

Novell Data Synchronizer 1.2.4 Connector for Mobility

Readme

Novell®

August 22, 2012

1 Overview

The Novell Data Synchronizer Connector for Mobility is the component of the Data Synchronizer Mobility Pack that connects your GroupWise system with mobile devices.

The Mobility Connector can also be used to connect mobile devices to other applications for which Data Synchronizer connectors are available.

For device-specific information, see the [Data Synchronizer Mobility Connector Devices Wiki \(https://vibe.novell.com/vibe/groupwise_mobility_devices\)](https://vibe.novell.com/vibe/groupwise_mobility_devices).

For a list of the enhancements and bug fixes provided since Mobility Pack 1.2.3, see the [Novell Data Synchronizer Mobility Pack 1.2.4 Readme \(http://www.novell.com/documentation/datasynchronizer1/datasync12_readme_mobility_upd4/data/datasync12_readme_mobility_upd4.html\)](http://www.novell.com/documentation/datasynchronizer1/datasync12_readme_mobility_upd4/data/datasync12_readme_mobility_upd4.html).

2 System Requirements

The general system requirements for the Mobility Connector are the same as for the Data Synchronizer Mobility Pack, as listed in “[Data Synchronizer System Requirements](#)” in the *Novell Data Synchronizer Mobility Pack Installation Guide*.

Mobile device requirements for the Mobility Connector are listed in “[Mobile Device Requirements](#)” in the *Mobility Connector Installation and Configuration Guide*.

3 Mobility Connector Installation

The Mobility Connector is automatically installed as part of the Data Synchronizer Mobility Pack, as described in the *Novell Data Synchronizer Mobility Pack Installation Guide*.

For device-specific setup instructions, see the [Data Synchronizer Mobility Connector Devices Wiki \(https://vibe.novell.com/vibe/groupwise_mobility_devices\)](https://vibe.novell.com/vibe/groupwise_mobility_devices)

4 Mobility Connector Issues

- ♦ [Section 4.1, “Synchronization Stops,” on page 2](#)
- ♦ [Section 4.2, “SSL Connections with Mobile Devices,” on page 2](#)
- ♦ [Section 4.3, “Mobility Connector Startup,” on page 2](#)
- ♦ [Section 4.4, “Reinitialization Issue,” on page 3](#)
- ♦ [Section 4.5, “Expired LDAP Password,” on page 3](#)
- ♦ [Section 4.6, “Multiple Device IDs for a Single Mobile Device,” on page 3](#)

- ♦ [Section 4.7, “Reminder Note Synchronization,” on page 3](#)
- ♦ [Section 4.8, “Log File Security Issue,” on page 3](#)
- ♦ [Section 4.9, “SLES Update Issue,” on page 4](#)
- ♦ [Section 4.10, “Synchronization Issue on Droid X and Droid 2 Devices,” on page 4](#)
- ♦ [Section 4.11, “BlackBerry Support,” on page 4](#)
- ♦ [Section 4.12, “S/MIME Not Supported,” on page 4](#)

For general connector issues, see “[General Connector Issues](#)” in the [Novell Data Synchronizer Mobility Pack 1.2.4 Readme](#) (http://www.novell.com/documentation/datasynchronizer1/datasync12_readme_mobility_upd4/data/datasync12_readme_mobility_upd4.html).

4.1 Synchronization Stops

Occasionally, synchronization from GroupWise to a mobile device stops, typically because abnormal cellular network conditions resulted in dropped synchronization data. To resolve the situation:

- 1 In Synchronizer Web Admin, click *Monitoring* in the *Actions* column for the Mobility Connector.
- 2 Locate the user whose mobile device has stopped synchronizing.
- 3 In the *Device* column for the user, click *Resync device*.

This causes synchronization to start over from the beginning. The user can accomplish the same thing by removing the account from the mobile device and adding it again, so that the GroupWise data resynchronizes from the mailbox to the mobile device.

4.2 SSL Connections with Mobile Devices

During Mobility Pack installation, you can choose whether to use an SSL connection between the Mobility Connector and mobile devices. Using a non-secure connection can simplify initial testing, but a secure SSL connection should be used in a production environment.

By default, the Mobility Connector rejects SSLv2, which reportedly has several cryptographic flaws and has been deprecated for several years. SSLv3 and TLSv1 are automatically accepted.

For instructions to reconfigure the security protocol for the Mobility Connector, see “[Selecting a Specific Version of SSL](#)” in “[Synchronizer System Security](#)” in the *Novell Data Synchronizer System Administration Guide*.

4.3 Mobility Connector Startup

Make sure that the GroupWise Connector is running before you start the Mobility Connector. The Mobility Connector needs to access the GroupWise Address Book through the GroupWise Connector in order to start successfully. If the GroupWise Connector is not already running, you see an error such as:

```
Couldn't sync GAL: None
Couldn't sync GAL: Connector currently unavailable: groupwise_connector_name
```

NOTE: GAL stands for Global Address List.

The Mobility Connector tries again in 30 minutes to contact the GroupWise Connector. If the GroupWise Connector is running at that time, the address book lookups begin.

4.4 Reinitialization Issue

After you reinitialize a user, the user must delete the existing account and add it again in order for synchronization to function properly. If the user does not delete and then add the account, contact synchronization might not work correctly.

4.5 Expired LDAP Password

If a user's LDAP password expires, the Mobility Connector does not allow the user's mobile device to connect to the Synchronizer system until the user resets the LDAP password and configures the mobile device with the new password. This functionality prevents mobile devices from consuming grace logins and locking the user out.

4.6 Multiple Device IDs for a Single Mobile Device

In Synchronizer Web Admin, the Mobility Connector Monitoring Information page might list two device IDs for one mobile device. Some mobile devices have one device ID for email and contact information and a second device ID for calendar information. This is working as designed.

4.7 Reminder Note Synchronization

When you configure the GroupWise Connector, you select the items to synchronize. For the *GroupWise Items to Sync* option, even if you deselect *Reminder Note*, reminder notes are still included during initial synchronization, although they are not synchronized after initial synchronization.

To prevent reminder notes from being included during initial synchronization:

- 1 In Synchronizer Web Admin, click the Mobility Connector to display the Mobility Connector Settings page, then click *Edit XML Source*.
- 2 Locate the following line:

```
<notes>1</notes>
```

IMPORTANT: If you see `<Note>1</Note>` rather than `<notes>1</notes>`, you are editing the XML for the GroupWise Connector, not the Mobility Connector. It is the Mobility Connector setting that is overriding your selection for the GroupWise Connector, so you need to make sure that you are editing the Mobility Connector XML to resolve the problem.

- 3 Change 1 to 0 (zero), then click *Save Custom Settings*.
- 4 Click *Home* to return to the main Synchronizer Web Admin page, then stop and start the Mobility Connector to put the change into effect.

This change affects users who are added to the GroupWise Connector and the Mobility Connector after you change the configuration of the Mobility Connector. When you add users during installation of the Mobility Pack, reminder notes are synchronized by default.

4.8 Log File Security Issue

If you set the logging level to Debug for the Mobility Connector log file, Subject lines and recipients from users' emails and appointments are included in log files for troubleshooting purposes. This information identifies items that are experiencing synchronization problems.

If you use the Debug logging level, ensure that log files are kept secure to protect users' personal information.

No text from message bodies is included in log files.

4.9 SLES Update Issue

If you install the Mobility Pack and then install updates to the SUSE Linux Enterprise Server (SLES) operating system, you might see errors in the Mobility Connector log during the SLES update. After the update has finished, restart the server, then restart the Synchronizer services to successfully complete the update.

4.10 Synchronization Issue on Droid X and Droid 2 Devices

After you enable or change the device password security policy on the Mobility Connector, synchronization stops on Droid X and Droid 2 mobile devices. Removing the existing account from the mobile device and adding it again puts the device password security policy into effect. This is a problem with the Android 2.2 operating system only on those specific devices.

4.11 BlackBerry Support

The Mobility Connector does not support BlackBerry devices. Instead, you can use [BlackBerry Enterprise Server for GroupWise](http://na.blackberry.com/eng/services/business/server/full/) (<http://na.blackberry.com/eng/services/business/server/full/>). ActiveSync clients for BlackBerry devices are not supported for use with the Mobility Connector.

If a GroupWise user has multiple devices, multiple synchronization solutions can access the same GroupWise account without causing any conflicts.

4.12 S/MIME Not Supported

S/MIME is not currently supported by the Mobility Connector. You can open encrypted messages in GroupWise, but not on your mobile device.

5 Item Synchronization Issues

For device-specific synchronization issues, visit the [Data Synchronizer Mobility Connector Devices Wiki](https://vibe.novell.com/vibe/groupwise_mobility_devices) (https://vibe.novell.com/vibe/groupwise_mobility_devices).

- [Section 5.1, "New Contacts," on page 5](#)
- [Section 5.2, "Copied Contacts," on page 5](#)
- [Section 5.3, "Contacts with Categories," on page 5](#)
- [Section 5.4, "Contacts with Pictures," on page 6](#)
- [Section 5.5, "Large Distribution Lists," on page 6](#)
- [Section 5.6, "Organizations," on page 6](#)
- [Section 5.7, "Personal Address Books," on page 6](#)
- [Section 5.8, "Shared Address Books," on page 6](#)
- [Section 5.9, "Draft Items," on page 6](#)
- [Section 5.10, "HTML Formatted Email Messages on Some Mobile Devices," on page 6](#)
- [Section 5.11, "HTML Formatted Appointments," on page 7](#)
- [Section 5.12, "Personal Calendars," on page 7](#)
- [Section 5.13, "Shared Calendars," on page 7](#)
- [Section 5.14, "Non-Synchronizing Folders," on page 7](#)

- ♦ [Section 5.15, “Attachments,” on page 7](#)
- ♦ [Section 5.16, “Large Attachments,” on page 8](#)
- ♦ [Section 5.17, “Notes,” on page 8](#)
- ♦ [Section 5.18, “Tasks,” on page 8](#)
- ♦ [Section 5.19, “Phone Messages,” on page 8](#)
- ♦ [Section 5.20, “Picture Quality,” on page 8](#)
- ♦ [Section 5.21, “Archived Items,” on page 8](#)
- ♦ [Section 5.22, “Display Issue in Items Sent from a Mobile Device,” on page 9](#)

5.1 New Contacts

If you create a new contact on your mobile device, and if you do not assign it to a specific address book (perhaps called a “group” or a “category” on your mobile device) or if you assign it to an address book that does not exist in GroupWise, it might not synchronize back to GroupWise as you expect.

By default, an unassigned new contact synchronizes to your default personal address book in GroupWise. However, the default personal address book in GroupWise is your Frequent Contacts address book, which is not synchronized to your mobile device by default. So an unassigned new contact from your mobile device might not synchronize to GroupWise where you expect it, or it might not synchronize at all.

To assure that new contacts created on your mobile device synchronize to GroupWise as expected, always assign them to a mobile device address book (or “group” or “category”) that is synchronized with a specific GroupWise personal address book. Or, make sure that you change your default personal address book in GroupWise to a personal address book that synchronizes with your mobile device.

Your default personal address book in GroupWise is the address book that displays when you click the *Contacts* tab in the GroupWise client. When you change your default personal address book in the GroupWise client, the change takes effect for your mobile device the next time the GroupWise Connector is restarted.

5.2 Copied Contacts

If you copy a contact from one GroupWise address book to another, the contact is not synchronized to your mobile device in the destination address book. The GroupWise client links the original contact into the destination address book. Such links are not currently synchronized to your mobile device. However, on some mobile devices, you can search for contacts, regardless of which address book they are located in.

If the original contact is in an address book that is not synchronized to your mobile device, such as the Frequent Contacts address book, the copied contact does not appear on your mobile device, even when you are synchronizing the address book that it was copied into. If you want a copied contact to appear on your mobile device, delete the original contact from the original address book. This creates the contact as a normal contact in the address book that is being synchronized.

5.3 Contacts with Categories

On some mobile devices, contacts with categories appear to be duplicated. If this is a problem, remove the category from the contacts.

5.4 Contacts with Pictures

If you create a contact on your mobile device and add a picture to it, the contact might not synchronize to GroupWise if the picture that you added to the contact on your mobile device exceeds the GroupWise picture size limit. For more information, see [Section 5.20, "Picture Quality," on page 8](#).

5.5 Large Distribution Lists

If a message synchronizes to your mobile device that has a very large number of recipients, your mobile device might seem to hang when opening the message. To prevent this problem, open an item that has a small distribution lists, then configure your device to hide distribution lists.

5.6 Organizations

Organizations currently do not synchronize to mobile devices.

5.7 Personal Address Books

When your default personal address book synchronizes to your mobile device, it is named Contacts rather than the name that you see in GroupWise.

The default GroupWise personal address book is your Frequent Contacts personal address book. If you change your personal address book in GroupWise, this change does not synchronize to your mobile device. As a result, if you add new contacts to the new default personal address book in GroupWise, those new contacts synchronize to your original default personal address book on your mobile device. Restarting the GroupWise Connector resolves the problem, so that new contacts synchronize to the correct personal address book.

On some mobile devices, personal address books with categories appear to be duplicated. If this is a problem, remove the category from the personal address books.

5.8 Shared Address Books

Shared address books are synchronized to the owner's mobile device, but not to the mobile devices of those with whom the address book has been shared.

5.9 Draft Items

If you create a draft item on your mobile device, it does not synchronize to your Work in Progress folder in the GroupWise client. If you create a draft item in the GroupWise client, it does synchronize to your mobile device, but you cannot modify it on your mobile device.

5.10 HTML Formatted Email Messages on Some Mobile Devices

Email messages with HTML formatting in GroupWise display with HTML formatting on Apple iOS devices.

On other devices, HTML-formatted email messages might display with partial HTML formatting or with plain text formatting, depending on the capabilities of the device. For details about the HTML limitations of supported devices, see the [Data Synchronizer Mobility Connector Devices Wiki \(https://vibe.novell.com/vibe/groupwise_mobility_devices\)](https://vibe.novell.com/vibe/groupwise_mobility_devices).

5.11 HTML Formatted Appointments

Appointments with HTML formatting in GroupWise synchronize to mobile devices without the HTML-formatted text. As a result, you see the subject line of these appointments on your mobile device, but not the accompanying text that resides in the message body.

5.12 Personal Calendars

In the GroupWise client, you can select the personal calendars from which you want appointments displayed in the main GroupWise Calendar. However, when calendar data is synchronized to your mobile device, all appointments are synchronized into the main calendar on the mobile device, regardless of which personal calendars you have selected in GroupWise. This is working as designed at present.

5.13 Shared Calendars

Shared calendars are synchronized to the owner's mobile device, but not to the mobile devices of those with whom the calendar has been shared. If shared calendars are important to users, shared calendar owners can post them to the Internet using the GroupWise Calendar Publishing Host, as described in "[Publishing Personal Calendars on the Internet](#)" in "[Calendar](#)" in the *GroupWise 2012 Windows Client User Guide*. After the owner publishes the calendar, other users can view the calendar URL in the Web browser on their mobile devices.

5.14 Non-Synchronizing Folders

The following GroupWise folders do not synchronize to your mobile device:

- ◆ Shared folders (Shared folders do synchronize to your mobile device if you are the folder owner. Users with whom the folders are shared do not see the shared folders on their mobile devices.)
- ◆ Find Results (A Find Results folder is a view of search results, not an actual folder in GroupWise.)
- ◆ Sent Items
- ◆ Work in Progress
- ◆ Junk Mail
- ◆ Trash
- ◆ Documents
- ◆ POP and IMAP accounts
- ◆ RSS feeds
- ◆ Internet calendar subscription folders

Any folders that you move under a non-synchronizing folder no longer synchronize.

5.15 Attachments

On some mobile devices, items that have attachments are available on your mobile device before the attachments themselves have synchronized. When this happens, you see an informational attachment that indicates why the actual attachment is not present. For example, the attachment might still be downloading, or the attachment might be too large to download, based on size restrictions set by the Data Synchronizer administrator.

5.16 Large Attachments

Synchronizing large attachments to other applications and mobile devices can put a substantial load on the Mobility Connector. To decrease the amount of data that is synchronized to mobile devices, you can control the maximum size of attachments for both the Mobility Connector and the GroupWise Connector, as described in:

- ♦ [“Controlling Maximum Attachment Size”](#) in [“Mobility Connector Configuration”](#) in the *Mobility Connector Installation and Configuration Guide*
- ♦ [“Controlling Maximum Attachment Size”](#) in [“GroupWise Connector Configuration”](#) in the *GroupWise Connector Installation and Configuration Guide*

5.17 Notes

Reminder notes are synchronized to your device as all day events. If you create an all day event on your mobile device, it synchronizes to GroupWise as an all day event. If you create a reminder note on your mobile device, it does not synchronize to GroupWise.

5.18 Tasks

Tasks are not currently synchronized to your mobile device.

5.19 Phone Messages

Phone messages are not currently synchronized to your mobile device.

As a workaround, you can set up a rule to forward phone message items to yourself as email messages, which then synchronize to your mobile device.

5.20 Picture Quality

GroupWise personal address books limit contact pictures to 64x64 pixels and less than 2K in size. Mobile devices often handle pictures with more pixels and a larger file size.

When pictures are synchronized from your mobile device to GroupWise, GroupWise makes two attempts to optimize the picture to fit within the GroupWise limits of 64x64 pixels and 2K file size. The resulting picture might not display as well as expected in the GroupWise personal address book. You can use an image editing program to manually adjust the original picture to fit within the GroupWise limits, then synchronize it from your mobile device to GroupWise.

When pictures are synchronized from GroupWise to your mobile device, they might not display as well as expected on the mobile device because the GroupWise limit is retained on the mobile device.

5.21 Archived Items

If your GroupWise system is backed up using an archive solution that employs GroupWise stubbing, GroupWise items synchronize to your mobile device when they are archived and stubbed in GroupWise. Stubbing replaces an existing item with a copy of the item, with any attachments and without the message body text.

This default behavior of the GroupWise Connector can be changed so that users do not receive old archived items on their mobile devices. For instructions, see [“Preventing Synchronization of Archived Items”](#) in [“GroupWise Connector Configuration”](#) in the *GroupWise Connector Installation and Configuration Guide*

5.22 Display Issue in Items Sent from a Mobile Device

When you send an item from a mobile device to a GroupWise user, text in the *To*, *From*, or message body fields might display as garbled when you are using a localized version of GroupWise. This occurs when the POA is running on 64-bit SLES, which does not include the `glibc-locale-32bit` RPM by default. To correct the problem, manually install the needed RPM from the SLES repository, then restart the POA.

This problem is resolved in GroupWise 2012 Support Pack 1.

6 Device-Specific Issues

See the [Data Synchronizer Mobility Connector Devices Wiki \(https://vibe.novell.com/vibe/groupwise_mobility_devices\)](https://vibe.novell.com/vibe/groupwise_mobility_devices) to check for issues related to your particular mobile device.

7 International Issues

- ♦ [Section 7.1, “Display Issues with Extended Characters,” on page 9](#)
- ♦ [Section 7.2, “Extended Characters in Domain and Post Office Names,” on page 9](#)

7.1 Display Issues with Extended Characters

Some extended characters might not display correctly in messages and attachments on your mobile device. The problem has been corrected in Mobility Pack 1.2.3. However, complete resolution also requires the use of GroupWise 2012 or GroupWise 8 Support Pack 3. Update to the latest release for your version of GroupWise to resolve character display issues on your mobile device.

7.2 Extended Characters in Domain and Post Office Names

The representation of extended characters in event IDs has changed between GroupWise 8.0.1 and 8.0.2. The change affects GroupWise mobile device users in domains and post offices where the domain or post office name includes extended characters. It affects these users regardless of the synchronization application they have been using (GroupWise Mobile Server, BlackBerry Enterprise Server, or the Data Synchronizer Mobility Pack).

Perform the following procedure when you update to GroupWise 8.0.2 in order to accommodate the change in the representation of external characters:

- 1 Identify the users who have been synchronizing data by using GroupWise Mobile Server, BlackBerry Enterprise Server, or Novell Data Synchronizer, and who belong to domains or post offices whose names include extended characters.
- 2 Remove the affected users from the synchronization applications.
- 3 Run GWCheck for each user to see if the user database currently contains any event records:
 - 3a In the *Database Path* field, browse to and select the path to the user’s post office.
 - 3b In the *Object Type* box, select *User/Resource*, then specify the user’s GroupWise user ID.
The *Analyze/Fix Databases* action is selected by default, as well as the *Structure* and *Fix problems* options.
 - 3c Select *Index Check* and *Contents*.
 - 3d On the *Logging* tab, select *Verbose logging*.
 - 3e On the *Results* tab, specify any users in addition to the GroupWise administrator that you want the log file sent to.

The log file is created in the `post_office_directory\wpcout\ofs` directory, then emailed to the specified users.

3f Click *Run* to check the user database and generate the log file.

4 Review the log file for lines similar to the following:

```
Starting scan of EVENT (and EVENT configuration) records
  Located EVENT configuration record (drn=58517; key='string')
Finished scan of EVENT (and EVENT configuration) records
```

The key *string* varies depending on the synchronization application. For example, if the user has been synchronizing through Synchronizer, the key *string* would look similar to:

```
default.pipeline1.gw_Trusted App_C29AC0403_userid
```

If the user has been using multiple synchronization applications, there might be multiple event records, each with a different key *string*.

5 (Conditional) If the log file shows no event records for the user, repeat [Step 3](#) and [Step 4](#) for the next affected user.

6 For each affected user:

6a Identify the key *string* for the user's synchronization application.

6b Rerun GWCheck as described in [Step 3](#), then on the *Misc* tab, specify the following option in the *Support Options* field:

```
cleanupgwevntskkey=string
```

This removes all event records for the associated synchronization application.

6c (Conditional) If the user has been using multiple synchronization applications, repeat [Step 6](#) for each synchronization application.

7 After all event records have been removed for all affected users, stop the POA.

8 Update the POA to GroupWise 8.0.2.

9 Add the affected users back to their synchronization applications.

This process is necessary because item IDs include domain and post office names. Because extended characters are represented differently in GroupWise 8.0.2, event records for items that contain the old representations of extended characters must be removed, so that subsequent synchronization of events for existing items can function correctly.

8 Documentation

Novell Data Synchronizer Mobility Pack documentation is available at the [Novell Data Synchronizer Documentation Web site \(http://www.novell.com/documentation/datasynchronizer1\)](http://www.novell.com/documentation/datasynchronizer1):

- ♦ Novell Data Synchronizer Mobility Pack Readme
- ♦ Novell Data Synchronizer installation and administration guides

Novell Data Synchronizer connector documentation is available at the [Novell Data Synchronizer Connector Documentation Web site \(http://www.novell.com/documentation/datasync_connectors1\)](http://www.novell.com/documentation/datasync_connectors1)

- ♦ Connector Readmes
- ♦ Connector Quick Starts
- ♦ Connector installation and configuration guides

In addition to the Data Synchronizer product documentation, the following resources provide additional information about Data Synchronizer and connectors:

- ♦ [Novell Support and Knowledgebase \(http://www.novell.com/support\)](http://www.novell.com/support)
- ♦ [Data Synchronizer Support Forum \(http://forums.novell.com/forumdisplay.php?f=939\)](http://forums.novell.com/forumdisplay.php?f=939)
- ♦ [Data Synchronization Cool Solutions \(http://www.novell.com/communities/cool solutions/datasynchronizer\)](http://www.novell.com/communities/cool solutions/datasynchronizer)
- ♦ [Data Synchronizer Mobility Connector Devices Wiki \(https://vibe.novell.com/vibe/groupwise_mobility_devices\)](https://vibe.novell.com/vibe/groupwise_mobility_devices)
- ♦ [Data Synchronizer Connector Marketplace \(http://www.novell.com/products/data-synchronizer/connectors\)](http://www.novell.com/products/data-synchronizer/connectors)

9 Legal Notices

Novell, Inc. makes no representations or warranties with respect to the contents or use of this documentation, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.

Further, Novell, Inc. makes no representations or warranties with respect to any software, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc. reserves the right to make changes to any and all parts of Novell software, at any time, without any obligation to notify any person or entity of such changes.

Any products or technical information provided under this Agreement may be subject to U.S. export controls and the trade laws of other countries. You agree to comply with all export control regulations and to obtain any required licenses or classification to export, re-export, or import deliverables. You agree not to export or re-export to entities on the current U.S. export exclusion lists or to any embargoed or terrorist countries as specified in the U.S. export laws. You agree to not use deliverables for prohibited nuclear, missile, or chemical biological weaponry end uses. Please refer to the [Novell International Trade Services Web page \(http://www.novell.com/info/exports/\)](http://www.novell.com/info/exports/) for more information on exporting Novell software. Novell assumes no responsibility for your failure to obtain any necessary export approvals.

Copyright © 2010-2012 Novell, Inc. All rights reserved. No part of this publication may be reproduced, photocopied, stored on a retrieval system, or transmitted without the express written consent of the publisher.

For Novell trademarks, see [the Novell Trademark and Service Mark list \(http://www.novell.com/company/legal/trademarks/tmlist.html\)](http://www.novell.com/company/legal/trademarks/tmlist.html).

All third-party trademarks are the property of their respective owners.