

# Novell DirXML® Driver for Exchange

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IMPLEMENTATION GUIDE

103-000268-001



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Implementation Guide  
December 13, 2002

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# About This Guide

This guide explains how to install and configure the DirXML<sup>®</sup> Driver for Microsoft\* Exchange.

The guide contains the following sections:

- ◆ **Chapter 1, “Introducing the DirXML Driver for Exchange,” on page 9**  
This section introduces new features and explains the default driver configuration.
- ◆ **Chapter 2, “Installing and Configuring the Driver,” on page 17**  
This section covers both the installation and upgrade processes as well as post-installation setup tasks.
- ◆ **Chapter 3, “Customizing the DirXML Driver for Exchange,” on page 27**  
This section explains how to customize driver parameters and data synchronization. It provides examples for common customizations.
- ◆ **Chapter 4, “Troubleshooting the Driver,” on page 31**  
This section lists common error messages and possible causes.

## Additional Documentation

For documentation on using DirXML and the other DirXML drivers, see the [DirXML Documentation Web site \(http://www.novell.com/documentation/lg/dirxml11a/index.html\)](http://www.novell.com/documentation/lg/dirxml11a/index.html).

## Documentation Updates

For the most recent version of this document, see the [DirXML Driver for Exchange Documentation Web site \(http://www.novell.com/documentation/lg/dirxml\\_Exchange/index.html\)](http://www.novell.com/documentation/lg/dirxml_Exchange/index.html)

## Documentation Conventions

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

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# 1

## Introducing the DirXML Driver for Exchange

The DirXML<sup>®</sup> Driver for Exchange is a connector designed to synchronize data between Novell<sup>®</sup> eDirectory<sup>™</sup> and Microsoft Exchange. This makes it possible for Exchange accounts to be managed in eDirectory. It is no longer necessary to manage a user's eDirectory and Exchange accounts separately. The DirXML Driver for Exchange increases the efficiency of your network management by allowing eDirectory and Exchange accounts to be managed as a single account in a single management tool.

### Overview

In this section you will find information explaining the following terms and concepts that you should understand when installing and using the driver:

- ◆ Basic driver concepts  
See [“Driver Concepts” on page 10](#).
- ◆ Benefits of this driver  
See [“Benefits” on page 11](#).
- ◆ New features  
See [“New Features” on page 11](#).
- ◆ The Novell iManager management utility  
[“Understanding iManager” on page 12](#).
- ◆ Skills you should have before using this driver  
See [“Required Skills” on page 12](#).
- ◆ Additional driver concepts  
See [“Adding to the DirXML Basics” on page 13](#)

# Driver Concepts

The driver is a bidirectional synchronization connector between Microsoft Exchange and eDirectory. This connector uses XML to convert Exchange objects to eDirectory objects and vice versa.

eDirectory acts as a hub, with other applications and directories publishing their changes to it. eDirectory then sends changes to the applications and directories that have subscribed for them. This results in two main flows of data: the Publisher channel and the Subscriber channel.

- ◆ The Publisher channel reads information from your Exchange Server and submits that information to eDirectory via the DirXML engine.
- ◆ The Subscriber channel watches for additions and modifications to eDirectory objects and creates changes on your Exchange server via the DirXML engine.

## Publisher Channel

The Publisher channel continuously polls the Exchange server for changes to objects. If the Exchange driver detects a change to a server object, the data between Exchange and eDirectory is synchronized. If the change was caused by data sent to Exchange from the Subscriber, no synchronization is necessary.

## Subscriber Channel

This Subscriber channel synchronizes changes made in eDirectory with data on the Exchange server. If an associated object is changed in eDirectory, the Subscriber channel updates the Exchange server with the new information.

# Benefits

You can use the driver to automate and maintain business processes in the following ways:

- ◆ Automatically create eDirectory objects from Exchange objects
- ◆ Synchronize bidirectional data between Exchange and eDirectory
- ◆ Maintain accurate and consistent eDirectory IDs
- ◆ Allow integration between Exchange and multiple applications (for example, eDirectory, Lotus Notes\*, Netscape\*, SAP\*, and Active Directory\*) using DirXML and eDirectory
- ◆ Manage Exchange distribution lists and remote objects

You can configure the DirXML Exchange connector to enhance your organization's processes using custom business logic in the form of XML rules and XSLT style sheets. Before installing and configuring the driver, you should evaluate and define those processes. During installation, you configure the driver's rules and style sheets to automate these processes wherever possible.

# New Features

This section lists the new features for this release of the driver:

## **Publisher Filter**

In this release, the Publisher channel uses the Publisher filter to build the API requests for data. If an attribute that is not supported by the class is in the filter, the Publisher channel will display an error. If a class that is not supported by the Publisher channel is in the filter, the filter will be ignored.

## **Attributes Supported by the Publisher**

In the past the Publisher supported only a handful of attributes. Now it supports all attributes supported by Exchange.

## **Proxy-Address and Target-Address Attributes**

In previous releases, the driver treated Proxy-Address and Target-Address as single-valued attributes. The driver would pull out and set only the SMTP value in these attributes and strip off the SMTP tag. Support for this behavior

is still present in the driver. However, Proxy-Address and Target-Address are multi-valued attributes that can contain more than one type of address, such as cc:Mail, X400, and others.

To synchronize all the values, a new tag called <proxyFlg/> has been added to the driver parameters. If this tag is not present, then the driver will work as it did in previous releases; the driver assumes that only the SMTP e-mail address is wanted. If the tag is put into the driver setting section of the driver parameters, then the driver will treat Proxy-Address and Target-Address as multi-valued and will synchronize all e-mail values and their associated types.

See “[Synchronizing Proxy-Address and Target-Address Attributes](#)” on page 29 for more information.

### **Synchronization of Distribution List Members**

Distribution List members now synchronize from Exchange to eDirectory.

## **Understanding iManager**

The Novell iManager utility is a tool for managing eDirectory objects, the schema, partitions, and replicas. Additional capabilities can be added to iManager through plug-ins. A Novell product, such as DirXML, adds plug-ins to iManager so it can manage the product’s additional capabilities and eDirectory objects and attributes. You manage DirXML objects for the driver in eDirectory by using the iManager DirXML plug-ins.

Prior to installing and configuring the driver, you should install the DirXML plug-ins found on the DirXML Product CD or at the root of the directory where you downloaded DirXML 1.1a.

## **Required Skills**

Implementing the driver requires expertise in Exchange and DirXML.

### **Expertise in Exchange**

This document assumes that your expertise in Exchange is equivalent to one of the following:

- ◆ An Exchange developer
- ◆ An Exchange administrator
- ◆ An application designer

- ◆ An upgrade administrator
- ◆ A database administrator

## Expertise in DirXML

This document assumes that your expertise in DirXML is equivalent to one of the following:

- ◆ An eDirectory administrator
- ◆ An XML developer
- ◆ An XSLT developer
- ◆ A DirXML administrator

## Adding to the DirXML Basics

The following areas of DirXML functionality are important to the driver.

- ◆ [“Event Processing Support” on page 13](#)
- ◆ [“Rules and Style Sheets” on page 14](#)
- ◆ [“Associations” on page 14](#)

## Event Processing Support

The driver supports the following events on the Publisher and Subscriber channels.

Functionality	Event
Publisher	Add Modify Delete
Subscriber	Add Modify Delete

The driver also supports a defined query capability so that DirXML can query the synchronized application or directory.

## Rules and Style Sheets

Rules are used to control the synchronization of the driver with eDirectory and the application, database, or directory. Rules help DirXML transform an event on a channel input into a set of commands on the channel output.

Style sheets are XSLT documents that define transformations or modifications of XML documents. You can configure and create rules and style sheets using the DirXML iManager plug-ins. The driver includes the following set of preconfigured rules and style sheets:

Rule or Style Sheet	Description
Placement Rule	Configured on the Publisher and Subscriber channels
Matching Rule	Operates on both the Publisher and Subscriber channels
Mapping Rule	Configured on the Driver object
InputTransform Style Sheet	Configured on the Driver object
OutputTransform Style Sheet	Configured on the Driver object
Create Style Sheet	Found on the Publisher channel
Event Transform Style Sheet	Found on the Publisher channel

For more information about creating your own rules and style sheets, refer to the *DirXML Administration Guide* (<http://www.novell.com/documentation/lg/dirxml11a/dirxml/data/a371o9o.html>).

## Associations

The driver uses the Exchange DN for associations. A unique ID or unique user name is created for records relating to Exchange objects. However, DirXML does not need to share these same unique IDs.

The association attribute received from Exchange is unique to the Exchange application, based on each driver for Exchange that you install and enable. If other drivers are installed, they use an association specific to that application. The association attribute is multi-valued. Therefore, if DirXML is being used

to connect multiple applications, all of their associations can be stored on this attribute.

The unique ID association links an object in Exchange to its associated object in eDirectory. This association allows the driver to perform subsequent tasks on the appropriate object.

The Association field is stored on the eDirectory object on the DirXML property page.



# 2

## Installing and Configuring the Driver

In this section, you will find information and procedures to help you:

- ◆ Know the **prerequisites** before you install the driver
- ◆ **Install** the driver
- ◆ **Upgrade** the driver
- ◆ **Import** the preconfigured driver file
- ◆ **Configure** the Exchange server
- ◆ Install a **remote Exchange driver**
- ◆ **Start** the driver

### Prerequisites

This section lists the software and hardware requirements for running the DirXML<sup>®</sup> Driver for Exchange.

#### Software Requirements

- ◆ Novell<sup>®</sup> DirXML 1.1 or higher
- ◆ eDirectory 8.6.2 or higher
- ◆ Windows\* NT\* 4
- ◆ Exchange 5.5

#### Hardware Requirements

- ◆ 128 MB RAM (256 MB or more recommended)

# Installing the Driver

- 1** Install Novell eDirectory™ 8.6.2 or later.  
You can create a new tree, or install into an existing tree.
- 2** Install the driver using the DirXML install.
- 3** Log in to eDirectory with Admin rights and start iManager.
- 4** Create a new driver set object under which the driver will be created.

Follow the instructions in the *DirXML 1.1a Administration Guide* (<http://www.novell.com/documentation/lg/dirxml11a/dirxml/data/a2iii88.html>) to create a DirXML-Driver Set object in iManager for the Exchange driver. You do not need to create a new Driver-Set object if one already exists.

# Upgrading the Driver

This section includes upgrade and post-installation instructions and explains how to:

- ◆ **Upgrade**
- ◆ **Perform other installation options**
- ◆ **Run the Normalize Exchange Associations utility**

## Upgrading

To upgrade from the DirXML Driver for Exchange 1.0:

- 1** During the DirXML installation, install the Exchange DirXML Driver.
- 2** In iManager, click Overview, then click the Exchange driver.
- 3** Verify the configuration of the driver.

Ensure that the name and path specified in the Driver Module section of the Driver Configuration are correct. The name should be Exchange55Shim.dll.

- 4** Click OK.

## Other Installation Options

To install the driver after you have already installed the DirXML engine:

- 1** Run the DirXML installation and follow the instructions.

- 2** Check the DirXML Engine and Driver installation check box.
- 3** Check the DirXML Driver 1.1 for Microsoft Exchange check box.
- 4** Complete the installation.

## Running the Normalize Exchange Associations Utility

If you are upgrading from the DirXML Driver 1.0 for Exchange, you need to install and run the Normalize Exchange Associations utility. This utility searches the eDirectory tree and normalizes the Exchange DirXML Driver associations. You first install the utility and then run it.

**NOTE:** If you are upgrading from the 1.0a patch, you do not need to run the Normalize Exchange Associations utility.

- 1** Create a temporary directory on the NT server where the Exchange DirXML Driver is installed.
- 2** Expand changeAssocKey.zip into the directory.
- 3** Open the RUN.BAT file and edit the file with these parameters:

Parameter	Value
Java	Driver letter and path for Java*. For example, enter C:\Novell\consoleone\1.2\jre\bin\java or D:\Novell\NDS\jre\bin\java
LDAP address:port	The IP address and port number of the eDirectory server. Normally, this is localhost:389.
LDAP Bind ID	The LDAP authentication ID.
LDAP Bind Password	The LDAP authentication password.
Driver Name	The name of the Driver object. For example, ExchangeDriver.

Parameter	Value
Action	Specify one of these desired actions: <ul style="list-style-type: none"> <li>◆ 1- Lists eDirectory objects with no association to the driver specified above.</li> <li>◆ 2- Lists eDirectory objects with an incomplete association to the driver specified above.</li> <li>◆ 3- Lists eDirectory objects with associations to be normalized.</li> <li>◆ 4- Modifies the associations in eDirectory and lists the objects.</li> </ul>

**NOTE:** We recommend that you first set the action to 3 so you can see what associations will change when you set the action to 4. Then, you can set the action to 4 and run the program again. You will not cause any problems by running the program more than once. If you are concerned about the current state of the associations, you can run the utility with the action set to 1 or 2.

**4** Run the RUN.BAT file.

## Post-Installation Tasks

This section explain how to do these tasks:

- ◆ **Import the preconfigured driver file.**
- ◆ **Configure the Exchange server.**
- ◆ **Install a Remote Exchange driver.**
- ◆ **Configure the driver parameters.**
- ◆ **Start the driver.**
- ◆ **Activate the driver.**

### Importing the Preconfigured Driver File

The Application Driver Creation Wizard will help you import a preconfigured Exchange DirXML Driver file. In iManager, this file will create and configure the objects needed to make the driver work properly.

**1** From iManager, click DirXML Management > Create Driver.

- 2** Choose to create a new driver set or install the driver as part of an existing driver set, then click Next.
- 3** Select the EXDRIVERCONFIG.XML file from the list of XML files, then click Next.
- 4** Enter the following information as prompted:
  - ◆ The driver name you want to use for the driver.
  - ◆ The IP address for the Exchange Server (used for LDAP queries).
  - ◆ If you want the Exchange Mailbox objects you created to be associated with a domain user, enter 0.
  - ◆ The Exchange Server name.
  - ◆ The name of the Exchange site this driver will administer.
  - ◆ The domain name of new NT accounts.
  - ◆ The frequency in seconds at which you want the Publisher to poll Exchange for events.
  - ◆ The eDirectory container where new eDirectory users will be added. Use the syntax listed in the field.
  - ◆ The eDirectory container where new eDirectory groups will be added.
  - ◆ The default Exchange container for Exchange mailboxes.
  - ◆ The default Exchange container for Exchange distribution lists.
- 5** When the import is finished, click Yes to define security equivalence on the imported driver.
  - 5a** Click Add, then select an object with Admin rights (or any other rights that you want the driver to have).
  - 5b** Click Apply, then click Close.
- 6** Click Finish.

You have now created the necessary DirXML objects. Follow the steps in [“Starting the Driver” on page 24](#) to configure these objects for your setup.

## Configuring the Exchange Server

This section contains information on configuring the Exchange server for use with the DirXML Driver for Exchange. You should already be familiar with Exchange administration and deployment.

You must have the following information about your setup before you proceed:

- ◆ The name of the Exchange Server that the driver will be synchronizing with.
- ◆ The name of the Exchange site you want to administer.
- ◆ The IP address or hostname of the Exchange server.
- ◆ The name of the Exchange service account and its password.

If the Exchange server is running on the same computer as eDirectory, the eDirectory LDAP server should be disabled or reconfigured to run on a different port.

To disable the eDirectory LDAP server:

- 1** Select the server module in the eDirectory Console.
- 2** Click Attributes and uncheck the Automatic check box.
- 3** If the LDAP module is currently loaded, unload it before you proceed.
- 4** If you want to run the eDirectory LDAP Server, reconfigure it to run on a different port.

To reconfigure the server in iManager:

- 1** Click eDirectory Management > Modify Object
- 2** Select the tree that the LDAP server is in.
- 3** Select the organization the LDAP server is in.
- 4** Display the LDAP server object Properties window, then click General.
- 5** Change the TCP port number to a value other than 389 or disable it.

## Installing a Remote Exchange Driver

The driver does not need to run on the same machine as the Exchange Server. However, when running remotely, the driver can run only on an NT server or

member server that belongs to the same domain as the Exchange server domain. This restriction is a Microsoft-imposed NT credential restriction.

The NT server on which you install the driver needs to have some Microsoft DLLs installed before it can run. These DLLs are LIBXDS.DLL, EXCHMEM.DLL, and EXPSRV.DLL, and they are installed by the Exchange Administrator program. Exchange Administrator can be installed from the *Microsoft Exchange Server CD*.

A remote driver will not create NT accounts when a new Exchange mailbox is created. This is also because of restrictions imposed by the Microsoft DAPI API that the driver uses.

## Configuring the Driver Parameters

To configure the driver parameters, you set up the driver, Publisher, and Subscriber parameters.

### Configuring the Driver Properties

- 1** In iManager, click DirXML Management > Overview.
- 2** Locate the driver set containing the Exchange driver, then click the driver's icon
- 3** From the DirXML Driver Overview, click the Exchange driver object, which will display the driver configurations.

This page requires you to enter the NT credentials the driver needs to manipulate the Exchange directory. Enter the credentials of the NT user who has administrative rights to the Exchange directory:

- ◆ **Authentication ID:** Username
- ◆ **Authentication Context:** Domain Name
- ◆ **Authentication Password:** Case-sensitive password for this NT user

### Configuring Publisher and Subscriber Driver Filters

You should modify the filters on the Publisher and Subscriber channels to include object classes and attributes you want available for DirXML processing.

- 1** In iManager, click DirXML Management > Overview.

- 2** Locate the driver set containing the Exchange driver, then click the driver's icon to display the DirXML Driver Overview page.
- 3** Click the Publisher or Subscriber filter object to display the Filter dialog box.
- 4** If the filter is empty, click The Filter is Empty to add classes to the filter.
- 5** In the Edit Filter dialog box, mark classes you want added to the filter for DirXML processing. When you are finished, click Apply, then click Ok.

The Subscriber and Publisher will work with all attributes that Exchange supports for Mailbox, dl, and Remote.

Mail-nickname is the Alias attribute on the General page in the Exchange Administrator. It is the Exchange attribute name that the driver supports but does not map to any existing eDirectory attributes. Based on your organization's needs, you can map this Exchange attribute to existing or new eDirectory attributes (after extending the schema) by modifying the Schema Mapping rule. Make sure that the syntax for any maps you add is valid. You can also handle this in a style sheet.

## Starting the Driver

- 1** In iManager, click DirXML Management > Overview.
- 2** Locate the driver in its driver set.
- 3** Click the driver status indicator in the upper right corner of the driver icon, then click Start Driver.

When the driver starts, you can open DSTrace to see driver processing details.

## Migrating and Resynchronizing Data

DirXML will synchronize data as it changes. If you want to synchronize all data immediately, you can choose from the following options:

- ♦ **Migrate data from eDirectory:** Allows you to select containers or objects you want to migrate from eDirectory to an application. When you migrate an object, the DirXML engine applies all of the Matching, Placement, and Create rules, as well as the Subscriber filter, to the object.
- ♦ **Migrate data into eDirectory:** Allows you to define the criteria DirXML uses to migrate objects from an application into Novell eDirectory. When

you migrate an object, the DirXML engine applies all of the Matching, Placement, and Create rules, as well as the Publisher filter, to the object. Objects are migrated into eDirectory using the order you specify in the Class list.

- ◆ **Synchronize:** DirXML looks in the Subscriber class filter and processes all objects for those classes. Associated objects will be merged. Unassociated objects will be processed as Add events.

To use one of the options explained above:

- 1** In iManager, select DirXML Management > Overview.
- 2** Locate the driver set containing the Exchange driver, then double-click the driver icon.
- 3** Click the appropriate migration button.

## Activating the Driver

DirXML and DirXML drivers must be activated within 90 days of installation, or they will shut down. At any time during the 90 days, or afterward, you can choose to activate DirXML products to a fully licensed state.

To activate your driver, you should:

- ◆ Purchase DirXML licenses
- ◆ Generate a Product Activation Request
- ◆ Submit the Product Activation Request
- ◆ Install the Product Activation Credential received from Novell

For more information about completing these tasks, refer to [Activating Your DirXML Product \(http://www.novell.com/documentation/lg/dirxml11a/index.html\)](http://www.novell.com/documentation/lg/dirxml11a/index.html).



# 3

## Customizing the DirXML Driver for Exchange

This section explains how to customize your driver for your specific business environment. It provides information on the following subjects:

- ♦ [Integrating the DirXML drivers for Exchange and NT domains](#)
- ♦ [Managing external repients](#)
- ♦ [Synchronizing Proxy-Address and Target-Address Attributes](#)

### Integrating the DirXML Driver for Exchange and the DirXML Driver for NT Domain

Both the DirXML<sup>®</sup> Driver for NT Domain and the DirXML Driver for Exchange can create users in the domain. To avoid a conflict, a mechanism can be set up using DirXML rules. The DirXML Driver for NT Domain has a User attribute called NT4AccountName. This attribute contains the DomainName/UserName attribute. This value is what the Exchange MailBox and Remote objects need to associate to a domain account. For that association to occur correctly, the value in NT4AccountName needs to be put in the MailBox attribute Assoc-NT-Account.

- 1** Pick an existing Novell<sup>®</sup> eDirectory<sup>™</sup> attribute (for example, preferredName) to hold the value of NT User objects attribute NT4AccountName.
- 2** Change the DirXML Driver for NT Domain Schema Mapping rule to map preferredName to NT4AccountName.

For example:

```
<attr-name>  
  <nds-name>preferredName</nds-name>
```

```
        <app-name>NT4AccountName</app-name>
    </attr-name>
```

- 3 Change the DirXML Driver for Exchange Schema Mapping rule to map preferredName to Assoc-NT-Account.

For example:

```
<attr-name>
    <nds-name>preferredName</nds-name>
    <app-name>Assoc-NT-Account</app-name>
</attr-name>
```

- 4 Make a Create rule for the DirXML Driver for Exchange that will not allow a new MailBox object to be created unless the preferredName attribute is populated.

For example:

```
<rule name="SubscriberCreateRule">
    <create-rules>
        <create-rule class-name="User">
            <required-attr attr-name="preferredName"/>
            <required-attr attr-name="Given Name"/>
        </create-rule>
    </create-rules>
</rule>
```

- 5 Add the preferredName attribute to the Publisher filter on the DirXML Driver for NT Domain and the Subscriber filter on the DirXML Driver for Exchange.
- 6 Restart both drivers.

## Control Flow in the Drivers

These changes to the drivers will ensure the following control flow:

1. A user is created in eDirectory.
2. The DirXML Driver for NT Domain is handed a create request. The DirXML Driver for Exchange Create event is vetoed because of the absence of the preferredName attribute.
3. The DirXML Driver for NT Domain creates the NT account and feeds back the name of the NT account just created to the preferredName attribute.
4. The DirXML Driver for Exchange is now notified. It creates the mailbox and associates the mailbox with the NT account information stored in NDS.

**NOTE:** The examples used preferredName as the eDirectory attribute to hold the NT account information, but you can choose any attribute that works for you.

## Managing External Recipients Instead of Mailboxes

Microsoft Exchange directories let you create special objects called External Recipients. These can be thought of as address book entries that represent recipients in external messaging systems. You can modify the Schema Mapping rule to map an eDirectory User object to a remote object instead of the Mailbox object. You should now be able to map this to any object. For example:

```
<class-name>
  <nds-name>User</nds-name>
  <app-name>remote</app-name>
</class-name>
```

If you decide to make this change, you should also add the Internet EMail Address attribute as a required attribute to the Create rule as shown in the following example:

```
<create-rules>
  <create-rule class-name="User">
    <required-attr attr-name="Given Name"/>
  </create-rule>
</create-rules>
```

An Internet EMail Address attribute is required to create an External Recipient object in the Exchange directory. Failure to add the Internet EMail Address attribute will result in an error when trying to create an External Recipient.

## Synchronizing Proxy-Address and Target-Address Attributes

To synchronize all the e-mail values of the multi-value Proxy-Address and Target-Address attributes, add the <proxyFlg/> tag to the driver parameters.

- 1** In iManager, click eDirectory Administration > Modify Object.
- 2** Locate the driver object, then click OK.
- 3** Locate the Driver Parameters section at the bottom of the Driver Configuration page, then click Edit XML.
- 4** Add the <proxyFlg/> tag.

This tag can go anywhere between the <driver-options> tags. The updated parameters could look similar to the following example:

```
<driver-options>
  <x-ldap-server display-name="IP address of Exchange Server(for LDAP
queries):">167.55.135.28</x-ldap-server>
  <x-remote display-name="Remote Exchange Driver?(1=true; 0=false):">0</x-
remote>
  <x-server display-name="Exchange Server Name:">DHEAD</x-server>
  <x-site display-name="Exchange Site:">/o=Novell/ou=DOMAINLIMA</x-site>
  <proxyFlg/>
</driver-options>
```

**5** Click OK.

# 4 Troubleshooting the Driver

This section explains how to troubleshoot the DirXML<sup>®</sup> Driver for Exchange.

## Known Issues

- ♦ Exchange Directory names used in the Placement rule are case-sensitive.
- ♦ If Exchange and eDirectory are running on the same machine, you must disable the eDirectory LDAP server or change the port assignment from port 389.
- ♦ If you encounter syntax errors in XML rules, use Internet Explorer 5.0 to verify the syntax.
- ♦ The authentication credentials you specify should be for an NT account/domain that has rights to the Exchange Directory.
- ♦ CN and Object-Class should not be in the filter. Any unsupported attribute in the filter will also prevent the driver from starting.

# Driver Error Messages

The following is a list of error messages the driver might return:

- ◆ USN Cache Initialized from disk

This is an informational message printed at the beginning of the driver initialization indicating that the driver's last state was read from the disk.

- ◆ USN Cache could not be initialized. Most likely reason: Insufficient memory.

The previous driver state was not initialized correctly. This means that the registry or the driver configuration file was manipulated by another process. This might happen if you accidentally deleted one of the driver configuration files. This results in a loss of event data.

- ◆ DAPIStart() failed. Please check the Event Log for details. Returned error code =

This usually suggests that the Exchange Server is down or could not be reached. The NT Application Event Log should contain a more detailed description of the error.

- ◆ DAPIStart() encountered non fatal error. Please check the Event Log for details. Returned error code =

This error message is returned when a warning was returned by Exchange. The returned warning is logged in the NT Application Event Log.

- ◆ Call to Import function failed. Likely cause- bad XML or too little memory.

- ◆ Subscriber Import attempt failed. Please check the NT Event Log for details. Returned error code =

An attempt to write to the Event log did not succeed.

- ◆ Subscriber Import attempt encountered non critical error. Please check the NT Event Log for details. Returned error code =

- ◆ A bad XML document was sent to the driver. Critical error in the Subscriber XML document.

- ◆ A bad XML document was sent to the driver. The subscriber could not process the input node.

- ◆ A bad XML document was sent to the driver. An unsupported operation type was received.
- ◆ A bad XML document was sent to the driver. The operation node could not be processed.
- ◆ Bad Subscriber filter or Subscriber filter contains an unsupported attribute. Please check the Subscriber filter.

An unsupported attribute was added to the Subscriber filter. Verify the Subscriber filter with the list of supported attributes in the file ATTRIBUTES.TXT (located in the NT\DIRXML\DRIVERS\EXCHANGE\RULES directory).

- ◆ Could not log in to Exchange with the specified credentials. Driver will not start.

The authentication credentials supplied were incorrect. The credentials specified should be for an NT account/domain that has rights to the Exchange directory.

- ◆ NT Event handles could not be created. The System could be low on memory
- ◆ An expected initialization parameter was missing from the parameter list.

One or more of the initialization parameters was missing. Try restarting. If the problem persists, try retyping the initialization parameters.

- ◆ Could not allocate memory.
- ◆ Failed to initialize the base of the USN cache. Driver will not start.



# 5

## Documentation Content Updates

This section contains information on documentation content changes that have been made in the *Implementation Guide* for the DirXML Driver for Exchange. The information will help you to keep current on updates to the documentation.

The information is grouped according to the date the documentation updates were published. Within a dated section, the changes are alphabetically listed by the names of the main table of contents sections for Policy and Distribution Services.

The documentation is provided on the Web in two formats: HTML and PDF. The HTML and PDF documentation are both kept up-to-date with the documentation changes listed in this section.

If you need to know whether a copy of the PDF documentation you are using is the most recent, the PDF document contains the date it was published in the Legal Notices section immediately following the title page.

The documentation was updated on the following dates:

- ♦ “November 15, 2002” on page 35

### November 15, 2002

Updates were made to the following sections. The changes are explained below.

- ♦ [Installing and Configuring the Driver](#)
- ♦ [Customizing the DirXML Driver for Exchange](#)

## Installing and Configuring the Driver

The following updates were made in this section:

Location	Change
<a href="#">“Installing the Driver” on page 18</a>	Removed the requirement to install eDirectory on the Exchange server documented in step 1.
<a href="#">“Upgrading” on page 18</a>	Added driver name and path validation to step 3.
<a href="#">“Configuring the Exchange Server” on page 22</a>	Changed the requirement for knowing the name of the eDirectory tree to knowing the name of the Exchange service account.

## Customizing the DirXML Driver for Exchange

The following updates were made in this section:

Location	Change
<a href="#">“Integrating the DirXML Driver for Exchange and the DirXML Driver for NT Domain” on page 27</a>	Corrected the <app-name> statement in step 3. It changed from <pre>&lt;app-name&gt; Assoc-NT-Account &lt;/app-name&gt;</pre> to <pre>&lt;app-name&gt;Assoc-NT-Account&lt;/app-name&gt;</pre>
<a href="#">“Integrating the DirXML Driver for Exchange and the DirXML Driver for NT Domain” on page 27</a>	Corrected attribute assignments in step 5.