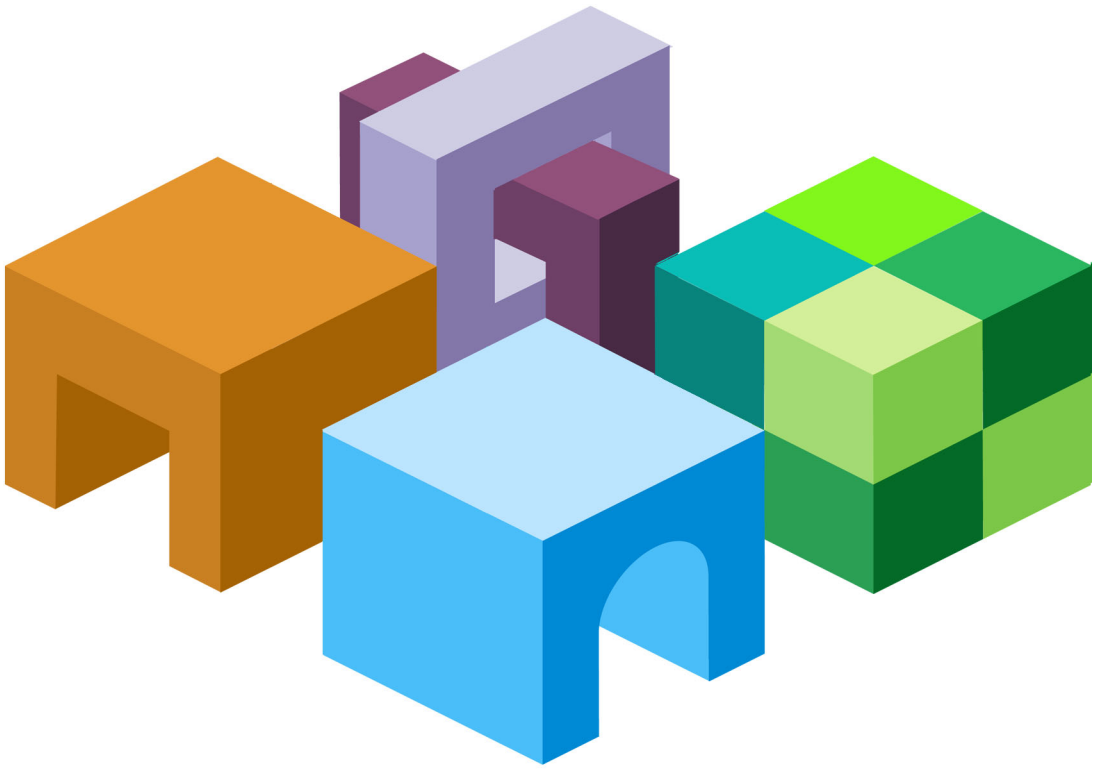

ORACLE® ESSBASE ADMINISTRATION SERVICES

RELEASE 11.1.1

DEVELOPER'S GUIDE

ORACLE
ENTERPRISE PERFORMANCE MANAGEMENT SYSTEM

Administration Services Developer's Guide, 11.1.1

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Contents

1 Introduction

In This Chapter

This chapter provides an overview of Oracle Essbase Administration Services.

About Administration Services

Administration Services is the cross-platform framework for managing and maintaining Oracle Essbase.Administration Services provides a single point of access for viewing, managing, and maintaining Essbase Servers, Essbase Administration Servers, and Oracle Hyperion Provider Services.

Administration Services works with Essbase Servers in a three-tiered system that consists of a client user interface, a middle-tier server, and one or more database servers (Essbase Servers). The middle tier coordinates interactions and resources between the user interface and Essbase Servers. The three tiers may or may not be on the same computer or platform. For more information about deployment scenarios, see *Oracle Hyperion Enterprise Performance Management System Installation and Configuration Guide*.

The three tiers include the following:

- Client tier: Administration Services Console

  This component is a Java client console that enables administrators to manage the Essbase environment from a robust graphical user interface.

- Middle tier: Essbase Administration Server

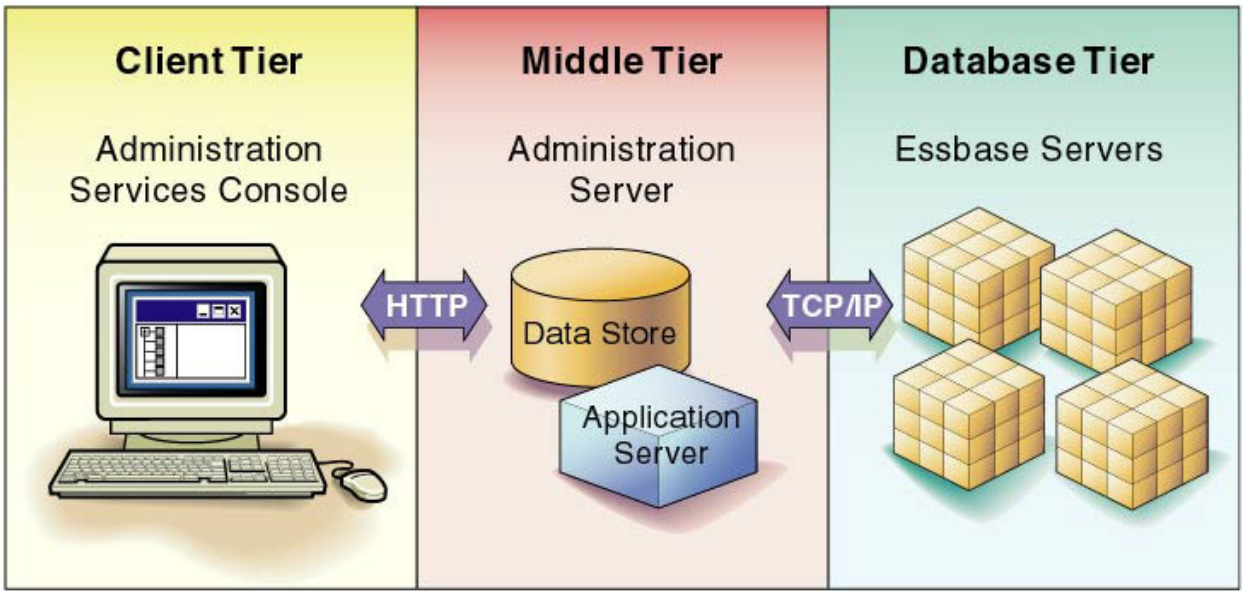
  This component is a Java middle-tier server that communicates with both Administration Services Console and Essbase Servers. Essbase Administration Server maintains communication and session information for each connection to Essbase Servers. Essbase Administration Server also stores documentation files so that console users can access documentation without having to install it locally.

- Database tier: Essbase Server

  One or more Essbase Server store and process multidimensional database information. Essbase Servers are installed separately from Administration Services.

Essbase Administration Server serves as the middle tier between Administration Services Console and Essbase Servers, as shown in Figure 1.

Figure 1 Administration Services Architecture



About Java Plug-in Components

Administration Services Java plug-ins are installable components. They provide the following benefits to users:

- Enable theAdministration Services development team to easily provide additional functionality to end users
- Allow other Oracle internal development groups to easily integrate their products withAdministration Services
- Enable partners and customers to easily integrate their processes intoAdministration Services
- Allow customers to accomplish more because they are not launching several applications at once

The following list describes how you can useAdministration Services plug-ins:

- Customize the Administration Services Console Enterprise Tree
- Customize the Administration Services Console File > Open dialog box
- Customize the Administration Services Console File > New dialog box
- Customize the Administration Services Console File > Save As dialog box

- Change the Administration Services Console menus

For each of these tasks, there are a set of classes, interfaces, and methods that must be implemented by a plug-in author. There are also a set of guidelines to follow when implementing plug-ins.

For information about performing the preceding tasks, see "Writing Client Plug-ins" on page 9.

Requirements for UsingAdministration Services Java Plug-ins

The following list describes the requirements necessary to use Administration Services Java plug-in components:

- Java SDK Version 1.4.1_b06 or later
- Essbase Release 7.1 or later
- Administration Services Release 7.1 or later

Prerequisite Knowledge

Developers using this guide must have the following prerequisite knowledge:

- XML (Extensible Markup Language)
- HTTP (Hypertext Transfer Protocol)
- Java 2
  - Introspection Introspection is a Java technique thatAdministration Services uses to interact and communicate with plug-in components.
  - Exception handling
  - Packaging of applications (`.jar` files)
- Swing

  Swing is a graphical user interface (GUI) component kit, part of the Java Foundation Classes (JFC) integrated into Java 2 platform, Standard Edition (J2SE). Swing simplifies deployment of applications by providing a complete set of user-interface elements written entirely in the Java programming language. Swing components permit a customizable look and feel without relying on any specific windowing system.

  Because Swing is incorporated in the Java 2 platform, there is no need to download or install it.

Framework Concepts

Packaged APIs forAdministration Services

Administration Services consists of several packages. For detailed information about these packages, see the *Administration ServicesJava API Reference* for the packages and classes described in this guide.

Administration Services Java Packages

com.essbase.eas.ui.* (all packages)

com.essbase.eas.framework.* (all packages)

Example Classes

ConsoleTreeHandler

ConsoleMenuHandler

MiscellaneousHandler

NewDialogHandler

OpenDialogHandler

OptionsDialogHandle

About the Sample Code in this Guide

The code snippets and examples contained in this guide are intended to demonstrate how plug-ins interact with theAdministration Services framework. They are intended to show how to get an aspect of the interaction to work and, in some cases, omit details that are not relevant to the topic being discussed. In addition, while the techniques shown will work, the Java techniques shown may in some cases not be the best implementation method when scaling up to a production quality product.

For example, in the section on context menu items, "Adding Context Menu Items To Tree Nodes" on page 15, the example creates new menu items and action listeners each time the getContextMenuItems() method is called; this might not be the best mechanism for handling this task. Please consult the appropriate Java resources (books, Web pages, documentation) for other techniques; in particular, when dealing with Swing objects, the Swing event model, and associating Swing event listeners to objects.

2 Writing Client Plug-ins

In This Chapter

This chapter explains how to write a plug-in for Administration Services Console. Plug-ins are the mechanism for extending the functionality of Administration Services Console.

Preliminaries

We make the following user presumptions:

- You have some Java experience
- You have access to the *Administration Services Java API Reference*
- Since different developers use different build tools and environments, we do not discuss how to do anything for specific development environments. Rather, we describe the desired results, leaving it to the developer to know how to achieve these results with their specific development tools.

Note:

For the purposes of this documentation, the terms “client framework”, “Administration Services Console”, “console”, “Administration Services client”, and simply, “the client” can generally be taken to refer to the client application.

Access Point for Plug-ins

The implementation of theAdministration Services client is contained in the `eas_client.jar` and `framework_client.jar` files that are installed withAdministration Services. Additional classes are found in the `eas_common.jar` and `framework_common.jar` files. The Essbase plug-in to Administration Services Console is contained in the `essbase_common.jar` and `essbase_client.jar` files.

Class Packages

Administration Services Console consists of several packages. The public classes in these packages are available to the implementor of plug-ins. In particular, the user interface, print, and mail-related classes. For detailed information about the packages and classes described in Table 1, see the *Administration Services Java API Reference*.

Table 1 Administration Services Console Class Packages

Package or Class Name	Description
com.essbase.eas.client.intf	The classes and interfaces that provide an interface to the console
com.essbase.eas.client. manager	The classes that provide “management” services for parts of the console; such as, LoginManager, CommandManager, ConsoleManager, and so on
com.essbase.eas.client. plugins	The classes that the client framework uses to install plug-ins, track plug-ins, and so on
com.essbase.eas.framework.client.defs.command	The client-specific classes related to sending commands to the mid-tier. As of Release 7.1, this consists only of the UICommandManager class.
com.essbase.eas.framework.client.defs.login	This is the default login dialog box provided by the console. It displays if no plug-in has registered a different login dialog or if any command is sent to the Administration Services mid-tier and a mid-tier server name has not been provided.
com.essbase.eas.framework.client.ui.filedlgs	Implements dialog boxes associated with a file menu. For example, New, Open, Save As
com.essbase.eas.ui	Another package with several user interface components used by the console and by the Essbase plug-in
com.essbase.eas.ui.ctable	An implementation of a standard extension to the JTable control
com.essbase.eas.ui.ctree	An implementation of an extension to the JTree control. This is the control that is used in the Enterprise Tree and in the custom views of the console.
com.essbase.eas.ui.editor	An implementation of a standard text editor with syntax highlighting. This control is used as the base class for the calculation script editor, MaxL editor, and report script editor in the Essbase plug-in.

Package or Class Name	Description
com.essbase.eas.ui.email	An implementation of some e-mail related classes. The framework provides a service for sending e-mail; this package contains the implementation of the service.
com.essbase.eas.ui.font	The classes that provide the font-related utility
com.essbase.eas.ui.print	The classes that provide the print-related utility
com.essbase.eas.ui.ptable	An extension to the JTable control for editing properties. This table provides extensive editing, sorting capabilities, and is used by many windows and dialogs in the Essbase plug-in.
com.essbase.eas.ui.ptree	An extension to the JTree control for editing tree-oriented properties. This tree provides extensive editing capabilities and is used by many windows and dialogs in the Essbase plug-in.
com.essbase.eas.ui.tree	The generic utility routines for working with JTree-based controls
com.essbase.eas.framework.defs	This package and the packages under it provide services for transferring commands from the mid-tier to the client, packaging/unpackaging data to be transferred, a logging mechanism, and so on
com.essbase.eas.i18n	The internationalization utility classes
com.essbase.eas.utils	Various utility classes spanning a range of uses: file utilities, compression, encryption, array utilities, and so on
com.essbase.eas.utils.print	Utility classes dealing with printing

How the Client Locates Plug-ins

The client tracks plug-ins by maintaining a list of jar files that the user has selected using the Configure Plugin Components dialog box. To display this dialog box, from Administration Services Console, select **Tools** > **Configure components**.

When a jar file is selected, the dialog scans through each package in the jar file looking for a class called MiscellaneousHandler.class. When a class with this name is found, the jar file name and the package name containing that class file are retained by the plug-in manager. Therefore, each jar file must contain exactly one package with a MiscellaneousHandler class in it.

When Administration Services Console starts, the plug-in manager scans each jar file in its stored list, looking for the MiscellaneousHandler.class file in the specified package. If this class is found, the plug-in manager adds this plug-in to its list of plug-ins. Other parts of the application, or any other plug-in can then call the plug-in manager to get a list of all plug-ins.

Basically, each plug-in consists of the following:

A jar file containing a package with a

MiscellaneousHandler class

For the rest of this document, we will use the term “plug-in root” to refer to the package containing the MiscellaneousHandler class.

For example, the rest of this document uses a plug-in with a class named com.MyPlugin.MiscellaneousHandler; the plug-in root refers to the package com.MyPlugin.

Creating the Miscellaneous Handler Class

In order forAdministration Services to recognize your client plugin, you must create a MiscellaneousHandler.java class and include it in the plugin jar file. See the following example, which implements a single API getDescription(). The framework_client.jar file is required to compile this example.

```
package com.mycompany.client.plugins;

import com.essbase.eas.client.plugins.Description;

public class MiscellaneousHandler {
    public MiscellaneousHandler() {
    }
    /**
     * Return a description object for this plugin
     */
    public static Object getDescription() {
        Description d = new Description();
        d.setText("Give a short description");
        d.setVersion("1.0.0");
        d.setVendor("My Company Inc.");
        d.setCopyright("Copyright 2006, My Company Inc.");
        return d;
    }
}
```

Adding Functionality

There are many ways to add functionality to Administration Services Console. The following sections describe how this is currently implemented:

Semantic Rules

Many of the following sections have a description of semantic rules. In most cases, Administration Services Console does not enforce these rules. We expect that developers writing plug-ins forAdministration Services will be "well-behaved citizens"; philosophically, this means that a lot of the console is open, accessible, and plug-ins can have an adverse effect on the application by taking actions that break these semantic rules.

Adding a Branch to the Enterprise Tree

When Administration Services Console starts, a panel is created called the "Enterprise View". This panel contains an instance of the CTree class. The text for the root node is called "Enterprise View". Each plug-in gets the opportunity to add children to the root node. This permits each plug-in to have its own branch in the Enterprise Tree view.

In the plug-in root, add a class called ConsoleTreeHandler. In our example, this would be com.MyPlugin.ConsoleTreeHandler. Add a method called "populateTree()" to this class. The source code should look something like the following example:

```
public class Console TreeHandler {
  //a no-argument constructor is required by the framework.
  public ConsoleTreeHandler() {
  }

  public void populateTree(CTreeModel model) {
    Object root=model.getRoot();

    //strictly speaking, this next check should not be
    //necessary; however, we do this to make sure some other
    //plug-in hasn't replaced the root node with something
    //unexpected.
    if ((root!=null) && (root instanceof CTreeNode))
      //create any CTreeNode-derived objects, adding them
      //as children of the root node.
    }
  }
}
```

There are some unenforced semantic rules associated with CTree objects:

- The only action a plug-in should perform on the CTreeModel is to get the root. The plug-in should never replace the root node, traverse the tree model, or make changes to any other descendants of the root node.
- Every object added as child of the root node must be derived from a CTreeNode. Theoretically, any object can be added as a child of the root; however, other parts of the framework will not respond to those objects in any meaningful way.

Note:

A plug-in can be called more than once if the console disconnects from the current server. The code needs to check that the node has already been added and only append nodes that

have not been added previously. The source code should look something like the following Essbase ConsoleTreeHandler code:

```
/**
  * populates the model with information required.
  */
  public void populateTree(CTreeModel model) {
    Object root=model.getRoot();
    CTreeNode rootNode=null;
    boolean firstTime=true;
    if (root instanceof CTreeNode) {
      rootNode=(CTreeNode) root;
      if (rootNode.getChildCount()!=0) {
        CTreeNode node=(CTreeNode) rootNode.getFirstChild();
        while (node !=null) {
          if (node instanceof ServersContainerNode) {
            firstTime=false;
            UIFactory.refreshServerList();
            break;
         }
          node=(CTreeNode rootNode.getChildAfter(node);
        }
      }
    }
    if (firstTime) {
      CTreeNode essnode=new ServersContainerNode(null);
      rootNode.add(essnode);
      final CTreeNode containerNode=essnode;

      ConsoleManager.getConsoleInstance().addFrameListener(new WindowAdapter() {
        public void windowClosed(WindowEvent e) {
          //signal that we are simply disconnecting instead of
          //closing
          if (e.getNewState() == WindowEvent.WINDOW_OPENED &&
            e.getOldState() == WindowEvent.WINDOW_OPENED) {
            Server[] servers = UIFactory.getServers();
            for (int ii=0; ii<servers.length; ii++) {
              UIFactory.removeServerInstance(servers[ii]);
            }
          }
           UIFactory.disconnectAll();
        }
      })
    }
  }
```

Adding Children to Other Tree Nodes

When a CTreeNode object is expanded for the first time, each plug-in gets the opportunity to add child nodes to the CTreeNode being expanded.

In the plug-in root, add a class called ConsoleTreeHandler. In our example, this would be com.MyPlugin.ConsoleTreeHandler. Add a method called “getTreeNodeChildren()” to this class. The source code should look something like the following example:

```
public static CTreeNode[] getTreeNodeChildren(CTreeNode node) {
  // strictly speaking, this check for null should never be
  // necessary
  if (node == null)
    return new CTreeNode[0];
  if (node instanceof SomeSpecificTreeNode) {
    CTreeNode[] theChildren = new CTreeNode[5];
    theChildren[0] = new ChildNode();
    theChildren[1] = new AnotherChildNode();
    // and so on...
    return theChildren;
  }
  else if (node instanceof SomeOtherTreeNode) {
    // different set of children here.
  }
  // and if we're not interested in any other types.
  return new CTreeNode[0].
}
```

Item of interest for this operation:

- This method could be declared public Object[] getTreeNodeChildren(CTreeNode node) and it would still get called. The CTreeNode method that handles this checks the return value for null and also checks each item returned in the array to ensure that it is an instance of a CTreeNode object. Declaring the method as in the example enforces to the implementer of the plug-in that the items returned must be items derived from the CTreeNode class.
- The only arrangement that currently is done is that child nodes that cannot have children are placed before the child nodes that can have children. Nodes from plug-ins are placed after the nodes that the parent node already knows about.

Permitting Plug-ins To Add Children To Your Tree Nodes

By default, all CTreeNode based objects that can have children have this feature enabled. Currently, there is no way to prevent plug-ins from adding children to a tree node if that tree node can have children.

Adding Context Menu Items To Tree Nodes

When the CTree control detects that a popup menu needs to be displayed, it calls the instance of the CTreeNode and asks it for a list of items to display in the context menu. The following are rules or guidelines for how CTreeNode objects should build this array:

- The signature for the CTreeNode method is:

  ```
  public Component[] getContextMenuItems();
  ```

  Even though this method is declared to return an array of Component objects, it is highly recommended that the objects returned all be instances of the JMenuItem class (or classes derived from JMenuItem).
- The state of any menu items returned from the getContextMenuItems() method must be properly initialized; that is, enabled/disabled, checked.

- The JMenuItem objects (or whatever objects) must be properly linked to the specific CTreeNode object that is being called. The event passed in the actionPerformed() call will contain none of this contextual information.

The CTree then calls each plug-in, retrieving any additional menu items for the specified CTreeNode object. If there are additional items, the CTree places a separator after the original menu items, then places all of the plug-in items in the popup menu, and then, if the CTreeNode can be put on custom views, puts another separator and the menu items related to custom views.

For a plug-in to respond to the CTree properly in this case, add a class called ConsoleTreeHandler to the plug-in root package. In our example, this would be com.MyPlugin.ConsoleTreeHandler. Add a method called "getContextMenuItemsFor()" to this class. The source code could look something like the following example:

```
public static Component[] getContextMenuItmsFor(CTreeNode node) {
  // strictly speaking, this check for null should never be
  // necessary
  if (node == null)
    return new Component[0];
  if (node instanceof SomeSpecificTreeNode) {
    JMenuItem theItem = new JMenuItem("Walk");
    JMenuItem anotherItem = new JMenuItem("Don't walk");
    theItem.addActionListener(new ActionListener() {
      public void actionPerformed(ActionEvent e) {
        // take action here.
      }
    }
    return new Component[] { theItem, anotherItem };
  }
  else if (node instanceof SomeOtherTreeNode) {
    // different set of menu items here.
  }
  // and if we're not interested in any other types.
  return new Component[0].
}
```

Items of interest for this operation:

- This method can be declared to return anything. For instance, for better type safety within your own code, you could declare the method to be "public static JMenuItem[] getContextMenuItemsFor(CTreeNode node)"; however, the CTree object making the call will only use items that are derived from the Component class.
- This example is very bare bones; for instance, the returned JMenuItem object does not know which CTreeNode object it should be working with; even worse, one of the items does not have an action listener associated with it. For a complete example of this, please see the sample plug-ins developed by the Administration Services development team.
- CTreeNode (being derived from DefaultMutableTreeNode) objects have a user object. This is available through the getUserObject() method. The intent is that the user object for a node represents that data that the node has been created for and this is the data that would need to be associated with the menu item. For instance, a node might have an object representing an Essbase application. In the above example, we would then perform a node.getUserObject () call to obtain this Essbase application object

- Because plug-ins are called in the order that the user has arranged them in the Component Manager dialog box, there currently is no way to force the menu items from one plug-in to appear before the menu items of another plug-in.

Handling the File > New Menu Item

Obviously, it makes sense that the framework would provide a single **File** > **New** dialog box; then the issue becomes, "How do we get every conceivable object that can be created into the **File** > **New** dialog box?".

When the **File** > **New** menu item is invoked, the framework creates and displays an instance of the com.essbase.eas.framework.client.ui.filedlgs.NewDialog.java class. There are three tabs on this dialog box:

- Essbase
- Scripts
- Wizards

These tabs were added, in this case, by theEssbase plug-in and the Administration Services plug-in. The dialog box itself provides the following items:

- The OK, Cancel, and Help buttons
- An instance of a JTabbedPane to act as a container for each of the other panels
- Actions for the OK, Cancel, and Help buttons that make the appropriate calls into the plug-in that provided the active panel

To add a panel and tab to the New dialog box, add a class called NewDialogHandler to the plug-in root package. In our example, this would be com.MyPlugin.ConsoleTreeHandler. Add a method called "populatePanel()" to this class. The source code could look something like the following code:

```
public void populatePanel(JTabbedPane panel) {
  // create an instance of the right kind of panel
  CNewDialogScrollPanel s = new CNewDialogScrollPane();
  s.setHorizontalScrollBarPolicy(JscrollPane.HORIZONTAL_SCROLLBAR_AS_NEEDED);
  s.setVerticalScrollBarPolicy(JscrollPane.VERTICAL_SCROLLBAR_AS_NEEDED);

  // create a list model that has some items in it.
  DefaultListModel model = new DefaultListModel();
  model.addElement(new JLabel("XTD Connection");
  model.addElement(new Jlabel("SQL Connection");

  // make sure the list box has a selected item
  list.setSelectedIndex(0);

  // toss the list into the scroll pane and ensure that the new
   // dialog box will call this instance when the OK button is
  // clicked.
  s.getViewport().add(list);
  s.setOkHandler(this);

  // add this panel to the tabbed panel we were given
```

```
  panel.add("My Objects", s);

}
```

For this to work correctly, you would also need to add the following method to the class:

```
public void handleOk(Component component) {
  if (component instanceof CNewDialogScrollPane) {
    CNewDialogScrollPane scroller = (CNewDialogScrollPane) component;
    Component control = scroller.getViewport().getComponent(0);
    if (control != null) && (control instanceof JList)) {
      // extract the selected item in the JList.
      // ensure that it is one of the ones we added.
      // take the appropriate action.
    }
  }
}
```

Items of interest for this operation:

- Items added to the JTabbedPane must be derived from the CNewDialogScrollPane class.
- Since CNewDialogScrollPane is derived from JScrollPane, the components that give the best visual presentation when displayed in the new dialog box are components that are derived from JTable, JTree, and JList.
- For the best visual presentation, the component added to the scroller can have custom renderers, event handlers, and so on.
- For the best behavior, this list would need a MouseListener added to it to listen for double click events. This MouseListener then would need to call the enclosing dialog box's handleOk () method.
- A plug-in can add more than one panel to the JTabbedPane instance.

Adding Items To Menus

Menu items are typically displayed in three ways:

- Static
- From an internal frame
- From a CTreeNode on the console tree

Static Menu Items

Static menu items are always displayed. The following example is for a static menu item:

```
public class XYZ {
  private CMenu editorsMenu = new CMenu("Scripts", Console.ID_ACTIONS_MENU - 1, this);
  private CMenuItem outline  = new CMenuItem("Outline", null, 0, this);
  private CMenuItem report  = new CMenuItem("Report", null, 1, this);
  private CMenuItem calc    = new CMenuItem("Calc", null, 2, this);
  private CMenuItem maxl    = new CMenuItem("Maxl", null, 3, this);
  private CMenuItem mdx     = new CMenuItem("Mdx", null, 4, this);
```

```
  private CMenuItem dataprep  = new CMenuItem("DataPrep", null, 5, this);
    void createMenu() {
report.addActionListener(new AbstractAction("createReport") {
  public void actionPerformed(ActionEvent e) {
  }
});
calc.addActionListener(new AbstractAction("createCalc") {
  public void actionPerformed(ActionEvent e) {
  }
});
maxl.addActionListener(new AbstractAction("createMaxl") {
  public void actionPerformed(ActionEvent e) {
  }
});
mdx.addActionListener(new AbstractAction("createMdx") {
  public void actionPerformed(ActionEvent e) {
  }
});
outline.addActionListener(new AbstractAction("createOutline") {
  public void actionPerformed(ActionEvent e) {
  }
});
dataprep.addActionListener(new AbstractAction("createDataPrep") {
  public void actionPerformed(ActionEvent e) {
  }
});
editorsMenu.add(outline);
editorsMenu.add(dataprep);
editorsMenu.add(calc);
editorsMenu.add(report);
editorsMenu.add(maxl);
editorsMenu.add(mdx);
LocalizeUtils.localizeMenu(resources, editorsMenu);
ConsoleManager.getConsoleInstance().mergeMenus(new Component[] { editorsMenu});
    }
}
```

Internal Frame Menu Items

Menu items from an internal frame only display when the internal frame is active. If the internal frame is deactivated or or closed, then these menu items no longer are displayed. The following example is for an internal frame menu item:

```
public class XYZ extends CInternalFrame {
  public Component[] getFrameMenus() {
// Like the example above
    return (new Component[] { editorsMenu});
  }
}
```

Console Tree Menu Items

These menu items only display when a node is selected. The following example is for a console tree menu item:

```
public XYZ extends CTreeNode {
  public Component[] getActionMenuItems() {
    return (new Component[] { editorsMenu});
  }
}
```

In general, there are predefined menu positions defined in the Console interface:

```
  public static final int ID_FILE_MENU = 0;
  public static final int ID_EDIT_MENU = 1;
  public static final int ID_VIEW_MENU = 2;
  public static final int ID_ACTIONS_MENU = 10;
  public static final int ID_TOOLS_MENU = 20;
  public static final int ID_WIZARD_MENU = 30;
  public static final int ID_WINDOW_MENU = 90;
  public static final int ID_HELP_MENU = 99;
```

If the CMenu item's (that is returned from the above example) position matches with one of the predefined ones, then that CMenu item's submenus are merged in else that CMenu is inserted based on the position. So if the CMenu has a position of ID_ACTIONS_MENU, then the items are merged in to the action menu item that is already on the main menubar. If the CMenu has a position (ID_ACTIONS_MENU - 1), then the CMenu is inserted before the action menu.

Handling Save As

Save As requires the plug-in to implement the interface SaveAsRequestor. The following example uses an inner class:

```
  if (saveAsAdapter == null) {
  saveAsAdapter = new SaveAsAdapter();
  }
  SaveAsDialog.showDialog(resources.getString("exportTitle"),
(SaveAsRequestor) saveAsAdapter);

}
```

The initSaveAsDialog is called to allow the dialog/frame to initialize the SaveAsDialog as it needs to. By default a file system chooser is added to mainPanel at index 0. A plug-in can add other panels to save to other places in this method.

When an object is selected from any panel, then the saveAsObject method is called with the selected object. If the file system panel is selected the object will be a File if the plug-in adds a panel of their own it they will have to perform the steps to save the object.

```
private class SaveAsAdapter implements SaveAsRequestor {
  public void initSaveAsDialogComponents(JTabbedPane mainPanel) {
    String xmlString = ResourceUtilities.getStringSafely(resources, XML_FILES);
    DefaultFileFilter xmlFilter =  new DefaultFileFilter(xmlString, "xml",
resultAction);
    JFileChooser jfc = (JFileChooser) mainPanel.getComponentAt(0);
    jfc.setFileSelectionMode(JFileChooser.FILES_ONLY);
    if (jfc.isAcceptAllFileFilterUsed() == true)
      jfc.setAcceptAllFileFilterUsed(false);
    jfc.setFileFilter(xmlFilter);
```

```
  }

  public void initExtraComponents(JPanel extraPanel) {
  }

   public boolean saveAsObject(Object saveObject) {
    boolean saved = false;
    if (saveObject instanceof File) {
      File file = (File) saveObject;
      String exportFile = file.getPath();
      if (exportFile != null) {
        String msg = "";
        if (AdminServerPropertiesHelper.requestExportDB(exportFile))
        {
          msg = resources.getString("sucEXDBMsg");
          StandardMessages.showMessage(resources, "exportTitle",
msg,           JOptionPane.DEFAULT_OPTION, JOptionPane.INFORMATION_MESSAGE);
          saved = true;
        }
        else
        {
          msg = resources.getString("failEXDBMsg");
          StandardMessages.showMessage(resources, "exportTitle",
msg,           JOptionPane.DEFAULT_OPTION, JOptionPane.ERROR_MESSAGE);
        }
      }
    }
    return saved;
  }
  public void setFocusComponent() {
  }
}
```

Handling Server Connection and Disconnection

In this release, Administration Services Console initially opens up disconnected from any Essbase Administration Server. Your code can be notified when Essbase Administration Server is connected, is disconnecting, or has already disconnected. Your code can implement the EASServerListener interface to be notified of the change in the Essbase Administration Server state.

```
import com.essbase.eas.client.intf.EASServerListener;
private EASServerListener listener = new EASServerListener() {
    public void ServerDisconnecting(String server) {
        // server is about to disconnect.
    }
    public void ServerDisconnected(String name) {
        // server is disconnected
        // disable menu items or Enterprise tree nodes when
disconnected             from the EAS server
    }
    public void ServerConnected(String name) {
        // enable menus
        // add Enterprise tree nodes
    }
```

```
};
```

To add the EASServerListener to the console use the following code snippet.

```
Console console = ConsoleManager.getConsoleInstance().
console.addEASServerListener(listener);
```

Standard Controls

While it is not required that plug-ins use the standard controls provided by the framework classes, there are some benefits to using them. Namely, some consistency of look and feel is provided, some housekeeping tasks are performed by the standard controls, there is support for internationalization, accessibility, and so on.

The StandardDialog Class

The StandardDialog class is an extension of the JDialog class and was introduced for the following reasons:

1. Standardize the mechanism for internationalization and localization handling
2. Standardize the position, location, and behavior of dialog "action" buttons
3. Standardize some of the accessibility handling for modal dialogs
4. Standardize the handling of results

The StandardDialog class contains the following protected (or private) fields:

Table 2 Fields in the StandardDialog Class

Field	Description
`okBtn`	An instance of an OK button. This is one of the standard controls described in "Dialog Initialization" on page 23.
`cancelBtn`	An instance of a Cancel button. This is one of the standard controls described in "Dialog Initialization" on page 23.
`helpBtn`	An instance of a Help button. This is one of the standard controls described in "Dialog Initialization" on page 23.
`buttons`	An instance of a ButtonPanel. The ButtonPanel is one of the standard controls described in "Dialog Initialization" on page 23.
`resources`	An instance of a ResourceBundle object. This resource bundle is used for internationalization purposes.
`adapter`	An instance of a StandardDialogAdapter.
`dialogResult`	An instance of a DialogResult object.
`saveDialogBounds`	A boolean value indicating whether the bounds (location and size) of this dialog should be saved when it is closed.

Name of Standard Dialog Class

The name of the Standard Dialog class is StandardDialog. It is in com.essbase.easui.StandardDialog.class.

Dialog Creation

There are at least 11 constructors for the StandardDialog class; most of these chain to another constructor. The two constructors that should be invoked by derived classes are the ones with the following signatures:

- StandardDialog(Frame owner, String title, boolean modal, DialogResult result);
- StandardDialog(Dialog owner, String title, boolean modal);

Most of the other constructors exist only to match constructor names of the JDialog class.

Dialog Initialization

During the call to the StandardDialog constructor, the following initialization steps will occur:

- An OK button, a Cancel button, and a Help button are created

  These are the standard buttons used by most dialogs. If the dialog being implemented uses a different set of buttons (for instance, Close, Apply, Next, and so on) the derived class should implement instances of those buttons.

- A ButtonPanel containing the OK, Cancel, and Help buttons is created

  If the dialog being implemented wants the button panel to contain a different set of buttons, it should call buttonPanel.changeButtons(new Jbutton[] { closeBtn, helpBtn }); // as an example.

- A ResourceBundle instance is created

  This resource bundle is used to perform localization work within the dialog. It is important to know where the standard dialog looks for the instance of the resource bundle. For example, if the dialog class is MyFunnyDialog, then the resource bundle must be in a file called resources/MyFunnyDialog.properties.

- A StandardDialogAdapter is created and is added as a window listener to the dialog

  Caution!

  Because of the implementation of the StandardDialogAdapter class, there should never be a reason for a descendant class of StandardDialog to attach a WindowListener to itself. Routing of all window events should be handled by the StandardDialogAdapter. If the descendant class needs to take action when a window close, window open, and so on, event occurs then override the methods in StandardDialog that the StandardDialogAdapter calls.

- Sets the instance of the dialog result to the value passed in, if any

  To understand how this works, see "Dialog Results" on page 25.

- Sets the dialog's default close operation to DISPOSE_ON_CLOSE

In most cases, this is the desired behavior; for a dialog that needs a different behavior, this can be changed by the constructor in the descendant class.

- Sets the dialog's content pane layout to be a BoxLayout oriented vertically

  If necessary, this can be changed by the derived class.

- Adds entries to the action and input maps of the dialog's root pane to take a "default action" when the Enter key is pressed by the user

  For more information on what this default action is, and why this step is necessary, see the section of this document titled "Dialog default action".

Dialog Default Action

The Microsoft Windows operating environment has the concept of a default button when modal dialog windows are open. The default button is painted in a way that makes it stand out visually to the user. Normally, that is the OK button; however, it can be any action button on the dialog. To handle this concept, the StandardDialog adds entries to the action and input maps of its root pane for handling the enter keystroke.

If your dialog box does not have an OK button or, if at any time, the default button should be some other button, then a call like the following needs to be performed:

```
dlg.getRootPane().setDefaultButton(closeBtn);
```

Dialog Keyboard Handling, Focus Order, Action Maps, and So On

Depending on which buttons are inserted into a dialog, certain keystrokes will be mapped automatically:

- The Enter key
- The Esc key
- The F1 key (for help)

These are the primary keystrokes that are mapped by the standard dialog and the standard buttons.

To add handling when these keystrokes are pressed, do the following:

- For the Enter key, override the handleOk() method. If everything finishes correctly and the dialog needs to be released, then call super.handleOk(). This will ensure that the dialog shuts down properly.
- For the Esc key, override the handleCancel() method. The standard dialog behavior closes the dialog, releases all the controls, disposes of contained components, and so on. In most cases, this method will not need to be overridden.
- For the F1 key, override the handleHelp() method. If the dialog has been connected via the Administration Services help system via the normal manner, this step should not be necessary.

By default, the Java Swing implementation sets the focus order of controls to correspond to the order in which they were added to their container, and then those container's to their container,

and so on. This can be overridden by making a call to the method DialogUtils.setFocusOrder(). This mechanism should be used in all dialogs to ensure the focus order of controls is correct and doesn't rely on how the code for building the containment models was written.

Dialog Results

In many cases, a dialog needs to return a significant amount of information to the calling mechanism. Unfortunately, the method Dialog.show() is declared as void and does not return any data.

If, when implementing a dialog, results from the dialog are needed, the recommended way to get those is by doing the following tasks:

- Extend the DialogResult class to contain references and additional data needed by the dialog and/or returned by the dialog.
- Before creating the dialog, create an instance of the DialogResult class.
- Ensure that the dialog has at least one constructor that accepts an instance of a DialogResult object.
- In the constructor for the dialog class derived from StandardDialog, pass the DialogResult object to the correct StandardDialog constructor.
- During the handling of the OK button, set the results back into this instance.

Methods to Override

The StandardDialog class has a set of methods that can be overridden. Whether each of these methods are overridden will depend on the needs of each derived class. See the *Administration Services Java API Reference* for detailed information about each of the following methods:

- dispose()
- handleCancel()
- handleOk()
- handleWindowClosed()
- handleWindowClosing()
- handleWindowOpened()

Standard Buttons and Other Controls

There are a large number of standard controls provided by the client framework. The following is a representative list; for more complete information, see the *Administration Services Java API Reference* for the com.essbase.eas.ui package and descendant packages.

Note:

This is not a complete list of controls. The plug-in developer should browse the Java API Reference for the com.essbase.eas.ui package and other packages under this one for additional standard components.

- ActivateButton
- ApplyButton
- BackButton
- BooleanComboBox
- ButtonPanel
- CancelButton
- CloseButton
- DoneButton
- FinishButton
- HelpButton
- ListMoverPanel
- NextButton
- NumericTextField
- OkButton
- ReadOnlyTextFrame
- RefreshButton
- ResetButton
- SimpleWizardPanel
- VerticalPairPanel
- WizardPanel

Administration Services Console Services

The client framework provides the following Administration Services Console services:

- Retrieving the CSS Token from the ConsoleRetrieving the CSS Token from the Console
- Sending E-mail

Retrieving the CSS Token from the Console

The CSS token is retrieved from the FrameworkUser object which is returned on successful login to Essbase Administration Server.

```
import com.essbase.eas.client.intf.Login;
import com.essbase.eas.client.manager.LoginManager;
import com.essbase.eas.admin.defs.*;
import com.essbase.eas.admin.client.*;
import com.essbase.eas.framework.defs.FrameworkUser;
private String getToken() {
    String loginToken = null;
    Login login = LoginManager.getLoginInstance();
    if (login != null) {
        FrameworkUser u = (FrameworkUser)
login.getProperty("FrameworkUser");
        if (u != null) {
            loginToken = u.getToken();
        }
    }
    return loginToken;
}
```

Sending E-mail

Administration Services Console has integrated support for sending e-mail using the JavaMail API. We have wrapped the classes and provide a dialog for sending e-mail. There is also support in the InternalFrame class to send from any class derived from the CInternalFrame class.

The following is a simple example of how to send the contents of a text area in an e-mail from a dialog.

```
Import com.essbase.eas.ui.email.*;
public void email() {
    JFrame fr = ConsoleManager.getConsoleFrame();

    SendEmail email = new SendEmail(fr, fr.getTitle(), new Object[] {
getTextArea().getText()} );
    email.send();
  }
```

The following example is for a window derived from CInternalFrame. The methods, isEmailable () and getObjectsToEmail, are methods in the CInternalFrame class.

```
  public boolean isEmailable() {
    return true;
  }

  public Object[] getObjectsToEmail() {
    HTMLDoc doc = new HTMLDoc();

    doc.setTitle(getTitle());
    doc.addObject(doc.getHeading(2, doc.getStyleText(getTitle(),
doc.BOLD | doc.UNDERLINE), doc.CENTER));
    doc.addObject(doc.BR);
doc.addObject(TableUtilities.getHTML((DefaultTableModel)locksTable.getModel()));
    return (new Object[] { new EmailAttachment(doc.toString(),
"Locks.htm", EmailAttachment.HTMLTEXT, "", EmailAttachment.ATTACHMENT)});
  }
```

Note:

Sending an e-mail puts an entry in the background process table showing the outcome of the e-mail.

Internationalization

The framework provides a set of internationalization and localization utilities in the package com.essbase.eas.i18n. These classes provide a mechanism for locating resources associated with a window or dialog box, loading resource bundles based on the locale, localizing collections, arrays of components, or containers. There is also an i18n-friendly string collator class.

Packaging the Plug-in

The only packaging requirement is that all classes and resources necessary for a client plug-in must be contained in the same jar file. You must include an entry in the jar file which defines the other jar files it depends on. For example, lets say the plug-in jar file `xyz.jar` depends on `abc.jar` and `cde.jar`, include the following entry in the manifest file for the plug-in jar file:

```
Class-Path: xyz.jar cde.jar
```

3 Writing Server-side Command Listeners

In This Chapter

This chapter explains how to write a command listener for the Administration Services mid-tier web server. Installable command listeners are the mechanism for extending the functionality of theAdministration Services Web server.

Preliminaries

We make the following user presumptions:

- You have some Java experience
- You have access to the *Administration Services Java API Reference*
- Since different developers use different build tools and environments, we do not discuss how to do anything for specific development environments. Rather, we describe the desired results, leaving it to the developer to know how to achieve these results with their specific development tools.

Note:

For the purposes of this documentation, the terms “Administration Services web server”, “Administration Services servlet”, “Administration Services mid-tier”, “Administration Services framework”, and, simply, “the framework” can generally be taken to refer to the same object.

The **framework** is theAdministration Services servlet and associated classes that receive commands, handle housekeeping duties, return results, and route commands to the registered listener.

Command Listeners

A *command listener* is an instance of any class that implements the CommandListener interface; however, for practical purposes, all plug-in command listeners should extend one of these classes:

- EssbaseCommandListener
- AppManCommandListener
- AbstractCommandListener

The framework uses command listeners as the mechanism to properly route commands to be handled.

When theAdministration Services servlet starts up, it builds a table of command listeners, the commands that each command listener can handle, and the method in the command listener for that command. As client applications send commands (http requests), theAdministration Services servlet uses the command's operation parameter to determine the command listener and method to route the request to.

For example, a typical command might be to log in to theAdministration Services servlet. When expressed as an http request, this command will look something like this:

```
http://LocalHost/EAS?op=login&name=user1&password=hello
```

When all of the http information is parsed out, the part that would be of interest to the Administration Services servlet are the following parameters:

- op=login
- name=user1
- password=hello

The framework uses the "op" parameter to route the command to the correct command listener. If the command listener has been registered correctly, the framework will also collect the "name=" and "password=" parameters and pass them as arguments to the method in the command listener.

Class Hierarchy

The class hierarchy for the command listeners is:

```
com.essbase.eas.framework.server.application.AbstractCommandListener
com.essbase.eas.server.AppManCommandListener
com.essbase.eas.essbase.server.EssbaseCommandListener
```

All three of these classes are declared as abstract. You must extend from one of these three classes in order to have the framework find your command listener.

The AbstractCommandListener class provides the basic functionality that is needed for the framework. Most of the methods in this class are either final or protected; for most practical purposes, implementers of derived classes should not override the protected methods of this class. For a description of those methods that can be useful to implement in a derived class, see the section "Which Methods to Override" on page 31.

The AppManCommandListener class adds some small functionality to the AbstractCommandListener, mostly dealing with EAS servlet session validation and exception handling during command routing.

The EssbaseCommandListener class adds some Essbase-specific functionality, primarily Oracle Essbase session validation.

Which Class To Extend

Do not extend the AbstractCommandListener class, even though it is declared public. The EssbaseCommandListener.handleEventPrep() method checks some standard parameters for an Essbase Server name, application name, and database name and ensures a connection to that database if those parameters exist. If the implementer of the new command listener wishes to take advantage of the session handling performed by the EssbaseCommandListener, then they should extend this class; however, if this isn't necessary, the new command listener can extend the AppManCommandListener class.

Which Methods to Override

AbstractCommandListener.getCommands() must be overridden. We explain more about this method in the section, "Registering Commands" on page 32.

The handleEventPrep(), handleEventPost(), and handleEventException() methods may be overridden. These three methods, along with AbstractCommandListener.handleEvent(), form the core processing for any command received by the framework.

Once the framework determines which command listener to route a command to, it calls that command listener's handleEvent() method. Since the AbstractCommandListener declares this method as final, the framework always calls the method in AbstractCommandListener. This method then performs the following sequence of steps:

1. Calls handleEventPrep(); if this method returns true, then continues with step 2.
2. Gets the command listener's method that handles this specific command. If this method cannot be located, logs an error with the logging utility.
3. Converts the arguments from the http command into an array of Java objects.
4. Using Java introspection, invokes the method.
5. If no exceptions were thrown, invokes handleEventPost().
6. If exceptions were thrown in steps 4 or 5, calls handleEventException().

Any change to the processing of events before they arrive at a specific method in the command listener must be done by overriding the handleEventPrep() method. For instance, this is where the EssbaseCommandListener class checks Essbase sessions and the AppManCommandListener checks for a valid servlet session.

In most cases, the handleEventPost() method is empty and the handleEventException() method is empty.

Registering Commands

After a command listener is instantiated by the framework, the framework calls the getCommands() method. This method returns an array of CommandDescriptor objects. The CommandDescriptor objects describe each command that the CommandListener is designed to handle. The CommandDescriptor object consists of three main parts:

- A string for the command
- The method in the command listener to call
- The list of arguments expected for this command.

The next few sections describe the classes used by the framework when registering commands.

Note:

All of these classes are in the package com.essbase.eas.framework.defs.command.

CommandString Class

When most people write a command listener, they think of it handling commands like "GetDatabaseList", "GetUsers", "DeleteUsers", and so on. Since each command must be unique, it is easy to see how this would lead to confusion. The CommandString class was introduced to let each programmer of command listeners think of their commands in the simplest way. The CommandString class is declared as:

```
public abstract class CommandString
```

The only constructors are declared as:

```
private CommandString() { ... }
protected CommandString(String original) { ... }
```

These two declarations combined mean that instances of this class can never be instantiated and derived classes must call the CommandString(String original) constructor with a valid String object as the parameter.

The most important action that instances of this class do is take the original String object and prepend the class name, including the package name, to the front of the String. This new value is then returned when the object's toString() method is called.

CommandArgument Class

The CommandArgument class describes individual arguments to commands. It contains the following fields:

- String name (available through the getName() method)

  This is the name of the http parameter corresponding to this argument.
- boolean required (available through the isRequired() method)

Indicates whether this argument is required. The intent is that the framework can check this field when routing a command and return a pre-defined error status to the client if a required field is missing.

- Class ClassType (available through the getClassType() method)

  This is used so the framework can convert the incoming text value to an appropriate object type.

- Object defaultValue (available through the getDefaultValue() method)

  The framework will substitute this object for the argument if the argument is missing from the command.

- Boolean hidden (available through the isHidden() method)

  The framework can log the retrieval and routing of commands and their parameters. Setting this field to true means the framework will not echo the value of this argument in the log file. This would be useful for passwords, and so on.

These fields are all declared as private and, since there are no setXXX() methods, cannot be changed after a CommandArgument object is constructed.

CommandDescriptor Class

The CommandDescriptor class combines the CommandArgument and CommandString classes into a cohesive value so that the framework can construct its internal tables and route the commands as they are received.

The examples in the following sections show how all of this fits together.

Examples

This section includes the following sample code:

- Example
- Example
- Example
- Example

Example.java

```
// this is a simple class used as a parameter to show how the
// framework can separate out command arguments that are object
// types embedded in XML. For more information on how the
// framework uses XML to transport "generic" objects between the
// mid-tier and the client, please see the Java Docs references
// for the XMLTransferObject class.
public Example extends Object {
  private String name = "";
  private String[] text = new String[0];
  // no-argument constructor. Must be public for XML Transfer
  // to work.
```

```
    public Example() {
    }

    public String getName() {
      return name;
    }

    public void setName(String value) {
      name = value;
    }

    public String[] getSampleText() {
      String[] result = new String[text.length];
      for (int i = 0; i < result.length; ++i)
        result[i] = text[i];
      return result;
    }

    public void setSampleText(String[] values) {
      if (values != null) {
        text = new String[values.length];
        for (int i = 0; i < values.length; ++i)
          text[i] = values[i];
      }
      else {
          text = new String[0];
      }
    }
}
```

ExampleCommandString.java

```
public ExampleCommandString extends CommandString {
    // declare some static String objects in a way that we know
these
    // objects do not need to be translated to different locales.
    public static final String GET_EXAMPLES_TEXT = "GetExamples";
    public static final String ADD_EXAMPLE_TEXT = "AddExample";
    public static final String DELETE_EXAMPLE_TEXT =
"DeleteExample";

    // now we declare the actual commands
    public static final ExampleCommandString GET_EXAMPLES =
        new ExampleCommandString(GET_EXAMPLES_TEXT);
    public static final ExampleCommandString ADD_EXAMPLE =
        new ExampleCommandString(ADD_EXAMPLE_TEXT);
    public static final ExampleCommandString DELETE_EXAMPLE =
        new ExampleCommandString(DELETE_EXAMPLE_TEXT);

    // for organizational purposes, we also declare the parameters for each
    // of these commands in this file.
    public static final String PARAM_LOCATION = "location";
    public static final String PARAM_EXAMPLE = "example";
    public static final String PARAM_NAME = "examplename";

    // declare a CommandArgument object for each of these parameters
    private static final CommandArgument ARGUMENT_LOCATION =
```

```
        new CommandArgument(PARAM_LOCATION,
        true,
        String.class,
        null);
    private static final CommandArgument ARGUMENT_EXAMPLE =
        new CommandArgument(PARAM_EXAMPLE,
        true,
        Example.class,
        null);
    private static final CommandArgument ARGUMENT_NAME =
        new CommandArgument(PARAM_NAME,
        true,
        String.class,
        null);

    // declare an array of arguments for each command.
    public static final CommandArgument[] GET_EXAMPLES_ARGS =
        new CommandArgument[] { ARGUMENT_LOCATION };
    public static final CommandArgument[] ADD_EXAMPLE_ARGS =
        new CommandArgument[] { ARGUMENT_LOCATION,
            ARGUMENT_EXAMPLE };
    public static final CommandArgument[] DELETE_EXAMPLE_ARGS =
        New CommandArgument[] { ARGUMENT_LOCATION,
            ARGUMENT_NAME };
}
```

This class declares command strings and describes the arguments for three commands that will be supported by the ExampleCommandListener class. If the toString() method of each ExampleCommandString object declared in this source code file were called, the results would be:

```
ExampleCommandString.GetExamples
ExampleCommandString.AddExample
ExampleCommandString.DeleteExample
```

Every CommandDescriptor object contains a reference to an object derived from CommandString; it is through this mechanism that the framework guarantees every command name is unique.

ExampleDescriptor.java

```
public class ExampleDescriptor extends CommandDescriptor {
    private static final String GET_EXAMPLES_METHOD = "getExamples";
    private static final String ADD_EXAMPLE_METHOD = "addExample";
    private static final String DELETE_EXAMPLE_METHOD = "deleteExample";

    public static final CommandDescriptor GET_EXAMPLES =
        new CommandDescriptor(ExampleCommands.GET_EXAMPLES,
            GET_EXAMPLES_METHOD,
            ExampleCommands.GET_EXAMPLES_ARGS);
    public static final CommandDescriptor ADD_EXAMPLE =
        new CommandDescriptor(ExampleCommands.ADD_EXAMPLE,
            ADD_EXAMPLE_METHOD,
            ExampleCommands.ADD_EXAMPLE_ARGS);
    public static final CommandDescriptor DELETE_EXAMPLE =
        new CommandDescriptor(ExampleCommands.DELETE_EXAMPLE,
```

```
            DELETE_EXAMPLE_METHOD,
            ExampleCommands.DELETE_EXAMPLE_ARGS);
}
```

ExampleCommandListener.java

```
public class ExampleCommandListener extends AppManCommandListener {
    // the method called when the GetExamples command is received.
    public boolean getExamples(CommandEvent theEvent,
            ServiceContext theContext,
            String theLocation) {
        // the details will be filled in later
        return true;
    }

    // the method called when the AddExample command is received.
    Public Boolean addExample(CommandEvent theEvent,
            ServiceContext theContext,
            String theLocation,
            Example theExample) {
        // the details will be filled in later
        return true;
    }

    // the method called when the DeleteExample command is
    // received.
    public boolean deleteExample(CommandEvent theEvent,
            ServiceContext theContext,
            String theLocation,
            String theName) {
        // the details will be filled in later.
        return true;
    }

    // the framework calls this method to get the descriptors for
    // the commands supported by this command listener.
    public CommandDescriptor[] getCommands() {
        return new CommandDescriptor[] {
            ExampleDescriptor.GET_EXAMPLES,
            ExampleDescriptor.ADD_EXAMPLE,
            ExampleDescriptor.DELETE_EXAMPLE };
    }
}
```

The preceding example shows the skeleton of a command listener:

1. Extend the correct class
2. Add the command handling methods
3. Override the getCommands() method to return the descriptors for those commands.

The difficulty is in the details of the command handling methods, which is covered in the next section.

Command Handling Methods

This section includes the following topics:

Method Signatures

If you were looking carefully at the example code in the preceding section, you might be saying something along the lines of, "Wait a minute, in GET_EXAMPLES_ARGS, I defined one argument, the location argument. What are these other two arguments, theEvent and theContext? Where did they come from and what do I do with them?" The answer partly lies in the older version of the Administration Services framework. The first version of the framework did not do all the type checking and parameter parsing that the new level does, so all command handling methods had the following signature:

```
public boolean handlerMethod(CommandEvent theEvent) { }
```

It was up to each method to then extract and handle the arguments along the lines of:

```
String theLocation = theEvent.getRawParameter("Location");
if (theLocation == null) {
  // oops - this shouldn't happen!
  return false;
}
```

Or, if the parameter was supposed to be a numeric value:

```
int theNumber = 0;
String theValue = theEvent.getRawParameter("Value");
if (theValue == null) {
  // oops - this shouldn't happen!
  return false;
}
try {
  theNumber = Integer.parseInt(theValue)
}
catch (Exception ex) {
  return false;
}
```

In most cases, theEvent object was used mostly to get the parameters for the command. When the framework was upgraded, theEvent object was retained as the first argument to the command handler methods, even though it is rarely used.

The second argument, theContext, is actually a field in theEvent object; if you want to return results to the client, you must do so through the ServiceContext reference. Since every command handling method at some time would call theEvent.getServiceContext(), we decided to add it as a second parameter to every command handling method.

As a result of these decisions, every command handling method has the following signature:

```
public boolean handlerMethod(CommandEvent theEvent,
        ServiceContext theContext,
        Class0 value0,
        ...,
        ClassN, ValueN);
```

Where the ClassX parameters are described by the CommandDescriptor for the method.

In addition, even though the method is declared boolean, the framework never looks at the return value from a command handler method. Return values are handled within each method by a mechanism explained later in this document.

Grabbing Command Arguments

In most cases, the command arguments will have been extracted and parsed by the framework; however, special circumstances can arise whereby extra arguments are sent with each command that, for whatever reason, the programmer doesn't want to include in the CommandDescriptor object.

An example is the EssbaseCommandListener; the EssbaseCommandListener.handleEventPrep() method calls a validateSession() method that looks for the standard parameters “servername”, “appname”, “dbname”, then attempts to validate an EssbaseSession against those parameters. If this fails, then the handleEventPrep() method returns a standard error status to the client. In most cases, any EssbaseCommandListener will need these arguments when handling commands. However, there are cases (such as in the outline editor) when those arguments aren't used. If, during implementation of a command listener method, a similar situation arises, the parameters can be retrieved by the following call:

```
String aValue = theEvent.getRawParameter("SomeParameterName");
```

This should be a rare necessity and should raise caution alarms if an implementer finds themselves needing to do this.

Sending Results Back to the Client

There are two types of results to return to a client:

1. Status of the command
2. Data that the client needs to display

The CommandStatus class is used to return the success/failure of the command to the client. The CommandStatus class only understands two types of status: SUCCESS and FAILURE. The original intent of this class was to indicate whether a command was routed successfully by the framework. However, this wasn’t made explicit and, as a result, many existing command handling methods use this SUCCESS/FAILURE to indicate the status of their specific processing.

It would be a good practice to always extend this class to enable returning more specific error codes than just SUCCESS/FAILURE.

So, let's return to our example and fill in one of the command handling methods to return data and a SUCCESSFUL status to the client.

```
public boolean getExamples(CommandEvent theEvent,
          ServiceContext theContext,
          String theLocation) {
  //object used to transmit results back to the client
  XMLTransferObject xto=new XMLTransferObject();
  Example [] theResults=someMethod(theLocation);
  if (theResults == null) {
    //this is simplistic, but it shows what we need
    xto.setCommandStatus(CommandStatus.SIMPLE_FAILURE);
  }
  else {
    if (theResults.length != 0)
      xto.addAll(theResults);
    xto.setCommandStatus(CommandStatus.SIMPLE_SUCCESS);
  }
  this.storeService.set(theContext,
          DefaultScopeType.REQUEST_SCOPE,
          AppManServlet.RESULT,
          xto.exportXml());
  return true;
}
```

The XMLTransferObject is used to transmit the data and the command status back to the client; we use the defined CommandStatus.SIMPLE_FAILURE or CommandStatus.SIMPLE_SUCCESS objects to return the correct status. If results were available, they were then added to the XMLTransferObject using the addAll() method. The results were then placed in the command listener's store service using the REQUEST_SCOPE and using the key AppManServlet.RESULT. After this method returns to the framework, the framework will take any data stored using the combination DefaultScopeType.REQUEST_SCOPE and AppManServlet.RESULT and send that data back to the client as the results of the command.

Storing Temporary Data Using the Framework

In the preceding section, we gave an example of how to place data in the framework's storage so that the data would be returned to the client as the results of a command. The storeService field in each command manager can store data for additional purposes. There are six defined DefaultScopeTypes:

1. CONFIG_SCOPE

   This is used by the framework as it is initializing. It should never be used by command handler methods.

2. BUILDER_SCOPE

   This is used by the framework as it is initializing. It should never be used by command handler methods.

3. APP_SCOPE

Using this scope type will cause the data to be stored for the life of the servlet. This should be very, very rarely used by command listeners.

4. SESSION_SCOPE

   Using this scope type will cause the data to be stored until the current client/server session is no longer valid. At that point, the framework will remove all data stored in this scope. If storing information in this scope that needs to be recovered during processing of a later command.

5. USER_SCOPE

   Using this scope makes the data available to any client connected using the same EAS user id. When all sessions associated with this user are no longer valid, the framework will remove data stored in this scope. In the current implementation, this is never used and it probably will never be used very often.

6. REQUEST_SCOPE

   Using this scope makes the data available until the framework has bundled the results of the command and returned them to the client. The framework then removes all data stored in this scope associated with the request that just finished.

Storing data is done through a command listener's store service, as in the preceding example. The StoreService interface has several get(), set(), and remove() methods. However, there is only one of each of these methods that a command listener (or other plug-in code) should call; the other methods were put in place for use by some of the framework code itself. The three method signatures are:

```
public Object get(ServiceContext context, ScopeType type, Object key);
public Object set(ServiceContext context, ScopeType type, Object key, Object value);
public Object remove(ServiceContext context, ScopeType type, Object key);
```

For more information about these methods, see the *Essbase Administration Services Java API Reference*.

Packaging the Code

When packaging the code into jar files for a plug-in, follow these guidelines:

- Separate the code into three distinct pieces:
  - Code that is only used on the client
  - Code that is only used on the server
  - Code that is used in both places
- Set up the build tools to compile and package these different pieces separately in order to prevent crossover compilation. For example, the framework is packaged into the following jar files:

```
framework_client.jar
framework_common.jar
framework_server.jar
```

- Package the command listener classes in the server jar
- Package the command descriptor classes in the server jar. This is because they contain references to the method names in the command listeners and this should not be publicly available on the client.
- Package the CommandString derived classes in the common jar file. While the framework does not currently take advantage of this on the client, it will be upgraded to do the packaging of parameters and commands for client applications.
- Place any classes extending CommandStatus in the common jar file.
- Place any specialized classes (such as `Example.java`) in the common jar file.

The server jar file must contain a manifest file. Each command listener must have an entry in this manifest file that looks like the following:

Name: `ExampleCommandListener.class`

EAS-Framework-CommandListener: True

If, as is likely, the command listener has a package name that must be prepended to the name in the example above, like this:

Name: `com/essbase/eas/examples/server/ExampleCommandListener.class`

EAS-Framework-CommandListener: True

Note:

Even though this is a class name, use slashes ("/") instead of dots (".") to separate the package names.

Loading the Code

After all of this, to get the framework to recognize the command listeners and route the commands to the correct place, the jar file containing the command listeners and any other jar files that this code depends on must be placed into Administration Server's `lib` directory. The exact location is dependent upon each particular installation. However, in the default installation using the Tomcat web server, the location will be:

```
EAS_HOME/server/tomcat/webapps/eas/WEB-INF/lib
```

After putting the jar files in this location, you must stop and restart Administration Server. To determine if the new command listeners have been installed, set the Administration Services logging level to between 5000 and 9999.

Utility Classes

There are many utility classes provided by theOracle Essbase Administration Services framework. In particular, there are utility classes in some of the following packages:

`com.essbase.eas.framework.defs`

```
com.essbase.eas.framework.server
com.essbase.eas.utils
com.essbase.eas.ui
com.essbaes.eas.i18n
com.essbase.eas.net
```

The *Administration Services Java API Reference* makes it easy to navigate through these classes and learn what is available.

Glossary

! *See bang character (!).*

#MISSING *See missing data (#MISSING).*

access permissions A set of operations that a user can perform on a resource.

accessor Input and output data specifications for data mining algorithms.

account blocking The process by which accounts accept input data in the consolidated file. Blocked accounts do not receive their value through the additive consolidation process.

account eliminations Accounts which have their values set to zero in the consolidated file during consolidation.

account type How an account's value flows over time, and its sign behavior. Account type options can include expense, income, asset, liability, and equity.

accountability map A visual, hierarchical representation of the responsibility, reporting, and dependency structure of the accountability teams (also known as critical business areas) in an organization.

accounts dimension A dimension type that makes accounting intelligence available. Only one dimension can be defined as Accounts.

active service A service whose Run Type is set to Start rather than Hold.

activity-level authorization Defines user access to applications and the types of activities they can perform on applications, independent of the data that will be operated on.

ad hoc report An online analytical query created on-the-fly by an end user.

adapter Software that enables a program to integrate with data and metadata from target and source systems.

adaptive states Interactive Reporting Web Client level of permission.

adjustment *See journal entry (JE).*

Advanced Relational Access The integration of a relational database with an Essbase multidimensional database so that all data remains in the relational database and is mapped to summary-level data residing in the Essbase database.

agent An Essbase server process that starts and stops applications and databases, manages connections from users, and handles user-access security. The agent is referred to as ESSBASE.EXE.

aggregate cell A cell comprising several cells. For example, a data cell that uses Children(Year) expands to four cells containing Quarter 1, Quarter 2, Quarter 3, and Quarter 4 data.

aggregate function A type of function, such as sum or calculation of an average, that summarizes or performs analysis on data.

aggregate limit A limit placed on an aggregated request line item or aggregated metatopic item.

aggregate storage database The database storage model designed to support large-scale, sparsely distributed data which is categorized into many, potentially large dimensions. Upper level members and formulas are dynamically calculated, and selected data values are aggregated and stored, typically with improvements in overall aggregation time.

aggregate view A collection of aggregate cells based on the levels of the members within each dimension. To reduce calculation time, values are pre-aggregated and stored as aggregate views. Retrievals start from aggregate view totals and add up from there.

aggregation The process of rolling up and storing values in an aggregate storage database; the stored result of the aggregation process.

aggregation script In aggregate storage databases only, a file that defines a selection of aggregate views to be built into an aggregation.

alias An alternative name. For example, for a more easily identifiable column descriptor you can display the alias instead of the member name.

alias table A table that contains alternate names for members.

alternate hierarchy A hierarchy of shared members. An alternate hierarchy is based upon an existing hierarchy in a database outline, but has alternate levels in the dimension. An alternate hierarchy allows the same data to be seen from different points of view.

ancestor A branch member that has members below it. For example, the members Qtr2 and 2006 are ancestors of the member April.

appender A Log4j term for destination.

application (1) A software program designed to run a specific task or group of tasks such as a spreadsheet program or database management system. (2) A related set of dimensions and dimension members that are used to meet a specific set of analytical and/or reporting requirements.

application currency The default reporting currency for the application.

area A predefined set of members and values that makes up a partition.

arithmetic data load A data load that performs operations on values in the database, such as adding 10 to each value.

artifact An individual application or repository item; for example, scripts, forms, rules files, Interactive Reporting documents, and financial reports. Also known as an object.

assemblies Installation files for EPM System products or components.

asset account An account type that stores values that represent a company's assets.

assignment The association of a source and destination in the allocation model that controls the direction of allocated costs or revenue flow within Profitability and Cost Management.

attribute Characteristic of a dimension member. For example, Employee dimension members may have attributes of Name, Age, or Address. Product dimension members can have several attributes, such as a size and flavor.

attribute association A relationship in a database outline whereby a member in an attribute dimension describes a characteristic of a member of its base dimension. For example, if product 100-10 has a grape flavor, the product 100-10 has the Flavor attribute association of grape. Thus, the 100-10 member of the Product dimension is associated with the Grape member of the Flavor attribute dimension.

Attribute Calculations dimension A system-defined dimension that performs these calculation operations on groups of members: Sum, Count, Avg, Min, and Max. This dimension is calculated dynamically and is not visible in the database outline. For example, using the Avg member, you can calculate the average sales value for Red products in New York in January.

attribute dimension A type of dimension that enables analysis based on the attributes or qualities of dimension members.

attribute reporting A reporting process based on the attributes of the base dimension members. *See also base dimension*.

attribute type A text, numeric, Boolean, date, or linked-attribute type that enables different functions for grouping, selecting, or calculating data. For example, because the Ounces attribute dimension has the type numeric, the number of ounces specified as the attribute of each product can be used to calculate the profit per ounce for that product.

authentication Verification of identity as a security measure. Authentication is typically based on a user name and password. Passwords and digital signatures are forms of authentication.

authentication service A core service that manages one authentication system.

auto-reversing journal A journal for entering adjustments that you want to reverse in the next period.

automated stage A stage that does not require human intervention, for example, a data load.

axis (1) A straight line that passes through a graphic used for measurement and categorization. (2) A report aspect used to arrange and relate multidimensional data, such as filters, pages, rows, and columns. For example, for a data query in Simple Basic, an axis can define columns for values for Qtr1, Qtr2, Qtr3, and Qtr4. Row data would be retrieved with totals in the following hierarchy: Market, Product.

backup A duplicate copy of an application instance.

balance account An account type that stores unsigned values that relate to a particular point in time.

balanced journal A journal in which the total debits equal the total credits.

bang character (!) A character that terminates a series of report commands and requests information from the database. A report script must be terminated with a bang character; several bang characters can be used within a report script.

bar chart A chart that can consist of one to 50 data sets, with any number of values assigned to each data set. Data sets are displayed as groups of corresponding bars, stacked bars, or individual bars in separate rows.

base currency The currency in which daily business transactions are performed.

base dimension A standard dimension that is associated with one or more attribute dimensions. For example, assuming products have flavors, the Product dimension is the base dimension for the Flavors attribute dimension.

base entity An entity at the bottom of the organization structure that does not own other entities.

batch calculation Any calculation on a database that is done in batch; for example, a calculation script or a full database calculation. Dynamic calculations are not considered to be batch calculations.

batch file An operating system file that can call multiple ESSCMD scripts and run multiple sessions of ESSCMD. On Windows-based systems, batch files have BAT file extensions. On UNIX, batch files are written as a shell script.

batch loader An FDM component that enables the processing of multiple files.

batch POV A collection of all dimensions on the user POV of every report and book in the batch. While scheduling the batch, you can set the members selected on the batch POV.

batch processing mode A method of using ESSCMD to write a batch or script file that can be used to automate routine server maintenance and diagnostic tasks. ESSCMD script files can execute multiple commands and can be run from the operating system command line or from within operating system batch files. Batch files can be used to call multiple ESSCMD scripts or run multiple instances of ESSCMD.

block The primary storage unit which is a multidimensional array representing the cells of all dense dimensions.

block storage database The Essbase database storage model categorizing and storing data based on the sparsity of data values defined in sparse dimensions. Data values are stored in blocks, which exist only for sparse dimension members for which there are values.

Blocked Account An account that you do not want calculated in the consolidated file because you want to enter it manually.

book A container that holds a group of similar Financial Reporting documents. Books may specify dimension sections or dimension changes.

book POV The dimension members for which a book is run.

bookmark A link to a reporting document or a Web site, displayed on a personal page of a user. The two types of bookmarks are My Bookmarks and image bookmarks.

bounding rectangle The required perimeter that encapsulates the Interactive Reporting document content when embedding Interactive Reporting document sections in a personal page, specified in pixels for height and width or row per page.

broadcast message A simple text message sent by an administrator to a user who is logged on to a Planning application. The message displays information to the user such as system availability, notification of application refresh, or application backups.

budget administrator A person responsible for setting up, configuring, maintaining, and controlling an application. Has all application privileges and data access permissions.

build method A method used to modify database outlines. Choice of a build method is based on the format of data in data source files.

business process A set of activities that collectively accomplish a business objective.

business rules Logical expressions or formulas that are created within an application to produce a desired set of resulting values.

cache A buffer in memory that holds data temporarily.

calc script A set of commands that define how a database is consolidated or aggregated. A calculation script may also contain commands that specify allocation and other calculation rules separate from the consolidation process.

calculated member in MaxL DML A member designed for analytical purposes and defined in the optional WITH section of a MaxL DML query.

calculated member in MaxL DML A member designed for analytical purposes and defined in the optional WITH section of a MaxL DML query.

calculation The process of aggregating data, or of running a calculation script on a database.

Calculation Manager A module of Performance Management Architect that Planning and Financial Management users can use to design, validate, and administrate business rules in a graphical environment.

calculation status A consolidation status that indicates that some values or formula calculations have changed. You must reconsolidate to get the correct values for the affected entity.

calendar User-defined time periods and their relationship to each other. Q1, Q2, Q3, and Q4 comprise a calendar or fiscal year.

cascade The process of creating multiple reports for a subset of member values.

Catalog pane Displays a list of elements available to the active section. If Query is the active section, a list of database tables is displayed. If Pivot is the active section, a list of results columns is displayed. If Dashboard is the active section, a list of embeddable sections, graphic tools, and control tools are displayed.

categories Groupings by which data is organized. For example, Month.

cause and effect map Depicts how the elements that form your corporate strategy relate and how they work together to meet your organization's strategic goals. A Cause and Effect map tab is automatically created for each Strategy map.

CDF *See custom-defined function (CDF).*

CDM *See custom-defined macro (CDM).*

cell (1) The data value at the intersection of dimensions in a multidimensional database; the intersection of a row and a column in a worksheet. (2) A logical group of nodes belonging to one administrative domain.

cell note A text annotation for a cell in an Essbase database. Cell notes are a type of LRO.

CHANGED status Consolidation status that indicates data for an entity has changed.

chart A graphical representation of spreadsheet data. The visual nature expedites analysis, color-coding, and visual cues that aid comparisons.

chart template A template that defines the metrics to display in Workspace charts.

child A member with a parent above it in the database outline.

choice list A list of members that a report designer can specify for each dimension when defining the report's point of view. A user who wants to change the point of view for a dimension that uses a choice list can select only the members specified in that defined member list or those members that meet the criteria defined in the function for the dynamic list.

clean block A data block that where the database is fully calculated, if a calculation script calculates all dimensions at once, or if the SET CLEARUPDATESTATUS command is used in a calculation script.

cluster An array of servers or databases that behave as a single resource which share task loads and provide failover support; eliminates one server or database as a single point of failure in a system.

clustered bar charts Charts in which categories are viewed side-by-side; useful for side-by-side category analysis; used only with vertical bar charts.

code page A mapping of bit combinations to a set of text characters. Different code pages support different sets of characters. Each computer contains a code page setting for the character set requirements of the language of the computer user. In the context of this document, code pages map characters to bit combinations for non-Unicode encodings. *See also encoding.*

column A vertical display of information in a grid or table. A column can contain data from one field, derived data from a calculation, or textual information.

committed access An Essbase Kernel Isolation Level setting that affects how Essbase handles transactions. Under committed access, concurrent transactions hold long-term write locks and yield predictable results.

computed item A virtual column (as opposed to a column that is physically stored in the database or cube) that can be calculated by the database during a query, or by Interactive Reporting Studio in the Results section. Computed items are calculations of data based on functions, data items, and operators provided in the dialog box and can be included in reports or reused to calculate other data.

configuration file The security platform relies on XML documents to be configured by the product administrator or software installer. The XML document must be modified to indicate meaningful values for properties, specifying locations and attributes pertaining to the corporate authentication scenario.

connection file *See Interactive Reporting connection file (.oce).*

consolidated file (Parent) A file into which all of the business unit files are consolidated; contains the definition of the consolidation.

consolidation The process of aggregating data from dependent entities to parent entities. For example, if the dimension Year consists of the members Qtr1, Qtr2, Qtr3, and Qtr4, its consolidation is Year.

consolidation file (*.cns) The consolidation file is a graphical interface that enables you to add, delete or move Strategic Finance files in the consolidation process using either a Chart or Tree view. It also enables you to define and modify the consolidation.

consolidation rule Identifies the rule that is executed during the consolidation of the node of the hierarchy. This rule can contain customer specific formulas appropriate for the correct consolidation of parent balances. Elimination processing can be controlled within these rules.

content Information stored in the repository for any type of file.

content browser A Component that allows users to Browse and select content to be placed in a Workspace Page .

context variable A variable that is defined for a particular task flow to identify the context of the taskflow instance.

contribution The value added to a parent from a child entity. Each child has a contribution to its parent.

controls group Used in FDM to maintain and organize certification and assessment information, especially helpful for meeting Sarbanes-Oxley requirements.

conversion rate *See exchange rate.*

cookie A segment of data placed on your computer by a Web site.

correlated subqueries Subqueries that are evaluated once for every row in the parent query; created by joining a topic item in the subquery with a topic in the parent query.

critical business area (CBA) An individual or a group organized into a division, region, plant, cost center, profit center, project team, or process; also called accountability team or business area.

critical success factor (CSF) A capability that must be established and sustained to achieve a strategic objective; owned by a strategic objective or a critical process and is a parent to one or more actions.

crosstab reporting Categorizes and summarizes data in table format. The table cells contain summaries of the data that fit within the intersecting categories. For example, a crosstab report of product sales information could show size attributes, such as Small and Large, as column headings and color attributes, such as Blue and Yellow, as row headings. The cell in the table where Large and Blue intersect could contain the total sales of all Blue products that are sized Large.

cube A block of data that contains three or more dimensions. An Essbase database is a cube.

cube deployment In Essbase Studio, the process of setting load options for a model to build an outline and load data into an Essbase application and database.

cube schema In Essbase Studio, the metadata elements, such as measures and hierarchies, representing the logical model of a cube.

currency conversion A process that converts currency values in a database from one currency into another. For example, to convert one U. S. dollar into the European euro, the exchange rate (for example, 0.923702) is multiplied with the dollar (1* 0.923702). After conversion, the European euro amount is .92.

Currency Overrides In any input period, the selected input method can be overridden to enable input of that period's value as Default Currency/Items. To override the input method, enter a pound sign (#) either before or after the number.

currency partition A dimension type that separates local currency members from a base currency, as defined in an application. Identifies currency types, such as Actual, Budget, and Forecast.

custom calendar Any calendar created by an administrator.

custom dimension A dimension created and defined by users. Channel, product, department, project, or region could be custom dimensions.

custom property A property of a dimension or dimension member that is created by a user.

custom report A complex report from the Design Report module, composed of any combination of components.

custom-defined function (CDF) Essbase calculation functions developed in Java and added to the standard Essbase calculation scripting language using MaxL. *See also custom-defined macro (CDM).*

custom-defined macro (CDM) Essbase macros written with Essbase calculator functions and special macro functions. Custom-defined macros use an internal Essbase macro language that enables the combination of calculation functions and they operate on multiple input parameters. *See also custom-defined function (CDF).*

cycle through To perform multiple passes through a database while calculating it.

dashboard A collection of metrics and indicators that provide an interactive summary of your business. Dashboards enable you to build and deploy analytic applications.

data cache A buffer in memory that holds uncompressed data blocks.

data cell *See cell.*

data file cache A buffer in memory that holds compressed data (PAG) files.

data form A grid display that enables users to enter data into the database from an interface such as a Web browser, and to view and analyze data or related text. Certain dimension member values are fixed, giving users a specific view into the data.

data function That computes aggregate values, including averages, maximums, counts, and other statistics, that summarize groupings of data.

data load location In FDM, a reporting unit responsible for submitting source data into the target system. Typically, there is one FDM data load location for each source file loaded to the target system.

data load rules A set of criteria that determines how to load data from a text-based file, a spreadsheet, or a relational data set into a database.

data lock Prevents changes to data according to specified criteria, such as period or scenario.

data mining The process of searching through an Essbase database for hidden relationships and patterns in a large amount of data.

data model A representation of a subset of database tables.

data value *See cell.*

database connection File that stores definitions and properties used to connect to data sources and enables database references to be portable and widely used.

date measure In Essbase, a member tagged as "Date" in the dimension where measures are represented. The cell values are displayed as formatted dates. Dates as measures can be useful for types of analysis that are difficult to represent using the Time dimension. For example, an application may need to track acquisition dates for a series of capital assets, but the acquisition dates span too large a period to allow for feasible Time dimension modeling. *See also typed measure.*

Default Currency Units Define the unit scale of data. For example, if you select to define your analysis in Thousands, and enter "10", this is interpreted as "10,000".

dense dimension In block storage databases, a dimension likely to contain data for every combination of dimension members. For example, time dimensions are often dense because they can contain all combinations of all members. *Contrast with sparse dimension.*

dependent entity An entity that is owned by another entity in the organization.

derived text measure In Essbase Studio, a text measure whose values are governed by a predefined rule expressed as a range. For example, a derived text measure, called "Sales Performance Index," based on a measure Sales, could consist of the values "High," "Medium," and "Low." This derived text measure is defined to display "High," "Medium," and "Low" depending on the range in which the corresponding sales values fall. *See also text measure.*

descendant Any member below a parent in the database outline. In a dimension that includes years, quarters, and months, the members Qtr2 and April are descendants of the member Year.

Design Report An interface in Web Analysis Studio for designing custom reports, from a library of components.

destination Within a Profitability and Cost Management assignment, the destination is the receiving point for allocated values.

destination currency The currency to which balances are converted. You enter exchange rates and convert from the source currency to the destination currency. For example, when you convert from EUR to USD, the destination currency is USD.

detail chart A chart that provides the detailed information that you see in a Summary chart. Detail charts appear in the Investigate Section in columns below the Summary charts. If the Summary chart shows a Pie chart, then the Detail charts below represent each piece of the pie.

dimension A data category used to organize business data for retrieval and preservation of values. Dimensions usually contain hierarchies of related members grouped within them. For example, a Year dimension often includes members for each time period, such as quarters and months.

dimension build The process of adding dimensions and members to an Essbase outline.

dimension build rules Specifications, similar to data load rules, that Essbase uses to modify an outline. The modification is based on data in an external data source file.

dimension tab In the Pivot section, the tab that enables you to pivot data between rows and columns.

dimension table (1) A table that includes numerous attributes about a specific business process. (2) In Essbase Integration Services, a container in the OLAP model for one or more relational tables that define a potential dimension in Essbase.

dimension type A dimension property that enables the use of predefined functionality. Dimensions tagged as time have a predefined calendar functionality.

dimensionality In MaxL DML, the represented dimensions (and the order in which they are represented) in a set. For example, the following set consists of two tuples of the same dimensionality because they both reflect the dimensions (Region, Year): { (West, Feb), (East, Mar) }

direct rate A currency rate that you enter in the exchange rate table. The direct rate is used for currency conversion. For example, to convert balances from JPY to USD, In the exchange rate table, enter a rate for the period/scenario where the source currency is JPY and the destination currency is USD.

dirty block A data block containing cells that have been changed since the last calculation. Upper level blocks are marked as dirty if their child blocks are dirty (that is, they have been updated).

display type One of three Web Analysis formats saved to the repository: spreadsheet, chart, and pinboard.

dog-ear The flipped page corner in the upper right corner of the chart header area.

domain In data mining, a variable representing a range of navigation within data.

drill-down Navigation through the query result set using the dimensional hierarchy. Drilling down moves the user perspective from aggregated data to detail. For example, drilling down can reveal hierarchical relationships between years and quarters or quarters and months.

drill-through The navigation from a value in one data source to corresponding data in another source.

driver A driver is an allocation method that describes the mathematical relationship between the sources that utilize the driver, and the destinations to which those sources allocate cost or revenue.

duplicate alias name A name that occurs more than once in an alias table and that can be associated with more than one member in a database outline. Duplicate alias names can be used with duplicate member outlines only.

duplicate member name The multiple occurrence of a member name in a database, with each occurrence representing a different member. For example, a database has two members named "New York." One member represents New York state and the other member represents New York city.

duplicate member outline A database outline containing duplicate member names.

Dynamic Calc and Store members A member in a block storage outline that Essbase calculates only upon the first retrieval of the value. Essbase then stores the calculated value in the database. Subsequent retrievals do not require calculating.

Dynamic Calc members A member in a block storage outline that Essbase calculates only at retrieval time. Essbase discards calculated values after completing the retrieval request.

dynamic calculation In Essbase, a calculation that occurs only when you retrieve data on a member that is tagged as Dynamic Calc or Dynamic Calc and Store. The member's values are calculated at retrieval time instead of being precalculated during batch calculation.

dynamic hierarchy In aggregate storage database outlines only, a hierarchy in which members are calculated at retrieval time.

dynamic member list A system-created named member set that is based on user-defined criteria. The list is refreshed automatically whenever it is referenced in the application. As dimension members are added and deleted, the list automatically reapplies the criteria to reflect the changes.

dynamic reference A pointer in the rules file to header records in a data source.

dynamic report A report containing data that is updated when you run the report.

Dynamic Time Series A process that performs period-to-date reporting in block storage databases.

dynamic view account An account type indicating that account values are calculated dynamically from the data that is displayed.

Eliminated Account An account that does not appear in the consolidated file.

elimination The process of zeroing out (eliminating) transactions between entities within an organization.

employee A user responsible for, or associated with, specific business objects. Employees need not work for an organization; for example, they can be consultants. Employees must be associated with user accounts for authorization purposes.

encoding A method for mapping bit combinations to characters for creating, storing, and displaying text. Each encoding has a name; for example, UTF-8. Within an encoding, each character maps to a specific bit combination; for example, in UTF-8, uppercase A maps to HEX41. *See also code page* and *locale*.

ending period A period enabling you to adjust the date range in a chart. For example, an ending period of "month", produces a chart showing information through the end of the current month.

Enterprise View An Administration Services feature that enables management of the Essbase environment from a graphical tree view. From Enterprise View, you can operate directly on Essbase artifacts.

entity A dimension representing organizational units. Examples: divisions, subsidiaries, plants, regions, products, or other financial reporting units.

Equity Beta The riskiness of a stock, measured by the variance between its return and the market return, indicated by an index called "beta". For example, if a stock's return normally moves up or down 1.2% when the market moves up or down 1%, the stock has a beta of 1.2.

essbase.cfg An optional configuration file for Essbase. Administrators may edit this file to customize Essbase Server functionality. Some configuration settings may also be used with Essbase clients to override Essbase Server settings.

EssCell A function entered into a cell in Essbase Spreadsheet Add-in to retrieve a value representing an intersection of specific Essbase database members.

ESSCMD A command-line interface for performing Essbase operations interactively or through batch script files.

ESSLANG The Essbase environment variable that defines the encoding used to interpret text characters. *See also encoding.*

ESSMSH *See MaxL Shell.*

exceptions Values that satisfy predefined conditions. You can define formatting indicators or notify subscribing users when exceptions are generated.

exchange rate A numeric value for converting one currency to another. For example, to convert 1 USD into EUR, the exchange rate of 0.8936 is multiplied with the U.S. dollar. The European euro equivalent of $1 is 0.8936.

exchange rate type An identifier for an exchange rate. Different rate types are used because there may be multiple rates for a period and year. Users traditionally define rates at period end for the average rate of the period and for the end of the period. Additional rate types are historical rates, budget rates, forecast rates, and so on. A rate type applies to one point in time.

expense account An account that stores periodic and year-to-date values that decrease net worth if they are positive.

Extensible Markup Language (XML) A language comprising a set of tags used to assign attributes to data that can be interpreted between applications according to a schema.

external authentication Logging on to Oracle's Hyperion applications with user information stored outside the applications, typically in a corporate directory such as MSAD or NTLM.

externally triggered events Non-time-based events for scheduling job runs.

Extract, Transform, and Load (ETL) Data source-specific programs for extracting data and migrating it to applications.

extraction command An Essbase reporting command that handles the selection, orientation, grouping, and ordering of raw data extracted from a database; begins with the less than (<) character.

fact table The central table in a star join schema, characterized by a foreign key and elements drawn from a dimension table. This table typically contains numeric data that can be related to all other tables in the schema.

Favorites gadget Contains links to Reporting and Analysis documents and URLs.

field An item in a data source file to be loaded into an Essbase database.

file delimiter Characters, such as commas or tabs, that separate fields in a data source.

filter A constraint on data sets that restricts values to specific criteria; for example, to exclude certain tables, metadata, or values, or to control access.

flow account An unsigned account that stores periodic and year-to-date values.

folder A file containing other files for the purpose of structuring a hierarchy.

footer Text or images at the bottom of report pages, containing dynamic functions or static text such as page numbers, dates, logos, titles or file names, and author names.

format Visual characteristics of documents or report objects.

format string In Essbase, a method for transforming the way cell values are displayed.

formula A combination of operators, functions, dimension and member names, and numeric constants calculating database members.

frame An area on the desktop. There are two main areas: the navigation and Workspace frames.

free-form grid An object for presenting, entering, and integrating data from different sources for dynamic calculations.

free-form reporting Creating reports by entering dimension members or report script commands in worksheets.

function A routine that returns values or database members.

gadget Simple, specialized, lightweight applications that provide easy viewing of EPM content and enable access to core Reporting and Analysis functionality.

genealogy data Additional data that is optionally generated after allocation calculations. This data enables reporting on all cost or revenue flows from start to finish through all allocation steps.

generation A layer in a hierarchical tree structure that defines member relationships in a database. Generations are ordered incrementally from the top member of the dimension (generation 1) down to the child members. Use the unique generation name to identify a layer in the hierarchical tree structure.

generic jobs Non-SQR Production Reporting or non-Interactive Reporting jobs.

global report command A command in a running report script that is effective until replaced by another global command or the file ends.

grid POV A means for specifying dimension members on a grid without placing dimensions in rows, columns, or page intersections. A report designer can set POV values at the grid level, preventing user POVs from affecting the grid. If a dimension has one grid value, you put the dimension into the grid POV instead of the row, column, or page.

group A container for assigning similar access permissions to multiple users.

GUI Graphical user interface

head up display A mode that shows your loaded Smart Space desktop including the background image above your Windows desktop.

highlighting Depending on your configuration, chart cells or ZoomChart details may be highlighted, indicating value status: red (bad), yellow (warning), or green (good).

Historical Average An average for an account over a number of historical periods.

holding company An entity that is part of a legal entity group, with direct or indirect investments in all entities in the group.

host A server on which applications and services are installed.

host properties Properties pertaining to a host, or if the host has multiple Install_Homes, to an Install_Home. The host properties are configured from the CMC.

Hybrid Analysis An analysis mapping low-level data stored in a relational database to summary-level data stored in Essbase, combining the mass scalability of relational systems with multidimensional data.

hyperlink A link to a file, Web page, or an intranet HTML page.

Hypertext Markup Language (HTML) A programming language specifying how Web browsers display data.

identity A unique identification for a user or group in external authentication.

image bookmarks Graphic links to Web pages or repository items.

IMPACTED status Indicates changes in child entities consolidating into parent entities.

implied share A member with one or more children, but only one is consolidated, so the parent and child share a value.

import format In FDM, defines the structure of the source file which enables the loading of a source data file to an FDM data load location.

inactive group A group for which an administrator has deactivated system access.

inactive service A service suspended from operating.

INACTIVE status Indicates entities deactivated from consolidation for the current period.

inactive user A user whose account has been deactivated by an administrator.

income account An account storing periodic and year-to-date values that, if positive, increase net worth.

index (1) A method where Essbase uses sparse-data combinations to retrieve data in block storage databases. (2) The index file.

index cache A buffer containing index pages.

index entry A pointer to an intersection of sparse dimensions. Index entries point to data blocks on disk and use offsets to locate cells.

index file An Essbase file storing block storage data retrieval information, residing on disk, and containing index pages.

index page A subdivision in an index file. Contains pointers to data blocks.

input data Data loaded from a source rather than calculated.

Install_Home A variable for the directory where EPM System products are installed. Refers to one instance of an EPM System product when multiple applications are installed on the same computer.

integration Process that is run to move data between EPM System products using Shared Services. Data integration definitions specify the data moving between a source application and a destination application, and enable the data movements to be grouped, ordered, and scheduled.

intelligent calculation A calculation method tracking updated data blocks since the last calculation.

Interactive Reporting connection file (.oce) Files encapsulating database connection information, including: the database API (ODBC, SQL*Net, etc.), database software, the database server network address, and database user name. Administrators create and publish Interactive Reporting connection files (.oce).

intercompany elimination *See elimination*.

intercompany matching The process of comparing balances for pairs of intercompany accounts within an application. Intercompany receivables are compared to intercompany payables for matches. Matching accounts are used to eliminate intercompany transactions from an organization's consolidated totals.

intercompany matching report A report that compares intercompany account balances and indicates if the accounts are in, or out, of balance.

interdimensional irrelevance A situation in which a dimension does not intersect with other dimensions. Because the data in the dimension cannot be accessed from the non-intersecting dimensions, the non-intersecting dimensions are not relevant to that dimension.

intersection A unit of data representing the intersection of dimensions in a multidimensional database; also, a worksheet cell.

intrastage assignment Assignments in the financial flow that are assigned to objects within the same stage.

introspection A deep inspection of a data source to discover hierarchies based on the inherent relationships in the database. *Contrast with scraping*.

Investigation *See drill-through*.

isolation level An Essbase Kernel setting that determines the lock and commit behavior of database operations. Choices are: committed access and uncommitted access.

iteration A "pass" of the budget or planning cycle in which the same version of data is revised and promoted.

Java Database Connectivity (JDBC) A client-server communication protocol used by Java based clients and relational databases. The JDBC interface provides a call-level API for SQL-based database access.

job output Files or reports produced from running a job.

jobs Documents with special properties that can be launched to generate output. A job can contain Interactive Reporting, SQR Production Reporting, or generic documents.

join A link between two relational database tables or topics based on common content in a column or row. A join typically occurs between identical or similar items within different tables or topics. For example, a record in the Customer table is joined to a record in the Orders table because the Customer ID value is the same in each table.

journal entry (JE) A set of debit/credit adjustments to account balances for a scenario and period.

JSP Java Server Pages.

KeyContacts gadget Contains a group of Smart Space users and provides access to Smart Space Collaborator. For example, you can have a KeyContacts gadget for your marketing team and another for your development team.

latest A Spreadsheet key word used to extract data values from the member defined as the latest time period.

layer (1) The horizontal location of members in a hierarchical structure, specified by generation (top down) or level (bottom up). (2) Position of objects relative to other objects. For example, in the Sample Basic database, Qtr1 and Qtr4 are in the same layer, so they are also in the same generation, but in a database with a ragged hierarchy, Qtr1 and Qtr4 might not be in same layer, though they are in the same generation.

layout area Used to designate an area on a Workspace Page where content can be placed.

legend box A box containing labels that identify the data categories of a dimension.

level A layer in a hierarchical tree structure that defines database member relationships. Levels are ordered from the bottom dimension member (level 0) up to the parent members.

level 0 block A data block for combinations of sparse, level 0 members.

level 0 member A member that has no children.

liability account An account type that stores "point in time" balances of a company's liabilities. Examples of liability accounts include accrued expenses, accounts payable, and long term debt.

life cycle management The process of managing application information from inception to retirement.

Lifecycle Management Utility A command-line utility for migrating applications and artifacts.

line chart A chart that displays one to 50 data sets, each represented by a line. A line chart can display each line stacked on the preceding ones, as represented by an absolute value or a percent.

line item detail The lowest level of detail in an account.

lineage The relationship between different metadata elements showing how one metadata element is derived from one or more other metadata elements, ultimately tracing the metadata element to its physical source. In Essbase Studio, a lineage viewer displays the relationships graphically. *See also traceability*.

link (1) A reference to a repository object. Links can reference folders, files, shortcuts, and other links. (2) In a task flow, the point where the activity in one stage ends and another begins.

link condition A logical expression evaluated by the taskflow engine to determine the sequence of launching taskflow stages.

linked data model Documents that are linked to a master copy in a repository.

linked partition A shared partition that enables you to use a data cell to link two databases. When a user clicks a linked cell in a worksheet, Essbase opens a new sheet displaying the dimensions in the linked database. The user can then drill down those dimensions.

linked reporting object (LRO) A cell-based link to an external file such as cell notes, URLs, or files with text, audio, video, or pictures. (Only cell notes are supported for Essbase LROs in Financial Reporting.) *Contrast with local report object*.

local currency An input currency type. When an input currency type is not specified, the local currency matches the entity's base currency.

local report object A report object that is not linked to a Financial Reporting report object in Explorer. *Contrast with linked reporting object (LRO)*.

local results A data model's query results. Results can be used in local joins by dragging them into the data model. Local results are displayed in the catalog when requested.

locale A computer setting that specifies a location's language, currency and date formatting, data sort order, and the character set encoding used on the computer. Essbase uses only the encoding portion. *See also encoding* and *ESSLANG*.

locale header record A text record at the beginning of some non-Unicode-encoded text files, such as scripts, that identifies the encoding locale.

location alias A descriptor that identifies a data source. The location alias specifies a server, application, database, user name, and password. Location aliases are set by DBAs at the database level using Administration Services Console, ESSCMD, or the API.

locked A user-invoked process that prevents users and processes from modifying data.

locked data model Data models that cannot be modified by a user.

LOCKED status A consolidation status indicating that an entity contains data that cannot be modified.

Log Analyzer An Administration Services feature that enables filtering, searching, and analysis of Essbase logs.

logic group In FDM, contains one or more logic accounts that are generated after a source file is loaded into FDM. Logic accounts are calculated accounts that are derived from the source data.

LRO *See linked reporting object (LRO)*.

managed server An application server process running in its own Java Virtual Machine (JVM).

manual stage A stage that requires human intervention to complete.

Map File Used to store the definition for sending data to or retrieving data from an external database. Map files have different extensions (.mps to send data; .mpr to retrieve data).

Map Navigator A feature that displays your current position on a Strategy, Accountability, or Cause and Effect map, indicated by a red outline.

Marginal Tax Rate Used to calculate the after-tax cost of debt. Represents the tax rate applied to the last earned income dollar (the rate from the highest tax bracket into which income falls) and includes federal, state and local taxes. Based on current level of taxable income and tax bracket, you can predict marginal tax rate.

Market Risk Premium The additional rate of return paid over the risk-free rate to persuade investors to hold "riskier" investments than government securities. Calculated by subtracting the risk-free rate from the expected market return. These figures should closely model future market conditions.

master data model An independent data model that is referenced as a source by multiple queries. When used, "Locked Data Model" is displayed in the Query section's Content pane; the data model is linked to the master data model displayed in the Data Model section, which an administrator may hide.

mathematical operator A symbol that defines how data is calculated in formulas and outlines. Can be any of the standard mathematical or Boolean operators; for example, +, -, *, /, and %.

MaxL The multidimensional database access language for Essbase, consisting of a data definition language (MaxL DDL) and a data manipulation language (MaxL DML). *See also MaxL DDL*, *MaxL DML*, and *MaxL Shell*.

MaxL DDL Data definition language used by Essbase for batch or interactive system-administration tasks.

MaxL DML Data manipulation language used in Essbase for data query and extraction.

MaxL Perl Module A Perl module (essbase.pm) that is part of Essbase MaxL DDL. This module can be added to the Perl package to provide access to Essbase databases from Perl programs.

MaxL Script Editor A script-development environment in Administration Services Console. MaxL Script Editor is an alternative to using a text editor and the MaxL Shell for administering Essbase with MaxL scripts.

MaxL Shell An interface for passing MaxL statements to Essbase Server. The MaxL Shell executable file is located in the Essbase bin directory (UNIX: essmsh, Windows: essmsh.exe).

MDX (multidimensional expression) The language that give instructions to OLE DB for OLAP- compliant databases, as SQL is used for relational databases. When you build the OLAPQuery section's Outliner, Interactive Reporting Clients translate requests into MDX instructions. When you process the query, MDX is sent to the database server, which returns records that answer your query. *See also SQL spreadsheet.*

measures Numeric values in an OLAP database cube that are available for analysis. Measures are margin, cost of goods sold, unit sales, budget amount, and so on. *See also fact table.*

member A discrete component within a dimension. A member identifies and differentiates the organization of similar units. For example, a time dimension might include such members as Jan, Feb, and Qtr1.

member list A named group, system- or user-defined, that references members, functions, or member lists within a dimension.

member load In Integration Services, the process of adding dimensions and members (without data) to Essbase outlines.

member selection report command A type of Report Writer command that selects member ranges based on outline relationships, such as sibling, generation, and level.

member-specific report command A type of Report Writer formatting command that is executed as it is encountered in a report script. The command affects only its associated member and executes the format command before processing the member.

merge A data load option that clears values only from the accounts specified in the data load file and replaces them with values in the data load file.

metadata A set of data that defines and describes the properties and attributes of the data stored in a database or used by an application. Examples of metadata are dimension names, member names, properties, time periods, and security.

metadata elements Metadata derived from data sources and other metadata that is stored and cataloged for Essbase Studio use.

metadata sampling The process of retrieving a sample of members in a dimension in a drill-down operation.

metadata security Security set at the member level to restrict users from accessing certain outline members.

metaoutline In Integration Services, a template containing the structure and rules for creating an Essbase outline from an OLAP model.

metric A numeric measurement computed from business data to help assess business performance and analyze company trends.

migration The process of copying applications, artifacts, or users from one environment or computer to another; for example, from a testing environment to a production environment.

migration audit report A report generated from the migration log that provides tracking information for an application migration.

migration definition file (.mdf) A file that contains migration parameters for an application migration, enabling batch script processing.

migration log A log file that captures all application migration actions and messages.

migration snapshot A snapshot of an application migration that is captured in the migration log.

MIME Type (Multipurpose Internet Mail Extension) An attribute that describes the data format of an item, so that the system knows which application should open the object. A file's mime type is determined by the file extension or HTTP header. Plug-ins tell browsers what mime types they support and what file extensions correspond to each mime type.

mining attribute In data mining, a class of values used as a factor in analysis of a set of data.

minireport A report component that includes layout, content, hyperlinks, and the query or queries to load the report. Each report can include one or more minireports.

minischema A graphical representation of a subset of tables from a data source that represents a data modeling context.

missing data (#MISSING) A marker indicating that data in the labeled location does not exist, contains no value, or was never entered or loaded. For example, missing data exists when an account contains data for a previous or future period but not for the current period.

model (1) In data mining, a collection of an algorithm's findings about examined data. A model can be applied against a wider data set to generate useful information about that data. (2) A file or content string containing an application-specific representation of data. Models are the basic data managed by Shared Services, of two major types: dimensional and non-dimensional application objects. (3) In Business Modeling, a network of boxes connected to represent and calculate the operational and financial flow through the area being examined.

monetary A money-related value.

multidimensional database A method of organizing, storing, and referencing data through three or more dimensions. An individual value is the intersection point for a set of dimensions. *Contrast with relational database*.

multiload An FDM feature that allows the simultaneous loading of multiple periods, categories, and locations.

My Workspace Page A page created with content from multiple sources including documents, URL, and other content types. Enables a user to aggregate content from Oracle and non-Oracle sources.

named set In MaxL DML, a set with its logic defined in the optional WITH section of a MaxL DML query. The named set can be referenced multiple times in the query.

native authentication The process of authenticating a user name and password from within the server or application.

nested column headings A report column heading format that displays data from multiple dimensions. For example, a column heading that contains Year and Scenario members is a nested column. The nested column heading shows Q1 (from the Year dimension) in the top line of the heading, qualified by Actual and Budget (from the Scenario dimension) in the bottom line of the heading.

NO DATA status A consolidation status indicating that this entity contains no data for the specified period and account.

non-dimensional model A Shared Services model type that includes application objects such as security files, member lists, calculation scripts, and Web forms.

non-unique member name *See duplicate member name*.

note Additional information associated with a box, measure, scorecard or map element.

Notifications gadget Shows notification message history received from other users or systems.

null value A value that is absent of data. Null values are not equal to zero.

numeric attribute range A feature used to associate a base dimension member that has a discrete numeric value with an attribute that represents a value range. For example, to classify customers by age, an Age Group attribute dimension can contain members for the following age ranges: 0-20, 21-40, 41-60, and 61-80. Each Customer dimension member can be associated with an Age Group range. Data can be retrieved based on the age ranges rather than on individual age values.

ODBC Open Database Connectivity. A database access method used from any application regardless of how the database management system (DBMS) processes the information.

OK status A consolidation status indicating that an entity has already been consolidated, and that data has not changed below it in the organization structure.

OLAP Metadata Catalog In Integration Services, a relational database containing metadata describing the nature, source, location, and type of data that is pulled from the relational data source.

OLAP model In Integration Services, a logical model (star schema) that is created from tables and columns in a relational database. The OLAP model is then used to generate the structure of a multidimensional database.

online analytical processing (OLAP) A multidimensional, multiuser, client-server computing environment for users who analyze consolidated enterprise data in real time. OLAP systems feature drill-down, data pivoting, complex calculations, trend analysis, and modeling.

Open Database Connectivity (ODBC) Standardized application programming interface (API) technology that allows applications to access multiple third-party databases.

organization An entity hierarchy that defines each entity and their relationship to others in the hierarchy.

origin The intersection of two axes.

outline The database structure of a multidimensional database, including all dimensions, members, tags, types, consolidations, and mathematical relationships. Data is stored in the database according to the structure defined in the outline.

outline synchronization For partitioned databases, the process of propagating outline changes from one database to another database.

P&L accounts (P&L) Profit and loss accounts. Refers to a typical grouping of expense and income accounts that comprise a company's income statement.

page A display of information in a grid or table often represented by the Z-axis. A page can contain data from one field, derived data from a calculation, or text.

page file Essbase data file.

page heading A report heading type that lists members represented on the current page of the report. All data values on the page have the members in the page heading as a common attribute.

page member A member that determines the page axis.

palette A JASC compliant file with a .PAL extension. Each palette contains 16 colors that complement each other and can be used to set the dashboard color elements.

parallel calculation A calculation option. Essbase divides a calculation into tasks and calculates some tasks simultaneously.

parallel data load In Essbase, the concurrent execution of data load stages by multiple process threads.

parallel export The ability to export Essbase data to multiple files. This may be faster than exporting to a single file, and it may resolve problems caused by a single data file becoming too large for the operating system to handle.

parent adjustments The journal entries that are posted to a child in relation to its parent.

parents The entities that contain one or more dependent entities that report directly to them. Because parents are both entities and associated with at least one node, they have entity, node, and parent information associated with them.

partition area A sub cube within a database. A partition is composed of one or more areas of cells from a portion of the database. For replicated and transparent partitions, the number of cells within an area must be the same for the data source and target to ensure that the two partitions have the same shape. If the data source area contains 18 cells, the data target area must also contain 18 cells to accommodate the number of values.

partitioning The process of defining areas of data that are shared or linked between data models. Partitioning can affect the performance and scalability of Essbase applications.

pattern matching The ability to match a value with any or all characters of an item entered as a criterion. Missing characters may be represented by wild card values such as a question mark (?) or an asterisk (*). For example, “Find all instances of apple” returns apple, but “Find all instances of apple*” returns apple, applesauce, applecranberry, and so on.

percent consolidation The portion of a child's values that is consolidated to its parent.

percent control Identifies the extent to which an entity is controlled within the context of its group.

percent ownership Identifies the extent to which an entity is owned by its parent.

performance indicator An image file used to represent measure and scorecard performance based on a range you specify; also called a status symbol. You can use the default performance indicators or create an unlimited number of your own.

periodic value method (PVA) A process of currency conversion that applies the periodic exchange rate values over time to derive converted results.

permission A level of access granted to users and groups for managing data or other users and groups.

persistence The continuance or longevity of effect for any Essbase operation or setting. For example, an Essbase administrator may limit the persistence of user name and password validity.

personal pages A personal window to repository information. You select what information to display and its layout and colors.

personal recurring time events Reusable time events that are accessible only to the user who created them.

personal variable A named selection statement of complex member selections.

perspective A category used to group measures on a scorecard or strategic objectives within an application. A perspective can represent a key stakeholder (such as a customer, employee, or shareholder/financial) or a key competency area (such as time, cost, or quality).

pie chart A chart that shows one data set segmented in a pie formation.

pinboard One of the three data object display types. Pinboards are graphics, composed of backgrounds and interactive icons called pins. Pinboards require traffic lighting definitions.

pins Interactive icons placed on graphic reports called pinboards. Pins are dynamic. They can change images and traffic lighting color based on the underlying data values and analysis tools criteria.

pivot The ability to alter the perspective of retrieved data. When Essbase first retrieves a dimension, it expands data into rows. You can then pivot or rearrange the data to obtain a different viewpoint.

planner Planners, who comprise the majority of users, can input and submit data, use reports that others create, execute business rules, use task lists, enable e-mail notification for themselves, and use Smart View.

planning unit A data slice at the intersection of a scenario, version, and entity; the basic unit for preparing, reviewing, annotating, and approving plan data.

plot area The area bounded by X, Y, and Z axes; for pie charts, the rectangular area surrounding the pie.

plug account An account in which the system stores any out of balance differences between intercompany account pairs during the elimination process.

post stage assignment Assignments in the allocation model that are assigned to locations in a subsequent model stage.

POV (point of view) A feature for setting data focus by selecting members that are not already assigned to row, column, or page axes. For example, selectable POVs in FDM could include location, period, category, and target category. In another example, using POV as a filter in Smart View, you could assign the Currency dimension to the POV and select the Euro member. Selecting this POV in data forms displays data in Euro values.

precalculation Calculating the database prior to user retrieval.

precision Number of decimal places displayed in numbers.

predefined drill paths Paths used to drill to the next level of detail, as defined in the data model.

presentation A playlist of Web Analysis documents, enabling reports to be grouped, organized, ordered, distributed, and reviewed. Includes pointers referencing reports in the repository.

preserve formulas User-created formulas kept within a worksheet while retrieving data.

primary measure A high-priority measure important to your company and business needs. Displayed in the Contents frame.

process monitor report Displays a list of locations and their positions within the FDM data conversion process. You can use the process monitor report to monitor the status of the closing process. The report is time-stamped. Therefore, it can be used to determine to which locations at which time data was loaded.

product In Shared Services, an application type, such as Planning or Performance Scorecard.

Production Reporting *See SQR Production Reporting.*

project An instance of EPM System products grouped together in an implementation. For example, a Planning project may consist of a Planning application, an Essbase cube, and a Financial Reporting server instance.

property A characteristic of an artifact, such as size, type, or processing instructions.

provisioning The process of granting users and groups specific access permissions to resources.

proxy server A server acting as an intermediary between workstation users and the Internet to ensure security.

public job parameters Reusable, named job parameters created by administrators and accessible to users with requisite access privileges.

public recurring time events Reusable time events created by administrators and accessible through the access control system.

PVA *See periodic value method (PVA).*

qualified name A member name in a qualified format that differentiates duplicate member names in a duplicate member outline. For example, [Market].[East].[State].[New York] or [Market].[East].[City].[New York]

query Information requests from data providers. For example, used to access relational data sources.

query governor An Essbase Integration server parameter or Essbase server configuration setting that controls the duration and size of queries made to data sources.

range A set of values including upper and lower limits, and values falling between limits. Can contain numbers, amounts, or dates.

reciprocal assignment An assignment in the financial flow that also has the source as one of its destinations.

reconfigure URL URL used to reload servlet configuration settings dynamically when users are already logged on to the Workspace.

record In a database, a group of fields making up one complete entry. For example, a customer record may contain fields for name, address, telephone number, and sales data.

recurring template A journal template for making identical adjustments in every period.

recurring time event An event specifying a starting point and the frequency for running a job.

redundant data Duplicate data blocks that Essbase retains during transactions until Essbase commits updated blocks.

regular journal A feature for entering one-time adjustments for a period. Can be balanced, balanced by entity, or unbalanced.

Related Accounts The account structure groups all main and related accounts under the same main account number. The main account is distinguished from related accounts by the first suffix of the account number.

relational database A type of database that stores data in related two-dimensional tables. *Contrast with multidimensional database.*

replace A data load option that clears existing values from all accounts for periods specified in the data load file, and loads values from the data load file. If an account is not specified in the load file, its values for the specified periods are cleared.

replicated partition A portion of a database, defined through Partition Manager, used to propagate an update to data mastered at one site to a copy of data stored at another site. Users can access the data as though it were part of their local database.

Report Extractor An Essbase component that retrieves report data from the Essbase database when report scripts are run.

report object In report designs, a basic element with properties defining behavior or appearance, such as text boxes, grids, images, and charts.

report script A text file containing Essbase Report Writer commands that generate one or more production reports.

Report Viewer An Essbase component that displays complete reports after report scripts are run.

reporting currency The currency used to prepare financial statements, and converted from local currencies to reporting currencies.

repository Stores metadata, formatting, and annotation information for views and queries.

resources Objects or services managed by the system, such as roles, users, groups, files, and jobs.

restore An operation to reload data and structural information after a database has been damaged or destroyed, typically performed after shutting down and restarting the database.

restructure An operation to regenerate or rebuild the database index and, in some cases, data files.

result frequency The algorithm used to create a set of dates to collect and display results.

review level A Process Management review status indicator representing the process unit level, such as Not Started, First Pass, Submitted, Approved, and Published.

Risk Free Rate The rate of return expected from "safer" investments such as long-term U.S. government securities.

role The means by which access permissions are granted to users and groups for resources.

roll-up *See consolidation*.

root member The highest member in a dimension branch.

RSC services Services that are configured with Remote Service Configurator, including Repository Service, Service Broker, Name Service, Event Service, and Job Service.

runtime prompt A variable that users enter or select before a business rule is run.

sampling The process of selecting a representative portion of an entity to determine the entity's characteristics. *See also metadata sampling*.

saved assumptions User-defined Planning assumptions that drive key business calculations (for example, the cost per square foot of office floor space).

scaling Scaling determines the display of values in whole numbers, tens, hundreds, thousands, millions, and so on.

scenario A dimension for classifying data (for example, Actuals, Budget, Forecast1, and Forecast2).

scope The area of data encompassed by any Essbase operation or setting; for example, the area of data affected by a security setting. Most commonly, scope refers to three levels of granularity, where higher levels encompass lower levels. From highest to lowest, these levels are as follows: the entire system (Essbase Server), applications on Essbase servers, or databases within Essbase server applications. *See also persistence*.

score The level at which targets are achieved, usually expressed as a percentage of the target.

scorecard Business object that represents the progress of an employee, strategy element, or accountability element toward goals. Scorecards ascertain this progress based on data collected for each measure and child scorecard added to the scorecard.

scraping An inspection of a data source to derive the most basic metadata elements from it. *Contrast with introspection*.

Search gadget Searches the Reporting and Analysis repository. The Search gadget looks for a match in the document keywords and description, which are set when you import a document.

secondary measure A low-priority measure, less important than primary measures. Secondary measures do not have Performance reports but can be used on scorecards and to create dimension measure templates.

security agent A Web access management provider (for example, Netegrity SiteMinder) that protects corporate Web resources.

security platform A framework enabling EPM System products to use external authentication and single sign-on.

serial calculation The default calculation setting. Divides a calculation pass into tasks and calculates one task at a time.

services Resources that enable business items to be retrieved, changed, added, or deleted. Examples: Authorization and Authentication.

servlet A piece of compiled code executable by a Web server.

Servlet Configurator A utility for configuring all locally installed servlets.

shared member A member that shares storage space with another member of the same name, preventing duplicate calculation of members that occur multiple times in an Essbase outline.

Shared Services Registry Part of the Shared Services database, the Shared Services Registry stores and re-uses information for most installed EPM System products, including installation directories, database settings, deployment settings, computer names, ports, servers, URLs, and dependent service data.

Shared Workspace Page Workspace Pages shared across an organization which are stored in a special System folder and can be accessed by authorized users from the Shared Workspace Pages Navigate menu.

sibling A child member at the same generation as another child member and having the same immediate parent. For example, the members Florida and New York are children of East and each other's siblings.

single sign-on Ability to access multiple EPM System products after a single login using external credentials.

smart slice In Smart View, a reusable perspective of a data source that contains a restricted set of dimensions or dimension members.

Smart Space client software Runs on the client's computer and provides gadgets, instant collaboration and access to the Reporting and Analysis repository. It is composed of the Smart Space framework and gadgets.

Smart Space Collaborator A service that enables users or systems to send messages and share Reporting and Analysis repository content. The message can take many forms, including instant message style discussions, meetings, and toast messages.

smart tags Keywords in Microsoft Office applications that are associated with predefined actions available from the Smart Tag menu. In EPM System products, smart tags can also be used to import Reporting and Analysis content, and access Financial Management and Essbase functions.

SmartBook gadget Contains documents from the Reporting and Analysis repository or URLs. All documents are loaded when the SmartBook is opened so you can access all content immediately.

SmartCut A link to a repository item, in URL form.

snapshot Read-only data from a specific time.

source currency The currency from which values originate and are converted through exchange rates to the destination currency.

sparse dimension In block storage databases, a dimension unlikely to contain data for all member combinations when compared to other dimensions. For example, not all customers have data for all products. *Contrast with dense dimension*.

SPF files Printer-independent files created by an SQR Production Reporting server, containing a representation of the actual formatted report output, including fonts, spacing, headers, footers, and so on.

Spotlighter A tool that enables color coding based on selected conditions.

SQL spreadsheet A data object that displays the result set of a SQL query.

SQR Production Reporting A specialized programming language for data access, data manipulation, and creating SQR Production Reporting documents.

stage A task description that forms one logical step within a taskflow, usually performed by an individual. A stage can be manual or automated.

stage action For automated stages, the invoked action that executes the stage.

staging area A database that you create to meet the needs of a specific application. A staging area is a snapshot or restructured version of one or more RDBMSs.

standard dimension A dimension that is not an attribute dimension.

standard journal template A journal function used to post adjustments that have common adjustment information for each period. For example, you can create a standard template that contains the common account IDs, entity IDs, or amounts, then use the template as the basis for many regular journals.

Status bar The status bar at the bottom of the screen displays helpful information about commands, accounts, and the current status of your data file.

stored hierarchy In aggregate storage databases outlines only. A hierarchy in which the members are aggregated according to the outline structure. Stored hierarchy members have certain restrictions, for example, they cannot contain formulas.

strategic objective (SO) A long-term goal defined by measurable results. Each strategic objective is associated with one perspective in the application, has one parent, the entity, and is a parent to critical success factors or other strategic objectives.

Strategy map Represents how the organization implements high-level mission and vision statements into lower-level, constituent strategic goals and objectives.

structure view Displays a topic as a simple list of component data items.

Structured Query Language A language used to process instructions to relational databases.

Subaccount Numbering A system for numbering subaccounts using non-sequential, whole numbers.

subscribe Flags an item or folder to receive automatic notification whenever the item or folder is updated.

Summary chart In the Investigates Section, rolls up detail charts shown below in the same column, plotting metrics at the summary level at the top of each chart column.

super service A special service used by the startCommonServices script to start the RSC services.

supervisor A user with full access to all applications, databases, related files, and security mechanisms for a server.

supporting detail Calculations and assumptions from which the values of cells are derived.

suppress rows Excludes rows containing missing values, and underscores characters from spreadsheet reports.

symmetric multiprocessing (SMP) A server architecture that enables multiprocessing and multithreading. Performance is not significantly degraded when a large number of users connect to an single instance simultaneously.

sync Synchronizes Shared Services and application models.

synchronized The condition that exists when the latest version of a model resides in both the application and in Shared Services. *See also model.*

system extract Transfers data from an application's metadata into an ASCII file.

tabs Navigable views of accounts and reports in Strategic Finance.

target Expected results of a measure for a specified period of time (day, quarter, and so on).

task list A detailed status list of tasks for a particular user.

taskflow The automation of a business process in which tasks are passed from one taskflow participant to another according to procedural rules.

taskflow definition Represents business processes in the taskflow management system. Consists of a network of stages and their relationships; criteria indicating the start and end of the taskflow; and information about individual stages, such as participants, associated applications, associated activities, and so on.

taskflow instance Represents a single instance of a taskflow including its state and associated data.

taskflow management system Defines, creates, and manages the execution of a taskflow including: definitions, user or application interactions, and application executables.

taskflow participant The resource who performs the task associated with the taskflow stage instance for both manual and automated stages.

Taxes - Initial Balances Strategic Finance assumes that the Initial Loss Balance, Initial Gain Balance and the Initial Balance of Taxes Paid entries have taken place in the period before the first Strategic Finance time period.

TCP/IP *See Transmission Control Protocol/Internet Protocol (TCP/IP).*

template A predefined format designed to retrieve particular data consistently.

text list In Essbase, an object that stores text values mapped to numeric identifiers. Text Lists enable the use of text measures.

text measure A data type that allows measure values to be expressed as text. In Essbase, a member tagged as "Text" in the dimension where measures are represented. The cell values are displayed as predefined text. For example, the text measure "Satisfaction Index" may have the values Low, Medium, and High. *See also typed measure, text list, derived text measure.*

time dimension Defines the time period that the data represents, such as fiscal or calendar periods.

time events Triggers for execution of jobs.

time line viewer An FDM feature that allows a user to view dates and times of completed process flow steps for specific locations.

time scale Displays metrics by a specific period in time, such as monthly or quarterly.

time series reporting A process for reporting data based on a calendar date (for example, year, quarter, month, or week).

Title bar Displays the Strategic Finance name, the file name, and the scenario name Version box.

toast message Messages that appear in the lower right corner of the screen and fade in and out.

token An encrypted identification of one valid user or group on an external authentication system.

top and side labels Column and row headings on the top and sides of a Pivot report.

top-level member A dimension member at the top of the tree in a dimension outline hierarchy, or the first member of the dimension in sort order if there is no hierarchical relationship among dimension members. The top-level member name is generally the same as the dimension name if a hierarchical relationship exists.

trace allocations A feature of Profitability and Cost Management that enables you to visually follow the flow of financial data, either forwards or backwards, from a single intersection throughout the model.

trace level Defines the level of detail captured in the log file.

traceability The ability to track a metadata element to its physical source. For example, in Essbase Studio, a cube schema can be traced from its hierarchies and measure hierarchies, to its dimension elements, date/time elements, and measures, and ultimately, to its physical source elements.

traffic lighting Color-coding of report cells, or pins based on a comparison of two dimension members, or on fixed limits.

transformation (1) Transforms artifacts so that they function properly in the destination environment after application migration. (2) In data mining, modifies data (bidirectionally) flowing between the cells in the cube and the algorithm.

translation *See currency conversion.*

Transmission Control Protocol/Internet Protocol (TCP/IP) A standard set of communication protocols linking computers with different operating systems and internal architectures. TCP/IP utilities are used to exchange files, send mail, and store data to various computers that are connected to local and wide area networks.

transparent login Logs in authenticated users without launching the login screen.

transparent partition A shared partition that enables users to access and change data in a remote database as though it is part of a local database

triangulation A means of converting balances from one currency to another via a third common currency. In Europe, this is the euro for member countries. For example, to convert from French franc to Italian lira, the common currency is defined as European euro. Therefore, in order to convert balances from French franc to Italian lira, balances are converted from French franc to European euro and from European euro to Italian lira.

triggers An Essbase feature whereby data is monitored according to user-specified criteria which when met cause Essbase to alert the user or system administrator.

trusted password A password that enables users authenticated for one product to access other products without reentering their passwords.

trusted user Authenticated user.

tuple MDX syntax element that references a cell as an intersection of a member from each dimension. If a dimension is omitted, its top member is implied. Examples: (Jan); (Jan, Sales); ([Jan], [Sales], [Cola], [Texas], [Actual])

two-pass An Essbase property that is used to recalculate members that are dependent on the calculated values of other members. Two-pass members are calculated during a second pass through the outline.

typed measure In Essbase, a member tagged as "Text" or "Date" in the dimension where measures are represented. The cell values are displayed as predefined text or dates.

unary operator A mathematical indicator (+, -, *, /, %) associated with an outline member. The unary operator defines how the member is calculated during a database roll-up.

Unicode-mode application An Essbase application wherein character text is encoded in UTF-8, enabling users with computers set up for different languages to share application data.

Uniform Resource Locator The address of a resource on the Internet or an intranet.

unique member name A non-shared member name that exists only once in a database outline.

unique member outline A database outline that is not enabled for duplicate member names.

upgrade The process of replacing an earlier software release with a current release or replacing one product with another.

upper-level block A type of data block wherein at least one of the sparse members is a parent-level member.

user directory A centralized location for user and group information. Also known as a repository or provider.

user variable Dynamically renders data forms based on a user's member selection, displaying only the specified entity. For example, user variable named Department displays specific departments and employees.

user-defined attribute (UDA) User-defined attribute, associated with members of an outline to describe a characteristic of the members. Users can use UDAs to return lists of members that have the specified UDA associated with them.

user-defined member list A named, static set of members within a dimension defined by the user.

validation A process of checking a business rule, report script, or partition definition against the outline to make sure that the object being checked is valid. For example, in FDM, validation rules ensure that certain conditions are met after data is loaded from FDM to the target application.

value dimension Used to define input value, translated value, and consolidation detail.

variance Difference between two values (for example, planned and actual value).

varying attribute An attribute association that changes over one or more dimensions. It can be used to track a value in relation to these dimensions; for example, the varying attribute Sales Representative, associated with the Product dimension, can be used to track the value Customer Sales of several different sales representatives in relation to the Time dimension. Varying attributes can also be used for member selection, such as finding the Products that a Sales Representative was responsible for in May.

version Possible outcome used within the context of a scenario of data. For example, Budget - Best Case and Budget - Worst Case where Budget is scenario and Best Case and Worst Case are versions.

view Representation of either a year-to-date or periodic display of data.

visual cue A formatted style, such as a font or a color, that highlights specific types of data values. Data values may be dimension members; parent, child, or shared members; dynamic calculations; members containing a formula; read only data cells; read and write data cells; or linked objects.

Web server Software or hardware hosting intranet or Internet Web pages or Web applications.

weight Value assigned to an item on a scorecard that indicates the relative importance of that item in the calculation of the overall scorecard score. The weighting of all items on a scorecard accumulates to 100%. For example, to recognize the importance of developing new features for a product, the measure for New Features Coded on a developer's scorecard would be assigned a higher weighting than a measure for Number of Minor Defect Fixes.

wild card Character that represents any single character or group of characters (*) in a search string.

WITH section In MaxL DML, an optional section of the query used for creating re-usable logic to define sets or members. Sets or custom members can be defined once in the WITH section, and then referenced multiple times during a query.

work flow The steps required to process data from start to finish in FDM. The workflow consists of Import (loading data from the GL file), Validate (ensures all members are mapped to a valid account), Export (loads the mapped members to the target application), and Check (verifies accuracy of data by processing data with user-defined validation rules).

workbook An entire spreadsheet file with many worksheets.

Workspace Page A page created with content from multiple sources including documents, URL, and other content types. Enables a user to aggregate content from Oracle and non-Oracle sources.

write-back The ability for a retrieval client, such as a spreadsheet, to update a database value.

ws.conf A configuration file for Windows platforms.

wsconf_platform A configuration file for UNIX platforms.

XML *See Extensible Markup Language (XML).*

XOLAP An Essbase multidimensional database that stores only the outline metadata and retrieves all data from a relational database at query time. XOLAP supports aggregate storage databases and applications that contain duplicate member names.

Y axis scale Range of values on Y axis of charts displayed in Investigate Section. For example, use a unique Y axis scale for each chart, the same Y axis scale for all Detail charts, or the same Y axis scale for all charts in the column. Often, using a common Y axis improves your ability to compare charts at a glance.

Zero Administration Software tool that identifies version number of the most up-to-date plug-in on the server.

zoom Sets the magnification of a report. For example, magnify a report to fit whole page, page width, or percentage of magnification based on 100%.

ZoomChart Used to view detailed information by enlarging a chart. Enables you to see detailed numeric information on the metric that is displayed in the chart.

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