Going Mobile with Domino Everyplace

Take your Domino apps wireless

Skill Level: Introductory

Carl Kriger (carl_kriger@us.ibm.com)
Senior Product Manager
IBM

14 Mar 2003

This tutorial describes how to develop a mobile application using IBM Lotus Domino Everyplace. More specifically, it describes how to build a wireless version of an existing Domino application using the Domino Everyplace Access component of IBM Lotus Domino Everyplace 6. It describes the key components of Domino Everyplace Access and how to develop mobile applications that leverage the Domino platform.

Section 1. Introduction

What this tutorial is about

This tutorial will show you how to develop a mobile application using IBM Lotus Domino Everyplace. It demonstrates how to build a wireless version of an existing Domino application using the Domino Everyplace Access component of IBM Lotus Domino Everyplace 6. It describes the key components of Domino Everyplace Access and how to develop mobile applications that leverage the Domino platform.

Who should take this tutorial?

This tutorial is intended for anyone interested in learning how to develop wireless applications with Domino Everyplace. In particular, it will be useful for developers

interested in learning how to create mobile applications using Domino Everyplace and who are looking to extend their existing Domino applications to wireless devices.

This tutorial assumes that you are familiar with Domino and have some basic knowledge of mobile devices, and with the concept of mobile technology within a corporate IT environment. It does not assume that you know how to build mobile applications using Domino Everyplace.

What you need

- Lotus Notes Domino R5.06a server or higher or Lotus Notes Domino R6.x server
  Download a trial version of Notes Domino server 6.0.1
- Lotus Notes Client R5.x or R6.x
  Download a trial version of Notes Client 6.0.1.
- Domino Everyplace 6.0
  Unfortunately a trial version of Domino Everyplace is not available at this time. For more information about Domino Everyplace, go to the Lotus Domino Everyplace Web site.
- Mobile device emulator
  Emulators are typically available from manufacturers of microbrowsers, mobile devices or mobile application software and toolkits. For example, Openwave offers a toolkit with a device emulator for various different mobile devices. There are many sources for device emulators, but for this tutorial we'll be using one from Openwave.

Follow the installation instructions included with the software.

Section 2. Getting started

Going wireless

In the past, developing wireless applications has been a daunting task, hindered by the plethora of various wireless devices from cell phones to PDAs. Some devices support WAP, while others support xHTML, cHTML or various proprietary wireless standards. Each device also has differing screen sizes and screen resolutions that must be factored in. All of these issues make wireless application design and

development very difficult.

However, using Domino Everyplace 6, developing wireless applications is now a simple process in a familiar development environment. Domino Everyplace automatically creates the appropriate code for the target device, and supports nearly any mobile device on the market today. Not only does this mean that developers don't have to mess with the details, but they can write the application only once and Domino Everyplace does the rest.

I've found that the best way to learn a new technology is to develop a simple application and then enhance it. For this tutorial, we'll build a mobile application using a Domino Discussion database built directly from the standard Domino Discussion template (discsw6.ntf) shipped with Notes/Domino 6. The reason for this is that this application should be familiar and readily available to most readers of this tutorial, while also demonstrating that there is no need to modify your existing application to make it available to mobile users. Unless, of course, you want to. Furthermore, the best way to implement such an application is to build and host the mobile application on a Domino server; the client device (PDA or WAP-enabled device) will access the application to simulate mobile access into corporate data.

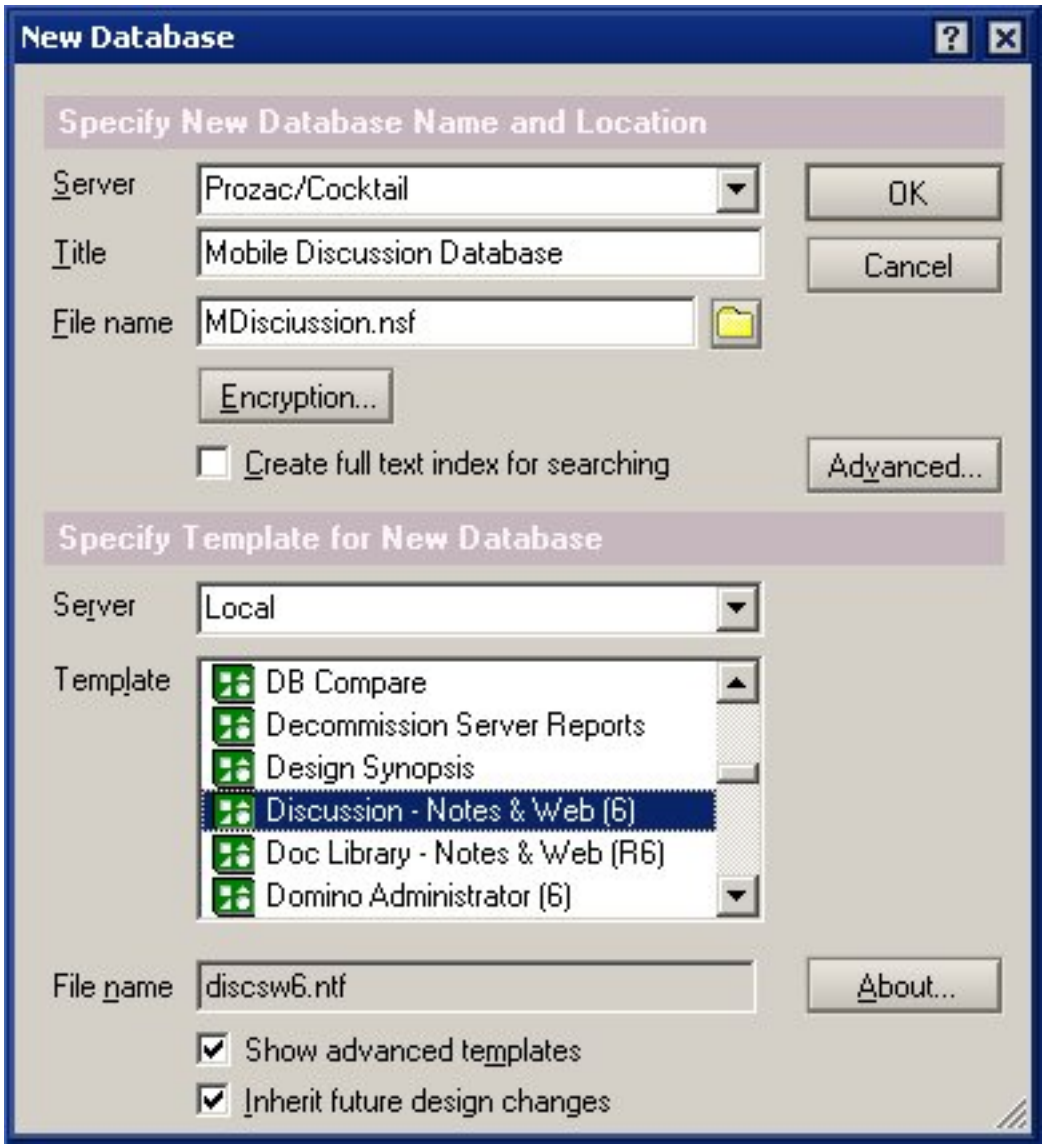
Getting set up

You'll need to do the following initial set-up and configuration for this tutorial:

- Install and configure DEA on a Domino Web server. DEA is an add-on product for IBM Lotus Domino. It comes as a stand-alone install process and is intended to be installed on top of a Domino R5.x or R6.x server and can access both Domino R5.x or R6.x data. The Domino Everyplace Application Design database (DEASAPPDESIGN.NSF), which should be installed with DEA and is available in the *domino_root*\data directory, where *domino_root* is the location of your Domino program files, contains a set of utilities that you will use to design and build a mobile application. The first time you edit an Application Design document in the DE Application Design database from your Notes client, you are prompted to select the directory into which to install the utilities. You can install the utilities in the Notes program directory or any other directory that you choose.
- Establish connectivity between the Domino Everyplace Access server and mobile devices. For details on how to do this, see the Domino Everyplace 6 documentation.
- Ensure the Domino server document in the DEA Domino Directory has the correct DSAPI filter setting. The MSDCerberus.dll file should be listed in the **DSAPI filter files names** field in the Internet Protocols/HTTP area

of your Domino server document as shown below:

- Obtain a mobile device emulator of your choice to test your application. For this tutorial, we'll use the Openwave 4.1 emulator provided with the Openwave Mobile SDK Toolkit.
- Create a new Domino discussion database to mobilize, using the Discussion - Notes & Web (6) template. Populate the database with a few documents of your choice. We'll use these documents to demonstrate mobile access into a Domino application. Use the information below for Title and File name. Be sure to replace the name of your Domino server in the Server field below. If you are unfamiliar with creating a new database from the template, see Lotus Notes 6 Help for details.



- Make sure that the Minimal ACL access level field for the discussion database is set to the default of Editor.
- Ensure that the DEA server name is listed in the ACL of the application being accessed from mobile devices. The reason for this is that, upon request from a mobile user to a Domino application, the DEA server acts as a proxy interface converting the IP-based HTTP request into a Notes Remote Procedure Call (NRPC) on behalf of the user. In turn, DEA needs to be explicitly listed in the ACL of the target mobile application.

Two ways to build a mobile application

Wireless applications designed for IBM Lotus Domino Everyplace provide mobile

users with a way to list and search documents in a database, create new documents, read or update existing documents, act on documents and even delete data from a mobile device. Using a wireless device, users send URLs or requests to the DEA server, which then sends to the wireless device the requested information - text, editable fields, links, and actions - to display. Using the links and actions, users send new requests to the DEA server.

When thinking about whether an existing Domino application is a good candidate for use on a wireless device, consider whether you can streamline the design enough so that the application is usable on a wireless device. In essence, there are two ways to create a Domino Everyplace application from an existing application:

- Use the IBM Lotus Notes client and the Simple Mobile Design Tool provided in the Domino Everyplace Application Design database (DEASAPPDESIGN.NSF) to enable a Domino application for wireless access to existing forms and views in the application. For this tutorial, we will be using Simple Mobile Design Tool to work with existing forms and views in a Domino application and select a subset of design elements to relay to the wireless device. The Simple Mobile Design Tool is best suited for modifying relatively simple applications, such as a Domino Discussion database. The Simple Mobile Design Tool simplifies the task of enabling an existing application for wireless access. It reads the views and forms in an existing application and presents you with options for displaying the information on a wireless device.
- Use Domino Designer to design new forms and views for use on the wireless device. This method is best used for more complex applications, where you want to create new forms and views for a mobile application. The following features are not supported by the Simple Mobile Design Tool:
    - Using a hide-when formula to hide text, fields, and actions
    - Creating text emphasis - for example, bold, large, and small. These options are not supported on all wireless devices.
    - Using a computed-for-display field
    - Using fields that support multiple values
    - Forcing input fields to be required or optional
    - Calling another Domino Everyplace application - for example, to request information or perform an action
    - Displaying a secondary dialog - for example, a confirmation dialog -- when an action is selected
    - Controlling how actions are displayed on the device

- Calling nonstandard actions
- Selecting and processing multiple documents in one action from a view
- Supporting Icon columns in a view
- Performing an action if there is exactly one document in a view - for example, automatically opening a document
- Performing a new action if there are no documents in a view
- Controlling view format - for example, using alternate column separator characters, omitting columns of data from some documents, and so on

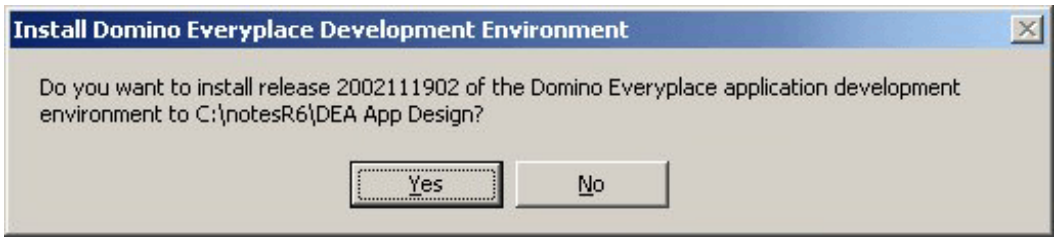
---

Section 3. Configure and build the mobile application

Create an Application Design document

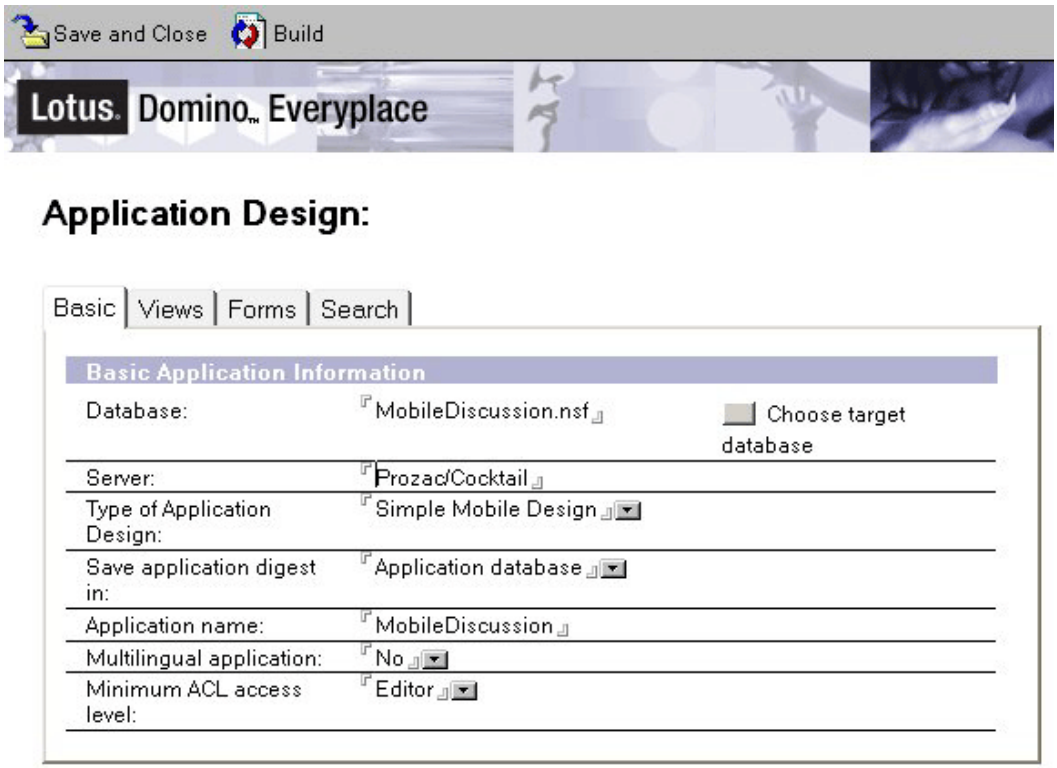
The first step in building your mobile application is to configure settings in the DEA Application Design database provided with DE and then compile the mobile application.

1. Once you have already successfully installed DEA, as described in Getting set up, open the Domino Everyplace Application Design database (DEASAppDesign.NSF).
2. Select **Create New Application** in the **Application Designs** view to create a new mobile application design document. This document is used by DEA to describe and identify the mobile application to the DEA server.
3. If this is your first time creating a mobile application with DEA, you'll be asked whether you want to install the Domino Everyplace development environment. Select **Yes**.



The development tools necessary to create and build a new mobile application will be installed on your computer. The appropriate templates and dll files are copied to your *notes_root\data* directory, where *notes_root* is the location of your local Notes client. The MS Windows registry is used to determine the location of your Notes client.

Once the installation has successfully completed, you will see a new wireless application design document similar to the image below.



This document is your primary interface for identifying and configuring your mobile application. It consists of four tabbed pages, in which you fill out the information necessary to provide mobile access to your application.

Basic page

1. In the **Database** field, enter the name of the application you want to mobilize. We will use the Mobile Discussion database discussed in Getting set up.

2. In the **Server** field, enter the name of the Domino server where DEA is installed.

3. Set the type of application design to **Simple Mobile Design**.

4. In the **Save application digest in** field, specify the location where DEA will store the Application Digest. The Digest is the XML representation of the mobile application design elements that DEA uses to display the Domino data on the mobile device. For this tutorial, select **Application database**. Storing the digest in the same application as the data takes advantage of replication and security. With the digest stored in the application database (in our case, MobileDiscussion.nsf), the digest will be located wherever the database is and will follow the Domino security model in place for the application.

5. In the **Application name** field, specify the name of you mobile application. This will be the application name seen by users when they access this application from a mobile device, so it should be descriptive. It does not have to be the same as the name of Notes or Web version of the application. In this case we will use MobileDisussion. Note that the title must not include special characters, such as spaces.

6. Leave the **Multilingual application** field set to **No**. I'll cover multilingual applications later.

7. The **Minimal ACL access level** field provides additional security for mobile access into your Domino environment. Leave this field set to **Editor**. Note that the DEA server name must be explicitly listed in the ACL of the application being accessed from mobile devices. The reason for this is that, upon request from a mobile user to a Domino application, the DEA server acts as a proxy interface converting the IP based HTTP request into a Notes Remote Procedure Call (NRPC) on behalf of the user. In turn, DEA needs to specify application layer access via the ACL.

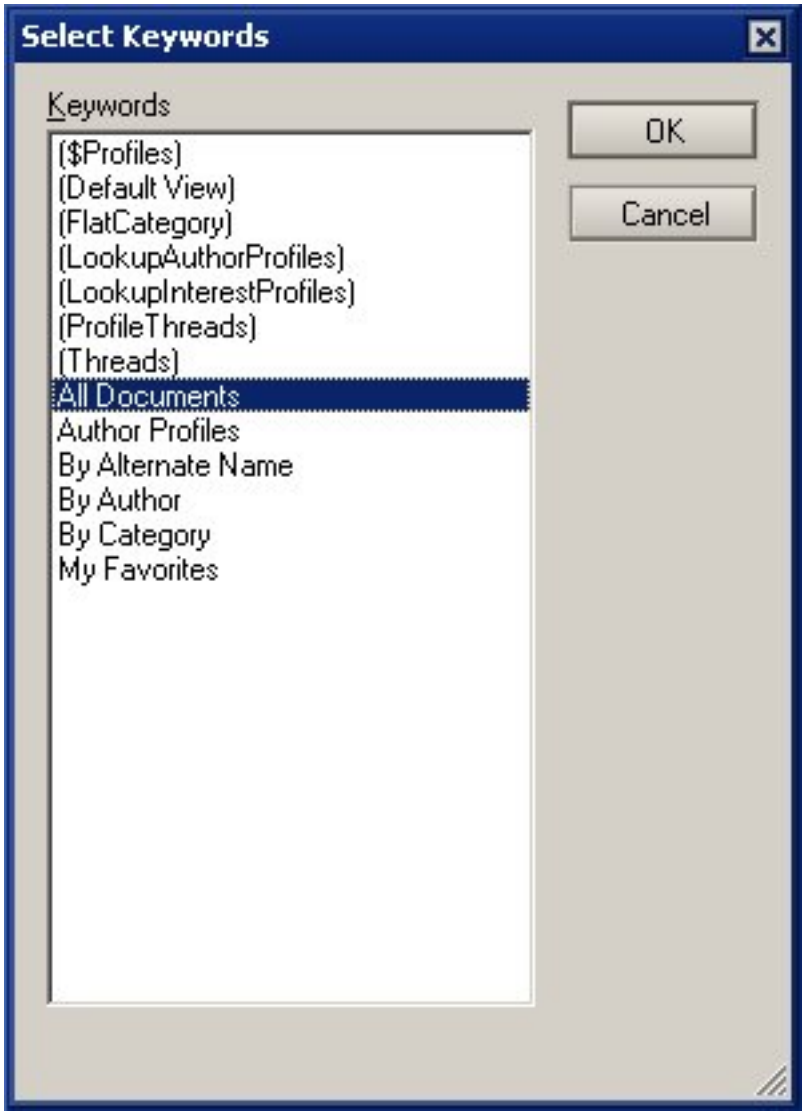
View page - Select your views

On the view page, you can select up to five views in your Domino application database that you want to emulate on a wireless device.

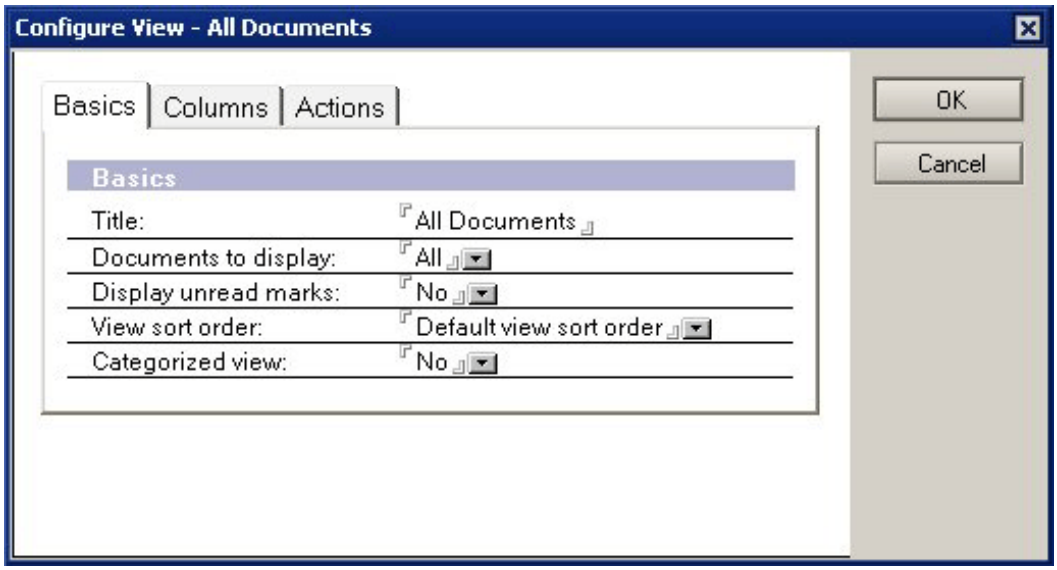
1. Select the helper button next to the first field to display a selection list containing all the views in the Mobile Discussion database.

2. Select the **All Documents** view from the list. This will be the view presented to mobile users when they access the application.

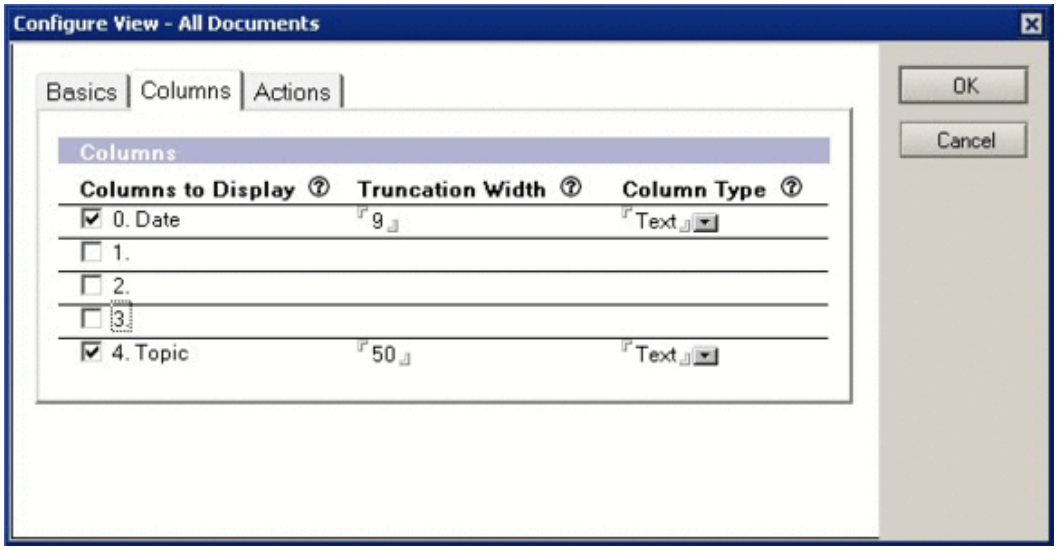
3. The **Configure** button will display next to the view name.



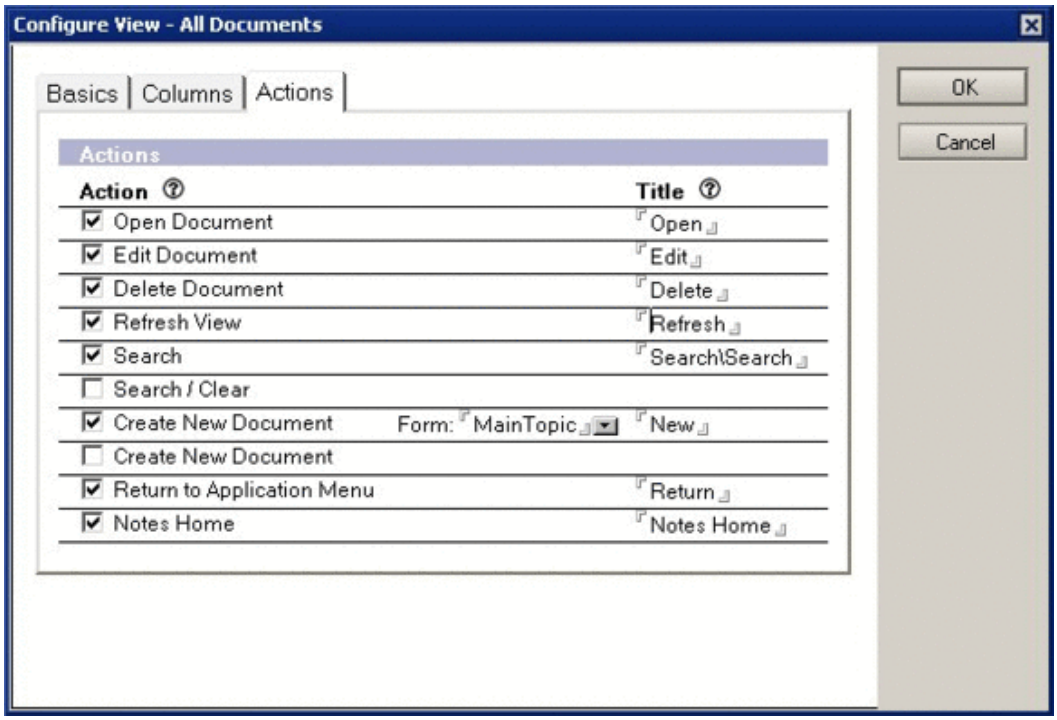
4. The **Configure View** dialog is displayed. Set the fields on the Basics page of the dialog to the values shown below.



5. On the **Columns** page, set the view columns you want to display on a mobile device. For this tutorial, select only the **Date** and **Topic** columns. Ensure that all other columns are deselected as shown below.



6. On the **Actions** page, set the actions you want to make available to mobile users. Select **Edit Document**, **Delete Document**, and **Create New Document**. In the **Form** field beside **Create New Document**, select **MainTopic**.



Forms page - Select your forms

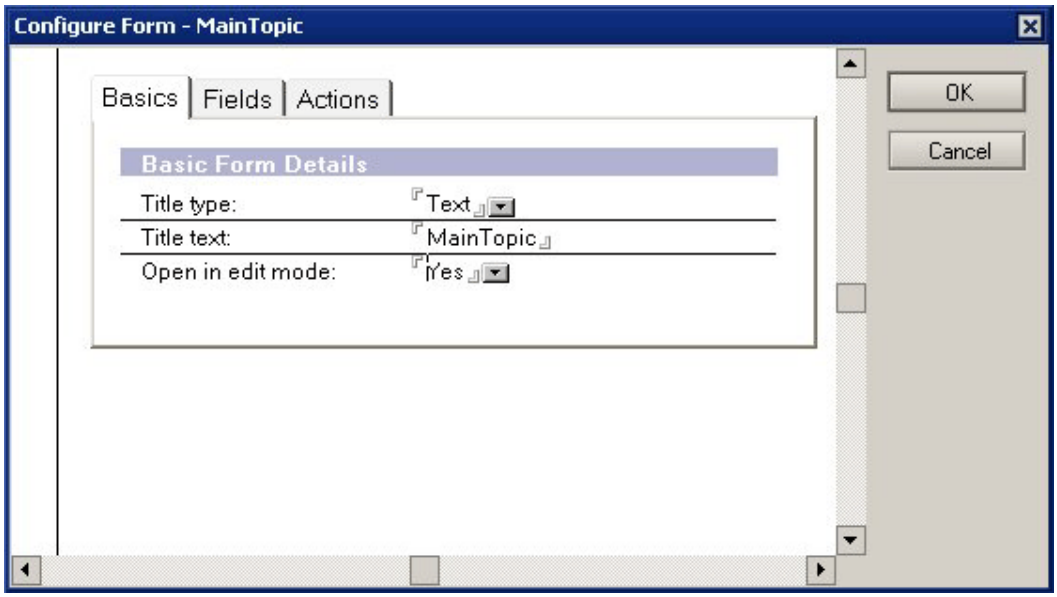
On the **Forms** page, you can select up to five forms in your Domino application database that you want to emulate on a wireless device. For example, if you want to allow users to create new documents with the MainTopic form, as we specified on the **Views** page, you must add this form to this area of the Application Digest document.

1. Select the helper button next to the first field to display a list of all the forms in the Mobile Discussion database.

2. Select a form, then select **Configure** to configure how the form will be displayed on the mobile device.

3. The **Configure Form** dialog displays.

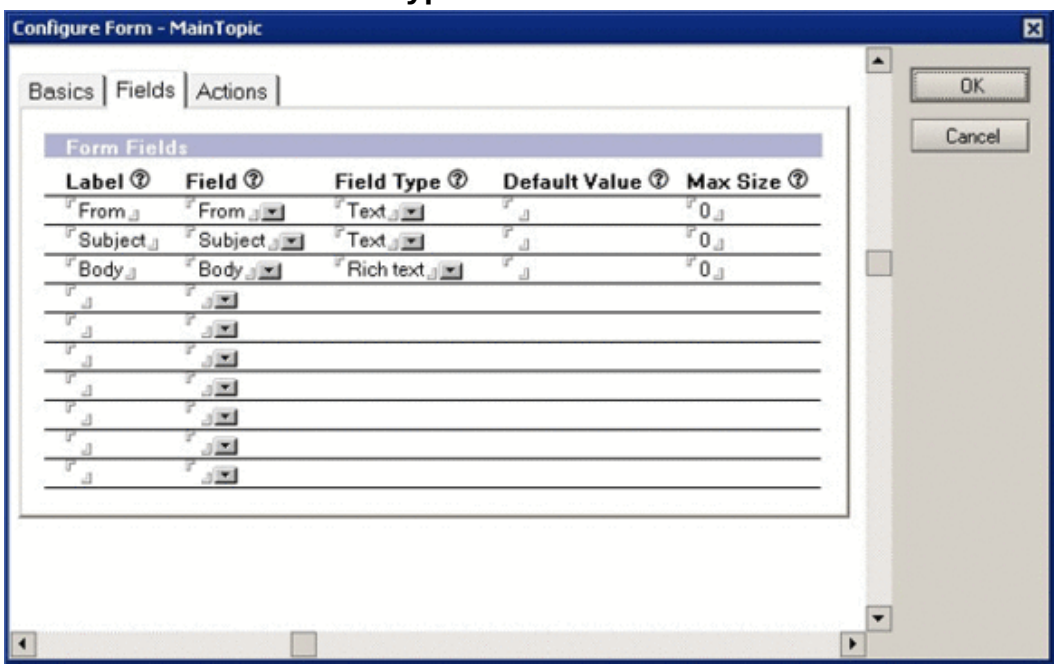
4. On the **Basics** page, you can set the form title and initial mode for the mobile user. It's easier for mobile users to enable the form to open in edit mode, rather than read mode. Change the **Open in edit mode** field to **Yes**.



5. On the **Fields** page, we'll set the fields to be displayed from the MainTopic form. In the **Field** column, select **From**, **Subject** and **Body**.

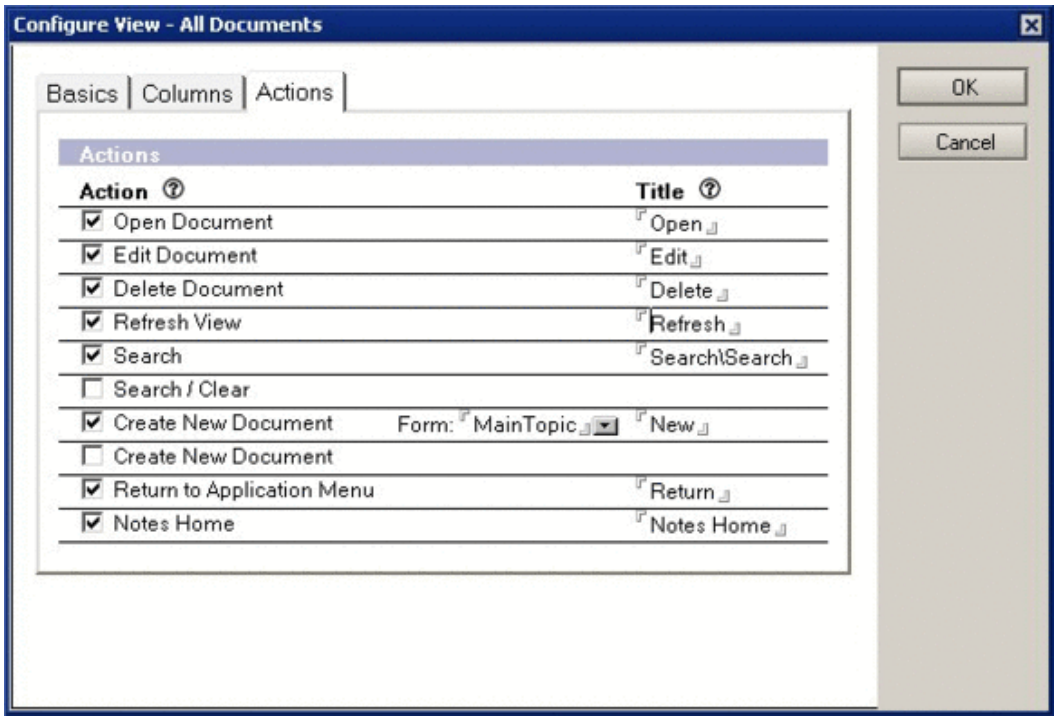
6. In the **Label** field, specify the name you want to display for the field.

7. Set the values in the **Field Type** column as shown below.



8. On the **Actions** page we'll set the actions we want to make available to

mobile users of this form. Select **Delete Document**.



Search page - Make your application searchable

This is an optional configuration. If you enable search for a view, you'll need to configure search options, such as the field on which to search. For this tutorial, we won't make search available.

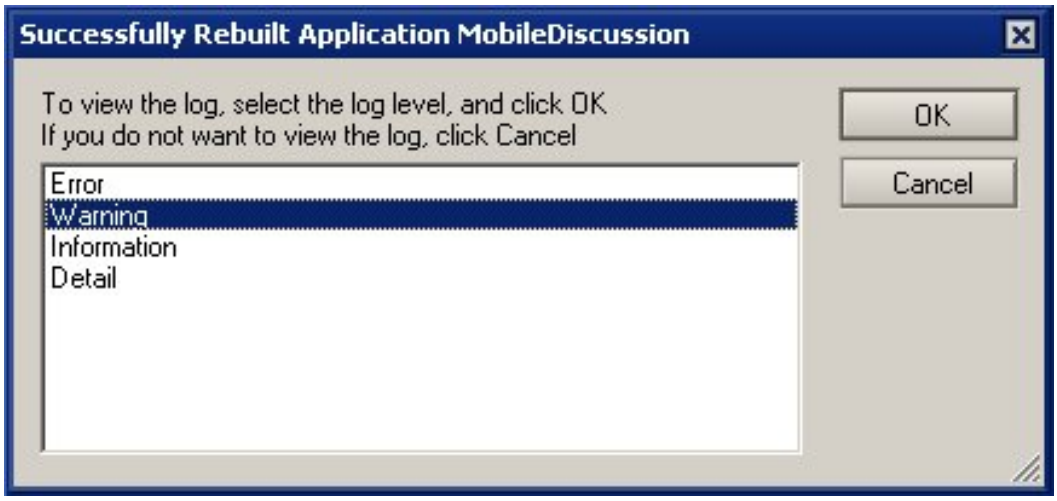
Build the application

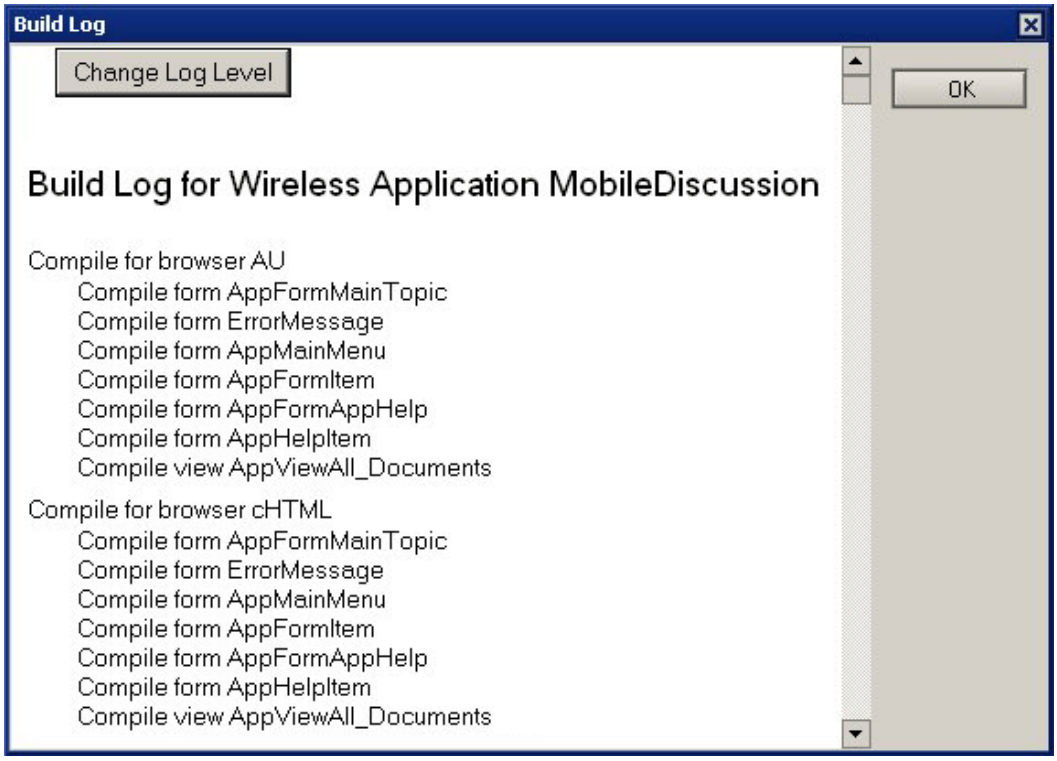
Now that we've configured the Application Design document (and done so with no coding or knowledge of WAP, WMLScript or any other language necessary, I might add!), it's time to build our mobile application.

1. To build the application, use the **Build** action within the Application Design document.

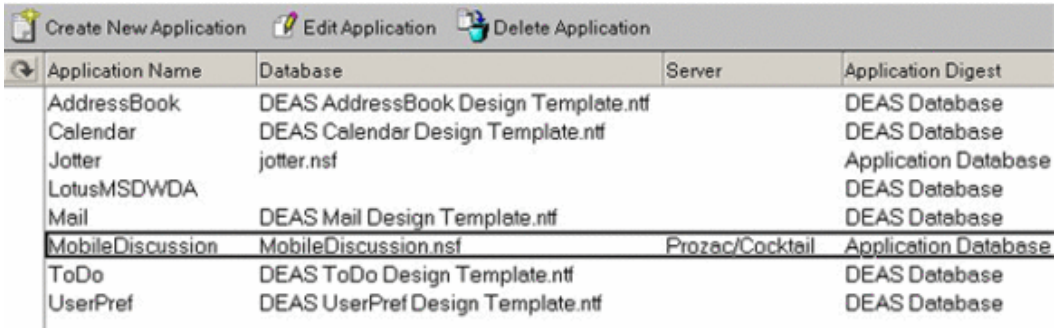
2. If errors are displayed, you'll need to debug and rebuild until you get no build errors. When no errors are displayed, you've successfully built the application digest, which includes the compiled application file and all of the information necessary to deploy the application on a wireless device.

3. When the build process ends, you are prompted to select the level of log messages to display. The default is **Warning**. The log helps you find errors in your mobile application, especially if you are building it using Domino Designer rather than a standard template like we're using here.





4. Save and close the Application Digest document. The MobileDiscussion application should display in the **Application Designs** view.



Application Name	Database	Server	Application Digest
AddressBook	DEAS AddressBook Design Template.ntf		DEAS Database
Calendar	DEAS Calendar Design Template.ntf		DEAS Database
Jotter	jotter.nsf		Application Database
LotusMSDWDA			DEAS Database
Mail	DEAS Mail Design Template.ntf		DEAS Database
MobileDiscussion	MobileDiscussion.nsf	Prozac/Cocktail	Application Database
ToDo	DEAS ToDo Design Template.ntf		DEAS Database
UserPref	DEAS UserPref Design Template.ntf		DEAS Database

In review, what we have done here is simply define the information necessary for DEA to render the Mobile Discussion application appropriately on a mobile device and made it available in an appropriate format for the mobile device. The next step is to make this application available for mobile users.

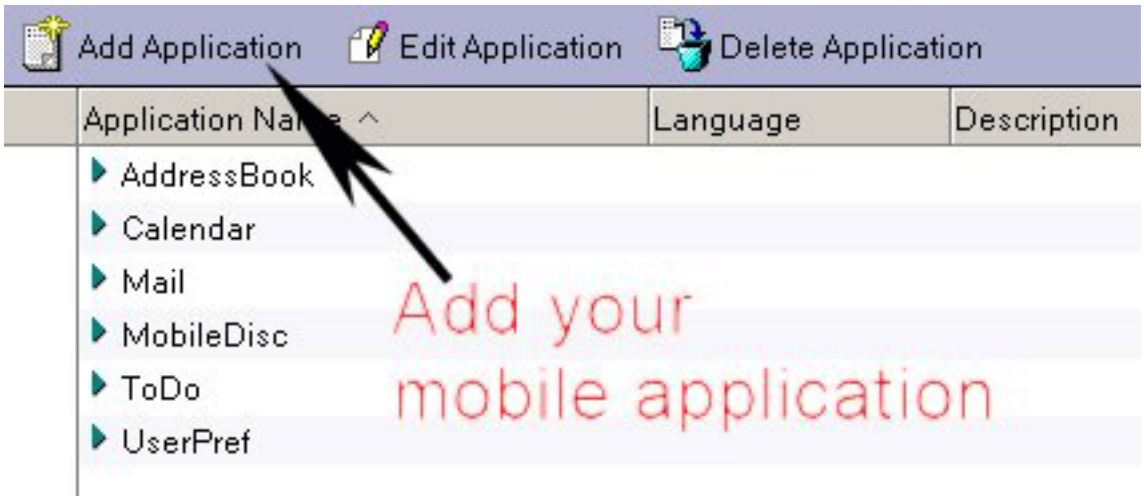
Section 4. Create an application document

Create a mobile application document

In this step of building our mobile application, we'll use the Domino Directory to create an Application Document describing some basic information about our mobile application, such as location, language, menu options and help. To create the Application Document, we'll use the Domino Directory on the DEA server to specify the mobile application information and data we created in Create an Application Design document.

To do this, first open the Domino Directory located on the DEA server. Note that the Domino Directory has additional views and actions available to service the needs of your mobile environment.

From the **Mobile\Applications** view, select **Add Application**.



The new Application Document is displayed.

Specify information about the Application Document

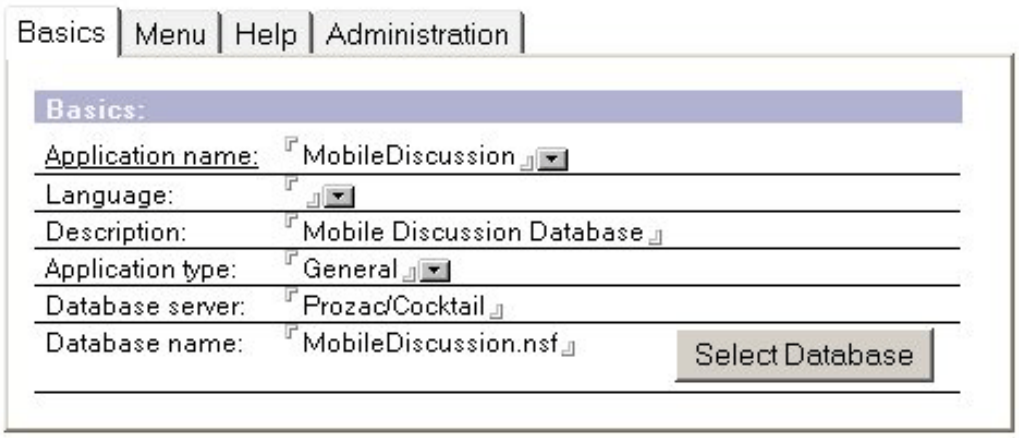
1. Select **MobileDiscussion** from the **Application name** field.

2. Leave the **Language** field blank to use the default language or select a language from the list.

3. In the **Application type** field, select **General**, which enables you to specify a database server and name.

4. In the **Database Server** and **Name** fields, point to the target Application Database on a server accessible from the DEA server. Use the **Select Database** button to select a database to fill in these fields.

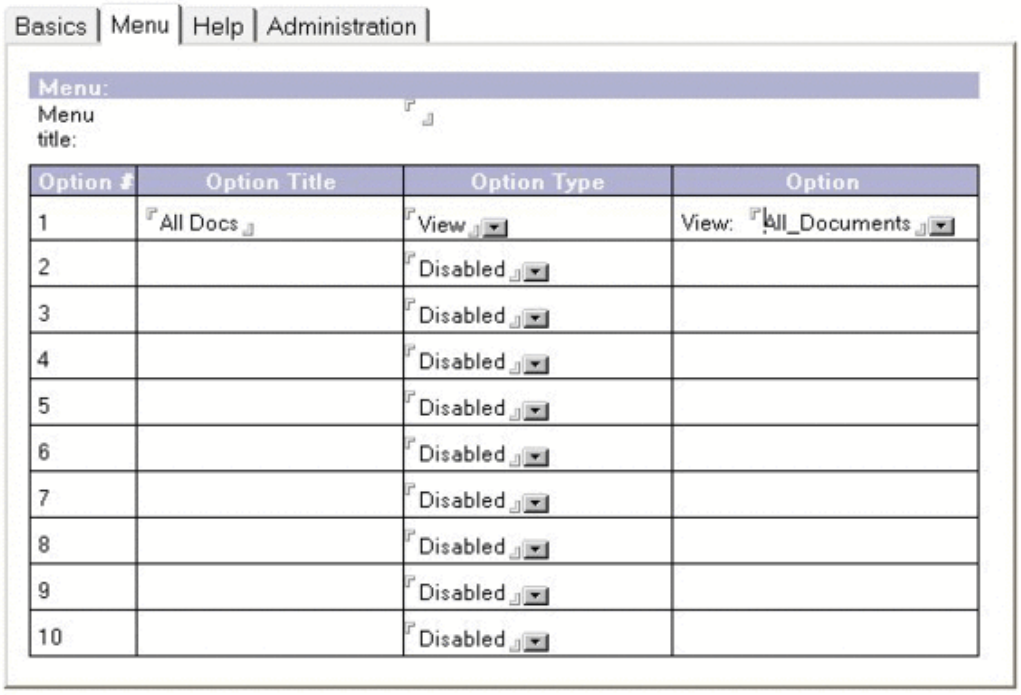
5. Once completed, your **Basics** tab should look like it does in the image below.



6. Creating a menu list for an application is optional and not really necessary for our demo, but we'll do it for the sake of completeness. When a user selects an application from their mobile home page, DEA can display an application menu, which lists the options available in the application. If your application has no need for an application menu (for example, if it has only one view), you may omit this step.

    1. To create an application menu, go to the **Menu** page.
    2. Enter the text you want to display as the title of the menu in the **Menu Title** field.
    3. In the **Option Title** field, enter the text to display on the wireless device.
    4. In **Option Type** field, choose one of the following:
        - View - displays a view. Select the name of the view in the **Option** column.
        - New document - creates a new document. Select the form to use to create the document in the **Option** column.
        - Search - displays a view search form. Select the view to search and the name of the search form in the **Option** column. The search form defines the layout of the search options on the wireless device.
        - Help - displays the application help text.
        - Other DEA Request - specifies a full Domino Everyplace request. Normally used to select a request not directly supported by other option types.

For this tutorial, set the fields as shown below.



7. On the **Help** page, specify the title of the help to display and the help text. In our case, we'll enter some help for demonstration purposes as shown below.

8. Select **Save and Close**.

Now we're ready to add the application to the home page document of one or more users.

Section 5. Update the home page

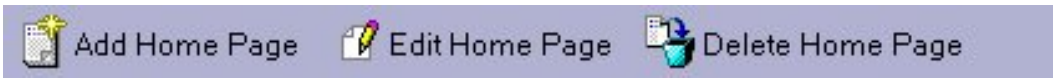
Mobile home page - A single point of access

Before continuing with this next step, I want to point out a nice feature of DEA. Whenever users make a request to the DEA server from their mobile device, they are prompted for their user name and password, then presented with a mobile home page, which presents them with a list of choices that serve as a means to organize their entry points into your Domino environment. By default, users have six menu choices available to them - **Mail**, **Calendar**, **To Do**, **Address Book**, **Preferences**, and **Help**. These options give users "out-of-the-box" mobile access to their key business applications with DEA.

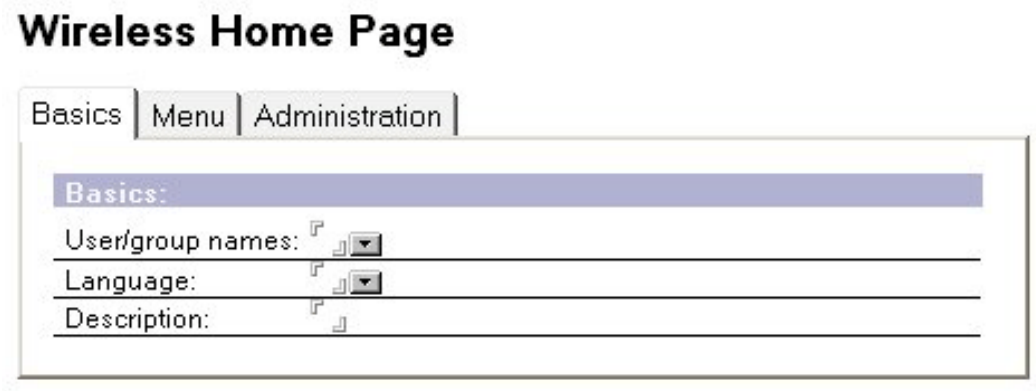
So, on to updating the home page. We'll be using the Domino Directory once again. You'll have the option to change the home page of a single user, multiple users or a group of users.

1. Go to the Domino Directory on the DEA server and open **Mobile** -> **User Home Pages**. This view displays default home pages for all users in the 16 languages supported by DEA.

2. You can select either the default home page to add the application to the default user's home page, or select a specific home page for a subset of users. In our case, we'll add a new home page for a specific user. Typically, you may want to select the **Add home page** action in the **Mobile\User Home Pages** view, and you'd be presented with a new Wireless home page document.



3. To add a new home page for a specific user, use the **Add Home Page** action in the Mobile\User Home Pages view in the Domino Directory. The result would be the following Wireless Home Page where you would typically go through and edit the Basics, Menu and Administration pages of the document with the appropriate information.



However, to create a new wireless home page for a specific user, where we want to keep the default home page menus and add an application to the list, it's easier just to create a copy of one of the default home pages. So, go ahead and create a new home page document by using **Copy/Paste**. Simply select the default home page (English) and select

Edit -> Copy. Then select **Edit -> Paste**. You can, of course, create a copy using the language of your choice.

4. Go to the **Menu** page to add a new entry to the table.

    1. Enter the **Option Title** . This is where we enter the menu selection information to point to the Mobile Discussion application we built in Create an Application Design document. If an **Option type** field is set to **Disabled**, the associated **Option Title** field is hidden from the user. However, since we defined an application menu for our mobile application in Create a mobile application document, select an **Option Type** of **Open Application**.

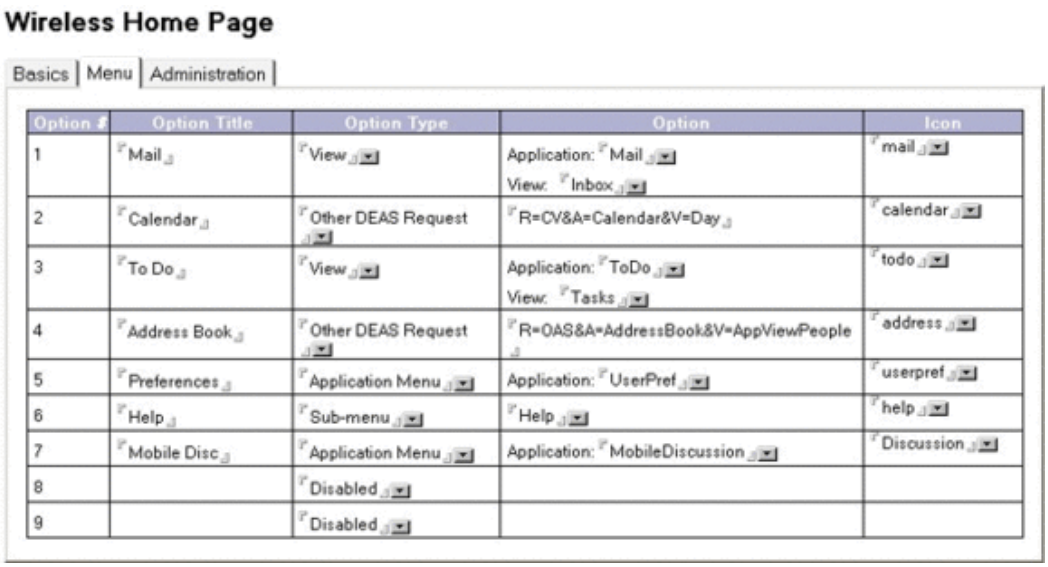
    2. Select the **MobileDiscussion** application name in the **Options** column.

    3. Select an icon of your choice for the mobile application. For our demo, select the **Discussion** icon.

Note: The complete list of Option Types and their meaning are as follows:

- Disabled - disables the menu option
- Application menu - displays the application main menu
- View - displays a view
- New Document - creates a new document
- Search - displays a view search form
- Help - displays help text
- Log out - logs out of the DEA server
- Other DEAS Request - specifies a full DEA server request. Normally used to select a DEA server request not directly supported by other option types
- URL - specifies the URL of a different wireless application on the mobile device
- Sub-menu - displays a sub-menu on the mobile device

Once completed, the **Menu** page should look like it does in the image below. Note that Option 7 should be the menu location of the Mobile Discussion application.



5. Select **Save and Close**.

Section 6. Test the mobile application

Test, test, and test some more

As with any application, this step involves testing the application to ensure it meets your needs. And with mobile applications, this may be new for most folks. How do you easily test a mobile application? It isn't quite as easy as viewing the application using your local browser and running it through a set of predefined quality assurance scripts, although conceptually it's similar. To test your mobile application, you'll need a way to view the application as though you were using a mobile device. You can do this with a device emulator. These emulators simulate the experience of a mobile device, including the embedded microbrowser found on most devices today. There are many sources for device emulators, but for this tutorial we'll be using one from Openwave (see What you need).

1. In order to test our application, first we need to ensure that the DEA server and the Domino server in which your mobile application resides are up and running. In typical early stages, the mobile application may reside on the same Domino server as the DEA server. This is neither required, nor a typical real-world deployment topology, but for demo

purposes, I have the MobileDiscussion application residing on the same server as DEA.

2. Launch the emulator and point it the Domino server running DEA. The URL needed is `http://[servername]/servlet/deas`, where [*servername*] is the name of your DEA server. You will be prompted to enter a user name and password. Specify the user name for which we created the wireless home page in Mobile home page - A single point of access.

Once the user name and password are authenticated, you'll be presented with the home page including a link to the Mobile Discussion application.

For the sake of completeness, take a few minutes and walk through the application

to see the results. Key points of interest are the Application Menu created in Create a mobile application document as well as the All Documents View.

Section 7. Access the application from a mobile device

Providing the URL

Now that we've designed and built the mobile application, as well as updated the mobile home page and defined user access, we are ready to move on to the final step in building our mobile application. This step is simply to provide users with the URL to access the newly created mobile application and creating a bookmark from their mobile device of choice. The default URL to access the DEA server is:

`http://[ServerName]/servlet/deas`

Where `[ServerName]` is the name of your DEA server. In this case, the name of my DEA server is `prozac.lotus.com`. So, the full URL needed to access the DEA server in our case would be:

`http://prozac.lotus.com/servlet/deas`

As with all browsers and probably even more so with the microbrowsers found on mobile devices, it is much easier to create a bookmark to allow for easier access to the DEA server. The following steps demonstrate the general process to create a Domino Everyplace Access bookmark for a mobile-enabled handset. These steps will vary from device to device, so see your device user guide for specific instructions for your device.

1. Navigate to Bookmarks.
2. Choose **Add New Bookmark**.
3. Enter the URL address as follows:
   `http://[ServerName]/servlet/deas`
   If SSL is not being enabled, the http:// and www are not required. For example, `prozac.lotus.com/servlet/deas`. If you are using SSL, then the full URL is required. Also, you are able to use the server's registered IP address instead of the Host Name, but only if SSL is not being used.

Section 8. A few mobile design tips

Considerations for mobile applications

Following are some basic considerations for designing mobile applications:

- Deck size limitations
- Display size
- Input capabilities
- Connection speed
- Device capabilities and limitations

Designing a mobile application for a wireless device presents challenges that you don't face when you design an application for Notes or the Web. By their very nature, wireless devices are small. Consequently, the amount of available memory, the size of the display screen, the data-input mechanism, as well as the connection speed all influence application design.

For example, data is sent to a wireless device in a unit known as a deck. One deck might contain a list of documents in a view or a single document. Because each device has a limited amount of memory in which to save the deck, you must carefully design the application so that the amount of data sent in each deck does not exceed the device's limit. Because of screen size limitations, you must also consider how much of each view, column, field, and so on to display.

To control the deck size of a view, DEA divides the list of documents in the view into groups and provides links so that users can navigate to the next or preceding group of documents.

In a nutshell, don't strive to achieve Notes-like behavior. Instead, design with the device in mind and strive for a usable application on the mobile device.

Designing for differences among devices

Each wireless device supports a different set of functions. For example, one device

might support text highlighting, but not the display of titles. For each wireless device, Domino Everyplace provides a Browser Characteristics document that describes the functions that the device supports and the response that the device makes to certain commands. Using the Browser Characteristics document, Domino Everyplace optimizes the deck sent to the particular device.

Designing for small devices

To prevent a large view or document from exceeding the deck size limit of a device, use these techniques:

- Truncate information in the columns of a view. You can specify the maximum width of data to display in each column of the view to ensure that a document containing a large amount of data does not exceed the deck size maximum or become unreadable on the small screen.
- Truncate the fields in a document. You can choose either to display a specific length or to display as much of the field as possible. A field that is truncated to a specific length displays two periods at the end. A field that displays as much as possible displays a More... link, which, when selected, displays the next section of the field.

Designing multilingual applications

After you have designed an application, you may want to translate it into different languages for your users. Upon receiving a request from a user, Domino Everyplace looks at the language setting on the wireless device or at the user's Person document in the Domino Directory to determine which language to display. It then looks for an application digest for the requested language. If an application digest for the requested language does not exist, Domino Everyplace uses the default language digest.

The **Multilingual application** field on the **Basics** page of the Application Design document controls whether language-specific application digests will be created or whether only the default language digest will be created. If you choose **No** in this field, Domino Everyplace creates only a default language digest. However, if you choose **Yes**, you must perform additional steps to produce a multilingual application that includes language-specific digests, as follows:

1. Open the Application Design document in edit mode.
2. Set the **Multilingual design application** option to **Yes**, and click the

Create translation file button. When this operation is complete, a message box informs you of the name of the translation file it has created.

3. Copy this translation file and duplicate it for each language.

Section 9. Conclusion

Summary

This tutorial has covered the basic steps to build a mobile application with Domino Everyplace Access. We talked about some basic up-front configuration needed, then described five simple steps to build, deploy and access a mobile application built from the standard Domino Discussion template (discsw6.ntf) that ships with Notes/Domino 6. These five steps are:

1. Configure and build
2. Create application document
3. Update Home page
4. Test
5. Access

Hopefully, you've seen that building a mobile application can be much easier than you thought. I encourage you to take what you've learned here and move beyond this to build a better mobile application. The results may surprise and delight you, your boss, and your users!

Resources

Learn

- Domino Everyplace
- GSM World
- developerWorks Wireless zone
- Lotus developer domain
- Lotus product information
- Stay current with developerWorks technical events and Webcasts.

Get products and technologies

- Build your next development project with IBM trial software, available for download directly from developerWorks.

Discuss

- Participate in the discussion forum for this content.

About the author

Carl Kriger

As Senior Product Manager for Lotus Workplaces, Carl Kriger is responsible for overall Lotus collaborative capabilities for IBM WebSphere Portal. In this role, Carl focuses on driving the total solution offering within Lotus' collaboration portfolio designed to provide customers with the highest value Portal capabilities. He is involved in setting product direction, interfacing with all aspects of the IBM WebSphere Portal business, and representing IBM WebSphere Portal software with customers and at industry events worldwide. His areas of expertise are WebSphere Portal, Web development, languages, and security along with Notes/Domino application development, including wireless development. Carl has authored many industry articles in these areas including The Notes/Domino R5 Application Developers Best Practices Guide and co-authored a number of IBM Redbooks. Carl received his MBA from Northeastern University. Off-line Carl spends much of his time with his wife, Joanne, and playing with his three children, Ian, Nevin and Erin. You can reach Carl at carl_kriger@us.ibm.com.