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Microsoft Visio 2013

Scott A. Helmers

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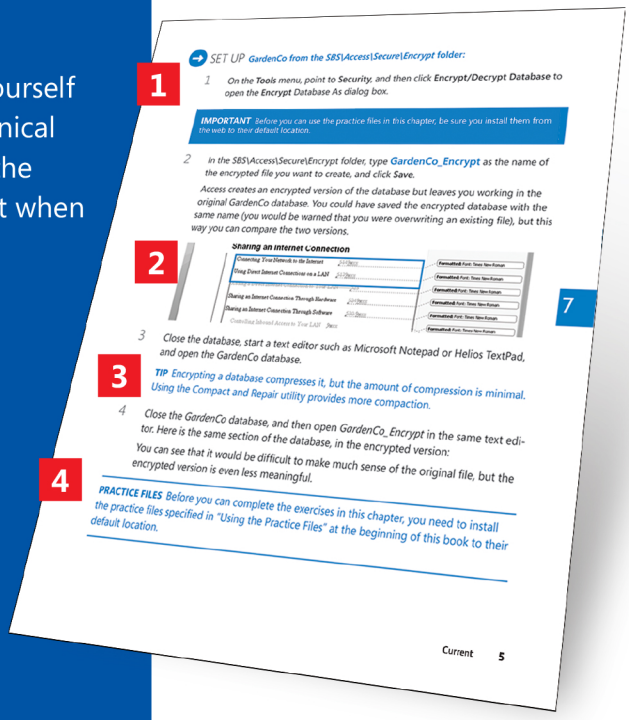

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Step by Step

Scott A. Helmers

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This book is dedicated to the memory of Judy Lew, 1966-2012. Her skill in guiding the Visio Program Management team toward the release of Visio 2013 was exceeded only by her love of life and her family. Though we only met face to face a few times, and always at Visio-related work events, Judy and I spent far more time talking about our daughters than about work. Esmé and Lila, your mother was a truly special person.

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Introduction

Microsoft Visio 2013 is the premier application for creating business and technical diagrams. Far more than a drawing program, Visio is used by millions of people to document the physical world and to convey concepts and data in a visual format.

Microsoft Visio 2013 Step by Step offers a comprehensive look at both the Standard and Professional editions of Visio 2013. By following the exercises in the book, you will learn about important product features by working with them rather than just reading about them. You will also explore the powerful integration between Visio and other members of the Microsoft Office suite of applications, including Microsoft SharePoint 2013 and SharePoint Online.

Who this book is for

Microsoft Visio 2013 Step by Step and other books in the *Step by Step* series are designed for beginning to intermediate level computer users. The examples and exercises in this book apply equally well in small, medium, and large organizations, whether their orientation is commercial, governmental, academic, or non-profit. Many examples teach skills that can be applied for home and personal projects as well. Whether you are already comfortable working in Visio and want to learn about new features, or are new to Visio, this book provides invaluable hands-on experience.

How this book is organized

This book is divided into 13 chapters that explore the rich set of Visio capabilities. In the first two chapters, you learn how to navigate within the Visio user interface, how to find diagram templates to help you get started, and how to create and work with diagrams. Each of the subsequent chapters introduces you to key concepts or diagram types and provides multiple examples. Depending on your experience with Visio, the exercises in each chapter either teach or reinforce important concepts because you are working with real diagrams and real-world examples.

This book has been designed to lead you step by step through the tasks you're most likely to want to perform with Visio 2013. If you start at the beginning and work your way through all of the exercises, you will gain enough proficiency to master the use of Visio. However, if you are only interested in certain topics or features, you can jump in anywhere to acquire exactly the skills you need.

Downloading the practice files

Before you can complete the exercises in this book, you need to download the book's practice files to your computer. The practice files can be downloaded from the following page:

http://aka.ms/Visio2013SbS/files

IMPORTANT Visio 2013 is not available from this page. You should purchase and install that program before using this book.

The following table lists the practice files for this book.

Chapter	File
Chapter 1: A visual orientation to a visual product	None
Chapter 2: Creating a new diagram	Basic ShapesA_start.vsdx Basic ShapesB_start.vsdx Basic ShapesC_start.vsdx Quick Draw_start.vsdx Size & Position_start.vsdx
Chapter 3: Adding sophistication to your drawings	Background Exercises_start.vsdx Corporate DiagramA_start.vsdx Corporate DiagramB_start.vsdx International Office.jpg Orient Shapes and TextA_start.vsdx Orient Shapes and TextB_start.vsdx Shape Data_start.vsdx Starfish.jpg Text ExercisesA_start.vsdx Text ExercisesB_start.vsdx

Chapter	File
Chapter 4: Creating flowcharts and organization charts	HR Recruiting Flowchart_start.vsdx Org Chart Data_start.xlsx Photos folder
Chapter 5: Adding style, color, and themes	Align and Space_Start.vsdx HR Recruiting FlowchartA_start.vsdx HR Recruiting FlowchartB_start.vsdx Network diagram_start.vsdx
Chapter 6: Entering, linking to, and reporting on data	HR Process Data_start.xlsx HR Process MapA_start.vsdx HR Process MapB_start.vsdx HR Process MapC_start.vsdx HR Process MapD_start.vsdx HR Process MapE_start.vsdx HR Process MapF_start.vsdx
Chapter 7: Adding and using hyperlinks	HR Process Map_start.vsdx Human Resources Policy Manual.docx Sample PDF Document.pdf Sample presentation.pptx Sample Project file.mpp Sample spreadsheet.xlsx
Chapter 8: Printing, reusing, and sharing diagrams	HR Process Map for Chapter08A_start.vsdx HR Process Map for Chapter08B_start.vsdx
Chapter 9: Creating network and data center diagrams	Network Diagram (Basic) with data_start.vsdx Network Diagram (Basic)_start.vsdx Network Diagram (Detailed)_start.vsdx Network Diagram (Organized)_start.vsdx Network Diagram with RackA_start.vsdx Network Diagram with RackB_start.vsdx
Chapter 10: Visualizing your data	Casino Floor.vsdx Contoso Network Data.xlsx HR Recruiting Flowchart with data graphics_start.vsdx HR Recruiting Flowchart_start.vsdx Network Diagram_start.vsdx Sales Proposal Process TaskMap.pdf
Chapter 11: Adding structure to your diagrams	Containers, Lists and Callouts_start.vsdx Data graphics legends_start.vsdx

Chapter	File
Chapter 12: Creating and validating process diagrams	HR Recruiting Flowchart Validation_start.vsdx
	RuleSets -- BPMN 2.0.html
	RuleSets -- Cross-Functional Flowchart.html
	RuleSets -- Flowchart.html
	RuleSets -- SharePoint 2010 Workflow.html
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	Theater Ticketing ProcessA_start.vsdx
	Theater Ticketing ProcessB_start.vsdx
	Visio 2007 Flowchart_start.vsd
Chapter 13: Collaborating on and publishing diagrams	Collaboration Brainstorm DiagramA_start.vsdx
	Collaboration Brainstorm DiagramB_start.vsdx
	Theater Ticketing Process Status Data_start.xlsx
	Theater Ticketing ProcessA_start.vsdx
	Theater Ticketing ProcessB_start.vsdx
	Timeline diagram_start.vsdx
Appendix: Looking under the hood	Basic Shapes_start.vsdx
	ShapeSheet_start.vsdx

Your companion ebook

With the ebook edition of this book, you can do the following:

- Search the full text
- Print
- Copy and paste

To download your ebook, please see the instruction page at the back of the book.

Getting support and giving feedback

The following sections provide information about getting help with Office 2013 Professional or the contents of this book and contacting us to provide feedback or report errors.

Errata

We've made every effort to ensure the accuracy of this book and its companion content. Any errors that have been reported since this book was published are listed on our Microsoft Press site:

http://aka.ms/Visio2013SbS/errata

If you find an error that is not already listed, you can report it to us through the same page.

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Acknowledgments

As with the 2010 edition of this book, my deepest thanks and love to Marilyn, Sara, and Julie for doing everything that I didn't do while I was in book-writing mode.

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The dozen or so Visio experts in the world who are part of the Microsoft Most Valuable Professional (MVP) program are an amazingly talented group, and it is a pleasure to count many of them as friends. In particular, thanks to: John Marshall for his astute and historically rich technical editing of this book; Chris Roth for maintaining the ever-useful collection of articles, ideas, and forums at the Visio Guy website (*www.visguy.com*); Al Edlund for advice on page scaling; John Goldsmith whose online contributions at *visualsignals.typepad.co.uk/vislog* are cited multiple times in this text; and David Parker for his Rules Tools (*www.visiorules.com*) and for consultation on that subject.

Thanks to two companies who provide complimentary copies of their products to MVPs for use in our work: TechSmith (*www.techsmith.com*) for Snagit, the most amazing screen capture tool imaginable, and VMware (*www.vmware.com*) for VMware Workstation, an essential part of keeping multiple versions and combinations of Windows, Microsoft Office, and Visio organized and accessible at the click of a mouse.

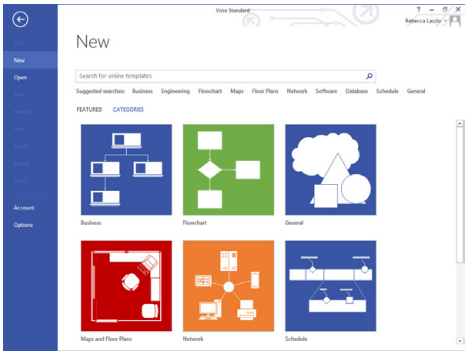
Thanks to the editorial teams at Microsoft Press, O'Reilly, and OTSI for their guidance and support throughout the development of this book. Special thanks to my editor Kenyon Brown for guiding me through the process a second time.

Finally, thanks to Kathy Brennan and Mike Cunningham. Our collective decision to build TaskMap as a Visio add-in started the journey of discovery that led to this book.

Chapter at a glance

Get

Get started with Visio 2013, page 13



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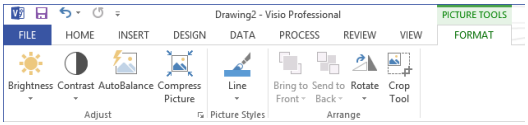
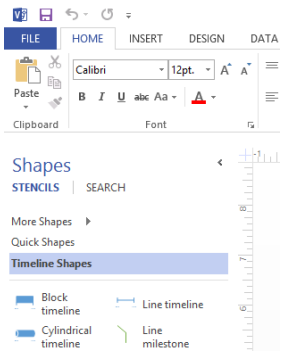
Understand tool tabs and add-in tabs, page 32



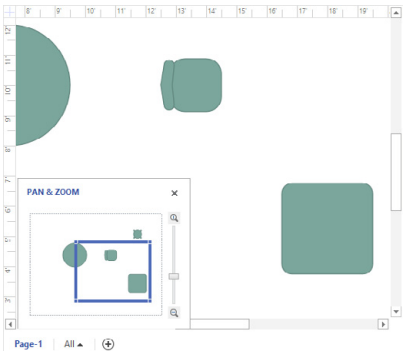
Manage

Manage the shapes window, page 39



Zoom

Pan and zoom in Visio, page 45



A visual orientation to a visual product

1

IN THIS CHAPTER, YOU WILL LEARN HOW TO

- Identify the editions and features of Visio 2013.
- Get started with Visio 2013.
- Explore, minimize, and restore the Visio ribbon.
- Understand tool tabs and add-in tabs.
- Understand shapes, masters, stencils, and templates.
- Explore the drawing window and manage the Shapes window.
- Pan and zoom in Visio.

Microsoft Visio is the premier application for creating business diagrams of all types, ranging from flowcharts, network diagrams, and organization charts, to floor plans and brainstorming diagrams. Even though this book contains dozens of examples and sample diagrams, it can only scratch the surface of the hundreds of types of diagrams you can create with Visio.

Microsoft Visio 2013 continues the use of the ***fluent user interface*** (UI), otherwise known as the ***ribbon***, that was introduced with Visio 2010. Regardless of what you might think of the ribbon in other Microsoft Office applications, it feels right at home in Visio, primarily because the goal of a ribbon-style interface is a visual presentation of a related group of functions, and Visio is, first and foremost, a visual product.

In this chapter, you will learn that there are three editions of Visio 2013, and will discover what's new in the 2013 release of the product. You will launch Visio and explore the ***Backstage*** view and will then explore the tabs on the Visio ribbon. You will compare the permanent tabs on the ribbon with tool tabs sets and add-in tabs. You will learn about stencils, templates, masters, and shapes and how to manage the various windows that comprise the Visio user interface. Finally, you will learn how to pan and zoom the diagram in the drawing window.

PRACTICE FILES You don't need any practice files to complete the exercises in this chapter.

Identifying the editions of Visio 2013

Visio 2013 is available in three editions. The first two editions utilize the traditional desktop software purchase and installation model and mirror the two editions that were offered in most prior Visio releases. The third edition is part of the Office 365 suite of subscription-based applications.

- **Visio Standard 2013** Visio Standard is the starter edition of Visio. It provides significant capability for creating business diagrams and includes 26 templates for creating diagrams in six categories.
- **Visio Professional 2013** Visio Professional expands on the Standard edition by offering more than four dozen additional templates for a total of 76 across eight categories. In addition, Visio Pro includes the ability to link diagrams to a wide variety of data sources, and includes a diagram validation capability that is especially well-suited for the expanded set of business process diagrams it supports.
- **Visio Pro for Office 365** This new edition of Visio 2013 provides the identical features and templates as Visio Professional 2013. The key differences in this edition are in packaging and delivery, because it is part of Microsoft Office 365. Office 365 is a cloud-based subscription service. Instead of purchasing Visio Pro for Office 365, you pay a monthly subscription and can install the software on up to five computers running Windows 7 or Windows 8. Each time you install, you automatically receive the latest updates.

Identifying new features of Visio 2013

If you have used any previous version of Visio, you will find a rich set of new features described in the sections that follow. Even if you've never used Visio, it will still be worth reading through the features described here in order to learn more about the capabilities of the software.

If you are upgrading from Visio 2010

Visio 2010 introduced the ribbon user interface and a long list of new features. Visio 2013 continues the momentum with another long list of enhancements and new capabilities.

TIP The data-connected sample diagrams that were included with Visio 2010 and Visio 2007 are no longer included with Visio 2013. In addition, the database reverse engineering add-in is no longer packaged with Visio 2013.

- **Updated, modern shapes** Hundreds of shapes have been completely redesigned for Visio 2013 to make your diagrams look fresh and modern, and to accommodate Visio 2013 themes. The new shapes are included with the stencils used in many familiar templates, enhancing the appearance of Basic Network, Organization Chart, Timeline, Workflow, and SharePoint Workflow diagrams, among others.
- **Professional appearance** Visio 2013 themes have been dramatically enhanced, making it easier than ever to produce eye-catching yet professional-looking diagrams. In addition, themes have been supplemented with pre-designed visual variants that let you add your personal touch. Further, you can apply effects like reflection, glow, and bevel to provide additional emphasis.
- **Integration with the cloud** The Open, Save, and Save As pages in the Visio 2013 Backstage view provide easy access to your SkyDrive account, as well as to Microsoft SharePoint and SharePoint Online sites.
- **Improved integration with SharePoint** Publishing Visio diagrams to SharePoint is easier than ever because SharePoint 2013 can open Visio files directly. Diagrams published to SharePoint can be viewed using almost any web browser.
- **Collaboration (commenting)** Multiple people can read and add comments to a Visio diagram using either Visio or a web browser when diagrams are stored in SharePoint or SharePoint Online.
- **Change shape** With Visio 2013, you can replace one shape with another, and the new shape will retain the connections, text, and data from the original shape.
- **Duplicate page** You can create a duplicate copy of any Visio page with two clicks.
- **Enhanced template and shape search** It's easier in Visio 2013 to locate the right template to begin a new diagram or to find exactly the right shape to enhance your diagram. Search results are sorted and filtered more effectively and duplicate results are eliminated.

- **Organization charts with photos** The Organization Chart wizard has been enhanced in Visio 2013 to provide bulk import of photographs.
- **Improved Mini Toolbar** The Mini Toolbar that appears when you right-click either the drawing page or a shape has been revamped, further streamlining many actions and reducing mouse movement. The Drawing Tools, Connector Tool, Change Shape, Shape Styles, and alignment features have been added to the Mini Toolbar.
- **Enhanced touch support** Visio 2013 recognizes a greater array of gestures and touch for easier use on tablets and computers with touch screens.
- **New file format** All previous versions of Visio stored drawings in a proprietary file format. Visio 2013 joins other members of the Microsoft Office family in using the Open Packaging Convention, an XML-based format. The new .vsdx file format makes the contents of Visio drawings more accessible to other applications for a variety of purposes, including integration with SharePoint as described previously and following.

The following features are available only in the Professional edition of Visio 2013.

- **Collaboration (coauthoring)** Multiple authors can edit the same Visio 2013 document simultaneously when the document is stored on SkyDrive, SharePoint, or SharePoint Online in Office 365.
- **SharePoint Workflow integration** Visio 2013 supports the Microsoft .NET Framework 4 workflows that are supported in SharePoint 2013. In addition, Microsoft SharePoint Designer 2013 can open and manipulate Visio 2013 files directly. Consequently, you can use Visio's visual workflow design features to create workflows in both Visio and SharePoint Designer, and then execute them with SharePoint Workflow.
- **Updated BPMN and UML templates** The Business Process Model and Notation (BPMN) template now conforms to version 2.0 of that standard, and the Unified Modeling Language (UML) templates conform to UML version 2.4.

SEE ALSO The Visio product team wrote a series of blog posts describing the new features in Visio 2013. Refer to *blogs.office.com/b/visio/archive/2013/03/19/recapping-posts-on-the-new-visio.aspx* for a summary.

If you are upgrading from Visio 2007

Visio 2010 was the most significant upgrade to the capabilities of Visio in years. If you are upgrading from Visio 2007, you will benefit from the following features in addition to everything listed in the previous section.

- **New user interface** Visio 2010 is the first version of the product to incorporate the ribbon user interface (UI) and the Backstage view. In addition, the **Shapes** window presents stencils more logically and can be minimized so it occupies less screen real estate.
- **Enhanced user experience** Live Preview is a tremendous addition to Visio 2010, because it enables you to view potential changes in color, fill pattern, font size, shape type, data graphics, and more, before you commit to the change. Visio 2010 also reduces required mouse movement with features like AutoConnect and Quick Shapes (refer to next bullet), and the Mini Toolbar.
- **Diagramming support** Multiple features whose names begin with *Auto* or *Quick* suggest that creating and organizing Visio 2010 diagrams is even easier, and it's true. AutoConnect and Quick Shapes add new connectors and shapes; AutoAdd and AutoDelete simplify adding and removing shapes on the page; AutoSize expands and contracts Visio page dimensions. In addition, the **Add page** button creates new pages with a single click, and enhanced copy/paste enables you to control where shapes will be pasted. Finally, the enhanced Dynamic Grid provides excellent visual feedback when placing or moving shapes, dramatically reducing the need to nudge and reposition shapes after they are on the page.
- **Structured diagrams** Visio 2010 introduces a new type of shape called a container that provides more than just a visual grouping for a set of shapes. Shapes in a container know they are contained, and the container knows the members that reside within it. Consequently, when you move, copy, or delete a container, all of the members go with it. However, unlike a group shape, the member shapes are accessible with a single click just as if the container were not there.

  In most containers, you can place member shapes wherever you'd like. However, a list is a special type of container that maintains members in ordered sequence. Each list member knows exactly where it resides within the list.

  The third structured diagram element is a new type of callout. The purpose of a callout is still the same—to add annotations to shapes on the page—but both the callout and the target shape are aware of each other, which dramatically improves shape behavior.

  Not only do containers, lists, and callouts enable users to make more effective diagrams more easily, they also provide significant opportunities to Visio developers for building location-aware shapes and for writing code that takes advantage of diagram structure.

- **Enhanced appearance** Visio 2010 themes and effects add a new professional appearance to your diagrams. The themes gallery, with Live Preview, lets you sample more than two dozen coordinated sets of colors, fonts, patterns, and effects before choosing the one that is just right for your diagram.
- **Improved CAD support** Visio 2010 supports import, conversion, and export of newer file types from Autodesk's AutoCAD software.
- **Save as PDF or XPS** The software to save diagrams in Portable Document Format (PDF) or XML Paper Specification (XPS) format is now bundled with Visio.

The following features are available only in the Professional or Premium editions of Visio 2010.

- **Dynamic web diagrams** Previous versions of Visio have allowed you to save a Visio drawing as a set of webpages but with one key limitation: if the diagram changed, you needed to republish the website. Visio 2010, in conjunction with Visio Services on SharePoint 2010, introduces the ability to create dynamic websites from data-connected diagrams. Now, many changes to the diagram, or to the data behind the diagram, appear automatically for anyone viewing your diagram with a web browser.
- **Business process** Several new features add to your ability to create business process diagrams in Visio 2010: a BPMN template that conforms to the 1.2 version of the BPMN standard; a feature that automatically creates subprocess pages for flowcharts and BPMN diagrams; and a new interchange file type that lets you create SharePoint Workflow diagrams in Visio and export them to SharePoint Designer (you can also import SharePoint Workflow diagrams into Visio to view graphical representations of the workflows).
- **Diagram validation** You can ensure that your diagrams meet a minimum set of predefined conditions before you publish or distribute them using diagram validation rules. Four Visio 2010 templates—Basic Flowchart, Cross Functional Flowchart, Microsoft SharePoint Workflow, and BPMN—include predefined validation rule sets. You can edit the existing rule sets or create your own.

If you are upgrading from Visio 2003

Visio 2007 Professional introduced an important set of data-related enhancements that significantly improved your ability to create data-rich diagrams and to visualize that data creatively and effectively.

- **Themes** Visio 2007 introduces themes—a fast way to add style and a professionally designed look to your diagrams.

- **AutoConnect** You no longer need to return to the stencil every time you want to add a shape to the page. When you click one of the four AutoConnect arrows that appear when you point to an existing shape on the drawing page, Visio adds a connector and a copy of the currently selected ***master*** shape in the stencil.
- **Save as PDF or XPS** After downloading a free, add-in available from Microsoft, you can save Visio diagrams in either PDF or XPS format.
- **Sample diagrams** Visio 2007 includes five sample diagrams in the new Getting Started category on the startup screen. In the Professional edition, the diagrams are connected to data in Excel workbooks that are also included with Visio.

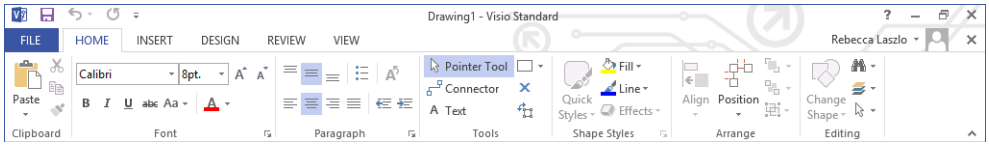
The following features are available only in the Professional edition of Visio 2007.

- **Data linking** A new linking wizard dramatically simplifies the task of linking shapes on the drawing page to data that resides in Microsoft Excel, Access, SQL Server, SharePoint lists, or almost any ODBC or OLEDB-compatible database. No programming is required to establish connections or to refresh a diagram when the underlying data changes.
- **Data graphics** You can use Visio 2007 data graphics to visualize data by displaying text or a graphic that is based on the data inside the shape.
- **PivotDiagrams** You can build tree-structured data views using the new PivotDiagram template.
- **ITIL and Value Stream mapping** New templates enable you to create two important types of diagrams: Information Technology Infrastructure Library (ITIL) process maps and Value Stream maps.

Working with the ribbon

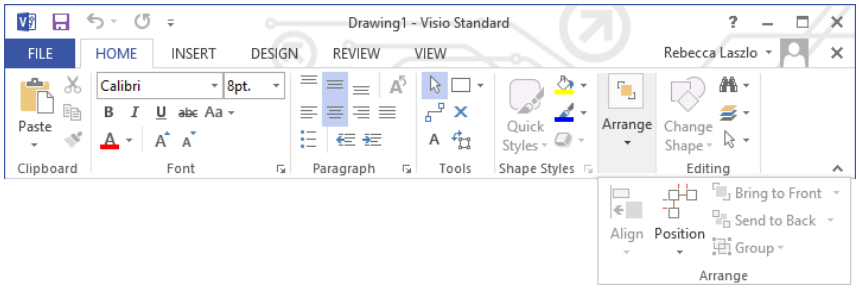
The Office ribbon is a dynamic user interface element; its appearance changes if the width of the window in which it is being viewed changes. As a result, a button might be large or small, it might or might not have a label, or it might even be an entry in a list.

For example, when sufficient horizontal space is available, the buttons on the Home tab are spread out, and the available commands in each group are visible.

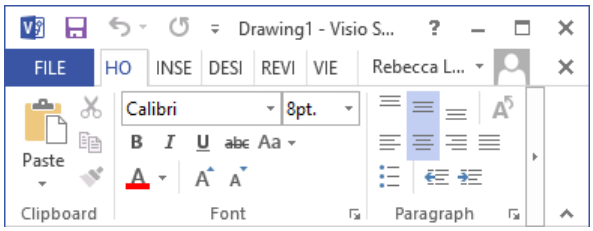


If you decrease the horizontal space available to the ribbon, small button labels disappear and groups of buttons might hide under one button that represents the entire group.

Compare the arrangement of buttons in the Font and Paragraph groups in the preceding and following graphics, for example. Also, in the following graphic, notice that the captions for the rightmost buttons in the Arrange group have disappeared, and that the Arrange group has been collapsed to a single button. Collapsed buttons and groups retain all of their functions, as the submenu beneath the Arrange button demonstrates.



When the ribbon becomes too narrow to display all of the groups, a scroll arrow appears at its right end. Clicking the scroll arrow displays additional groups.



The width of the ribbon depends on three factors:

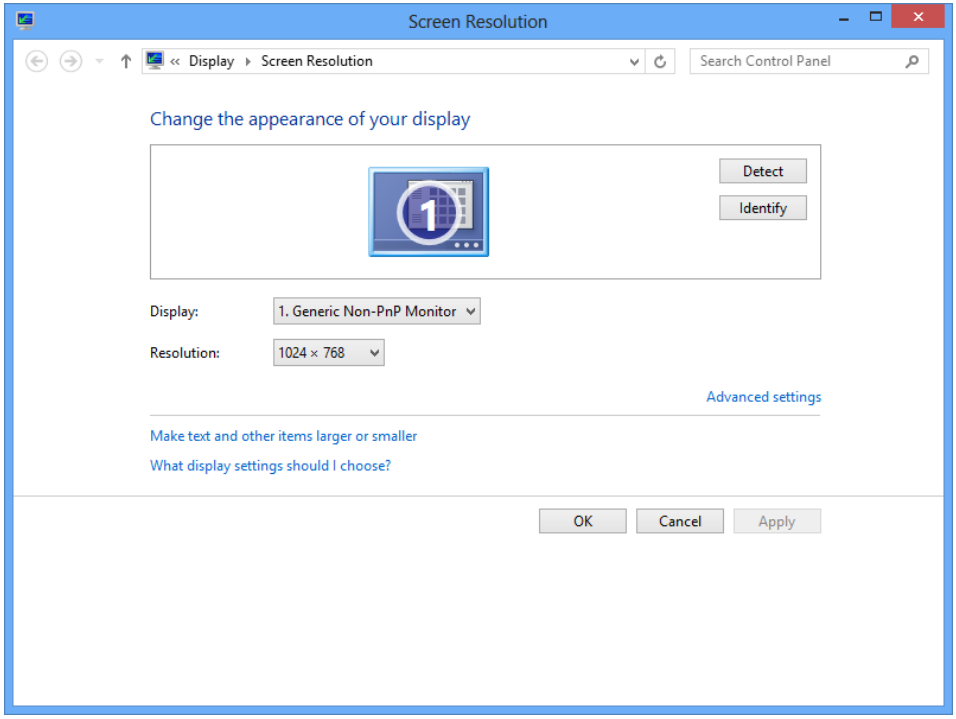
- **Program window width** Maximizing the program window provides the most space for the ribbon. To maximize the window, click the **Maximize** button, drag the borders of a nonmaximized window, or drag the window to the top of the screen.

- **Screen resolution** Screen resolution is the size of your screen display expressed as pixels wide × pixels high. Your screen resolution options are dependent on the display adapter installed in your computer, and on your monitor. Common screen resolutions range from 800 × 600 to 2560 × 1600. The greater the number of pixels wide (the first number), the greater the number of buttons that can be shown on the ribbon.

  To change your screen resolution:

  a. Display the **Screen Resolution** control panel item in one of the following ways:
     - Right-click the Windows desktop, and then click **Screen Resolution**.
     - Type screen resolution in Windows 8 Search, and then click **Adjust screen resolution** in the **Settings** results.
     - Open the **Display** control panel item, and then click **Adjust resolution**.

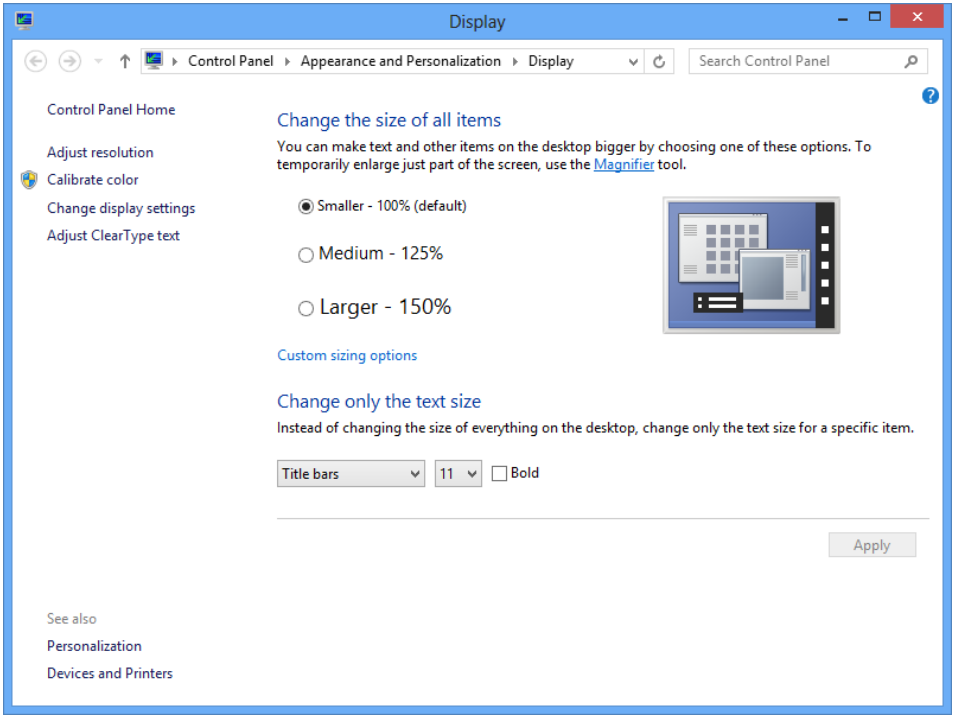
  b. On the **Screen Resolution** page, click the **Resolution** arrow, click or drag to select the screen resolution you want, and then click **Apply** or **OK**.



- **The magnification of your screen display** If you change the screen magnification setting in Windows, text and user interface elements are larger and therefore more legible, but fewer elements fit on the screen. You can set the magnification from 100 to 500 percent.

  You can change the screen magnification from the Display page of the Appearance and Personalization control panel item. You can display the Display page directly from Control Panel or by using one of the following methods:

  - Right-click the Windows desktop, click **Personalize**, and then in the lower-left corner of the **Personalization** window, click **Display**.
  - Type display in Windows 8 Search, and then click **Display** in the **Settings** results.



To change the screen magnification to 125 or 150 percent, click that option on the Display page. To select another magnification, click the Custom sizing options link and then, in the Custom sizing options dialog box, click the magnification you want in the drop-down list or drag the ruler to change the magnification even more.

After you click OK in the Custom sizing options dialog box, the custom magnification is shown on the Display page along with any warnings about possible problems with selecting that magnification. Click Apply on the Display page to apply the selected magnification.

Adapting exercise steps

The Visio ribbon consists of multiple tabs, each of which contains a set of related functions. The function buttons on any one tab are organized into named groups. Consequently, the instructions in the book that guide you to a specific function or button will include three parts. For example:

On the **Home** *tab, in the* **Tools** *group, click the* **Pointer Tool** *button.*

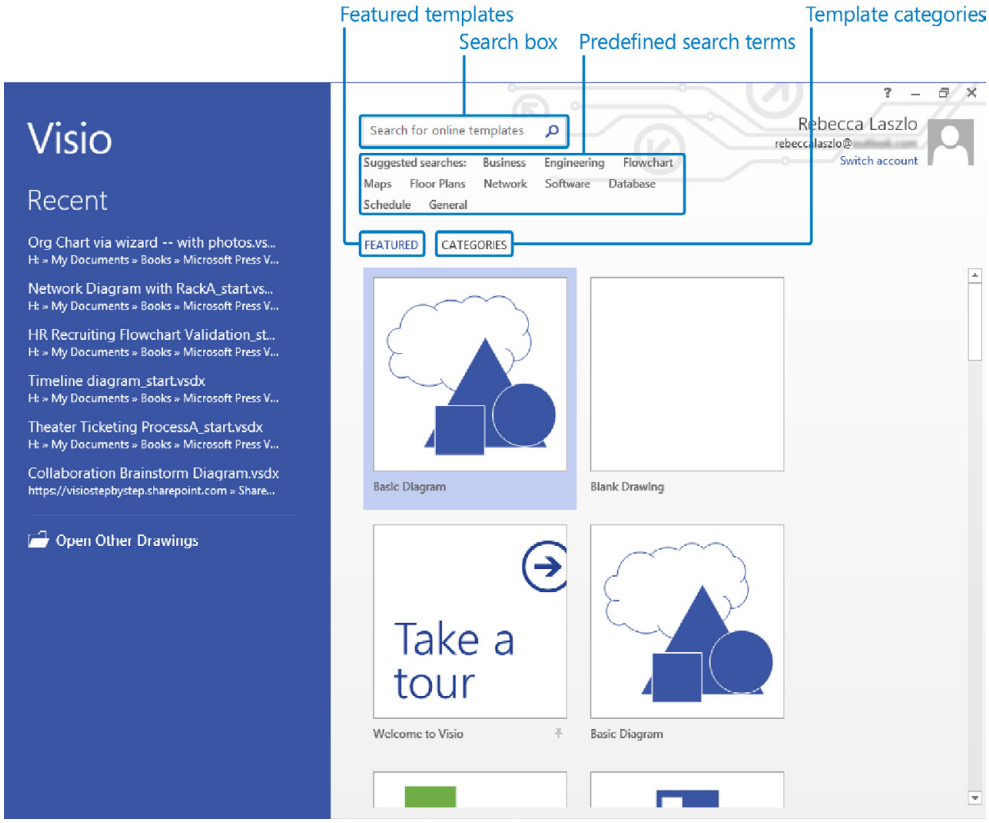
The screen shots shown in this book were captured at a screen resolution of 1024 × 768, at 100% magnification. If your settings are different, the ribbon on your screen might not look the same as the one shown in this book, but you can easily adapt the steps to locate the command.

For example, if a button appears differently on your screen than it does in this book, start by clicking the specified tab, and then locate the specified group. If a group has been collapsed into a group list or under a group button, click the list or button to display the group's commands. If you can't immediately identify the button you want, point to likely candidates to display their names in ScreenTips.

Instructions in this book are based on traditional keyboard and mouse input methods. If you're using Visio on a touch-enabled device, you might be taking action by tapping with your finger or with a stylus. If so, substitute a tapping action any time you're instructed to click a user interface element. Also note that when you're instructed to type information in Visio, you can do so by typing on a keyboard, tapping in the entry field under discussion to display and use the onscreen keyboard, or even speaking aloud, depending on your computer setup and your personal preferences.

Getting started with Visio 2013

When you start Visio 2013, it presents a startup page that is new to this version of Visio and is common to both the Standard and Professional editions of Visio 2013.



Key sections of the start page are described in the following list.

- In the narrower left column is a list of recently opened diagrams. Clicking any diagram name opens it again.

  If you want to open a diagram that is not on the Recent list, click the Open Other Drawings button at the bottom of the list and Visio will take you to the Open page that is described in the next section.

- In the wider right column is a collection of thumbnails representing recently used or recommended templates.

- Above the template thumbnails are four important ways to find Visio templates.

  - You can type any words into the **Search for online templates** box and Visio will present templates that match your keywords.

  - You can click any word in the **Suggested searches** list to initiate an online search for matching templates.

- **Featured** is the default selection for the template thumbnails that appear in the main part of the page (refer to the preceding graphic). The presentation of thumbnails is dynamic; the templates you use most frequently will rise to the top.
- Clicking **Categories** presents a set of template categories that are the same as the categories in previous versions of Visio: Business, Flowchart, General, Maps and Floor Plans, Network, and Schedule. The Professional edition also includes Engineering, and Software and Database categories.

At the end of the template categories list is an additional entry called New from existing. Clicking this thumbnail enables you to select any existing Visio diagram. Visio will then open a copy of the diagram as a new document and will leave the original untouched.

IMPORTANT Clicking a suggested search term will *not* produce the same result as selecting a template category of the same name. For example, clicking the Flowchart search term will yield some of the same templates that you will find in the template category named Flowchart, however, it will also return several—or several hundred—additional templates, both for Visio and for other programs in the Office suite.

If you would like to locate Visio 2013 templates using a method that is most like what you are familiar with from a previous version of Visio, click Categories and then select the desired template category.

SEE ALSO Microsoft has published a series of quick-start guides for the programs in the Office family at *office.microsoft.com/en-us/support/office-2013-quick-start-guides-HA103673669.aspx*.

Exploring the Backstage view

The Backstage view is the central location for managing files and setting the options that control how Visio 2013 operates. You access the Backstage view by clicking the File tab at the top left of the Visio window.

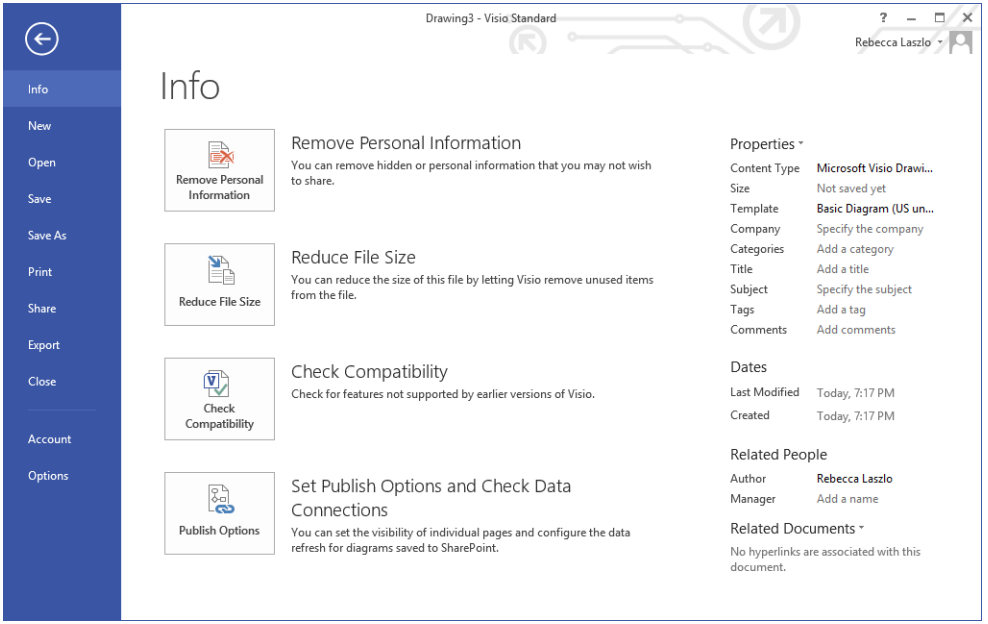
Of the 11 pages in the Backstage view, only four—New, Open, Account, and Options—are available if you do not have a diagram open. The remaining seven appear when you open a diagram.

TIP If you are in the Backstage view and have a diagram open, you can return to the diagram by clicking the left-pointing arrow in the upper-left corner of the Visio window. If you don't have a diagram open, clicking the arrow will return you to the start screen.

The pages in the Backstage view are described in the following sections.

Info

When you have a diagram open and click the File tab, Visio presents the Info page.



The center section of the page includes four command buttons.

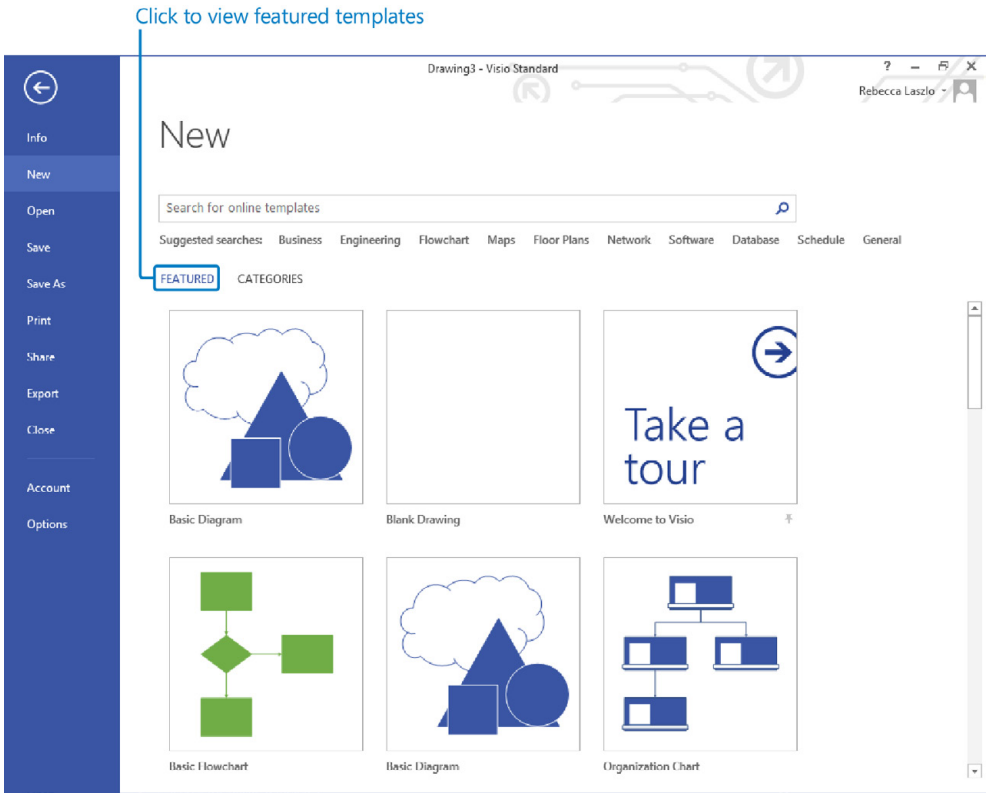
- You will learn more about the **Remove Personal Information** button in Chapter 8, "Printing, reusing, and sharing diagrams."
- You can click the **Reduce File Size** button if document size is a major consideration.
- The **Check Compatibility** button checks the current diagram for features that are not compatible with previous versions of Visio.
- You will learn about the SharePoint publishing settings behind the **Set Publish Options and Check Data Connections** button in Chapter 13, "Collaborating on and publishing diagrams."

The right side of the page provides information about the open document, along with a Properties list that you can use to view and set additional document properties. You will use the Properties list in several places in this book, including Chapter 7, "Adding and using hyperlinks," and Chapter 8.

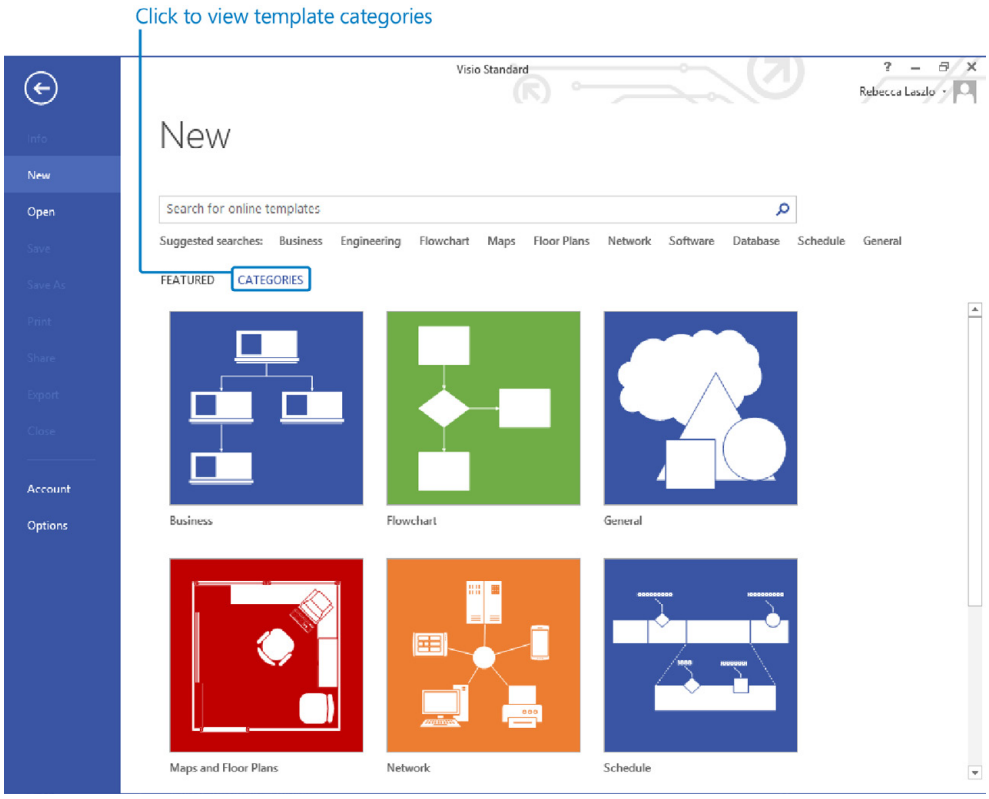
SEE ALSO If you open a file from a previous version of Visio, it will open in compatibility mode, and an additional button, labeled *Convert*, will appear at the top of the Info page. Refer to "The Visio 2013 file formats" in the Appendix for more information about working with files from previous versions of Visio.

New

The New page provides access to both built-in templates and online templates. You access built-in templates by clicking a diagram thumbnail in the lower part of the page. You can either type your own search terms or use the predefined search terms at the top of the page to locate templates from *Office.com*.

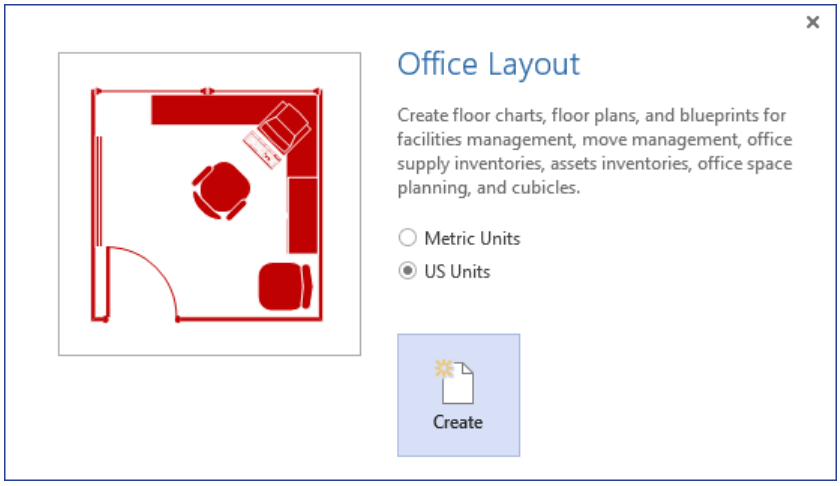


The preceding graphic displays Featured diagrams, while the following graphic shows the template Categories for Visio Standard. Be sure to read about the difference between featured templates and template categories at the beginning of the "Getting started with Visio 2013" section.



Clicking any template category displays thumbnails for the diagrams in that category.

If you click once on a diagram thumbnail, Visio displays information about that template, as shown in the following graphic. If you double-click a diagram thumbnail, Visio launches a new diagram.



TIP When you create a new diagram, Visio names it Drawing*n*, where *n* is a sequence number that is incremented for each new drawing created within one Visio session. Closing and restarting Visio always resets the sequence number to 1.

Visio templates are provided in two different sets of measurement units.

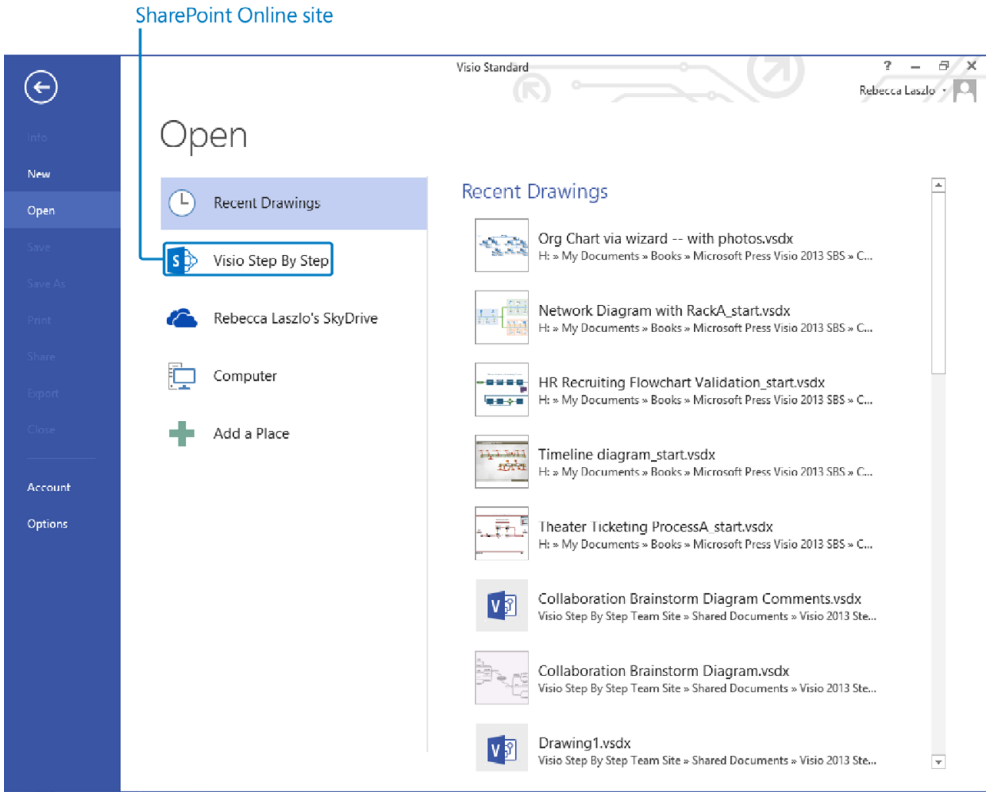
- **Metric** ***Metric*** drawings are sized using International Standards Organization (ISO) specified paper sizes; the default size is usually A4. Metric templates also include other ISO drawing and paper sizes. All measurements are in millimeters or other metric measurement units.
- **US Units** Diagrams created with ***US Units*** use the 8.5-by-11-inch, letter-sized paper that is common in the United States and parts of Canada and Mexico. Templates created for US Units also include additional drawing and paper sizes that are common in those countries. The default measurement units are inches and feet.

Depending on your system configuration, you might be offered a choice between the two, as shown in the preceding graphic.

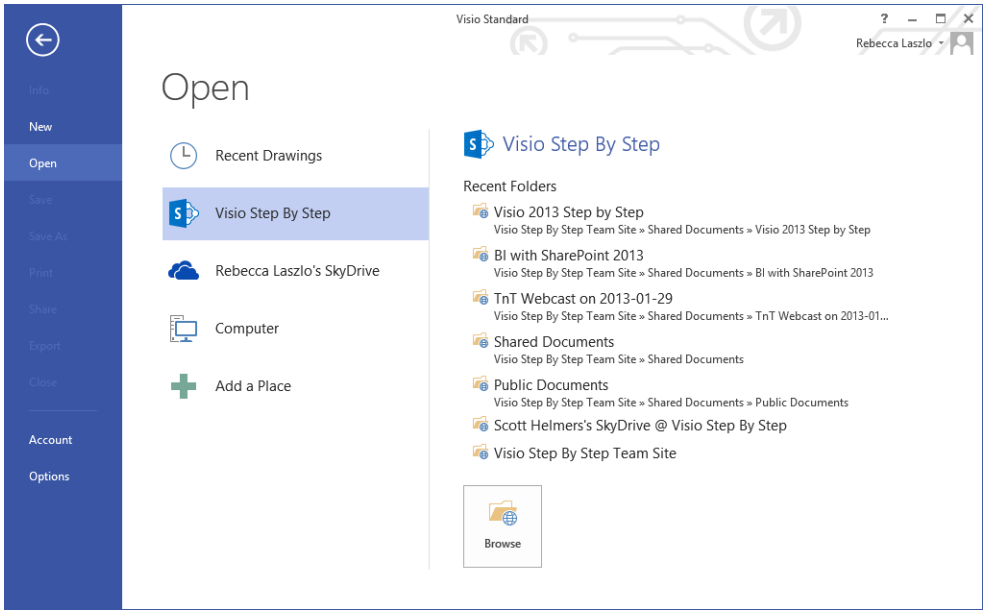
Open

The Open page provides access to previously stored Visio diagrams.

TIP If you are familiar with the Backstage view in Visio 2010, you will notice that there is no longer a separate Recent page in the Visio 2013 Backstage view; Recent drawings are available on the Open page instead.



One of the first things you'll notice on the Visio 2013 Open page is that the buttons in the center column make it just as easy to access diagrams stored on SharePoint or SkyDrive as it is to open documents on your computer. Simply click any of the location buttons in the center column to display a list of recently used folders along with a Browse button for that location. The page that results from clicking the button for the Visio Step By Step SharePoint Online site is shown in the following graphic.



Click Add A Place to pin additional SkyDrive or SharePoint Online locations to the Open page.

When you click the Browse button on the Open page, Visio displays the Windows Open dialog box. The file type filter in the Open dialog is preset to display Visio drawings, templates, and stencils that were created in the new Visio 2013 file format, as well as those created with previous versions of Visio.

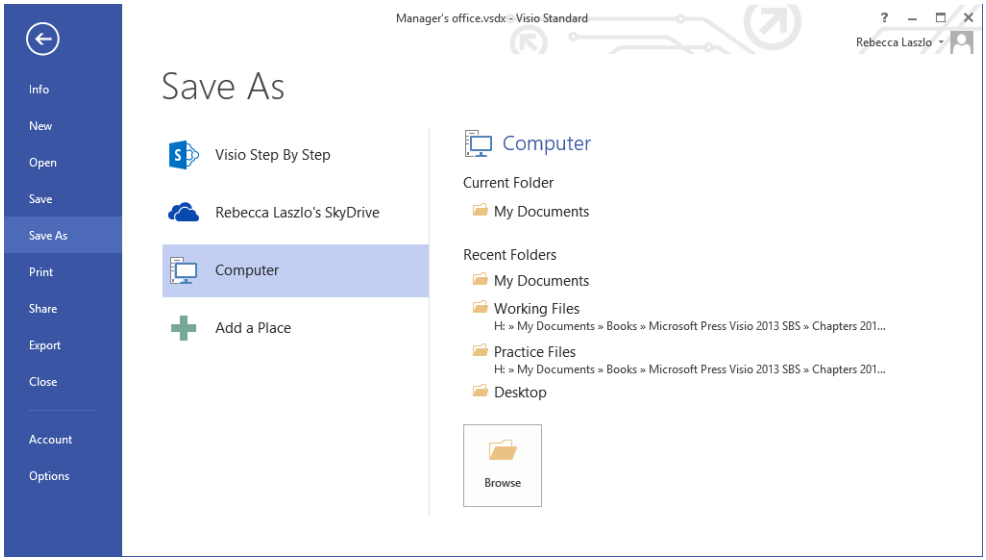
SEE ALSO To learn more about the new Visio file formats and about opening and converting files created in previous versions of Visio, refer to "The Visio 2013 file formats" in the Appendix.

Save

Clicking Save for a previously unsaved diagram displays the Save As page shown in the following section. Clicking Save for a previously saved diagram simply saves the changes.

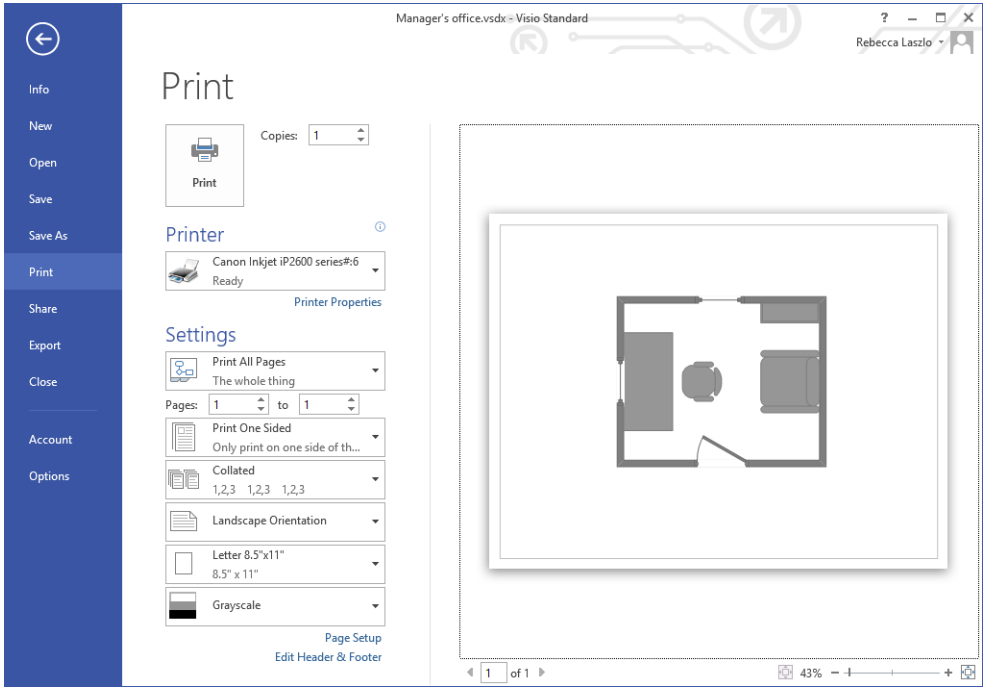
Save As

On the Save As page, you can choose a local or remote location and then either select a recent folder or use the Browse button to navigate to the desired location.



Print

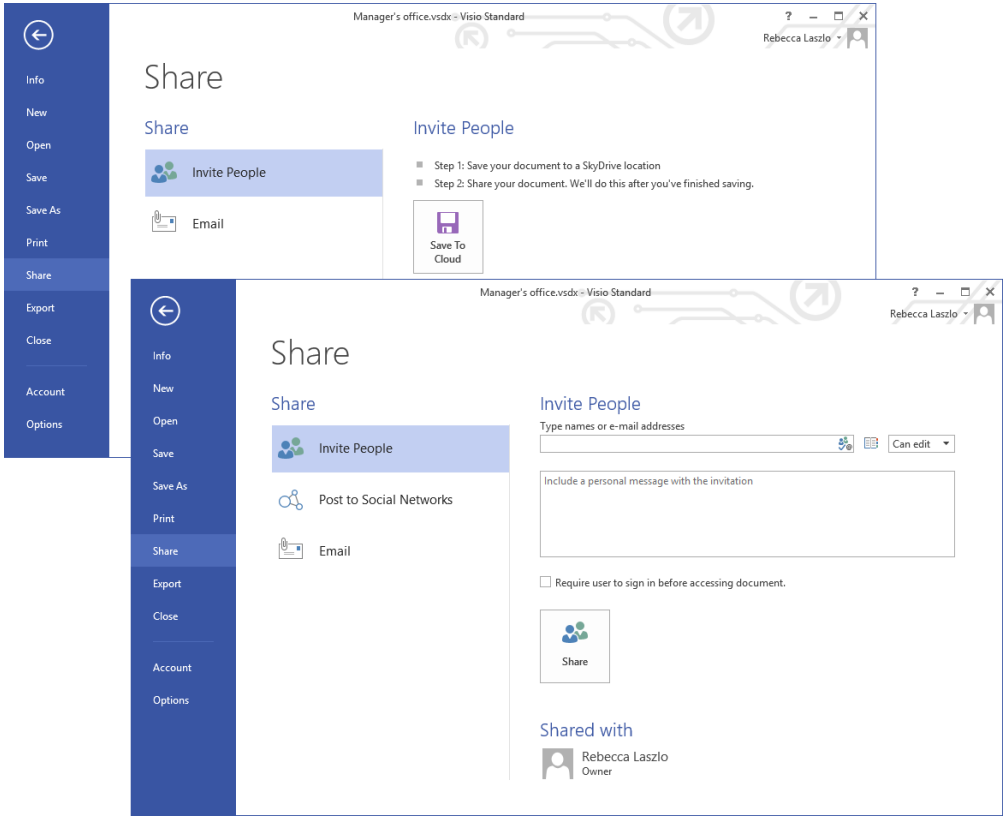
The Print page provides a print preview and printing options. You will learn about print options in Chapter 8.



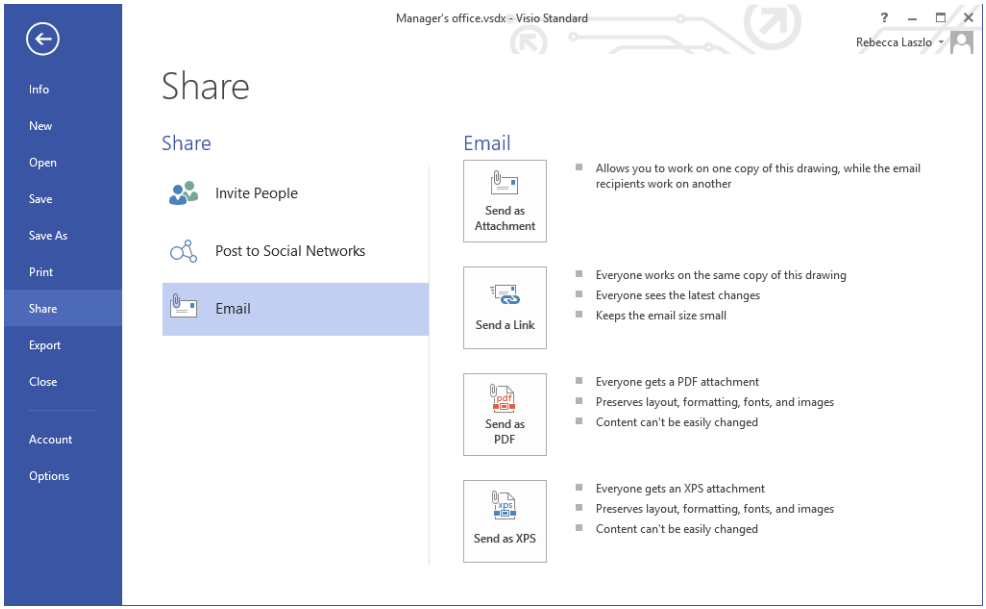
Share

The Share page offers two techniques for sharing your Visio drawing.

You can click Invite People to publicize your diagram via email or social media. The first step is to click the Save To Cloud button to store your diagram to either SkyDrive or SharePoint. After the save operation completes, Visio provides an email form and several buttons you can use to share links to your diagram.

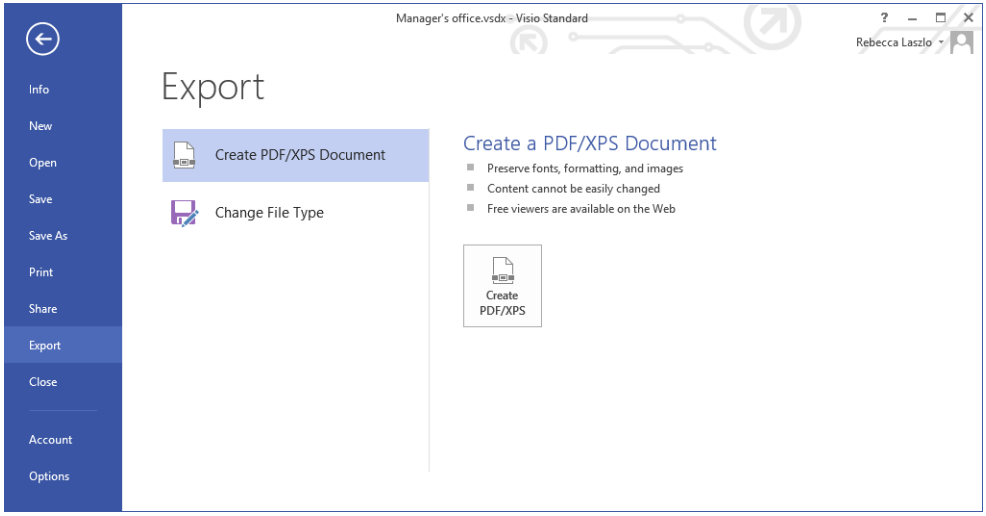


You can click the Email button to share your diagram using any of the options listed on the right side of the following graphic.



Export

The Export page enables you to create a PDF or XPS document as well as to save in a wide variety of other file formats. You will learn about exporting to other file formats in Chapter 8, "Printing, reusing, and sharing diagrams," and Chapter 12, "Creating and validating process diagrams."

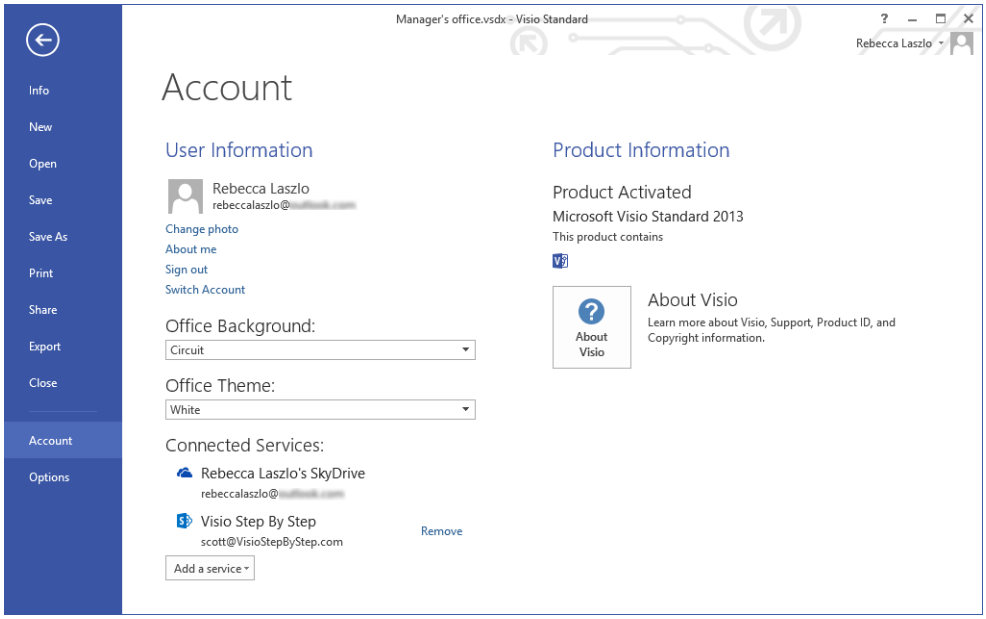


Close

There is no Close page—clicking Close simply closes the active diagram.

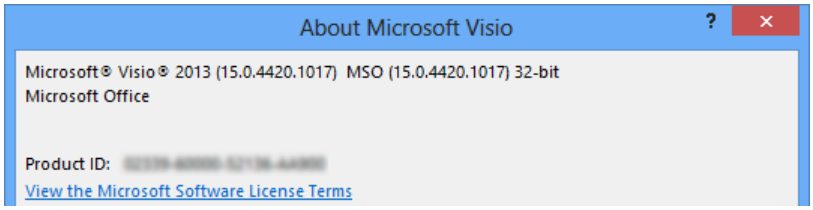
Account

The Account page summarizes information about the Microsoft Account (formerly known as Live ID) that you have linked to Visio. Links in the Account column enable you to change your Microsoft Account details and to switch to another Microsoft Account if you have more than one. The same column provides drop-down lists you can use to alter the Office Background and Office Theme used for Visio and all other Office applications.



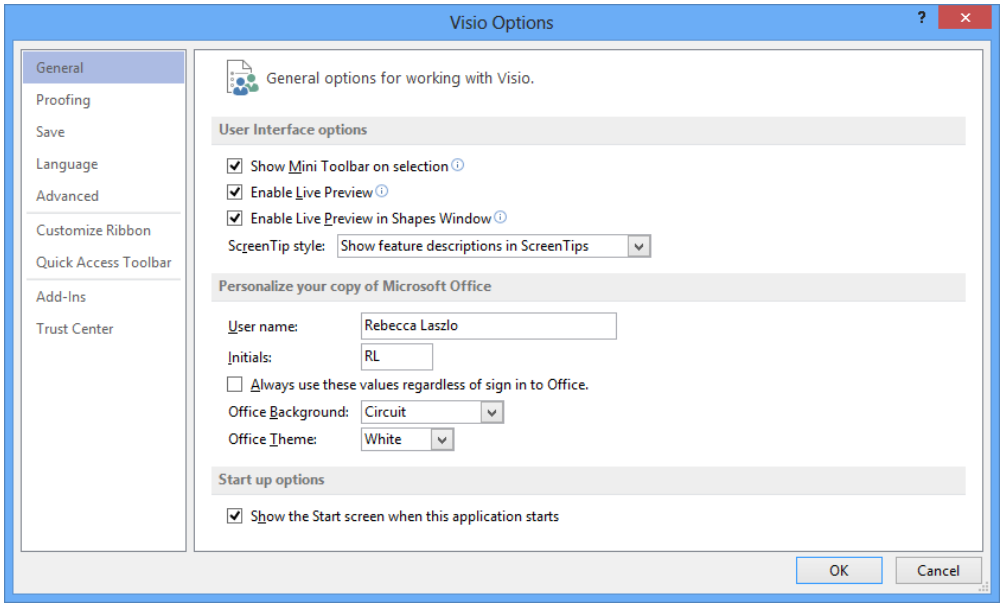
Clicking the About Visio button in the right-hand column displays version information and your product ID. The upper portion of the About Microsoft Visio dialog box is shown in the following graphic.

TIP The About Microsoft Visio dialog box does not indicate whether you are running the Standard or Professional edition of Visio. However, that information is displayed in the title bar of the Visio window as shown in the preceding graphic.



Options

The Options button opens a dialog box that contains dozens of settings you can use to customize the operation of Visio. Many people use Visio 2013 without ever needing to change any of these options, but it's a good idea to examine the option categories for potential future use.



- **General** Type your user name and initials as well as set various global options, including Live Preview and the Visio window color scheme.
- **Proofing** Set autocorrect, spelling, and grammar options.
- **Save** Set the default Visio save format (Visio Document; Visio Macro-Enabled Document; Visio 2003-2010 Document) and the document management check out/check in options.
- **Language** Set editing, display, help, and ScreenTip language parameters.

- **Advanced** Set dozens of options in five categories: Editing, Display, Save/Open, Shape Search, and General.
- **Customize Ribbon** Add/rearrange commands on built-in ribbon tabs; create new tabs and commands.
- **Quick Access Toolbar** Add/remove command buttons on the *Quick Access Toolbar*.
- **Add-ins** View and add/delete Visio add-ins.
- **Trust Center** View and edit macro settings and other trust-related options.

Exploring the Visio ribbon

Earlier in this chapter, the graphics in "Working with the ribbon" demonstrated how the appearance of the ribbon can change depending on the width of the Visio window.

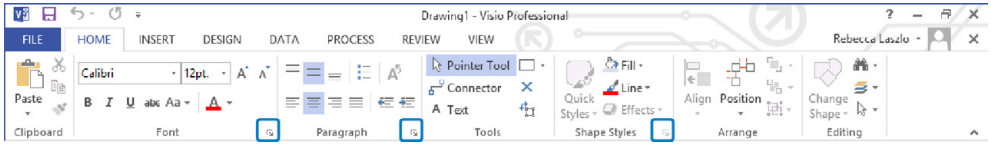
In this exercise, the width of the ribbon will remain constant at 1024 pixels and you will explore each of the Visio tabs.

IMPORTANT Most of the screen shots in this book feature the Professional edition ribbon. Consequently, there might be tabs, buttons, or options in the screen shots that don't apply if you are using the Standard edition. In general, you can ignore any buttons or tabs that do not appear on your computer screen. Where necessary, the text will distinguish those exercises or functions that can only be performed with a specific Visio 2013 edition.

SET UP **If Visio is already running, click File, and then click New. If Visio is not running, start it. On either the New or startup page, double-click the Basic Diagram thumbnail.**

1 Click the **Home** tab if it is not already selected.

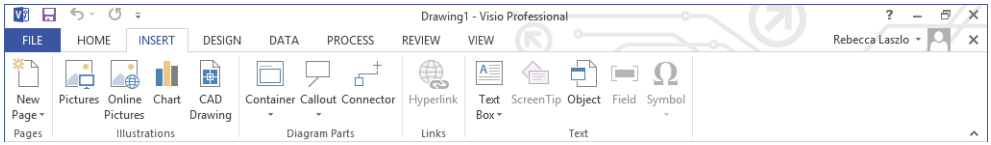
The Home tab is just what it sounds like: a place where you will spend a considerable amount of time. The Home tab contains the largest number of buttons by far, because the Visio team at Microsoft tried to fit as many of the most frequently used functions as possible onto this tab. You'll find sets of related buttons organized into groups called Clipboard, Font, Paragraph, Tools, Shape Styles, Arrange, and Editing.



You will use buttons on this tab in most of the exercises in this book.

TIP Many of the groups on the Visio tabs include a small arrow in the lower-right corner of the group (refer to the Font, Paragraph, and Shape Styles groups above). The arrow button, known as the *dialog box launcher*, opens a dialog box that provides detailed control over multiple functions related to that group. In many cases, the dialog box that opens will look familiar to experienced Visio users, because it is the same one that was used in previous Visio versions.

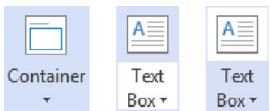
2 Click the **Insert** tab to access the **Pages**, **Illustrations**, **Diagram Parts**, **Links**, and **Text** groups. Many of the functions available on this tab mirror the items on the Insert menu in Visio 2007 and earlier.



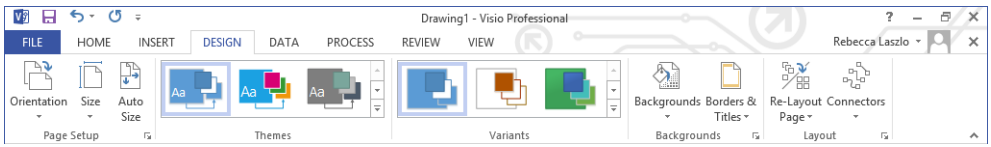
You will use buttons on this tab in multiple chapters including Chapter 3, "Adding sophistication to your drawings," and Chapter 11, "Adding structure to your diagrams."

TIP Ribbon buttons that display a downward-pointing arrow behave in one of two ways. When you point to some buttons, like the Container button on the left in the following graphic, the entire button is illuminated. Clicking this type of button always presents a set of options related to the button title.

When you point to other buttons, like the Text Box button in the following graphic on the right, only half of the button is illuminated. Clicking the half without the arrow performs the default action for the button. Clicking the half with the arrow presents a menu of options.



3 Click the **Design** tab to change **Page Setup**, select **Themes** or **Variants**, create or edit page **Backgrounds**, and change page **Layout**.

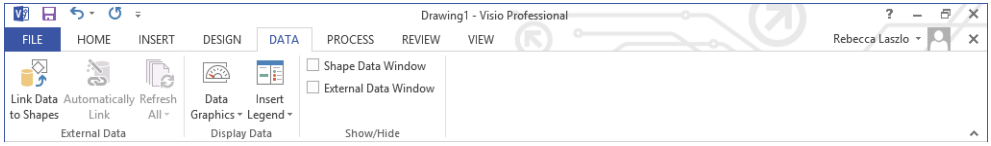


You will use buttons on this tab in various exercises, including those in Chapter 3, "Adding sophistication to your drawings," and Chapter 5, "Adding style, color, and themes."

4 Click the **Data** tab.

IMPORTANT This tab is available only in the Professional edition.

On the Data tab, you can establish and maintain links to External Data, Display Data using ***data graphics***, and Show/Hide both the Shape Data and External Data windows.

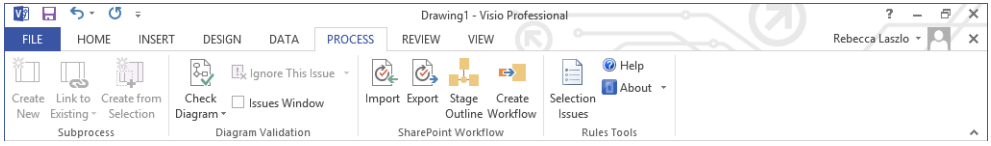


You will use buttons on this tab primarily in Chapter 6, "Entering, linking, and reporting on data," and Chapter 10, "Visualizing your data."

5 Click the **Process** tab.

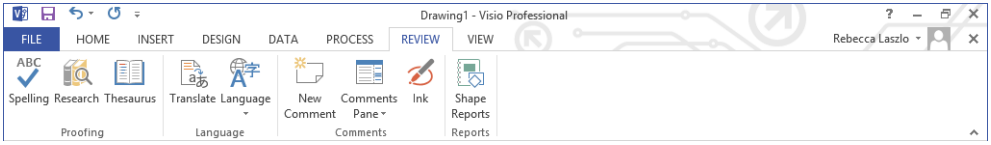
IMPORTANT This tab is available only in the Professional edition.

In the Subprocess group, you can create a new ***subprocess*** or link to an existing one. In the Diagram Validation group, you can validate a drawing against a set of business rules and manage validation issues. You can also import or export a SharePoint Workflow from this tab.



You will use buttons on this tab in Chapters 12 and 13.

6 Click the **Review** tab for access to functions for **Proofing**, **Language**, **Comments**, and **Reports**.



You will use buttons on this tab in various exercises, including those in Chapters 3 and 6.

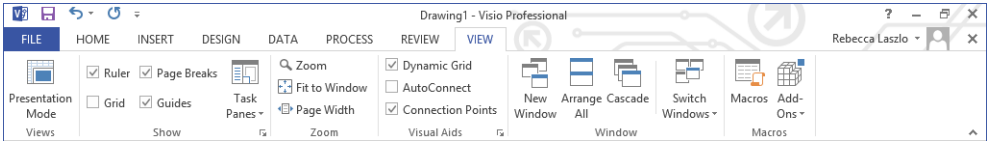
7 Click the **View** tab.

As the name suggests, most of the buttons on this tab affect which Visio features are visible on the screen:

- The lone button in the **Views** group sets Visio into full-screen display mode.

  KEYBOARD SHORTCUT Press F5 to enter or exit full-screen view mode.

- The **Show** group controls which drawing aids and task panes are visible.
- Use the **Zoom** buttons to change the magnification level in the drawing window.
- The **Visual Aids** group enables and disables various on-screen drawings aids.
- Use the **Window** buttons to arrange or select among multiple windows when you have more than one drawing open.
- The **Macros** group provides access to the Visio macro programming window and to a list of pre-programmed add-ons that enhance the capabilities of Visio.



You will use buttons on this tab in exercises later in this chapter and throughout the rest of the book.

CLEAN UP **Close the *Drawing1* drawing. It is not necessary to save your changes.**

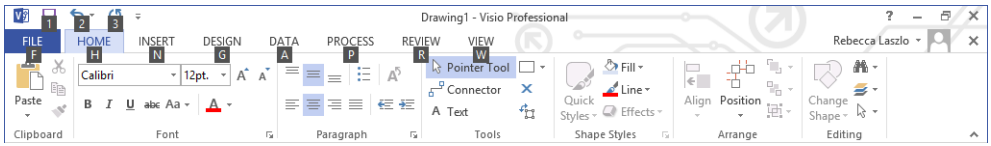
TIP The buttons and controls on all ribbon tabs display pop-up tooltip text when you point to them. If you are unsure of the function of any button, just point to the button to view the tooltip.

SEE ALSO If you are familiar with versions of Visio prior to Visio 2010 and would like help shifting from toolbars and menus to the ribbon, Microsoft has created an interactive guide to the ribbon for each product in the Office suite. When you click a toolbar or menu item in the guide, it will display the appropriate ribbon button. You can find the Visio guide at *office.microsoft.com/en-us/visio-help/learn-where-menu-and-toolbar-commands-are-in-office-2010-and-related-products-HA101794130.aspx*. Although this guide was created for Visio 2010, the Visio 2013 ribbon is sufficiently similar that you will still find the guide to be helpful.

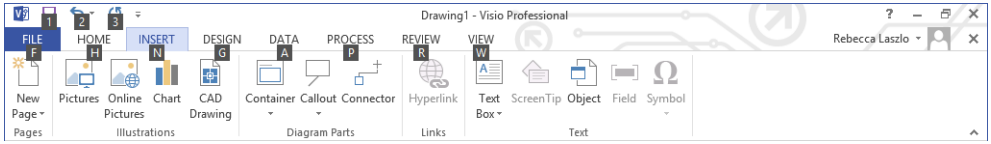
Where are the keyboard shortcuts?

If you are accustomed to using keyboard shortcuts, you'll be happy to know that they still exist in Visio 2013. Most shortcuts are the same as in previous versions of Visio, although some were changed to make them consistent with other applications in the Office suite.

The keyboard shortcut letters appear when you press the Alt key. The following graphic shows the shortcut letter associated with each tab on the Visio 2013 ribbon. Notice, too, that each button on the Quick Access Toolbar has been assigned a shortcut number based on its position within the Quick Access Toolbar.



Pressing the letter or number for any displayed shortcut key opens the relevant tab and displays the shortcut keys for that tab. For example, pressing the N key when in the view shown in the previous graphic displays the Insert tab and the shortcut letters shown in the following graphic.



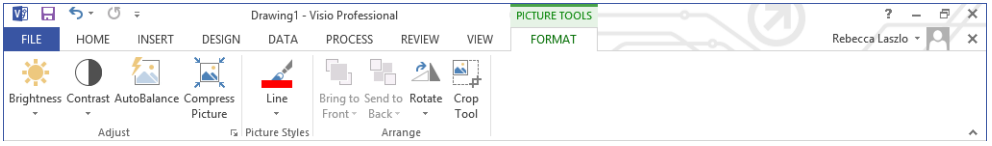
TIP Previous versions of Visio used the capital letter *I* as the shortcut key for the Insert menu. Visio 2013 uses the keyboard shortcut *N* to be consistent with other Office applications.

Understanding tool tabs and add-in tabs

All of the ribbon tabs shown in the preceding sections are visible 100 percent of the time as you run Visio. However, there are two types of tabs that only appear when necessary.

A ***Tool tab set*** only appears in a particular drawing context, usually when a specific type of shape is selected on the drawing page. Tool tab sets usually appear to the right of the View tab and are not activated automatically, that is, you must click the tab to view its contents. A tool tab set includes a colored header and may contain one or more tool tabs under the header. Here are examples of two tool tab sets:

- **Picture Tools** This tool tab set appears whenever you insert or select a graphic on a Visio drawing page. The green Picture Tools header contains a Format tool tab, which includes buttons to crop, rotate, and otherwise modify a picture.

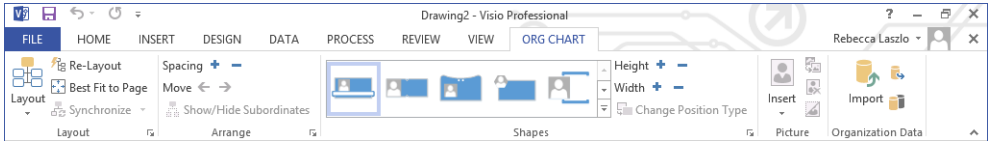


- **Container Tools** This tool tab set appears whenever you insert or select a Visio ***container***. The orange Container Tools header contains a Format tool tab, which includes buttons to size and style containers, and to control container membership. You will learn about containers in Chapter 11.

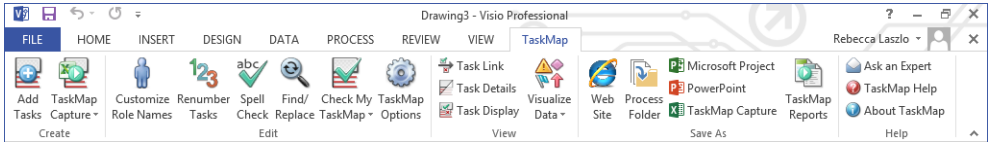
Add-in tabs are associated with software that adds capabilities to Visio. Some add-ins are packaged with Visio by Microsoft; others are sold by third-party software vendors.

Unlike tool tabs, add-in tabs look and behave exactly like permanent Visio tabs with one primary exception: they appear when an add-in application is active and disappear when it is not. Here are two examples:

- **Org Chart** This add-in is included with Visio and is activated whenever you create or edit a drawing that uses either of the Visio organization chart templates. You will learn about organization charts in Chapter 4.



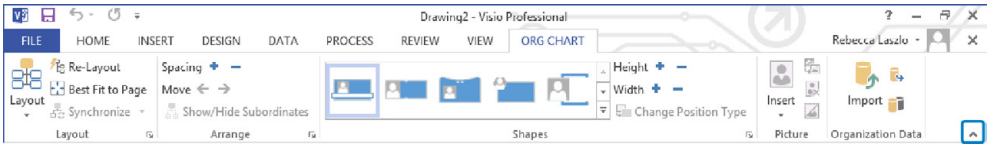
- **TaskMap** This third-party add-in provides easy-to-use process mapping, analysis, and improvement functions that can be used with any edition of Visio.



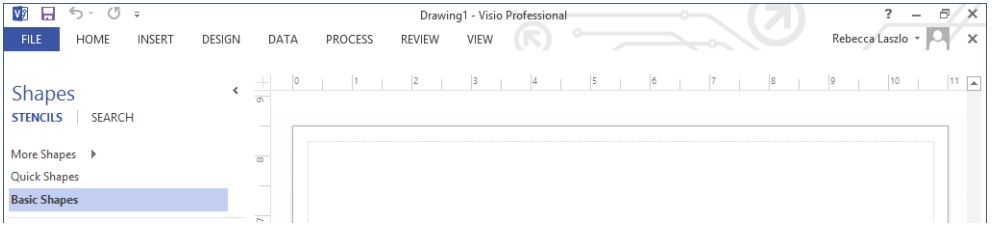
SEE ALSO For more information about the TaskMap add-in, go to *www.taskmap.com*.

Minimizing and restoring the Visio ribbon

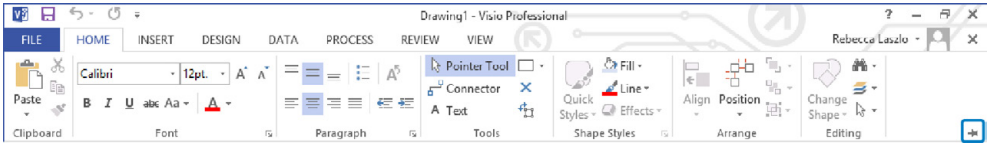
Because the ribbon takes a reasonable amount of space at the top of the Visio window, you may want to minimize it if you need more space for the drawing page. The key to doing so is a very small up arrow located in the lower-right corner of the ribbon.



Clicking this button minimizes the ribbon as shown in the following graphic. To temporarily display a tab when it's minimized, click the tab name.



To restore the ribbon to normal operation after it has been minimized, click the pushpin located in the lower-right corner of the ribbon.



Understanding shapes, masters, stencils, and templates

Before you explore the rest of Visio, it's helpful to understand a number of commonly used terms:

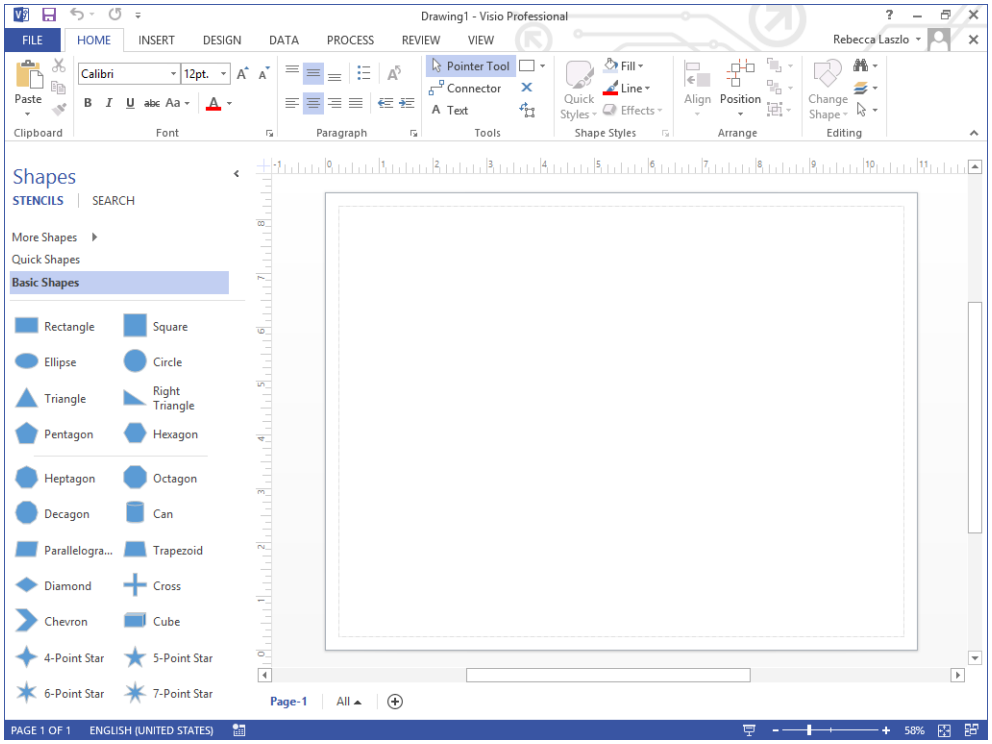
- ***Master*** An object in a Visio stencil. The vast majority of people who create diagrams with Visio use the masters that ship with Visio or that they download from the Internet. You can create new masters; however, the techniques for doing so are outside the scope of this book.
- ***Stencil*** A collection of masters.
- ***Shape*** An object on a Visio drawing page. Often you create shapes by dragging a master from a stencil to the drawing page; however, you can also create shapes in other ways. (You will learn more about shapes in Chapter 2, "Creating a new diagram," and throughout this book.)

  A shape can be very simple: a line, a polygon, an image. A shape can also be a sophisticated object that changes appearance or behavior as data values change, as its position on the page changes, or as properties of another shape change—the possibilities are endless.
- ***Template*** A Visio document that includes one or more drawing pages with preset dimensions and measurement units. A template may also include one or more stencils; it may include background pages and designs; its pages may contain shapes or text. A template may also include special software that only operates in that template.
- ***Workspace*** A collection of Visio windows and window settings. At minimum, the workspace consists of the drawing window and the zoom settings for the pages in the drawing; frequently, it also includes a Shapes window containing one or more stencils. The workspace can also include the Shape Data, Size & Position, or Pan & Zoom windows. Unless you have changed the default action, Visio saves the on-screen workspace whenever you save the document. As a result, when you next open the same document, the same collection of windows is restored.

TIP Despite the distinction made in this list between a master and a shape, you will find that many people refer to an object in a stencil as a shape. Indeed, when you think about it, the window that displays stencils is called the *Shapes* window! Consequently, unless the distinction is important in a specific context, the text in this book will refer to *shapes* in a stencil and to *shapes* on the drawing page.

Exploring the drawing window

When you start Visio, two windows normally appear below the ribbon.



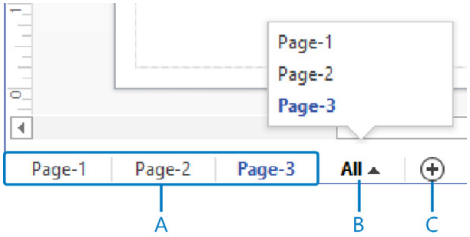
- The ***Shapes window*** on the left contains one or more stencils, each represented by a header bar containing the name of the stencil. Depending on the number of open stencils in the **Shapes** window, a scroll bar might appear at the right of the headers. You will investigate the **Shapes** window in the next section of this chapter.

  TIP The width of the Shapes window is adjustable, so the one on your system may be wider or narrower than the one that appears in the preceding graphic.

- The larger window on the right is called the ***drawing window*** because it contains the ***drawing page***. The drawing window is bounded on the top and left by rulers that display inches, millimeters, or whatever units you have selected (or your template has selected) for measuring page dimensions.

  TIP All previous versions of Visio displayed the grid on the drawing page by default. However, in Visio 2013, the opposite is true. To make the grid visible, click Grid in the Show group on the View tab.

At the lower left of the drawing window is a set of ***page controls***.



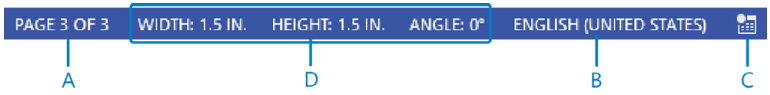
- **A** ***Page name tabs*** display the name of each page and the active page name is displayed in a different color. Click any tab to change to that page. Right-click any page name tab to access page management functions including the new **Duplicate Page** function.
- **B** Click the **All** button to display a list of all pages in the diagram. The name of the active page is highlighted in the list.
- **C** Click the **Insert Page** button to add a new page.

Below the Shapes and drawing windows is a ***status bar*** that contains a variety of indicators, buttons, and controls. The buttons and indicators on the left end of the status bar are context sensitive, so they will show different information depending on the state of the drawing.

If nothing is selected on the drawing page, the left end of the status bar looks like the following graphic.

- **A** The **Page Number** button shows which page is active and displays the total number of pages in the current drawing; click this button to open the **Page** dialog box.
- **B** The **Language** area displays the language of the current drawing; the drawing language is normally derived from Windows or Visio language settings.
- **C** Click the **Macros** button to start the macro recorder.

If you have selected a shape on the drawing page, the left end of the status bar looks like the following graphic instead.



- **A** Same as previous A.
- **B** Same as previous B.
- **C** Same as previous C.
- **D** This area contains three buttons. The **Width** and **Height** buttons display the dimensions of the selected shape and the **Angle** button displays its angle of rotation; click any of the three buttons to open the **Size & Position** window.

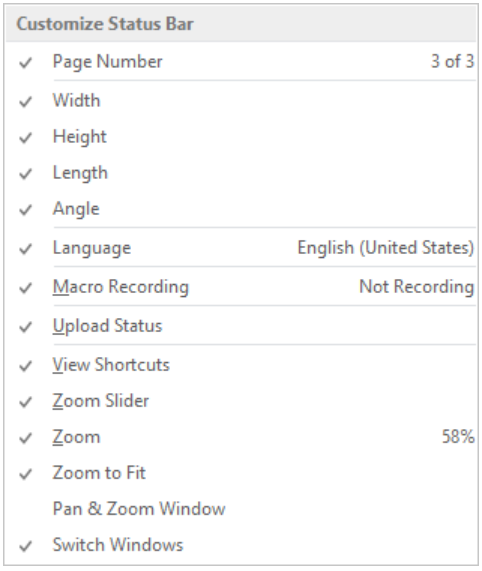
The right end of the status bar contains a variety of useful buttons and controls.

- **A** Click the **Presentation Mode** button to view the active diagram in full-screen presentation mode.
- **B** Move the **Zoom** slider to zoom in or out.
- **C** The **Zoom Level** button displays the current zoom percentage; click it to open the **Zoom** dialog box.

- **D** Click the **Fit Page To Current Window** button to resize the drawing page so the entire page is visible in the drawing window.
- **E** Click the **Switch Windows** button to switch to another Visio window.

  TIP Most other Office applications require the use of a button on the View tab of the ribbon to switch among multiple open windows. The Visio development team had the foresight to include the Switch Windows button (E) on the status bar where it is much more convenient.

If you right-click anywhere in the status bar, the Customize Status Bar menu appears. You can click any of the options in the Customize Status Bar menu to toggle the display of a button or control.



Managing the Shapes window

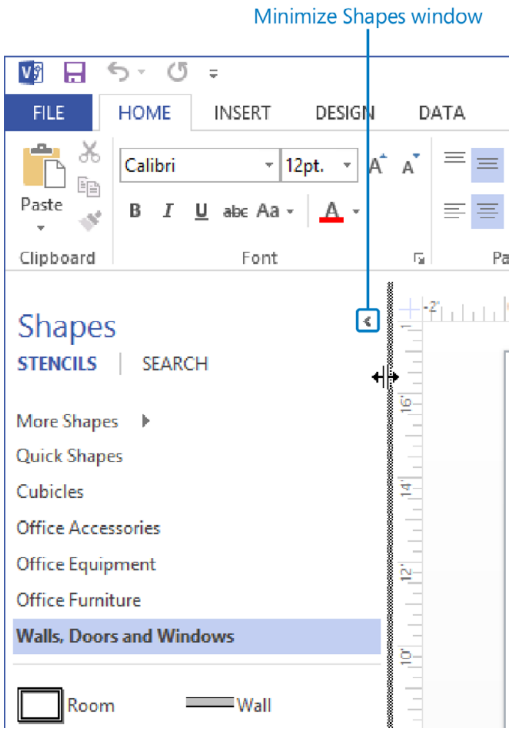
The upper part of the Shapes window contains a list of stencil titles and the lower part displays the shapes from the currently selected stencil.

In this exercise, you will learn various ways to manipulate the Shapes window so it appears in the most useful size and position when you are working on a drawing.

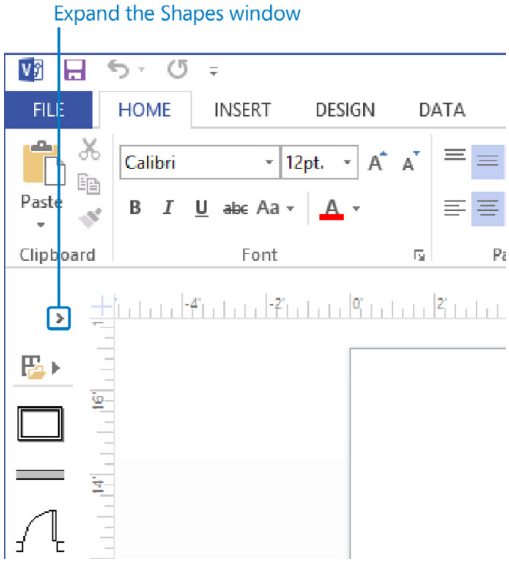
SET UP **If Visio is already running, click File, and then click New. If Visio is not running, start it. On either the New or startup page, click Categories, click Maps and Floor Plans, and then double-click the Office Layout thumbnail. Save the new drawing as *Exploring Visio 2013*.**

IMPORTANT One of the user interface changes in Visio 2013 is that window boundaries have been designed to fade into the background so they don't interfere visually with the content of the drawing. Consequently, the appearance of some parts of the Shapes window is less obvious than in previous versions of Visio. In particular, the boundary of the Shapes window is not visible. The only way to know where it is located is to move the pointer slowly across it until the pointer changes to a window resize tool.

1 Change the width of the **Shapes** window by dragging the window boundary left or right. The pointer changes to a double-headed arrow as the window border is dragged to a wider or narrower view. (In the following graphic, the pointer is located to the right of the **Search** tab.)



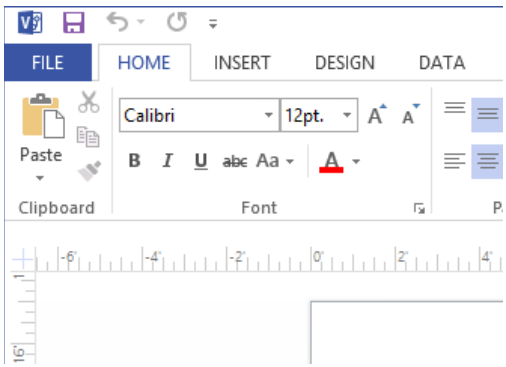
2 Minimize the **Shapes** window by clicking the **Minimize the Shapes window** arrow shown in the preceding graphic. Even though the descriptions are now hidden, all of the masters in the stencil are still accessible when the **Shapes** window is minimized. Consequently, this view is useful when you need more space for the drawing window and the icons depicting the masters in the stencil are very recognizable.



3 Return the **Shapes** window to its former size by clicking the **Expand the Shapes window** arrow highlighted in the preceding graphic.

4 To hide the **Shapes** window entirely, on the **View** tab, in the **Show** group, click the **Task Panes** button, and then click **Shapes**.

TIP The various subwindows that can be opened or closed within the Visio window are sometimes referred to as ***task panes***.

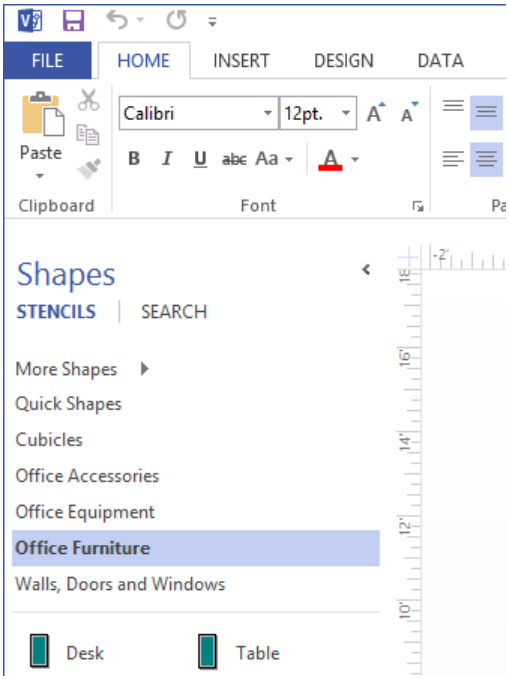


TIP The Shapes window can be reopened by clicking the same button you used to close it.

5 On the **View** tab, in the **Show** group, click **Task Panes**, and then click **Shapes**. If the window does not already show two columns of shapes, adjust the width so it does. The **Walls**, **Doors** and **Windows** title bar is highlighted, indicating that this is the active stencil. However, the Office Layout template includes several additional stencils.

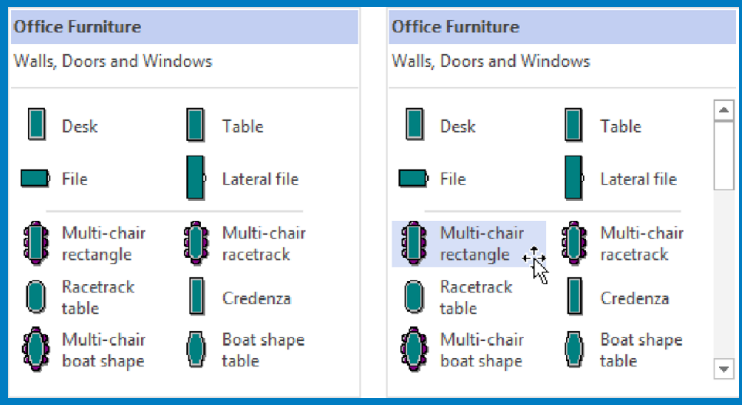
6 In the **Shapes** window, click **Office Furniture**.

TIP When you click the title bar of any stencil, the title bars remain stationary, and the stencil always opens in the same place, below all title bars. This is a significant improvement in behavior over versions of Visio prior to Visio 2010.

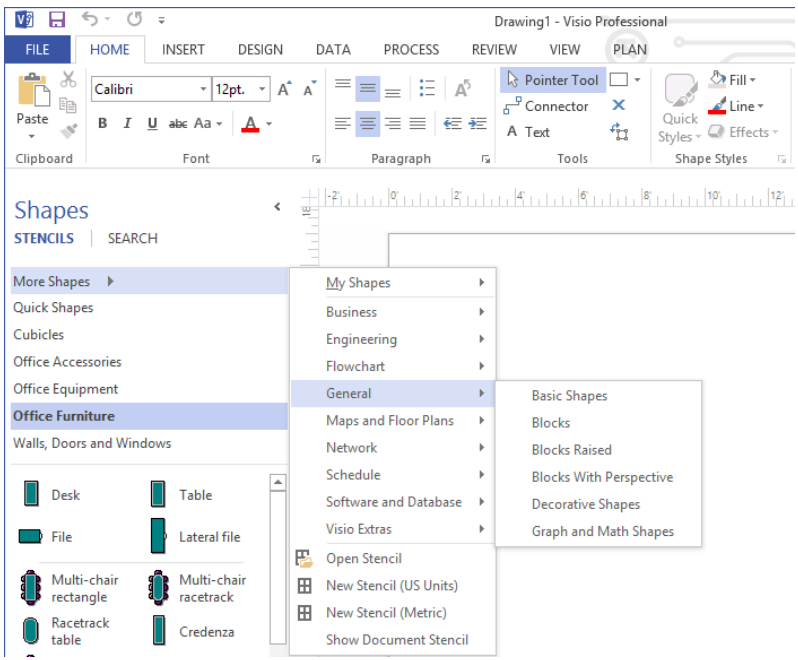


You are not restricted to using just the stencils that open in a particular template, as you will discover in the following steps.

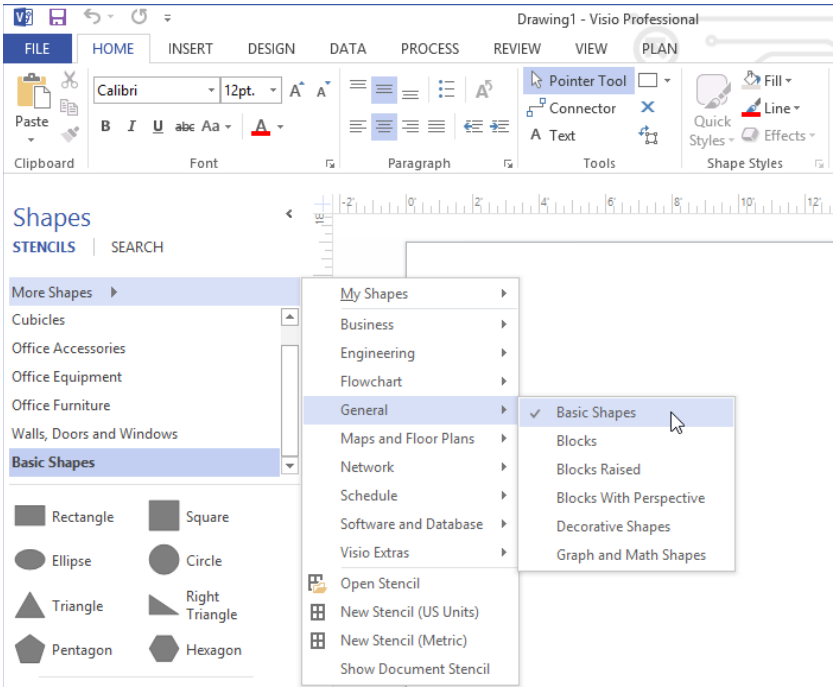
IMPORTANT If there is a sufficient number of masters in a stencil to require scroll bars, the scroll bars are only visible if the pointer is inside the stencil portion of the Shapes window. The downside of this visual technique is that you don't necessarily know there are more shapes available (refer to the following graphic on the leftw) unless you move the pointer into the stencil portion of the Shapes window (following graphic on the right).



7 In the **Shapes** window, click **More Shapes**, and then point to **General**. (Do not click any stencils in the **General** group yet.) A fly-out menu containing stencil names appears. In the following graphic, the collection of stencils in the **General** group is visible.



8 With the cascading menus open from step 7, click **Basic Shapes**. Visio opens the **Basic Shapes** stencil. In a behavior change from Visio 2010, a check mark appears to the left of the stencil you selected, but the fly-out menus remain open, allowing you to select additional stencils from the same or another stencil family.



9 Click anywhere in the Visio window to close the cascading menus.

Although it isn't actually necessary in this exercise, it's helpful to know how to close stencils you no longer need, so that's what you will do in the remaining step.

10 Right-click **Basic Shapes**, and then click **Close**.

TIP Although you didn't use it in this exercise, be sure to notice the Search tab at the top of the Shapes window. The enhanced shape search function in Visio 2013 yields more targeted results with fewer duplicate results.

CLEAN UP **Leave the *Exploring Visio 2013* drawing open if you are continuing with the next exercise. If not, there is no need to save changes.**

Panning and zooming in Visio

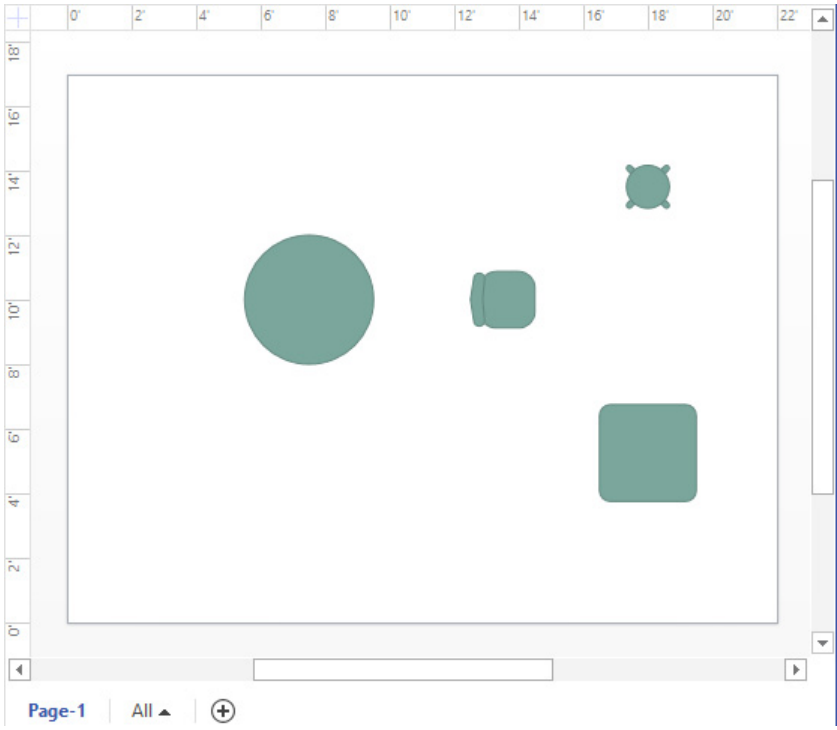
As you work with more detailed Visio diagrams, you will find that you frequently need to ***zoom*** in and out and ***pan***—move left-right and up-down—within the drawing window. Both can be accomplished using a variety of techniques, some of which rely on your mouse, some that use a special Pan & Zoom window, and others that use keyboard shortcuts.

In this exercise, you will learn several techniques to pan and zoom your diagram, beginning with keyboard shortcuts and ending with the Pan & Zoom window.

SET UP **If the *Exploring Visio 2013* drawing is still open from the preceding exercise, continue with this exercise. Otherwise, create a new drawing: on the File tab, click New, click Categories, click Maps and Floor Plans, and then double-click the Office Layout thumbnail. Save the new drawing as *Exploring Visio 2013*.**

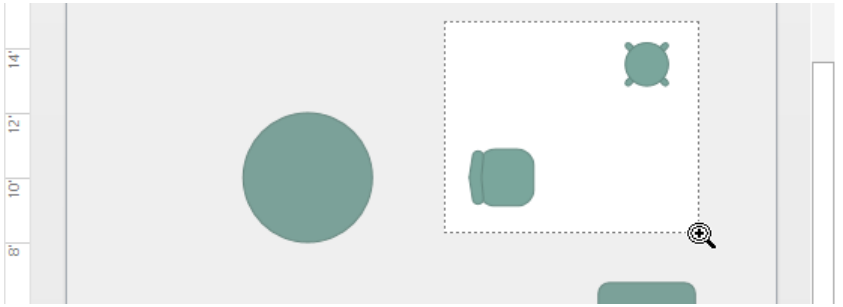
1. Click **Office Furniture** if it is not already the active stencil, and then drag a **Round table** shape onto the drawing page.
2. Drag a **Chair** shape onto a different part of the page.
3. Drag a **Corner table** shape onto yet another part of the page.
4. Drag a **Stool** and a **Square table** onto the page. Space the shapes so they occupy at least half of the drawing page.

   Your diagram might look something like the following graphic.

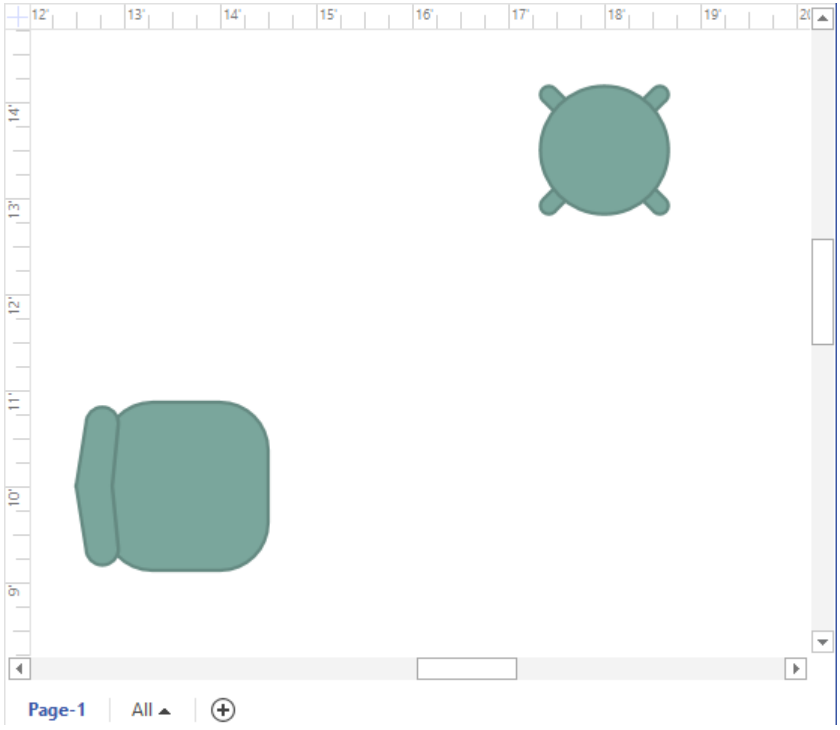


5 Hold down the **Ctrl+Shift** keys (the cursor will change to a magnifying glass with a plus sign), and then drag a rectangle around two of the shapes on the drawing page.

IMPORTANT You must press Ctrl+Shift *before* you click for this zoom technique to work.



6 Release the mouse button and the keyboard keys. Visio sets the view in the drawing window to just the rectangle you outlined with the mouse.



7 Press **Ctrl+Shift+W** to return to a view of the whole drawing page.

TIP Ctrl+Shift+W is an incredibly useful keyboard shortcut to remember because you will frequently zoom in to part of a drawing and then want to return to full page view. To help remember this shortcut, just remember that *W* is the first letter of *whole page*.

IMPORTANT In Visio 2007 and earlier, the keyboard shortcut to view the whole page was Ctrl+W. If you've upgraded from one of those versions of the software, it may take a bit of retraining to get accustomed to using Ctrl+Shift+W instead. To make matters worse, in Visio 2013, Ctrl+W closes the active document. (You will receive a warning if the document has unsaved changes.)

8 Hold down the **Ctrl** key and rotate the mouse wheel. Visio zooms in or out as you rotate the mouse wheel.

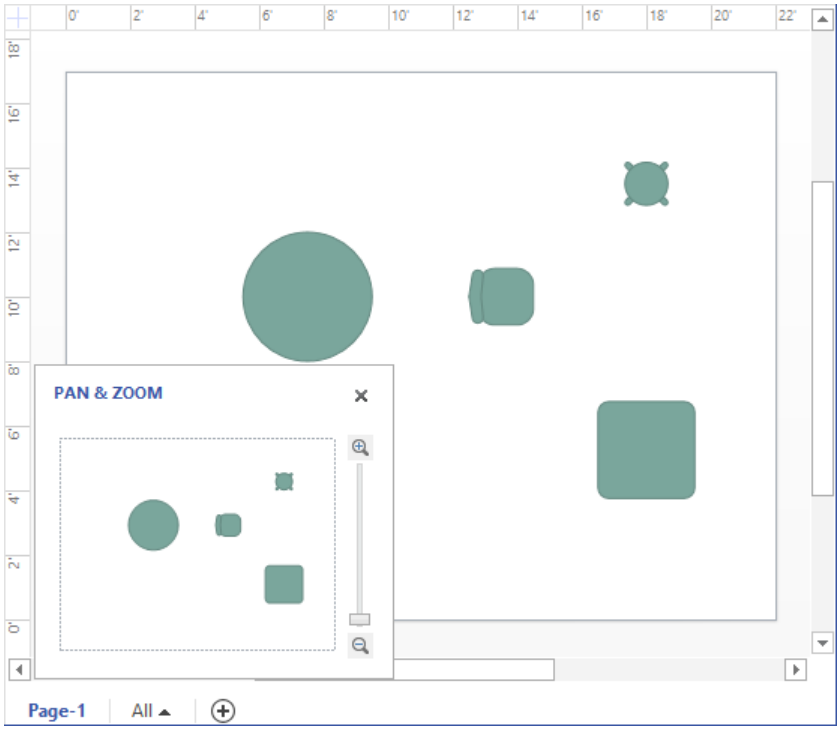
IMPORTANT You can only perform this step if your mouse has a wheel.

TIP Sometimes you may want to zoom in on a specific shape. Visio provides an option setting that makes this very easy to do. On the File tab, click Options, and then click Advanced. In the Editing Options section of the Visio Options dialog box, click Center Selection On Zoom. Now when you select a shape and press the Ctrl key while rotating the mouse wheel, Visio automatically zooms in and out on the selected shape.

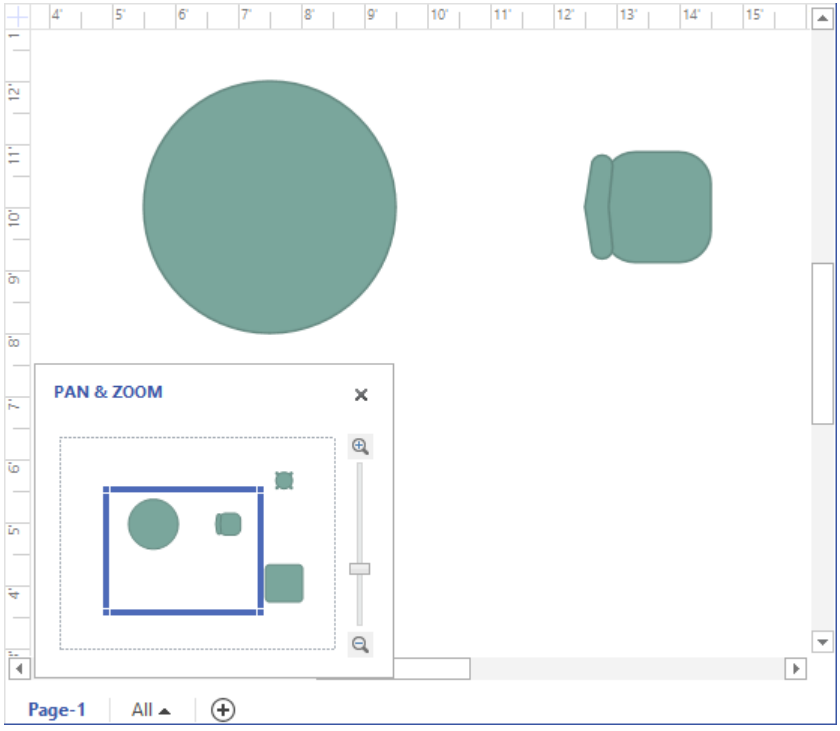
9 Press **Ctrl+Shift+W** to return to a view of the whole drawing page.

10 On the **View** tab, in the **Show** group, click the **Task Panes** button, and then click **Pan & Zoom**. The **Pan & Zoom** window opens. You can drag it to position it wherever you'd like.

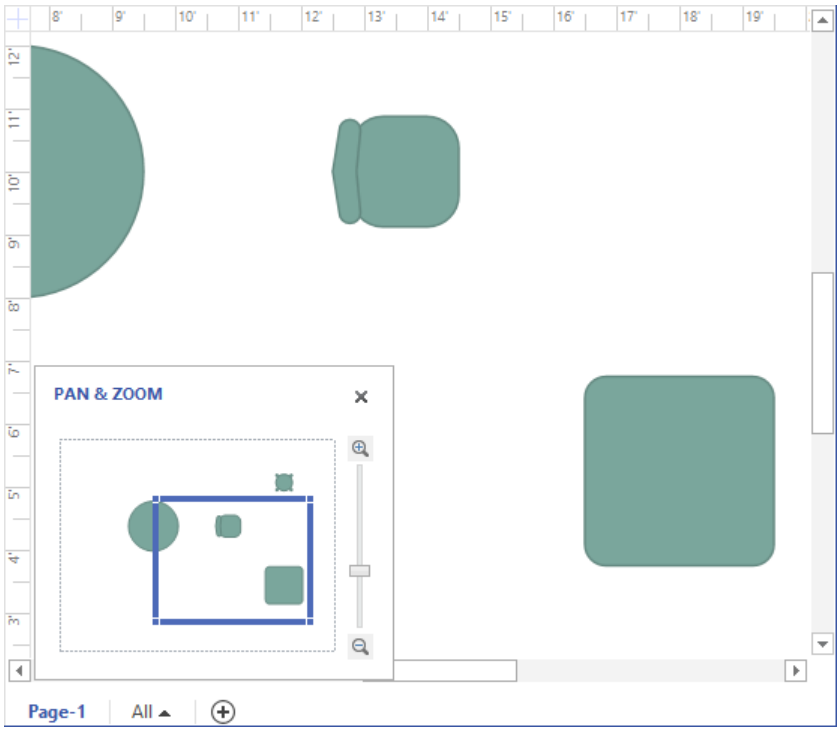
TIP You can also open the Pan & Zoom window by clicking the Pan & Zoom button on the right end of the status bar. (Refer to "Exploring the drawing window" earlier in this chapter for information about the Visio status bar.)



11 Click in the **Pan & Zoom** window, and then drag the cursor to create a rectangle that surrounds any two of the shapes. A blue rectangle appears in the Pan & Zoom window and the drawing window shows only the selected portion of the page.



12 In the **Pan & Zoom** window, click in the interior of the blue rectangle, and then drag into another part of the miniature drawing page. The drawing window now shows the newly selected area of the drawing page.



With the Pan & Zoom window open, you can:

- Continue to move the blue rectangle to reposition what appears in the drawing window.
- Drag the edges or the corners of the blue rectangle to resize it and change the zoom level.
- Drag the slider control on the right edge of the **Pan & Zoom** window to change the zoom level.

For many drawings, the Pan & Zoom window isn't necessary and may even be in the way. However, it is extremely helpful when your drawing page is very large, as it may be if you are working on diagrams such as engineering drawings, floor plans, or office layouts.

CLEAN UP **Close the Pan & Zoom window. Save changes and close the drawing.**

TIP If you have a mouse with a wheel button, you can move the drawing page up and down in the drawing window by rotating the mouse wheel. You can reposition the drawing page to the left and right by holding down the Shift key while rotating the mouse wheel.

You can also move the drawing page using the arrow keys on your keyboard. Be sure that no shapes are selected before pressing the arrow keys, however, or you will move the selected shape(s) instead of moving the page.

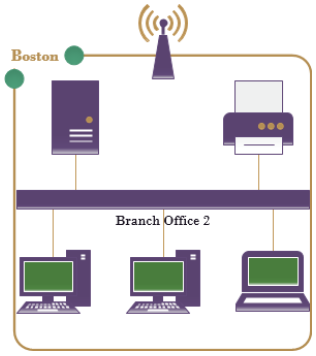
Key points

- Visio Professional contains templates, stencils, ribbon tabs, and functions that are not included in Visio Standard. A key focus for the additional features in Visio Professional is linking to data sources and then visualizing that data using text callouts and icons. Professional features also enhance diagram collaboration, and enable documenting and managing business processes.
- Visio 2013 is the second version of Visio to employ the Office fluent user interface, commonly known as the ribbon. The Visio ribbon is well-designed and easy to use, in large part because the goal of the ribbon is to present sets of related functions visually, and Visio is a visual product.
- Tool tab sets and add-in tabs provide unique features and are only visible when they are relevant and can be used. Most ribbon tabs are visible all of the time.
- The Backstage view provides file management and option settings for Visio 2013.
- The drawing window and the Shapes window are the primary windows you will use to create and manipulate Visio diagrams.
- Visio provides a variety of keyboard shortcuts, mouse techniques, and specialized subwindows for panning and zooming within a diagram.

Chapter at a glance

Organize

Organize shapes with containers, page 425

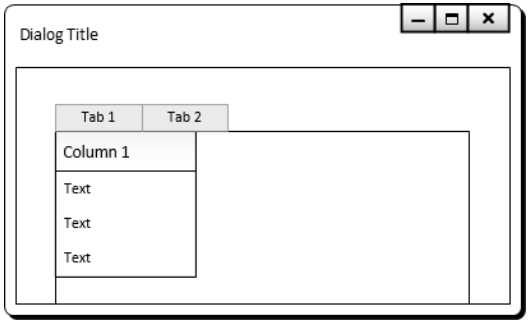


Add

Add shapes to lists, page 431

Build

Build wireframes, page 441



Annotate

Annotate shapes with callouts, page 448

Adding structure to your diagrams

11

IN THIS CHAPTER, YOU WILL LEARN HOW TO

- Compare containers and groups.
- Work with containers and their contents.
- Format and size containers.
- Add shapes to lists.
- Format and size lists.
- Find containers and lists in Visio (swimlanes, wireframes, and legends).
- Annotate shapes with callouts.

In many types of Microsoft Visio diagrams, it is useful to create visual or logical relationships among a set of shapes. In previous versions of Visio, you could use background shapes and groups for this purpose. These capabilities are still available in Visio 2013 as you discovered when you created a network diagram in Chapter 9, "Creating network and data center diagrams" However, Visio 2013 offers three more effective ways to establish relationships and add structure to diagrams:

- **Containers** A ***container*** provides a visual boundary around a set of objects, but it also establishes a logical relationship between the container and the objects within it: shapes know when they are members of a container and containers know which shapes they contain.

  The key advantage of a container is that while you can move, copy, or delete it and its members as a unit, each contained shape maintains its independence. Selecting an object inside a container only requires one click, which makes it simple to access a container member's shape data and other properties.

  TIP A container can contain shapes, other containers, and lists.

- **Lists** A ***list*** is a special type of container that maintains an ordered relationship among its members. Each object in a list knows its ordinal position; new objects are not merely added to a list but are added to a specific position in a list.

  TIP A list can contain shapes and containers but cannot contain other lists.

- **Callouts** In previous versions of Visio, a callout was merely a shape that you glued to another shape to add a comment. A Visio 2013-style ***callout*** still provides a way to add annotation to a shape, but the callout knows the shape to which it is attached, and the shape can identify any attached callouts.

In this chapter, you will experiment with and learn the value of containers, lists, and callouts in Visio diagrams.

PRACTICE FILES To complete the exercises in this chapter, you need the practice files contained in the Chapter11 practice file folder. For more information, refer to "Downloading the practice files" in this book's Introduction.

Comparing containers and groups

You can use either groups or containers to visually connect a set of shapes. However, the two have key behavioral differences that are likely to lead you to use one or the other depending on your needs.

In this exercise, you will create both a group and a container, and then you will perform the same set of actions on each in order to examine the differences.

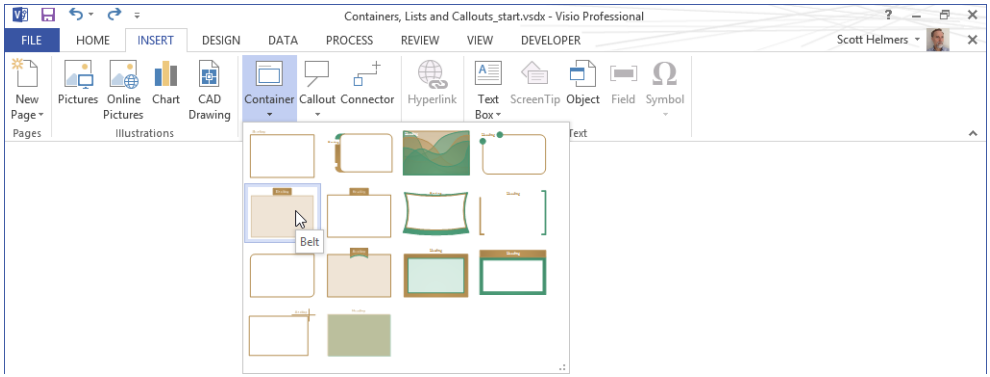
SET UP **You need the *Containers, Lists and Callouts_start* drawing located in the Chapter11 practice file folder to complete this exercise. Open the drawing in Visio and save it as *Groups vs. Containers*.**

1 Create a colored rectangle and group it with the network shapes on the left side of the page.

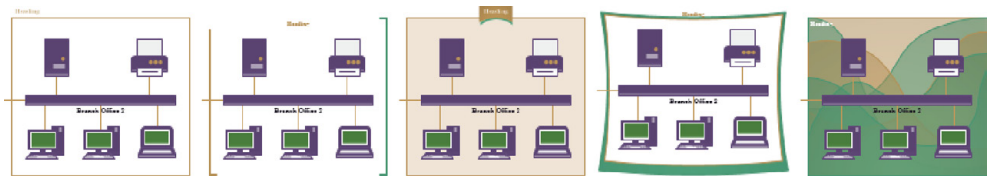
  SEE ALSO For a refresher on using a group with a background shape to organize a set of shapes, refer to "Organizing network shapes in a diagram" in Chapter 9.

2 Draw a bounding box around the **Branch Office 2** network shapes on the right side of the page.

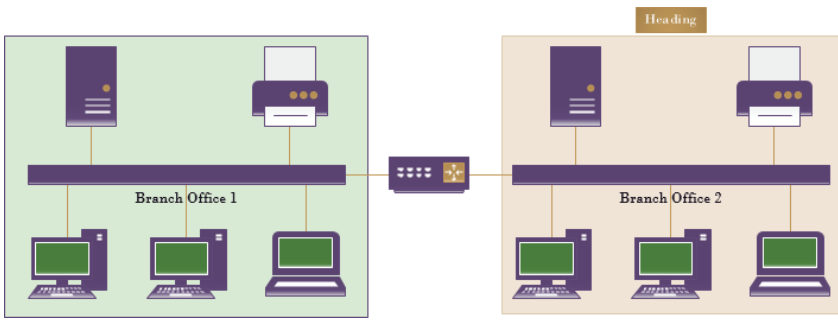
3 On the **Insert** tab, in the **Diagram Parts** group, click the **Container** button. The **Container** gallery opens and as you point your mouse to the thumbnails in the gallery, ***Live Preview*** shows how each container style will look with your selected shapes. (Note that the **Belt** style is highlighted; you will use this style in the next step.)



TIP The 14 container styles in the gallery range in appearance from subtle to bold so you have an option to match the style of the container to the style of your diagram. The following graphic offers five very different looks for a set of Network shapes.



4 Click the **Belt** thumbnail in the **Container** gallery. Your diagram now shows a set of grouped shapes on the left and a container on the right.



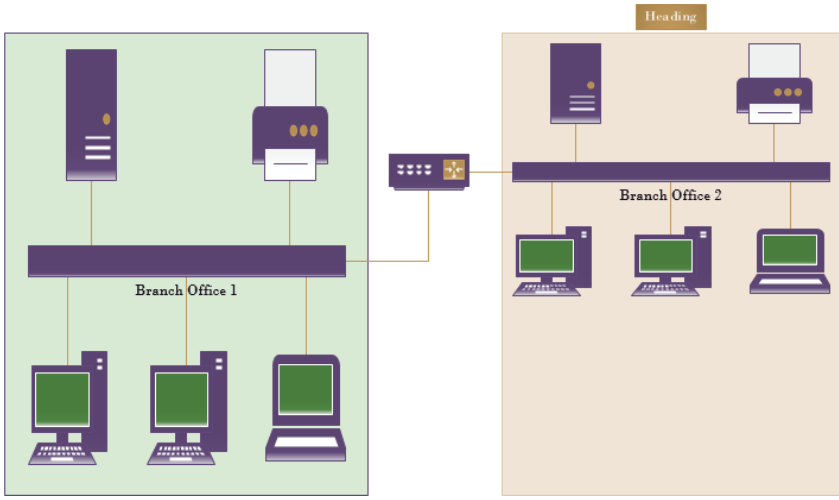
5 Click the **Branch Office 1** group once to select it, and then drag the bottom resize handle down to the bottom of the page.

6 Click the edge or heading of the **Branch Office 2** container once to select it, and then drag the bottom resize handle down to the bottom of the page.

> **IMPORTANT** One immediate difference to note is that you can select a group by clicking anywhere on its edge or interior, but you can only select a container by clicking its edge or its heading.

The following graphic illustrates that what you've previously learned about groups applies here: resizing the group resizes the shapes in the group. Look at the container on the right, however. The container is taller but its member shapes are unchanged.

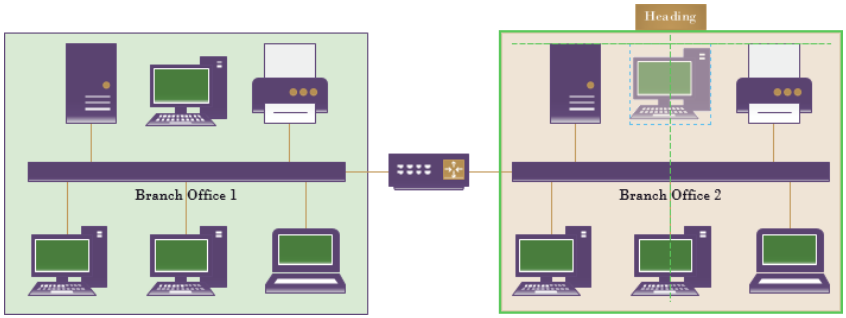
TIP If you run Visio in developer mode, you can change the behavior of a group so the interior shapes do not resize. For more information about developer mode, refer to the Appendix.



7 Press **Ctrl+Z** twice to undo both resize operations.

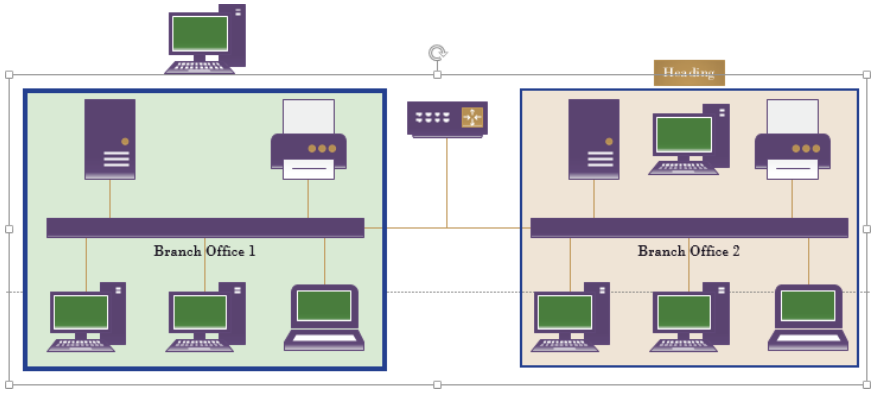
8 Drag two **PC** shapes from the **Computers and Monitors** stencil, dropping the first in the open area above the **Branch Office 1** network segment and the second in the open area of the container for **Branch Office 2**.

TIP Containers provide visual feedback when you drag shapes near or into them. (This is one way to distinguish a container from a group or an ordinary shape.) The border of the container on the right in the following graphic shows a green color that is very similar to the coloring used for Dynamic Grid lines (also visible in the graphic).



9 Hold down the **Shift** key while clicking both the group and the container to select them, and then drag the selection down to the bottom of the page. As the following graphic shows, dropping a shape on a group does not add it to the group—it remains behind when you move the group. In contrast, dropping a shape into a container adds it to the container, so it moves when you move the container.

TIP By default, shapes dropped on a group are not added to the group. However, if you run Visio in developer mode, you can change the behavior of a group so it will accept dropped shapes. For more information about developer mode, refer to the Appendix.



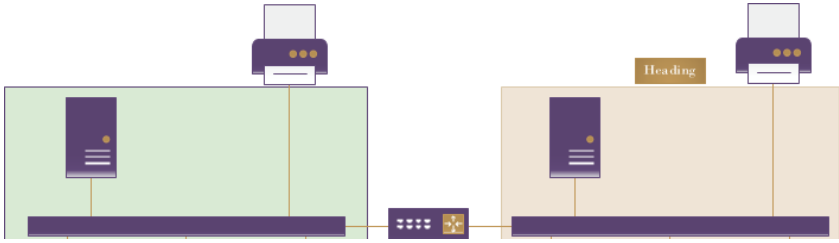
10 Press **Ctrl+Z** three times to undo the move operation and delete the two PCs you added.

11 Click once to select the **Branch Office 1** group, and then click the printer in the group. Drag it out of the top of the group rectangle.

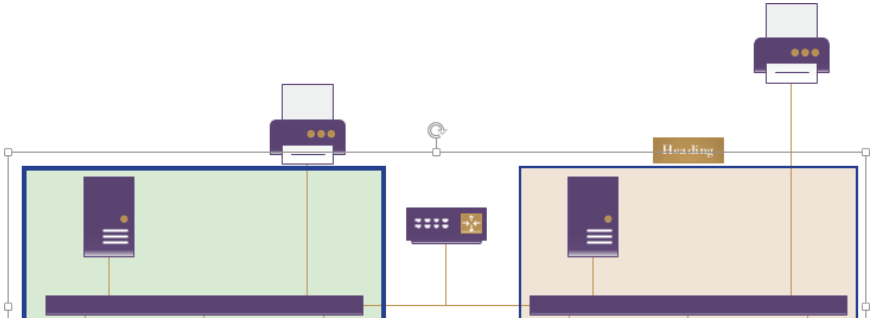
TIP The default behavior for groups is that the first click selects the group; you must click a second time to select a shape in the group. If you run Visio in developer mode, you can alter the selection characteristics of a group. For more information about developer mode, refer to the Appendix.

12 Click once to select the printer in the **Branch Office 2** container, and then drag it out of the top of the container. The results of both this step and the previous step are shown in the following graphic.

TIP One click is sufficient to select any shape in a container because, by design, the fill of the container can't be selected with a mouse click.



13 Hold down the **Shift** key while clicking both the group and the container to select them, and then drag the selection down to the bottom of the page. Although you have relocated the printer on the left outside the colored group rectangle, the shape is still part of the group. Consequently, the printer moves when you move the group. On the right, however, dragging a shape out of a container removes it from the container; therefore, it stays behind when you move the container.

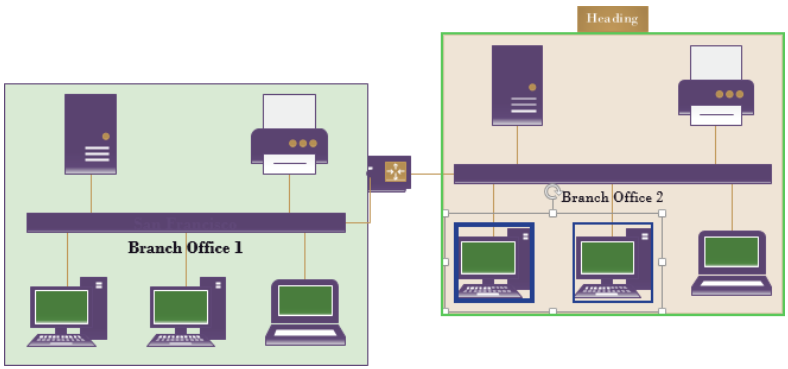


14 Press **Ctrl+Z** three times to undo the move operation and return the printers to their original locations.

15 Click and drag in the interior of the group and attempt to draw a bounding box around the two PCs below the network segment. The result will not be what you intended. You cannot select the two PCs with a bounding box because dragging within the group shape moves the group (refer to the left side of the graphic in the next step).

TIP You can select shapes in a group with a bounding box—but only if you start the bounding box outside of the group.

16 Click once in the interior of the container and attempt to draw a bounding box around the two PCs below the network segment. A bounding box inside a container does select contained shapes for the same reason that you could select a contained shape with a single click in step 13: the container background is invisible to mouse clicks.



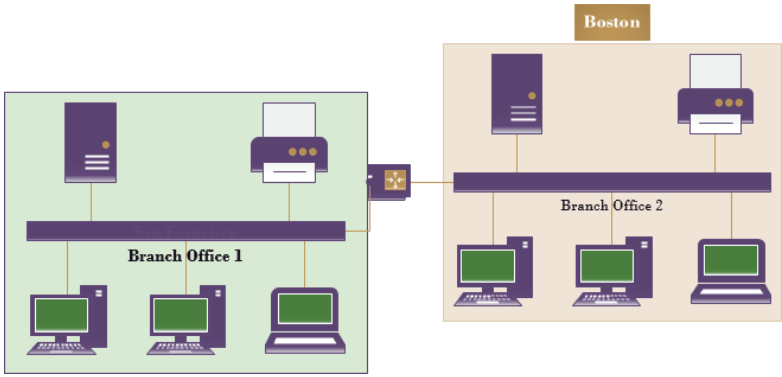
17 Click once to select the **Branch Office 1** group, type **San Francisco**, and press **Esc**. Then format the text to **16 pt.** and **Bold** to make it more visible. Because the new text falls directly on top of an Ethernet segment that is a similar color, the text is all but invisible.

18 Click once to select the container, type **Boston**, and press **Esc**. Then format the text to **16 pt.** and **Bold** to make it more visible. Notice that changing the font characteristics of the group makes the same changes to the text on all shapes within the group.

In the following graphic, the text you added to the group on the left is positioned in the center of the group by default. Because the default position and color render

the text invisible, you may want to use the text manipulation skills you learned in Chapter 3, "Adding sophistication to your drawings," to move the text to a better position.

In contrast, a container has a built-in header. When you select a container and type text, the words automatically appear in the header. Changing the format of the header text does not affect the text on any shapes within the container.



CLEAN UP Save your changes to the *Groups vs. Containers* drawing, and then close it.

After completing this exercise, you should have a good working knowledge of the properties of groups compared to containers. For future reference, the following table contains a summary of the key differences.

Action	Groups	Containers
Resizing	Contents are resized with the group	Contents are not changed
Selecting an interior shape	Requires two clicks (unless default group behavior has been changed)	Requires one click
Selecting interior shape(s) with a bounding box	Cannot start a bounding box by clicking inside a group	Can start a bounding box by clicking anywhere
Dropping a new shape inside	Dropped shapes are not added to the group (unless default group behavior has been changed)	Dropped shapes are added to the container
Dragging a shape out	Shape is physically outside the group but remains part of the group	Shape is removed from the container
Typing text	Text is placed in the center of the group	Text is placed in the container's heading

SEE ALSO For more information about Visio 2013 containers, refer to the Visio development team blog at *blogs.office.com/b/visio/archive/2012/11/05/containers-and-callouts-in-visio.aspx*. Although the appearance of containers changed considerably between Visio 2013 and Visio 2010, the following Visio 2010 articles still contain useful information: *blogs.msdn.com/b/visio/archive/2009/08/25/organizing-diagrams-with-containers.aspx* and *blogs.msdn.com/b/visio/archive/2009/08/27/details-on-container-behaviors.aspx*. Finally, for the technically inclined, this post provides details about the inner workings of containers, lists and callouts: *blogs.office.com/b/visio/archive/2010/01/12/custom-containers-lists-and-callouts-in-visio-2010.aspx*.

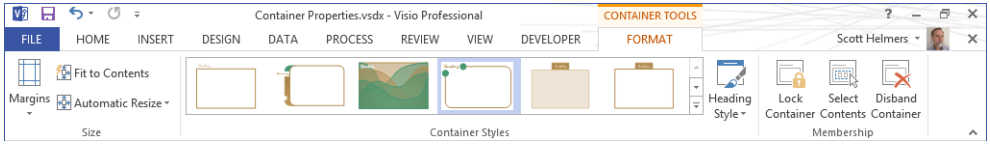
Organizing shapes with containers

Group shapes are still valuable for many purposes, including holding collections of sub-shapes that will never change. However, Visio 2013 containers offer numerous advantages for dynamically grouping, moving, and managing a set of related shapes.

In this exercise, you will continue working with containers to learn more about their unique properties.

SET UP **You need the *Containers, Lists and Callouts_start* drawing located in the Chapter11 practice file folder to complete this exercise. Open the drawing in Visio and save it as *Container Properties*.**

1. Draw a bounding box around the **Branch Office 1** network shapes.
2. On the **Insert** tab, in the **Diagram Parts** group, click the **Container** button, and then click **Wire**.
3. Right-click the edge or heading of the container to select it. Notice that whenever you select a container, the **Container Tools** ***tool tab set*** appears and includes the **Format** ***tool tab***, as shown in the following graphic.
4. In the **Container Tools** tool tab set, click the **Format** tool tab to activate it.

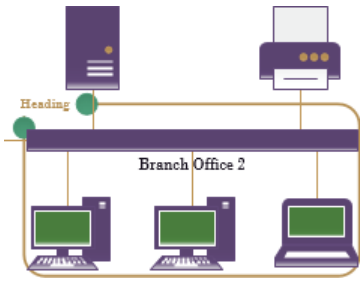


5 On the **Format** tab, in the **Membership** group, click the **Select Contents** button. All contained shapes are selected.

TIP You can also right-click the edge or heading of the container, click Container, and then click Select Contents to achieve the same result.

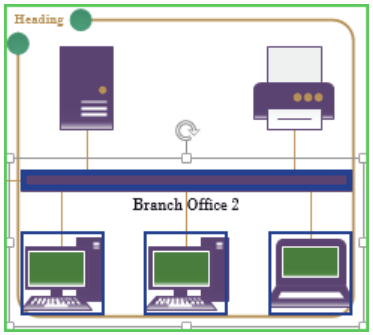
6 Draw a bounding box to select the **Branch Office 2** network segment and the PCs below it; do not select the server and printer above it.

7 On the **Insert** tab, in the **Diagram Parts** group, click the **Container** button, and then click **Wire**. You have created a container around part of the **Branch Office 2** network components.



8 Click the edge or heading of the container you just created and drag the top resize handle up until the container surrounds the server and printer.

9 On the **Format** tab, in the **Membership** group, click the **Select Contents** button. Notice that the server and printer are not selected. Surrounding shapes with an existing container do not add them to the container.



10 Click once on the server shape to select it.

11 Right-click the selected server, click **Container**, and then click **Add to Underlying Container**. The server shape is now a member of the container.

TIP When you select any shape that is a member of a container, the green outline appears on the border of the container.

12 Click once on the edge or heading of the **Branch Office 2** container to select it, and then press the **Delete** key. The container and its contents are deleted.

If you want to remove a container but leave its contents, the simplest method is to disband the container.

13 Click once on the edge or heading of the **Branch Office 1** container to select it.

14 On the **Format** tab, in the **Membership** group, click the **Disband Container** button. The container is removed from the drawing but all of the previously contained shapes remain on the page.

TIP You can also right-click the edge or heading of the container, click Container, and then click Disband Container to achieve the same result.

CLEAN UP **Close the *Container Properties* drawing without saving changes.**

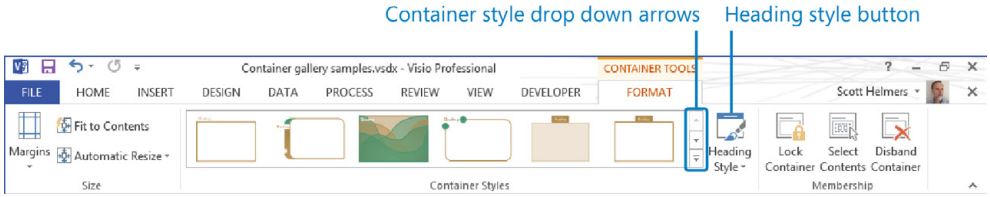
In this exercise and the preceding one, you selected a set of existing objects and created a container around them. You can also create an empty container and later add objects to it. To do so, ensure that nothing on the drawing page is selected. On the Insert tab, in the Diagram Parts group, click the Container button, and then click a container style in the gallery. The new container will be added to the center of the drawing window. You can then drop in new or existing shapes, lists, or other containers.

TIP You can copy a container and paste it elsewhere in the same or a different drawing. A copy of the container and all its members will be pasted into the new location.

The Lock Container button in the Membership group of the Format tool tab prevents shapes from being added or removed; it also locks the container against deletion.

Formatting containers

When you drop a container onto the page, it includes a set of style attributes. You can change a container's formatting at any time by selecting it and then using the commands on the Format tab of the Container Tools tool tab set.



- You can use the **Style** gallery in the **Container Styles** group to select a different container style. (Be sure to notice the drop-down arrows at the right end of the **Container** gallery; use them to view additional container styles.) The container style options are also available by clicking the **Change Shape** button, either in the **Editing** group on the **Home** tab, or on the Mini Toolbar that appears when you right-click a container.
- You can choose alternate heading styles by clicking the **Heading Style** button in the **Container Styles** group. Visio offers either two or four heading styles, depending on the container.

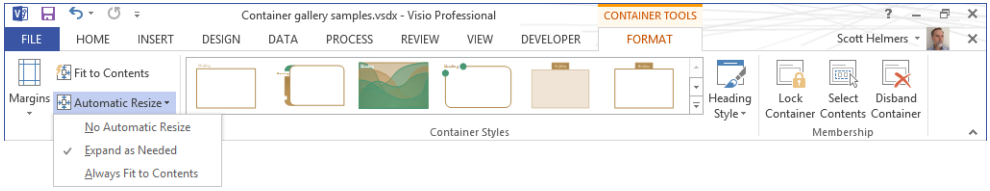
There are two additional ways to alter the appearance of a container.

- Containers react to ***Themes*** and ***Variants***. Consequently, the colors of the thumbnails in the **Containers** gallery and the containers on your drawing page can be very different from one diagram to the next.
- You can change the fill, line, and shadow attributes of a container by using the same techniques you use for any other Visio shape—on the **Home** tab, click any button in the **Shape Styles** group.

Sizing containers

The predesigned containers in Visio 2013 expand automatically when you add shapes near the edge of the container. You can change this default behavior by using the Format tool tab of the Container Tools tool tab set: in the Size group, click the Automatic Resize button to reveal three mutually exclusive options.

- **No Automatic Resize** The container will not expand when you drop shapes near the edge.
- **Expand as Needed** The container will expand when you drop shapes near the edge. The opposite is not true: however, the container will not shrink when you remove shapes.
- **Always Fit to Contents** The container will expand and contract automatically when you add or remove shapes.

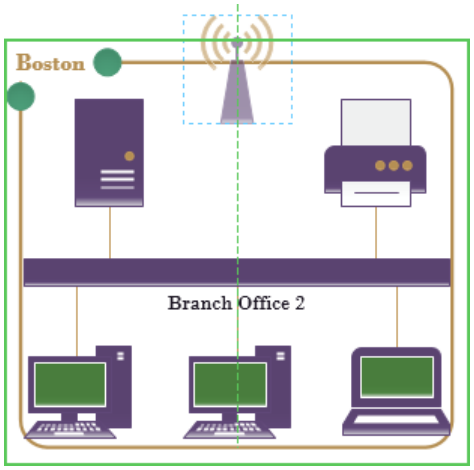


You can also affect container size with the two buttons located above and to the left of the Automatic Resize button shown in the preceding graphic:

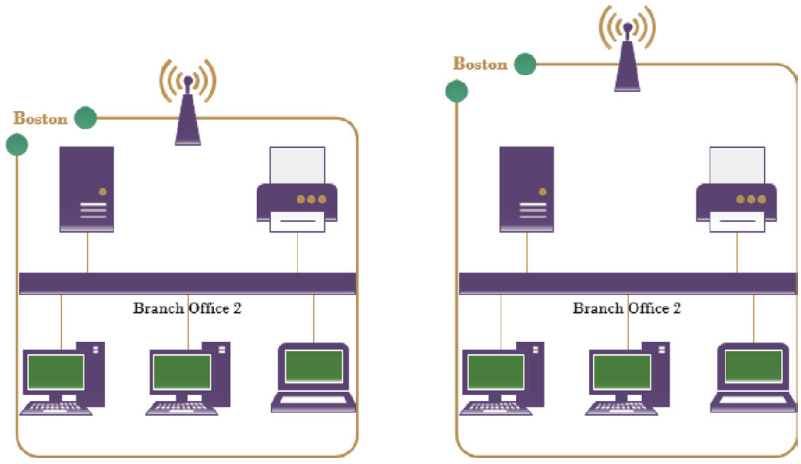
- **Margins** Sets the spacing between the edges of the container and the contained shapes.
- **Fit to Contents** Sets the container size to the minimum required for the contained shapes plus the margin.

On the border

As you have already learned, when you drag a shape into a container, a green outline appears on the border of the container. This is true even when you drag most but not all of the shape into the container. In the following graphic, the wireless access point will be added to the container when the mouse button is released, even though it is not fully within the borders of the container. (Depending on the resize options described just before this sidebar, the container may expand to encompass the new shape.)



The following graphic on the left shows a different container behavior that you might use from time to time. In contrast to the previous graphic, the wireless access point has not been dragged quite as far into the container. The container signals the difference by displaying a green outline only on the top border and not all the way around. When the shape is dropped, the wireless access point will become a member of the container, but it will be attached to the edge of the container.



The key difference in behavior of a boundary shape is that when the container is resized, the boundary shape stays on the border. For example, when the resize handle on top of the container in the right-hand image in preceding graphic is dragged upward, the wireless access point remains on the container boundary.

You might use border shapes for a situation like the one shown in this network diagram because the wireless access point is attached to the branch office network but is also linked to other networks. Consequently, it makes sense to show it on the border rather than in the interior of the container. The "Wireframes" section of "Finding containers and lists in Visio" later in this chapter, contains another use for border shapes.

Adding shapes to lists

A list is a special type of container that maintains its members in ordered sequence. When you drop an object into a list, it takes a specific place before, between, or after existing members. Each list member knows its relative position in the list.

Visio 2013 doesn't provide a list gallery on the Insert tab in the same way that it offers a container gallery. Consequently, creating a list either requires reusing an existing list shape or having enough technical knowledge to make changes to the ***ShapeSheet***. (For more information about modifying the ShapeSheet, refer to the Appendix.)

In this exercise, you will add shapes to a list, and then reorder the shapes within the list. For this hypothetical scenario, the list shape is called *My New PC*; you will add rectangular shapes that represent the software you will load onto your new PC. Your goal for this exercise is to create a list that shows the installation sequence for your new PC.

IMPORTANT The shapes you will drop into the list in this exercise have been prepared with two special attributes:

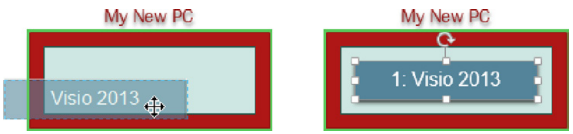
- Each shape displays the name of a software product. (The name of the product is stored in the shape as shape data.)
- Each shape displays its relative position in the list when it is in a list. When the shape is not in a list, it doesn't display any number.
- The first attribute uses a Visio field to display shape data; refer to Chapter 3 for more information about Visio fields. The second attribute was created specifically for this exercise and uses two ShapeSheet formulas to determine and present each shape's position in the list; refer to the Appendix for information about the ShapeSheet.

SET UP **You need the *Containers, Lists and Callouts_start* drawing located in the Chapter11 practice file folder to complete this exercise. Open the drawing in Visio and save it as *Lists*. Then go to the Lists page.**

1 Drag **Visio 2013** into the list.

TIP A list provides the same visual feedback—a green border—as a container when a shape approaches its interior.

The graphic on the left shows the list outlined as the Visio 2013 shape approaches, and the graphic on the right shows the shape inside the list. Notice that the shape now displays its ordinal position in the list in front of the product name.

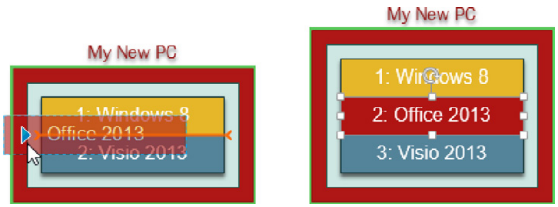


2 Because you can't install Visio until after you've installed Windows, drag **Windows 8** into the list, above **Visio 2013**. As you approach the list with the **Windows 8** shape, notice that an orange ***insertion bar*** appears to tell you where you can add a new list member. In this example, you can insert the new shape after the existing shape (the following graphic on the left) or before the existing shape (graphic in the center).

When you drop Windows 8 above Visio 2013, notice that each rectangle displays its current position in the list. Visio 2013 is now #2.

TIP The blue triangle that appears at the end of the orange insertion bar in the previous left and center graphics and in several of the following graphics will be explained in the next section.

3 Insert **Office 2013** between **Windows 8** and **Visio 2013**.



4 Drop **Mozilla** at the end of the list.

5 Drag **Visio add-in** until the orange insertion bar appears below **Mozilla**, but stop when the pointer is on the edge of the list but most of the shape is still outside of it, as shown in the following graphic on the left.

6 With **Visio add-in** in the position shown on the left in the following graphic, release the mouse button. When you release the mouse button from this position, the shape jumps into the list producing the result shown on the right.

The behavior demonstrated by the *Visio add-in* shape highlights two differences between containers and lists:

- Container members can be located anywhere within a container; list members are always in fixed positions.
- Shapes that are dragged onto the border of a container can be attached to the border; shapes cannot be attached to the border of a list.

7 Drag **Mozilla** up so it is located between **Windows 8** and **Office 2013**.

The following graphic on the left shows the Mozilla shape as it is being dragged up the list; the graphic on the right shows the result. Notice that when you release the mouse button, each shape immediately reflects its new position in the list.

As this step illustrates, you cannot only add shapes to specific positions in a list, you can rearrange the shapes within a list.

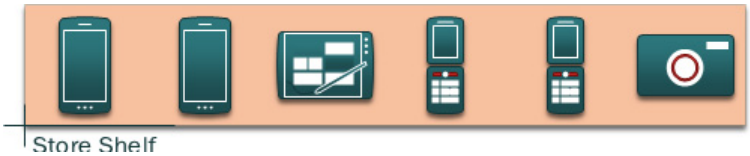
Although you aren't likely to use a Visio list for the specific purpose suggested by this exercise, you can probably imagine your own applications for position-aware shapes. Refer to the subsections in "Finding containers and lists in Visio" later in this chapter for examples of several ways that lists are used in Visio 2013 templates.

The previous exercise used a vertical list with shapes automatically placed from top to bottom. A Visio list can be either vertical or horizontal and can order shapes in either direction within the list. Although these attributes are controlled by parameters and don't require writing code, you can't change them from the Visio ribbon; you must make changes to the ShapeSheet for the list.

SEE ALSO You will learn about the Visio ShapeSheet in the Appendix.

If you would like to experiment with a horizontal list, the Lists page in the *Containers, Lists and Callouts_start* drawing located in the Chapter11 practice file folder also includes a horizontal list called Store Shelf. Drag shapes from the Computers And Monitors or Network

And Peripherals stencils to create a list like the following example. The Store Shelf list is configured to add shapes from left to right so it expands to the right as you add shapes.



SEE ALSO If you would like to know more about lists, go to *msdn.microsoft.com/en-us/library/ff959245.aspx*, which offers a comprehensive MSDN article on structured diagrams written by Mark Nelson of Microsoft.

CLEAN UP **Save your changes to the *Lists* drawing, and then close it.**

Formatting and sizing lists

You can adjust most of the same format and size options for a list that you can for a container with one notable exception: you cannot change the size of a Visio list shape. Visio expands and contracts each list shape so it is the exact size of its member shapes plus the margin around the shapes.

The Format tool tab in the Container Tools tool tab set provides the functions described in the following list.

In the Size group:

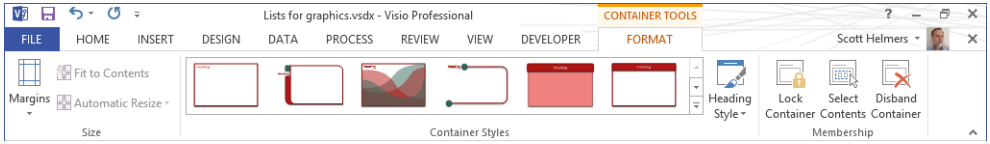
- You can use the **Margins** button to adjust the spacing between the edges of the list and the contained shapes.
- Because Visio controls the size of a list shape, **Fit To Container** and **Automatic Resize** are disabled.

In the Container Styles group:

- If you open a diagram created in Visio 2010 that contains a list, you can select one of 10 alternate styles for the list. However, at present, Visio 2013 does not allow you to change the style of lists created in Visio 2013.
- The **Heading Style** gallery provides either two or four heading placement and style alternatives, depending on the list style.

In the Membership group:

- The **Lock Container**, **Select Contents**, and **Disband Container** buttons provide the same functions for lists that they do for containers.



Finding containers and lists in Visio

Several Visio 2013 templates take advantage of the properties of containers and lists to enhance ease of use and to add valuable features. In this section, you will discover three examples.

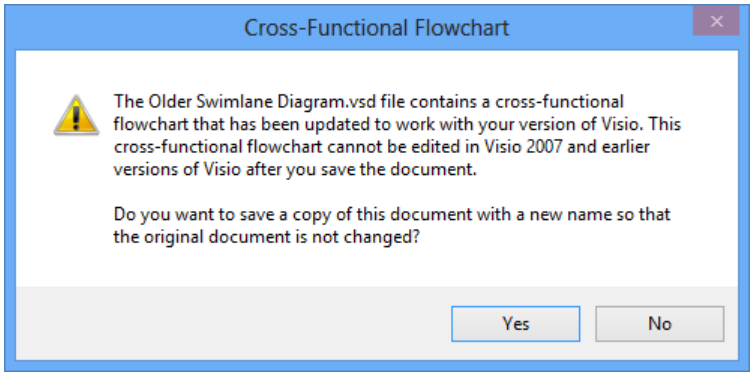
Swimlanes

One of the most prominent examples of list and container usage is for ***cross-functional flowcharts***, also known as ***swimlane*** diagrams. (Refer to Chapter 4, "Creating flowcharts and organization charts," for more information about this type of diagram.)

The swimlane add-in was completely redesigned for Visio 2010 in order to take advantage of both lists and containers, with the net effect that a cross-functional flowchart (CFF) is a list of containers! The Visio 2010 structure is also used for Visio 2013 swimlane diagrams:

- The framework that holds swimlanes is a list.
- Each swimlane is a container.

IMPORTANT Because Visio 2010 swimlanes also use containers, if you open a 2010 swimlane diagram in Visio 2013, it will open directly. However, if you open a swimlane diagram created in an earlier version of Visio, it will be converted to the new swimlane structure and cannot subsequently be edited with the older software. To protect you, Visio presents the dialog box shown in the following graphic so you have the opportunity to save the older version of the diagram if you want to.



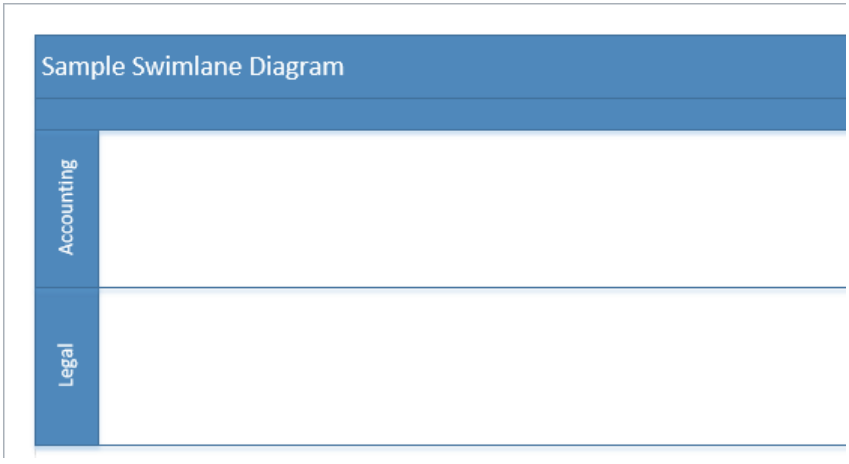
In this exercise, you will create part of a swimlane diagram to understand how lists and containers are used.

SET UP **Click the File tab, and then click New. Click Categories, click *Flowchart*, and then double-click the *Cross-Functional Flowchart* thumbnail to create a new drawing.**

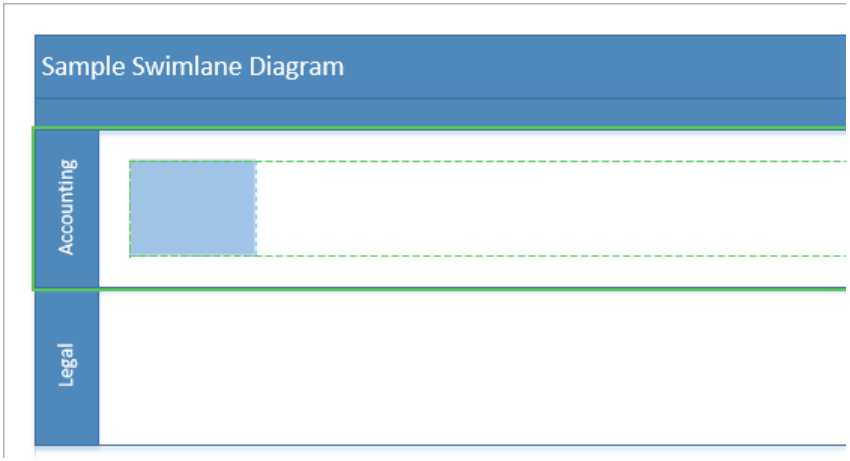
1 Click the top edge of the CFF, and then type **Sample Swimlane Diagram**. Because the CFF structure is a list, the text you typed appears in the list heading.

2 Click the rectangle at the left end of the upper swimlane, and then type **Accounting**. Because the swimlane is a container, your text appears in the container heading.

3 Click the rectangle at the left end of the lower swimlane, type **Legal**, and then press the **Esc** key. The following graphic shows the results of steps 1, 2, and 3.



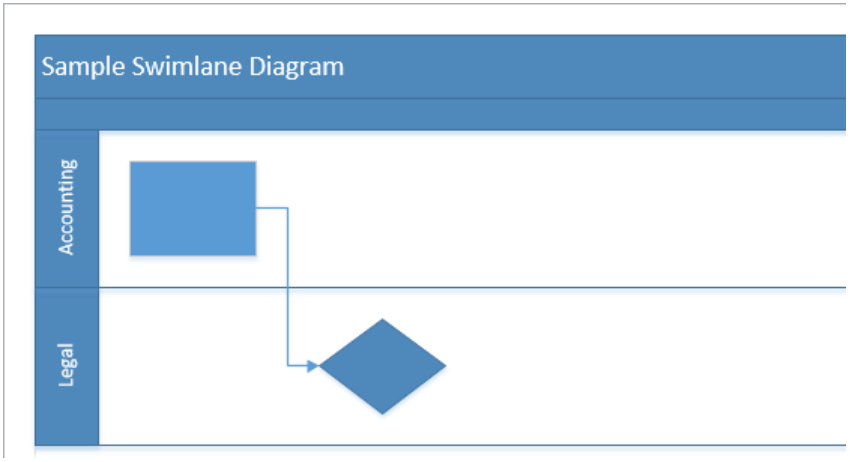
4 Drag a **Process** shape into the **Accounting** swimlane. Notice that the swimlane shows the green border that you previously learned was characteristic behavior for containers.



5 Drag a **Decision** shape into the **Legal** swimlane and position it to the right of the **Process** shape in the **Accounting** lane.

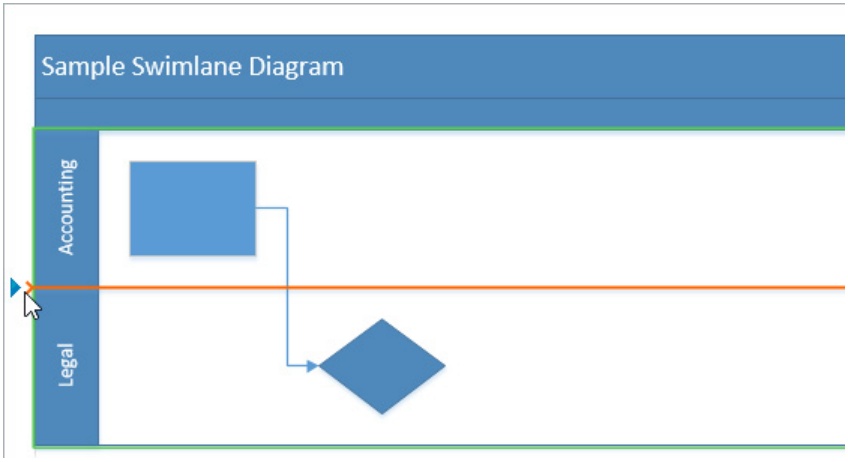
6 Drag the **AutoConnect** arrow on the right side of the **Process** shape to link that shape to the **Decision** shape.

SEE ALSO Refer to Chapter 2, "Creating a new diagram," for a refresher on using AutoConnect.



7 Position the cursor just outside the CFF frame at the junction between the **Accounting** and **Legal** swimlanes (the pointer is visible in the following graphic).

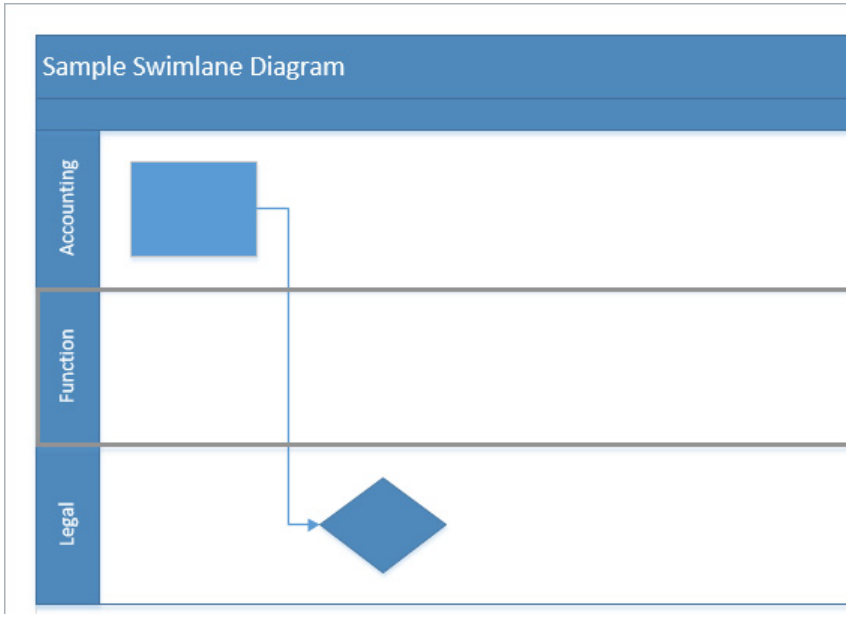
TIP If the insertion bar isn't visible when you first position the cursor near the lane boundary, pause just a moment longer and it will appear.



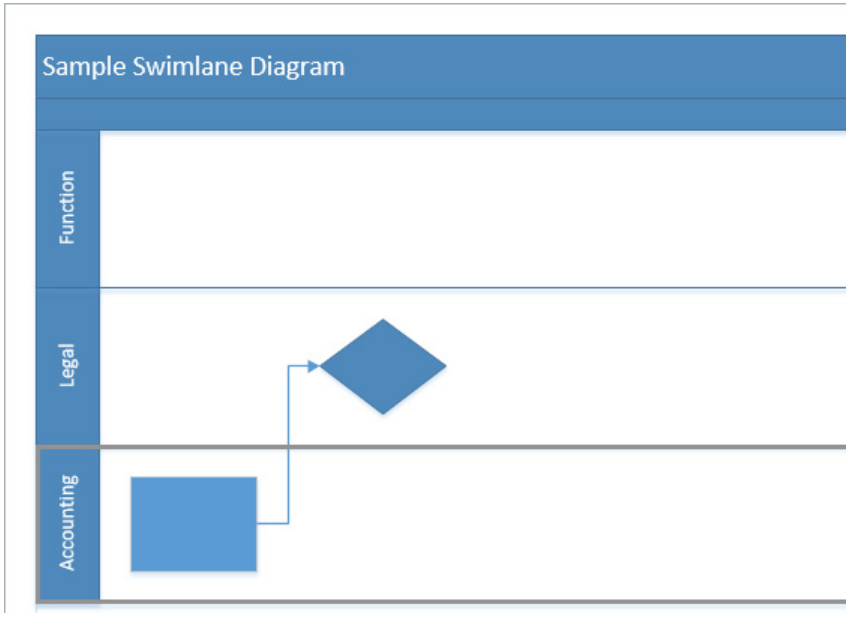
The presence of the list insertion bar on the boundary between the Accounting and Legal lanes provides visible evidence that you are working with lists. Also, be sure to note the blue insertion triangle that appears at the end of the insertion bar. Clicking the blue insertion triangle automatically adds the default insertion object at the insertion bar location.

TIP Not all lists have a default insertion object. If you click the blue insertion triangle on a list without a default, Visio will insert a copy of one of the adjacent list members.

8 Click the blue insertion triangle, shown in the previous graphic. Visio inserts a new swimlane between the other two and maintains all existing connections between shapes in the lanes.



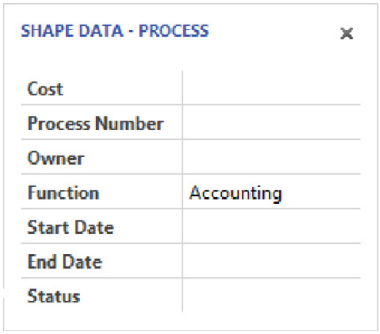
9 Click in the heading area of the **Accounting** swimlane and drag it down below the **Legal** lane. Visio moves the **Accounting** lane to the end of the list and maintains the connections between shapes within and across all swimlanes.

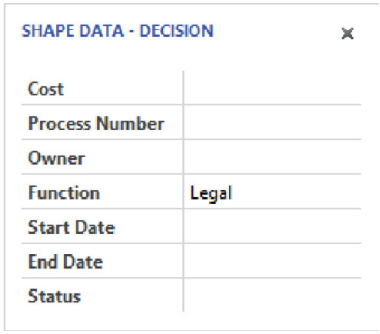


CLEAN UP **Save and close your diagram if you want to keep it; otherwise, just close it.**

Adding, deleting, and rearranging swimlanes is more predictable and logical in Visio 2013, because containers and lists provide the underlying structure.

Swimlane diagrams derive another benefit from being built as containers: shapes in the container know they are contained. To find evidence of this, examine the Function field in the shape data for any flowchart shape in a swimlane. As an example, the following graphics show the shape data for the process shape (on the left) and decision diamond shape (right) from the preceding graphic. The value in the Function field is derived dynamically from the swimlane heading; if you change the value of the swimlane title, the Function field will be updated for all contained shapes.





SEE ALSO For more about swimlane containers, go to the Visio development team blog at *blogs.msdn.com/b/visio/archive/2009/09/01/cross-functional-flowcharts-in-visio-2010.aspx*.

IMPORTANT The following section applies only to the Professional edition of Visio 2013.

Wireframes

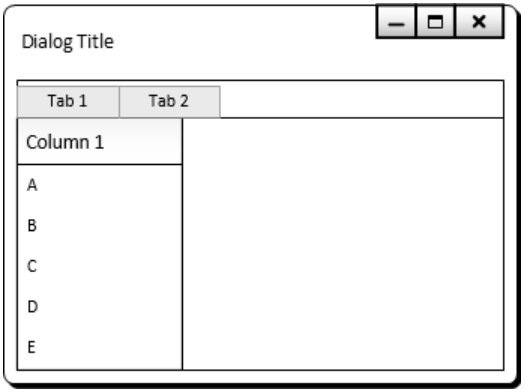
Visio 2013 includes a revamped set of user interface (UI) design shapes that were initially introduced in Visio 2010. For this chapter, the key point of interest about the redesigned shapes is that many of them are either containers or lists.

Software designers use wireframe shapes to create mockups of dialog boxes and other visual elements that will be displayed by their applications. When you use Visio 2013 to create a mockup of a dialog box, you will find that the Dialog Form shape is a container. Consequently, as you add buttons and controls to your dialog form, they become container

members. If you move, copy, or delete your dialog box, all of the contained shapes are included. If you have ever created a UI mockup using Visio 2007 or earlier, it won't take more than a moment or two of experimentation to realize how significant an improvement this is.

Some Visio 2013 UI shapes are lists, including, not surprisingly, the List Box control. When you drop one into a dialog form container, the list is prepopulated with three list members. You can add, delete, and resequence list members by dragging them, as you learned in "Adding shapes to lists" earlier in this chapter.

In this exercise, you will use the Wireframe template to build a prototype of a simple dialog box that looks like the one in the following graphic. Even if you aren't a UI designer, you should find this exercise useful in learning more about the behavior of containers and lists.



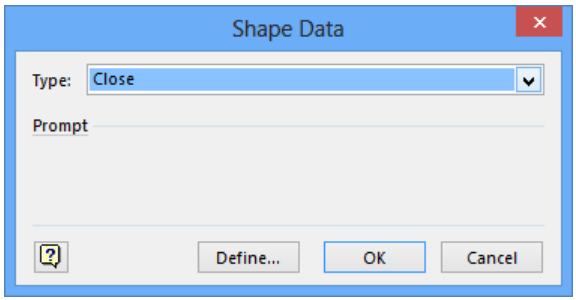
SET UP **Click the File tab, and then click New. Click Categories, click *Software and Database*, and then double-click the *Wireframe Diagram* thumbnail to create a new drawing.**

1. Drag a **Dialog form** shape from the **Dialogs** stencil, drop it on the page, and then zoom in so you can work with the shape.
2. Drag a **Dialog button** shape from the **Dialogs** stencil and glue it to a connection point in the upper-right corner of the dialog form.

TIP As soon as you drag the Dialog Button shape into the Dialog Form shape, notice that the edges of the Dialog Form shape are marked with the green outline that characterizes a container.

When you drop a Dialog Button shape onto the page, it automatically opens the Shape Data dialog box.

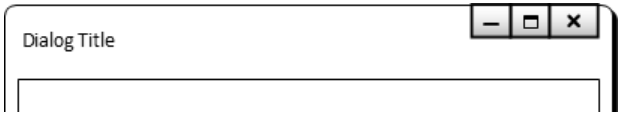
3 In the **Shape Data** dialog box, click **OK** to accept the default value for **Type**.



4 Drag another **Dialog button** shape into the dialog form container and glue it to the left end of the previous one; when the **Shape Data** dialog box opens, click **Maximize** in the **Type** list, and then click **OK**. Repeat a third time and select **Minimize** in the **Type** list.

TIP The Dialog Button shape is a ***multi-shape***; the data value you select in the Shape Data dialog box determines the appearance of the shape.

The top of your dialog form container now looks like the following graphic.

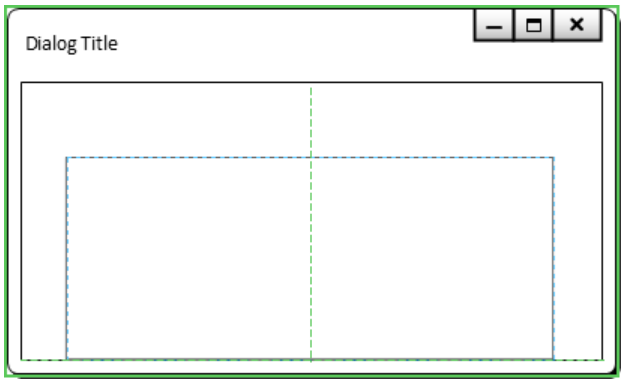


5 Drag a **Panel** shape from the **Dialogs** stencil and drop it onto the page below (not inside) the dialog form. You need to drop it outside the dialog form, because it is too large to fit inside, and you want it to become a member of the **Dialog** container. (If a shape doesn't fit inside a container, it will not become a container member.)

6 Use the **Size & Position** window or the resize handles to change the width of the **Panel** shape to approximately 3 inches (75 mm) and its height to about 1.25 inches (30 mm).

7 Drag the **Panel** shape into the dialog form and position it in the bottom center.

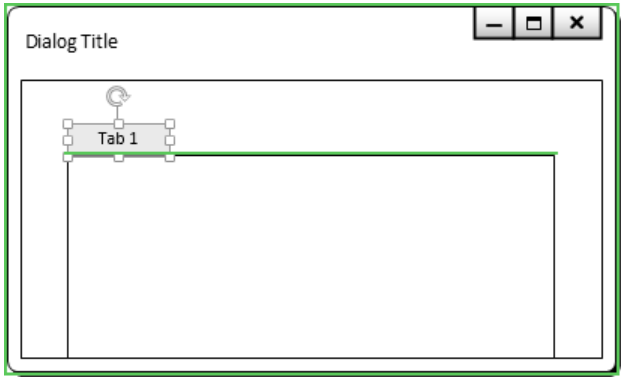
TIP The Panel shape is a container, so you can only select and drag it by its edges.



8 Drag an **Upper tab item** shape from the **Dialogs** stencil, position it as a **Boundary** shape at the upper-left corner of the panel container, type **Tab 1**, and press **Esc**.

TIP You want the Upper tab item shape to be on the boundary of the Panel shape and not inside it. Consequently, when you position the Upper tab item shape, make sure that only the top border of the panel container shows the green highlight, as shown in the following graphic. Refer to the sidebar "On the border" earlier in this chapter for more information about border shapes.

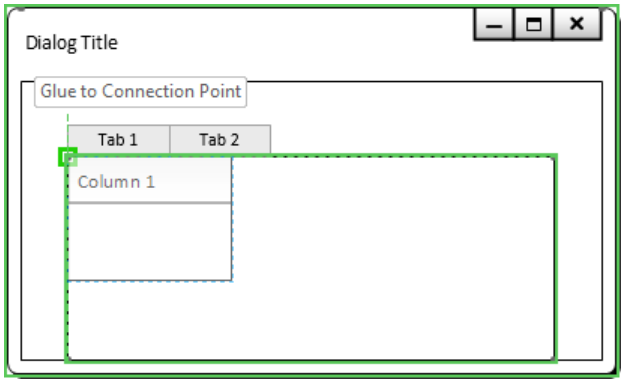
By attaching the Upper tab item shape to the boundary of the panel container, you have "welded" them together. If you reposition the panel container, the tab follows along.



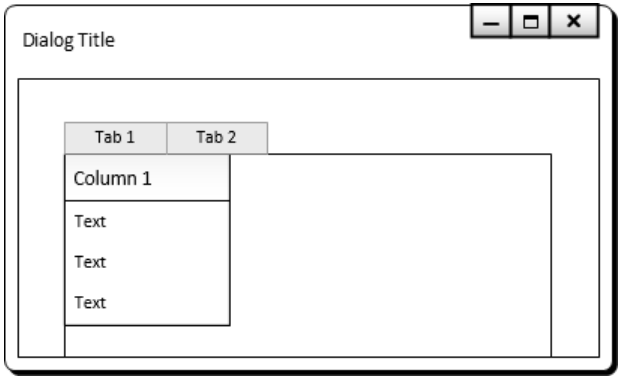
TIP Notice that the top border of the panel container is not the only thing with a green outline in this graphic. There is also a green outline surrounding the dialog form container. This is because you are adding the Tab shape to a container that is nested inside another container; both containers reflect your action.

9 Drag another **Upper tab item** shape from the **Dialogs** stencil, position it as a **Boundary** shape to the right of the previous tab, type **Tab 2**, and press **Esc**.

10 Drag a **List box** from the **Controls** stencil and position it in the upper-left corner of the panel container as shown in the following graphic.

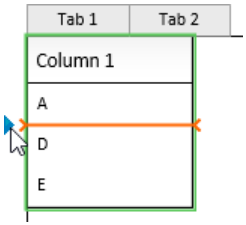


TIP The List Box shape exhibits behavior you haven't learned about yet in this chapter. When you release the mouse button to drop the new list, it automatically adds several list items, as shown in the following graphic. A List shape that automatically adds list entries can be very useful, but creating one that behaves this way is beyond the scope of this book.

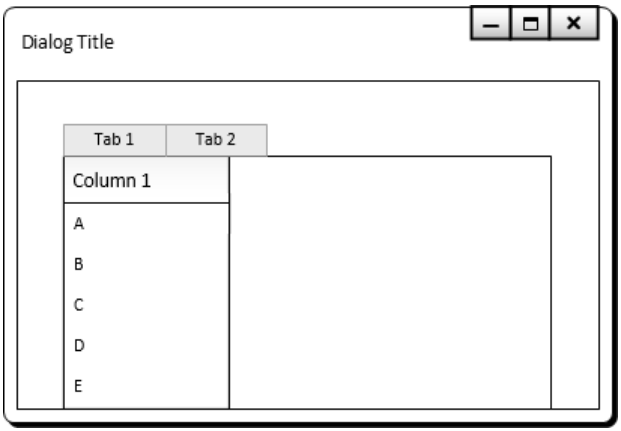


11 Select the uppermost **Text** item and type **A**, select the middle **Text** item and type **D**, and then select the bottom **Text** item and type **E**.

12 Position the cursor just to the left of the **Column 1** list shape, between the **A** and **D** labels.



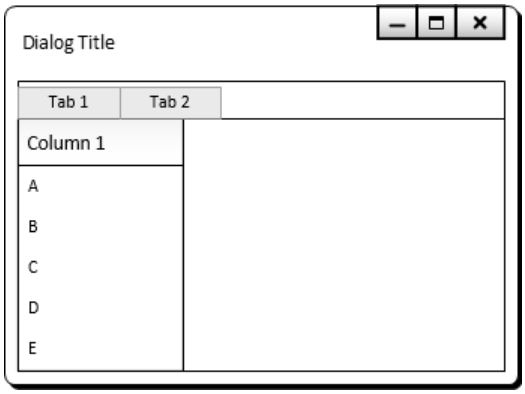
13 Click the blue insertion triangle twice to add two entries to the **List Box** shape, and then type **B** into the upper item and **C** into the lower one.



TIP The Dialog Form shape in this graphic is taller than the ones in step 10. That's because the list box, panel container, and dialog form container are all configured for automatic expansion. When you added new list items, the list expanded, which, in turn, caused both of the surrounding containers to expand.

14 Click once on the outer edge of the **Dialog form** shape to select it.

15 On the **Format** tab of the **Container Tools** tool tab set, in the **Size** group, click **Fit to Contents**. The **Dialog form** container shrinks to fit the size of the **Panel** container located within it.



CLEAN UP **Save and close your diagram if you want to keep it; otherwise just close it.**

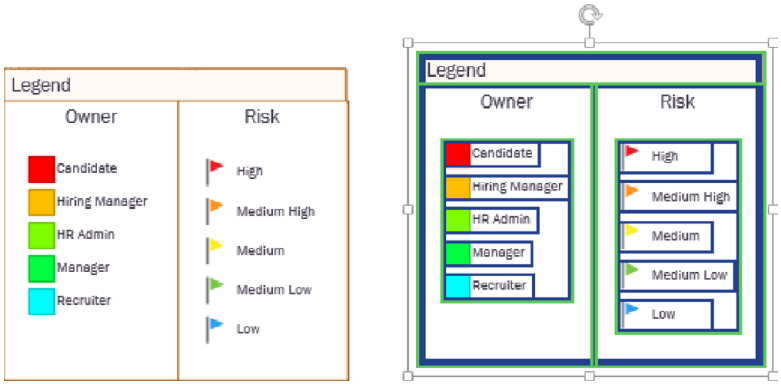
The dialog box mockup you've created in this exercise isn't going to win any design awards. If you wanted to create a real mockup, you would add additional controls, text, colors, and themes. However, by completing this exercise, you have created a practical application for nested containers and lists, and have an example of a container with a border shape.

SEE ALSO For more information about wireframe design, refer to the Visio development team blog at *blogs.msdn.com/b/visio/archive/2009/12/22/wireframe-shapes-in-visio-2010.aspx*.

IMPORTANT The following section applies only to the Professional edition of Visio 2013.

Legends

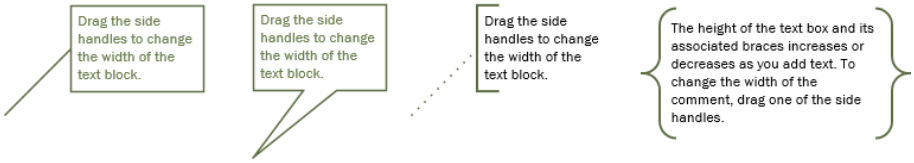
In Chapter 10, "Visualizing your data," you learned about ***data graphics*** and created a legend for your data graphics. A data graphics legend is actually a structure consisting of an outer list, one or more containers as list members, and lists within those containers. For example, the same legend is shown in both of the following graphics. The structure is loosely visible on the left. However, after drawing a bounding box around the entire legend, the structure is very apparent on the right: the legend consists of three containers (Legend, Owner, Risk) and two lists, all of which are outlined in green.



If you return to the data graphics diagram you created in Chapter 10 (or open the *Data graphics legends_start* file in the Chapter11 practice files folder), you will find that you can add, delete, rename, and move legend components. Throughout your changes, however, the legend maintains its overall structure because of the nested containers and lists.

Annotating shapes with callouts

In previous versions of Visio, you could drag a callout from the Callouts stencil onto the drawing page. The Callouts stencil still exists: in the Shapes window, click More Shapes, click Visio Extras, and then click Callouts to reveal more than three dozen callout types. The following graphic shows four examples.

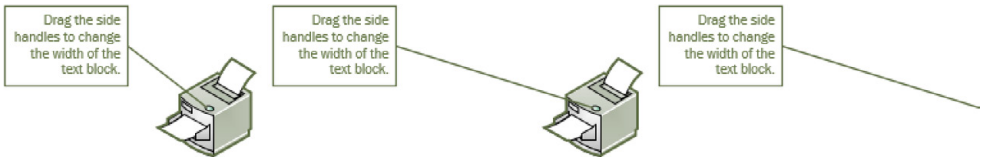


Old-style callouts are useful for their intended purpose: you can type text into the text box and glue the tail onto another shape. Some even have attractive or clever designs.

The underlying problem with the older callouts, however, is that most of them are just shapes. Although you can attach them to other shapes, they aren't associated with those shapes in any useful way. For example, start with the printer and callout on the left in the following graphic.

- Moving the printer to the right (center image), doesn't change the location of the callout.
- Deleting the printer shape (rightmost graphic) doesn't affect the callout.

It's also easy to accidentally detach the callout from the printer by dragging the text box portion of the callout while trying to relocate it.



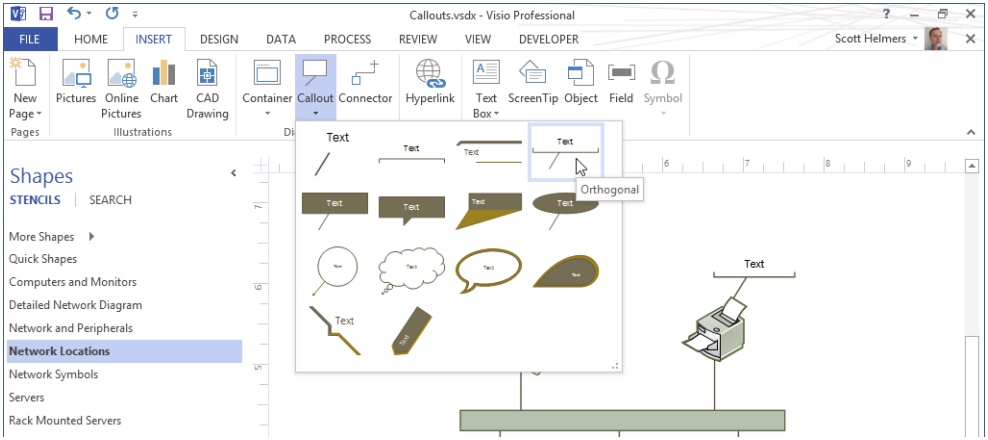
In this exercise, you will discover that Visio 2013 callouts are associated with the shapes to which they are attached in ways that make sense; the callout and its attached shape act in tandem.

SET UP **You need the *Containers, Lists and Callouts_start* drawing located in the Chapter11 practice file folder to complete this exercise. Open the drawing in Visio and save it as *Callouts*. Then go to the Callouts page.**

1 Click once on the **Printer** shape to select it.

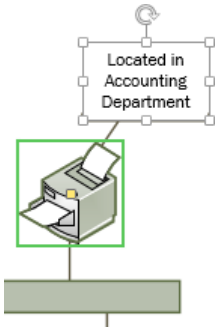
2 On the **Insert** tab, in the **Diagram Parts** group, click the **Callout** button. The **Callout** gallery opens.

3 Point to various callout images in the gallery and notice that Live Preview shows what each callout will look like when attached to the printer shape.



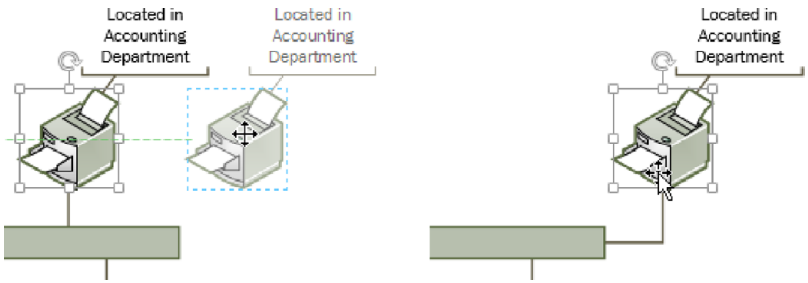
4 Click **Orthogonal** (as shown in the previous graphic). The callout is added to the page and attached to the printer.

5 With the callout still selected, type **Located in Accounting Department**, and then press **Esc** to exit text edit mode.



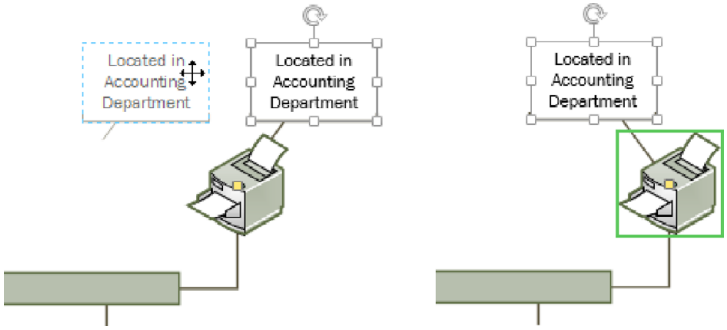
TIP Notice that when the callout is selected, there is a green border around the printer to signal the association between the two shapes. The reverse is not true: if you select the printer, the callout does not have any kind of border.

6 Select and drag the printer to the right (shown on the left in the following graphic), and then release the mouse button (graphic on right). The callout moves with the printer.



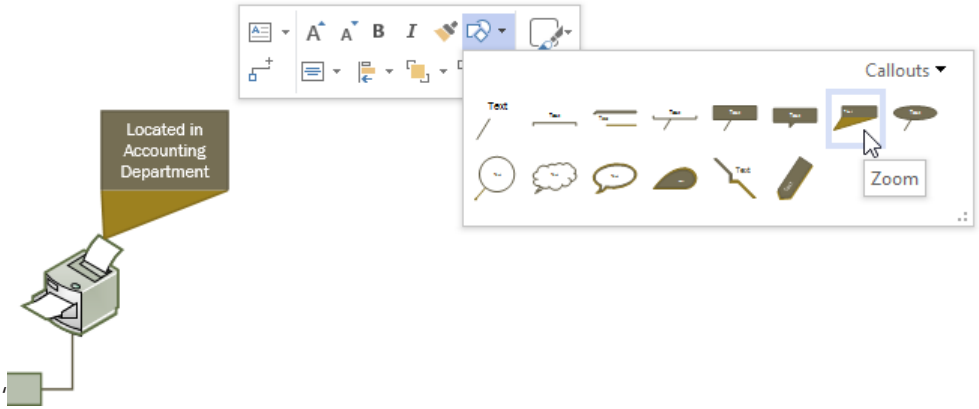
7 Select and drag the callout to the left side of the printer.

As you drag the callout, it looks like it's been detached from the printer (left graphic). However, as soon as you release the mouse button, it is still attached to the printer (right graphic).



CLEAN UP **Save and close your diagram if you want to keep the changes; otherwise just close it.**

Unlike containers and lists, callouts do not have a context tab on the Visio ribbon. However, you can take advantage of the new change shape feature in Visio 2013 to switch any callout to a different style. Click the Change Shape button, either in the Editing group on the Home tab, or on the Mini Toolbar that appears when you right-click a callout. The following graphic takes advantage of Live Preview and the Mini Toolbar to illustrate changing the callout from the preceding graphics to the Zoom style.



There are a few other useful things to know about callouts:

- If you delete a callout, it doesn't affect the shape to which it was attached. However, if you delete the shape, the callout is also deleted.
- If you copy a shape that has a callout attached, both the shape and the callout are copied.
- You can attach more than one callout to a shape.
- If you do not have any shapes selected when you insert a callout, Visio inserts the callout in the center of the drawing window.
- If you select more than one shape before inserting a callout, Visio will attach a callout to each selected shape.
- Callouts respond to Themes and Variants so their appearance on the page will remain consistent with the rest of your diagram.

SEE ALSO For more information about callouts, refer to the Visio development team blog at *blogs.office.com/b/visio/archive/2012/11/05/containers-and-callouts-in-visio.aspx*.

Key points

- You can use containers and lists to achieve many of the same results that you can by creating a background shape and grouping it with a set of shapes. However, containers offer considerable advantages over grouped shapes:
  - When you move, copy, or delete a container or a list, the member shapes in the container or list are also moved, copied, or deleted.
  - Even though the previous statement is true, each shape in a container or list maintains its independence. It's easy to select a container member with a single click and to access its shape data and other properties.
  - Shapes in containers and lists know they are contained and can derive data from the parent container. (Refer to the example at the end of the Swimlanes topic in "Finding containers and lists in Visio," earlier in this chapter.)
- Visio 2013 lists are a special type of container in which shapes are maintained in a specific sequence. Each shape knows its ordinal position in the list even when shapes are added, deleted, or rearranged.
- Visio 2013 uses containers and lists for cross-functional flowcharts, wireframe diagrams, data graphic legends, and other purposes. Visio also provides generic containers that you can use for any purpose you would like.
- Visio 2013 callouts are much more intelligent than the callouts provided with previous versions of Visio. In Visio 2013, each callout is associated with a specific target shape and is copied, moved, or deleted with that shape.

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About the author

Scott A. Helmers is a Microsoft Most Valuable Professional (MVP) for Microsoft Visio and is the primary Visio expert at Experts-Exchange.com. He has helped companies create custom Visio add-ins to enhance organizational efficiency and employee productivity, and has taught thousands of people how to use technology more effectively.

He is Vice President of Product Planning and Support at the Harvard Computing Group, a software and consulting firm that helps clients understand and implement business process solutions. Scott is a co-inventor of TaskMap (*www.taskmap.com*), a Visio add-in that allows anyone to document all of the important aspects of any business process.

Scott has worked with clients in Afghanistan, Egypt, India, Ireland, Jordan, Malaysia, Saudi Arabia, Singapore, Canada, and the United States on projects involving knowledge management, specification of new IT systems, process mapping and redesign, and technology training. In addition, he has been an Adjunct Professor at both Northeastern University and Boston University.

Scott is the author of two previous books: *Microsoft Visio 2010 Step by Step* (Microsoft Press, 2011) and *Data Communications: A Beginner's Guide to Concepts and Technology* (Prentice-Hall, 1989). He also contributed Chapter 9, "Visio and Visio Services," to *Business Intelligence in Microsoft SharePoint 2013* by Norm Warren, Mariano Neto, Stacia Misner, Ivan Sanders, and Scott Helmers (Microsoft Press, 2013). Information about Scott's books is available at *www.VisioStepByStep.com*.

When not working or spending time with his family in Andover, Massachusetts, Scott can usually be found on his bicycle or working with a local community theater company.

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