

Overview to Oracle Demand Planning

Student Guide

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Preface

Profile

Before You Begin This Course

Before you begin this course, you should have the following qualifications:

- Knowledge of statistical forecasting methods.

Prerequisites

- Overview of the Advanced Planning and Scheduling Suite of Products — 14513GC10.

How This Course Is Organized

Overview to Oracle Demand Planning is an instructor-led course featuring lecture and discussions.

Related Publications

- System release bulletins
- Installation and user's guides
- read.me files
- Oracle Applications User's Group (OAUG) articles
- Oracle Magazine

Typographic Conventions

Typographic Conventions in Text

Convention	Element	Example
Bold italic	Glossary term (if there is a glossary)	The <i>algorithm</i> inserts the new key.
Caps and lowercase	Buttons, check boxes, triggers, windows	Click the Executable button. Select the Can't Delete Card check box. Assign a When-Validate-Item trigger to the ORD block. Open the Master Schedule window.
Courier new, case sensitive (default is lowercase)	Code output, directory names, filenames, passwords, pathnames, URLs, user input, usernames	Code output: <code>debug.set ('I', 300);</code> Directory: <code>bin</code> (DOS), <code>\$FMHOME</code> (UNIX) Filename: Locate the <code>init.ora</code> file. Password: User <code>tiger</code> as your password. Pathname: Open <code>c:\my_docs\projects</code> URL: Go to <code>http://www.oracle.com</code> User input: Enter <code>300</code> Username: Log on as <code>scott</code>
Initial cap	Graphics labels (unless the term is a proper noun)	Customer address (<i>but</i> Oracle Payables)
Italic	Emphasized words and phrases, titles of books and courses, variables	Do <i>not</i> save changes to the database. For further information, see <i>Oracle7 Server SQL Language Reference Manual</i> . Enter <code>user_id@us.oracle.com</code> , where <i>user_id</i> is the name of the user.
Quotation marks	Interface elements with long names that have only initial caps; lesson and chapter titles in cross-references	Select "Include a reusable module component" and click Finish. This subject is covered in Unit II, Lesson 3, "Working with Objects."
Uppercase	SQL column names, commands, functions, schemas, table names	Use the SELECT command to view information stored in the <code>LAST_NAME</code> column of the EMP table.

Convention	Element	Example
Arrow	Menu paths	Select File→ Save.
Brackets	Key names	Press [Enter].
Commas	Key sequences	Press and release keys one at a time: [Alternate], [F], [D]
Plus signs	Key combinations	Press and hold these keys simultaneously: [Ctrl]+[Alt]+[Del]

Typographic Conventions in Code

Convention	Element	Example
Caps and lowercase	Oracle Forms triggers	When-Validate-Item
Lowercase	Column names, table names	SELECT last_name FROM s_emp;
	Passwords	DROP USER scott IDENTIFIED BY tiger;
	PL/SQL objects	OG_ACTIVATE_LAYER (OG_GET_LAYER ('prod_pie_layer'))
Lowercase italic	Syntax variables	CREATE ROLE <i>role</i>
Uppercase	SQL commands and functions	SELECT userid FROM emp;

Typographic Conventions in Navigation Paths

This course uses simplified navigation paths, such as the following example, to direct you through Oracle Applications.

(N) Invoice > Entry > Invoice Batches Summary (M) Query > Find (B) Approve

This simplified path translates to the following:

1. (N) From the Navigator window, select Invoice > Entry > Invoice Batches Summary.
2. (M) From the menu, select Query > Find.
3. (B) Click the Approve button.

Notations :

(N) = Navigator

(M) = Menu

(T) = Tab

(I) = Icon

(H) = Hyperlink

(B) = Button

Typographical Conventions in Help System Paths

This course uses a “navigation path” convention to represent actions you perform to find pertinent information in the Oracle Applications Help System.

The following help navigation path, for example—

(Help) General Ledger > Journals > Enter Journals

—represents the following sequence of actions:

1. In the navigation frame of the help system window, expand the General Ledger entry.
2. Under the General Ledger entry, expand Journals.
3. Under Journals, select Enter Journals.
4. Review the Enter Journals topic that appears in the document frame of the help system window.

Overview to Oracle Demand Planning

Chapter 1

Oracle Demand Planning

Overview

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Oracle Demand Planning Modular Courses

Oracle Demand Planning Modular Courses

- Overview of Oracle Demand Planning (ODP)
- Administering Oracle Demand Planning
- Generating Forecasts
- Analyzing and Managing Forecasts

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Oracle Demand Planning Agenda

This training module provides an overview of the Oracle Demand Planning (ODP) product. Subsequent Oracle Demand Planning training modules are:

- Administering Oracle Demand Planning
- Generating Forecasts
- Analyzing and Managing Forecasts

Objectives

Objectives

After completing this module, you should be able to:

- **Explain features and benefits of Oracle Demand Planning**
- **Describe demand planning roles**
- **Explain demand planning process steps**

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Objectives

- Explain features and benefits of Oracle Demand Planning
- Describe demand planning roles
- List demand planning processes

What is Demand Planning?

What is Demand Planning?

- **Planning for future demand scenarios**
 - Estimate future demand based on market conditions
 - Collaborative planning process involving internal and external participants
- **A crucial function for improving operational plans**
 - Optimal resource allocation
 - Reduced inventory levels
 - Improved customer satisfaction
 - Exception-based forecast tracking and notifications



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What Is Demand Planning?

Oracle Demand Planning is an integrated module within the Oracle Advanced Planning and Scheduling (OAPS) application suite. Oracle Demand Planning assists in the process of creating forecasts. These forecasts are projections of demand, primarily for finished goods.

Demand planning involves more than forecasting. It is a collaborative process involving internal and external participants. Information from several sources is collected and organized in order to estimate future demand based on market conditions.

This is a crucial function for improving operational plans. Successful demand planning results in optimal resource allocation, reduced inventory levels and improved customer satisfaction. ODP provides exception-based forecast tracking and notifications.

Why is Demand Planning Difficult?

Why is Demand Planning Difficult?

- Short product life cycles
- Evolving market conditions
- Global markets
- Multiple sales channels
- Multiple sources of information
- Demand distortions



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Challenges for Demand Management

Planning for demand is a difficult challenge. Short product life cycles limit the availability of historical data to use as a basis for projections. Market conditions are constantly changing. Global market demands are filled through multiple competing sales channels. Multiple sources can result in overlapping information, where the same demand is measured at different levels of aggregation. Finally, many factors can cause demand to change from its normal course.

Demand Distortions

Demand Distortions

- State of the economy
- Promotions
- Competitors' responses to promotions
- Product introduction and cannibalization
- Lot-size discounts
- Fiscal budget cycle
- Allocations
- Panic and perceptions
- Hedging, commodity futures



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Influencing Demand

The state of the economy can have a general influence demand for a broad category of products, such as durable goods.

Promotions are intended to change the timing or magnitude of demand. Competitors can be expected to respond to promotions. For example, when one airline changes fares for a route, other airlines serving that same route are likely to respond with similar pricing. Cannibalization is a term used to describe the situation where a new product introduction results in reduced demand for similar existing products.

Lot size discounts provide incentive for customers to place larger orders, less frequently than they ordinarily would.

Much of demand seasonality can be traced to budget cycles. Near the end of a fiscal year, budget gamesmanship requires managers to spend their entire budget or suffer a budget reduction in the next year.

Items in short supply tend to be hoarded in regions of low demand rather than being redistributed. This makes shortages across the system worse. Local sales forecasts are artificially inflated in the hope of gaining a greater allocation. Allocation processes can mask the real level of demand.


Perceptions of impending shortages can be self fulfilling. For example, fear that the municipal water supply would be disrupted by Y2K problems caused the demand for bottled water to increase just prior to New Years Day 2000. This in turn caused some store inventories to be depleted.

Hedging and futures trading buffer price uncertainty, but sometimes these practices disrupt commodity markets.

Why is Demand Planning Important? Demand Planning Benefits

Why is Demand Planning Important?
Demand Planning Benefits

- **Improve forecast accuracy**
 - **Manage demand distortions**
 - **Plan collaboratively**
- **Improve operational plans**
 - **Inventory reduction**
 - **Higher fill rates**
 - **Higher revenue**



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Demand Planning Benefits

Oracle Demand Planning improves forecast accuracy by providing the capability to effectively manage demand distortions and plan collaboratively.

Oracle Demand Planning provides functionality to improve operational plans, as well as improve a company's ability to manage profitability and customer expectations.

Improving Operational Plans



Planning Versus Reacting

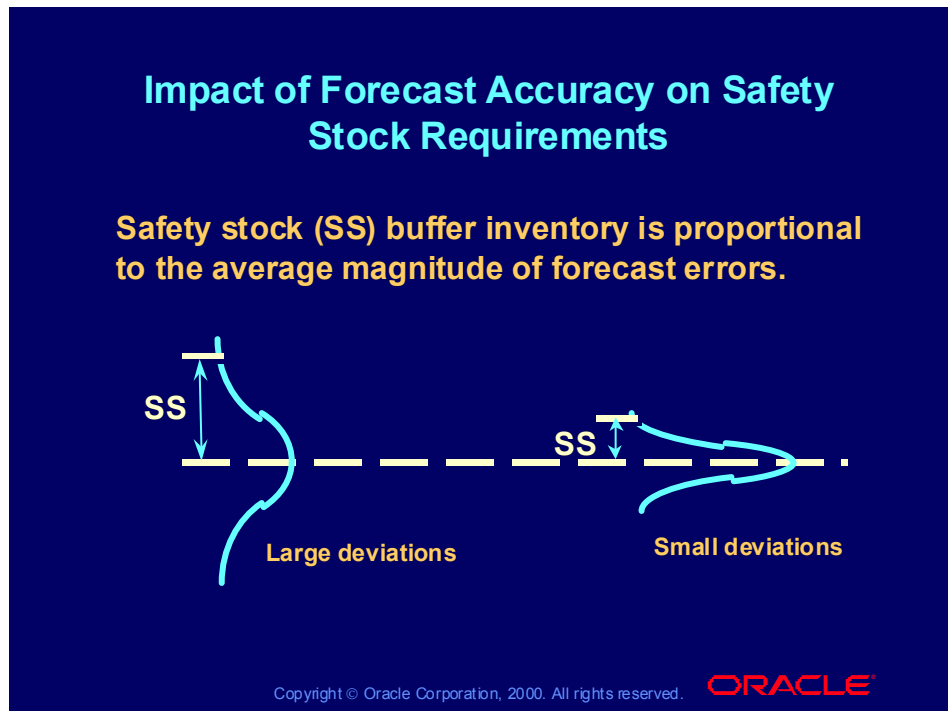
Forecasts always contain some error variance, but the only alternative to forecasting is not forecasting. In other words, the choice is between making operations plans that are based on forecasts that contain some errors, or reacting to the current instant market conditions with a series of short-range operations decisions.

The figure indicates that it is usually undesirable to let the market directly drive production operations. Reaction to dynamic markets requires rapid changes in usage of operations resources, such as labor, materials, capital equipment and distribution facilities. This chaotic approach is costly, difficult to implement, and often loses sight of strategic goals.

Forecasting is essential to the planning process. Better forecasts tend to improve planning processes. Making use of all available information sources tends to result in better forecasts, provided the information is organized into a usable format.

Oracle Demand Planning enables manufacturers to coordinate information from a broad range of sources to systematically create better forecasts. ODP also improves the operations planning process by providing the information necessary to make product-mix decisions in a manner that is consistent with the strategic goals of the company.

Impact of Forecast Accuracy on Safety Stock Requirements



Safety Stock and Uncertainty

The purpose of safety stock is to buffer uncertainty. One cause of uncertainty is forecast error. When forecasts are inaccurate, more safety stock is needed to cover situations when actual demand is greater than expected.

Basing Demand Forecasts on Sales History

Basing Demand Forecasts on Sales History

- **Statistical extrapolation of history provides an objective baseline**
- **Issues:**
 - Sales history usually underestimates the actual level of demand.
 - The effect of unique future events are not reflected in sales history data.
 - Products with short life cycles do not provide enough historical sales data to identify trends and patterns.
- **Solution: Supplement historical sales data with information about future events, promotions and customer plans.**



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Issues Associated With Using Sales History Data

Actual sales are sometimes a poor measure of the true level of demand. Sales can be limited to something less than demand when problems in the supply chain prevent getting the right product to the right place at the right time. Demand forecasts based on historical periods when supply chain problems were causing lost sales tend to underestimate future demand. Safety stock will be consumed.

Marketing promotions and special events can have a profound influence on sales. Sales history alone might not provide enough information for estimating the sales boost from an innovative promotion. When the promotion is underestimated, safety stock will be consumed.

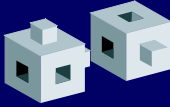
One effect of the trend toward very short product life cycles is that there is little or no sales history data available for most products. For example, seventy percent of sales for one large high-tech manufacturer result from products that have existed for less than two years.

Solution

Sales are dramatically influenced by promotions, competitive reactions, customer plans, and unique future events, the effects of which are not recorded in sales history data. Forecasts that account for knowledge about unique future events will usually be more accurate than statistical forecasts that rely only on sales history data. Oracle Demand Planning provides functionality to gather information from many collaborating sources, analyze data along multiple dimensions, and adjust forecasts accordingly.

Key Features

Key Features



- Internet collaboration
- View and work with data that is relevant to responsibilities
- Integrate demand forecasts into Advanced Supply Chain Planning
- Unlimited forecast scenarios
- Multidimensional analysis
- Multiple statistical methods
- Automatic selection of best-fit model
- Exception reporting and feedback

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ODP Key Features

Oracle Demand Planning supports Internet collaboration, incorporating information from sales, marketing, operations, and customers. Each demand planner can view and work with data that is relevant to their responsibility. ODP also provides the tools and techniques for building a forecast of demand, which in turn will be used to drive the supply chain planning process.

The online analytical process supports ad hoc creation of an unlimited number of scenarios that can be analyzed within the system. It also supports multi-dimensional analysis for ad hoc reporting and graph generation.


Demand planners can select from several statistical forecasting methods or can direct the system to make an automatic selection of the statistical model that performs best, based on historical data.

Other key features include performance measures, alert notification, and predefined exception reports.

100% Internet-Based Solution

100% Internet-Based Solution

- **Web browser access**
- **Low cost to deploy**
- **Global visibility**

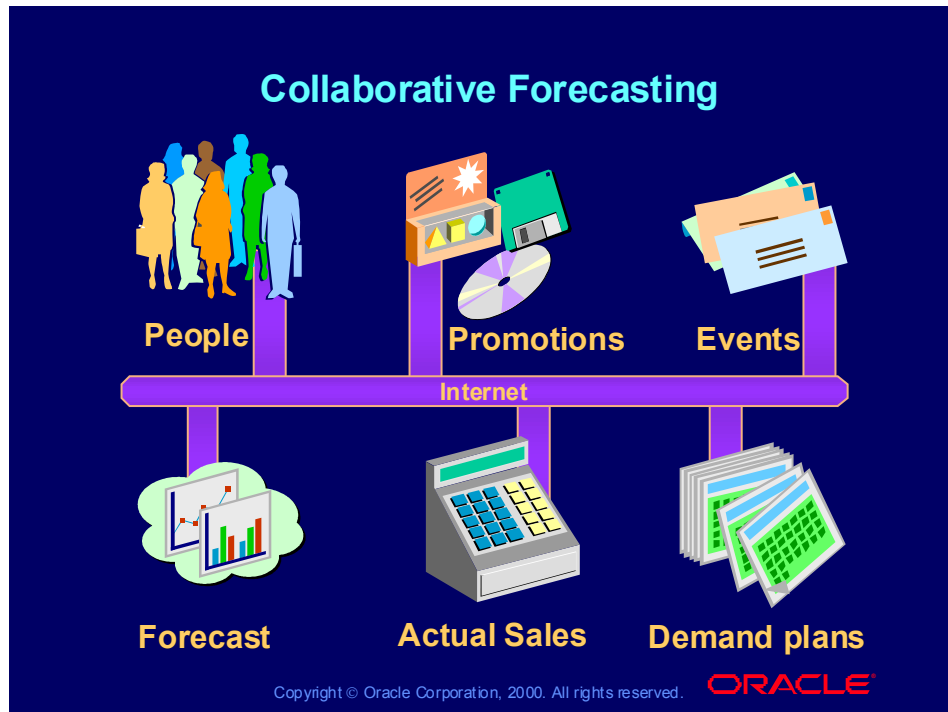


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Internet-Based Solution

Oracle Demand Planning is an easy-to-use Internet-based solution for creating forecasts and developing collaborative demand plans. Only a Web browser is required to access the application, which enables low-cost deployment of powerful demand planning tools to all internal and external participants in the demand planning process.

Collaborative Forecasting



Collaborative Forecasting

Oracle Demand Planning provides a robust Internet-based framework for developing collaborative demand plans and forecasts.

You can collect the data you need from multiple disparate sources and provide secure access to portions of the demand plan. You can also manage multiple scenarios to develop a collaborative consensus demand plan. The integration between Oracle Advanced Supply Chain Planning and Oracle Demand Planning also allows you to manage the balance between production capabilities and market needs.

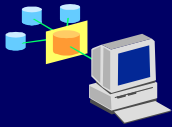
Collaboration Reduces Uncertainty

Instead of forecasting your customers' future demand and maintaining safety stock and extra capacity because you will guess wrong, why not just ask your customers? One reason is that adversarial price negotiations require that supplier-customer relationships be kept at arms length. Sharing information in an adversarial environment results in disadvantages at the negotiation table.

Collaboration is practical in environments where all can gain by sharing information, and where the incentive to maintain trust over the long term is greater than the incentive to use information for temporary unilateral advantage. When collaborative arrangements are carefully established throughout a supply chain, many competitive advantages accrue to the group. Supply chains built upon arms-length adversarial relationships cannot survive in international free markets for very long after collaborative supply chains enter. No longer will competition be company against company. Instead, competition will be supply chain against supply chain.

Information Visibility

- **Deploy information using the World-Wide Web**
- **Information visibility across the supply chain**
- **Internal and external collaboration with secured access to detailed plans**
- **Workflow gets the right information to the right place quickly**



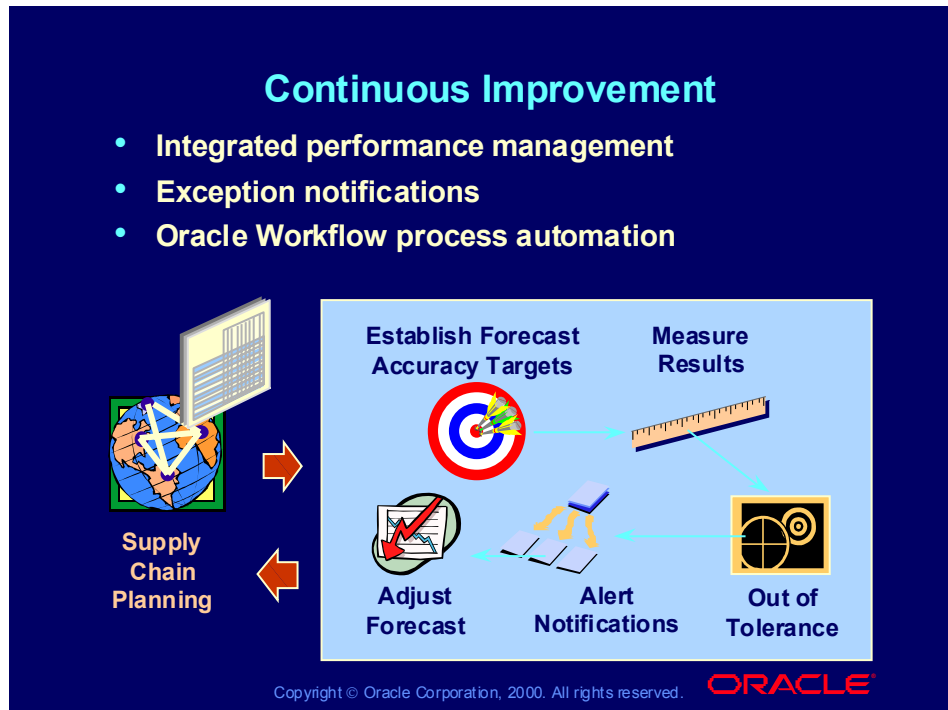
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Sharing Information with Alliance Partners

Virtual enterprises organize alliance partner core competencies into a supply chain to meet customer requirements. The emergence of virtual enterprises requires complete end-to-end visibility across the supply chain from the suppliers' suppliers to the customers' customers. In addition, the need to coordinate production activities across a global supply chain necessitates increased collaboration between every supply chain participant.

Oracle Demand Planning extends the collaborative features of Oracle Applications. It is built on Oracle's Internet computing architecture, which enables all of the applications to be deployed over the Internet or your corporate intranet. ODP is also completely integrated with Oracle's Self-Service Web Applications.

Continuous Improvement



Integrated Performance Management

- Set targets for continuous improvement.
- View, measure and feedback results.
- Compare performance to targets.
- Manage by exception.
- An alert is sent when performance measures miss the targets.
- Process automation using Oracle Workflow manages the demand planning processes.

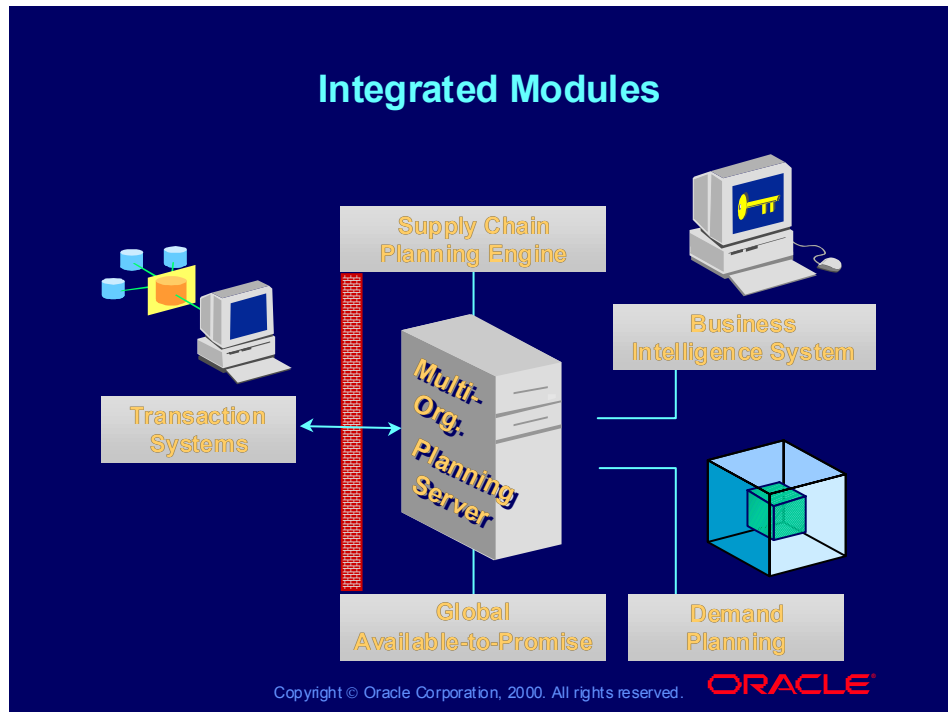
Alert Notifications

Oracle Demand Planning provides the mechanism to create alerts based on forecast targets. When the target is missed, a notification is automatically triggered for corrective action.

Workflow

Oracle Demand Planning provides the control mechanisms to manage the collaborative nature of forecasting. These mechanisms include notifications, data collection, and execution of forecasting, exception reports and performance analysis based on an event or calendar. The customer can configure the schedule on which these tasks are performed, as well as the sequencing of the tasks.

Integrated Modules



Demand Planning Integration


Statistical and final forecasts from Demand Planning are integrated with Advanced Supply Chain Planning, Business Intelligence System, and Global Available-to-Promise (ATP) Server. Those modules in turn publish information from the planning server to transaction systems for suppliers, manufacturing plants, and distribution networks.

Examples of transaction systems include inventory, order entry, purchasing, and manufacturing work-in-process, and other modules associated with enterprise resources planning and customer relationship management systems.

Planning Server Information

Planning Server Information

- Historical sales
- Marketing plans
- Sales plans



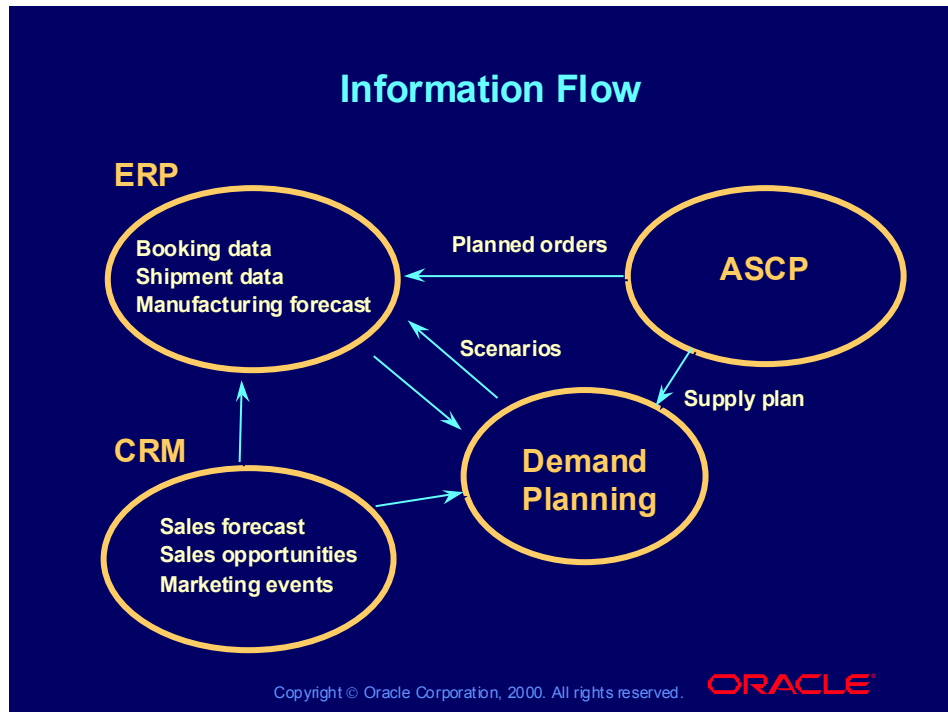
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Information Is Central

Oracle Demand Planning is based on a central repository of information called a planning server. The planning server provides a single source of data integrated in such a way that it can answer a broad range of business questions. Oracle Demand Planning uses much of this information to support the forecasting process. The key areas of information are:

- **Historical sales:** This forms the statistical base for generating demand forecasts. History is particularly useful where trends and seasonal factors repeat from year to year. Sales data can be captured in several ways, most commonly as shipments, orders, or actual sales. Numerous statistical methods have been developed to project historical trends and patterns into the future.
- **Marketing plans:** Marketing influences demand through pricing, advertising, promotions, packaging, education, and new product introductions. Marketing programs use these tools to raise the level of demand or to change the timing of demand. When the impact of previous marketing plans can be estimated, this information, combined with marketing plans for the future, can be used to improve the accuracy of demand forecasts.
- **Sales plans:** Through their direct relationships with customers, salespersons often have a good sense of what orders will be forthcoming. This information can be a valuable indicator of future demand; however, it directly applies only to existing customers. When patterns observed by the sales force differ from patterns included in the marketing plan, it is often useful to find the cause.

Information Flow



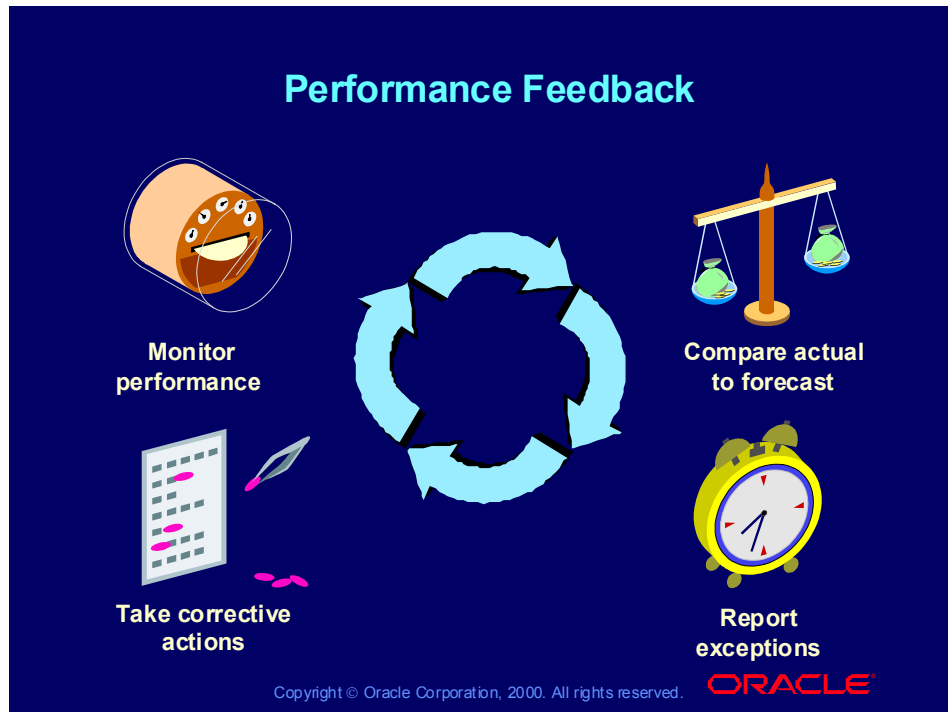
Information Flow

Information can be collected from multiple source instances (10.7, 11.0, or 11i) using out-of-the-box collection programs for discrete manufacturing. There is out-of-the-box 11i integration for OPM, with 10.7 and 11.0 OPM being consulting solutions.

The information is collected, moved to staging tables in the Demand Planning Server, and then moved to the Oracle Express database. Once a forecast has been generated in Express, it is submitted back to the Demand Planning server and made available for operational planning.

The forecast can also be published back to the source instance for release 10.7 and 11.0 customer bases. Scenarios replace the concept of forecast sets used in these earlier releases.

Performance Feedback



Feedback Loop

Monitor performance: Two types of performance monitoring are supported: forecast accuracy, and tracking actual versus plan. Both types of monitoring can be connected to the alert mechanism within Oracle Demand Planning.

Report exceptions: By comparing the state of the business with the needs of the market, exception reports highlight areas of greatest concern. Demand Planning has a strong set of tools available to define the conditions to test. The customer can define a common set of exception reports accessible by all demand planners, and the demand planner can create reports for customized analyses.


Ad-hoc reports and graphs: This feature is used while a forecast is being developed. It gives you an unlimited number of views into data along any of the defined dimensions. You can display the reports and graphs in any unit of measure defined on the planning server. Both reports and graphs enable the demand planner to drill-down on any row or column to more detail. From within a report, the demand planner can adjust forecasts, assuming the data is not locked.

Audit trails: All forecasts, scenarios, and overrides have audit trails. These trails are helpful in understanding how a forecast was created and adjusted.

General Features

General Features

- Activity log
- Annotated forecast changes
- Multiple allocation rules
- Create new forecast
- New product introductions
- Event and promotion management
- Ad hoc and predefined reports



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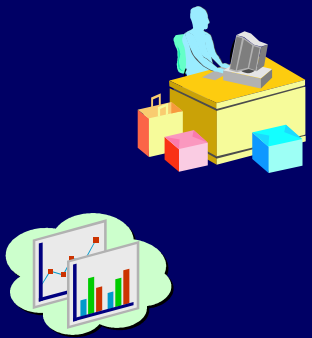
ODP Features: General

- Activity log: Oracle Demand Planning maintains an activity log that captures system changes made to the forecast worksheet.
- Annotate changes: Oracle Demand Planning provides the ability to annotate changes to individual cells in the forecast worksheet so that the demand planner can explain changes or store reminders.
- Multiple allocation rules: The demand planner has the option to spread down the forecast using allocation weights based on the history or on the forecast.
- Create new forecast: A step-by-step interactive guide walks the demand planner through the process of creating a new forecast.
- New product introductions and event and promotion management support: Oracle Demand Planning supports new product introduction activity as well as events and promotions that impact demand plans for product families and item categories. The new product product forecast can be based on another product forecast or the history of an existing product or products. Demand planners can enter coefficients that represent a percentage change to be applied to the statistical forecast for managing events, promotions, phase-ins and phase-outs.
- Ad hoc and predefined reports: A set of eighteen predefined reports is shipped with Oracle Demand Planning. You can create and save ad-hoc reports as well.

Statistical and Analytical Features

Statistical and Analytical Features

- Multiple forecasting techniques
- Selection of best-fit model
- Multidimensional analysis
- Performance tracking



The illustration shows a person sitting at a desk with a computer monitor and keyboard. To the right of the desk are three small cubes in red, yellow, and blue. Below the desk is a cloud containing two overlapping charts: a line graph and a bar chart.

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ODP Features: Statistical and Analytical

Oracle Demand Planning includes a broad range of statistical forecasting techniques, as well as automatic outlier detection and filtering capabilities.

Statistical forecasts provide the baseline information for Demand Planning. They are used as the initial estimate of demand. Oracle Demand Planning selects the best-fit model for each series of forecasts to use based upon historical demand and trends and a knowledge base of exception rules.

After statistical forecasts are generated, demand planners review and adjust the baseline forecasts to account for factors that are not exhibited in the historical data: for example, knowledge about a promotion scheduled three months into the future.



You can use several forecast dimensions, such as product family, geographic region, and time, and define your own dimensions. Then you can use the system to analyze the information along various dimensions. For example, you can compare how different product families sell in a specific region during a season of the year.

The system can be used to benchmark performance. The online analytical processing (OLAP) engine contained in the system supports a broad range of metrics to compare actuals to plan, as well as to study further the trends within actuals.

Statistical Forecasting Methods

Statistical Forecasting Methods

- **Exponential smoothing**
 - Single
 - Double
 - Holt-Winters
- **Regression**
 - Linear
 - 5 types of non linear



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Statistical Forecasting Methods

Oracle Demand Planning includes several time-series forecasting methods. Time-series forecasts identify trends and patterns existing in demand history data and then base demand projections on the assumption that historical trends and patterns will repeat in the future.

Major advantages of using time-series methods include:

- They are well suited in situations where a large number of products need to be forecasted.
- They work well for products having fairly stable historical demand data.
- They are useful to smooth out short-term random fluctuations in demand data.
- They are useful for short-term and mid-term forecasting.


Disadvantages include:

- They can be slow to recognize a shift in the trend and general level of demand.
- They sometimes require a significant amount of demand history upon which to base projections.
- They cannot account for factors that affect demand but have not occurred in the past.
- They are ineffective for long-term forecasts.

Selection of Best-Fit Model

Selection of Best-Fit Model

- Geneva forecast engine
- Rapidly determines which forecasting models are likely to produce the best statistical forecasts
- Best-fit selection from nine models
- Outlier detection and filtering
- Seasonality and erratic demand filtering



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Automatic Best-Fit Model

There are many ways to forecast future demand based on the past. It is sometimes difficult to decide which forecasting technique to use. Oracle Demand Planning uses the Geneva automated time-series forecasting algorithm (ATSF) to select the best technique. The forecast technique resulting in the lowest mean squared error (MSE) becomes the recommended approach, until an alert causes the techniques to be reevaluated.

The forecast techniques used are:

- Linear regression
- Five types of nonlinear regression
- Single exponential smoothing
- Double exponential smoothing
- Holt-Winters exponential smoothing

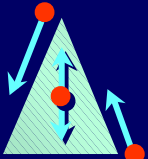
Data filters are used to identify and repair the following demand data situations that would otherwise distort the forecast results:

- Large outliers
- Sparse history
- Incomplete seasonal cycles

Scenarios, Reconciliation, and Consolidation Features

Scenarios, Reconciliation, and Consolidation Features

- Multiple forecasting scenarios
- Top-down, middle-out, and bottom-up allocation strategies
- Forecast adjustments
- Multiple units of measure
- Convert units to currency and vice versa
- Consolidation of individual forecasts



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ODP Features: Scenarios, Reconciliation, and Consolidation

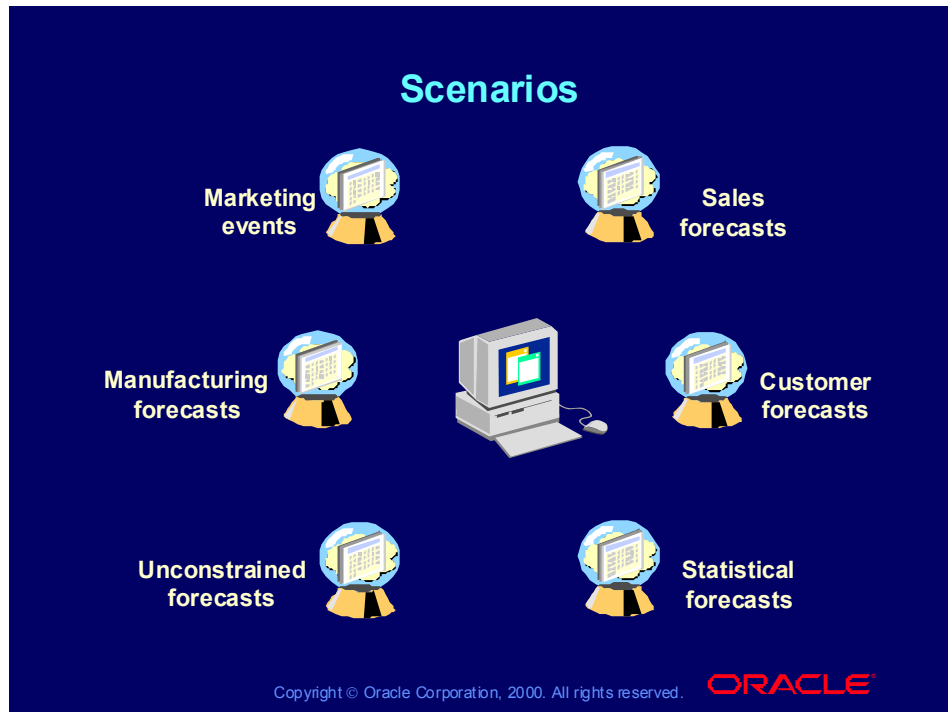
Oracle Demand Planning supports ad-hoc creation of an unlimited number of scenarios, which in turn can be analyzed within the system. The analysis provided across scenarios can be along any dimension and at any level. Scenarios can also be compared in terms of volume or value.

Forecast aggregation can be performed at any level of detail. Bottom-up data is forecast at the lowest level and rolled up to the most aggregate level. Top-down data is forecast at the most aggregate level and then allocated downward to the lowest level of detail. Finally, middle-out data is forecast at an intermediate level and spread down to the lowest level of detail and then rolled up to the most aggregate level. Adjustments made in the hierarchy are first allocated down and then rolled up. Values can be protected so that they are not affected by adjustments originating elsewhere in the hierarchy. These values are protected throughout the lower-level hierarchies. Adjustments can also be entered as percentages.

Oracle Demand Planning supports multiple units of measure. It has the capability to equalize lower-level units of measure at the upper levels. For example, bottles at the item level can be converted to cases at the product family level. Forecasts can be converted from units to currency and vice versa. Forecasts can be entered in units or in monetary values.

Oracle Demand Planning captures demand from all sources, consolidating demand so that it can be summarized by item, product line, region, time, organization, and a variety of other dimensions.

Scenarios



Scenarios

Users can experiment with different approaches to forecasting, known as scenarios. Scenarios can be created, tested, and discarded as needed. The system is delivered with a set of predefined scenarios:

- Sales Forecast
- Sales Opportunities
- Marketing Events
- Manufacturing Forecast
- Statistical Forecast

The demand planner can define new scenarios beyond the standard set.



Scenarios are key to improving the forecasts. By comparing scenarios, questions such as the following can be answered:

- How do our forecasts vary from month to month?
- How accurate is the sales forecast?
- Do managers improve forecast accuracy when they override statistical forecasts?
- What amount of lost sales are the result of supply constraints?

Demand Analysis

Demand Analysis

- Unconstrained demand forecasts
- Constrained supply plans
- Resource cost versus lost sales



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Strategic Questions

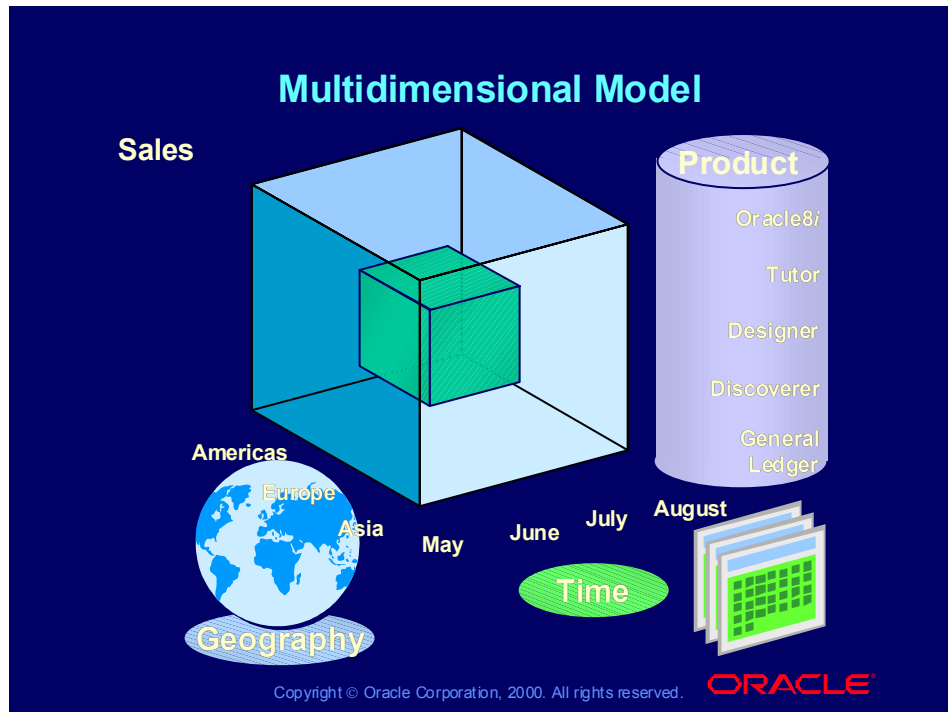
Demand planners generate unconstrained forecasts to estimate market demand as it would occur without the influence of supply constraints and distribution system limitations. Constrained supply plans, by comparison, represent what the producer is capable of delivering. They take into consideration the limitations of capacity, materials, labor, distribution, and other factors.

By having the ability to compare unconstrained demand and constrained supply, producers can look into strategic questions such as:

- Are we producing a product mix that best supports our corporate objectives?
- Would corporate objectives be met if we could supply the unconstrained demand?
- What investment in resources to relieve supply constraints would be justified by the projection of demand?
- Are there regional pockets of unfulfilled demand?
- Is unfulfilled demand the result of production or distribution problems across regions?
- Is the impact of promotions stronger in one region than another?
- Is additional demand pointing to market trends that broadly influence our future?

Finding answers to questions such as these involves analysis. The Oracle Express database provides technology to analyze historical information and to apply that knowledge to demand projections.

Multidimensional Model



Online Analytical Processing (OLAP)

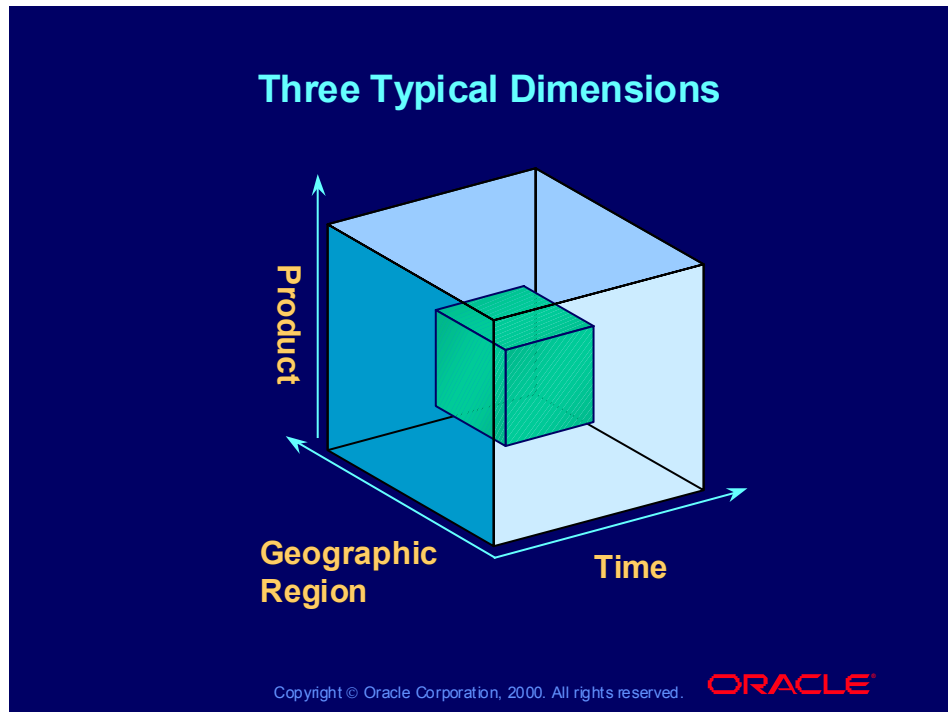
Oracle Demand Planning is based on a multiple-dimensional server and architecture. It enables you to define your own sets of dimensions and your own sets of aggregation. You can define multiple sets of aggregation along all dimensions.

The multidimensional architecture enables analysis along all dimensions without reorganizing the data. It presents the data to you in a way that significant sales trends can be found, whether those trends are in relation to time, product, geographic market, or other dimensions. This enables you to answer questions such as:

- Which products have experienced the most growth?
- What regions are experiencing growth?
- Are some products selling better in some markets than in others?
- Which markets are the most profitable?

Sales management can review and adjust forecasts in monetary amounts, while production management can plan from the same forecasts in units.

Three Typical Dimensions



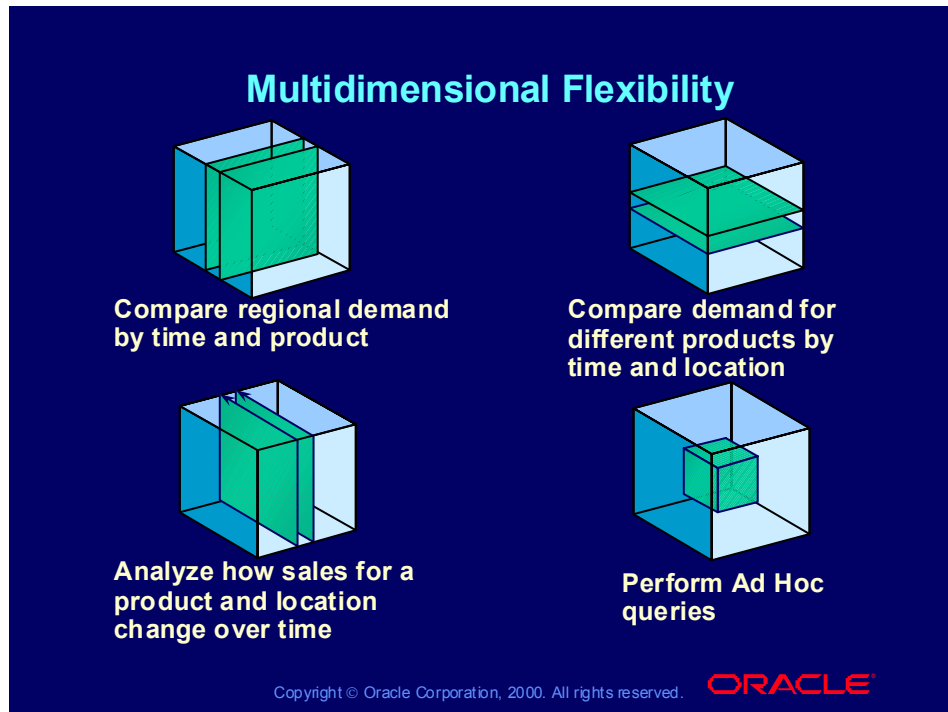
Dimensions

Dimensions define the way data is segmented for the generation, modification, and viewing of demand plans. Oracle Demand Planning contains six predefined demand planning dimensions: Sales Channel, Geography, Ship from Location, Product, Sales Representative, and Time. You can set up two additional user-defined dimensions for a total of eight dimensions.

In the ODP system, each demand plan is given a name and description. Each named demand plan can be run in two, three, or four dimensions. Time and Product are mandatory dimensions in all demand plans. That leaves up to two more dimensions that you can choose for each named demand plan. You list the two, three, or four dimensions that you choose to use in a named demand plan in the Demand Plans window in a column labeled User Dimensions. These are not necessarily the same as user-defined dimensions mentioned in the preceding paragraph. User Dimensions specify which of the eight dimensions the user wants to view in this named demand plan. Again, Time and Product must be included on the User Dimensions list.

One approach would be to select Time, Product, and up to two more choices from the six remaining demand planning dimensions. Another approach would be to collapse several demand planning dimensions into a single User Dimension. For example, Sales Channel, Geography, and Sales Representative could be collapsed into the User Dimension Geography. To continue this example, User Dimensions would be Time, Product, and Geography (which represents the Sales Channel, Geography, and Sales Representative dimensions). Using this approach, the demand planner can toggle among the collapsed demand planning dimensions Sales Channel, Geography, and Sales Representative, but will not be able to view them simultaneously.

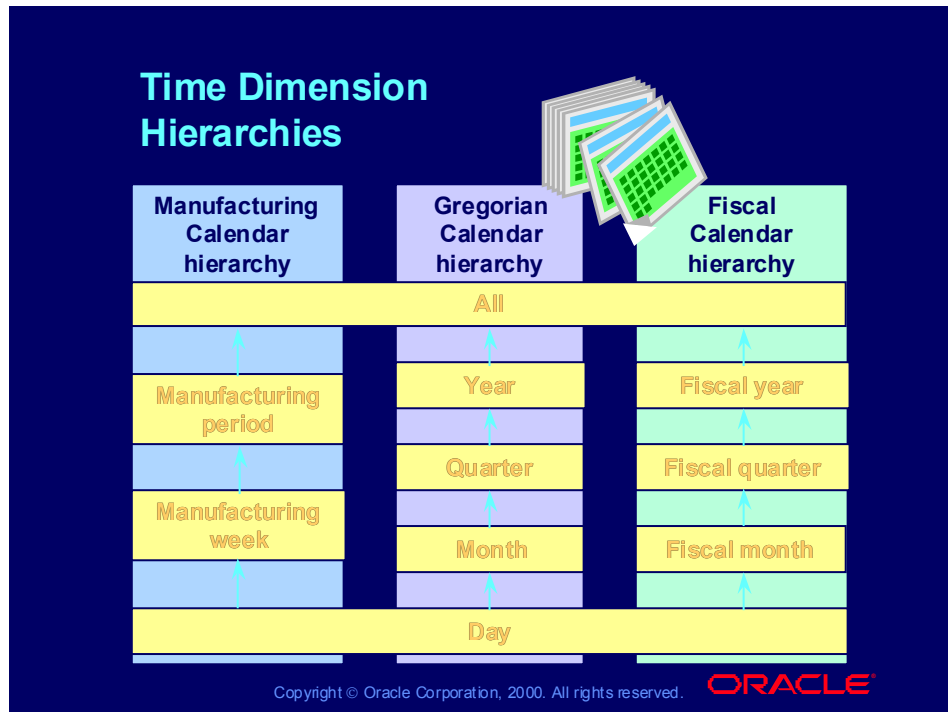
Multidimensional Flexibility



Multidimensional Analysis

Oracle Demand Planning gives you flexibility to summarize, rotate, and drill down into any dimension for analysis. This enables the analyst to spend more time making business decisions and less time writing queries.

Time Dimension Hierarchies

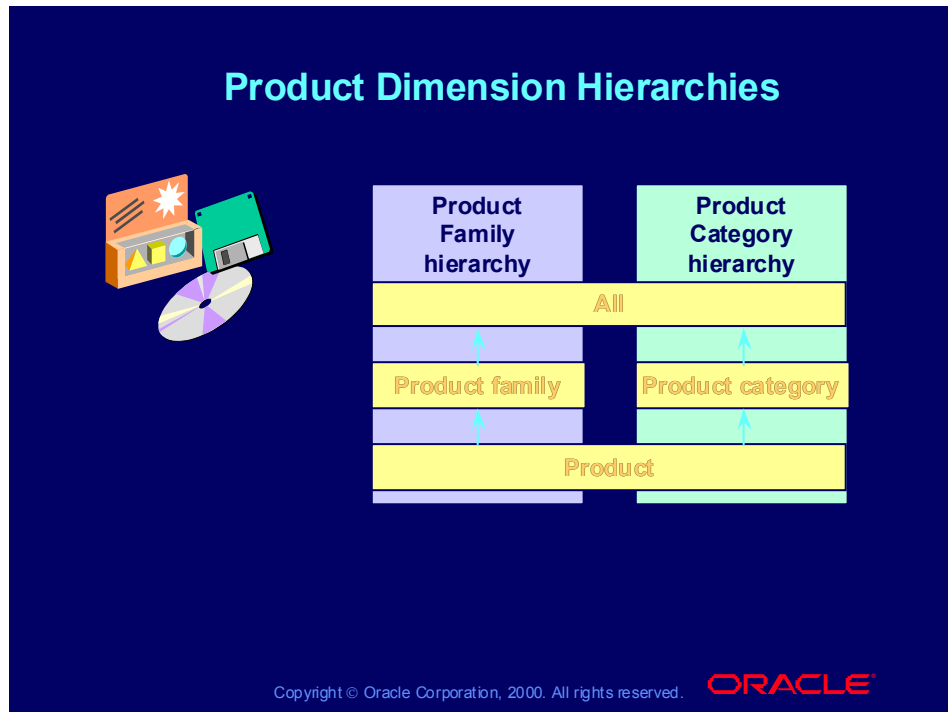


Hierarchies

Dimensions contain hierarchies that are used for aggregating data. Multiple hierarchies can exist for each dimension. You can use one hierarchy for allocation and others for reporting.

In this example, the Time dimension has three hierarchies: Manufacturing Calendar, Gregorian Calendar, and Fiscal Calendar.

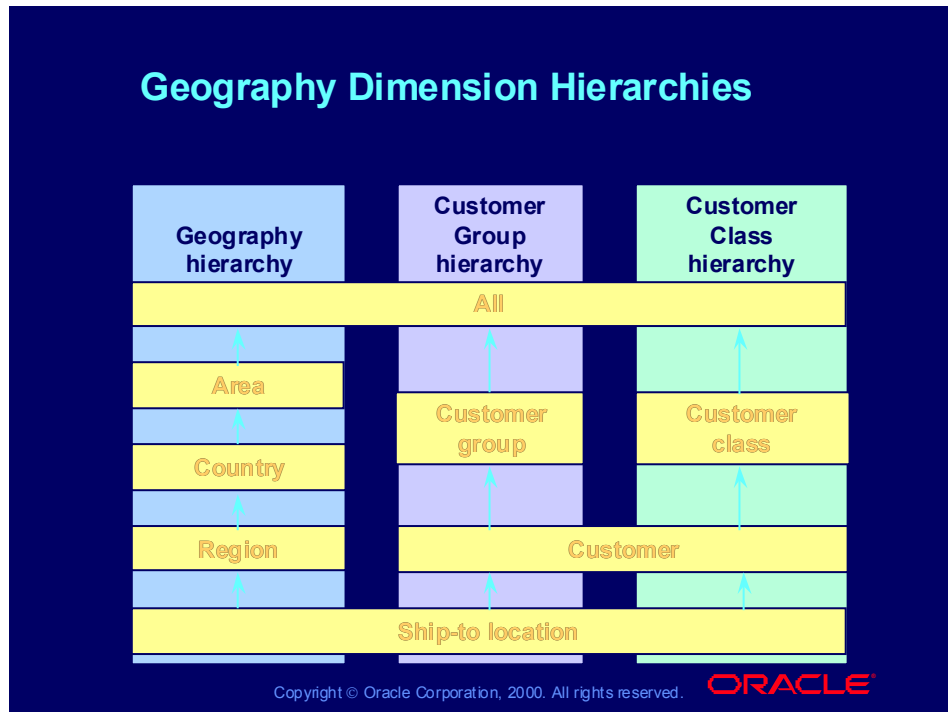
Product Dimension Hierarchies



Product Hierarchies

This example shows the product dimension with two hierarchies: Product Category and Product Family.

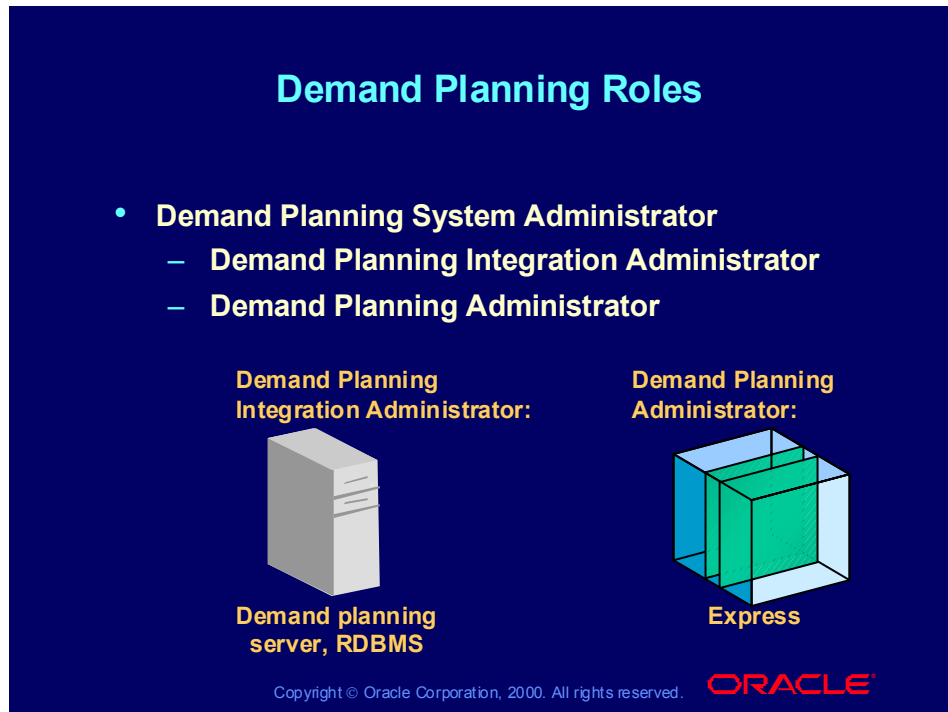
Geography Dimension Hierarchies



Geography Hierarchies

The Geography Dimension has three hierarchies: Geography, Customer Group, and Customer Class.

Demand Planning Roles



Demand Planning Roles

For the Demand Planning System Administrator sign-on responsibility two selections are possible: Integration and Planning. This was done to accommodate situations where one person manages both RDBMS and Express. Depending on how you structure your workforce, you could have both a Demand Planning Integration Administrator and a Demand Planning Administrator.

- System administrator: Responsible for RDBMS and Express administration.
- Demand planning integration administrator: Applying a deep understanding of the business process, determines the overall default settings for the demand planning system.
- Demand planning administrator: Responsible for assigning data (and resolving conflicts) to individual demand planners, specifying the baseline forecast methods and forecast allocation rules, selecting and setting defaults for the predefined reports, and invoking forecast consolidation after all data from personal databases has been sent to the shared database. The administrator also:
 - Creates and assigns data slices
 - Generates baseline forecasts
 - Defines default settings for pre-defined reports

Demand Planning Roles

Demand Planning Roles

- **Demand Planner**
 - Analyzing and forecasting demand
 - Submitting scenarios
- **Demand Planning Manager**
 - Review and adjust forecasts
 - Submit final scenarios

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Demand Planning Roles

- **Demand planner:** Responsible for analyzing and forecasting demand in an assigned data segment, and for submitting a demand forecast corresponding to each scenario for his or her segment of the data. The demand planner is assigned a segment of the shared data by the demand planning administrator. Allocation rules, default settings for predefined reports, and baseline forecasts for each scenario are already completed before the demand planner looks at the data. The demand planner can generate forecast variants and new custom measures and aggregates, and can rotate, drill down, or aggregate the data.
- **Demand planning manager:** Responsible for the final forecast numbers for each scenario submitted to the planning server. Once the individual demand planners submit forecasts for each scenario from their personal databases to the shared database, the demand planning administrator invokes the consolidation process to obtain a consolidated forecast. The demand planning manager reviews the consolidated forecast for each scenario and decides whether to accept or reject it. The demand planning manager could modify the forecasts or ask the demand planning administrator to reassign them to the demand planners.

Demand Planning Setup Steps



Demand Planning Setup Steps

System Administrator:


1. Set up instances.
2. Create database links.

Demand Planning Integration Administrator:

3. Create dimension definitions.
4. Create demand plan definitions.
5. Define scenarios.
6. Run collection programs to load interface tables.



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Demand Planning Setup Steps

System Administrator: The system administrator sets up the database instances and links used for data collection.

Demand Planning Integration Administrator: The demand planning process begins with some important initial setup that is not routinely repeated. This includes creating dimension definitions that state the hierarchy level structures within dimensions. A hierarchy is an ordered set of levels used for aggregation and navigation. Demand plan definitions state the hierarchies to be forecasted within dimensions. Scenarios define the type of history, the forecast horizon, and the forecast period type to be used for the demand plan.

Demand Planning Process Steps

Demand Planning Process Steps

Demand Planning Administrator:

7. Load data into Oracle Express database.
8. Generate baseline forecasts.
9. Assign data to users, generate reports, and notify users.



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Demand Planning Process Steps (continued)

Demand Planning Administrator: Routine steps for the demand planning administrator include launching a concurrent program to load interface tables with level values and fact values. Data associated with the forecasting scenario and stored in the planning server is first loaded into interface tables, where the integrity of the data is checked before the data is loaded into the Oracle Express database. The Express link to the planning server performs this step.

Generating a baseline forecast involves running the forecasting engine. Automated algorithms are applied to historical data resulting in demand projections.

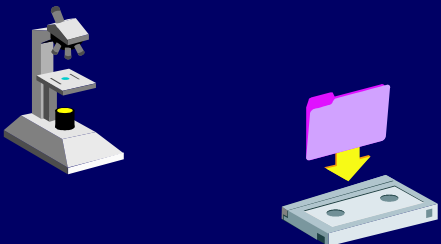
Demand Planning learns the definition of users and roles from the application server. This information can then be used to assign forecasting responsibilities to users. The responsibilities can be assigned based on information from multiple dimensions. The multidimensional architecture enables users to assign responsibility and accountability at appropriate levels. For example, marketing can assign forecasting and forecast accuracy responsibility to product managers by product line, while sales can assign accountability by region or territory. Typically, the assignments are made by a combination of product focus and geographic area. For instance, one person may be responsible for forecasting demand for Brand A in Europe while another is responsible for forecasting Brand B in Asia. When a user is assigned to a particular level in the hierarchy, the user has access to all levels below that particular level in the hierarchy. To provide more granularity, you can specify a value at that level for which the user is responsible.

Demand Planning Process Steps

Demand Planning Process Steps

Demand Planners:

- 10. Analyze and adjust forecasts.**
- 11. Submit saved forecast scenarios to the shared server.**



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Demand Planning Process Steps (continued)

Demand Planner: The statistical forecast is based on historical demand patterns. The forecast analysis step can result in several adjustments based on marketing plans, sales and customer plans, manufacturing forecasts, and managerial review.

All people responsible for developing a part of the forecast can save their work across forecasting work sessions in an area available only to them. When they decide which forecast best reflects their market, they submit it to the system.

During this step, the demand planner can:

- View statistical and baseline forecasts for a particular product
- Specify statistical forecasting methods for generating alternative personal forecasts
- Manually adjust the forecast to create alternative personal forecasts
- Choose which personal forecast to submit as the final adjusted forecast
- Enter event, promotion, and cannibalization coefficients that represent a percent change to be applied to the statistical forecast. Values can be negative or positive.

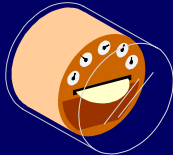

Demand Planning Process Steps

Demand Planning Process Steps

Demand Planning Administrator:
12. Consolidate forecasts.

Demand Planning Manager:
13. Perform managerial review of forecasts.

Demand Planning Administrator:
14. Submit final forecasts to the planning server.



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Demand Planning Process Steps (continued)

Demand Planning Administrator: You can use workflow notification to direct and coordinate the effort of collecting forecasts from all contributors. After the consolidation engine combines and organizes the information, the forecasts are available for managerial review.

Demand Manager: During the review process, the planning manager can make further adjustments to the integrated forecast before releasing it to drive the production planning and scheduling programs. After the manager reviews and accepts the final forecasts, the demand planning administrator is notified that the forecasts are ready to be submitted to the planning server.

Demand Planning Administrator: Final forecasts are submitted to the planning server.

An often neglected, but essential step to improved forecasting is to track the forecast errors. Forecasts always contain some error variance, but some processes result in more bias or greater errors than do others. In this step, you review the forecast accuracy report to ensure that your forecasting process remains in control. Alerts can be set to flag out-of-control conditions.

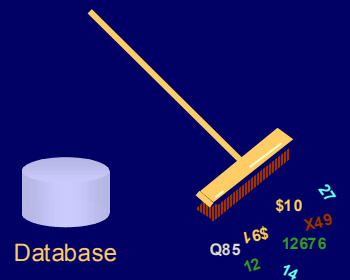
Transaction System Note: The current ODP process calls for forecast consumption to occur on the transaction (source) side. Named forecast scenarios published to the transaction system are linked to forecast sets. Forecast consumption occurs once within a forecast set. Forecasts are used in master demand schedules. Then master demand schedules are collected and loaded into the Advanced Planning and Scheduling system to create a supply plan matching the demand plan.

Demand Planning Process Steps

Demand Planning Process Steps

Demand Planning Administrator:

15. Clean up the database and prepare for the next round of planning.



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Demand Planning Process Steps (continued)

Demand Planning Administrator: The final step is to prepare for the next cycle. This step can best be thought of as preparing the Demand Planning database for the next round of planning. You can decide whether any of the analyses defined in the previous planning cycles should be retained. At this time, you can review the database and determine whether the data is still needed.

Summary

Summary

In this lesson, you should have learned how to:

- **Explain features and benefits of Oracle Demand Planning (ODP)**
- **Describe demand planning roles and processes**

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Summary

Oracle Demand Planning assists in the process of creating forecasts. It uses an Internet-based framework to capture demand from all sources, resulting in more accurate forecasts, reduced safety stock requirements, and better planning.

In addition to having all of the features required to create accurate forecasts, Oracle Demand Planning has the following key differentiators:

- Pure Internet-based solution
- Full backward compatibility
- Single-source data integration
- Powerful multidimensional analysis capability
- Proven Geneva ATSF engine
- Support for multiple units of measure
- Multiple scenario comparison

Review Question

Review Question

Regarding statistical demand forecasts based on sales history data —

- 1. A strength is their ability to account for the effects of future events, promotions and customer plans.**
- 2. They are useful for providing an objective baseline.**
- 3. They become more useful when products have shorter life cycles.**
- 4. They tend to overestimate the actual level of demand.**

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Review Question

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Review Question

Review Question

A large customer uses the internet to communicate a forecast of their demand for your products to your demand planning system. This collaborative customer is acting in the role of:

- 1. Demand plan manager**
- 2. Demand planner**
- 3. Demand planning administrator**
- 4. Demand planning integration administrator**
- 5. System administrator**

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Review Question Solution

A large customer uses the internet to communicate a forecast of their demand for your products to your demand planning system. This collaborative customer is acting in the role of:

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- 3. Demand planning administrator**
- 4. Demand planning integration administrator**
- 5. System administrator**

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Review Question

Review Question

The demand plan manager is responsible for:

- 1. Setting up instances**
- 2. Defining scenarios**
- 3. Generating baseline forecasts**
- 4. Assigning data slice to demand planners**
- 5. Reviewing and approving final forecasts**

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Review Question Solution

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1. **Setting up instances**
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