# Contents at a Glance

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1 Integrated Performance</td>
<td>5</td>
</tr>
<tr>
<td>2 PerformancePoint Services 2010</td>
<td>13</td>
</tr>
<tr>
<td>3 Case Study: Managing What You Measure</td>
<td>19</td>
</tr>
<tr>
<td>4 Installing Microsoft SharePoint Server 2010 and Configuring PerformancePoint Services</td>
<td>39</td>
</tr>
<tr>
<td>5 Introducing PerformancePoint Dashboard Designer</td>
<td>71</td>
</tr>
<tr>
<td>6 Data Sources</td>
<td>89</td>
</tr>
<tr>
<td>7 Using Indicators, KPIs, and Scorecards</td>
<td>121</td>
</tr>
<tr>
<td>8 Reports</td>
<td>165</td>
</tr>
<tr>
<td>9 Page Filters, Dashboards, and SharePoint Integration</td>
<td>199</td>
</tr>
<tr>
<td>10 Securing a PerformancePoint Installation</td>
<td>235</td>
</tr>
<tr>
<td>11 Working with the Monitoring API</td>
<td>261</td>
</tr>
<tr>
<td>12 Maintaining a PPS Deployment</td>
<td>285</td>
</tr>
</tbody>
</table>
# Table of Contents

**Introduction**
- Who Should Buy This Book ............................................................... 2
- How This Book Is Organized .............................................................. 2
- Conventions Used in This Book ......................................................... 4
  - Text Conventions ..................................................................... 4
  - Special Elements ...................................................................... 4

1 **Integrated Performance**  
- Business Intelligence as a Discipline .................................................... 5
- Performance Management Methodologies ............................................ 9
- Business Intelligence as an Enabler ..................................................... 9
- Integrated Business Planning ............................................................ 10
- Summary...................................................................................... 12

2 **PerformancePoint Services 2010**  
- PerformancePoint Services 2010 Architecture ...................................... 13
- What’s New? ................................................................................. 15
- What’s the Same?........................................................................... 16
- What’s Gone?................................................................................ 17
- Summary...................................................................................... 17

3 **Case Study: Managing What You Measure**  
- Overview and Business Background ................................................... 20
- Business Situation and Requirements ................................................. 21
  - Market Expansion .................................................................. 22
  - Increase Popularity ................................................................. 24
- Where to Start ............................................................................... 24
- Proposed Solution Architecture Roadmap ........................................... 25
- Basic Project Plan ........................................................................... 26
  - Gather Data .......................................................................... 26
  - Analyze Data and Identify Measures .......................................... 29
  - Design KPIs and Scorecards ..................................................... 30
  - Design Reports ...................................................................... 32
  - Design the Dashboard ............................................................. 34
- Summary...................................................................................... 38
- Best Practices.............................................................................. 38
4 Installing Microsoft SharePoint Server 2010 and Configuring PerformancePoint Services

Examining PPS Installation Prerequisites
Examine Server Hardware Prerequisites for PPS
Examine Server Software Prerequisites for PPS
Running the Preparation Tool
Installing SharePoint
Examining the Standalone Installation for SharePoint
Running the Standalone Installation for SharePoint
Examining the Server Farm Installation for SharePoint
Running the Server Farm Installation for SharePoint
Configuring PPS
Configuring the Secure Store Service
Creating the Service Application
Starting the PerformancePoint Service
Creating the PerformancePoint Service Application
Set the Unattended Service Account
Associating the Service Application Proxy with a Proxy Group
Activating the Feature in the Web Application
Validating the PPS Installation
Summary
Best Practices

5 Introducing PerformancePoint Dashboard Designer

Understanding PerformancePoint Dashboard Designer Prerequisites
Installing Dashboard Designer
Uninstalling Dashboard Designer
Examining Dashboard Designer
Examining First Class Objects
Examining the Home Tab
Examining the Edit Tab
Examining the Create Tab
Examining Dashboard Designer Item Properties
Content Migration with Dashboard Designer
Importing Content with Dashboard Designer
Summary
Best Practices

6 Data Sources

Overview of Data Sources
Multidimensional Data Sources
7 Using Indicators, KPIs, and Scorecards

Understanding and Working with Indicators
Examining Indicator Styles
Examining Indicator Sources
Creating Custom Indicators
Editing a Custom Indicator
Understanding and Working with KPIs
Creating an Analysis Services KPI
Understanding Multiple Targets and Actuals
Examining Data Mapping
Understanding and Working with Scoring
Changing a Scoring Pattern
Editing Thresholds
Examining How a Score Is Calculated
Examining a Scoring Walkthrough
Examining Rollup Scoring
12 Maintaining a PPS Deployment

- Planning for High Availability ........................................................ 285
- Examining the Management Pack .................................................. 286
- Examining Network Load Balancing ............................................. 286
- Configuring Multiple Application Servers .................................... 287

Managing PPS

- PerformancePoint Service Settings ............................................. 288
- Trusted Data Source and Content Locations ............................... 296

Migrating from PPS 2007

- Step-by-Step Migration from PPS 2007 ....................................... 300

Using Windows PowerShell and Cmdlets

- Launching PowerShell ................................................................. 302
- Cmdlet Reference ....................................................................... 302
- Cmdlets Available Out of the Box ............................................. 303
- Cmdlet Samples ....................................................................... 310

Troubleshooting

- Event Viewer ............................................................................. 312
- Trace Log Files ......................................................................... 313

Summary ...................................................................................... 313
Best Practices ................................................................................ 313

Index ............................................................................................ 315
Foreword

Nobody chooses to work in the absence of good, supporting information. Given the choice, and to improve the decisions they make every day, most business users want relevant information about their business to be easily available. Business intelligence (BI), business information, and the tools that deliver it can provide that information, but most business users do not have BI available to them, or if they do, they don’t use it.

Today, roughly 20% of information workers utilize BI. This represents only about 8% of all business users. It seems clear that having the appropriate data to support decisions could lead to superior outcomes for nearly all information workers. However, for this to happen, that data needs to be provided in an intuitive, familiar, and context-sensitive way. And it needs to be provided where the user already works, not in some hidden location.

Given this, why are more people not using BI today? Business users don’t currently use BI because most BI solutions are still provided by unfamiliar, specialized software that is separate from the software with which those business users normally do their work. Typically, the BI solutions provide information related to a business process that most users infrequently perform, such as budgeting, resource planning, or product planning. You have a situation where business users must use an unfamiliar product, for an unfamiliar activity performed so infrequently that they can’t remember what they learned in the previous experience. It is no wonder that only the most advanced and data-savvy users take advantage of BI.

It is for this reason that we, Microsoft, believe that broadly applicable capabilities such as dashboarding and scorecarding should appear in a familiar and commonly used product. SharePoint 2010 is that product. It makes sense to see the metrics that define your team’s success right alongside the rest of your documents and other information in your team portal.

SharePoint 2010 is the culmination of several evolutionary product steps for Microsoft. Each of these intermediate products had elements of broadly applicable features, but they solved only part of the problem, and they, too, were released as software that was separate from the familiar Office and SharePoint environments. Report Builder, Business Scorecard Manager, ProClarity, Data Analyzer, and even PerformancePoint Server 2007 are all examples. But now with the 2010 release of Office and SharePoint, PowerPivot is integrated into Excel, and PerformancePoint Services is integrated into SharePoint. From this point forward, BI will be a mainstream capability available to nearly all the users of Office and SharePoint.
The authors of *Microsoft SharePoint 2010 PerformancePoint Services Unleashed* have done an amazing job walking the reader through the capabilities of PerformancePoint Services and touching on important learning scenarios along the way. Their approach is pragmatic and straightforward, but not superficial. By the time you complete this book, you should be well prepared to embark on your own solutions.

Have fun reading the book, learn a lot, and be sure to make many great dashboards available to people who have never used them before! Together we will fix this oxymoron called *business intelligence*!

—Russ Whitney

Russ Whitney is a group program manager in the Microsoft Office organization. He and his team are responsible for BI capabilities in SharePoint and Office. He has worked as a development manager and a general manager in the four years he has been with Microsoft. Previously, Russ was the SVP of Research and Development of ProClarity Corporation. Since 1997, he has pursued the goal of bringing fact-based decision making to more people in more organizations than ever before. When not at work, you can find Russ hiking, fly-fishing, and taking pictures in the mountains of Idaho.
This page intentionally left blank
How is a dashboard like a poem? In the immortal words of the poet Elizabeth Barrett Browning “let me count the ways.” Like a good poem, a good dashboard is elegant, brief, and to the point. In a good dashboard, every object (word) counts, and in a good dashboard you get a lot of meaningful information compressed into a small space.

How does this relate to PerformancePoint Services 2010, and why should you care? If you are reading this book, you might not care about poems, but you certainly care about business intelligence. Dashboards are at the heart of business intelligence solutions, and business intelligence solutions are at the heart of business performance.

To thrive, all organizations need to understand how they are performing. This is important in all organizational areas, including financials, sales, employees, and operations. With PerformancePoint Services, you can create web-based dashboards that enable you to define key metrics such as sales, revenue, and employee head count to measure performance in these and other key area. With key metrics in place, you can monitor and analyze your organization’s performance. You can see how your business is doing, understand why it’s performing the way it is, and set real goals based on real data.

Our intention with this book is to help you imagine what is possible for you and your organization in terms of business intelligence solutions. We also give you the technical know-how you need to begin implementing a business intelligence solution with PerformancePoint Services 2010. In these chapters, we try to help you understand the different aspects of business intelligence solutions, balancing an under-the-hood look at PerformancePoint Services features
with sections that will have you rolling up your sleeves to do actual work. We say here that this is the kind of introduction you get when you put the four of us together. Between the four of us, we have years of experience in technology, business intelligence solutions and products, entertainment, and (you guessed it) poetry. We bring it all to bear in this book.

Emily Dickinson said that a good poem should take off the top of your head. A good dashboard may not take off the top of your head or the collective head of your business users, but it should provide you and your business users with plenty of “aha” moments.

Enjoy the book and use it well. Let us know what you think and what it has enabled you to do. Write to us at PPSUnleashed@itmentors.com with your thoughts, comments, sample dashboards, tips, and tricks. The occasional poem is welcome, too!

Who Should Buy This Book

*Microsoft SharePoint 2010 PerformancePoint Services Unleashed* focuses on what architects, implementers, and developers need to know to successfully deploy a business intelligence solution with PerformancePoint Services. If your organization has a SharePoint license or is considering a SharePoint license, you need to read this book. If you already have a PerformancePoint 2007 installation or other business intelligence solution, you need to read this book. If your business users ask for information and reports to help predict and analyze business performance, you need to read this book.

We assume that you have basic Windows Server and SharePoint skills. We also assume you are comfortable experimenting with various features and options in a new product, that you have a safe computing environment to experiment in, and that you are curious about what PerformancePoint Services can do for you and your organization.

How This Book Is Organized

*Microsoft SharePoint 2010 PerformancePoint Services Unleashed* is organized into 12 chapters. In this even dozen, you can go from understanding the business reasons for implementing PerformancePoint Services to getting the technical information you need to start. Read the book cover to cover to step through the entire process from planning a PerformancePoint Services deployment to implementing and maintaining your first installation. Or if you are a more experienced user, just dip into the chapters that interest you the most or that can help you fill in the gaps of your own knowledge.

Chapter 1, “Integrated Performance Management,” introduces business principles of performance management and discusses the value and process of planning for a business intelligence solution in your organization.

Chapter 2, “PerformancePoint Services 2010,” gives you an overview of PerformancePoint Services 2010, including a summary of what’s new and different.
Chapter 3, “Case Study: Managing What You Measure,” provides a case study that enables you to follow Apples and Oranges Productions, a fictitious production company, as they work through the process of implementing a business intelligence solution with PerformancePoint Services.

Chapter 4, “Installing Microsoft SharePoint Server 2010 and Configuring PerformancePoint Services,” takes you through the first step toward implementing a business intelligence solution by installing Microsoft SharePoint Server and configuring PerformancePoint Services.

Chapter 5, “Introducing PerformancePoint Dashboard Designer,” covers the specifics of the Dashboard Designer, which is the design tool you use to create and deploy dashboards on SharePoint.

Chapter 6, “Data Sources,” provides information on data sources, which are the foundation of any business intelligence solution. In Chapter 6, you learn about two types of data sources, multidimensional and tabular, that you can use in PerformancePoint Services. This chapter also steps through several examples that illustrate how you can apply these data sources appropriately in various scenarios.

Chapter 7, “Using Indicators, KPIs, and Scorecards,” provides an overview of how to work with indicators and KPIs and how to integrate these objects into a scorecard view. This chapter is rich in examples that explain the main features of indicators, KPIs, and scorecards. It also provides in-depth information on scoring patterns, thresholds, and methods. (If you’re not sure what a scoring pattern is or a threshold, you definitely need to read this chapter.)

Chapter 8, “Reports,” illustrates how you can work with the 10 different types of PerformancePoint Services reports to visualize data. The chapter explains the main features for each report type and provides examples of appropriate implementation and usage that help you translate data into information for your business users.

Chapter 9, “Page Filters, Dashboards, and SharePoint Integration,” shows you different ways to create dashboards and connect filters using Dashboard Designer, SharePoint Designer, or the browser on the SharePoint page. This chapter covers each way to create dashboards and how to connect filters to dashboards, including Time Intelligence and other typical filters.

Chapter 10, “Securing a PerformancePoint Installation,” focuses on security that an organization can implement to protect information stored in a PerformancePoint Services solution. This includes PerformancePoint Services element security (that is, how to configure user access to scorecards, KPIs), data sources, and other objects; and PerformancePoint Services data security (that is, how to secure data that appears on the dashboard).

Chapter 11, “Working with the Monitoring API,” illustrates how to extend native PerformancePoint Services capabilities and functionality by using the Monitoring API. The focus here is on creating custom objects and creating editors or custom ASPX pages hosted inside of SharePoint.
Chapter 12, “Maintaining a PPS Deployment,” covers the tools SharePoint provides for monitoring and maintaining a PerformancePoint Services deployment. This coverage includes the PerformancePoint Service settings you can apply from the Manage PerformancePoint Services page in SharePoint.

Conventions Used in This Book

The following section explains the special conventions used to help you get the most from this book and from PerformancePoint Services 2010.

Text Conventions

Various typefaces in this book identify terms and other special objects. These special typefaces are as follows:

- **Italic**: New terms or phrases when initially defined
- **Monospace**: Examples of code that you can use

Special Elements

Throughout this book, you find Tips, Notes, Cautions, and Cross References. These elements provide a variety of content, ranging from information you should not miss to information that can help you set up your own PerformancePoint Services solutions.

<table>
<thead>
<tr>
<th>TIPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tips point out features and tricks of the trade that you might otherwise miss. This is not run-of-the-mill information that you learn out-of-the-box and don’t need us to tell you about.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notes point out items that you should be aware of. Generally, we have added notes as a way to give you some extra information on a topic without weighing you down.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay attention to Cautions! These could save you precious hours. Don’t say we didn’t warn you.</td>
</tr>
</tbody>
</table>
This chapter introduces business intelligence (BI) as a discipline and discusses how business management and performance management strategies work hand in hand in BI solutions. You learn about the different decision types that occur across all levels of an organization and how BI products have evolved to their present capacity in which they can enable business decisions across all levels of an organization.

**Business Intelligence as a Discipline**

In any organization, decisions happen daily at every level, from the person working at the front desk to the most senior executive in the corner office. And for every person in an organization, making sound and timely decisions depends on access to good and reliable information. At its best, BI exists where decisions and information converge (see Figure 1.1).

The type of information needed for a decision varies depending on the decision required. The decisions themselves vary depending on who is making the decision, how much time there is to make the decision, and how much of an impact the decision may have on the organization as a whole. There are three different decision types referred to in the BI world:

- Strategic
- Tactical
- Operational
Strategic decisions are typically made by senior management and generally impact the company as a whole. Only a few of these decisions are made during the year, and they often involve long-range planning from 1 to 3 years at the executive level. Strategic decisions might be centered on questions such as the following:

- Should we start a new product line?
- Should we open regional offices in Europe or the Middle East?
- Should we close our plants in the Midwest?

Tactical decisions are usually made more often than strategic decisions and have less of an impact on the company as a whole. They involve planning on a quarterly or semi-annual basis and might be centered on questions such as the following:

- How can we adjust the budget for the Chicago office to meet projections this quarter?
- Do we need to increase our sales staff for the upcoming holiday season this year?
- How can we increase production in the overseas plant to meet demand next quarter?

Operational decisions are made most often, and on a daily basis, by all types of employees, at all the various levels in the organization. These are like the decisions that keep the assembly plant running every shift and might be centered on questions such as the following:

- Do we need to add a team to the night shift to pack the orders that need to go out tomorrow morning?
- Who is available to replace Jane on her shift tonight?
- Do we need to change the supplier for our store?

Consider an example based on the case study of an organization called Apples and Oranges Productions detailed in Chapter 3, “Case Study: Managing What You Measure.” The executive team of Apples and Oranges Productions, a fictitious production company
with TV and film divisions, decides to grow the organization. Strategic questions might be centered on the following:

- How can we grow our organization?
- Which division is best positioned for growth?

The executive team decides to grow the organization by expanding into new markets and that compared to the Film division, the TV division is best positioned right now for this expansion. The decision to expand the TV division into new markets is an example of a decision taken at the highest level of the organization that will impact the company as a whole and will be evaluated and implemented over the long term. The executive team arrived at this decision by looking at industry performance, overall company revenue, and overall strengths and weaknesses. The decision defines a direction for Apples and Oranges for the next 2 years and will have an impact on the company as a whole as resources, financial and human, are turned toward realizing the goal of expanding the TV division into new markets.

Following up on this strategic direction, the management team of the TV division looks at what they need to do to realize this strategic goal. At this level, the TV division makes tactical decisions centered on these types of questions:

- Which of our shows is best positioned for expansion into new markets?
- How can we increase viewership for our best shows?

Looking at current viewership and advertising revenue, they decide that a show called *The Green Orange* that is currently in the top 10 television markets is best positioned for expansion. This is an example of a tactical decision. It is a decision taken at a lower level in the organization with the objective of enabling the strategic decisions communicated to the company. Other examples of tactical decisions at this level would be the decision to increase guest appearances on the show or to increase the presence of a particularly popular character based on viewership data.

Operational decisions for *The Green Orange* occur on the set and are centered on these types of questions:

- How do we increase viewership for *The Green Orange*?
- What can we do to make the show as appealing as possible to our viewership?
- What can we do to make the characters as appealing as possible to our viewership?

The set designer makes decisions about the appropriate architecture and furnishings for the show. The costume designer makes decisions about how to dress the characters. The writers make decisions about story lines and scripts. The actors decide how to interpret their lines. These are operational decisions made by a wide variety of Apples and Oranges employees, and all are geared toward producing the best possible episodes to realize operational, tactical, and strategic goals.
Information is required for each of these types of decisions. With BI, an organization can provide a continuous flow of information to business decision makers at all levels of the organization to answer questions such as the following:

- What has happened?
- What is happening?
- Why?
- What will happen?
- What do we want to have happen?


BI is where information and decisions converge to provide answers to these questions.

Organizations have been making business decisions from data ever since the first computer was introduced into the workplace, and in the past five years, BI products and understanding has evolved exponentially. In particular, the capacity to transform data into information has evolved. It is important to note that data and information differ in the following way:

- Data equals raw numbers.
- Information is repurposed data presented in a format that helps human beings make better decisions.

Various products have facilitated the evolution of data into information. Let’s consider Microsoft products specifically: People have been making decisions from data since Excel was introduced to the desktop. Microsoft has offered an OLAP solution since SQL Server 7.0 and OLAP Services, which later evolved into Analysis Services with the release of SQL Server 2000. This was further enhanced by a line of BI-specific products. Again at Microsoft in particular, the Business Scorecard Manager, one of the first products in the BI line, embraced the idea of key performance indicators (KPIs) and scorecards as measures of business performance to enable better decisions. The next iteration of the product, PerformancePoint Server, extended the use of dashboards as visual decision-making support systems, and further expanded the analytic capabilities of the BI tools through the integration of ProClarity. With the most recent integration of PerformancePoint Services into SharePoint 2010, the next step in the evolution makes reliable information accessible throughout the organization in a secure, flexible, and readily available format integrated into daily activities and tools.

With this more unified and familiar structure, people in organizations have the support they need to make decisions and track the impact of their decisions quickly and with ease. This does not mean that people will always make predictable decisions dictated by data. It is important to remember that people make business decisions and that this can involve impulsive and intuitive behaviors. Think of how often on a personal level you might have gone against the facts at hand. For example, every month, Sam allocates money from his paycheck to pay the bills. This month he sees that he has additional money in hand. Following the strategic plan he laid out with his accountant, he knows he should invest
this money in his retirement account. Instead Sam decides on impulse to buy tickets for a Broadway show and enjoy a night on the town with friends. This is the human factor. As long as BI involves people making decisions, the human factor will remain as an unpredictable (and sometimes surprising and profitable) aspect of the BI discipline.

**Performance Management Methodologies**

The BI products have matured along with the understanding by businesses of how they need a deep understanding of internal business drivers and processes. Although the products now provide a way to support the decision-making process at all levels, businesses have matured in their understanding of how business management and performance management methodologies work together to create frameworks for analyzing and understanding business performance and drivers.

Starting from business management strategies such as Balanced Scorecard, Six Sigma, CMMI (Capability Maturity Model Integration), Agile Management, and CRM (Customer Relationship Management), organizations can build performance management frameworks for monitoring and analysis. As long as your organization has the supporting metrics, you can use almost any form of organizational principle and measure, including, for example, employee satisfaction, future sales, and customer satisfaction.

The methodology you choose to support can provide a framework for thinking about and understanding your business and can help you maintain focus on displaying and communicating the current state of your business and its desired future state. A BI tool such as PerformancePoint Services is flexible enough to take whatever plan or methodology you choose is most appropriate and turn the analysis into tangible information that employees at all levels can use for informed decisions and actions.

**Business Intelligence as an Enabler**

By providing information across the organization, BI enables better decisions that support organizational objectives. It also can facilitate communication that in turn can enable buy-in of organizational directives.

Even though business intelligence enables better decisions, it is important to remember that BI is not a silver bullet, nor is it an exact science. Decisions are made by people, who have an amazing capacity to consume and process all kinds of data and information. A BI solution provides one part of what goes into making a decision. For example, a CFO checks her financial dashboard and sees that her company has experienced a drop of 4% in sales for this quarter. This does not necessarily mean that the best decision is to cut 4% of the staff for the coming year. Looking at her other performance measures, she sees that customer satisfaction has shot through the roof, and looking further into the overall performance of her industry, she sees that the industry as a whole lost 20% in sales. Processing all these points of information, her 4% drop in sales begins to look quite different, and she concludes that it is best to actually increase staff because she expects that sales next year will skyrocket.
BI also enables better communication across an organization. In another company, the CFO looks at KPIs and scorecards to measure employee productivity against revenue versus nonrevenue projects. In consultation with the Human Resources group, the company uses the scorecards to communicate to employees the necessity of moving the organization toward a more efficient operational model. Employees have access to the scorecards that track hours spent in revenue versus nonrevenue projects, and they can see the imbalance in how time is spent and the need for more effective models of work.

**Integrated Business Planning**

With the maturity of the products that makes up a BI solution, organizations can create and maintain a technically integrated BI solution. With SQL Server, an organization can create a central repository for data and repurpose the data for use in PerformancePoint Services to communicate valuable business information.

On the back end, SQL source systems collect and store data in normalized forms through transactional systems that provide the capacity to insert, update, and delete data. The SQL solution enables these transactional systems, and with extract and load processes provides the potential to extend the business value and potential of this data. Using extract and load processes, an organization can then transform and optimize data into cubes and prepare it for use in scorecards and dashboards.

To better understand this, consider a transactional sales system that tracks and stores sales quantities and orders as they are entered (see Figure 1.2). The data elements are stored in a relational database, and the underlying architecture of the system might look something like the structure shown here.

---

**FIGURE 1.2** SQL Server systems collect and store data that can be transformed into valuable business information.
This system captures and stores valuable information that a manager may want to use when making daily or long-term decisions. The challenge is to extract the most valuable data and to transform it into a usable form for performance management—in other words, to transform the data into information.

To optimize data for reporting and analysis, data elements are typically structured into measures and dimensions. Measures identify data that you want to analyze, such as sales, head count, defective products, and profit margin. Dimensions enable you to add context to one or more measures. For example, if we have a measure called Sales, and its value is $1,000, what does that mean? Is it total sales for a year, quarter, or month? Is it for all products or a specific product category? A number by itself does not mean much to most users. By adding one or more dimensions that contain information about time, products, and regions, for example, you can start to add context to the number $1,000. You can now analyze sales based on time, products, and region. A dimension can also include hierarchies that provide navigational paths. It can make it easier for the user to browse data by looking at sales for all years and then navigate to a specific year, quarter, or month.

To use the data for analyses, the data elements must be converted into measures (see Figure 1.3). This is done by associating data elements with a dimension. Raw data elements are considered facts, whereas dimensions group these facts by time or geography, for example. Associating a fact with a dimension enhances its informational value. In this case, it is a fact that the sales organization sold 10,000 shoes. It is important to know that 5,000 of these shoes were sold in Quarter 4. It is also important to know that of these 5,000 shoes, 3,000 were sold in Europe. The measure that surrounds the fact communicates a dimension. In this case, Quarter is an example of the Time dimension, and Europe is an example of the Geography dimension.

**FIGURE 1.3** In this scenario, sales data is transformed into sales information displayed as KPIs on a Sales scorecard.
Dimensions allow you to measure facts in different ways to create and communicate valuable business information. You can then use these measures in the final step in this process, which occurs in PerformancePoint Services (which is where KPIs are built on available measures and presented in scorecards and dashboards). In this example, KPIs might display sales by quarter and by region. This information is populated dynamically from the underlying transactional database reflecting at all times a current view of the organization's sales performance.

**Summary**

This chapter provided you with an overview of BI as a discipline, including discussion of the types of decisions and information that are part of making an organization function and thrive. You learned how BI products have matured and how businesses have also matured in their understanding of how business management and performance management methodologies can work together in a technically integrated BI solution. With this theoretical overview of BI, you should be ready to roll up your sleeves and start exploring how PPS can help you build a BI solution.
Index

A

Abs function, 139
actuals, KPIs, 133-135
Add Items option (Workspace section), 79
Add Lists option (Workspace section), 79
ADOMD.NET 2008, 41
aggregation types, data sources, 100
aggregations, scorecards, adding, 161-162
Agile Management, 9
Analysis Services data source
creating, 92-95
time intelligence, configuring, 109-110
Analysis Services KPIs, creating, 128-132
analytic chart reports, 167-175
   additional measures, adding, 170-172
   context menus, 173-175
   data elements, adding, 169-170
   dimensions, adding, 170-172
   filters, 172-173
   interactivity features, 173-175
analytic grid reports, 176-177
APIs, Monitoring API, 261
  custom editors, 269-274
  custom objects, 269-274
  development environment setup, 265-266
  extending PPS functionality, 261-262
  PPS objects, 267-268
Apples and Oranges Productions case study, 19-21, 38
  architecture roadmap, 25-26
  business situation, 21-24
  dashboards, 22
    designing, 34-36
  data analysis, 29
  dimensional data warehouse, building, 27-28
  expansion strategies, 24-25
  gathering data, 26-27
  KPIs, designing, 30-33
  market extensions, 22-24
  measures, identifying, 29
  project plan, 26-36
  reports, designing, 32-34
  requirements, 21-24
  scorecards, 22
    designing, 30-33
Application Server Role, 41
application servers, multiple application servers, configuring, 287-288
architecture, Apples and Oranges Productions case study, 25-26
authentication
  Analysis Services data source, 93-94
  Kerberos, PPS, 255-256
  PPS, troubleshooting, 251-252
Average function, 139

B
Balanced Scorecard, 9
best practices
  Dashboard Designer, 87
dashboards, 233
data sources, 119
high availability, 313
indicators, 163-164
KPIs, 163-164
performance optimization, 313
PPS, security, 260
PPS (PerformancePoint Service) installation, 68-69
reports, 197
scorecards, 163-164
BI (business intelligence), 5-7, 12, 19-20
  Apples and Oranges Productions case study, 19-21
    business situation, 21-24
    requirements, 21-24
  as discipline, 5-9
  as enhancer, 9-10
  integrated business planning, 10-12
  operational decisions, 6
  performance management methodologies, 9
  strategic decisions, 6
  tactical decisions, 6
Blank Indicator template, 125
Browning, Elizabeth Barrett, 1
browsers, dashboards, creating in, 227-232
Bulk Edit section (Dashboard Designer Edit tab), 81-82
Business Connectivity Services filter, 204
business intelligence (BI). See BI (Business Intelligence)
cache intervals, Analysis Services data source, 95

cache settings (PPS), 291-292

Calculated Metrics Data Source Mapping dialog box, 138

calculating scoring, KPIs, 146-150

calculating metrics, KPI data mapping, 138-139

Calculation dialog box, 140-142

case studies, Apples and Oranges Productions case study, 19-21, 26-38

architecture, 25-26

business situation, 21-24

expansion strategies, 24-25

requirements, 21-24

centered indicators (PPS), 122

Changes section (Dashboard Designer Home tab), 80

Chart Controls for .NET 3.5, 41

choice filters, 204

claims, Windows Token service, configuring, 259

class libraries, custom tabular data source, creating for, 270-274

ClearSPPPerformancePointServiceApplication-TrustLocation cmdlet, 309

ClickOnce Applications, Dashboard Designer, 72-73

client operating systems, SharePoint Server 2010, installing on, 262-265

cmdlets (PPS), 302-312

ClearSPPPerformancePointServiceApplicationTrustLocation, 309

GetSPPPerformancePointSecureDataValues, 310

GetSPPPerformancePointServiceApplication-TrustLocation, 309

NewSPPPerformancePointServiceApplication, 304

NewSPPPerformancePointServiceApplicationProxy, 307

NewSPPPerformancePointServiceApplication-TrustLocation, 308

RemoveSPPPerformancePointServiceApplicationProxy, 308

RemoveSPPPerformancePointServiceApplicationTrustedLocation, 309

service applications, creating, 310

SetSPPPerformancePointSecureDataValues, 310

SetSPPPerformancePointServiceApplication, 305

shared services, creating, 310

SPPPerformancePointServiceApplication, 304, 307

CMMI (Capability Maturity Model Integration), 9

Colon operator (STPS), 113

column types, tabular data sources, 100

Comma operator (STPS), 113

Comments section (PPS Settings screen), 290-291

Compare Item option (Changes section), 80

computer accounts, constrained delegation, 258

configuration

Analysis Services data source, time intelligence, 109-110

multiple application servers, 287-288

PPS (PerformancePoint Service), 39, 53-67

Secure Store Service, 53-56

service application creation, 56-57

tabular data sources, time intelligence, 110-111

TLS, web applications, 253

WFE (web front-end) servers, 58

Windows Token service, claims, 259

Configuration Wizard, server farm installation, 47-53

Connect To values (Web Parts), 209-210

How can we make this index more useful? Email us at indexes@samspublishing.com
Connect To Web Part connection, 208
collection strings, Unattended Service Account, username added to, 245
constrained delegation, computer and service accounts, 258
content migration, Dashboard Designer, 84-86
context menus
   analytic chart reports, 173-175
   analytic grid reports, 176-177
Create tab (Dashboard Designer), 82
CRM (Customer Relationship Management), 9
current user filters, 204
custom indicators
   creating, 123-126
   editing, 126-127
custom object editors, 275-283
   deploying, 279-282
   file system data source, creating for, 275-279
custom properties
   KPIs, updating on, 268
   scorecards, 162
Custom Properties section (Dashboard Designer Properties pane), 84
Custom Table filter (PPS), 200
custom tabular data source
   class libraries, creating for, 270-274
   creating, 269
Customer Experience Improvement Program, 51

dashboards, 232
   best practices, 233
   creating, 207, 210-215
   deploying, 210-215
   filters, 220-224
   pages, 218-220
   zones, 216-218
Details pane, 77
Edit tab, 81-82
examining, 76-79-84
first class objects, 78
GreenOrange data source option, 224-227
Home tab, 79-80
   Changes section, 80
   Import section, 80
   Item section, 80
   Workspace section, 79
installing, 73-75
launching from FireFox, 75
main screen, 77
PPS filters, creating, 201-203
prerequisites, 72-73
Properties pane, 83-84
uninstalling, 75
Workspace Browser, 77
dashboards, 1, 78, 199-200, 232
   Apples and Oranges Productions case study, 22
   best practices, 233
   creating, 207, 210-215
      browsers, 227-232
      PPS objects, 228-232
   deploying, 210-215
   designing, 34-36
   filters, 220-224
   GreenOrange data source option, 224-227
   pages, 218-220

D

Dashboard Designer, 71, 86
   best practices, 87
   content migration, 84-86
   Create tab, 82
   custom indicators, creating, 123-126
dimensions
   analytic chart reports
      adding to, 170-172
   filters, 172-173
   scorecards, adding, 158-160, 162
disciplines, BI (Business Intelligence), 5-9
DLLs, PPS, copying from GAC, 265-266
Drucker, Peter, 19

E
Edit Banding Settings dialog box, 144
Edit tab (Dashboard Designer), 81-82
editing
   custom indicators, 126-127
   scoring thresholds, 146
elements (PPS), security, 236-242
   permissions, 236-239
enhancers, BI (Business Intelligence), 9-10
Event Viewer, SharePoint Server 2010, troubleshooting, 312
examining, Dashboard Designer, 76-84
Excel, Import from Excel Workbook data source option, 102-104
Excel Services data sources
   best practices, 119
   creating, 97-101
Excel Services reports, 176-180
   expansion strategies, Apples and Oranges Productions case study, 24-25

F
farm sources, SPNs, creating for, 256-257
file system data source, custom object editors, creating for, 275-279
filters, 78, 199-200
   analytic chart reports, 172-173
   Business Connectivity Services filter, 204
   choice filters, 204
   creating, 200
   current user filters, 204
dashboards, 220-224
   date filter, 204
   PPS filters, creating, 200-203
   query string filters, 204
   SharePoint Server 2010 filters, creating, 204-206
   SQL Server Analysis Services filters, 204
text filters, 204
filters settings (PPS), 292-293
Firefox, Dashboard Designer, launching from, 75
first class objects, Dashboard Designer, 78
First<Member> function (STPS), 114
FirstChild function (STPS), 114
fixed values, KPI data mapping, 135
Full<Member> function (STPS), 115
functions
   calculated metrics, 139
   STPS syntax, 113-115
G
General Properties section (Dashboard Designer Properties pane), 83
Geneva Framework Runtime, 41
Get Values From Web Part connection, 208
GetDataSet method, 272-274
GetSPPerformancePointSecureDataValues cmdlet, 310
GetSPPerformancePointServiceApplication, 304
GetSPPeformancePointServiceApplicationTrust
edLocation cmdlet, 309
GreenOrange data source option, dashboards, 224-227

H

hardware prerequisites, PPS (PerformancePoint Service), 39-40
high availability
  best practices, 313
  PPS, planning for, 285-288
Home tab (Dashboard Designer), 79-80
  Changes section, 80
  Import section, 80
  Item section, 80
  Workspace section, 79

I

If function, 139
Import from Excel Workbook data source option, creating, 102-104
Import section (Dashboard Designer Home tab), 80
importing content to Dashboard Designer, 84-86
Indicator Template Wizard, custom indicators, creating, 123-126
indicators, 78, 121-122, 163. See also KPIs (key performance indicators)
  best practices, 163-164
  creating, 267-268
  custom indicators
    creating, 123-126
    editing, 126-127
KPIs, 128
  actuals, 133-135
  Analysis Services KPIs, 128-132
  data mapping, 135-142
  multiple targets, 133-135
  scorecards, 154
  sources, 122-123
styles, 122
installation
  Dashboard Designer, 73-75
    best practices, 87
  PPS, security, 235
  PPS (PerformancePoint Service), 68-69
    best practices, 68-69
    prerequisites, 39-40
    validating, 67
SharePoint Server 2010, 39, 44, 45-53
  client operating systems, 262-265
  minimum requirements, 39-43
  server farm installation, 47-53
  standalone installation, 44, 45-47
integrated business planning, BI (Business Intelligence), 10-12
interactivity features
  analytic chart reports, 173-175
  analytic grid reports, 176-177
Item section (Dashboard Designer Home tab), 80
K

Kaplan, Robert S., 19, 22
Kerberos, per-user authentication, PPS, 255-256
KPI details reports, 180-182

How can we make this index more useful? Email us at indexes@samspublishing.com
KPIs (key performance indicators), 8, 78, 89, 121, 128, 163
- actuals, 133-135
- Analysis Services KPIs, creating, 128-132
- best practices, 163-164
- creating, Scorecard Wizard, 154-158
- custom properties, updating on, 268
- data mapping, 135-142
  - calculating metrics, 138-139
  - data sources, 135
  - fixed values, 135
  - metrics, 137
- number formatting, 140
- data sources, 89-92
  - Analysis Services data source, 92-95
  - Excel Services data sources, 97-101
  - multidimensional data sources, 90-91
  - PowerPivot data sources, 95-96
  - SharePoint list data source, 105-106
  - SQL Server Table data source, 107-108
- tabular data sources, 91, 100
- time intelligence, 108-118
- trusted locations, 92
- designing, 30-33
- multiple targets, 133-135
- scorecards, 154
  - adding dimensions, 158-160
  - designing, 161-163
  - rollup, 140-142
  - Scorecard Editor, 160-161
  - updating, 161
- scoring, 142-153
  - calculating, 146-150
  - editing thresholds, 146
  - walkthrough, 150-153
- scoring patterns, changing, 143-145

L
- language form, STPS syntax, 112
- Last<Member> function (STPS), 114
- LastChild function (STPS), 114
- launching
  - Dashboard Designer from FireFox, 75
  - PowerShell, 302

M
- management pack, 286
- managing, PPS, 288-297
- Mark Differences option (Changes section), 80
- market extensions, Apples and Oranges Productions case study, 22-24
- Max function, 139
- MDX, 137
- MDX Query filter (PPS), 200
- measures
  - analytic chart reports
    - adding to, 170-172
    - filters, 172-173
    - Apples and Oranges Productions case study, identifying, 29
  - Member Selection filter (PPS), 200
- <Member>ToDate function (STPS),
- methods, GetDataSet, 272-274
- metrics
  - KPI data mapping, 137
    - calculating, 138-139
    - scorecards, adding, 161
- Microsoft Filter Pack 2.0, 41
- Microsoft Operations Manager (MOM), 286
- migration, PPS 2007, 299-301
- Min function, 139
minimum requirements
Dashboard Designer, 72-73
SharePoint Server 2010, installation, 39-43
MOM (Microsoft Operations Manager), 286
Monitoring API, 261
custom editors, 269-274
custom object editors, 275-283
creating for file system data source, 275-279
custom objects, 269-274
custom tabular data source
class libraries, 270-274
creating, 269
development environment, setting up, 265-266
PPS, extending functionality, 261-262
PPS objects, 267-268
SharePoint, installing on client operating systems, 262-265
multidimensional data sources, 90-91
multiple application servers, configuring, 287-288
multiple targets, KPIs (key performance indicators), 133-135

N
Named Set filter (PPS), 201
named sets, scorecards, 163
.NET Framework, ClickOnce Applications, 72-73
.NET Framework 3.5 SP1, 41
network load balancing, 286-287
NewSPPPerformancePointServiceApplication cmdlet, 304
NewSPPPerformancePointServiceApplication Proxy cmdlet, 307
NewSPPPerformancePointServiceApplication TrustedLocation cmdlet, 308
normalized banding, scoring, 146-153
Norton, David P., 19, 22
number formatting, KPI data mapping, 140

O
object editors (custom), 275-283
creating for file system data source, 275-279
deploying, 279-282
OLAP (online analytical processing) data sources, 8, 91
operators, STPS syntax, 113

P
pages, dashboards, 218-220
Parent function (STPS), 114
performance management methodologies, BI (Business Intelligence), 9
performance optimization, best practices, 313
Performance Point Content lists, analytic chart reports, creating, 168
PerformancePoint Dashboard Designer. See Dashboard Designer
permissions, PPS elements, 236-239
Permissions option (Item section), 80
per-user authentication, PPS, Kerberos, 255-256
per-user identity, PPS, 245-251
PowerPivot data sources, creating, 95-96
PowerShell, launching, 302
PPS (PerformancePoint Services), 13, 19-20, 39
Apples and Oranges Productions case study, 19-21
architecture, 25-26
business situation, 21-24
requirements, 21-24

How can we make this index more useful? Email us at indexes@samspublishing.com
PPS objects, dashboards, creating with, 228-232
Prerequisite tool, 42-43
running, 42-43
prerequisites
Dashboard Designer, 72-73
SharePoint Server 2010 installation, 39-43
ProClarity Analytics Server Page reports, 183-185
project plan, Apples and Oranges Productions case study, 26-36
Properties option (Item section), 80
Properties pane (Dashboard Designer), 83-84
proxy groups, service application proxy, associating with, 63

Q
query string filters, 204

R
Refresh option (Workspace section), 79
RemoveSPPerformancePointServiceApplication Proxy cmdlet, 308
Report Viewer 2008, SQL Server Reporting Services reports, 87
Reporting Services report, 185-188
reports, 78, 165-166, 196
analytic chart reports, 167-175
adding additional measures, 170-172
adding data elements, 169-170
adding dimensions, 170-172
context menus, 173-175
filters, 172-173
interactivity features, 173-175
analytic grid reports, 175-177
best practices, 197
decomposition tree reports, 193-194
designing, 32-34
Excel Services reports, 176-180
KPI details reports, 180-182
ProClarity Analytics Server Page reports, 183-185
Reporting Services report, 185-188
show details reports, 194-196
strategy maps, 188-192
web page reports, 192
requirements, SharePoint Server 2010 installation, 39-43
rollup, KPIs, scorecards, 140-142
Round function, 139

S
SCOM (System Center Operations Manager), 286
Scorecard Editor, 160-161
Scorecard Wizard, KPIs, creating, 154-158
scorecards, 78, 121, 154, 163
aggregations, adding, 161-162
Apples and Oranges Productions case study, 22
best practices, 163-164
custom properties, 162
designing, 30-33, 161-163
dimensions, adding, 158-160, 162
KPIs
creating, 154-158
rollup, 140-142
metrics, adding, 161
named sets, 163
Scorecard Editor, 160-161
set formulas, 163
upating, 161

scoring
definitions, 143
KPIs, 142-153
calculating, 146-150
walkthrough, 150-153
thresholds, editing, 146

scoring patterns, KPIs, changing, 143-145

Secure Store Service (PPS), configuring, 53-56

security (PPS), 235-236, 259
authentication, 251-252
best practices, 260
constrained delegation, 258
data connections, 242-244
data source connections, 255
deployment with TLS, 252-253
elements, 236-242
per-user authentication with Kerberos, 255-256
per-user identity, 245-251
SPNs, 256-257
Unattended Service Account, 242-245
Windows Token service, 259

Select Measure Control setting (PPS), 293

Send Values To Web Part connection, 208
server farm installation, SharePoint Server 2010, 47-53
server requirements, PowerPivot data sources, 95
service accounts, constrained delegation, 258
service applications, creating, 56-57, 310
services settings (PPS), changing, 311
set formulas, scorecards, 163

Settings screen (PPS)
cache settings, 291-292
Comments section, 290-291
Data Sources setting, 292-293
Decomposition Tree settings, 294-296
filters settings, 292-293
Select settings, 293
Show Details settings, 294

shared services, creating, 310
SharePoint Designer, filters, creating, 205-206
SharePoint lists, data sources, 105-106, 119
best practices, 119

SharePoint Server 2010
client operating systems, installing on, 262-265
filters, creating, 200, 204-206
installing, 39, 44-53
minimum requirements, 39-43
server farm installation, 47-53
standalone installation, 44
troubleshooting, 312-313
WFE (web front-end) servers, configuring for, 58

show details reports, 194-196
Show Details settings (PPS), 294

Six Sigma, 9

software prerequisites, PPS (PerformancePoint Service), 39-40

Source Value Web Part connection, 208
source values, Web Parts, 209
sources, indicators, 122-123
SPNs (Service Principal Names), data sources, creating for, 256-257
SPPerformancePointServiceApplication cmdlet, 307

SQL 2008 Native Client, 41
SQL Server Analysis Services filters, 204
SQL Server Reporting Services reports, Report Viewer 2008, 87
SQL Server Table data source, creating, 107-108
standalone installation, SharePoint, 44-47
standard indicators (PPS), 122
starting, PPS (PerformancePoint Service), 57-58
STPS syntax, time intelligence, 111-118
  functions, 113-115
  language form, 112
  operators, 113
  time members, 112
strategy map reports, Visio Professional, 87
strategy maps, 188-192
styles, indicators, 122
Sum function, 139
Sync Framework Runtime v1.0, 41
System Center Operations Manager (SCOM), 286

T

tabular data sources, 91
  column types, 100
  custom tabular data source class libraries, 270-274
  creating, 269
  time intelligence, configuration, 110-111
text filters, 204
thresholds, scoring, editing, 146
time intelligence, data sources, 108-118
  Analysis Services data source, 109-110
  STPS syntax, 111-118
  tabular data sources, 110-111
Time Intelligence Connection Formula filter (PPS), 201
Time Intelligence filter (PPS), 201
time members, STPS syntax, 112-113
TLS (Transport Layer Security)
  PPS, deploying, 252-253
  PPS web services, configuring on, 254
  web applications, configuring on, 253
trace log files, SharePoint Server 2010, troubleshooting, 313
troubleshooting, SharePoint Server 2010, 312-313
trusted data sources (PPS), 296-297, 311
trusted locations, data sources, 92

U

Unattended Service Account, security, 242-245
Unattended Service Account (PPS)
  connection string, username added to, 242-245
  setting, 61-62
uninstalling Dashboard Designer, 75
  best practices, 87
updating
  custom properties, KPIs, 268
  scorecards, 161
  usernames, Unattended Service Account, connection strings, 245

V

Validate Item option (Changes section), 80
validation, PPS (PerformancePoint Service) installation, 67
Visio Professional, strategy map reports, 87
W

walkthrough, scoring, 150-153
web applications, TLS, configuring on, 252-253
web page reports, 192
Web Part connections, dashboards, 208-210
Web Parts
  Connect To values, 209-210
  source values, 209
Web Server Role, 41
WFE (web front-end) servers, configuring, 58
Windows PowerShell 2.0, 41
Windows Token service, claims, configuring, 259
wizards
  Configuration Wizard, server farm installation, 47-53
  Indicator Template Wizard, 123-126
  Scorecard Wizard, 154-158
Workspace Browser (Dashboard Designer),
  Details pane, 77
Workspace section (Dashboard Design Home tab), 79

Z

zones, dashboards, 216-218