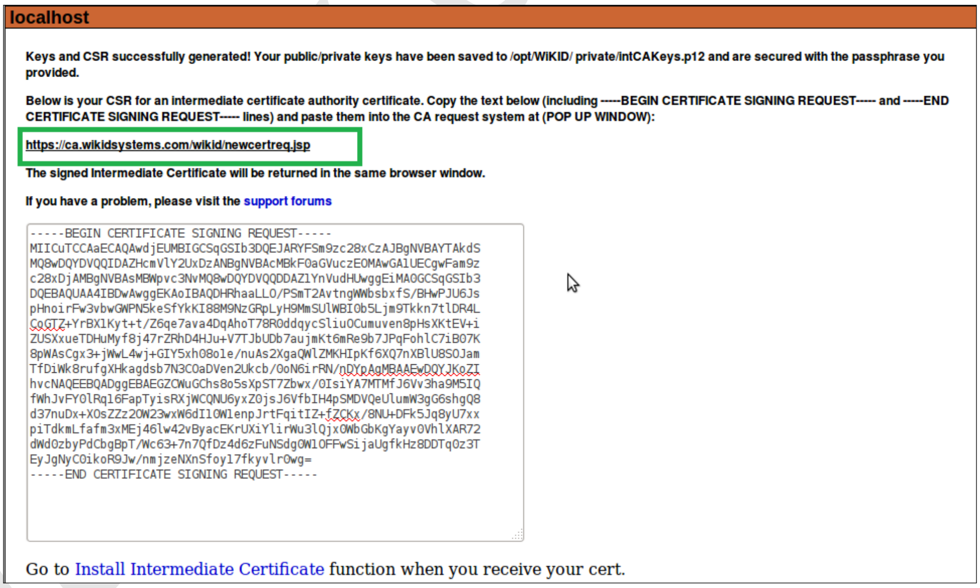
Before you can communicate with Network Clients or start the wAuth protocol listener you must obtain an intermediate certificate authority certificate from the WiKID Systems corporate CA. By completeing the form below you can generate a Certificate Signing Request (CSR) for this WiKID authentication server.

The CSR will be displayed on the screen in your browser. Simply select and copy the CSR text and click the link to the WiKID corporate CA management site. Paste the CSR into the area provided and make a note of your transaction number. The signed Intermediate Certificate will be returned in the same browser window. If you have a problem, please visit the support forums.

The passphrase will be used to secure the key pair that identifies this system and *you will need it to start the WiKID Server*. This passphrase will not be stored or transmitted. If you lose or forget this passphrase you will not be able to start the server or communicate with other systems. **DO NOT LOSE THIS PASSPHRASE!** The passphrase must be at least 6 characters long (but it should be much longer) and cannot exceed 200 characters.

Picture.161 CA fields

The most important field is the "Passphrase" because this Passphrase will be used when we will connect JOSSO with the WiKID Authentication System. As we have filled in all the fields we click on Generate button and appear a window with the certificate that we just created.



Keys and CSR successfully generated! Your public/private keys have been saved to /opt/WiKID/ private/intCAKeys.p12 and are secured with the passphrase you provided.

Below is your CSR for an intermediate certificate authority certificate. Copy the text below (including -----BEGIN CERTIFICATE SIGNING REQUEST----- and -----END CERTIFICATE SIGNING REQUEST----- lines) and paste them into the CA request system at (POP UP WINDOW):

https://ca.wikidsystems.com/wikid/newcertreq.jsp

The signed Intermediate Certificate will be returned in the same browser window.

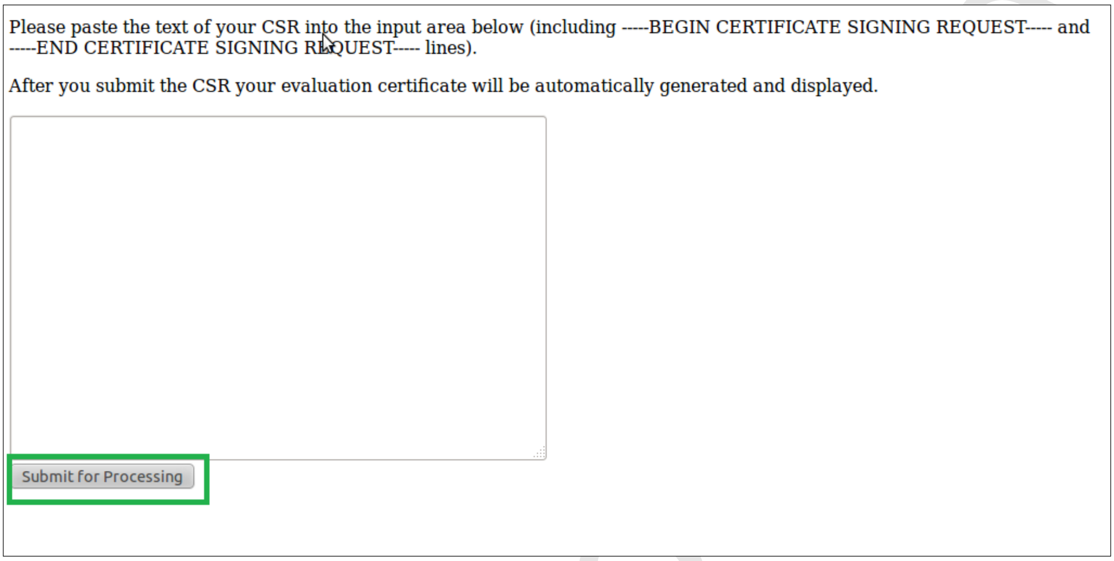
If you have a problem, please visit the support forums

```
-----BEGIN CERTIFICATE SIGNING REQUEST-----
MIICuTCCAaECAQAwdjEUMBIGCSqGSIb3DQEJARYFSm9zc28xCzAJBgNVBAYTAkdS
MQ8wDQYDVQQIDAZHcmVlY2UxDzANBgNVBAcMBkF0aGVuczEOMAwGA1UECgwFam9z
c28xDjAMBgNVBAsMBWpvc3NvMQ8wDQYDVQQDDAZ1YnVudHUwggEiMA0GCSqGSIb3
DQEBAQUAA4IBDwAwggEKAoIBAQDHRhaaLLO/PSmT2AvtngWWbsbxfS/BHwPJU6Js
pHnoirFw3vbwGWPN5keSfYkKI88M9NzGRpLyH9MmSUlWBIOb5Ljm9Tkkn7tlDR4L
CoGTZ+YrBXlKyt+t/Z6qe7ava4DqAhoT78R0ddqycSliuOCumuven8pHsXKtEV+i
ZUSXxueTDHuMyf8j47rZRhD4HJu+V7TJbUDb7aujmKt6mRe9b7JPqFohlC7iB07K
8pWAsCgx3+jWwL4wj+GIY5xh08ole/nuAs2XgaQWlZMKHIpKf6XQ7nXBlU8SOJam
TfDiWk8rufgXHkagdsb7N3COaDVen2Ukcb/0oN6irRN/nDYpAgMBAAEwDQYJKoZI
hvcNAQEEBQADggEBAEGZCWuGChs8o5sXpST7Zbwx/0IsiYA7MTMfJ6Vv3ha9M5IQ
fWhJvFY0lRq16FapTyisRXjWCQNU6yxZ0jsJ6VfbIH4pSMDVQeUlumW3gG6shgQ8
d37nuDx+XOsZZz2OW23wxW6dI10WlenpJrtFqitIZ+fZCKx/8NU+DFk5Jq8yU7xx
piTdkmLfafm3xMEj46lw42vByacEKrUXiYlirWu3lQjx0WbGbKgYayv0VhlXAR72
dWd0zbyPdCbgBpT/Wc63+7n7QfDz4d6zFuNSdg0W1OFFwSijaUgfkHz8DDTq0z3T
EyJgNyC0ikoR9Jw/nmjzeNXnSfoy17fkyvlr0wg=
-----END CERTIFICATE SIGNING REQUEST-----
```

Go to Install Intermediate Certificate function when you receive your cert.

Picture.162 Generate Button

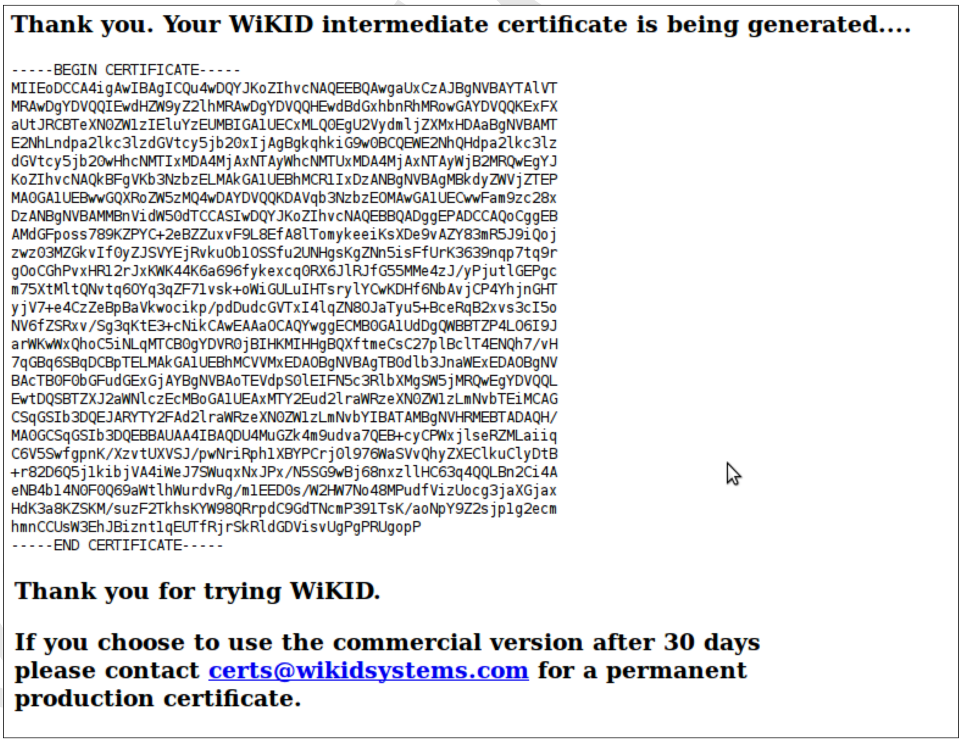
As a next step we copy this certificate and click on the following link: https://ca.wikidsystems.com/wikid/newcertreq.jsp that opens a pop up window in which we paste the certificate and click on submit for processing button.



Please paste the text of your CSR into the input area below (including -----BEGIN CERTIFICATE SIGNING REQUEST----- and -----END CERTIFICATE SIGNING REQUEST----- lines).

After you submit the CSR your evaluation certificate will be automatically generated and displayed.

Picture.163 Submit for Processing Button



Thank you. Your WiKID intermediate certificate is being generated....

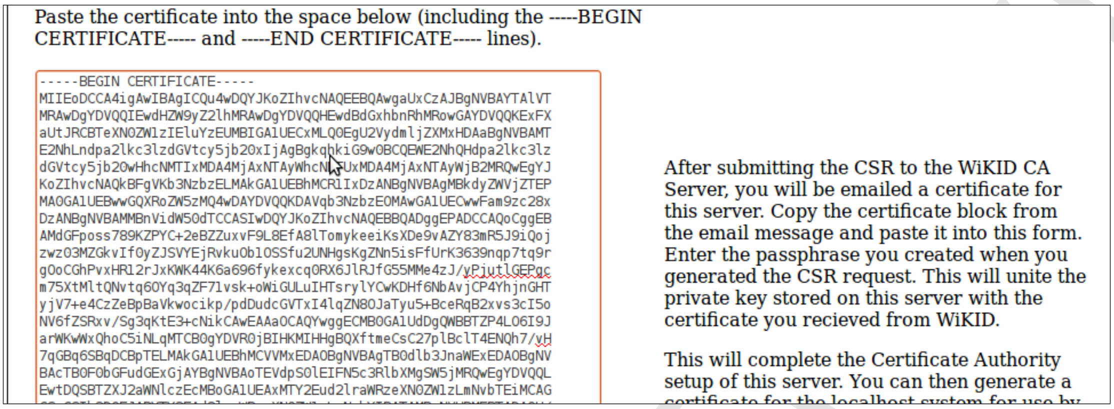
```
-----BEGIN CERTIFICATE-----
MIIEoDCCA4igAwIBAgICQu4wDQYJKoZIhvcNAQEEBQAwgaUxCzAJBgNVBAYTAlVT
MRAwDgYDVQQIEwdHZW9yZ2lhMRAwDgYDVQQHEwdBdGxhbnRhMRowGAYDVQQKExFX
aUtJRCBTeXN0ZW1zIEluYzEUMBIGA1UECxMLQ0EgU2VydmljZXMxHDAaBgNVBAMT
E2NhLndpa2lkc3lzdGVtcy5jb20xIjAgBgkqhkiG9w0BCQEWE2NhQHdpa2lkc3lz
dGVtcy5jb20wHhcNMTIxMDA4MjAxNTAyWhcNMTUxMDA4MjAxNTAyWjB2MRQwEgYJ
KoZIhvcNAQkBFgVKb3NzbzELMAkGA1UEBhMCR1IxDzANBgNVBAgMBkdyZWVjZTEP
MA0GA1UEBwwGQXRoZW5zMQ4wDAYDVQQKDAVqb3NzbzEOMAwGA1UECwwFam9zc28x
DzANBgNVBAMMBnVidW50dTCCASIwDQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEB
AMdGFposs789KZPYC+2eBZZuxvF9L8EfA8lTomykeeiKsXDe9vAZY83mR5J9iQoj
zwz03MZGkvIf0yZJSVYEjRvkuObl0SSfu2UNHgsKgZNn5isFfUrK3639nqp7tq9r
gOoCGhPvxHR12rJxKWK44K6a696fykexcq0RX6JlRJfG55MMe4zJ/yPjutlGEPgc
m75XtMltQNvtq6OYq3qZF71vsk+oWiGULuIHTsrylYCwKDHf6NbAvjCP4YhjnGHT
yjV7+e4CzZeBpBaVkwocikp/pdDudcGVTxI4lqZN8OJaTyu5+BceRqB2xvs3cI5o
NV6fZSRxv/Sg3qKtE3+cNikCAwEAAaOCAQYwggECMB0GA1UdDgQWBBTZP4LO6I9J
arWKwWxQhoC5iNLqMTCB0gYDVR0jBIHKMIHHgBQXftmeCsC27plBclT4ENQh7/vH
7qGBq6SBqDCBpTELMAkGA1UEBhMCVVMxEDAOBgNVBAgTB0dlb3JnaWExEDAOBgNV
BAcTB0F0bGFudGExGjAYBgNVBAoTEVdpS0lEIFN5c3RlbXMgSW5jMRQwEgYDVQQL
EwtDQSBTZXJ2aWNlczEcMBoGA1UEAxMTY2Eud2lraWRzeXN0ZW1zLmNvbTEiMCAG
CSqGSIb3DQEJARYTY2FAd2lraWRzeXN0ZW1zLmNvbYIBATAMBgNVHRMEBTADAQH/
MA0GCSqGSIb3DQEBBAUAA4IBAQDU4MuGZk4m9udva7QEB+cyCPWxjlseRZMLaiiq
C6V5SwfgpnK/XzvtUXVSJ/pwNriRph1XBYPCrj0l976WaSVvQhyZXEClkuClyDtB
+r82D6Q5j1kibjVA4iWeJ7SWuqxNxJPx/N5SG9wBj68nxzllHC63q4QQLBn2Ci4A
eNB4bl4N0F0Q69aWtlhWurdvRg/mlEED0s/W2HW7No48MPudfVizUocg3jaXGjax
HdK3a8KZSKM/suzF2TkhsKYW98QRrpdC9GdTNcmP391TsK/aoNpY9Z2sjp1g2ecm
hmnCCUsW3EhJBizntlqEUTfRjrSkRldGDVisvUgPgPRUgopP
-----END CERTIFICATE-----
```

Thank you for trying WiKID.

If you choose to use the commercial version after 30 days please contact certs@wikidsystems.com for a permanent production certificate.

Picture.164 Certificate

Then we copy the certificate from the pop up window and paste it to the empty frame in WiKID in order to install this certificate.



Paste the certificate into the space below (including the -----BEGIN CERTIFICATE----- and -----END CERTIFICATE----- lines).

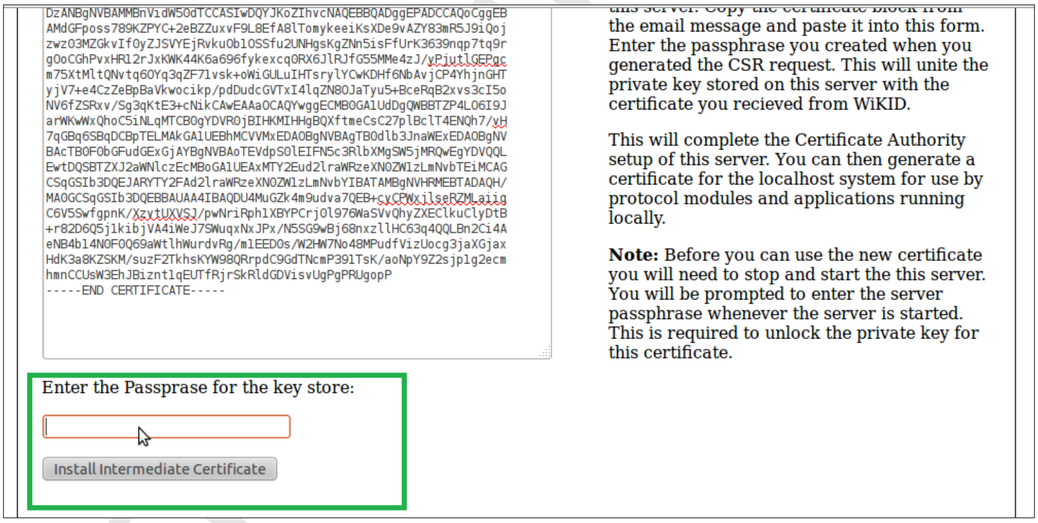
```
-----BEGIN CERTIFICATE-----
MIIEoDCCA4igAwIBAgICQu4wDQYJKoZIhvcNAQEEBQAwgaUxCzAJBgNVBAYTAlVT
MRAwDgYDVQQIEwdHZW9yZ2lhMRAwDgYDVQQHEwdBdGxhbnRhMRowGAYDVQQKExFX
aUtJRCBTeXN0ZW1zIEluYzEUMBIGA1UECxMLQ0EgU2VydmljZXMxHDAaBgNVBAMT
E2NhLndpa2lkc3lzdGVtcy5jb20xIjAgBgkqhkiG9w0BCQEWE2NhQHdpa2lkc3lz
dGVtcy5jb20wHhcNMTIxMDA4MjAxNTAyWhcNMTUxMDA4MjAxNTAyWjB2MRQwEgYJ
KoZIhvcNAQkBFgVKb3NzbzELMAkGA1UEBhMCR1IxDzANBgNVBAgMBkdyZWVjZTEP
MA0GA1UEBwwGQXRoZW5zMQ4wDAYDVQQKDAVqb3NzbzEOMAwGA1UECwwFam9zc28x
DzANBgNVBAMMBnVidW50dTCCASIwDQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEB
AMdGFposs789KZPYC+2eBZZuxvF9L8EfA8lTomykeeiKsXDe9vAZY83mR5J9iQoj
zwz03MZGkvIf0yZJSVYEjRvkuObl0SSfu2UNHgsKgZNn5isFfUrK3639nqp7tq9r
gOoCGhPvxHRl2rJxKWK44K6a696fykexcq0RX6JlRJfG55MMe4zJ/yPjutlGEPgc
m75XtMltQNvtq6OYq3qZF7lvsk+oWiGULuIHTsrylYCwKDHf6NbAvjCP4YhjnGHT
yjV7+e4CzZeBpBaVkwocikp/pdDudcGVTxI4lqZN8OJaTyu5+BceRqB2xvs3cI5o
NV6fZSRxv/Sg3qKtE3+cNikCAwEAAaOCAQYwggECMB0GA1UdDgQWBBTZP4LO6I9J
arWKwWxQhoC5iNLqMTCB0gYDVR0jBIHKMIHHgBQXftmeCsC27plBclT4ENQh7/vH
7qGBq6SBqDCBpTELMAkGA1UEBhMCVVMxEDAOBgNVBAgTB0dlb3JnaWExEDAOBgNV
BAcTB0F0bGFudGExGjAYBgNVBAoTEVdpS0lEIFN5c3RlbXMgSW5jMRQwEgYDVQQL
EwtDQSBTZXJ2aWNlczEcMBoGA1UEAxMTY2Eud2lraWRzeXN0ZW1zLmNvbTEiMCAG
```

After submitting the CSR to the WiKID CA Server, you will be emailed a certificate for this server. Copy the certificate block from the email message and paste it into this form. Enter the passphrase you created when you generated the CSR request. This will unite the private key stored on this server with the certificate you recieved from WiKID.

This will complete the Certificate Authority setup of this server. You can then generate a

Picture.165 Install Certificate

After we paste it, we fill in the passphrase field and click on Install Intermediate Certificate button. In this way we just have installed the certificate.



```
DzANBgNVBAMMBnVidW50dTCCASIwDQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEB
AMdGFposs789KZPYC+2eBZZuxvF9L8EfA8lTomykeeiKsXDe9vAZY83mR5J9iQoj
zwz03MZGkvIf0yZJSVYEjRvkuObl0SSfu2UNHgsKgZNn5isFfUrK3639nqp7tq9r
gOoCGhPvxHRl2rJxKWK44K6a696fykexcq0RX6JlRJfG55MMe4zJ/yPjutlGEPgc
m75XtMltQNvtq6OYq3qZF7lvsk+oWiGULuIHTsrylYCwKDHf6NbAvjCP4YhjnGHT
yjV7+e4CzZeBpBaVkwocikp/pdDudcGVTxI4lqZN8OJaTyu5+BceRqB2xvs3cI5o
NV6fZSRxv/Sg3qKtE3+cNikCAwEAAaOCAQYwggECMB0GA1UdDgQWBBTZP4LO6I9J
arWKwWxQhoC5iNLqMTCB0gYDVR0jBIHKMIHHgBQXftmeCsC27plBclT4ENQh7/vH
7qGBq6SBqDCBpTELMAkGA1UEBhMCVVMxEDAOBgNVBAgTB0dlb3JnaWExEDAOBgNV
BAcTB0F0bGFudGExGjAYBgNVBAoTEVdpS0lEIFN5c3RlbXMgSW5jMRQwEgYDVQQL
EwtDQSBTZXJ2aWNlczEcMBoGA1UEAxMTY2Eud2lraWRzeXN0ZW1zLmNvbTEiMCAG
CSqGSIb3DQEJARYTY2FAd2lraWRzeXN0ZW1zLmNvbYIBATAMBgNVHRMEBTADAQH/
MA0GCSqGSIb3DQEBBAUAA4IBAQDU4MuGZk4m9udva7QEB+cyCPWxjlseRZMLaiig
C6V5SwfgpnK/XzvtUXVSJ/pwNriRphlXBYPCrj0l976WaSVvQhyZXEClkuClyDtB
+r82D6Q5jlkibjVA4iWeJ7SWuqxNxJPx/N5SG9wBj68nxzllHC63q4QQLBn2Ci4A
eNB4bl4N0F0Q69aWtlhWurdvRg/mlEED0s/W2HW7No48MPudfVizUocg3jaXGjax
HdK3a8KZSKM/suzF2TkhsKYW98QRrpdC9GdTNcmP39lTsK/aoNpY9Z2sjplg2ecm
hmnCCUsW3EhJBizntlqEUTfRjrSkRldGDVisvUgPgPRUgopP
-----END CERTIFICATE-----
```

Enter the Passprase for the key store:

this server. Copy the certificate block from the email message and paste it into this form. Enter the passphrase you created when you generated the CSR request. This will unite the private key stored on this server with the certificate you recieved from WiKID.

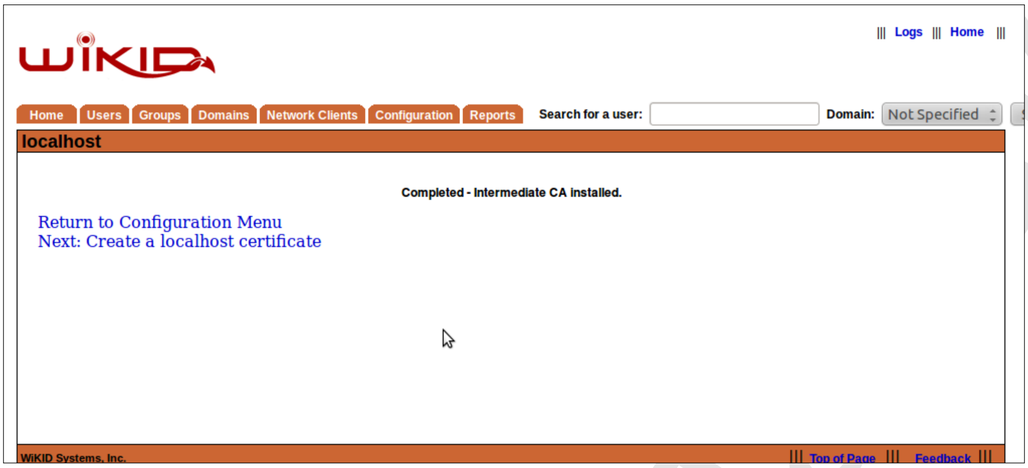
This will complete the Certificate Authority setup of this server. You can then generate a certificate for the localhost system for use by protocol modules and applications running locally.

Note: Before you can use the new certificate you will need to stop and start the this server. You will be prompted to enter the server passphrase whenever the server is started. This is required to unlock the private key for this certificate.

Picture.166 Install Intermediate Certificate Button

Step 4

Create a localhost Certificate by clicking on "Create a localhost Certificate" link. In this window we fill in all the fields and click on generate button.

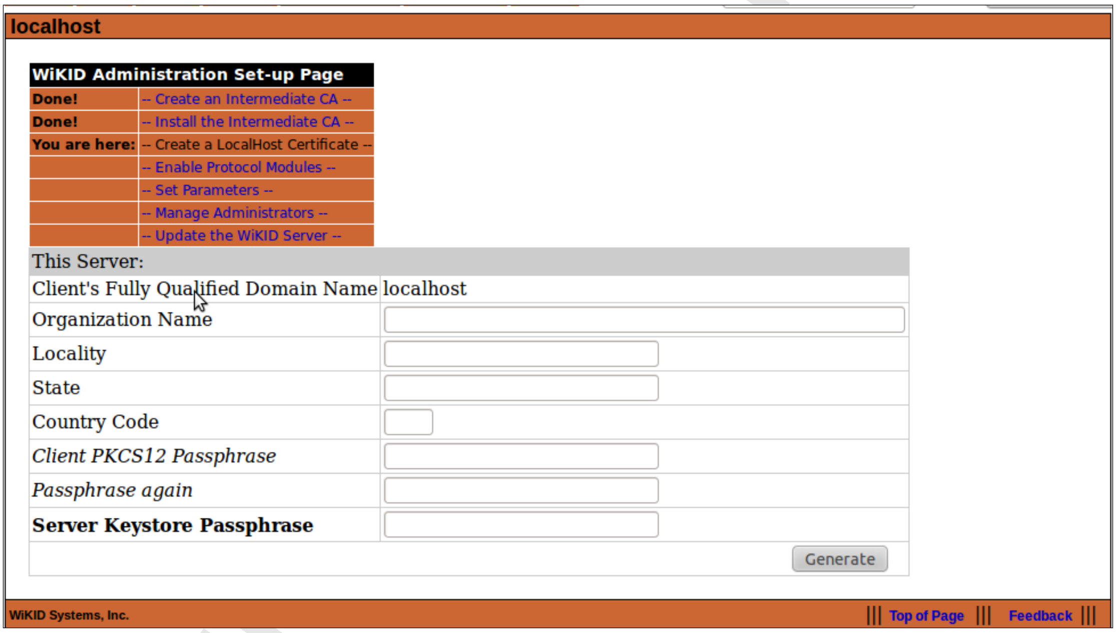


localhost

Completed - Intermediate CA installed.

Return to Configuration Menu
Next: Create a localhost certificate

Picture.167 Create a localhost Certificate

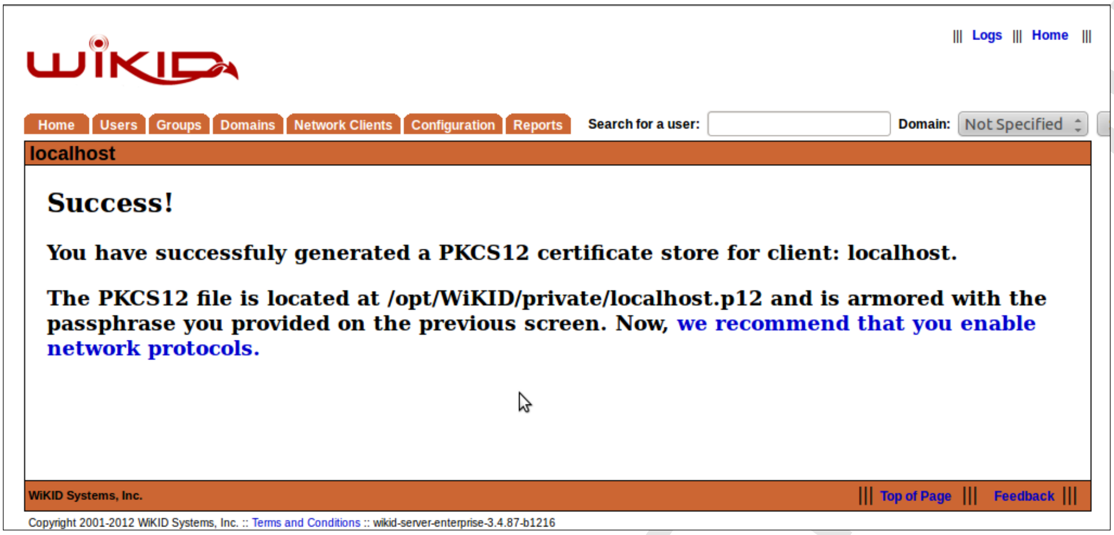


localhost

WiKID Administration Set-up Page	
Done!	-- Create an Intermediate CA --
Done!	-- Install the Intermediate CA --
You are here:	-- Create a LocalHost Certificate --
	-- Enable Protocol Modules --
	-- Set Parameters --
	-- Manage Administrators --
	-- Update the WiKID Server --

This Server:	
Client's Fully Qualified Domain Name	localhost
Organization Name	
Locality	
State	
Country Code	
Client PKCS12 Passphrase	
Passphrase again	
Server Keystore Passphrase	

Picture.168 localhost Certificate Fields



localhost

Success!

You have successfuly generated a PKCS12 certificate store for client: localhost.

The PKCS12 file is located at /opt/WiKID/private/localhost.p12 and is armored with the passphrase you provided on the previous screen. Now, we recommend that you enable network protocols.

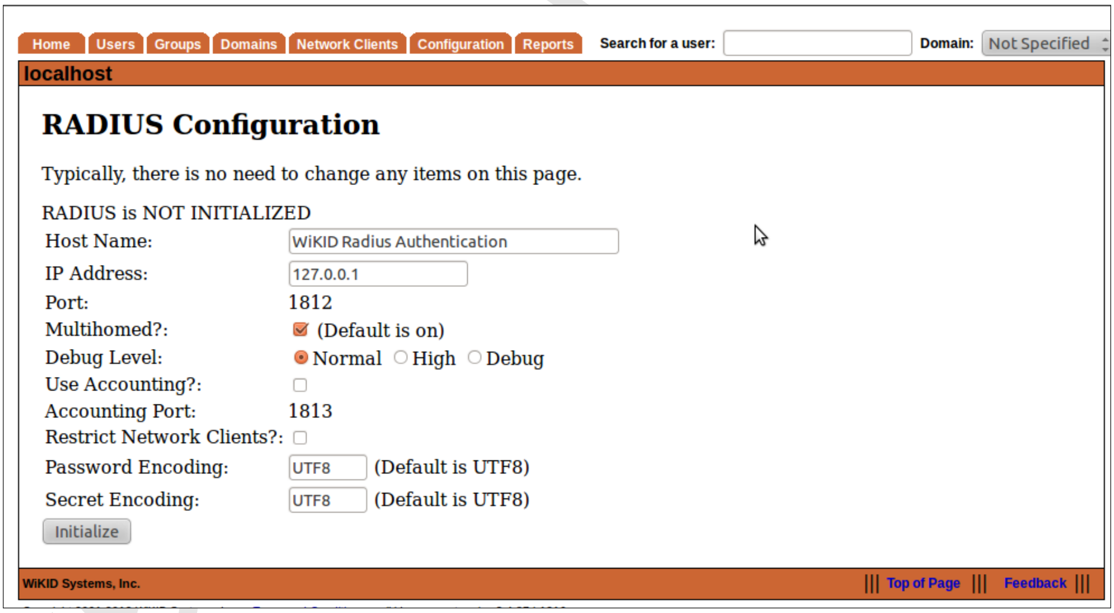
Copyright 2001-2012 WiKID Systems, Inc. :: Terms and Conditions :: wikid-server-enterprise-3.4.87-b1216

Picture.169 Success Window

Step 5

Enable network protocols.

WAUTH is already enabled but it is recommended to enable and another protocol.



localhost

RADIUS Configuration

Typically, there is no need to change any items on this page.

RADIUS is NOT INITIALIZED

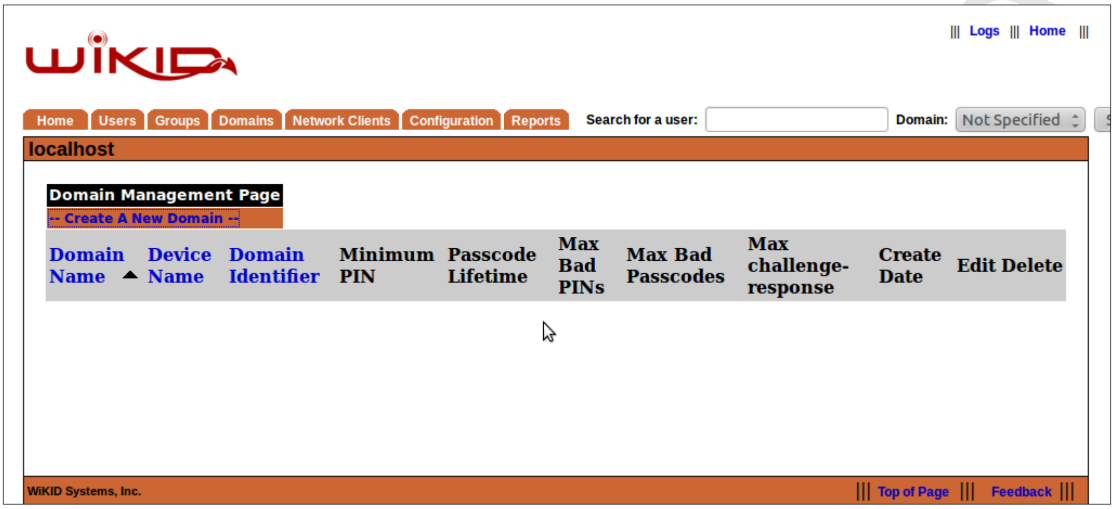
Host Name:	WiKID Radius Authentication
IP Address:	127.0.0.1
Port:	1812
Multihomed?:	☑ (Default is on)
Debug Level:	● Normal ○ High ○ Debug
Use Accounting?:	□
Accounting Port:	1813
Restrict Network Clients?:	□
Password Encoding:	UTF8 (Default is UTF8)
Secret Encoding:	UTF8 (Default is UTF8)

Picture.170 Enable Network Protocols

Step 6

Create a Network Client.

As we have created a Network Client it has been created a certificate. This certificate will be uploaded in JOSSO when we go to connect JOSSO with WiKID Authentication System.



localhost

Domain Management Page

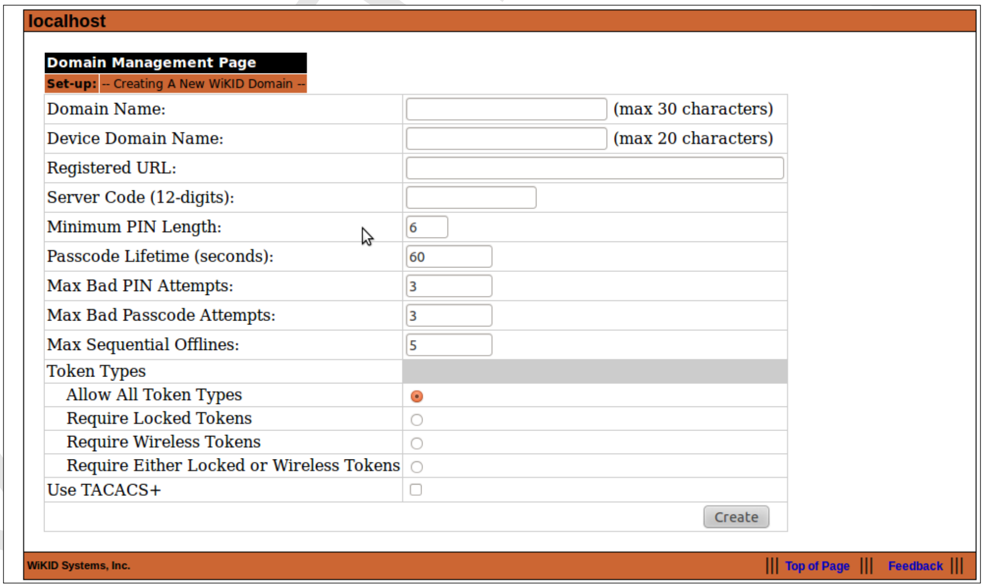
-- Create A New Domain --

Domain Name ▲	Device Name	Domain Identifier	Minimum PIN	Passcode Lifetime	Max Bad PINs	Max Bad Passcodes	Max challenge-response	Create Date	Edit Delete

Picture.171 Network Client

Step 7

Create a Domain.



localhost

Domain Management Page

Set-up: -- Creating A New WiKID Domain --

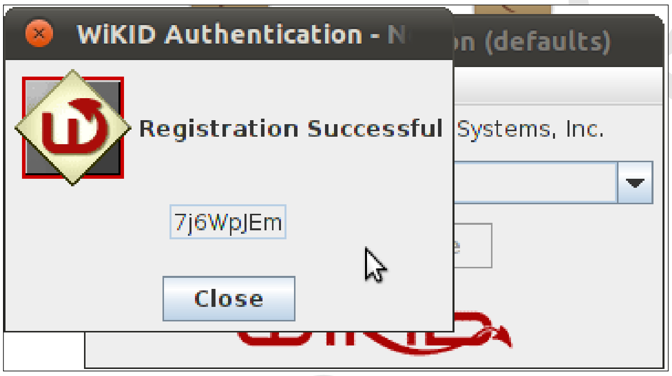
Domain Name:	(max 30 characters)
Device Domain Name:	(max 20 characters)
Registered URL:	
Server Code (12-digits):	
Minimum PIN Length:	6
Passcode Lifetime (seconds):	60
Max Bad PIN Attempts:	3
Max Bad Passcode Attempts:	3
Max Sequential Offlines:	5
Token Types	
Allow All Token Types	●
Require Locked Tokens	○
Require Wireless Tokens	○
Require Either Locked or Wireless Tokens	○
Use TACACS+	□
	Create

Picture.172 Create a Domain

Step 8

Create a user.

Before clicking on manually validate a user button we have to open a WiKID token in order to create a registration code which will characterize the user that we going to create.

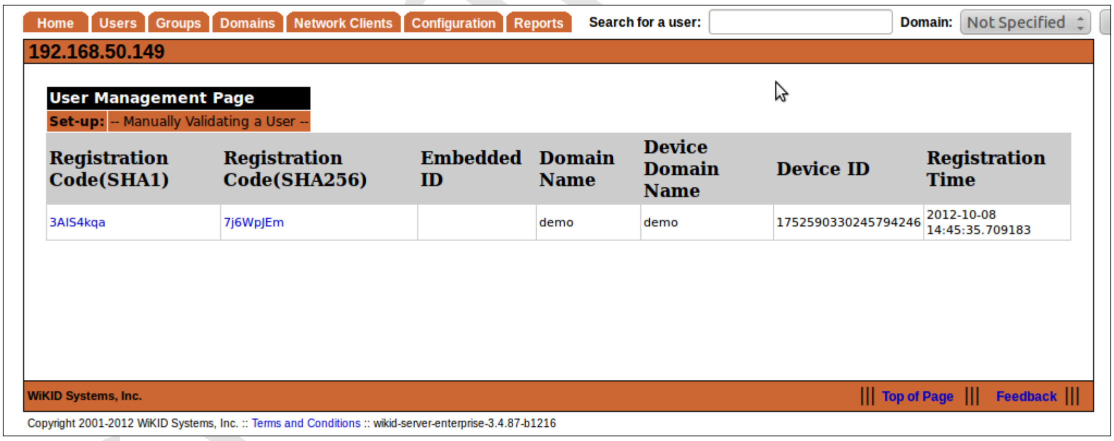


Registration Successful

7j6WpJEm

Picture.173 WiKID token

When we will try to login in JOSSO with the username of the user that we have just created, it will be authenticated by the passphrase that WiKID token creates.



Search for a user:

Domain: Not Specified

192.168.50.149

User Management Page

Set-up: -- Manually Validating a User --

Registration Code(SHA1)	Registration Code(SHA256)	Embedded ID	Domain Name	Device Domain Name	Device ID	Registration Time
3AIS4kqa	7j6WpJEm		demo	demo	1752590330245794246	2012-10-08 14:45:35.709183

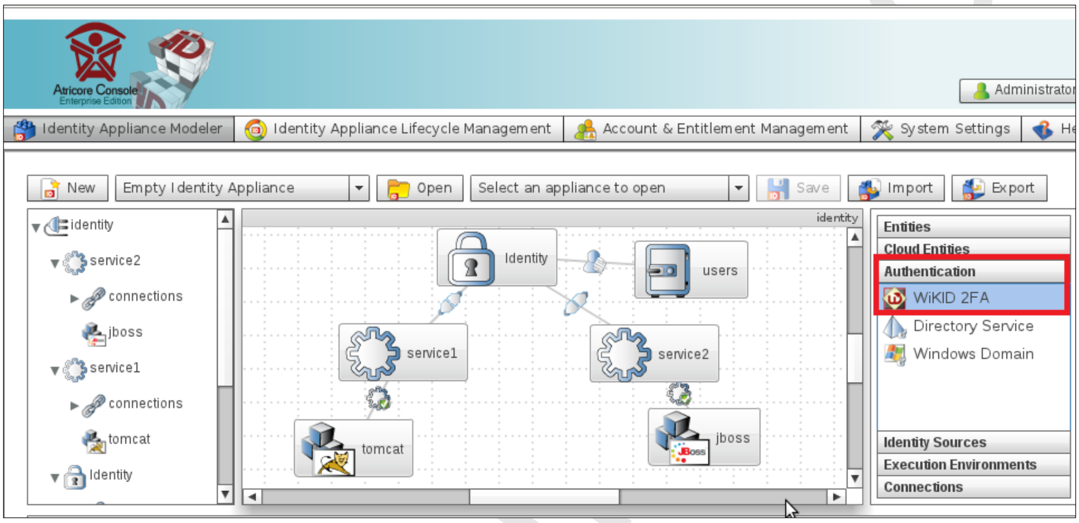
WiKID Systems, Inc. ||| Top of Page ||| Feedback |||

Copyright 2001-2012 WiKID Systems, Inc. :: Terms and Conditions :: wikid-server-enterprise-3.4.87-b1216

Picture.174 Registration

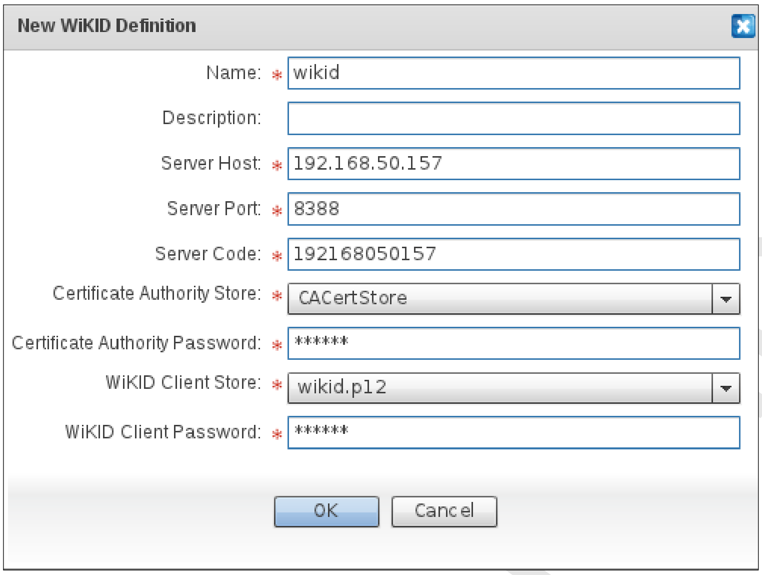
When we have configured WiKID Authentication System, we have to connect it with JOSSO. In order to connect JOSSO with WiKID Authentication System we have to upload the two certificates that we have created in WiKID Authentication System to the Atricore Console. The certificate, as we have already stated, is in Network Client and we have to download it. The other certificate is located in opt/WiKID/private folder and is a CACertStore certificate. As long as we have available these certificates we can continue with the JOSSO setup.

As we already have created the Identity Appliance as we have see in chapter 23 the next step that we have to do is to add WiKID entity by clicking on WiKID item from pallet and drop it into Diagram canvas.



Picture.175 Add WiKID in JOSSO

As we drop the WiKID item into Diagram canvas the window that illustrated in picture 176 appears. In this window we have to fill in the fields and to upload the certificates that we have already mentioned (for more information look on chapter 17.3).

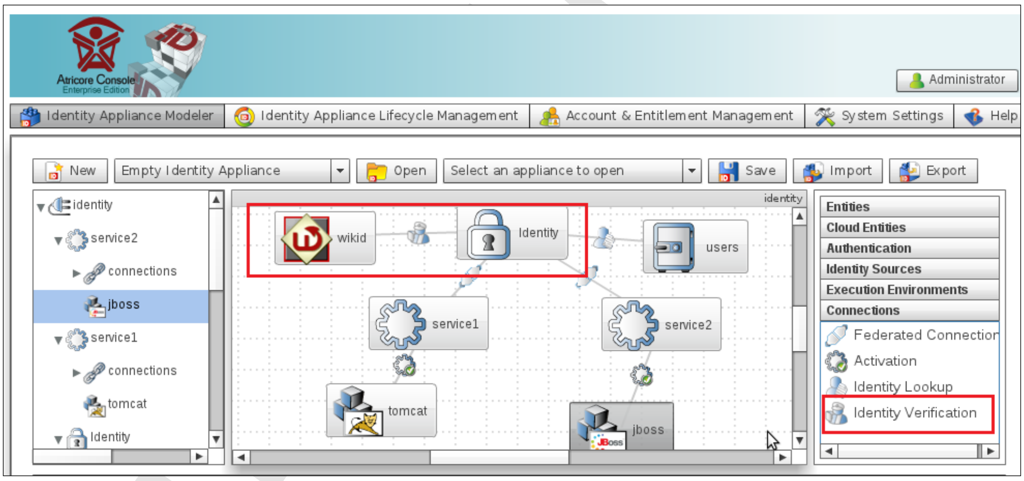


New WiKID Definition

Name: * wikid
Description:
Server Host: * 192.168.50.157
Server Port: * 8388
Server Code: * 192168050157
Certificate Authority Store: * CACertStore
Certificate Authority Password: * ******
WiKID Client Store: * wikid.p12
WiKID Client Password: * ******

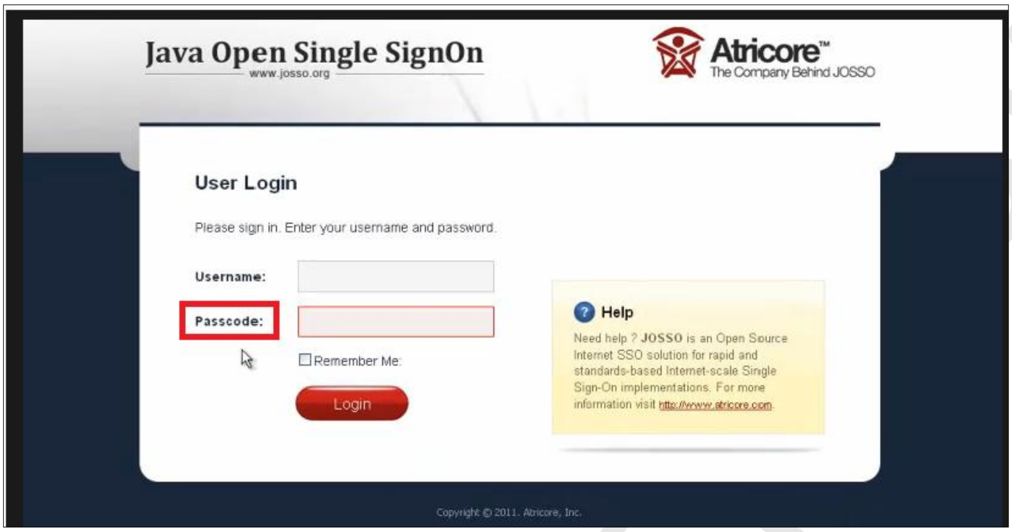
Picture.176 WiKID Definition Window

After that step we click on OK button. The last thing that we have to do is to connect the Identity Provider with WiKID with an Identity Verification connection.



Picture.177 Connect WiKID with JOSSO

The only difference that worth mentioned in this authentication process is that when we are going to login in Atricore we have to give a Username and a Passphrase instead of a Username and a Password, so we have to generate a passphrase with WiKID token and fill with that the passphrase field.



Java Open Single SignOn
www.josso.org

Atricore™
The Company Behind JOSSO

User Login

Please sign in. Enter your username and password.

Username:

Passcode:

□ Remember Me

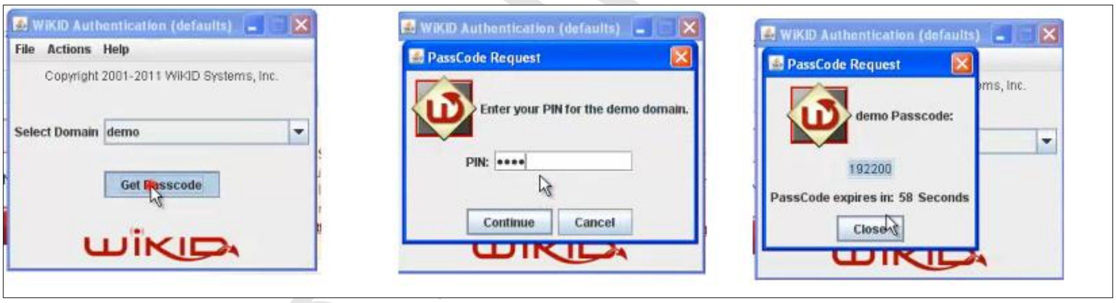
Login

Help

Need help ? JOSSO is an Open Source Internet SSO solution for rapid and standards-based Internet-scale Single Sign-On implementations. For more information visit http://www.atricore.com

Copyright © 2011. Atricore, Inc.

Picture.178 Login with Passcode



WiKID Authentication (defaults)

File Actions Help

Copyright 2001-2011 WiKID Systems, Inc.

Select Domain demo

Get Passcode

PassCode Request

Enter your PIN for the demo domain.

PIN: ••••

Continue Cancel

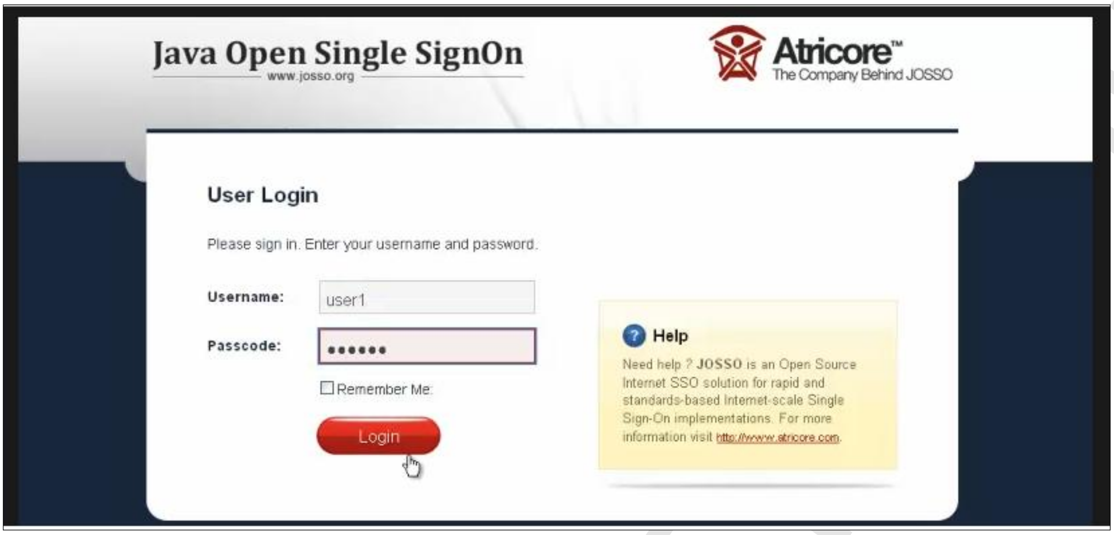
demo Passcode:

192200

PassCode expires in: 58 Seconds

Close

Picture.179 Get Passcode



Java Open Single SignOn
www.josso.org

Atricore™
The Company Behind JOSSO

User Login

Please sign in. Enter your username and password.

Username: user1

Passcode: ••••••

☐ Remember Me

Help

Need help ? JOSSO is an Open Source Internet SSO solution for rapid and standards-based Internet-scale Single Sign-On implementations. For more information visit http://www.atricore.com.

Picture.180 User Login

26. Conclusion

In this thesis it was studied the implementation of the JOSSO solution for Single Sign-On services. JOSSO was studied for its architecture and how it can be the mean that interconnects different technologies under its roof in order to provide high level services. All the components and various technologies are installed and configured in a user friendly interface console that is very easy to navigate. It comes in two different versions, one open source which is called JOSSO Community Edition and one commercial called JOSSO Enterprise Edition. Both editions were tested and analyzed in this thesis. Both have common features, but the Enterprise Edition has extra features for collaborating with commercial Cloud Providers and Authentication Providers. As a conclusion, JOSSO is one of the easiest to use and versatile SSO solution, introducing this kind of technology to users that do not have to be technologically skilled in a top level. It is a fine way for users to explore and learn about the SSO technology.

27. References

1. http://docs.atricore.com/josso2/2.2.2/en-US/html/index.html
2. http://www.wikidsystems.com/support/support/wikid-support-center
3. http://karaf.apache.org/
4. http://tomcat.apache.org/
5. http://www.josso.org/confluence/display/JOSSO1/JOSSO+-+Java+Open+Single+Sign-On+Project+Home
6. http://en.wikipedia.org/wiki/Main_Page
7. http://www.salesforce.com/eu/?ir=1
8. http://www.google.com/enterprise/apps/business/
9. http://www.jboss.org/
10. https://www.oasis-open.org/