IBM Business Analytics Proven Practices: IBM Cognos Active Report 10.2 Cookbook

Product(s): IBM Cognos Business Intelligence 10.2; Area of Interest: Reporting

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A description of the various features available within IBM Cognos Active Report and how they can be used to create and distribute interactive reporting applications.

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Purpose
This document describes the various features available within IBM Cognos Active Report and how they can be used to create and distribute interactive reporting applications.

This document assumes a basic knowledge of IBM Cognos Active Report functionality. For introductory information please refer to the IBM Cognos Active Report section of the IBM Cognos Report Studio User Guide located under the Author and Create folder at http://publib.boulder.ibm.com/infocenter/cbi/v10r1m1/index.jsp.

Applicability
The product behaviours described in this document were validated using:

- IBM Cognos Business Intelligence 10.2

What's New in the IBM Cognos Active Report 10.2 Cookbook
The release of IBM Cognos Business Intelligence 10.2 provides several new features to improve both the creation and end-user consumption experience of IBM Cognos Active Reports. To highlight these improvements, the following new sections and techniques have been added to this version of the document.

- Introduction to the Interaction Model
- Static Repeater Table
• Repeater Table
• Reducing the Number of Hotspots on Charts and Maps
• Application Drill-Through
• Consuming IBM Cognos Active Reports in IBM Cognos Workspace
• Creating Custom Content Buttons
• Two State Buttons
• Pop-ups
• Pop-up Menus
• Custom Tooltips
• Freeze Panes

What’s New in the IBM Cognos Active Report 10.2.2 Cookbook

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• Active Report Performance Improvements
• Active Report Output
• Active Report Templates
• Auto Select
• Active Report Preview
• Active Reports Sizing on Mobile Devices
• Consuming IBM Cognos Active Reports in IBM Cognos Workspace Improved
• Layout Use Case updated

IBM Cognos Active Report Overview

IBM Cognos Active Report is a report output type that was introduced in IBM Cognos Business Intelligence 10.1 that allows professional report authors to create interactive reporting applications. The following sections will highlight the features, use cases and deployment options for IBM Cognos Active Report.

Key Features

There are many features that are unique to an IBM Cognos Active Report that allow the solution to deliver additional value to IBM customers. Some of the solution's key features include:

Disconnected

An IBM Cognos Active Report is a stand-alone, self-contained file. This allows users to fully interact with all of the content in their reporting application without being dependent on connectivity to their IBM Cognos BI server. Disconnected reporting simplifies report distribution and consumption within an organization and makes BI content readily available to external partners and customers.

Highly Interactive
IBM Cognos Active Report controls enable a new level of interactive behaviour. When combined with the solution’s speed of thought performance, business users are provided with an engaging end user experience. The flexibility provided by the report controls allows a single reporting application to meet the needs of many users, eliminating the need to customize reports to suit personal viewing preferences.

**Portable**

Business users need access to their BI information regardless of their location, connectivity or consumption device. The same IBM Cognos Active Report can be consumed in standard web browsers and on the Apple iPad while connected or disconnected from the network. This ensures that business users always have their IBM Cognos BI content available at their fingertips. When consuming an IBM Cognos Active Report in the IBM Cognos Mobile native iPad application, standard report controls are automatically given the native iOS look and feel and interactive gestures such as swiping are enabled. This ensures that users are provided with the native iPad experience that they demand without creating the need for the professional report author to create device specific reports. Additionally, IBM Cognos Active Report content can be consumed in IBM Cognos Business Insight where it can be viewed side by side with your organization’s broad analytic content.

**Access to Details on Demand**

By leveraging drill-through functionality while connected to the IBM Cognos BI server, a business user can drive a deeper analysis without losing context. This allows a user to leverage the performance and interactivity of an IBM Cognos Active Report without sacrificing easy access to additional IBM Cognos content.

**Broad Distribution**

IBM Cognos Active Report outputs are intuitive to navigate and can be consumed in standard web browsers. This allows a broad base of users to immediately benefit from the full power of a contained IBM Cognos BI solution. In addition, the IBM Cognos Active Report output can be distributed using the existing scheduling and bursting functionality already available within IBM Cognos.

**IBM Cognos Platform Security**

IBM Cognos Active Report content respects all existing IBM Cognos platform security features. When a user in IBM Cognos Connection runs a reporting application or an administrator schedules and bursts reporting applications to a group of users, all role based security policies will be honoured. Each user will consume a reporting application that contains only the data that they are authorized to view.

**Single Authoring Environment**
IBM Cognos Report Studio is used to create standard report output types and IBM Cognos Active Report content. As a result, existing reports can be converted into interactive reporting applications with a single click. This allows existing queries and chart objects to be reused and reduces the amount of time required to build interactive reporting applications.

**Common Use Scenarios**

The features of IBM Cognos Active Report make it a flexible and portable solution whose benefits can be leveraged across an entire organization and beyond. In order to ensure a successful deployment, it is important to apply the technology to the proper use cases. Some of the ideal use cases for IBM Cognos Active Report include:

**Enabling the Mobile Workforce**

Mobility is on the rise and is becoming a way of life. Business users expect to be able to consume their business information at anytime regardless of their location or what device they are using. IBM Cognos Active Report enables the mobile workforce by allowing the exact same reporting application to be consumed on the Apple iPad and in standard web browsers. When combined with the disconnected nature of the solution, IBM Cognos Active Report ensures users have the right information to make business decisions while on the go.

**Managed Dashboards**

Business users expect visually appealing, high performance and interactive dashboards that are able to communicate key business information. IBM Cognos Active Report allows the professional report author to create managed dashboards that can be distributed to a broad audience. The wide array of IBM Cognos Active Report controls ensures that the desired functionality can be achieved and an engaging end user experience can be delivered to business users. The reporting applications are high performance stand-alone files and by leveraging drill through technology, business users can seamlessly connect to more detailed data without losing context. IBM Cognos Active Report allows business users' most common data to be presented in an interactive manner but also provides a simple path for driving a deeper analysis.

**Extending BI to External Customers or Partners**

Businesses can improve their relationships with customers and increase synergies with partners by improving the flow of information to external users. IBM Cognos Active Report technology allows interactive reports to be distributed outside the organization without having to worry about granting those users access to the IBM Cognos server. The solution provides a scalable and secure way of sharing information outside the organization without creating an increased support burden.

**Deployment Strategies**

The portability of IBM Cognos Active Report creates many possible deployment options. IBM Cognos administrators should consider the intended audience and use case when choosing which method is most suitable. Some of the most common scenarios include:
Email Distribution

IBM Cognos Active Report content can be distributed through secure corporate email, which will then allow the recipients to fully interact with all of the data regardless of their connectivity to the IBM Cognos BI server. Scheduling and bursting can be used to ensure that this operation occurs at a non-peak server time to reduce system loads. Additionally, leveraging scheduling and bursting ensures that IBM Cognos role based security restrictions will be honoured. This is a suitable deployment option for distributing IBM Cognos Active Report content to a controlled audience, which could be both internal and external.

Mobile Distribution

The IBM Cognos Mobile native iPad application has the ability to pull IBM Cognos Active Report content to the device in several ways. Scheduling and bursting can be used to send content directly to an end user's iPad. After the report is run on the IBM Cognos BI server, the IBM Cognos Mobile Service transfers the report output to the iPad as soon as the user logs in from their device. Once the content is transferred, it becomes available for offline consumption. Alternatively, the IBM Cognos Connection folder structure can be browsed from the native iPad application and the user can choose to run any IBM Cognos Active Report that they are authorized to access. After running the report, it will be stored locally on the iPad and available for disconnected consumption. Under both of these deployment scenarios the reporting content is protected by an initial IBM Cognos BI server authentication and role based security restrictions. The iPad application also supports email distribution. When a user is sent a reporting application as an attachment to an email, the file will be associated with the IBM Cognos Mobile iPad application and can be directly launched into this environment. The output will then be saved within the application for offline consumption. Scheduling and bursting is the recommended deployment scenario for the mobile workforce as this ensures that the users' IBM Cognos BI content is downloaded and made available for offline consumption whether or not they chose to run that specific report before becoming disconnected.

Network Accessible Location

IBM Cognos Active Report output is a self-contained output. As a result, the single-file output can be placed in a shared location and made accessible to anyone who has access to this network location. Security can be provided via password or login credentials for the remote location to ensure that only people who are authorized to view the content have access to the report. This deployment scenario eliminates the need to email a copy of the file to every recipient, which can reduce network loads. Since a single version of the output is shared, each user consumes the same reporting application and role based security is not honoured.

IBM Cognos Connection

As is the case with standard IBM Cognos reports, IBM Cognos Active Report content resides in IBM Cognos Connection. Assuming the user has the proper folder permissions and privileges, users can easily navigate to the location of the report and gain access to the reporting application. The user can choose to view an existing saved output or re-run the report to get the freshest data possible. By leaving the reports in IBM Cognos Connection, every user must authenticate with the
IBM Cognos BI server before gaining access. Additionally, all IBM Cognos role based security will remain intact when a user chooses to run the report. If the end user has not manually downloaded the report from IBM Cognos Connection to their local machine, the content will be inaccessible while disconnected from the server.

**Restricting Consumption**

Not all IBM Cognos users are authorized to consume IBM Cognos Active Report content. Users must be a named user of Active Report Recipient or at least Enhanced Consumer in order to consume IBM Cognos Active Report content. Alternatively, a PVU based Active Report Recipient license can be purchased so that the reporting applications can be distributed across the entire organization and shared externally.

To ensure license compliance, several techniques can be used. An access code can be placed on the IBM Cognos Active Report output. The author of the report controls this and the access code is the same for all users. Additionally, IBM Cognos Active Report content can be contained in folders with permissions so that unauthorized users are unable to get access to the reports. Finally, deployment scenarios that distribute the content to a controlled group, such as email or mobile distribution, can be used to ensure that only the intended audience receives the reporting output.

**Introduction to the Interaction Model**

A report author defines the interactivity in an IBM Cognos Active Report in order to deliver a tailored user experience to their end users. This document will cover a wide range of the techniques that can be created but it is important to first understand the basics.

Interactivity can be setup between many objects and it is all based off of Active Report Variables. These variables are created when connections are formed and are used to pass context between multiple objects.

Every interactive object has Behaviour on Selection and Reaction Behaviour options. The Behaviour on Selection is used to set the state of an Active Report Variable when that object is selected. Data Item values, or static text can be stored in the Active Report Variable depending on the desired effect. The following screen capture shows an example of the menus provide for setting the Behaviour on Selection conditions for an object and creating a corresponding Active Report Variable to store the state.
Figure 1. IBM Cognos Report Studio displaying the Interactive Behavior menu

The Reaction Behaviour configures how an object responds when the state of an Active Report Variable is changed. Objects can be configured to respond to no variables, a single variable or multiple variables depending on the desired interactivity. The Reaction Behaviour has three main options:

- **Container Select**: This can be used to highlight elements within objects (i.e. highlight a bar in a chart, rows in a list or select a card in a deck)
- **Container Filter**: This can be used to dynamically reduce a result set (i.e. show me only the related entries in the list)
- **Control Enable**: This is used to conditionally enable / disable interaction with a control

The Container Select, Container Filter or Control Enable conditions can use combination logic between multiple Active Report Variables when more advanced interactivity is required. For simple interactivity, the wizard shown in the image below is provided that gives the user a single interface for selecting the object that will originate the interaction (i.e. set the Active Report Variable), allows the user to either create or re-use an existing Active Report Variable, select the target control (i.e. what object will respond to the Active Report Variable) and define which type of reaction will occur (i.e. Container Select or Container Filter). This dialog has the same effect as manually specifying all of these options individually in the Interactive Behaviour menu for each control. The wizard is simply used to streamline the connection process.
The IBM Cognos Active Report Toolbox Items

The following section provides an overview of each of the IBM Cognos Report Studio toolbox items that can be used to create an IBM Cognos Active Report application. This section will also provide a step-by-step example on how to use some of these items.

Variable Text Item

The Variable Text Item is used to display the value of an IBM Cognos Active Report variable. This toolbox item is equivalent to the IBM Cognos Report Studio Report Expression, ParamDisplayValue.

Variable Text Item Step by Step

The following example will step a user through creating a variable, assigning a value to the variable and displaying it on an IBM Cognos Active Report using the Variable Text Item.

2. Click on the Active Report Variables tab and click the Create a new variable link.
   The following screen capture displays IBM Cognos Report Studio with the Active Report Variable tab selected. It also displays the Active Report Variable dialog box that is presented to the user after clicking the Create a new variable link. The Active Report Variable dialog box consists of a Name field, a Data Type selection drop-down and a Set Default Value(s) link which can be used to specify default variable values.
3. Within the name field of the Active Report Variable dialog box, add the name varMyActiveReportVariable.
4. Click the Set Default Value(s) link to display the Default Variable Values dialog box.
5. Within the Default Variable Values dialog box, click the New icon at the bottom left of the dialog box.
6. Enter a default value of MyVariableValue and click the OK button.
7. Click the OK button to close the Active Report Variable dialog box.
8. From the available Toolbox items, locate the Variable Text item and drag it into the report. Since there is only one IBM Cognos Active Report variable defined, the Variable Text Item is automatically associated to this variable. If multiple variables have defined, the report author will be prompted to pick a variable.
   If the IBM Cognos Active Report is executed it will display the text MyVariableValue for the varMyActiveReportVariable Variable Text Item.

Row Number

The Row Number is used to ensure that the row number in a list is properly displayed as it is dynamically filtered by controls. By including the Row Number object in a list column, the rows will always be numbered sequentially beginning at one as the list is manipulated.
Figure 4. The IBM Cognos Active Report Toolbox show the two available options for Row Number

A Deck provides the report author the ability to manually create the desired number of cards. Decks are useful when the content displayed on the cards differ from card to card.

Figure 5. The IBM Cognos Active Report user interfaces required for connecting a Radio Button Group to a Deck

Deck Item Step by Step

The following example provides the step by step instructions on how to use a Deck item that is controlled by a Radio Button Group to display the same data in a crosstab and a chart.

2. From the available Toolbox items, drag the Radio Button Group object onto the report canvas.
3. Click on the Radio Buttons Definition icon located to the right of the Radio Button Group object.
4. Within the Radio Buttons Definition dialog box, delete Button Label 3 by clicking the X that appears when you hover to the left of the entry.
5. Rename Button Label 1 to Crosstab and Button Label 2 to Line Chart.
6. Click the OK button to return to the report page.
7. Click on the Radio Button Group and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Crosstab/Chart Radio Control.
8. From the available toolbox items, locate the Deck item and drag it underneath the Radio Button Group control.
9. Click on the Edit Deck Cards Definition icon located to the right of the Deck item.
10. Within the Deck Cards Definition dialog box, delete Card 3 by clicking the X.
11. Rename Card 1 to Crosstab and Card 2 to Line Chart.
12. Click the OK button to return to the report page.
13. Click on the Deck and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Crosstab/Chart Deck.
14. From the available Toolbox items, drag the Crosstab object onto the Crosstab card.
15. Using the available Source items, populate the Crosstab object with the GO Sales(query)\Sales(query)\Products\Product line on the rows, the GO Sales(query)\Sales(query)\Time\Year as the columns and GO Sales(query)\Sales(query)\Sales\Revenue as the measure. Once completed, the report page should now consist of two radio buttons at the top of the screen that are labelled Crosstab and Line Chart. Within the Deck, one of the cards is labelled Crosstab. The Crosstab card contains a Crosstab object that has been populated with Product line on the rows, Year on the columns and Revenue as the measure. This is also depicted by the image below.

**Figure 6. IBM Cognos Report Studio displaying a Deck with the Crosstab card populated**

16. Select the Line Chart card from the Deck drop down.
17. From the available Toolbox items, drag the Chart object onto the Line Chart card.
18. Within the Insert Chart dialog box, select line chart and press the OK button.
19. Using the available source items, populate the Line Chart object with the GO Sales(query)\Sales(query)\Products\Product line on the Series, the GO Sales(query)\Sales(query)\Time\Year as the Categories and GO Sales(query)\Sales(query)\Sales\Revenue as the measure.
20. Click the Create a New Connection icon to the right of the Radio Button Group control.
21. Within the Create a New Connection dialog box ensure the Source is the Crosstab/Chart Radio Control and the Target Control is the Crosstab/Chart Deck. The Active Report Variable should be the Label with a Default Value of the Line Chart.

**Figure 7. IBM Cognos Active Report Connection dialog displaying the connection between the Radio Button Group and the Deck**

22. Click the Connect button to make the connection and return to the report page. If the IBM Cognos Active Report is executed, it will display two radio buttons. One named Crosstab and the other named Line Chart. By default the user is presented with the Line Chart. The user then has the ability to switch the view to a crosstab by selecting the Crosstab radio button.

**Data Deck**

The Data Deck object is used to automatically create a card for each data item value used to drive the Data Deck. Data Decks are useful if the number of cards is unknown due to changing data. Data Decks are generally used to display the same report data container for different contexts.
Figure 8. The IBM Cognos Active Report user interfaces required for connecting a Radio Button Group to a Data Deck

Data Deck Item Step by Step

The following example provides the step by step instructions on how to use a Data Deck item that is controlled by a Button Bar to display a list for each product line.

2. From the available Toolbox items, drag the Data Button Bar object onto the report canvas.
3. Click on the Data Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Product line Data Button Bar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Button Bar/Deck Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.
6. From the available Source items, locate the GO Sales(query)\Sales(query)\Products\Product line and drag it into Labels section of the Data Button bar.
7. From the available Toolbox items, hold the right mouse button and drag the Data Deck object onto the report canvas.
8. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
9. When prompted for a query, select Data Button Bar/Deck Query and press the OK button.
10. Click on the Data Deck and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Product Line Data Deck.
11. From the available Toolbox items, locate the List query object and drag it into the Data Deck.
12. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to List Query.
After completing this step, the IBM Cognos Active Report should consist of a Data Button Bar at the top of the screen with the Product line query item inserted into the Labels drop area. Underneath the Data Button Bar, a Data Deck was inserted within which an empty List object was inserted. This is also illustrated by the following screen capture.

**Figure 9. The IBM Cognos Active Report with a Data Button Bar and Data Deck containing a List object**

14. From the available Source items, locate the GO Sales(query)\Sales(query)\Products\Product line and drag it into the List object.

15. Within the Data Item tab, select the Product line data item and drag it into the Values drop zone of the Data Deck. After completing this step, the IBM Cognos Active Report should consist of a Data Button Bar at the top of the screen with the Product line query item inserted into the Labels drop area. Underneath the Data Button Bar, a Data Deck now contains a List object populated with the Product line query item. The Product line query item was also used to populate the Values drop zone of the Data Deck. The current report layout is illustrated by the following screen capture.

**Figure 10. The IBM Cognos Active Report with a Data Button Bar and Data Deck containing a List object populated with the Product line query item**

16. Select the List object and within the left hand Properties pane under the Data section, select the Master Detail Relationships property by clicking the ellipsis.

17. Within the Master Detail Relationships dialog box, define a relationship between the Data Button Bar/Deck Query and the List Query by clicking the New Link.

18. Click the OK button to commit the relationship and return back to the report page.

19. Select the Data Button Bar object and right click to display the available menu.
20. From the available menu select Create a New Connection.
21. Within the Create a New Connection dialog box, ensure that the Source Control is the Product Line Data Button Bar, the Target Control is the Product Line Data Deck and the Active Report Variable section has a variable defined with the name varProductLine, a data type of String and a default value of Camping Equipment. The completed dialog box is also illustrated by the following screen capture.

**Figure 11. Create a New Connection dialog box linking the Data Button Bar to the Data Deck**

22. Click the Connect button to create the connection.
If the IBM Cognos Active Report is executed, it will display a button for each of the product lines at the top of the report. Each button will display a List that has been filtered to the appropriate product line when pressed. This is also illustrated by the following image.

**Figure 12. IBM Cognos Active Report output showing a single record list with the same data as the pressed button**

**Static Repeater Table**
A Static Repeater Table provides the report author the ability to manually create the desired number of repeating items. In an Active Report they can be used for creating image and text custom buttons.

**Static Repeater Table Step by Step**
The following example provides the step by step instructions on how to use a Static Repeater Table to create custom text buttons.

2. From the available Toolbox items, drag the Static Repeater Table object onto the report canvas.
3. Select the Static Repeater Table using the ancestor icon within its top left corner. Within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Ideas Button Static Repeater.
4. In the General section set the Across value to 4.
5. On the canvas click the Repeater Table Values Definition to display the Repeater Table Values Definition dialog box.
6. Click the New button at the bottom of the dialog box to add a fourth value.
7. Change the values from their default to the following:
   a. ‘Value 1’ replaced by ‘Activities’
   b. ‘Value 2’ replaced by ‘Events’
   c. ‘Value 3’ replaced by ‘Forums’
   d. ‘Value 4’ replace by ‘Tasks’

   This is depicted by the image below.

   **Figure 13. IBM Cognos Report Studio displaying the Static Repeater Table values definition for Data Item Label**

8. Click the New button on the right of the dialog box to add a new Data Item Value. Enter the text ‘Image’ in the New Data Item dialog box and click OK.
9. Under the Image data item column enter the following values:
   a. 1st Row: ../fragments/search/images/activities64.png
   b. 2nd Row: ../fragments/search/images/events64.png
   c. 3rd Row: ../fragments/search/images/forums64.png
   d. 4th Row: ../fragments/search/images/tasks64.png

   This is depicted by the image below.
10. From the available Toolbox items, drag an Image object and drop it beside the Label text in the Static Repeater Table.

11. Click the Image icon in the Static Repeater Table.

12. Within the bottom left hand Properties pane change the Source Type property within the URL Source section to Control Data Item Value.

13. In the same section change the Control Data Item Value from Label to Image.

14. On the canvas cut the Label values from the Static Repeater Table just leaving the images.

15. Click the Interactive Behavior icon to display the Interactive Behavior dialog box.

16. On the Behavior on Select pane click the pencil to Edit the Set Variable Values.

17. On the Set Variable Values dialog box at the bottom click Create a New Variable.

18. Enter varIdeas as the Name of the variable and click OK.

19. On the Set Variables Values dialog box set the Value for varIdeas to Label and click OK. The Interactive Behavior dialog should have the following settings.

**Figure 14. IBM Cognos Report Studio displaying the Static Repeater Table values definition for Data Item Label and Image**

Click OK to close the dialog box.

20. From the available Toolbox items, drag a Variable Text Item object and drop it below the Static Repeater Table. Note: since there is only one defined variable the Variable Text Item will default to varIdeas.

21. If the IBM Cognos Active Report is executed, it will display a button for each image at the top of the report. As each button is clicked, the Variable Text Item will display the value of the varIdeas variable.

**Figure 15. IBM Cognos Report Studio displaying the Interactive Behavior dialog box**

Click OK to close the dialog box.
Repeater Table

A Repeater Table provides the report author the ability to create a dynamic number of repeating items. In an Active Report they can be used for creating image and text custom buttons.

Repeater Table Step by Step

The following example provides the step by step instructions on how to use a Repeater Table to create custom text buttons.

2. From the available Toolbox items, drag the Repeater Table object onto the report canvas.
3. Click on the Repeater Table and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Product line Button Repeater.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Product Line Button/List Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.
6. From the available Toolbox items, drag a Block into the Repeater Table (in the area labelled ‘Drop items here to create repeating objects’).
7. Select the Block in the Repeater table and within the bottom left hand Properties pane change Size & Overflow to 30px (height) and 185px (width) within the Positioning section.
8. Under the Font & Text section of the Block change the Horizontal Alignment to Center.
9. Under the Box section set the Padding - Top padding to 7px.
10. In the Color & Background section click Background Effects, with Border selected change the Color to Navy and set the Corner radius to 3pt. This is depicted by the image below.
11. On the same Background Effects dialog box select Fill; change the color to Blue. Click the New button to add a new color; select the Navy color. Change the angle to 270 degrees and click OK to exit the dialog box. This is depicted by the image below.

**Figure 18. IBM Cognos Report Studio displaying the Background Effects Fill options**

12. Using the available Source items, populate the Repeater Table object with the GO Sales(query)\Sales(query)\Products\Product line. Drop the query item on the newly formatted block.

13. Select the Product line query item in the Repeater table; within the bottom left hand Properties pane under the Color & Background change the Foreground Color to White.

14. Under the Font & Text section select Font and change the Weight to Bold.

15. To modify the Repeater Table Cell click the Ancestor button on the Properties pane select Repeater Table Cell; under the Box section set the Padding values to zero for Top, Left and Bottom padding. Set the Right padding to 2px.

16. Click the Ancestor button on the Properties pane and select Repeater Table; in the General section change the Across setting to 5.

17. From the available Toolbox items, right click and drag the List object onto the report canvas below the Data Toggle Button Bar.

18. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.

19. When prompted for a query, select Product Line Button/List Query and press the OK button.
20. Using the available source items, populate the List object with GO Sales(query)\Sales(query)\Sales\Revenue.
21. From the available Data Items drag Product line into the first position of List object. When completed, the IBM Cognos Active Report should have a List that has been populated with Product line and Revenue. This is illustrated by the following screen capture.

**Figure 19. IBM Cognos Report Studio displaying the Repeater Table and List data object**

22. Click on the List and within the bottom left hand Properties pane and change the Name property within the Miscellaneous section to Product line List.
23. Click the Create a New Connection icon to the right of the Repeater Table control.
24. Within the Create a New Connection dialog box ensure the Source is the Product line Button Repeater and the Target Control is Product line List. The Behavior drop down list was changed from Select to Filter and an IBM Cognos Active Report variable named varProductLine was created. The varProductLine also has a default value of ‘Camping Equipment’ set. This is illustrated by the following screen capture.

**Figure 20. IBM Cognos Active Report Create a New Connection dialog box creating the connection between the Repeater Table and the List**

25. Click the Connect button to create the connection.
26. If the IBM Cognos Active Report is executed, it will display a button for each of the product lines at the top of the report. As each button is clicked, the List object refreshes including only the product lines whose buttons have been selected. In the following example, the user has selected the Camping Equipment. The list therefore only displays Camping Equipment and its associated revenue.
IBM Cognos Active Report Performance Improvements

With a focus on performance, the IBM Cognos 10.2.2 Active report output has been improved in the following areas:

- Streamlined the processing that is done on IBM Cognos Active Report output initialization logic to improve the first open performance.
- Introduced a new data store mechanism that provides superior space usage and fast query performance. The new data stores are now being used by the client side extensible visualizations and basic controls such as radio buttons and drop down list.
- Removed duplication and overhead associated with storing visualization definitions within the IBM Cognos Active Report output thus reducing the overall MHT size.
- Optimized and reduced overhead in general for the layout and data information that is stored within the IBM Cognos Active Report.

Active Report Output

The IBM Cognos Active Report output format has changed to allow browsers that do not have MIME HTML (MHT) capabilities to display the MHT within the IBM Cognos Viewer straight from the portal.

Active Report Templates

A report template is a pattern used to build reports. Templates are particularly useful when numerous reports need to be created using the same layout. A template can be created from scratch or an existing IBM Cognos Active Report can be converted to a template so it can be reused. When an IBM Cognos Active Report is converted to a template, query-related information is removed in addition data related variables, connections between controls, and interactive behaviour are also removed. However, variables, connections, and interactive behavior that use data items that were created in static controls remain in the template.

Active Report Template Creation Step by Step

1. Create an Active Report or open an existing Active Report.
2. Add objects to the work area.
3. From the File menu, click Convert to Template.
4. From the File menu, click Save As to save the template as a new file and keep the original report intact.

In the screen capture below, the author has inserted several images, blocks and tables on the second Home card in order to maintain a consistent look and feel. The same objects can be inserted again on the other cards ensuring uniformity.
Figure 22. IBM Cognos Report Studio displaying the second card (Home) of one of the sample Active Report Templates

Auto Select

The Auto select feature is a data control property that enables the user to set the Auto Select value to None, First Item or Last Item.

Auto Select Step by Step

The following example provides the step by step instructions on how to use the Auto Select to set the last item in a Data Drop-Down List object.

2. From the available Toolbox items, drag the Data Drop-Down List object onto the report canvas.
3. When prompted rename Name of the object to Product Line Drop Down List and Rename the Query Name to qryProductLine. Once completed click the OK.

   Figure 23. Object and Query Name for the Drop-Down List object with the renamed fields

4. From the available Source items, locate the GO Sales (query)\Sales (query)\Product\Product line and drag it into “Drop item here” section of the Data Drop-Down List.
5. From the available Toolbox items, locate the List query object and drag it onto the canvas below the Drop Down-List object.
6. When prompted, rename Name of the object to Product Line List and select the Query Name of qryProductLine; click OK.
7. Within the Data Item tab, select the Product line data item and drag it into the List Object.
8. Click the Create a New Connection icon to the right of the Data Drop-Down List object.
9. Within the Create a New Connection dialog box ensure the Source is the Product Line Drop Down List and the Target Control is ProductLine List. The Behavior drop down list is set to Select and an IBM Cognos Active Report variable is named varProductLine. Click Connect. This is illustrated by the following screen capture.

Figure 24. IBM Cognos Active Report Create a New Connection dialog box creating the connection between the Drop Down List and the List

10. Click the Connect button to create the connection.
11. Click Data Drop-Down List on the canvas to select it.
12. Using the Properties pane ensure the Ancestor button has Data Drop-Down List selected.
13. In the Interactive Behavior section change the Auto Select setting to Last Item.

Figure 25. Auto Select property set to None, First Item or Last Item

14. If the IBM Cognos Active Report is executed, it will display the selected Last Item in the Data Drop-Down List and the List. In the following example, the Last Item Personal Accessories is displayed selected in both controls.
Active Report Preview

IBM Cognos Active Report has a preview view that can be used to format an active report output to immediately see the layout changes. The report no longer has to be run to view the formatting change.

Active Report Preview Step by Step

The following example provides the step by step instructions on how to use an Active Report Preview. The first 21 steps are the creation of the Active Report, if you already have an IBM Cognos Active Report, the Active Report Preview begins at step 22.

Constructing the layout and adding objects.

2. From the available Toolbar Insert Table button create a 4 row by 1 column table.
3. On the canvas control click each cell of the table.
4. Using the Table Cell Properties set the padding to Top 20px and Left 20px.
5. From the available Toolbox items, drag the Text Item object to the upper cell of the table.
6. Add “Active Report Preview” to the Text dialog box and then click the OK button.
7. From the available Toolbox items, drag the Data Check Box Group object to the second cell of the table.
8. When prompted rename Name of the object to Product Line Check Box and rename the Query Name to qryPreview; click OK.
9. From the available Source items, locate the GO Sales (query)\Sales (query)\Products\Product line and drag it into “Drop item here” section of the Data Check Box Group.
10. From the available Toolbox items, drag the Visualization object to the third cell of the table.
11. Using the Visualization Gallery select the Bar visualization with the ID of az.bar. Note: selecting the Bar in the “Redefined by:” List will filter the list of visualizations to the ones tagged as Bar. Click the OK button.
When prompted leave the Visualization name and Data container name unchanged and select the Query Name to qryPreview; click OK.

Using the available Source items, populate the Bar Visualization object with the GO Sales (query)\Sales (query)\Retailers\Region on the Series, the GO Sales (query)\Sales (query)\Time Dimension\Year as the Categories and GO Sales (query)\Sales (query)\Sales \Quantity as the Size.

Using the Data Items tab select Product line from the qryPreview and add it as an Extra Categories.

From the available Toolbox items, drag the List object to the last cell of the table.
When prompted rename Name of the object to Product line List and select the Query Name to qryPreview; click OK.
Using the Data Items tab select Product line and Quantity from the qryPreview and add them to the newly added List object.
Figure 29. Displaying the layout of objects for the Active Report

18. Click the Create a New Connection icon to the right of the Data Check Box Group object. A connection will be created between the Data Check Box Group and the Bar Visualization.

19. Within the Create a New Connection dialog box ensure the Source is the Product Line Check Box and the Target Control is Bar: Data. The Behavior drop down list is set to Filter and an IBM Cognos Active Report variable is named varProductLine. Click Connect. This is illustrated by the following screen capture.

Figure 30. IBM Cognos Active Report Create a New Connection dialog box creating the connection between the Data Check Box Group and Bar Visualization

20. Click the Create a New Connection icon a second time to the right of the Data Check Box Group object. This time a connection will be created between the Data Check Box Group and the Product line List object.
21. Within the Create a New Connection dialog box ensure the Source is the Product Line Check Box and the Target Control is Product line List. The Behavior drop down list is set to Filter and an IBM Cognos Active Report variable is named varProductLine. Click Connect. This is illustrated by the following screen capture.

**Figure 31. IBM Cognos Active Report Create a New Connection dialog box creating the connection between the Data Check Box Group and List object**

22. Click the Active Report Preview button on the Query/Page Explorer. Make sure the Edit Button on the toolbar is displayed.
23. Check the Personal Accessories check box and notice the visualization and list update based on filtered value.
24. Click the Edit button on the toolbar to enter Edit mode.
25. Click the three small dots in the upper left corner of the canvas; this will select the Table object.
26. Click the Ancestor button on the Properties and select the Page Body.
27. Change the Background Color to Grey.
28. Click the text “Active Report Preview”.
29. From the Properties Pane change the Foreground Color to White.
30. From the Font property set the size to 12 pts.
31. On the canvas click the Product line Check Box Group.
32. Using the Properties set the Text Color to White.
33. On the canvas click the Bar Visualization.
34. Change the Bar Visualization
   a. Chart Body Color: Silver
   b. Label Color: White
   c. Width: 600 px
   d. Height: 400 px
   e. Animation Effect: Transition
35. On the canvas click the Product Line List Column Title in the List object.
36. Change the Font to 10 pts. and the Foreground Color to Grey. Repeat this for the Quantity List Column Title.
37. On the List Object click the Text of the List Column Body; using the Ancestor button select List Columns Body Style.
38. Change the Foreground Color to White.
39. Click the Preview button on the toolbar to return to Preview Mode and test the Product line Check Box filtering. Note: your report should look like the following image.

**Figure 32. IBM Cognos Active Report in Preview Mode**

![IBM Cognos Active Report in Preview Mode]

40. On the toolbar change the “Fit to screen” to Cognos iPad Mobile to see what the Active Report would look like on an Apple iPad running in the IBM Cognos Mobile App.
41. Click the Page Design button on the Query/Page Explorer to return to the original layout.
42. Save the Active Report.

**Tab Control**

A Tab Control provides the report author the ability to manually create the desired number of Tabs.

**Tab Control Item Step by Step**

The following example provides the step by step instructions on how to use a Tab Control to display either a crosstab or chart view of the same data.

2. From the available Toolbox items, drag the Tab Control object onto the report canvas.
3. Click on the Tab Control and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Crosstab/Chart Tab Control.
4. Click on the Tab Definition Icon located to the right of the physical tabs.
5. Delete Tab label 3 by hovering the mouse over it and clicking the X.
6. Rename Tab label 1 to Crosstab and Tab label 2 to Line Chart.
7. Press the OK button to return to the report page. When completed the report page should now display two tabs at the top of the screen. The first tab should be labelled Crosstab and the second Line Chart. This is also illustrated by the following screen capture.

Figure 33. IBM Cognos Report Studio displaying the IBM Cognos Active Report Tab Control

8. From the available Toolbox items, drag the Crosstab object onto the Crosstab tab.
9. Using the available source items, populate the Crosstab object with the GO Sales(query)\Sales(query)\Products\Product line on the rows, the GO Sales(query)\Sales(query)\Time\Year as the columns and GO Sales(query)\Sales(query)\Sales\Revenue as the measure.
10. Click on the Line Chart tab.
11. From the available Toolbox items, drag the Chart object on the Line Chart tab.
12. Within the Insert Chart dialog box, select Line chart and press the OK button.
13. Using the available source items, populate the Line Chart object with the GO Sales(query)\Sales(query)\Products\Product line on the Series, the GO Sales(query)\Sales(query)\Time\Year as the Categories and GO Sales(query)\Sales(query)\Sales\Revenue as the measure.

If the IBM Cognos Active Report is executed, it will display two tabs. One named Crosstab and the other named Line Chart. By default the user is presented with the Line Chart. The user then has the ability to switch the view to a crosstab by clicking on the Crosstab tab.

Data Tab Control

A Data Tab Control provides the report author the ability to create Tabs based on the number of records returned by a data item. A Data Tab Control can be effective when the number of tabs required needs to change when the record set of a data item changes.

Button Bar

A Button Bar provides the report author the ability to manually create the desired number of buttons.

Data Button Bar

A Data Button Bar provides the report author the ability to create buttons based on the number of records returned by a data item. A Data Button Bar can be effective when the number of buttons required needs to change when the record set of a data item changes.
Toggle Button Bar

A Toggle Button Bar provides the report author the ability to display manually created selectable buttons. These buttons can be used to dynamically filter a data container.

Data Toggle Button Bar

A Data Toggle Button Bar provides the report author the ability to display multiple selectable buttons based on the number of records returned by a data item.

Data Toggle Button Bar Step by Step

The following example provides the step by step instructions on how to use a Data Toggle Button Bar to dynamically filter a list object based on the selected buttons of the Data Toggle Button Bar.

2. From the available Toolbox items, drag the Data Toggle Button Bar object onto the report canvas.
3. Click on the Data Toggle Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine List ToggleButtonBar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Button Bar/List Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.
6. From the available Toolbox items, right click and drag the List object onto the report canvas below the Data Toggle Button Bar.
7. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
8. When prompted for a query, select Data Button Bar/List Query and press the OK button.
9. Using the available source items, populate the List object with GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales \Revenue.
10. From the available Data Items drag Product line into the Labels drop zone of the Data Toggle Button Bar. When completed, the IBM Cognos Active Report should have a Data Toggle Button Bar populated with Product line. Underneath the Data Toggle Button Bar a List has been populated with Product line and Revenue. This is also illustrated by the following screen capture.
Figure 34. IBM Cognos Report Studio displaying the Data Toggle Button Bar and List data object

11. Click the Create a New Connection icon to the right of the Toggle Button Bar control.
12. Within the Create a New Connection dialog box ensure the Source is the ProductLine List ToggleButtonBar and the Target Control is List1. The Behavior drop down list was changed from Select to Filter and an IBM Cognos Active Report variable name varProductLine was created. The varProductLine also has the default value of ‘Camping Equipment’, ‘Golf Equipment’ and ‘Mountaineering Equipment’ set. This is illustrated by the following screen capture.

Figure 35. IBM Cognos Active Report Create a New Connection dialog box creating the connection between the control and the list

13. Click the Connect button to create the connection.
If the IBM Cognos Active Report is executed, it will display a button for each of the product lines at the top of the report. As each button is clicked, the List object refreshes including only the product lines whose buttons have been selected. In the following example, the user has selected the Camping Equipment and Golf Equipment buttons. The list therefore only displays those two product lines and their associated revenue.
Radio Button Group
A Radio Button Group provides the report author the ability to manually supply the available selections displayed as a radio button choice. These values can be used to filter or select the data of a data container one radio button value at a time.

Data Radio Button Group
A Data Radio Button Group provides the report author the ability to supply the available selections as a radio button choice based on the record set returned by a specified data item. These values can be used to filter or select the data of a data container one radio button value at a time.

Check Box Group
A Check Box Group provides the report author the ability to manually supply the available selections displayed as check boxes. The items selected in check boxes can be used to filter the data of a data container.

Data Check Box Group
A Data Check Box Group provides the report author the ability to display multiple selectable check boxes based on the number of records returned by a data item. These check boxes can be selected in multiples and used to dynamically filter a data container.

Data Check Box Group Step by Step
The following example provides the step by step instructions on how to use the Convert Control menu option to convert the previous Data Toggle Button Bar example into a Data Check Box Group which then dynamically filters a list object based on which check boxes are selected.

2. From the available Toolbox items, drag the Data Toggle Button Bar object onto the report canvas.
3. Click on the Data Toggle Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine List ToggleButtonBar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data ToggleButtonBar/List Query.
5. From the available Toolbox items, hold the right mouse button and drag the List object onto the report canvas.
6. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
7. When prompted for a query, select ProductLine List ToggleButtonBar Query and press the OK button.

8. Using the available source items, populate the List object with the GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales \Revenue.

9. From the available Data Items drag Product line into the Labels drop zone of the Data Toggle Button Bar. When completed, the IBM Cognos Active Report should have a Data Toggle Button Bar populated with Product line. Underneath the Data Toggle Button Bar a List has been populated with Product line and Revenue. This is also illustrated by the following screen capture.

**Figure 37. IBM Cognos Report Studio displaying the Data Toggle Button Bar and List data object**

10. Click the Create a New Connection icon to the right of the Toggle Button Bar control.

11. Within the Create a New Connection dialog box ensure the Source is the ProductLine List ToggleButtonBar and the Target Control is List1. The Behavior drop down list was changed from Select to Filter and an IBM Cognos Active Report variable name varProductLine was created. The varProductLine also has the default value of ‘Camping Equipment’, ‘Golf Equipment’ and ‘Mountaineering Equipment’ set. This is illustrated by the following screen capture.
12. Click the Connect button to create the connection.
13. Select the Data Toggle Button Bar control and right click. From the available menu items select Convert Control.
14. From the available list, select Data Check Box Group.
15. Select the Data Check Box Group and within the bottom left hand side Properties pane under the Miscellaneous section, change the Name property from ProductLine List ToggleButtonBar to ProductLine List DataCheckBoxGroup.

If the IBM Cognos Active Report is executed, it will display a check box for each of the product lines at the top of the report. As each check box is selected, the List object refreshes to include only the product lines whose check boxes have been selected. In the following example, the user has selected the Camping Equipment and Golf Equipment check boxes. The list therefore only displays those two product lines and their associated revenue.

**Figure 39. IBM Cognos Viewer output displaying the Check Box Group with two values selected**

### Drop-Down List

A Drop-Down List provides the report author the ability to manually supply the available selections displayed in a drop down list. The items selected in the Drop-Down List can be used to dynamically filter or select a data container.
**Data Drop-Down List**
A Data Drop-Down List provides the report author the ability to supply the available selections in a drop down list based on the record set returned by a specified data item. The items selected in the Data Drop-Down List can be used to dynamically filter or select a data container.

**List Box**
A List Box provides the report author the ability to manually supply the available selections displayed in a List Box. The items selected in the List Box can be used to dynamically filter or select a data container one value at a time. Multi-select can also be enabled by setting the Multi-Select property to Yes.

**Data List Box**
A Data List Box provides the report author the ability to supply the available selections in a drop down list based on the record set returned by a specified data item. The items selected in the Data List Box can be used to dynamically filter or select a data container one value at a time. Multi-select can also be enabled by setting the Multi-Select property to Yes.

**Iterator**
A static Iterator is a control that allows users to navigate through values by using buttons such as first, last, previous and next. The control provides the report author the ability to manually supply the available selections. When connected to a variable it will allow the iterator control to filter or select values from a data container.

**Data Iterator**
A Data Iterator is a control that allows users to navigate through values by using buttons such as first, last, previous and next. The control provides the report author the ability to supply the available values based on the record set returned by a specified data item. When connected to a variable it will allow the iterator control to filter or select values from a data container.

**Data Iterator Step by Step**
The following example provides the step by step instructions on how to use a Data Iterator to dynamically select values from a deck.

2. From the available Toolbox items, drag the Table object onto the report canvas.
3. On the Insert Table dialog box set the Number of columns to 3 and Number of rows to 1 and then click the OK button.
4. From the available Toolbox items, drag the Data Iterator object onto the report canvas and place it in the first cell of the table.
5. Click on the Data Iterator and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine_Data_Iterator.
6. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Iterator_Deck_Query.
7. Using the Page Explorer tab, return to the report view by clicking on Page1.
8. From the available Toolbox items, hold the right mouse button and drag the Data Deck object onto the report canvas and place the Data Deck in the middle cell of the table.
9. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
10. When prompted for a query, select Iterator_Deck_Query and press the OK button.
11. Click on the Data Deck and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine_Deck.
12. Using the available Source items, populate the ProductLine_Data_Iterator Label drop zone with the GO Sales(query)\Sales(query)\Products\Product line.
13. From the available Data Items drag Product line from the Iterator_Deck_Query into the Values drop zone of the Data deck named ProductLine_Deck.
14. From the available Toolbox items, locate the List object and drag it into the Data Deck named ProductLine_Deck.
15. From the available Source items, locate the GO Sales(query)\Sales(query)\Products\Product line, GO Sales(query)\Sales(query)\Products\Product type and GO Sales(query)\Sales(query)\Sales\Revenue and drag them into the List object.
16. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to ProductList_Query.
17. Using the Page Explorer tab, return to the report view by clicking on Page1.
18. Select the List object and within the left hand Properties pane, select the Master Detail Relationships property from the Data Section by clicking the ellipsis.
19. Within the Master Detail Relationships dialog box, define a relationship between the Iterator_Deck_Query and the ProductList_Query by clicking the New Link. The Iterator_Deck_Query \ Product line data item should be linked to ProductList_Query \ Product line data item.
20. Click the OK button to commit the relationship and return back to the report page.
21. Click the Create a New Connection icon to the right of the Data Iterator named ProductLine_Data_Iterator.
22. Within the Create a New Connection dialog box ensure the Source is the ProductLine_Data_Iterator and the Target Control is ProductLine_Deck. The Behavior drop down list is set to the default of Select and the IBM Cognos Active Report variable name varProductLine was created. The varProductLine also has the default value of ‘Camping Equipment’ set. This is illustrated by the following screen capture.
23. Click the Connect button to create the connection.
24. Select the ProductLine_Data_Iterator in the left hand table cell, right click to display the context menu and choose Copy to place into the paste buffer.
25. Select the far right cell of the table, right click to display the context menu and select Paste to add the Data Iterator to the cell.
26. Select the newly copied Data Iterator named ProductLine_Data_Iterator1.
27. Within the bottom left hand Properties pane, locate the General section and set:
   - Iterator First to Hide
   - Iterator Previous to Hide
   - Iterator Label Area to Hide
   - Iterator Next to Show
   - Iterator Last to Hide

28. Return to the left hand table cell and select the Data Iterator named ProductLine_Data_Iterator.
29. Within the bottom left hand Properties pane, locate the General section and set:
   - Iterator First to Hide
   - Iterator Previous to Show
   - Iterator Label Area to Hide
   - Iterator Next to Hide
   - Iterator Last to Hide

30. The completed layout is illustrated by the following screen capture.

Figure 41. IBM Cognos Report Studio displaying the Data Iterators, List data object within a Data Deck
31. The last few steps are layout clean up steps to make the Active Report more appealing and complete. Select a List column and within the bottom left hand Properties pane, click the triangular Ancestor button and select List Columns.

32. Locate the Positioning section, select the Size and Overflow property and click the ellipsis on the right.

33. In the Size & Overflow dialog box set the Width to 150 pixels.

34. Click OK to save the settings.

35. Click the triangular Ancestor button and select Table.

36. Locate the Positioning section, select the Size and Overflow property and click the ellipsis on the right.

37. In the Size & Overflow dialog box clear all values.

38. Return to the canvas and control click and select all three table cells.

39. Click the Left button on the Toolbar to align objects in the cell to the left.

40. Click the Top button on the Toolbar to align objects in the cell to the top.

41. If the IBM Cognos Active Report is executed, it will display two iterators (one showing only Next and one showing only Previous) on either side of the List report. As the Iterator buttons are clicked a different card is displayed. In the following example, the user has displayed the first card which has the value of Camping Equipment for the Product line column. Note that since this is the first value, the Prev button is disabled and the Next button is active.

Figure 42. IBM Cognos Active Report output displaying the Data Iterator set to Camping Equipment

Discrete Values Slider

A Discrete Values Slider provides the report author a slider which can be used to filter or select a data container based on values defined by the report author. The Discrete Values Slider is best suited for non numeric filtering or the selection of a data container. A Range can also be enabled so that multiple sequential items can be selected at the same time.

Data Discrete Values Slider

A Data Discrete Values Slider provides the report author a slider which can be used to filter or select a data container based on values obtained from a data item. The Data Discrete Values Slider is best suited for non numeric filtering or the selection of a data container. A Range can also be enabled so that multiple sequential items can be selected at the same time.

Data Discrete Values Slider Step by Step

The following example provides the step by step instructions on how to use a Data Discrete Values Slider to dynamically filter a list object based on its selected value.
2. From the available Toolbox items, drag the Data Discrete Values Slider object onto the report canvas.
3. Click on the Data Discrete Values Slider and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine List DiscreteValuesSlider.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Slider/List Query.
5. Using the Page Explorer tab, return to the report view by clicking Page1.
6. From the available Toolbox items, hold the right mouse button and drag the List object onto the report canvas.
7. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
8. When prompted for a query, select Data Slider/List Query and press the OK button.
9. Using the available Source items, populate the List object with the GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales\Revenue.
10. From the available Data Items drag Product line into the Labels drop zone of the Data Discrete Values Slider. When completed, the IBM Cognos Active Report should have a Data Discrete Values Slider populated with Product line. Underneath the Data Discrete Values slider, a List has been populated with Product line and Revenue. This is also illustrated by the following screen capture.

Figure 43. IBM Cognos Report Studio displaying the Data Discrete Values Slider and List data object

11. Click the Create a New Connection icon to the right of the Data Discrete Value Slider.
12. Within the Create a New Connection dialog box ensure the Source is the ProductLine List DiscreteValuesSlider and the Target Control is List1. The Behavior drop down list was changed from Select to Filter and an IBM Cognos Active Report variable name varProductLine was created. The varProductLine also has the default value of ‘Mountaineering Equipment’ set. This is illustrated by the following screen capture.
13. Click the Connect button to create the connection.
14. Select the Data Discrete Values Slider and within the bottom left Properties pane under the General section, change the Orientation property from Horizontal to Vertical.

If the IBM Cognos Active Report is executed, it will display a slider with a value for each of the product lines at the top of the report. Currently, every time the slider is dragged and released the list will update to display the selected product line and its associated revenue. If the Update Variables Live property of the Data Discrete Values Slider is set to Yes, then as the slider is moved, the List object will update without the user having to release the slider. In the following example, the user has placed the slider on the Personal Accessories value. The list therefore only displays that product line and its associated revenue.

Figure 45. IBM Cognos Active Report output displaying the Data Discrete Values slider set to Personal Accessories

**Continuous Values Slider**

A Continuous Values Slider provides the report author a slider which can be used to filter or select a data container based on manually entered numeric values. The Continuous Values Slider is best suited for numeric range filtering. The range settings can be controlled in the Properties panel when the Continuous Values Slider is selected.
Button

The Button Toolbox item can be used to add additional interactivity to an IBM Active Report. The IBM Cognos Active Report Button can be used to select or filter a container. It can also be used to enable a control or set a variable.

Button Step by Step

The following example provides the step by step instructions on how to use a Data Toggle Button Bar to dynamically filter a list object based on the selected buttons of the Data Toggle Button Bar. It also provides the steps on how to use a button to enable the Data Toggle Button Bar which has been disabled by default.

2. From the available Toolbox items, drag the Data Toggle Button Bar object onto the report canvas.
3. Click on the Data Toggle Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine List ToggleButtonBar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Button Bar\List Query.
5. From the available Toolbox items, hold the right mouse button and drag the List object onto the report canvas.
6. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
7. When prompted for a query, select Data Button Bar\List Query.
8. Query and press the OK button.
9. Using the available Source items, populate the List object with the GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales Revenue.
10. From the available Data Items drag Product line into the Labels drop zone of the Data Toggle Button Bar. When completed, the IBM Cognos Active Report should have a Data Toggle Button Bar populated with Product line. Underneath the Data Toggle Button Bar a List has been populated with Product line and Revenue. This is also illustrated by the following screen capture.
11. Click the Create a New Connection icon to the right of the Data Toggle Button Bar control.
12. Within the Create a New Connection dialog box ensure the Source is the ProductLine List ToggleButtonBar and the Target Control is List1. The Behavior drop down list was changed from Select to Filter and an IBM Cognos Active Report variable name varProductLine was created. The varProductLine was given the default value of the set ‘Camping Equipment’, ‘Golf Equipment’ and ‘Mountaineering Equipment’. This is illustrated by the following screen capture.

Figure 47. IBM Cognos Active Report Create a New Connection dialog box creating the connection between the control and the list

13. Click the Connect button to create the connection.
14. From the available Toolbox items, drag the Button object below the list object.
15. Click on the Button to select it. Within the bottom left of Properties pane, under the General section, change the button Label to Enable IT!.
16. Click on the Interactive Behavior icon to the right of the Button object.
17. Within the Interactive Behavior dialog box, double click the Set Variable Values area.
18. Within the Set Variable Values dialog box, click the Create a New Variable link.
19. Create a new variable named varEnableDisable with a default value of disable.
20. Click OK to return back to the Set Variable Values dialog box.
21. Within the Set Variable values dialog box, leave the varProductLine value as “Do not set” but change the varEnableDisable value to “Enable” by selecting Type in a value. When completed, the Set Variable Values dialog box should display the varProductLine variable with a value of “Do not set” and the varEnableDisable variable set to the type in value of “Enable”. This is also illustrated by the following screen capture.

**Figure 48. IBM Active Report Set Variable Values dialog box with a value supplied to the varEnableDisable variable**

22. Click the OK button to return to the Interactive Behavior dialog box.
23. Click OK again to return to the report layout.
24. Select the Interactive Behavior for the Data Toggle Button Bar.
25. Within the Interactive Behavior dialog box, double click the Control Enable at the bottom right of the screen.
26. In the Condition Enable dialog box, set the left Item to Value and type Enable in the corresponding text field. Set the right Item to Active Report Variable and ensure the variable varEnableDisable has been selected. The operator drop down should be set to IN. This is also illustrated by the following screen capture.
27. Click the OK button three times to return to the report layout. If the IBM Cognos Active Report is executed, it will display a button for each of the product lines at the top of the report with interactivity disabled. The button to enable the interactivity is displayed below the List object. Once this button is clicked the Data Toggle Button bar becomes active. As each button is clicked, the List object refreshes including only the product lines whose buttons have been selected.

**Guidelines to Building an IBM Cognos Active Report**

The following sections discuss recommended design practices and guidelines for some of the main areas of IBM Cognos Active Report content creation. Tips and techniques will also be presented in order to help authors implement better reporting applications.

**Microsoft Hypertext Archive (MHT) File Size**

Once loaded, an IBM Cognos Active Report output will respond instantly to user interactions. Depending on the amount of data packaged into the application and the number of chart variations, the output file size will vary and the IBM Cognos Active Report load time will be impacted.

IBM Cognos Active Report outputs are self contained so all of the data that is returned by the queries is included in the reports. As the amount of data increases, the MHT file size increases. To help limit the file size increase, there is a configurable property in the IBM Cognos Active Report Properties menu box that allows the author to set the maximum number of rows that a query can return. This property is set to a value of 5,000 by default. This value is by no means a hard limit as it is simply intended to make the IBM Cognos Report author aware when they are including large queries.

When an IBM Cognos Active Report is created, a unique image of every chart variation is created. For example, let’s examine a report that contains a data deck driven by ‘Products’. The data
card contains a line chart of revenue over the last five years and the Master Detail Relationship for the chart is configured to filter the chart based on ‘Products’. Therefore, a unique line chart exists for each member of ‘Products’. Each of these unique charts is a generated image that is packaged into the MHT output file. As a result, if there are 25 members in ‘Products’ then there will be 25 images generated and packaged. If ‘Products’ and ‘Countries’ drive a deck then there is the number of members in ‘Products’ times the number of members in ‘Countries’ unique combinations. An image will be generated for each one of these permutations. The larger the number of unique chart permutations that an author creates, the larger the size the MHT output file will be.

Determining what an acceptable file size is for an IBM Cognos Active Report is a subjective exercise. In applications where users can tolerate a longer load time and the file is shared to all users as a saved output in IBM Cognos Connection or on a network drive then it is not unlikely that a file over 20MB would be acceptable. If users are looking for a high level dashboard for a quick overview of their business while on the go then smaller reports that load faster would be best. In order to build useful reports and ensure a successful deployment, the author must carefully examine the use case and determine the best course of action.

To help keep file sizes to a minimum and thereby improve load time there are several techniques that an author can employ. The following tips and techniques can be applied in many situations.

**Query Filtering**

IBM Cognos Report authors should filter queries so that they include only the data that the end user is interested in. This is particularly important when a query is driving a data deck in order to avoid creating unnecessary images. Leveraging bursting technology to ensure that only data that is relevant to each user is included in their report is an effective way to manage file size without having to build multiple reports.

There is an advanced debug menu available when running an IBM Cognos Active Report application from IBM Cognos Report Studio. By pressing Control+Shift+D additional options in the right click menu will be enabled. The below illustrates the debug menu with the Show Variables, Reset Variables, Info, Print, Copy Tab Control Recordset and Show Tab Control Recordset as available menu options. The figure also illustrates the dialog that would appear by selecting the Info menu option or the Show Tab Control Recordset. The Info dialog box displays the number of records associated with each of the controls within the IBM Cognos Active Report application. The Show Tab Control Records set displays the actual records associated with the control. In this example there is a recordset for each of the regions so a sample record would consist of a field name of Region with a value of “Americas”. With this information the IBM Cognos Report author is able to determine how many charts have been created, how many controls are in the report and what records are included in the report. This is a valuable tool for ensuring the queries are filtered properly and no unnecessary data or images are included in the reporting application.
Keep Decks Simple

Decks should only contain data that is unique to a card. Any common styling or static content should be placed outside of the deck in order to avoid it being unnecessarily duplicated. In the image below, the IBM Cognos Active Report application simply consists of a data button bar populated with the Product line query item. This data button bar is used to set a value for a variable which controls the left and right hand data decks, both of which are driven by Product line and contain the Product line query item. The data deck on the left has the formatting correctly applied to the block that contains the data deck. The data deck on the right has the formatting applied to the block that is inside the data deck and will be repeated for each card in the deck. The end result will appear the same to the end user but the output file size will be reduced if the styling is placed outside the deck because the styling is only included once in the output file.

Classes and Layout Component Reference Objects

Using classes is a way to ensure that styling elements are shared between objects. This helps to minimize the output file size. This is particularly true when styling objects in a deck because many copies of the same styling will otherwise be created. By using classes to style, significant improvements in file size have been observed.
Leveraging layout component reference objects has a similar effect to using classes for styling. By using a layout component reference object, a single object is shared throughout the IBM Cognos Active Report application, which in turn, reduces the amount of duplication in the output file. Additionally, design changes can quickly be reflected across multiple objects or reports simply by changing the class or layout component reference object.

Reducing the Number of Hotspots on Charts and Maps

Reducing the number of Hotspots on Charts and Maps

If a Chart or a Map has no interactivity configured for driving selection, it is a best practice to set the number of Hotspots to zero. Setting the value to zero reduces the overall Active Report size but will also disable the use of tooltips, which may or may not be acceptable depending on the use case. It is worth noting that tooltips are not supported when consuming an Active Report on the iPad so for use cases primarily targeting mobile this technique should always be considered. If tooltips are required, setting the property to a smaller value (i.e. 500) will still reduce file size while enabling tooltips to still be used. The exact value required to support tooltips varies depending on the specific chart so some testing and evaluation will be required for specific scenarios. As shown in the figure below, the Maximum Hotspots setting can be found in the Miscellaneous section on the Properties pane for both Charts and Maps.

Figure 52. The Maximum Hotspots setting shown in the Properties panel of IBM Cognos Report Studio

Simplifying the Authoring Experience

As reports become more complex, it is important to maintain an understanding of the overall interaction model and the relationships that exist between the controls and the variables. An author will find the following tips useful as they begin to create advanced reporting applications.

The Active Report Variables and Active Report Controls Tabs

The image below illustrates the dialog boxes presented by selecting the tabs beside the toolbox icon in IBM Cognos Report Studio. The dialog box on the left hand side displays the Active Report Variables and the right hand side displays the Active Report Controls. The Active Report Variables tab shows the author all of the variables that have been created and allows the author to change the name of a variable, change default values and see what controls interact with each of the variables. The Active Report Controls tab complements the variable pane by showing which variables each control is set by and which variables each control sets. This information can
also be accessed on a per control basis by hovering over a control's interactive behaviour icon on the report canvas. This is very useful information for the author as they are trying to debug functionality or understand the interaction in a reporting application.

**Figure 53. The interactivity information that is shown in the Active Report Variables and the Active Report Controls tab**

**Diligent Naming**

As more functionality gets added to an IBM Cognos Active Report application, default control, query and variable names become less meaningful. In order to ensure that the proper controls are being connected with the correct variable when setting up interactive behaviour, everything should be given meaningful names. It is particularly useful to prefix all variable names with v or var so that they can easily be identified as variables. This practice will help ensure that the author can easily maintain and update the report moving forward. Giving meaningful names also makes it much easier to navigate helpful menus such as the IBM Cognos Active Report Variables panel and Query Explorer. The following image consists of three parts: the IBM Cognos Active Report Variable dialog box which displays a list of variable names that have been properly named with the var prefix, the Query Explorer dialog box, which displays a list of query objects appropriately named to allow for easy association to the report object that uses them and the IBM Cognos Report Studio properties pane. The IBM Cognos Report Studio properties pane illustrates that the Data Button Bar object has been appropriately named Product Line Button Bar under the Miscellaneous\Name property.

**Figure 54. Variables, queries and controls with meaningful names**

**Reusing Queries**
When authoring an IBM Cognos Active Report, a new query is created every time an object is
dragged into the report. As a result, the number of queries in the report increases quickly and it
becomes difficult to ensure that all queries are filtered and implemented properly. This situation
can be simplified by reusing the same query for multiple controls that share the same information.
A simple way to accomplish this is to use a right-click and drag when adding a new control to the
canvas. The author will then be prompted to associate this control with an existing query instead of
having a new query created.

**Default Variables**

Where applicable, all variables should be assigned default values. This will ensure that when the
reporting application is loaded the end user will be shown the proper data with the desired context.

**Nesting Data Containers**

To simplify the interactive behavior logic, an author should avoid nesting a data container inside
another data container. Instead of creating a deck for ‘Products’ with a deck for ‘Years’ inside it,
create a single deck for ‘Products’ and ‘Years’. A selection expression that is a combination of
the variables containing the desired year and product can be used to choose the proper card.
Alternatively, one of the variables can be used to filter the deck and the other variable can select
which of the remaining cards to display.

**Testing and Debugging**

In addition to the report diagnostics that are discussed in section 4.1.1, there are several other
strategies that can be used to help test and debug reporting applications. The following image
illustrates the dialog box presented to the user after right clicking on a reporting application that
has been run from IBM Cognos Report Studio. The debug dialog box consists of Show Variables,
Reset Variable, Info, Print, Copy Tab Control Recordset and Show Tab Control Recordset.
The bottom half of the image illustrates the dialog box presented to the user after selecting the
Show Variables menu item. In this example the dialog box shows the report author that the
vProductLine variable has a value of Golf Equipment along with several other variable name and
value combinations.

The Show Variables dialog box gives the author the current value of all variables and allows the
author to understand how the variables are changing as a user interacts with the report. The Reset
Variables option from the same right-click menu allows the report author to return the reporting
application to its original state without having to exit the report.
Figure 55. Output of the View Variables debug menu

Appearance and Performance
The timely interaction and visual appeal are two of the key features of an IBM Cognos Active Report that create a compelling end user experience. The following are some concepts to keep in mind when creating and styling a reporting application.

Object Sizing

Not all cards in a deck are necessarily the same size. When a different sized card is selected for viewing, other displayed objects may move to accommodate the new card. To the end user this appears as objects bouncing on the screen. This behaviour can be avoided by sizing objects. Fixed sizing can be applied to the objects on the card and to the deck to ensure they are all the same. Consistent object and deck sizing is also important when animation on the deck is enabled. If the size of a deck is not constrained and animation is enabled then the new card could potentially animate in from across the screen, which creates an undesirable experience for the end user. If the deck is set to the same size as the cards then the animation will be more natural because it will be constrained to only the area occupied by the objects in the card. The size of a control is configured by the Size & Overflow property in the Properties panel. Other properties such as horizontal and vertical padding can also be used to enforce spacing between various controls.

In order to impose size constraints, the author can start at the bottom of the object hierarchy and then move upwards by using the Ancestor button that is shown within the following image. In this example, the object hierarchy is displayed as Card, Deck, Block, Tab Card, Tab Control, Page Body and Page. The lowest object in the hierarchy in this case would be the Card. By starting at
the lowest level and moving up the hierarchy, the author can ensure that proper sizing propagates through the reporting application.

**Figure 56. The Ancestor button allows the author to traverse the layout hierarchy**

Bouncing can also appear on lists or crosstabs. As data is filtered, the width of the columns will automatically adjust to fit the data that is currently being shown. This behaviour can be avoided by assigning a fixed column width to every column of the list or crosstab. Additionally, it is important to keep in mind the amount of data that is contained in a list or crosstab when laying out a fixed size report. If the list changes to include more data then the height of the object will expand and push down the items below it. This will occur regardless of whether or not there is a size constraint on the height of the list and its container. To avoid this behaviour, the real estate allocated to the list should be set to the lists maximum size or it can be placed in a scrollable block.

**Filtering versus Segmenting Data**

Performance gains can be realized by segmenting list or crosstab data onto multiple cards instead of using the filtering functionality in the interactive behaviour area. As more data is included in the list or crosstab the performance gains become more noticeable and the end user experience is improved.

The following screen capture provides a visual representation of the differences between filtering and segmentation. The list report on the right hand side consists of Product line, Product type and Quantity. The Camping Equipment records are distributed throughout the list, interlaced with the other records in the list. This large list would need to be filtered to reveal only the Camping Equipment items. The left hand side shows multiple lists using the same data items that are included in the right hand list. Each list on the left includes only a single Product line. These individual lists can be constructed by including the larger list in a data deck that is driven by
Product line with a Master Detail Relationship setup between the list and data deck. In this scenario, the author can then select which pre-filtered list should be presented to the end user.

**Figure 57. A list segmented into cards to provide filtering functionality with improved performance**

![Diagram](image)

### Optimizing Data Deck Queries

When working with dimensional data, if multiple dimensions drive a Data Deck and the fact table is large, it is possible to optimize the query and reduce the build time of the reporting application. Instead of dragging the dimensions into the Data Deck and having them put into the same query, a separate query should be built for each dimension and then a join operation with an expression of $1 = 1$ should be used to create a new query. The Set Cross Product Allowed property for the new query must be set to Allow. The dimensions can then be brought into the Data Deck from the new query.

### Aligning Data and Objects

When laying out a reporting application, use the right, left, centre and top, middle, bottom alignment controls that are accessible through the IBM Cognos Report Studio toolbar to get the desired object orientation. The alignment should be done as close to the object as possible. For example, when trying to centre a chart, the alignment should be set on the block or table cell that contains the chart. As previously mentioned, using the Ancestor button is an effective way to select containers that are nearest to the object that needs to be aligned.

Depending on the desired functionality an author needs to decide whether to use a block or a table as the object container. Tables are more flexible because rows or columns can be added to existing tables to quickly adjust a layout. They also support both horizontal and vertical alignment. Tables are unable to control the overflow of content so they get automatically increased in size if the contents are larger than the container. This behaviour can affect the layout of a fixed size dashboard. On the other hand, blocks do not support vertical alignment but they can control overflow by becoming a scrollable area or by clipping content.

### Background Effects & Images
An author can use background effects or images to improve the visual appeal of reporting applications. It is important to note that for a background effect to appear, it needs to be applied to an area that is a fixed size. If relative sizing is used, the background effect for that area will not show up in the IBM Cognos Active Report.

**Scaling Chart Axes When Using a Data Deck**

When charts are used in a data deck and a Master Detail Relationship is set up, the maximum values of the data belonging to each chart can be significantly different. When this situation is encountered and the scale of the chart remains the same on each card, the resulting charts can end up being illegible. The same range for all instances of chart property can be used to address this issue. The property can be found in the Axis Range menu of the chart’s Primary Axis properties. When this setting is unchecked, the axes of each chart in the data deck will be scaled to the data contained in that specific chart.

**iPad Specific Guidance**

The same IBM Cognos Active Report can be consumed in standard web browsers and by the IBM Cognos Mobile native iPad application. If the use case for a specific reporting application is mobile centric and it will frequently be consumed on the iPad then there are some design considerations that can be taken into account to optimize the end user experience.

**Report Dimensions and Sizing**

With earlier versions of the IBM Cognos Mobile App when a reporting application was larger than the iPad screen it became scrollable. With the 10.2.2 releases; the App will apply horizontal resizing. This means the report author will need to ensure that all the objects do not exceed the size of the device. This process is made easier with the introduction of the Active Report Preview and its ability to select the device or size of device of the desired device. In the two screen captures below the first one displays a chart with horizontal scrollbars. The presence of the horizontal scroll bar indicates that this report will be horizontally resized when viewed on the iPad. The second screen capture is the same chart with an object size applied within the Active Report Preview. The absence of the horizontal scrollbar indicates the chart will display as sized on the iPad without any resizing.
When creating a report it is important to plan the report layout and ensure that all objects and containers are sized properly. As discussed in the previous sections, if an object is larger than its container, the container could be pushed out and the entire report layout may be affected. This is one of the reasons that it is strongly recommended to use percentage sizes on container objects like tables and blocks. This means that proper sizing must be applied to all objects and propagated throughout the entire object hierarchy in order to maximize screen real estate and avoid scrolling. Simply sizing the Page of the reporting application to iPad specific dimensions will not give the desired result if the objects contained within the Page are not properly sized.

### Scrollable Areas
It is common practice when designing reporting applications for the desktop to nest large objects such as lists inside a smaller blocks with scrolling enabled. This minimizes the impact on overall screen real estate and still allows the user to view all of the detail contained within the object. On the desktop these scrollable areas are identified with scrollbars on the block. In order to remain consistent with established iOS navigation standards, scrollable areas on a reporting application when rendered in the IBM Cognos Mobile native iPad application do not have visible scrollbars. The following screen capture displays two lists consisting of Product line, Product type, Quantity, Revenue and Gross profit. The list on the left represents the desktop view and shows the scroll bars to the right of the Gross profit column. The list on the right represents the iPad view and does not have a scrollbar to the right of the Gross profit column.

Figure 60. Difference between a scrollable area on the Desktop and iPad

Touchable Regions

When reporting applications are going to be used on the iPad it is important to remember that items that are easily selectable by a mouse on the desktop may be difficult to press on a touch interface. This is not a concern with standard IBM Cognos Active Report controls as they conform to Apple’s Human Interface Guidelines but is important when implementing objects such as maps. On the iPad, a small area on the map may be difficult for a user to select so an alternative control should also be provided. A simple solution is to create a control such as a drop down list that has the same selection options as the map in order to provide users with the flexibility of using either the map or the list to drive their interactions.

Swipe Gesture

In order to create a user experience that takes advantage of standard touch interface interactions, the swiping gesture can be implemented on Decks or Data Decks. This functionality is complemented by the Iterator control, which can be configured to appear as page dots to indicate the current selection. The following high-level procedure can be followed to enable swiping and obtain the corresponding page indicator dot look and feel for the Iterator control:

- Ensure that the Iterator and the Deck are driven by the same values
- Create a variable to be used to control the selection
- Configure the Interactive Behaviour of both the Iterator and the Deck so that each control sets (Set Variable Values) and is selected by (Container Select) the same variable
- Enable the desired Slide Animation Direction effect on the Deck
- For the Iterator control, ensure that the Iterator First, Iterator Previous, Iterator Next and Iterator Last properties are set to Hide. Only the Iterator Label Area should be set to Show.
- Select the Iterator Label Area on the canvas and set the Select UI property to Page Dots Indicator.

The detailed step by step instructions for creating a swipeable Data Deck that shows the historical revenue for each Product line in a separate line chart is shown below:

2. From the available Toolbox items, drag a Data Deck object onto the report canvas.
3. Click on the Data Deck and within the bottom left hand Properties pane, change the Name property within the Miscellaneous section to ProductLine_Data_Deck and change the Slide Animation Direction property within the General section to Auto Horizontal.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Swipe_Deck_Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.
6. From the available Toolbox items, hold the right mouse button and drag the Data Iterator object onto the report canvas and place the control under the Data Deck.
7. After releasing the right mouse button, a menu appears. Select the option Insert using existing query.
8. When prompted for a query, select Swipe_Deck_Query and press the OK button.
9. Click on the Data Iterator and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine_Data_Iterator.
10. Within the bottom left hand Properties pane, locate the General section and set:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iterator First</td>
<td>Hide</td>
</tr>
<tr>
<td>Iterator Previous</td>
<td>Hide</td>
</tr>
<tr>
<td>Iterator Label Area</td>
<td>Show</td>
</tr>
<tr>
<td>Iterator Next</td>
<td>Hide</td>
</tr>
<tr>
<td>Iterator Last</td>
<td>Hide</td>
</tr>
</tbody>
</table>

11. Click on the Label area of the Data Iterator in the report canvas and within the bottom left hand Properties pane under the General section, change the Select UI property to Page Dots Indicator.
12. Using the available source items, populate the ProductLine_Data_Iterator Label drop zone with the GO Sales(query)\Sales(query)\Products\Product line.
13. From the available Data Items drag Product line from the Swipe_Deck_Query into the Values drop zone of the ProductLine_Data_Deck.
14. From the available Toolbox items, locate the Chart object and drag it into the Data Deck named ProductLine_Data_Deck.
15. Within the Insert Chart dialog box, select line chart and press the OK button.
16. Click on the Chart and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to ProductLine_Chart.
17. Using the available source items, populate the Line Chart object with the GO Sales(query)\Sales(query)\Products\Product line on the Series, the GO Sales(query)\Sales(query)\Time\Year as the Categories and GO Sales(query)\Sales(query)\Sales\Revenue as the measure.
18. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Chart_Query.
19. Using the Page Explorer tab, return to the report view by clicking on Page1.
20. Select the Chart object and within the left hand Properties pane under the Data section, select the Master Detail Relationships property by clicking the ellipsis.
21. Within the Master Detail Relationships dialog box, define a relationship between the Swipe_Deck_Query and the Chart_Query by clicking the New Link. This should link Swipe_Deck_Query \ Product line to Chart_Query \ Product line.
22. Click the OK button to commit the relationship and return back to the report page.
23. Click the Interactive Behavior icon to the right of the Data Deck.
24. Double click on the Set Variable Values area of the Interactive Behavior dialog box.
25. Select the Create a New Variable link and create a variable named varProductLine with a Data Type of String and a default value of ‘Camping Equipment’. Click OK to return to the Set Variable Values dialog box.
26. For varProductLine, change the Value field from Do not set to Product line and click OK to return to the Interactive Behavior dialog box.
27. Double click on the Container Select area and select the Data Item radio button from the Item area on the left hand side of the dialog box. Ensure that Product line is selected from the drop-down menu.
28. Set the value in the Operator drop-down menu to IN.
29. Select the Active Report Variable radio button from the Item area on the right hand side of the dialog box and ensure that varProductLine is selected from the drop down menu.
30. Click OK three times to commit the modifications to the Data Deck’s interactive behaviour.
31. Click the Interactive Behavior icon to the right of the Data Iterator.
32. Double click on the Set Variable Values area of the Interactive Behavior dialog box.
33. For varProductLine, change the Value field from Do not set to Product line and click OK to return to the Interactive Behavior dialog box.
34. Double click on the Container Select area and select the Data Item radio button from the Item area on the left hand side of the dialog box. Ensure that Product line is selected from the drop-down menu.
35. Set the value in the Operator drop-down menu to IN.
36. Select the Active Report Variable radio button from the Item area on the right hand side of the dialog box and ensure that varProductLine is selected from the drop down menu.
37. Click OK three times to commit the modifications to the Data Iterator’s interactive behaviour.
38. If this IBM Cognos Active Report is executed, it will display a line chart for the revenue of Camping Equipment. The Data Iterator will appear as Page Dots Indicator below the chart. In the desktop browser, clicking on the various page dots will change the chart. When this same report is consumed in the IBM Cognos Mobile native iPad application, the user can use the swipe gesture on the chart to transition to the next chart.

**Application Drill-Through**

When consuming IBM Cognos Active Reports in the IBM Cognos Mobile iPad Application, the Application Drill-Through mechanism can be used to link multiple Active Reports together and share Active Report Variable state between them. As shown in the figure below, this allows an
application consisting of multiple Active Reports to be created so that an end user can navigate between multiple reports with a smooth user experience.

**Figure 61. Two IBM Cognos Active Reports connected through with Application Drill-Through**

This functionality requires that all interconnected Active Reports be stored locally in the IBM Cognos Mobile iPad Application and is therefore supported while disconnected from the server. This capability is only supported within the iPad Application.

The following section will provide a Step-by-Step on configuring and deploying Active Reports that leverage this technique. Two Active Reports will be involved in the scenario. The source report will be the users starting point and the target report is the report that the user wants to establish a link to.

1. Select the control you wish to setup Application Drill-Through on in the source report.
2. On the Properties for that object select the Application Drill-Through under Interactive Behavior to display the Application Drill-Through dialog box.
3. Click the New button on the bottom left of the Application Drill-Through dialog box.

4. Add a Name for the drill through definition Note: this name is not exposed to the user.
5. Enter cogmobgr for the Method (it must be cogmobgr).
6. Enter a label; this label is exposed to the user on the iPad.
7. Click the New button under the Parameters at the bottom of the dialog box.
8. Enter cogmobgr_cm_store_id.
9. Click the New button to add a static value and enter the store id for the target report.
10. Note: store id can be found on the properties of the report in Cognos Connection.
11. Click OK twice.
12. Repeat this process for the Search Path which is found in the same location as the Store ID.
13. Click the New button under the Parameters at the bottom of the dialog box.
14. Enter cogmobgr_cm_search_path.
15. Click the New button to add a static value and enter the Search Path for the target report.
16. Click OK twice.
17. Repeat this process and create a new Application Drill-Through entry for every report that you want to make available as a target.

**Design considerations**

1. All Active Report Variables whose state you wish to pass from the Source to the Target report must have the same variable name in each report and be declared as Public (External). For example, as shown below, varPL is set for Public (External) and will now be able to pass the value of the variable to the target report when the Application Drill-Through is invoked.

   **Figure 65. IBM Cognos Report Studio showing an Active Report Variable that has been created and identified as Public**

2. In the target reports all variables must be declared as Public (External) and have the same name as the variables in the source report if they are to receive context from the source report.
3. A variable that is marked as Public must be set by the control in the source report where the Application Drill-Through is configured in order for the report linking to occur. This is required regardless of whether or not the source object requires a variable for interactivity within its own report. An arbitrary variable can be created and set to any value if the source object does not already set an Active Report Variable.

**Deployment Considerations**

1. Schedule the group of reports as a job so that they arrive on the iPad together and have equally fresh data.
2. The Application Drill-Through will only work if the reports are provided through the mobile server. Reports added via email or via iTunes will not support the Application Drill-Through.
3. DrillTarget.AgeDifferenceReRunThresholdHours is a new Mobile Service advanced setting that controls the maximum allowable age difference between Active Reports for linking; if the time difference between target and source reports is greater than the specified value the reports will not be available for disconnected linking. The default value is 1 hour.

**On the iPad**

1. ‘Reports on My iPad’ section will display all of the Active Reports in the group
2. After navigating to the Target report use the Back button in the top left corner of the iPad application to return to the source report.

**Consuming IBM Cognos Active Reports in IBM Cognos Workspace**

IBM Cognos Active Reports can be consumed within IBM Cognos Workspace alongside other widgets. The integration of these technologies provides several benefits. The flexibility of Active Report allows the creation of highly interactive and tailored experiences, which can be used to improve the overall experience within Cognos Workspace. Also, Active Reports are disconnected so if there is data displayed within a Cognos Workspace that does not require frequent updates (i.e. historical quarterly sales data) then this can be presented within an Active Report so that unnecessary queries do not have to be run. This results in improved performance and enhances the overall experience.

Since they are disconnected, an Active Report being consumed in Cognos Workspace requires a saved output to be created. As a result, Active Reports that are intended for consumption in Cognos Workspace should be scheduled accordingly so that the proper freshness of data is represented in the workspace.

In order to ensure a successful integration of the two technologies, the following considerations should be kept in mind:

- IBM Cognos Active Reports are authored experiences and as a result do not support the capabilities on the on-demand toolbar, including the “Do More” option that enables report editing in IBM Cognos Workspace Advanced.
- Within a Cognos Workspace, Active Reports can communicate with other Active Reports if they share the same variable name and both variables are marked as ‘Public’ when created in IBM Cognos Report Studio.
• The following components can pass context into an Active Report but non-Active Report widgets do not respond to context driven from within an Active Report:
  • The IBM Cognos Workspace Slider and Select Value Filter controls can trigger Select or Filter actions within an IBM Cognos Active Report.
  • Report Prompts whose parameter name matches an Active Report Variable name can pass context into an Active Report (the Active Report Variable must be marked as ‘Public’ within IBM Cognos Report Studio).
• All IBM Cognos Active Reports’ must be Saved Output to function correctly.
• IBM Cognos Workspace must be connected to the server.
• An Active Report can now can pass context to both a Regular and Active Report. See IBM Cognos Workspace Passing Context Step-by-Step.

IBM Cognos Workspace Step-by-Step

The following example will step a user through creating two simple Active Reports; one Active Report will be a Data Button Bar that assigns a value to the variable. The other Active Report will use that value to filter a Simple List.

2. From the available Toolbox items, drag the Data Button Bar object onto the report canvas.
3. Click on the Data Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Product line Data Button Bar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Button Bar/List Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.
6. From the available Source items, locate the GO Sales(query)\Sales(query)\Products\Product line and drag it into Labels section of the Data Button Bar.
7. Click the Interactive Behavior icon on the List object to display the Interactive Behavior dialog box.
8. On the Behavior on Select pane click the pencil to Edit the Set Variable Values.
9. On the Set Variable Values dialog box at the bottom click Create a New Variable link.
10. Enter varPL as the Name of the variable.
11. Check the Public (External) option (this option enables passing context via a variable from Active Report to other Active Reports).
12. Click the ‘Set Default Value(s)…’ link at the bottom of the Active Report Variable dialog box.
13. On the Default Variable Values dialog box click the New button at the bottom.
14. Enter the text ‘Camping Equipment’ in the Value field of the New Default Value dialog box and click OK three times to return to the Set Variables dialog box.
15. On the Set Variables Values dialog box set the Value for varPL to ‘Product line’ and click OK to close the dialog box.
16. As displayed in the figure below, the Interactive Behavior dialog should show the condition ‘Set varPL to Product line’.
17. Click OK to close the dialog box.
18. Save the report as Product line Bar.

The second report will be a simple list which contains a variable with the Public (External) option enabled. It is mandatory that the variable names match and that the Public (External) option is set in order for the context to be passed from one Active Report to another within the IBM Cognos Workspace.

2. From the available Toolbox items, drag the List object onto the report canvas.
3. Click on the List object and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Product line List.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Product line Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.
6. Populate the List object with GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales\Revenue. This is illustrated by the following screen capture.

![Figure 67. IBM Cognos Report Studio displaying the List object](image)

7. Click the Interactive Behavior icon to the right of Product line List.
8. On the Behavior on Select pane click the pencil to Edit the Set Variable Values.
9. On the Set Variable Values dialog box at the bottom click Create a New Variable link.
10. Enter varPL as the Name of the variable.
11. Check the Public (External) option.
12. Click the ‘Set Default Value(s)...’ link at the bottom of the Active Report Variable dialog box.
13. On the Default Variable Values dialog box click the New button at the bottom.
14. Enter the text ‘Camping Equipment’ in the Value field of the New Default Value dialog box and click OK three times to return to the Set Variables dialog box.
15. On the Set Variables Values dialog box set the Value for varPL to ‘Product line’ and click OK to close the dialog box. This now enables the Active Report to pass context to another Active Report when a row of the Product line List is clicked on.

16. On the Container Select pane click the pencil to create a new condition.

17. Accept the default settings and click OK twice to return to the Interactive Behavior dialog box. The figure below shows the Set Variable Values condition (‘Set varPL to Product line’) and the Container Select condition (‘Product line in varPL’) within the Interactive Behavior dialog.

**Figure 68. IBM Cognos Report Studio showing the Set Variable Values and Container Select conditions in the Interactive Behavior menu**

18. Click OK to close the dialog box.

19. Save the report as Product line List.

This next section outlines the steps required to run and save the reports in Cognos Connection, add the reports to the Canvas within IBM Cognos Workspace and enable the Master filter.

1. Locate the report Product line List in Cognos Connection and click on the Run with options icon.
2. On the Run with options page change the Delivery option to Save the Report.
3. Repeat steps 1 to 2 for the Product line Bar report.
4. The next step is to invoke IBM Cognos Workspace and drag and drop the reports onto the canvas.
5. The final step is to enable the Master Filter for the Product line Bar. Click the Product line Bar to show the on demand tool bar; then click the Master filter button to enable the filtering.

**Figure 69. IBM Cognos Workspace showing the Product line Bar Active Reports on the canvas**

The resulting dashboard shows the button bar and the list on the canvas is shown below.
IBM Cognos Workspace Passing Context Step-by-Step

The following example will step a user through creating one simple Active Report and a second regular report; one Active Report will be a Data Button Bar that assigns a value to the variable. The other report will use that value to filter a Simple List.

2. From the available Toolbox items, drag the Data Button Bar object onto the report canvas.
3. Click on the Data Button Bar and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Product line Data Button Bar.
4. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Data Button Bar/List Query.
5. Using the Page Explorer tab, return to the report view by clicking on Page1.
6. From the available Source items, locate the GO Sales(query)\Sales(query)\Products\Product line and drag it into Labels section of the Data Button bar.
7. Click the Interactive Behavior icon on the List object to display the Interactive Behavior dialog box.
8. On the Behavior on Select pane click the pencil to Edit the Set Variable Values.
9. On the Set Variable Values dialog box at the bottom click Create a New Variable link.
10. Enter Product line as the Name of the variable. This is key step; the variable name MUST be the same name as the column that is being filtered.
11. Check the Public (External) option (this option enables passing context via a variable from Active Report to other Active Reports).
12. Click the ‘Set Default Value(s)’ link at the bottom of the Active Report Variable dialog box.
13. On the Default Variable Values dialog box click the New button at the bottom.
14. Enter the text ‘Camping Equipment’ in the Value field of the New Default Value dialog box and click OK three times to return to the Set Variables dialog box.
15. On the Set Variables Values dialog box set the Value for varPL to ‘Product line’ and click OK to close the dialog box.

16. As displayed in the figure below, the Interactive Behavior dialog should show the condition ‘Set Product line to Product line’.

**Figure 71. IBM Cognos Report Studio showing the Set Variable Values condition in the Interactive Behavior menu**

![Interactive Behavior dialog box](image)

17. Click OK to close the dialog box.

18. Save the report as Product line Bar.

The second report will be a simple list.


21. From the available Toolbox items, drag the List object onto the report canvas.

22. Click on the List object and within the bottom left hand Properties pane change the Name property within the Miscellaneous section to Product line List.

23. Within the Query Explorer tab, click on Query1. Within the bottom left hand Properties pane, locate the Miscellaneous section and change the name of the query from Query1 to Product line Query.

24. Using the Page Explorer tab, return to the report view by clicking on Page1.

25. Populate the List object with GO Sales(query)\Sales(query)\Products\Product line and GO Sales(query)\Sales(query)\Sales\Revenue. This is illustrated by the following screen capture.

**Figure 72. IBM Cognos Report Studio displaying the List object**

![List object](image)

26. Save the report as Product line List.

27. Locate the report Product line Bar in Cognos Connection and click on the Run with options icon.

28. On the Run with options page change the Delivery option to Save the Report.

29. The next step is to invoke IBM Cognos Workspace and drag and drop the reports onto the canvas.
30. The final step is to enable the Master Filter for the Product line Bar. Click the Product line Bar to show the on demand tool bar; then click the Master filter button to enable the filtering.

**Common IBM Cognos Active Report Functionality**

The flexibility of IBM Cognos Active Report controls allows a wide variety of functionality to be implemented. The following sections will present commonly used techniques that leverage standard controls to deliver compelling end user experiences. IBM Cognos Active Report outputs that demonstrate the functionality and the corresponding report specifications are included in ARFunctionality.zip. The report specifications are built from the GO Sales dataset and the GO Sales (query) package so IBM Cognos customers can open and fully interact with the reports in IBM Cognos Report Studio.

**Default Cards**

When the variable that controls the selection of a Deck is empty or does not match a card name then a default card can be used to show content to the user. This is useful for displaying summary information to the user before they make a valid selection. Changing the Default Card property in a Deck’s property panel to Yes will enable the default card. When this feature is enabled a new No Data Contents icon appears above the Deck. The author can select this icon to view the default card and add report objects.

**Making Use of the No Value List Item**

When working with a List or Drop-Down List an additional item can be added to the list. The author has control over the text that is shown and when it is selected the variable that is set by the list is cleared. This functionality can be used to accomplish several design goals. For example, if list selection is being used to filter an object then the extra item can be labelled Show All and when it is selected all filters will be removed. Additionally, it could be used to select a default card in a deck. To enable this functionality select the List or Drop-Down List and change the No Value List Item to Show.

**Calculating Summaries in the Output**

When the end user dynamically filters a List or Crosstab, the Summarize in Output functionality can be used to aggregate the data that is currently being shown in the filtered object. The supported aggregation methods are total, count, average, minimum and maximum. This functionality can be accessed through the Summarize menu on the IBM Cognos Report Studio toolbar. This feature will ensure that the correct summary information is always presented to the end user as they interact with a List or Crosstab.

**Clickable Regions**

There are multiple areas of objects that can be used to drive interactivity. The Clickable Regions property can be used to set which areas of each object are selectable. The menu will adjust to reflect the correct options for each object.

**Showing and Hiding List Columns or Crosstab Columns and Rows**

The visibility of list columns can be controlled by variables. The Column Visibility menu that is accessible in the List Column Body Properties panel allows the author to set the visibility based
on a condition. A multi-select control such as a Check Box Group can be used to control which columns in the list are visible. This allows the end user to show only the information that they are interested in on the screen. The same concept can be applied to hiding and showing crosstab rows and columns. This crosstab functionality can be accessed in the Container Filter menu of the Crosstab Properties panel. This functionality is demonstrated in the supporting file *Toggled List Column Display.mht.*

**Sorting List Columns**
List column sorting can be enabled by selecting the appropriate column and changing the Allow Sorting property to Yes. This will allow the user to toggle sorting on or off and enables sorting in both ascending and descending order.

**Drilling Through to a Live Report**
Drill-through can be used to provide the end user with access to more details on demand while they are connected. This functionality allows summary level dashboards to be built without sacrificing the ability to get to more detail when required. To ensure that context is not lost while drilling through, parameter values or data item values can be used to populate prompts in the target report. In order to setup a drill-through, the Drill-Through Definitions menu in the Properties panel for report objects can be used.

**Expandable and Collapsible Regions**
To save screen real estate the report author can choose to hide areas of a reporting application. This type of functionality can be particularly useful for showing or hiding filter criteria or additional metrics that are not frequently used. To accomplish this an author can include the information they want to hide on a card of a Deck and create an empty card in the same Deck. A variable can be used to determine whether the card with content or the blank card should be shown. When the blank card is active, the content will not be visible and objects beside the Deck will collapse into its location. When the variable is changed to select the card with content, the layout will adjust to reveal the additional detail. This functionality is demonstrated in the supporting file *Hidden Report Regions.mht.*

**Disabling Until a Condition is Met**
An author can disable the use of controls or hide content from the end user until a condition is met. This is useful for when additional functionality or detail will only be shown if a particular item is selected. To disable the use of a control based on a condition the Control Enable functionality in the Interactive Behaviour menu can be used. To hide content until a condition is satisfied, a Deck with an empty default card can be used. Alternatively, the default card can be used to provide a cue to the end user that more information is available if they make the proper selection. This functionality is demonstrated in the supporting file *Disabling Until a Condition is Met.mht.*

**Creating Custom Content Buttons**
The IBM Cognos Active Report Button control provides the author with a simple way to implement a standard look and feel button. For some applications the author may choose to create a button with a customized look and feel. To accomplish this, a List object can be used. In order to create a single button, a single cell list is created. This is done by including a single data item in a list
and then selecting the List Column Title and setting the Box Type property to None. The cell can then be styled with a background colour or image to create the desired look and feel. Arrays of buttons can be constructed by including this functionality in a Repeater Table. This functionality is demonstrated in the supporting files Custom Buttons.mht and Repeaters and Buttons.mht.

Creating Custom Content Buttons
As opposed to using the standard look and feel buttons, custom button bars can be used to create a very specific visual effect. Images or custom background effects defined within blocks can drive the styling of the custom buttons. If a known number of buttons are needed, a Static Repeater Table can be used to create the button bar. If the number of buttons is dynamic then a Repeater Table can be used so that the number of buttons is driven from a query.

Supporting files: Repeater Table Buttons.mht and Static Repeater Table Buttons.mht

Two State Buttons
To help display the current context and selection state of the dashboard to the end user the styling of a custom button can be changed to better reflect an active state. To accomplish this; a Deck is used to show or hide an active and inactive styled version of the button as the user selects / deselects the button.

Supporting file: Two State Buttons.mht

Cascading Prompt Controls
Cascading prompts are useful for interacting with a reporting application when there is hierarchical data. Cascading prompts allow the end user to progressively filter their data in an intuitive way instead of presenting a long list of items and forcing the user to search for their desired selection. To build a cascading prompt, each control must be filtered by the selections made in all of the higher-level controls. In order to accomplish this, all of the higher-level items must be included in the Values section of each control so that they are present in the control's query. The author can also choose whether or not they want to allow the user to immediately select a value from the lowest level prompt or whether they want to force a selection in all controls. If the author wants to force selection, then the Control Enable functionality can be used. Alternatively, the author can hide lower level prompt controls and enable progressive disclosure by putting all of the lower-level controls into their own Decks. The default card functionality can then be used to choose when to reveal the control to the end user. Using this technique, animation can be enabled on the Decks to make it appear to the end user like the new controls are sliding into view after a selection is made. This functionality is demonstrated in the supporting files Cascading Prompt.mht and Cascading Animated Prompt.mht.

Tree Control
An alternative to the cascading prompt that provides similar functionality and benefits for efficiently making hierarchical selections is the tree control. The tree control makes use of lists to display each section of selection options. The various levels of the selection hierarchy are contained in separate Decks and variables are used to filter the display Lists and show or hide Decks to provide the desired functionality. This functionality is demonstrated in the supporting file Tree Control.mht.
Creating a Scrolling Key Metrics Area

The focal point of many dashboards is a key metrics area that provides the business user with a high level view of their key performance indicators. In IBM Cognos Active Report, these metric areas can be updated based on user selection. To accomplish this functionality, the metrics area should be built in a Data Deck that is driven by the same item as the selection control. To get the proper values to show up, a Text Item should be used with the Source Type set to Data Item Value. The Data Item Value property should then be set to the measure that will be displayed. In order for the measure to appear as an option in the Data Item Value property it must be included in the query that the Data Deck is using. This functionality is demonstrated in the supporting file Top Metrics.mht.

User Toggled Conditional Styling

Conditional styling is used to highlight areas of interest within a report object. By providing the end user with the flexibility to control the criteria of the conditional styling, they can quickly navigate between different visual indicators of performance. For example, the user can choose whether they want the best or worst performers highlighted. To accomplish this, the report object should be duplicated on multiple Cards in a Deck. Different conditional styling should then be applied to the objects on each Card. The title of each Card should reflect the conditional styling that is present on that Card. A selection control should then be connected to the Deck that allows the user to select the conditional styling they want to view. This functionality is demonstrated in the supporting file Toggled Conditional Styling.mht.

Sliding to Visualize Deltas Over Time

To gain an understanding of how information within a chart is changing over time a Discrete Value Slider can be used to update the chart. To implement this functionality the chart should be placed in a Data Deck that is driven by the desired time period. Once the proper Master Detail Relationship is setup a Data Discrete Value Slider can be connected to the Data Deck to control the selection. If the Update Variables Live property of the Data Discrete Values Slider is set to Yes then the chart will update as the slider is dragged. This functionality is demonstrated in the supporting file Sliding to Visualize Changes.mht.

Drilling Down to Details

End users often want access to additional detail and in order for this to be made available offline, a drill down must be authored into the reporting application. The different levels of detail need to be included in separate Decks or Data Decks. When a selection is made and a user wants to drill down, variables and Default Card functionality is used to hide the current Deck and reveal the Deck that contains the lower-level information. An advantage of this approach is that the data can be represented in a different form at each level. For example, Product Line Revenue can be shown in a list and when the user drills into Product Line, the Product Type Revenue could be shown against the planned values in a Bullet Chart. In order to allow the user to navigate back up the drill path a breadcrumb trail should be left. This can be made of a variety of controls that set the variables such that the user is returned to the desired level of detail. This functionality is demonstrated in the supporting file Drill to Details.mht.
**Scrollable Selection Controls**

List Box, Check Box Group and Radio Button Group controls can become large if they contain many selection options. In order to save screen real estate an author can enable scrolling so that only a portion of the selections are visible at any given time. The List Box automatically becomes scrollable when the contents are larger than its size. This does not occur for the Check Box Group and Radio Button Group controls. In order to enable scrolling on these controls they should be placed inside a fixed sized block with Overflow property set to use scrollbars only when necessary. The Overflow property can be found inside the Size & Overflow Property dialogue box. This functionality is demonstrated in the supporting file `Scrollable Control List.mht`.

**Clickable Exploding Pie Slices**

The exploding pie slice functionality is useful for providing a visual indication of selection. It also increases the level of interactivity on the pie chart and improves the end user experience. To accomplish this functionality, the pie chart must be placed into a Data Deck that is driven by the same item as the Pie Chart Series in order to generate a unique version of the chart for every possible exploded slice. The Pie Chart and Data Deck must also use different queries. To ensure that the correct slice is exploded when it is selected, a selection connection must be setup between the Pie Chart and the Data Deck. Additionally, the Exploded Slices property of the Pie Chart must be setup to use an expression such that 

\[ \text{[Pie Chart Query].[Pie Chart Series Item]} = \text{[Data Deck Query].[Pie Chart Series Item]} \]

This functionality is demonstrated in the supporting file `Exploding Pie Slice.mht`.

**Scrolling Marquee of Data**

The scrolling marquee can be used to passively display key metrics or information that will continually scroll across the screen. This gives the end user a stock ticker like experience. In order to accomplish this, the desired string should be built within a Repeater control. The string can be built by using multiple Text Item controls that use Text, Data Item Value or Data Item Label as the Source Type. The Repeater should then be placed in a fixed sized Block with an HTML Item. The HTML in the HTML Item should be `<marquee>` and the Block Overflow should be set to content is clipped. This functionality is demonstrated in the supporting file `Scrolling Marquee.mht`.

**Embedded Videos**

Reporting applications can display video content for the end user. This functionality is enabled with an HTML Item. The HTML Item describes the size of the frame that will display the video and the source of the video. A user must be connected in order to consume a video. This functionality is demonstrated in the supporting file `Embedded Videos.mht`.

**Absolutely Positioning Content**

When a dashboard is built using fixed sizing it is possible to overlay additional report objects. For example, when selecting different regions on a map, a chart that provides additional details can be overlaid on that location. In order to accomplish this, HTML Items that describe the absolute pixel location of the object are used. The HTML sets the base location of the object and then based on selections made in the reporting application; the HTML can offset the location of the object to make
it appear in the proper location. This functionality is demonstrated in the supporting file **Absolutely Positioned Content.mht**.

### Pop-ups

End users often want to access related or more detailed views of the data they are consuming. An effective way to achieve this is by using a pop-up to display this information in an overlay on top of the dashboard. A pop-up can be used to build custom tooltips or to show brand new views of the data. It is also possible to build an interactive experience within the pop-up to further improve the user experience. To build a pop-up, HTML items are used to set the location and size of the pop-up container. Within the HTML items, a Deck is used to either show or hide the content.

Supporting file: Pop-up.mht

### Pop-up Menus

When there are many buttons or options available to a user the interface can become cluttered. Menus are an effective way to organize the presentation of controls and maximize real estate in the body of the dashboard. To build a menu, HTML items are used to create and position them in the proper location. A Deck is then used to conditionally show or hide the menu depending on the state of the Active Report Variables controlling the menu.

Supporting file: Menus.mht

### Custom Tooltips

Tooltips that include additional information, custom styling elements or conditional formatting to highlight anomalies can be built using an HTML Item. These tooltips provide end users with a simple way to get more context into their data. Another benefit of this technique is that the tooltip will appear when hovered over or when selected, which makes them available to an end user through a tap gesture on a touch device. This technique cannot be used to create tooltips embedded in charts.

Supporting file: Tooltips.mht

### Freeze Panes

When lists or crosstabs are large and contain more data than can viewed on the display it is beneficial to freeze the column / row headers as appropriate so that when the user navigates through the data they can still see the headings. In order to accomplish this, an HTML Item can be used to define the size and location of the frozen area.

Supporting file: Freeze Panes.mht

### Active Reports Sizing on Mobile Devices

The Cognos Mobile applications on iOS and Android are designed to render the Cognos BI content in a similar way to what users are accustomed to on desktop browsers, but with an important distinction; the app will scale the content to fit to the width of the screen when necessary.
This mechanism ensures that the user will always see the full width of the content by default, regardless of the resolution of the screen. The user can then perform a zoom-in gesture to zoom in and interact with the content if needed.

When opening a report or dashboard, the app will perform two actions in order to fit the content to the width of the screen. It will first squeeze the content like in a web browser, and secondly it will scale (zoom-out) the content if it is still too wide. To clearly understand what is happening the two points will be explained in detail.

**Browser squeeze – Determining the Minimum Width**

If a report was authored using percentage based positioning of objects rather than fixed positioning, the spacing between objects will fluctuate depending on the width of the screen. The wider the screen, the more space there will be between the objects. The opposite effect is also true, where the smaller the screen, the more the objects are going to be brought together or squeezed until they have reached the minimum padding or chart widths in the report. When the minimum width has been reached, horizontal scroll bars appear, requiring the user to scroll horizontally. Below are three figures demonstrating this effect using a report authored with percentage based positioning on the charts. Both charts are centered in a table of two horizontal cells.

**Figure 73. On a wide screen, both charts remain centered in their respective position and their padding has increased**

![Figure 73](image1.png)

**Figure 74. As the width of the browser gets narrower, the charts are brought closer together**

![Figure 74](image2.png)
Figure 75. Once the browser is narrower than the minimum size of the charts and padding the horizontal scrollbar appears

![Chart Example]

Scaling or Zooming-out the View

If the Cognos Mobile app determines that the minimum width is still too wide for the width of the screen, rather than displaying scroll bars or making the user pan horizontally, it will scale the view until it fits perfectly within the width. This ensures that the user always sees a full width view of their content, allowing them to zoom in if necessary. This functionality only applies to the width, not the height of the content.

When the width of the screen of the device is wider than the minimum width of the report, the mobile app will simply display the content as is, similar to a browser.

When using a smaller screen such as a phone or by placing the device in portrait mode, the minimum width of the report often exceeds the width of the screen. In this case, the app will scale the report until it fits to the width of the screen.

Figure 76. The minimum width of the report fits within the width of the screen. In this case no scaling is performed.
Figure 77. In portrait view, the minimum width of the report is wider than the width of the screen. In this case the app has scaled the view until it fits the width of the screen.

Creating an IBM Cognos Active Report Dashboard

The following sections will step a user through the process that should be followed when designing an IBM Cognos Active Report. A basic example will be presented to illustrate the workflow.

The Use-Case

Ed, the Vice President of Sales for the Great Outdoors Company, is responsible for expanding the company’s market share globally. Ed closely monitors the revenue that is generated through the company’s main sales channels and directly oversees a team of Territory Managers that are responsible for regional growth. He spends most of his time travelling and meeting with key customers. While on the road, Ed needs to be able to monitor the performance of his sales organization to ensure that the company is meeting their growth targets. He has increasingly been using his iPad for all of his communication needs, especially while travelling. Ed needs access to enough detail so that he can identify areas of concern and delegate further analysis to his management team.

Identify Requirements and Choose a Technology

After receiving the use-case, the author must now evaluate the key requirements of the dashboard and pick the IBM Cognos technology that will be best suited to solving the business problem. When evaluating IBM Cognos Active Report as a potential solution, the use-case should be evaluated against the key features of the solution in order to ensure a successful deployment. The key aspects of this particular scenario are:
• Business Problem: The VP of Sales needs to be able to monitor the company’s performance against their targets. Ed needs to be able to quickly identify any emerging trends that could negatively impact the revenue of the company and take corrective action before it is too late.

• Key Features of the Solution:
  • Summary Level: Ed is responsible for global sales and requires summary level data. Ed does not drive his own analysis. He instead chooses to delegate this work to Territory Managers.
  • Portable: Ed spends most of his time travelling which means he will need to be able to access his BI information from his mobile device. Additionally, Ed may not have access to a consistent network connection so the ability to consume content offline is important.

In this situation, the requirements for a portable and disconnected solution make IBM Cognos Active Report an ideal solution. Additionally, since Ed deals with summary level data, all of the information that he requires on a daily basis can be included in a single high performance reporting application.

**Designing the Dashboard**

In order to simplify the overall dashboard creation process, the author should carefully plan out the design of the dashboard before beginning the assembly.

**Identifying the Information Needed to Solve the Business Problem**

With IBM Cognos Active Report identified as the proper technology, the author must now determine what information needs to be included in the dashboard to solve the business problem. Only information that will be used on a daily basis should be included in the reporting application. Additional detailed data that will not routinely be accessed should be authored into a separate report that will be a drill-through target from the high level dashboard. This will prevent the reporting application from becoming unnecessarily large.

Another factor to consider is the time sensitivity of the data and how it relates to the use-case and deployment scenario. For example, if the dashboard will be scheduled so that Ed receives a fresh version every Monday but it is known that he often tracks closed deals on a daily basis, then the closed deals information should be made accessible with a drill-through so that he always gets the freshest information when he accesses that portion of the report.

**Determining the Layout**

The first decision that needs to be made is what layout strategy will be used for the reporting application. If the use-case is broad distribution for predominately desktop and tablet consumption then using a layout that uses relative sizing is the most prudent. The author must make this decision with careful consideration of the requirements because it will impact the end user experience. Before beginning the construction of the dashboard it is recommended that the author create sketches of the layout to better understand the overall functionality of the dashboard. A proposed layout for the dashboard is shown in the image below. This dashboard highlights Ed’s main areas of interest, sales by territory, performance against plan and sales by channel. As is the case with this dashboard, individual analysis areas are often separated into discrete sections for
easy navigation. This layout uses a button bar at the top of the dashboard to navigate between the two main sections of the report, Sales Overview and Channel Analysis.

The interactivity in the Sales Overview section is driven by an exploding pie chart in the top left corner. The pie chart shows the revenue breakdown by product line and when the end user selects a slice of the pie, the rest of the content updates to show additional detail about the selected product line. The key metrics area that is directly below the pie chart provides the user with high-level information including revenue, planned revenue, quantity and gross profit for the selected product line. Upon selection, the metrics area will scroll vertically to provide the user with a visual cue that the data has updated. Conditional formatting will also be used to draw the end users attention to areas of concern. Two additional graphs are stacked vertically to the right of the pie chart and show a time series and a geographic comparison of actual revenue versus planned revenue for the selected product line.

The Channel Analysis section consists of a summary level list that covers the top half of the dashboard with more detailed charts below that update based on the channel that the user selects in the list. The list will include a spark line chart for quarter-over-quarter revenue and a bullet chart to show the performance versus plan for channel revenue. Additional data in the list will include unit cost, unit price, revenue, planned revenue and gross profit. The detailed charts will show a geographic comparison of planned versus actual revenue and a time series of revenue by product line for the selected channel. The charts at the bottom can be navigated on the iPad with a swipe gesture and the channel that is currently being shown will be highlighted in the list. The Iterator control with Page Dot Indicators will be placed below the charts to provide a visual cue that swiping is enabled.
The dashboard proposal should now be communicated with key stakeholders to align on the content, layout and level of detail. The authoring effort will be significantly reduced if the core functionality is agreed upon before design iterations begin.

**Building the Dashboard**

Once the desired layout and functionality is finalized, the construction of the dashboard can begin. The construction of the dashboard can be segmented into several steps.

**Build the layout and add controls**

The first thing to consider when beginning a layout is where Decks are going to be used and what interactivity they will provide. For example, in this scenario a button bar is being used to navigate between the main sections so a Deck will need to be used to support this functionality. A standard Deck will be used because it is known that there are two unique sections, each of which will be
built on its own Card. As shown in the image below, on the Sales Overview Card there are three separate Data Decks that are needed to achieve the desired functionality. All three Decks will be Data Decks because they all need to provide a unique view for each member of Product Line.

- Pie Chart Deck: This deck contains only the pie chart and its purpose is to enable the exploding slice functionality that shows which product line is currently selected. No animation will be enabled on this deck so to the end user it will appear that the slice they select instantly pops out.
- Metrics Deck: This Data Deck holds the numeric values in the key metrics area. It is in a separate deck because vertical animation will be used on this portion of the report to provide a visual indication that the content has updated. The titles of the metrics are not included in the Data Deck in order to prevent the titles from animating on selection.
- Detailed Charts Deck: This Data Deck includes the detailed charts to the right of the pie chart. They are in a separate Data Deck in order to accomplish the desired report layout. Animation will not be enabled on this Deck so it will appear that these charts update in place.

**Figure 79. Deck layout for the Sales Overview Card**

For the Channel Analysis Card only one additional deck is required. As shown in the image below, a Data Deck is required for the detailed charts that are below the summary list. A Data Deck is used because unique content is required for each member of Sales Channel. Auto Horizontal animation will be enabled on this deck to support the iPad swiping functionality.
Figure 80. Deck layout for the Channel Analysis Card

With the required Decks finalized, the report layout can now be constructed. In order to achieve the desired layout, Tables and Blocks should be used. In this scenario, Tables will be used because they are more flexible and this dashboard does not require any scrollable areas. As shown in the image below, the first step of laying out the report is to create a table that divides the dashboard into its main sections. In this case, it is a Table with three rows and one column. The first row will hold the title text, the second row contains the Button Bar that selects the visible section and the third row will hold the Deck that contains each main section on a Card.

Figure 81. The main dashboard layout Table

The content of each main section can now be laid out on their own Cards in the Deck. In order to create the desired layout, it will be necessary to nest Tables inside of Decks or Table Cells. As shown in the image below, the detailed charts on the right side of the Sales Overview Card can be placed by first dividing the Card into two columns and one row with a Table. The right column can then be populated with a Data Deck to support the desired interactivity. This Data Deck will have a
Table with two rows and one column placed on its Card. A chart will be placed in each Table Cell, which will allow the orientation of the detailed charts to be fixed. This process can be used to place the remaining objects required on the dashboard.

**Figure 82. The layout of the detailed charts on the Sales Overview Card**

![Diagram of chart layout](image)

**Alternate Layout Solution**

With the support of Visualizations in IBM Cognos 10.2 the layout can be simplified removing the need for data decks with Charts. If the Visualization Render Method property in Report Studio is set to Client then the visualizations can be directly filtered removing the requirement of data decks with master-detail relationships.

Removing the two requirements of exploding slice for the pie chart and ability to swipe on the data deck on Channel Analysis card the layout can be simplified to two decks. A deck with two cards for Sales Overview and Channel Analysis and a data deck for the Metrics. The following two images show the decks (in green) and the tables (in red) that would be required to complete the layout.
**Figure 83. The layout of the detailed charts on the Sales Overview Card**

![Sales Overview Card](image1)

**Figure 84. The layout of the detailed charts on the Channel Analysis Card**

![Channel Analysis Card](image2)

## Setup of the Functionality

Once the objects and controls are properly placed, the interactivity can be authored into the reporting application. The authoring guidelines and best practices that were presented throughout this document should be utilized when building out and testing the interactivity.

After the desired interactivity is achieved, the dashboard should again be socialized with stakeholders.

### Apply Appropriate Sizing

In an Active Report there are objects that are or should be a fixed size
• Charts/Visualizations
• Images
• Column Widths (this will help to eliminate the dancing affect when lists are filtered)

These objects should reside in tables or blocks that relatively sized.

After the layout and functionality is completed, fixed sizing should be applied to the chart and list objects in the dashboard. Sizing should be applied to both the objects and their containers; with the container objects like blocks and tables being relatively sized. It is also important to consider spacing while doing this exercise. The charts can then be centre and middle aligned in the Table Cells to provide appropriate spacing between the objects. Before beginning to size objects it is useful to return to the original sketches of the dashboard and apply rough sizing to all objects.

**Styling the dashboard**

Styling of the dashboard should be the last task when creating an IBM Cognos Active Report. A consistent look and feel should be applied to all controls, data, layout objects, images, icons and text. Classes, Templates and Layout Component Reference, Style By objects should be used for a number of reasons. These objects will reduce the time required to apply and adjust styling and will also provide a library of design styles that can be reused for other reports. Classes also have an additional benefit, if used they reduce the size of the MHT output file, which will improve transfer time across networks and load times in the browser or IBM Cognos Mobile iPad Application.
## Downloadable resources

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<th>Description</th>
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