Mobile Design and Administration Guide
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9,432,808, 9,438,597, 9,444,805, 9,450,942, 9,450,958, and 9,454,594. Other patent applications are pending.
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Description of this guide

MicroStrategy Mobile gives users access to MicroStrategy reports and documents on their mobile devices, and allows users to analyze and interact with business data. There are different applications for use on the Apple© iPhone®, the Apple iPad®, and Android® devices.

This guide discusses how an administrator can install and configure MicroStrategy Mobile on mobile devices and how a designer working in MicroStrategy Developer or MicroStrategy Web can create reports and documents for use with MicroStrategy Mobile.

Specifically, this guide includes the following:

- Chapter 1, Using MicroStrategy Mobile describes common business scenarios and use cases for the MicroStrategy Mobile application.

- Chapter 2, Designing Reports and Documents for Mobile Devices provides best practices to design reports and dashboard-style documents in MicroStrategy Web, for display and use on mobile devices such as iPhones, iPads, and Android-based phones and tablets.

- Chapter 3, Displaying data as interactive visualizations: Widgets provides best practices for displaying data as widgets.

- Chapter 4, Using links in documents describes the steps to create links in documents for mobile devices, which allow users to open a device’s applications or navigate between reports and documents.

- Chapter 5, Administering MicroStrategy Mobile describes how to install and configure MicroStrategy Mobile on an Intelligence Server, and how to install and
configure the MicroStrategy Mobile client on mobile devices. It also explains how to subscribe to reports and discusses the ways in which administrators can manage multiple subscriptions simultaneously.

About this book

This book is divided into chapters that begin with a brief overview of the chapter's content.

The following sections provide the location of additional examples, list prerequisites for using this book, and describe the user roles the information in this book was designed for.

The sample documents and images in this guide, as well as some example steps, were created with dates that may no longer be available in the MicroStrategy Tutorial project. If you are re-creating an example, replace the year(s) shown in this guide with the most recent year(s) available in the software.

How to find business scenarios and examples

Within this guide, many of the concepts discussed are accompanied by business scenarios or other descriptive examples. Many of the examples use the MicroStrategy Tutorial, which is MicroStrategy’s sample warehouse and project. Information about the MicroStrategy Tutorial can be found in the Basic Reporting Guide.

Detailed examples of advanced reporting functionality can be found in the Advanced Reporting Guide.

What’s new in this guide

**MicroStrategy 10.5**

- Mobile administrators can customize error messages originating from Intelligence Server. For details, see *Customizing error messages for mobile devices*.

**MicroStrategy 10.4**

- You can enable push notifications for users with Android devices so that they receive alerts when selected targets are met. For steps, see *Configuring MicroStrategy Mobile for Android to receive push notifications*.

- iOS users can now apply multiple layers with different datasets on a map. This allows users to see data from various datasets by switching between layers on the same map, as well as see multiple layers for comparison on the same map. For steps on how to add datasets to a Google map, see the *GIS Help*. 
**MicroStrategy 10.3**

- You can select which view (month, week, or day) that the Date Selection widget displays initially on an iPad. For steps, see *Displaying an interactive event calendar: Date Selection widget.*

**MicroStrategy 9.4.1 iOS Update 5**

- For devices with very high-resolution screens, such as the iPhone 6 Plus, you can take advantage of the additional screen space by providing images of a higher resolution.

  For guidelines for adding images to your documents, and additional best practices to design documents, see *Best practices for designing reports and documents for mobile devices, page 19.*

**MicroStrategy 9.4.1 iOS Update 4**

- You can create a link that opens and prints a target document. For steps, see *Using links to access features within the MicroStrategy Mobile application, page 150.*

**MicroStrategy 9.4.1 iOS Update 3**

- You can enable MicroStrategy Mobile for iOS to download data when the app is running in the background so that new data is already downloaded and available when users resume the app. For steps, see *Configuring MicroStrategy Mobile for iPhone or iPad, page 189.*

  You can customize the accent color used for some text and buttons in MicroStrategy Mobile for iOS. For steps, see *Configuring MicroStrategy Mobile for iPhone or iPad, page 189.*

  You can specify a dark or light color theme for MicroStrategy Mobile for iOS. For steps, see *Configuring MicroStrategy Mobile for iPhone or iPad, page 189.*

**MicroStrategy 9.4.1 Update 1**

- A user can interact with data and send those interactions back to the data source, using transactions to make decisions and write back to the data source. If you have multiple input object controls on a document displayed on an iOS device, you can create a transaction table to group and organize the controls. For steps and an example, see *Organizing transactions with tables on iOS devices, page 67.*

**Analytics Enterprise**

- The name of MicroStrategy Desktop has been changed to MicroStrategy Developer.
**MicroStrategy 9.4**

- You can create a Survey widget for an iPad, which allows an analyst to interact with a survey on an iPad and submit answers, which are then stored in your data source.
  
  For steps and an example, see *Gathering data from users: Survey widget, page 119.*

- You can create a Microcharts widget for use on an iPhone. A Microcharts widget allows users to analyze trends at a glance using compact charts and line graphs.
  
  For steps and an example, see *Visualizing trends: Microcharts widget, page 108.*

- You can take advantage of Smooth Scroll mode for a Microcharts widget displayed on an Android device, to ensure that the metric columns in the widget have enough space to be displayed on a mobile device. For steps, see *Enabling Smooth Scroll mode, page 110.*

- You can select formatting options for a Time Series widget displayed on an Android device, such as background and label display options. For steps, see *Uploading images: Photo Uploader widget, page 113.*

- You can create a Video Player widget for the iPhone and iPad. This widget plays video directly in a document. Videos can be cached for offline viewing.
  
  For steps and an example, see *Downloading and playing videos: Video Player widget, page 128.*

- In a Map widget:
  
  ▪ You can display map markers as points on a path displayed on the map. The line used to represent the path is displayed as thicker for larger metric values and thinner for smaller metric values.
  
  ▪ Additional display themes, such as Desert Theme and Ice Theme, are available.
  
  ▪ You can choose to display or hide items in the map, such as the map toolbar, or a slider that allows the user to zoom in and out of the map.
  
  For steps to create a Map widget, see *Displaying geographical data: Map widget, page 93.*

**Prerequisites**

Before working with this manual you should be familiar with:

- The nature and structure of your company's data that you will analyze in your business intelligence reports and documents

- The information provided in the *Basic Reporting Guide* about analyzing report data—and the information about designing reports, if you plan to create reports in MicroStrategy Developer or MicroStrategy Web for use with MicroStrategy Mobile

**Who should use this guide**

This document is designed for the following users:
• Administrators who intend to install and configure MicroStrategy Mobile on mobile devices.


• Analysts who intend to run and analyze MicroStrategy reports and documents using MicroStrategy Mobile on a mobile device.

**Education**

MicroStrategy Education Services provides a comprehensive curriculum and highly skilled education consultants. Many customers and partners from over 800 different organizations have benefited from MicroStrategy instruction. For a detailed description of education offerings and courses, visit [https://www.microstrategy.com/Education](https://www.microstrategy.com/Education).
Use MicroStrategy Mobile to distribute the power of analytics within your enterprise. You can create a powerful custom mobile app that allows users to view, analyze, and write-back information to your database or you can use MicroStrategy Mobile simply as an extension of your MicroStrategy project to view project documents, dashboards, and reports on mobile devices.

For an overview of what you can create with Mobile and how, see the following:

- **Common business scenarios for MicroStrategy Mobile, page 10**: This section provides examples of the kinds of documents and apps you can create.

- **Overview: Creating documents for mobile, page 11**: This section provides a workflow for creating documents for mobile devices and outlines the considerations to take into account while creating documents for mobile devices.

- **Overview: Creating apps with MicroStrategy Mobile, page 15**: This section provides a workflow for creating mobile apps and outlines the considerations to take into account while designing apps for mobile devices.

- **Viewing demo apps and dashboards: Restoring default settings, page 17**: This section provides steps to restore your app to MicroStrategy's default settings.

### Common business scenarios for MicroStrategy Mobile

MicroStrategy Mobile can be used to support business activities, including the following examples:

- Instantly view data from any existing report or document to answer your questions. If you are in a business meeting, Mobile ensures that the data is up-to-date. Examples of documents and dashboards you can create with Mobile are:
  - A Visual Insight dashboard used to explore data in a strategic business meeting. Dashboards allow users to change the graph used to display data and create their own filters, thresholds, and metrics.
A dashboard-style document that displays data on a business’ bestselling products and stores. Users can view inventory on bestselling products as well as data on other products that are similar. The information in the document is updated weekly.

• Instantly write information to your database. Transaction Services allow you to create forms that automatically send information to your database. Examples of how you can use Transaction Services are:
  ▫ A Corporate Request Center (CRC) app with selectors that allow users to approve or deny time off, expenses, and purchase order requests. The approvals and denials are automatically written to the database after processing.
  ▫ A customer satisfaction survey document that asks customers to rate your business on a scale and leave comments. You can ask customers to complete the survey after a transaction.

• Distribute mobile apps within your organization, or in the Apple App Store or Google Play. Mobile apps can support any recurring business needs you have. Examples of apps you can create are:
  ▫ An app for your CFO with a high-level overview of your company’s performance that refreshes with up-to-date information biweekly.
  ▫ An app that displays product, sales, and inventory information for your business and maps all items to store locations. Users can drill down into graphs and widgets for deeper analysis and also scan product barcodes to view item information. The data in the app is automatically refreshed on a weekly schedule.

• Link together multiple mobile devices with MicroStrategy Mobile installed on them to create a Command Center. You can use any of the linked devices to control the data that displays on all other linked devices. Changes made on one device, such as filtering or drilling, update the display of the other linked devices. For steps, see the MicroStrategy Developer Library.
  ▫ If you have Apple TV, you can display the output of each device on an HDTV.

Overview: Creating documents for mobile

Dashboard-style documents form the basis of the apps and dashboards you can create with MicroStrategy Mobile.
The following workflow describes the process of creating a document for viewing on a mobile device. It assumes that you are familiar with designing MicroStrategy reports and documents and have the necessary privileges to do so.

For information on designing MicroStrategy reports, see the Basic Reporting Guide. For information on designing dashboard-style documents, see the Document Creation Guide.

If users want to be able to create their own filters, thresholds, or change the graph style used to display data, consider creating a dashboard instead of a document. For steps to create a dashboard, see the MicroStrategy Web Help.

To view sample RS documents created for each mobile device, in the MicroStrategy Tutorial project, navigate to the Shared Reports folder. Click MicroStrategy Platform Capabilities, then click MicroStrategy Mobile. Select the folder to open based on the device you are using. The folder displays a list of reports and documents designed for that device.

To create a document for a mobile device

1. Based on how users will interact with the document, decide what objects to add to the document.
   - If users want to be able to see different subsets of data depending on the situation, consider using a prompt or including a table of selectors. Examples of how prompts and selectors can be used are:
     - Viewing data on a specific product. Create a prompt that asks the user to type or scan the product’s barcode. The data in the document is filtered based on the product scanned.
     - Searching for hospitals within a certain distance from the user. Create a prompt that asks for permission to obtain the user’s location from their...
mobile device and a selector the user can use to define the maximum
distance of a hospital. The data in the document is filtered to display only
the hospitals that are within the distance defined by the selector to the user.

For guidelines on creating prompts for mobile devices, see *Allowing users to
filter data: prompts, page 56*. For steps to create a selector, see the *Dashboards
and Widgets Creation Guide*.

- If users want to be able to edit, add, or delete data from your database with a
  mobile device, create documents that use Transaction Services. You must have
  Transaction Services to use this feature.

For an introduction to Transaction Services, and instructions to create
Transaction Services reports, see the *Advanced Reporting Guide*. For
instructions to create Transaction Services-enabled documents, see the
*Document Creation Guide*.

  - If you are designing for iPhones or iPads, consider using a Transactions table
to organize the Transactions data. For example, you are creating a calendar
of events and want users to be able to add or edit events on the calendar.
You can use a Transactions table to easily create a form that asks the user for
event details and saves them to the database. For steps, see *Organizing
transactions with tables on iOS devices, page 67*.

  - If you want to create a survey, where users are presented with a set of
questions they answer by selecting options from a list or by typing in their
answers, consider using a Survey widget. For steps, see *Gathering data from
users: Survey widget, page 119*.

- To create a document that runs other applications on the mobile device to
perform a specific task, such as opening your mail app to send an email, accesses
specific features within MicroStrategy Mobile, such as repeating a prompt on a
document, or opens other documents or reports, add a link. For more
information on what you can do with links and steps to create them, see *Linking
to reports and documents from a mobile document*.

- To include videos and images in a document, use the Video Player and Image
Viewer widgets. For steps, see *Download and playing videos: Video Player
widget, page 128* and *Displaying images: Image Viewer widget, page 87*.

2 Based on the information users want to access and how they want to use that data,
decide how you will display data in your document.

- You can display important information in a docked header or footer. Docked
headers and footers are always visible at the top and bottom, respectively, of the
screen as the user scrolls up or down in the document. For steps, see *Allowing
users easy access to document content: docked headers and footers, page 49*.

- You can inform users of important information, such as new content or updates,
by displaying and update a badge displayed next to the MicroStrategy Mobile
application icon on a user’s iPhone or iPad. For steps, see *Notifying users:
Displaying a badge next to the MicroStrategy Mobile application icon, page 51*.

- You can create a simple graph to display your data. Many graph types are
available, such as overlapping bar graphs and pie graphs. For steps, see the
*Document Creation Guide*. 
For interactive graphs, such as a data cloud, graph matrix, or map, consider using a widget. For a description of each widget you can use and steps to create them, see *Adding widgets and visualizations to documents for mobile devices*, page 78.

3 Design your document based on how you want the user to interact with your document and the mobile device they are using. For best results, follow the guidelines listed in *Best practices while planning reports and documents*, page 19.

For iPads and Android tablets, it is recommended that the document be the same size as the screen of the device. If you cannot fit all the objects you need in one document, consider splitting the document into multiple documents and linking them together, or use one of the following techniques:

- Group small sets of related data together into panel stacks. For information on creating panel stacks for mobile devices, see *Allowing users to access information easily: mobile-friendly panel stacks*, page 36.
- Place detailed data in an Information Window that displays when the user taps on another object. For example, you are creating a document with a scatter graph. You can create an Information Window that displays when the user taps on a bubble in the scatter graph, with detailed information on the bubble. For steps, see *Providing additional information to users: Information Windows*, page 38.

4 Create the datasets that support your document. You can import data from your database or use an already existing report or Intelligent Cube. For steps, see the *Document Creation Guide*.

5 Create the document based on your design. For best results, follow the guidelines listed in *Best practices while creating reports and documents*, page 22. For device-specific guidelines, see also *Best practices while creating reports and documents for the iPhone 5*, page 24 or *Creating documents for mobile devices*, page 24.

6 If the document is going to be viewed on devices with different screen sizes, format the document so it displays properly on all devices. For steps, see *Formatting documents for mobile devices*, page 26.

7 Distribute the document. If the document is part of an app, deploy the app within your organization or on the App Store. For steps, see *Deploying and configuring the MicroStrategy Mobile application*, page 186. Otherwise, place the document in the Shared Reports folder of your MicroStrategy project. All users with permission to view the folder are able to view the document from their mobile device.

8 If you have MicroStrategy Enterprise Manager, you can fine-tune the design of your app based on user statistics. Enterprise Manager is a set of pre-built documents that display data on how people are using your app, such as what device they’re using, which documents they view the most, and app performance. You can also create your own documents with the statistics that Enterprise Manager collects. For a description of the pre-built reports in Enterprise Manager and steps to install and configure, see the *System Administration Guide*.
Overview: Creating apps with MicroStrategy Mobile

You can use MicroStrategy Mobile as a platform to create mobile business intelligence (BI) apps for your organization. By linking dashboard-style documents and Visual Insight dashboards together, you create the experience of a mobile app. Using visualizations and widgets, users can analyze data and make decisions based off that data as they receive it.

The app you create uses a dashboard-style document that serves as a home screen and links to other documents of interest. The home screen displays when users open your Mobile application instead of MicroStrategy’s default interface. For example, the CFO Dashboard demo app has a home screen that links to documents for financial performance, what-if analysis, and so on, as shown in the following figure:

---

To create a mobile app

1. Evaluate what the users need and the workflow that they require. It is useful to know the following:
   - The users’ current problems, their goals, and their expectations
   - The mobile device(s) the users are using for the app.
Define the purpose of the app and the key issues the app solves. Based on this, determine the data required for the app and whether your database contains that data.

Create a diagram of the documents you are designing and how users will navigate between them. Design the documents to accomplish your users’ tasks and the navigation system to support your users’ workflow. Best practices while designing documents are described in Best practices while planning reports and documents, page 19.

You can have users navigate the app with:

- A menu bar with buttons that link to the main documents in your app. The menu bar displays at the bottom of all documents that it is linked to.

- Swiping left or right to view each new screen. This is useful for apps that have a linear workflow or for apps whose main purpose is to showcase information. Do this by creating a panel stack that fills the screen of the device and adding a docked panel selector to the stack. Each panel in the stack is a separate screen.

- A link embedded in a document. You can create links to documents from a text field, image, button, or attribute element. Depending on the device you are designing for, you can create links that filter the data of the document they link to based on the object the user selects.

Create the documents that make up your app and link them together based on your diagram.

To create the feel of a standalone app, designate one of the documents you create as the home screen for your app, which you configure to display when the application opens. Consider adding a button to your home screen with a link to MicroStrategy’s device-specific help, which provides instructions for your users on how to interact with widgets and reports, and so on. To create a link to the help, see Using links to access features within the MicroStrategy Mobile application, page 150.

For high-level steps to create a document, see Overview: Creating documents for mobile, page 11.

If you are creating a custom home screen for the app, create a mobile configuration that configures users' devices to load the custom home screen when the application loads. For steps to create a mobile configuration, including steps to define a custom home screen, see Chapter 5, Administering MicroStrategy Mobile.

By default, users log in to your mobile app using their MicroStrategy user name and password. You can customize the way users log in to your app, by requiring a custom token when they log in or allowing them to use their Facebook credentials to log in. You can also have users log in separately for each project they want to access. For detailed information on how you can customize the way users log in to Mobile, see the MicroStrategy Developer Library.

Distribute your app to a preliminary set of users to gather feedback on whether your app addresses your users' needs. You can also test how easily users navigate and use your app. Redesign components of your app as necessary based on user feedback.
8 Distribute the app to users within your organization, on Google Play, or on the Apple App Store. For steps to deploy and configure your app for all mobile devices, see Chapter 5, Administering MicroStrategy Mobile.

You can create customized versions of the MicroStrategy applications that use your organization’s branding. For the requirements and steps to build customized applications, refer to the MicroStrategy Developer Zone (MSDZ), at the following URL: https://resource.microstrategy.com/MSDZ/

<i>To access the MSDZ, you must create an account in the MicroStrategy Knowledge base, at the following URL: https://resource.microstrategy.com.</i>

9 Update and maintain the app as necessary. Most apps require periodic refreshing so the data they contain is relevant and up-to-date. To automatically refresh the data, you can create subscriptions for users to send them updated data on a schedule.

If the users are using iPhone or iPad devices, you can use the Newsstand feature to schedule deliveries to users' devices at off-peak hours, even if the MicroStrategy Mobile application is not currently running. For steps, see Managing Mobile report subscriptions, page 225.

**Viewing demo apps and dashboards: Restoring default settings**

On the iPhone or iPad, you can restore your custom Mobile app to MicroStrategy’s default project settings at any time to view the latest demo apps that MicroStrategy provides and see examples of the latest features.

Steps to restore MicroStrategy’s default app settings are provided below.

**To restore your Mobile app to MicroStrategy’s default app settings**

1 From the iPhone or iPad's home screen, tap **Settings**.

2 From the list of apps on the left, tap one of the following:
   - If you want to reset your Mobile app, tap **MicroStrategy**.
   - If you want to reset your Good Dynamics app, tap **MicroStrategyGD**.

3 Tap **Reset Application**.

You can return to your custom Mobile app by re-installing it, either by downloading it from your company’s internal website or clicking a configuration URL in an email from your administrator.
DESIGNING REPORTS AND DOCUMENTS FOR MOBILE DEVICES

This chapter contains steps to design reports and dashboard-style documents in MicroStrategy Web, for display and use on mobile devices such as iPhones, iPads, and Android-based phones and tablets. These can be standalone documents or documents that are part of a mobile app. This chapter also contains best practices for designing reports and documents that perform well and are easy to use. The following topics are covered:

- **Best practices for designing reports and documents for mobile devices, page 19.** Designing a MicroStrategy report or dashboard-style document that is viewed on iOS and Android devices requires the use of device-specific document features. This section discusses best practices for using these features.

- **Creating documents for mobile devices, page 24.** This section describes the ways in which you can design dashboard-style documents for iOS- and Android-based devices, and to use features specifically designed for these devices.

- **Allowing users to filter data: prompts, page 56.** A prompt is a question that the system presents to a user when a report is executed. The user’s answer determines the data that is returned by the report. Specific prompts can be added to a report for use on a mobile device that has the MicroStrategy Mobile application.

- **Allowing users to filter data using filter panels, page 67.** You can create a panel of selectors in a dashboard-style document that acts as a filter panel, where users decide what data in the document is displayed by making selections in the panel.

- **Organizing transactions with tables on iOS devices, page 67.** A user can interact with data and send those interactions back to the data source. For example, a user can add a new customer contact name and details while on-site with the customer, and send the new data back to be recorded in the data source immediately. Transactions allow users to make decisions and write back to the data source. If you have multiple input object controls on a document displayed on an iOS device, you can create a transaction table to group and organize the controls.
Prerequisites

- This chapter assumes that you know the nature and structure of your company's data, which users will analyze in business intelligence reports and documents.
- This chapter assumes that you are familiar with designing MicroStrategy reports and documents and have the necessary privileges to do so.

For information on designing MicroStrategy reports, see the Basic Reporting Guide. For information on designing dashboard-style documents, see the Document Creation Guide.

Best practices for designing reports and documents for mobile devices

Designing a report or dashboard-style document that is viewed on iOS and Android devices requires the use of device-specific document features. This section discusses best practices for using these features.

**Best practices for enhancing performance on a mobile device**

- Keep the report or document as focused as possible, by providing only the objects necessary for an effective analysis.
- Consider using Intelligent Cubes to provide historical or trend data in your documents. For background information on Intelligent Cubes, and instructions to create reports based on Intelligent Cubes, see the In-memory Analytics Guide.
- To let users display subsets of data, group data in a document using features such as page-by. Accessing a cached report or document that has multiple pages is faster than re-prompting the report or document, which resubmits the job to the Intelligence Server.

**Best practices while planning reports and documents**

- Sketch the documents you will use in your app and outline how users will navigate between them. If you are creating an app for both tablets and mobile phones, you may want to create multiple diagrams for your app, one for each screen size. Diagramming the documents and links that need to be created allows you to identify:
  - If you are creating an app that uses an existing dashboard-style document, whether the content in that document needs to be reorganized to suit a smaller screen.
  - If you are creating an app with documents that contain a large amount of data, consider splitting each document into multiple, smaller documents to reduce
loading time. You can then use links to allow users to switch between the documents.

- The navigation tools you must include. For example, you can include a tab bar on the bottom of every document that links users to other documents or you can allow users to navigate through documents by swiping right or left. For descriptions of the navigation tools you can use, see Chapter 4, Using links in documents.

- If users must tap on or swipe across an object, the size of those objects. In general, objects that users are meant to tap on should be at least 30 pixels wide and 30 pixels tall. For best results, make the objects larger, around 45 pixels wide and 45 pixels tall.

- If you are creating an app or a document that links to other documents, the order in which these documents must be built. Links must be created after the document they target has already been created. For instructions on creating links in mobile documents, see Chapter 4, Using links in documents.

- Where duplicate functionality exists. If two documents display different data with the same formatting, you may be able to create one document, duplicate it, and change the datasets to save development time.

- The datasets that are needed. One dataset can frequently supply data to multiple documents, which can speed up development and reduce cache sizes on the Intelligence Server.

- Any user interactivity you may want to include, such as widgets for data visualization or changing the appearance of the app when the mobile device is oriented in landscape mode instead of portrait.

- Consider the mobile device you are designing for:
  - Create your documents using fonts that are available on the device.
  - Ensure that the document displays correctly on the mobile device by defining the display properties, available in the Properties dialog box. These properties include optimizing the layout for display on a device, and whether the page-by-bar and re-prompt icon are displayed. For descriptions of these properties, see Creating documents for mobile devices, page 24.
  - Consider the size of the device’s screen when building your reports. Although users can scroll through data, reports with fewer metrics improve performance and are usually easier to read. In addition, take advantage of the larger screen size available on tablet devices.
  - Design documents for tablets such that users can view all the data in a single screen without panning. If more data must be displayed than will fit on one screen, consider using panel stacks to arrange the data such that the user can navigate by swiping or using selectors.
  - To take advantage of the high-resolution screens on newer iOS devices, consider using large images in your documents.
If the documents are for both older and newer mobile devices, add the suffix @2x to the image’s file name. This ensures that the image is appropriately resized for the older device. For example, http://example.com/image@2x.png. For devices with very high-resolution screens, such as the iPhone 6 Plus, use the suffix @3x.

- In documents for tablets, use Information Windows to show users additional information about an attribute element they select. For information on creating Information Windows, see Providing additional information to users: Information Windows, page 38.

- In documents for tablets, use the Interactive Grid widget adjacent to a panel stack, and use the Interactive Grid as a selector that targets the panel stack. This allows users to view additional information without linking to a new document.

- In general, use at least 13-point size font. Font sizes that are greater than or equal to 13-point font are easier for readers to view.

- Images are easier to manage if they are hosted on a web server, and referenced using HTTP or HTTPS URLs. That way, if you need to migrate images across environments, you do not need to change the URLs for the images.

An example of an HTTP URL to an image is http://example.com/folder/image.png.

- You can configure the mobile apps to pre-cache reports, documents, or dashboards, so that they are available to users if they are offline. If the reports and documents contain images, to ensure that the images are pre-cached, store the images on both your Mobile Server and Intelligence Server machine. By default, the folders that you can store your images in are:

  - Mobile Server: C:\Program Files\MicroStrategy\Mobile Server ASPx\Images
  - Intelligence Server: C:\Program Files\MicroStrategy\Intelligence Server\Images

When you add the images to your documents or dashboards, use relative paths for the image's location, for example, .\images\mobile_example.png.

- If the data in your document is frequently updated, you can have the document periodically refresh itself as it is being displayed on a mobile device. For steps, see Enabling automatic refresh for documents, page 35.

- In a Transaction Services document, you can submit a unique ID for a specific mobile device, using the Mobile ID prompt. This allows you to keep track of which mobile devices are creating which records. You can filter the transaction date by Mobile ID.

The Mobile ID prompt is a system prompt, which is a special type of prompt that does not require an answer from the user. Instead, it is answered automatically by Intelligence Server. System prompts are located in the Public Objects/Prompts/System Prompts folder in Developer. For background information on system prompts in general, see the System Administration Guide.
• Use the docked panel selector to display visualizations grouped on panel stacks. For information on creating docked panel selectors, see *Allowing users to easily switch between panels: docked panel selectors, page 37.*

• For reports with data grouped by an attribute in the page-by-pane, you can choose to display the report on an iPad as a book with a separate page for each attribute element. This option, called Enable book-style page-by-navigation, is selected by default. For steps to group data in a report, see the [Basic Reporting Guide](#).

**Best practices while creating reports and documents**

• Consider using one of MicroStrategy’s pre-designed templates when creating documents for a mobile device. The pre-designed templates take into account the size of the device’s screen. For a list of pre-designed templates, see *Creating documents for mobile devices using a template, page 25.*

• Enable drilling to give users the ability to view information at different levels within a single report. Drilling allows users to get more information from one report without having to browse to, and run, other reports.

• When designing graph reports to be used on a mobile device, consider the following:
  ▫ To display tooltips on mobile devices, enable tooltips for the graph series while creating the graph. For steps, see the [Basic Reporting Guide](#).
  ▫ To maximize the graph size, move the legend below the graph.
  ▫ The following graph types are supported on Android devices:
    — Bubble
    — Funnel
    — Gauges
    — Horizontal Area
    — Horizontal Bar
    — Horizontal Line
    — Pareto
    — Pie
    — Scatter
    — Vertical Area
    — Vertical Bar
    — Vertical Line
  ▫ If you must display more information than can fit on one screen, use page-bys to break the graph in logical places across multiple screens.
• When designing grid reports, add padding around the cells to make the data more legible on mobile devices.

• Because Android devices come in varying screen sizes, a document designed for iOS may appear different when viewed on an Android device. To adapt a document’s display to an Android device, while leaving the display on an iOS device unaffected, use the following properties to modify the document:
  • Use the **Fit Page** or **Fit Width** options to ensure that the document fits to the size of the screen. Before selecting one of these Zoom options on the Home toolbar, optimize the layout for micro applications. For steps, see *Formatting document tabs: layouts, page 31.*
  • By default, when the document is displayed on an Android device, any area not used to display the document is rendered in the same color as the background color defined for the document. You can use the Document Fill Color or Layout Watermark to provide a background for any part of the screen that is not used by the rest of the document.
  • Manually size the column widths of any grids on a document, rather than using the automatic resizing options.

• Consider using Mobile Views to support different screen sizes, and different orientations of the device. For instructions on using Mobile Views, see *Formatting documents for various screen sizes and different orientations: Mobile Views, page 27.*

• Consider creating documents that include widgets, rather than converting reports to widgets. Certain features, such as Information Windows and network lines for the Map widget, can only be used in documents.

  For steps to create widgets in documents, see *Chapter 3, Displaying data as interactive visualizations: Widgets.*

• If you are creating an Interactive Grid widget, it is recommended that you assign an action to only one attribute form in the widget. For example, if you want one attribute to act as a selector, ensure that drilling is disabled for the Grid/Graph, and that attributes on the Grid/Graph do not link to other reports or documents.

  For steps to create an Interactive Grid widget, see *Displaying data in rows and columns: Interactive Grid widget, page 90.*

• Consider using links to add interactivity to your document. For example, you can create links that allow users to send an email, make a phone call, or execute related reports and documents. For information and the steps to create links, see *Opening a device’s installed applications from documents, page 132* and *Linking to reports and documents from a mobile document, page 138.*

• If you have prompts in a linked-to report, make sure that there are default answers saved for the prompts.
Best practices while creating reports and documents for the iPhone 5

The iPhone 5 has a different aspect ratio than the iPhone 4. To ensure that your reports and documents display correctly on an iPhone 5, follow the best practices below:

- By default, reports and documents displayed on the iPhone 5 are displayed with black bars on the edges to fill the screen. If you design your reports and documents to fill the iPhone 5 screen, you can create an iPhone configuration that enables the iPhone 5 to display them on the entire screen. For steps, see Configuring MicroStrategy Mobile for iPhone or iPad, page 189.

- You can use Mobile Views to support documents that need to be displayed on both the iPhone 4 and the iPhone 5. You can size each layout according to the phone's screen size. This is the recommended approach if you are designing for both the iPhone 4 and iPhone 5. For instructions on using Mobile Views, see Formatting documents for various screen sizes and different orientations: Mobile Views, page 27.

- You can dock objects at the top or bottom of the screen as an alternative to Mobile Views. If you design the content that displays in the middle of the screen to fit the iPhone 5, that content will scroll when viewed on an iPhone 4. If you design the content that displays in the middle of the screen to fit the iPhone 4, empty space will be displayed when viewed on an iPhone 5. This allows you to use a single view for both devices. However, using multiple views is recommended, so that the users do not experience additional scrolling or empty space.

To dock an object at the top of the screen, insert the object in the page header section of the document. In the Properties and Formatting dialog box for the section, select the Dock to top of screen (Mobile only) check box. When the document is displayed on a mobile device, the docked page header is always displayed at the top of the screen, remaining in place as the user scrolls up or down in the document.

Similarly, to dock an object at the bottom of the screen, insert the object in the page footer section. In the Properties and Formatting dialog box for the section, select the Dock to bottom of screen (Mobile only) check box.

Creating documents for mobile devices

This section describes the ways in which you can design dashboard-style documents for iOS- and Android-based devices, and to use features specifically designed for some devices.

If you are creating an app, you can use dashboard-style documents as the pages and panels of your app and create links on buttons and tab bars in your documents to allow users to navigate to other pages or panels in the app. For steps, see Chapter 4, Using links in documents.
This section assumes that you have created a document with the datasets that you want to analyze. For steps to create a document, refer to the Report Services Document Creation Guide.

Creating documents for mobile devices using a template

A document template allows you to start with a predefined structure when you create a new document. You can use several predesigned templates for your mobile documents to help you create documents that are correctly sized for the device’s screen, as described below.

The following templates are optimized for display on iPhone and Android smart phones:

- **iPhone Portrait**: This template is designed to be viewed on an iPhone or Android smart phone held in a vertical position. Only the Detail Header section of the document is displayed.
  - Width: 6.6 inches
  - Height: 9.6 inches, which includes room for the smart phone’s status bar
  - Supported orientation: Portrait only
  - Graph tooltips displayed: Yes

- **iPhone Portrait Micro-Application**: This template is the same as the iPhone Portrait template, except that the Optimize layout for micro application option is selected, preventing users from performing actions such as zooming in or out of the document. This allows you to better control the user’s experience and interaction with the document.

- **iPhone Landscape**: This template is designed to be viewed on an iPhone or Android smart phone held in a horizontal position. Only the Detail Header section of the document is displayed.
  - Width: 10 inches. The smart phone’s status bar is not displayed in landscape view.
  - Height: 6.6 inches
  - Supported orientation: Landscape only
  - Graph tooltips displayed: Yes

- **iPhone Landscape Micro-Application**: This template is the same as the iPhone Landscape template, except that the Optimize layout for micro application option is selected, preventing users from performing actions such as zooming in or out of the document. This allows you to better control the user’s experience and interaction with the document.

- **iPhone Map Information Window**: You can define an Information Window for a Map widget to be displayed on an iPhone or Android smartphone, to display additional information when a user taps a map marker in the widget. Use this template to create a document layout for use as an Information Window. For
detailed steps, see *Using a layout as an Information Window in a Map widget, page 100.*

- Width: 3 inches
- Height: 2 inches

The following templates are optimized for display on iPad and Android tablets:

- **iPad Portrait:** This template is designed to be viewed on an iPad or Android tablet held in a vertical position. Only one section of the document is displayed.
  - Width: 8 inches
  - Height: 10 inches, which includes room for the tablet’s status bar
  - Supported orientation: Portrait only

- **iPad Landscape:** This template is designed to be viewed on an iPad or Android tablet held in a horizontal position. Only one section of the document is displayed.
  - Width: 10.67 inches
  - Height: 7.33 inches
  - Supported orientation: Landscape only

For documents displayed on an iOS device, you can create a navigation document, which contains only a tab bar. A tab bar displays a series of buttons, which users can tap to navigate through the documents in your app. Use the following templates to create a navigation document. For steps and examples, see *Linking from documents with buttons and tab bars, page 152.*

- **Navigation for iPad:** This template is designed to create a navigation document for iPads.
- **Navigation for iPhone:** This template is designed to create a navigation document for iPhones.

**Formatting documents for mobile devices**

You can ensure that the document displays correctly on mobile devices by defining the display properties, such as whether the document layout is optimized for mobile phones, and whether the page-by-bar and re-prompt icon are displayed.

You can format the display properties at the following levels:

- For each Mobile View. You can create Mobile Views to define how your document appears on different devices, and for different orientations of the device. For example, you can size a graph so that it takes up less vertical space when displayed in landscape orientation on a device. For instructions to define Mobile Views, see *Formatting documents for various screen sizes and different orientations: Mobile Views, page 27.*

- In multi-layout documents, for each document layout. For descriptions of the layout display properties, see *Formatting document tabs: layouts, page 31 and Disabling swiping between layouts in iOS documents, page 33.*
You must use MicroStrategy Web to define these properties. For instructions, see the steps below.

**Formatting documents for various screen sizes and different orientations: Mobile Views**

You can specify how to display documents on iPhone, iPad, and Android devices by using Mobile Views. Mobile Views allow you to quickly and easily determine how the elements of a document are displayed in the following scenarios:

- When users rotate their devices. For example, you can resize a graph to take advantage of the extra horizontal space when the device is held in landscape orientation, or rearrange the controls on the document to accommodate the extra vertical space when the mobile device is held in portrait orientation.

- When users access the same document from different devices, which may have different screen sizes. For example, you can size text to take up less room on a mobile phone in one Mobile View, or enlarge an image to fit a tablet in another Mobile View. The document is automatically displayed using the Mobile View that most closely matches the height and width (resolution) of the device’s screen.

- When users access the same document on an iPhone 4 and an iPhone 5, which have different screen sizes. You can create a view for each device, with the corresponding layout height. The objects on each layout can have different sizes and positions.

When you use a Mobile View, controls in the document keep the same basic settings when displayed in different Mobile Views. For example, a selector containing a list of regions targets a graph displaying revenue data. If the user selects the Southeast region from the selector, revenue information for Southeast is displayed in the graph. When the user rotates the mobile device and the document is displayed using a different Mobile View, Southeast remains selected and the data displayed in the graph is unchanged.

**Parameters you can change in Mobile Views**

Once you have added a Mobile View to a document, you can do the following:

- Display a preview of the Mobile View in Design Mode or Editable Mode in Web.
- Edit controls in the Mobile View. You can edit the following options for a control independently in each Mobile View:
  
  Editing any option that is not included in the list below also edits this property for all other Mobile Views in the document. For example, if you change the background color of a document section to green in one Mobile View, the section is displayed as green in all other Mobile Views.

  - The position of the control in the document
  - The height and width of the control
  - The height of the control’s title bar (for Grid/Graphs, panel stacks, and selectors)
Whether the control is hidden. You can determine whether a control will be visible when the Mobile View is displayed on a mobile device. All controls in the document must be included in each Mobile View you define. However, you can hide a control in an individual Mobile View to prevent it from being displayed when the document is viewed on a mobile device. For steps to determine whether a control is visible, see the Report Services Document Creation Guide.

For example, you want to create two Mobile Views, but only want to display a specific grid in the Mobile View for a single mobile device. You must hide the grid in the Mobile View in which you do not want the grid to be displayed.

- Whether the height and width of the control are automatically determined or are fixed at a specific size
- The height of a document section
- Whether a document section can grow or shrink to fit its contents
- Whether to hide a document section if it has no content

• Show or hide all controls in the document in Design Mode, regardless of whether they are shown when the document is displayed on a mobile device.

By default, the mobile device tries to display a document using the Mobile View that matches the exact height and width of the device’s screen. If there is more than one Mobile View with the same height and width as the mobile device’s screen, the first of these Mobile Views, as listed in the Manage Views Editor, is used. Otherwise, the mobile device displays the Mobile View whose width most closely matches the width of the mobile device’s screen.

Using Mobile Views with multi-layout documents

Documents can contain multiple layouts. Once you create a Mobile View, it is automatically available to every layout in the document.

For example, a multi-layout document contains three layouts. If you create a Mobile View to determine how the document is shown on an iPhone, you must edit the controls in each layout to define how the layouts will be displayed. You can use the Orientation option for Mobile Views in conjunction with the Supported Orientation option for document layouts to determine how a mobile device chooses the best Mobile View to use to display a document layout, as follows:

• If the Supported Orientation of the document layout is set to Both Portrait and Landscape, the document layout is displayed using the Mobile View that most closely matches the height and width of the mobile device, as well as the orientation in which the mobile device is held.

For example, if the mobile device is held vertically, the mobile device attempts to display the document layout using the Mobile View that has Orientation set to Portrait or Portrait and Landscape, and most closely matches the height and width of the device. If only Mobile Views designed to be displayed in landscape orientation have been defined for the layout, the mobile device chooses the best Mobile View from among those defined and rotates the Mobile View to be displayed vertically, to match the orientation of the mobile device.
• If the Supported Orientation of the document layout is set to either Portrait Only or Landscape Only, the document layout is displayed using the Mobile View that most closely matches the height and width of the mobile device, as well as the Supported Orientation of the layout.

For example, if the Supported Orientation is Portrait Only, the mobile device attempts to display the document layout using the Mobile View that has Orientation set to Portrait or Portrait and Landscape, and most closely matches the height and width of the mobile device. If only Mobile Views designed to be displayed in landscape orientation have been defined for the layout, the mobile device chooses the best Mobile View from among those defined and displays the Mobile View vertically, to match the Supported Orientation of the document layout. The Mobile View is locked to the same orientation as the Supported Orientation option, meaning that if the Supported Orientation is set to Portrait Only and a Mobile View is displayed vertically on the mobile device, the orientation of the layout as displayed on the mobile device remains the same and does not rotate regardless of whether the user rotates the mobile device.

When a document is viewed on the iPhone, the Supported Orientation option determines which layout is displayed on the mobile device. The mobile device then determines the best Mobile View to use to display the layout. For more information on the Supported Orientation setting, see the MicroStrategy Web Help.

To define a Mobile View in a document

1. In MicroStrategy Web, open the document in Design Mode or Editable Mode.
2. From the Tools menu, select Manage Views. The Manage Views Editor opens.

   A default Mobile View is automatically displayed in the list of Mobile Views, and cannot be deleted.
3. Click the Duplicate icon next to an existing Mobile View. A new Mobile View is automatically created.
4. In the Name field, type a name for the new Mobile View.
5. Under the Resolution column, specify the height and width of the mobile device screen on which to display the Mobile View, as follows:

   a. In the first field, type the width, in pixels, of the device screen.
   b. In the second field, type the height, in pixels, of the device screen.
6. You can specify whether the Mobile View is designed to be displayed on a mobile device when the device is held vertically or horizontally. From the Orientation drop-down list, select one of the following:

   • To display the Mobile View when the device is held vertically, select Portrait Only.
• To display the Mobile View when the device is held horizontally, select **Landscape Only**.

• To display the Mobile View when the device is held vertically or horizontally, select **Portrait and Landscape**.

7 Repeat the appropriate steps above to define each Mobile View.

8 You can determine which Mobile View to display in Design Mode when the document layout is displayed in Web. Under the **Current** column, select the Mobile View to display.

9 To delete an existing Mobile View, click the **Delete** icon next to the Mobile View to delete.

10 You can choose to show all controls in Design Mode in Web, regardless of whether they are marked as hidden. For example, you design a Mobile View to be displayed on the iPhone. The Mobile View contains several controls that will be displayed on the iPhone, as well as a grid that is marked as hidden and will not be displayed. You can choose to display all the controls in Design Mode, including the grid. Do one of the following:

   • To display all controls in the layout in Design Mode, regardless of whether they are hidden, select the **Show hidden objects in Design Mode** check box.

   • To display only the controls that are specified as not hidden, clear the **Show hidden objects in Design Mode** check box.

11 Click **OK** to save your changes.

12 Add controls to the document, such as text fields, images, graphs, and so on. For steps to add controls to a document, see the Report Services Document Creation Guide. When you add a new control to the document, a message is displayed asking if you would like to make the control visible in all Mobile Views. Do one of the following:

   • To make the control visible in all views, select **Yes**.

   • To make the control visible in only the current Mobile View, select **No**.

   • To remove a control from a Mobile View, select the control, and press Delete. A message is displayed asking you if you want to delete the control from the document. To hide the control from the current Mobile View, while keeping it visible in all other Mobile Views, select **No**.

To determine which Mobile View to display in Web

13 From the **Tools** menu, select **Manage Views**. The Manage Views editor opens.

14 Under the **Current** column, select the Mobile View you want to display.

15 Click **OK** to save your changes.

To delete a Mobile View from a document

16 From the **Tools** menu, select **Manage Views**. The Manage Views editor opens.
17 Click the **Delete** icon next to the Mobile View you want to delete.

18 Click **OK** to save your changes.

**Formatting document tabs: layouts**

Each layout in a document can be defined to display on an iPhone, iPad, or Android device independently of other layouts within the same document. Steps are provided below to format a document layout for mobile devices.

For an introduction to multi-layout documents, see the *Report Services Document Creation Guide*.

**To define how tabs in a document display on mobile devices**

1 In MicroStrategy Web, open the document in Design Mode.

2 From the **Tools** menu, select **Layout**. The Properties dialog box opens.

3 From the left, under Layout Properties, click **Mobile**. You can define the following display options:

   - From the **Supported Orientations** drop-down list, select which orientations you want the layout to support:
     - **Portrait Only** (height is greater than width)
     - **Landscape Only** (width is greater than height)
     - **Portrait and Landscape**

4 You can also define the following display options for documents:

   - To allow users to filter the display of the document by tapping a page-by element from the page-by bar, select the **Display page-by interface** check box.
   - To allow users to change their prompt answers, select the **Display filter interface** check box. The Filter button displays on the layout.
   - To use a layout as an Information Window in a Map widget, select the **Use as Information Window for the Map widget** check box.

An Information Window is a small pop-up window that provides additional details about a location. It is displayed when a user selects a map marker in a Map widget. For more information, see *Using a layout as an Information Window in a Map widget, page 100*.

If the document is to be displayed on multiple devices, it is recommended that you use a panel stack as the Information Window. For information, see *Providing additional information to users: Information Windows, page 38*. 
• To prevent Android users from performing actions such as scrolling in the document, choose **Optimize layout for micro application**. Optimizing the layout for a micro-application prevents you to better control the user’s experience and interaction with the document.

Selecting this option allows you to size the layout for Android devices to fit the page or the width of the device's screen. When a user views the document on an Android device, a fit-to-page layout is zoomed and displayed within the screen, so that he does not need to scroll vertically or horizontally to view any data. A fit-to-width layout is zoomed to the width of the screen, so that a user does not need to scroll horizontally to view any data. To do this, complete the following steps:

  a. Select **Optimize layout for micro application**.

  b. Click **Apply**.

  c. On the **Home** toolbar, select either **Fit Page** or **Fit Width** from the **Zoom** drop-down list.

5 You can choose to always open a document in full screen mode. From the left, under Document Properties, click **Document**, and select the **Always open this document in full screen mode** check box.

   Documents displayed on an iPhone in landscape orientation are automatically displayed in full screen mode.

When documents are displayed in full screen mode, the navigation bars and action menu are hidden. You can control whether users can access the hidden navigation bars and action menu.

• To display the navigation bars and action menu when users tap on the full screen button at the top of the app, select the **Allow users to access navigation bars and action menu** check box (default).

• To prevent users from accessing the navigation bars and access menu, clear the **Allow users to access navigation bars and action menu** check box.

  ◦ On the iPad, users are also unable to access the layout bar, which displays the different tabs in the document.

  ◦ On the iPhone in landscape orientation, users are unable to access the layout bar, which displays the different tabs in the document, and the page-by-bar. In Portrait orientation, users can access both.

Consider doing this when you want to control how users exit and interact with the document, such as when the document is part of a custom mobile app with its own navigation system.

To allow users to perform actions that would normally be done in the action menu, you can create a link in the document that performs the same action. For example, to allow users to exit the document, you can create a link in the document that opens another document or sends them to a different screen in the app, such as the Home page. For steps, see *Using links to access features within the MicroStrategy Mobile application, page 150.*
Click OK. The Properties dialog box closes.

**Disabling swiping between layouts in iOS documents**

By default, users can navigate between layouts in a document by swiping to the left or right. On an iPad or iPhone, you can disable this default so that users must use the layout bar to navigate between layouts.

**To disable swiping between layouts in documents on iOS devices**

1. In MicroStrategy Web, open the document in Design Mode.
3. From the left, under the Document Properties section, click Mobile.
4. Do one of the following:
   - To allow users to swipe between pages or select an option in the layout bar to display a report or document, select the Enable swiping to switch layout check box (default).
   - To disable swiping between layouts and have users switch layout by tapping the layout’s name in the layout bar, clear the Enable swiping to switch layout check box.
5. To enable graph tooltips on the device, select the Enable graph tooltips check box.
6. Click Apply. The Properties dialog box closes.

**Displaying documents on iOS devices with a dark or light theme**

On the iPad and iPhone, you can choose whether documents use a dark or light theme. In the image shown below, the document on the left is using the dark theme, while the document on the right is using the light theme.
A document’s theme controls the colors of its title bar, menu, and may also control the colors of the widgets in the document.

You may want to choose the dark theme if the document’s background is also dark, so that the title bar and menu match the document. Similarly, if the document’s background is light, you may want to choose the light theme.

You can also display documents with the same theme the app is using. By default, Mobile apps use the dark theme.

**To choose which theme a document displayed on the iPad or iPhone uses**

1. In MicroStrategy Web, open the document in Design Mode.
3. From the left, under the Document Properties area, select Mobile.
4. From the Document theme color drop-down list, select one of the following:
   - If you want the document and its widgets to use the same theme as the rest of the Mobile app, select Application theme color (default).
   - If you want the document to always use the dark theme, select Dark.
   - If you want the document to always use the light theme, select Light.
Enabling automatic refresh for documents

For iPhone, iPad, and Android devices, you can define whether the document refreshes itself as it is being displayed on a mobile device. Automatic refresh is helpful if the document’s data is frequently updated.

Automatic refresh also applies to documents viewed in Express Mode in MicroStrategy Web.

To enable automatic refresh in an iOS or Android document

1. In MicroStrategy Web, open the document in Design Mode.
3. From the left, under the Document Properties section, click Advanced.
4. Select the Automatically Refresh check box.
5. In the field, type the amount of time, in seconds, to wait before each refresh.
6. Click OK. The Properties dialog box closes.

Enabling zoom for iOS documents

For the iPhone and iPad, you can define whether you can zoom in and out of the document by pinching and double-tapping.

To enable zooming in an iOS document

1. In MicroStrategy Web, open the document in Design Mode.
3. From the left, under the Document Properties section, click Mobile.
4. Select the Enable zoom (pinch and double-tap) check box.
5. Click OK. The Properties dialog box closes.

Creating an image watermark for an Android document

An image watermark is a faint design appearing in the background of a document. A watermark typically identifies or decorates pages. For example, a business logo can appear in the background of an Android document.
To create an image watermark for an Android document

1. In MicroStrategy Web, open the document in Design or Editable Mode.
3. To make the background of the document transparent:
   a. From the left, select Color and Borders.
   b. From the Color drop-down list, select No Fill.
4. From the left, select Watermark.
5. To create an image watermark:
   a. From the Watermark drop-down list, select Image watermark. The image file must be available to both the Intelligence Server and to the designers of the document.
   b. Type the path and file name of the image in the Source field.
   c. By default, the image is automatically resized to fit within the document margins while retaining its aspect ratio. To scale the image manually, select a percentage from the Scale drop-down list.
6. Click OK to return to the document.

Allowing users to access information easily: mobile-friendly panel stacks

In addition to the standard features supported by panels in documents, you can use the following features to make viewing data in your app easy for users:

- Allow users to easily switch between panels by tapping on circles displayed in a docked panel selector that appears at the bottom of a panel stack. See Allowing users to easily switch between panels: docked panel selectors, page 37.
- Allow users to switch between panels by swiping. See Allowing users to switch panels by swiping, page 38.
- Save screen space by using an Information Window, which is a pop-up window that can display additional details when users tap a selector in a document or a marker in a map widget. See Providing additional information to users: Information Windows, page 38.
- In documents for iPad, determine whether a panel stack resets to the first panel when an attribute selector that targets the panel stack is changed. See Resetting panel stacks when selectors are changed, page 48.
Allowing users to easily switch between panels: docked panel selectors

A docked panel selector allows users to switch between panels by tapping on circles displayed on a selector bar that appears at the bottom of a panel stack. An example of a panel with a docked selector on the iPad is shown below:

A row of circles, each representing a panel, is displayed in the center of the selector. The current panel is marked with a dark circle.

You can use a docked panel selector in an app to display multiple graphs or widgets in one space. You can also use the docked panel selector with a panel stack to create an interactive slide show, where the information in one panel progresses naturally to the information displayed in the next.

The steps to create a docked panel selector are described below.

To create a docked panel selector

1. In MicroStrategy Web, create a new document, or open an existing document in Design Mode.
2. From the Insert menu, choose Panel Stack. When you move the mouse cursor to the Layout area, the pointer changes to crosshair.
3. Click and drag in the Layout area to create the panel stack.

To create and configure a selector for the panel stack

4. Right-click the panel stack, and choose Create Panel Selector. A drop-down selector appears above the panel stack.
5. Right-click the panel selector and choose Properties and Formatting. The Properties and Formatting dialog box appears.
6. From the left, choose the Selector category.
7 Under Mobile, ensure that the Display selector docked to its panel stack check box is enabled.

8 Click OK to save the changes.

To add panels and content to the panel stack

9 Hover the mouse cursor over the panel stack. A toolbar appears above the panel stack.

10 Click Add Panel to add panels to the stack.

11 For each panel, click Add Content, and add grids or graphs to the panel.

Allowing users to switch panels by swiping

You can allow users to change panels in a panel stack by swiping the device’s screen to move to the next or previous panel.

Prerequisites

This procedure assumes that you have created a document with the following:

- A panel stack. For steps to add panel stacks to documents, see the Dashboards and Widgets Creation Guide.
- A selector that targets the panel stack. For steps to add selectors to documents, see the Dashboards and Widgets Creation Guide.

To allow users to switch panels by swiping

1 Open the document in Design or Editable Mode.

2 Right-click the panel stack with the docked panel selector and select Properties and Formatting. The Properties and Formatting dialog box opens.

3 From the left, select General.

4 Select the Allow current panel to be changed without selector check box.

5 Click OK to return to the document.

Providing additional information to users: Information Windows

Information Windows let users view additional information about a specific object by tapping it. A pop-up window displays the additional information. A user can display an Information Window by tapping:

- An attribute element in a grid or graph.
- A button.
• An image.
• An item in a selector.
• An object in a widget. For example, a user can tap a store’s location in a Map widget to display the store’s address, phone number, and ratings.
• A text field.

An Information Window is a panel stack that is configured to appear as a pop-up window over the selected object, displaying an additional visualization or additional information based on the selected object. An example of an Information Window in an iPad document is shown below:

You can customize the data that displays in an Information Window depending on the content of the selected object by using the object as a selector. In the above example, the Subcategory column in the grid is used as a selector. When a user taps an element in the column, the Information Window is displayed with data specific to that attribute element.

You can also use an Information Window as a navigational menu that displays when a user clicks on a button in the page. For example, in the MicroStrategy Mobile demo app below, an Information Window is used to display a list of useful links within the app. The Information Window is configured to slide in from the left side of the screen when the user clicks a menu button in the app.
To use an Information Window in a document, you must do one of the following:

- Define a panel stack to be used as the Information Window, and a Grid/Graph or selector that uses the panel stack as an Information Window, as described in *To define an Information Window for a Grid/Graph or a selector in a mobile document, page 40.*

- Define a panel stack to be used as the Information Window, and a text field, image, or button that uses the panel stack as an Information Window, as described in *To define an Information Window for a text field, an image, or a button in a mobile document, page 43.*

You can specify how the Information Window is displayed, by specifying how it opens (for example, it can slide in from the right), how it closes (using a Close button or tapping outside the window), its location, and its opacity. For examples of the different options and steps to specify them, see *Specifying the display of an Information Window on an iPad or iPhone, page 44.*

**To define an Information Window for a Grid/Graph or a selector in a mobile document**

1. In MicroStrategy Web, navigate to the document to add an Information Window to. The document must contain a Grid/Graph or a selector, which must contain data related to the data to be placed on the panel stack. This procedure includes steps to add a selector; for steps to create a Grid/Graph, see the *Dashboards and Widgets Creation Guide.*

   For example, the document shown below contains a basic grid:
2  Open the document in Design Mode.

**To define the panel stack for the Information Window**

3  From the **Insert** menu, choose **Panel Stack**. When you move the cursor into the Layout area, the pointer becomes a crosshair.

4  Click and drag anywhere in the Layout area to create the panel stack. The panel stack is added to the document.

5  Right-click the panel stack, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

6  From the left, click **General**, then type an appropriate name for the panel stack in the **Name** field. This name appears as the title of the Information Window on the mobile device.

7  Select the **Use as Information Window** check box.

8  Click **OK** to save the changes.

9  Add data related to the Grid/Graph to the Grid/Graph or selector.

   For example, in the document above, a pie chart representation of Revenue for each Year is added to the panel stack, as shown below:
10 Do one of the following:

- If you are using a Grid/Graph, define the Grid/Graph as a selector. Follow the steps below:
  
  a. In the report grid, right-click the attribute you want to use as the selector, and choose **Use as Selector**. MicroStrategy Web automatically attempts to find targets for the selector.
  
  In the above example, the Region attribute is used as a selector for the Information Window.

  b. To verify that the selector targets the Information Window, right-click the attribute again, and choose **Edit Selector**. The Configure Selector dialog box appears, as shown below.

  ![Configure Selector dialog box](image)

  c. In the Selected Targets list, ensure that the Information Window panel appears in the list.

  d. Click **OK**.

- If you are using a selector, create the selector to target the panel used as an Information Window. Follow the steps below:

  a. Click the arrow next to the **Selector Control** icon on the Controls toolbar, and then choose how to display the selector from the drop-down list. When you move the mouse to the layout area, the pointer becomes crosshairs.

  b. Click the section of the Layout area in which to place the selector. If you click and drag in the section, you can size the selector.

  c. Right-click the selector and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

  d. From the left, choose **Selector**.
Select an attribute, custom group, or consolidation in the Source field. The elements of the source are displayed as items in the selector.

In the Selected list, ensure that the Information Window panel appears in the list.

Click OK.

Save the document.

For the example above, when the document is executed on an iPad, the Information Window appears when the user taps an element in the Region column, as shown below:

To define an Information Window for a text field, an image, or a button in a mobile document

1. In MicroStrategy Web, navigate to the document to add an Information Window to.
2. Open the document in Design Mode.

To create the panel stack for the Information Window

3. From the Insert menu, choose Panel Stack. When you move the cursor into the Layout area, the pointer becomes a crosshair.
4. Click and drag anywhere in the Layout area to create the panel stack. The panel stack is added to the document.
5. Right-click the panel stack, and select Properties and Formatting. The Properties and Formatting dialog box opens.
6 From the left, click **General**, then type an appropriate name for the panel stack in the **Name** field. This name appears as the title of the Information Window on the mobile device.

7 Click **OK** to save the changes.

8 Add controls to the panel stack, such as Grid/Graphs or text fields.

**To define the text field, image, or button that uses the Information Window**

9 Add a text field, image, or button to the panel stack.

10 Right-click the text field or image, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

11 From the left, click **General**.

12 From the **Panel Stack** drop-down list, select the panel stack to use as the Information Window.

13 Click **OK** to save your changes.

14 Save the document.

**Specifying the display of an Information Window on an iPad or iPhone**

You can specify how an Information Window opens on an iPad or iPhone: by popping up over the document, flipping up (like turning over a card), increasing in size, or sliding in from an edge of the screen.

You can display a Close button on the Information Window or have it close when the user taps outside the Information Window.

An Information Window can display in the best position automatically, at the position of the panel stack, above or below the selected object, or to the right or left of the selected object.

You can specify the transparency of the Information Window.

You specify these options by defining:

- The window Mode, which is how the Information Window opens (pop up, flip up, scale, or slide)
- Whether the Close button is displayed

For pop-up Information Windows, you can specify the placement, or position, of the Information Window:

- A flip-up or scaling Information Window displays in the center of the screen.
- A sliding Information Window displays at the edge that it slid from.

In the document below, a user can tap the buttons on the left to display Information Windows.
Each Information Window is formatted differently. If a user taps the KPI button, an Information Window without a Close button pops up. The user can tap anywhere outside of the Information Window to close it.
If the user taps the Task Logger button, the Task Logger Information Window pops up. Notice that a Close button is displayed.

When the user taps the Profit Forecast button, the Profit Forecast Information Window slides in from the right.
To specify how an Information Window displays on iPads and iPhones

1  In Web, open the document in Design Mode.

2  Right-click the panel stack that is used as an Information Window, and select Properties and Formatting.

3  From the left, choose the General category.

4  To specify how to open the Information Window, select one of the following Window mode options:
   • To open the Information Window by popping it up, select Appear. (This is the default.)
   • To open the Information Window by flipping it up, like turning over a card, select Flip Up.
   • To open the Information Window by gradually increasing its size, select Scale Up.
   • To open the Information Window by sliding it from an edge of the screen, select Slide.

5  If you selected Appear as the Window Mode, you can specify the location of the Information Window. Select one of the following options from the Placement drop-down list:
   • To display the Information Window in the best position, select Automatic. (This is the default.)
   • To display the Information Window at the position of the panel stack, select Fixed.
   • To display the Information Window above the selected object (for example, the item in the selector or the attribute in the grid), select Above.
   • To display the Information Window below the selected object, select Below.
   • To display the Information Window to the left of the selected object, select Left.
   • To display the Information Window to the right of the selected object, select Right.

6  If you selected Slide as the Window Mode, you can specify which edge to slide the Information Window from. Select one of the following options from the Position drop-down list:
   • Right (the default)
   • Left
   • Above
   • Below
7 By default, Information Windows on an iPhone fill the screen when they display. To scale the Information Window so it is the same size on the iPhone as in Web, select the **Display in partial screen per panel stack size on mobile phone** check box.

Information Windows on an iPad automatically scale so they are the same size as in Web.

- If you selected Slide as the Window Mode, you can specify how much of the Information Window initially displays. Users can then drag the Information Window out to view the rest of the Information Window. Do one of the following:
  - If you selected Right or Left as the Information Window’s position, specify how much of the Information Window’s left or right side displays, respectively. Type the value, in inches, in the **Initial sliding in width** field.

    To display the full Information Window, type 0 (default).

  - If you selected Above or Below as the Information Window’s position, specify how much of the Information Window’s bottom or top side displays, respectively. Type the value, in inches, in the **Initial sliding in height** field.

    To display the full Information Window, type 0 (default).

8 By default, the Information Window is closed when a user taps outside of the Information Window. To close the Information Window by tapping a button instead, select the **Dismiss only when ‘Close’ button is tapped** check box.

9 If the Information Window is set to open by flipping, increasing in size, or sliding into the screen, you can define how transparent the Information Window displays. Do the following:

a From the left, select **Effects**.

b In the **Transparency** field, type a percentage. A higher value displays the Information Window as more transparent, while a lower value displays the Information Window as more solid. The default value is 0.

c To blur the sections of the document that show through the transparent Information Window, select **Enable blur effect**.

10 Click **OK** to save your changes and return to the document.

**Resetting panel stacks when selectors are changed**

In documents for iPad, you can determine whether a panel stack resets to the first panel when an attribute selector that targets the panel stack is changed. By default, the current panel (the panel that is displayed) does not change when an attribute selector is changed. The steps to enable this option follow.
To determine whether a panel stack resets when a selector is changed

1 In MicroStrategy Web, open the document in Design Mode.
2 Right-click the panel stack, and select Properties and Formatting.
3 In the General category, select the Reset to first panel when targeted (Mobile only) check box.
4 Click OK to save your changes.

Allowing users easy access to document content: docked headers and footers

You can ensure that users always have access to a section of content in a mobile document by adding the content to a docked page header or page footer. The content of a docked page header is always displayed at the top of the screen, while a docked page footer is always displayed at the bottom, regardless of screen size. Docked headers and footers remain in the same place on the screen as the user scrolls up or down in the document, allowing the user easy access to the footer's content.

Some examples of how you can use docked headers and footers are:

- To display important information, such as the name of your company, project, or app, copyright information, or contact information.

- To create a navigation bar of useful links. Do this if you want to create a custom navigation bar instead of the tab bar MicroStrategy provides. For steps to create a tab bar, see Creating a tab bar to hold buttons, page 155.

Steps are below to define a docked page header or page footer.

To dock a header or footer to the top or bottom of a document

1 Right-click the page header or page footer section that you want to define as docked, then select Properties and Formatting. The Properties and Formatting dialog box opens.
2 From the left, click General in the Properties section. Do one of the following:
   - To display the page header or page footer as an ordinary header or footer that is not docked to the top or bottom of the document, clear the Dock to top of screen (Mobile only) check box or the Dock to bottom of screen (Mobile only) check box.
   - To display the page header or page footer as docked, select the Dock to top of screen (Mobile only) check box or the Dock to bottom of screen (Mobile only) check box.
Allowing users to copy text from documents on iOS devices

On an iPad or iPhone, a user can copy text from a document, by tapping and holding the text to copy. If zoom is disabled, a user can also double-tap the text.

If the document uses a document template other than an iPad or iPhone template, the document may use a Detail section. The Detail section of a document displays one row for each row of data in the document’s dataset. (For descriptions and examples of the different document sections, see the Designing and Creating Documents chapter of the Report Services Document Creation Guide.) If the text is displayed in the Detail section, a user taps the text to copy.

For example, a document contains the heading “List of Regions” in the Detail Header section, and the actual regions in the Detail, as shown below:

```
List of Regions
Central
Mid-Atlantic
Northeast
Northwest
South
Southeast
Southwest
Web
```

Zoom is disabled in the document, so double-tapping the word Region displays a pop-up menu. The user can copy the selected text (Region), or select all the text in the text field (List of Regions).

When a user taps Northeast, which is in the Detail section, the word Northeast is selected. The pop-up menu allows the user to copy the selected text (Northeast).

For a document, you can enable copying for the whole document, and also enable or disable copying for a specific text field, as described in the steps below. This means that you can enable copying for all text fields on a document, but specify that a particular text field cannot be copied.

To allow users to copy text from a text field in a document

1. In MicroStrategy Web, open the document in Design Mode.
2. To enable copying for the whole document, follow the steps below:
   b. From the list of categories on the left, under Document Properties, select Mobile.
c To enable copying from all text fields on the document, select the **Enable copy for text** check box.

Text sub-selection is only supported outside of the Detail section. This means that if the user selects text in the Detail section of the document, all the text in the Detail section is selected. A user cannot select a single word, as he can in other document sections. The example in *Allowing users to copy text from documents on iOS devices* demonstrates this.

3 By default, all text fields use the document-level setting to determine whether copying is enabled. You can enable or disable copying on a specific text field by following the steps below:

a Right-click the text field, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

b From the list of categories on the left, select **General**.

c Select one of the following:

- To enable copying on this text field, select **Enable copy for this text**.
- To disable copying on this text field, select **Disable copy for this text**.

d Click **OK** to save your changes and return to the document.

**Notifying users: Displaying a badge next to the MicroStrategy Mobile application icon**

You can choose to display and update a badge displayed next to the MicroStrategy Mobile application icon on a user’s iPhone or iPad. The badge is an alert you can use to inform users of important information, such as new content or updates. A badge displays as a red circle with white text.

You can:

- Update the badge each time that the user runs a document. For steps, see *Updating the MicroStrategy Mobile application badge each time that a document is run, page 51*.

- Update the badge when the data in a report meets specific threshold conditions. For steps, see *Updating the MicroStrategy Mobile application badge when the data in a report meets specific threshold conditions, page 52*.

**Updating the MicroStrategy Mobile application badge each time that a document is run**

You can update the badge displayed next to the MicroStrategy Mobile application icon on a user’s iPhone or iPad each time that the user runs a document. To do so, you must add a text field to the document which contains the value to display in the badge, as described in the steps below. When the user runs the document, the value displayed in the text field is automatically used to update the badge.
To update the MicroStrategy Mobile application badge each time that a document is run

1 In MicroStrategy Web, open the document in Design or Editable Mode.

2 You can have MicroStrategy update the badge with the value of a metric, rather than a static value. Do one of the following:
   - To update the badge with a metric value, from the Dataset Objects panel on the left, click and drag the metric onto the layout area. A text field is automatically created and displayed, containing shortcut text that will be automatically replaced with the metric's value when the document is run.
   - To update the badge with a static value, from the Insert menu, select Text, then click the location in the layout area to add the text field to. A blank text field is automatically created and added to the document. In the field, type the value to display, then click outside the text field to apply your changes.

3 Right-click the text field and select Properties and Formatting. The Properties and Formatting dialog box opens.

4 Under Mobile, select the Set application badge to value of this field check box.

5 Click OK to apply your changes.

Updating the MicroStrategy Mobile application badge when the data in a report meets specific threshold conditions

You can update the badge displayed next to the MicroStrategy Mobile application icon on a user's iPhone or iPad when a metric on a report meets specific threshold conditions. This alerts users who see the badge to data that is likely to be important for making business decisions. To do this, you must create an alert-based subscription based on the metric, as described in the steps below.

Prerequisites

- You must have MicroStrategy Distribution Services installed.
- MicroStrategy Web must be configured to use Distribution Services.
- Mobile device users must have the Use MicroStrategy Mobile and Mobile View Document privileges.

To update the MicroStrategy Mobile application badge when the data in a report meets specific threshold conditions

1 In MicroStrategy Web, run the report to use to update the application badge.
2 Right-click the name of a metric in the report, then point to Alerts. Select Mobile Notifications. The Alerts Editor opens.

**Define the condition**

3 From the Filter On drop-down list, select the attribute or metric to use to create a condition.

4 If you are creating a condition based on a metric, do the following:
   a Select a comparison operator, such as Greater Than or Less Than.
   b Enter a value in the field on the right or click Select Metric to choose another metric to compare the original metric to.

5 If you are creating a condition based on an attribute, do one of the following:
   • To define your condition by typing specific attribute form values:
     a Select the Qualify option.
     b From the drop-down list on the left, select the attribute form on which to base the condition. For example, you can qualify on the attribute element’s ID form, one of its description forms, or the DATE if the attribute is time-based.
     c From the next drop-down list, select a comparison operator such as Greater Than or Less Than. The operators available for a selection depend on the attribute form you chose above.
     d Do one of the following:
       — To compare the attribute form to a specified value, type the value in the field.
       — To compare the first attribute form to a second attribute form, click Select Attribute, then select the second attribute form from the drop-down list.
   • To define your condition by selecting attribute elements from a list:
     a Choose the Select option.
     b From the drop-down list on the left, select In List or Not In List. If you select Not in List, then the attribute elements in the Selected list will not be included in the threshold condition.
     c Move attribute elements from the Available list to the Selected list. Elements in the Selected list are included in the threshold condition.
   • To search for a specific element, use the Search for field. Select the Match case check box to return only items that match the upper and lower cases you typed in the Search for field.

6 Click the Apply icon to define the condition.
7 To add another threshold condition, select Add Condition, then repeat the appropriate steps above to define the condition.

**Specify delivery options**

8 Expand Delivery Settings, then enter a name for the subscription in the Name field.

9 From the Schedule drop-down list, select a schedule or event. The schedule choices available are created in the Developer Schedule Manager. For steps, see the Scheduling Jobs and Administrative Tasks chapter in the System Administration Guide.

10 If you want alerts delivered to a mobile device:
   a Click To to choose an address. The Recipients Browser dialog box opens.
   b You can search for contacts or a contact list in the Find field. The contacts will appear in the Available list below.
   c Click the left arrow and right arrow to add or remove contacts from the To, Cc, and Bcc fields.
   d Click OK to save the list of addresses.

11 From the Device type drop-down list, select the type of device to deliver the notifications to.

12 From the Target Application drop-down list, select the type of application you want to send the report to.

13 Select the Update application badge with the value of this metric check box. From the drop-down list next to the check box, select the metric whose value you want to display next to the application icon. Once a row of data in the report meets the threshold condition you defined in the steps above, the value of this metric, as displayed in the row, is shown next to the application icon. The first row of data that meets the threshold condition is used to update the application icon.

   For example, in the report displayed below, you can define a threshold condition as “Profit greater than or equal to 200,000”. If you select Sales Team from the drop-down list, 8 is displayed next to the application icon.

<table>
<thead>
<tr>
<th>Satellite Operations</th>
<th>Profit</th>
<th>Sales Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlanta</td>
<td>$157,963</td>
<td>5</td>
</tr>
<tr>
<td>Boston</td>
<td>$224,495</td>
<td>8</td>
</tr>
<tr>
<td>Charleston</td>
<td>$199,884</td>
<td>7</td>
</tr>
<tr>
<td>Fargo</td>
<td>$126,778</td>
<td>3</td>
</tr>
<tr>
<td>Memphis</td>
<td>$301,966</td>
<td>9</td>
</tr>
<tr>
<td>Miami</td>
<td>$178,713</td>
<td>6</td>
</tr>
</tbody>
</table>

14 If you want to specify an expiration date for the subscription, expand Advanced Options and select the Do not deliver after check box, then specify an expiration date by choosing a date from the calendar.

15 Click OK to create the subscription.
Creating documents that use Transaction Services to update your data warehouse

You can create documents for iOS and Android devices that allow users to change values in grids and then write those changes to your data warehouse. Use Transaction Services in your apps and documents to update data, write new information to your warehouse, or delete existing records. This feature is available when you install Transaction Services.

For an introduction to Transaction Services, see the Advanced Reporting Guide.

Some examples of how you can use Transaction Services are:

• To create a Corporate Request Center that allows users to approve or deny time off, expenses, and purchase order requests.

• To create inspection forms. Inspectors can input data with sliders and selectors. They can also take pictures of any issues they find. The results of their inspections are instantly written to the database.

• To create and update budgets or calendars.

Prerequisites

• You must have Transaction Services.

• You must have the Web Configure Transaction privilege.

Overview

The following is a high-level overview of the tasks you need to perform to create a document that uses Transaction Services. Each high-level step describes where to find specific instructions for designing transaction-enabled documents:

• In Developer, create a Transaction Services report using the Freeform SQL Editor. For instructions, see the Advanced Reporting Guide.

• In MicroStrategy Web, create a dataset report that includes the attributes and metrics you added to the Transaction Services report above. For instructions, see the Report Services Document Creation Guide.

• In MicroStrategy Web, create a document for mobile devices that uses the above dataset report, and link it to the Transaction Services report you created above. For instructions, see the Report Services Document Creation Guide.

For iOS devices, the document can include a transaction table, which provides a structure to organize multiple input object controls for the same transaction. For steps to create a transaction table, including an example, see Organizing transactions with tables on iOS devices, page 67.

The values in documents you create using the above procedure can only be edited by users who have the Execute Transaction privilege.
Allowing users to filter data: prompts

A prompt is a question that the system presents to a user when a report is executed. The user’s answer determines the data that is returned by the report. Specific prompts can be added to a report for use on an iPhone, iPad, or Android device that has the MicroStrategy Mobile application. These prompts are then displayed when the prompted report, or a document that uses the prompted report as a dataset, is executed on the device.

You can use prompts to customize the data within an app to the user. For example, an app contains information on sales and inventory for all stores of a company nationwide, with a prompt asking for which store(s) the user would like to view data. Store managers in different regions typically want to see data for different stores. Including a prompt allows you to create one app that all store managers can use.

If an app or document has more than one prompt, you can filter the options available in the second prompt based on the user’s answers in the first prompt. To do this, add the first prompt as a filter on the second prompt. For steps to create a filter, see the Basic Reporting Guide.

For an introduction to prompts, the basic prompt types, prompt creation, and adding a prompt to a report, see the Basic Reporting Guide. For instructions to add a prompt to a document, see the Document Creation Guide.

For best practices when creating prompts for mobile devices, see Best practices for creating prompts for mobile devices, page 57.

For steps to answer prompts in MicroStrategy Mobile, see the MicroStrategy Mobile Analysis Guide.

You can display prompts on mobile devices in the following styles:

- **Textbox**: This prompt lets users type a value via a keypad to answer a prompt.
- **Slider**: This prompt lets users select a numeric value on a horizontal slider.
- **Stepper**: This prompt displays a numeric value. Users can tap the increment and decrement buttons to increase or decrease the value for their prompt answer.
- **Switch**: This prompt lets users choose between two choices, On and Off.
- **Wheel**: This prompt displays a wheel or row of wheels that the user can scroll through to specify a date or date and time. On Android devices, this prompt is displayed as a stepper.
- **Calendar**: This prompt lets users select a date from a calendar.
- **Geo Location**: This prompt lets users filter results based on their current geographical location. The prompt includes a request for permission to enable a GPS-style locator. For more information, see Prompting users for their location: Geo Location prompts, page 64.
- **Barcode Reader**: This prompt lets users answer a prompt by scanning or typing a barcode. For more information, see Creating Barcode Reader prompts, page 65.
• **Tree**: This prompt lets users answer a prompt by selecting objects in a tree. Tapping one object in the tree displays all objects underneath it. For more information, see *Allowing users to choose elements from multiple attributes: Hierarchy prompts, page 63.*

Prompts for mobile devices are divided into four types: value prompts, attribute element prompts, hierarchy prompts, and object prompts. Value prompts require the user to select a single value, such as a date or number. Attribute element prompts require the user to select from a limited list of available attribute elements.

Hierarchy prompts require the user to select an attribute or attribute element from a hierarchy of related attributes. For example, an app may display data for a time period that the users specify. The app may include a prompt on the Time hierarchy, which contains the Year, Month, and Day attributes. Users can then choose to view data for a specific year, month, or day.

Object prompts require the user to select one or more objects from a list of available objects. Objects prompts allow users to choose exactly what data they want to view. For example, a document may contain a grid with the Region and City attributes. You can add an object prompt to allow users to choose which metrics or filters to add to the grid.

**Best practices for creating prompts for mobile devices**

• Create prompts specifically designed for use on mobile devices. Some examples of the prompt types are listed below:
  ▫ Slider, which allows users to answer the prompt by selecting a numeric value on a slider.
  ▫ Stepper, which allows users to answer the prompt by using increment and decrement buttons.
  ▫ Wheel, which allows users to answer the prompt by moving wheels to specify a value.
  ▫ Geo Location, which allows users to filter results based on their current geographical location.
  ▫ Barcode Reader, which allows users to answer the prompt by scanning or typing a barcode.

• Prompts that are not specifically designed for mobile devices can still be used. In general, use:
  ▫ The List style for single selections.
  ▫ The Shopping Cart style for multiple selections on iOS devices.
  ▫ The Geo Location style for geographical location data.
  ▫ The Barcode Reader style for barcode data.
Allowing users to filter data based on a single value:

Value prompts

A value prompt lets users select a single value, such as a date or specific text string, and filter report data based on their selection. The different types of value prompts are:

- **Date and time prompt**: This prompt type asks users to type or select a date, and returns data with the Date data type that matches the user's selection. For example, the Date prompt can be useful when added to a filter that screens data based on Year=2016. The prompt lets users select a specific date within the year of the filter's condition. Date prompts are used in filters that qualify on a date.

  Date and time prompts are displayed as wheels on an iPhone or iPad, and are displayed as a date/time stepper on an Android device.

- **Numeric prompt**: This prompt type asks users to type a numeric value. Numeric value prompts accept integers or decimals up to 15 digits of precision. Numeric prompts can be used in any filter that needs a number input from the user. For example, a numeric prompt may be used to filter results where the minimum value for Revenue is entered by the user.

  Numeric prompts can be displayed as text boxes, numeric wheels, sliders, steppers, switches to choose between two numeric values, and location prompts.

- **Text prompt**: This prompt type asks users to type a string of text in a text box.

  Text prompts can be displayed as text boxes, or as barcode reader prompts.

- **Big decimal prompt**: This prompt type asks users for a "big decimal" value. Big decimal value prompts accept integers and decimals up to 38 digits of precision.

  Big decimal prompts can be displayed as text boxes.

For more information about value prompts, see the MicroStrategy Web Help.

---

**To create a value prompt**

1. On the MicroStrategy Web home page, click **Create Prompt**. The Create Prompt page opens, with a list of the types of prompts you can create.

2. Click **Value Prompt**. The New Prompt page opens.

3. Specify the type of value prompt, making your selection based on your requirements:

   - To let users filter for data related to either a specific date or a range of dates, click **Date and Time prompt**.

   - To let users filter numeric data, usually based on a metric, click **Numeric prompt**.

   - To let users filter text data, usually based on attribute forms, click **Text prompt**.
• To let users filter data based on a big decimal value for a metric, click **Big Decimal prompt**.

4 Click the **General** tab.

5 Specify a title and description for the prompt in the **Title** and **Instructions** fields.

**To restrict the prompt answers**

6 To require users to answer the prompt before running the report, select the **Prompt answer is required** check box.

7 To set the maximum and minimum values that can be entered by the user, select the **Minimum value** and **Maximum value** check boxes and type a value in the respective fields. You can specify a minimum value even if you do not specify a maximum value.

**To specify the layout and display style of the prompt**

8 Click the **Style** tab.

9 From the **Display style** drop-down list, specify a presentation style, such as **Textbox**, for the prompt. This is how the prompt is displayed to the user.

10 Depending on your requirements, choose the appropriate display style and options by referring to the following table:

<table>
<thead>
<tr>
<th>End Goal</th>
<th>Prompt Type and Display Style</th>
<th>Setup Recommendations and Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select a date from a calendar</td>
<td><strong>Prompt type</strong>: Date &amp; Time</td>
<td><strong>Minimum value</strong>: Specify the earliest date that can be used to answer the prompt.</td>
</tr>
<tr>
<td></td>
<td><strong>Display style</strong>: Textbox</td>
<td><strong>Maximum value</strong>: Specify the latest date that can be used to answer the prompt.</td>
</tr>
<tr>
<td>Select a date and/or time from a wheel</td>
<td><strong>Prompt type</strong>: Date &amp; Time</td>
<td><strong>Minimum value</strong>: Specify the earliest date and time that can be used to answer the prompt.</td>
</tr>
<tr>
<td></td>
<td><strong>Display style</strong>: Textbox</td>
<td><strong>Maximum value</strong>: Specify the latest date and time that can be used to answer the prompt.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Allow user to select time</strong>: Specify whether the user can select a time as well as a date to answer the prompt.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Interval</strong> (minutes): Specify the interval displayed between each value on the wheel. For example, an interval of 30 allows users to select times in 30-minute intervals, such as 9:30 A.M., 10:00 A.M., 10:30 A.M., and so on.</td>
</tr>
<tr>
<td>Type a numeric value to answer a prompt</td>
<td><strong>Prompt type</strong>: Numeric</td>
<td><strong>Minimum value</strong>: Specify the lowest value that can be used to answer the prompt.</td>
</tr>
<tr>
<td></td>
<td><strong>Display style</strong>: Textbox</td>
<td><strong>Maximum value</strong>: Specify the highest value that can be used to answer the prompt.</td>
</tr>
<tr>
<td>End Goal</td>
<td>Prompt Type and Display Style</td>
<td>Setup Recommendations and Requirements</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------</td>
<td>----------------------------------------</td>
</tr>
</tbody>
</table>
| Use a switch to choose between two numeric values | **Prompt type:** Numeric  
**Display style:** Switch | **On value:** Specify the numeric value used when the switch is set to its On position. The default is 1.  
**Off value:** Specify the numeric value used when the switch is set to its Off position. The default is 0. |
| Select a numeric value on a horizontal slider | **Prompt type:** Numeric  
**Display style:** Slider | **Minimum value** (required): Specify the lowest selectable value in the slider.  
**Maximum value** (required): Specify the highest selectable value in the slider.  
**Interval:** Specify the interval displayed between each value on the slider. For example, an interval of 10 allows users to specify values in increments of 10, such as 10, 20, 30, and so on. |
| Use a stepper to increment or decrement a numeric value | **Prompt type:** Numeric  
**Display style:** Stepper | **Minimum value** (required): Specify the lowest value that is displayed in the prompt.  
**Maximum value** (required): Specify the highest value that is displayed in the prompt.  
**Interval:** Specify the interval used to increment or decrement values in the stepper. For example, if the stepper’s minimum value is set to 100, and the interval is 10, users can increment the stepper value to 100, 110, 120, and so on. |
| Select a numeric value from a wheel          | **Prompt type:** Numeric  
**Display style:** Wheel | **Minimum value** (required): Specify the lowest value that is displayed in the prompt.  
**Maximum value** (required): Specify the highest value displayed in the prompt.  
**Interval:** Specify the interval displayed between each value on the wheel. For example, an interval of 30 allows users to specify values in increments of 30. |
| Filter data based on a user’s current location | **Prompt type:** Numeric  
**Display style:** Geo Location | **Mobile preferences:** Select the Latitude or Longitude option to filter data based on the current latitude or longitude.  
For Geo Location prompts, you must create one prompt for the longitude, and one for the latitude.  
For a detailed description of the Geo Location prompt, see Prompts users for their location: Geo Location prompts, page 64. |
| Type text to answer a prompt                 | **Prompt type:** Text  
**Display style:** Textbox | **Minimum number of characters** (required): Specify the minimum required length of the prompt answer.  
**Maximum number of characters** (required): Specify the maximum allowable length of the prompt answer. |
Scan or type an item’s barcode

**Prompt type:** Text

**Display style:** Barcode Reader

**Setup Recommendations and Requirements**

**Minimum number of characters:** Specify the minimum required length of the barcode.

**Maximum number of characters:** Specify the maximum allowable length of the barcode.

For a detailed description of the Barcode Reader prompt, see *Creating Barcode Reader prompts, page 65.*

Type a large number to answer a prompt

**Prompt type:** Big Decimal

**Display style:** Textbox

**Setup Recommendations and Requirements**

**Minimum value:** Specify the lowest value that can be used to answer the prompt.

**Maximum value:** Specify the highest value that can be used to answer the prompt.

For examples of each prompt display style, see *Allowing users to filter data: prompts, page 56.*

To save the prompt

1. To save the prompt, click **Save As.** The Save As dialog box opens.

2. Specify a name, description, and the location in which to save the prompt and click **OK.** The Save As dialog box closes, and the prompt is saved.

**Allowing users to choose from a list of attribute elements: Attribute element prompts**

An attribute element prompt lets users select prompt answers from a limited list of specific attribute elements.

The table in the steps below provides a list of attribute element prompt types that you can create in MicroStrategy Web for use on a mobile device. To create a prompt that accomplishes a specific goal, find the task you want to perform in the first column in the table, then see the remaining columns for the display style, recommendations, and requirements to create the prompt. For images of each prompt display style, see *Allowing users to filter data: prompts, page 56.*

For more information about attribute element prompts, see the *MicroStrategy Web Help.*

**To create an attribute element prompt**

1. On the MicroStrategy Web home page, click **Create prompt.**

2. The Create Prompt page opens with a list of the types of prompts that you can create. Click **Attribute Element List.**
3 To determine the attribute whose elements the user can choose from, click Select Attribute. Select the attribute whose elements are displayed in the prompt and click OK.

To define the elements that the user can choose from

4 Choose one of the following options:

- To display all the attribute elements to users while they are answering the prompt, choose List all elements (no restriction). This option is recommended only if there are a small number of elements for the attribute.

- To create a list of attribute elements from which users can choose, select Use a predefined list of elements. This option is recommended if users need to choose from a specific set of elements.

  To select the elements, click Add, then click OK. To remove an object, highlight it and click Remove. To remove all items, click Clear.

- To narrow the list of available attribute elements by using a filter, choose Use a filter to reduce the number of elements. This option is recommended for attributes with a large number of elements.

  For example, you can restrict the Customer attribute by only showing the top 100 customers. Browse to and select the filter.

  Filtered attribute element prompts apply to iOS devices. On Android devices, all attribute elements are displayed.

5 Click the General tab.

6 Specify a title and description for the prompt in the Title and Instructions fields.

7 To require users to answer the prompt before running the report, specify whether the prompt requires an answer. Select the Prompt answer is required check box.

8 Optionally, set the maximum and minimum number of prompt answers allowed. Enter these numbers in the Minimum number of answers and Maximum number of answers fields.

9 Click the Style tab.

10 You can determine the presentation style used to display the prompt to the user. The default is Shopping Cart. From the Display style drop-down list, select the presentation style you want to use.

11 Depending on your requirements, select the appropriate display style and options by referring to the following table:
<table>
<thead>
<tr>
<th>End Goal</th>
<th>Display Style</th>
<th>Setup Recommendations and Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select a date-based attribute element from a calendar</td>
<td>Calendar</td>
<td><strong>Minimum date</strong>: Specify the earliest date that users can select.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Maximum date</strong>: Specify the latest date that users can select.</td>
</tr>
<tr>
<td>Select an attribute element from a list</td>
<td>List</td>
<td><strong>Show search box</strong>: Specify whether users are presented with a search box to filter the list of attribute elements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Make search required</strong>: Specify whether to require that users search for elements.</td>
</tr>
<tr>
<td>Use the current geographical location to filter attribute elements</td>
<td>Geo Location</td>
<td><strong>Select location mapping level</strong>: Select the level at which to filter attribute elements. For example, if this option is set to City, the attribute elements will be filtered to include only those in the current city.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Select location mapping attribute</strong>: Select the attribute to use to filter the element list. The location mapping attribute must contain attribute forms for latitude and longitude, and these attribute forms must be visible on the template. For a detailed description of the Geo Location prompt, see Promoting users for their location: Geo Location prompts, page 64.</td>
</tr>
<tr>
<td>Scan or type the barcode of an item to search for an attribute element</td>
<td>Barcode Reader</td>
<td><strong>Show search box</strong>: Specify whether users are presented with a search box to filter the list of attribute elements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Make search required</strong>: Specify whether to require that users search for elements.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Barcode mapping attribute form</strong>: Select the attribute form used to look up barcode information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For a detailed description of the Barcode Reader prompt, see Creating Barcode Reader prompts, page 65.</td>
</tr>
</tbody>
</table>

**To save the prompt**

12 To save the prompt, select **Save As**. The Save As dialog box opens.

13 Specify a name, description, and the location in which to save the prompt and click **OK**.

**Allowing users to choose elements from multiple attributes: Hierarchy prompts**

Users can answer a prompt on an iPad or iPhone by selecting attribute elements from all of the attributes in a hierarchy, using the Hierarchy prompt.
Use Hierarchy prompts when users want to view or compare data for different types of attribute elements. For example, a user wants to analyze sales information across all the products in his store. The user wants to be able to analyze sales data for specific items in his store and analyze sales data across different product categories. You can create a Hierarchy prompt on the Product hierarchy, which contains both the Item and Category attributes, and add it to the report.

For steps to create a Hierarchy prompt, refer to the Basic Reporting Guide.

**Allowing users to choose from a list of objects: Object prompts**

Users can answer a prompt on an iPad or iPhone by selecting from a list of objects. The object prompt is more flexible than the attribute element prompt. Instead of choosing from a list of attribute elements, users can choose from a list of objects, such as attributes, metrics, and custom groups. Users can also choose which filter to apply to a report or document.

Use Object prompts when users want to control what data they view in a report or document. For steps to create an Object prompt, refer to the Basic Reporting Guide.

**Prompting users for their location: Geo Location prompts**

The Geo Location prompt lets users answer a prompt by using their device’s current geographical location. Geo Location prompts are typically used to filter data in a Map widget. For example, a Map widget displays several locations as markers on the map display. You can choose to display only those map markers that are in the user’s current city.
The location name that is returned by a Geo Location prompt is based on Google’s geocoding. The prompt determines the user’s longitude and latitude using the mobile device’s GPS receiver, and passes this information to Google Maps to return information about the user’s location.

You can also use an attribute element prompt to filter attribute elements based on the location of the mobile device. To support attribute element prompts, your MicroStrategy schema must include a location mapping attribute that includes attribute forms for latitude and longitude information.

For example, to filter a list of stores by the state in which the mobile device is located, provide a location mapping attribute that contains attribute forms for the state name, latitude, and longitude.

The attribute that provides the list of attribute elements that are filtered and displayed by the Geo Location prompt, also called the display attribute, does not have to be the same as the location mapping attribute. For example, the Customer State is both the display attribute and the location mapping attribute. When the prompt is displayed on a mobile device, the list of prompt answers is filtered to display the current state, as shown in the image below. Instead, if the display attribute is the Store attribute, and the location mapping attribute is Customer State, the list of prompt answers is filtered to display the stores in the current state, as shown in the image below on the right. Users can select stores from the list for which to display data.

You can:

- Create a prompt that automatically uses the device’s current latitude and longitude. While creating the prompt, you must define two value prompts, one for latitude and one for longitude.
  
  For steps to create value prompts, see *To create a value prompt, page 58*.

- Create a prompt that filters an attribute element list using the current geographical location, by defining an attribute element prompt with the display style set to Geo Location.
  
  For steps to create an attribute element prompt, see *To create an attribute element prompt, page 61*.

**Creating Barcode Reader prompts**

The Barcode Reader prompt lets users scan or type an item’s barcode using the device to answer a prompted report or document.

You can add a Barcode Reader prompt to a report or document by defining a prompt and setting its display style to Barcode Reader. The prompt is then displayed as a Barcode Reader when the report or document is executed, as shown below:
Some examples of how you can use the Barcode Reader prompt are:

- To spontaneously view a product’s sales and inventory information.
- To view other locations where the product is stocked, as stored in your database.
- To compare the product’s popularity with other products in the same category or with the same brand name.

The Barcode Reader prompt supports the following types of barcodes:

- QR code
- UPC-A
- UPC-E
- EAN-8
- EAN-13

You can do the following:

- To allow iPhone, iPad, and Android users to filter report results based on a product barcode, you can define a value prompt with the display style set to Barcode Reader. For steps to create a value prompt, see *To create a value prompt, page 58.*

- To allow iPhone, iPad, and Android users to search for an item in an attribute element list, you can define an attribute element prompt with the display style set to Barcode Reader. If an item’s barcode matches the scanned or typed barcode, its name is returned in the search and can be selected to answer the prompt.
For steps to create an attribute element prompt, see *To create an attribute element prompt, page 61*.

To support the scanning of barcodes using MicroStrategy Mobile, you must store the barcode data used in the associated prompt with a database data type that supports text data. MicroStrategy recommends using the varchar data type for your database to store the barcode data. For details about storing data in your warehouse, see the *Project Design Guide*.

### Allowing users to filter data using filter panels

You can allow users to filter data within a dashboard-style document using a panel of selectors, called a filter panel. Users select different options in the filter panel, which changes the data that is displayed in the document.

You can customize the filter panel so that each filter in the panel is collapsible, similar to the Filters panel in dashboards. For steps, see the procedure below.

For detailed steps to add a filter panel to a document, see the *Dashboards and Widgets Creation Guide*.

#### To make each filter in a filter panel collapsible

1. In MicroStrategy Web, open the document containing the filter panel in Design or Editable Mode.
2. Right-click the filter panel and select Properties and Formatting.
3. Under the Panel Stack area, select the Show as collapsible panel (Mobile only) check box.

### Organizing transactions with tables on iOS devices

A transaction-enabled document contains embedded write-back functionality for the purposes of decision-making or initiating a transaction. Transaction Services-enabled documents allow you to update, delete, or create new entries in your database from within your Mobile app.

If you have multiple input object controls on a document displayed on an iOS device, you can create a transaction table to group and organize those controls. For general background information on transaction-enabled documents, including the prerequisites needed to work with them, see the *Transaction-enabled Documents* chapter of the *Report Services Document Creation Guide*.

You can create a transaction table that is displayed at all times in the document, or that pops up as an Information Window when a user taps an object.
The image below gives an example of a transaction table in an app for store inspectors. The inspector fills in all the fields to complete the transaction table, and then taps Submit to submit the changes.

The high-level steps to create and enable a transaction table are described below:

1. Create a transaction table, as described in *Creating a table, page 70*.

2. Link the transaction table to a Transaction Services-enabled report. Data from the input objects defined in the Transaction Services report is displayed in the table cells for users to edit.

3. Link each input object on the Transaction Services report to a cell in the transaction table.

4. Determine what type of input object control is displayed to users when they view the Transaction Services-enabled document. Analysts use these input object controls to edit the data displayed in a document. For example, users can type text in a text field, turn a switch on and off to specify a numeric value, select a value from a list, and so on.

The following input control types are displayed as a list in a transaction table:

- Check box
- Likert Scale
- Radio List
- Toggle

Only the MicroStrategy Mobile-specific procedure for creating a transaction table is included in this guide. For detailed procedures for the remaining steps to create transactions, including descriptions of the available input object controls, see the *Transaction-enabled Documents* chapter of the *Report Services Document Creation Guide*. 
The parts of a table

A transaction cell is the basic component of a transaction table. A transaction cell contains an input object control, which are the objects that allow analysts to edit the data displayed in a document. For example, users can type text in a text field, turn a switch on and off to specify a numeric value, select a value from a list, and so on.

An example of a transaction table in Design Mode is show below:

A transaction cell displays a title and a placeholder, as described below:

- **Cell title**: The title or description of the cell. An input object control cell displays the value entered by the user. In the example above, Name, Email, and Year are cell titles.

- **Cell placeholder text**: A hint for the user about the format for an input object control. In the example above, “Last, First” and “Name@domain.com” are placeholders. A placeholder is optional. In the example, “Make and Model” does not have a placeholder.

  If an input object control is required, the placeholder text displays “Required” automatically for the user on a mobile device. If the placeholder is not empty, the text “(Required)” is added to the placeholder text. When you configure the transactions, you select whether the control is required.

A transaction table contains at least one group. Groups collect related cells together under a descriptive title. The example above contains two groups, Customer and Vehicle, which separate and give context to the cells that require customer information and cells that require vehicle information.

You can create a group that is displayed to the document designer but hidden from users. For example, you may create a cell that contains a macro to gather the mobile device’s ID. Since no input is required from the user, only the mobile device, you may want to hide the group. To hide a group, name the group hidden.

A transaction table also displays a Clear button and a Submit button, or Cancel and Submit if the transaction table is used as an Information Window.

- **The Submit** button submits the data in the transaction table. If the transaction table is displayed as an Information Window, the Information Window is also closed.

- **The Clear** button erases all the information added to the transaction table, allowing the user to start again.
• The Cancel button closes the Information Window without submitting the data in the transaction table.

You can customize the button names, but they are referred to as Clear and Submit throughout this chapter. By default, changes are cleared or submitted automatically, as soon as the button is tapped. You can require that a confirmation message is displayed after the Clear or Submit button is tapped.

Creating a table

Prerequisites

• You must have Transaction Services.

• You must have the Web Configure Transaction privilege.

• The Transaction Services report that you want to link to the Grid/Graph or text fields has already been created. This report must contain the input object for each value that you want to allow users to change. For steps to create a Transaction Services report, see the Advanced Reporting Guide.

The high-level steps to creating a table are listed below, with links to the appropriate steps.

1 Add a table. See Adding a table to a document, page 70 for steps to create and format a table. The new table contains a single cell in a single group, and the Clear and Submit buttons. You can customize the actions and name of the buttons, as described in the procedure.

2 Add groups to the table. A group is a collection of related cells. You can add as many groups as needed to the table. If the table contains multiple groups, you can change the order that the groups are displayed in. For steps, see Adding and moving groups in a table, page 75.

3 Add transaction cells to the table. You can add as many transaction cells as needed. If the table contains multiple cells, you can change the order that the cells are displayed in. For steps, see Adding or moving cells in a table, page 76.

Adding a table to a document

To add a table

1 In MicroStrategy Web, open the document in Design Mode or Editable Mode.

2 From the Insert menu, select Table Control (Mobile). When you move the cursor to the Layout area, the pointer becomes crosshairs. Click in the desired location in the Layout area. If you click and drag in the Layout area, you can size the table. An empty table container is added to the document, with a single cell in a single group, and the Clear and Submit buttons, as shown below:
To change the group title

3 To change the group title from the default of Title, double-click the group title text, and type your title. Press ENTER to add the text.
   • If you do not want to display a title for this group, double-click the group title text and delete the text.
   • If you want to hide this group from users, type hidden as the title. The title is not case-sensitive, so you can use Hidden or HIDDEN as well.

To display the table as an Information Window

A transaction table can either be displayed at all times in the document, or it can pop up as an Information Window when a user taps an object. To use an Information Window, follow the steps below. To display a transaction table at all times in the document, skip to To customize the buttons’ name and actions, page 72.

4 Add the text field, image, or button that will open the transaction table in an Information Window.

5 Right-click the newly added object, and select Properties and Formatting. The Properties and Formatting dialog box opens.

6 From the left, click General.

7 From the Panel Stack drop-down list, select the panel stack to use as the Information Window.

8 Click OK to save your changes.

9 Right-click the table and select Properties and Formatting. The Properties and Formatting dialog box opens.

10 From the left, click General.

11 Select the Use as Information Window check box.

12 To display a title bar in the Information Window, complete the following steps:
   a Select the Show Title Bar check box.
   b From the Title drop-down list, select Custom Title.
   c Type a title in the Title field. This text is used as the title of the Information Window.
To specify how to open the Information Window on an iPad, select one of the following **Window mode** options:

- **To open the Information Window by popping it up**, select **Appear** (default).
  
  If you select Appear, you can specify the location of the Information Window on an iPad. Select one of the following options from the **Placement** drop-down list:
  
  ◦ To display the Information Window in the best position, select **Automatic** (default).
  ◦ To display the Information Window at the position of the panel stack, select **Fixed**.
  ◦ To display the Information Window above the selected object (for example, the item in the selector or the attribute in the grid), select **Above**.
  ◦ To display the Information Window below the selected object, select **Below**.
  ◦ To display the Information Window to the left of the selected object, select **Left**.
  ◦ To display the Information Window to the right of the selected object, select **Right**.

- **To open the Information Window by flipping it up**, like turning over a card, select **Flip Up**.

- **To open the Information Window by gradually increasing its size**, select **Scale Up**.

- **To open the Information Window by sliding it from an edge of the screen**, select **Slide**.
  
  If you select Slide, you can specify which edge to slide the Information Window from, on an iPad or iPhone. Select one of the following options from the **Position** drop-down list:
  
  ◦ **Right** (default)
  ◦ **Left**
  ◦ **Above**
  ◦ **Below**

**To customize the buttons’ name and actions**

14 If the Properties and Formatting dialog box is not open, right-click the table and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

15 From the left, select **Buttons**.

16 You can change the name displayed on the Submit button, by replacing the default text in the **Display text** field in the Submit button area.
17 You can choose to display a message asking for confirmation when a user taps the Submit button, before the user’s changes are submitted. Do one of the following:

- To display the confirmation message, select the **Require Confirmation** check box in the Submit button area.
- To submit changes without displaying a confirmation message, clear the **Require Confirmation** check box in the Submit button area.

18 You can determine which action is performed after a user submits his changes. Select one of the following under **Subsequent Actions**:

- To return to the document without performing any additional actions, select the **No subsequent action** option.
- To refresh the display of the document, select the **Refresh the current document** option.
- To run a specific report or document, complete the following steps:
  a Select the **Run a new report or document** option. Click ... (the browse button), navigate to and select the report or document you want to run, and click **OK**.
  b Specify whether the report or document will be executed using data cached on the mobile device. Do one of the following:
    — To run the report or document without using data cached on the mobile device, select the **Force Live Execution** check box.
    — To run the report or document using data cached on the mobile device, clear the **Force Live Execution** check box.
  c You can choose to use the same prompt answers that were chosen in the source document to answer the prompts in the target report or document. To use the same prompt answers, select the **Answer prompts with the same answers as the source** check box. If both the source and target report/document contain the same prompts, the user will not be asked to provide prompt answers. The user will still be prompted for any prompts that exist in the target but that do not exist in the source.

- To display a custom confirmation message after changes are submitted, select the **Display message after submitting** option. Type the message in the field below the option.
- A Transaction Services-enabled document that is pre-cached is run in the background, and its results are stored on the mobile device on which it is executed, improving the speed with which the document is run. You can choose to update document results cached on a mobile device after the user submits his changes, by using the Invalidate Mobile Device Cache setting to mark a document’s results as in need of updating.

If the document is defined to be pre-cached, the document will be automatically pre-cached each time the user submits his changes. If the document is not defined to be pre-cached, the document will be automatically executed using data cached on the Intelligence Server the next time the document is run, or executed
against the data source if no cached data is available. For background information on pre-caching, see Chapter 5, Administering MicroStrategy Mobile. Do one of the following:

- To have the document pre-cached each time the user submits his changes, select the **Invalidate Mobile Device Cache** check box.
- To allow the user to submit his changes without marking the data cached on the mobile device as in need of updating, clear the **Invalidate Mobile Device Cache** check box.

19 You can change the name displayed on the Clear button (or Cancel button, if the table is displayed as an Information Window), by replacing the default text in the **Display text** field in the Clear button area (or Cancel button area).

20 You can choose to display a message asking for confirmation when a user taps the Clear button (or Cancel button, if the table is displayed as an Information Window). Do one of the following:

- To display the confirmation message, select the **Require Confirmation** check box in the Clear button area (or Cancel button area).
- To discard changes without displaying a confirmation message, clear the **Require Confirmation** check box in the Clear button area (or Cancel button area).

**To format the table**

21 In the Properties and Formatting dialog box, from the left, select **Color and Lines**.

22 From the first drop-down list at the top of the dialog box, select **Table**. The next drop-down list is then automatically displayed as **Body**.

23 To change the background fill of the table, select the color from the **Color** drop-down list.

24 To change the border around the table, select one of the following from the **Borders** options:

- To hide the table border, select **None**.
- To use a single color for the entire border, select **All**. From the first drop-down list, select the type of border (thick, thin, and so on). From the second drop-down list, select the border’s color.
- To use different colors on different sides of the table, select **Custom**. For each side (Top, Bottom, Left, and Right), select the border type and the border color.

25 From the left, select **Font**.

26 You can change the font for the cell title and value for all cells in the table, and for all the group titles. For each part that you want to format, follow the steps below:

a From the first drop-down list, select **Cells** or **Groups**.
From the second drop-down list, select the part of the table to format. Your options are:

- **Title** (available for cells and groups)
- **Value** (available for cells)

Format the font, including the font type, color, size, and so on.

27 Click **OK** to save your changes.

## Adding and moving groups in a table

A group organizes cells related to each other so that they appear together in a table. A table can contain multiple groups or only a single group.

### Prerequisite

Before you can add a group to a table, you must have already created a table, as described in *Adding a table to a document, page 70*. When you create a table, a group is automatically created in the table.

### To add or move a group in a table

1. In MicroStrategy Web, open the document in Design Mode or Editable Mode.
2. Click the **Add new group** button in the table. A new group is added to the table, with a single cell.
3. To change the group title from the default, double-click the group title text, and type your title. Press ENTER to add the text.

   ![Tip]
   If you do not want to display a title for this group, double-click the group title text and delete the text.

4. If you have multiple groups in a table, you can change the order that the groups are displayed in the table. Select a group to move, by clicking the group, not the group title or a cell. Then drag and drop the group to its new position. As you drag the group, a blue arrow is displayed to indicate its new position.

### Deleting a group

#### Prerequisite

The table must contain at least two groups to delete a group, because a table must always have at least one group.
To delete a group from the table

1. In MicroStrategy Web, open the document in Design Mode or Editable Mode.
2. Right-click the group to delete, and select Delete Group.
   - The Delete Group option is not available if the table contains a single group.

Adding or moving cells in a table

You can add as many cells as necessary. If you add multiple cells, you can change the order of the cells.

Prerequisites

- Before you can add a cell to a table, you must have already created a table, as described in Adding a table to a document, page 70.
- If you want to add the cell to a group in the table, you must have already created the group. See Adding and moving groups in a table, page 75 for steps.

When you create a table or a group, a default cell is added as well. You can configure the cell as though you added it yourself, by following the procedure below, skipping over the step to add a new cell.

To add or move a cell in a table

1. In MicroStrategy Web, open the document in Design Mode or Editable Mode.
2. Hover the cursor over the group to add the cell to. Click the Add new cell button that is displayed. A new cell is added to the table, displaying Title and Placeholder in the cell.
3. The cell title is the description for the cell. To change the cell title from the default, double-click the Title text, and type your title. Press ENTER to add the text.
4. The placeholder text contains a hint for the user about the format for an input object control. For example, if the input object control is a login, the placeholder text can be domain/user or user@domain.com. To change the text from the default, double-click the Placeholder text, and type the new text. Press ENTER to add the text.

To move a cell

5. Select the cell to move, by clicking the cell, not the cell title or other component. Then drag and drop the cell to its new position. As you drag the cell, a yellow bar is displayed to indicate its new position.
After you have created the table, you need to enable transactions for the document, as described in the *Transaction-enabled Documents* chapter of the *Report Services Document Creation Guide*. 
DISPLAYING DATA AS INTERACTIVE VISUALIZATIONS: WIDGETS

A widget is a rich, graphical display of the results of data, which allows users to visualize data in different ways than they can when using traditional reports. Widgets are sophisticated visualization techniques that can combine with interactivity to enable a better understanding of the data.

Use the following methods to define widgets for mobile devices:

• Display reports as widgets. This is recommended if you want to display only one widget on the screen. Note that certain features, such as Information Windows for the Map widgets, require you to create widgets in documents.

To display reports as widgets, you need to use the Custom Visualizations Editor in MicroStrategy Web. For steps, see the MicroStrategy Web Help.

• Add widgets to documents. This is recommended if you want to display additional information on the same layout as the widget. Instructions are included in this chapter to create and add widgets to documents.

Adding widgets and visualizations to documents for mobile devices

The following table contains a list of mobile widgets, the mobile devices on which they can be displayed, and links to background information for each widget.

- Widgets other than the mobile widgets in this table are displayed as grid or graph reports on mobile devices.
<table>
<thead>
<tr>
<th>Widget</th>
<th>Description</th>
<th>Displays on</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Cloud widget</td>
<td>Displays the names of attribute elements in various font sizes to depict the differences in metric values.</td>
<td>iPhone, iPad</td>
<td>Displaying a Data Cloud widget, page 81</td>
</tr>
<tr>
<td>Date Selection widget</td>
<td>Allows users to view data about events on an interactive calendar.</td>
<td>iPad, Android tablet</td>
<td>Displaying an interactive event calendar: Date Selection widget, page 81</td>
</tr>
<tr>
<td>Graph Matrix Visualization</td>
<td>Displays data using a variety of graph styles, such as the line graph, bubble graph, or grid.</td>
<td>iPad</td>
<td>Displaying data in an interactive graph: Graph Matrix widget, page 85</td>
</tr>
<tr>
<td>Heat Map widget</td>
<td>Allows users to visualize data as rectangles color-coded and sized to depict the differences in metric values.</td>
<td>iPad, Android</td>
<td>Displaying data in a Heat Map widget, page 86</td>
</tr>
<tr>
<td>Image Layout widget</td>
<td>Allows users to visualize data as colored areas or bubble markers overlaid on an image.</td>
<td>iPad, Android</td>
<td>Displaying data as an overlay on an image: Image Layout widget, page 87</td>
</tr>
<tr>
<td>Image Viewer widget</td>
<td>Allows users to browse through a collection of images.</td>
<td>iPhone, iPad, Android</td>
<td>Displaying images: Image Viewer widget, page 87</td>
</tr>
<tr>
<td>Interactive Grid widget</td>
<td>Displays data in a compact tabular layout.</td>
<td>iPhone, iPad, Android</td>
<td>Displaying data in rows and columns: Interactive Grid widget, page 90</td>
</tr>
<tr>
<td>Map widget</td>
<td>Allows users to search and view information for locations on a map.</td>
<td>iPhone, iPad, Android</td>
<td>Displaying geographical data: Map widget, page 93</td>
</tr>
<tr>
<td>Microcharts widget</td>
<td>Allows users to analyze trends at a glance using compact charts and line graphs.</td>
<td>iPhone, iPad, Android</td>
<td>Visualizing trends: Microcharts widget, page 108</td>
</tr>
<tr>
<td>Multimedia widget</td>
<td>Allows users to download and view multimedia files, such as videos, PDFs, and ePub books.</td>
<td>iPhone, iPad, Android</td>
<td>Downloading and viewing multimedia files: Multimedia widget, page 111</td>
</tr>
<tr>
<td>Network widget</td>
<td>Allows users to analyze relationships between items and clusters as a network of connected nodes.</td>
<td>iPad</td>
<td>Visualizing relationships: Network widget, page 112</td>
</tr>
<tr>
<td>Photo Uploader widget</td>
<td>Allows users to upload images by taking a new image or using an existing image on their mobile device.</td>
<td>iPhone, iPad, Android</td>
<td>Uploading images: Photo Uploader widget, page 113</td>
</tr>
<tr>
<td>RSS Reader widget</td>
<td>Allows users to view and update an RSS news feed.</td>
<td>iPhone, iPad</td>
<td>Displaying RSS feeds:</td>
</tr>
</tbody>
</table>
### Widget Description

<table>
<thead>
<tr>
<th>Widget</th>
<th>Description</th>
<th>Displays on</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey widget</td>
<td>Allows users to interact with the survey in a Transaction Services-enabled document and submit their answers, which are then stored in your data source.</td>
<td>iPad</td>
<td>Gathering data from users: Survey widget, page 119</td>
</tr>
<tr>
<td>Timeline widget</td>
<td>Allows users to view events or important milestones in the status of a product.</td>
<td>iPad</td>
<td>Displaying a Timeline widget, page 121</td>
</tr>
<tr>
<td>Time Series widget</td>
<td>Displays data for a specific period of time in a line graph.</td>
<td>iPhone, iPad, Android</td>
<td>Displaying data trends: Time Series widget, page 125</td>
</tr>
<tr>
<td>Video Player</td>
<td>Play video directly in a document. Videos can be cached for offline viewing.</td>
<td>iPhone, iPad</td>
<td>Downloading and playing videos: Video Player widget, page 128</td>
</tr>
</tbody>
</table>

If you are designing widgets for an iPhone or Android device, you can determine whether the widget takes up the entire screen. For steps, see *Displaying widgets using the entire screen on mobile devices, page 130*.

Some widgets are also available as interactive visualizations in Visual Insight, which allows you to quickly create a customized, interactive Visual Insight dashboard.

In a dashboard, users can add or remove attributes and metrics, change the type of visualization that is used, or create new filters and thresholds in the dashboard on-the-fly. Consider using dashboards when your users want a high degree of interaction with their data. Dashboards can be especially helpful in strategic business meetings to spontaneously discover the answer to any business queries that come up.

You can create visualizations that highlight or filter other visualizations in a dashboard when a user taps on an attribute element in the visualization.

For steps to create a dashboard, see the *MicroStrategy Web Help*.

The following visualizations can be viewed in a dashboard on an iPad:

- Density Map visualization
- Grid visualization
- Graph visualization
- Graph Matrix visualization
- Heat Map visualization
- Image Layout visualization
- Map visualization
- Map with Areas visualization
Network visualization

**Displaying widgets as grids or graphs**

You can determine whether mobile widgets are displayed as widgets or grid or graph reports on mobile devices. For detailed procedures on displaying widgets, see the [Dashboards and Widgets Creation Guide](#).

After upgrading from MicroStrategy 9.2.1m, widgets that were previously created to display on Android tablets may display as grids or graphs on the mobile device. To display these widgets on Android tablets, ensure that **Android Tablet** is selected as a display option for the widget. For detailed procedures on displaying your widgets on Android tablets after an upgrade from MicroStrategy 9.2.1m, see the [Upgrade Guide](#).

**Displaying a Data Cloud widget**

A Data Cloud widget for the iPhone and iPad displays the names of attribute elements in various font sizes to depict the differences in metric values between the elements. This type of widget allows users to quickly identify the most significant positive or negative contributions.

A Data Cloud widget is a list of attribute elements. The first metric on the widget’s template determines the font size for the attribute elements. A bigger font for an element indicates a larger metric value.

For steps to add a Data Cloud widget to a document and specify formatting options, see the [Dashboards and Widgets Creation Guide](#). You can also define an Information Window that displays when an attribute element is tapped. For instructions on creating an Information Window, see [Providing additional information to users: Information Windows, page 38](#).

**Displaying an interactive event calendar: Date Selection widget**

The Date Selection widget displays events in an interactive calendar in either a Month, Week, or Day view on an iPad. An example of a Date Selection widget is shown below:
Use the Date Selection widget as a calendar of events or appointments within your app. Users can select an event to display an Information Window or open a link containing information on the event. If you have Transaction Services, users can then edit or delete events.

For instructions on creating an Information Window, see Providing additional information to users: Information Windows, page 38. For steps to define a link in a widget using the Links Editor, see the Providing Flash Analysis and Interactivity: Widgets chapter in the Dashboards and Widgets Creation Guide.

You can also use the Date Selection widget as a filter for the data in your dashboard. Users can select an event on the widget and automatically update the rest of the dashboard with data that relates to the event. To do this, you define the Event attribute as a selector. For steps, see the Dashboards and Widgets Creation Guide.

**Prerequisites**

For a Grid/Graph to be used as a Date Selection widget, it must include at least two attributes on the rows. These attributes must meet the following criteria:

- The first attribute represents each day displayed in the calendar, and must contain elements of the Date data type.
- The second attribute provides the events displayed in the calendar, and uses the following attribute forms:
  - The first attribute form contains a description of the event.
  - The second attribute form (optional) contains the image displayed for the event when the widget is shown in Day View. This attribute form must be of the image data type.
The third attribute form (optional) contains the image displayed for the event when the widget is shown in Week View. This attribute form must be of the image data type.

The third attribute (optional) provides the category name of each event in the calendar, and is used to color-code the events. It uses the following attribute forms:

- The first attribute form contains the description of the category.
- The last attribute form (optional) contains the color in which to display the category, stored as a hex value. The value must be of the form \texttt{0xFFFFFFFF} or \texttt{FFFFFF}.

Additional attributes, if any, are displayed when a user taps on the event in the calendar.

You can add objects from multiple datasets to the Grid/Graph containing the widget. You must have the correct privileges and the project must allow Grid/Graphs to use multiple datasets. For steps to allow Grid/Graphs to use multiple datasets, see the \textit{Adding Text and Data} chapter of the \textit{Document Creation Guide}.

---

**To create a Date Selection widget for mobile devices**

1. In MicroStrategy Web, open the document in Design or Editable Mode.
2. From the \textbf{Insert} menu, point to \textbf{Widgets}, then \textbf{Mobile}, and select \textbf{Date Selection}.
3. Click the location on your document where you want to place the widget. The Grid/Graph containing the widget is displayed.
4. Optionally, resize the widget by clicking and then dragging its handles.
5. From the Dataset Objects panel on the left, select attributes and drag them on to the widget. Place at least two attributes on the Grid/Graph’s rows, as described in the prerequisites above.

---

**Formatting a Date Selection widget**

You can format a Date Selection widget by:

- Selecting whether events in the Month view are grouped by day or week. For steps, see \textit{To select the grouping of events in the Month view}.
- Automatically assigning colors to event categories. The colors are based on the elements of the categorization attribute of the widget’s dataset. For steps, see \textit{To automatically assign colors to event categories, page 84}.
- Specifying the color of each event category. For steps, see \textit{To assign a specific color to each category, page 84}.
- Selecting which view (month, week, or day) the widget displays initially. For steps, see \textit{To set the default display view}.
Prerequisite

The following procedures assume that you have already created the Date Selection widget you want to modify.

To select the grouping of events in the Month view

1. Open the document in Flash Mode.
2. Right-click the widget, then select iPad Properties. The iPad Date Selection dialog box is displayed.
3. From the Month view is displayed by drop-down list, select one of the following:
   - Day: When the widget is shown in the Month view on an iPad, events are grouped by day.
   - Week: When the widget is shown in the Month view on an iPad, events are grouped by the week.
4. Click OK to save your changes.

To automatically assign colors to event categories

1. Open the document in Flash Mode.
2. Right-click the widget, then select iPad Properties. The iPad Date Selection dialog box is displayed.
3. From the Color events by drop-down list, select Attribute.
4. From the Series color palettes, select the colors you want to use to display the event categories. Each color will automatically be assigned to a category and displayed when the widget is viewed on a mobile device.
5. Click OK to save your changes.

To assign a specific color to each category

1. Open the document in Flash Mode.
2. Right-click the widget, then select iPad Properties. The iPad Date Selection dialog box is displayed.
3. From the Color events by drop-down list, select Attribute Form. The events are color-coded based on the attribute form that contains the color for each category.
4. Click OK to save your changes.
To set the default display view

1. Open the document in Flash Mode.
2. Right-click the widget, then select iPad Properties. The iPad Date Selection dialog box is displayed.
3. From the Default View drop-down list, select one of the following:
   - Month (default)
   - Week
   - Day
4. Click OK to save your changes.

Displaying data in an interactive graph: Graph Matrix widget

The Graph Matrix widget allows you to quickly analyze various trends across several metric dimensions. The widget consists of several line graphs that allow users to analyze and compare trends in metric data.

An example of the Graph Matrix widget is shown in the image below.

For steps to add a Graph Matrix widget to a document and specify formatting options, see the Dashboards and Widgets Creation Guide. You can also define an Information Window that displays when a graph is tapped. For instructions on creating an Information Window, see Providing additional information to users: Information Windows, page 38. You can define a link in the widget to open a report or another
document. For steps to define a link in a widget using the Links Editor, see the
Providing Flash Analysis and Interactivity: Widgets chapter in the Dashboards and
Widgets Creation Guide.

You can also use the Graph Matrix visualization in dashboards. For information on
creating analyses, refer to the MicroStrategy Web Help.

**Displaying data in a Heat Map widget**

The Heat Map widget for the iPad and Android tablet displays elements as rectangles and
lets users quickly grasp the state and impact of a large number of variables at one time.
An example of the Heat Map widget on the iPad is shown below:

![Heat Map Widget Example](image)

For steps to add a Heat Map widget to a document and specify formatting options, see
the Dashboards and Widgets Creation Guide.

You can also use the Heat Map visualization in dashboards. For information on creating
analyses, refer to the MicroStrategy Web Help.

By default, the header for each group in a Heat Map widget is displayed in the middle of
the group. For example, in the Heat Map widget above, Northeast is displayed in the
middle of all elements that belong to Northeast. For steps to display headers at the top of
the widget, see the procedure below.

You can define an Information Window that displays when a rectangle is tapped. For
instructions on creating an Information Window, see Providing additional information
to users: Information Windows, page 38.

You can create a link on one of the attributes in the widget that opens a report or
another document. For steps to define a link in a widget using the Links Editor, see the
Providing Flash Analysis and Interactivity: Widgets chapter in the Dashboards and
Widgets Creation Guide.
Displaying data as an overlay on an image: Image Layout widget

You can add an Image Layout widget to a document to display an image overlaid with colored areas or bubble markers. For example, you can display a map of the United States, with a bubble marker displayed over each state. You can have states with a high number of stores displayed using large bubble markers, and states with a low number of stores displayed using small bubble markers. As another example, you can display the layout of a store in the widget, with each aisle displayed as a separate region, then have MicroStrategy automatically color each aisle based on the number of visits each aisle receives. The image below shows an Image Layout widget with a map of a store, in which each section of the store is displayed as a separate colored region.

![Image Layout widget example](image)

You can display the Image Layout widget on an iPad or Android tablet with MicroStrategy Mobile. For steps to add an Image Layout widget to a document and specify formatting options, see the *Dashboards and Widgets Creation Guide*.

A shape file is an HTML file that contains the image that you want to display in the widget, as well as the location of each bubble marker or area you want to display on top of the image. MicroStrategy provides several default shape files for you to choose from, including a map of countries of the world and a map of states in the United States.

You can define your own shape file for use in the widget, such as the layout of a store or floor in a building, using the same steps as you would to customize an Image Layout visualization. You can also create multiple shape files and have the user choose which shape file displays in the widget. For steps, see the *Dashboards and Widgets Creation Guide*.

You can also define an Information Window that displays when a marker or an area is tapped. For instructions on creating an Information Window, see *Providing additional information to users: Information Windows, page 38*.

Displaying images: Image Viewer widget

You can use the Image Viewer widget to display images and image description in a document on an iPhone, iPad, or Android device with MicroStrategy Mobile. Users can
zoom in and out of the images.

For iPhone and iPad, you can choose to display the images in a slide show, filmstrip, or matrix layout, specify the captions to display for each image, format the background and border color of the widget, and so on.

You can define:

- An Information Window that displays when an image is tapped. For instructions on creating an Information Window, see Providing additional information to users: Information Windows, page 38.

- A link in the widget to open a report or another document. For steps to define a link in a widget using the Links Editor, see the Providing Flash Analysis and Interactivity: Widgets chapter in the Dashboards and Widgets Creation Guide.

**Prerequisites**

- You must create an attribute to place on the widget’s Grid/Graph, with the following attribute forms:
  - The first attribute form contains the location in which each image is saved.
  - The second attribute form contains a description of each image.
  - The third attribute form contains the unique numeric ID of each image.

**To add an Image Viewer widget to a document**

1. Open the document in Design or Editable Mode.
2. From the Insert menu, point to Widgets, then point to Mobile, and select Image Viewer.
3. Click the location on your document where you want to place the widget. The Grid/Graph containing the widget is displayed.
4. Optionally, resize the widget by clicking and then dragging its handles.
5. From the Dataset Objects panel on the left, select attributes and metrics, and drag them on to the Grid/Graph, as described in the prerequisites above.

To choose the attribute forms displayed for an attribute in the widget, right-click the header of the attribute, point to Attribute Forms, then select the attribute forms to display.

**Configure the widget’s display properties**

6. Right-click the widget, then select Properties and Formatting. The Properties and Formatting dialog box opens.
7. From the left, select Widget.
8. Click the Widget Properties icon. The Image Viewer Properties dialog box opens.
9 From the **Display Style** drop-down list, select the display style to use to show images in the widget, as follows:

- To display the images in an interactive slideshow, select **Slideshow** (default). Users can switch between images by performing a horizontal swipe motion on the mobile device.
- To display the images in a filmstrip layout, select **Filmstrip**. Users can scroll through images vertically or horizontally, as determined by the Scroll Direction option described below.
- To display the images in a table layout, with evenly spaced rows and columns, select **Matrix**. You can specify the number of rows and columns displayed in the table using the Number of Rows and Number of Columns options described below.

10 You can determine whether to display images in the widget in a vertical or horizontal layout. This option is only available if the Display Style option is set to Filmstrip. From the **Scroll Direction** drop-down list, select one of the following:

- To display images in a vertical layout, select **Vertical** (default). Users can perform a vertical swipe motion on the mobile device to scroll through the images.
- To display images in a horizontal layout, select **Horizontal**. Users can perform a horizontal swipe motion on the mobile device to scroll through the images.

11 You can determine how many rows of images are displayed in the widget. In the **Number of Rows** field, type the number of rows to display. This option is only available if the Display Style option is set to Matrix.

12 You can determine how many columns of images are displayed in the widget. In the **Number of Columns** field, type the number of columns to display. This option is only available if the Display Style option is set to Matrix.

13 From the **First Caption Line** drop-down list, select the attribute form that contains the first line of captions you want to display for images in the widget.

14 From the **Second Caption Line** drop-down list, select the attribute form that contains the second line of captions you want to display for images in the widget.

15 You can specify the default action (such as drilling on an attribute or opening a report or document) to perform when the user taps an image caption in the widget. From the **Default Action Form** drop-down list, select an attribute form. The action defined for this attribute form will automatically be performed when the user taps the caption.

16 From the **Background Color** palette, select the background color of the widget by doing one of the following:

- To display a transparent background color, click **No Fill**.
- To display a solid background color, select the background color from the palette. You can access additional colors by clicking **More Colors**.

17 From the **Border Color** palette, select the color of the border to display around the images in the widget by doing one of the following:
18 From the **Border Width** drop-down list, select the thickness of the border to display around the images. The default value is 5 pixels.

19 Click **OK** to return to the Properties and Formatting dialog box.

20 Click **OK** to save the changes.

**Displaying data in rows and columns: Interactive Grid widget**

The Interactive Grid widget allows you to display data in a compact tabular layout on an iPhone, iPad, or Android device. Attributes and metric values are displayed in columns in the widget, as shown below. You can specify multiple display options for the widget, such as whether to apply banding to the rows in the widget, whether to display multiple attributes or metrics in a column as stacked together in a single row or allow users to toggle between the values displayed in the column, and so on.

<table>
<thead>
<tr>
<th>Category</th>
<th>Profit Forecast</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Books</td>
<td>$9,005</td>
<td>$37,161</td>
</tr>
<tr>
<td>Electronics</td>
<td>$68,677</td>
<td>$354,333</td>
</tr>
<tr>
<td>Movies</td>
<td>$4,684</td>
<td>$57,979</td>
</tr>
<tr>
<td>Music</td>
<td>$3,670</td>
<td>$52,751</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feb 2010</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>$10,781</td>
<td>$44,810</td>
</tr>
<tr>
<td>Electronics</td>
<td>$82,133</td>
<td>$424,982</td>
</tr>
<tr>
<td>Movies</td>
<td>$6,009</td>
<td>$71,786</td>
</tr>
<tr>
<td>Music</td>
<td>$5,100</td>
<td>$68,478</td>
</tr>
</tbody>
</table>

You can allow users to directly edit the data displayed in the widget using a mobile device. For example, you create a widget to display a list of time off requests. A user can tap a button next to each request to display a check mark for approved requests and an X for rejected requests, then submit their changes to their data source. To accomplish this, you must link the widget’s Grid/Graph to a Transaction Services report. For steps and background information about Transaction Services, see the *Advanced Documents* chapter in the *Report Services Document Creation Guide*.

You can allow users to perform an action when they tap an attribute or metric in the widget on a mobile device. To do this, you must assign the action to the attribute or metric on the widget’s Grid/Graph in Web. For example, if several customer regions are displayed in an Interactive Grid widget, you can allow users to tap the name of a
customer region to update the data displayed in another grid in the document. Only one action can be performed for each attribute or metric. If more than one action is enabled for an attribute or metric, the action with the highest priority is performed. You can enable the following actions for a value in the widget, in order of highest to lowest priority:

- Edit data for the attribute or metric, by displaying the attribute or metric as an input object control in a Transaction Services-enabled document. For steps and background information about Transaction Services, see the Advanced Documents chapter in the Report Services Document Creation Guide.

- Use an attribute or metric in the widget as a selector. To do this, you must define the attribute or metric as a selector on the widget’s Grid/Graph. For steps, see the MicroStrategy Web Help.

- Open a link to a report or document. For steps to define a link in a widget using the Links Editor, see the Providing Flash Analysis and Interactivity: Widgets chapter in the Dashboards and Widgets Creation Guide.

- Drill on an attribute element. For steps to enable drilling in a Grid/Graph, see the Displaying Reports in Documents: Grid/Graphs chapter in the Report Services Document Creation Guide.

The steps to add an Interactive Grid widget to a document follow.

**Prerequisites**

For a Grid/Graph to be used as an Interactive Grid widget, it must meet the following requirements:

- At least one attribute on the rows. The elements of this attribute are displayed in the first column of the widget.

- At least one metric on the columns. The metric values are displayed in additional columns in the widget.

You can add objects from multiple datasets to the Grid/Graph containing the widget. You must have the correct privileges and the project must allow Grid/Graphs to use multiple datasets. For steps to allow Grid/Graphs to use multiple datasets, see the Adding Text and Data chapter of the Document Creation Guide.

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**To create and add an Interactive Grid widget to a document**

1. Open the document in Design or Editable Mode.

2. From the Insert menu, point to Widgets, then Mobile, and select Interactive Grid.

3. Click the location on your document where you want to place the widget. The Grid/Graph containing the widget is displayed.

4. Optionally, resize the widget by clicking and then dragging its handles.

5. From the Dataset Objects panel on the left, select attributes and metrics, and drag them on to the Grid/Graph, as described in the prerequisites above.
Configure the widget’s display properties

6 Right-click the widget, then select **Properties and Formatting**. The Properties and Formatting dialog box opens.

7 From the left, select **Widget**.

8 Click the **Widget Properties** icon ![Widget Properties Icon]. The Interactive Grid Properties dialog box opens.

9 If you added more than one attribute to the widget, you can group the data displayed in the widget based on the first attribute in the widget’s Grid/Graph. Do one of the following:

   • To group the data displayed in the widget, do the following:
     
     a Select the **Apply Grouping to** check box. The first attribute on the widget’s Grid/Graph is automatically used to group the data when the widget is viewed.
     
     b You can change the background color used for the attribute elements in the grouping. From the **Grouping background** drop-down list, select the color you want to use as the background for the attribute elements. In the example image above, Grouping background is set to gray.
     
     To remove the grouping background you applied, select **No Fill**.
     
     c You can change the font size used for the attribute elements in the grouping. From the **Grouping Font Size** drop-down list, select the size of the font you want to use. In the example image above, Grouping font size is set to 16.
     
     d To change the font size of the column headings, from the **Header Font Size** drop-down list, select the size of the font you want to use.
     
     e To change the font size of the data displayed in the Interactive Grid, from the **Values Font Size** drop-down list, select the font size you want to use.
     
   • To display the widget without grouping its data, clear the **Apply grouping to** check box.

10 From the **Color Theme** drop-down list, select a color theme to use to display the background color, border color, and header color of the widget.

11 By default, the rows of the widget are not banded. To apply banding to the widget, select the **Banding** check box.

12 By default, the width of the columns in the widget is automatically determined. To manually specify the width of each column, clear the **Automatic column sizing** check box. In the **Width (%)** fields, specify the width of each column as a percentage. The widths for all columns should add up to 100.

13 You can select a default action (such as drilling on an attribute, opening a report or document, or acting as a selector) to perform for attributes and metrics that have no action defined on the widget’s Grid/Graph. From the **Default Action Form** drop-down list, select an attribute. The action defined for this attribute will automatically
be performed when a user taps a value in the widget for which no action is explicitly defined.

It is recommended that you assign an action to only one attribute form in the widget. For example, if you want one attribute to act as a selector, ensure that drilling is disabled for the Grid/Graph, and that the attribute does not link to another report or document.

14 If you place multiple attributes or metrics in a column, you can choose whether to display each attribute element or metric value stacked together in a single row in the widget, or to allow the user to tap the header of a column to change which attribute or metric value is displayed. Do one of the following:

- To allow users to tap a column header to change which object is displayed, select the **Toggle** check box.
- To display each object as stacked values in a single row, clear the **Toggle** check box. Column headers are not displayed when values are displayed as stacked.

15 You can create, rearrange, or delete columns in the widget:

- To rearrange report objects within the columns, click a report object and drag it to a new location.
- To add a new column to the widget, click **Add Column**. The new column is added and displayed.
- To delete a column, click **x** to the right of the column.

The first two columns in the widget are added to the widget by default and cannot be deleted.

16 Click **OK** to return to the Properties and Formatting dialog box.

17 Click **OK** to save the changes.

**Displaying geographical data: Map widget**

With a Map widget, users can search and view information for locations on a map on an iPhone, iPad, or Android device. You can specify the geographical location of each location on the map by either supplying the location as a spatial point, or by providing separate values for the longitude and latitude.

Locations on the map are displayed as map markers, bubble markers, color-coded areas, or points along a path displayed on the map. Tapping a location displays an Information Window with additional details about the selected location, as shown below:
You can display data in the Map widget in the following ways:

- Display your data using static images as map markers. You can define a threshold on this metric to change the image used for the map markers. For information on defining thresholds on a metric, see the MicroStrategy Web Help.

- Display your data using bubble markers. The size of each bubble marker is automatically determined based on the value of the metric on the columns of the widget. You can define a threshold on this metric to change the color of the bubble markers. For information on defining thresholds on a metric, see the MicroStrategy Web Help.

- For iPhone and iPad documents, display your data as areas color-coded based on the population density of locations on the map. For example, you can display areas with a high concentration of stores in red, and areas with a low concentration of stores in blue.

- Display your data as points on a path displayed on the map. The line used to represent the path is displayed as thicker for larger metric values and thinner for smaller metric values. For example, you can display ridership at different stops along a train route, with the most popular stations displayed with the thickest lines extending from the station.

- For iPhone and iPad documents, color-code geographical regions, based on your data. For example, you can give each country displayed on a map a different color, based on their type of government. MicroStrategy provides maps with pre-defined regions, such as countries of the world or states in the US.

- Create and format a custom Information Window, which is a pop-up window that displays additional data, for the Map widget. For steps to define an Information Window, see Providing additional information to users: Information Windows, page 38.

- Filter the locations displayed on a Map widget to view only those locations that meet certain criteria. For example, if store locations are displayed on the widget, you can limit the displayed stores to only those within a specified zip code. For more information on filtering by geographical location, see Using the Geo Location prompt in the Map widget, page 102.
For iPhone and iPad documents, once you create a Map widget, you can display lines that show relationships between locations on the map. For steps to use lines for relationships, see Using lines to display relationships between locations in a Map widget, page 105.

To display your data in the Map widget, you must provide geographical information for each location in the map using attributes or attribute forms. You can provide this data in the following ways:

- During the import data process, you can define an attribute and assign it a geo role to identify what type of geographical information it contains. For example, you can create an attribute called City, which contains the names of multiple cities, then assign it the City geo role. Web automatically creates the City attribute with the attribute forms Latitude and Longitude, which contain the latitude and longitude of each city. You can then use the City attribute to provide latitude and longitude information for locations in the widget. Web automatically adds latitude and longitude information as attribute forms to data columns with the Country, State, Zip Code, City, or Location geo roles. You can also use attributes that have been assigned the Latitude or Longitude geo roles to provide geographical information as attributes, as described in the prerequisites below. For background information on importing data into MicroStrategy Web, including steps to assign a geo role to an attribute, see the MicroStrategy Web Help. For steps to assign a geo role to an attribute in Developer, see the Developer Help.

- Your administrator can create attributes containing location data to support the Map widget. Steps to create location data are included in the Warehouse Structure for Your Logical Data Model chapter in the Project Design Guide.

Creating a Map widget

Prerequisites
The Grid/Graph for the Map widget must meet the following requirements:

- Place the attribute or attributes containing the geographical information on the rows. The attributes must provide this information in one of three ways:
  - If you want to display geographical regions on the map, you must provide an attribute whose values match the names of regions in a map provided by MicroStrategy. You select the map you want to use in the steps below.
    
    For example, MicroStrategy provides a map called Countries of the World. To display a map that contains a colored area for each country in which your company has sales representatives, you can create an attribute called Country, which contains the names of these countries, then use the Country attribute to provide location information in a widget that uses the Countries of the World map.
  - To provide the geographical information using attributes, you must provide one of the following:
    - One attribute that contains the latitude of each location and one attribute that contains the longitude of each location. For example, you can provide an attribute that has been assigned the Latitude geo role and an attribute that has been assigned the Longitude geo role.
    - One attribute that provides geographical information for each location as a point.
  - To provide the geographical information using attribute forms, you must provide one of the following:
    - One attribute, which provides the latitude and longitude of each location using separate attribute forms. For example, you can provide an attribute that has been assigned the Country, State, Zip Code, City, or Location geo roles.
    - One attribute that provides geographical information for each location as a point, using a single attribute form.

If you are using attribute forms, be sure that the attribute forms containing the geographical information are visible in the grid. Right-click the header of the attribute, point to Attribute Forms, then select the attribute forms you want to display.

- Place at least one metric on the columns. You can define a threshold on this metric to change the display of markers on the map. For more information on thresholds, see the MicroStrategy Web Help.

You can add objects from multiple datasets to the Grid/Graph containing the widget. You must have the correct privileges and the project must allow Grid/Graphs to use multiple datasets. For steps to allow Grid/Graphs to use multiple datasets, see the Adding Text and Data chapter of the Document Creation Guide.

To create and add a Map widget to a document for mobile devices

1. In MicroStrategy Web, open the document in Design or Editable Mode.
2 From the Insert menu, point to Widgets, then Mobile, and select Map.

3 Click the location on your document where you want to place the widget. The Grid/Graph containing the widget is displayed.

4 Optionally, resize the widget by clicking and then dragging its handles.

5 From the Dataset Objects panel on the left, select attributes and metrics, and drag them on to the Grid/Graph, as described in the prerequisites above.

Configure the widget’s display properties

6 Right-click the widget, then select Properties and Formatting. The Properties and Formatting dialog box opens.

7 From the left, select Widget.

8 On the right, ensure that the check boxes for the mobile devices you are designing for are enabled, as applicable.

9 Click the Widget Properties icon [ ]. The Map Properties dialog box opens.

10 You can replace map markers with static images, bubble markers, color-coded areas based on the population density of locations on the map, or geographical regions. Do one of the following:

   • To use map markers to mark locations on the map, select the Use Image Markers option. From the drop-down list, select the marker image to use to display locations on the map. A preview of the selected marker style is displayed to the right of the drop-down list.

   • To use bubble markers to mark locations on the map, select the Use Bubble Markers option. The size of each bubble marker is automatically determined based on the value of the metric on the columns of the widget.

   • To use shades of color to indicate the concentration of locations on the map, select the Use Density Maps option. From the drop-down list, select the color theme to use to automatically color areas on the map. A preview of the selected color theme is displayed to the right of the drop-down list.

   • To display locations on the map as points on a path, select the Use as a Path on the Map option. From the drop-down list, select the color of the line to use to display the map path.

   • To display geographical regions on the map, select the Show Areas option. From the drop-down list, select the regions you want to use in the map.

11 You can determine how to size bubble markers representing negative metric values. From the Negative Values are Represented As drop-down list, select one of the following:

   • To use the absolute value of the metric to size the bubble marker, select Absolute Numbers. For example, a bubble representing a metric value of -2,500 will be displayed as the same size as a bubble representing 2,500.
• To display bubble markers representing negative metric values as bubbles with a size of 7 pixels, select **Bubbles Sized at 7 Pixels**.

12 You can determine whether to apply threshold formatting to image markers or bubble markers in the widget. Do one of the following:

• To enable threshold display, select the **Apply threshold for the map** check box.

• To disable threshold display, clear the **Apply threshold for the map** check box.

13 You can choose to provide geographical information for the widget using attributes or attribute forms. From the **Use Attribute or Form** drop-down list, select one of the following:

• To provide geographical information using attributes, select **Use Attribute**.

• To provide geographical information using attribute forms, select **Use Attribute Form**.

14 You can determine whether to provide geographical information to the widget as a point, or as separate latitude and longitude values. Do one of the following:

• To define the location as a point:
  
  ◦ From the **Select Data Type** drop-down list, select the **Point** option.

  ◦ If the **Use Attribute or Form** drop-down list is set to **Use Attribute Form**, from the **Select Attribute** drop-down list, select the attribute that contains the attribute form you want to use to display the widget.

  ◦ From the **Select Point** drop-down list, select the attribute or attribute form that contains the point information.

• To define the location as a latitude and longitude:

  ◦ From the **Select Data Type** drop-down list, select the **Latitude/Longitude** option.

  ◦ If the Use Attribute or Form drop-down list is set to Use Attribute Form, from the **Select Attribute** drop-down list, select the attribute that contains the attribute forms you want to use to display the widget.

  ◦ From the **Select Latitude** drop-down list, select the attribute or attribute form that contains the latitude information.

  ◦ From the **Select Longitude** drop-down list, select the attribute or attribute form that contains the longitude information.

15 From the **Selection Display Attribute/Form** drop-down list, select the attribute to use to display data in the Information Window when the user selects locations in the widget.

16 By default, if multiple locations in the widget have the same latitude and longitude—for example, two stores located in the same building—a separate map marker is displayed for each location. If you are designing this widget to be displayed on an
iPhone or iPad, you can choose to display a separate map marker for each store, or display a single map marker for all of the stores at that location. Do one of the following:

- To display a single map marker, select the **For repeated rows, display only one marker for same location** check box. When the user taps the map marker on the document, information for each location at the selected latitude and longitude is displayed. If map markers in the widget are displayed as bubble markers and a group of locations are located at the same latitude and longitude, the bubble marker for this group is sized and colored based on the last location in the group, as displayed in the widget. If subtotals are displayed in the widget, the subtotal for the group is used to size and color the bubble marker.

- To display a separate map marker for each location, clear the **For repeated rows, display only one marker for same location** check box.

17 On a mobile device, tapping a map marker on the map displays additional information about the location in an Information Window.

You can define a layout in the document to use as a custom Information Window, and format its appearance. Select the **Display Information Window from document layout** check box. For instructions to configure the layout to use as the Information Window, see *To specify a layout as an Information Window in a Map widget, page 101*.

If you are designing the document for both iOS and Android devices, it is recommended that you use a panel stack as the Information Window. For detailed steps to define panel stacks as Information Windows, see *Providing additional information to users: Information Windows, page 38*.

- From the **Select Layout to use** drop-down list, select the name of the layout to use as the Information Window.

18 You can specify the display theme to use to display the widget. For example, you can display the map as a satellite image, a map with topographical details, and so on. From the **Default View** drop-down list, select a display theme.

19 You can specify the type of magnification to apply to the map when the user selects a location in the widget. From the **Redraw Behavior on Selector Action** drop-down list, select one of the following:

- To maintain the widget’s current level of magnification, select **Keep the Current Zoom**.

- To refit the contents of the widget to the selected area, select **Refit the Content**.

20 You can let users select areas, zoom in and out of the widget, and so on using the map toolbar. Under Map Elements Visibility Options, choose from the following:

- To display the map toolbar at the top of the widget, select the **Map toolbar** check box. This option is selected by default.

- To allow the user to select which display theme to use to display the map, select the **Map view options** check box. This option is selected by default.
- To display a slider that allows the user to zoom in and out of the map, select the **Zoom bar (Web only)** check box. This option is selected by default.

- To allow the user to view a list of the areas he has selected in the widget, select the **Selection list bucket (Mobile only)** check box. This option is selected by default.

- To display the Current Location icon, which allows MicroStrategy to access an iPad user's current location, select the **Current location (Mobile only)** check box. If this option is selected, the icon is displayed even if the document does not have a Geo Location prompt. This option is cleared by default.

**Complete the widget**

The plus sign (+) at the top of the interface allows you to add additional datasets to the Map widget for display in MicroStrategy Web. For steps to add additional datasets for Web, see the *GIS Integration Help*.

21. Click **OK** to return to the Properties and Formatting dialog box.

22. Click **OK** again to save changes.

**Using a layout as an Information Window in a Map widget**

When a user taps a map marker in a Map widget on an iPhone, iPad, or Android device, a pop-up window is displayed. This Information Window provides additional details about the location, such as the location name and related metric values, as shown below:

![Information Window Example](image)

Information Windows are automatically displayed for all markers, using a default layout and format. You can create and format a custom Information Window to display for a Map widget. To define a custom Information Window, you create a document layout, using either Developer or Web. You then enable the layout to be displayed as an Information Window and specify the layout as the Information Window in the Map widget’s properties. Layouts enabled as an Information Window are not displayed with the other layouts in a document and are only displayed on mobile devices.
If you define an Information Window in a separate document, you can reuse the Information Window layout by importing it into other documents. For instructions on importing layouts, see the Document Creation Guide.

**Prerequisite**
This procedure assumes you have already added a Map widget to the document. For instructions, see *To create and add a Map widget to a document for mobile devices, page 96.*

---

**To specify a layout as an Information Window in a Map widget**

1. In MicroStrategy Web, open the document that contains the Map widget in Design Mode.

**Create the layout to use as the Information Window**

2. From the Insert menu, select Layout. The Insert Layout dialog box opens.

3. Do one of the following to define a style for the new layout:
   - To define a layout style, click the Layout tab, then select a layout style.
   - To import a layout from a saved document, click the Document tab, then select a previously saved document.

4. Click OK. The new layout is displayed.

**Add content to the layout**

5. The content that you add to this layout is displayed in the Information Window. You can add any controls to the layout, including text fields, Grid/Graphs, images, shapes, and so on. For instructions, about designing documents, see the Report Services Document Creation Guide.

   The container that displays the Information Window on the iPhone is 1.5 inches wide. Its height is defined to fit to the content, with a maximum height of 1 inch.

**Enable the layout to be displayed as an Information Window**


7. From the Layout Properties section on the left, select Mobile.

8. Select the Use as Information Window check box.

9. Click OK. The layout is enabled as an Information Window.
**Specify the Information Window layout to be displayed in the Map widget's properties**

10 Select the tab of the layout that contains the Map widget, then right-click the widget.

11 Select Properties and Formatting. The Properties and Formatting dialog box opens.

12 From the left, select Widget.

13 Click the Widget Properties icon. The Map Properties dialog box opens.

14 Select the Display Information Window from document layout check box.

15 From the Select Layout to use drop-down list, select the name of the layout to use as the Information Window.

16 Click OK to apply the changes.

17 Click OK to return to the document.

**Using the Geo Location prompt in the Map widget**

The Geo Location prompt lets users answer a prompt by using the device’s current geographical location. In a Map widget, a Geo Location prompt is typically used to filter data in the widget. For example, you can choose to display only those map markers that are in your current state.

You cannot add a prompt directly to a document; you must define the prompt on the dataset reports used for the document. For more information on using prompts in documents, see the [Document Creation Guide](#).

You can create the Geo Location prompt to do the following:

- To automatically use the device’s current longitude and latitude to filter the widget’s results, define value prompts with the display style set to Geo Location. You must define two value prompts, one for latitude and one for longitude. The prompts are then automatically answered and do not display in the interface.

- To filter an attribute element list using the current geographical location, you can define an attribute element prompt with the display style set to Geo Location.

Geo Location prompts are defined in MicroStrategy Web. For instructions, see Prompting users for their location: Geo Location prompts, page 64.

**Filtering data based on geographical distance from a mobile device**

You can filter data in a report to display information based on the distance between a location on the report, and the current location of an iPhone, iPad, or Android device. For example, in the image below, a report displays a list of stores.
When the report is viewed on a mobile device, the user can choose to display only stores within a ten mile radius, as shown in the image below.

If the report is displayed as a Map widget, only map markers for stores within a ten mile radius are displayed, as shown below.

To filter data based on the distance from a point of interest to a mobile device, you must first create a metric to calculate this distance. The steps to create this metric are described below.

Once you have created the distance calculation metric, you can use it to filter data by creating a prompt or filter using the metric. For example, you can:

- Create a prompt to allow users to display only data for locations within a specified radius of the mobile device.
- Create a filter to automatically display data only for locations greater than a certain distance from the mobile device.
- In a Map widget, display map markers only for locations within a specified radius.

**Prerequisites**
• You must create an attribute with attribute forms containing the latitude and longitude of each location to use for the distance calculation. For example, the Store attribute in the example above has two attribute forms, Latitude and Longitude, which contain the latitude and longitude information for each store.

• You must create two Geo Location prompts, one each for the latitude and longitude. The prompts must be created as value prompts, as described in *Allowing users to filter data based on a single value: Value prompts, page 58.*

**To create a metric to calculate the distance between locations and a mobile device**

1. In Developer, from the **File** menu, point to **New**, and then **Metric**. The New Metric dialog box opens.

2. Click **OK** to create a new metric. The Metric Editor opens.

3. In the Definition pane, type the formula of the metric you want to create. Use the syntax in the table following this procedure for the metric’s definition.

4. Click **Save and Close**. The Save As dialog box opens.

5. In the **Object name** field, type the name of the new metric. Use the name provided in the table below.

6. Navigate to the location in which you want to save the new metric, then click **Save**. The new metric is created.

7. Repeat the appropriate steps above to create each of the metrics required to calculate the distance to each store.

8. Once you have created the distance calculation metric, Point_Distance, you can create any of the following prompts to use the metric:

   - A Metric Qualification prompt. You can add the prompt to a report to let users specify a distance radius for which to display data. For information on creating Metric Qualification prompts, see the MicroStrategy Web Help.

   - A Metric Set Qualification filter. You can add the filter to a report or to a dataset report in a document, to automatically filter the data using the current location of the mobile device.

   - A prompt or filter that will use the metric, added to a report displayed as a Map widget, or to the dataset report of a Map widget in a document. When the Map widget is displayed on a mobile device, only the map markers for locations within the specified distance from the mobile device are displayed.

<table>
<thead>
<tr>
<th>Metric Name</th>
<th>Metric Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location_Lat</td>
<td>Max (AttributeName@LatitudeFormName)</td>
</tr>
<tr>
<td></td>
<td>Replace AttributeName with the name of the location attribute, and replace</td>
</tr>
<tr>
<td>Metric Name</td>
<td>Metric Definition</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>LatitudeFormName with the attribute form that contains the latitude information for each location. For example, for an attribute named Store with the attribute forms Latitude and Longitude, create a metric with the name Location_Lat, with the definition ( \text{Max} \text{(Store@Latitude)} ).</td>
<td></td>
</tr>
<tr>
<td>Location_Long</td>
<td>( \text{Max} \text{(AttributeName@LongitudeFormName)} )</td>
</tr>
<tr>
<td>Replace AttributeName with the name of the location attribute, and replace LongitudeFormName with the attribute form that contains the longitude information for each location. For example, for an attribute named Store with the attribute forms Latitude and Longitude, create a metric with the name Location_Long, with the definition ( \text{Max} \text{(Store@Longitude)} ).</td>
<td></td>
</tr>
<tr>
<td>DeltaLat/2</td>
<td>( \left( \text{Radian} \left( \left( \text{Location_Lat} - \ ?\text{LatitudePromptName} \right) / 2 \right) \right) )</td>
</tr>
<tr>
<td>Replace LatitudePromptName with the name of the value prompt for latitude. For example, if the value prompt is named Latitude, the definition is ( \left( \text{Radian} \left( \left( \text{Location_Lat} - \ ?\text{Latitude} \right) \right) / 2 \right) ).</td>
<td></td>
</tr>
<tr>
<td>DeltaLong/2</td>
<td>( \left( \text{Radian} \left( \left( \text{Location_Long} - \ ?\text{LongitudePromptName} \right) / 2 \right) \right) )</td>
</tr>
<tr>
<td>Replace LongitudePromptName with the name of the value prompt for longitude. For example, if the value prompt is named Longitude, the definition is ( \left( \text{Radian} \left( \left( \text{Location_Long} - \ ?\text{Longitude} \right) \right) / 2 \right) ).</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>[ \left( \text{Sin} \left( \left( \text{DeltaLat/2} \right) \right) \right) \times \left( \text{Sin} \left( \left( \text{DeltaLat/2} \right) \right) \right) + \left( \text{Cos} \left( \text{Radian} \left( \ ?\text{Latitude} \right) \right) \right) \times \left( \text{Cos} \left( \text{Radian} \left( \text{Location_Lat} \right) \right) \right) \times \left( \text{Sin} \left( \text{Radian} \left( \ ?\text{Longitude} \right) \right) \right) \times \left( \text{Sin} \left( \left( \text{DeltaLong/2} \right) \right) \right) \times \left( \text{Sin} \left( \left( \text{DeltaLong/2} \right) \right) \right) ]</td>
</tr>
<tr>
<td>C</td>
<td>( \left( 2 \times \left( \text{Atan2} \left( \text{Sqrt} \left( \left( 1 - A \right) \right) \right) \right) \right) )</td>
</tr>
<tr>
<td>Point_Distance</td>
<td>( \left( 3959 \times C \right) )</td>
</tr>
</tbody>
</table>

This value is based on the radius of the Earth, 3,959 miles or 6,371 km. To calculate the distance between the stores and the mobile device using a different unit of distance, replace 3959 with the radius of the Earth in the units you want to use to measure distance. For example, to calculate distance in kilometers, the metric definition is \( \left( 6371 \times C \right) \).

### Using lines to display relationships between locations in a Map widget

Once you create a Map widget for an iPhone or iPad, you can show relationships between locations on the map when the widget is displayed on the device. To do this, you display lines between the map markers. You can choose to display these lines using different thicknesses or colors depending on the relationship between locations.

**Prerequisites**
• The procedure assumes that you have created a Map widget. For more information on the requirements for this widget, see Creating a Map widget, page 95.

• If you provided the location of each map marker in the Map widget using attribute forms, the Latitude, Longitude, and ID attribute forms of the location attribute should be displayed in the Map widget.

• If you provided the location of each map marker in the Map widget using attributes, you must include the lookup attribute on the Map widget.

• You must create a Grid/Graph that is used to display lines in the widget. This Grid/Graph includes the metrics used to determine the color and thickness of lines between map markers, and attributes containing the IDs of the starting and ending locations of each line. The IDs provided must correspond to the IDs used to identify map marker locations in the Map widget. The steps to create this Grid/Graph are below.

---

**To display lines between map markers in a Map widget**

1. Open the document in Design or Editable Mode.

**To create the Grid/Graph for the relationships**

2. From the **Insert** menu, select **Grid/Graph**.

3. Click the location on your document in which you want to place the Grid/Graph. This Grid/Graph will not be visible when the widget is displayed on the device, and should be in the same document section as the Map widget.

4. From the Dataset Objects panel on the left, select attributes and metrics, and drag them on top of the Grid/Graph, as described below:

   • You must place two attributes on the rows of the Grid/Graph, which must provide the IDs of the starting and ending locations of each line in the widget. The IDs provided must correspond to the ID forms in the attribute used to identify map marker locations in the Map widget. Place the attributes as follows:

      ▪ The first attribute is the lookup attribute for the widget. It must contain a single attribute form containing the ID of the starting location for each line.

      ▪ The second attribute must be a single attribute form containing the ID of the ending location for each line.

   • Place at least one metric on the Grid/Graph’s columns:

      ▪ The first metric automatically determines the thickness of each line displayed in the widget, with thick lines representing large metric values. For example, if airports are displayed in the Map widget, and the lines represent flights between each airport, you can add the Passenger Count metric to the Grid/Graph. When the widget is displayed on a mobile device, the flights with the most passengers are displayed with thick lines, while flights with less passengers are displayed with thin lines.
To display each line using the same thickness, you can provide a metric with a constant value.

- The second metric is used to determine the color of each line in the widget. By default, each line in the widget is displayed using the default color. You can override the default color by defining a threshold to change the font color of the metric values that meet the threshold condition. For information on creating thresholds, refer to the MicroStrategy Web Help.

If only one metric is placed on the columns, all lines will display using the default color.

5 The ID attribute form of each attribute must be displayed in the Grid/Graph you just created. If they are not displayed, for each attribute, right-click the header of the attribute, point to Attribute Forms, then select the attribute forms you want to display.

6 If you provided the location of each map marker in the Map widget using attributes, you must include the lookup attribute on the Grid/Graph that you just created to display lines between the map markers. Place the lookup attribute on the rows of the Grid/Graph, directly before or directly after the attributes providing the latitude and longitude of each map marker.

**To enable the line display**

7 Right-click the Map widget, then select Properties and Formatting. The Properties and Formatting dialog box opens.

8 From the left, click Advanced.

9 Clear the Enable incremental fetch on grid check box, and click Apply.

10 From the left, select Widget.

11 Click the Widget Properties icon . The Map Properties dialog box opens.

12 To enable the display of lines, select the Display Affinity Lines/Arcs check box.

13 If the Use Attribute or Form option is set to Use Attribute, from the Select Lookup Attribute drop-down list, select the lookup attribute.

14 From the Select Affinity Data drop-down list, select the Grid/Graph that you created above.

15 From the Draw Arcs/Lines drop-down list, select Arcs to display curved lines or Lines to display straight lines.

16 From the Max Line Thickness drop-down list, select the maximum thickness that can be used to display lines in the widget. The thickness of each line is automatically determined based on the value of the first metric on the new Grid/Graph’s rows. The default value is 5.

17 Click OK to return to the Properties and Formatting dialog box.

18 Click OK to save changes and return to the document.
**Visualizing trends: Microcharts widget**

The Microcharts widget for iOS and Android devices lets users visualize trends in a metric at a quick glance. Depending on the number of metrics used in the underlying report, the Microcharts widget can display one, two, or three microcharts. For example, bar and sparkline microcharts convey trends in a metric, and bullet microcharts compare a metric’s actual value to its targets. An example of a Microcharts widget is shown below:

![Microcharts widget example](image)

The Microcharts widget can be used in the following modes:

- **Grid mode**: This is the default setting. In this mode, all attributes except the last one from the left are grouped and displayed as rows in the widget.
  - You can display Grid mode in Tree mode, which groups the rows in the widget logically. Users can collapse and expand the rows as needed to see more detailed data. You must enable Tree mode for users to access it; steps are provided in the [Dashboards and Widgets Creation Guide](#).
  - If the widget is displayed on an iPhone or iPad, users can sort the widget based on a column in the widget. Users can sort the widget based on:
    - Attribute elements or metric values
    - Elements in a consolidation
    - Attribute elements or metric values with thresholds applied

If your widget contains subtotals, you can control where the subtotals are displayed when the widget is sorted. Edit the subtotals to display at the top or bottom of each group. For steps, see the [Document Creation Guide](#).

- **KPI List mode**: In this mode, key performance indicators (KPIs), such as Profit, Revenue, and so on, are displayed in a list. Each KPI is represented by its own row of microcharts.

  🔄 Ticker mode and Vertical Scroll mode are not available for mobile devices.

You can also define Information Windows that display when the widget is tapped. For instructions on creating an Information Window, see *Providing additional information to users: Information Windows, page 38*. 
Creating a Microcharts widget

Prerequisites

In a document, create a Grid/Graph that meets the following minimum requirements:

- For a Microchart widget in Grid mode, the report must have at least two attributes in the rows. The last attribute from the left is used as the X-axis for the bar graph and sparkline microchart.

- For a Microchart widget in KPI List mode, the report must have only one attribute in the rows.

- At least two metrics in the columns. The first metric from the left determines the height of the bars for the bar microchart, and the peaks of the sparkline microchart. The second metric displays a horizontal reference line for both microcharts.

For steps to create a Microcharts widget, and for more information on creating Grid/Graphs that meet the data requirements for the Microcharts widget, as well as variations of the widget based on the number of metrics used, see the Dashboards and Widgets Creation Guide.

You can add objects from multiple datasets to the Grid/Graph containing the widget. You must have the correct privileges and the project must allow Grid/Graphs to use multiple datasets. For steps to allow Grid/Graphs to use multiple datasets, see the Adding Text and Data chapter of the Document Creation Guide.

Displaying the Microcharts widget in KPI List mode

By default, if the Grid/Graph has only one attribute row, the Microcharts widget displays in KPI List mode. To configure other properties of the widget, you must run the document in Flash Mode in MicroStrategy Web, and then change the properties, as described in the steps below.

You must determine how many of the metrics to use for each KPI. For example, if you specify three metrics for each KPI, the first three metrics from the left are used for the first KPI, the next three for the second, and so on.

To display the Microcharts widget in KPI List mode

1. In MicroStrategy Web, navigate to the document where you have defined the Microcharts widget, and open it in Flash Mode. The document should open with the Microcharts widget displayed.

2. Right-click the Microcharts widget, and select Properties. The Microcharts properties dialog box opens.

3. From the drop-down list at the top left, choose Mode. If your widget has a single attribute row, the KPI List Mode check box is enabled by default.
4 If the widget contains more than one attribute, the KPI List Mode check box is disabled.

5 In the Metrics per KPI field, type the number of metrics to use for each KPI.

6 Click OK.

Enabling Smooth Scroll mode

You can enable Smooth Scroll mode to ensure that the metric columns displayed in the widget on an iPad or Android with MicroStrategy Mobile have enough space.

In Smooth Scroll mode, if there is enough space on the mobile device to display all the attribute columns in the widget plus at least one metric, the attribute columns are allowed to take up as much space as they require. If space is limited, however, priority is given to displaying the metrics in the widget, and attributes are displayed in the remaining space. Users can perform a horizontal swipe gesture to view the metric columns that cannot fit on a single page.

To enable Smooth Scroll mode for a Microcharts widget

1 In Flash Mode, right-click the widget and select Properties. The Microcharts dialog box opens.

2 From the drop-down list, select Mode.

3 Select the Enable Smooth Scroll Mode for Metrics (Mobile Only) check box.

4 From the Metric Column Spacing drop-down list, determine how to size and display columns in the widget by selecting one of the following:
   • To display columns as more compact in width, select Compact.
   • To display columns using the default width, select Normal.
   • To display columns as wider than the default, select Large.

5 Click OK to apply your changes.

Selecting a display theme for the widget

You can select a display theme to use to display the Microcharts widget on a mobile device. Display themes are used only for widgets displayed on mobile devices, not for widgets displayed in Flash Mode.
To select a display theme for the Microcharts widget

1. In Flash Mode or Interactive Mode, right-click the widget and select Properties. The Microcharts dialog box opens.
2. From the drop-down list, select Options.
3. From the Choose Theme drop-down list, select a color theme to use to display the widget, as follows:
   - To display the widget using a light-colored theme, select Light (default).
   - To display the widget using a dark-colored theme, select Dark.
   - To display the widget using custom color options that you define, select Custom. The colors that you select for the widget in the Microcharts dialog box will be used to display the widget on a mobile device.
4. Click OK to apply your changes.

Downloading and viewing multimedia files: Multimedia widget

You can allow users to browse and view files in a web folder, such as documents, images, and videos, using a Multimedia widget. When viewed on a mobile device, the Multimedia widget displays a list of available files, along with information about each file, including the file name, description, and file type. Users can tap the Download icon next to a file displayed in the widget to download and view the file. When the mobile device is offline, users can view files that have been downloaded and automatically stored on their mobile device. Files that have not been stored on the mobile device are grayed out and cannot be viewed offline.

Users can view the following types of files using the Multimedia widget:
- Audio and video files
- ePub files
- Excel
- HTML
- Image
- PDF
- Plain text
- PowerPoint
- Word

PDF files are displayed in-app using a native PDF reader.

Prerequisites
Before creating a Multimedia widget, you must perform the following tasks:

- Create the document in which to insert the Multimedia widget.
- Configure an XQuery database instance to retrieve web folder contents. For steps to configure this database instance, see the Custom SQL Queries: Freeform SQL and Query Builder chapter in the Advanced Reporting Guide.
- Create an XQuery report to use to access the web folder that contains the files to display in the widget. Add the XQuery report as a dataset report in the document. For steps to create the XQuery report, see the Custom SQL Queries: Freeform SQL and Query Builder chapter in the Advanced Reporting Guide.

To create and configure a Multimedia widget

1. In MicroStrategy Web, open the document in Design or Editable Mode.
2. From the Dataset Objects panel on the left, click and drag the dataset report to the area of the document in which to display the widget. The attributes on the Grid/Graph of the dataset report should be displayed in the following order:
   - MW_URL
   - MW_Name
   - MW_ModifiedOn
   - MW_ModifiedOnText
   - MW_DBIGUID
   - MW_ThumbnailURL
   - MW_Description
3. Right-click the dataset report, then select Properties and Formatting. The Properties and Formatting dialog box opens.
4. From the left, click Widget.
5. From the Widget drop-down list, point to Mobile, then select Multimedia.
6. Click OK to save your changes and return to the document.

Visualizing relationships: Network widget

You can create a Network widget to allow analysts to quickly and easily identify relationships between related items and clusters, such as when visualizing a social network or displaying a market basket analysis. Attribute elements are displayed as nodes in the visualization, with lines (called edges) drawn between the nodes to represent relationships between elements. Once the visualization is created, users can view characteristics of the nodes and the relationships between them, using display options such as node size, edge thickness, and edge color.
For steps to add a Network widget to a document and specify formatting options, see the Dashboards and Widgets Creation Guide. You can also define Information Windows that display when a node is tapped. For instructions on creating an Information Window, see Providing additional information to users: Information Windows, page 38.

You can also use the Network visualization in dashboards. For information on creating analyses, refer to the MicroStrategy Web Help.

**Uploading images: Photo Uploader widget**

Analysts can use the Photo Uploader widget to upload images from an iPhone, iPad, or Android device. A user can choose to take a new photo to use as an image, use an existing image on his mobile device, or delete images.

For example, you can add the Store attribute to the widget’s Grid/Graph, and then add a prompt to the document to allow users to select a store. Users can run the document, then select the store in which they are taking a picture with their mobile devices. When the image is uploaded, the name of the store is stored in the user’s data source, along with the description of the image and the location in which the image is stored. For steps to create prompts, see Allowing users to filter data: prompts, page 56.

**Prerequisites**

- You must have Transaction Services.
- You must have the Web Configure Transaction privilege.
- This procedure assumes you have already created attributes and metrics to place on the widget. The widget is used to store information about the images before they are uploaded and must contain a placeholder row of data for each image you want to upload. The data in these rows is updated when users upload images. The following attributes and metrics must be created:

  - One attribute that contains the following attribute forms:

    - The first attribute form is the location in which each image is saved. The values may be blank or placeholders, and are updated with new paths when users upload images.

    - The second attribute form contains a description of each image, as provided by the user.

    - The third attribute form (optional) contains a unique numeric ID of each image that the user uploads.

Note the following:

- The number of placeholder rows in the widget determines the maximum number of images users can upload. For example, if you create a widget with 20 rows, users can upload a maximum of 20 images.

- To choose the attribute forms displayed for an attribute in the widget, right-click the header of the attribute, point to Attribute Forms, then select the attribute forms to display.
- Two metrics, as follows:
  - The first metric is used to indicate whether the image has been uploaded.
  - The second metric (optional) contains the sum of the values in the first metric, and is used to display the number of images the user has uploaded.
- You can provide additional information about an uploaded image by placing additional attributes and metrics on the widget. For example, you can add the Store attribute to the widget, and then add a prompt to the document to allow users to select a store. Users can run the document, then select the store in which they are taking a picture with their mobile devices. When the image is uploaded, the name of the store is stored in the user's data source, along with the description of the image and the location in which the image is stored. For steps to create prompts, see Allowing users to filter data: prompts, page 56.
- You can add objects from multiple datasets to the Grid/Graph containing the widget. You must have the correct privileges and the project must allow Grid/Graphs to use multiple datasets. For steps to allow Grid/Graphs to use multiple datasets, see the Adding Text and Data chapter of the Document Creation Guide.

- This procedure assumes you have created a Transaction Services report to link to the widget. There must be an attribute form or metric displayed in the widget (described above) for each input object in the Transaction Services report. For steps to create a Transaction Services report, see the Advanced Reporting Guide.

**To add a Photo Uploader widget to a document**

1. Open the document in Design or Editable Mode.
2. From the Insert menu, point to Widgets, then point to Mobile. Select Photo Uploader.
3. Click in your document where you want to place the widget. A Grid/Graph containing the widget is added to the document.
4. Optionally, resize the widget by clicking and then dragging its handles.
5. From the Dataset Objects panel on the left, select attributes and metrics, and drag them on to the Grid/Graph, as described in the prerequisites above.
6. To specify the size and quality of images uploaded through the Photo Uploader, the camera used to take images, and other properties, right-click the widget and select Properties and Formatting, then click the gear icon next to Widget Properties.

You can specify the following options:

a. The quality of the images that are uploaded. From the Image Quality drop-down list, select High, Medium, or Low (default).

b. The size of the images uploaded. From the Image Size drop-down list, select Small, Medium (default), Large, or Actual.
Whether users can upload multiple images at one time. From the Allow Multiple Photos drop-down list, select Yes (default) or No.

Whether users can use photos already stored on their mobile device. From the Allow Existing Pictures drop-down list, select Yes (default) or No.

The camera used to take photos by default. Users can still switch between the cameras. From the Default Camera drop-down list, select Back (default) or Front.

To link the widget to the Transaction Services report, right-click the widget’s Grid/Graph, then select Configure Transaction. The Configure Transactions dialog box opens.

Click … (the Browse button), then navigate to and select the Transaction Services report to link to.

A list of the attributes and metrics that can be modified in the Transaction Services report is displayed in the Transaction Input column. Perform the following steps for each input object:

a From the Grid Object drop-down list, select the attribute form or metric to link to the input object.

b You can choose whether users can edit the value of each input object. Do one of the following:

— To allow users to edit the value of the input object, select the Editable check box.

— To prevent users from editing the value of the input object, clear the Editable check box.

You must define the first metric on the columns of the widget to be editable. This metric indicates whether the image has been uploaded.

c From the Transaction Input drop-down list, choose a control to display the input as, such as a text box, slider, and so on.

Repeat the appropriate steps above to define and format the control to display for each input object.

Click OK to save your changes and return to the document.

To create a button for users to submit a photo, from the Insert menu, point to Selector, then select Action Selector Button.

Click the section of the Layout area in which you want to place the selector. Right-click the selector, then select Properties and Formatting. The Properties and Formatting dialog box opens.

From the left, click General, then in the Display Text field, type the text you want to display on the button or link; for example, Submit.

By default, a descriptive title bar is displayed for the selector. You can determine whether to display the title bar. Do one of the following:
• To display the title bar, select the **Show Title Bar** check box and type the title you want to display in the field.

• To display the selector button or link without the title bar, clear the **Show Title Bar** check box.

16 From the left, click **Selector**. From the **Action Type** drop-down list, select **Submit**.

17 By default, the selector button or link targets each Grid/Graph and panel stack in the document section in which it is placed. You can choose the targets of the selector manually instead. To do so, click **Click here**, then use the right arrow to move the target Grid/Graph or panel stack from the **Available** list to the **Selected** list. For additional information on working with selectors, see the MicroStrategy Web Help.

18 Select the appropriate options to define the selector. For the full steps to define an action selector button, see the **Document Creation Guide**.

19 Click **OK** to save your changes and return to the document.

**Displaying RSS feeds: RSS Reader widget**

You can provide an RSS feed on the iPhone and iPad. RSS (Rich Site Summary, or Really Simple Syndication) is a data format used to display updated content from a website. An RSS document is called a feed. It contains either a summary of the content from an associated website or the full text.

The RSS Reader widget allows users to compare data in the dashboard with information from external news feed sources. The widget retrieves news from an RSS news feed and displays it alongside the other components of the dashboard. The RSS feed is automatically reloaded to display the most up-to-date news about a variety of topics that you specify.

You can add an RSS Reader widget to a document, then display the widget when the document is viewed on a mobile device, as shown in the image above. Users can select an RSS feed to display a list of news items, then select an item to display from the list. For steps to create an RSS Reader widget and add it to a document, see the *Dashboards and Widgets Creation Guide*. 
Formatting an RSS Reader widget for mobile devices

You can format how the widget is displayed when viewed on the mobile device. For example, you can change the color in which the titles of RSS feeds are displayed, or the background color used for news items that are selected in the widget.

The table below suggests formatting ideas and provides steps to format how an RSS Reader widget is displayed on the mobile device.

<table>
<thead>
<tr>
<th>What to Format In the Widget</th>
<th>How to Format It</th>
</tr>
</thead>
</table>
| Specify the URL of the RSS feed to display in the widget | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **General** tab, type the URL of the RSS feed in the **Default RSS Field**. To specify multiple URLs, type ?? between each URL. For example: http://www.businessweek.com/rss/bwdaily.rss??http://news.google.com/news?ned=us&topic=h&output=rss  
3. Click **OK** to apply your changes. |
| Specify the title of the RSS feed displayed in the widget | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **General** tab, type the title of the RSS feed in the **RSS Reader Title** field. To specify titles for multiple RSS feeds, type ?? between each title. For example, you can type Business??World News to create two RSS feeds, one named Business and the other named World News.  
3. Click **OK** to apply your changes. |
| Select the color in which the titles of RSS feeds are displayed | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **General** tab, select a color from the **RSS Reader Title Color** palette.  
3. Click **OK** to apply your changes. |
| Select the background color of the widget | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **General** tab, select a color from the **Background Color** palette.  
3. Click **OK** to apply your changes. |
| Select the color of the widget’s border | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **General** tab, select a color from the **Border Color** palette.  
3. Click **OK** to apply your changes. |
| Select the background color to use to display news items in the widget | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **NewItem** tab, select **Colors** from the first drop-down list.  
3. Select **Background** from the second drop-down list.  
4. Select a color from the **Background** color palette.  
5. Click **OK** to apply your changes. |
<table>
<thead>
<tr>
<th>What to Format in the Widget</th>
<th>How to Format It</th>
</tr>
</thead>
</table>
| Select the background color displayed for news items when a cursor hovers over the item in the widget | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **NewsItem** tab, select **Colors** from the first drop-down list.  
3. Select **Rollover Background** from the second drop-down list.  
4. Select a color from the **Rollover Background** color palette.  
5. Click **OK** to apply your changes. |
| Select the font color to use to display news items in the widget | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **NewsItem** tab, select **Colors** from the first drop-down list.  
3. Select **Font** from the second drop-down list.  
4. Select a color from the **Font Color** palette.  
5. Click **OK** to apply your changes. |
| Select the font color to use to display news items when a cursor hovers over the item in the widget | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **NewsItem** tab, select **Colors** from the first drop-down list.  
3. Select **Rollover Font** from the second drop-down list.  
4. Select a color from the **Rollover Font Color** palette.  
5. Click **OK** to apply your changes. |
| Select the font color to use for news items that have been read | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **NewsItem** tab, select **Colors** from the first drop-down list.  
3. Select **Read Articles** from the second drop-down list.  
4. Select a color from the **Read Articles** color palette.  
5. Click **OK** to apply your changes. |
| Select the background color to use to display news items that are selected in the widget | 1. In Flash Mode, right-click the widget and select **Properties**. The RSS Reader dialog box opens.  
2. On the **NewsDetail** tab, select a color from the **Background Color** palette.  
3. Click **OK** to apply your changes. |
What to Format in the Widget | How to Format It
---|---
Select the font color to use to display news items that are selected in the widget | 1 In Flash Mode, right-click the widget and select Properties. The RSS Reader dialog box opens.  
2 On the NewsDetail tab, select a color from the Font Color palette.  
3 Click OK to apply your changes.

Gathering data from users: Survey widget

The Survey widget allows an analyst to interact with a survey on an iPad and submit answers, which are then stored in your data source. You can create a survey in a database or on a third-party survey creation website, then display your survey in a Transaction Services-enabled document on an iPad.

The Survey widget provides an easy way to dynamically generate and maintain surveys. If you want to modify the survey after its creation (for example, by adding or editing survey questions), you can update the survey information provided by the attributes and metrics placed on the widget’s grid. These changes will automatically be reflected and displayed in the widget, without requiring any additional configuration changes to the widget in the document.
You can add a Survey widget to a document, then display the widget when the document is viewed on a mobile device, as shown in the image above.

A Survey widget displayed on an iPad can contain the following question types:

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text field</td>
<td>A field consisting of one line in which users can enter text. Text fields are suited for questions in which users provide a single line of text, such as an email address.</td>
</tr>
<tr>
<td>Text area</td>
<td>A field in which users can type multiple lines of text. Text areas are suited for comments sections in which users provide multiple lines of written content.</td>
</tr>
<tr>
<td>Radio button</td>
<td>A list of radio buttons, displayed in a table. Users can select one radio button at a time.</td>
</tr>
<tr>
<td>Check box</td>
<td>A list of check boxes, displayed in a table. Users can select more than one check box at the same time.</td>
</tr>
<tr>
<td>Drop-down list</td>
<td>A list of options, displayed in a table. Users can select one option from the drop-down list at a time.</td>
</tr>
<tr>
<td>Question Type</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Likert scale</td>
<td>A series of radio buttons, displayed in a table, that users can choose from to rate an item on a numeric scale. For example, users can choose 1 to strongly disagree with a statement, or 5 to strongly agree.</td>
</tr>
<tr>
<td>Drag and drop ranking</td>
<td>A list containing options that users can click and drag to rank them from highest to lowest.</td>
</tr>
<tr>
<td>Star ranking</td>
<td>A row of stars that users can use to submit a specific star rating out of five stars (such as four out of five stars).</td>
</tr>
<tr>
<td>Group question</td>
<td>When you display questions in a question group or table, you specify which question is treated as the main question. The main question is displayed as a header above the rest of the questions.</td>
</tr>
</tbody>
</table>

In the example above, the second question is displayed as a table of choices. The iPad displays the text “Required” for required questions (as shown for First Name in the example). For steps to create a Survey widget and add it to a document, including descriptions of the question types, see the Dashboards and Widgets Creation Guide.

**Displaying a Timeline widget**

The Timeline widget allows analysts using an iPad to view events or important milestones in the status of a product. For example, the image below shows a Timeline widget for a company that leases commercial jets to different airlines.

Each line represents a different commercial jet. An icon is displayed to mark events in the jet’s lifetime, such as a new lease, a lease expiring, a new purchase, and so on. The
metric values on the right are the key performance indicators (KPIs) for each jet, and the values at the bottom are the KPIs for each year.

Creating and adding a Timeline widget to a report or document

The following are instructions to define a Timeline widget for display on a mobile device. You can also define Information Windows for the widget, which can display additional information when users tap a section of the timeline. You can define a link in the widget to open a report or another document. For steps to define a link in a widget using the Links Editor, see the Providing Flash Analysis and Interactivity: Widgets chapter in the Dashboards and Widgets Creation Guide.

Prerequisites

- You must have a total of three datasets for the Timeline widget, which contain data as follows:
  - A main dataset, which must have the following objects:
    - One attribute on the rows. Each attribute element is shown as a row on the Timeline widget. In the example above, the Asset attribute is placed on the rows.
    - The Year and Quarter attributes, in that order, on the columns.
    - One metric for Status, with codes for the asset’s status, such as leased, sold, and so on. This metric determines the color of the timeline for a particular status. You can define the colors using thresholds on the Status metric.
    - One metric for Event, with codes for events in the asset’s timeline. You can define the appearance of the event marker by defining a threshold on the Event metric.
    - Optionally, one metric for the count of events for each asset, which contains the number of events that have occurred in a given quarter. If this value is greater than 1 for a specific quarter, a number badge for the quarter is displayed in the widget in place of an event icon. This number badge contains the number of events that affected the asset during the quarter.
  - A dataset that relates the asset to the KPI metrics. The metrics are displayed on the right side of the widget. The dataset must contain the following objects:
    - On the rows, the attribute for which timelines are displayed. In the example above, this is the Asset attribute.
    - On the columns, the metrics for the KPIs.
  - A dataset that relates the Year to the KPI metrics. The metrics are displayed at the bottom of the widget. The dataset must contain the following objects:
    - On the rows, the Year attribute.
    - On the columns, the metrics for the KPIs.
To create and configure the Timeline widget for mobile devices

1. In Web, open the document in Design or Editable Mode.
2. From the Insert menu, point to Widgets, then Mobile, and select Timeline.
3. Click the location on your document where you want to place the widget. The Grid/Graph containing the widget is displayed.
4. Optionally, resize the widget by clicking and then dragging its handles.

To define the grid for the main dataset

5. From the Dataset Objects panel on the left, place the objects from the main dataset on to the widget. The requirements for these objects are described in the prerequisites above.
6. To color-code the line for each asset in the widget based on the asset’s status, you must define a threshold on the status metric to change the color in which metric values are displayed, as described below:
   a. Right-click the widget, then point to Thresholds, and select Visual. The Visual Threshold Editor opens.
   b. Select the appropriate options to define your threshold. For detailed steps to define a threshold, see the Formatting a Report chapter in the Basic Reporting Guide.
7. To display an image icon when an event occurs to an asset in the widget, you must define a threshold on the event metric to replace metric values with the image you want to display, as described below.
   a. Right-click the widget, then point to Thresholds, and select Visual. The Visual Threshold Editor opens.
   b. Select the appropriate options to define your threshold. For detailed steps to define a threshold, see the Formatting a Report chapter in the Basic Reporting Guide.

To define the grid for displaying metrics by asset

8. From the Insert menu, select Grid, then click the area in the Layout area in which you want to place the grid.
   - This grid will not be visible when the widget is displayed.
9. From the Dataset Objects panel, drag the objects from the second dataset, which relates the assets to metrics, on to the grid.
To define the grid for displaying metrics by year

10 From the Insert menu, select Grid, then click the area in the Layout area in which you want to place the grid.

   This grid will not be visible when the widget is displayed.

11 From the Dataset Objects panel, drag the objects from the third dataset, which relates the year to metrics, onto the grid.

To configure the widget

12 Right-click the Timeline widget, then select Properties and Formatting. The Properties and Formatting dialog box opens.

13 On the left, click Widget.

14 In the Available list under Secondary Data Providers, select the grid with the asset attribute, then click > to move it to the Selected list. Select the grid with the Year attribute and click > to move it to the Selected list.

15 Click the Widget Properties icon [ ]. The Timeline Properties dialog box opens.

16 You can choose the starting point from which to display data in the timeline when the widget is displayed. From the Initial column display properties drop-down list, select one of the following:

   • To display data in the timeline starting with the most recent dates available, select Right Justified.
   • To display data in the timeline starting with the earliest dates available, select Left Justified.

17 You can determine whether to show labels for each quarter displayed in the timeline. Do one of the following:

   • To show the labels for each quarter, select the Show labels check box.
   • To display the timeline without labeling each quarter, clear the Show labels check box.

18 Click OK to save your changes and return to the Properties and Formatting dialog box.

19 Click OK to save your changes.

Displaying additional information: Information Windows

You can define Information Windows, which are pop-up windows that display additional information when the user taps an area in the widget when the widget is displayed on the mobile device. To do so, you must first define a panel stack containing the information you want to display, then define specific attributes as selectors targeting the panel stack, as follows:
• To display an Information Window when the user taps a section of the timeline for a specific asset and quarter, you must define the Asset, Year, and Quarter attributes on the Timeline widget as selectors targeting the panel stack.

• To display an Information Window when the user taps the name of an asset in the widget, you must define the Asset attribute in the grid containing the metrics to be displayed by Asset (the second Grid/Graph you added to the document) as a selector targeting the panel stack.

For detailed steps to create Information Windows, see "Providing additional information to users: Information Windows, page 38."

**Displaying data trends: Time Series widget**

The Time Series widget displays data over a specific period of time on an iPhone, iPad, or Android device. This widget is displayed as a line graph on the device. You can configure the widget to display multiple data series on the same graph. An example of a Time Series widget on an iPhone is shown below.

![Time Series widget example](image)

You can configure the Time Series widget to provide data across multiple time intervals. For example, in the image above, data is displayed for a one-month time period. However, the widget can also display data for one year, several years, or for the entire time period. You can add intervals to a widget by configuring the widget’s properties.

The number of data points displayed in a Time Series widget is determined by the maximum number of rows displayed in the grid on which it is based. For steps to change the number of data points displayed in a Time Series widget in a document, see "To determine the maximum number of data points displayed in a document, page 128."

For iPhones and iPads, you can define:

• Information Windows that display when the widget is tapped. For instructions on creating an Information Window, see "Providing additional information to users: Information Windows, page 38."
• A link in the widget to open a report or another document. For steps to define a link in a widget using the Links Editor, see the Providing Flash Analysis and Interactivity: Widgets chapter in the Dashboards and Widgets Creation Guide.

Prerequisites

For a Grid/Graph to be used as a Time Series widget, it must meet the following requirements:

• At least one attribute on the rows. The attribute provides the values along the horizontal axis of the widget, and should be time-based.

• At least one metric on the columns. The metric values are graphed in the widget.

• To view data for multiple series, place at least one attribute on the columns. The attribute elements are graphed on the widget’s axis.

• Ensure that the row and column headers of the report are not merged.

You can add objects from multiple datasets to the Grid/Graph containing the widget. You must have the correct privileges and the project must allow Grid/Graphs to use multiple datasets. For steps to allow Grid/Graphs to use multiple datasets, see the Adding Text and Data chapter of the Document Creation Guide.

To create and add a Time Series widget to a document

1. In MicroStrategy Web, open the document in Design or Editable Mode.
2. From the Insert menu, point to Widgets, then Mobile, and select Time Series.
3. Click the location on your document where you want to place the widget. The Grid/Graph containing the widget is displayed.
4. Optionally, resize the widget by clicking and then dragging its handles.
5. From the Dataset Objects panel on the left, select attributes and metrics, and drag them on top of the widget, as described in the prerequisites above.

    Android devices can only display up to two metrics in a Time Series widget.

To configure the widget’s display properties

6. Right-click the widget, then select Properties and Formatting. The Properties and Formatting dialog box opens.
7. From the left, select Widget.
8. Click the Widget Properties icon [ ]. The Time Series Properties dialog box opens.
To add an interval selector to the widget

Interval selectors let users select the time period for which they want to view data in the widget, allowing them to analyze data at different levels of detail. You can add, rearrange, or delete interval selectors in a Time Series widget, as described below.

9 To add an interval selector, complete the following steps:
   a Click Add. The new selector is added and displayed.
   b Type a name for the selector in the Name field.
   c From the Template drop-down list, select the control in the document that contains the time-based attribute you want to use to create the interval selector. The granularity is automatically determined by the last (right-most) attribute on the Grid/Graph's rows, as described above.
   d From the Interval unit drop-down list, select the units in which you want to specify the length of the time interval. For example, to define a six-month interval, you can select Month as the interval unit.
   e Type the number of units you want to include in the interval in the Interval size field. For example, if the Interval unit is defined as Month, you can type 6 to specify a six-month time interval.
   f A summary of the interval selector's properties is displayed in the bottom pane. Repeat the appropriate steps above to add additional interval selectors.

10 You can rearrange the order in which an interval selector is displayed. Click Move up or Move down to change the position of the selector.

11 To delete an interval selector, select the interval selector's name in the Interval Selector list to the left, then click Remove. The interval selector is removed.

To use the slider as a selector

12 You can use the slider to filter the data in your dashboard, so that only the data selected in the slider is displayed. Select the Use slider as selector check box.

To format colors, labels, and the axis scale

13 Click the Formatting tab.

14 To change the background color of the widget, select a color from the Background palette.

15 To change the color of the text and lines, select a color from the Line and Text palette.

16 The color of each series is displayed in the Series palettes. To change the color of a series, select a color from the corresponding palette.

17 From the Background transparency drop-down list, select a level of transparency. The higher the percentage, the more transparent the background is.
By default, axis labels are condensed, which means the widget allocates more space to the chart area than to the labels. You can change this behavior by clearing the **Condense labels** check box.

You can specify the minimum and maximum values of the axis, by completing the following steps:

a  Select the **Custom axis scale** check box.

b  Type the **Maximum axis value**.

c  Type the **Minimum axis value**.

Click **OK** to return to the Properties and Formatting dialog box.

Click **OK** again to save changes.

---

**To determine the maximum number of data points displayed in a document**

---

Increasing the number of rows that can be displayed in a grid may affect performance when the document is displayed.

1. Open the document containing the widget in Design or Editable Mode.

2. Right-click the widget’s Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

3. From the left, select **Grid**.

4. Select the **Enable incremental fetch in Grid** check box.

5. From the **Count By** drop-down list, select **Individual Rows**.

6. Type the maximum number of data points to display in the widget in the **Maximum number of rows per page** field.

7. Click **OK** to save changes.

---

**Downloading and playing videos: Video Player widget**

On an iPhone or iPad, the Video Player widget loads and plays a video from a remote location or from the local cache. The widget can display:

- An online video from a streaming service such as YouTube.

- An online video from a file server location.

- A cached video from the WebDAV cache, in offline mode. The WebDAV cache can be populated by a manual download request.

If the mobile device is online, the Video Player widget loads the video from the remote location, unless a local cache already exists on the device’s WebDAV cache store. Caching should be set up whenever possible.
When a user requests a video:

1. The widget checks for a local copy stored on the device, regardless of whether the device is connected. If a cached file is used, the widget can start playing the video without loading the full file into memory.

2. If the video is not yet cached, then the widget requests the video from the source. The video can be a streaming video, such as a YouTube video, or a full video download file served by a web server.

   - A streaming video is buffered and played as it downloads. By default, the downloaded video file is discarded when the MicroStrategy Mobile application is closed. You can ensure that the video is downloaded and stored on the mobile device for offline use. For steps, see *Pre-caching online content on the mobile device for offline use, page 214.*

   - A file download video is downloaded fully to the client. Once the video is fully downloaded, the video can be played. You can pre-cache the video to download the video before the user requests it. This allows a faster response time when the video is requested. For steps, see *Pre-caching online content on the mobile device for offline use, page 214.*

The video is saved to the WebDAV Content Manager cache store so that it can be shared by other instances of the Video Player widget or the Multimedia widget. The video source URL is used as the key of the cache so it can be matched by other requests to the same video.

You can configure the Video Player widget to use one source for online live requests that are initiated by the user, and a second source for a full file that can be downloaded and cached by a manual download request. For example, the live source can be set to a YouTube location while the offline cache source points to a URL that serves the full video file.

In a different scenario, such as a company that hosts its videos on its own servers, both sources can use the same URL. For the live request, the device directly accesses the video from the hosting web server, if a matching cache is not found on the local cache.

For steps to configure a WebDAV folder, see the *Advanced Reporting Guide.*

---

**To create and add a Video Player widget to a document**

1. In MicroStrategy Web, open the document in Design or Editable Mode.

2. From the **Insert** menu, point to **Widgets**, then **Mobile**, and select **Video Player**.

3. Click the location on your document where you want to place the widget.

4. Optionally, resize the widget by clicking and then dragging its handles.

5. Right-click the widget, then select **Properties and Formatting**. The Properties and Formatting dialog box opens.

6. From the left, select **Widget**.
7 Click the **Widget Properties** icon [ ] . The Video Player Properties dialog box opens.

8 Do one of the following to define the video’s source:

- To stream the video:
  a Select **Video streaming**.
  b The **Embed video HTML** field is used for online live requests initiated by users. Type or copy the HTML needed to embed the video in a site. For example, the HTML for a MicroStrategy Express demo on YouTube is:

  ```html
  <iframe width="560" height="315"
  src="//www.youtube.com/embed/AH4Z9fEyF8"
  frameborder="0" allowfullscreen></iframe>
  ```
  c The **Alternate download URL** is a cache source that serves the full video file. Type the URL in the field.

- To download the video:
  a Select **Video download**.
  b Type the **Video URL**.

9 To display a thumbnail for the video, type the **Video thumbnail URL**.

   - If the video is streamed but an alternate URL is not provided, the Video thumbnail URL field is not available.

10 Click **OK** to return to the Properties and Formatting dialog box.

11 Click **OK** to save changes.

**Displaying widgets using the entire screen on mobile devices**

By default, when you add a widget to a layout in a document, the widget is sized to take up the entire screen when displayed on an iPhone or Android device. Any additional grids, graphs, or widgets you add to the layout are not displayed. You can choose to display the widget without taking up the entire screen, and allow the display of other grids, graphs, or widgets together in the layout.

---

**To determine whether to display a widget using the entire screen on a mobile device**

1 Open the document in Design or Editable Mode.
2 Right-click the Grid/Graph containing the widget and select **Properties and Formatting**. The Properties and Formatting dialog box is displayed.

3 From the left, select **Widget**. Do one of the following:

- To size the widget to fit the entire screen, select the **Full Screen** check box.
- To display the widget without taking up the entire screen, and allow the display of other grids, graphs, or widgets in the layout, clear the **Full Screen** check box.

**Displaying widgets on iOS devices with a dark or light theme**

On the iPad and iPhone, you can display widgets using a dark or light theme. To do this, change the theme of the document containing the widget. In the image below, the date selection widget on the left uses the dark theme, while the date selection widget on the right uses the light theme.

![Images showing dark and light themes for widgets](image)

You can change the theme for the following widgets:

- Map
- Heat Map
- Time Series
- Date Selection
- Survey
- Microchart

For steps to change a document’s theme, see *Displaying documents on iOS devices with a dark or light theme, page 33*. 

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USING LINKS IN DOCUMENTS

You can create the experience of navigating through a native app by adding links between documents. Each document becomes a page or panel in your app, which a user can access from, for example, a button or tab bar.

You can also create links that perform actions or open other applications on the user’s mobile device. For example, a document designer can include a link that dials a store location’s phone number from the user’s mobile device. The following topics are covered:

• Opening a device’s installed applications from documents, page 132. You can use links that interact with applications installed with mobile devices, such as email or text messaging.

• Linking to reports and documents from a mobile document, page 138. A link lets the user execute another document or report (the target) from a document (the source). Parameters can be passed to answer any prompts or set any selectors that are in the target.

• Using links to access features within the MicroStrategy Mobile application, page 150. You can use links in a document to access specific features within the MicroStrategy Mobile application for iPhone or iPad. Examples are viewing a folder and emailing a screenshot of the document.

• Linking from documents with buttons and tab bars, page 152. A button can send a user to the various screens, such as the Home screen or the Report List, on an iPad, iPhone, or Android device. A button can open a web page, or run a report or document. You can add a single button to a dashboard, multiple buttons with different formatting in different locations on the dashboard, or a bar of buttons that are all formatted the same, called a tab bar.

• Storing links on NFC tags on Android devices, page 160. You can store a link on Near Field Communications (NFC) tags to open a report, document, or folder on an Android device.

Opening a device’s installed applications from documents

A document displayed on an iPhone, iPad or Android device can interact with the applications that are installed with the device. For example, a document can send
addresses to maps for directions or open a video. These applications include:

- Web browser
- Email
- Phone (applicable to mobile phones only)
- SMS (applicable to mobile phones only)
- Maps
- Videos

To allow users to open an external application in a document, you must create a hyperlink. The hyperlink connects a text field or an image to a web page or application (the target). When the document is viewed on a device, the user can click the control to navigate to the target.

For example, you create a document for the regional managers for a chain of stores. This document contains information about each of the stores in the manager’s region, as shown in the image below.

The information includes the store’s address, phone number, the store manager’s email address, its inventory figures, and so on. When regional managers view this document on their iPhones, they can:

- View a map of the store’s location and get directions from their current location
- Email the store manager
- Call the store
To create a link with a larger area that is easier to select, you can define a link that includes both the text and the area around it, or create an image button that users can select. To do this, you can:

- Create an image to use as the button and add a link to it.
- Insert a transparent image into the document, then enlarge and/or position it to cover the desired link area. Link the transparent image to the target. The user can then tap any area covered by the image to open the link. A sample transparent image is located by default in \C:\Program Files\MicroStrategy\Intelligence Server\images\1ptrans.gif.

When you create a hyperlink to open an external application, you must use the syntax outlined in the table below. Two examples are included for each type of hyperlink. The first example replaces the italicized variables in the syntax with specific, static text, while the second replaces it with an attribute, so that the hyperlink can change according to the data in your document.

<table>
<thead>
<tr>
<th>To...</th>
<th>Use This Syntax....</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td><code>&lt;a href=&quot;mailto:EmailAddress&quot;&gt;Name&lt;/a&gt;</code></td>
</tr>
<tr>
<td></td>
<td>Examples:</td>
</tr>
<tr>
<td></td>
<td><code>&lt;a href=&quot;mailto:jdoe@example.com&quot;&gt;John Doe&lt;/a&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;a href=&quot;mailto:{StoreMgrEmail}&gt;{StoreMgr}&lt;/a&gt;</code></td>
</tr>
<tr>
<td></td>
<td>where StoreMgrEmail and StoreMgr are attributes</td>
</tr>
<tr>
<td></td>
<td><code>&lt;a href=&quot;mailto:{Store@StoreMgrEmail}&quot;&gt;{Store@StoreMgr}&lt;/a&gt;</code></td>
</tr>
<tr>
<td></td>
<td>where StoreMgrEmail and StoreMgr are attribute forms of the Store attribute</td>
</tr>
<tr>
<td>Email with a subject</td>
<td><code>&lt;a href=&quot;mailto:EmailAddress?cc=EmailAddress&amp;subject=SubjectLine&amp;body=Message&quot;&gt;Text&lt;/a&gt;</code></td>
</tr>
<tr>
<td></td>
<td>Example:</td>
</tr>
<tr>
<td></td>
<td><code>&lt;a href=&quot;mailto:jdoe@example.com?cc=msmith@example.com&amp;subject=Greetings%20from%20MicroStrategy!&amp;body=I%20have%20reviewed%20your%20store’s%20sales%20results%20and%20have%20the%20following%20feedback%20for%20you:%Contact%20John%20Doe&quot;&gt;&lt;/a&gt;</code></td>
</tr>
<tr>
<td>Call (applicable to mobile phones only)</td>
<td><code>&lt;a href=&quot;tel:PhoneNumber&quot;&gt;PhoneNumber&lt;/a&gt;</code></td>
</tr>
<tr>
<td></td>
<td>Examples:</td>
</tr>
<tr>
<td></td>
<td><code>&lt;a href=&quot;tel:1-555-555-5555&quot;&gt;1-555-555-5555&lt;/a&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;a href=&quot;tel:{StorePhone}&quot;&gt;{StorePhone}&lt;/a&gt;</code> where StorePhone is an attribute</td>
</tr>
<tr>
<td>To...</td>
<td>Use This Syntax....</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>
| Use SMS links (applicable to mobile phones only) | `<a href="sms:SMSNumber">Text</a>`  
Examples:  
`<a href="sms:1-555-555-5555">I’ll be there soon</a>`  
`<a href="sms:{MgrPhone}">New Message</a>` where MgrPhone is an attribute |
| Pass location to Google Maps | `<a href="http://maps.google.com/maps?q=City">City</a>`  
Examples:  
`<a href="http://maps.google.com/maps?q=Chicago">Chicago</a>`  
`<a href="http://maps.google.com/maps?q={CustomerCity}"> {CustomerCity}</a>` where CustomerCity is an attribute  
`<a href="geo:38.915645,-77.220796">MicroStrategy HQ</a>` where the numbers in the link are the latitude and longitude respectively. |
Examples:  
`<a href="http://maps.google.com/maps?daddr=Washington+,DC&saddr=Chicago">Directions</a>`  
`<a href="http://maps.google.com/maps?daddr={CustomerAddress}&saddr={StoreAddress}">Directions from {StoreName} to {CustomerName} location</a>` where CustomerAddress, StoreAddress, StoreName, CustomerName are attributes |
| Open a video | Example:  
To... | Use This Syntax....
---|---
Display a web page in the internal web browser (iPad) | `WebPageURL?inApp=1`
By default, web pages open in Safari | Replace `WebPageURL` with the URL of the web page you want to display in the internal web browser.
Otherwise, the URL of the web page you want to display must end with a `/ (forward slash), followed by `?inApp=1`. For example, to link to the Google web page, the URL is `http://www.google.com/?inApp=1`.

You use the hyperlink properties to define links to the device's applications, as described below.

To create a hyperlink to an application on the device

1. In MicroStrategy Web, open the document in Design Mode or Editable Mode.
2. To use a text field for the hyperlink, complete the following steps (see the next step for instructions to add an image instead):
   a. From the Insert menu, select Text.
   b. Click in the section of the document where you want to place the text field. If you click and drag in the section, you can size the text field.
   
      To ensure that the area of a link is large enough to recognize a user selecting it, make sure it has a height and width of at least 40 pixels.
   c. Type the text to be displayed to users into the text field. You can add static text, dynamic text (in the form of data fields and auto text codes), or a combination to the text field:
      • To add static text, type the static text into the text field.
      • To add a data field, drag and drop a dataset object from the Dataset Objects panel into the text field.
      • To add an auto text code, from the Insert menu, select Auto-text, then select the code to insert.

   For background information about adding text to documents, see the Report Services Document Creation Guide.
3. To use an image for the hyperlink, complete the following steps:
a From the **Insert** menu, select **Image**.

b Click in the section of the document where you want to place the image. If you click and drag in the section, you can size the image. The Properties and Formatting dialog box opens.

To ensure that the area of a link is large enough to recognize a user selecting it, make sure it has a height and width of at least 40 pixels.

c Type the address of the image file to insert in the **Source** field. Navigate to and select the image file to insert in the document.

d Click **OK**. The image appears in the document.

For background information about adding images to documents, especially to ensure that the image is available as needed, see the [Document Creation Guide](https://example.com).  

4 Right-click the text field or image that you just added, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

5 From the left, click **General**, then select the **Is hyperlink** check box.

6 In the **Hyperlink** field, delete the “http://” text that is automatically filled in. Following the syntax in the table on [click here](https://example.com), type the hyperlink into the **Hyperlink** field. You can type static text, dynamic text (in the form of data fields and text codes), or a combination, as described below:

   • To add static text, type the static text into the text field.

   • To add a data field (that is, an object from a dataset report), type the object’s name within braces, such as `{Revenue}` or `{Region}`. The name must match either the name of an object in a dataset or its alias. If either name contains spaces or special characters, you must type it in square brackets `[ ]` within the braces; for example, `{{{Manager Name}}}`.

   A special character is any character other than a - z, A - Z, 0 - 9, #, _, and . (period).

   • To add an auto text code (that is, document and dataset report information), type the code within braces. As with data fields, if an object’s name contains spaces or special characters, enclose it in square brackets within the braces. For background information about available auto text codes, see the [Document Creation Guide](https://example.com).

7 Click **OK** to return to the document. Notice that the text field is now underlined, indicating that it is a hyperlink.
Linking to reports and documents from a mobile document

A link is a connection in a document to another document or a report. A link lets a user execute another document or report (the target) from a document (the source), and to pass parameters to answer any prompts that are in the target. You can link from a text field, an image, or a button.

For example, if a user is viewing a document containing regional sales, he can select a particular region to execute another document that displays sales for the stores in that region. This is a form of drilling, where the user has drilled from region to store. If the document contains a selector, the user can select a specific region in the selector, then tap a link to another document that displays sales for the months in that year. The source document could also link to the underlying dataset report, to display profit and cost values as well.

Most links can be created using the Link Editor. If you want to specify the page-by or report view (grid or graph) of a report, or specify the layout or grouping of a document, use the hyperlink properties and create the link URLs manually, by using the object ID and link syntax. For steps to create links using the Link Editor, see Creating a link for a mobile document, page 139. For steps to create links using manual URLs, see Creating a link URL to specify page-by, report view, layout, or grouping for the target, page 145.

Links you can create for iOS devices

You can use links to do the following on an iPhone or iPad:

- Execute a report, specifying the page-by, prompt answers, and report view (grid, graph, or both grid and graph).

- Execute a document, specifying the layout, grouping, prompt answers, and selector values.
  - A multi-layout document contains multiple documents, each in its own layout, creating a “book” of documents. Each layout functions as a separate document, with its own grouping, page setup, and so on, but the layouts are generated into a single PDF document.
  - Grouping a document helps users understand the data better. Grouping the data sets up a type of hierarchy within the document, and an inherent or implied sort order for the data.

You can change the grouping or layout for the currently displayed document, or for a target document. If you change the grouping or layout for the currently displayed document, you still must use the entire link URL, including the document ID, event parameter, and so on.

- Reprompt a report or document.

- Display the Home screen, Shared Library, Report List, Settings screen, Status screen, or Help screen.
Links you can create for Android devices

You can use links to do the following on an Android device:

- Execute a report, specifying whether it is displayed as a grid, a graph, or both a grid and graph
- Execute a document
- Run a report or document from a different project or server

Creating a link for a mobile document

Prerequisites

- The source document and any target reports/documents must be created.
- If the target report/document contains prompts, you must know what types of prompts the targets require and how they will be answered by the link (or by the user). For details on each prompt answer method, see Specifying how prompts are answered in the target, page 143.
- If you want to pass selector values from the source document to the target document, both the source and the target must contain the same selector. This means that either both documents must contain a selector with the same name (such as Region Selector), or both documents must contain a selector that uses the same source object (such as Region).

To create a link for a mobile document

1. In MicroStrategy Web, open the document in Design Mode or Editable Mode.
2. You can link from a text field, an image, or a button. Do one of the following:
   - To link from a text field, complete the following steps:
     a. From the Insert menu, select Text.
     b. Click in the section of the document where you want to place the text field. If you click and drag in the section, you can size the text field.

       To ensure that the area of a link is large enough to recognize a user selecting it, make sure it has a height and width of at least 40 pixels.

     c. Type the text to be displayed to users into the text field. You can add static text, dynamic text (in the form of data fields and auto text codes), or a combination to the text field:
       - To add static text, type the static text into the text field.
       - To add a data field, drag and drop a dataset object from the Dataset Objects panel into the text field.
— To add an auto text code, from the Insert menu, select Auto-text, then select the code to insert.

For background information about adding data fields and auto text codes to documents, see the Document Creation Guide.

d Right-click the text field, and select Edit Links. The Links dialog box opens.

• To link from an image, complete the following steps:
  a From the Insert menu, select Image.
  b Click in the section of the document where you want to place the image. If you click and drag in the section, you can size the image. The Properties and Formatting dialog box opens.

  To ensure that the area of a link is large enough to recognize a user selecting it, make sure it has a height and width of at least 40 pixels.
  c Type the address of the image file to insert in the Source field.
  d Click OK. The image appears in the document.

For background information about adding images to documents, see the Report Services Document Creation Guide.

e Right-click the image, and select Edit Links. The Links dialog box opens.

• To link from a button, complete the following steps:
  a Create the button, as described in Linking from documents with buttons and tab bars, page 152.
  b Right-click the button, and select Properties and Formatting. The Properties and Formatting dialog box opens.
  c Click to configure actions on the button. The Links dialog box opens.

3 In the Links dialog box, if other links already exist on this document, click the New icon to create a new link.

4 Type a name for the link in the URL display text field. Since the name appears in the link, it should be descriptive and informative to help users identify the target of the link.

To define the link

5 Perform the appropriate steps below, depending on whether you are linking to a web page or to a report/document:
  • To link to a web page:
To Select Prompt To Select Select Select Answer Click Answer Continue From The Answer Use Continue Type Mobile 141 Design 7 6 To apply one The page prompt included and • • • • • • • • • • Administration element using that use is required, prompt after documents report/document. want to answer the prompt method, method, the answer prompt's answer prompt's designer. This option requires that a default answer is defined for the prompt in the target.

The following methods are not intended to be used with buttons. For a button, use one of the previous methods.

• **Answer dynamically**: Select this option if you want to answer the prompt using the object selected in the source. This option is only available for attribute element prompts and value prompts.

To apply prompt answers to targets that contain prompts

6 The box below **Run this report or document** contains a list of any prompts included in the target report/document. Select a target prompt from the box.

7 Select a prompt answer method from the drop-down list. For examples of each prompt answer method, see *Specifying how prompts are answered in the target*, page 143.

• **Answer with the same prompt from the source**: Select this option if you want to use the same prompt answers for both the source report and the target report/document. This option requires that both the source and target documents use the same prompt.

• **Prompt user**: Select this option if you want the user to type prompt answers after he taps the link to run the target report/document.

• **Answer with an empty answer**: Select this option if you want to ignore the prompt in the target report/document. The prompt is not answered. This option requires that the prompt in the target is not required. If the prompt in the target is required, the user is prompted to provide an answer.

• **Use default answer**: Select this option if you want the prompt in the target to use the default answer defined by the prompt's designer. This option requires that a default answer is defined for the prompt in the target.
• **Answer using current unit**: Select this option if you want to answer the prompt using the object selected in the source. This option is only available for hierarchy prompts.

• **Answer using all valid units**: Select this option if you want to answer the prompt in the target with any object to the left of or above the object that the user selects in the source document. This method passes all pertinent selections in the source, rather than just the selection made for the link. This option is available only for hierarchy prompts.

8 For each prompt in the target report/document, repeat the step above.

**To specify the prompt answer method for prompts not in the list**

9 Any other prompts are those prompts that are not in the target report/document when you are creating the link. For example, these prompts can include prompts added to the target later. By default, the **Prompt user** answer method is selected for these prompts, but you can change the method. To do this, follow the steps below:

a Select **Any other prompts** in the list.

b Select a prompt answer method from the list; these are the only methods available for the Any other prompts option. For examples of each answer method, see *Specifying how prompts are answered in the target, page 143.*

   ◦ **Answer with the same prompt from the source**
   ◦ **Prompt user** (default)
   ◦ **Answer with an empty answer**
   ◦ **Use default answer**

**To apply selector values to a target document that contains selectors**

10 Choose a selector value method from the **Pass all selector values** drop-down list. For an example of passing selector values, see *Passing selector values from the source to the target, page 144.*

   • To match selector values by the selector’s source attribute (that is, the object displayed in the selector), select **Match Selectors by Source Attribute**.

   • To match selector values by the name of the selector, select **Match Selectors by Control Name**.

**To define additional links and determine link behavior**

11 Repeat the steps above if you want to create additional links. You can create multiple links on the same object.

12 Select the **Open in new window** check box to have the target report/document open in a new window. This allows the target and the source documents to be visible
simultaneously. If this check box is cleared, the target report/document or web page opens and replaces the source document.

13 If the object has more than one link, select the link that you want to make the default link, and click the Set as Default icon. When a user taps the object, the default link is automatically used. To access other links, the user tabs and holds the object, which displays a list of links that he can choose from.

14 Click OK to return to the source document and to save your link.

**Specifying how prompts are answered in the target**

This section contains only a brief overview of prompt answer methods. For more detailed descriptions of the different prompt answer methods, including examples, see the Linking Documents chapter of the Document Creation Guide. For background information on prompts, see the description of prompt types in Building Query Objects and Queries chapter in the Basic Reporting Guide.

To pass parameters to the target, the target must contain a prompt. When you create a link, you define how the target’s prompt is answered, by selecting one of the following prompt answer methods:

- **Answer with the same prompt from the source**. The same prompt answers that were used to execute the source are used in the target. This option requires that the source and target use the same prompt. If the same prompt does not exist in the source and in the target, the user is prompted to provide an answer when the target is executed.

- **Prompt user**. When the target is executed, the user is prompted to provide answers manually.

- **Answer with an empty answer**. The prompt in the target is ignored, which means that the prompt is not answered. No prompt answer is provided from the source and the user is not prompted to provide answers.

  The prompt must not be required, because if the prompt is required, the user is prompted to provide an answer when the target report is executed by clicking the link.

The **Answer with an empty answer** method, when used in conjunction with the dynamic prompt answer method, allows a source document to answer one prompt in a target with the user selection, while ignoring any other prompts.

- **Use default answer**. The prompt is answered by the default prompt answer for the prompt in the target. If the target prompt does not have a default answer, the **Answer with an empty answer** method is used. In this case, the prompt is not answered, unless it is required, in which case the user is prompted to provide an answer.

The following prompt answer methods are not intended to be used with buttons, since a button does not select an object in the source. If you use one of them with a button, the user is prompted for an answer. For a button, use one of the methods described above.
• **Answer dynamically.** The object selected in the source is passed to the prompt in the target. If this object does not answer the target prompt, the **Answer with an empty answer** method is used. In this case, the prompt is not answered, unless it is required, in which case the user is prompted to provide an answer.

Available only for attribute element prompts and value prompts.

• A hierarchy prompt allows users to select prompt answers from one or more attribute elements from one or more attributes. This prompt gives users the largest number of attribute elements to choose from when they answer the prompt to define their filtering criteria. The **Answer using all valid units** prompt answer method passes selections made on the source document, rather than just the selection made for the link, to the target. To restrict the prompt answer to just the selected attribute element, use the **Answer using current unit** prompt answer method. Like the Answer dynamically method, only the attribute element that is selected is passed to the target.

These two prompt answer methods are available only for hierarchy prompts.

- **Answer using current unit.** The prompt is answered using the object selected in the source. If the user selects an attribute header rather than a specific attribute element, the **Answer with an empty answer** method is used. In this case, the prompt is not answered, unless it is required, in which case the user is prompted to provide an answer.

- **Answer using all valid units.** Any object to the left of or above the user selection in the source is used as the prompt answer for the target. In other words, this method passes all the selections made on the source, rather than just the selection made for the link. If the user does not select any valid objects (for example, the user selects an attribute header rather than a specific attribute element), the **Empty answer** method is used. That is, the prompt is not answered, unless it is required, in which case the user is prompted.

You can select a prompt answer method for prompts that are not in the target when you are creating the link. These can be either:

• Prompts added to the target after the link is created

• Prompts that are created as the result of an answer to one of the original prompts in the target, such as a prompt-in-prompt answer

These prompts are listed as the **Any other prompt** option in the list of prompts in the Link Editor.

**Passing selector values from the source to the target**

A selector allows each user to interact with a document to display only the subset of data that he is interested in or only specific attribute elements or metrics. For background information on selectors, see the description of selector types, including examples and steps to create them, in the **Selectors** chapter in the *Dashboards and Widgets Creation Guide*.

The selector values that the user chooses in the source document can be passed to the selectors in the target document.
For example, the Regional Revenue document contains a selector for Region, so that the user can view revenue for a specific region. The document contains a link to the Category Revenue by Region document, which also contains a Region selector. If you select Central in the selector, only the Central region, with its revenue, is displayed in the document. If you tap the link for the Category Revenue by Region document, that document is displayed. The selector is set to Central, the same as the selector in the Regional Revenue document. Only Central’s data is displayed, by category.

To pass selector values from the source document to the target document, both the source and the target must contain the same selector. This means that either both documents must contain a selector with the same name (such as Region Selector), or both documents must contain a selector that uses the same source object (the object displayed in the selector, such as Region). When you create a link that passes selector values, you can choose to match the selector values either by the selector name or the source object.

**Creating a link URL to specify page-by, report view, layout, or grouping for the target**

The Link Editor provides a quick and easy way to link to documents and reports. For steps to create a link using the Link Editor, see *Creating a link for a mobile document, page 139.*

For a document on an iPhone or iPad, you can specify a report’s page-by or report view, or a document’s layout or grouping. For a document on an Android device, you can specify a report’s report view. (The report view is whether a report is displayed as a grid, a graph, or both a grid and graph.) To specify these parameters, use the hyperlink properties and create the link URLs manually, by using the object ID and link syntax, as described below.

**Prerequisites**

Before creating links, create any target documents and reports, and use the following procedure to obtain their IDs:

1. Navigate to the folder location of the report or document.
2. Right-click the report or document, and select Properties. The Properties dialog box is displayed, with the object’s ID displayed in the ID field. You can highlight and copy this ID to use in a link URL.

**To create a link using a manual URL**

1. In MicroStrategy Web, open the document in Design Mode or Editable Mode.
2. To use a text field for the hyperlink, complete the following steps (if you are adding an image, skip this step):
   a. From the Insert menu, select Text.
   b. Click in the section of the document where you want to place the text field. If you click and drag in the section, you can size the text field.
To ensure that the area of a link is large enough to recognize a user selecting it, make sure it has a height and width of at least 40 pixels.

c Type the text to be displayed to users into the text field. You can add static text, dynamic text (in the form of data fields and auto text codes), or a combination to the text field:

- To add static text, type the static text into the text field.
- To add a data field, drag and drop a dataset object from the Dataset Objects panel into the text field.
- To add an auto text code, from the Insert menu, select Auto-text, then select the code to insert.

For background information about adding data fields and auto-text codes to documents, see the Document Creation Guide.

3 To use an image for the hyperlink, complete the following steps:

a From the Insert menu, select Image.

b Click in the section of the document where you want to place the image. If you click and drag in the section, you can size the image. The Properties and Formatting dialog box opens.

To ensure that the area of a link is large enough to recognize a user selecting it, make sure it has a height and width of at least 40 pixels.

c Type the address of the image file to insert in the Source field.

d Click OK. The image appears in the document.

For background information about adding images to documents, see the Document Creation Guide.

4 Right-click the image or text field, and select Properties and Formatting. The Properties and Formatting dialog box opens.

5 From the left, click General, then select the Is Hyperlink check box.

6 Type the link URL in the Hyperlink field:

- To have the link execute a document, use the syntax:

  http://MSTRMobileURL?
  source=source
  &evt=2048001&currentViewMedia=2&documentID=objectID

- To have the link execute a report, use the syntax:
To add additional parameters to the URL, such as providing answers for the target document's prompts, see Using links to display document layouts and group data, and run reports and documents on other servers and projects, page 147.

Replace the italicized variables, as listed in the following table:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Replace With</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSTRMobileURL</td>
<td>To use an absolute path to your Mobile Server, use one of the following:</td>
</tr>
<tr>
<td></td>
<td>• For .NET</td>
</tr>
<tr>
<td></td>
<td>MobileServer/MicroStrategy/asp/Main.aspx</td>
</tr>
<tr>
<td></td>
<td>• For J2EE</td>
</tr>
<tr>
<td></td>
<td>MobileServer/MicroStrategy/servlet/mstrWeb</td>
</tr>
<tr>
<td></td>
<td>Replace MobileServer with the name of your MicroStrategy Mobile Server.</td>
</tr>
<tr>
<td></td>
<td>To use a relative path to your Mobile Server, use mstrWeb.</td>
</tr>
<tr>
<td>source</td>
<td>The page component that should handle the action and the event:</td>
</tr>
<tr>
<td></td>
<td>• For a document using J2EE format, mstrWeb.2048001</td>
</tr>
<tr>
<td></td>
<td>• For a document using .NET format, Main.aspx.2048001</td>
</tr>
<tr>
<td></td>
<td>• For a report using J2EE format, mstrWeb.4001</td>
</tr>
<tr>
<td></td>
<td>• For a report using .NET format, Main.aspx.4001</td>
</tr>
<tr>
<td>view</td>
<td>Report view mode:</td>
</tr>
<tr>
<td></td>
<td>• For grid view: 1</td>
</tr>
<tr>
<td></td>
<td>• For graph view: 2</td>
</tr>
<tr>
<td></td>
<td>• For grid and graph view: 3</td>
</tr>
<tr>
<td>objectID</td>
<td>The object ID of the target document or report</td>
</tr>
</tbody>
</table>

7 Click OK to return to the document.

Using links to display document layouts and group data, and run reports and documents on other servers and projects

Once you have created a link to run a report or a document on an iPhone or iPad, you can add parameters to the URL to perform additional tasks, such as providing answers
for prompts in the linked document, or specifying the layout to display when a document is run.

For Android and iOS devices, you can run reports or documents from a different project or server. The project or server that you link to must be defined in the mobile configuration for the device.

The table below lists the tasks you can perform, and the syntax for the link parameters to perform them. You can add these parameters to a link URL by separating each parameter with an ampersand (&). The link parameters are case sensitive. For example, the following URL contains parameters to display the first layout in a document:

```
Main.aspx?evt=2048001&currentViewMedia=2&documentID=E8663E7A4D8CDF05C060129D0061692&layoutIndex=0
```

<table>
<thead>
<tr>
<th>Task</th>
<th>Syntax</th>
</tr>
</thead>
</table>
| Run a report or document from | `Server=servername
&Project=projectname&uid=username&pwd=password`                      |
| a different project or server | Replace `servername`, `projectname`, `username`, and `password` with the |
|                               | name of the server, project, and the login name and password to use to log in |
|                               | By default, if the URL does not specify a server and project, the current server and project are used. You can specify these parameters, called session parameters, to execute a report or document in a different server or project, and provide the appropriate login name and password. |
|                               | For more information on session parameters, see the Customizing MicroStrategy Web section, in Part I: Fundamentals of Customization in the Web Software Development Kit, available in the MicroStrategy Developer Library (MSDL), which is part of the MicroStrategy SDK.

```
layoutIndex=layout
```

Replace `layout` with the number of the layout you want to display. The first layout in the document is 0, the second is 1, and so on.

```
groupByElements=
groupByUnitID
;groupByUnitType;groupByElementID
```

Replace the italicized variables with the following:

- `groupByUnitID`: The ID of the group-by attribute or consolidation. You can use `@AttributeName@GUID`, to provide the ID automatically. Replace `AttributeName` with the name of the attribute or consolidation.
- `groupByUnitType`: Use 12 for an attribute, or 47 for a consolidation.
- `groupByElementID`: The ID of the group-by element. You can use `@AttributeName@LongElementID`, to provide the ID automatically. Replace `AttributeName` with the name of the attribute or consolidation.

You can specify multiple group-by elements by separating each set of `groupByElementID` with a semicolon.
<table>
<thead>
<tr>
<th>Task</th>
<th>Syntax</th>
</tr>
</thead>
<tbody>
<tr>
<td>parameters with a caret (^), as follows:</td>
<td>groupByElements=groupByUnitID1;groupByUnitType1;groupByElementID1^groupByUnitID2;groupByUnitType2;groupByElementID2</td>
</tr>
<tr>
<td>Specify the page-by element in a report</td>
<td>pageByElements=pageByUnitID;pageByUnitType;pageByElementID</td>
</tr>
<tr>
<td>Replace the italicized variables with the following:</td>
<td></td>
</tr>
<tr>
<td>• pageByUnitID: The ID of the page-by attribute or consolidation. You can use {&amp;AttributeName@GUID}, to provide the ID automatically. Replace AttributeName with the name of the attribute or consolidation.</td>
<td></td>
</tr>
<tr>
<td>• pageByUnitType: Use 12 for an attribute, or 47 for a consolidation.</td>
<td></td>
</tr>
<tr>
<td>• pageByElementID: The ID of the page-by attribute or consolidation. You can use {&amp;AttributeName@LongElementID}, to provide the ID automatically. Replace AttributeName with the name of the attribute or consolidation.</td>
<td></td>
</tr>
<tr>
<td>You can specify multiple page-by elements by separating each set of page-by parameters with a caret (^), as follows:</td>
<td></td>
</tr>
<tr>
<td>pageByElements=pageByUnitID1;pageByUnitType1;pageByElementID1^pageByUnitID2;pageByUnitType2;pageByElementID2</td>
<td></td>
</tr>
<tr>
<td>For information about finding the ID of an individual attribute element, see To obtain the ID of a specific attribute element in a document, page 149.</td>
<td></td>
</tr>
</tbody>
</table>

To obtain the ID of a specific attribute element in a document

1. To obtain the ID of a specific element in an attribute, you must first obtain the ID of the attribute. Navigate to the folder location of the attribute.

2. Right-click the attribute, then select Properties. The Properties dialog box is displayed, with the attribute's ID displayed in the ID field.
3 Highlight the ID, then copy it to the clipboard.

4 Open the document that contains the attribute in Editable Mode.

5 Right-click the header of the attribute in the Grid/Graph, then point to Attribute Forms, and select ID. The ID of each element in the attribute is displayed.

6 The full attribute element ID is the ID of the element’s attribute, followed by a colon (:) and the ID of the element displayed in the grid. For example:

   8D679D4B11D3E4981000E787EC6DE8A4:2

---

**Using links to access features within the MicroStrategy Mobile application**

You can use links in a document to access specific features within the MicroStrategy Mobile application for iPhone or iPad. For example, you can add a link to display the My Reports folder or email a screenshot of the document.

You can use the Link Editor to quickly create the following links, instead of typing the URL into a hyperlink, to display the:

- Help
- Home screen
- Report List
- Shared Library
- Status screen
- Settings screen

For steps, see *Creating a link for a mobile document, page 139.*

The procedure to create the following hyperlinks is identical to that for creating hyperlinks to the device’s installed applications. For steps, see *To create a hyperlink to an application on the device, page 136.*

The table below lists the types of links you can create, and the URL to use to create them.

<table>
<thead>
<tr>
<th>Task</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>View a folder</td>
<td>mstr://?evt=2001&amp;folderID=foldernumber</td>
</tr>
<tr>
<td></td>
<td>Replace <em>foldernumber</em> with the ID of the folder you want to display.</td>
</tr>
<tr>
<td>Task</td>
<td>URL</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Display the Shared Reports folder</td>
<td>mstr://?evt=2001&amp;systemFolder=7</td>
</tr>
<tr>
<td>Display the My Reports folder</td>
<td>mstr://?evt=2001&amp;systemFolder=20</td>
</tr>
<tr>
<td>Email a screenshot of the document</td>
<td>mstr://?evt=3037</td>
</tr>
<tr>
<td>The screenshot is added to the email as an attachment. To add a subject to the email, add &amp;emailSubject=subject to the end of the URL, then replace subject with the subject. For example, to send an email with the subject “Your requested report”, type mstr://?evt=3037&amp;emailSubject=Your+requested+report.</td>
<td></td>
</tr>
<tr>
<td>Annotate and Share the report or document</td>
<td>mstr://?evt=3175</td>
</tr>
<tr>
<td>Print the current document</td>
<td>mstr://?evt=3103</td>
</tr>
<tr>
<td>Print a target document</td>
<td>mstr://?evt=2048001&amp;src=source.2048001&amp;visMode=0&amp;currentViewMedia=20&amp;documentID=objectID</td>
</tr>
<tr>
<td>Where:</td>
<td></td>
</tr>
<tr>
<td>• source is the page component that should handle the action and the event.</td>
<td></td>
</tr>
<tr>
<td>• objectID is the object ID of the target document.</td>
<td></td>
</tr>
<tr>
<td>Display the Help</td>
<td>mstr://?evt=3994</td>
</tr>
<tr>
<td>Display the Home screen</td>
<td>mstr://?evt=3995</td>
</tr>
<tr>
<td>Display the Shared Library</td>
<td>mstr://?evt=3996</td>
</tr>
<tr>
<td>Display the Reports or Subscriptions screen, as applicable</td>
<td>mstr://?evt=3997</td>
</tr>
<tr>
<td>Display the Status screen</td>
<td>mstr://?evt=3998</td>
</tr>
<tr>
<td>Display the Settings screen</td>
<td>mstr://?evt=3999</td>
</tr>
<tr>
<td>Log out the user</td>
<td>mstr://?evt=4000</td>
</tr>
<tr>
<td>Return to the</td>
<td>mstr://?evt=3124</td>
</tr>
<tr>
<td>Task</td>
<td>URL</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>previously viewed document</td>
<td>mstr://?evt=2048076&amp;psName=PANEL_STACK_NAME&amp;pName=PANEL_NAME</td>
</tr>
</tbody>
</table>
| Select a specific panel in a panel stack | Replace the italicized variables as follows:  
• PANEL_STACK_NAME: The name of the panel stack to target  
• PANEL_NAME: The name of the panel to select  
To select panels from multiple panel stacks, use the following format:  
mstr://?evt=2048076&psKey=PanelStack1|PanelStack2|...&pKey=PanelK1|PanelK2|... |
| Display a specific Information Window | mstr://?evt=2048500&panelName=Name |
| Display a selection screen that allows you to specify the element to use to group data | mstr://gb/?e={&AttributeName@ElementID}&a={&AttributeName@GUID}&s=style |
| Re-prompt the document | mstr://pr |

**Linking from documents with buttons and tab bars**

A button can send a user to the various screens, such as the Home screen or the Report List, on an iPad, iPhone, or Android device. A button can run a report or document, or open a web page or Information Window. An Information Window lets users view additional information in a pop-up window. In MicroStrategy Web, a button can open a web page, or run a report or document.
For example, the document shown below contains several buttons. Notice that all the buttons are displayed in white.

![Retail Store Management](image)

A button can change its appearance after a user taps it. When a user taps the Customer button, for example, the button changes to blue, as shown below. This is referred to as its highlight state. The button’s initial state (when it is not selected) is referred to as its normal state.

![Customer Button](image)

A customer analysis document is displayed. If a user tapped the Sales Analysis button instead, a regional sales document is displayed. If a user taps the button with the envelope, the email program is launched.

The different button styles determine whether a caption, icon, or both are displayed. A caption is the text that describes the button’s action. The icon is a small image that represents the button’s action. If both a caption and an icon are displayed, the button style also determines where the caption and icon are located in relation to each other. The icon can be to the left or the right of the caption, or it can be above the caption.

You can also select the custom style, which allows you to select an image to display as the button. The image can be any shape, size, and color. The image is displayed on your mobile device without any additional formatting. You can use two different images, one for the normal state and the other for the highlighted state. The example above uses custom style buttons.

Each button can have more than one link. The same button can be linked to multiple web pages, reports, and documents. If a default link has been defined, that link is executed when the button is tapped. To open a list of links, tap and hold the button. If a default link has not been defined, tapping the button opens the list of links.

You can add a single button to a document, or add multiple buttons with different formatting in different locations on the document; see Creating a button to link from a Mobile document, page 157 for steps. For documents displayed on an iOS device, you can
create a bar of buttons that are all formatted the same, called a tab bar. A tab bar displays at the bottom of the screen, similar to tab bars in other iOS applications.

You create the tab bar as a navigation document, which contains only the tab bar. This allows the tab bar to display all the time, even when a user changes panel stacks or layouts on a document, or switches to a different document. In effect, you are creating a navigation system for the set of Mobile documents that are linked with the tab bar. The tab bar is shown only when navigating the documents linked in the tab bar. The tab bar is not displayed if either of the following cases:

- A user opens a linked document from a folder, not from the navigation document or tab bar.
- A user opens a document that is not linked in the tab bar.

The navigation document becomes the home page or launch site for this set of documents. When a user opens the navigation document, the tab bar and the document linked in the first button are displayed.

For example, a navigation document, called Store Dashboards, has been created for a project. The user opens Store Dashboards, and the Overview dashboard is displayed, along with the tab bar, as shown below:

Notice that the button for Overview is selected in the tab bar. The user taps the button for Customer, which causes that document to display, as shown below:
Notice that the button for Customer is selected in the tab bar, and there is no Back button at the upper left.

### Creating a tab bar to hold buttons

A tab bar is a bar of navigation buttons, displayed at the bottom of an iOS document. The tab bar is displayed all the time, even when a user changes panel stacks or layouts on a document, or switches to a different document. In effect, you are creating a navigation system for a set of Mobile documents.

You create the tab bar as a navigation document, which contains only the tab bar. You can customize the background tint of the tab bar, and the color of the selected button’s icon (the highlight state). When the tab bar is displayed on a mobile device, the caption and icon colors use a generic iOS format to enhance readability. In the examples above, the background of the tab bar has a tint of black, with the selected button’s icon highlighted in blue. The selected button’s caption is automatically displayed in white, while the captions of the other buttons automatically remain gray.

You can add buttons to the tab bar, remove buttons from the tab bar, and move the buttons around on the tab bar. For each button on the tab bar, you define the link and the icon. If you define more than five buttons for an iPhone document or eight for an iPad document, a button labeled More is automatically added to the tab bar.

Take into account the height of the tab bar, which is 49 points, when you design a document that will be linked from a tab bar.
Best practices for creating the button image

The button’s image is used by iOS to create the icon that is displayed in Mobile, so you do not need to create a full-color image for the button. Some best practices to create the image for the button include:

- Use pure white with the appropriate alpha transparency.
- Do not use a drop shadow.
- Use anti-aliasing.
- Bevels should be 90°. The bevel should look like a light source is positioned at the top of the image.

To ensure that the tab bar icon renders sharply on devices with different resolutions, follow these suggestions:

- If you are designing the tab bar to be displayed on a high-resolution (retina display) device, design your button icon to be about 60 x 60 pixels. Add the text @2x as the suffix of the image name, for example, icon@2x.jpg. For devices with very high-resolution screens, such as the iPhone 6 Plus, use the suffix @3x. The image is shown as designed on a high resolution device, without any stretching or shrinking at the pixel level. On low resolution devices, the image is scaled to support the lower resolution.

- If you are designing the tab bar for low-resolution devices, design your button icon to be about 30 x 30 pixels. Do not include the @2x suffix in the image name. The image is shown as designed on low resolution devices, without any stretching or shrinking at the pixel level. On high resolution devices, the image is scaled to four times its original size at the pixel level, causing the image to look blurry.

To add a tab bar for an iPad or iPhone document


2. Select either Navigation for iPad or Navigation for iPhone, and click OK. The Document Editor opens in Design Mode. A tab bar is already displayed in the document template, with two buttons, in the Document Footer. No other document sections are available.

To select the tab bar’s colors

3. Right-click the tab bar (not a button) and select Properties and Formatting. The Properties and Formatting dialog box opens.

4. From the left, select Color and Lines.

5. From the Color drop-down list, select the tint of the tab bar’s background.
6. From the **Highlight state color** drop-down list, select the color of a button’s icon after it is tapped. All buttons on the tab bar use the same color in their highlight state (after being tapped).

7. Click **OK** to save your changes and return to the document.

The tab bar and buttons do not change color in Design Mode; the colors apply when the document is displayed in MicroStrategy Mobile.

Now you can add buttons to the tab bar, as described in *Creating a button to link from a Mobile document, page 157* below. You can add as many buttons as necessary. If you define more than five buttons for an iPhone document or eight for an iPad document, a button labeled More is automatically added to the tab bar.

**Creating a button to link from a Mobile document**

**Prerequisites**

- If you are adding a button to a tab bar, you must have already created the tab bar. For steps, see *Creating a tab bar to hold buttons, page 155*.

- If you are using an icon on the button, you need to know the location of the images to be used. You can specify a single image, or you can specify an image to display before the button is tapped and a different image after it is tapped. If the button is part of a tab bar, the images should be monochromatic for the best display.

---

**To add a button**

1. In MicroStrategy Web, open the document in Design Mode or Editable Mode.

2. You can add a stand-alone button or add a button to a tab bar:

   - To add a stand-alone button, from the **Insert** menu, point to **Button**, and then select a style. When you move the cursor to the Layout area, the pointer becomes crosshairs. Click in the desired location in the Layout area to add a button of the default size. If you click and drag in the Layout area, you can size the button.

   - To add a button to a tab bar, click the Add Button icon on the tab bar. A new button is added to the tab bar, with the correct size.

3. If the selected button style displays a caption, double-click the caption text box. Type the caption to display, and press ENTER.

4. Right-click the button, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

5. From the left, select **Button**.

   You can change the button style, if the button is stand alone.
6 If the selected button style displays an icon or a custom image, specify the source of the images.

- The normal state is displayed before the user taps it. Type the location and file name of the image to display in the normal state, in the **Normal state source** field.

- The highlighted (or selected) state is displayed after the user taps it. Type the location and file name of the image to display in the highlighted state, in the **Highlight state source** field.

   **If the button is displayed in a tab bar, the images should be monochromatic.**

7 If the button style is set to Caption only, you can determine whether the button is displayed as highlighted only:

- To display the button as highlighted only after a user taps it, clear the **Show button in highlight state by default** check box.

- To display the button as highlighted only, select the **Show button in highlight state by default** check box. When a user taps the button, the action is triggered, but the button does not change.

8 Click **OK** to save your changes and return to the document.

Next, you define the link or the Information Window for the button. For steps to define the link, see *Creating a link for a mobile document, page 139*. For steps to define an Information Window, see *Providing additional information to users: Information Windows, page 38*.

### Formatting a stand-alone button

To format a stand-alone button, you can:

- **Size the button**

- **Select the button’s background color before and after it is tapped**

- **Select whether to display a border around the button when the document is viewed in MicroStrategy Web**

- **Format the font of the button’s caption**

- **Select the button’s caption font color before and after the button is tapped**

This formatting applies to a stand-alone button, because a tab bar specifies the same formatting for all of its buttons. Steps to format the tab bar’s colors and the caption’s font are included in the procedure to create a tab bar; see *To add a tab bar for an iPad or iPhone document, page 156*. For a button with a custom style, you can size the button, but all other formatting comes from the image that you select.

### Prerequisite

Before you can format a stand-alone button, you must have created the button. For steps, see *Creating a button to link from a Mobile document, page 157*.
To format a stand-alone button

1. In MicroStrategy Web, open the document in Design Mode or Editable Mode.

2. Right-click the button and select Properties and Formatting. The Properties and Formatting dialog box opens.

To size the button

3. From the left, select Layout.

4. In the Size area, type the Width and Height in the fields. The icon and caption, if both are used, are automatically resized to maintain their proportions in the button.

To select the button’s colors

These options are unavailable for a button with a custom style, since the image is displayed as is.

5. From the left, select Color and Lines.

6. From the Style drop-down, select one of the following:
   - Flat
   - Glossy

7. From the Normal state color drop-down, select the button’s color before it is tapped.

8. From the Highlight state color drop-down, select the button’s color after it is tapped.

9. Determine whether the button has a border, by doing one of the following:
   - To hide borders, select None.
   - To display borders, select All. From the drop-down list, select the color of the borders around the button.

To format the caption’s font

These options are unavailable for a button with a custom style, since the image is displayed as is.

10. From the left, select Font.

11. Select the Font, Style, and Size of the caption text.

12. From the Normal state color drop-down, select the caption’s color before the button is tapped.
13 From the **Highlight state color** drop-down, select the caption’s color after the button is tapped.

14 Click **OK** to save your changes.

## Storing links on NFC tags on Android devices

You can store a link on Near Field Communications (NFC) tags to open the Home screen, Settings screen, Help screen, or the contents of the Shared Library folder on an Android device through MicroStrategy Mobile. An NFC tag is a small piece of hardware that broadcasts short-range wireless signals to compatible devices. When a Mobile user places her NFC capable Android device within the required range of the NFC tag, a link is broadcast to her device. This link opens MicroStrategy Mobile on the Android device and displays the specified screen.

A Mobile user can only view the projects that her device has been configured to access. When creating a link for NFC tags, ensure that your target audience is using a mobile configuration that provides access to the specified report, document, or folder.

To store a link on your NFC tags, use a third-party NFC programming app on an NFC capable Android device. The table below lists the types of links you can create on NFC tags, and the URL to use to create them. The URLs in the table open the default MicroStrategy Mobile application. If your organization has a customized version of MicroStrategy Mobile, replace `mstr://` with your customized URL prefix.

<table>
<thead>
<tr>
<th>Task</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display the Home screen</td>
<td><code>mstr://?evt=3995</code></td>
</tr>
<tr>
<td>Display the Settings screen</td>
<td><code>mstr://?evt=3999</code></td>
</tr>
<tr>
<td>Display the Help screen</td>
<td><code>mstr://?evt=3994</code></td>
</tr>
<tr>
<td>Display the contents of the Shared Library folder</td>
<td><code>mstr://?evt=3996</code></td>
</tr>
<tr>
<td>Display the previously viewed screen (Back)</td>
<td><code>mstr://?evt=3124</code></td>
</tr>
</tbody>
</table>
ADMINISTERING MICROSTRATEGY MOBILE

This section explains how to install and configure MicroStrategy Mobile on an Intelligence Server, and how to install and configure the MicroStrategy Mobile application on mobile devices. It also explains how to subscribe to reports, and the ways in which administrators can manage multiple subscriptions simultaneously.

Prerequisites

- This section is primarily intended for system administrators. As such, readers are assumed to have various MicroStrategy system administrator privileges.

The topics covered in this section include:

- Overview: MicroStrategy Mobile architecture, page 161
- Installing and configuring Mobile Server, page 162
- Working with projects and managing Intelligence Server, page 168
- Configuring and viewing logs and statistics, page 180
- Deploying and configuring the MicroStrategy Mobile application, page 186
- The Mobile subscription workflow, page 224
- Managing Mobile report subscriptions, page 225
- Customizing error messages for mobile devices
- Troubleshooting MicroStrategy Mobile, page 240

Overview: MicroStrategy Mobile architecture

The following diagram shows MicroStrategy Mobile as a part of the MicroStrategy architecture:
There are two main components in a MicroStrategy Mobile deployment:

- The MicroStrategy Mobile client applications, installed on an iPhone, iPad, or Android device. The client applications send requests for reports and documents to Mobile Server, and display the reports when they are received. For steps to deploy and configure client applications, see Deploying and configuring the MicroStrategy Mobile application, page 186.

- MicroStrategy Mobile Server, which performs the following functions:
  - Maintains the configurations for devices, and connects the devices to projects on Intelligence Server.
  - Receives reports and documents from Intelligence Server, and delivers them to the iPhone, iPad, or Android device.

For steps to install Mobile Server, see Installing and configuring Mobile Server, page 162.

### Installing and configuring Mobile Server

To install MicroStrategy Mobile Server, select the MicroStrategy Mobile Server component of MicroStrategy Mobile during your MicroStrategy installation. For system requirements and specific instructions on how to install or upgrade MicroStrategy, see either the MicroStrategy Installation and Configuration Guide or the MicroStrategy Upgrade Guide.

MicroStrategy Mobile affects several specific areas that may require an administrator's attention. These include:

- Authentication settings for the Mobile Server application, page 163
• Privileges and permissions, page 163
• SSL encryption, page 164
• Client authentication with a certificate server, page 164
• Destination folder for the Photo Uploader widget and Signature Capture input control, page 168

Authentication settings for the Mobile Server application

The following instructions apply only to authenticating the Mobile Server application on the machine that it runs on. For instructions on setting up user authentication for your MicroStrategy environment, such as LDAP or single sign-on authentication, see the System Administration Guide.

If you are using the ASP.NET version of Mobile Server, make sure that you configure the IIS authentication settings for the Mobile Server application. Otherwise certain reports and documents may display incorrectly or fail to execute.

You must make sure that IIS uses anonymous authentication to access all directories at the Mobile Server application level. In addition, you must enable integrated Windows authentication for all directories except the following image directories:

• MicroStrategyMobile/asp/images
• MicroStrategyMobile/images

Integrated Windows authentication must be disabled for these directories.

For instructions on how to configure the authentication settings in your version of IIS, see the IIS documentation.

Privileges and permissions

Reports viewed in Mobile are subject to the same security restrictions as reports viewed in any other MicroStrategy client. In particular, access control lists (ACLs) and security filters are applied to reports viewed in Mobile in the same way as in MicroStrategy Web or Developer.

To view reports in Mobile, users must have the Use MicroStrategy Mobile privilege for all projects containing reports they want to view. In addition, to view Report Services documents in Mobile, users must have the Mobile View Documents privilege for all projects containing documents they want to view. Both these privileges can be found in the MicroStrategy Mobile privilege group.

It is the responsibility of the system administrator to ensure that MicroStrategy Mobile users have the privileges and permissions necessary to view reports and documents. In general, this means that users should have the Execute permission for any reports they are subscribed to, and for any objects contained in those reports.

For information about setting user privileges and object permissions, see the Setting Up User Security chapter in the System Administration Guide, or the MicroStrategy
Developer Help). For a complete list of user privileges, see the List of Privileges chapter in the Supplemental Reference for System Administration.

SSL encryption

MicroStrategy Mobile is equipped to take advantage of Secure Socket Layer (SSL) encryption, to ensure that your data remain secure at all stages of transmission. SSL transmissions can be identified by the https:// prefix, instead of the standard http:// prefix.

For detailed instructions on configuring Mobile Server to use SSL, see the Enabling Secure Communication chapter in the System Administration Guide.

If you are using MicroStrategy Mobile for Android devices, you can specify a location for trusted certificates in the Connectivity Settings tab in the Mobile Configuration.

Client authentication with a certificate server

MicroStrategy Mobile Server can use a certificate server to authenticate the identity of Android and iOS mobile clients. This certificate server can run on the same application server as the Mobile Server, or on a different one.

When client authentication is enabled and a certificate server is configured, a valid certificate must be issued to mobile clients that allows them to gain access to the Mobile Server. This process ensures that each mobile device is authorized to access the system, and allows you to deny authentication requests from devices which may have been compromised.

To set up the client certificate server

1. Set up SSL between mobile devices and MicroStrategy Mobile using the procedure in the Administering MicroStrategy Web and Mobile chapter in the System Administration Guide.

2. Install the certificate server using the ASP or JSP installation file from your MicroStrategy installation folder. The ASP files are located in MicroStrategy\Mobile Server ASPx\CertificateServer. The JSP file is located in MicroStrategy\Mobile Server JSP\CertificateServer.war.

Note the following:

- To set up a certificate server with Microsoft Internet Information Services (IIS) 6.0, you must have the Read Scripts and Run Scripts permissions, and you must deploy the certificate server as a virtual directory.

- To set up a certificate server with Microsoft Internet Information Services (IIS) 7.0 or newer, you must deploy the certificate server as an application.
3 You must choose a signed certificate from a third party certificate authority to configure the certificate server. Either use the same certificate generated for SSL, or obtain a different one.

4 Once you have the certificate, install it on your application server, add it to a previously created trust list, and enable client authentication. Refer to your application server documentation for information on installing the certificate, creating a trust list, and configuring the application server to use client authentication.

**Configuring the certificateServerConfig.xml file**

5 Specify the Intelligence Server and project name in the certificateServerConfig.xml file, located by default in MicroStrategy\Mobile Server ASPx\CertificateServer\ WEB-INF\xml\CertificateServerConfig.xml for the ASP version, or MicroStrategy\Mobile Server JSP\ CertificateServer\WEB-INF\xml\ certificateServerConfig.xml for the JSP version. This information is used to authenticate clients before they have obtained a certificate.

6 In the certificateServerConfig.xml file, ensure that the correct provider is selected. This information is dependent on the MicroStrategy Mobile Server platform, as displayed in the following example for Tomcat application servers:

   <provider class="com.microstrategy.web.certificate.TomcatCertificateProvider"/>

7 In the certificateServerConfig.xml file, ensure that the X.509 parameters are correctly configured for your environment.

8 In the certificateServerConfig.xml file, specify your signing certificate format as either Java Keystore (JKS) or Distinguished Encoding Rules (DER).

9 To enable the certificate server to revoke specified client certificates, set up the Certificate Revocation List (CRL) on the application server. Also configure the CRL Distribution Point (CDP) to designate a URL where the application server can check for CRLs. Configure the CDPLocation parameter in the certificateServerConfig.xml file by specifying the URL for the CRL. Refer to your application server documentation for information on configuring the CRL and CDP.

**Enabling the certificate server in the Mobile configuration**

10 When creating your MicroStrategy Mobile configuration, in the iPhone Settings, iPad Settings, Phone Settings, or Tablet Settings tab, select the Use Certificate Server check box, and in the text field, specify a URL for the certificate server. Because the certificate server must be configured with SSL, ensure that the URL employs the fully qualified name of the certificate server, and begins with https://, as in the following examples.

   ASP:

JSP:

https://fully_qualified_domain_name:port/
CertificateServer

or

https://fully_qualified_domain_name:port/
CertificateServer/servlet/certificate

where:

• fully_qualified_domain_name:port is the location and port of your certificate server. For example, machine_name.domain.com:8443.

For more information on creating a mobile configuration, see Configuring MicroStrategy Mobile for iPhone or iPad, page 189 or Configuring MicroStrategy Mobile for Android, page 197.

**Downloading a certificate to a mobile client**

11 When a client requires a certificate, the Mobile user is prompted to begin the download. When a user clicks OK to begin the download, she is prompted to log in to the project specified in the certificateServerConfig.xml file.

Users can also manually download a client certificate from the Advanced Settings screen of the MicroStrategy Mobile application. For more information, see Downloading a client certificate from the certificate server, page 219.

**Managing certificates with the certificate server API**

12 To obtain a certificate for each mobile device through the API, use one of the following URLs.

**ASP:**

https://fully_qualified_domain_name:port/

&loginParams=<auth><device_id>mobile_device</device_id><pkcs12_password>keystore_password</pkcs12_password><field n="pwd" v="MSTR_password"/><field n="login" v="MSTR_login"/></auth>

**JSP:**

https://fully_qualified_domain_name:port/
CertificateServer/servlet/certificate?action=GetCertificate

&loginParams=<auth><device_id>mobile_device</device_id><pkcs12_password>keystore_password</pkcs12_password><field n="pwd" v="MSTR_password"/><field n="login" v="MSTR_login"/></auth>

where:
• **fullyQualifiedDomainName:port** is the location and port of your certificate server. For example, `machine_name.domain.com:8443`.

• **mobile_device** is the UUID of the mobile device.

• **keystore_password** is the pkcs12 password that is used for the generated keystore.

• **MSTR_password** is the user’s MicroStrategy password for the project specified in `certificateServerConfig.xml`.

• **MSTR_login** is the user’s MicroStrategy login for the project specified in `certificateServerConfig.xml`.

13 To view a list of certificates on the certificate server through the API, the application server administrator uses one of two URLs, as displayed in the examples below.

**ASP:**

```plaintext
```

**JSP:**

```plaintext
```

where **fullyQualifiedDomainName:port** is the location and port of your certificate server. For example, `machine_name.domain.com:8443`.

14 To revoke a specific certificate through the API, the application server administrator uses one of two URLs, as displayed in the examples below.

**ASP:**

```plaintext
```

**JSP:**

```plaintext
https://fullyQualifiedDomainName:port/servlet/certificateAdmin?action=RevokeCertificate&serialNumber=serial_number
```

where:

• **fullyQualifiedDomainName:port** is the location and port of your certificate server. For example, `machine_name.domain.com:8443`.

• **serial_number** is the serial number of the certificate to be revoked. This number can be retrieved from the list of certificates.

15 To revoke all certificates for a specific mobile device through the API, the application server administrator uses one of two URLs, as displayed in the examples below.
ASP:


JSP:


where:

• fully_qualified_domain_name:port is the location and port of your certificate server. For example, machine_name.domain.com:8443.

• device_uuid is the universally unique identifier of the mobile device.

Destination folder for the Photo Uploader widget and Signature Capture input control

The Photo Uploader widget allows Mobile users to upload images from their mobile devices to a central location that is specified in the microstrategy.xml file on the Mobile Server. Images of signatures provided using the Signature Capture input control in a Transaction Services-enabled document are also uploaded to this location. By default, the microstrategy.xml file is located in your MicroStrategy installation location in MicroStrategy\Mobile Server ASPx\WEB-INF or in MicroStrategy\Mobile Server JSP\WEB-INF, depending on the application server that runs your Mobile Server.

Configure the desired location for saved images by specifying a relative or absolute path in the value field of the resourcesFolderSavedImage parameter in the microstrategy.xml file. If you have clustered Mobile Servers in your environment and you would like to store all saved images in a central location, specify an absolute path to the desired location in the microstrategy.xml file of each individual Mobile Server, and ensure that all Mobile Servers are able to access that location.

Working with projects and managing Intelligence Server

To allow MicroStrategy Mobile users to access MicroStrategy projects, you must create a connection between a MicroStrategy Intelligence Server and Mobile Server. You can create connections between Intelligence Server and Mobile Server, disconnect from Intelligence Server, and specify additional options, such as whether traffic between mobile devices, Mobile Server, and Intelligence Server is encrypted or whether to enable Single Sign-on (SSO) authentication for MicroStrategy Mobile with third-party trusted authentication providers such as Tivoli or SiteMinder.
Your users can also log into MicroStrategy Mobile using MicroStrategy Usher. Usher enables users to electronically validate their identity using the Usher app and mobile badge on their smartphone, instead of entering a password.

For steps, see the appropriate links below:

- *Creating a new connection to Intelligence Server, page 169*
- *Connecting to an available Intelligence Server, page 171*
- *Disconnecting from an Intelligence Server, page 172*
- *Specifying default connection, load balance, and timeout settings, page 172*
- *Encrypting session information, page 174*
- *Maintaining TCP/IP connections through a firewall, page 175*
- *Enabling single sign-on authentication for Mobile, page 175*
- *Enabling Usher authentication for Mobile, page 177*

**Creating a new connection to Intelligence Server**

To allow Mobile users to access projects, you must create a connection between a MicroStrategy Intelligence Server and Mobile Server.

Mobile automatically recognizes new Intelligence Servers added to a cluster of Intelligence Servers in the MicroStrategy system. Once an Intelligence Server is added to the system from MicroStrategy Developer, it is automatically listed in Mobile as a part of the Intelligence Server cluster.

You must connect to an Intelligence Server of the same product version as the Mobile client you have installed. If the Intelligence Server is an older version, an error message prompts you to upgrade your Intelligence Server to a compatible version.

**To create a new Mobile-to-Intelligence Server connection**

1. Access the Mobile Server Administrator page:
   - In Windows: From the **Start** menu, point to **Programs**, then **MicroStrategy Tools**, and select **Mobile Administrator**. The Mobile Server Administrator web page opens.
   - In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the `mstrMobileAdmin` servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2. In the **Add a server manually field**, specify the DNS name of the Intelligence Server machine.
3 Click Add. The Server Properties page opens and displays server name, connection status, and server port number.

4 Select one of the following to determine when and how Mobile connects to the Intelligence Server.
   • To ensure that Mobile server automatically reconnects to the Intelligence Server when the Mobile server is started or restarted, select **Automatically connect to Intelligence Server when Mobile Server or Intelligence Server is restarted**.
   • To ensure that the administrator must manually create a connection to the Intelligence Server by clicking Connect, select **User manually connects Mobile to Intelligence Server**. This is the default option.

5 In the Port field, specify the port number used to connect to the Intelligence Server.

6 If the Intelligence Servers are in a cluster, you can determine the number of connections within the "pool" of connections. The pool is the number of connections between Mobile Server and the Intelligence Servers. This is defined at the Intelligence Server level, not at the cluster level. This allows you to grant more or fewer initial connections depending on the size of the Intelligence Server machines.
   • Define the pool size for each Intelligence Server in the cluster in the **Initial pool size** field. The default initial pool size is 5.
   • Define the maximum pool size for the Intelligence Servers in the **Maximum pool size** field. The default maximum pool size is 50.

7 Specify how jobs are balanced between Intelligence Servers in a cluster by entering a value in the Load balance factor field. For more powerful servers in a cluster, this value can be increased to provide an appropriate balance. A larger load balance factor means the server supports a greater load in the server cluster in which it resides. For example, if two servers make up a cluster, one server has a balance factor of 3 and the other has a balance factor of 2, and 20 users log in, 12 are supported by the first server and 8 by the second. The default Load balance factor value is 1. For detailed information about load balancing, see the Clustering chapter in the *MicroStrategy System Administration Guide*.

8 If there is a firewall between Mobile Server and Intelligence Server, you can ensure that the firewall does not remove connections between Mobile Server and Intelligence Servers. To do this, select the **Keep the connection alive between the Mobile server and Intelligence Server** check box. When this setting is enabled, Mobile Server sends a signal to Intelligence Server on each open TCP connection periodically, so that the firewall does not see the connection as idle. For detailed information, see *Maintaining TCP/IP connections through a firewall, page 175*.

9 If no authentication providers are configured for single sign-on authentication, a Setup button is displayed next to **Trust relationship between Mobile Server and MicroStrategy Intelligence Server**.

   Click Setup to create a trust relationship. The Setup Trust Relationship with MicroStrategy Intelligence Server page opens. Do the following:
a Select an authentication mode, and then enter the user name and password for that authentication mode. For additional details about the authentication modes, refer to the Authentication chapter of the MicroStrategy System Administration Guide.

b Enter the path to the Mobile Server application in the Mobile Server Application field.

c Click Create Trust Relationship.

10 Click Save. The Intelligence Server is added to the Connected Servers list. You can connect to this server by clicking Connect.

Related topics

- Connecting to an available Intelligence Server, page 171
- Maintaining TCP/IP connections through a firewall, page 175

Connecting to an available Intelligence Server

To allow Mobile users to access reports and documents, you must connect Mobile Server to one or more Intelligence Servers. If you or another administrator has already created a connection from Mobile Server to an Intelligence Server in the system, you can connect to the Intelligence Server.

Available Intelligence Servers are listed in the Unconnected servers list in the Servers page of the Mobile Server Administrator page.

Prerequisite

- It is assumed that a connection between Mobile and Intelligence Server has already been created by an administrator. For steps to create a new connection between Mobile and an Intelligence Server, see Creating a new connection to Intelligence Server, page 169.

To connect Mobile to an available Intelligence Server

1 Access the Mobile Server Administrator page:

   • In Windows: From the Start menu, point to Programs, then MicroStrategy Tools, and select Mobile Administrator. The Mobile Server Administrator web page opens.

   • In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2 From the pane on the left, select Servers.
3 In the **Action** column in the Unconnected servers list, click **Connect** for the Intelligence Server to connect to. The Intelligence Server moves to the Connected servers list and Mobile Server is connected to the Intelligence Server.

**Related topics**

- *Creating a new connection to Intelligence Server, page 169*

**Disconnecting from an Intelligence Server**

You may need to disconnect Mobile from an Intelligence Server if, for example, you are performing maintenance on the Mobile Server machine. Disconnecting Mobile from an Intelligence Server disables Mobile users from accessing projects on the Intelligence Server.

**To disconnect Mobile from an Intelligence Server**

1 Access the Mobile Server Administrator page:

   - In Windows: From the **Start** menu, point to **Programs**, then **MicroStrategy Tools**, and select **Mobile Administrator**. The Mobile Server Administrator web page opens.
   
   - In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2 From the pane on the left, select **Servers**.

3 In the **Action** column in the Connected servers list, click **Disconnect** for the Intelligence Server to disconnect from. The Intelligence Server moves to the Disconnected servers list and Mobile is disconnected from the Intelligence Server.

**Related topics**

- *Creating a new connection to Intelligence Server, page 169*
- *Connecting to an available Intelligence Server, page 171*

**Specifying default connection, load balance, and timeout settings**

You can specify default connection, load balance, pool size, and timeout settings for all connections to Intelligence Servers.

These default settings can be changed for an individual server. However, certain settings can be specified only at this default Intelligence Server level that apply to all server connections. For example, timeout settings cannot be applied to specific Intelligence Server connections, but can be applied to all Intelligence Server connections.
To specify default connection, load balance, and timeout settings

1. Access the Mobile Server Administrator page:
   - In Windows: From the Start menu, point to Programs, then MicroStrategy Tools, and select Mobile Administrator. The Mobile Server Administrator web page opens.
   - In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2. From the pane on the left, select Default properties. The Default Server Properties page opens.

3. Select one of the following to determine when and how Mobile Server connects to Intelligence Servers.
   - To ensure that the Mobile Server automatically reconnects to Intelligence Servers when the Mobile Server is started or restarted, select Automatically connect to Intelligence Server when Mobile Server or Intelligence Server is restarted.
   - To ensure that the administrator must manually create a connection to Intelligence Servers by clicking the Connect button, select the User manually connects Mobile Server to Intelligence Server. This is the default option.

4. In the Port field, specify the default port number for all Intelligence Server connections.

5. If the Intelligence Servers are in a cluster, you can determine the number of connections within the "pool" of connections. The pool is the number of connections between Mobile and the Intelligence Servers. This is defined at the Intelligence Server level, not at the cluster level. This allows you to grant more or fewer initial connections depending on the size of the Intelligence Server machines.
   - Define the pool size for each Intelligence Server in the cluster in the Initial pool size field. The default initial pool size is 5.
   - Define the maximum pool size for the Intelligence Servers in the Maximum pool size field. The default maximum pool size is 50.

6. Specify how jobs are balanced between Intelligence Servers in a cluster by entering a value in the Load balance factor field. For more powerful servers in a cluster, this value can be increased to provide an appropriate balance. A larger load balance factor means the server supports a greater load in the server cluster in which it resides. For example, if two servers make up a cluster, one server has a balance factor of 3 and the other has a balance factor of 2, and 20 users log in, 12 are supported by the first server and 8 by the second. The default Load balance factor value is 1.

7. Establish default server and request timeout settings, as follows:
• Specify the length of time (in seconds) that a Mobile request should wait for a connection from the connection pool, if the maximum number of connections are all busy. Enter this value in the Server busy timeout field. The default value is 10.

• Specify the length of time (in seconds) that Mobile waits to receive a response from Intelligence Server. Enter this value in the Request timeout field. The default value is 40.

8 If there is a firewall between Mobile Server and Intelligence Server, you can ensure that the firewall does not remove connections between Mobile Server and Intelligence Servers. To do this, select the Keep the connection alive between the Mobile Server and Intelligence Server check box. When this setting is enabled, Mobile Server sends a signal to Intelligence Server on each open TCP connection periodically, so that the firewall does not see the connection as idle. For detailed information, see Maintaining TCP/IP connections through firewalls.

9 Click Save.

Encrypting session information

You can control whether traffic between mobile devices, Mobile Server, and Intelligence Server is encrypted. By default, this data is not encrypted because encrypting the data increases the load on the Intelligence Server, which may result in reduced performance in Mobile.

To determine how session information is encrypted, cached, and stored

1 Access the Mobile Server Administrator page:

• In Windows: From the Start menu, point to Programs, then MicroStrategy Tools, and select Mobile Administrator. The Mobile Server Administrator web page opens.

• In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2 From the pane on the left, select Security. The Security page opens.

3 In the Encryption area, select one of the following options:

• AES Tunneling: Uses the AES encryption algorithm to secure data between Web and Intelligence Server.

   This option increases the load on the Intelligence Server and may result in reduced performance in MicroStrategy Web.

• SSL: Uses Secure Socket Layer (SSL) encryption to secure data between Mobile Server and Intelligence Server. This is the recommended option for secure communications. If you want Mobile Server to verify Intelligence Server's SSL
certificate before setting up a connection, select **Validate Intelligence Server certificate.** For background information and instructions to set up SSL encryption for Web, see the *MicroStrategy System Administration Guide.*

4 Click **Save.**

**Maintaining TCP/IP connections through a firewall**

If there is a firewall between Mobile Server and Intelligence Server, the firewall may cause the TCP connection to Mobile Server to time out after it has been idle for a length of time. In this case, the firewall closes the connection to Mobile Server (outside the firewall), but not to Intelligence Server (inside the firewall). This results in Intelligence Server never closing the TCP connection. Eventually, Intelligence Server's connection limit is reached, and no more connections are allowed until Intelligence Server is restarted.

You can configure either of the following to address this potential issue:

- Put Intelligence Server and Mobile Server on the same side of the firewall.
- Configure Mobile Server to constantly refresh all TCP/IP connections with Intelligence Server. Steps for this configuration are below.

**To configure Mobile Server to keep connections alive**

1 Access the Mobile Server Administrator page:
- In Windows: From the **Start** menu, point to **Programs**, then **MicroStrategy Tools**, and select **Mobile Administrator**. The Mobile Server Administrator web page opens.
- In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the `mstrMobileAdmin` servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2 From the pane on the left, select **Servers**.

3 In the Properties column, select **Modify** for the Intelligence Server connection to edit. The Default Server Properties page opens.

4 Select the **Keep the connection alive between the Mobile Server and Intelligence server** check box.

5 Click **Save.** Mobile Server will periodically send a signal to Intelligence Server on each open TCP connection, so that the firewall will not identify the connection as idle.

**Enabling single sign-on authentication for Mobile**

You can enable single sign-on (SSO) authentication for MicroStrategy Mobile with third-party trusted authentication providers such as Tivoli or SiteMinder. Once a user is authenticated in the third-party system, the user's permissions are retrieved from a user directory, and access is granted to MicroStrategy Mobile.
Prior to enabling trusted authentication for MicroStrategy Mobile, you must complete the initial third-party authentication setup. To create users and links in a third party system, see the Authentication chapter in the System Administration Guide.

To enable users to log in to MicroStrategy Mobile using SSO authentication, you must enable trusted authentication as an available authentication mode in MicroStrategy Mobile.

To enable trusted authentication in MicroStrategy Mobile

1. Access the Mobile Server Administrator page:
   - In Windows: From the Start menu, point to Programs, then MicroStrategy Tools, and select Mobile Administrator. The Mobile Server Administrator web page opens.
   - In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2. From the pane on the left, select Default properties. The Default Server Properties page opens.

3. From the Trusted Authentication Providers drop-down list, select Tivoli or SiteMinder. For information about adding custom authentication, see the MicroStrategy Developer Library (MSDL).

4. At the bottom of the page, click Save.

To enable the authentication token to pass from the third-party authentication provider to MicroStrategy Mobile, and then to Intelligence Server, a trust relationship must be established between MicroStrategy Mobile and Intelligence Server.

To establish trust between MicroStrategy Mobile and Intelligence Server

1. Access the Mobile Server Administrator page:
   - In Windows: From the Start menu, point to Programs, then MicroStrategy Tools, and select Mobile Administrator. The Mobile Server Administrator web page opens.
   - In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2. From the pane on the left, select Servers.

3. Confirm that MicroStrategy Mobile Server is currently connected to an Intelligence Server. If an Intelligence Server is not connected, in the Unconnected Servers table, under Action, click Connect for the appropriate Intelligence Server.
4 In the Connected Servers table, under Properties, click Modify. The Server Properties page opens.

5 Next to Trust relationship between Mobile Server and Intelligence Server, click Setup.

6 Type a User name and Password in the appropriate fields. The user must have administrative privileges for MicroStrategy Mobile.

7 From the options provided, select the authentication mode used to authenticate the administrative user.

8 In the Mobile Server Application field, type the URL for MicroStrategy Mobile. For example, you might provide the URLs for the application using Tivoli, as follows:

   https://MachineName/JunctionName/MicroStrategyMobile/asp

9 Click Create Trust Relationship.

10 Click Save to create the trust relationship.

For steps to verify or delete the trust relationship, see the Authentication chapter in the System Administration Guide.

**Enabling Usher authentication for Mobile**

If you use an LDAP directory to centrally manage users in your environment, you can add them to your Usher network, and allow them to log into MicroStrategy Mobile by using their Usher badges.

The high-level steps to enable Usher authentication for Mobile are as follows:

1 Set up an Usher network, and badges for your users. Your network is the group of users in your organization who can use the Usher app on their smartphone to validate their identity to log in to MicroStrategy. For steps to create an Usher network, see the Usher Help.

2 Add your LDAP directory to your Usher network. For steps to add your LDAP directory to Usher, see the Usher Help.

3 Connect your LDAP directory to MicroStrategy. For steps to connect your LDAP directory to MicroStrategy, see the System Administration Guide.

4 Register your MicroStrategy environment with Usher. For steps, see Registering your MicroStrategy products with Usher, page 178.

5 Configure Usher in MicroStrategy Web and Mobile. For steps, see Configuring Usher in MicroStrategy Web and Mobile, page 178.

**Prerequisites**

- You have created an Usher network, and badges for your users. Your network is the group of users in your organization who can use the Usher app on their smartphone
to validate their identity to log in to MicroStrategy. For steps to create an Usher network, see the *Usher Help*.

- You have connected an LDAP user directory to MicroStrategy. For steps to connect your LDAP directory to MicroStrategy, see the *System Administration Guide*.

### Registering your MicroStrategy products with Usher

To establish a connection between Usher and your MicroStrategy products and components, you must register your MicroStrategy products and components with Usher, using the steps below.

#### To register MicroStrategy with Usher

1. In a web browser, log in to Usher Network Manager, using one of the following methods:
   - If you have installed Usher in your IT infrastructure, navigate to the server where you installed Usher Network Manager.
   - If you are using Usher in the cloud, navigate to [https://go.usher.com](https://go.usher.com).
2. Click **Gateway Configuration**. The Gateway Configuration page opens.
3. In the MicroStrategy Platform Login area, click the **MicroStrategy** icon. Review the message, then click **Continue**.
4. To change the image that is displayed on the login page when users open MicroStrategy Web, click **Import an Icon**. Select an image to display, and click **Open**.
5. In the **Enter Display Name** field, type a name to display on your MicroStrategy login page.
6. Click **Next**. The Set Up Your MicroStrategy Platform page is shown, with the details to configure your MicroStrategy Intelligence Server.
7. Note the values for Organization ID, Application ID, and Token. You use these values to configure MicroStrategy Intelligence Server.
8. Click **Done**.

### Configuring Usher in MicroStrategy Web and Mobile

To allow your users to log into MicroStrategy Web and Mobile with their Usher badges, you must configure Usher as a trusted authentication provider in Web Administrator and Mobile Administrator, as described in the steps below.
Prerequisites

- You have registered your MicroStrategy products and components with Usher, as described in *Registering your MicroStrategy products with Usher*, page 178, and noted the Organization ID, Application ID, and Token provided by Usher.

To enable Usher authentication in Mobile

To configure Intelligence Server for Usher authentication

1. From the Windows Start menu, select All Programs, then MicroStrategy Tools, and click Mobile Administrator. The Mobile Administrator page opens, with a list of your Intelligence Servers.

2. For your Intelligence Server, click Modify. The Server Properties page opens.

3. Next to Usher Configuration, click Setup. The Usher Configuration page opens.

4. In the Connectivity section, in the OrgID field, type the Organization ID from Usher Network Manager.

5. In the AppID field, type the Application ID from Usher Network Manager.

6. If you want to use Usher as a two-factor authentication system for MicroStrategy Web, Developer, and Desktop, select the Enable two-factor authentication check box.

   MicroStrategy users who are members of the Two-factor Exempt (2FAX) group are exempt from two-factor authentication, and do not need to provide an Usher code to log into MicroStrategy Web. It is recommended that these users have a secure password for their accounts, and use their accounts for troubleshooting MicroStrategy products and components.

   Two-factor authentication is not currently supported for Mobile.

7. In the Security token field, type the Security Token from Usher Network Manager.

8. Click Save to save your changes. To save the Usher configuration, you are prompted for your MicroStrategy credentials.

9. Type your MicroStrategy username and password, and click Login. The settings are saved.

To enable Usher authentication in Mobile

10. In Mobile Administrator, from the menu on the left, click Default Properties. The Default Server Properties page opens.

11. In the Login area, for Trusted Authentication Request, select the Enabled check box.

12. From the Trusted Authentication Providers drop-down menu, select Usher.
13 Click **Save** to save your changes.

## Configuring and viewing logs and statistics

Logs are records of low-level activity, which can be aggregated and used for troubleshooting a specific problem or for server and system analysis. You can determine whether to log information such as errors, warnings, or messages generated by MicroStrategy Mobile users, as well as statistical information such as the time taken by the web server and Intelligence Server to complete an operation, how much data is received and sent, the waiting time to receive data from the Intelligence Server, and so on.

For steps, see the appropriate links below:

- *Determining what and where information is logged, page 180*
- *Creating logs to debug API issues, page 181*
- *Viewing server logs, page 183*
- *Enabling and viewing statistics, page 184*

### Determining what and where information is logged

Tasks performed by MicroStrategy Mobile users may generate errors, warnings, or messages in MicroStrategy Mobile Server. This information can be stored in log files. You can define what information is logged by MicroStrategy Mobile and where it is logged.

---

**To determine what and where information is logged**

1. Access the Mobile Server Administrator page:
   - In Windows: From the **Start** menu, point to **Programs**, then **MicroStrategy Tools**, and select **Mobile Administrator**. The Mobile Server Administrator web page opens.
   - In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2. From the pane on the left, select **Configuration**. The Diagnostics Configuration page opens.

3. Select either **Internal diagnostic setup** or **Custom diagnostic setup** to determine the type of log to create, as described below:
   - **Internal diagnostic setup**: This setting is used to set the type of information to be logged in the log file. The settings defined here are written in the logger.properties file. This is the default option.
Level: Select the level at which the information is written in the log file. You can choose from the following levels:

- **OFF**: Nothing is written in the log file.
- **Errors**: Errors generated by Mobile are included in the log file. This is the default option.
- **Warnings**: Errors and warnings generated by Mobile are included in the log file.
- **Messages**: Errors, warnings, and messages generated by Mobile are included in the log file.

**Log files directory**: This field displays a default path where the log files are saved. You can also specify a different path. The log file is generated in the specified path in the MSTRmmddyyyy.log_num format. The default directory is Program Files/MicroStrategy/Mobile Server ASPx/WEB-INF/log/.

The naming of the log file is handled by the logger.properties file. For example, the first log file created on 01/02/2008 appears as MSTR01022008.log_1.

**Maximum output file size**: The maximum size, in bytes, of the log file. When the maximum file size is reached, a new log file is started. The default size is 10,000,000 bytes.

**Number of file outputs**: The maximum number of log files that MicroStrategy Web creates. The default number of files is 100.

Logs can also be created to better identify and debug API issues. These logs are configured in the Advanced Logger Settings area. For details and steps, see Creating logs to debug API issues, page 181.

**Custom diagnostic setup**: This option is typically used to load a logger.properties file provided to you by MicroStrategy Technical Support. The logger.properties file contains the internal diagnostics setup settings above. You can load diagnostics settings contained in the file, get the output, and send it back to Technical Support. When the Technical Support engineer is done, he or she can reset your log to its original settings. This allows for a very detailed level of logging without you having to write the logger.properties file yourself.

- Specify the path to the logger.properties file in the Path to custom diagnostics setup file field.

4 Click **Save** to apply the changes.

**Creating logs to debug API issues**

You can use logs to better identify and debug API issues. The logs can provide the following information:

- Name of the class and method being accessed
- Custom messages used in the code to specify the reason why the message was logged
• All argument values sent to the method that logged the message

Using the options described below, you can determine the specific user and packages for which errors are logged. This makes it easier to debug API issues since each log contains unique information about a specific user, date, and package.

The logs generated by the XML-API logger are saved in different files from those generated by the Internal Diagnostics logger. The XML-API logs are saved in the form of AdvMSTRLog[package][date].log. In the log file name, [date] is replaced by the current date and [package] is replaced by the name of the specific package name for which the log exists. For details about the Internal Diagnostics logger, see Determining what and where information is logged, page 180.

To create a log to debug API issues

1 Access the Mobile Server Administrator page:

   • In Windows: From the Start menu, point to Programs, then MicroStrategy Tools, and select Mobile Administrator. The Mobile Server Administrator web page opens.

   • In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2 From the pane on the left, under Diagnostics, select Configuration. The Diagnostics Configuration page opens.

3 Select Internal diagnostic setup.

4 In the Advanced Logger Options area, select from the following options to disable or enable the creation of XML-API logs, as well as configure how and what information is logged.

   • Disabled: When this option is selected, logs are created using only the default settings you specify in the Internal Diagnostics options, as described in Determining what and where information is logged, page 180. All errors, warnings, or messages are logged to the log file you specified in the Log Files directory, but logs are not created for each user, date, and package combination. This is the default option.

   • Enable XML-API Logger: When this option is selected, all messages for a particular user for all calls to the API are logged. These messages consist of any classes that are located under the com.microstrategy.webapi package.

      o User name: To specify that the XML-API logger only saves messages for a specified user, enter the user's name in the text field. If you do not specify a user, messages are logged for all users.

      — When the Enable XML-API Logger option is selected, you can log only API messages, not messages coming from a specific package or multiple packages. To log information about specific or multiple
packages, you must select the **Enable logging for multiple/other package(s)** option.

- **Enable logging for multiple/other package(s):** When this option is selected, you can determine the specific packages for which logs are created. This further refines the logging process because you can more distinctly define which error messages are logged and for which users and packages.
  
  - **Package(s):** To specify certain packages for which to create logs, type the name of the package(s) in the text field. Use a comma to separate the names of multiple packages. For example, you want to log API messages as well as messages for an **addons** package. You list both of these packages by typing the following in the text field: `com.microstrategy.webapi, com.microstrategy.web.app.addons`
  
  - **User name:** To specify that the XML-API logger saves messages only for a specified user, type the user's name in the text field. If you do not specify a user, messages are logged for all users.
  
  - **Pattern:** You can limit the number of logged messages by specifying a pattern. Only messages that match the pattern are logged. For example, you want to log messages that are related only to methods that start with the “getCustomLogin” string. In this case, type “getCustomLogin*”.

You can create patterns using a limited set of regular expressions. For more information about regular expressions, see [http://jakarta.apache.org/oro/api/org/apache/oro/text/GlobCompiler.html](http://jakarta.apache.org/oro/api/org/apache/oro/text/GlobCompiler.html).

- **Level:** You can specify the types of messages that are logged by selecting one of the following options:
  
  - **Warnings:** Errors and warnings are included in the log file.
  
  - **Errors:** Errors are included in the log file.
  
  - **All:** Errors, warnings, and messages are logged.
  
  - **OFF:** Nothing is written in the log file. This is the default option.

5. Click **Save** to apply the changes.

### Viewing server logs

The information collected in server logs can be difficult to understand if you read it directly from the log file itself. As an alternative to scanning a log that contains all information collected for your system activity, you can view and filter logged information using the View Logs page. This allows you to more easily locate and troubleshoot application errors and the system.

The log display depends on what information is available in the log file. If the log is empty, information from it is not displayed on the screen. For steps to set the level of information recorded in the log file, see *Determining what and where information is logged, page 180*. 

To view the Mobile Server log file

1. Access the Mobile Server Administrator page:
   - In Windows: From the **Start** menu, point to **Programs**, then **MicroStrategy Tools**, and select **Mobile Administrator**. The Mobile Server Administrator web page opens.
   - In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2. From the pane on the left, select **View logs**. The View logs page opens.

3. In the Display area, select the check boxes for the log information you want to display on the View logs page:
   - **Errors**: Logged errors are displayed on the screen. This is selected by default.
   - **Warnings**: Logged warnings are displayed on the screen.
   - **Messages**: Logged messages are displayed on the screen.

4. In the **From** area, specify the start date of logged information to display on the screen.

5. In the **To** area, specify the end date of logged information to display on the screen.

   - If the From and To date fields contain the same date, logs are viewed for that day only.

6. Click **Refresh** to display the selected log information on the View Logs page. The logged information appears in the following columns:
   - **Time**: The time and date when the event log was created
   - **User name**: The name of the user who logged in
   - **User IP Address**: The IP address of the user who logged in
   - **Level**: Error, Warning, or Message, as above
   - **Class and Method**: Code references for the issue
   - **Message**: The text of the logged message

7. To sort a column, click the **Sort** icon in the column’s header.

Enabling and viewing statistics

You can enable statistics to interpret and analyze system and server performance and disable them when you no longer need to monitor performance. For example, you can obtain information about the time taken by the web server and Intelligence Server to
complete an operation, how much data is received and sent, the waiting time to receive some data from the Intelligence Server, and so on.

You can determine what statistical information is logged to either the Mobile device or to a text file on the Mobile Server machine.

Note the following:

- If multiple users work on the same server, displaying statistics for each of them is not recommended, as it may impact system performance.
- If the statistics are being saved in the file, the file size grows quickly, which is unnecessary. For this reason, this feature should not be used unless the system is not working properly and you want to analyze the data for system tuning or troubleshooting.

**To enable statistics collection in MicroStrategy Mobile**

1. Access the Mobile Server Administrator page:
   - In Windows: From the Start menu, point to Programs, then MicroStrategy Tools, and select Mobile Administrator. The Mobile Server Administrator web page opens.
   - In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2. From the pane on the left, select Statistics. The Statistics page opens.

3. From the Mode drop-down list, select where statistics are logged:
   - **OFF**: Statistics are not displayed on the screen or saved in a file. This option is selected by default.
   - **Screen**: Statistics are saved to the log file on the Mobile device, at the lowest log level.
   - **File**: Statistics are saved in the specified log file. If selected, type the path to the log file in the Statistics file field, including the absolute path to where the Mobile Server is installed.
   - **Screen and file**: Statistics are saved in both the log file on the Mobile device and in the specified log file. If selected, type the path to the log file in the Statistics file field, including the absolute path to where the Mobile Server is installed.
Deploying and configuring the MicroStrategy Mobile application

Once you have installed and configured MicroStrategy Mobile Server, you need to install and configure the MicroStrategy Mobile application on your company’s mobile devices. These steps vary depending on whether you are using MicroStrategy Mobile for iPhone or iPad, or MicroStrategy Mobile for Android.

- Deploying MicroStrategy Mobile for iPhone or iPad, page 186
- Configuring MicroStrategy Mobile for iPhone or iPad, page 189
- Deploying MicroStrategy Mobile for Android, page 197
- Configuring MicroStrategy Mobile for Android, page 197
- Configuring connectivity settings for iOS and Android devices, page 202
- Configuring the home screen for iPhone, iPad, and Android devices, page 205
- Pre-caching online content on the mobile device for offline use, page 214
- Configuring MicroStrategy Mobile for iPhone or iPad to receive push notifications, page 216
- Applying configurations to mobile devices, page 217
- Managing multiple configurations for MicroStrategy Mobile, page 219

Deploying MicroStrategy Mobile for iPhone or iPad

For a list of supported iPhone and iPad devices and operating systems, see the MicroStrategy Readmes.

To maintain control of your MicroStrategy Mobile implementation cycle, it is recommended that you use the iOS Enterprise Deployment process to install the MicroStrategy Mobile applications on your users’ devices.

The requirements and workflow for this process are described below.

Overview

The following is a high-level overview of the tasks you must perform to begin deploying the MicroStrategy Mobile applications on your users’ devices:

- Download the MicroStrategy Mobile Xcode project.
- Use the iOS Developer Portal to create the files you need to build the applications in Xcode.
- Create a distributable archive of the application.
• Create a basic web page for your network, from which users can download the application.

**Prerequisites**

• You must use an Apple Mac, running Xcode 4.2 or better.

• Your organization must be enrolled in the iOS Developer Enterprise Program. For information about this program, visit [http://developer.apple.com/programs/ios/enterprise/](http://developer.apple.com/programs/ios/enterprise/).

• You must create an Application ID for the deployed application, using the iOS Provisioning Portal. An Application ID is of the form [Code].com.yourcompany.yourappname, where Code is an alphanumeric code, called the Bundle Seed, and is generated when you create the Application ID.

  - If you are deploying MicroStrategy Mobile for both iPhone and iPad, you must create an Application ID for each.

• You need a location on your network that users can access through their web browsers, using either the HTTP or HTTPS protocol. The distributable archive must be saved to this location.

**Deploying the MicroStrategy Mobile applications**

You must use Xcode to create modified versions of the MicroStrategy Mobile applications to deploy them on your users’ devices.

The third-party products discussed below are manufactured by vendors independent of MicroStrategy, and the information provided is subject to change. For detailed instructions to perform the following tasks, refer to the iOS Developer Library at [http://developer.apple.com/library/ios/](http://developer.apple.com/library/ios/).

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**To build and deploy the MicroStrategy Mobile applications**

**To create a distribution certificate for MicroStrategy Mobile**

1 In the Keychain Access utility on your Mac, use the Certification Assistant feature to create a Certificate Signing Request (CSR) file.

2 In the iOS Provisioning Portal, in the Certificates section, request a Distribution Certificate. When prompted, upload the CSR file you created in the previous step.

3 Once your certificate is ready, download it to your computer.

4 Use the Keychain Access utility to install the downloaded certificate to your computer.
This certificate authorizes your Mac as a trusted computer on the network, and is used to sign the MicroStrategy Mobile applications for distribution.

**To create a distribution Provisioning Profile for MicroStrategy Mobile**

5 In the iOS Provisioning Portal, in the Provisioning section, create a Distribution Provisioning Profile for the application.

6 Download the Provisioning Profile to your computer.

**To download and install the MicroStrategy Mobile Xcode projects**

7 On your Mac, download the disk image with the MicroStrategy Mobile Xcode projects from https://software.microstrategy.com/Download/index.aspx. To do this, select the desired version from the **Version** drop-down list, and then select **iOS** from the **OS** drop-down list. The file name is MicroStrategy Mobile SDK.dmg.

You must have a username and password to access the download site.

8 Double-click the downloaded file. A license agreement is displayed.

9 To accept the terms of the license agreement, click **Agree**. The disk image opens.

10 Copy the contents of the disk image to your computer, and eject the disk image.

**To set up the Xcode projects**

11 In the MicroStrategyMobile folder copied from the disk image, double-click MicroStrategyMobile.xcodeproj. The MicroStrategy Mobile project opens in Xcode.

12 Choose the **MicroStrategyMobileiPhone** or **MicroStrategyMobileIPad** scheme, as applicable.

13 Open the property list file for the scheme you are building the application for. The file names are **Info_iPhone.plist** or **Info_iPad.plist** for iPhone and iPad respectively.

14 Change the **Bundle Identifier** property to your organization’s Bundle Identifier.

The Bundle Identifier is of the form com.YourCompanyName.YourApplicationName, and is part of the application ID you created in the iOS Provisioning Portal.

15 For the scheme you selected, in the **Build Settings** section, under **Code Signing**, ensure that your distribution provisioning profile is selected.

**To build the application for distribution**

16 From the **Build** menu, select **Build and Archive**. An archived version of the application is built, with a .ipa extension.
17 Open Xcode’s Organizer window, select the archived application, and click Share Application. The Share Archived Application dialog opens.

18 Click Distribute for Enterprise. The archive is built, and you are prompted to enter the information for the application’s manifest file, which contains the information that users’ devices need to download the application.

19 Enter the information for the manifest file. In the URL field, enter the web address for the network location from which users can download the application. For example, http://YourNetworkLocation/MicroStrategyMobile.ipa.

**Uploading and distributing the application**

20 Upload the following files to your network location above:

- The application archive. For example, MicroStrategyMobile.ipa.
- The manifest file. For example, manifest.plist.

21 To distribute the application, provide users with a URL to the manifest file, using the following syntax:

`itms-services://?action=download-manifest&url=http://YourServerLocation/manifest.plist`

You can provide this URL in an email, or by using a basic HTML page that users can connect to.

**Configuring MicroStrategy Mobile for iPhone or iPad**

Before a user can view reports and documents in MicroStrategy Mobile for iPhone/iPad, the application must be configured to communicate with Mobile Server and Intelligence Server. Manually configuring each device can be time-consuming and difficult. Instead, you can create a configuration.

A mobile device configuration is a list of settings for a MicroStrategy Mobile application that are stored in a file on Mobile Server. A configuration for MicroStrategy Mobile for iPhone/iPad contains information about the memory limit, network timeout, caching, and error logging, as well as what projects can be accessed from the application and what buttons are available on the home screen.

A single configuration can configure devices to connect to multiple Mobile Servers. Users can manually connect to any available Mobile Server, if the configuration allows them to configure the application from the mobile device. For instructions on how to configure the application from the mobile device, see Configuring the application from the device, page 218.

You can create and save multiple configurations. Each configuration can have its own login credentials, list of projects, and Home screen design. For example, you can create one configuration for regional sales managers, providing access to only those projects that report on sales data. You can then create another configuration for executives, which gives them access to all projects currently in production and also provides a Home screen with buttons for several high-level dashboards.
User logins and passwords included with a configuration should be used only for demonstration purposes, as the configuration is not transmitted or stored securely.

Once you have created a configuration, you can generate a URL for that configuration. You can then email that URL to a mobile device user. When the user opens the URL, the MicroStrategy application on the mobile device is automatically configured with the saved settings. For steps, see Configuring mobile devices using a generated URL, page 217.

To create an iPhone or iPad configuration

1 Access the Mobile Server Administrator page:
   • In Windows: From the Start menu, point to Programs, then MicroStrategy Tools, and select Mobile Administrator. The Mobile Server Administrator web page opens.
   • In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2 From the pane on the left, select Mobile Configuration.

3 Click Define New Configuration.

4 From the Device drop-down list, select either iPhone or iPad to create a configuration for the device. Click OK.

5 In the Configuration Name field, type the name of the configuration. This is the name that is displayed in the configuration list.

Configure the iPhone or iPad settings

6 Select either the iPhone Settings or iPad Settings tab.

7 By default, the MicroStrategy Mobile application has a dark color theme. To change the theme color, select Light from the Application Theme Color drop-down list.

8 To choose an accent color to highlight icons, buttons, and clickable text in MicroStrategy Mobile, click the desired color in the Accent Color area. For example, you can select an accent color that is used in your organization’s logo.

9 From the Memory Limit drop down list, select the amount of memory that is available to the application. Values include 25 MB, 50 MB, 100 MB, 250 MB, 500 MB, 1 GB, 2 GB, 3 GB, or 4 GB. The application uses either this value or the available memory on the device, whichever is lower. Reports and documents render faster when more memory is available to the application. The default value is 250 MB.

10 In the Network Timeout field, specify how long, in seconds, the application should wait for the network to respond before reporting a timeout. The default value is 60 seconds.
11 In the **Acceptable Network Response Time** field, specify an amount of time, in seconds, that is acceptable for a network response. The default value is 2 seconds.

Along with the network timeout setting, this value determines the mobile server connection quality displayed in the Network tab of the Settings screen in the iPhone or iPad client. The Mobile Server quality is displayed as:

- A green image when network latency is less than the Acceptable Network Response value.
- A red image when network latency is greater than the Network Timeout value.
- An orange image when the network latency is between the Network Timeout value and the Acceptable Network Response Time value.

12 In the **Maximum Columns in Grid** field, specify the maximum number of columns displayed at one time in a grid report. If the number of columns in the grid exceeds this value, a user can scroll to see additional columns. The default value is 10 columns for iPhone and 50 columns for iPad.

13 From the **Logging Level** drop-down list, select the level of information to be stored in the application's log file. You can choose from the following levels:

- **Warnings**: Errors and warnings generated by Mobile are included in the log file. This is the default option.
- **Errors**: Errors generated by Mobile are included in the log file.
- **Messages**: Messages generated by Mobile are included in the log file.
- **All**: Warnings, errors, and messages generated by Mobile are included in the log file.
- **Off**: Nothing is written in the log file.

To view the log file, in the MicroStrategy Mobile for iPhone application, from the **Settings** screen, tap **Advanced Settings**, then, in the **Logging** group, tap **View Log**.

14 In the **Maximum log size** field, specify the maximum number of entries to be stored in the log file. The default value is 50 entries.

15 In the **Check for new subscriptions every** field, type how often, in seconds, the application checks for new versions of subscribed reports and documents on Intelligence Server. The default value is 600 seconds.

16 In the **Validate device caches every** field, type how often, in seconds, the application validates the report and document caches on the device with Intelligence Server. This check only invalidates a cache on the device if the corresponding cache on Intelligence Server is invalid or expired; it does not check whether any changes have been made to the original report or document. The default value is 600 seconds.

17 Some reports and documents have the pre-caching feature enabled, but do not use server side caching. To increase the execution performance for these objects, you can force the application to use the local caches for a specified amount of time. To do
this, select the **Cache real-time data for** check box, and in the field, specify the number of seconds that a local cache remains valid.

Note the following:

- For instructions on configuring reports, documents, or the contents of a folder to be pre-cached, see *Configuring the home screen for iPhone, iPad, and Android devices*, page 205.

- If caching for a specific report or document has been disabled, you can still force it to use the pre-cache feature on a mobile device. To do this, open the report or document in Developer, open the corresponding Report Caching Options or Document Properties dialog box, and select the **Allow mobile devices to cache data temporarily to optimize performance** check box.

18 By default, the Mobile Server network response quality is measured and displayed as a green, yellow, or red image on the mobile client. To disable this feature, clear the **Monitor Network Status** check box.

19 By default, users can view and change the configuration settings in the Settings screen in the application. To prevent users from changing the configuration settings for the application, clear the **Allow users to access advanced and connectivity settings** check box.

20 By default, if a cache exists for a subscribed report or document, that cache is loaded when the user opens that report or document, and only for the page-by-selection or layout that is opened. This speeds up initial access to the application. To allow access to reports and documents even when the connection to the network is intermittent, select the **Automatically pre-load subscriptions** check box. If this check box is selected, caches are loaded for all subscribed reports and documents when the application is launched.

21 By default, MicroStrategy Mobile caches the contents of folders, and does not refresh the folder unless the user shakes the device while in the folder screen. To disable folder caching and to refresh folders every time that the user opens them, clear the **Cache Folders** check box. This may cause Mobile to open folders more slowly, as it must retrieve information about the folders from Intelligence Server every time they are opened.

22 By default, reports and documents are cached on the device until either the memory limit is reached or a newer version of the report or document is available. This allows access to reports and documents even when the connection to the network is intermittent. To clear the caches when the application is closed, select the **Clear caches when the application closes** check box.

23 By default, users can modify caching settings for the Mobile application. For example, users can choose to clear or save caches when the application is closed. To prevent users from modifying caching settings, clear the **Allow users to modify caching settings** check box.

24 By default, users can modify logging settings for the Mobile application. For example, users can select the level of detail for logged statistics. To prevent users from
modifying logging settings, clear the **Allow users to modify logging settings** check box.

**25** To enable push notification alerts, select the **Enable Push Notification** check box. For details on configuring push notification alerts, see *Configuring MicroStrategy Mobile for iPhone or iPad to receive push notifications, page 216.*

To enable push notifications, Mobile Server must be configured to use Secure Socket Layer (SSL) encryption. For detailed instructions on configuring Mobile Server to use SSL, see the *Enabling Secure Communication* chapter in the **System Administration Guide**.

**26** To allow MicroStrategy Mobile to download data in the background when the application is running in the background, select the **Enable Background Download Mode** check box.

The Enable Push Notification option must be selected before you enable background downloading.

**27** By default, mobile users can email, and print an image of the report or document that they are viewing. To disable this feature, clear the **Enable sharing, including emailing, printing, and saving to photos** check box.

**28** By default, mobile users can annotate an image of the report or document that they are viewing, and email a copy to their contacts. To disable this feature, clear the **Enable annotating** check box.

**29** If you require that your users log into your MicroStrategy projects using a passcode, and your users have iOS devices with Apple Touch ID® enabled, they can use their fingerprints to access the app, instead of using a passcode. To enable this feature, enable the **Allow authentication via system pass code for Touch ID** check box. To require users to log into MicroStrategy using a password, see *Configure users' app passwords, page 195.*

**30** By default, PDF documents open in MicroStrategy Mobile’s built-in PDF viewer. To disable this viewer, select the **Disable the built-in PDF viewer** check box. If this option is selected and the **Allow users to open PDF documents in external applications** check box is selected, users are prompted to choose a third party PDF viewer when they open a PDF document.

**31** By default, Mobile users can use other applications to view PDF documents that are generated by MicroStrategy Mobile. To disable this privilege, clear the **Allow users to open PDF documents in external applications** check box.

**32** By default, Keynote documents open in MicroStrategy Mobile’s built-in Keynote viewer. To allow Mobile users to open keynote files in an external application, select the **Use external applications to open Keynote files** check box. If this option is selected, Mobile users are prompted to choose a third party Keynote viewer when they open a Keynote document.

**33** To ignore user privilege errors when the mobile device is reconciling, select the **Ignore user privilege errors during reconcile** check box. Enable this setting if you are creating a single Mobile configuration that includes multiple projects that may not be accessible by all users who are using that configuration. This option
eliminates the error messages that users would normally receive for each inaccessible project during reconciliation, and removes any associated subscriptions and caches from the mobile device.

34 To display a log out option in the Action menu in MicroStrategy Mobile, select the **Display Log Out Option in Action Menu** check box. When a Mobile user logs out, her user name, password, and session information are removed from the device and she is logged out of the project on the connected Intelligence Server. The Mobile user must type her credentials to log back in to the application.

35 To clear all caches on the mobile device when a Mobile user logs out, select the **Clear Caches on Log Out** check box. When the Display Log Out Option in Action Menu option is selected, users can log out of MicroStrategy Mobile to delete caches that have been created on the device.

36 By default, the MicroStrategy Mobile application displays a Learn More link. When this link is tapped by a Mobile user, the mobile version of the MicroStrategy website opens in the default web browser. You can modify the Learn More link in the following ways.

- To change the website that opens when the Learn More link is tapped, type the desired URL in the **Custom URL** field.

- To remove the Learn More link, clear the **Show “Learn More” Link** check box.

37 By default, the passwords used to log in to projects and Intelligence Servers can be saved in the MicroStrategy Mobile application. To configure the application to remove saved passwords after a certain period of time:

   a  In the **Clear Saved Password** settings, select **After**.

   b  From the drop-down list, select whether to specify the password removal time in **Days**, **Hours**, or **Minutes**.

   c  In the field, type the number of days, hours, or minutes before the saved passwords are removed from the application. The timer counts from when the user types a password, or, if the password is included as part of a configuration, from when the configuration is applied. Once a password is removed, the user must type the password the next time the login dialog appears.

38 By default, the configuration used on the device is not updated automatically. To enable the mobile device to check the Mobile Server for updates to the configuration at a specified time interval:

   a  In the **Check and update configuration** settings, select **Every**.

   b  From the drop-down list, select whether to specify the time interval in **Days** or **Hours**.

   c  In the field, type the number of days or hours that must pass between each check for updates. The MicroStrategy Mobile application checks for an update to the Mobile configuration at this specified interval. If an update is found, the user is prompted to apply the new configuration to the mobile device. The user can then choose to apply the new configuration or wait to apply the configuration at
a later time. If the user selects the latter option, the prompt reappears five minutes later.

39 To set up client authentication for Mobile Server, select the **Use Certificate Server** check box. With this option selected, you can set up a client certificate server responsible for creating certificates for mobile clients. These certificates are required from mobile clients attempting to access the Mobile Server.

To specify the certificate server, type the certificate server’s URL in the **Use Certificate Server** text field. This field must begin with `https://` and requires the use of the fully qualified name of the certificate server in the URL, as in the following examples.

**ASP:**

```
https://fully_qualified_domain_name:port/
CertificateServer/asp/certificate.aspx
```

**JSP:**

```
https://fully_qualified_domain_name:port/
CertificateServer
```

or

```
https://fully_qualified_domain_name:port/
CertificateServer/servlet/certificate
```

where:

- `fully_qualified_domain_name:port` is the location and port of your certificate server. For example, `machine_name.domain.com:8443`.

For detailed steps on configuring a certificate server, see *Client authentication with a certificate server, page 164.*

40 If a mobile device has an invalid certificate, it can still run reports and documents that are cached on the device. To clear the device cache when a certificate becomes invalid, select the **Clear caches when certificate becomes invalid** check box.

### Configure users’ app passwords

41 To specify requirements for the passwords that Mobile users enter to gain access to the Mobile application, use the following settings under App Password Options:

a To require Mobile users to type a password to open the application, select the **Require password to open the application** check box.

b To require Mobile users to type a password to open the application after the mobile device is unlocked, select the **Require password after locking the device** check box.

c To require at least one numeric character in the password, select the **Requires at least one numeric character** check box.
d To require at least one special character in the password, select the **Requires at least one special character** ($, @, %...) check box.

e To require at least one capital letter in the password, select the **Requires at least one capital letter** check box.

f To specify a minimum number of characters for the password, type the desired number, in characters, in the **Minimum passcode length** text box. The default value is 4 characters.

g To specify a maximum number of failed login attempts before a user is locked out of the Mobile application, type the desired maximum number in the **Maximum number of failed logon attempts** text box. If the maximum is met, all data is wiped, including caches and the mobile app configuration. The default value is 10 attempts.

h To specify how long a user has to wait to try again after he enters an incorrect passcode, type the desired amount of time, in seconds, in the **Lockout duration** text box. The default value is 0 seconds.

i To specify the amount of inactive time that must elapse before a password request appears on the mobile device, type the desired number of seconds in the **Require password on resuming application after** text box. The user is required to re-enter valid credentials when the MicroStrategy Mobile application is resumed after being inactive for the specified period of time.

The MicroStrategy Mobile application is considered inactive if it is running in the background, if other applications are running in the foreground, or if the mobile device is locked.

j If your users have configured their iOS devices to unlock using a numeric or alphanumeric password, you can allow them to use the same password to access MicroStrategy Mobile. On newer iOS devices such as the iPhone 6, users can access the app by scanning a fingerprint and using Apple Touch ID. To enable this feature, enable the **Authenticate using iOS device passcode** check box.

**Configure the connectivity settings**

42 Click the **Connectivity Settings** tab to configure the connectivity settings for your iPhone or iPad. For instructions on configuring the connectivity settings, see *Configuring connectivity settings for iOS and Android devices, page 202.*

**Configure the home screen settings**

43 Click the **Home Screen** tab to configure the appearance of the home screen in the Mobile application. For detailed instructions on configuring the home screen, see *Configuring the home screen for iPhone, iPad, and Android devices, page 205.*

**Save and distribute the Mobile configuration**

44 When you are finished creating the configuration, click **Save**.
45 Generate a URL for the configuration, and distribute it to your Mobile users. For detailed instructions on generating and distributing a URL, see Configuring mobile devices using a generated URL, page 217.

Deploying MicroStrategy Mobile for Android

For a list of supported Android devices and operating systems, see the MicroStrategy Readmes.

To deploy MicroStrategy Mobile to users' Android devices, you can send the application as an email attachment to your users. The application is installed when the users download the attachment.

Configuring MicroStrategy Mobile for Android

Before a user can view reports and documents in MicroStrategy Mobile for iPhone/iPad, the application must be configured to communicate with Mobile Server and Intelligence Server. Manually configuring each device can be time-consuming and difficult. Instead, you can create a configuration.

A mobile device configuration is a list of settings for a MicroStrategy Mobile application that are stored in a file on Mobile Server. A configuration for MicroStrategy Mobile for Android contains information about the memory limit, network timeout, caching, and error logging, as well as what projects can be accessed from the application and what buttons are available on the home screen. For details on configuring push notification alerts, see Configuring MicroStrategy Mobile for Android to receive push notifications, page 220.

A single configuration can configure devices to connect to multiple Mobile Servers. Users can manually connect to any available Mobile Server, if the configuration allows them to configure the application from the mobile device. For instructions on how to configure the application from the mobile device, see Configuring the application from the device, page 218.

You can create and save multiple configurations. Each configuration can have its own login credentials, list of projects, and Home screen design. For example, you can create one configuration for regional sales managers, providing access to only those projects that report on sales data. You can then create another configuration for executives, which gives them access to all projects currently in production and also provides a Home screen with buttons for several high-level dashboards.

User logins and passwords included with a configuration should be used only for demonstration purposes, as the configuration is not transmitted or stored securely.

For information on the requirements to support the Map widget on Android devices, refer to the MicroStrategy Readme.

Once you have created a configuration, you can generate a URL for that configuration, and then post that URL to an HTML page. Mobile users can use their mobile devices to browse to the HTML site and click on the URL. When a user opens the URL on her mobile device, the application is automatically configured using the settings in the configuration. For steps, see Configuring mobile devices using a generated URL, page 217.
To create an Android Phone or Android Tablet configuration

1 Access the Mobile Server Administrator page:
   - In Windows: From the Start menu, point to Programs, then MicroStrategy Tools, and select Mobile Administrator. The Mobile Server Administrator web page opens.
   - In UNIX/Linux: After you deploy MicroStrategy Mobile Server Universal and log on to the mstrMobileAdmin servlet using proper credentials, the Mobile Server Administrator web page opens. The default location of the Administrator servlet varies depending on the platform that you are using.

2 From the pane on the left, select Mobile Configuration.

3 Click Define New Configuration.

4 From the Device drop-down list, select either Android Phone or Android Tablet to create a configuration for the device. Click OK.

5 In the Configuration Name field, type the name of the configuration. This is the name that is displayed in the configuration list.

Configure the Android Phone or Android Tablet settings

6 Select either the Phone Settings or Tablet Settings tab.

7 In the Network Timeout field, specify how long, in seconds, the application should wait for the network to respond before reporting a timeout. The default value is 60 seconds.

8 In the Maximum Columns in Grid field, specify the maximum number of columns displayed at one time in a grid report. If the number of columns in the grid exceeds this value, the user can scroll to see additional columns. The default value is 10 columns for Android phones and 50 columns for Android tablets.

9 In the Refresh data and submit pending transactions every field, type how often, in seconds, the application should validate the report and document caches on the device with Intelligence Server and upload any pending transactions. This check only invalidates a cache on the device if the corresponding cache on Intelligence Server is invalid or expired; it does not check whether any changes have been made to the original report or document. The default value is every 600 seconds.

10 Some reports and documents have the pre-caching feature enabled, but do not use server side caching. To increase the execution performance for these objects, you can force the application to use the local caches for a specified amount of time. To do this, select the Cache real-time data for check box, and in the field, specify the number of seconds that a local cache remains valid. For instructions on configuring reports, documents, or the contents of a folder to be pre-cached, see Configuring the home screen for iPhone and Android Phone, page 208 or Configuring the home screen for iPad or Android Tablet, page 212.
If caching for a specific report or document has been disabled, you can still force it to use the pre-cache feature on a mobile device. To do this, open the report or document in Developer, open the corresponding Report Caching Options or Document Properties dialog box, and click the **Allow mobile devices to cache data temporarily to optimize performance** check box.

11 To check for and download subscription updates in the background, select the **Enable background syncing** check box. When this option is selected, the mobile device checks for updates and downloads subscriptions at the specified interval, even if the MicroStrategy Mobile application is not running on the device. To specify the subscription update interval, do one of the following.

- To update subscriptions on the device every 1, 2, 4, 10, or 24 hours, select the interval from the **Update subscriptions every** drop-down list.
- To update subscriptions on the device at the same time each day, select 24 hours from the **Update subscriptions every** drop-down list, and then select the desired time from the **Time of the day for update** drop-down list.

12 By default, the Mobile Server network response quality is measured and displayed as a green, yellow, or red image on the mobile client. To disable this feature, clear the **Monitor Network Status** check box.

13 By default, users can view and change the configuration settings in the Settings screen in the application. To prevent users from changing the configuration settings for the application, clear the **Allow users to access settings** check box.

14 By default, if a cache exists for a subscribed report or document, that cache is loaded when the user opens that report or document, and only for the page-by-selection or layout that is opened. This speeds up initial access to the application. To allow access to reports and documents even when the connection to the network is intermittent, select the **Automatically pre-load subscriptions** check box. If this check box is selected, caches are loaded for all subscribed reports and documents when the application is launched.

15 By default, MicroStrategy Mobile caches the contents of folders, and does not refresh the folder unless the user shakes the device while in the folder screen. To disable folder caching and to refresh folders every time that the user opens them, clear the **Cache folders** check box. Clearing this option may cause Mobile to open folders more slowly, as it must retrieve information about the folders from Intelligence Server every time they are opened.

16 By default, reports and documents are cached on the device until either the memory limit is reached or a newer version of the report or document is available. This allows access to reports and documents even when the connection to the network is intermittent. To clear the caches when the application is closed, select the **Clear caches when the application closes** check box.

17 By default, users can modify caching settings for the Mobile application. For example, users can choose to clear or save caches when the application is closed. To prevent users from modifying caching settings, clear the **Allow users to modify caching settings** check box.
18 To prevent users from sharing images of documents from the MicroStrategy Mobile application, clear the **Allow users to share document screenshots** check box. When this option is disabled, Mobile users cannot access the Share and Annotate features.

19 By default, the MicroStrategy Mobile application displays a Learn More link. When this link is tapped by a Mobile user, the mobile version of the MicroStrategy website opens in the default web browser. You can modify the Learn More link in the following ways.

- To change the website that opens when the Learn More link is tapped, type the desired URL in the **Custom URL** field.

- To remove the Learn More link, clear the **Show “Learn More” link** check box.

20 By default, the configuration used on the device is not updated automatically. To enable the mobile device to check the Mobile Server for updates to the configuration at a specified time interval:

   a In the **Check and update configuration** settings, select **Every**.

   b From the drop-down list, select whether to specify the time interval in **Days** or **Hours**.

   c In the field, type the number of days or hours that must pass between each check for updates. The MicroStrategy Mobile application checks for an update to the Mobile configuration at this specified interval. If an update is found, the user is prompted to apply the new configuration to the mobile device. The user can then choose to apply the new configuration or wait for a later time. If the user selects the latter option, the prompt reappears five minutes later.

21 To set up client authentication for Mobile Server, select the **Use Certificate Server** check box. With this option selected, you can set up a client certificate server responsible for creating certificates for mobile clients. These certificates are required from mobile clients attempting to access the Mobile Server. To specify the certificate server, type the certificate server’s URL in the **Use Certificate Server** text field. This field must begin with **https://** and requires the use of the fully qualified name of the certificate server in the URL, as in the following examples.

   **ASP:**

   ```
   https://fully_qualified_domain_name:port/
   CertificateServer/asp/certificate.aspx
   ```

   **JSP:**

   ```
   https://fully_qualified_domain_name:port/
   CertificateServer
   ```

   or

   ```
   https://fully_qualified_domain_name:port/
   CertificateServer/servlet/certificate
   ```

   where:
• **fullyQualifiedDomainName:** Is the location and port of your certificate server. For example, `machine_name.domain.com:8443`.

For detailed instructions on configuring a certificate server, see *Client authentication with a certificate server, page 164.*

### Configuring passcode and encryption options

22 To require users to enter a password to access the application, and to enable the encryption of caches on their mobile devices, select the **Requires passcode (required for Data Encryption)** check box. When this option is selected, a Mobile user must create a password the first time that she opens the Mobile application. The user is then prompted for the password each time that she attempts to open the application.

> Mobile device caches are encrypted only if the Requires Passcode check box is selected.

23 To require Mobile users to type a password to open the application after the mobile device is unlocked, select the **Require password after locking the device** check box.

24 To specify requirements for the passwords that Mobile users enter to gain access to the Mobile application, use the following settings under Encryption options:

a. To require at least one numeric character in the password, select the **Requires at least one numeric character** check box.

b. To require at least one special character in the password, select the **Requires at least one special character ($, @, %...)** check box.

c. To require at least one capital letter in the password, select the **Requires at least one capital letter** check box.

d. To specify a minimum number of characters for the password, type the number, in characters, in the **Minimum passcode length** text box. The default value is 4 characters.

e. To specify a maximum number of failed login attempts before a user is locked out of the Mobile application, type the maximum number in the **Maximum number of failed logon attempts** text box. If the maximum is met, all data is wiped, including caches and the mobile app configuration. The default value is 10 attempts.

f. To specify how long a user has to wait to try again after he enters an incorrect passcode, type the amount of time, in seconds, in the **Lockout duration** text box. The default value is 0 seconds.

g. To specify the amount of inactive time that must elapse before a password request appears on the mobile device, type the number of seconds in the **Require password on resuming application after** text box. The user is required to re-enter valid credentials when the MicroStrategy Mobile application is resumed after being inactive for the specified period of time.
The MicroStrategy Mobile application is considered inactive if it is running in the background, if other applications are running in the foreground, or if the mobile device is locked.

25 To continue the mobile configuration, click the Connectivity Settings tab. For detailed instructions on configuring connectivity settings, see Configuring connectivity settings for iOS and Android devices, page 202.

Configuring connectivity settings for iOS and Android devices

To configure mobile devices to communicate with Mobile Server and provide access to projects, you must provide connection and authentication information. Configure the connection and authentication information for your Mobile Server(s) and project(s) in the Connectivity Settings tab of the Mobile Configuration.

Configure the connectivity settings

1 From the Mobile Configuration, select the Connectivity Settings tab.

2 By default, user logins and passwords can be cached on the mobile device for a specified period of time. To stop credentials from caching on mobile devices, select the Never Persist Credentials check box. When this option is selected, a user is required to log in when she completely closes and reopens MicroStrategy Mobile. To completely close MicroStrategy Mobile, the user must also close the background task for the application on her device. This option is available for iPhone, iPad, and Android devices.

3 Under Default Mobile Server Authentication, specify the default Mobile Server authentication settings.

   a From the Authentication Mode drop-down list, select the default authentication mode to use to log in to the Mobile Server machine.

      ♦ For iOS devices, to use a trusted authentication provider such as Tivoli or SiteMinder, you must choose Basic and enter your credentials for the trusted authentication provider.

      ♦ The default mode is Anonymous.

      ♦ For Android, to use trusted authentication as the default authentication mode, you must use basic authentication.

      ♦ If you are using HTML forms for trusted authentication with the iPhone or iPad, you can choose Anonymous, Basic, or Windows as the default Mobile Server authentication mode.

   b For basic or Windows authentication, in the Login field, type the user name. To use basic authentication with a trusted authentication provider, type your trusted authentication provider login.
c  For basic or Windows authentication, in the Password field, type the password for the login. To use basic authentication with a trusted authentication provider, type your trusted authentication provider password.

d  For basic or Windows authentication, you can override login credentials that users may have specified on their mobile devices. To do this, select the Overwrite user-specified credentials when applying configuration check box.

e  For integrated authentication, ensure that you have configured integrated authentication for your MicroStrategy environment. For steps to configure integrated authentication, see the System Administration Guide.

4  Click Configure New Mobile Server.

5  In the Mobile Server Name field, type the fully qualified host name of this machine. This is the Mobile Server that the application will connect to.

   •  For iOS devices, if you are using trusted authentication, in this field, type the URL that is monitored by your trusted authentication provider. For example, if you are using Tivoli for trusted authentication, type http://tivoli\_machine:port/junctionName/. For additional information on trusted authentication, see the System Administration Guide.

   •  If you are using trusted authentication, in this field, type the name of the trusted authentication provider machine.

6  If mobile clients must use a different name to access the Mobile Server, select the Mobile clients access this server using the following external name check box, and type the name in the field. For example, type the externally accessible name of a load balancer in machine-name.domain.com format.

7  In the Mobile Server port field, type the port number that is used by Mobile Server on this machine. The default port is 80.

8  In the Mobile Server path field, type the path to the MicroStrategy Mobile Server files on this machine. The default path is MicroStrategyMobile.

9  From the Mobile Server type drop-down list, select ASP.NET for MicroStrategy Mobile, or J2EE for MicroStrategy Mobile Universal. ASP.NET is selected by default.

10 From the Request type drop-down list, specify whether the mobile devices use HTTP (no encryption) or HTTPS (HTTP encryption) to access the Mobile Server. For more information about HTTP and HTTPS and instructions on configuring Secure Sockets Layer (SSL), see SSL encryption, page 164. For information on encrypting traffic to Mobile Server, see Encrypting session information, page 174.

   You must decide whether to configure your Mobile Server to use SSL prior to creating mobile configurations. If you attempt to implement SSL on your Mobile Server after creating mobile configurations, you will not be able to update any configuration that has a Request Type of HTTP.
11 The default Mobile Server authentication settings specified above are used to log in to the Mobile Server. To use different login credentials, clear the **Use default authentication** check box and specify the Mobile Server authentication settings:

a From the **Authentication mode** drop-down list, select the default authentication mode to use to log in to the Mobile Server machine. For iOS devices, to use a trusted authentication provider such as Tivoli or SiteMinder, you must choose **Basic** and enter your credentials for the trusted authentication provider.

   - If you are using HTML forms for trusted authentication with the iPhone or iPad, you can choose Anonymous, Basic, or Windows as the Mobile Server authentication mode.
   - Anonymous authentication is selected by default.
   - For Android, to use trusted authentication, you must use basic authentication.

b For basic or Windows authentication, in the **Login** field, type the user name. To use basic authentication with a trusted authentication provider, type your trusted authentication provider login.

c For basic or Windows authentication, in the **Password** field, type the password for the login. To use basic authentication with a trusted authentication provider, type your trusted authentication provider password.

d For basic or Windows authentication, you can override login credentials that a user may have specified on their mobile device. To do this, select the **Overwrite user-specified credentials when applying configuration** check box.

12 Under **Default Project Authentication**, specify the default project authentication settings.

a From the **Authentication mode** drop-down list, select the type of authentication used by the Intelligence Server. Standard authentication is selected by default.

   If you select **Trusted Authentication** or **Windows Authentication**, the **Login** and **Password** fields are disabled. For iOS devices, to use trusted authentication you must supply your trusted authentication provider credentials in the Mobile Server Authentication section above.

b In the **Login** field, type the MicroStrategy user name to be used by the application to log in to the Intelligence Server.

c In the **Password** field, type the password for that user name.

d For standard, LDAP, and database authentication, you can override login credentials that a user may have specified on their mobile device. To do this, select the **Overwrite user-specified credentials when applying configuration** check box.
Configure a project

13 Configure a project that contains reports and documents intended to be viewed on the mobile device:

a  Click Configure New Project.

b  Select the project from the Project Name drop-down list.

c  The default project authentication settings specified above are used to log in to the project. To use different login credentials, clear the Use Default Authentication check box and specify the project authentication settings.

d  To specify a root folder, other than the project’s default, select the Use root folder check box. Click the down arrow to select the root folder.

e  Designate whether the login is case-sensitive by selecting or clearing the User login is case-sensitive check box.

14 To configure another project, click Configure New Project. Enter the information for this project.

15 To configure another Mobile Server, click Configure New Mobile Server. Enter the information for this Mobile Server.

Add a trusted certificate for SSL encryption for Android devices

16 If you are using SSL encryption for communication between Android devices and Mobile Server, you must specify the location of your trusted certificate. A certificate is required for secure client authentication with the Mobile Server. To add a new certificate, click Add New Certificate and enter the URL for the certificate in the Trusted Certificates text box.

  The URL for the trusted certificates must be accessible from the Android devices.

Configuring the home screen for iPhone, iPad, and Android devices

You can specify whether the user is presented with the default MicroStrategy Mobile home screen, a folder or report that you specify, or a custom home screen when they open the MicroStrategy Mobile application. To do this, configure the settings in the Home Screen tab of the Mobile Configuration.

Configure the home screen

1  From the Mobile Configuration, select the Home Screen tab.

2  To display the default MicroStrategy Mobile home screen when the application is started, select Display the default home screen. The default home screen contains buttons for Shared Library, Reports, Settings, and Help.
To display the contents of a folder when the application is started:

a. Select **Display the contents of a folder**.

b. Click the down arrow next to the **Object** field. A dialog box opens.

c. From the **Project** drop-down list, select the project that contains the folder you want to display. This must be a project that the configuration has been granted access to on the **Connectivity Settings** tab.

d. In the **User name** and **Password** fields, type the user name and password to log in to the project.

e. Browse to the folder and click **Current folder**. The dialog box closes and the browse folder is specified in the field. This is the root folder where the Mobile user begins browsing for reports and documents.

f. By default, Mobile Server checks for a cached subscription when a Mobile user selects a report or document from the browse folder. To execute the report or document without checking for a cached subscription, clear the **Check subscription** check box. Disabling this option ensures that reports and documents are updated, but this execution requires more time than displaying cached subscriptions.

g. You can configure the application to cache and preload the contents of a folder in the background when the application reconciles. This feature creates a faster response time for the contents of the desired folder, and allows you to cache objects on the mobile device without requiring users to manually execute them. To enable cache preloading, select the **Pre-cache contents at startup** check box.

To increase the execution performance of pre-cached objects that do not have server side caching enabled, specify an appropriate amount of time for local caches to remain valid. To do this, enter the amount of time in the **Cache real-time data for** field in the iPhone Settings, iPad Settings, Phone Settings, or Tablet Settings tab. For detailed instructions on configuring this option, see **Configuring MicroStrategy Mobile for iPhone or iPad, page 189** or **Configuring MicroStrategy Mobile for Android, page 197**.

4. To create a customized home screen, select **Display a custom home screen**. Specify the options for each button. For detailed instructions on how to create a custom home screen, see **Creating a custom home screen, page 206**.

5. Click **Save**. The configuration is saved.

**Creating a custom home screen**

When you create a configuration for MicroStrategy Mobile, you can choose to display a report or document on the home screen, customize the application’s home screen, or use the default home screen.

- **Displaying a single report or document as the home screen, page 207**
- **Configuring the home screen for iPhone and Android Phone, page 208**
Displaying a single report or document as the home screen

You can customize the home screen to display a single report or document when the application is started. To improve the start-up performance of this report or document, configure it to pre-cache.

To display a single report or document when the application starts

1. Select **Display a custom home screen**.
2. Select **Display a report or document**.
3. Click the down arrow. A project login dialog box opens.
4. From the **Project** drop-down list, select the project that contains the folder you want to display. This must be a project that the configuration has been granted access to on the **Connectivity Settings** tab.
5. In the **User name** and **Password** fields, type the user name and password to log in to the project.
6. Browse to the report or document and select it. The dialog box closes and the report or document is specified in the field.

Pre-caching reports, documents, and supporting objects

7. You can configure the application to cache and preload a report or document and its supporting objects folder in the background when the application reconciles. This feature creates a faster response time for the report or document you choose to display at startup.

   To increase the execution performance of pre-cached objects that do not have server side caching enabled, specify an appropriate amount of time for local caches to remain valid. To do this, enter the amount of time in the **Cache real-time data for** field in the iPhone, iPad, Phone, or Tablet Settings tab. For detailed instructions on configuring this option, see *Configuring MicroStrategy Mobile for iPhone or iPad, page 189* or *Configuring MicroStrategy Mobile for Android, page 197*.

8. To enable cache preloading for a report or document, click +.
9. From the **Action** drop-down list, select **Run report or document**.
10. From the **Object** drop-down list, select the desired report or document.
11. From the **Include a folder of supporting objects** drop-down list, select a folder that includes supporting objects for your report or document. The contents of this folder are pre-cached at startup.

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Pre-caching a folder of supporting objects

12 To enable cache preloading for a folder, click +.

13 From the Action drop-down list, select Browse folder.

14 From the Root drop-down list, select the desired folder. The contents of this folder are pre-cached at startup.

15 To execute the report or document without checking for a cached subscription, clear the Check subscription check box.

You can also pre-cache online content. For steps, see Pre-caching online content on the mobile device for offline use, page 214.

Displaying a progress bar for subscriptions and pre-caching

16 On the iPhone or iPad, if the home screen is a report or document, you can display a progress bar along the bottom of the screen to measure the progress for subscription synchronization and pre-caching. To do this, select Display a progress bar for subscriptions synchronization and pre-caching. By default, the progress bar is displayed in gray. To change the color of the progress bar, click the Color drop-down list and select the desired color.

17 Click Save to save and close the configuration.

Configuring the home screen for iPhone and Android Phone

The default home screen for MicroStrategy Mobile on iPhone and Android Phone includes the following buttons:

• **Shared Library**: Opens the Projects screen, which displays a list of all projects that the device has been configured to access.

• **Settings**: Opens the Settings screen. If the Allow users to access Settings check box (in the iPhone Settings tab) is cleared, the Settings screen displays version information and the status of the application. If this check box is selected, the Settings screen also displays configuration settings such as the memory limit.

• **Help**: Opens the Help for the application.

You can configure the home screen to display the contents of a folder, or a single report or document.

You can also customize the home screen to display a set of custom buttons. Each button can perform one of the following actions:

• Run a report or document

• Browse a specific folder

• List the projects available in the application

• List all reports or documents the user has subscribed to
• Open the **Settings** screen

• Open the Help for the application

Depending on how many buttons you define, the buttons are arranged as follows:

• If the home screen has one to four buttons, the buttons are arranged in one column of four rows.

• If the home screen has five or six buttons, the buttons are arranged in two columns of three rows.

• If the home screen has seven to nine buttons, the buttons are arranged in three columns of three rows.

• If the home screen has more than nine buttons, the buttons are arranged in multiple pages. Each page contains three columns of three rows of buttons.

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**To create a custom home screen for iPhone or Android Phone**

1. On the **Mobile Configuration** page (accessible from the **Mobile Administrator** page), define a new configuration, or modify an existing configuration. For instructions on how to define a new configuration, see *Configuring MicroStrategy Mobile for iPhone or iPad, page 189* or *Configuring MicroStrategy Mobile for Android, page 197*.

2. Select the **Home Screen** tab.

3. Select **Display a custom home screen**.

4. Select **Display a custom list of folders, documents, or reports**. A preview of the custom home screen is displayed on the left, and the customization options are displayed on the right.

**Define the buttons**

5. Select a button in the preview.

6. From the **Buttons** drop-down list, select **Action**.

7. From the **Action** drop-down list, specify the action that you want the button to take:

   • **Run report or document**: Executes a specific report or document. To specify the report or document, click the arrow next to **Object**, select the project containing the report or document, log in, and browse to the report or document. To create faster response times on iPhone by pre-caching the document or report in the background when the application starts, select the **Pre-cache contents at startup** check box. To pre-cache the supporting objects for the report or document on iPhone or Android Phone, select the desired folder from the **Include a folder of supporting objects** drop-down list.
To increase the execution performance of pre-cached objects that do not have server side caching enabled, specify an appropriate amount of time for local caches to remain valid. To do this, enter the amount of time in the **Cache real-time data for** field in the iPhone Settings or Phone Settings tab. For detailed instructions on configuring this option, see Configuring MicroStrategy Mobile for iPhone or iPad, page 189 or Configuring MicroStrategy Mobile for Android, page 197.

- **Browse folder**: Opens a specific folder. To specify the folder, click the arrow next to **Root**, select the project containing the folder, log in and browse to the folder.

  You can allow MicroStrategy Mobile for iPhone users to browse folders made available over the web through the WebDAV protocol. To do this, you must create an External Mobile Folder and specify it as a Browse Folder. For detailed steps to create an External Mobile Folder, see the Advanced Reporting Guide.

By default, Mobile Server checks for a cached subscription when a Mobile user selects a report or document from the browse folder. To execute the report or document without checking for a cached subscription, clear the **Check subscription** check box. Disabling this option ensures that reports and documents are updated, but this execution requires more time than displaying cached subscriptions.

To create faster response times on iPhone or Android Phone by pre-caching the folder in the background when the application starts, select the **Pre-cache contents at startup** check box.

To increase the execution performance of pre-cached objects that do not have server side caching enabled, specify an appropriate amount of time for local caches to remain valid. To do this, enter the amount of time in the **Cache real-time data for** field in the iPhone Settings or Phone Settings tab. For detailed instructions on configuring this option, see Configuring MicroStrategy Mobile for iPhone or iPad, page 189 or Configuring MicroStrategy Mobile for Android, page 197.

- **Go to Reports**: Opens the Reports screen on the iPhone, which displays the reports and documents the user has subscribed to.

- **Go to Subscriptions**: Opens the Subscriptions screen on Android phones, which displays the reports and document the user has subscribed to.

- **Go to Settings**: Opens the Settings screen. If the **Allow users to access Settings** check box (in the iPhone Settings or Phone Settings tab of the Mobile Configuration page) is cleared, the Settings screen displays version information and the status of the application. If this check box is selected, the Settings screen also displays configuration settings such as the memory limit.

- **Go to Shared Library**: Opens the Shared Library screen, which displays a list of all projects that the device has been configured to access.

- **Go to Help**: Opens the Help for the application.
8. From the **Buttons** drop-down list, select **Caption**.

9. In the **Caption** field, type the text to be displayed on the button.

10. In the **Description** field, type any notes about the button. This field is only for reference within the configuration, and is not visible to the user.

11. To change the image used for the button’s icon:
   a. From the **Buttons** drop-down list, select **Icon**.
   b. Select **Use my own**.
   c. In the **Image URL** field, specify the location of the image to use as the icon for the button.

12. To add a new button, click **Add a button**. The button is displayed in the preview.

13. To delete a button, select the button and click **Remove a button**.

**Configure the button display**

14. From the **Format** drop-down list, select **Button Style**.

15. From the **Border Color** color picker, select the color used in the outline of the button.

16. From the **Fill Color** color picker, select the color used in the background of the button.

17. From the **Font Color** color picker, select the color of the font used in the button captions.

18. From the **Style** drop-down list, select the style to apply to the buttons:
   • **Glass**: Same as Flat, but with a gloss applied on top of the background and icon.
   • **Flat**: The **Border Color** and **Fill Color** properties (see below) define a background for the button. The active area of the button includes the icon and the background.
   • **None**: No background is used. The only active area of the button is the icon itself. The **Border Color** and **Fill Color** properties (see below) are ignored when this style is selected.

**Specify the background**

19. From the **Format** drop-down list, select **Background**.

20. To set the background to a specific color, select **Fill Color** and, from the color picker, select that color.

21. To use a custom image as the background, select **Image**, and specify the location of the image in the **Image URL** field.

   The image must be no larger than 320 pixels wide and 416 pixels high.
Configure the title bar

22 From the Format drop-down list, select Title Bar.

23 To specify text to be displayed in the title bar, select Caption and, in the field, type the text to be displayed. MicroStrategy Mobile is displayed by default.

24 To display an image as the title bar on the iPhone, select Image URL and, in the text field, specify the location of the image.

   The image must be no larger than 232 pixels wide and 44 pixels high.

25 When you are ready to save the custom Home screen with the configuration, click Save. The configuration and the custom home screen are saved.

Configuring the home screen for iPad or Android Tablet

The default home screen for MicroStrategy Mobile on iPad and Android Tablet displays all projects that the device has been configured to access. In the menu bar it displays the following options:

• Home or Shared Library: Displays the list of projects.

• Enable Reports Tab or Enable Subscriptions Tab: Displays the reports and documents the user has subscribed to.

On the iPad, the application also has an i in the upper right. Tapping i on iPad or hitting the menu button on an Android tablet brings up a menu with the following options:

• Settings: Displays version information and the status of the application. If the Allow users to access Settings check box (in the iPad Settings or Tablet Settings tab of the Mobile Configuration page) is selected, the Settings screen also displays configuration settings such as the memory limit.

• Help: Displays the Help for the application.

You can configure the home screen to display the contents of a folder, or a single report or document. You can also customize the home screen to display a set of custom buttons. These buttons are displayed in a list. Each button can perform one of the following actions:

• Run a report or document

• List the reports or documents in a folder

• List the projects available in the application

To create a custom home screen for iPad or Android Tablet

1 In the Mobile Administrator home page, in the Mobile Configuration page, define a new configuration, or modify an existing configuration. For instructions on how to define a new configuration, see Configuring MicroStrategy Mobile for
iPhone or iPad, page 189 or Configuring MicroStrategy Mobile for Android, page 197.

2 Select the Home Screen tab.

3 Select Display a custom home screen.

4 Select Display a custom list of folders, documents, or reports. A preview of the custom home screen is displayed on the left, and the customization options are displayed on the right.

Define the buttons

5 Select a button in the preview.

6 From the Action drop-down list, specify the action that you want the button to take:

- **Run report or document**: Execute a specific report or document. To specify the report or document, click the arrow next to the Object field, select the project containing the report or document, and browse to the report or document. To create faster response times on iPad or Android Tablet by pre-caching the document or report in the background when the application starts, select the Pre-cache contents at startup check box. To pre-cache the supporting objects for the report or document, select the desired folder from the Include a folder of supporting objects drop-down list.

To ensure that pre-cached objects are used by the application, select the Cache real-time data for check box in the iPad Settings or Tablet Settings tab. For detailed instructions on configuring this option, see Configuring MicroStrategy Mobile for iPhone or iPad, page 189 or Configuring MicroStrategy Mobile for Android, page 197.

- **Browse folder**: Open a specific folder. To specify the folder, click the arrow next to the Root field, select the project containing the folder, and browse to the folder.

You can allow MicroStrategy Mobile for iPad users to browse folders made available over the web through the WebDAV protocol. To do this, you must create an External Mobile Folder and specify it as a Browse Folder. For detailed steps to create an External Mobile Folder, see the Advanced Reporting Guide.

By default, Mobile Server checks for a cached subscription when a Mobile user selects a report or document from the browse folder. To execute the report or document without checking for a cached subscription, clear the Check subscription check box. Disabling this option ensures that reports and documents are updated, but this execution requires more time than displaying cached subscriptions.

To create faster response times by pre-caching the folder in the background when the application starts, select the Pre-cache contents at startup check box.
To ensure that pre-cached objects are used by the application, select the Cache real-time data for check box in the iPad or Tablet Settings tab.

For detailed instructions on configuring this option, see Configuring MicroStrategy Mobile for iPhone or iPad, page 189 or Configuring MicroStrategy Mobile for Android, page 197.

- Go to Shared Library: Open the Shared Library screen, which displays a list of all projects that the device has been configured to access.

7 To add a new button, click Add a button. The button is displayed in the preview.

8 To delete a button, select the button and click Remove a button.

9 To move a button up or down in the display, select the button and click Move down or Move up.

Specify the contents of the home screen selector

10 Select the check box next to each item that you want to appear in the Home screen:

- Enable reports tab: On the iPad, adds a Reports tab to the home screen, which displays the reports and documents the user has subscribed to.

- Enable subscriptions tab: On Android tablets, adds a Subscriptions tab to the home screen, which displays the reports and documents the user has subscribed to.

- Settings: Adds Settings to the menu on the iPad or the menu button on an Android tablet. Tapping Settings displays version information and the status of the application. If the Allow users to access Settings check box (in the iPad Settings or Tablet Settings tab of the Mobile Configuration page) is selected, the Settings screen also displays configuration settings such as the memory limit.

- Help: Adds Help to the menu on the iPad or the menu button on an Android tablet. Tapping Help displays the Help for the application.

11 When you are ready to save the custom home screen with the configuration, click Save. The configuration and the custom home screen are saved.

Pre-caching online content on the mobile device for offline use

You can pre-cache online content, such as videos or files, on a mobile device, which allows a user to view the content when the device is offline.

For example, when a user views a streaming video on a mobile device using the Video Player widget, the streaming video is buffered and played as it downloads. By default, the downloaded video file is discarded when the MicroStrategy Mobile application is closed.

You can ensure that the video is downloaded and stored on the mobile device for offline use. To do so, you must provide a WebDAV folder that contains the video, and define the
appropriate settings to have the contents of the folder pre-cached, as described in the steps below.

If the video is downloaded instead of streamed, pre-caching downloads the video before the user requests it. This allows a faster response time.

**Prerequisites**

- Create an External Mobile Folder to browse the contents of the WebDAV folder that contains your video or other content. For detailed steps, see the *Advanced Reporting Guide*.

- Create the document that contains the content to be pre-cached. For example, if you are pre-caching a video, you can create a document with a Video Player widget that displays either of the following on an iPhone or iPad:
  - A streaming video which provides the location of the video file using the Alternate Download URL setting.
  - A downloaded video which provides the location of the video file using the Video URL setting.

For detailed information and steps to create a Video Player widget, see *Downloading and playing videos: Video Player widget, page 128*.

**To store content on the mobile device for offline use**

1. In Mobile Administrator, click **Mobile Configuration** from the left. Define a new configuration, or select the existing configuration that you want to modify. For steps to define a new configuration, see *Configuring MicroStrategy Mobile for iPhone or iPad, page 189* or *Configuring MicroStrategy Mobile for Android, page 197*.

2. On the **Home Screen** tab, select **Display a custom home screen**.

3. Select the appropriate settings to define the External Mobile Folder as a folder of supporting objects for the document and pre-cache its contents. For detailed steps, see the appropriate link below:
   - If you have defined the mobile configuration to display a single report or document when the application starts, see *To display a single report or document when the application starts, page 207*.
   - If you have defined the mobile configuration to display a custom list of folders, documents, or reports when the application starts on the iPhone, see *To create a custom home screen for iPhone or Android Phone, page 209*.
   - If you have defined the mobile configuration to display a custom list of folders, documents, or reports when the application starts on the iPad, see *To create a custom home screen for iPad or Android Tablet, page 212*. 
Configuring MicroStrategy Mobile for iPhone or iPad to receive push notifications

You can use alert-based subscriptions to ensure that users automatically receive notifications on an iPhone or iPad with MicroStrategy Mobile when a metric on a report meets specific threshold conditions. You can create an alert-based subscription using the Alerts Editor in Web. For information on creating alert-based subscriptions, see the MicroStrategy Web Help.

These alerts are “pushed” to MicroStrategy Mobile for iPhone or iPad by Intelligence Server. For information on how these push notifications are displayed on the device, see the MicroStrategy Mobile Analysis Guide.

The following high-level procedure provides steps to enable push notifications for MicroStrategy Mobile on an iPhone or iPad.

Prerequisites

- MicroStrategy delivers alert notifications through the Apple Push Notification Service (APNS). Therefore, you must have an Apple iOS developer license to send mobile push notifications. For information about the various iOS developer licenses available, see http://developer.apple.com/programs/.

- Your Intelligence Server machine must have a direct internet connection to the Apple Push Notification Service (APNS).

- You must have MicroStrategy Distribution Services to use push notifications with MicroStrategy. For information about purchasing a Distribution Services license, contact your MicroStrategy account executive.

- Push notifications must be enabled on an iPhone or iPad for the device to receive MicroStrategy push notifications. In addition, the first time MicroStrategy Mobile for iPhone or iPad is opened on a device, the user is prompted to allow the application to receive push notifications.

- To enable push notifications, Mobile Server must be configured to use Secure Socket Layer (SSL) encryption. For detailed instructions on configuring Mobile Server to use SSL, see the Enabling Secure Communication chapter in the System Administration Guide.

High-level steps to enable MicroStrategy push notifications for iPhone or iPad

1. Install the APNS certificate on the Intelligence Server machine that provides the push notifications. For instructions, see the documentation provided with your iOS developer license.

2. In Developer, create a Distribution Services device for iPhone or iPad. For detailed instructions, see the Scheduling Jobs and Administrative Tasks chapter in the System Administration Guide, or see the Developer Help (formerly the MicroStrategy Desktop Help).
3 Create a configuration for the application (see Configuring MicroStrategy Mobile for iPhone or iPad, page 189). In the iPhone Settings or iPad Settings tab of the configuration, make sure that you select the Enable Push Notification check box.

4 The first time the user opens MicroStrategy Mobile for iPhone or iPad on a device, the user is prompted to allow push notifications for MicroStrategy Mobile. The user must select Allow push notifications.

Applying configurations to mobile devices

Once you have created a configuration for a mobile device, you need to apply that configuration to the device. You can:

- Generate a URL for the configuration, then email the link to users or create an HTML page containing the link. When users tap the URL on their mobile device, the configuration is automatically applied to the device. For steps, see Configuring mobile devices using a generated URL, page 217.

- Configure MicroStrategy Mobile for iPhone, iPad, and Android through the Settings screen in the application. For steps, see Configuring the application from the device, page 218.

Configuring mobile devices using a generated URL

You can quickly and easily apply a configuration to a mobile device using a URL, as follows:

- Email the URL to your mobile device users. When these users tap the URL in the email client on their mobile device, the configuration is automatically applied to the device. This option is available for iOS users.

- Create an HTML page that includes the URLs as links. When users tap the URL in the HTML page using the browser on their mobile device, the configuration is automatically applied to the device. To email the link to Android users, you must create a short link. This option is available for Android users.

Steps to generate a mobile configuration URL are provided below.

![Warning](image)

User logins and passwords included with a configuration should be used only for demonstration purposes, as the configuration is not transmitted or stored securely.

To generate a URL for a configuration

1 In the MicroStrategy Mobile Server page, from the pane on the left, select Mobile Configuration.

2 For the configuration you want to generate a link for, click Generate URL. A Generate Configuration URL dialog box opens.

3 In the Server Name field, type the fully qualified host name of the machine hosting the Mobile Server that the configuration is stored on.
If you are using trusted authentication, in this field, type the name of the trusted authentication provider machine.

4. By default, the port number used by Mobile Server is included in the URL. If you do not want to include the port number in the URL, clear the **Include port** check box.

5. If you are including the port number in the URL, select the **Include port** check box, and in the text box next to it, type the port number used by Mobile Server. The default is 80.

6. By default, the request type is set to **HTTP**. If you are using a secure connection, select **HTTPS** from the **Request Type** drop-down list.

7. From the **Authentication Mode** drop-down list, select an authentication mode. When the user taps the URL, she will have to provide a username and password to log in to Mobile Server using this authentication mode.

8. For Android devices, you must shorten the configuration URL before you insert it as a clickable link in an email. To do this, click **Use Short URL**.

9. To generate the URL, click **Generate URL**. The URL is generated and displayed in the dialog box. You can then copy and paste the URL into an email for iPhone and iPad users. For Android users, you can insert the link into an HTML page and instruct users to click on the appropriate link using the browser on their Android devices, or you can email a short URL.

10. To save the URL settings, click **Save**. The Generate Configuration URL dialog box closes, and the authentication mode and host are saved for the next time you generate a URL for this configuration.

**Configuring the application from the device**

You can also configure MicroStrategy Mobile for iPhone, iPad, and Android through the Settings screen in the application. You need to add the connection information for the MicroStrategy Mobile server, and then configure the projects that you want to receive reports from, as described in the procedures below.

If you have applied a configuration to the device and that configuration does not allow users to view or change the device settings, you will not be able to configure the application from your device. Contact your system administrator if you need to change your configuration settings.

**To configure MicroStrategy Mobile on an iPhone, iPad, or Android device**

1. Open the Settings screen:
   - On an iPhone, tap the **Settings** button.
• On an iPad, tap ☰ and then tap Settings.
• On Android, tap the menu button ☰, then tap Settings.

Depending on your configuration, you may not be able to access the Settings screen, or you may only be able to view the About MicroStrategy Mobile information.

2 To configure an existing server, tap the server name or IP address. To add a new server, tap Add Mobile Server. Specify the settings for the server as described in Configure the connectivity settings, page 202.

3 To configure the application settings, tap Advanced Settings. Specify the settings for the application as described in Configure the iPhone or iPad settings, page 190 or Configuring MicroStrategy Mobile for Android, page 197.

**Downloading a client certificate from the certificate server**

4 Click Get Certificate.

5 In the Authentication screen, log in using your MicroStrategy login and password. The certificate will download and display in the Advanced Settings screen.

6 To exit the settings screen and return to the Home screen, tap Home.

**Managing multiple configurations for MicroStrategy Mobile**

To see all configurations that have been saved on this Mobile Server, select the Mobile Configuration category in the Mobile Server Administrator page.

To rename a configuration, click the name of the configuration. Type the new name for the configuration and press ENTER.

From the Actions column, you can manage your configurations:

• To modify an existing configuration, click Modify. The configuration opens, and you can make any changes. For instructions, see the appropriate link below:
  ▫ Configuring MicroStrategy Mobile for iPhone or iPad, page 189
  ▫ Configuring MicroStrategy Mobile for Android, page 197

• To copy a configuration, click Duplicate. A copy of that configuration is created with the name "Copy of <configuration>" and added to the end of the list. You can then modify this copy by clicking Modify.

• To generate a URL for a configuration, click Generate URL. A Generate URL dialog box opens.

• To delete a configuration, click Delete.

• To create a new configuration, click Define New Configuration.
Configuring MicroStrategy Mobile for Android to receive push notifications

You can use alert-based subscriptions to ensure that users automatically receive notifications on an Android device with MicroStrategy Mobile when a metric on a report meets specific threshold conditions. You can create an alert-based subscription using the Alerts Editor in Web. For information on creating alert-based subscriptions, see the MicroStrategy Web Help.

These alerts are “pushed” to MicroStrategy Mobile for Android by Intelligence Server. For information about how these push notifications are displayed on the device, see the MicroStrategy Mobile Analysis Guide.

Prerequisites

- MicroStrategy delivers alert notifications through the Google Cloud Message (GCM), which is a free service that enables developers to send messages between servers and client applications. For some customizations, you may need an API key obtained from Google Play Console.
- Your Intelligence Server must be able to connect to Google Cloud Message service either with direct connect or through a proxy, which can be configured through Developer.
- You must have MicroStrategy Distribution Services to use push notifications with MicroStrategy. For information about purchasing a Distribution Services license, contact your MicroStrategy account executive.
- Push notifications must be enabled on an Android device to receive MicroStrategy push notifications. In addition, the first time MicroStrategy Mobile for Android is opened on a device, the user is prompted to allow the application to receive push notifications.
- To enable security, it is recommended that Mobile Server be configured to use Secure Socket Layer (SSL) encryption. For detailed instructions on configuring Mobile Server to use SSL, see the Enabling Secure Communication chapter in the System Administration Guide.
- Your Android device must have Google Play service.

High-level steps to set up Android Alert Push Notification Environment

1. Open MicroStrategy Developer settings for Intelligence Server:
   a. From the Administrator menu select Delivery Message.
   b. Select Devices.
   c. Create a device with Mobile Client Android as shown in the image below.
▫ In the **Package Name** field enter your Android application identity. (For out of the box build users, use the default name. For customized application user provide the package name.)

▫ Under the Google Cloud Messaging Services section, for **IP Address** and **Port Number** fields use the default values that display automatically.

▫ In the **Authorization Key** field enter the **Application Programming Interface Key** obtained from **Google Developer Console**. (For out of the box build user, use the default value. For customized application users provide the package name.)

▫ The **Collapse Key** field displays empty by default. (This parameter identifies a group of messages that can be collapsed in a way that only the last message gets sent when delivery is resumed. This is intended to avoid sending duplicates of the same message when the device comes back online or becomes active.)

▫ The **Delay While Idle** field defaults to "False." (When this parameter is set to "True", it indicates that the message should not be sent until the device becomes active.)

▫ In the **Notification Active For** (in hours) field indicate how long the message should be kept Google Cloud Message Storage if the device is offline. (The maximum time to live supported is 4 weeks. Since this amount is measured in seconds the default value appears as 1 hour.)
The **Google Cloud Message Proxy** field is optional. If Intelligence Server cannot communicate with Google Cloud Messaging then select the check box and enter the IP Address of the proxy server.

2 Create Alert Subscription for Android device in Web Server:

   a From **Report** menu select **Alert**.

   b Select **Mobile Notification**. The Alert Editor dialogue box opens.

   c Select **Android** as the **Device Type** and enter the newly created device name as **Target Application**.

3 Open **Mobile Configuration** settings for Mobile Server and select the **Enable push notification** check box.
Apply the mobile configuration on Android device. Once the alert is triggered, user receives alert subscription through the Android device.

How to receive notification through Customized Application

1. Open Android Studio and create a new SDK project.

2. Select a configuration file to add to the new SDK project. The configuration file provides service-specific information for the application.
   - To obtain the configuration file, select an existing project for the application or create new.
   - A package name for the application must also be provided. (For more information please refer to the Google Developer Help.)

3. Download google-services.json and copy into the application.

4. Compile and distribute application.

High-level steps to enable MicroStrategy push notifications for Android

1. In MicroStrategy Developer, create a Distribution Services device for Android. For detailed instructions, see the Scheduling Jobs and Administrative Tasks chapter in the System Administration Guide, or see the Developer Help.

2. Create a configuration for the application. In Android Settings tab of the configuration, make sure that you select the Enable Push Notification check box.
3 The first time you open MicroStrategy Mobile for Android on a device, the user is prompted to allow push notifications for MicroStrategy Mobile. The user must select **Allow push notifications**.

**The Mobile subscription workflow**

There are three steps in the MicroStrategy Mobile subscription workflow. These steps, detailed below, explain how Mobile retrieves a report from Intelligence Server:

- First, a subscription to the report is created. Any prompts are answered, and the scheduled event or time is set. Subscriptions can be created by an administrator or Mobile user in MicroStrategy Developer or Command Manager.

  For more information about how an administrator schedules a report to be delivered, see *Scheduling the report or document, page 224.*

  For more information about how a user subscribes to a report or document from their device, see the *MicroStrategy Mobile Analysis Guide.*

- Second, the report is executed when the scheduled event or time is triggered. Upon execution of the report, the new report cache is sent to the MicroStrategy history list. For more information, see *Executing the report on Intelligence Server, page 224.*

- Finally, the user retrieves the report from Mobile Server, and it is available on the user's mobile device. For more information, see *Retrieving the report in MicroStrategy Mobile, page 225.*

  For background information on data security in MicroStrategy Mobile, see *Data security in Mobile, page 225.*

**Scheduling the report or document**

The Mobile user or an administrator selects the reports or dashboard-style documents to be viewed in MicroStrategy Mobile. They then schedule these reports for delivery to Mobile, and answers any prompts in the reports. For instructions on scheduling report subscriptions for Mobile, see *Managing Mobile report subscriptions, page 225.*

In addition, the Mobile user schedules an update time window for the mobile device to automatically retrieve the reports. For instructions, see the section on choosing when to update the Report List in the *MicroStrategy Mobile Analysis Guide.*

**Executing the report on Intelligence Server**

When the schedule associated with a report is triggered, that report is executed by Intelligence Server. The report is then sent to the History List, to reduce the load on Intelligence Server. For a detailed explanation of the History List, see the *Caching* chapter in the *System Administration Guide.*

Reports available in Mobile are only updated when the associated schedule is triggered. In particular, editing the report through MicroStrategy Web or Developer does not update the report’s History List message. If you are concerned that Mobile users may not
have the most recent version of a report, you should either update the History List message, or inform the users that they need to reset that report.

If the user has made changes to the report on the Mobile device and saved those changes, any changes made to the report in MicroStrategy Web or Developer are not applied to the report on the Mobile device until the user resets the report.

**Retrieving the report in MicroStrategy Mobile**

Once a report has been sent to the History List, it is available on Mobile Server. Mobile then retrieves the report from the server, either during its scheduled update time or during a manual update. To schedule when reports are retrieved from Mobile Server, and to retrieve reports immediately, see the [MicroStrategy Mobile Analysis Guide](https://www.microstrategy.com/docs/MobileAnalysisGuide.pdf).

Mobile retrieves reports from Mobile Server by report ID (a unique 32-character identifier) and report type. Graph reports are stored on the mobile device as JPG image files. Other types of reports are compressed to roughly one-tenth their original size, using LZW compression. This keeps the memory footprint of each individual report as small as possible, and also reduces the amount of bandwidth that the reports use during reconciliation.

In MicroStrategy Mobile for iPhone, iPad, or Android, the administrator can control how much memory is available for use by reports in the **Memory Limit** setting in the device configuration. For instructions on changing this setting, see [Configuring MicroStrategy Mobile for iPhone or iPad, page 189](https://www.microstrategy.com/docs/MobileAnalysisGuide.pdf) or [Configuring MicroStrategy Mobile for Android, page 197](https://www.microstrategy.com/docs/MobileAnalysisGuide.pdf).

**Data security in Mobile**

The data in the reports and documents that you view on your mobile device is secured by MicroStrategy. This means that the data you can view and work with is controlled by the same security mechanisms that control access to the data in other MicroStrategy products and components. Security settings can limit your data access to specific projects, certain reports within a project, the ability to use specific objects on reports, and how you can explore some data. If you have any questions about any data you expect to be able to access but cannot, see your MicroStrategy administrator.

MicroStrategy also secures the data in your reports and documents by ensuring that other applications on your mobile device cannot access it.

**Managing Mobile report subscriptions**

To receive reports and dashboard-style documents on a mobile device, the device’s user must be subscribed to those reports. Each Mobile subscription is associated with a MicroStrategy schedule that controls how often the report or document is updated. For detailed information about schedules and subscriptions, including instructions on how to create schedules, see the [Scheduling Jobs and Administrative Tasks](https://www.microstrategy.com/docs/SystemAdministrationGuide.pdf) chapter in the [System Administration Guide](https://www.microstrategy.com/docs/SystemAdministrationGuide.pdf).
Before you subscribe

Note the following when you configure MicroStrategy Mobile subscriptions, either for yourself or for other users:

- To view reports in the MicroStrategy Mobile application, users must have the Use MicroStrategy Mobile privilege for all projects containing reports they want to view.
- To view dashboard-style documents in MicroStrategy Mobile, users must have the Mobile View Documents privilege for all projects containing documents they want to view.
- When subscribing a user to a report, be certain that the user has the proper permissions to view the report and the objects it contains.

For additional information about report and report object permissions in the MicroStrategy security model, see the Setting Up User Security chapter in the System Administration Guide.

- MicroStrategy has a number of recommended best practices for designing reports to be viewed in MicroStrategy Mobile. Reports designed according to these best practices load quickly and are easy to read on mobile devices. For a list of these best practices, see Chapter 2, Designing Reports and Documents for Mobile Devices.

See the appropriate link below:

- Managing subscriptions, page 226
- Managing multiple subscriptions at once with Developer, page 227
- Managing subscriptions using Command Manager, page 232
- Managing your subscriptions through MicroStrategy Web, page 232
- Managing subscriptions in MicroStrategy Developer, page 234
- Managing subscriptions with Newsstand for the iPhone and iPad, page 235

Managing subscriptions

Both administrators and MicroStrategy Mobile users can manage subscriptions in Mobile. There are several different ways to manage MicroStrategy Mobile report and document subscriptions:

- **Subscribing multiple users**
  
  You can subscribe multiple users to reports or documents in MicroStrategy Developer. The Subscription Manager allows you to manage all the subscriptions for a project from one interface. For specific information about how to manage Mobile subscriptions using Developer, see Managing multiple subscriptions at once with Developer, page 227.

- **Using MicroStrategy Command Manager**
  
  You can use MicroStrategy Command Manager to manage any number of subscriptions. Command Manager is a script-based tool for administering
MicroStrategy systems. For specific information about how to manage Mobile subscriptions using Command Manager, see Managing subscriptions using Command Manager, page 232. For general information about Command Manager, including detailed instructions, see the Automating Administrative Tasks with Command Manager chapter in the System Administration Guide, or see the Help for Command Manager.

- **Individual users managing personal subscriptions**
  - **In MicroStrategy Web**
    Individual users can manage their subscriptions in MicroStrategy Web. For specific information about managing individual MicroStrategy Mobile subscriptions, including how to subscribe to reports, see Managing your subscriptions through MicroStrategy Web, page 232. For general information about managing subscriptions using MicroStrategy Web, see the MicroStrategy Web Help.
  - **In MicroStrategy Developer**
    Individual users can manage their subscriptions through MicroStrategy Developer. Specifically, the Subscription Wizard offers users a way to subscribe to multiple reports simultaneously, without having to open each individual report. Users can also subscribe to individual reports by using the report’s Properties page. For specific information about managing individual MicroStrategy Mobile subscriptions in Developer, including how to subscribe to reports, see Managing subscriptions in MicroStrategy Developer, page 234. For general information about managing subscriptions using MicroStrategy Developer, see the MicroStrategy Web Help.
  - **In MicroStrategy Mobile**
    Individual users can manage their subscriptions on their mobile devices. They can subscribe to any report or document that they have access to, answer prompts, and define the schedule or event that will determine when the report or document is sent to the device. Users can also edit their existing subscriptions on their device. For specific information about editing and subscribing to reports and documents on a mobile device, see the MicroStrategy Mobile Analysis Guide.

**Managing multiple subscriptions at once with Developer**

The Subscription Manager allows you to manage all the subscriptions for a project from one interface. It is a convenient, central location that displays every subscription, and allows you to filter on various criteria.

To access the Subscription Manager, log in to Developer and expand Administration, then Configuration Managers, and then select Subscriptions. For detailed information about the Subscription Manager, see the MicroStrategy Developer Help.

In Developer, the administrator can subscribe multiple MicroStrategy Mobile users to a single report at once, or subscribe a single user to multiple reports by using the Subscription Creation Wizard.
For more information about using the Subscription Creation Wizard, refer to the MicroStrategy Developer Help.

To subscribe one or more users to one or more reports

1. From the Administration menu, point to Scheduling and then select Subscription Creation Wizard. The Subscription Wizard opens.

2. Review the information on the Introduction dialog box and click Next. The Specify Characteristics dialog box opens, as shown below:

3. From the Choose a project from which reports/documents will be delivered to the recipients drop-down list, select the project that contains the reports that you want to create a subscription to.

4. From the Choose a delivery type drop-down list, select Mobile to send the report directly to the Mobile device, select Cache Update to update server side caches for reports and documents that use the pre-caching feature, or select History List to deliver the report to a Mobile device using the History List.

   Use cache update subscriptions to update server side caches for your pre-cached reports and documents. For instructions on configuring the pre-cache option for reports and documents, see Configuring the home screen for iPhone and Android Phone, page 208 or Configuring the home screen for iPad or Android Tablet, page 212.

5. Click Next. The Choose Reports/Documents dialog box opens, as shown below:
6 Browse to the reports/documents to be delivered and click the right arrow to add them to the Selected objects. Click **Next**.

7 Answer any prompts for the selected reports/documents.

   - You cannot schedule reports with prompts unless the report has default answers.

8 Click **Next**. The Choose Recipients dialog box opens, as shown below:
9 From the Schedule drop-down list, select the schedule to execute the reports/documents.

10 Click To... to open the Select Recipients dialog box, as shown below:

11 Browse to the recipients of the subscription and click the right arrow > to add them to the Selected recipients. Click OK to return to the Subscription Wizard - Choose Recipients dialog box.

12 If you are creating a history list subscription for a document, choose the form of export to generate from the Pre-generate export drop-down list. The options for this setting are an HTML page, a PDF document, or an Excel spreadsheet.

13 If you are creating a Mobile delivery, from the Mobile device type drop-down list, choose Phone or Tablet.

14 If you are creating a cache update subscription for pre-cached reports and documents, select either Phone or Tablet from the Delivery Format drop-down list.

15 To send the report to the selected recipients immediately after creating the subscription, select the Run subscription immediately check box.

16 Click Next. The Specify Subscription Properties dialog box opens, as shown below:
17 Specify your subscription properties as follows:

- Depending on the reports or documents selected, one or more options may be grayed out and unavailable. For details on these options and when they are available, see the *System Administration Guide*.

- To configure a date when the subscription will stop sending reports, select the **Expire subscription on** check box and select a date.

- If you are creating a History List delivery, you can have an automated delivery notification email sent when the report is delivered. To do this, select the **Send notification to default email address of each recipient** check box.

- If you are creating a History List delivery, to ensure that previous versions of the report in the recipients’ delivery location are replaced with the most recent version, select the **The new scheduled report will overwrite older versions of itself** check box. If this check box is not selected, the older versions remain.

- To ignore any existing report or document caches and ensure that the report or document always has the latest data, select the **Re-run against the warehouse** check box.

- To update History List caches and not Matching caches, select the **Do not create or update matching caches** check box. For an explanation of Matching and History caches, see the *Caching* chapter of the *System Administration Guide*.

18 Click **Next**. The Summary dialog box opens.

19 Review the settings and click **Finish**. The subscription is created and available for viewing in the Subscription Manager.
Managing subscriptions using Command Manager

MicroStrategy Command Manager is a script-based tool for automating Intelligence Server administration. You can compose Command Manager scripts to manage user subscriptions. In some situations this may be more efficient than navigating the Developer GUI, since you can quickly change the names of reports, users, or projects with Command Manager scripts.

To configure subscriptions with Command Manager, you must have the Use Command Manager privilege.

To start Command Manager, from the Start menu point to Programs, then MicroStrategy Products, and select Command Manager.

The Command Manager statement syntax for creating a mobile subscription is:

```
CREATE MOBILESUBSCRIPTION subscription_name [FOR OWNER login_name] SCHEDULE schedule_name USER user_name CONTENT report_or_document_name IN FOLDER location_name IN PROJECT project_name [OVERWRITEOLDERVERSION (TRUE|FALSE)] [EXPIRATIONDATE mm/dd/yyyy] [RUNFRESH (TRUE|FALSE)] [CREATEUPDATECACHE (TRUE|FALSE)] [MODIFICATIONBYRECIPIENTS (TRUE|FALSE)];
```

For more information about Command Manager, including detailed instructions, see the Automating Administrative Tasks with Command Manager chapter in the System Administration Guide, or see the Help for Command Manager.

Managing your subscriptions through MicroStrategy Web

There are a variety of ways to manage your MicroStrategy Mobile subscriptions using MicroStrategy Web.

MicroStrategy Web’s subscription interface enables you to subscribe to a new report or document, or to unsubscribe from a report or document that you no longer need to view. You can also change the update schedule for a subscription. Finally, you can change the prompt answers for a report or document that is delivered to your mobile device. See the following sections for procedures:

- To subscribe to a report or document in MicroStrategy Web, page 233
- To unsubscribe from a report, page 233
- To change the update schedule for a subscription in MicroStrategy Web, page 233
- To change the personalized prompt answers for a report or document, page 234

To manage your Mobile subscriptions through MicroStrategy Web, you must have the Web Scheduled Reports privilege as well as the Use MicroStrategy Mobile privilege. In addition, to subscribe to a document you must have the Mobile View Document privilege.
**To subscribe to a report or document in MicroStrategy Web**

1. Open the report or document in MicroStrategy Web.
2. Answer any prompts that the report or document contains and click **Run Report**.
   
   Your answers to the prompts are saved and used to personalize your subscription to that report or document. To change these answers later, open the report or document again and, from the Data menu, select **Re-prompt**.
3. From the **Home** menu, point to **Subscribe to**, and then select **Mobile**. The Subscribe to Mobile dialog box opens.
4. Type a name for the subscription in the **Name** text field.
5. Select a schedule or event from the **Schedule** drop-down list.
6. Click **To** to choose the subscription recipients.
7. Choose the subscription device from the **Device type** drop-down list.
8. To run the subscription immediately following its creation, select the **Run subscription immediately** check box.
9. To choose an end date for the subscription, expand **Advanced Options**, select the **Do not deliver after** check box, and click the **Calendar** drop-down menu to choose a date.
10. Click **OK**. The Subscribe to Mobile dialog box closes.
11. To verify that you are subscribed to the report or document, at the top of the page, click **My Subscriptions**. Note that the report appears in your list of subscriptions, in the Mobile Subscriptions section.

**To unsubscribe from a report**

1. Open MicroStrategy Web and log into a project.
2. At the top of the page, click **My Subscriptions**. The Subscriptions screen opens, with a list of all your subscriptions for that project.
3. In the **Unsubscribe** column, select the check box for any reports that you no longer want to receive on your mobile device.
4. Click **Unsubscribe**. Any selected reports are removed from your subscription list.

**To change the update schedule for a subscription in MicroStrategy Web**

1. Open MicroStrategy Web and log into a project.
2 At the top of the page, click My Subscriptions. The Subscriptions page opens, with a list of all your subscriptions for that project.

3 In the Action column, click Edit for the subscription you want to edit. The Edit Subscription page for that subscription opens.

4 From the drop-down list, select the new schedule.

5 Click OK. The Edit Subscription dialog box closes.

---

**To change the personalized prompt answers for a report or document**

1 Open the report or document in MicroStrategy Web.

2 From the Data menu, select Re-prompt.

3 Answer the prompts in the report or document.

4 When you are satisfied with your prompt answers, click Run Report. The report executes with your prompt answers, and your answers are saved and used to personalize your subscription to the report.

---

**Managing subscriptions in MicroStrategy Developer**

You can manage your subscriptions to individual reports. Steps for these procedures are below.

To manage subscriptions in bulk, and for steps to use the command line tool Command Manager, see the System Administration Guide.

To manage your Mobile subscriptions through MicroStrategy Developer, you must have the Use Developer privilege as well as the Use MicroStrategy Mobile privilege. In addition, to subscribe to a document you must have the Mobile View Document privilege.

To unsubscribe from a report or document delivery, you must either have created the subscription originally (you are the owner of the subscription), or else the creator must have selected Allow Unsubscribe when she created the subscription. If neither of these is true, then only an administrator or the subscription’s owner can unsubscribe users from the report/document delivery.

---

**To subscribe to a single report or document**

1 In Developer, right-click the report/document, select Schedule delivery to, and select Mobile.

2 Type the name of the subscription in the Name text field.

3 Select the schedule that you want the report/document to be delivered based on, by selecting it from the drop-down list.

4 Click To to choose the subscription recipients.

5 Select the desired mobile device from the Mobile device type drop-down list.
6 To run the subscription immediately following its creation, select the **Run subscription immediately** check box.

7 Click **OK**. The dialog box closes.

---

**To unsubscribe from a single report or document**

1 In Developer, from the **Tools** menu, select **My Subscriptions**.

2 Right-click the subscription and select **Unsubscribe**.

   - If the Unsubscribe option is not available, the subscription can only be deleted by the subscription’s owner or by an administrator.

3 Confirm that you want to delete the subscription by clicking **Yes**. The subscription is deleted.

---

**Managing subscriptions with Newsstand for the iPhone and iPad**

For iPhone and iPad, using the MicroStrategy SDK, you can configure your MicroStrategy Mobile application to use the Newsstand feature in iOS. By delivering subscriptions through Newsstand, you can schedule deliveries at off-peak hours. These subscriptions are downloaded to iPhones and iPads even if the MicroStrategy Mobile application is not running on the mobile device.

To use the Newsstand feature in iOS, you must configure MicroStrategy Mobile to receive push notifications, as described in *Configuring MicroStrategy Mobile for iPhone or iPad to receive push notifications, page 216*.

For procedures on compiling the MicroStrategy Mobile application as a Newsstand application, see the *MicroStrategy Developer Library*.

You can perform the following administrative tasks to manage Newsstand subscriptions:

- Mobile clients create connections with Intelligence Server to download Newsstand subscriptions. To allow these connections to stay open during downloads, Intelligence Server allows a specific amount of idle time during the connections. To modify the idle time limit, adjust the **Mobile Newsstand session idle time** setting in the Governing Rules dialog box (in the Intelligence Server Configuration Editor). For detailed instructions on modifying Intelligence Server governing rules, see the *System Administration Guide*.

- When a Newsstand subscription is ready to be downloaded, a push notification is sent to the Newsstand application on the recipient’s mobile device. You can schedule an administration task to send Newsstand push notifications at a specific time of day. For detailed procedures on scheduling administration tasks, see the *System Administration Guide*. 
Customizing error messages for mobile devices

Mobile administrators can customize error messages originating from Intelligence Server. Use this custom error message feature to:

- Provide alternate, less technical, and app-specific text
- Include administrator contact information
- Translate error message text

This feature is for customizing error messages originating from Intelligence Server. The Mobile server performs the following general workflow when an error is received from Intelligence Server:

1. The Mobile server verifies whether the error code is configured in the mobileErrors.xml file on the Mobile server. If the error code is configured in the mobileErrors.xml file, the Mobile server passes the customized message to the mobile app. To configure an error code in the mobileErrors.xml file, see To customize error messages for mobile devices (from Intelligence Server).

   For a list of the out-of-the-box error message defined in the mobileErrors.xml file, see Default mobileErrors.xml.

2. If the error code is not configured in the mobileErrors.xml file, the Mobile server verifies whether the Override unhandled Intelligence Server error messages setting is enabled. If the setting is enabled, the Mobile server passes the defined error message to the mobile app. To set the override setting, see To override non-customized error messages (from Intelligence Server).

3. If the Override unhandled Intelligence Server error messages setting is not enabled, the Mobile server passes the standard error message from the Intelligence Server to the mobile app.

   When an error is logged, the original error message from Intelligence Server is always written to the log file, regardless of the error message sent to the mobile app.

To customize error messages for mobile devices (from Intelligence Server)

1. On the Mobile server, open the mobileErrors.xml file with an XML or text editor. The file is located in <MobileServerRoot>\WEB-INF\xml\config. For example, if installed on the C: drive, the file is located in C:\Program Files (x86)\MicroStrategy\Mobile Server ASPx\WEB-INF\xml\config.

2. Edit the file to customize error messages.

   The following is an typical error message from the XML file:
Note the following syntax rules:

- Only the following attributes are supported in the `<error/>` tag:
  - `code` - specifies the ID of the error code from Intelligence Server.
  - `useOriginalMessage` - specifies whether to use the error message from Intelligence Server. If `true`, the text from Intelligence Server is passed to the Mobile app. If `false`, the custom text is passed to the Mobile app.

Other attributes are available for MicroStrategy Web only and are ignored here.

- If there are multiple `<message/>` tags defined for an error code, the messages are concatenated and passed to the mobile app.
  - When translating error messages, it is good practice to divide the text into strings that can be reused by multiple error messages.

- Internationalization is supported through the `desc-id` attributes, which point to the translated strings in the `MessagesBundle_*.properties` files in `<MobileServerRoot>/WEB-INF/classes/resources`. For more information see the following topic in the MicroStrategy Developer Zone: Using Localization Descriptor Files.

3 Save and close the file.

---

**To override non-customized error messages (from Intelligence Server)**

1 Open Mobile Administrator.

2 Click **Security**. The Security page opens.

![Security page](image)

3 In the **Diagnostics** section, note the following options:
• **Override unhandled Intelligence Server error messages** - Specifies the error message text that will be sent to mobile apps for errors originating from Intelligence Server and that are not configured in the mobileErrors.xml file on the Mobile server. To define an error message, select the check box and enter the error message text in the text field.

  
  Internationalization of this message is currently not supported.

• **Include time stamp in error message** - Select the check box to include a time stamp when the error message is sent to the mobile apps.

4 Click **Save**.

**Default mobileErrors.xml**

The out-of-the-box mobileErrors.xml file includes customizations for the error messages listed in the following table. For other scenarios, mobile administrator can choose to replace the error messages through the **Override unhandled Intelligence Server error messages** setting on the Security page in Mobile Administrator Security page, or add additional error messages to the mobileErrors.xml file.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Error Code</th>
<th>Customized Error Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>User does not have the privilege to use mobile app</td>
<td>-2147205002</td>
<td>You do not have the required privilege to access this resource. Please contact your Administrator.</td>
</tr>
<tr>
<td>User lacks necessary privileges to access the resource</td>
<td>-2147213784</td>
<td>You do not have the required privilege to open the page. Please contact your Administrator.</td>
</tr>
<tr>
<td>Project LDAP privilege error</td>
<td>-2147214578</td>
<td>The username or password you entered is incorrect.</td>
</tr>
<tr>
<td>User is not linked to any MicroStrategy user</td>
<td>-2147212488</td>
<td>Your account is not linked to a MicroStrategy account. Please contact your Administrator.</td>
</tr>
<tr>
<td>The size of the result binary exceeds the limit set by the client request</td>
<td>-2147071867</td>
<td>The size of the result binary exceeds the limit set by the client request. Please contact your Administrator.</td>
</tr>
<tr>
<td>Dataset cannot be run</td>
<td>-2147466604</td>
<td>The page could not be displayed because cube is not published or dataset returns an error. Please publish the cube or contact your administrator for help.</td>
</tr>
<tr>
<td>Username is not found or password is incorrect</td>
<td>-2147216959</td>
<td>The username or password you entered is incorrect.</td>
</tr>
<tr>
<td>User is disabled</td>
<td>-2147216965</td>
<td>Your account has been disabled. Please contact your Administrator.</td>
</tr>
<tr>
<td>User is required to change the password</td>
<td>-2147216960</td>
<td>Your password has expired. You will need to change it in order to connect.</td>
</tr>
<tr>
<td>Scenario</td>
<td>Error Code</td>
<td>Customized Error Message</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Password has expired</td>
<td>-2147216963</td>
<td>Your password has expired. You will need to change it in order to connect.</td>
</tr>
<tr>
<td>Project is not loaded</td>
<td>-2147209183</td>
<td>The project is offline now. If the problem persists, please contact your administrator for help.</td>
</tr>
<tr>
<td>Attempt to access data for project not registered with server</td>
<td>-2147209151</td>
<td>The project could not be found. Please contact your Administrator.</td>
</tr>
<tr>
<td>Intelligence Server is not connected</td>
<td>-2147206923</td>
<td>The contents of this page could not be displayed because the Intelligence Server is not running. Please contact the Administrator.</td>
</tr>
<tr>
<td>The connection failed</td>
<td>-2147207419</td>
<td>The contents of this page could not be displayed because the Intelligence Server is not running. Please contact the Administrator.</td>
</tr>
<tr>
<td>The target report, document, or any object (e.g., attribute, metric, etc.) referenced cannot be found in the metadata</td>
<td>-2147216373</td>
<td>The page could not be displayed. Please contact your Administrator.</td>
</tr>
<tr>
<td>Standard authentication not allowed</td>
<td>-2147213792</td>
<td>Standard authentication is not allowed. Please specify a correct authentication mode or contact your administrator for help.</td>
</tr>
<tr>
<td>Maximum number of Server users exceeded</td>
<td>-2147209056</td>
<td>Maximum number of Server users exceeded. Please try again. If the problem persists, contact the Administrator.</td>
</tr>
<tr>
<td>User does not have privilege to login to the selected project</td>
<td>-2147216961</td>
<td>Please contact your Administrator.</td>
</tr>
<tr>
<td>Database connection errors</td>
<td>-2147216380</td>
<td>The page could not be displayed. Please contact your Administrator.</td>
</tr>
<tr>
<td>Login failure</td>
<td>-2147216953</td>
<td>You cannot log in as Windows user. Please contact your Administrator.</td>
</tr>
<tr>
<td>Unable to determine your Windows identity</td>
<td>-2147205087</td>
<td>You cannot log in as Windows user. Please contact your Administrator.</td>
</tr>
<tr>
<td>The user does not have access to this object</td>
<td>-2147214570</td>
<td>You do not have the required privilege to open the page. Please contact your Administrator.</td>
</tr>
<tr>
<td>Login failure</td>
<td>-2147072513</td>
<td>You have reached the maximum number of password attempts. Please contact your Administrator.</td>
</tr>
<tr>
<td>You cannot supply a new password; the current password is not modifiable</td>
<td>-2147216972</td>
<td>You are not allowed to change your password. Please contact your Administrator.</td>
</tr>
</tbody>
</table>
### Scenario | Error Code | Customized Error Message
--- | --- | ---
No server is available to serve your request | -2147205282 | The contents of this page could not be displayed because the Intelligence Server is not running. Please contact the Administrator.
Type mismatch | -2147352571 | Error when answering the prompt. Please review your answer(s).
The proposed answer to a prompt question failed validation requirements | -2147217090 | Error when answering the prompt. Please review your answer(s).
Failed to load object from XML | -2147216992 | Error when answering the prompt. Please review your answer(s).
Request timeout | -2147206497 | Your request has timed out. Please try again later.
Maximum number of result rows retrieved per report was exceeded | -2147202391 | The page could not be displayed. Please contact your Administrator.
Message is not persisted in history list. History list may be full | -2147205473 | The page could not be displayed. Please contact your Administrator.
Maximum number of jobs per User Account exceeded when trying to submit job for user in project Id | -2147209053 | You have reached the maximum number of messages per user. Please contact the Administrator.
Number of jobs exceeded maximum for Project | -2147209164 | The maximum number of messages per project has been reached. Please contact the Administrator.
You do not have access to the object | -2147214579 | You do not have the required privilege to open the page. Please contact your Administrator.
Project is idle | -2147209192 | The project is idle now. If the problem persists, please contact your administrator for help.

## Troubleshooting MicroStrategy Mobile

This section provides guidance for finding and fixing trouble spots in the system. While the material in this section does not go into great detail, it does provide references to the relevant portions of the documentation where the topic or remedy is discussed in more detail.

- **Troubleshooting connection issues, page 241**
- **Troubleshooting reports and documents, page 241**
- **Troubleshooting prompt answers, page 241**
Troubleshooting connection issues

When you create a configuration for a mobile device (see Configuring MicroStrategy Mobile for iPhone or iPad, page 189), you must specify the Mobile Server machine by its fully qualified name so that the Mobile device can locate the machine on the network.

Troubleshooting reports and documents

- MicroStrategy recommends that caching be enabled for all reports and documents intended to be viewed on a mobile device. For information on report and document caching, including instructions on how to enable caching for specific reports and documents, see the Caching chapter of the System Administration Guide.

- If subscribed reports and documents are loading slowly on an iPhone or iPad, enable the Automatically Pre-Load Caches setting. This setting causes cached reports/documents to be loaded onto the device when the application is launched. This setting is found in the iPhone Settings or iPad Settings tab of the Mobile Configuration Editor, or in the device's Settings screen if the device is configured for users to have access to the settings. For information about configuring your device, see Configuring MicroStrategy Mobile for iPhone or iPad, page 189.

- If a Video Player widget stops in the middle of streaming video playback: When a mobile device is offline, the user can play the portion of the streaming video that was downloaded while the mobile device was online.

  By default, the downloaded video file is discarded when the MicroStrategy Mobile application is closed. You can ensure that the video is downloaded and stored on the mobile device for offline use. For steps, see Pre-caching online content on the mobile device for offline use, page 214.

Troubleshooting prompt answers

To support the scanning of barcodes using MicroStrategy Mobile for iPhone, you must store the barcode data used in the associated prompt with a database data type that supports text data. MicroStrategy recommends using the VarChar data type for your database to store the barcode data. For information about setting up the database, see the Project Design Guide and the Installation and Configuration Guide.
Glossary

access control list
A list of users, groups and the access permissions that each has for an object.

attribute
A data level defined by the system architect and associated with one or more columns in a data warehouse lookup table. Attributes include data classifications like Region, Order, Customer, Age, Item, City, and Year. They provide a means for aggregating and filtering at a given level.

See also:
• attribute element
• attribute form

attribute element
A value of any of the attribute forms of an attribute. For example, New York and Dallas are elements of the attribute City; January, February, and March are elements of the attribute Month.

attribute form
One of several columns associated with an attribute that are different aspects of the same thing. ID, Name, Last Name, Long Description, and Abbreviation could be forms of the attribute Customer. Every attribute supports its own collection of forms.

cache
A special data store holding recently accessed information for quick future access. This is normally done for frequently requested reports, whose execution is faster because they need not run against the database. Results from the data warehouse are stored separately and can be used by new job requests that require the same data. In the MicroStrategy environment, when a user runs a report for the first time, the job is submitted to the database for processing. However, if the results of that report are cached, the results can be returned immediately without having to wait for the database to process the job the next time that the report is run.
**consolidation**

An object that can be placed on a report and is made up of an ordered collection of elements called consolidation elements. Each element is a grouping of attribute elements that accommodates inter-row arithmetic operations.

**dashboard**

A visually intuitive display of data that summarizes key business indicators for a quick status check. A special type of document, dashboards usually provide interactive features that let users change how they view the dashboard’s data.

**dataset**

A MicroStrategy report that retrieves data from the data warehouse or cache. It is used to define the data available on a document.

**document**

1. A container for objects representing data coming from one or more reports, as well as positioning and formatting information. A document is used to format data from multiple reports in a single display of presentation quality.

2. The MicroStrategy object that supports the functionality defined in (1).

**drill**

A method of obtaining supplementary information after a report has been executed. The new data is retrieved by requerying the Intelligent Cube or database at a different attribute or fact level.

See also:

- page-by
- sort
- subtotal

**filter**

A MicroStrategy object that specifies the conditions that the data must meet to be included in the report results. Using a filter on a report narrows the data to consider only the information that is relevant to answer your business question, since a report queries the database against all the data stored in the data warehouse.

A filter is composed of at least one qualification, which is the actual condition that must be met for the data to be included on a report. Multiple qualifications in a single filter are combined using logical operators. Examples include “Region = Northeast” or “Revenue > $1 million”.

A filter is normally implemented in the SQL WHERE clause.

**Grid/Graph**

A control placed in a document that displays information in the same way a MicroStrategy report does.
hierarchy
A set of attributes defining a meaningful path for element browsing or drilling. The order of the attributes is typically—though not always—defined such that a higher attribute has a one-to-many relationship with its child attributes.

level
1 In a data warehouse, facts are said to be stored at a particular level defined by the attribute IDs present in the fact table. For example, if a fact table has a Date column, an Item_ID column, and a fact column, that fact is stored at the Date/Item level.

2 In a metric calculation, the level is the granularity of where an attribute appears in its hierarchy, where that attribute defines how a related metric is calculated. For example, a metric on a report with Year and Store attributes would be calculated at the Year/Store level.

See also: level of aggregation.

level of aggregation
The point in an attribute hierarchy where aggregation is performed. For example, in the geographical State—City—Store hierarchy there are three possible levels of aggregation.

link
A connection in one report or document to another report or document. A link lets an analyst execute another document or report (the target) from a document or report (the source), and to pass parameters to answer any prompts that are in the target.

metric
1 A business calculation defined by an expression built with functions, facts, attributes, or other metrics. For example: \( \text{Sum(dollar_sales)} \) or \( [Sales] - [Cost] \).

2 The MicroStrategy object that contains the metric definition. It represents a business measure or key performance indicator.

page-by
Segmenting data in a grid report by placing available attributes, consolidations, and metrics on a third axis called the Page axis. Since a grid is two-dimensional, only a slice of the cube can be seen at any one time. The slice is characterized by the choice of elements on the Page axis. By varying the selection of elements, the user can page through the cube.

See also:
- drill
- sort
- subtotal

panel
A way of grouping data in a document so that users can navigate subsets of data as if the subsets were pages in a smaller document. Each “page”, or layer of data, is a panel; a
group of panels is called a panel stack.

**panel stack**
The holder for a collection of panels, or layers of data, in a document. A user can navigate or flip through the panels in a panel stack; only one panel is displayed at a time.

**permission**
Defines for each object the degree of control that a user has over them.

**privilege**
Defines what types of operations certain users and user groups can perform in the MicroStrategy system. For example, which objects a given user can create and which applications and editors he can use.

**prompt**
1. MicroStrategy object in the report definition that is incomplete by design. The user is asked during the resolution phase of report execution to provide an answer that completes the query. A typical example with a filter is choosing a specific attribute on which to qualify.
2. In general, a window requesting user input, as in "type login ID and password at the prompt."

**qualification**
The actual condition that must be met for data to be included on a report. Examples include “Region = Northeast” or “Revenue > $1 million”. Qualifications are used in filters and custom groups. You can create multiple qualifications for a single filter or custom group, and then set how to combine the qualifications using the logical operators AND, AND NOT, OR, and OR NOT.

See also:
- filter

**report**
The central focus of any decision support investigation, a report allows users to query for data, analyze that data, and then present it in a visually pleasing manner.

See also:
- filter
- template

**report creation**
The process of building reports from existing, predesigned reports in MicroStrategy Developer or in MicroStrategy Web.
**report design**
The process of building reports from basic report components using the Report Editor in MicroStrategy Developer or MicroStrategy Web.

**schema**
1. The set of tables in a data warehouse associated with a logical data model. The attribute and fact columns in those tables are considered part of the schema itself.
2. The layout or structure of a database system. In relational databases, the schema defines the tables, the fields in each table, and the relationships between fields and tables.

**selector**
A type of control in a document that allows a user to:
- Flip through the panels in a panel stack, to see different predefined layers of data, or “pages”, in the same document
- Display different attribute elements or metrics in a Grid/Graph

**sort**
Arranging data according to some characteristic of the data itself (alphabetical descending, numeric ascending, and so forth).

See also:
- drill
- page-by
- subtotal

**subtotal**
A totaling operation performed for a portion of a result set.

See also:
- drill
- page-by
- sort

**threshold**
Used to create conditional formatting for metric values. For example, if revenue is greater than $200, format that cell to have a blue background with bold type.

**widget**
A type of control that presents data in a visual and interactive way; an interactive Flash-only graph that dynamically updates when a new set of data is selected. Some types include Gauge, Heat Map, and Stacked Area widgets.
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