Getting Started with SAS® Activity-Based Management 6.4

Second Edition

SAS® Documentation

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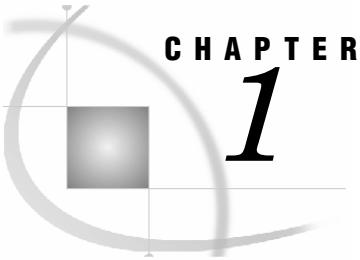


CHAPTER 1

Introduction

This tutorial is intended to familiarize you with the basic modeling concepts that are used in SAS Activity-Based Management software. To complete the model-building process, perform this tutorial from beginning to end, exactly as it is presented.

Note: You can import an already completed model for the Parcel Express Tutorial by doing the following:

1. Select **File > Import > Model Data**.
2. Select **XML or ZIP File** as the type of data you want to import, and click **Next**.
3. Browse to the following file:
<install director>\Activity-Based Management Solution\Client\Samples\Models\Native**ParcelExpressTutorial.xml**, and click **Next**.
4. Name the tutorial. You can name it anything you want. Click **Next**, review your choices, and then click **Finish**.

The tutorial model is imported. You must calculate the model to view calculated data.

If you are new to the discipline of activity-based management (ABM), you might benefit more from this tutorial by first learning about the concept. A number of books and articles present excellent overviews. Even without this background, you will learn some basic ABM concepts by completing this tutorial.

Even though you might know ABM, work through this tutorial to become familiar with SAS Activity-Based Management software—the concepts, terminology, commands, and dialog boxes.

Tutorial Conventions

This section discusses the conventions that are used throughout this tutorial.

Fonts

Font	Represents	Example
Bold	Menu > Command	Select **File > Save Model As**.
	User input	Type **`Parcel Express Tutorial`**.
	User interface elements, such as menus, dialog boxes, buttons, or list items	Select **Calculate Specific Modules**

Procedures

A procedure is a task that includes a set of numbered step-by-step instructions. Some steps are followed by a comment or an explanation. A section that has the following convention indicates a procedure:

➢ **Begin this tutorial**

1 Perform step one.

Explanatory comments and illustrations, which explain and display results of proper completion of the preceding steps, are included between steps, when necessary.

2 Perform step two.

Notes and Tips

A note indicates additional information. This is the convention for indicating a note:

Note: Text that is set off in this manner presents important information.

The format for a tip is similar.

Illustrations

Depending on your display settings and the number of times that you perform a step or procedure, the information in the windows might differ slightly from the illustrations that are presented in this tutorial. If you enter, then delete, and then re-create accounts and cost elements, the reference number might differ from the illustration. The displayed order of accounts might differ if you close and reopen the model. Consider the illustrations to be guides.

Illustrations will usually show only the pertinent portions of the window that are being discussed.

Terminology

This tutorial refers to both the discipline of activity-based management (ABM), and the SAS Activity-Based Management solution. References to the discipline appear in lowercase or by abbreviation. The SAS solution is always capitalized.

The discipline of activity-based management has a set of specialized terms. Some are used in this tutorial precisely because of their specialized meaning to the theory and practice of ABM. As these terms are introduced, this tutorial provides brief definitions. More complete definitions can be found in the *CAM-I Glossary of Activity-Based Management*.

Online Help

The online Help is a comprehensive information system that has full-text search capabilities. It includes:

- detailed step-by-step instructions to complete specific tasks
- information about features
- reference material

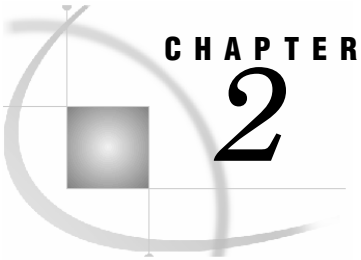
Technical Support

If you encounter problems that you cannot solve by reading the online Help or this tutorial, refer to the Worldwide Technical Support topic in the online Help.

Additional Training and Tutorials

Additional training and tutorials can be found at the SAS Web site and the companion Web site, http://www.bettermanagement.com. BetterManagement.com offers in-depth content about selected management concepts that are aimed at improving an organization's performance. The BetterManagement.com site is a comprehensive source for performance management information.

Topics that are covered on the BetterManagement.com site include value-based management, profitability analysis, strategic enterprise management, activity-based costing/management, business intelligence, and performance measurement.



CHAPTER 2

Activity-Based Management

Activity-based management is a discipline that enables companies to manage activities and processes as a means of improving organizational performance and the value that is received by the customer. By applying direct and indirect business costs to activities, the SAS Activity-Based Management solution enables managers to get a true understanding of the costs and profits that are associated with a product, customer, service, or business process. It supports ongoing profitability analysis, cost-management initiatives, shared-services management, planning and budgeting efforts, and capacity optimization.

The basic tool of ABM is activity-based costing (ABC), which more accurately tracks costs than traditional methods. Two critical limitations of traditional cost accounting systems are:

- the inability to report individual product, service, customer, or process costs with a reasonable level of accuracy
- the inability to provide useful feedback to management for the purpose of operational control

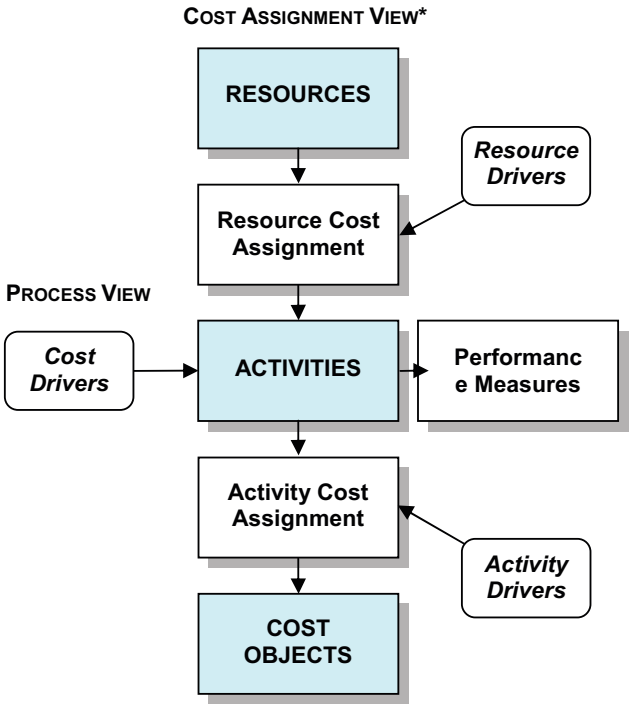
Often, managers of complex organizations make important decisions about pricing, product and customer mix, resource allocations, and budgeting that are based on inaccurate and inappropriate cost and profitability information.

Using SAS Activity-Based Management, you build one or more models that apply direct and indirect organizational costs to specific activities and processes. As a result, managers are able to see actual cost assignments and their bottom-line impacts from an operational perspective. Managers get a true understanding of the cause-and-effect relationships that link resources and processes to outputs. Thus, business planners can easily forecast resource requirements, create budgets, and optimize capacity usage.

The ABC Model and CAM-I Methodology

ABC assumes that activities cause expenditure of resources, and that cost objects—the results of activities or products and services that are produced—create the demand for activities.

The Consortium of Advanced Management, International (CAM-I) develops methods to define critical business issues and to model effective strategies and solutions that resolve cost and resource management issues. SAS Activity-Based Management uses the CAM-I methodology for activity-based model development.



The Cost Assignment View

An ABM system enables you to identify the activities that are performed, associate resources (expenditures) with those activities, and flow the cost of activities to cost objects. Resource drivers (typically, general ledger entries such as payroll, utilities, or materials) drive expenditures for activities. Activity drivers (such as the number of parts or setups) drive activity consumption for cost objects. Types of cost objects are: products, services, markets, distribution channels, engineering projects, or customers.

The Process View

An ABM system enables you to expose the relationship between why work is done, and the results of that work. In ABM terms, cost drivers drive the reason for activities and the effort that is needed to engage in the activities. Performance measures drive the

achieved results of activities—the efficiency, the required completion time, and the quality of the activities that were performed.

SAS Activity-Based Management Models

The basic container for ABM information in SAS Activity-Based Management software is the *model*. A meaningful ABM model reflects the organization that it is modeling, and uses terms that are familiar to the people who work there. The structural elements of a model should be named after elements that are present in the organizational environment. For example, a company's general ledger account names, such as Wages and Depreciation, can be used to name and reference the resource accounts in the ABM model; the hierarchy of processes in a company can be applied to the activity accounts in the ABM model.

Modules

A model consists of three basic modules, which reflect the CAM-I definitions:

Resource	contains the expenses (or costs), such as salaries, materials, and depreciation, for the organization that is being modeled.
Activity	contains activities. Activities have accounts with cost elements. Costs might be assigned to activities from resource accounts or from other activity accounts.
Cost Object	contains cost objects (products, services, channels, or customers). These cost objects are assigned costs from resources, activities, other cost objects, or any combination of the three.

These modules constitute the main structure of a model. A fourth module, external units, provides support for external costs. An external unit is an item, such as a part that is purchased from a supplier, whose cost is maintained outside of a SAS Activity-Based Management model, but which needs to be accounted for in the model. You will build each of these modules with the use of dimensions.

Dimensions

A dimension is a category by which data is analyzed. For example, it might be useful to see sales figures when they are broken down by region, by customer, and by product. Each of these categories (region, customer, and product) represents a single dimension. Common dimensions are products, time, geography, customers, promotions, and sales channels.

To break down information into a manageable or useful form, you can group items within a dimension to create a hierarchical structure. Each member of the hierarchy is then at a specific level in the hierarchy. You can name a dimension level as needed. Dimension levels are a powerful modeling tool because they allow you to ask questions at a high level, and then expand a dimension to reveal more detail.

Types of Dimensions

There are two types of dimensions in a model: structural and attribute.

Structural dimensions are the building blocks of modules. For example, the typical structural dimensions of the resource module are region, organization, or general ledger; the activity module might be structured according to the region or organization dimension, along with an activity dimension.

Dimension attributes provide information that is useful, but not required, to uniquely identify the model structure. Using dimension attributes, you can classify or organize information in ways that will help you analyze model results. The SAS Activity-Based Management OLAP tool makes no distinction between dimension attributes and structural dimensions.

Basic Steps to Building a Model

The following list of steps summarizes the method that you will use in this tutorial for setting up and analyzing information in SAS Activity-Based Management models. This method is described completely in the lessons and exercises in the tutorial.

1 **Create a paper plan**.

   Collect resource (expenditure), activity, and cost object (products and services) information to design your model. Determine the goal of the model (what kind of information you want to get from it), and determine the appropriate dimensions, periods, and scenarios to achieve that goal.

2 **Create periods and scenarios**.

   Create the periods and scenarios to be used by your model. (Periods and scenarios are shared by all models on a server.)

3 **Create dimensions, modules, and accounts**.

   Create the dimensions and dimension members that you will use to build the modules. Build the resource, activity, and cost object modules by defining the accounts (dimension intersections) of each module.

4 **Define attributes**.

   Define and add attributes to the appropriate accounts.

5 **Define drivers**.

   Define drivers that measure the consumption of expenses and activities.

6 **Make assignments**.

   Select the relevant driver for each source account. Make cost assignments from source accounts to destination accounts.

7 **Calculate costs**.

   Calculate costs and display the results.

8 **Add bills of costs**.

Define and link external unit costs to accounts.

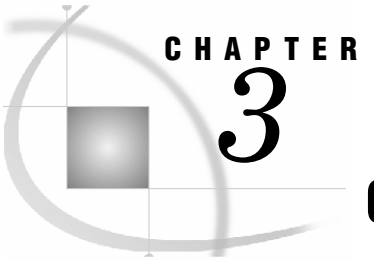
9 **Enter output, sales, and revenue data**.

Enter output quantities, determine unit costs, enter sales volumes, and calculate profit.

Parcel Express

Parcel Express is a fictitious organization that is using activity-based management to determine whether this method more clearly conveys costs and profitability information than traditional costing methods.

A later chapter outlines the main business activities of Parcel Express and the company's goals in using SAS Activity-Based Management.



CHAPTER 3

Getting Started

The SAS Activity-Based Management solution is Web-enabled. Its server typically resides on your company's intranet, and the client software resides on your computer. This tutorial assumes that you have installed the software on your computer, and that you are familiar with basic software usage techniques, such as using menus, dialog boxes, and other windows and Web controls.

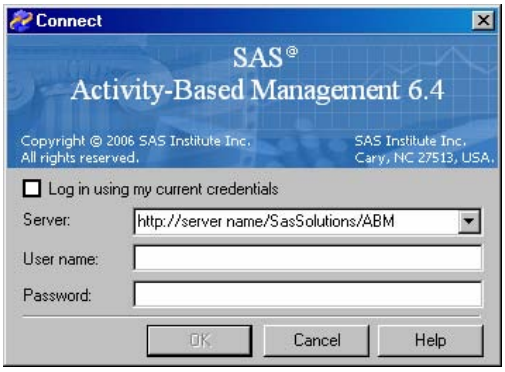
Logging In

Log in to SAS Activity-Based Management from the **Start** menu.

➢ **Log in to SAS Activity-Based Management**

1 Select **Start > Programs > SAS > Activity-Based Management 6.x > Activity-Based Management Solution**.

You see the Connect dialog box. The software version number might vary.



2 If your current network login information is not valid for the server, clear the **Log in using my current credentials** option.

3 From the **Server** drop-down list, select a server, or type the server name.

4 If you cleared the **Log in using my current credentials** option:

   a Type your domain and **User name**.

   For example, `HQ\JohnD`.

   b Type your **Password**.

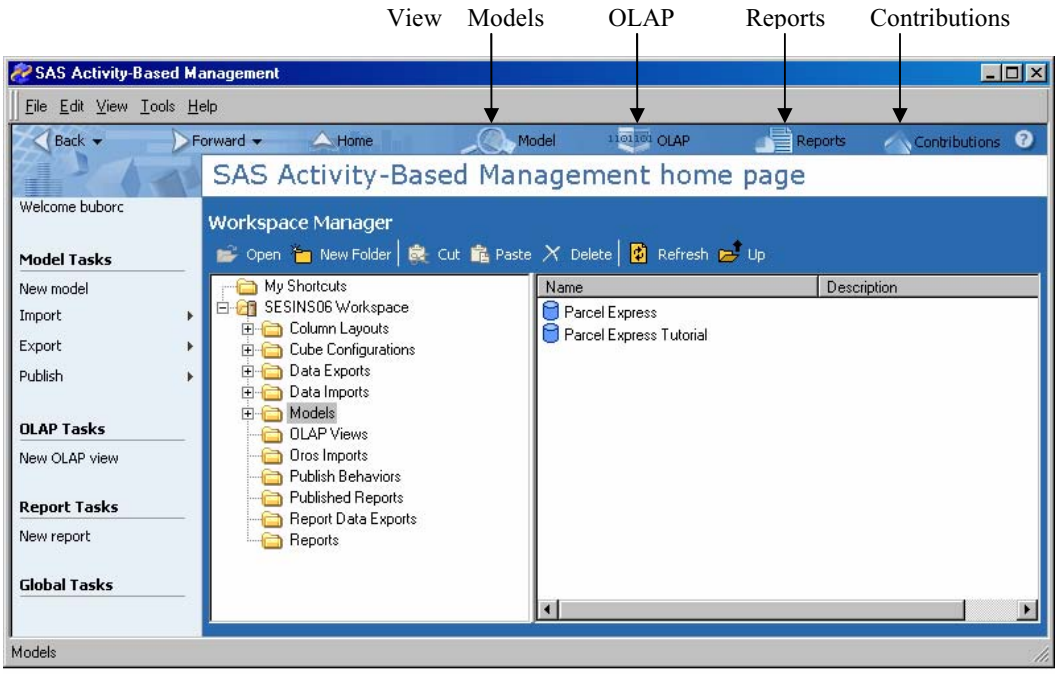
   As you type each character, an asterisk (*) appears in its place.

5 Click **OK**.

You see the SAS Activity-Based Management home page.

The Home Page

The following window shows the SAS Activity-Based Management home page.



Read the online Help (click ) for descriptions of the home page and Workspace Manager. Any existing models to which you have access rights appear in the Models folder or its subfolders. You can create shortcuts to your models in the My Shortcuts folder.

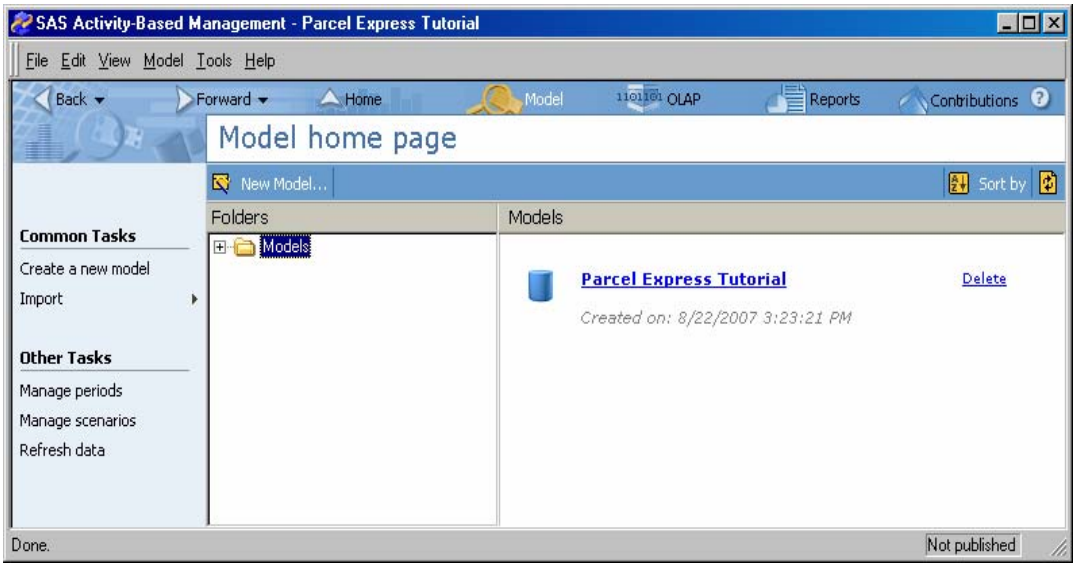
➢ Change to Model mode

1 On the home page, click 

You see a model page. If you have just started SAS Activity-Based Management, you will see the Model home page. If you have been working with a model, you will see the model page you were working on last.

Model Home Page

The Model home page lists the models to which you have access rights. From this page, you can open, create, or delete models.

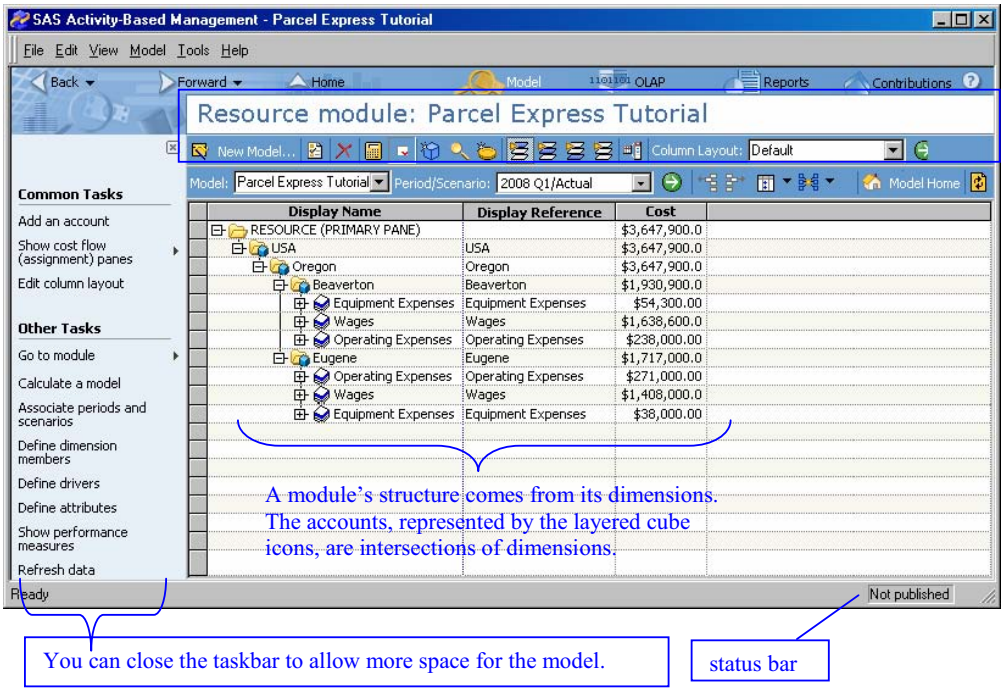


Model Mode and Module Pages

When you open a model, you usually go to the Resource module page, one page among many pages that constitute Model mode. If you change to a different mode, such as OLAP or Reports mode, and then return to Model mode, you go to the model page you were working on most recently.

You perform all of the tasks that are associated with building a model, entering data, and calculating costs in Model mode. Many of the tasks rely on the use of dialog boxes (which enable you to manage specific aspects of the model) and wizards (which guide you through certain procedures). In many cases, you will enter data directly into a column on one of the Model mode pages.

The following window shows the Resource module page of the model that you will be building in this tutorial.



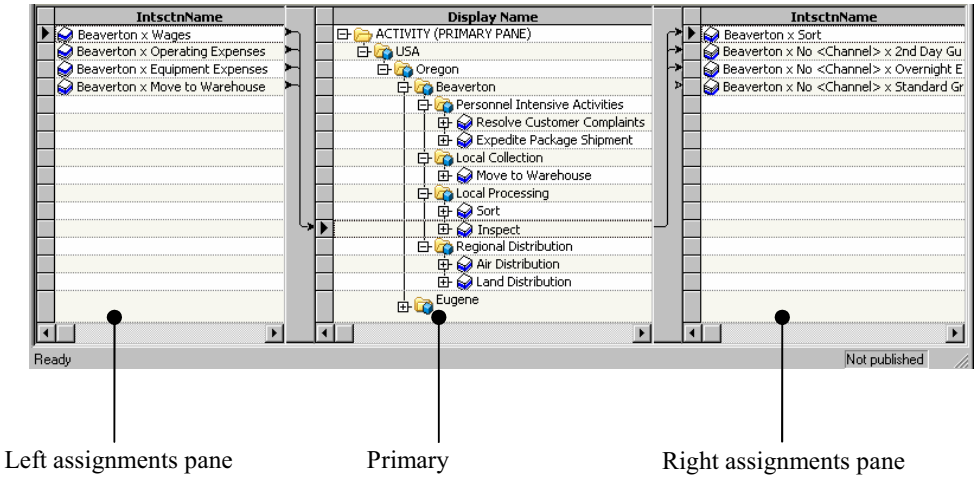
In this tutorial, you will be directed to use the menus most of the time. Occasionally, you will be instructed to use a button or an icon. As you become more familiar with the software, you can choose whichever method you prefer to initiate tasks. Read the online Help for complete descriptions of toolbar buttons and icons.

Assignments Panes

One of the main objectives of activity-based management is to accurately assess how company costs are consumed; for example, how costs flow from general ledger accounts to activities to products and services. SAS Activity-Based Management provides you with several graphical tools to help you see and manage this flow. Among these tools are the left and right assignments panes, which allow you to view and assign costs from one module to another and within a single module.

By default, each module opens in a single-pane view, the primary pane. The primary pane contains the structure of a module, which includes the dimension intersections (accounts) and each account's cost elements. You can open the left assignments pane to see the accounts from which costs flow (sometimes called source accounts). You can open the right assignments pane to see the accounts to which costs flow (sometimes called destination accounts).

The following display shows the Activity module of the model that you will be building in this tutorial. All three panes are open.



In this display, the arrows that point from the left assignments pane to the primary pane indicate costs that are flowing into the Beaverton Inspect account in the Activity module. The arrows that point from the primary pane to the right assignments pane indicate costs that then flow from the Beaverton Inspect account into other accounts.

In this tutorial, you will use the right assignments pane to assign costs from one account to another.

Column Layouts

A column layout is a collection of displayed columns, column formats, and the column order on the module pages. You can customize a column layout to display various information, such as properties, attributes, periods, and scenarios. When you have customized it, you can save a column layout by name so that you can retrieve it later. You see saved column layouts in the Workspace Manager and in the Column Layout list on the Resource, Activity, Cost Object, and External Units module pages.

When you save a column layout, the following information is saved:

- description
- column headings
- information that is displayed in each column and the period/scenario association to which it applies
- format for each column and order of the columns from left to right
- model
- column widths

The following information is *not* saved:

- number of assignments panes that appear on the page

Tip: All column layouts that are saved by all users on the same server are listed in the Workspace Manager. Therefore, your organization might want to set guidelines for saving and naming column layouts.

Properties, Attributes, and Dimensions in Column Layouts

The columns of a column layout are derived from the following model elements:

Properties	A property is a model item that holds values that are entered by a user or calculated by the software. Examples of properties are: Cost, Unit Cost, Output Quantity, Sold Quantity, and Profit. The more familiar you become with SAS Activity-Based Management modeling, the more you will be able to use properties creatively to achieve your analysis goals.
Attributes	An attribute is a user-defined label or numeric value that is attached to an account. Each attribute is a particular characteristic that is used for analysis. An attribute conveys information about the item to which it is attached.
Dimensions	A dimension is a category by which data will be or is analyzed. You define the dimensions of your model when you use the New Model Wizard.

Reports

SAS Activity-Based Management allows you to use predefined report templates or to create your own reports.

➢ **Change to the Reports page**

1 From the home page, click 

You see the Reports home page.

OLAP Cubes

A cube is the main object in OLAP, a technology that provides fast access to data in a model. A cube contains a set of data that is constructed from a subset of model data and that is organized and summarized into a multidimensional structure. SAS Activity-Based Management cubes are standard OLAP cubes.

You use SAS Activity-Based Management software to connect to and interact with the cubes on a SAS Activity-Based Management server. For each model, you can generate cubes that you can manipulate on the OLAP page to interactively analyze business data.

➢ **Change to the OLAP page**

1 From the home page, click 

You see the OLAP home page.

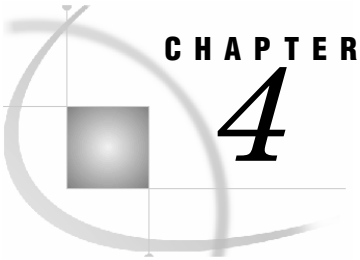
Contributions

The Contributions page allows you to query a cube on the fly without having to generate a cube. You can quickly see what input contributed to costs from accounts in any module to accounts in any other module. The Contributions page provides the quickest and easiest way to explore the flow of costs throughout a model.

➢ **Change to the Contributions page**

1 From the home page, click 

You see the Contributions page.



CHAPTER 4

Creating a Paper Plan

Activity-based management projects begin with a plan. After you have determined the analysis goals of the model and defined the dimensions that will enable that analysis, you can begin data collection. Information concerning resources (expenditures), activities (tasks), and cost objects (products and services produced) provides the basis for building an ABM model.

Building by Design

Before beginning to build a model, evaluate and make preliminary decisions about the design of the model. Just as a building contractor needs a plan before beginning to build a house, a model builder needs a plan for the structure of a model before beginning to build the model.

Factors that influence a model's design include the following:

- goal of the model—the operational or strategic questions the activity-based management program is intended to answer
- data already collected and its format
- data needed that is not being collected
- types of reports and OLAP cubes that will be needed

This tutorial uses a simple design and focuses on the steps for building a model. The design of the model and the effort that it takes can be simple or complex. The model builder will need to understand these factors, and other factors that are unique to each modeling situation, to arrive at a design. The model used with this tutorial is named Parcel Express. The Parcel Express Tutorial case study provides fictitious company data.

The Parcel Express Tutorial Model

Company Background

Parcel Express began operations in Beaverton, Oregon, in 1990 as a ground parcel delivery service. In 1995, with 125 employees and $1 million in sales, the company began expanding to overnight delivery and second-day delivery.

In the first quarter of 2004, total sales revenue was approximately $5.5 million. Costs for the same period were about $3.8 million, for a profit of about $1.7 million.

ABM Goals

Parcel Express hopes to use SAS Activity-Based Management to trace operating costs to individual products and services so that the overall costs and profit of each product and service can be determined and improved. Parcel Express is concerned that the current accounting system, which divides the business into about 10 product groupings, might not accurately reflect the different costs of doing business for the two express services: Overnight Express and 2nd Day Guaranteed.

Management wants to know how each product is performing. The company's competitors have dominated in the second-day delivery market, and management has recently slashed prices on that product. Sales volumes have increased as a result, but it's unclear how much profit Parcel Express is making, if any. The company would like to meet a target profit margin of at least 10% on the 2nd Day Guaranteed product, and at least 25% on all others. It is willing to adjust pricing or modify processes to reach that goal.

Model Structure

Parcel Express has assembled a SAS Activity-Based Management modeling team whose members have become familiar with ABM concepts and the structure of ABM models. Together, they have determined that the following module structure most accurately reflects the way Parcel Express conducts its operations.

Resource Module

Resources will be structured by region and general ledger account. The two main processing plants are Beaverton and Eugene, Oregon. General ledger accounts include:

- wages (salary and overtime)
- operating expenses and office supplies
- equipment depreciation

Activity Module

Activities will be structured by region and activity. The activities Parcel Express has chosen to model are:

- branch collection
- sorting and inspection
- air and land distribution
- resolution of customer complaints

The Eugene facility does not have an air distribution function, so it will have one less account than Beaverton.

Cost Object Module

Parcel Express needs to be able to track not only the costs of products and services, but the costs of its channels as well. Therefore, Parcel Express will organize the cost object module by channel and products and services.

The three channels are:

- drop box
- walk in
- commercial pick up

The three products and services are:

- Standard Ground
- 2nd Day Guaranteed
- Overnight Express

External Units Module

Each product has packaging costs that must be accounted for. Materials for packaging will be tracked as external units, including:

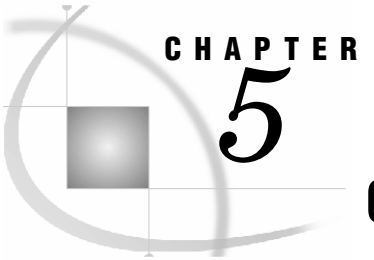
- envelopes
- flats
- boxes

Data Collection

The following data will be collected for entry into the ABM model:

Wages	Wage information, including salaries and overtime, will come from the general ledger system. Wages will be entered as dollar amounts, and assigned to activities according to the number of full-time employees, or FTEs (Full-Time Equivalents), who are associated with an activity.

Operating Expenses	Operating expenses and supply costs will come from the general ledger. These costs will be assigned to activities in dollar amounts.
Equipment Expenses	Equipment expenses, including depreciation, will come from the general ledger. These costs will be assigned by percentage.
Collection and Distribution	Branch managers will collect data from their control systems regarding the number of packages that are collected, moved to warehouses, sorted, inspected, and distributed by land and air. Accurate numbers here are critical to the success of the modeling effort. Activity accounts will assign costs by number of packages.
Complaints	The number of customer complaints will be collected by branch managers. Costs that are associated with complaint resolution will be assigned according to the number of complaints that re received.
Revenue	Revenue will come from the sales accounting system. Revenue will be associated with cost objects according to the sales quantity for each product.



CHAPTER 5

Creating Periods and Scenarios

A period is an interval of time in which activity-based management data is maintained. A period can represent any unit of time: a month, a quarter, a year, and so on. For example, if your organization chooses to enter data each month, the marketing payroll cost is the amount of payroll for one month. A model can hold data for different periods, but only one period at a time is active. You can create a hierarchy of periods, such as FY2008 > Q1 > January. By default, each level is given a name, such as Period L1.

You can compare model data that you have entered for different periods. For example, you can enter costs into a model on a month-by-month basis and examine the costs for March versus the costs for February.

Scenarios are generally used to manage different variations of data within a period. A scenario can be any set of data: actual, budget, aggressive plan, conservative plan, and so on. The default scenarios are Actual and Budget. You can create a hierarchy of scenarios, such as Budget > Aggressive. By default, each level is given a name, such as Scenario L1. However, these names are not descriptive when you generate cubes. So, you can rename a default scenario level.

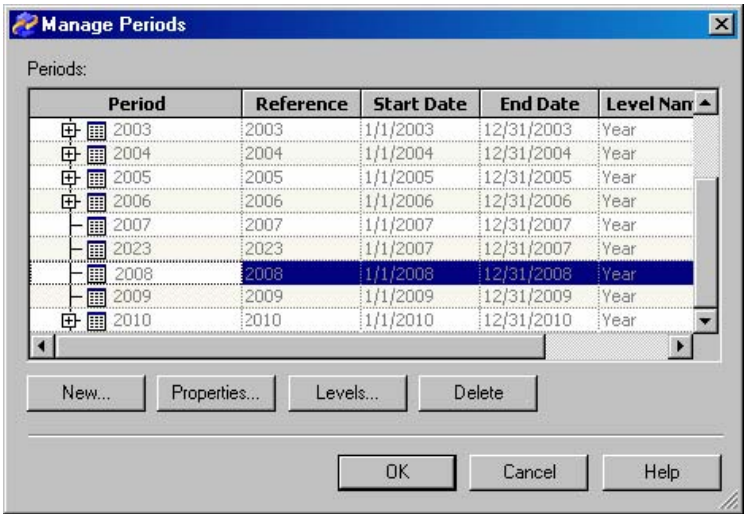
Creating a Period

Parcel Express analyzes costs by quarters, so the model will be structured to analyze quarter-on-quarter costs. The period that you will create is 2008 Q1.

➢ **Create a period**

1 Select **Tools > Manage Periods**.

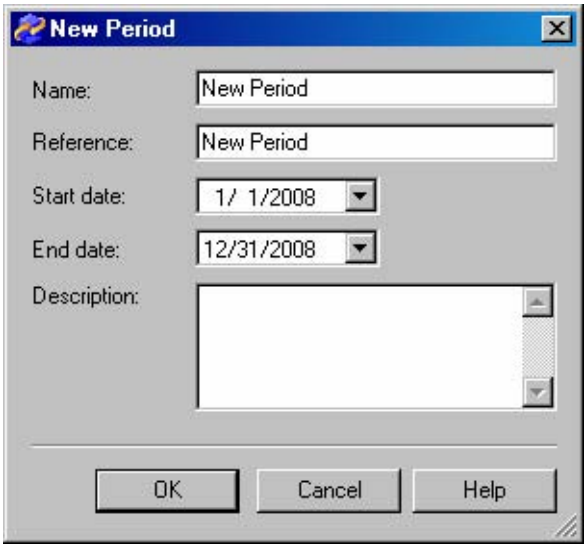
You see the Manage Periods dialog box.



2 Select the **2008** period and click **New**.

Note: These periods might already exist on your server.

You see the New Period dialog box.



3 For **Name**, replace **New Period** with `2008 Q1`.

4 For **Reference**, type `08Q1`.

5 Select a **Start date** of January 1, 2008.

6 Select an **End date** of March 31, 2008.

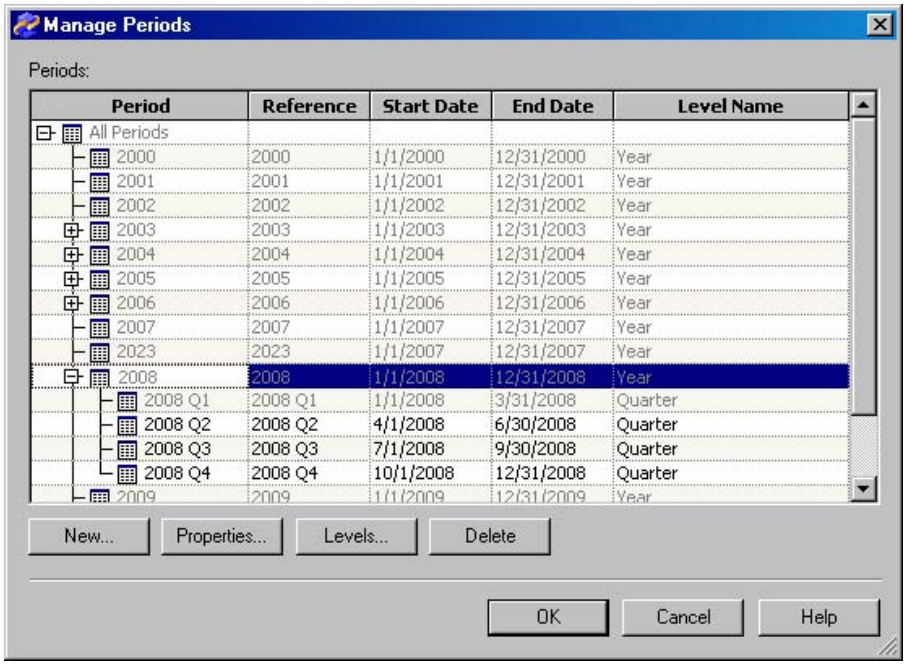
Note: SAS Activity-Based Management enables you to enter descriptions for the items that you create. In this tutorial, you do not enter descriptions.

7 Click **OK**.

You see the new period added to the list below the 2008 period.

8 Create three more periods that are named **2008 Q2, 2008 Q3**, and **2008 Q4**. Specify appropriate date ranges and references for each period. All period references must be unique.

When you are done, you should see the following periods in the Manage Periods dialog box:



9 Click **OK**.

Creating a Scenario

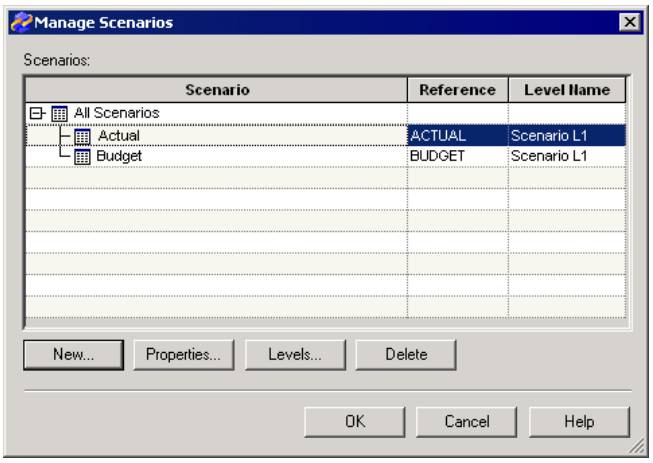
Parcel Express wants to compare actual costs that it incurred on a quarterly basis. It will analyze the profit and loss trends in these costs to make decisions about resource allocation, process control, and pricing. For these purposes, the Actual default scenario is adequate.

However, so that you gain experience, assume that the company had specific profit targets that it wanted to model in SAS Activity-Based Management. You could create a scenario named Target.

➢ Create a scenario

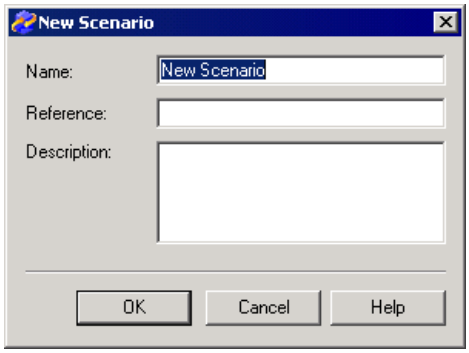
1 Select **Tools > Manage Scenarios.**

You see the Manage Scenarios dialog box.



2 Select **All Scenarios** and click **New**.

You see the New Scenario dialog box.



3 For **Name**, replace **New Scenario** with `Target`.

4 For **Reference**, type `TARGET`.

5 Click **OK**.

You see the new scenario added to the list below the Actual scenario.

6 Click **OK**.

Deleting Periods and Scenarios

You can delete a period or scenario from the Manage Periods or Manage Scenarios dialog boxes, respectively:

1 Select **Tools > Manage Periods** or **Tools > Manage Scenarios**.

2 Select a period or scenario.

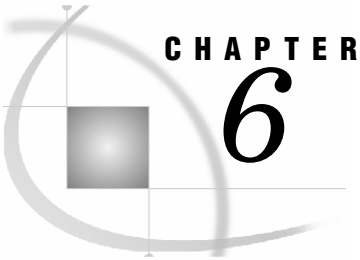
3 Click **Delete**.

Note: This procedure makes the period or scenario unavailable for any model. If a period/scenario association is already assigned to a model, then you first need to delete the association from every such model. To do so:

1 Open the model and select **Model > Period and Scenario Associations Page**.

2 Right-click a period/scenario association.

3 Select **Delete**.



CHAPTER 6

Creating Dimensions and Dimension Members

Before creating the structure of a module, you must define the dimensions, as specified in the paper plan, that you will use to build that structure.

The dimensions that you will create for the tutorial are:

Module	Dimensions
Resource	Region General Ledger
Activity	Region Activities
Cost Object	Region Channel Products and Services
External Unit	Materials
Profit Analysis	Region Channel Products and Services

By contrast, the default dimensions are:

Module	Dimensions
Resource	Organization General Ledger
Activity	Organization Activities
Cost Object	Customer Products and Services
External Unit	Materials
Profit Analysis	Customer Products and Services

Creating Dimensions with the New Model Wizard

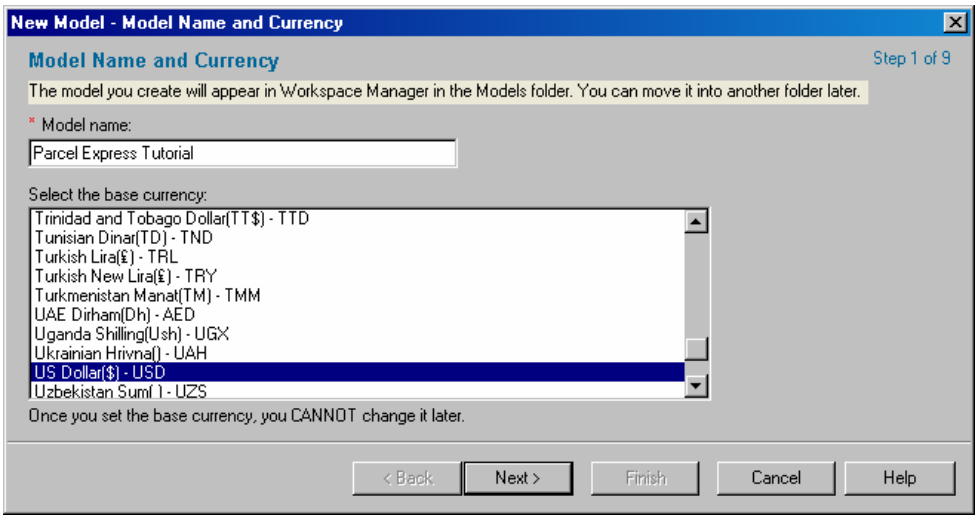
The main purpose of the New Model Wizard is to establish the dimensions of your model. These are the dimensions that you will use to create accounts and the structure of the modules. Most important, these are the dimensions that will eventually enable you to generate meaningful cubes and to analyze the profits and losses that result from your business activities.

Now, you will create the model named Parcel Express Tutorial. The model's monetary data will be in U.S. dollars.

➢ Start the New Model Wizard

1 Select **File > New > Model**.

You see Step 1 of the New Model Wizard.



The New Model Wizard contains nine steps. If you accept the default dimensions for your model, you will not perform every step. For this tutorial, you will define your own dimensions and perform every step in the New Model Wizard.

2 For the name, type `Parcel Express Tutorial`.

Note: Each model name must be unique on a SAS Activity-Based Management server.

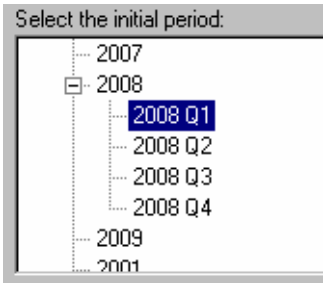
3 Verify that the base currency is **US Dollar($)**.

4 Click **Next.**

You see Step 2 of the New Model Wizard.

➢ Select a starting period and scenario

1 Expand **2008** and select the **2008 Q1** period.



2 Select the **Actual** scenario.

A period/scenario association identifies a specific period and scenario combination; in this case, 2008 Q1/Actual. All model data must reside in a period and must apply to a scenario. An association represents a period-scenario pair.

3 Click **Next**.

You see Step 3 of the New Model Wizard.

➢ Select the method for defining dimensions

1 Verify that the **Select or define the dimensions for each module** option is selected.

This option enables you to create new dimensions, rearrange dimensions, or use the default dimensions for some modules, but not others. The dimensions that you will create for the tutorial are:

Module	Dimensions
Resource	Region General Ledger
Activity	Region Activities
Cost Object	Region Channel Products and Services
External Unit	Materials
Profit Analysis	Region Channel Products and Services

2 Click **Next**.

You see Step 4 of the New Model Wizard.

➢ Define the resource module dimensions

1 In the **Selected dimensions** list, select the **Organization** dimension.

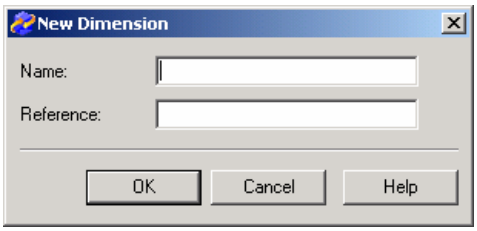
Next, you will remove this dimension from the **Selected dimensions** list.

2 Click **< Remove**.

You see the **Organization** dimension move from the **Selected dimensions** list to the **Available dimensions** list.

3 Click **New**.

You see the New Dimension dialog box.



4 For **Name**, type `Region`.

5 For **Reference**, use **Region**.

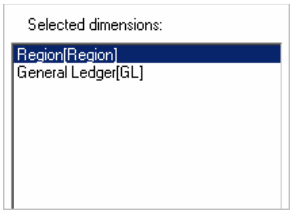
6 Click **OK**.

The New Dimension dialog box closes and you see that the **Region** dimension has been added to the **Available dimensions** list.

7 Select the **Region** dimension and click **Add >**.

You see the **Region** dimension move from the **Available dimensions** list to the **Selected dimensions** list, below the **General Ledger** dimension. The order of dimensions in the list determines the hierarchy of dimensions in the module. In this case, Parcel Express wants to organize its resources by **Region**, and then by **General Ledger**. So, you will have to move **Region** above **General Ledger**.

8 Select the **Region** dimension and click **Move Up**.



9 Click **Next**.

You see Step 5 of the New Model Wizard.

Now, you will define the dimensions for the activity module by using these same techniques. Refer to the previous procedure if you need clarification on a step.

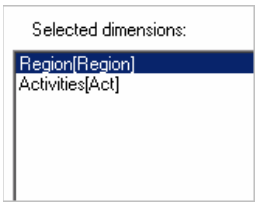
➢ Define the activity module dimensions

1 Move the **Organization** dimension to the **Available dimensions** list.

2 Move the **Region** dimension to the **Selected dimensions** list.

3 Move **Region** above **Activities**.

The **Selected dimensions** list should appear as follows:



4 Click **Next**.

You see Step 6 of the New Model Wizard.

➢ Define the cost object module dimensions

1 Move the **Customer** dimension to the **Available dimensions** list.

2 Move the **Region** dimension to the **Selected dimensions** list.

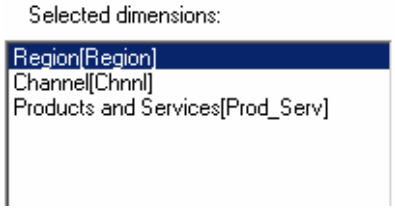
3 Move **Region** above **Products and Services**.

4 Create a new dimension named **Channel** that has a reference of **Chnnl**.

5 Move the **Channel** dimension to the **Selected dimensions** list.

6 Move **Channel** above **Products and Services**.

The **Selected dimensions** list should appear as follows:



7 Click **Next**.

You see Step 7 of the New Model Wizard.

➢ Define the external units module dimensions

1 Verify that **Materials** is the only dimension in the **Selected dimensions** list.

2 Click **Next**.

You see Step 8 of the New Model Wizard.

➢ Define the profit analysis dimensions

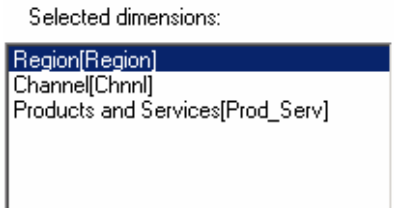
1 Move the **Region** dimension to the **Selected dimensions** list.

2 Move the **Channel** dimension to the **Selected dimensions** list.

3 Move **Region** above **Products and Services**.

4 Move **Channel** above **Products and Services**.

The **Selected dimensions** list should appear as follows:

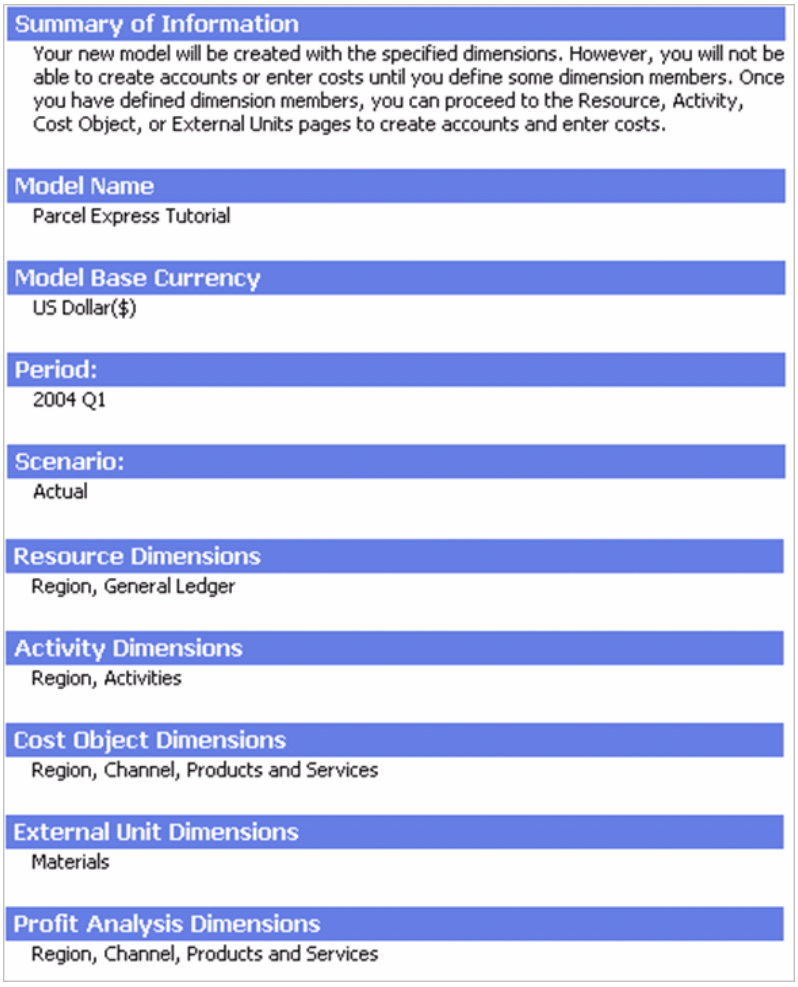


5 Click **Next**.

You see Step 9 of the New Model Wizard.

➢ Review the summary and finish the New Model Wizard

1 Review the **Summary of Information** and dimensions in each module, as shown:



If any of the information in the summary is incorrect, click **Back** to move to the page that requires changes. After making the corrections, click **Next** to return to the summary.

2 Click **Finish**.

You see the **Dimensions** page that now has the following dimensions:

Name	Reference
Region	Region
General Ledger	GL
Activities	Act
Channel	Chnnl
Products and Services	Prod_Serv
Materials	Mat

These dimensions are the basic building blocks that you will use to construct the modules of your model. First, however, you must create the members of each dimension.

Note: The order of the dimensions can vary if the dimension members are changed or if the model is imported.

Creating Dimension Members

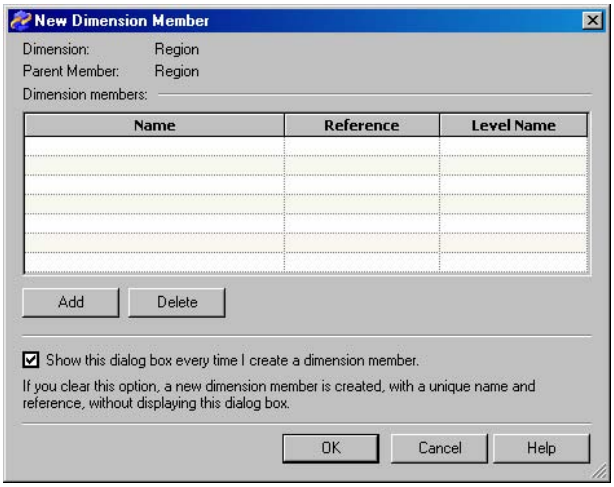
Dimension members are the unique elements of a dimension level. For example, the Region dimension of the Parcel Express Tutorial model will have levels that include countries, states, and cities. Beaverton and Eugene are dimension members at the same level of the Region dimension.

➢ **Create dimension members**

1 On the **Dimensions** page, select **Region**.

2 Select **Edit > New Dimension Member**.

You see the New Dimension Member dialog box.



3 Click **Add**.

4 For **Name**, type `USA`.

Tip: You see that the **Reference** field is automatically set to the name that you type. In this tutorial, you will not change the references of dimensions; however, for the models that you create for your company, you might want to devise a standard referencing methodology.

5 Click **OK**.

You see that the **USA** dimension member has been added below **Region**.

6 Select the **USA** dimension member.

7 Create a new dimension member under **USA** named **Oregon**.

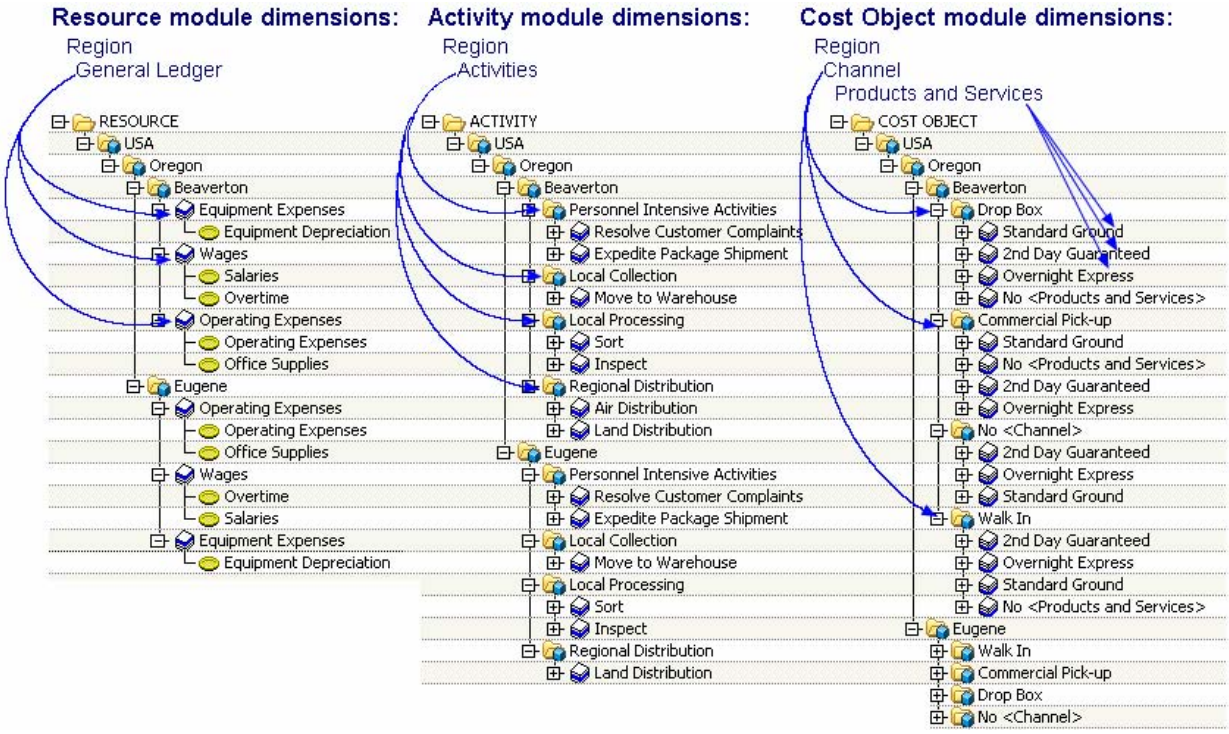
Note that the level is **Level2**. The reason for this is that you are adding a dimension member below a **Level1** dimension member.

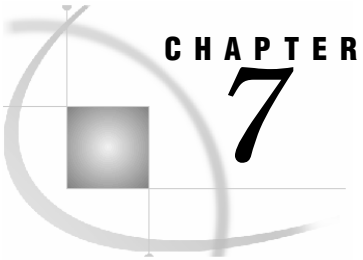
8 Using the techniques that you have learned, create the following dimension members:

Name	Reference	DimLevelName
Region	Region	
USA	USA	Level1
Oregon	Oegon	Level2
Beaverton	Beaverton	Level3
Eugene	Eugene	Level3
General Ledger	GL	
Wages	Wages	Level1
Operating Expenses	Operating Expenses	Level1
Equipment Expenses	Equipment Expenses	Level1
Activities	Act	
Personnel Intensive Activities	Personnel Intensive Activities	Level1
Resolve Customer Complaints	Resolve Customer Complaints	Level2
Expedite Package Shipment	Expedite Package Shipment	Level2
Local Collection	Local Collection	Level1
Move to Warehouse	Move to Warehouse	Level2
Local Processing	Local Processing	Level1
Sort	Sort	Level2
Inspect	Inspect	Level2
Regional Distribution	Regional Distribution	Level1
Air Distribution	Air Distribution	Level2
Land Distribution	Land Distribution	Level2
Channel	Channel	
Drop Box	Drop Box	Level1
Walk In	Walk In	Level1
Commercial Pick Up	Commercial Pick Up	Level1
Products and Services	Prod_Serv	
2nd Day Guaranteed	2nd Day Guaranteed	Level1
Overnight Express	Overnight Express	Level1
Standard Ground	Standard Ground	Level1
Materials	Mat	

Note: You will not create dimension members for the Materials dimension yet. You will add those dimension members when you create bills of costs.

The following picture shows the dimensions that you are defining along with the hierarchy of dimension members for each module:





CHAPTER 7

Creating Modules and Accounts

An account is the basic repository of costs in a model. You create an account in SAS Activity-Based Management by defining an intersection between dimension members. For example, in the Parcel Express Tutorial model, you will create an account for tracking the costs of inspecting packages in Beaverton. You create this account by defining an intersection between **Region** and **Activity** dimension members, as shown here:

Region > USA > Oregon > Beaverton

x

Activity > Regional Sorting > Inspect

Shorthand for the resulting account, or dimension intersection, is **Beaverton x Inspect**.

The costs of an account are derived from cost elements, which can either be added directly to the account or assigned from other accounts.

Building the Resource Module Structure

Start by creating a structure to hold the resource costs in the model.

➢ **Create resource accounts**

1 To open the resource module, select **Model > Resource Module**.

2 Select **Edit > New Account**.

You see Step 1 of the New Account Wizard.

The **Dimensions** area contains the dimensions of the resource module. The **Accounts** area will contain the accounts that you create.

3 Expand **Region** to display all of its dimension members.

4 In the **Dimensions** list, select the following dimension members:

Beaverton

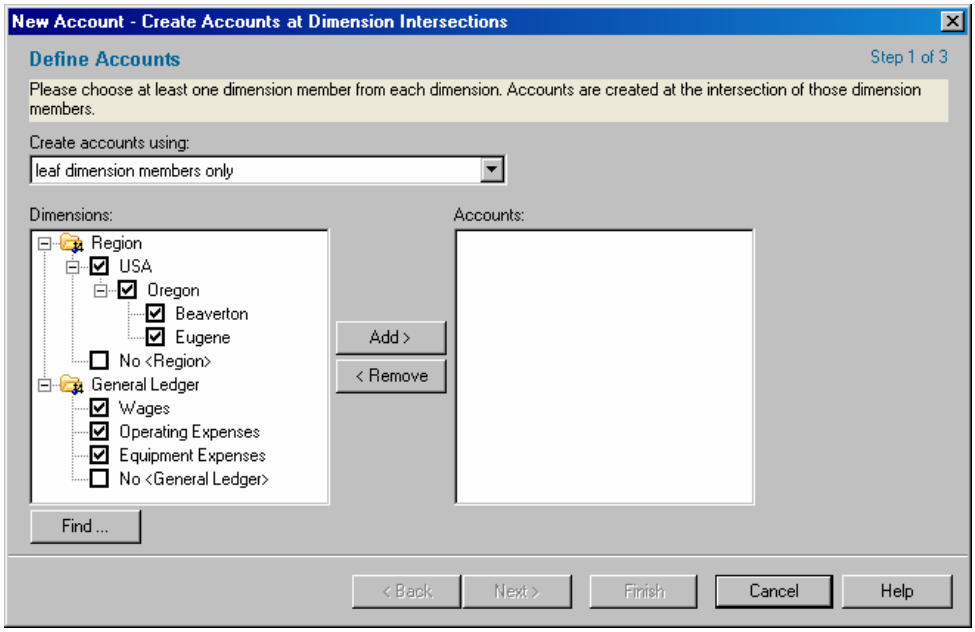
Eugene

Wages

Operating Expenses

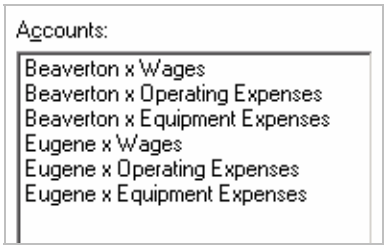
Equipment Expenses

5 Verify that **leaf dimension members only** is selected in the Create accounts using field.



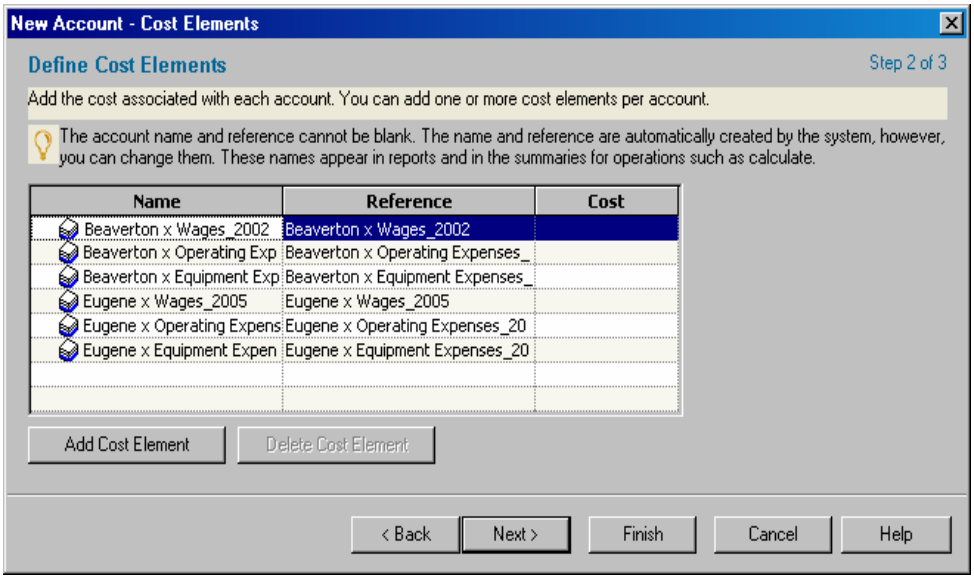
6 Click **Add**.

You see that the following accounts have been added to the **Accounts** list:



7 Click **Next**.

You see Step 2 of the New Account Wizard. Here, you will add the cost elements and costs of each account.



Tip: The system has automatically generated a unique name and reference for each account. The names and references that you see will be different from those shown in the window. These names and references are used in reports and operational summaries, but they do not appear elsewhere on a page, unless you add columns to display them. Your company can decide whether to use the system-generated names or to use a naming and referencing methodology. If your models are extremely large, it will probably be more convenient to use system-generated account names and references.

➢ Add cost elements and costs

1 Select the **Beaverton x Wages** account and click **Add Cost Element** twice.

You see that two cost elements have been added to the account table. The names and references of these cost elements are system-generated. In the account table, you can add costs and change the names and references of cost elements.

2 Change the names and references of the two cost elements that you added and enter their costs, as follows:

Name	Reference	Cost
Salaries	BS	1,563,000.00
Overtime	BOT	75,600.00

Note: In large models, costs might be imported from other sources, such as a database. In that case, you could create the cost elements, but leave the costs empty.

3 Using the techniques that you have learned, create cost elements and enter costs as follows:

Account	Cost Elements	Cost Element Reference	Cost
Beaverton x Operating Expenses	Operating Expenses	BOE	228,000.00
	Office Supplies	BOS	10,000.00
Beaverton x Equipment Expenses	Equipment Depreciation	BED	54,300.00
Eugene x Wages	Salaries	ES	1,298,000.00
	Overtime	EOT	110,000.00
Eugene x Operating Expenses	Operating Expenses	EOE	263,000.00
	Office Supplies	EOS	8,000.00
Eugene x Equipment Expenses	Equipment Depreciation	EED	38,000.00

4 Click **Next**.

You see Step 3 of the New Account Wizard. This step contains a summary of the accounts, cost elements, and costs you are about to create.

5 Click **Finish**.

You see that the accounts have been added to the resource module.

Display Name	Display Reference	Cost
RESOURCE (PRIMARY PANE)		$3,647,900.0
USA	USA	$3,647,900.0
Oegon	Oegon	$3,647,900.0
Beaverton	Beaverton	$1,930,900.0
Wages	Wages	$1,638,600.0
Salaries	BS	$1,563,000.0
Overtime	BOT	$75,600.00
Operating Expenses	Operating Expenses	$238,000.00
Operating Expenses	BOE	$228,000.00
Office Supplies	BOS	$10,000.00
Equipment Expenses	Equipment Expenses	$54,300.00
Equipment Depreciation	BED	$54,300.00
Eugene	Eugene	$1,717,000.0
Wages	Wages	$1,408,000.0
Salaries	ES	$1,298,000.0
Overtime	EOT	$110,000.00
Operating Expenses	Operating Expenses	$271,000.00
Operating Expenses	EOE	$263,000.00
Office Suplies	EOS	$8,000.00
Equipment Expenses	Equipment Expenses	$38,000.00
Equipment Depreciation	EED	$38,000.00

The system automatically rolls up costs from cost elements, to accounts, to higher-dimension levels.

Building the Activity Module Structure

An *activity* is a task that consumes resources. Examples of activities include setting up a machine to produce a particular part, scheduling production of a certain number of products, and inspecting a batch of parts. In a model, you identify activities and calculate their costs.

Creating Activity Accounts

In the activity module, you will create activity accounts.

➢ **Create activity accounts**

1 To open the activity module, select **Model > Activity Module**.

2 Select **Edit > New Account**.

You see the New Account Wizard.

3 Using the New Account Wizard, create the following accounts:

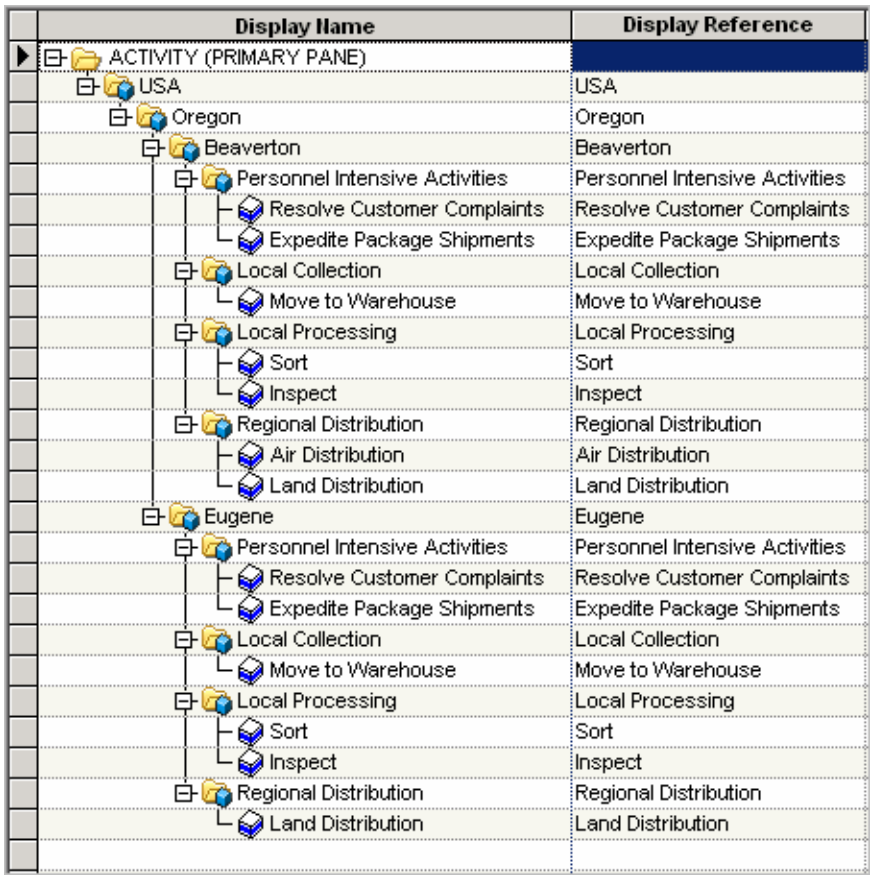
Note: Do not create cost elements. Costs will be assigned to these accounts from other accounts.

Note: After creating the accounts in Step 1 of the New Account Wizard, click **Finish**. Because you are not creating cost elements, there is no need to perform steps 2 and 3.

Dimension Intersection	
Personnel Intensive Activities	Beaverton x Resolve Customer Complaints
	Beaverton x Expedite Package Shipments
Local Collection	Beaverton x Move to Warehouse
Local Processing	Beaverton x Sort
	Beaverton x Inspect
Regional Distribution	Beaverton x Air Distribution
	Beaverton x Land Distribution
Personnel Intensive Activities	Eugene x Resolve Customer Complaints
	Eugene x Expedite Package Shipments
Local Collection	Eugene x Move to Warehouse
Local Processing	Eugene x Sort
	Eugene x Inspect
Regional Distribution	Eugene x Land Distribution

Note: There is no Air Distribution from Eugene.

After completing the steps of the New Account Wizard, you see the following activity module structure:



Display Name	Display Reference
ACTIVITY (PRIMARY PANE)	
USA	USA
Oregon	Oregon
Beaverton	Beaverton
Personnel Intensive Activities	Personnel Intensive Activities
Resolve Customer Complaints	Resolve Customer Complaints
Expedite Package Shipments	Expedite Package Shipments
Local Collection	Local Collection
Move to Warehouse	Move to Warehouse
Local Processing	Local Processing
Sort	Sort
Inspect	Inspect
Regional Distribution	Regional Distribution
Air Distribution	Air Distribution
Land Distribution	Land Distribution
Eugene	Eugene
Personnel Intensive Activities	Personnel Intensive Activities
Resolve Customer Complaints	Resolve Customer Complaints
Expedite Package Shipments	Expedite Package Shipments
Local Collection	Local Collection
Move to Warehouse	Move to Warehouse
Local Processing	Local Processing
Sort	Sort
Inspect	Inspect
Regional Distribution	Regional Distribution
Land Distribution	Land Distribution

Note: You have not entered cost elements for these accounts, and no costs have been assigned yet, so cost is $0.00.

Building the Cost Object Module Structure

The cost object module will hold information about Parcel Express Tutorial's products and services. Its dimensions are Channel and Products and Services.

Omitting a Dimension from an Account

You can create accounts that omit one or more dimensions of a module. In the cost object module of the Parcel Express Tutorial model, you will create accounts that have a Channel dimension member, but no Products and Services dimension member, and vice versa. The purpose of these omissions is to track the unique costs of a channel that are unassociated with any product, and to track the unique costs of a product that are unassociated with any channel. To omit a dimension from an account, you select the No option in the New Account Wizard.

Examples of accounts that omit a dimension are:

- Drop Box x No <Products and Services>
  (tracks unique costs that are associated with the Drop Box channel)
- No <Channel> x 2nd Day Guaranteed
  (tracks unique costs that are associated with the 2nd Day Guaranteed product)

Creating Cost Object Accounts

➢ **Create cost object accounts**

1 Using the techniques that you have learned, create the following accounts in the cost object module for each regional office—Beaverton and Eugene:

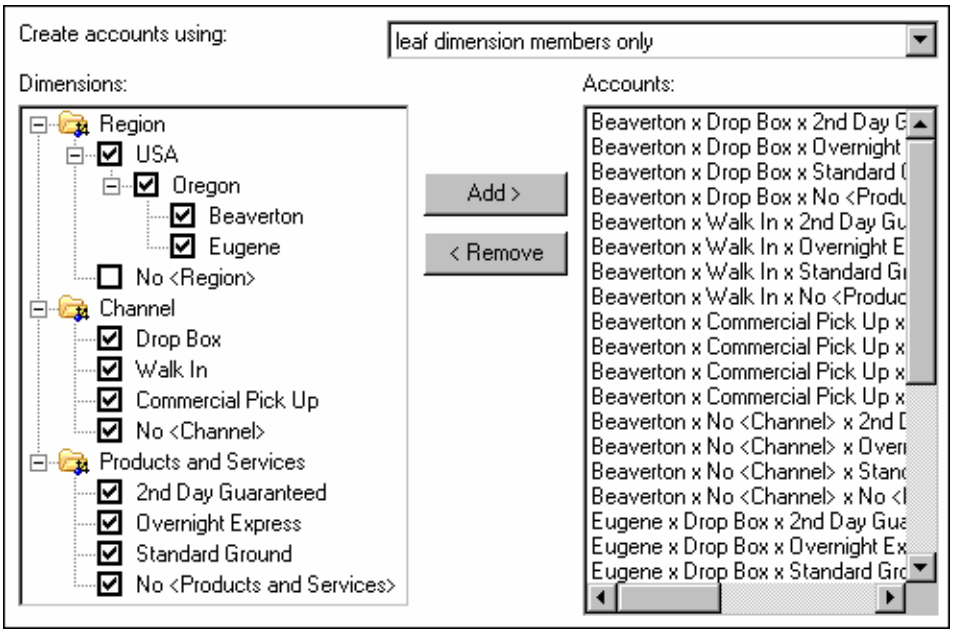
Note: Do not create cost elements. Costs will be assigned to these accounts from other accounts.

Dimension Intersection
Drop Box x 2nd Day Guaranteed
Drop Box x Overnight Express
Drop Box x Standard Ground
Drop Box x No <Products and Services>
Walk In x 2nd Day Guaranteed
Walk In x Overnight Express
Walk In x Standard Ground
Walk In x No <Products and Services>
Commercial Pick Up x 2nd Day Guaranteed
Commercial Pick Up x Overnight Express
Commercial Pick Up x Standard Ground
Commercial Pick Up x No <Products and Services>
No <Channel> x 2nd Day Guaranteed
No <Channel> x Overnight Express
No <Channel> x Standard Ground

Note: You can create these accounts all at once by checking the leaf dimension members that are shown in the following display. This quick method, however, results in creating two meaningless accounts that you can delete afterward:

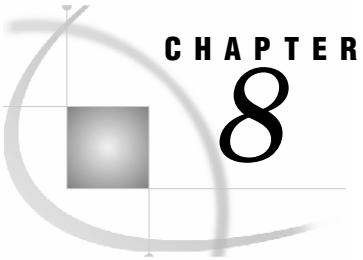
Beaverton x No <Channel> x No <Products and Services>

Eugene x No <Channel> x No <Products and Services>



After you have created these accounts, you see the following cost object module structure:

Display Name	Display Reference	Cost
COST OBJECT (PRIMARY PANE)		$0.00
USA	USA	$0.00
Oegon	Oegon	$0.00
Beaverton	Beaverton	$0.00
Drop Box	Drop Box	$0.00
2nd Day Guaranteed	2nd Day Guaranteed	$0.00
Overnight Express	Overnight Express	$0.00
Standard Ground	Standard Ground	$0.00
No<Products and Services>	No<Prod_Serv>	$0.00
Walk In	Walk In	$0.00
2nd Day Guaranteed	2nd Day Guaranteed	$0.00
Overnight Express	Overnight Express	$0.00
Standard Ground	Standard Ground	$0.00
No<Products and Services>	No<Prod_Serv>	$0.00
Commercial Pick Up	Commercial Pick Up	$0.00
2nd Day Guaranteed	2nd Day Guaranteed	$0.00
Overnight Express	Overnight Express	$0.00
Standard Ground	Standard Ground	$0.00
No<Products and Services>	No<Prod_Serv>	$0.00
No<Channel>	No<Channel>	$0.00
2nd Day Guaranteed	2nd Day Guaranteed	$0.00
Overnight Express	Overnight Express	$0.00
Standard Ground	Standard Ground	$0.00
Eugene	Eugene	$0.00
Drop Box	Drop Box	$0.00
2nd Day Guaranteed	2nd Day Guaranteed	$0.00
Overnight Express	Overnight Express	$0.00
Standard Ground	Standard Ground	$0.00
No<Products and Services>	No<Prod_Serv>	$0.00
Walk In	Walk In	$0.00
2nd Day Guaranteed	2nd Day Guaranteed	$0.00
Overnight Express	Overnight Express	$0.00
Standard Ground	Standard Ground	$0.00
No<Products and Services>	No<Prod_Serv>	$0.00
Commercial Pick Up	Commercial Pick Up	$0.00
2nd Day Guaranteed	2nd Day Guaranteed	$0.00
Overnight Express	Overnight Express	$0.00
Standard Ground	Standard Ground	$0.00
No<Products and Services>	No<Prod_Serv>	$0.00
No<Channel>	No<Channel>	$0.00
2nd Day Guaranteed	2nd Day Guaranteed	$0.00
Overnight Express	Overnight Express	$0.00
Standard Ground	Standard Ground	$0.00



CHAPTER 8

Creating Attributes

An attribute is a label or identification tag that is attached to an account or roll-up account. The attribute conveys information about the object to which it is attached.

Attributes have many purposes. You can use them to do the following:

- group activity-based management data to simplify report preparation and interpretation
- create different dimensions of data
- report similar cost categories across cost centers
- classify cost components as fixed or variable, value-added or non-value-added
- use them in the definition of a calculated driver

Types of Attributes

There are five attribute types:

- text
- numeric
- calculated
- dimension
- Boolean

Text Attributes

A text attribute describes model information. You can use text attributes to annotate a model. You can use them to provide information about a model. You will see an example in this chapter.

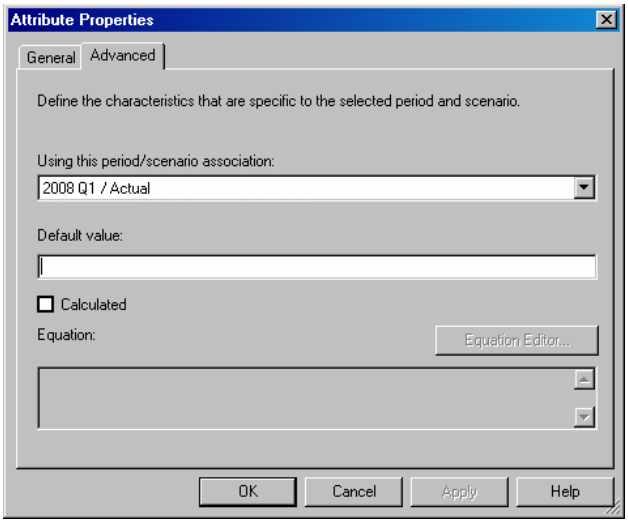
Note: Text attributes cannot be viewed in OLAP.

Numeric Attributes

A numeric attribute enables you to enter data that is not entered or otherwise generated in a model.

Typically, numeric attributes are measures or quantities of units that contribute to the total cost of an activity, such as number of cases, number of pounds, number of orders, or number of times an activity is performed.

You can establish numeric attributes as performance measures for special reporting purposes, such as tracking productivity (number of inputs or rejects, cycle time, and quality), or classifying information (level of complexity or number of subassemblies). Use the **Default Value** field under the **Advanced** tab to define data that is specific to that attribute.



Calculated Numeric Attributes

Numeric attributes can be calculated. Calculated numeric attributes are also user-defined attributes, but they rely on a formula to express their characteristics. This formula is developed by the user to capture unique business data. Calculated numeric attributes can be used in a driver definition.

Dimension and Dimension Member Attributes

A dimension attribute reflects a dimension, and a dimension member attribute reflects a dimension member. Dimension attributes enable you to categorize, select, and subtotal information in a report. For example, activities can be grouped by summary-level processes, such as detailed manufacturing activities rolling up to “manufacturing,” and detailed distribution activities rolling up to “distribution.” The names of these higher-level processes are defined as dimension member attributes and are attached to

their respective activities. Most importantly, you can query for dimension member attributes in OLAP.

Other examples of dimension attributes include:

- value-added categories (high, medium, low) that are attached to activities
- fixed cost/variable cost that is attached to resources—enables you to group activity or cost object costs by fixed and variable cost components
- cost object groupings that are used to roll up products by product family, brand, market segment, or package type, or to group customers by region, channel, or salesperson

Boolean Attributes

A Boolean attribute stores a Boolean value (True or False).

Note: Boolean attributes cannot be viewed in OLAP.

Creating Attributes

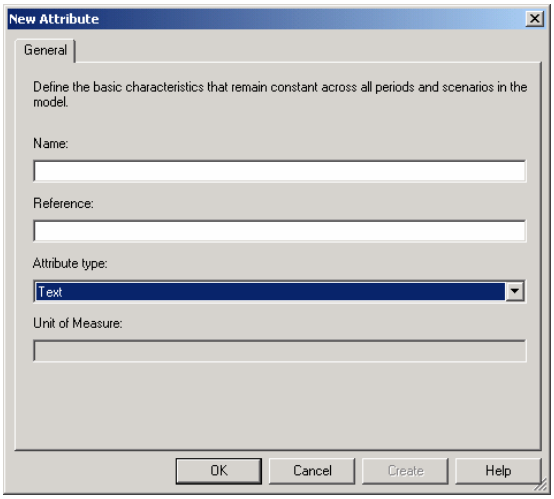
You will create a text attribute, a numeric attribute, and a dimension attribute.

➢ **Create a text attribute**

1 Select **Model > Attributes Page**.

2 Select **Edit > New Attribute**.

You see the New Attribute dialog box.



3 For **Name**, type `Manager`.

4 Select an **Attribute type** of **Text**.

5 Click **OK**.

You see that the Manager attribute has been added to the list.

➢ Create a numeric attribute

6 Select **Model > Attributes Page**.

7 Select **Edit > New Attribute**.

You see the New Attribute dialog box.

8 For **Name**, type `Number of Inspections`.

9 For **Reference**, type `Num of Ins`.

10 Select an **Attribute type** of **Numeric**.

11 For **Unit of Measure**, type `Inspections`.

To summarize:

Name	Reference	Type	Unit of Measure
Number of Inspections	Num of Ins	Numeric	Inspections

12 Click **OK**.

You see that the Number of Inspections attribute has been added to the list.

13 Create three more numeric attributes.

Name	Reference	Type	Unit of Measure
Inspections Passed	I_P	Numeric	Units Passed
Completed Expedite Requests	Completed Expedite Requests	Numeric	Completed Requests
Average Time to Expedite	Average Time to Expedite	Numeric	Hours

➢ Create a calculated numeric attribute

Name	Reference	Type	Unit of Measure	Formula
Cost per Inspection	Cost per Inspection	Numeric Calculated	Dollars	Cost / "No. of Inspections"

1 Select **Edit > New Attribute**.

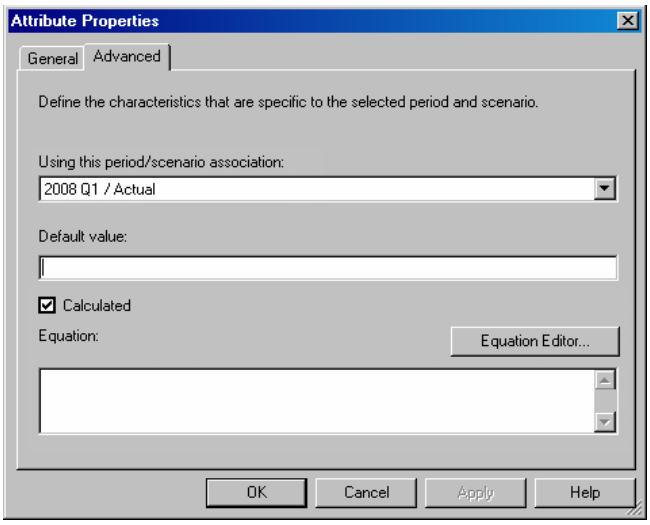
2 For **Name**, type `Cost per Inspection`.

3 For **Reference**, type `Cost per Inspection`.

4 Select an **Attribute type** of **Numeric**.

5 Select **Dollars** for Unit of Measure.

6 Select the **Advanced** tab.

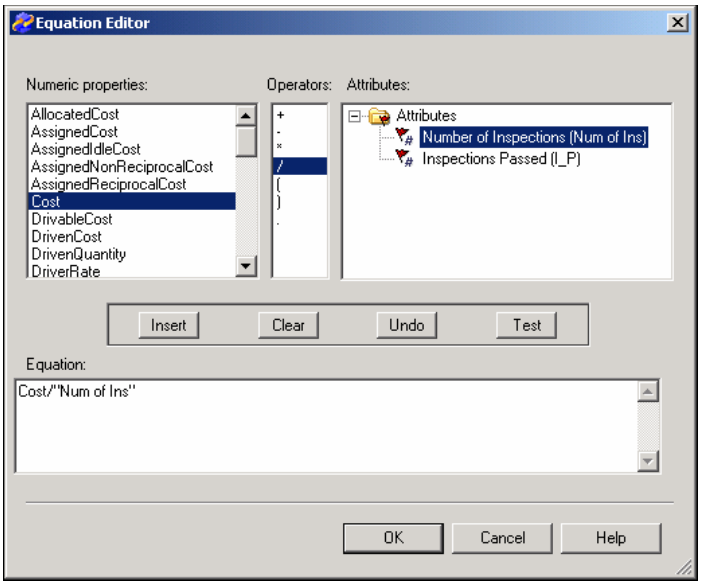


7 Verify that the period is **2008 Q1 / Actual**.

8 Select the **Calculated** check box. This allows you to enter a formula.

9 Click **Equation Editor**.

You see the Equation Editor dialog box.



10 The cost of inspection would be derived from a formula of **Cost** divided by the **Number of Inspections**. Create this formula by double-clicking each element. The formula will appear in the **Equation** area.

11 Click **Test** to verify the syntax of the formula.

12 Click **OK** to dismiss the message box.

13 Click **OK** to accept the formula.

14 Click **OK** to create the attribute.

15 Create a calculated numeric attribute for **Percent of Inspections Passed**.

Name	Reference	Type	UoM	Formula
Percent of Inspections Passed	Percent of Inspections	Numeric Calculated	Percentage	Inspections Passed / No. of Inspections

➢ Create a dimension attribute folder

Name	Reference	Type
Fixed_Variable	FV	Dimension

1 Select **Edit > New Attribute**.

2 For **Name**, type `Fixed_Variable`.

3 For **Reference**, type `FV`.

4 Select a **Type** of **Dimension**.

5 Click **OK**.

6 Select the **Fixed_Variable** attribute.

7 Create the following two dimension attributes:

Name	Reference	Type
Fixed	F	Dimension Member
Variable	V	Dimension Member

You see that the **Fixed_Variable** dimension and its two-dimension members have been added to the list of your model's dimensions.

Name	Reference	Type	UoM	DefaultValue	Formula
ATTRIBUTES	ATTRIBUTES				
Average Time to Expedite	Average Time to Exp	Numeric	Hours		
Completed Expedite Requests	Completed Expedite	Numeric	Completed Re		
Cost per Inspection	Cost per Inspection	Numeric	Dollars		Cost / "Num of Ins"
Fixed_Variable	FV	Dimension			
Fixed	F	Dimension Me			
Variable	V	Dimension Me			
Inspections Passed	I_P	Numeric	Units Passed		
Number of Inspections	Num of Ins	Numeric	Inspections		
Percent of Inspections Passed	Percent of Inspectio	Numeric	Percentage		"I_P" / "Num of Ins"
Manager	Manager	Text			

Creating a Column Layout

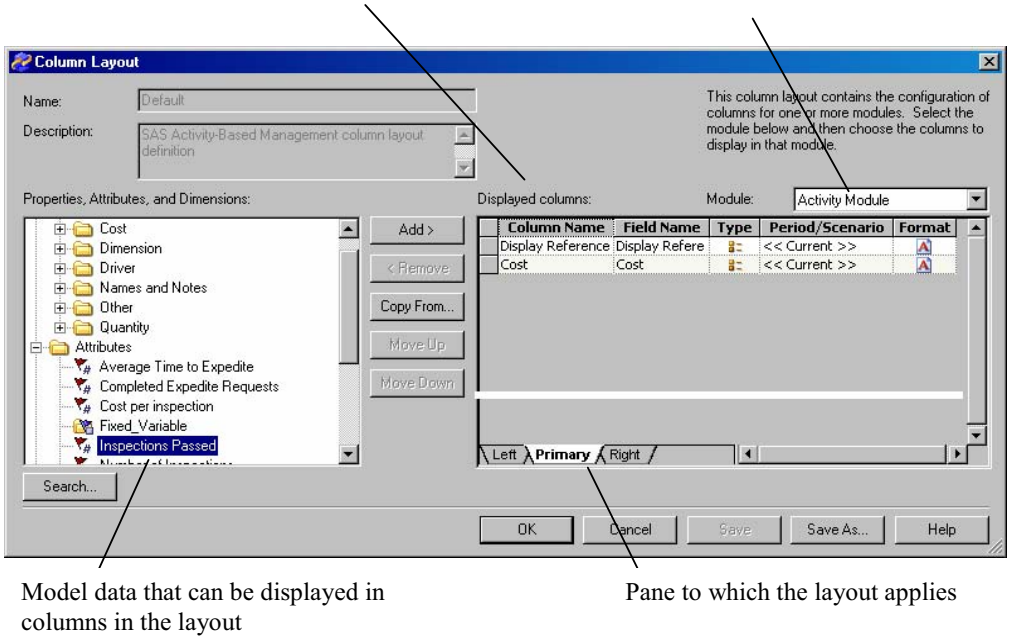
To view the attributes in the model, add a column. For the Parcel Express Tutorial model, you will create a column layout named Cost Assignments. Initially, you will define the column layout for the activity module. Later, you will add columns to the layout for the other modules to create a cost assignment column view.

➢ **Add a column to show an attribute**

1 Select **Model > Activity Module**.

2 Select **Model > Column Layout > Edit Columns**.

You see the Column Layout dialog box.



The columns that you see in the **Displayed columns** list refer to the layout for a specific pane in a specific module. In the illustration, you see the column layout for the **Primary** pane of the **Activity Module**. To change the column layout for a different pane or module, select that pane or module. The **Inspections Passed** column layout that you create in this tutorial will ultimately contain layouts for several modules and panes.

Note: A column layout is a read-only view of columns that already exist in tables in your model. Adding or removing a column from a column layout does not add or remove a column from a table; nor, for that matter, does creating a column layout create a table or add or remove columns from any table.

➢ **Define the column layout for one panel.**

1 Verify that the **Primary** pane tab is selected.

2 From the **Displayed columns** list, select **Display Reference**.

3 Click **Remove**.

You see that **Display Reference** has been removed from the list of **Displayed columns**. Removing this column from the layout will provide more screen space for columns that are relevant to making driver assignments.

4 From the **Properties, Attributes, and Dimensions** list, select **Inspections Passed** (under the **Attributes** folder).

5 Click **Add**.

You see that **Inspections Passed** has been added to the **Displayed columns** list.

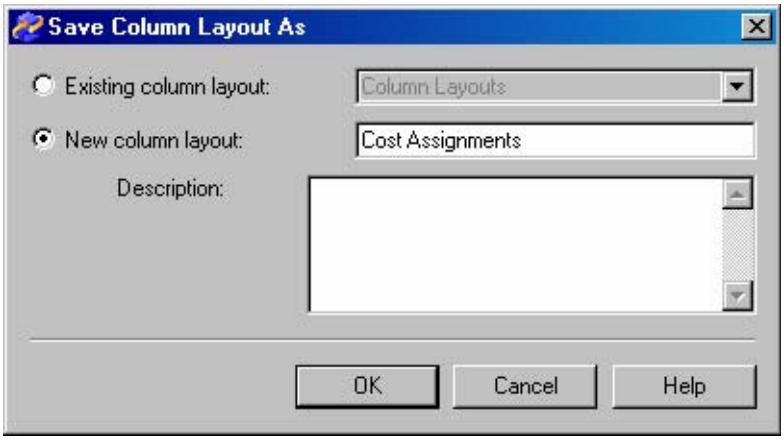
6 Select **Manager** (under the **Attributes** folder), and then click Add.

You see that **Manager** has been added to the **Displayed columns** list.

➢ Save the column layout

1 Click **Save As**.

You see the Save Column Layout As dialog box.



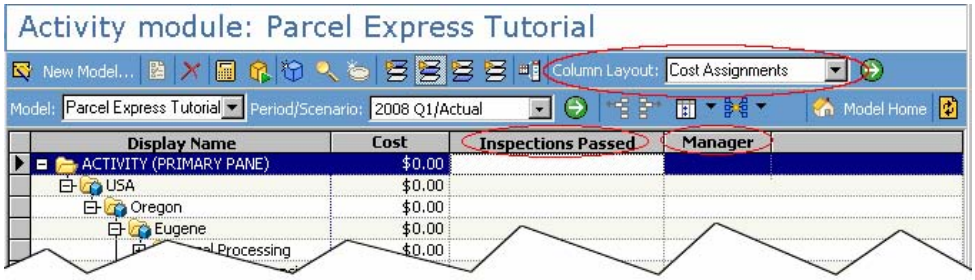
2 Verify that the **New column layout** option is selected, and then type **Cost Assignments**.

3 Click **OK**.

You see that the column layout **Name** has been changed to **Cost Assignments**.

4 Click **OK**.

You see the changes that you made to the column layout. **Cost Assignments** is the active column layout, and **Inspections Passed** and **Manager** appear in the column layout list.



Entering Attribute Values

Now, you will display a column to enter attribute values.

➢ **Enter attribute values**

1 In the **Inspections Passed** column for the **Beaverton x Inspect** account, type `43400`.

2 In the **Inspections Passed** column for the **Eugene x Inspect** account, type `1100`.

3 In the **Manager** column for the **Beaverton x Sort** account, type `Smith`.

4 In the **Manager** column for the **Eugene x Sort** account, type `Jones`.

Display Name	Cost	Inspections Passed	Manager
ACTIVITY (PRIMARY PANE)	$0.00		
USA	$0.00		
Oregon	$0.00		
Beaverton	$0.00		
Personnel Intensive Activities	$0.00		
Local Collection	$0.00		
Local Processing	$0.00		
Sort	$0.00		Smith
Inspect	$0.00	43,400.00	
Regional Distribution	$0.00		
Eugene	$0.00		
Personnel Intensive Activities	$0.00		
Local Collection	$0.00		
Local Processing	$0.00		
Sort	$0.00		Jones
Inspect	$0.00	1,100.00	
Regional Distribution	$0.00		

Applying Additional Attributes to Accounts

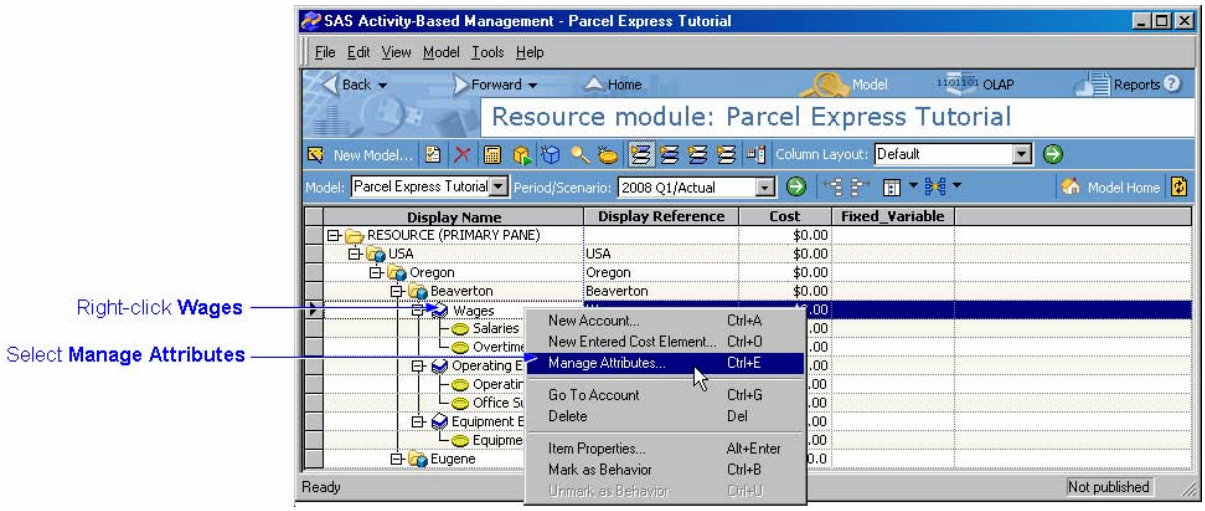
Having created the dimension attribute Fixed_Variable with its two dimension member attributes, Fixed and Variable, you can apply the dimension member attributes to accounts.

Note: You can attach attributes to accounts, but not to cost elements or to roll-up accounts.

➢ **Apply one attribute**

1 Switch to the **Resources** page.

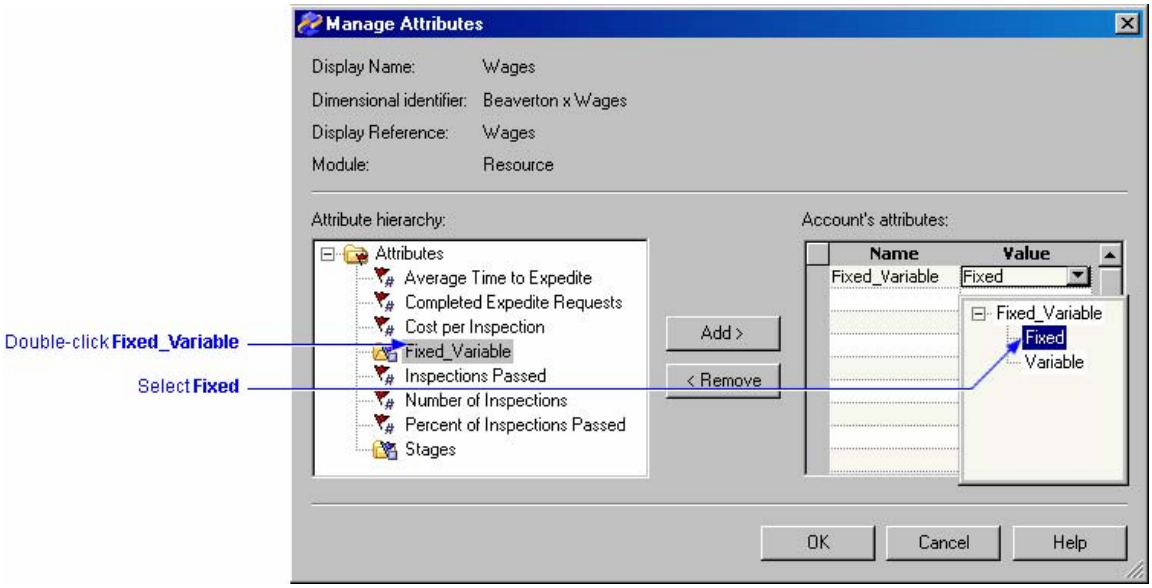
2 Right-click the **Beaverton x Wages** account, and then select **Manage Attributes** from the pop-up menu.



The Manage Accounts dialog box opens.

3 From the Manage Accounts dialog box, double-click **Fixed_Variable** to add it to the list of the Account's attributes. (Or, select **Fixed_Variable** and click **Add**.)

4 Select **Fixed** from the drop-down list of dimension member attributes.



5 Click **OK** to apply the attribute **Fixed** to the **Wages** account.

The attribute is added to the account.

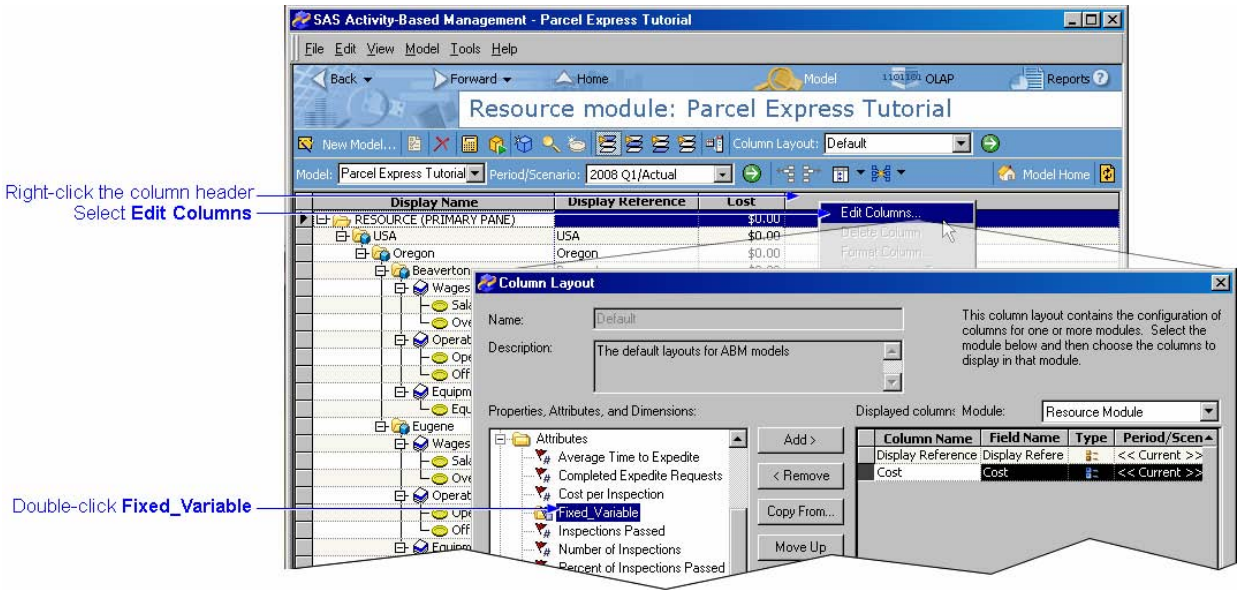
Before adding the Fixed or Variable attribute to additional accounts, let's add the Fixed_Variable attribute column to the layout so that we can add the attributes more easily and better see the results.

➢ **Add a Fixed_Variable column to the column layout**

1 Right-click (or double-click) the column header, and then select **Edit Columns** from the pop-up menu. (Or, select **Model > Column Layout > Edit Columns**.)

The Column Layout dialog box opens.

2 In the Column Layout dialog box, double-click **Fixed_Variable** (under the Attributes folder). (Or, select **Fixed_Variable** and click **Add**.)



3 Click **OK** to add the Fixed_Variable column to the column layout.

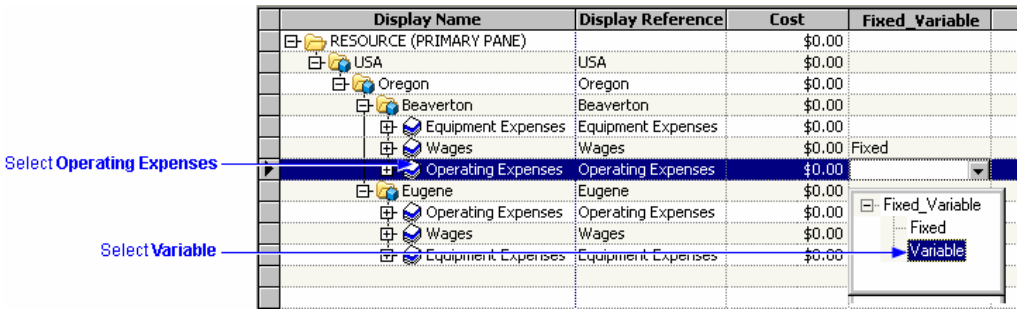
Display Name	Display Reference	Cost	Fixed_Variable
RESOURCE (PRIMARY PANE)		$0.00	
USA	USA	$0.00	
Oregon	Oregon	$0.00	
Beaverton	Beaverton	$0.00	
Wages	Wages	$0.00	Fixed
Operating Expenses	Operating Expenses	$0.00	
Equipment Expenses	Equipment Expenses	$0.00	
Eugene	Eugene	$0.00	
Wages	Wages	$0.00	
Operating Expenses	Operating Expenses	$0.00	
Equipment Expenses	Equipment Expenses	$0.00	

Now we can more easily apply additional **Fixed** and **Variable** attributes to accounts.

➢ **Apply additional attributes to accounts**

1 Select the **Beaverton x Operating Expenses** account.

2 From the menu in the **Fixed_Variable** column, select **Variable**.



3 Repeat the process to apply the following dimension member attributes to the following accounts:

Attribute	Account
Fixed	Eugene x Wages
Variable	Eugene x Operating Expenses

Note that it is not necessary to apply the attribute to all the resource accounts, as we are not applying it to the Equipment Expenses account.

Later, when we describe “Using OLAP Cubes for Analysis,” we will see that OLAP analysis allows, in this case, querying fixed-cost contributions versus variable-cost contributions. Dimension member attributes allow much of the functionality of real dimensions, without some of the overhead. In fact, they can provide a method of adding “dimensions” to a model, whereas the model itself cannot have dimensions added after the initial model definition.

CHAPTER 9

Drivers for the Model

An important aspect of activity-based management is the understanding of how activities in an organization consume expenses and how products consume activities. These consumptions are governed by relevant drivers, which measure the frequency or intensity of the cost demands that are placed on resources and activities. A driver specifies how costs are assigned.

This tutorial uses both system-defined and user-defined drivers.

The first step in assigning resource costs to activities and activity costs to cost objects is building a list of drivers.

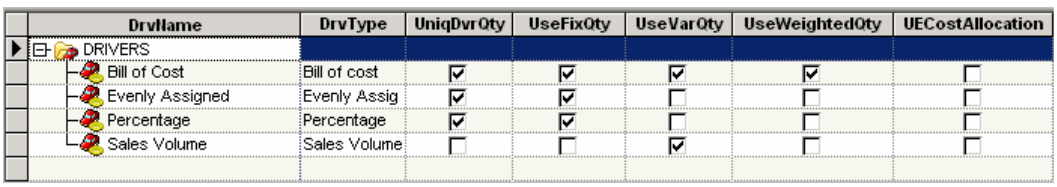
The Parcel Express Tutorial model uses several system-defined drivers. Additionally, you will create the following drivers:

User-Defined Driver	Purpose
FTEs	Tracks the cost of wages from the resource module to the activity module.
Dollars	Tracks the cost of operating expenses from the resource module to the activity module.
Number of Customer Complaints	Tracks the number of customer complaints per channel.
Number of Packages	Tracks the number of packages that were collected, sorted, and distributed.
Number of Expedite Requests	Tracks the packages that are expedited regionally.

➢ Define basic drivers

1 Select **Model > Drivers Page**.

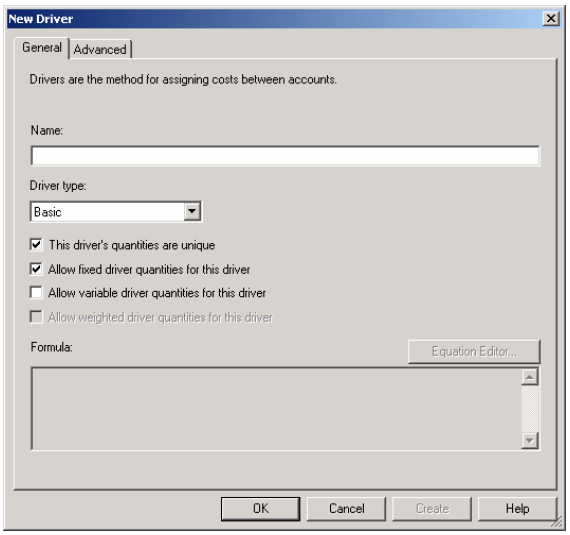
You see the following list of system-defined drivers:



DrvName	DrvType	UniqDvrQty	UseFixQty	UseVarQty	UseWeightedQty	UECostAllocation
DRIVERS						
Bill of Cost	Bill of cost	☑	☑	☑	☑	☐
Evenly Assigned	Evenly Assig	☑	☑	☐	☐	☐
Percentage	Percentage	☑	☑	☐	☐	☐
Sales Volume	Sales Volume	☐	☐	☑	☐	☐

2 Select **Edit > New Driver**.

You see the New Driver dialog box.



3 For **Name**, type **`FTEs`**.

4 Verify that the **Driver type** is **Basic**.

5 Verify that the **This driver's quantities are unique** option is checked.

6 Verify that **Allow fixed driver quantities for this driver** is checked.

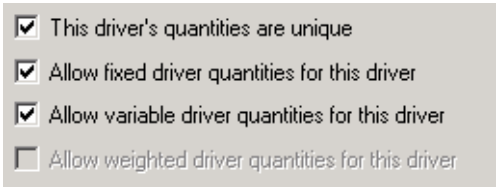
7 Click **OK**.

You see that **FTEs** has been added to the list of drivers.

8 Add the following **Basic** type of drivers:

Driver	Driver Type
Dollars	Basic
Number of Customer Complaints	Basic
Number of Packages	Basic

9 Select the following options for the **Number of Packages** driver:



The Number of Expedite Requests is a calculated driver. Calculated drivers expand system capability, enabling you to define cost drivers that are unique to your business. You define these calculated drivers with formulas that you create using the system-generated numeric properties and attributes that you have defined for your unique

usage. The calculated driver in this tutorial will use attributes that you have just created and numeric properties generated by the system.

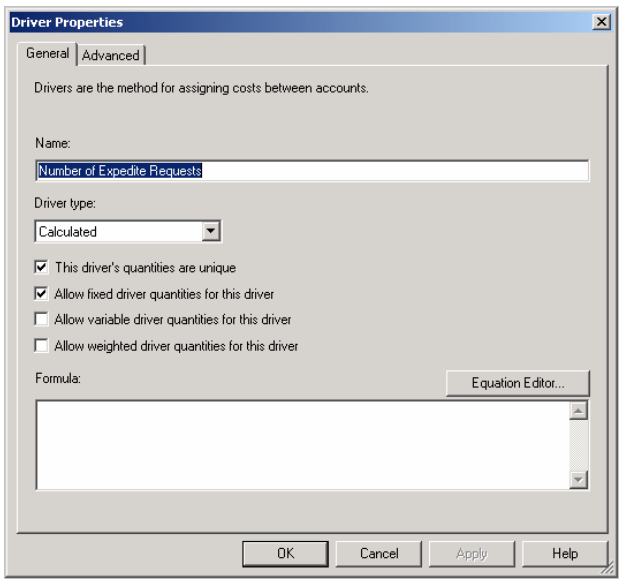
➢ Defining a calculated driver

Driver	Formula
Number of Expedite Requests	["Average Time to Expedite" * "Completed Expedite Requests"] / DriverQuantityFixed

1 Add **Number of Expedite Requests** as a calculated driver. For **Driver type**, select **Calculated**.

2 Verify that the **This driver's quantities are unique** option is checked.

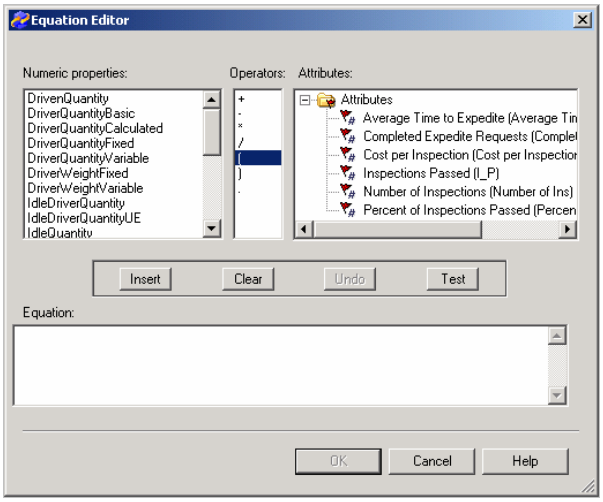
3 Verify that **Allow fixed driver quantities for this driver** is checked.



4 Click **Equation Editor**.

You see the Equation Editor dialog box.

Note: In the following instructions, you can “choose” an element of the equation either by double-clicking the element, or by selecting it and clicking **Insert**.



5 Choose **(** from the **Operators** list.

6 Chose **Average Time to Expedite** from the Attributes list.

7 Choose * from the **Operators** list.

8 Choose **Completed Expedite Requests** as the multiplier from the **Attributes** list.

9 Choose **)** to close the set.

10 Choose **/** from the Operators list.

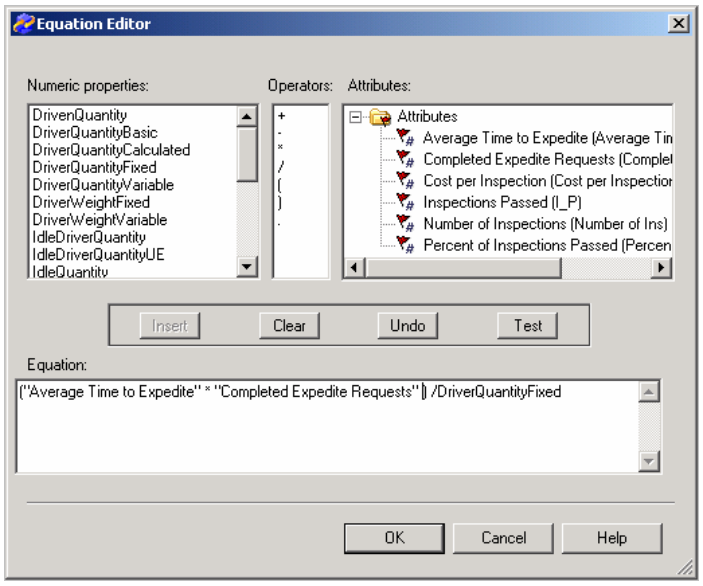
11 Choose **DriverQuantityFixed** from the Numeric properties list.

DriverQuantityFixed is the user-entered fixed quantity that flows from one account to another. You can change this value only on assigned cost elements with a driver that allows fixed driver quantities.

12 Click **Test** to verify the syntax of the formula.

13 Click **OK** to accept the formula.

14 Click **OK** to create the driver.

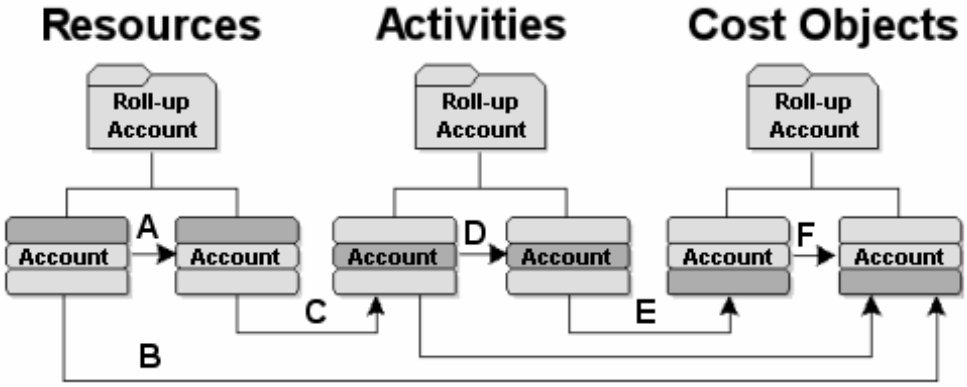


Review the list of drivers.

DrvName	DrvType	UniqD	UseFi	UseV	UseW	UECo	Formula
DRIVERS							
Bill of Cost	Bill of cost	☑	☑	☑	☑	☐	
Evenly Assigned	Evenly Assign	☑	☑	☐	☐	☐	
Percentage	Percentage	☑	☑	☐	☐	☐	
Sales volume	Sales Volume	☐	☐	☑	☐	☐	
FTEs	Basic	☑	☑	☐	☐	☐	
Dollars	Basic	☑	☑	☐	☐	☐	
Number of Customer Complain	Basic	☑	☑	☐	☐	☐	
Number of Packages	Basic	☑	☑	☑	☐	☐	
Number of Expedite Requests	Calculated	☑	☑	☐	☐	☐	("Average Time to Expedite"*"Completed Expedite Requests")/DriverQuantityFixed

CHAPTER 10 Making Assignments

An assignment links source accounts to destination accounts. Costs flow along this path from resources to activities to cost objects—from expenses to activities to products, services, or customers. A source account is the source of a cost assignment. A destination account receives the results of a cost assignment.



As previously shown, the possible assignments between accounts, as indicated by letters, are:

A resource to resource

B resource to cost object

C resource to activity

D activity to activity

E activity to cost object

F cost object to cost object

Using a Column Layout

In a previous section, you created a column layout named Cost Assignments for the activity module. In the following sections, you will add columns to the layout for the other modules.

While building the model structure, you have been working in the single pane view. To make assignments, you need to open an *assignments pane*. When the primary pane and an assignments pane are open, you can see source accounts, destination accounts, assignments, driver names, and driver quantities. To assign resource costs to activity accounts, you will open the right assignments pane.

➢ Open the right assignments pane and Column Layout dialog box

1 Select **Model > Resource Module**.

2 If it is not already open, open the **Cost Assignments** saved column layout.

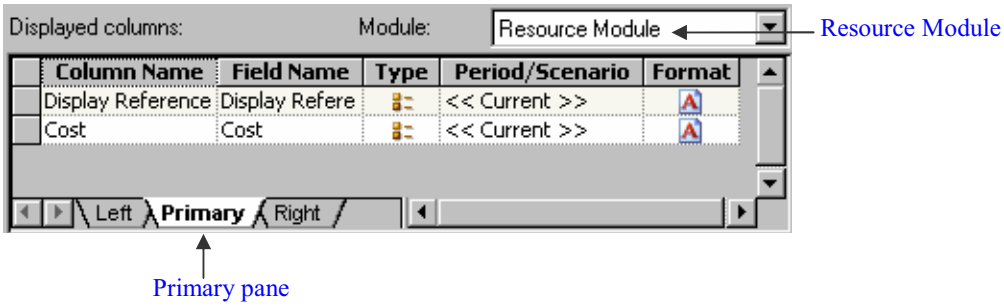
3 In the resource module, select **Model > Assignments > Show Right Assignments Pane**.

You see the right assignments pane (to the right of the resource module primary pane). The default columns are IntsctnName, Reference, and Cost.

Tip: You might want to hide the taskbar on the left side of the window to display more data. To do this, click the **X** in the upper-right corner of the taskbar. You can make columns wider or narrower by clicking on the line between two column headings and dragging the edge of the column to the width that you want.

4 Select **Model > Column Layout > Edit Columns**.

The columns that you see in the **Displayed columns** list refer to the layout for a specific pane in a specific module. Because you are currently viewing the resource module, you see the column layout for the primary pane of the resource module. To change the column layout for a different pane or module, select that pane or module. The Cost Assignments column layout that you create in this tutorial will ultimately contain layouts for several modules and panes.



➢ Define the column layout for two panes

1 Verify that the **Primary** pane tab is selected.

2 From the **Displayed columns** list, select **Display Reference**.

3 Click **Remove**.

You see that **Display Reference** has been removed from the list of **Displayed columns**. Removing this column from the layout will provide more space for columns that are relevant to making driver assignments. Remember that removing a column from a column layout does not remove it from any table in the model; it simply changes your view of the model.

4 In **Drivers**, select **Driver Name (DrvName)**.

Tip: To find **Driver Name (DrvName)**, scroll down to **Driver** and expand it.

5 Click **Add**.

You see that **Driver Name (DrvName)** has been added to the **Displayed columns** list.

6 Click the **Right** pane tab.

You see the default columns of the right pane in the **Displayed columns** list.

7 Remove the **Reference** column from the **Displayed columns** list.

8 Add the **Driver Quantity Fixed (DQF)** property to the **Displayed columns** list.

➢ **Save the column layout**

1 Click **Save**.

2 Click **OK** to dismiss the Column Layout dialog box.

You see the changes that you made to the Cost Assignments column layout appear in the Column Layout list.

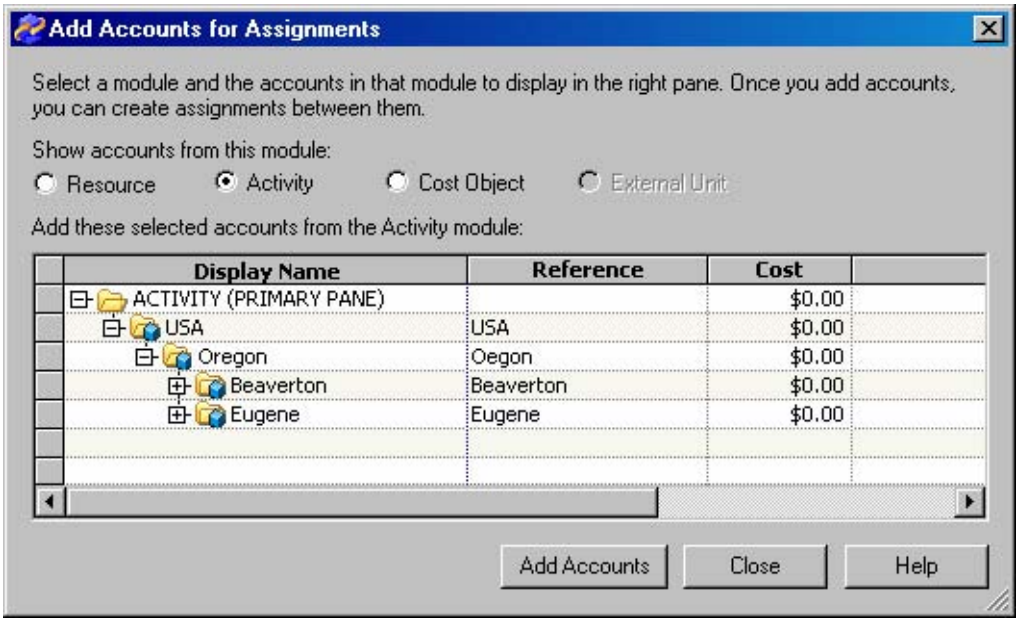
Making Assignments from Resources to Activities

The first assignments that you make will be inter-modular; that is, assignments from the resource module to the activity module.

➢ **Add accounts for assignments**

1 Select **Model > Assignments > Add Accounts in Right Pane**.

You see the Add Accounts for Assignments dialog box.



2 Verify that the **Activity** module is selected.

3 Expand **Activity** so that you can see the **Beaverton** and **Eugene** roll-up accounts.

4 Select the **Beaverton** roll-up account, and then click **Add Accounts**.

You see that the Beaverton activity accounts have been added to the right pane.

5 Add the **Eugene** activity accounts to the right pane.

6 Click **Close**.

Note: To avoid mixing up assignments between Beaverton resources and Eugene accounts (and vice versa), consider adding only the Beaverton accounts first to the right pane. Next, make the assignments. Then, do the same for Eugene.

Note: Clearing accounts from the right pane *does not delete assignments from your model*. It removes the accounts from view temporarily.

Now that the intended destination accounts are displayed, you can make assignments from resource accounts to activity accounts.

➢ Make assignments

1 In the primary pane, expand **Resource** to display all of its accounts.

Tip: Select **View > Expand** to display subfolders. In this tutorial, you do not need to expand the module hierarchies to display the cost elements of each account. If the cost elements are displayed, collapse the hierarchy to hide them.

Display Name	Cost	DrvName
RESOURCE (PRIMARY PANE)	$3,647,900.00	
USA	$3,647,900.00	
Oregon	$3,647,900.00	
Beaverton	$1,930,900.00	
Wages	$1,638,600.00	
Operating Expenses	$238,000.00	
Equipment Expenses	$54,300.00	
Eugene	$1,717,000.00	
Wages	$1,408,000.00	
Operating Expenses	$271,000.00	
Equipment Expenses	$38,000.00	

2 Select the **Wages** account under **Beaverton**.

You see that arrows appear next to each account in the right pane. These arrows indicate that you can make assignments from Beaverton Wages to any of the listed accounts. Logically, the cost of wages in Beaverton would be assigned only to Beaverton activities, not Eugene activities.

3 In the **Wages** row under **Beaverton** click on the cell in the **DrvName** column.

You see a list of available drivers, including system-defined and user-defined drivers.

4 Select **FTEs.**

5 Make assignments to all of the Beaverton accounts in the right pane by clicking the arrow next to each account.

Note: You can use the hotkey F7 to create assignments between the selected account and all of the accounts in the other assignment pane.

You see that a line now connects Beaverton Wages to each of the arrows that you clicked.

6 Type the following values in the **DQF** column in the right pane (the order of accounts might be different from the order that is shown; be careful to assign values to the correct accounts):

DQF column

IntsctnName	Cost	DQF
Beaverton x Resolve Customer Complai	$0.00	3.00
Beaverton x Expedite Package Shipme	$0.00	2.00
Beaverton x Move to Warehouse	$0.00	8.00
Beaverton x Sort	$0.00	4.00
Beaverton x Inspect	$0.00	3.00
Beaverton x Air Distribution	$0.00	9.00
Beaverton x Land Distribution	$0.00	12.00

Note: The total cost of Beaverton Wages ($1,638,600.00) will be consumed by these seven activity accounts according to the number of FTEs that you have entered. SAS Activity-Based Management performs the math for you when you calculate costs in a later lesson.

➢ Make other assignments

Note: Remember that when making assignments, you must first select a driver before you can select a destination account and assign a numeric value to the account.

1 In the primary pane, select **Operating Expenses** for **Beaverton** and make the following assignments:

Resource Account	Driver	Activity Account	DQF
Beaverton x Operating Expenses	Dollars	Beaverton x Resolve Customer Complaints	6,500.00
		Beaverton x Expedite Package Shipments	8,000.00
		Beaverton x Move to Warehouse	15,000.00
		Beaverton x Sort	23,000.00
		Beaverton x Inspect	54,000.00
		Beaverton x Air Distribution	83,000.00
		Beaverton x Land Distribution	56,500.00

2 In the primary pane, select **Equipment Expenses** for **Beaverton** and make the following assignments:

Resource Account	Driver	Activity Account	DQF
Beaverton x Equipment Expenses	Percentage	Beaverton x Resolve Customer Complaints	5
		Beaverton x Expedite Package Shipments	3
		Beaverton x Move to Warehouse	7
		Beaverton x Sort	20
		Beaverton x Inspect	25
		Beaverton x Air Distribution	25
		Beaverton x Land Distribution	15

Note: The total equals 100 because 100% of equipment expenses are used by Parcel Express.

3 In the primary pane, select **Wages** for **Eugene** and make the following assignments:

Resource Account	Driver	Activity Account	DQF
Eugene x Wages	FTEs	Eugene x Resolve Customer Complaints	2
		Eugene x Expedite Package Shipments	1
		Eugene x Move to Warehouse	5
		Eugene x Sort	3
		Eugene x Inspect	2
		Eugene x Land Distribution	12

4 In the primary pane, select **Operating Expenses** for **Eugene** and make the following assignments:

Resource Account	Driver	Activity Account	DQF
Eugene x Operating Expenses	Dollars	Eugene x Resolve Customer Complaints	7,700.00
		Eugene x Expedite Package Shipments	9,000.00
		Eugene x Move to Warehouse	69,000.00
		Eugene x Sort	38,000.00
		Eugene x Inspect	58,300.00
		Eugene x Land Distribution	98,000.00

5 In the primary pane, select **Equipment Expenses** for **Eugene** and make the following assignments:

Resource Account	Driver	Activity Account	DQF
Eugene x Equipment Expenses	Percentage	Eugene x Resolve Customer Complaints	5
		Eugene x Expedite Package Shipments	2
		Eugene x Move to Warehouse	8
		Eugene x Sort	20
		Eugene x Inspect	25
		Eugene x Land Distribution	40

Making Assignments from Activities to Other Activities

The costs of some activities flow to other activities. For example, at Parcel Express, when packages are moved to a warehouse, they must then be sorted or inspected. Therefore, in the Parcel Express Tutorial model, the costs of the Move to Warehouse activity flow to the Sort and Inspect activities. These are known as intra-modular, or reciprocal assignments.

➢ Modify the Cost Assignments column layout

1 Select **Model > Activity Module**.

2 If it is not already open, open the right assignments pane.

3 If the **Cost Assignments** layout is not already selected, select it from the **Column Layout** list, and then click the arrow.

4 Open the **Column Layout** dialog box.

5 Modify the column layout as follows:

a In the primary pane, remove **Inspections Passed** and add **Driver Name (DrvName)**.

b In the right pane, remove **Reference** and add **Driver Quantity Fixed (DQF)**.

6 Click **Save**, and then click **OK**.

You see that the column layout has changed.

➢ Add accounts for assignments

1 Open the Add Accounts for Assignments dialog box.

2 Select the **Activity** module.

3 Add the following accounts to the right pane:

Tip: To see these accounts, expand the hierarchy in the Add Accounts for Assignments dialog box. You can add the accounts individually or select them all at once by holding down the CTRL key, and then clicking **Add Accounts**.

Activity Account
Beaverton x Inspect
Beaverton x Sort
Beaverton x Air Distribution
Beaverton x Land Distribution
Eugene x Inspect
Eugene x Sort
Eugene x Land Distribution

4 Click **Close**.

➢ Make assignments

1 In the primary pane, select **Move to Warehouse** for **Beaverton** and make the following assignments:

Activity Account (Primary Pane)	Driver	Activity Account (Right Pane)	DQF
Beaverton x Move to Warehouse	Number of Packages	Beaverton x Sort	203,000
		Beaverton x Inspect	50,000

2 In the primary pane, select **Inspect** for **Beaverton** and make the following assignments:

Activity Account (Primary Pane)	Driver	Activity Account (Right Pane)	DQF
Beaverton x Inspect	Number of Packages	Beaverton x Sort	44,000

3 In the primary pane, select **Sort** for **Beaverton** and make the following assignments:

Activity Account (Primary Pane)	Driver	Activity Account (Right Pane)	DQF
Beaverton x Sort	Number of Packages	Beaverton x Land Distribution	107,000
		Beaverton x Air Distribution	140,000

4 In the primary pane, select **Move to Warehouse** for **Eugene** and make the following assignments:

Activity Account (Primary Pane)	Driver	Activity Account (Right Pane)	DQF
Eugene x Move to Warehouse	Number of Packages	Eugene x Sort	117,000
		Eugene x Inspect	18,000

5 In the primary pane, select **Inspect** for **Eugene** and make the following assignments:

Activity Account (Primary Pane)	Driver	Activity Account (Right Pane)	DQF
Eugene x Inspect	Number of Packages	Eugene x Sort	16,000

6 In the primary pane, select **Sort** for **Eugene** and make the following assignments:

Activity Account (Primary Pane)	Driver	Activity Account (Right Pane)	DQF
Eugene x Sort	Number of Packages	Eugene x Land Distribution	133,000

Making Assignments from Activities to Cost Objects

Now, you will make more inter-modular assignments from activity accounts to cost object accounts. Remember that some cost object accounts are single-dimension accounts. These accounts hold unique costs for individual channels or products. Some Parcel Express activities, such as Resolve Customer Complaints, apply uniquely to a channel, regardless of the packages that are being processed through the channel. Similarly, some costs apply only to products, as you will see in the following procedures.

➢ Add accounts for assignment

1 If there are accounts in the right pane, clear the accounts as follows:

   a Select the highest branch of the **Activity** hierarchy in the primary pane.

   b Select **Model > Assignments > Clear Right**.

   You see that the right pane has been cleared of accounts. This does not delete the assignments—it only removes them from view.

2 Open the **Add Accounts for Assignments** dialog box.

3 Verify that the **Cost Object** module is selected.

4 Add all of the **Cost Object** accounts to the right pane.

   Note: To avoid mixing up activities and cost objects from Beaverton and Eugene, consider first adding only the Beaverton accounts. Next, make the assignments. Then, clear the right pane. And then, add all of the Eugene accounts and make assignments. Also, note that clearing accounts from a pane does not delete assignments from your model. It removes the accounts from view temporarily.

5 Click **Close**.

➢ Make assignments for Beaverton

1 In the primary pane, select **Resolve Customer Complaints** for **Beaverton** and make the following assignments:

Activity Account	Driver	Cost Object Account for Beaverton	DQF
Beaverton x Resolve Customer Complaints	Number of Customer Complaints	Commercial Pick Up x No <Products and Services>	25
		Walk In x No <Products and Services>	85
		Drop Box x No <Products and Services>	15

2 In the primary pane, select **Inspect** for **Beaverton** and create the following assignments:

Activity Account	Driver	Cost Object Account for Beaverton	DQF
Beaverton x Inspect	Number of Packages	No <Channel> x Standard Ground	500
		No <Channel> x Overnight Express	4,500
		No <Channel> x 2nd Day Guaranteed	1,000

3 In the primary pane, select **Air Distribution** for **Beaverton** and make the following assignments:

Activity Account	Driver	Cost Object Account for Beaverton	DQF
Beaverton x Air Distribution	Number of Packages	No <Channel> x Standard Ground	50,000
		No <Channel> x Overnight Express	65,000
		No <Channel> x 2nd Day Guaranteed	25,000

4 In the primary pane, select **Land Distribution** for **Beaverton** and make the following assignments:

Activity Account	Driver	Cost Object Account for Beaverton	DQF
Beaverton x Land Distribution	Number of Packages	No <Channel> x Standard Ground	67,000
		No <Channel> x Overnight Express	15,000
		No <Channel> x 2nd Day Guaranteed	25,000

5 In the primary pane, select **Expedite Package Shipments** for **Beaverton** and make the following assignments:

Activity Account	Driver	Cost Object Account for Beaverton	DQF
Beaverton x Expedite Package Shipments	Number of Expedite Requests	No <Channel> x Standard Ground	3,000
		No <Channel> x Overnight Express	26,000
		No <Channel> x 2nd Day Guaranteed	15,000

➢ Make assignments for Eugene

1 In the primary pane, select **Resolve Customer Complaints** for **Eugene** and make the following assignments:

Activity Account	Driver	Cost Object Account for Eugene	DQF
Eugene x Resolve Customer Complaints	Number of Customer Complaints	Commercial Pick Up x No <Products and Services>	10
		Walk In x No <Products and Services>	32
		Drop Box x No <Products and Services>	25

2 In the primary pane, select **Inspect** for **Eugene** and create the following assignments:

Activity Account	Driver	Cost Object Account for Eugene	DQF
Eugene x Inspect	Number of Packages	No <Channel> x Standard Ground	1,000
		No <Channel> x Overnight Express	500
		No <Channel> x 2nd Day Guaranteed	500

3 In the primary pane, select **Land Distribution** for **Eugene** and make the following assignments:

Activity Account	Driver	Cost Object Account for Eugene	DQF
Eugene x Land Distribution	Number of Packages	No <Channel> x Standard Ground	75,000
		No <Channel> x Overnight Express	16,000
		No <Channel> x 2nd Day Guaranteed	42,000

4 In the primary pane, select **Expedite Package Shipments** for **Eugene** and make the following assignments:

Activity Account	Driver	Cost Object Account for Eugene	DQF
Eugene x Expedite Package Shipments	Number of Expedite Requests	No <Channel> x Standard Ground	25,000
		No <Channel> x Overnight Express	1,000
		No <Channel> x 2nd Day Guaranteed	10,000

Adding Attributes to Cost Accounts

When you created the cost drivers for the Parcel Express Tutorial model, you built one calculated driver, named Number of Expedite Requests, that was composed of two attributes, named Average Time to Expedite and Completed Expedite Requests (See Calculated Drivers). The value of those attributes must be added to the cost accounts to which they apply.

➢ **Open the cost object module**

1 Select **Model > Cost Object Module**.

➢ **Add columns for attributes in the column layout**

To enter numeric values for attributes, the attributes must be added to the column layout for the cost object account:

1 Make sure the current column layout is **Cost Assignments**.

2 Select **Model > Column Layout > Edit Columns**. The Column Layout window opens.

3 Make sure the **Cost Object Module** is selected.

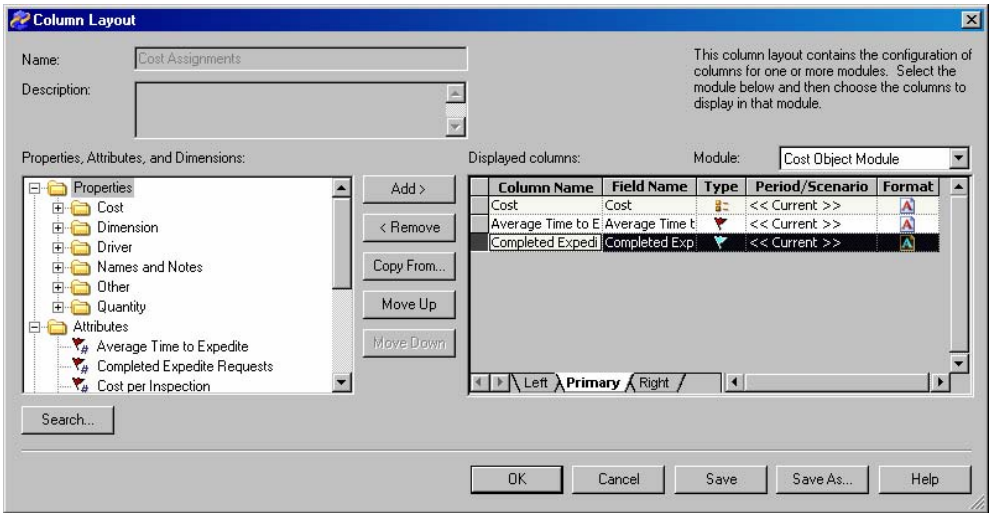
4 Make sure the **Primary** pane tab is selected.

5 Remove **Display Reference** from the Displayed columns list.

6 Add the **Average Time to Expedite** attribute.

7 Add the **Completed Expedite Requests** attribute.

The column layout should look like the following:



8 Click **OK**. The attributes are added to the primary pane. There is no need to save the column layout.

➢ Add attribute quantities

1 Now, add the following attribute quantities for Beaverton:

Destination Account	Average Time to Expedite	Completed Expedite Requests
No <Channel> x Standard Ground	1.75	4,000
No <Channel> x Overnight Express	1.75	15,000
No <Channel> x 2nd Day Guaranteed	1.75	25,000

2 Add the following attribute quantities for Eugene:

Destination Account	Average Time to Expedite	Completed Expedite Requests
No <Channel> x Standard Ground	3	6,000
No <Channel> x Overnight Express	3	15,000
No <Channel> x 2nd Day Guaranteed	3	20,000

The resulting attribute assignments should look like the following:

Display Name	Cost	Average Time to Expedite	Completed Expedite Requests
COST OBJECT (PRIMARY PANE)	$0.00		
USA	$0.00		
Oregon	$0.00		
Beaverton	$0.00		
Drop Box	$0.00		
Walk In	$0.00		
Commercial Pick Up	$0.00		
No <Channel>	$0.00		
2nd Day Guaranteed	$0.00	1.75	25,000.00
Overnight Express	$0.00	1.75	15,000.00
Standard Ground	$0.00	1.75	4,000.00
Eugene	$0.00		
Drop Box	$0.00		
Walk In	$0.00		
Commercial Pick Up	$0.00		
No <Channel>	$0.00		
2nd Day Guaranteed	$0.00	3.00	20,000.00
Overnight Express	$0.00	3.00	15,000.00
Standard Ground	$0.00	3.00	6,000.00

CHAPTER 11 Calculating Costs

Typically, costs are entered in a model at the end of a defined period. These costs come from an organization's general ledger accounts and from external bills of costs. Additional cost information can come from a Material Requirements Planning (MRP) system. Production data is also entered in a model at the end of a defined period.

At any time during the development of a model, you can calculate the cost of each account according to its driver and driver quantities.

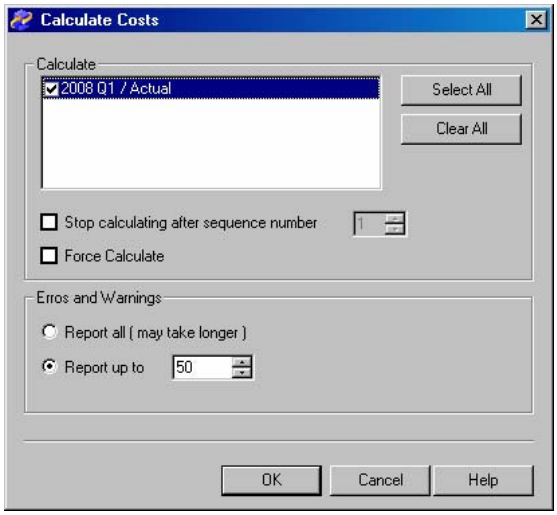
Performing Calculations

You entered Parcel Express costs and quantities for the 2004 Q1 period, so calculations will be performed for this period.

➢ **Calculate costs**

1 Select **Model > Calculate Costs**.

You see the Calculate Costs dialog box.

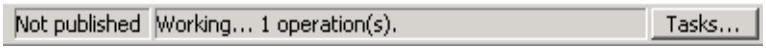


2 Select the period/scenario **2008 Q1/Actual**.

Note: You can select **Force Calculate** to perform calculations even if the flag is set that says that calculations are up to date. To speed processing, SAS Activity-Based Management skips calculating if it thinks that calculations are up to date. Use this option to force calculations anyway.

3 Click **OK**.

You see a message in the status bar, at the bottom of the window, indicating that the calculation is in progress.



Depending on the speed of your SAS Activity-Based Management server and your connection to it, the calculation might take several seconds. When the calculation is completed, you see the Operation Summary window. You should have 0 fatal errors, 0 errors, and 0 warnings.

Viewing and Verifying Calculation Results

Experienced activity-based costing users calculate a model after they create accounts, assignments, and driver quantities, or after they enter cost data, as a validation and quality assurance technique.

The following displays show the total costs for the resource, activity, and cost object modules, along with the key roll-up accounts in each module. Verify that the modules and accounts in your model match the costs.

Resource Module

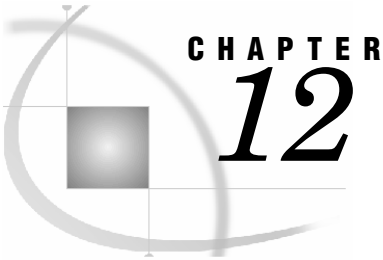
RESOURCE (PRIMARY PANE)		$3,647,900.00
USA	USA	$3,647,900.00
Oregon	Oregon	$3,647,900.00
Beaverton	Beaverton	$1,930,900.00
Wages	Wages	$1,638,600.00
Operating Expenses	Operating Expenses	$238,000.00
Equipment Expenses	Equipment Expenses	$54,300.00
Eugene	Eugene	$1,717,000.00
Wages	Wages	$1,408,000.00
Operating Expenses	Operating Expenses	$271,000.00
Equipment Expenses	Equipment Expenses	$38,000.00

Activity Module

ACTIVITY (PRIMARY PANE)		$3,647,900.00
USA	USA	$3,647,900.00
Oregon	Oregon	$3,647,900.00
Beaverton	Beaverton	$1,930,900.00
Personnel Intensive A	Personnel Intensive Activities	$218,201.72
Local Collection	Local Collection	$338,040.02
Local Processing	Local Processing	$716,731.93
Regional Distribution	Regional Distribution	$1,682,395.54
Eugene	Eugene	$1,717,000.00
Personnel Intensive A	Personnel Intensive Activities	$187,783.21
Local Collection	Local Collection	$351,422.14
Local Processing	Local Processing	$743,326.79
Regional Distribution	Regional Distribution	$1,504,169.86

Cost Object Module

COST OBJECT (PRIMARY PANE)		$3,647,900.00
USA	USA	$3,647,900.00
Oegon	Oegon	$3,647,900.00
Beaverton	Beaverton	$1,930,900.00
Drop Box	Drop Box	$15,468.14
Walk In	Walk In	$87,652.80
Commercial Pick Up	Commercial Pick Up	$25,780.24
No <Channel>	No <Channel>	$1,801,998.82
Eugene	Eugene	$1,717,000.00
Drop Box	Drop Box	$45,519.59
Walk In	Walk In	$58,265.07
Commercial Pick Up	Commercial Pick Up	$18,207.84
No <Channel>	No <Channel>	$1,595,007.50



CHAPTER 12

Adding Bills of Costs

A bill of costs provides a convenient mechanism for adding material and unit costs directly to accounts, for bidding on jobs or for implementing activity accounting.

Use a bill of costs when either of the following is true:

- Costs outside of the general ledger need to be introduced into a model. Not all costs that are assigned through a model come from the general ledger. For example, material costs (the cost of purchased components) can be additional product cost information that often comes from a MRP system.
- A model's unit cost elements that are associated with product families need to be tracked.

Steps for Building Bills of Costs

To build bills of costs:

1. Define a dimension in the external units module.

   You did this step for the Parcel Express Tutorial model when you completed the New Model Wizard. The dimension is Materials.

2. Create dimension members.

   For the Parcel Express Tutorial, the Materials dimension members will represent packaging materials.

3. Create accounts in the external units module.

   You will use the New Account Wizard to add external units to the model.

4. Create an assignment from the external unit to an account, using the Bill of Cost driver.

Packaging materials in the Parcel Express Tutorial model contribute to the unique costs of a product. You will make assignments from accounts in the external units module to accounts in the cost object module.

5 Enter a fixed or variable driver quantity.

You will enter both types of quantities.

6 If you enter a variable driver quantity, you must also enter an output quantity.

You will enter output quantities in a later lesson.

Internal and External Units

An external unit is a unit, such as a part purchased from a supplier, whose cost is maintained outside a SAS Activity-Based Management model, but which needs to be accounted for in the model. SAS Activity-Based Management treats external units like accounts. When an external unit's cost is flowed to an account, you see the flowed cost listed as an external unit cost element.

Fixed and Variable Quantities

A bill of costs quantity can include variable or fixed quantities or both.

Variable Quantities

In a variable quantity, the cost that flows to the account from the bill of costs depends on the output quantity: the bill of costs's unit cost is multiplied by the driver quantity and the output quantity (either a system-calculated output quantity or a user-entered output quantity).

For example, assume that a company manufactures bicycles. The rubber tires are purchased from another company for $5 each. Because each bicycle requires two tires, the unit cost of the bill of costs is $10. If the company produces 100 bicycles, the total cost is $1,000 (100 x $5 x 2).

Fixed Quantities

In a fixed quantity, the cost that flows to the account from the bill of costs does not depend on the output quantity: the bill of cost's unit cost is multiplied by the driver quantity.

For example, assume that the bicycle manufacturer that was mentioned previously buys 1,000 tires at the beginning of each year. The tires might be used in any model of bicycle that the manufacturer produced. In this case, the bill of costs's unit cost does not vary with the number of bicycles produced; it's always $5,000 (1,000 x $5).

Creating External Units and Bills of Costs

Parcel Express buys the following components from outside vendors:

- standard envelopes
- 2nd day flats
- overnight flats
- large boxes
- small boxes

These costs must be accounted for in the model. To account for them, you will create external units and assign them to cost object accounts, thereby creating bills of costs.

➢ Create the Materials dimension members

1 Select Model > Dimensions Page.

2 Using the techniques that you have learned, create the following Materials dimension members:

Name	Reference	DimLevelName
Region	Reg	
General Ledger	GL	
Activities	Act	
Channel	Chnl	
Products and Services	Prod_Serv	
Materials	Mat	
Envelopes	ENV	Level1
Standard Envelope	SENV	Level2
Flats	FTS	Level1
2nd Day Flat	2DF	Level2
Overnight Flat	ONF	Level2
Boxes	BX	Level1
Large Box	LBX	Level2
Small Box	SBX	Level2

Tip: Select Edit > New Dimension Member to open the New Dimension Member dialog box or right-click the dimension name.

➢ Create external units accounts

1 Select Model > External Units Module.

You see the external units module, which has no structure yet.

2 Select Edit > New Account.

You see the New Account Wizard.

3 Select the following dimension members:

- Standard Envelope
- 2nd Day Flat
- Overnight Flat

- Large Box
- Small Box

4 Click Add, and then Next.

You see Step 2 of the New Account Wizard.

5 Enter the following unit costs:

Account	Unit Cost
Standard Envelope	.06
2nd Day Flat	.14
Overnight Flat	.14
Large Box	.95
Small Box	.75

6 Click Finish.

You see the following external unit structure:

Display Name	Display Reference	UnitCost	Cost
EXTERNAL UNITS			$0.00
Envelopes	ENV		$0.00
Standard Envelope	SENV	$0.06	$0.00
Flats	FTS		$0.00
2nd Day Flat	2DF	$0.14	$0.00
Overnight Flat	ONF	$0.14	$0.00
Boxes	BX		$0.00
Large Box	LBX	$0.95	$0.00
Small Box	SBX	$0.75	$0.00

➢ Modify the Cost Assignments column layout

1 In the external units module, show the right assignments pane.

2 If the Cost Assignments layout is not already selected, select it from the Column Layout list, and then click the arrow.

3 Select Model > Column Layout > Edit Columns. The Column Layout dialog box opens.

4 Modify the primary pane as follows:

- Remove Display Reference.
- Add Driver Name (DrvName).

5 Modify the right pane as follows:

- Remove Reference.
- Add Driver Quantity Fixed (DQF).
- Add Driver Quantity Variable (DQV).

6 Click Save, and then OK.

➢ Add accounts for assignments

1 Open the Add Accounts for Assignments dialog box (Model > Assignments > Add Accounts in Right Pane).

2 Add the following Cost Object accounts under Beaverton and Eugene to the right pane:

Cost Object Account
No <Channel> x 2nd Day Guaranteed
No <Channel> x Overnight Express
No <Channel> x Standard Ground

➢ Make assignments

1 Make assignments that have the following driver quantities:

External Unit Account	Cost Object Account	DQF	DQV
Standard Envelope	Beaverton x No <Channel> x Overnight Express	17,333.00	
Standard Envelope	Eugene x No <Channel> x Overnight Express	8,677.00	
2nd Day Flat	Beaverton x No <Channel> x 2nd Day Guaranteed		1.00
2nd Day Flat	Eugene x No <Channel> x 2nd Day Guaranteed		1.00
Overnight Flat	Beaverton x No <Channel> x Overnight Express	123,500.00	
Overnight Flat	Eugene x No <Channel> x Overnight Express	6,500.00	
Large Box	Beaverton x No <Channel> x Standard Ground	120,833.00	
Large Box	Eugene x No <Channel> x Standard Ground	4,167.00	
Small Box	Beaverton x No <Channel> x Standard Ground	73,950.00	
Small Box	Eugene x No <Channel> x Standard Ground	2,550.00	

Note: When you make assignments from external units, the software automatically applies the Bill of Cost driver.

2 Select Model > Assignments > Show Single Pane.

3 Calculate the model, and then close the Operation Summary.

Note: Warnings occur because costs are still unassigned.

You see the following external unit costs:

Display Name	UnitCost	Cost	DrvName
EXTERNAL UNITS		$195,885.60	
Envelopes		$1,560.60	
Standard Envelope	$0.06	$1,560.60	Bill of Cost
Flats		$18,200.00	
2nd Day Flat	$0.14	$0.00	Bill of Cost
Overnight Flat	$0.14	$18,200.00	Bill of Cost
Boxes		$176,125.00	
Large Box	$0.95	$118,750.00	Bill of Cost
Small Box	$0.75	$57,375.00	Bill of Cost

Note: The 2nd Day Flat external unit does not have a cost yet because you assigned a variable driver quantity of 1. Until you enter an output quantity for the 2nd Day Guaranteed product, the system cannot calculate the cost of 2nd Day Flat.

The following picture shows how the Cost is derived for each external unit by multiplying the Total Driver Quantity times the UnitCost for each.

Note: Because there is no variable cost concerned in this case, we can simply add the two DQFs (Driver Quantity Fixed) to derive the TDQ (Total Driver Quantity).

	Standard Ground	Overnight Flat	Large Box	Small Box	
DQF (Beaverton)	17,333.00	123,500.00	120,833.00	73,950.00	
DQF (Eugene)	8,677.00	6,500.00	4,167.00	2,550.00	
TDQ (Total Driver Quantiy = DQF + DQF)	26,010.00	130,000.00	125,000.00	76,500.00	
UnitCost	$0.06	$0.14	$0.95	$0.75	
Cost (TDQ x UnitCost)	$1,560.60	$18,200.00	$118,750.00	$57,375.00	$195,885.60

CHAPTER 13

Entering Output, Sales, and Revenue Data

Some of the most critical calculations in a model rely on the number of products that are produced and sold, as well as sales revenue. From these values, you can determine unit costs and profit. SAS Activity-Based Management provides properties for the input and calculation of these values.

Entering Output Quantities

In SAS Activity-Based Management models, output quantity can be derived from a number of user-entered quantities. In the Parcel Express Tutorial model, you will enter data into the OutQtyUE (which stands for Output Quantity User-Entered) property and the SoldQty (which stands for Sold Quantity) property, both of which will be used to calculate the Cost of an account. The software uses OutQty (which stands for Output Quantity) to calculate UnitCost also.

➢ **Create a new column layout**

1 Select **Model > Cost Object Module**.

2 Select the **Default** column layout.

3 Remove the **Display Reference** column.

4 Add the following columns to the primary pane:

- Driver Name (DrvName)
- Unit Cost (UnitCost)
- Output Quantity UE (OutQtyUE)
- Output Quantity (OutQty)

5 Click **Save As** and name the new column layout **Unit Cost**.

➢ Enter output quantities and calculate costs

1 Expand the **No <Channel>** roll-up accounts for Beaverton and Eugene.

2 Delete the **No <Channel> x No <Products and Services>** accounts for both Eugene and Beaverton. Right-click each account and select **Delete**. (Note that you might have deleted them already when creating the cost object accounts.)

3 Assign the **Sales volume** driver to the following accounts for both Beaverton and Eugene:

Cost Object Account
Drop Box x No <Products and Services>
Walk In x No <Products and Services>
Commercial Pick Up x No <Products and Services>

4 Assign the **Sales volume** driver to each of the **No <Channel>** accounts:

Cost Object Account
No <Channel> x 2nd Day Guaranteed
No <Channel> x Overnight Express
No <Channel> x Standard Ground

5 In the **OutQtyUE** column, enter the following quantities:

Account	Quantity	
	Beaverton	Eugene
No <Channel> x 2nd Day Guaranteed	58,840	30,500
No <Channel> x Overnight Express	67,330	33,670
No <Channel> x Standard Ground	128,966	64,534

6 Calculate the model, and then close the **Operation Summary**.

You see the unit cost for each product. Output quantities have been generated for these products.

Display Name	Cost	DrvName	UnitCost	OutQtyUE	OutQty
COST OBJECT (PRIMARY PANE)	$3,856,293.20				
USA	$3,856,293.20				
Oregon	$3,856,293.20				
Beaverton	$2,127,721.43				
Drop Box	$15,468.14				
2nd Day Guaranteed	$0.00				0.00
Overnight Express	$0.00				0.00
Standard Ground	$0.00				0.00
No <Products and Services>	$15,468.14	Sales volume			0.00
Walk In	$87,652.80				
2nd Day Guaranteed	$0.00				0.00
Overnight Express	$0.00				0.00
Standard Ground	$0.00				0.00
No <Products and Services>	$87,652.80	Sales volume			0.00
Commercial Pick Up	$25,780.24				
2nd Day Guaranteed	$0.00				0.00
Overnight Express	$0.00				0.00
Standard Ground	$0.00				0.00
No <Products and Services>	$25,780.24	Sales volume			0.00
No <Channel>	$1,998,820.25				
2nd Day Guaranteed	$401,573.75	Sales volume	$6.82	58,840.00	58,840.00
Overnight Express	$564,408.05	Sales volume	$8.38	67,330.00	67,330.00
Standard Ground	$1,032,838.45	Sales volume	$8.01	128,966.00	128,966.00
Eugene	$1,728,571.77				
Drop Box	$45,519.59				
2nd Day Guaranteed	$0.00				0.00
Overnight Express	$0.00				0.00
Standard Ground	$0.00				0.00
No <Products and Services>	$45,519.59	Sales volume			0.00
Walk In	$58,265.07				
2nd Day Guaranteed	$0.00				0.00
Overnight Express	$0.00				0.00
Standard Ground	$0.00				0.00
No <Products and Services>	$58,265.07	Sales volume			0.00
Commercial Pick Up	$18,207.84				
2nd Day Guaranteed	$0.00				0.00
Overnight Express	$0.00				0.00
Standard Ground	$0.00				0.00
No <Products and Services>	$18,207.84	Sales volume			0.00
No <Channel>	$1,606,579.27				
2nd Day Guaranteed	$493,165.07	Sales volume	$16.17	30,500.00	30,500.00
Overnight Express	$245,887.62	Sales volume	$7.30	33,670.00	33,670.00
Standard Ground	$867,526.58	Sales volume	$13.44	64,534.00	64,534.00

If you return to the external units module, you will see that a cost has now been generated for the **2nd Day Flat** account. The reason is that you assigned cost by using the DQV property, and this property requires an output quantity for calculation. Now that you have entered the 2nd Day Guaranteed output quantity, the **2nd Day Flat** external unit account can be calculated.

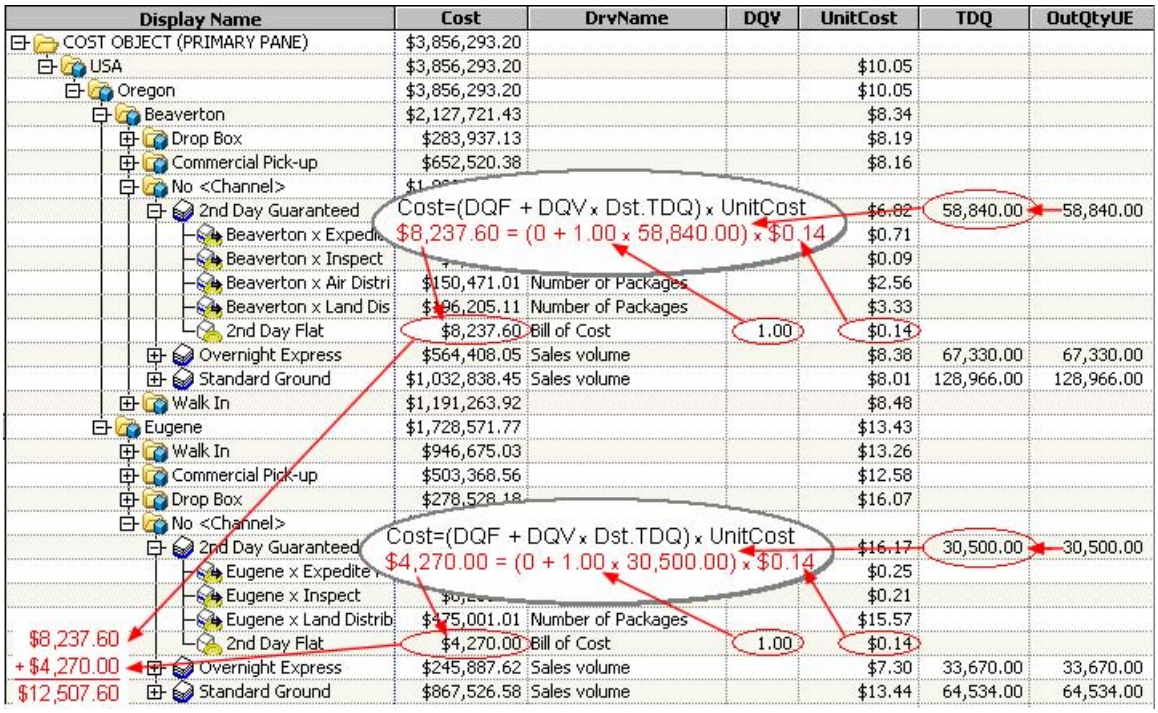
Display Name	UnitCost	Cost	DrvName
EXTERNAL UNITS		$208,393.20	
Envelopes		$1,560.60	
Standard Envelope	$0.06	$1,560.60	Bill of Cost
Flats		$30,707.60	
2nd Day Flat	$0.14	$12,507.60	Bill of Cost
Overnight Flat	$0.14	$18,200.00	Bill of Cost
Boxes		$176,125.00	
Large Box	$0.95	$118,750.00	Bill of Cost
Small Box	$0.75	$57,375.00	Bill of Cost

Let's look more closely at how the cost of $12,507.60 for 2nd Day Flat is calculated. Cost is calculated according to the following formula:

Cost = (DQF + DQV x Dst.TDQ) x UnitCost

In this case, DQF is zero and can be ignored. As for the Total Driver Quantity (TDQ), in this case its value equals the Output Quantity User Entered (OutQtyUE).

Note: TDQ does not always equal OutQtyUE as we shall see shortly.



Entering Sales Volumes

You will enter sales volumes in the SoldQty property.

➢ **Further modify the Cost Assignments column layout**

1 In the **Cost Object** module, show the primary pane.

2 If the **Cost Assignments** layout is not already selected, select it from the **Column Layout** list, and then click the arrow.

3 Select **Model > Column Layout > Edit Columns**. The **Column Layout** dialog box opens.

4 Modify the primary pane as follows:

- Remove the **Display Reference**, **Average Time to Expedite**, and **Completed Expedite Requests** columns.
- Add Driver Name (DrvName).
- Add Sold Quantity (SoldQty).

5 Click **Save**, and then **OK**.

➢ Enter sales volumes

1 In the primary pane, enter the following values for **SoldQty** for the following accounts:

Account	SoldQty
Beaverton x Drop Box x 2nd Day Guaranteed	9,000
Beaverton x Drop Box x Overnight Express	4,000
Beaverton x Drop Box x Standard Ground	21,666
Beaverton x Walk In x 2nd Day Guaranteed	29,840
Beaverton x Walk In x Overnight Express	37,330
Beaverton x Walk In x Standard Ground	73,300
Beaverton x Commercial Pick Up x 2nd Day Guaranteed	20,000
Beaverton x Commercial Pick Up x Overnight Express	26,000
Beaverton x Commercial Pick Up x Standard Ground	34,000
Eugene x Drop Box x 2nd Day Guaranteed	4,500
Eugene x Drop Box x Overnight Express	2,000
Eugene x Drop Box x Standard Ground	10,834
Eugene x Walk In x 2nd Day Guaranteed	16,000
Eugene x Walk In x Overnight Express	18,670
Eugene x Walk In x Standard Ground	36,700
Eugene x Commercial Pick Up x 2nd Day Guaranteed	10,000

Account	SoldQty
Eugene x Commercial Pick Up x Overnight Express	13,000
Eugene x Commercial Pick Up x Standard Ground	17,000

2 Calculate the model, and then close the **Operation Summary**.

You see that costs are now assigned to the nine accounts (for each location) that previously did not have costs.

Display Name	Cost	DrvName	SoldQty
COST OBJECT (PRIMARY PANE)	$3,856,293.20		
USA	$3,856,293.20		383,840.00
Oregon	$3,856,293.20		383,840.00
Beaverton	$2,127,721.43		255,136.00
Drop Box	$283,937.13		34,666.00
2nd Day Guaranteed	$65,439.43		9,000.00
Overnight Express	$35,315.67		4,000.00
Standard Ground	$183,182.03		21,666.00
No <Products and Services>	$15,468.14	Sales volume	
Walk In	$1,191,263.92		140,470.00
2nd Day Guaranteed	$222,273.37		29,840.00
Overnight Express	$336,220.46		37,330.00
Standard Ground	$632,770.10		73,300.00
No <Products and Services>	$87,652.80	Sales volume	
Commercial Pick Up	$652,520.38		80,000.00
2nd Day Guaranteed	$142,941.92		20,000.00
Overnight Express	$226,329.11		26,000.00
Standard Ground	$283,249.36		34,000.00
No <Products and Services>	$25,780.24	Sales volume	
No <Channel>	$1,998,820.25		
2nd Day Guaranteed	$401,573.75	Sales volume	
Overnight Express	$564,408.05	Sales volume	
Standard Ground	$1,032,838.45	Sales volume	
Eugene	$1,728,571.77		128,704.00
Drop Box	$278,528.18		17,334.00
2nd Day Guaranteed	$84,579.19		4,500.00
Overnight Express	$19,857.80		2,000.00
Standard Ground	$174,091.19		10,834.00
No <Products and Services>	$45,519.59	Sales volume	
Walk In	$946,675.03		71,370.00
2nd Day Guaranteed	$271,771.63		16,000.00
Overnight Express	$151,586.40		18,670.00
Standard Ground	$523,317.00		36,700.00
No <Products and Services>	$58,265.07	Sales volume	
Commercial Pick Up	$503,368.56		40,000.00
2nd Day Guaranteed	$166,245.43		10,000.00
Overnight Express	$100,854.85		13,000.00
Standard Ground	$236,268.28		17,000.00
No <Products and Services>	$18,207.84	Sales volume	
No <Channel>	$1,606,579.27		
2nd Day Guaranteed	$493,165.07	Sales volume	
Overnight Express	$245,887.62	Sales volume	
Standard Ground	$867,526.58	Sales volume	

Let's take a closer look at how Cost is determined. As already mentioned, Cost is calculated according to the following formula:

Cost = (DQF + DQV x Dst.TDQ) x UnitCost

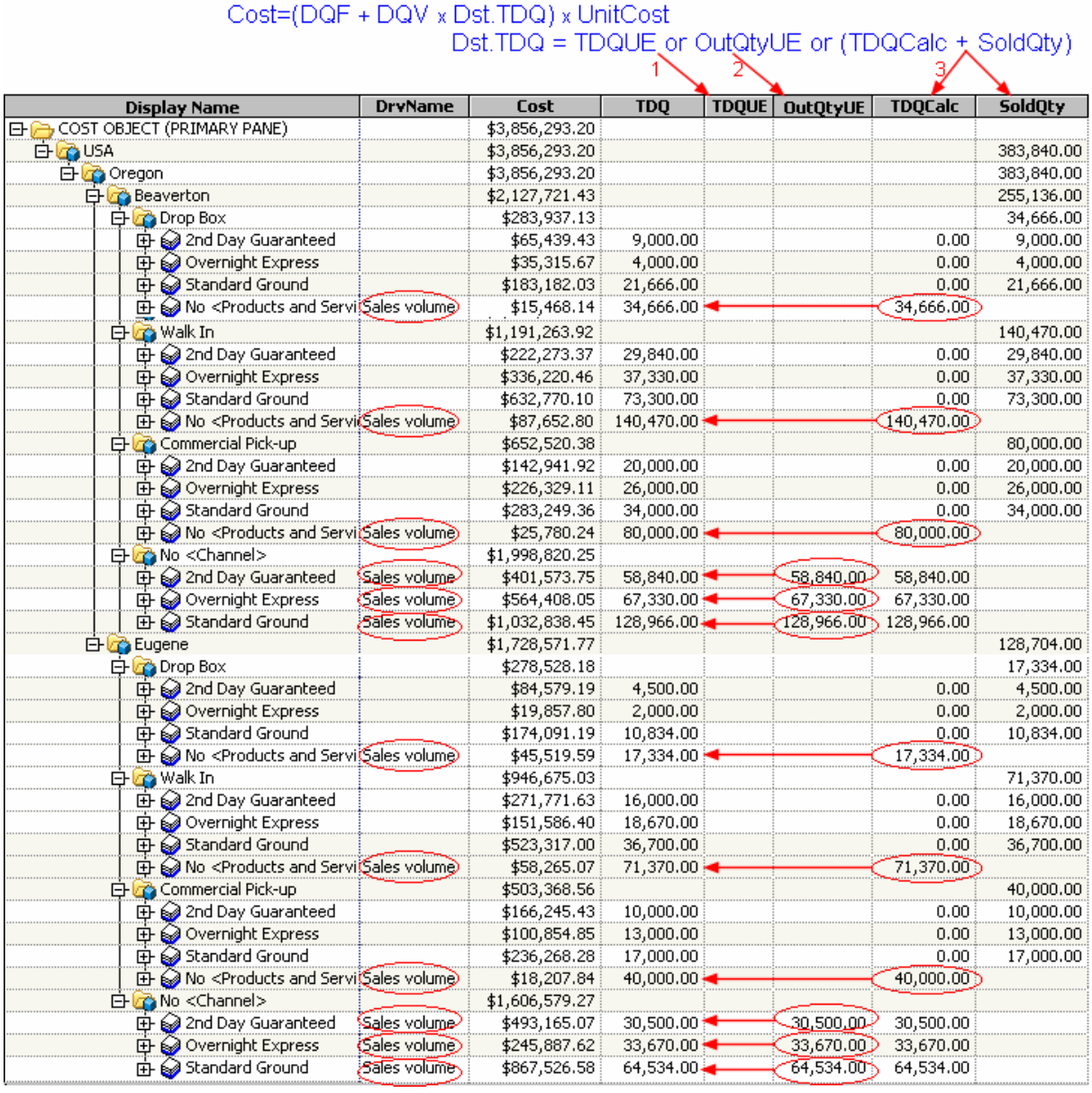
In the previous case, the TDQ equaled OutQtyUE. However, that is not always the case. In general, the value of TDQ is determined by the following formula:

TDQ = TDQUE (if entered)

else OutQtyUE (if entered)

else TDQCalc + SoldQty

In the following picture, you can see how TDQ is derived for all the accounts to which you assigned the Sales Volume driver.



Display Name	DrvName	Cost	TDQ	TDQUE	OutQtyUE	TDQCalc	SoldQty
COST OBJECT (PRIMARY PANE)		$3,856,293.20					
USA		$3,856,293.20					383,840.00
Oregon		$3,856,293.20					383,840.00
Beaverton		$2,127,721.43					255,136.00
Drop Box		$283,937.13					34,666.00
2nd Day Guaranteed		$65,439.43	9,000.00			0.00	9,000.00
Overnight Express		$35,315.67	4,000.00			0.00	4,000.00
Standard Ground		$183,182.03	21,666.00			0.00	21,666.00
No <Products and Servi	Sales volume	$15,468.14	34,666.00			34,666.00	
Walk In		$1,191,263.92					140,470.00
2nd Day Guaranteed		$222,273.37	29,840.00			0.00	29,840.00
Overnight Express		$336,220.46	37,330.00			0.00	37,330.00
Standard Ground		$632,770.10	73,300.00			0.00	73,300.00
No <Products and Servi	Sales volume	$87,652.80	140,470.00			140,470.00	
Commercial Pick-up		$652,520.38					80,000.00
2nd Day Guaranteed		$142,941.92	20,000.00			0.00	20,000.00
Overnight Express		$226,329.11	26,000.00			0.00	26,000.00
Standard Ground		$283,249.36	34,000.00			0.00	34,000.00
No <Products and Servi	Sales volume	$25,780.24	80,000.00			80,000.00	
No <Channel>		$1,998,820.25					
2nd Day Guaranteed	Sales volume	$401,573.75	58,840.00		58,840.00	58,840.00	
Overnight Express	Sales volume	$564,408.05	67,330.00		67,330.00	67,330.00	
Standard Ground	Sales volume	$1,032,838.45	128,966.00		128,966.00	128,966.00	
Eugene		$1,728,571.77					128,704.00
Drop Box		$278,528.18					17,334.00
2nd Day Guaranteed		$84,579.19	4,500.00			0.00	4,500.00
Overnight Express		$19,857.80	2,000.00			0.00	2,000.00
Standard Ground		$174,091.19	10,834.00			0.00	10,834.00
No <Products and Servi	Sales volume	$45,519.59	17,334.00			17,334.00	
Walk In		$946,675.03					71,370.00
2nd Day Guaranteed		$271,771.63	16,000.00			0.00	16,000.00
Overnight Express		$151,586.40	18,670.00			0.00	18,670.00
Standard Ground		$523,317.00	36,700.00			0.00	36,700.00
No <Products and Servi	Sales volume	$58,265.07	71,370.00			71,370.00	
Commercial Pick-up		$503,368.56					40,000.00
2nd Day Guaranteed		$166,245.43	10,000.00			0.00	10,000.00
Overnight Express		$100,854.85	13,000.00			0.00	13,000.00
Standard Ground		$236,268.28	17,000.00			0.00	17,000.00
No <Products and Servi	Sales volume	$18,207.84	40,000.00			40,000.00	
No <Channel>		$1,606,579.27					
2nd Day Guaranteed	Sales volume	$493,165.07	30,500.00		30,500.00	30,500.00	
Overnight Express	Sales volume	$245,887.62	33,670.00		33,670.00	33,670.00	
Standard Ground	Sales volume	$867,526.58	64,534.00		64,534.00	64,534.00	

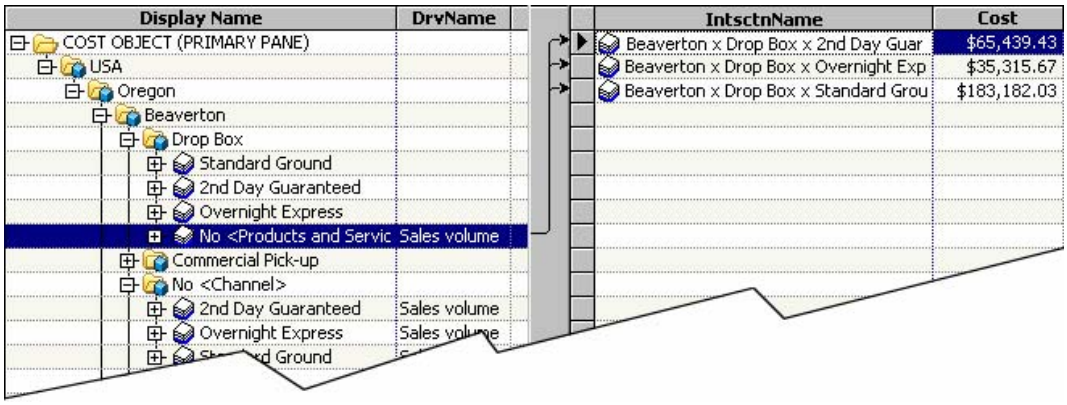
It is helpful to understand that whereas you ordinarily make assignments from accounts in the primary pane to accounts in the right pane, the Sales volume driver automatically assigns costs to the right pane based on the quantity that you enter in the primary pane. You don't have to make explicit assignments. To see this, follow these steps:

1 Show the right pane by selecting **Model > Assignments > Show Right Assignments Pane**.

2 In the primary pane, select the **Beaverton x Drop Box x No <Products and Services>** account.

3 Select **Model > Assignments > Show Right**.

You see that assignments have automatically been made to three accounts in the right pane.

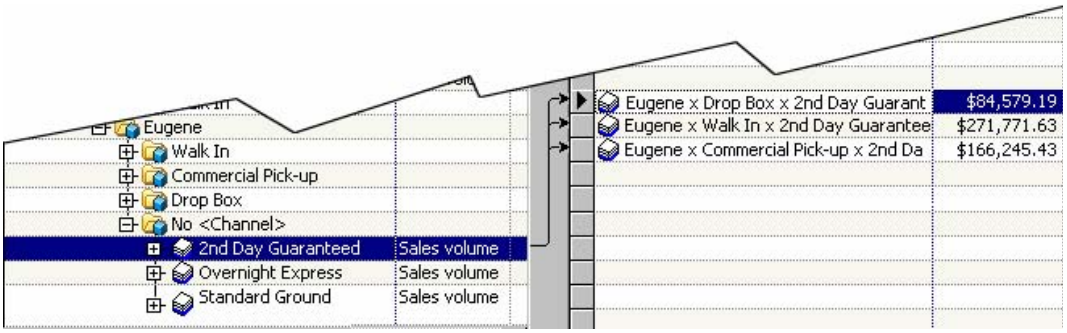


4 In the primary pane, select the **Eugene x No <Channel> x 2nd Day Guaranteed** account.

5 Select **Model > Assignments > Show Right**

(Or, click the Show Assignments button.)

Again, you see that assignments have automatically been made to three accounts in the right pane.



Of course, you can show the assignments that have been made for any account to which the Sales Volume driver is assigned.

Entering Revenue and Calculating Profit

Profit and loss can be calculated after you enter sales data in the Revenue property.

➢ **Create a new column layout**

1 Select **Model > Cost Object Module**.

2 Select the **Default** column layout.

3 Select **Model > Assignments > Show Single Pane**.

4 Open the **Column Layout** dialog box.

5 Modify the primary pane as follows:

- Remove the **Display Reference** column.
- Add the **UnitCost, Sold Quantity, Revenue**, and **Profit** columns.

6 Save the new column layout with the name **Profit**.

7 Close the **Column Layout** dialog box.

➢ **Enter revenue and calculate profit**

1 In the **Revenue** column, type the following values:

Cost Object Account	Revenue
Beaverton x Drop Box x 2nd Day Guaranteed	72,550
Beaverton x Drop Box x Overnight Express	59,800
Beaverton x Drop Box x Standard Ground	379,166
Beaverton x Walk In x 2nd Day Guaranteed	321,667

Cost Object Account	Revenue
Beaverton x Walk In x Overnight Express	558,133
Beaverton x Walk In x Standard Ground	123,333
Beaverton x Commercial Pick Up x 2nd Day Guaranteed	139,000
Beaverton x Commercial Pick Up x Overnight Express	388,700
Beaverton x Commercial Pick Up x Standard Ground	595,000
Eugene x Drop Box x 2nd Day Guaranteed	61,275
Eugene x Drop Box x Overnight Express	29,900
Eugene x Drop Box x Standard Ground	189,584
Eugene x Walk In x 2nd Day Guaranteed	215,834
Eugene x Walk In x Overnight Express	279,061
Eugene x Walk In x Standard Ground	641,667
Eugene x Commercial Pick Up x 2nd Day Guaranteed	69,500
Eugene x Commercial Pick Up x Overnight Express	194,350
Eugene x Commercial Pick Up x Standard Ground	297,500

2 Calculate the model, and then close the **Operation Summary**.

You see the following profit and loss information:

Display Name	Cost	UnitCost	SoldQty	Revenue	Profit
COST OBJECT (PRIMARY PANE)	$3,856,293.20				
USA	$3,856,293.20	$10.05	383,840.00	$4,616,020.00	$759,726.80
Oregon	$3,856,293.20	$10.05	383,840.00	$4,616,020.00	$759,726.80
Beaverton	$2,127,721.43	$8.34	255,136.00	$2,637,349.00	$509,627.57
Drop Box	$283,937.13	$8.19	34,666.00	$511,516.00	$227,578.87
2nd Day Guaranteed	$65,439.43	$7.27	9,000.00	$72,550.00	$7,110.57
Overnight Express	$35,315.67	$8.83	4,000.00	$59,800.00	$24,484.33
Standard Ground	$183,182.03	$8.45	21,666.00	$379,166.00	$195,983.97
No <Products and Services>	$15,468.14	$0.45			
Walk In	$1,191,263.92	$8.48	140,470.00	$1,003,133.00	($188,130.92)
2nd Day Guaranteed	$222,273.37	$7.45	29,840.00	$321,667.00	$99,393.63
Overnight Express	$336,220.46	$9.01	37,330.00	$558,133.00	$221,912.54
Standard Ground	$632,770.10	$8.63	73,300.00	$123,333.00	($509,437.10)
No <Products and Services>	$87,652.80	$0.62			
Commercial Pick Up	$652,520.38	$8.16	80,000.00	$1,122,700.00	$470,179.62
2nd Day Guaranteed	$142,941.92	$7.15	20,000.00	$139,000.00	($3,941.92)
Overnight Express	$226,329.11	$8.70	26,000.00	$388,700.00	$162,370.89
Standard Ground	$283,249.36	$8.33	34,000.00	$595,000.00	$311,750.64
No <Products and Services>	$25,780.24	$0.32			
No <Channel>	$1,998,820.25				
Eugene	$1,728,571.77	$13.43	128,704.00	$1,978,671.00	$250,099.23
Drop Box	$278,528.18	$16.07	17,334.00	$280,759.00	$2,230.82
2nd Day Guaranteed	$84,579.19	$18.80	4,500.00	$61,275.00	($23,304.19)
Overnight Express	$19,857.80	$9.93	2,000.00	$29,900.00	$10,042.20
Standard Ground	$174,091.19	$16.07	10,834.00	$189,584.00	$15,492.81
No <Products and Services>	$45,519.59	$2.63			
Walk In	$946,675.03	$13.26	71,370.00	$1,136,562.00	$189,886.97
2nd Day Guaranteed	$271,771.63	$16.99	16,000.00	$215,834.00	($55,937.63)
Overnight Express	$151,586.40	$8.12	18,670.00	$279,061.00	$127,474.60
Standard Ground	$523,317.00	$14.26	36,700.00	$641,667.00	$118,350.00
No <Products and Services>	$58,265.07	$0.82			
Commercial Pick Up	$503,368.56	$12.58	40,000.00	$561,350.00	$57,981.44
2nd Day Guaranteed	$166,245.43	$16.62	10,000.00	$69,500.00	($96,745.43)
Overnight Express	$100,854.85	$7.76	13,000.00	$194,350.00	$93,495.15
Standard Ground	$236,268.28	$13.90	17,000.00	$297,500.00	$61,231.72
No <Products and Services>	$18,207.84	$0.46			
No <Channel>	$1,606,579.27				

CHAPTER 14 Querying Contributions

The Contributions page provides the fastest and easiest method to view cost flows throughout a model. To query a model on the Contributions page, the model must have been calculated. However, a cube does not need to be generated. Queries are fast because there is no cube to navigate.

➢ **Open the Contributions page**

1 Click the Contributions icon, and then click **New Query**. This icon appears only if the Contributions Server has been installed.

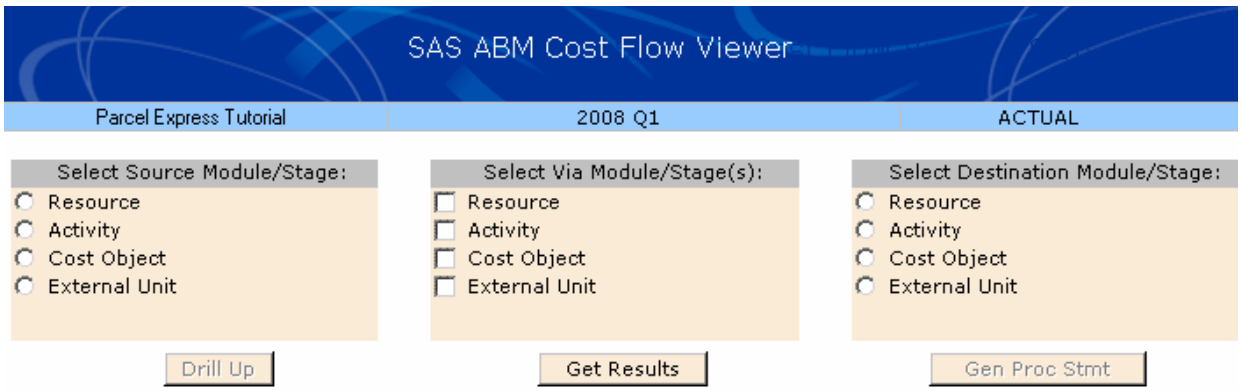
Or, select **File > New > Contribution Query**.

2 Select **Parcel Express Tutorial** as the model.

3 Select **2008 Q1/ Actual** as the association to use.

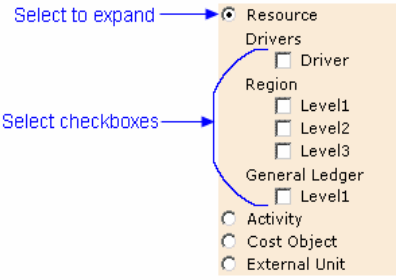
4 Click **Finish**. The Contributions page opens.

Note: Apache Tomcat must be running on the server.

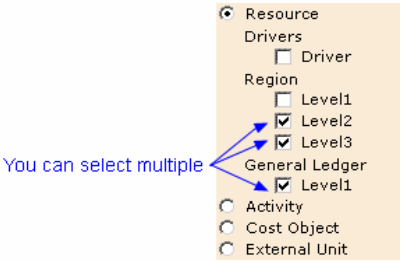


Some Key Things to Know

- Select a module (Resource, Activity, Cost Object, External Unit) to expand it. Expanding a module does *not* select anything in it. Select checkboxes to select dimensions in the module.

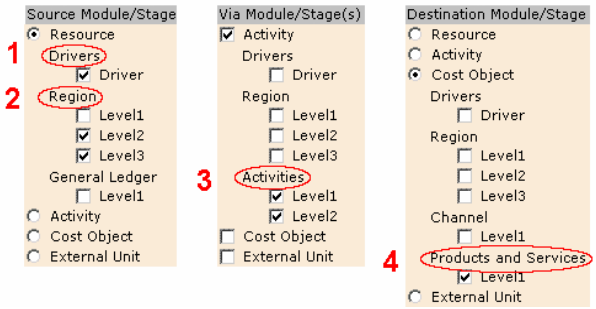


- You can choose only one module, but you can select multiple dimensions in a module.



Note: Only one module is active at a time. Do not be misled by the fact that checkboxes remain selected when a module is collapsed. If a module is collapsed, then it is not active.

- You can select up to 10 dimensions. You can select any number of levels within a dimension (for the Contributions page, **Drivers** is considered a dimension). The following picture should make clear how dimensions are counted. In this picture, four dimensions are selected and six dimension levels:

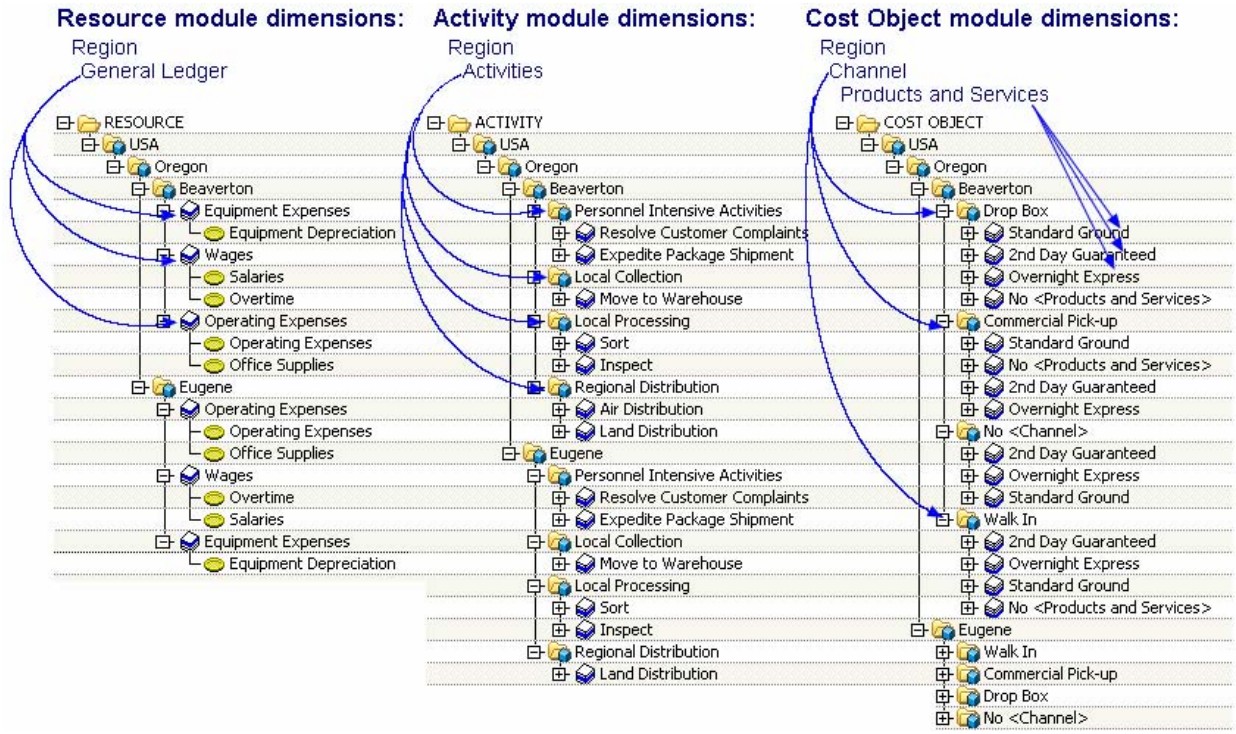


You must select at least one source level and at least one destination level.

- You do not have to select anything in **Via Module/Stage(s)**. Select nothing means that *all* paths from source to destination are included in calculations. Select something in **Via Module/Stage(s)** to *restrict* the paths that are included.

Query Contributions from Resource to Cost Object

To refresh your memory, here again is a picture of the model dimensions:



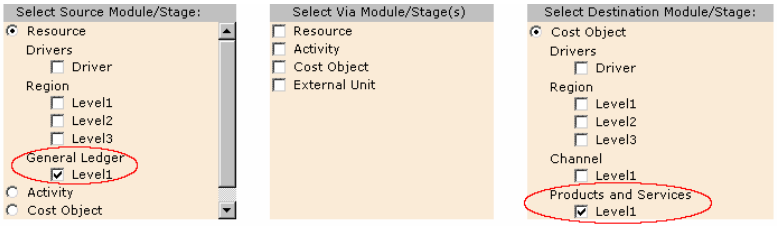
➢ **Query from general ledger to products and services**

1 For Source Module, select **Resource**, and then select:

- **Level1** under **General Ledger**

2 For Destination Module, select **Cost Object**, and then select:

- **Level1** under **Products and Services**



3 Click **Get Results**. The resulting table shows the contributions of wages, operating expenses, and equipment expenses to each of the products.

	1:None	1:2nd Day Guaran	1:Overnight Expre	1:Standard Ground
1:Wages	232537.56	785033.01	706383.49	1555183.51
1:Operating Expen	13741.12	132723.21	120263.66	256013.13
1:Equipment Exper	4615.00	22987.15	23756.53	45556.32

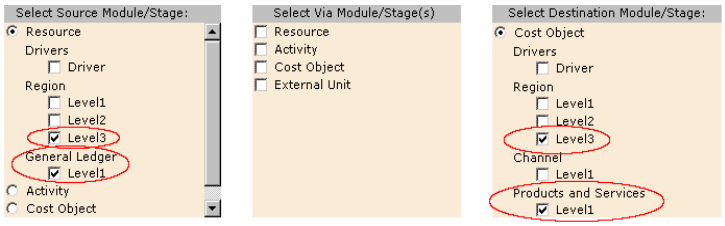
➢ Add a region to source and destination

1 For Source Module, select **Resource**, and then select:

- **Level3** under **Region**
- **Level1** under **General Ledger**

2 For Destination Module, select **Cost Object**, and then select:

- **Level3** under **Region**
- **Level1** under **Products and Services**



3 Click **Get Results**. The resulting table shows, by region, the contributions of wages, operating expenses, and equipment expenses to each of the products by region. (In order to fit the picture on the page, the table has been split in two and one half stacked on top of the other.)

		3:Beaverton 1:None	3:Beaverton 1:2nd Day Guaran	3:Beaverton 1:Overnight Expre	3:Beaverton 1:Standard Ground
3:Beaverton	1:Wages	119897.56	361146.58	481772.77	795680.65
3:Beaverton	1:Operating Expen	6288.62	49917.52	79472.73	108609.74
3:Beaverton	1:Equipment Exper	2715.00	11353.01	18289.75	24657.24
3:Eugene	1:Wages	0.00	0.00	0.00	0.00
3:Eugene	1:Operating Expen	0.00	0.00	0.00	0.00
3:Eugene	1:Equipment Exper	0.00	0.00	0.00	0.00

		3:Eugene 1:None	3:Eugene 1:2nd Day Guaran	3:Eugene 1:Overnight Expre	3:Eugene 1:Standard Ground
3:Beaverton	1:Wages	0.00	0.00	0.00	0.00
3:Beaverton	1:Operating Expen	0.00	0.00	0.00	0.00
3:Beaverton	1:Equipment Exper	0.00	0.00	0.00	0.00
3:Eugene	1:Wages	112640.00	423886.43	224610.72	759502.86
3:Eugene	1:Operating Expen	7452.50	82805.68	40790.93	147403.39
3:Eugene	1:Equipment Exper	1900.00	11634.14	5466.78	20899.08

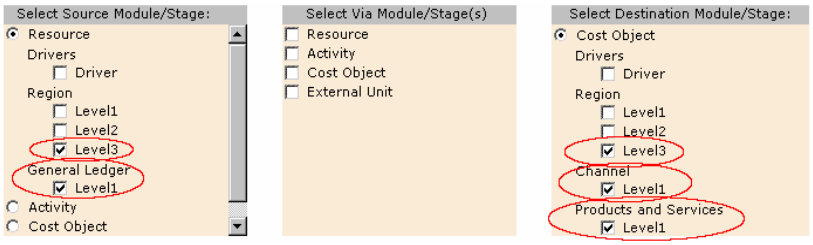
➢ Add channel to the destination

1 For Source Module, select **Resource**, and then select:

- **Level3** under **Region**
- **Level1** under **General Ledger**

2 For Destination Module, select **Cost Object**, and then select:

- **Level3** under **Region**
- **Level1** under **Channel**
- **Level1** under **Products and Services**



3 Click **Get Results**.

The resulting table shows the contributions of wages, operating expenses, and equipment expenses to each of the products by region and channel. (Again, the table is split in pieces to fit on the page.)

		3:Beaverton 1:None 1:2nd Day Guaran	3:Beaverton 1:None 1:Overnight Expre	3:Beaverton 1:None 1:Standard Grounc	3:Beaverton 1:Drop Box 1:None	3:Beaverton 1:Drop Box 1:2nd Day Guarant
3:Beaverton	1:Wages	334096.90	450652.53	733953.01	14387.71	54837.86
3:Beaverton	1:Operating Expen	48498.77	77840.48	105372.13	754.63	7614.15
3:Beaverton	1:Equipment Exper	10740.49	17585.06	23259.46	325.80	1727.42
3:Eugene	1:Wages	0.00	0.00	0.00	0.00	0.00
3:Eugene	1:Operating Expen	0.00	0.00	0.00	0.00	0.00
3:Eugene	1:Equipment Exper	0.00	0.00	0.00	0.00	0.00

		3:Beaverton 1:Drop Box 1:Overnight Expre	3:Beaverton 1:Drop Box 1:Standard Grounc	3:Beaverton 1:Walk In 1:None	3:Beaverton 1:Walk In 1:2nd Day Guaran	3:Beaverton 1:Walk In 1:Overnight Expres
3:Beaverton	1:Wages	28432.91	132294.68	81530.34	186752.70	271523.56
3:Beaverton	1:Operating Expen	4711.49	18173.92	4276.26	25503.97	44293.78
3:Beaverton	1:Equipment Exper	1082.30	4111.16	1846.20	5839.10	10240.37
3:Eugene	1:Wages	0.00	0.00	0.00	0.00	0.00
3:Eugene	1:Operating Expen	0.00	0.00	0.00	0.00	0.00
3:Eugene	1:Equipment Exper	0.00	0.00	0.00	0.00	0.00

		3:Beaverton 1:Walk In 1:Standard Grounc	3:Beaverton 1:Commercial Pick 1:None	3:Beaverton 1:Commercial Pick 1:2nd Day Guaran	3:Beaverton 1:Commercial Pick 1:Overnight Expre	3:Beaverton 1:Commercial Pick 1:Standard Grounc
3:Beaverton	1:Wages	459698.70	23979.51	119556.03	181816.30	203687.27
3:Beaverton	1:Operating Expen	62121.46	1257.72	16799.40	30467.46	28314.35
3:Beaverton	1:Equipment Exper	14183.29	543.00	3786.49	6967.08	6362.79
3:Eugene	1:Wages	0.00	0.00	0.00	0.00	0.00
3:Eugene	1:Operating Expen	0.00	0.00	0.00	0.00	0.00
3:Eugene	1:Equipment Exper	0.00	0.00	0.00	0.00	0.00

Because the table is long, you must scroll to see all the columns. The scroll button scrolls one column at a time.

➢ Add a Via module

1 For Source Module, select **Resource**, and then select:

- **Level3** under **Region**
- **Level1** under **General Ledger**

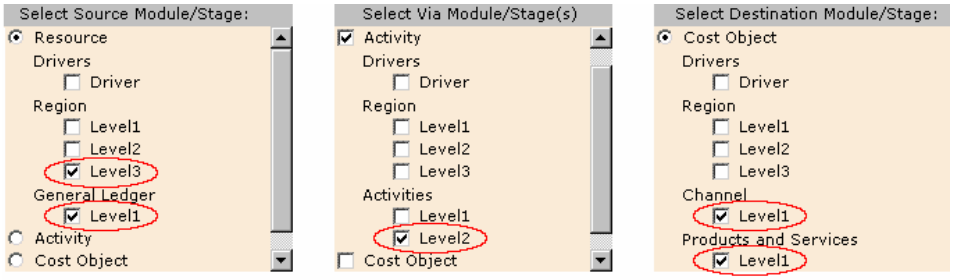
2 For Via Module, select **Activity**, and then select:

- **Level2** under **Activities**

3 For Destination Module, select **Cost Object**, and then select:

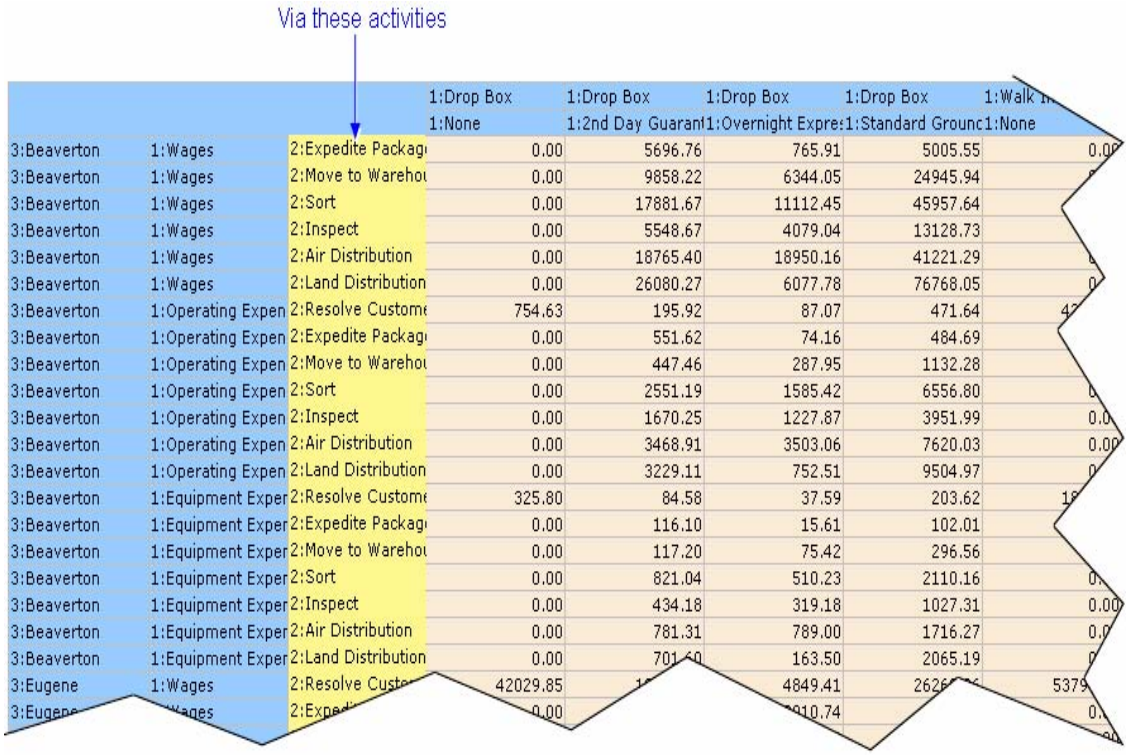
- **Level1** under **Channel**
- **Level1** under **Products and Services**

Note: We have deselected **Region.** This reduces the number of result columns by half. Because there are two items at **Level3** under **Region** (Beaverton and Eugene), the number of columns would double. If you want to see activities by region, then you can add it back.



4 Click **Get Results**.

The resulting table shows the general ledger contributions by activity to each of the three products by channel. (Activities in the Via column are shown in yellow.) Because it is large, only part of the table is shown.



			1:Drop Box 1:None	1:Drop Box 1:2nd Day Guaran	1:Drop Box 1:Overnight Expre	1:Drop Box 1:Standard Grounc	1:Walk 1:None
3:Beaverton	1:Wages	2:Expedite Packag	0.00	5696.76	765.91	5005.55	0.00
3:Beaverton	1:Wages	2:Move to Wareho	0.00	9858.22	6344.05	24945.94	
3:Beaverton	1:Wages	2:Sort	0.00	17881.67	11112.45	45957.64	
3:Beaverton	1:Wages	2:Inspect	0.00	5548.67	4079.04	13128.73	
3:Beaverton	1:Wages	2:Air Distribution	0.00	18765.40	18950.16	41221.29	
3:Beaverton	1:Wages	2:Land Distribution	0.00	26080.27	6077.78	76768.05	
3:Beaverton	1:Operating Expen	2:Resolve Custome	754.63	195.92	87.07	471.64	
3:Beaverton	1:Operating Expen	2:Expedite Packag	0.00	551.62	74.16	484.69	
3:Beaverton	1:Operating Expen	2:Move to Wareho	0.00	447.46	287.95	1132.28	
3:Beaverton	1:Operating Expen	2:Sort	0.00	2551.19	1585.42	6556.80	
3:Beaverton	1:Operating Expen	2:Inspect	0.00	1670.25	1227.87	3951.99	0.00
3:Beaverton	1:Operating Expen	2:Air Distribution	0.00	3468.91	3503.06	7620.03	0.00
3:Beaverton	1:Operating Expen	2:Land Distribution	0.00	3229.11	752.51	9504.97	
3:Beaverton	1:Equipment Exper	2:Resolve Custome	325.80	84.58	37.59	203.62	
3:Beaverton	1:Equipment Exper	2:Expedite Packag	0.00	116.10	15.61	102.01	
3:Beaverton	1:Equipment Exper	2:Move to Wareho	0.00	117.20	75.42	296.56	
3:Beaverton	1:Equipment Exper	2:Sort	0.00	821.04	510.23	2110.16	
3:Beaverton	1:Equipment Exper	2:Inspect	0.00	434.18	319.18	1027.31	0.00
3:Beaverton	1:Equipment Exper	2:Air Distribution	0.00	781.31	789.00	1716.27	
3:Beaverton	1:Equipment Exper	2:Land Distribution	0.00	701.40	163.50	2065.19	
3:Eugene	1:Wages	2:Resolve Custo	42029.85		4849.41		5379
3:Eugene	1:Wages	2:Expedi	0.00		910.74		

Query Contributions from Resource to Activity

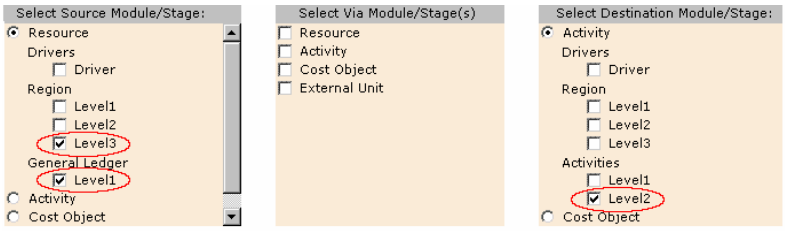
➢ **Query from general ledger to activities**

1 For Source Module, select **Resource**, and then select:

- **Level3** under **Region**
- **Level1** under **General Ledger**

2 For Destination Module, select **Activity**, and then select:

- **Level2** under **Activities**



3 Click **Get Results**. The resulting table shows the contributions, by region, of general ledger items to activities.

		2:Resolve Custom	2:Expedite Packag	2:Move to Wareho	2:Sort	2:Inspect	2:Air Distribution	2:Land Distribution
3:Beaverton	1:Wages	119897.56	79931.71	319726.83	577517.64	183084.68	687030.62	729769.95
3:Beaverton	1:Operating Expen	6288.62	7739.84	14512.20	82394.70	55111.93	127002.26	90355.85
3:Beaverton	1:Equipment Exper	2715.00	1629.00	3801.00	26516.86	14326.19	28604.80	19632.06
3:Eugene	1:Wages	112640.00	56320.00	281600.00	546512.59	150186.67	0.00	1222352.59
3:Eugene	1:Operating Expen	7452.50	8710.71	66782.14	152727.86	65330.36	0.00	247577.86
3:Eugene	1:Equipment Exper	1900.00	760.00	3040.00	19039.41	9905.33	0.00	34239.41

Drilling Down to a Lower Level

➢ **Drill to lower-level activities**

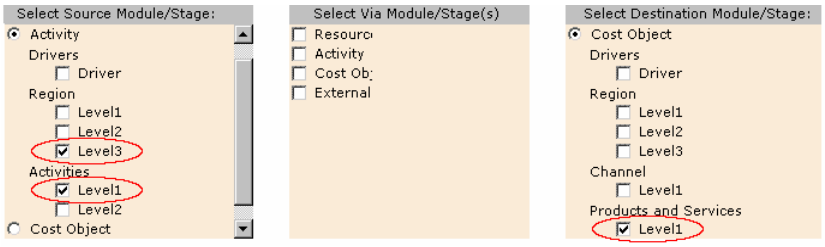
The table generated by a query is not static. If you select a dimension level to display that has additional levels under it, you can click the generated table to display the next level of detail.

1 For Source Module, select **Activity,** and then select:

- **Level3** under **Region**
- **Level1** under **Activities**

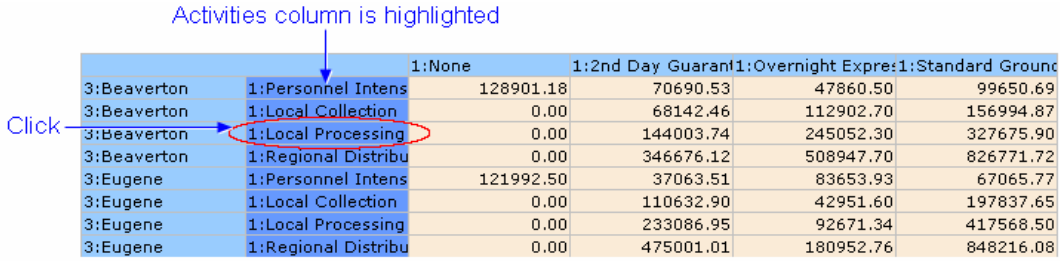
2 For Destination Module, select **Cost Object**, and then select:

- **Level1** under **Products and Services**



3 Click **Get Results**.

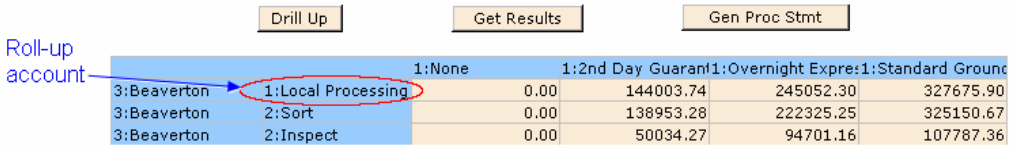
The resulting table shows the contributions of activities, by region, to products and services. Note that the Activities column is highlighted.



		1:None	1:2nd Day Guaran	1:Overnight Expre	1:Standard Grounc
3:Beaverton	1:Personnel Intens	128901.18	70690.53	47860.50	99650.69
3:Beaverton	1:Local Collection	0.00	68142.46	112902.70	156994.87
3:Beaverton	1:Local Processing	0.00	144003.74	245052.30	327675.90
3:Beaverton	1:Regional Distribu	0.00	346676.12	508947.70	826771.72
3:Eugene	1:Personnel Intens	121992.50	37063.51	83653.93	67065.77
3:Eugene	1:Local Collection	0.00	110632.90	42951.60	197837.65
3:Eugene	1:Local Processing	0.00	233086.95	92671.34	417568.50
3:Eugene	1:Regional Distribu	0.00	475001.01	180952.76	848216.08

4 Click **1:Local Processing** in the Activities column to go to the next level of detail.

Initially, activities were displayed at Level1. By clicking, you drill down to Level2 activities. Notice that the entire table is replaced by the Level2 activities. Also notice that the roll-up account **1:Local Processing** is displayed.



		1:None	1:2nd Day Guaran	1:Overnight Expre	1:Standard Grounc
3:Beaverton	1:Local Processing	0.00	144003.74	245052.30	327675.90
3:Beaverton	2:Sort	0.00	138953.28	222325.25	325150.67
3:Beaverton	2:Inspect	0.00	50034.27	94701.16	107787.36

5 Click **Drill Up** to return to the previous table.

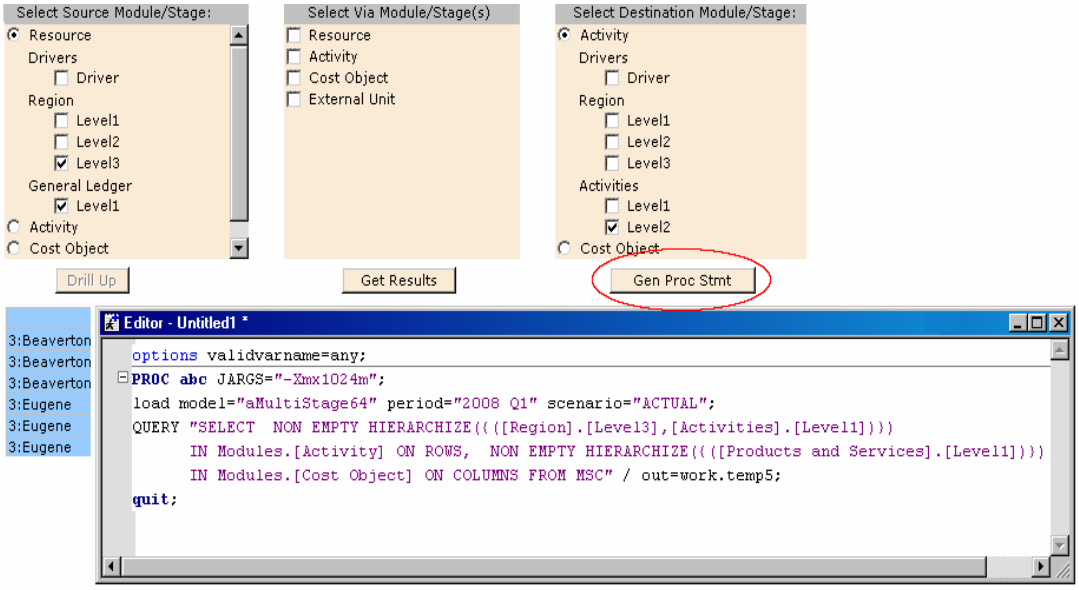
		1:None	1:2nd Day Guaran	1:Overnight Expre	1:Standard Grounc
3:Beaverton	1:Personnel Intens	128901.18	70690.53	47860.50	99650.69
3:Beaverton	1:Local Collection	0.00	68142.46	112902.70	156994.87
3:Beaverton	1:Local Processing	0.00	144003.74	245052.30	327675.90
3:Beaverton	1:Regional Distribu	0.00	346676.12	508947.70	826771.72
3:Eugene	1:Personnel Intens	121992.50	37063.51	83653.93	67065.77
3:Eugene	1:Local Collection	0.00	110632.90	42951.60	197837.65
3:Eugene	1:Local Processing	0.00	233086.95	92671.34	417568.50
3:Eugene	1:Regional Distribu	0.00	475001.01	180952.76	848216.08

Using the ABC Procedure

SAS Activity-Based Management has externalized, in the form of the ABC procedure, the processing that it uses internally to calculate a model and query a cube. The ABC

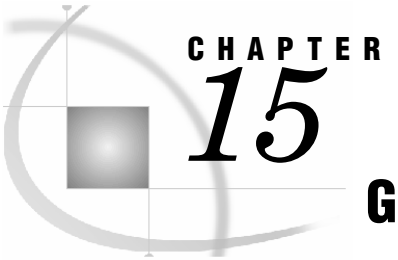
procedure allows you to create SAS programs to query model data outside of SAS Activity-Based Management.

The easiest method to create a program that uses the ABC procedure is to use the Contributions tab to perform a query. Then click **Gen Proc Stmt** to copy, to the clipboard, the PROC ABC statement that the Contributions tab itself used for the query. For example: Assume that you have performed the query described above; click **Gen Proc Stmt** and paste the statement into the SAS editor (or any ASCII editor). You will see something similar to the following:



You can modify the program in any way that you like before running it.

Note that you must click **Get Results** before clicking **Gen Proc Stmt**. Changing the query options after performing a query does not change what statement is copied to the clipboard unless you click **Get Results** again to perform a different query.



CHAPTER 15

Generating Reports

When the information has been entered into the activity-based management model, the costs have been calculated, and the data has been reviewed, the next step in analyzing the data is generating reports.

The benefits of generating reports include:

- validating the model
- producing printouts that present an overall view of the data
- analyzing costs online
- producing files for inclusion in other programs, such as spreadsheets or word processors
- focusing on a specific area of interest

Report Templates

A report template is a file that specifies the layout of a report and the fields of data in a report (but not the data itself). When you create a report, you first select a report template.

SAS Activity-Based Management has predefined report templates that provide formats and that enable great flexibility in the amount and type of information to include in a report. The following predefined templates are included:

- Destination Furthest
- Dimensional Attribute Cost
- Dimensional Attribute Unit Cost
- Dimensional View
- Driver—Cost and Rate
- Idle Capacity

- Module Hierarchy
- Multi-level Contributions
- Profit and Loss
- Profit Cliff
- Resource Contributions
- Resource Contributions by Attribute
- Single-stage Assignments
- Single-stage Contributions
- Unassigned Costs
- Unit Cost

Creating a Report

You will create a report and view the results online. The report is for the 2008 Q1/Actual period/scenario association, and includes information about resource contributions.

To create a new report, you use the Report Wizard. The Report Wizard has six steps.

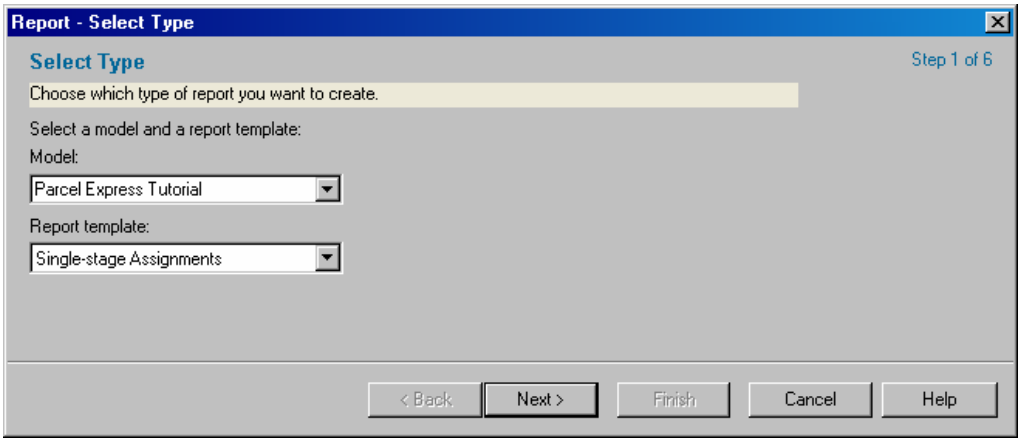
➢ **Select a model and template**

1 Click 

You see the Reports home page.

2 Select **File > New > Report**.

You see Step 1 of the Report Wizard.



3 Under **Select a model and a report template**, select the **Parcel Express Tutorial** model and the **Single-stage Assignments** report template.

Note: To create a report you do not have to generate a cube. However, to create the following reports you must have already generated the Fact table for the model:

- Resource Contributions
- Destination Furthest
- Profit and Loss (Resource Contribution)

4 Click **Next**.

You see Step 2 of the Report Wizard.

5 Select **2008 Q1/Actual**, and then click **Next**.

You see Step 3 of the Report Wizard.

6 Select **Use all modules**, and then click **Next**.

You see Step 4 of the Report Wizard.

7 Verify that no dimensions are selected.

Certain report types require you to select dimensions to arrange and filter data. For these reports, the order that you select these dimensions affects the results that you see in the report.

Click **Next**.

You see Step 5 of the Report Wizard.

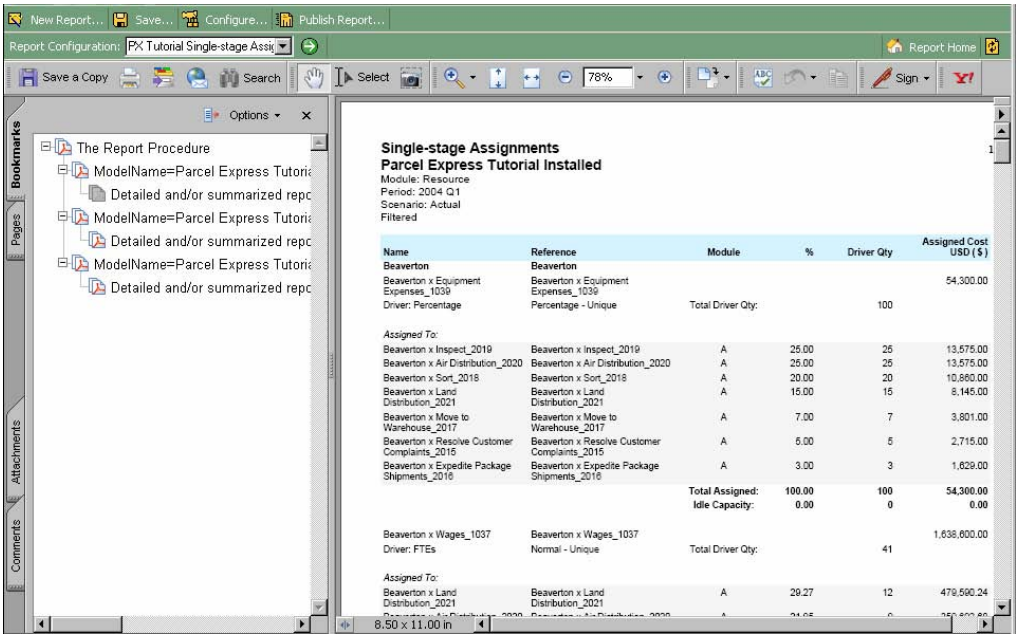
8 Verify that **Suppress zero costs** and **Single currency** are selected, and then click **Next**.

9 Select **Save configuration** for Step 6 of the Report Wizard.

10 For **Name**, type `PX Tutorial Single-stage Assignments`.

11 Click **Finish**.

You see the finished report in portable document format (PDF).



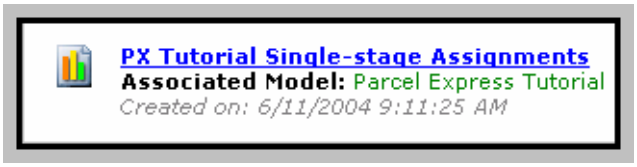
The data in this report reflects the current model. If you make changes to the model and reopen the report, the report data reflects the changes.

Each report has a header that lists pertinent information for that report. All or some of the following information can be listed in a report's header:

Information	Description
Model Name	The model that is selected for the report.
Module	One or more modules that are selected for the report. Each module starts on a new page.
Period	The period that is selected for the report.
Scenario	The scenario that is selected for the report.
View Perspective	The structural dimension that is selected for the report.
Filtered	Indicates that one or more attributes were used to select items for the report. Attributes that are used to select report data are listed on a report's last page.

Working with Reports

All saved report configurations that are on the same server are listed in the Workspace Manager. Your company might want to set up guidelines for saving and naming report configurations. You can open a report configuration from the Workspace Manager or from the Reports home page.



On the Reports home page, you can open, publish, configure, or delete a report configuration.

Navigating Reports

You can navigate the pages of a report by using the standard Adobe Acrobat paging and search tools on the toolbar.

Saving Report Data

When you save a report configuration, you are saving only the parameters of the report, not the data. To save the data in a report, you must publish or export the report.

Publishing Reports

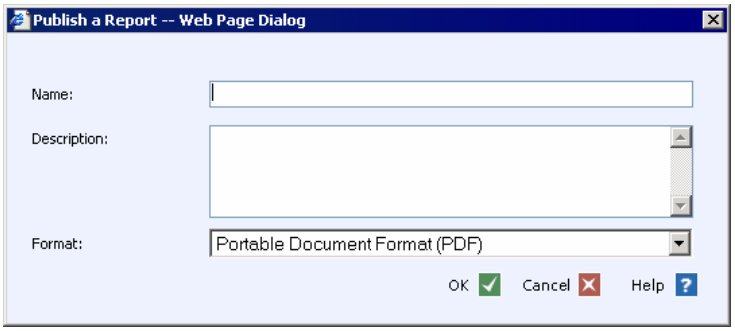
If you want other users to see the report results, along with the data that reflects a specific time period, you can publish the report. If you want to view and edit the report using SAS Web Report Studio, you must publish the report.

Publishing the report enables others to see the report data without having to rerun the report. In cases where a report requires considerable time to run, publishing the report can save time for other users.

➢ **Publish a report**

1 On the Reports home page, click the **Publish** link that is next to the desired report configuration.

You see the Publish a Report dialog box.



2 Type a **Name**.

Note: You cannot enter a path. Published reports are stored on the SAS Activity-Based Management server.

3 Type a **Description**.

4 Select a **Format**.

The available publishing formats are:

Report Publishing Formats
Portable Document Format (PDF)
Rich Text Format (RTF)

5 Click **OK**.

The report is added to the Workspace Manager in the Published Reports folder.

Exporting Reports

If you want to manipulate a report after running it, you can export the report. Data that you export from SAS Activity-Based Management can be used by other reporting tools, such as SAS Enterprise Guide and Microsoft Excel. To export a report, select **File > Export > Report Data**, and follow the instructions in the Report Data Wizard.

Importing Published Reports

You can also import a published report created outside of SAS Activity-Based Management. For example, you can import reports published by SAS Enterprise Guide. To import a published report (for example, from Enterprise Guide), in Workspace Manager select **Published Reports**, and select **File > Insert Published Report**.

Configuring Reports

By running the New Report Wizard, you are configuring a report.

➢ **Reconfigure a report**

1 On the Reports home page, click the **Configure** link that is next to the saved report configuration.

You see the Report Wizard. The Report Wizard contains a subset of steps that are in the New Report Wizard.

2 Complete the Report Wizard by selecting the new configuration settings.

CHAPTER 16

Generating Cubes

A *cube* is the basic unit of analysis in OLAP, a technology that provides fast, interactive access to data in a model. A cube is a storage unit that combines all of a model's dimensions and the measures they contain into one unit. You use SAS Activity-Based Management to connect to and interact with the cubes on a SAS Activity-Based Management server. For each model, you can generate cubes and manipulate them on the OLAP page to interactively analyze business data.

An OLAP cube is called a cube even if it has more than the three dimensions of an ordinary geometric cube. An OLAP cube can represent any number of dimensions of data. SAS Activity-Based Management cubes are standard OLAP cubes.

Types of Cubes

SAS Activity-Based Management provides the following types of cubes:

- multi-stage contribution
- resource contribution
- single-stage contribution

Each type of cube helps you to analyze data in various ways and to answer different kinds of questions.

Multi-Stage Contribution Cube

Use this type of cube to perform tasks and to answer questions such as:

- Why is product A not profitable? You want to trace the costs back through activities and then to resources that contribute costs to this product.
- What are the costs for Product B that originate in salary resources and that are assigned through the Inspection activity to this product?

The multi-stage contribution cube enables you to analyze cost contributions into and out of stages that are defined in a model. The Cube Explorer view enables you to visually trace cost contributions through all the stages.

Resource Contribution Cube

Use this type of cube to analyze resource accounts that contribute costs to other accounts. Or, use this type of cube to analyze the accounts that receive costs from resources.

The resource contribution cube enables you to analyze cost contributions from original accounts (where costs were entered) to final accounts that do not assign costs to other accounts. Generally, these contributions are from resource accounts to cost object accounts, but it does not matter where the original or final accounts reside.

Single-Stage Contribution Cube

Use this type of cube to answer questions such as:

- Which activity costs contribute to product, customer, service costs, and so on?
- When costs are assigned within the cost object module, which subassembly costs contribute to product costs?
- What are the costs of resources that contribute to activities?

The single-stage contribution cube enables you to analyze cost contributions from one assignment level back. It does not matter where the costs originate or end. Typically, cost is contributed from:

- activities to cost objects
- resources to activities

Overview of Cube Generation

Generating a cube is a two-step process.

Step 1: Create a cube configuration

From a single model, you can generate multiple cubes. A cube configuration remembers your choices for a particular cube. If you update the model and need to regenerate the cube, you don't have to specify the cube characteristics again. In short, one model can have multiple cube configurations, and each cube configuration contains the specifications for a single cube.

Step 2: Generate the cube

After a model has been calculated, you generate cubes by specifying which of the cube configurations belonging to the model are to be used, and which periods are to be included. For each cube configuration that you select, a cube is generated. If the model has not been calculated, you are asked if you want the calculation to be done so that cube generation can proceed.

Cube Configurations

For this tutorial, you will create four cube configurations:

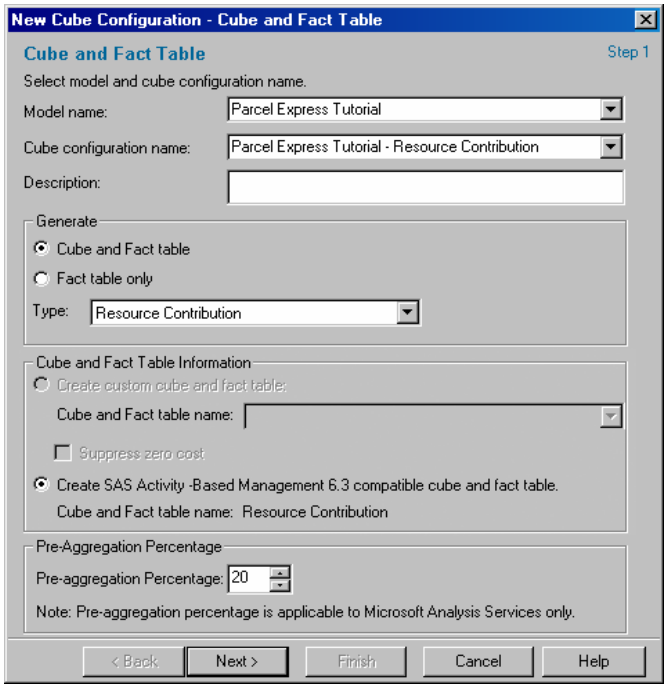
- resource contribution cube
- 6.3-compatible multi-stage contribution cube
- custom multi-stage contribution cube
- custom, but minimal, multi-stage contribution cube

➢ **Create a resource contribution cube**

1 Go to the Home page.

2 Select **File > New > Cube Configuration**.

Step 1 of the New Cube Configuration wizard opens.



Specify the following for step 1:

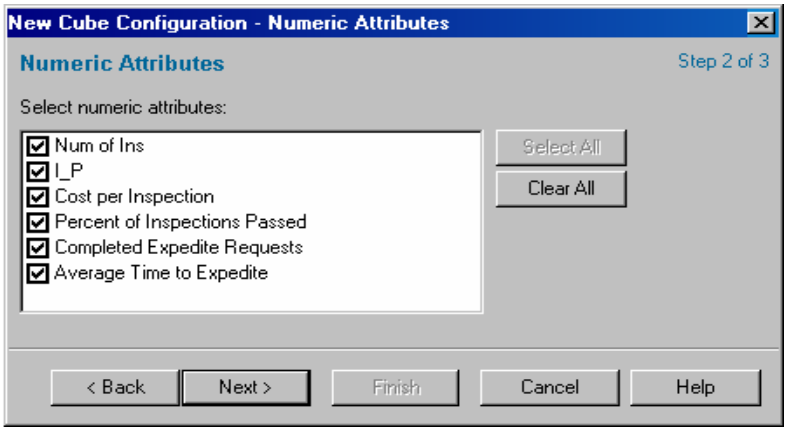
- For **Model name**, select **Parcel Express Tutorial**.
- For **Cube configuration name**, type `Parcel Express Tutorial - Resource Contribution`.
- In the **Generate** section, select **Cube and Fact table**.
- For **Type**, select **Resource Contribution**.
- In the **Cube and Fact Table Information** section, select **Create SAS Activity-Based Management 6.3 compatible cube and fact table**.

Note: For a resource contribution cube, the only option available is to generate a 6.3 compatible cube.

For a multi-stage contribution cube, you can generate a custom cube. A custom cube is one for which you choose what goes into it. We'll look at this in a moment.

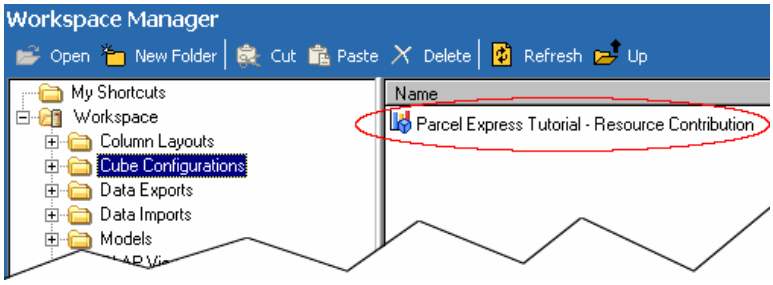
3 Click **Next**. Step 2 opens.

4 Select all numeric attributes to be included in the resource contribution cube. Since the Parcel Express Tutorial model is relatively small, you can select all of the numeric attributes.



5 Click **Next**. Review your options, and then click **Finish**.

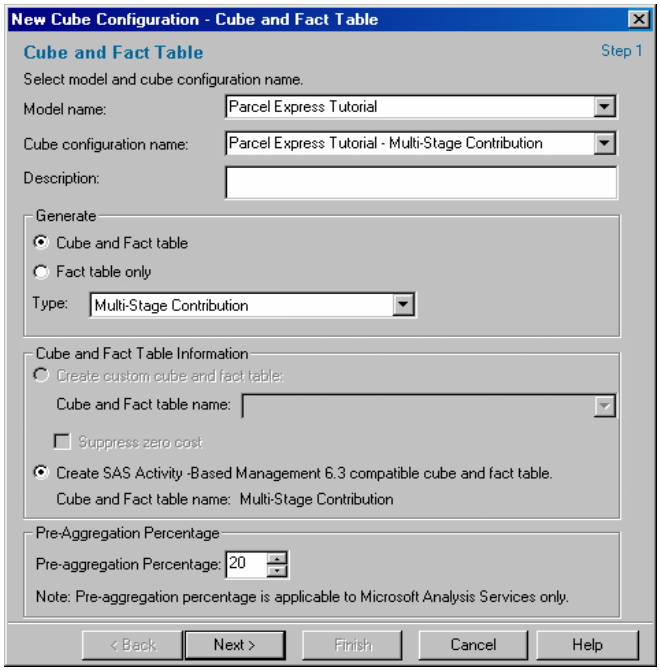
The cube configuration is added to the Cube Configurations folder.



➢ Create a multi-stage contribution cube

1 Select **File > New > Cube Configuration**.

Step 1 of the New Cube Configuration wizard opens.



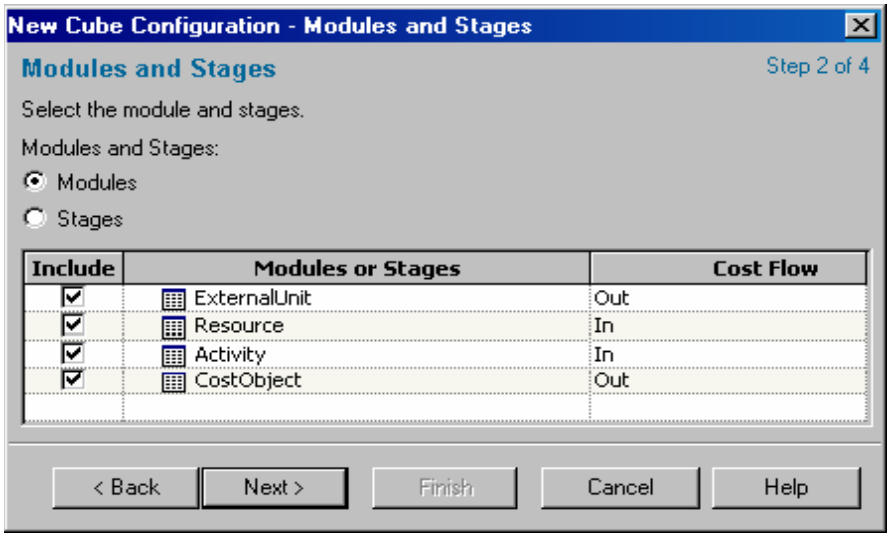
Specify the following for step 1:

- For **Model name**, select **Parcel Express Tutorial**.
- For **Cube configuration name**, enter **Parcel `Express Tutorial – Multi-Stage Contribution`**.
- In the **Generate** section, select **Cube and Fact table**.
- For **Type**, select **Multi-Stage Contribution**.
- For **Cube and Fact Table Information**, select **Create SAS Activity-Based Management 6.3 compatible cube and fact table**.

  Later, you will see what is involved in creating a custom cube. For now, choose a 6.3 compatible cube.

2 Click **Next**.

Step 2 opens. In this step, you select which modules or stages to include in the cube, and whether to include costs flowing into or out of the module or stage.



- Click the **Modules** checkbox. This means that each module defines a separate stage in the order shown.

  Selecting the **Stages** checkbox means that stages are defined by user-defined "Stages" attributes applied to accounts. The Parcel Express tutorial does not have any such attributes, so you select **Modules**.
- Select **Include** to include all the modules in the cube.
- Leave the defaults for **Cost Flow** as shown. The cost flow specifies whether to include cost flows into or out of the selected module or stage. We'll look more closely at what this choice means later in this chapter. In the meantime, you can take the defaults.

3 Click **Next**.

Step 3 opens. In this step, you select numeric attributes to be included in the cube. Since the tutorial model is relatively small, select all of the attributes.

4 Click **Next**. Review your selections, and then click **Finish**.

The cube configuration is added to the Cube Configurations folder.

➢ Create a custom multi-stage contribution cube

A custom cube allows you to select what goes into the cube. This allows you to create smaller cubes for particular purposes.

1 Select **File > New > Cube Configuration**. Step 1 opens.

Specify the following for step 1:

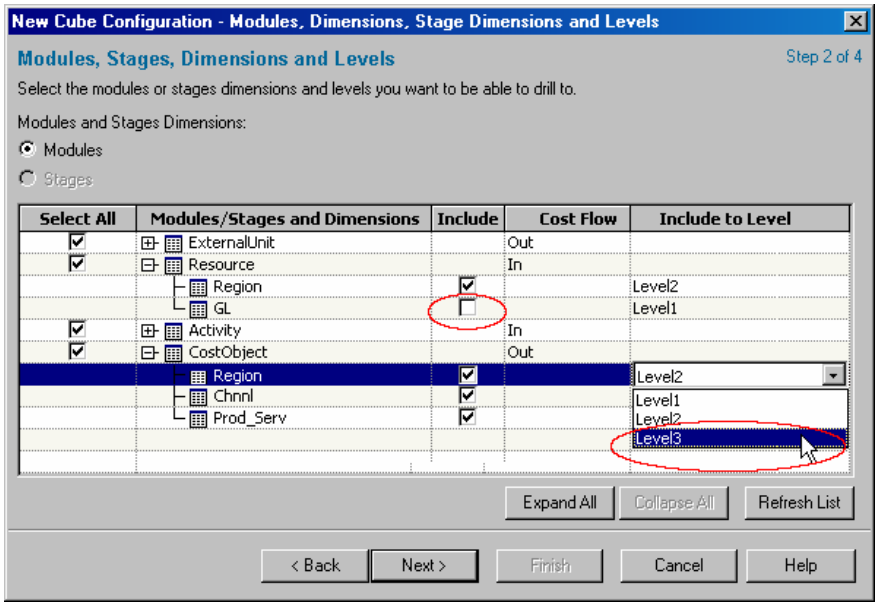
- For **Model name**, select **Parcel Express Tutorial**.
- For **Cube configuration name**, enter `Parcel Express Tutorial - Custom Cube`.
- In the **Generate** section, select **Cube and Fact table**.
- For **Type**, select **Multi-Stage Contribution**.

- In the **Cube and Fact Table Information** section, select **Create custom cube and fact table**.
- For **Cube and Fact table nam**e, enter **`Parcel Express Tutorial Custom Cube`**. Because you can generate different multi-stage contribution cubes for the same model, you must assign a name to each cube to identify it.

  Note: If you are generating only a fact table, then it is only the fact table name.

2 Click **Next**.

Step 2 opens. In this step, you can select not only which modules or stages to include in the cube, but also the level at which to include them.



- Click the **Modules** checkbox. This means that each module defines a separate stage in the order shown.
- Click the plus sign to expand the Resource module, and uncheck **GL** (General Ledger). The cube will be smaller if you exclude some accounts.
- Click the plus sign to expand the Cost Object module, and under the **Include to Level** column, select **Level 3** from the drop-down list for Region. Selecting **Level3** for Region includes the details for Beaverton and Eugene in the cube.
- Leave the defaults under **Cost Flow** as shown. We'll look more closely at what this choice means later in the chapter.

3 Click **Next**. Step 3 opens.

4 Select all the numeric attributes to be included in the cube.

5 Click **Next**. Review your options, and then click **Finish**.

The cube configuration is added to the Cube Configurations folder.

➢ Create a minimal custom multi-stage contribution cube

The next cube configuration that you create is an interesting one because it is very small. It provides an ideal illustration of the utility of custom multi-stage contribution cubes. Even though this one is small, it is useful because it allows you to concentrate on total costs without worrying about where they come from.

1 Select **File > New > Cube Configuration**. Step 1 opens.

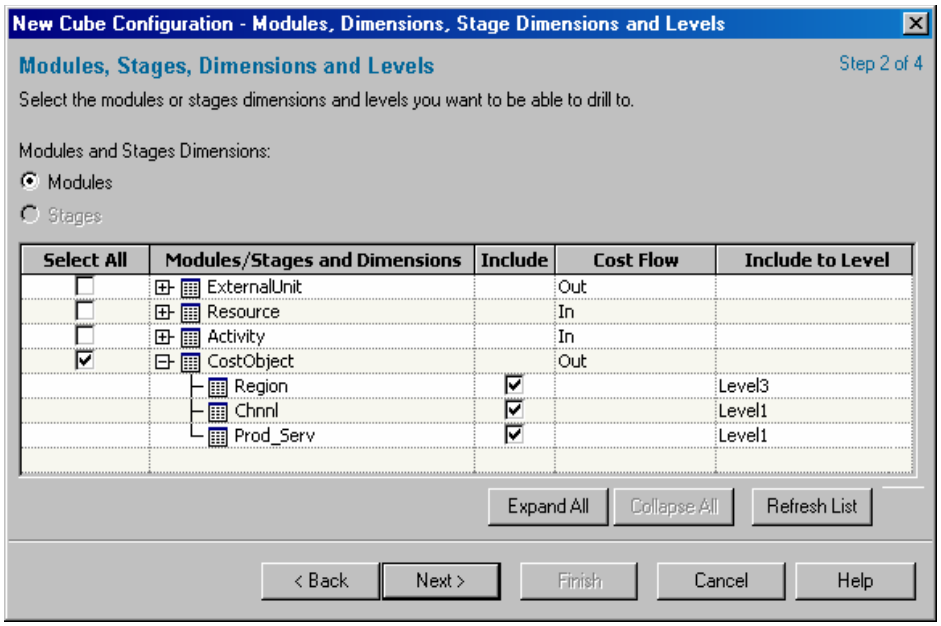
Specify the following for step 1:

- For **Model name**, select **Parcel Express Tutorial**.
- For **Cube configuration name**, enter **`Parcel Express Tutorial - Mini Cube`**.
- In the **Generate** section, select **Cube and Fact table**.
- For **Type**, select **Multi-Stage Contribution**.
- In the **Cube and Fact Table Information** section, select **Custom Cube**.

  For **Cube and Fact table name** name, specify **Parcel Express Tutorial Mini Cube**.

2 Click **Next**.

Step 2 opens. In this step, you can select not only which modules or stages to include in the cube, but also the level at which to include them.



- Click the **Modules** checkbox.
- Uncheck the first three modules: **ExternalUnit**, **Resource**, and **Activity**. In this cube, you want to see only final costs.
- Click the plus sign to expand the Cost Object module, and under the **Include to Level** column, select **Level 3** from the drop-down list for Region. Selecting **Level3** for Region includes the details for Beaverton and Eugene in the cube.
- Leave the defaults under **Cost Flow** as shown.

3 Click **Next**. Step 3 opens.

4 Select all the numeric attributes to be included in the cube.

5 Click **Next**. Review your options, and then click **Finish**.

The cube configuration is added to the Cube Configurations folder.

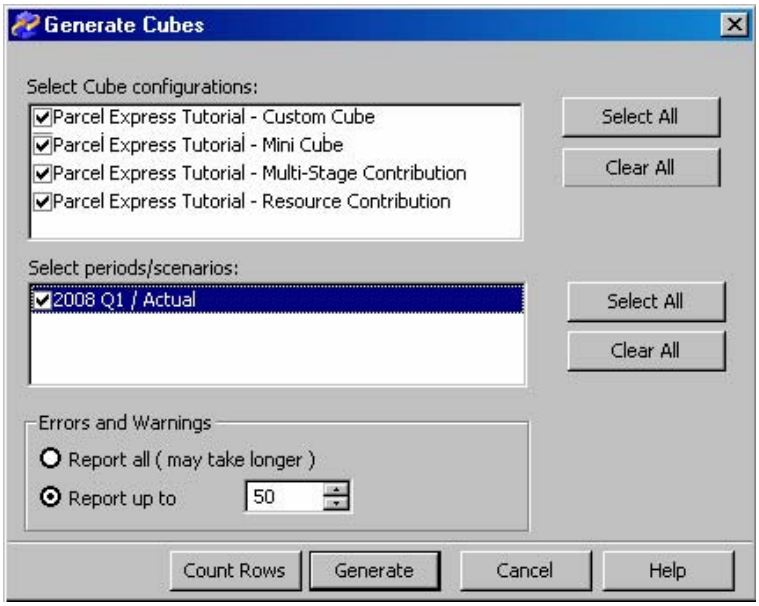
Generate Cubes

Having created four cube configurations, you can use them to generate cubes.

1 If the Parcel Express Tutorial is not already open, return to model mode and open the tutorial model.

2 Select **Model > Generate Cubes**.

The Generate Cubes dialog opens.



3 Select the four cube configurations that you created.

4 Select the period/scenario **2008 Q1/Actual**.

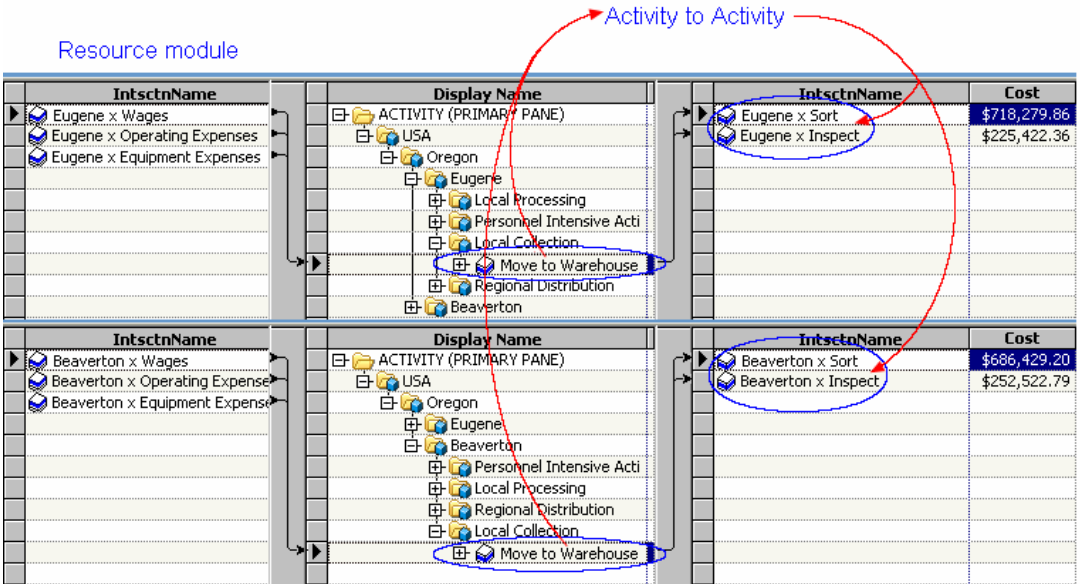
Note: In previous releases of SAS Activity-Based Management, you could not select a subset of periods/scenarios for inclusion.

5 Click **Generate**.

One cube is generated for each cube configuration that is selected.

Select Cost Flow: In or Out

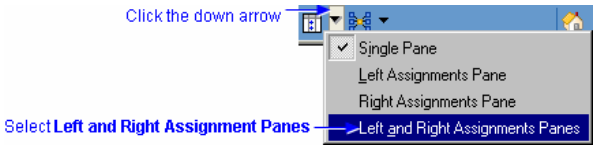
With some models, it makes a difference in generating a cube whether you select to show costs flowing into a module/stage or out of a module/stage. It makes a difference in case the model has assignments from accounts within a module/stage to accounts within the *same* module/stage. For the Parcel Express Tutorial model in Chapter 3, "Making Assignments," you made assignments from activities to activities. One such example is shown in the following picture.



Note: To display these assignments:

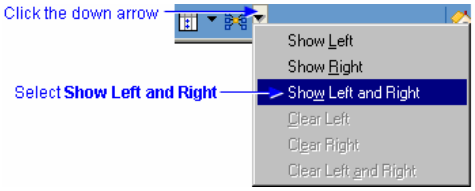
1 Select the Activity module.

2 Select **Left and Right Assignment Panes** from the View Assignment Panes icon.



3 Select the **Move to Warehouse** account.

4 Select **Show Left and Right** from the Show Assignments icon.



When you generate a cube, you must specify what cost assignments you want to appear in the cube for each module/stage. Sticking with the current example, you must choose assignments into the Activity module (Move to Warehouse), or out of the Activity Module (Sort and Inspect). You can't choose both because that would result in double-counting final costs (part of Sort and Inspect costs are Move to Warehouse costs).

The following picture shows the results of showing costs flowing *into* the Activity module. Notice that Move to Warehouse has non-zero cost because it receives assignments from the Resource module. Inspect and Sort also have non-zero costs because they also receive assignments from the Resource module.

All_Products_and_Services		All
	MeasuresLevel	Cost
Level1	*Level2*	
All		.
Local Collection	**Local Collection**	689,462.17
	Local Collection (direct)	.
	Move to Warehouse	689,462.17
Local Processing	**Local Processing**	770,596.55
	Inspect	364,282.53
	Local Processing (direct)	.
	Sort	406,314.02
None		208,393.20
Personnel Intensive Activities		405,984.94
Regional Distribution		1,781,856.34

By contrast, the following picture shows the results of showing costs flowing *out of* the Activity module. Notice that Move to Warehouse now has zero cost because it has no assignments out of the Activity module into the Cost Object module; its assignments are entirely within the Activity module.

All_Products_and_Services		All
	MeasuresLevel	Cost
Level1	*Level2*	
All		.
Local Collection	**Local Collection**	.
	Local Collection (direct)	.
	Move to Warehouse	.
Local Processing	**Local Processing**	55,349.66
	Inspect	55,349.66
	Local Processing (direct)	.
	Sort	.
None		208,393.20
Personnel Intensive Activities		405,984.94
Regional Distribution		3,186,565.40

If a model has no cost assignments from accounts within a module/stage to accounts within the same module/stage, then the choice of showing cost flows into or out of a module/stage makes no difference (Every cost into a module/stage is also a cost out of the module/stage.). By defining multiple stages such that there are no assignments

within a single stage, you avoid having to make the choice of showing cost flows in or out.

Manage Cube Permissions

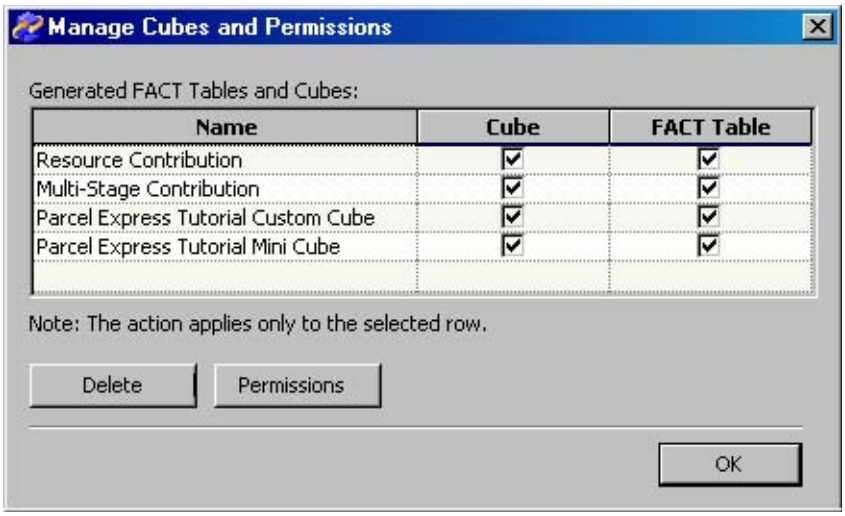
After generating a cube, you can changes its owner and control who has permission to access it. Permission is granted by role. All users who are authorized to a role can receive permission (or be denied permission) to view a cube. Roles are created, and users are assigned to roles, in the SAS Activity-Based Management Administrator program.

Note: The ability to manage permissions in this way is restricted to cubes stored in Microsoft Analysis Services (MSAS).

➢ **Manage cube permissions**

1 Select **Model > Manage Cubes and Permissions**.

The Manage Cubes and Permissions dialog box opens.

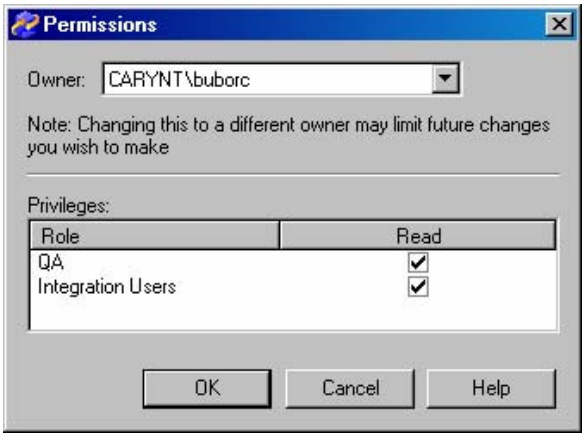


2 Select the cube whose permissions you want to manage.

Note: You can change only one cube at a time.

3 Click **Permissions**.

The Permissions dialog box opens.



4 You can change the cube owner and add or remove Read access to roles. All users with access to a role inherit the permission that you select for that role.

CHAPTER 17 Using OLAP Cubes for Analysis

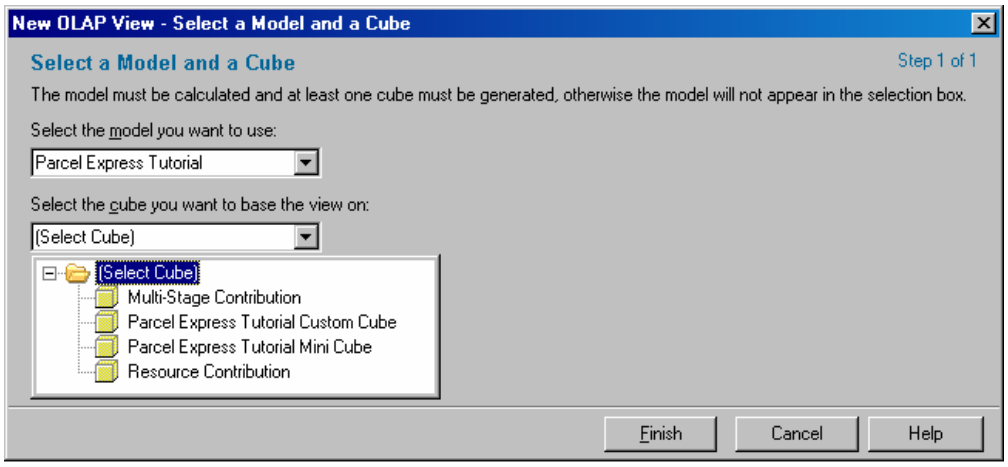
Once you have generated cubes, you use the SAS OLAP Analyzer to view the cube.

Creating OLAP Views

➢ **Create an OLAP view**

1 Select **File > New > OLAP View**.

You see Step 1 of the New OLAP View Wizard. The New OLAP View Wizard has only one step.

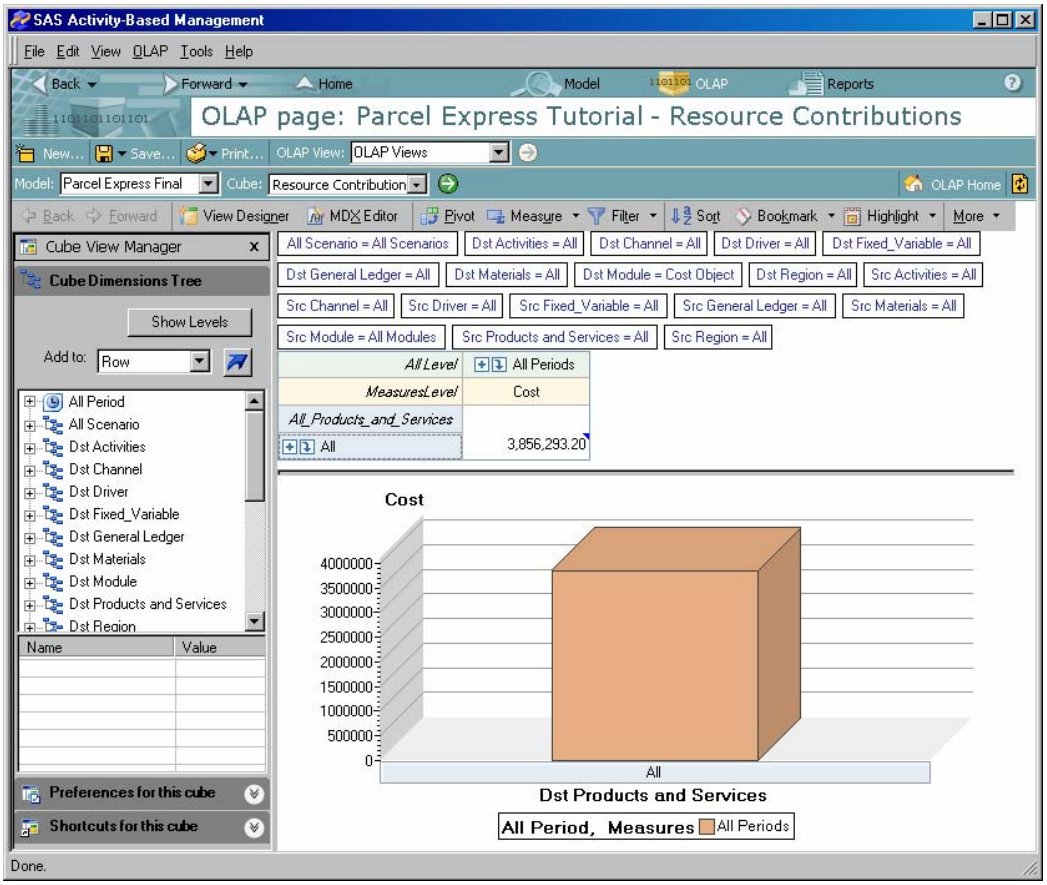


2 Select the **Parcel Express Tutorial** model.

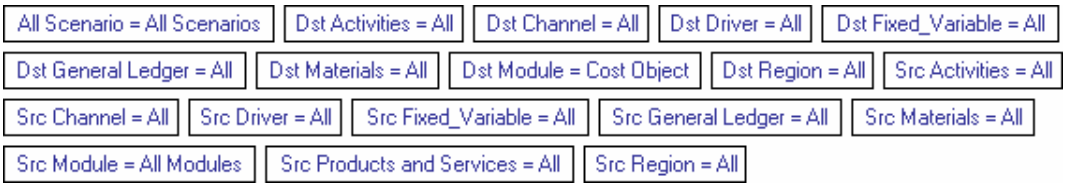
3 Select the **Resource Contributions** cube.

4 Click **Finish**.

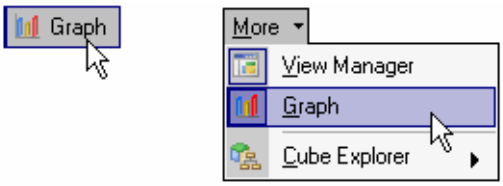
You see the resource contributions cube for the Parcel Express Tutorial model.



Note: You can turn on and off the display of the slicer buttons by selecting **OLAP > Slicers** from the menu.



Note: You can turn on and off the display of the graph by clicking the **Graph** button. Depending on the size of the SAS Activity-Based Management window, you might have to use the **More** menu to see the **Graph** button.



Analyzing OLAP Cubes

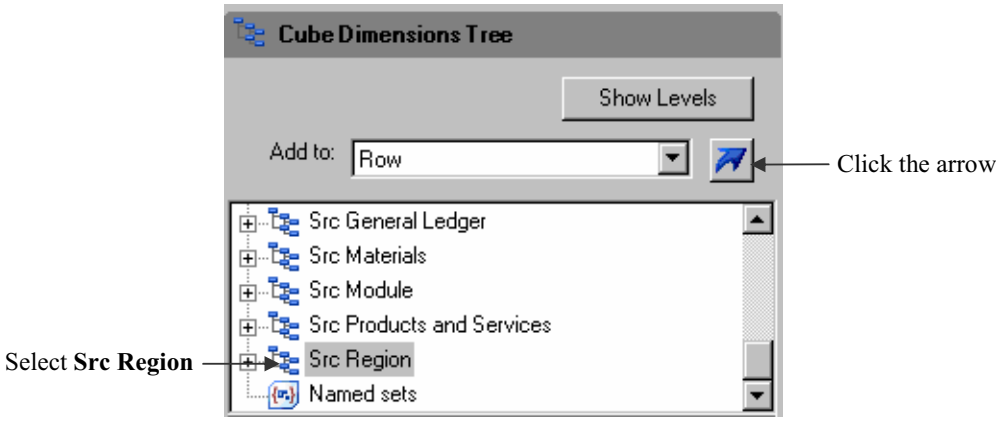
So far, the only information that the cube has provided is the costs for periods and scenarios. To perform an interactive analysis of the cube, you will select specific dimensions for analysis. You use the Cube Dimensions Tree to select dimensions for display in OLAP cubes.

Note: If the Cube Dimensions Tree is not visible, select **OLAP > View Manager** and click the **Cube Dimensions Tree** tab.

Selecting and Displaying Dimensions in Cubes

➢ **Select dimensions**

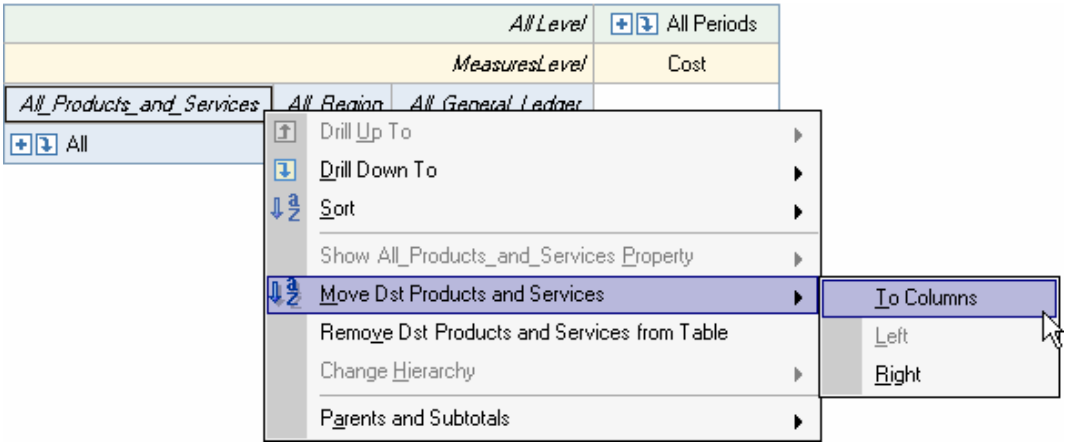
1 Select **Src Region** from the **Cube Dimensions Tree** and click the add arrow 



2 Select **Src General Ledger** from the **Cube Dimensions Tree** and click the add arrow to add to **Row**.

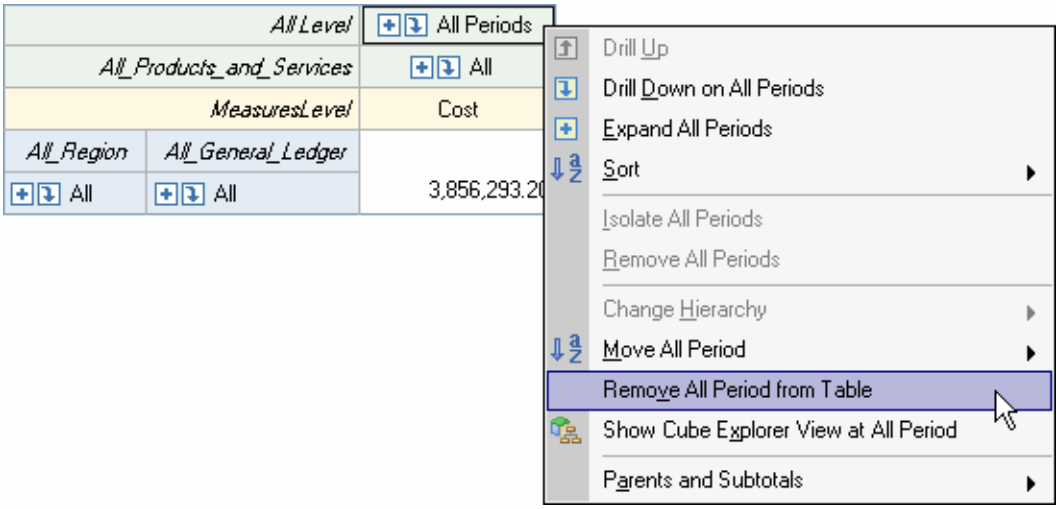
3 Move **Dst Products and Services** from rows to columns.

To do this, right-click ***All_Products_and_Services*** and select **Move Dst Products and Services > To Columns** on the menu.

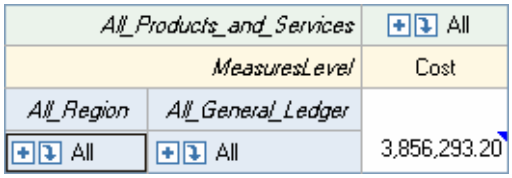


4 Remove **All Periods** from columns.

To do this, right-click **All Periods** and select **Remove All Period from Table** on the menu.



The table view should now look like the following:

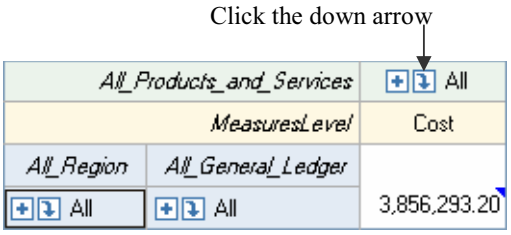


The data in the table view has been updated according to the dimensions that you have selected. To see the details, you must drill through the dimensions.

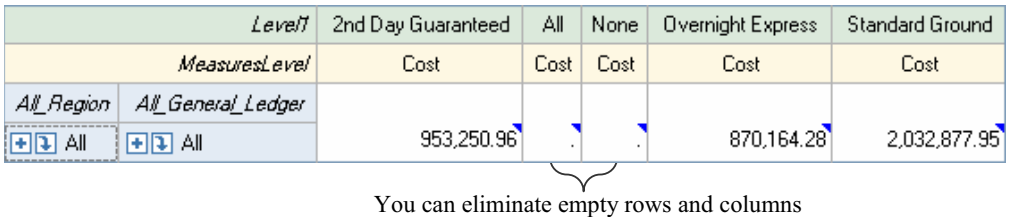
➢ Drill through dimensions

1 Click the down arrow next to the ***All_Products_and_Services*** column in the grid.

Note: Use ↧ to drill down (the node that you click is *replaced* by its children). Use ✚ to expand (the node that you click is displayed *along with* its children).

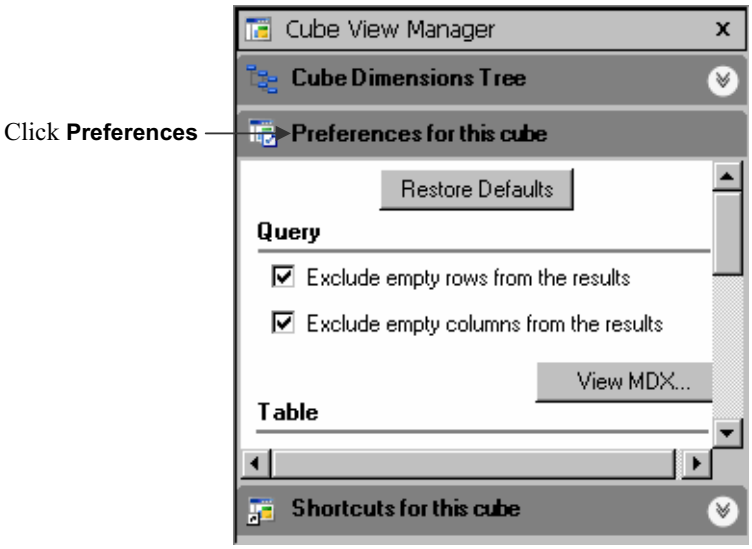


You see the **All_Products_and_Services** dimension expand, showing the costs for each product.



2 Delete empty rows and columns by clicking the **Preferences** tab of the Cube View Manager.

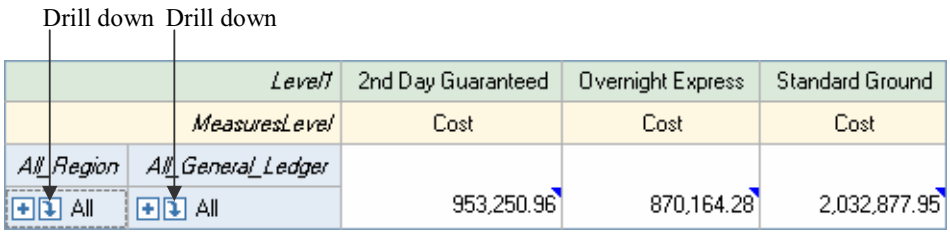
Note: If the Cube View Manager is not visible, then select **OLAP > View Manager**.



3 Select **Exclude empty rows from the results** and **Exclude empty columns from the results**.

You see that the empty rows and columns have been removed from the grid and bar chart.

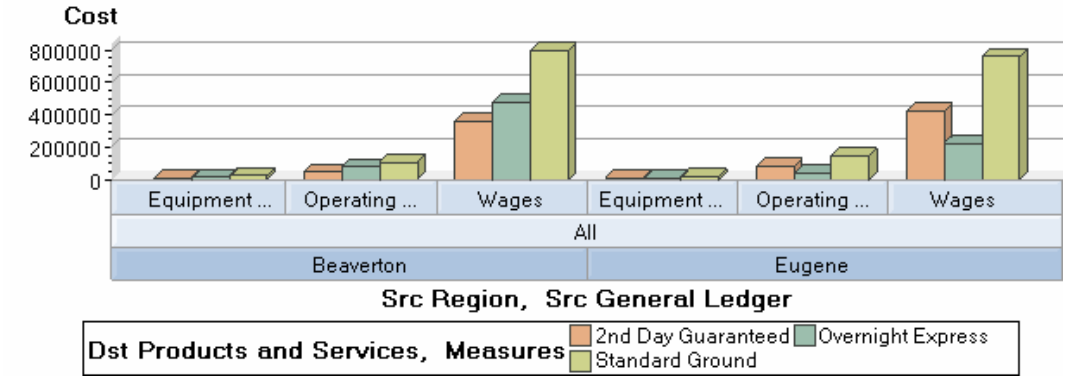
4 Drill down on the ***All_Region*** row and the ***All_General_Ledger*** row until you see the general ledger expenses for Eugene and Beaverton.



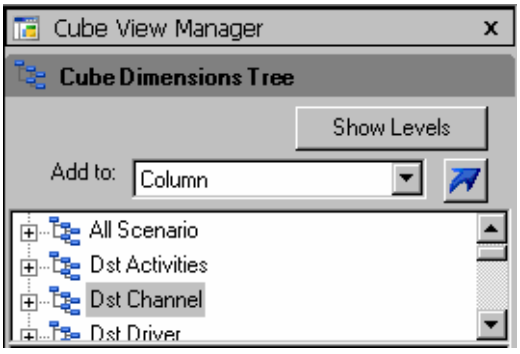
Both the grid and bar chart show the contribution of resource accounts to each product.

Dst Products and Services > **All**
Src Region > All > USA > **Oregon**
Src General Ledger > **All**

Level1		2nd Day Guaranteed	Overnight Express	Standard Ground
MeasuresLevel		Cost	Cost	Cost
Level3	*Level1*			
Beaverton	Equipment Expenses	11,353.01	18,289.75	24,657.24
	Operating Expenses	49,917.52	79,472.73	108,609.74
	Wages	361,146.58	481,772.77	795,680.65
Eugene	Equipment Expenses	11,634.14	5,466.78	20,899.08
	Operating Expenses	82,805.68	40,790.93	147,403.39
	Wages	423,886.43	224,610.72	759,502.86



5 In the Cube Dimensions Tree, add **Dst Channel** to **Column**.



You see that the ***All_Channel*** dimension has been added to the grid and bar chart.

6 Drill down on the added column in the grid.

Drill down

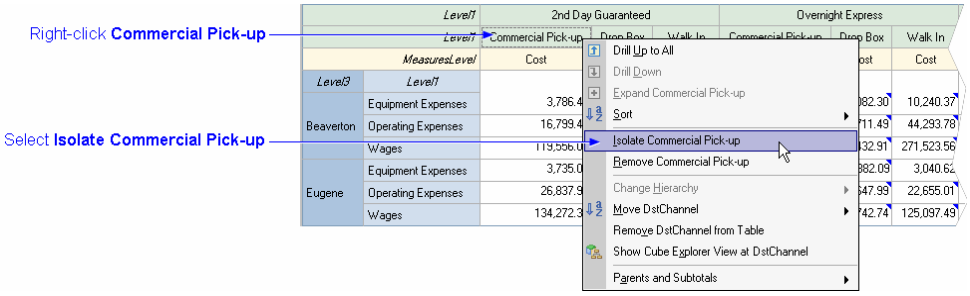
Level1	2nd Day Guaranteed	Overnight Express	Standard Ground
All_Channel	All	All	All
MeasuresLevel	Cost	Cost	Cost

The table view should look like the following, showing the cost per channel for each product and service:

	Level1	2nd Day Guaranteed			Overnight Express			Standard
	Level1	Commercial Pick-up	Drop Box	Walk In	Commercial Pick-up	Drop Box	Walk In	Commercial Pick-up
	MeasuresLevel	Cost	Cost	Cost	Cost	Cost	Cost	Cost
Level3	*Level1*							
Beaverton	Equipment Expenses	3,786.49	1,727.42	5,839.10	6,967.08	1,082.30	10,240.37	6,362.
	Operating Expenses	16,799.40	7,614.15	25,503.97	30,467.46	4,711.49	44,293.78	28,314.3
	Wages	119,556.03	54,837.86	186,752.70	181,816.30	28,432.91	271,523.56	203,68
Eugene	Equipment Expenses	3,735.08	1,832.93	6,066.13	2,044.07	382.09	3,040.62	5,3
	Operating Expenses	26,837.99	12,673.87	43,293.82	15,487.94	2,647.99	22,655.01	38,238.
	Wages	134,272.35	69,442.39	220,171.68	82,770.49	16,742.74	125,097.49	191,1

A very useful navigational aid is the ability to isolate portions of a table.

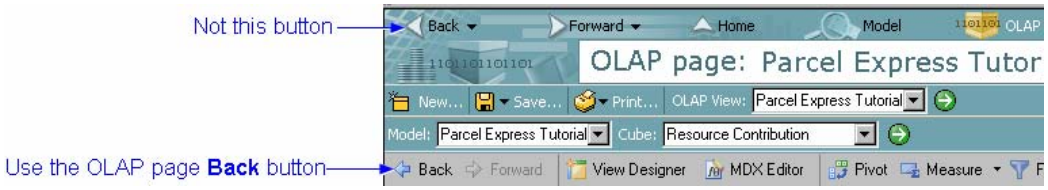
7 Right-click the **Commercial Pick-up** column, and then select **Isolate Commercial Pick-up** from the pop-up menu.



The resulting table allows you to focus your attention on the Commercial-Pick up channel.

	Level1	2nd Day Guaranteed	Overnight Express	Standard Ground
	Level1	Commercial Pick-up	Commercial Pick-up	Commercial Pick-up
	MeasuresLevel	Cost	Cost	Cost
Level3	*Level1*			
Beaverton	Equipment Expenses	3,786.49	6,967.08	6,362.79
	Operating Expenses	16,799.40	30,467.46	28,314.35
	Wages	119,556.03	181,816.30	203,687.27
Eugene	Equipment Expenses	3,735.08	2,044.07	5,354.50
	Operating Expenses	26,837.99	15,487.94	38,238.24
	Wages	134,272.35	82,770.49	191,128.92

Don't forget that you can click the Back button to return to a previous view. And, don't confuse the OLAP page back button, which returns you to a previous OLAP view, with the ABM back button, which returns you to the previous ABM page.



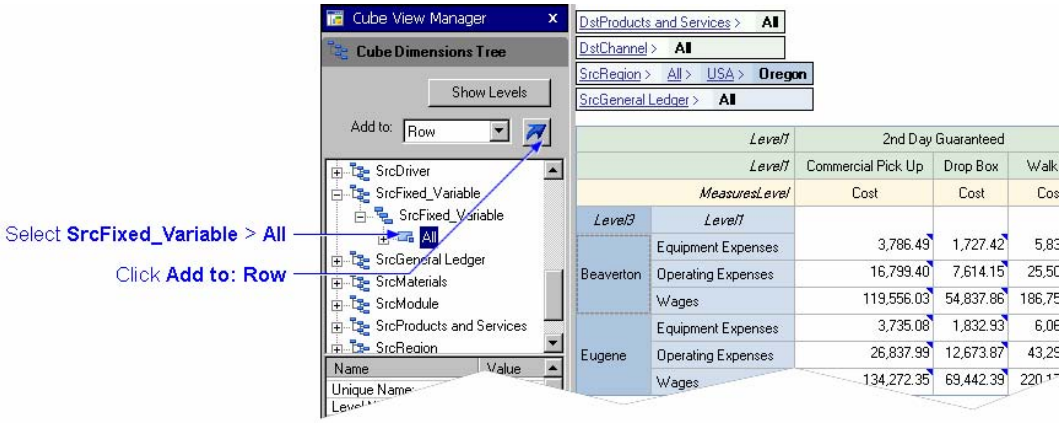
Displaying Dimension Attributes

In addition to displaying dimensions in the rows and columns of an OLAP view, you can display dimension attributes.

➢ **Select the Fixed_Variable dimension attribute**

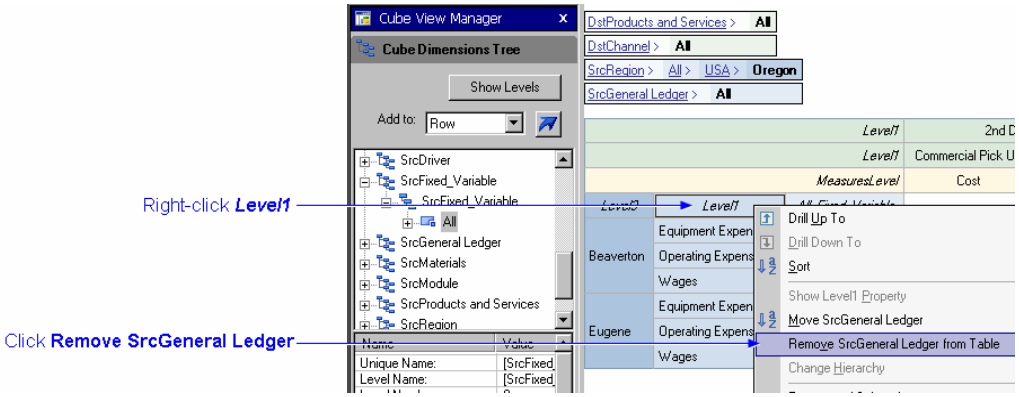
1 Select **SrcFixed_Variable > All** from the **Cube Dimensions Tree** and click the add arrow to add to **Row**.

Notice that the dimension attribute, Fixed_Variable, appears in the Cube Dimension Tree along with other cube dimensions.



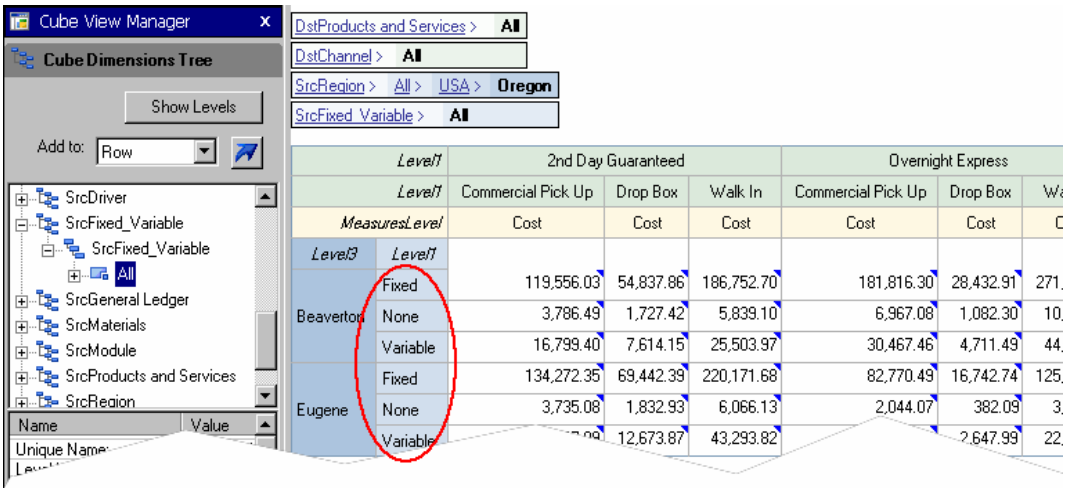
2 Right-click the row header, ***Level1***, and then select **Remove SrcGeneral Ledger from Table** from the pop-up menu.

This step is not necessary, but we are doing it so as to isolate the Fixed_Variable attribute.



3 Click the down arrow to drill down into the ***All_Fixed_Variable*** row.

Your OLAP view should now look like the following. Notice that costs are broken down into fixed costs and variable costs (and those that are neither fixed nor variable). Dimension attributes can serve the same purpose as full-fledged dimensions.



Saving OLAP Views

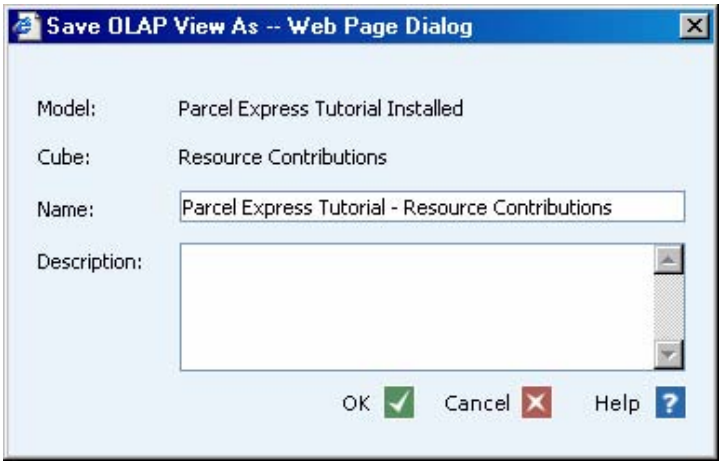
During the analysis, changes that you make to the Grid View, Chart View, and Cube Explorer View are retained during a session, even when you return to the OLAP page after viewing other tabs. However, when you close the session or when you close Grid View, Chart View, or Cube Explorer View, your changes are lost.

To save these changes so that they will be available later, you must save the OLAP view. When you save an OLAP view, you save the layout and contents of the view. However, the window positions and states are not saved.

➢ **Save an OLAP view**

1 Select **OLAP > Save View As**.

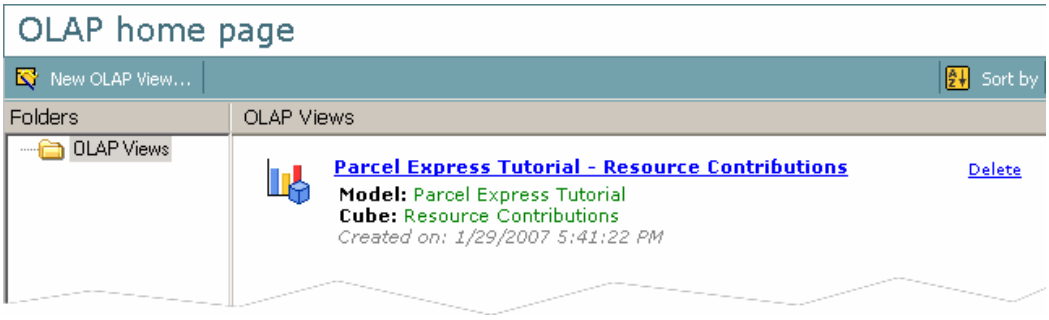
You see the Save OLAP View As dialog box.



2 For **Name**, type `Parcel Express Tutorial – Resource Contributions`. Click **OK**.

3 On the toolbar, click the **OLAP Home** link 

You see a link to **Parcel Express Tutorial – Resource Contributions** in the **OLAP Views** list.



Using Measures in Cubes

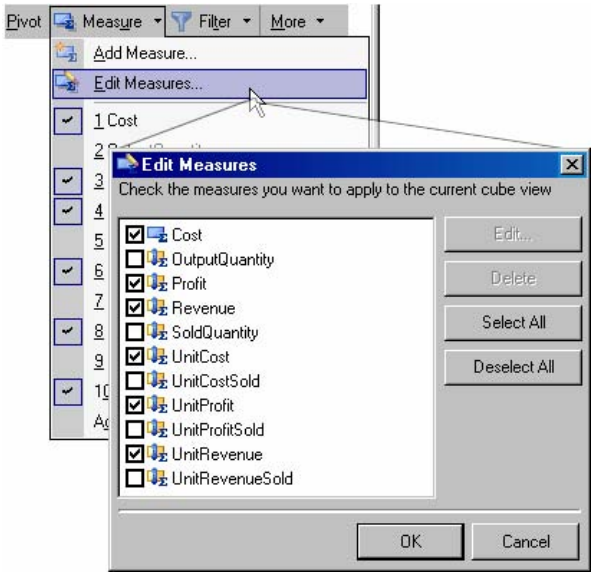
A measure is a property or an attribute that you can use to analyze OLAP information. The default measure is Cost. Now, you will create a new OLAP view using different measures. You will also create a custom measure.

➢ Working with measures in OLAP

1. Select **File > New > OLAP View** (or click **New OLAP View**).
2. Select the **Parcel Express Tutorial** model.
3. Select the **Resource Contributions** cube.
4. Click **Finish**.

   The resource contributions cube for the Parcel Express Tutorial model opens.
5. Select **Measure > Edit Measures**.
6. Select the following measures and click **OK**:

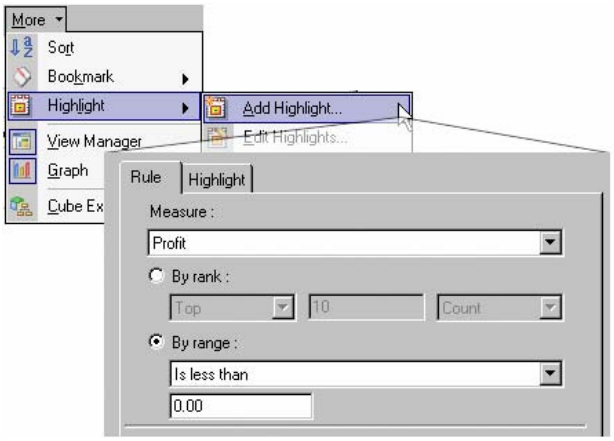
   Cost
   Profit
   Revenue
   UnitCost
   UnitProfit
   UnitRevenue



When you drill down on products and services, you see that the **2nd Day Guaranteed** product is losing money, while the other two products are profitable.

All Level	All Periods					
MeasuresLevel	Cost	Profit	Revenue	UnitCost	UnitProfit	UnitRevenue
Level7						
2nd Day Guaranteed	953,250.96	-73,424.96	879,826.00	10.67	-0.82	9.85
All	.	.	.	0.00	0.00	0.00
None	.	.	.	0.00	0.00	0.00
Overnight Express	870,164.28	639,779.72	1,509,944.00	8.62	6.33	14.95
Standard Ground	2,032,877.95	193,372.05	2,226,250.00	10.51	1.00	11.51

Note: To highlight the non-profitable cells in the table, select **Highlight > Add Highlight** and specify **Profit Is less than 0.00**.



7 Use the **Cube Dimensions Tree** to add **Dst Channel** to **Row**.

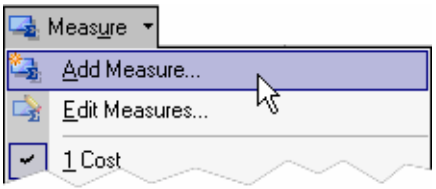
This will enable you to see whether this trend is similar across all channels. One of management's goals was to make a profit of at least 10% on the 2nd Day Guaranteed product, and at least 25% on all other products. SAS Activity-Based Management has shown that the company's profit picture is not what management expected. Competitive pressures forced the company to lower the price of their 2nd Day Guaranteed product, but it did not know that it was losing money on all products but the Walk In product.

All Level		All Periods					
MeasuresLevel		Cost	Profit	Revenue	UnitCost	UnitProfit	UnitRevenue
Level1	*Level1*						
2nd Day Guaranteed	All	.	.	.	0.00	0.00	0.00
	Commercial Pick-up	309,187.34	-100,687.34	208,500.00	10.31	-3.36	6.95
	Drop Box	150,018.62	-16,193.62	133,825.00	11.11	-1.20	9.91
	None	.	.	.	0.00	0.00	0.00
	Walk In	494,045.00	43,456.00	537,501.00	10.78	0.95	11.73
	All	.	.	.	0.00	0.00	0.00

Now, you will create a custom measure to calculate gross margin.

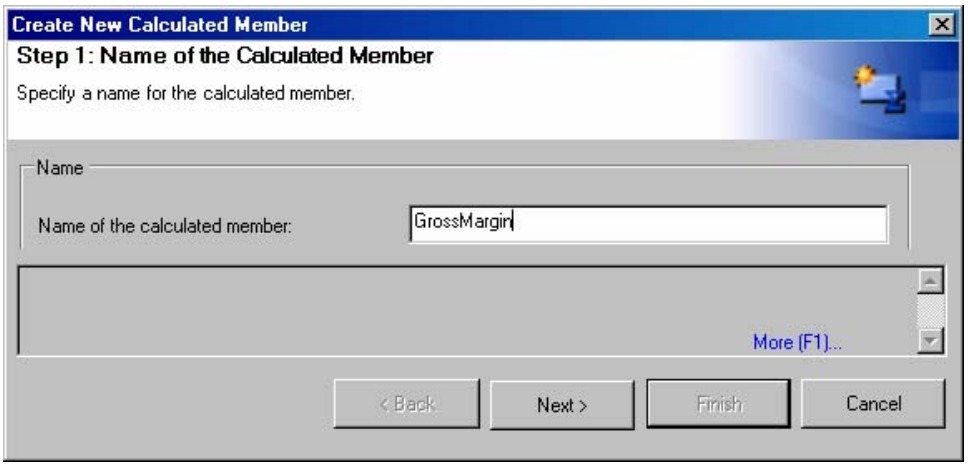
➢ Create a custom measure

1 Select **Measure > Add Measure**.

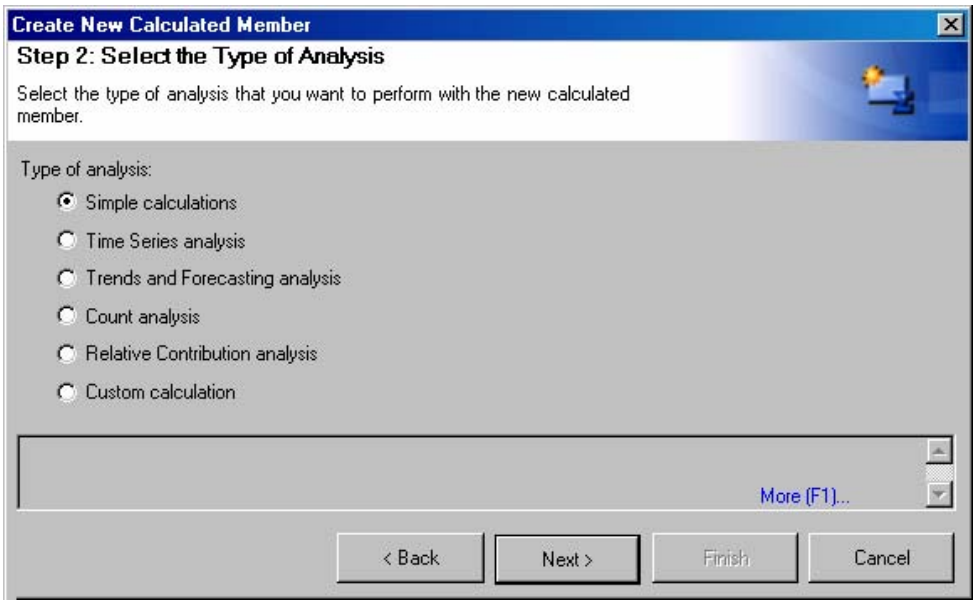


You see Step 1 of the Create New Calculated Member.

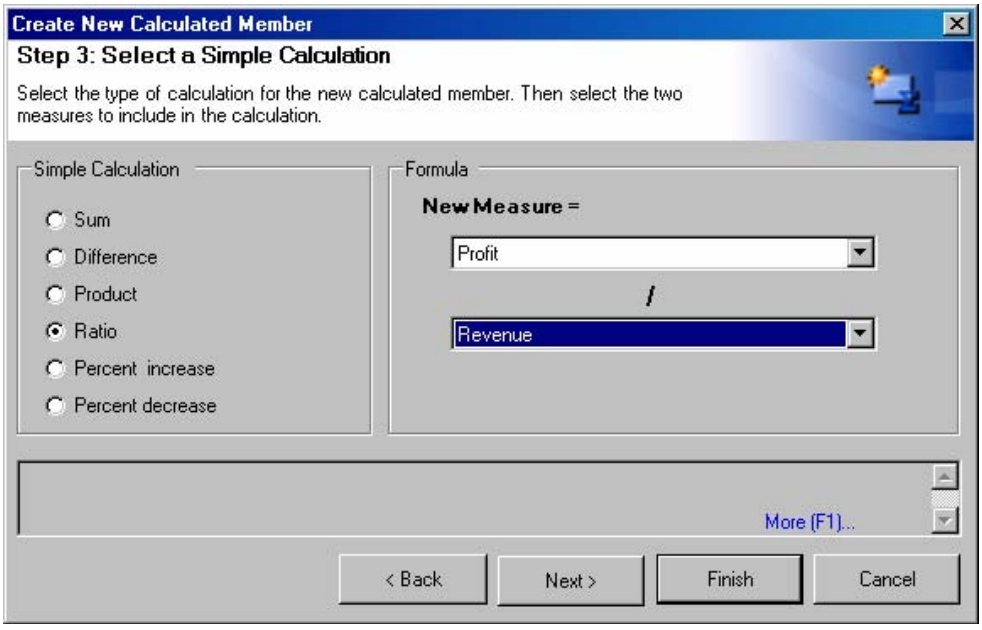
2 For **Name**, type `GrossMargin`, and then click **Next**.



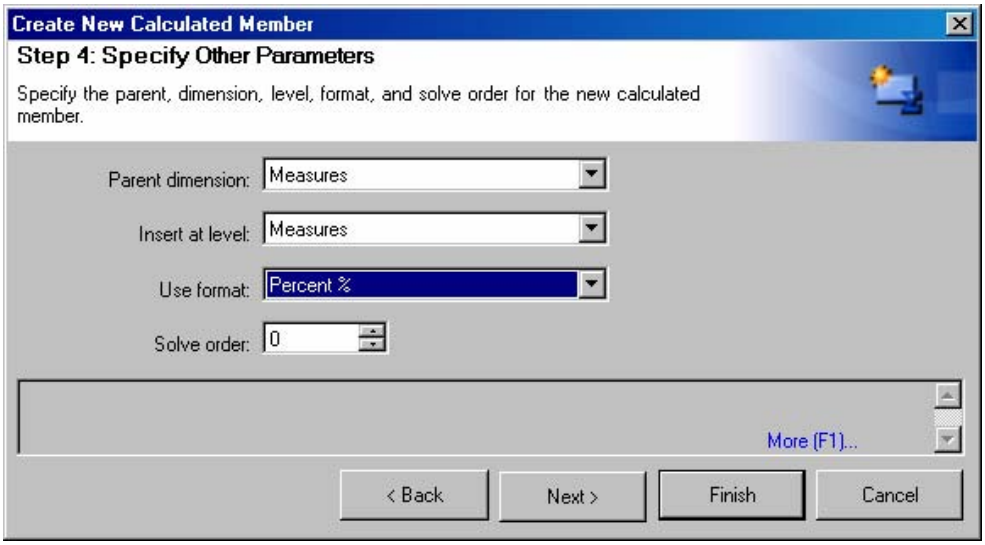
3 Select **Simple calculations**, and then click **Next**.



4 Select **Ratio** and **Profit / Revenue**, and then click **Next**.



4 Select **Percent** % for **Use format**, and then click **Next**.



5 In the next dialog box, you can select whether the calculated measure is to be temporary, for this cube view only, or for this session. Select **Available during this session only**, and then click **Finish**.

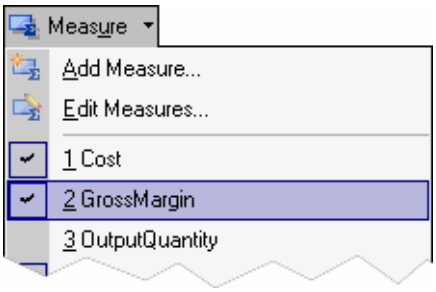
Note: The **Global, always available** option is available only for cubes in SAS OLAP Server. The option is not available for cubes in Microsoft Analysis Services.

You see the profit margin of each product. Based on the stated goals of the company, the 2nd Day Guaranteed is underperforming significantly.

Dst Products and Services > **All**
Dst Channel > **All**

All Level		All Periods						
MeasuresLevel		Cost	Profit	Revenue	UnitCost	UnitProfit	UnitRevenue	GrossMargin
Level1	*Level1*							
2nd Day Guaranteed	All	.	.	.	0.00	0.00	0.00	.
	Commercial Pick-up	309,187.34	-100,687.34	208,500.00	10.31	-3.36	6.95	-48.29%
	Drop Box	150,018.62	-16,193.62	133,825.00	11.11	-1.20	9.91	-12.10%
	None	.	.	.	0.00	0.00	0.00	.
	Walk In	494,045.00	43,456.00	537,501.00	10.78	0.95	11.73	8.08%
All	All	.	.	.	0.00	0.00	0.00	.
	Commercial Pick-up	.	.	.	0.00	0.00	0.00	.
				.		0.00		.

If you select the **Measure** menu, you can see that **GrossMargin** has been added to the list of available measures (unless you chose **Temporary** for the scope of the measure, in which case **GrossMargin** is not added).



Exporting Cubes

At any point during OLAP analysis, you can export the displayed data to a Microsoft Excel spreadsheet. When you export to Microsoft Excel, you are exporting only the data that is currently displayed, not the entire cube.

➢ **Export an OLAP cube**

1 Display the OLAP data that you want to export to a Microsoft Excel spreadsheet.

2 Select **OLAP > Export to Excel**.

You see a Microsoft Excel spreadsheet that contains the data that is currently displayed in the cube.

	A	B	C	D	E	F	G	H	I
1	All_Products	Level1	All_Channel	Level1	All Periods - Cost	All Periods - GrossMargin	All Periods - Profit	All Periods - Revenue	All Peri
2									
3	All	2nd Day Guaranteed	All	All					
4	All	2nd Day Guaranteed	All	Commercial Pick-up	309187.3407	-0.482912905	-100687.3407	208500	10.3
5	All	2nd Day Guaranteed	All	Drop Box	150018.6212	-0.12100595	-16193.62121	133825	11.
6	All	2nd Day Guaranteed	All	None					
7	All	2nd Day Guaranteed	All	Walk In	494045.002	8.08E-02	43455.99805	537501	1(
8	All	All	All	All					
9	All	All	All	Commercial Pick-up					
10	All	All	All	Drop Box					
	All	All	All	None					

Using the Cube Explorer View

Now, you will analyze the model by using the Cube Explorer View to get more information about the costs that are associated with each product. The management of Parcel Express has learned that margins on the 2nd Day Guaranteed product fall well below expectations. The SAS Activity-Based Management OLAP tool will help management assess why costs for that product are higher than costs for other products.

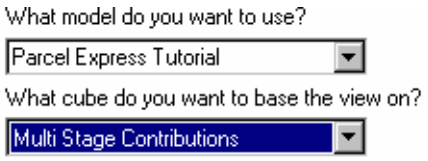
You will create a multi-stage contributions cube view and use the Cube Explorer View to explore costs.

➢ **Create a multi-stage contributions cube view**

1 Select **File > New > OLAP View** (or click **New OLAP View**).

2 Select the **Parcel Express Tutorial** model.

3 Select the **Multi Stage Contributions** cube.

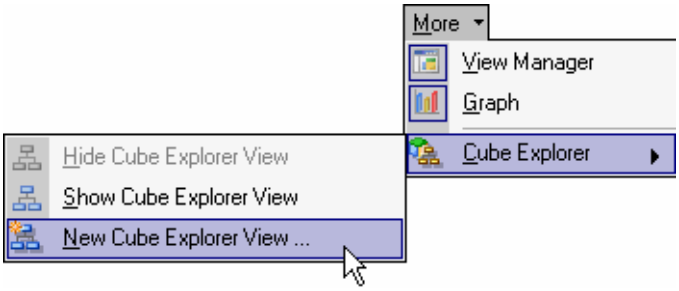


4 Click **Finish**.

The multi-stage contributions cube for the Parcel Express Tutorial model opens.

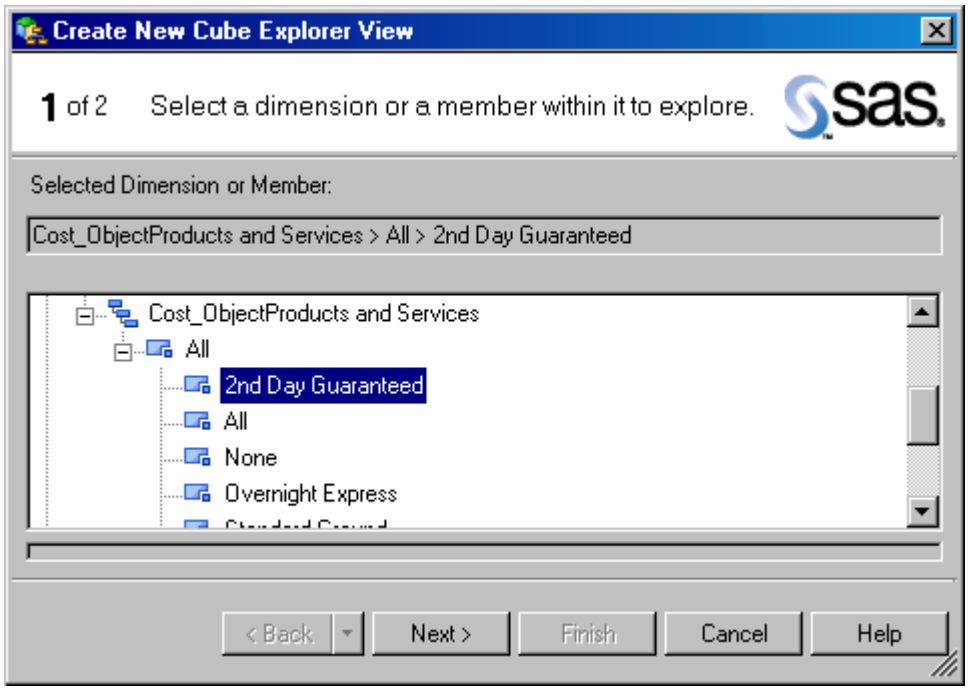
➢ Create a new Cube Explorer View

1 Select **Cube Explorer > New Cube Explorer View**.

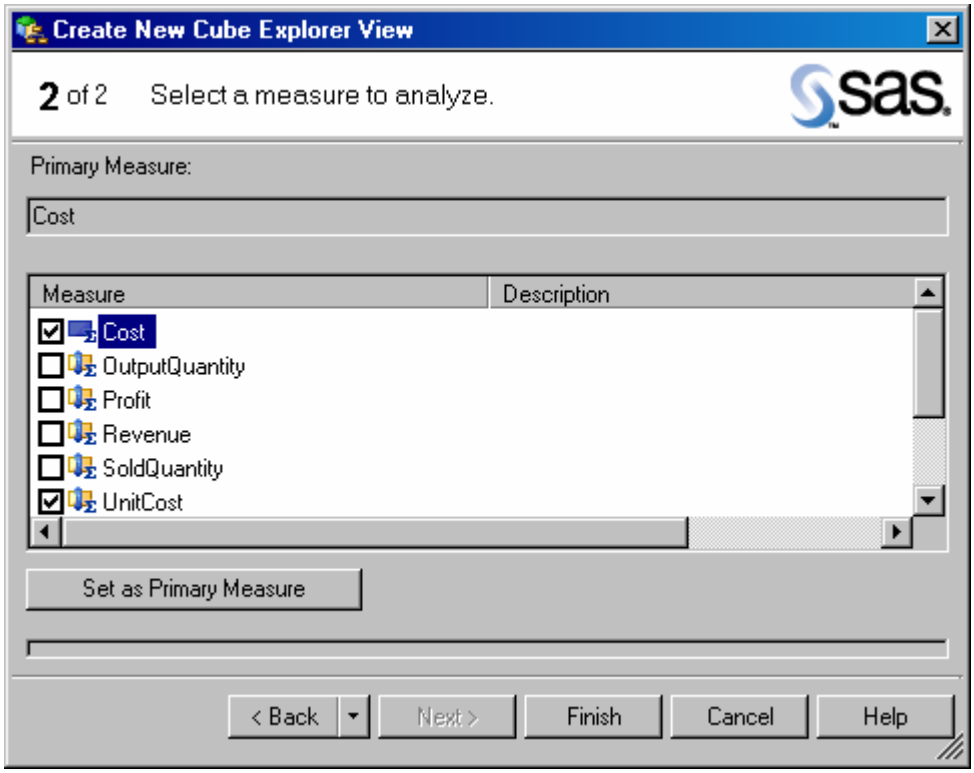


You see the first page of the Create New Cube Explorer View.

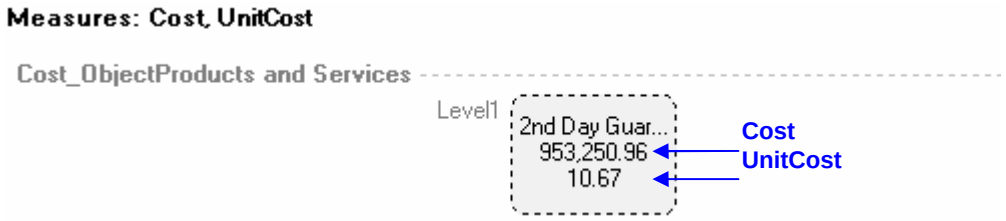
2 Click **Cost_ObjectProducts and Services > All > 2nd Day Guaranteed**, and then click **Next**. You will open the Cube Explorer View at the 2nd Day Guaranteed product because that is the product whose costs you want to explore.



3 Select Cost and UnitCost as the measures to analyze, and then click Finish.

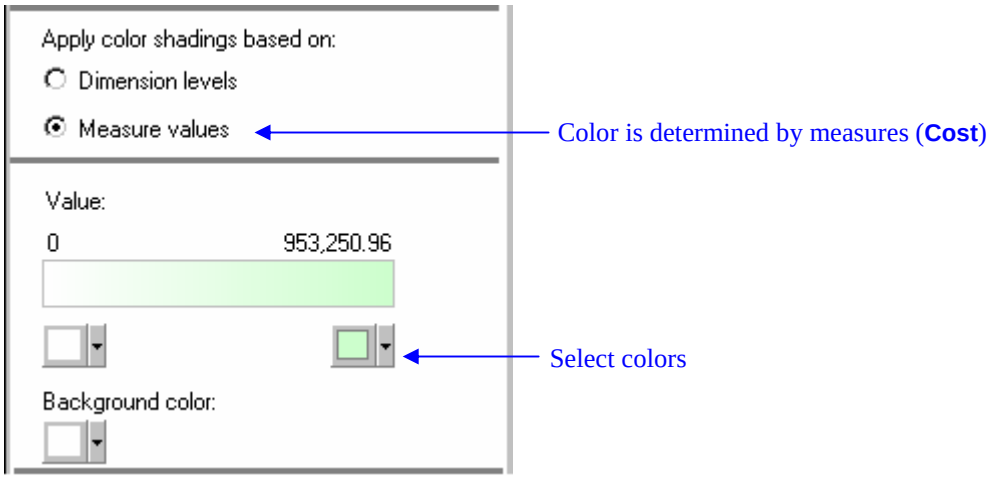


The Cube Explorer View opens at the 2nd Day Guaranteed product.

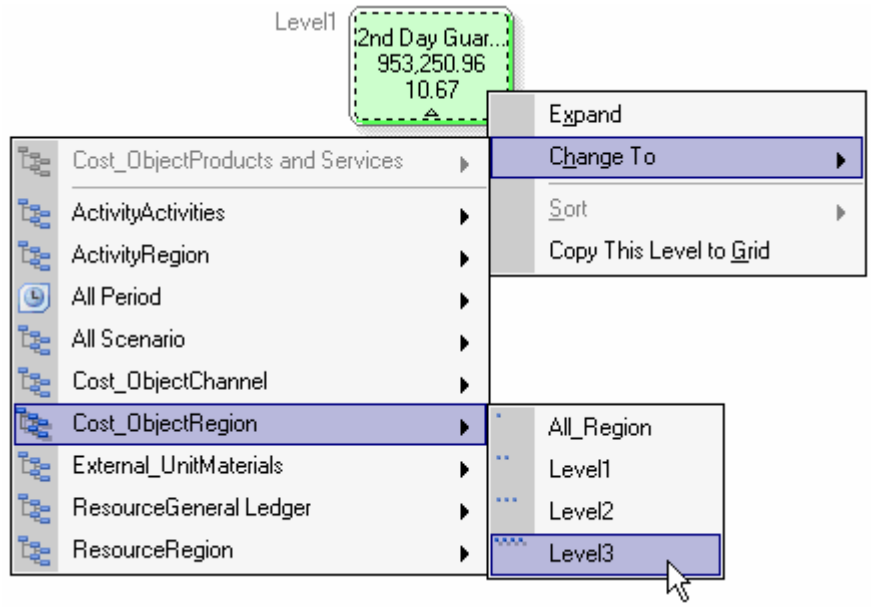


➢ Analyze the model in Cube Explorer View

1 Select Apply color shadings based on > Measure values so that large costs will stand out by their color, and then select the colors to use if you want colors other than the default colors.

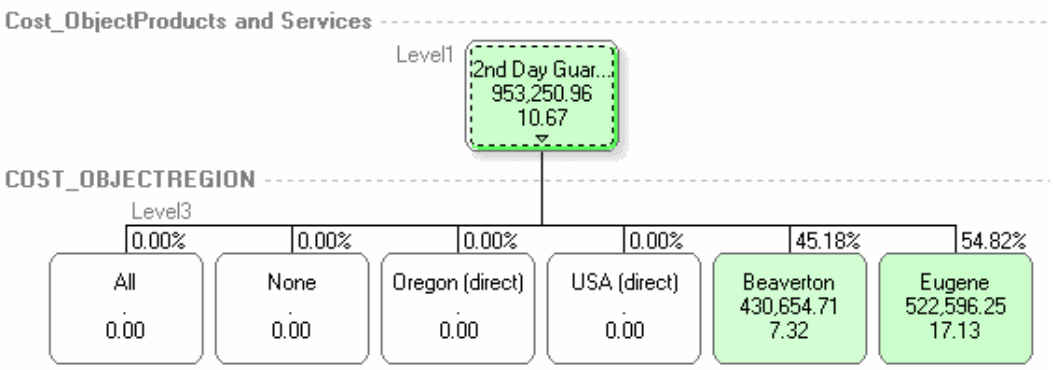


2 Right-click 2nd Day Guaranteed and select Change To > Cost_ObjectRegion > Level3.

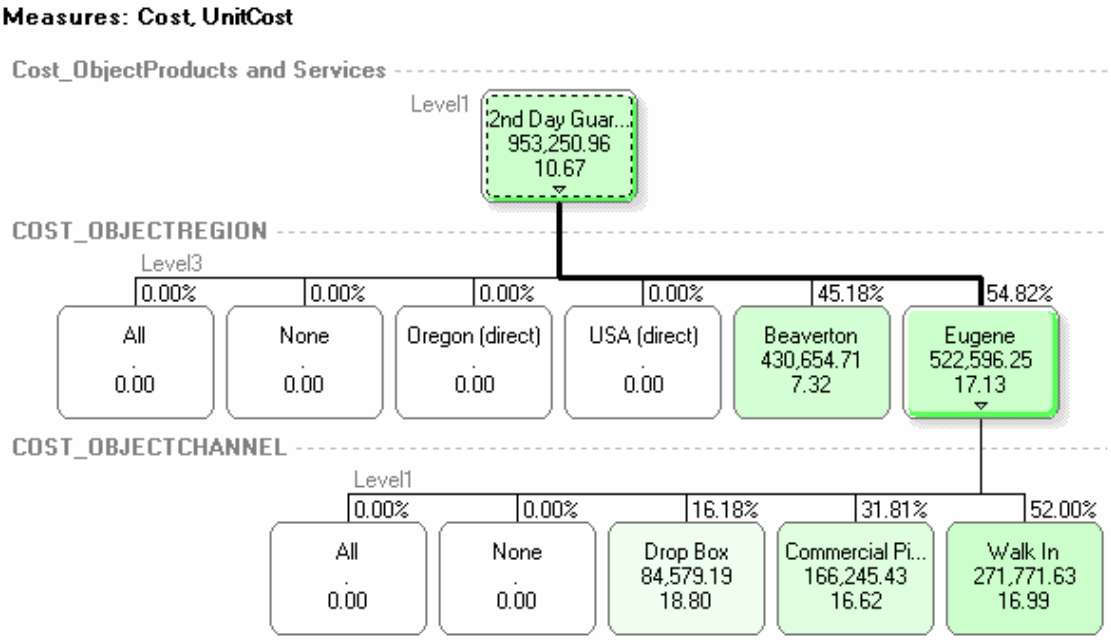


You see the regional costs that contribute to the 2nd Day Guaranteed product.

Measures: Cost, UnitCost

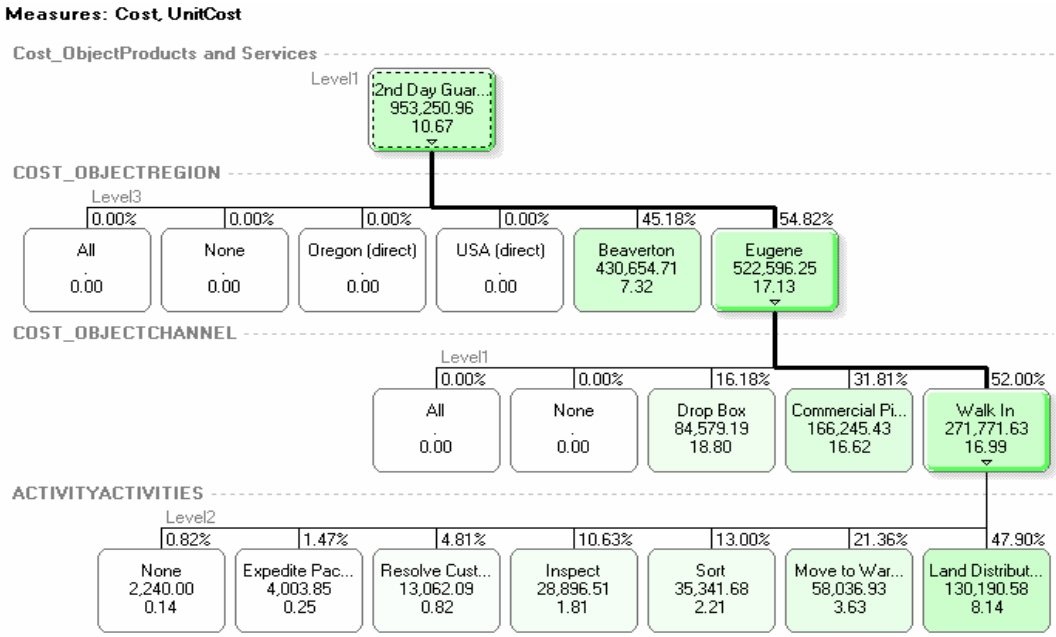


3 Because Eugene accounts for the larger part of costs (54.82%) of the 2nd Day Guaranteed product costs, drill down into Eugene to discover where those costs come from. Right-click Eugene and select Change To > Cost_ObjectChannel > Level1.



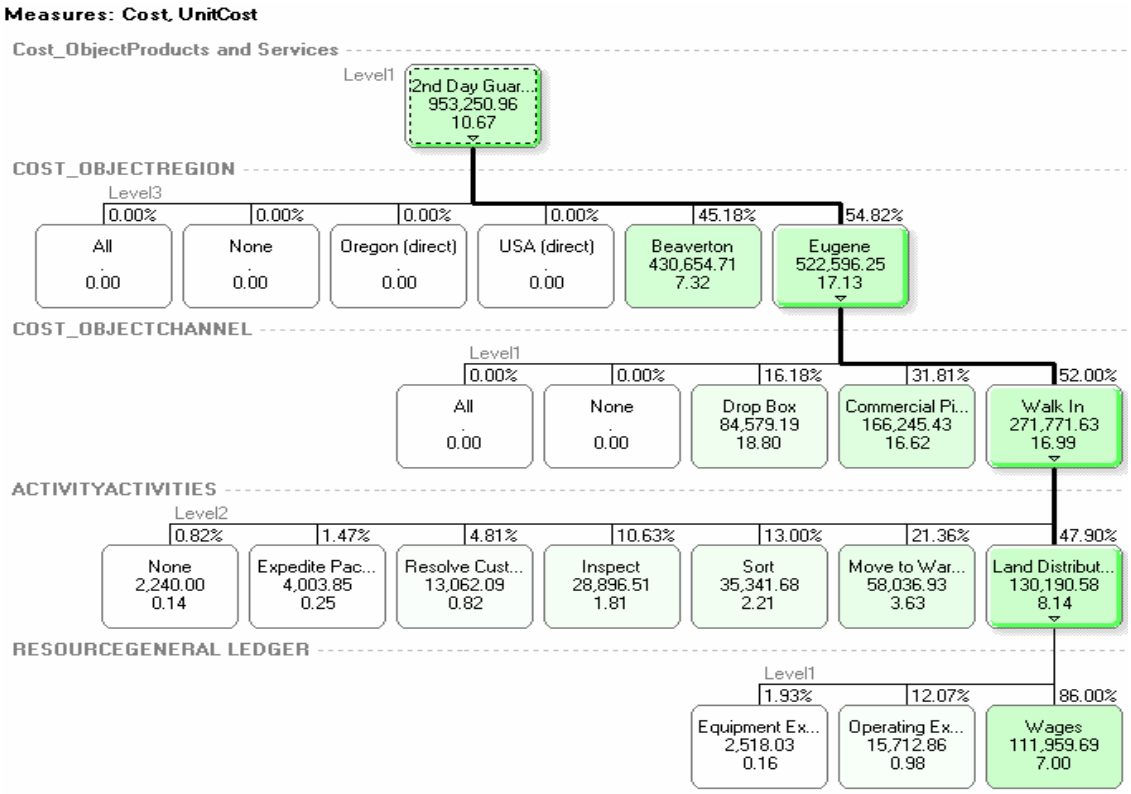
You see that the Walk In channel contributes 52% to the costs of the 2nd Day Guaranteed product. Drill down into this channel to explore what accounts for its costs.

4 Right-click Walk In and select Change To > ActivityActivities > Level2.



The Land Distribution set of activities stands out as constituting 47.90% of costs.

5 Right-click Land Distribution and select Change To > ResourceGeneral Ledger > Level1.



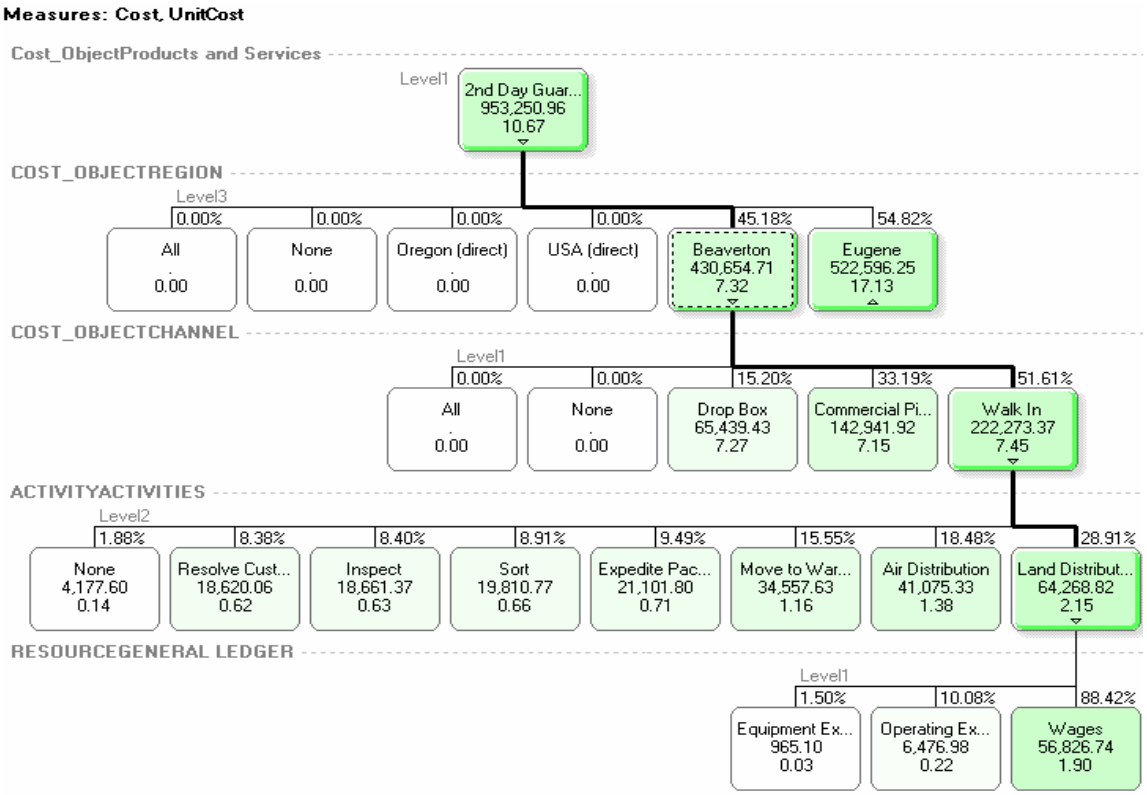
Now you can see that the overwhelming part of this cost is for wages in Eugene—a full 86%.

6 To confirm the finding that it is wages in Eugene that account for the high cost of the 2nd Day Guaranteed product, drill down on Beaverton for a comparison.

a Right-click Beaverton and select Change To > Cost_ObjectChannel > Level1.

b Right-click Walk In and select Change To > ActivityActivities > Level2.

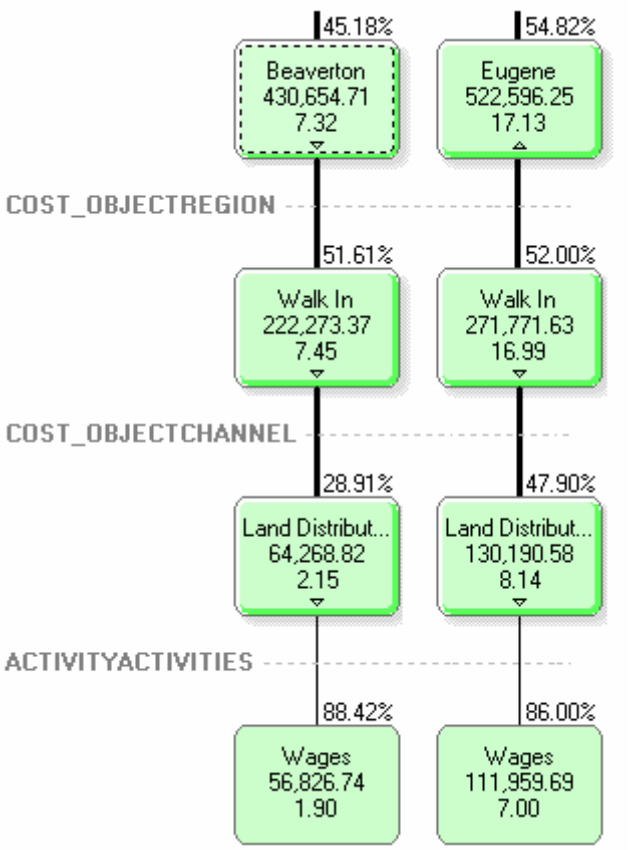
c Right-click Land Distribution and select Change To > ResourceGeneral Ledger > Level1.

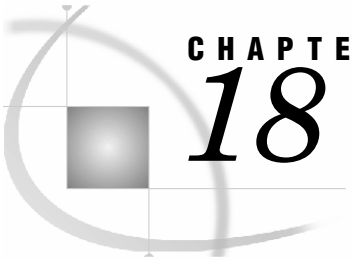


Even though Wages account for a similar percentage of costs for the 2nd Day Guaranteed product in Beaverton, UnitCost for Beaverton is a fraction of UnitCost for Eugene, and the total cost in Beaverton is half of the total cost in Eugene.

If you could put the two branches of the tree together, the picture would look like the following. The unit cost of wages in Eugene for land distribution ($7.00) is much higher than the unit cost of wages in Beaverton ($1.90). These costs play an important role in accounting for the total costs of the 2nd Day Guaranteed product.

Note: You cannot actually put these branches side-by-side in the Cube Explorer View.


45.18%
Beaverton
430,654.71
7.32
54.82%
Eugene
522,596.25
17.13
COST_OBJECTREGION
51.61%
Walk In
222,273.37
7.45
52.00%
Walk In
271,771.63
16.99
COST_OBJECTCHANNEL
28.91%
Land Distribut...
64,268.82
2.15
47.90%
Land Distribut...
130,190.58
8.14
ACTIVITYACTIVITIES
88.42%
Wages
56,826.74
1.90
86.00%
Wages
111,959.69
7.00



CHAPTER 18 Finishing Up

Now that you have created a SAS Activity-Based Management model and you have learned the basics of model analysis, you can begin designing and implementing your own models.

Parcel Express Conclusions

Using SAS Activity-Based Management, Parcel Express was able to see how costs flowed out of resource accounts to activities, and from activities to cost objects. In modeling the flow of costs through its business processes, the company learned that the 2nd Day Guaranteed product, which managers had assumed was not performing as well as the other products, was performing far worse than expected, and was actually losing money across all channels.

An OLAP analysis of the model showed that the percentages of costs that flowed from resource and activity accounts to cost object accounts was consistent across all product categories. Therefore, pricing seemed to be the primary reason for the underperformance. Another revelation was the amount of profit that was being made on the other two products.

Management must now decide how much of a loss, if any, is acceptable for the 2nd Day Guaranteed product. How will a price change affect volume? Is the higher profit on other products enough to offset the loss on the 2nd Day Guaranteed product?

To assess the impact of changes to the pricing structure, Parcel Express can use SAS Activity-Based Management to model possible future scenarios.

Additional Features

Many SAS Activity-Based Management features are not covered in this tutorial, or they are only briefly covered. These features include:

- importing data from other information systems
- importing models from databases, XML, or Oros

- exporting models to databases or XML
- sharing models
- managing the ownership and permissions for items
- publishing period/scenario associations
- managing item properties
- selecting currencies and exchange rates
- working with internal units
- creating stage attributes
- variable quantity drivers
- assigned idle cost
- allocated cost
- creating custom report templates
- using the SAS Services API

To build effective and complete models for your organization, you will want to use some of these additional features. Because your models will be much larger than the Parcel Express Tutorial model, you might want to read about model size and performance in the online Help. You can also consult the *SAS Activity-Based Management: User's Guide* at http://support.sas.com/documentation/onlinedoc/abm/.

What to Do Next

If you felt comfortable using the basic tools and techniques in this tutorial to build the Parcel Express Tutorial model, use them on a simple project of your own.

SAS has a variety of products, including videotapes and training classes, that can help you learn more about activity-based costing, management, and budgeting. In addition, SAS can help you build models for your organization. If you need additional information, contact your on-site SAS support personnel.

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