

# Novell Developer Kit

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DSMLV2/SOAP



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# Preface

This documentation describes Directory Services Markup Language (DSML) and its implementation with Lightweight Directory Access Protocol (LDAP).

This guide contains the following sections:

- [DSMLv2/SOAP Concepts](#)
- [Deployment and Configuration](#)
- [DSMLv2 Document Structure](#)
- [Samples](#)
- [Revision History](#)

## Audience

The guide is intended for application developers who are familiar with Extensible Markup Language (XML) and Simple Object Access Protocol (SOAP).

## Feedback

We want to hear your comments and suggestions about this manual. Please use the User Comments feature at the bottom of each page of the online documentation and enter your comments there.

## Documentation Updates

For the most recent version of this guide, see the [developer.novell.com/ndk/doc.htm](http://developer.novell.com/ndk/doc.htm) (<http://developer.novell.com/ndk/doc.htm>) Web site.

## Additional Documentation

For the most recent version of NDK guides, see the [NDK Download Web site](http://developer.novell.com/ndk/downloadaz.htm) (<http://developer.novell.com/ndk/downloadaz.htm>).

## Documentation Conventions

In this documentation, a greater-than symbol (>) is used to separate actions within a step and items within a cross-reference path.

A trademark symbol (® , ™ , etc.) denotes a Novell® trademark. An asterisk (\*) denotes a third-party trademark.

When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as Linux\* or UNIX\* , should use forward slashes as required by your software.



# DSMLv2/SOAP Concepts

Directory Services Markup Language (DSML), an OASIS specification, enables developers to express LDAP functions and retrieve data in XML. DSML version 2 (DSMLv2) represents LDAP directory operations and their results by XML request/response operations.

Common DSML operations include searching for specific directory objects and returning selected attribute values.

Simple Object Access Protocol (SOAP), is a lightweight protocol for exchange of information in a decentralized, distributed environment. It is an XML-based protocol that can potentially be used in combination with a variety of other protocols.

In this DSMLv2/SOAP kit, DSML makes use of SOAP requests to communicate with Novell® eDirectory™.

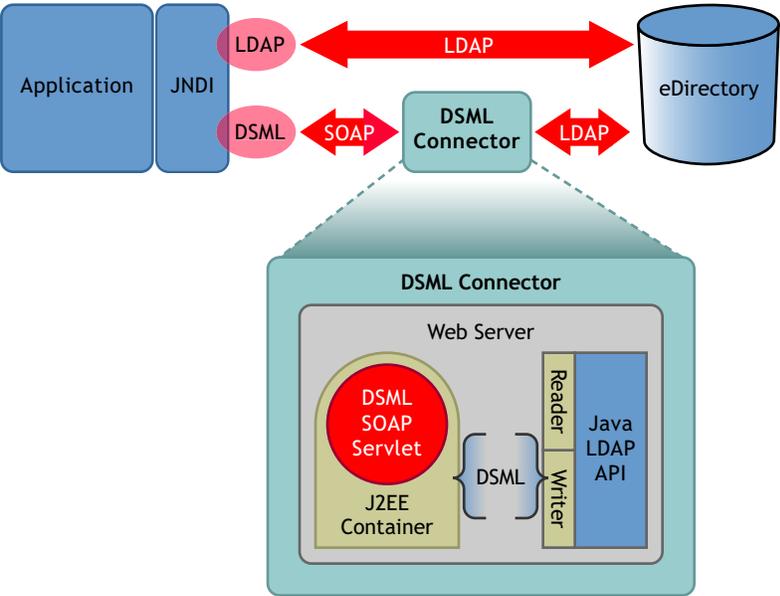
## 1.1 DSMLv2/SOAP and LDAP

DSMLv2/SOAP focuses on extending the reach of LDAP directories.

The following figure describes the communication between an application at the client side and Novell eDirectory. The application uses Java\* Naming and Directory Interface (JNDI) to access eDirectory.

JNDI is an industry-wide, open interface that gives developers a common interface for navigating the many naming systems that exist in the computing world today. JNDI greatly simplifies the code needed to browse directory services such as eDirectory, X.500, and LDAP.

Figure 1-1 DSMLv2/SOAP Architecture



JNDI can have two providers:

- LDAP: Uses LDAP to communicate with eDirectory.
- DSML: Uses the SOAP protocol to communicate with eDirectory. The DSML connector converts SOAP requests to LDAP requests, which it uses to communicate with eDirectory.

Existing LDAP applications can use DSML to access eDirectory and other LDAP directories.

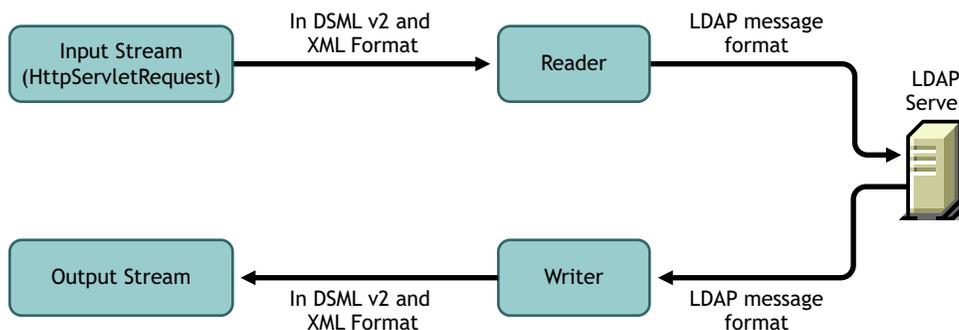
### 1.1.1 DSML Connector

The DSML connector converts SOAP requests to LDAP and accesses eDirectory. Clients send and receive DSML through HTTP/SOAP to and from the DSML connector. The DSML connector is a servlet in a Java or J2EE container. This means that it communicates over HTTP and handles SOAP itself. DSML is handed to the Java LDAP API and is converted into LDAP messages and sent to eDirectory over LDAP. The DSML connector could optionally run in a SOAP server.

#### DSML Reader and Writer

DSMLv2/SOAP for eDirectory makes use of DSMLReader and DSMLWriter classes, which are shipped as part of utility classes in Java LDAP SDK. It instantiates a DSMLReader class object and DSMLWriter class object.

*Figure 1-2 DSML Reader and Writer*



The DSMLReader class object takes the HttpServletRequest request as an input stream containing XML with DSML tags. It ignores all XML tags before and after batchRequests. All requests within batchRequests are converted into LDAP messages and sent to the LDAP server. The response from the LDAP server (in LDAP message format) is converted back to DSML tags using the DSMLWriter class object and the corresponding DSML tags are written back to the specified output stream.

### 1.1.2 DSMLv2 Schema

DSMLv2/SOAP expresses LDAP requests and responses as XML document fragments. DSMLv2 is a systematic translation of LDAP's ASN.1 grammar (defined by RFC 2251) into XML schema. Therefore, when a DSMLv2 element name matches an identifier in LDAP's ASN.1 grammar, the named element means the same thing in DSMLv2 and in LDAP.

Except where noted otherwise, the DSMLv2 grammar follows the same rules as the LDAP grammar, even if those rules are not explicitly expressed in the DSMLv2 schema—for example, a DSMLv2 AttributeDescription can contain only those characters allowed by LDAP.

## 1.2 Getting Started

The following sections cover a few basic requirements for getting set up and started with DSMLv2/SOAP:

### 1.2.1 Dependencies

Developing and running an application that uses DSMLv2/SOAP support for eDirectory requires the following:

- ❑ A Web Application Server or Servlet engine, such as the following:
  - Novell exteNd™ JBroker™ Web: You can download JBroker from the [Novell Download site \(http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4\)](http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4).
  - Novell exteNd Application Server: The Novell exteNd Application Server ships with NetWare 6.5 SP 1.1 and later. You can download this from the [Novell Download site \(http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4\)](http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4).
  - rta Tomcat version 4: You can download this from <http://jakarta.apache.org/tomcat> (<http://jakarta.apache.org/tomcat>).

---

**NOTE:** Tomcat version 3 is not supported.

---

- ❑ Java Runtime Environment (JRE) 1.4 or higher, required to run an application. You can download this from <http://java.sun.com/j2se/1.4> (<http://java.sun.com/j2se/1.4>).
- ❑ Java Development Kit (JDK\*) 1.4 or higher, required to develop applications. You can download this from <http://java.sun.com/j2se/1.4> (<http://java.sun.com/j2se/1.4>).
- ❑ An LDAP server. If you want to use TLS (SSL) or the Start/Stop TLS (Transport Layer Security) functionality, you need an LDAP server that supports these features.  
Novell eDirectory 8.x and higher supports SSL (Secure Socket Layer).  
Novell eDirectory 8.7 supports Start/Stop TLS. Refer to [Section 2.3, “Enabling TLS \(SSL\),” on page 19](#) for more information.
- ❑ Novell eDirectory 8.5 or higher if you want to develop or run applications that use the LDAP extensions for partition and replica management.

### 1.2.2 Supported Platforms

DSML and LDAP need not run in the same server.

This product is available on the following platforms:

- Windows\*:
  - Windows NT Server 4.0 with Service Pack 6 or later
  - Windows 2000 Server with Service Pack 2 or later
  - Windows XP
- Linux\*:
  - Red Hat\* Linux 7.2, 7.3, 8.0 or Red Hat Enterprise Linux AS 2.1
  - SuSE\* Linux Enterprise Server 8

- Solaris\*:
  - Solaris 7 on Sun SPARC (with patch 106327-13 or later for 32-bit systems)
  - Solaris 7 on Sun SPARC (with patch 106300-07 or later for 64-bit systems)
  - Solaris 8 on Sun SPARC (with patch 108827-20 or later)
  - Solaris 9 on Sun SPARC
- AIX\*:
  - AIX 5L with Maintenance Level 2, JVM 1.3.1, and the latest [AIX V6.0 Runtime Libraries](http://www-1.ibm.com/support/docview.wss?uid=swg24001467) (<http://www-1.ibm.com/support/docview.wss?uid=swg24001467>)

### 1.2.3 Installing DSMLv2/SOAP

To install DSMLv2/SOAP support on your system, download the exe from <http://developer.novell.com/ndk/dsml.htm> (<http://developer.novell.com/ndk/dsml.htm>).

Run the exe to install DSMLv2/SOAP support on your system.

### 1.2.4 What does this Kit Contain?

This kit consists of a deployable web archive (.war) file, called `novell-dsml.war`.

This file consists of the following:

- .jar files and .xml configuration files to run DSMLv2/SOAP support on your Web application server.
- The `web.xml` configuration file. This file is located in the `WEB-INF` directory.
- A readme that lists the known issues.
- Sample programs to get you started using DSMLv2/SOAP support.

### 1.2.5 DSMLv2 Authentication

An LDAP application associates a security principal with an LDAP connection by issuing a Bind request—or, in the SASL Bind case, by issuing as many successive Bind requests as needed to complete the authentication. A DSMLv2 document can be transported by means of a variety of mechanisms, so the document itself is not used to authenticate the requestor.

In the DSMLv2/SOAP implementation on eDirectory, the only authentication is the normal HTTP authentication. Therefore, the only way to bind with DSML is by sending the user name and password in the HTTP header.

# Deployment and Configuration

# 2

This section describes the steps to deploy DSMLv2/SOAP support for Novell® eDirectory™.

## 2.1 Deploying DSMLv2/SOAP

Ensure that you have installed DSMLv2 before proceeding with the deployment. For more details, see “[Installing DSMLv2/SOAP](#)” on page 14.

DSMLv2/SOAP can be deployed on the following Web servers:

- “[Jakarta Tomcat 4](#)” on page 15
- “[exteNd Application Server](#)” on page 16

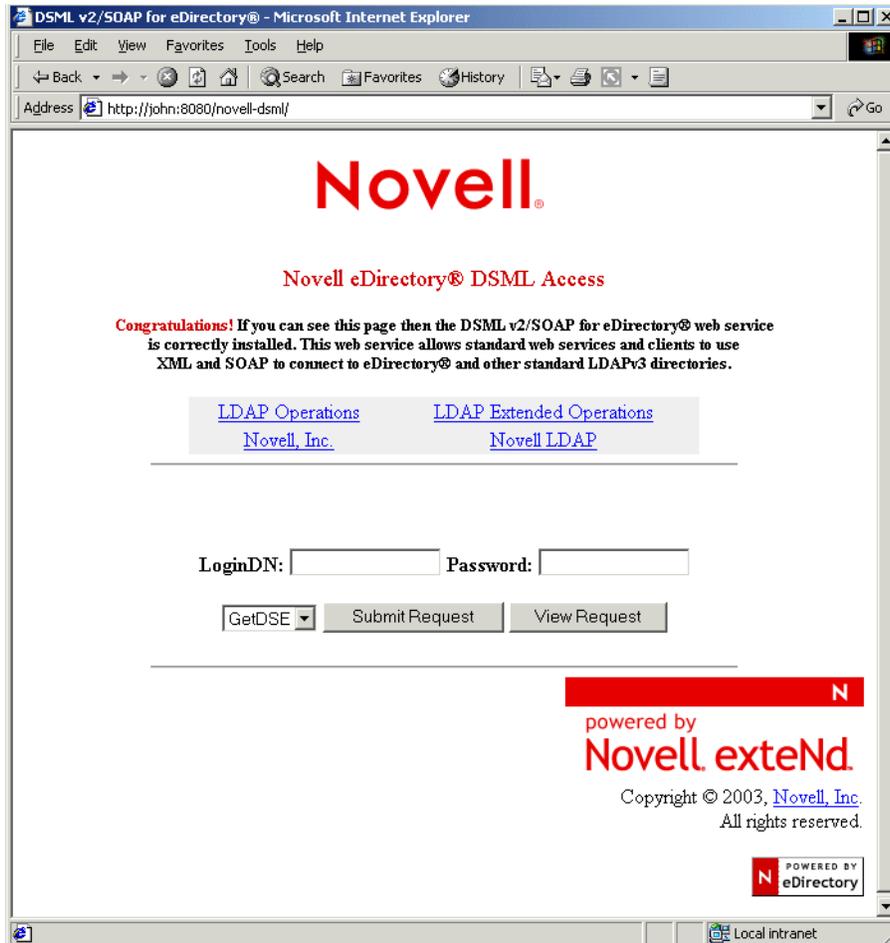
### 2.1.1 Jakarta Tomcat 4

The following steps guide you through deploying Novell DSMLv2/SOAP Support for eDirectory on Jakarta Tomcat 4.

- 1 Download and install Jakarta Tomcat from <http://jakarta.apache.org/tomcat> (<http://jakarta.apache.org/tomcat>).
- 2 Deploy the `novell-dsml.war` file on Tomcat by placing the file in the `tomcat\webapps` folder.
- 3 Start or restart Tomcat. When Tomcat loads, the `novell-dsml.war` file is found and expanded on your server.
- 4 Browse to `http://urltoservice/novell-dsml/`, where `urltoservice` is the URL where your Tomcat installation is running (this URL might contain a port).

- 5 If the DSMLv2/SOAP service is installed properly you will see the following verification page:

Figure 2-1 Verification Screen



- 6 By default, the `web.xml` configuration file is set up to access [www.nldap.com](http://www.nldap.com) (<http://www.nldap.com>), which can be used to run DSMLv2/SOAP samples.

## 2.1.2 exteNd Application Server

The Novell exteNd™ Application Server is a proven, scalable, and reliable J2EE\* compatible server with comprehensive support for Web Services. It provides you with the most complete foundation for building and deploying cross-platform, high-performance and standards-based applications.

The following steps guide you through deploying Novell DSMLv2/SOAP support for eDirectory on the exteNd Application Server.

- 1 Download and install the exteNd Application Server from the [Novell Download site](http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4) (<http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4>).
- 2 Download and install exteNd Workbench™ from the [Novell Download site](http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4) (<http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4>).
- 3 In Workbench, deploy the file by creating a new project of type “deploy only” and specify the `novell-dsml.war` file.

- 4 Create a deployment plan and set deployment properties.
- 5 Deploy the DSMLv2/SOAP service to your exteNd Application Server (or another Web application server).
- 6 By default, the `web.xml` configuration file is set up to access [www.nldap.com](http://www.nldap.com) (<http://www.nldap.com>), which can be used to run DSMLv2/SOAP samples.

### 2.1.3 exteNd JBroker Web

jBroker® Web 2.0 is a complete JAX RPC 1.0 compliant environment for building, running, and invoking Web services using Java.

The following steps guide you through deploying Novell DSMLv2/SOAP support for eDirectory on exteNd™ JBroker Web.

- 1 Download and install exteNd JBroker Web from [Novell Download site \(http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4\)](http://download.novell.com/index.jsp?search=Search&families=2642&x=28&y=4).
- 2 Deploy the `novell-dsml.war` file on JBroker using the `jwebserv` executable.
- 3 Browse to `http://urltoservice/jbroker`, where `urltoservice` is the URL where the DSML v2/SOAP support is deployed (this URL might contain a port).
- 4 If the DSML v2/SOAP service is installed properly you will see the verification page.
- 5 By default, the `web.xml` configuration file is set up to access [www.nldap.com](http://www.nldap.com) (<http://www.nldap.com>), which can be used to run DSMLv2/SOAP samples.

## 2.2 DSMLv2/SOAP Configuration

Novell DSMLv2/SOAP support for eDirectory is configured using the `WEB-INF\web.xml` file. This file contains several parameters enabling you to customize the behavior of the DSMLv2/SOAP service. These parameters are documented within the `web.xml` file.

**Table 2-1** *Web.xml Configuration File Parameters*

Parameter Name	Description
<code>ldapHost</code>	Path of the LDAP server on which the LDAP directory is running.  Default value: <code>www.nldap.com</code> .
<code>ldapPort</code>	Contains the port the LDAP server is listening on.
<code>ldapMaxConnections</code>	Contains the maximum number of connections allowed to the LDAP server.  This number depends on the LDAP server configuration.  Default value: 10
<code>ldapMaxInstancesToShareConnection</code>	Contains the maximum number of clients that are allowed to share a single connection to the LDAP server.  Default value: 10

Parameter Name	Description
ldapKeystore	<p>Contains the path to the TLS (SSL) Keystore (where the trusted root certificate is stored).</p> <p>If the location is specified, the connection is secure.</p> <p>If the location is not specified, the connection is over simple clear text.</p> <p>Refer to <a href="#">Section 2.3, "Enabling TLS (SSL),"</a> on page 19 for more information.</p>

## 2.2.1 Sample Web.xml File

```
<!-- * $OpenLDAP: pkg/jldap/com/novell/services/dsml/web-
template.xml,v 1.1 2003/02/10 21:40:08 vtag Exp $ * * Copyright (C)
1999 - 2003 Novell, Inc. All Rights Reserved. * * THIS WORK IS SUBJECT
TO U.S. AND INTERNATIONAL COPYRIGHT LAWS AND * TREATIES. USE,
MODIFICATION, AND REDISTRIBUTION OF THIS WORK IS SUBJECT * TO VERSION
2.0.1 OF THE OPENLDAP PUBLIC LICENSE, A COPY OF WHICH IS * AVAILABLE AT
HTTP://WWW.OPENLDAP.ORG/LICENSE.HTML OR IN THE FILE "LICENSE" * IN THE
TOP-LEVEL DIRECTORY OF THE DISTRIBUTION. ANY USE OR EXPLOITATION * OF
THIS WORK OTHER THAN AS AUTHORIZED IN VERSION 2.0.1 OF THE OPENLDAP *
PUBLIC LICENSE, OR OTHER PRIOR WRITTEN CONSENT FROM NOVELL, COULD
SUBJECT * THE PERPETRATOR TO CRIMINAL AND CIVIL LIABILITY.--><!DOCTYPE
web-app PUBLIC "-//Sun Microsystems, Inc.//DTD Web Application 2.2//
EN" "http://java.sun.com/j2ee/dtds/web-app_2_2.dtd"><web-app>
<display-name>DSML Web Service</display-name> <description> DSML
Web Service to access eDirectory and other LDAP directories. Two
implementations are included: 1. dsml - Default service. Built by
Novell Extend product, JBrokerWeb, this service features more robust
SOAP handling. This leading edge release does not support HTTP
authentication nor SOAP Authentication. 2. dsmlstreaming -
Alternative service. Built from a standard servlet, this service
features HTTP authentication but not SOAP Authentication and less
robust SOAP handling. This implementation is an attempt to overcome
scalability issues with the DSMLv2 Specification. </description>
<!-- contains the path to the LDAP server --> <context-param>
<param-name>ldapHost</param-name> <param-
value>www.nldap.com</param-value> </context-param> <!-- contains
the port the LDAP server is listening on --> <context-param>
<param-name>ldapPort</param-name> <param-value>389</param-
value> </context-param> <!-- contains the maximum number of
connections allowed to the ldap server --> <context-param>
<param-name>ldapMaxConnections</param-name> <param-value>10</
param-value> </context-param> <!-- contains the maximum number of
clients that are allowed to share a single connection to the ldap
server --> <context-param> <param-
name>ldapMaxInstancesToShareConnection</param-name> <param-
value>10</param-value> </context-param> <!-- contains the path to
the TLS (SSL) Keystore --> <context-param> <param-
name>ldapKeystore</param-name> <param-value></param-value> </
context-param> <!-- these commands start the two DSML services as
```

```

explained in the description --> <servlet> <servlet-
name>jbroker</servlet-name> <servlet-
class>com.novell.services.dsml.dom.DsmlImpl</servlet-class>
<load-on-startup>1</load-on-startup> </servlet> <servlet>
<servlet-name>streaming</servlet-name> <servlet-
class>com.novell.services.dsml.stream.DsmlService</servlet -
class> <load-on-startup>1</load-on-startup> </servlet>
<servlet-mapping> <servlet-name>jbroker</servlet-name>
<url-pattern>/jbroker</url-pattern> </servlet-mapping> <servlet-
mapping> <servlet-name>streaming</servlet-name> <url-
pattern>/stream</url-pattern> </servlet-mapping></web-app>

```

## 2.2.2 LDAP Test Server

Novell has set up an LDAP server that you can access over the Internet to test your LDAP application. The server's name is [www.nldap.com](http://www.nldap.com), and it listens on the default LDAP port (389). To use authenticated access, you must set up your own account in your own eDirectory container. Your account is limited to 1 MB of disk storage.

To access this site, go to the [NDS/LDAP Services Access Test Site \(http://www.nldap.com/NLDAP\)](http://www.nldap.com/NLDAP).

## 2.3 Enabling TLS (SSL)

To use TLS (SSL) with DSMLv2/SOAP support, you need to create a keystore. For instructions on creating a keystore, see the [LDAP Classes for Java documentation \(http://developer.novell.com/ndk/doc/jldap/jldapenu/data/cchcbejj.html\)](http://developer.novell.com/ndk/doc/jldap/jldapenu/data/cchcbejj.html). The JSSE and the keytool are included with JDK 1.4.

Once the keystore is created, specify the path in the `ldapKeystore` parameter in the `web.xml` configuration file as follows:

```

<context-param> <param-name>ldapKeystore</param-name> <param-
value></param-value></context-param>

```



# DSMLv2 Document Structure

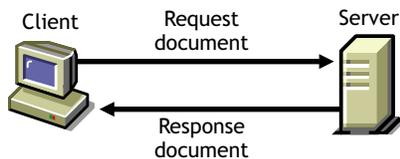
# 3

There are two types of DSMLv2 documents:

- Request document
- Response document

In a DSMLv2-based interaction between a client and a server there is a pairing of requests and responses. For each request document submitted by the client, one response document is produced by the server.

**Figure 3-1** DSMLv2 Documents



The top-level element of a request fragment is a BatchRequest and the top-level element of a response fragment is a BatchResponse.

A BatchRequest contains zero, one, or many individual request elements and a BatchResponse consists of zero, one or many individual response elements. A BatchRequest containing zero request elements is a valid request; the valid response is a BatchResponse containing zero response elements. Such a batch requestresponse pair can be used to verify that a server is capable of processing DSMLv2 documents.

For sample DSMLv2, see [“Samples” on page 23](#).



# Samples

# 4

This chapter gives you some sample DSMLv2/SOAP programs and also describes how to view sample JBroker™ and JNDI programs.

## 4.1 Sample DSMLv2/SOAP Programs

This section contains the following:

- “Sample DSMLv2/SOAP Client” on page 23
- Section 4.1.2, “Sample DSMLv2/SOAP Document to Add a User,” on page 25
- Section 4.1.3, “Sample DSMLv2/SOAP Document to Modify the Distinguished Name (DN),” on page 26
- Section 4.1.4, “Sample DSMLv2/SOAP Document to Modify Entries,” on page 27
- Section 4.1.5, “Sample DSMLv2/SOAP Document to Search for Entries,” on page 28
- Section 4.1.6, “Sample DSMLv2/SOAP Document to Delete an Entry,” on page 29

### 4.1.1 Sample DSMLv2/SOAP Client

The following sample program allows you to perform directory operations like search, modify, add, or delete on any LDAP server using a DSMLv2 document.

```
/
*****
* $Novell: DSMLSoapClient.java,v 1.0 2003/08/21 11:31:03 $
* Copyright (C) 1999, 2000, 2001 Novell, Inc. All Rights Reserved.
*
* THIS WORK IS SUBJECT TO U.S. AND INTERNATIONAL COPYRIGHT LAWS AND
* TREATIES. USE AND REDISTRIBUTION OF THIS WORK IS SUBJECT TO THE
LICENSE
* AGREEMENT ACCOMPANYING THE SOFTWARE DEVELOPMENT KIT (SDK) THAT
CONTAINS
* THIS WORK. PURSUANT TO THE SDK LICENSE AGREEMENT, NOVELL HEREBY
GRANTS TO
* DEVELOPER A ROYALTY-FREE, NON-EXCLUSIVE LICENSE TO INCLUDE NOVELL'S
SAMPLE
* CODE IN ITS PRODUCT. NOVELL GRANTS DEVELOPER WORLDWIDE DISTRIBUTION
RIGHTS
* TO MARKET, DISTRIBUTE, OR SELL NOVELL'S SAMPLE CODE AS A COMPONENT
OF
* DEVELOPER'S PRODUCTS. NOVELL SHALL HAVE NO OBLIGATIONS TO DEVELOPER
OR
* DEVELOPER'S CUSTOMERS WITH RESPECT TO THIS CODE.
*
* $name:          DSMLSoapClient.java
* $description:   This Sample Code allows you to perform any kind of
directory
```

```

*           operation e.g search,modify,add,delete on any
LDAPServer using
*           a DSML Document.
*
*****
****/import java.io.*;
import java.net.*;
import java.util.Hashtable;
import javax.naming.Context;
public class DSMLSoapClient {
    public static void main(String[] args) throws Exception {
        if (args.length < 4) {
            System.err.println("Usage:  java DSMLSoapClient " +
                "http://DsmlURL dsmlfile.xml" +
                " loginDN" + " userpassword");
            System.err.println("Example:");
            System.err.println("java DSMLSoapClient " +
                "http://acme.com:8080/novell-dsml/stream
" +
                "e:\\dsml.xml \"cn=admin,o=acme\"
\\secret\");
            System.exit(1);
        }
        String DsmlURL      = args[0];
        String DsmlDoc      = args[1];
        String loginDN      = args[2];
        String password     = args[3];
        String cred;
        URL url;
        URLConnection connection;
        HttpURLConnection httpConn;
        String SOAPAction = "\"#batchRequest\"";
        cred=loginDN + ":" + password;
        String encoding = new sun.misc.BASE64Encoder().encode (
            cred.getBytes());
        // Create the connection where we're going to send the
file.
        url = new URL(DsmlURL);
        connection = url.openConnection();
        connection.setRequestProperty ("Authorization", "Basic " +
encoding);
        httpConn = (HttpURLConnection) connection;
        FileInputStream instr = new FileInputStream(DsmlDoc);
        ByteArrayOutputStream outstr = new ByteArrayOutputStream();
        // Copy the SOAP file to the open connection.
        copy(instr,outstr);
        instr.close();
        byte[] b = outstr.toByteArray();
        // Create the HTTP parameters.
        httpConn.setRequestProperty( "Content-Length",
            String.valueOf( b.length ) );
        httpConn.setRequestProperty("Content-Type","text/xml;
charset=utf
-8");

```

```

httpConn.setRequestProperty("SOAPAction", SOAPAction);
httpConn.setRequestMethod( "POST" );
httpConn.setDoOutput(true);
httpConn.setDoInput(true);
// Write the XML that was read in to b.
OutputStream out = httpConn.getOutputStream();
out.write( b );
    out.close();
// Read the response returned from the DSML servlet and write
it
// to standard out.
InputStreamReader ireader =
    new InputStreamReader(httpConn.getInputStream());
BufferedReader in = new BufferedReader(ireader);
String inputLine;
System.out.println("\n-----"
                    + "-----");
    System.out.println("\n                                DSML v2/SOAP
Response");
    System.out.println("\n-----"
                    + "-----");
while ((inputLine = in.readLine()) != null)

    System.out.println(inputLine);
in.close();
}
public static void copy(InputStream in, OutputStream out)
    throws IOException
{
    synchronized (in) {
        synchronized (out) {
            byte[] buffer = new byte[256];
            while (true) {
                int bytesRead = in.read(buffer);
                if (bytesRead == -1) break;
                out.write(buffer, 0, bytesRead);
            }
        }
    }
}
}
}
}

```

## 4.1.2 Sample DSMLv2/SOAP Document to Add a User

### Request Document

The following DSMLv2 document is a request to add a user:

```

<?xml version="1.0" encoding="UTF-8"?>
<dsml:batchRequest xmlns:dsml="urn:oasis:names:tc:DSML:2:0:core"
    xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://

```

```

www.w3.org/
2001/XMLSchema-instance">
  <dsml:addRequest dn="cn=cjhones,o=test">
    <attr name="objectclass"><value>top</value></attr>
    <attr name="objectclass"><value>person</value></attr>
    <attr name="objectclass"><value>organizationalPerson</value></
attr>
    <attr name="objectclass"><value>inetorgperson</value></attr>
    <attr name="sn"><value>Johnson</value></attr>
    <attr name="givenName"><value>cjhones</value></attr>
    <attr name="title"><value>Software Design Engineer</value></
attr>
  </dsml:addRequest>
</dsml:batchRequest>
Response Document
The following DSMLv2 document is a response to the above add request:
<?xml version="1.0" encoding="UTF-8"?>
<soap-env:Envelope xmlns:soap-env="http://schemas.xmlsoap.org/soap/
envelope/">
<soap-env:Body>
<batchResponse xmlns="urn:oasis:names:tc:DSML:2:0:core"
xmlns:xsd="http://
www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/
/XMLSchema-
instance"><addResponse requestID="7"><resultCode code="0"
descr="Success" /
></addResponse></batchResponse></soap-env:Body>
</soap-env:Envelope>

```

### 4.1.3 Sample DSMLv2/SOAP Document to Modify the Distinguished Name (DN)

#### Request Document

The following DSMLv2 document is a request to modify a DN.

```

<?xml version="1.0" encoding="UTF-8"?><dsml:batchRequest
xmlns:dsml="urn:oasis:names:tc:DSML:2:0:core"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://
www.w3.org/
2001/XMLSchema-instance">
  <dsml:modDNRequest dn="cn=cjhones,o=test"
    newrdn="cn=AliceW"
    deleteoldrdn="true"
    newSuperior="O=org">
  </dsml:modDNRequest>
</dsml:batchRequest>
Response Document
<?xml version="1.0" encoding="UTF-8"?>
<soap-env:Envelope xmlns:soap-env="http://schemas.xmlsoap.org/soap
/envelope/">
<soap-env:Body>

```

```

<batchResponse xmlns="urn:oasis:names:tc:DSML:2:0:core"
xmlns:xsd="http://
www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/
/XMLSchema-
instance"><modDNResponse requestID="22"><resultCode code="0"
descr="Success"
/>
</batchResponse></soap-env:Body>
</soap-env:Envelope>

```

## 4.1.4 Sample DSMLv2/SOAP Document to Modify Entries

### Request Document

```

<?xml version="1.0" encoding="UTF-8"?>
<dsml:batchRequest xmlns:dsml="urn:oasis:names:tc:DSML:2:0:core"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://
www.w3.org/
2001/XMLSchema-instance">
  <dsml:modifyRequest dn="cn=cjhones,o=test">
    <modification name="telephoneNumber" operation="add">
      <value>536 354 2343</value>
      <value>234 212 4534</value>
    </modification>
    <modification name="sn" operation="replace">
      <value>Richard</value>
    </modification>
  </dsml:modifyRequest>
</dsml:batchRequest>

```

### Response Document

```

<?xml version="1.0" encoding="UTF-8"?>
<soap-env:Envelope xmlns:soap-env="http://schemas.xmlsoap.org/soap/
envelope/">
  <soap-env:Body>
    <batchResponse xmlns="urn:oasis:names:tc:DSML:2:0:core"
xmlns:xsd="http://
www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/
/XMLSchema-
instance"><modifyResponse requestID="15"><resultCode code="0"
descr="Success" /></modifyResponse></batchResponse></soap-env:Body>
</soap-env:Envelope>

```

## 4.1.5 Sample DSMLv2/SOAP Document to Search for Entries

### Request Document

```
<?xml version="1.0" encoding="UTF-8"?>
<dsml:batchRequest xmlns:dsml="urn:oasis:names:tc:DSML:2:0:core"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://
www.w3.org/
2001/XMLSchema-instance">
  <dsml:searchRequest
    dn="o=test"
    scope="wholeSubtree"
    derefAliases="neverDerefAliases"
    sizeLimit="1000">
    <dsml:filter>
      <dsml:and>
        <dsml:substrings name="givenName">
          <initial>S</initial></dsml:substrings>
        <dsml:equalityMatch name="objectclass">
          <value>inetorgperson</value></dsml:equalityMatch>
        </dsml:and>
      </dsml:filter>
    <dsml:attributes>
      <dsml:attribute name="cn"/>
      <dsml:attribute name="sn"/>
      <dsml:attribute name="l"/>
    </dsml:attributes>
  </dsml:searchRequest>
</dsml:batchRequest>
```

### Response Document

```
<?xml version="1.0" encoding="UTF-8"?>
<soap-env:Envelope xmlns:soap-env="http://schemas.xmlsoap.org/soap/
envelope/">
  <soap-env:Body>
    <batchResponse xmlns="urn:oasis:names:tc:DSML:2:0:core"
      xmlns:xsd="http://
www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/
XMLSchema
-instance"><searchResponse requestID="4"><searchResultEntry
  dn="cn=JSmith,o=test" requestID="4"><attr name="l"><value>Alaska</
value><
/attr><attr name="cn"><value>James Smith</value><value>Jim Smith<
/value><value>Jimmy Smith</value><value>JSmith</value></attr><attr
  name="sn"><value>Smith</value></attr><
/searchResultEntry><searchResultEntry dn="cn=sunil,o=test"
  requestID="4"><attr name="cn"><value>sunil</value></attr><attr
  name="sn"><value>kr</value></attr></searchResultEntry>
<searchResultDone requestID="4"><resultCode code="0" descr="Success" /
><<
```

```
/searchResultDone>
</searchResponse>
</batchResponse>
</soap-env:Body>
</soap-env:Envelope>
```

## 4.1.6 Sample DSMLv2/SOAP Document to Delete an Entry

### Request Document

```
<?xml version="1.0" encoding="UTF-8"?><dsml:batchRequest
xmlns:dsml="urn:oasis:names:tc:DSML:2:0:core"

  xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://
www.w3.org
/2001/XMLSchema-instance">
  <dsml:delRequest dn="cn=cjhones,o=test">
    </dsml:delRequest>
  </dsml:batchRequest>
```

### Response Document

```
<?xml version="1.0" encoding="UTF-8"?>
<soap-env:Envelope xmlns:soap-env="http://schemas.xmlsoap.org/soap/
envelope/">
<soap-env:Body>
<batchResponse xmlns="urn:oasis:names:tc:DSML:2:0:core"
xmlns:xsd="http://
/www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/
/XMLSchema
-instance"><delResponse requestID="10"><resultCode code="0"
descr="Success"
 /></delResponse></batchResponse></soap-env:Body>
</soap-env:Envelope>
```

## 4.2 Viewing Sample Programs

DSMLv2/SOAP support is bundled with several samples to get you up and running quickly. This kit contains two sample types; **JBroker** and **JNDI**.

Once the DSMLv2/SOAP service is running on your application server complete the following steps to run these samples.

## 4.2.1 JBroker

The JBroker samples can run once you have deployed the DSMLv2/SOAP service to your application server.

To test the JBroker samples, browse to `http://urltoservice/novell-dsml/`, where *urltoservice* is the URL where your application server is running (the URL might require a port number). If the DSMLv2/SOAP service is installed properly, you will see a verification page.

An additional JBroker sample, called *DomClient*, is included with this kit. Both samples use a stub and service generated by JBroker from the *DsmlClient.java* interface.

From the folder containing the deployed *novell-dsml.war* file, browse to `WEB-INF\classes`, which contains a compiled version of this sample.

To run this sample, execute the following command:

```
java sample_consumers.DomClient dsmlfile urltoservice
```

Where *dsmlfile* is any DSMLv2 file (an example, *dsml.xml*, is included in *novell-dsml.war*) and *urltoservice* is the URL of the DSMLv2/SOAP service (this URL might require a port number) on your application server. This program reads the DSMLv2 file as DOM and sends the request XML to the service.

The source code for this sample is contained in the *novell-dsml\src* folder.

## 4.2.2 JNDI

To run the samples that use JNDI you need the following:

- Java XML Summer Pack. This is available from Sun\* at <http://java.sun.com/xml/downloads/javaxmlpack.html> (<http://java.sun.com/xml/downloads/javaxmlpack.html>)
- JNDI DSMLv2 Service Provider. This is available from Sun at <http://java.sun.com/developer/earlyAccess/jndi> (<http://java.sun.com/developer/earlyAccess/jndi>)

The following *.jar* files (contained in the previous downloads) must be specified in your classpath:

- *dsmlv2.jar*
- *providerutil.jar*
- *saaj-api.jar*
- *activation.jar*
- *dom4j.jar*
- *saaj-ri.jar*
- *mail.jar*
- *commons-logging.jar*

From the folder containing the deployed *novell-dsml.war* file, browse to `WEB-INF\classes`, which contains a compiled version of the JNDI sample. To run this sample, execute the following command:

```
java sample_consumers.Search urltoservice logindn password searchdn  
searchfilter
```

Where, *urltoservice* is the URL of the DSMLv2/SOAP service running on your application server (this URL might require a port).

The source code for this sample is contained in the `novell-dsml\src` folder.

Additionally, you can modify any of the JNDI samples contained in the LDAP Controls and Extensions for JNDI (available at <http://developer.novell.com/ndk/extjndi.htm> (<http://developer.novell.com/ndk/extjndi.htm>)) to use the DSMLv2/SOAP service by performing the following:

Open a sample and modify the context factory environment variable as follows:

Change

```
com.sun.jndi.ldap.LdapCtxFactory
```

to

```
com.sun.jndi.dsmlv2.soap.DsmlSoapCtxFactory
```

For an example, see the source code for `Search.java`.



# Revision History



The following table lists all changes made to the DSMLv2/SOAP documentation:

---

Release	Changes
March 2006	Fixed formatting issues.
March 2005	<ul style="list-style-type: none"><li>• Updated the Dependencies section, “Dependencies” on page 13</li><li>• Changed the formatting of the Sample DSMLv2/SOAP Client.</li></ul>
October 2003	Initial documentation release.

---