



# **Administration and Configuration Framework Architecture**

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# Overview

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This document attempts to describe the general architecture of the OpenDS administration and configuration framework.

Administration and configuration design is still in progress and this architecture is therefore still evolving and should not be considered as set in stone.

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## Acknowledgments

The general format of this document was based on the documentation template used by [OpenOffice.org](http://OpenOffice.org).

## Modifications and Updates

<i>Date</i>	<i>Description of Change</i>
09/07/06	Initial draft

# Architecture Overview

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## High level requirements

From the user perspective, several features have to be provided by the OpenDS administration and Configuration framework:

- A well-defined set of objects used for the configuration ("User Management" objects )  
The user will have to update the server configuration by modifying parameters. In order to provide a global and coherent view of the server, we have to group those parameters, according to their semantic. This grouping will define a set of **"User Management" objects** . In order to simplify the user experience, we should provide a set of well-known **"User Management"** objects. Those objects will be the public interface for client's management tools (Embedded management, CLI, GUI, Shell, ...).
- OpenDS server administration  
The user should be able to manage the server life cycle (create, start stop, ...) either locally or remotely.
- Group of operations  
The administration framework should allow to perform operations (configuration or administrative operations) on several servers by evolving a single user interaction.

## Administration framework architecture

The Administration and Configuration framework is built around the following components:

- The OpenDS server itself  
When the server is up, it should handle configuration change requests. The user should be able to select the protocol used for those configuration access.
- A client Java API  
This Java API will be used to build client administration tools (CLI, a shell administration tool, GUI, ...). This client API will also be used for the embedded management: The application will use this API to access the server configuration. Note that the Java client API will be generated from the "User Management" objects definition.

The user management objects definition will also be used to generate the server-side API. In addition, it will also be possible to generate I18N message files, LDAP schema, and documentation.

- Centralized configuration repository

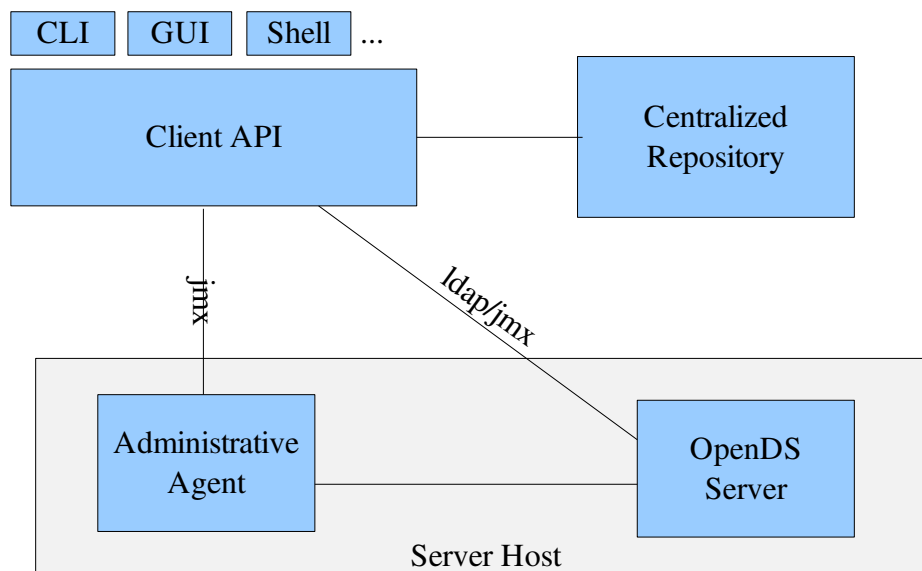
This repository will be used to store information like

- the list of OpenDS server instance to management
- The OpenDS server group definition
- ...

As Administration and configuration design is still in progress the information stored into the centralized configuration repository is not yet defined.

- An administrative agent

This agent will be located on the same host than the OpenDS server and will be responsible to handle “off-line” operation like create a new server instance, start a given instance, ...



The following schema represents the overall administration and configuration framework architecture:

Note that the administrative agent and the OpenDS server should be on the same host.

Note also that it should be also possible to install a stand alone OpenDS server. In this case, a remote user should be able to configure this stand alone server but some features, like remote server start, might be not available.

# The "User Management" objects

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There are two basic aspects in the "User Management" objects definition:

- The objects definition  
An object-oriented approach, including simple inheritance, will be used. For example, an *ldap-connection-handler* object will inherit all properties from the *connection-handler* object.
- The containment relationships between those objects i.e. how the "User Management" objects will be arranged. For example, an *index* object can be created only under a *backend* object.

An OpenDS server configuration will be seen from the user perspective, as an instantiation of all or a subset of "User Management" objects, following the containment relationships rules. This configuration will of course evolve during server life (creation, deletion, update of "User Management" objects), but the containment relationships rules will always be verified.

# The OpenDS Server

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## Server instance configuration

An instance of the OpenDS server should be able to handle configuration update from the configured management protocol (see “Client API” paragraph). Note that the management protocol should not imply a specific implementation.

For each supported management protocol, the server will embed codes which will map the management protocol based access, to the server based “configuration handler” interface.

## Server instance administration

The OpenDS Directory Server should provide a full set of command line tools that make it possible to manage, and monitor the server either locally or remotely (via the local agent).

# The client API

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The Java Client API will be used to build client administration tools (CLI, a shell administration tool, GUI, ...). This Java client API will also be used for the embedded management: the application will use this API to access the server configuration. Note that part of the Java client API will be generated from the "User Management" objects definition. A fix set of Java Classes should allow to operate on the server administration (server-client API). Binding to different management protocols will give the user the ability to customize his/her management access.

## Java Client API

A set of Java classes representing the "User Management" objects. Those Java classes will be used by client application to access to the server configuration and administration.

## LDAP binding for server configuration

The user should be able to update the server configuration via the LDAP protocol. A mapping from the Java Client API to the server internal LDAP representation should be provided.

## JMX binding for server configuration

The user should be able to update the server configuration via the JMX protocol. A mapping from the Java Client API to the server internal MBeans representation should be provided.

## Direct binding for server configuration

For embedded application, an as the server is a the same process than the application, the user should be able to directly update the server configuration . A mapping from the Java Client API to the server internal configuration representation should be provided.

## JMX binding for server administration

The user should be able to administer any OpenDS server instance. An access from the Java Client to the server administration script should be provided. Note that this access could be either a local access or a remote access, via the local agent, to the server instance administration scripts.



## Server-side API

The server-side API will remove the requirement for internal server components (e.g. Plugins) to be responsible for decoding entries and parsing attributes. A notification mechanism will be provided which notifies observer components of changes to the configuration – this notification mechanism will differ from the current one in that pre-parsed managed objects (i.e. Strongly typed) will be presented to the observers, rather than weakly typed configuration LDAP entries.

# The centralized repository

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The OpenDS Directory Server should provide a mechanism for managing multiple instances of the server as a single entity. When managing multiple servers, there must be a mechanism for dealing with the possibility of one or more of those instances to be unavailable at the time that the change was made. The centralized repository will store information about server group and individual server instances.

- The list of OpenDS server instance to management
- The OpenDS server group definition
- ...

As Administration and configuration design is still in progress, the information stored into the centralized configuration repository is not yet defined.

# The local agent

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The local agent should be located on the same host than the OpenDS server. It gives remote access to all administrative operations which need to be executed locally to the machine hosting a OpenDS server instance. This includes all the operations performed locally such as OpenDS server life management (create, start, stop, ...), logs manipulation, ...

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