



OpenDS : An extensible LDAP directory server

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Goals

Learn about the OpenDS project and how to use and extend the OpenDS LDAP server for your application's needs.

Agenda

- About the OpenDS project
- First steps with OpenDS
- How to extend the server capabilities
- Conclusion

The OpenDS Project

- Open source project launched in July 2006
- To develop an LDAPv3 based directory service
- Written in Java
- A small but growing community
 - > 42 committers
 - 16 full time developers
 - 8 full time quality engineers
 - > 3 full time technical writers
 - > 18 contributors
 - > 245 users

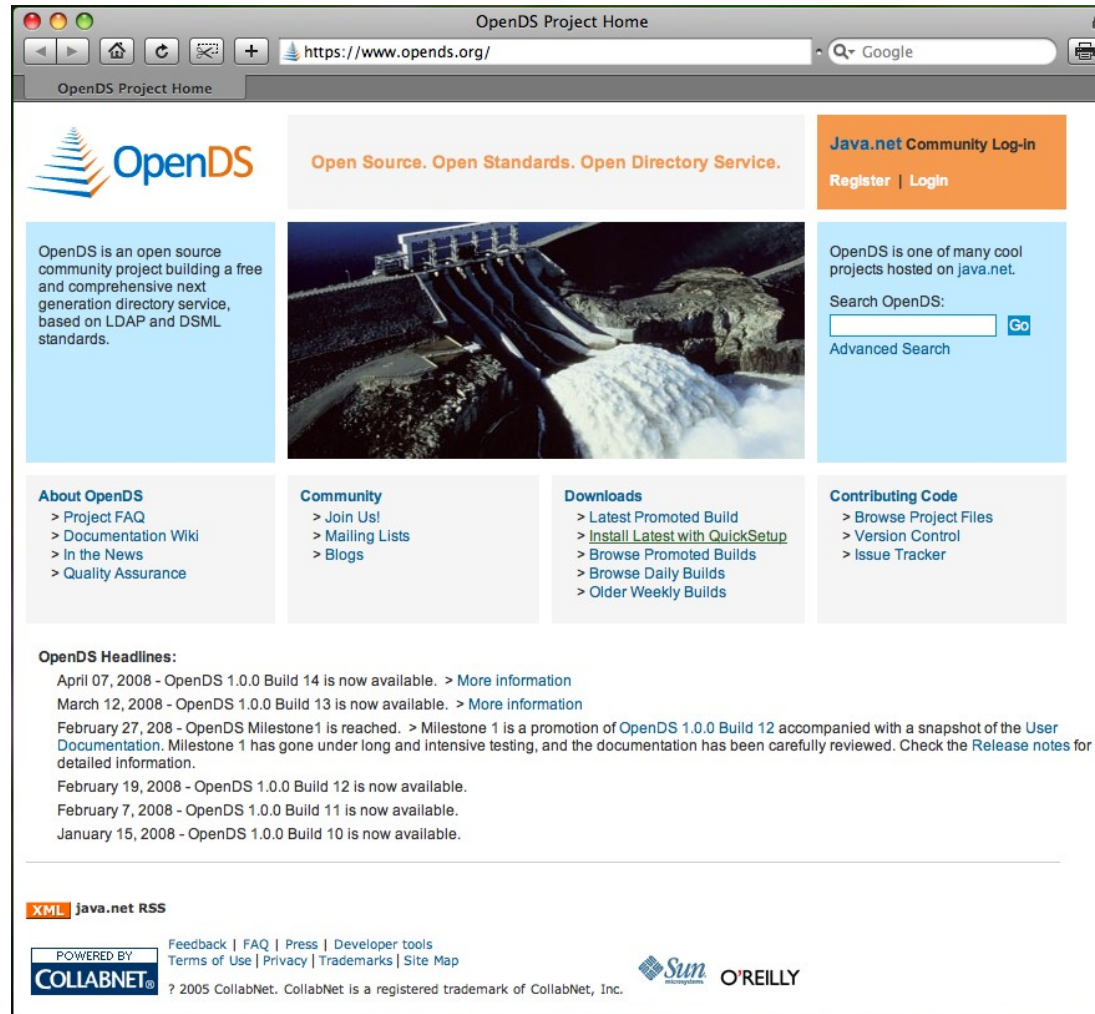
Goals

- Build a complete LDAPv3 based directory service
 - > A Directory Server i.e. the data-store
 - > And directory proxy services, virtual directory services...
 - > Consolidate data access: DSML, ...
- Easy to install, use and manage, also embeddable
- Extensible
 - > Many service APIs
 - > Default implementations provided
- With unmatched scalability and performance
 - > Both horizontal and vertical scalability
 - > Both Reads and Writes performance

Status

- OpenDS 1.0 release in early July
- Already full LDAPv3 compliant server
 - > Plus many standard and experimental extensions
 - > Partial support of RFC 4518 (Internationalization string preparation)
- Very configurable and extensible
- Several tools to help deploying, monitoring, interacting with the server
- Extensive testing
- Complete and accurate User documentation

Installing OpenDS



The screenshot shows the OpenDS Project Home website in a browser window. The browser address bar shows <https://www.opensds.org/>. The website features a navigation menu with the following sections:

- About OpenDS**
 - > Project FAQ
 - > Documentation Wiki
 - > In the News
 - > Quality Assurance
- Community**
 - > Join Us!
 - > Mailing Lists
 - > Blogs
- Downloads**
 - > Latest Promoted Build
 - > [Install Latest with QuickSetup](#)
 - > Browse Promoted Builds
 - > Browse Daily Builds
 - > Older Weekly Builds
- Contributing Code**
 - > Browse Project Files
 - > Version Control
 - > Issue Tracker

The main content area includes a central image of a dam, a search bar for OpenDS, and a "Java.net Community Log-in" section with "Register" and "Login" links. Below the navigation menu, there is a "OpenDS Headlines:" section with several news items:

- April 07, 2008 - OpenDS 1.0.0 Build 14 is now available. > [More information](#)
- March 12, 2008 - OpenDS 1.0.0 Build 13 is now available. > [More information](#)
- February 27, 2008 - OpenDS Milestone1 is reached. > Milestone 1 is a promotion of OpenDS 1.0.0 Build 12 accompanied with a snapshot of the [User Documentation](#). Milestone 1 has gone under long and intensive testing, and the documentation has been carefully reviewed. Check the [Release notes](#) for detailed information.
- February 19, 2008 - OpenDS 1.0.0 Build 12 is now available.
- February 7, 2008 - OpenDS 1.0.0 Build 11 is now available.
- January 15, 2008 - OpenDS 1.0.0 Build 10 is now available.

At the bottom of the page, there is an "XML java.net RSS" link, a "POWERED BY COLLABNET" logo, and a footer with "Feedback | FAQ | Press | Developer tools", "Terms of Use | Privacy | Trademarks | Site Map", and logos for Sun and O'REILLY. A copyright notice reads: "© 2005 CollabNet. CollabNet is a registered trademark of CollabNet, Inc."

Why Extending OpenDS ?

- Enrich data types
- Build business logic closer to the data
 - > Data integrity / Constraints
- Interaction with 3rd party applications
 - > AlertHandler
 - > LogHandler
- New LDAP extended operations
- Provide new kinds of LDAP services
 - > Penrose Virtual Directory

Multiple ways to extend OpenDS

- Extend the LDAP schema
- Intercept LDAP operations and provide additional processing:
 - > Using the DirectoryServerPlugin API
- Implement new or different flavors of the services by providing implementation of OpenDS service interfaces
 - > Over 50 public APIs
 - > Package `org.opensds.server.api`;

Extending Schema

- OpenDS includes by default most standard schemas
- Add files in the <instance>/config/schema directory
- Add LDAP schema attributes types or object classes over LDAP
- Implement new matching rules or syntaxes
 - > `public abstract class MatchingRule`
 - > `public abstract class AttributeSyntax`

DirectoryServerPlugin API

- Provides several entry points (47) in the Server life cycle and LDAP operation processing:
 - > Server Start / Stop
 - > Post Connect / Post Disconnect
 - > LDIF Import / Export
 - > Pre-Parsing
 - > Pre-Operation
 - > Searched Entry
 - > Searched Reference
 - > Post-Operation
 - > Post-Response
 - > ...

DirectoryServerPlugin API (cont.)

- Allows to defines business constraints or LDAP extensions
 - > EntryUUID attribute
 - > Referential integrity
 - > Last modification name and time
 - > Attribute Lists by objectclass

OpenDS Service Interfaces

- Allows extension of the LDAP protocol services and the server functionalities
- OpenDS defines many service interfaces, provides default implementations:
 - > AccessControlHandler : Implement ACI identical to Sun DSEE
 - > ConnectionHandler : Provides LDAP, LDAPS, JMX and SNMP

Some Service Interfaces

- Package `org.opens.server.api`
- `ExtendedOperationHandler`
- `AlertHandler`
- `LogPublisher` (for Access, Debug, Errors...)
- `SASLMechanismHandler`, `TrustManagerProvider` ...
- `SynchronizationProvider`
- `VirtualAttributeProvider`
- `Group`
- `EntryCache`

OpenDS public APIs

- When writing extensions, configuration parameters are automatically available through dsconfig and documented.
 - > `public abstract class ConnectionHandler`
`<T extends ConnectionHandlerCfg>`
- OpenDS 1.0
 - > Public APIs have been tagged as public
- Some APIs will need re-factoring post 1.0
 - > For better abstraction from internal processing
 - > For performance optimization

Summary

- OpenDS is an open source LDAP directory service written in the Java programming language
- Simple to use, with high performance
- It is very extensible
- Can be embedded in Java applications
- Already used in several other open source projects such as Penrose Virtual Directory and OpenSSO

Q & A



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