Enterprise HR®

Workflow User’s Guide
**ADP Trademarks**
The ADP® logo, ADP®, and Enterprise HR® are registered trademarks of ADP, LLC. A more human resource.SM is a service mark of ADP, LLC.

**Third-Party Trademarks**
Microsoft® and Windows® are registered trademarks of Microsoft Corporation.
PeopleSoft® and Java® are registered trademarks of Oracle Corporation.
SQR® is a registered trademark of Hyperion Solutions Corporation.
All other trademarks and service marks are the property of their respective owners.
# Contents

## About This Guide

- Introduction ........................................... xii
- Audience for this Guide ................................ xiii
- What’s in This Book ...................................... xiv
- Related Documentation ................................ xvi
- Documentation Conventions .............................. xvii

## 1 Understanding Workflow

- Introduction ........................................... 1-2
- What is a Workflow Business Process? .................. 1-3
- Components of a Workflow Business Process ......... 1-4
  - Tasks ................................................. 1-4
  - Rules ................................................ 1-4
  - Roles ................................................ 1-5
  - Routings ............................................. 1-5
- Sample Workflow Business Processes .................... 1-6
  - The Hire Employee Business Process .................. 1-7
  - The Terminate Employee Business Process ............. 1-9
  - The Employee Review Business Process ................ 1-11
  - Activating a Sample Business Process ................. 1-12
- Why Use Workflow? ...................................... 1-15
- Automating Business Processes in ADP Enterprise HR 1-16
- How Workflow Automates a Business Process .......... 1-17
- Extending the ADP Enterprise HR Application ......... 1-18
  - Panel-Based Operation ................................ 1-18
  - Automated Queries .................................... 1-19
  - The Workflow Designer ................................ 1-19
  - Event-Driven Routings ................................ 1-19
  - Open Architecture ..................................... 1-20
- Using Worklists ........................................ 1-21
  - Worklist Features .................................... 1-24
- Understanding the Workflow Worklist ................... 1-25
  - Worklist Icons ....................................... 1-26
    - Refresh Icon ....................................... 1-26
    - Mark Complete Icon ................................ 1-26
    - Re-route Icon ........................................ 1-26
  - Routing Work Items with Workflow Rules ............ 1-27
## Contents

Monitoring the Database with Database Agents ................................................. 1-28
Entering Panel Data Through the Message Agent Server .................................. 1-29
Integrating Third-Party Applications ............................................................... 1-30

# Designing Your Workflow

Introduction ........................................................................................................... 2-2
Preparing for Implementing a Workflow System .............................................. 2-3
    Executive Sponsorship .................................................................................. 2-3
    Time Allocation ............................................................................................ 2-3
    Process Redefinition .................................................................................... 2-3
    Project Team ................................................................................................. 2-4
Anatomy of a Business Process .......................................................................... 2-5
    Defining Your Business Model .................................................................... 2-5
Understanding the Employee Review Example .................................................. 2-7
    The Employee Review Business Process .................................................... 2-8
        The Employee Review Due Workflow Segment ..................................... 2-8
        The Review Employee Workflow Segment .......................................... 2-9
        The Model Compensation Workflow Segment .................................... 2-9
        The Approve Model Workflow Segment ............................................. 2-10
        The Workflow Development Process ................................................. 2-11

## Defining Workflow Business Processes: The Workflow Editor

Introduction ........................................................................................................... 3-2
Opening an Existing Workflow Business Process .............................................. 3-3
Creating a New Workflow Business Process ..................................................... 3-5
Creating a Workflow Panel Task ........................................................................ 3-6
Creating a Workflow Email Task ....................................................................... 3-13
Creating a Program Launch Task ..................................................................... 3-16
Creating a Route ................................................................................................. 3-21
Creating a Group Router ................................................................................... 3-26
Understanding the Workflow Toolbars ............................................................. 3-28
    Workflow Objects Toolbar ......................................................................... 3-28
    Visual Objects Toolbar .............................................................................. 3-29
    Layout Toolbar ............................................................................................ 3-31
    Canvas Toolbar ............................................................................................ 3-34
Modifying the Workflow Editor Options .......................................................... 3-35

## Defining Business Process Roles

Introduction ........................................................................................................... 4-2
What is a Role? ..................................................................................................... 4-3
    User List Roles and Query Roles .................................................................. 4-3
        User List Roles ...................................................................................... 4-4
        Query Roles ......................................................................................... 4-5
What is a Role User? .......................................................................................... 4-6
Developing Roles ............................................................................................... 4-7
Creating User List Roles ................................................................................... 4-7
Creating Query Role Definitions ........................................................................ 4-8
Contents

9 Message Definitions

Introduction ................................................................. 9-2
Understanding Message Definitions .................................. 9-3
Opening an Existing Message Definition ............................ 9-4
Creating Message Definitions .......................................... 9-6
Creating Valid Message Maps ......................................... 9-11
Mapping Output Fields .................................................. 9-12
Mapping Data to Panels with Scroll Regions ....................... 9-12
Debugging the Panel Processor ....................................... 9-13
Cross-Reference Reports for Message Definitions .................. 9-14

10 Initial Workflow Administration

Introduction ................................................................. 10-2
Setting Up the Administration Environment ......................... 10-3
Setting System Defaults ............................................... 10-4
Creating Default Email Messages ..................................... 10-6
Sending Workflow Messages .......................................... 10-8
Starting Workflow Database Agents .................................. 10-10

11 Monitoring a Business Process: The Workflow Administrator

Introduction ................................................................. 11-2
Configuring a Worklist Volume Monitor ............................... 11-3
Running a Worklist Volume Monitor ................................... 11-6
Checking for Worklist Time-outs ...................................... 11-9
Reviewing Work Items Online with the Worklist Monitor ........... 11-11
   Searching Workflow Properties .................................... 11-11
   Using the Worklist Entries Panel ................................... 11-14
   Searching for Work Items from a Worklist ......................... 11-16
   Updating Work Items .................................................. 11-18
   Reassigning Multiple Work Items ................................... 11-19
Clearing a Worklist ...................................................... 11-20

12 Troubleshooting Workflow Business Processes

Introduction ................................................................. 12-2
A Quick Workflow Review .............................................. 12-3
Is the Workflow Process Enabled? .................................... 12-4
Workflow Designer Tips .................................................. 12-5
Verifying the Workflow Roles .......................................... 12-6
Workflow User Setup .................................................... 12-7
13 Creating and Running Workflow Queries

Introduction .................................................................................................................. 13-2
Types of Workflow Queries ......................................................................................... 13-3
Running Predefined Queries ....................................................................................... 13-4
Creating a Query .......................................................................................................... 13-5
Selecting Record Definitions ...................................................................................... 13-7
Using the Query Utility Side Panel ............................................................................ 13-9
The Field View Panel .................................................................................................... 13-10
Using the Query Structure Toolbar ........................................................................... 13-11
Selecting a Field View ............................................................................................... 13-12
Fields in Record View ................................................................................................ 13-13
Selected Fields in Record View .................................................................................. 13-14
Ordering Fields View .................................................................................................. 13-15
Fields with Criteria View ........................................................................................... 13-16
All Above Fields View ............................................................................................... 13-16
Changing the Order of Fields ..................................................................................... 13-16
Joining Records in a Query ......................................................................................... 13-17
Selecting Query Output Fields ................................................................................... 13-18
Formatting Query Output ........................................................................................... 13-19
Viewing and Changing Column Headings ................................................................. 13-19
Setting the Output Sort Order .................................................................................... 13-20
Displaying Translate Values ....................................................................................... 13-20
Specifying Output Selection Criteria ......................................................................... 13-21
Specifying Selection Criteria for Aggregate Functions ............................................. 13-22
Setting Up Workflow Query Security ....................................................................... 13-24
Building Query Trees .................................................................................................. 13-25
Query Tree Considerations ......................................................................................... 13-25
Defining Your Query Tree ......................................................................................... 13-26
Access Group Security ............................................................................................... 13-27
Understanding Access Group Security ..................................................................... 13-27
Setting Up Access Group Security ............................................................................. 13-29
Row-Level Query Security ......................................................................................... 13-31
Setting Query Security Record Definitions ............................................................... 13-31
Query Security Profiles ............................................................................................. 13-33

14 Advanced Workflow Query Features

Introduction .................................................................................................................. 14-2
Selecting Output Fields ............................................................................................... 14-3
Changing Field Output Order ................................................................................... 14-3
Using the Column Number Option ........................................................................... 14-3
Using the Right Mouse Pop-up Menu ....................................................................... 14-4
Using the Query Structure Toolbar ........................................................................... 14-4
Deselecting a Field ..................................................................................................... 14-4
Formatting Query Output ........................................................................................... 14-5
Specifying Column Headings .................................................................................... 14-5
Using Translate Table Values ..................................................................................... 14-6
Specifying Output Row Sort Order ........................................................................... 14-8
Adding Sort Order ...................................................................................................... 14-8
Changing Sort Order ................................................................................................. 14-9
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saving Queries</td>
<td>14-10</td>
</tr>
<tr>
<td>Printing Queries</td>
<td>14-11</td>
</tr>
<tr>
<td>Running Queries</td>
<td>14-12</td>
</tr>
<tr>
<td>Entering Selection Criteria</td>
<td>14-14</td>
</tr>
<tr>
<td>The Criteria View Panel</td>
<td>14-15</td>
</tr>
<tr>
<td>Criteria Operator Field</td>
<td>14-17</td>
</tr>
<tr>
<td>Entering Comparison Values</td>
<td>14-18</td>
</tr>
<tr>
<td>Available Value Types</td>
<td>14-19</td>
</tr>
<tr>
<td>Entering a Constant Value</td>
<td>14-20</td>
</tr>
<tr>
<td>Entering a Field Value</td>
<td>14-20</td>
</tr>
<tr>
<td>Entering an Expression Value</td>
<td>14-21</td>
</tr>
<tr>
<td>Entering a Subquery Comparison Value</td>
<td>14-21</td>
</tr>
<tr>
<td>Entering a Prompt Value</td>
<td>14-22</td>
</tr>
<tr>
<td>Entering a Comparison List Value</td>
<td>14-25</td>
</tr>
<tr>
<td>Specifying Effective Date Criteria</td>
<td>14-26</td>
</tr>
<tr>
<td>Effective Date Dialog Box</td>
<td>14-27</td>
</tr>
<tr>
<td>Relating Multiple Criteria</td>
<td>14-28</td>
</tr>
<tr>
<td>Criteria View Options</td>
<td>14-28</td>
</tr>
<tr>
<td>The Logical Operators: AND and OR</td>
<td>14-29</td>
</tr>
<tr>
<td>Grouping Criteria with Parentheses</td>
<td>14-30</td>
</tr>
<tr>
<td>Advanced Query Options</td>
<td>14-31</td>
</tr>
<tr>
<td>Creating Aggregate Functions</td>
<td>14-31</td>
</tr>
<tr>
<td>Understanding Aggregate Functions</td>
<td>14-31</td>
</tr>
<tr>
<td>Applying Aggregate Functions to Record Fields</td>
<td>14-32</td>
</tr>
<tr>
<td>Combining Aggregate Functions with Other Selection Criteria</td>
<td>14-33</td>
</tr>
<tr>
<td>Using Having Criteria</td>
<td>14-34</td>
</tr>
<tr>
<td>Creating Query Expressions</td>
<td>14-35</td>
</tr>
<tr>
<td>Viewing Expressions</td>
<td>14-35</td>
</tr>
<tr>
<td>Adding Expressions</td>
<td>14-36</td>
</tr>
<tr>
<td>Editing Expressions</td>
<td>14-37</td>
</tr>
<tr>
<td>Deleting Expressions</td>
<td>14-37</td>
</tr>
<tr>
<td>Making Query Results Distinct</td>
<td>14-37</td>
</tr>
<tr>
<td>Creating Subqueries</td>
<td>14-38</td>
</tr>
<tr>
<td>Creating Query Joins</td>
<td>14-40</td>
</tr>
<tr>
<td>Creating Hierarchical Joins</td>
<td>14-40</td>
</tr>
<tr>
<td>Creating Related Record Joins</td>
<td>14-41</td>
</tr>
<tr>
<td>Creating Any Record Joins</td>
<td>14-43</td>
</tr>
<tr>
<td>Creating Query Unions</td>
<td>14-44</td>
</tr>
<tr>
<td>Viewing Query SQL Statements</td>
<td>14-45</td>
</tr>
<tr>
<td>Reporting Queries</td>
<td>14-46</td>
</tr>
<tr>
<td>Database Agent Queries</td>
<td>14-47</td>
</tr>
</tbody>
</table>

A  Third-Party Application Integration

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>A-2</td>
</tr>
<tr>
<td>Understanding the Panel Processor API</td>
<td>A-3</td>
</tr>
<tr>
<td>What is a Message?</td>
<td>A-3</td>
</tr>
<tr>
<td>How Do I Message-Enable an ADP Enterprise HR Panel?</td>
<td>A-3</td>
</tr>
<tr>
<td>How Do I Message-Enable a Third-party Application?</td>
<td>A-3</td>
</tr>
<tr>
<td>How Do I Send Messages to the Panel Processor?</td>
<td>A-4</td>
</tr>
<tr>
<td>API Operations</td>
<td>A-5</td>
</tr>
<tr>
<td>PAGE</td>
<td>TOPIC</td>
</tr>
<tr>
<td>------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>xii</td>
<td>Introduction</td>
</tr>
<tr>
<td>xiii</td>
<td>Audience for this Guide</td>
</tr>
<tr>
<td>xiv</td>
<td>What’s in This Book</td>
</tr>
<tr>
<td>xvi</td>
<td>Related Documentation</td>
</tr>
<tr>
<td>xvii</td>
<td>Documentation Conventions</td>
</tr>
</tbody>
</table>
Introduction

This guide is designed to help you develop, schedule, and administer workflow business processes in ADP’s Enterprise HR. It provides a solid foundation from which you can begin using the Workflow tools and features.

The chapters in this guide include both conceptual information about workflow, as well as detailed procedures for using the three Workflow applications: the Workflow Designer, the Workflow Administrator, and the Query Utility.
This guide is written for technical users, project leaders, and programmers who will be responsible for customizing ADP Enterprise HR to implement Workflow business processes. In order to take full advantage of the information covered in this guide, we recommend that you have a basic understanding of how to use ADP Enterprise HR.

To take advantage of the information covered in this guide, we recommend that you have a basic understanding of how to use ADP Enterprise HR applications. You should be familiar with how to navigate around in and how to add, update, and delete information using ADP Enterprise HR tables and tabs. You should know how to use ADP’s Enterprise HR with Enterprise Tools (referred to as Enterprise Tools), including the Record Editor, the Navigation Editor, and the Code Editor.

In addition, you should be comfortable using the Microsoft Windows graphical user interface. It is also assumed that you have a working knowledge of the database platform for your environment.

The introduction and tutorial information included in this guide are intended to familiarize you with the technology behind the ADP Enterprise HR development environment. They should also help you understand how the various Enterprise Tools editors work together.

The sample workflow business processes used in examples throughout this guide are delivered in the ADP Enterprise HR DEMO database. For more information, see “Sample Workflow Business Processes” on page 1-6. For application-specific information, refer to the Application Developer’s Guide.

This guide is not intended to teach database design. If you are unfamiliar with the concepts of relational database design and normalization, see The Relational Model for Database Management: Version 2; by E. F. Codd, Ph.D. (published by Addison-Wesley 1990).
What’s in This Book

Incorporating workflow into your ADP Enterprise HR application is a very complex process. Each chapter’s introduction includes a list of assumptions about your progress in the workflow development process. These assumptions tell you which workflow development tasks you must complete before you can apply the procedures described in the current chapter.

Often, to complete a workflow development task, you have to perform numerous procedures in a specific order. In these cases, a summary procedure is given that lists each step of the process, in the order in which it should be performed. “Creating a New Workflow Business Process” on page 3-5 is an example of a summary procedure. A summary procedure includes cross references to more specific instructions, so you will know where to find the documentation you need to complete the complex task.

The following chapters and appendices are included in this guide:

Chapter 1, “Understanding Workflow” reviews the concepts behind Workflow and its relationship to other ADP Enterprise HR applications. It also includes a summary of the sample workflow scenarios delivered in the ADP Enterprise HR DEMO database.

Chapter 2, “Designing Your Workflow,” gives you an overview of how to build a workflow business process. Use this chapter as an overview for the rest of the guide. Workflow design and diagraming conventions are discussed. Each component of a workflow business process is defined, and cross references are included to later chapters that include more detailed descriptions for building the workflow components.

Chapter 3, “Defining Workflow Business Processes: The Workflow Editor,” describes how to use the Workflow Designer to create the major components of a workflow business process. It includes procedures for creating business process descriptions, activities, events, and workflow routings.

Chapter 4, “Defining Business Process Roles,” describes how to use the Workflow Designer to create workflow role definitions. It provides a brief overview of how roles and role users are used in a workflow.

Chapter 5, “Defining Role Users,” describes how to use the Workflow Administrator to create role users and to assign these users to User List Roles.

Chapter 6, “Worklist Record Definitions,” includes an overview of worklist record definitions. It includes general procedures for creating and copying record definitions.


Chapter 8, “Creating Database Agents,” describes how to create database agents that will query your database and use ADP Enterprise HR to trigger workflow events. It includes procedures that define how to add and run database agents within your workflow. You will use both the Query Utility and the Process Scheduler to create database agent queries and schedule database agents.
Chapter 9, “Message Definitions,” describes how to use the Workflow Designer to create message definitions.

Chapter 10, “Initial Workflow Administration,” discusses how to use the Workflow Administrator to set up the workflow administrative environment and to schedule workflow agents. Refer to this chapter for information about how to run your workflow.

Chapter 11, “Monitoring a Business Process: The Workflow Administrator,” describes how to use the Workflow Administrator to monitor your worklist. Specifically, it describes how to monitor worklist volumes, and it includes procedures for checking worklist timeouts and reviewing worklist items online.

Chapter 12, “Troubleshooting Workflow Business Processes,” the frequently asked questions involved in the process of getting a newly created workflow processes running are discussed.

Chapter 13, “Creating and Running Workflow Queries,” describes how to use the Query Utility. It provides detailed procedures for creating and running queries, as well as setting up query security.

Chapter 14, “Advanced Workflow Query Features,” provides detailed information about Query Utility features.

Appendix A, “Third-Party Application Integration,” provides technical details that you need to know when you integrate Workflow with other products.

An index is also provided.
Related Documentation

This guide covers the information necessary for *The Workflow User’s Guide*. You may need to refer to related documentation for other areas of the product. You can access the documentation in the following locations:

- Online manuals through the ADP Enterprise HR application Help menu
- Printed and online manuals on the web at [National Accounts Support Center ~ Product Knowledgebase ~ Payroll / HR](#)

The *Using ADP Enterprise HR Guide* also includes a related documentation table which lists the documentation set delivered with ADP Enterprise HR, the purpose of the documents, and where the documents can be located. This table also includes a list of delivered online help.
ADP Enterprise HR allows your administrator to configure panels, translate values, and the ADP Enterprise HR home page. Your administrator can change field labels, assign default values to fields, define fields as required, hide fields, as well as re-align fields on a panel. Translate values can be added, changed or deleted for many fields. Panel illustrations and field descriptions used throughout this guide represent the default settings as delivered by ADP. For specifics on configuring ADP Enterprise HR, see the *Using ADP Enterprise HR Guide*.

Table 1 describes the documentation conventions used in this guide.

Table 1. Documentation Conventions

<table>
<thead>
<tr>
<th>Documentation Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>bold</strong></td>
<td>In procedures, user interface items that you select, click, or enter information for are shown in bold. For instance, tab names, buttons, and field names.</td>
</tr>
<tr>
<td><strong>command</strong></td>
<td>Indicates that you should type the command on your computer.</td>
</tr>
<tr>
<td></td>
<td>Signifies important additional information.</td>
</tr>
<tr>
<td></td>
<td>Signifies very important additional information.</td>
</tr>
<tr>
<td></td>
<td>Identifies helpful—but not necessary—information.</td>
</tr>
<tr>
<td></td>
<td>Signifies that a failure to follow the recommended procedure could result in a loss of data or could result in the product not performing properly.</td>
</tr>
<tr>
<td></td>
<td>Used to indicate the either of the following:</td>
</tr>
<tr>
<td></td>
<td>• You can find additional information in the online help</td>
</tr>
<tr>
<td></td>
<td>• You can find additional information on interface shortcuts and tips in the user’s guide.</td>
</tr>
<tr>
<td>Company Definitions ~ Organization Definitions</td>
<td>At the beginning of a procedure, shows the path or navigation to a process or task.</td>
</tr>
<tr>
<td>People ~ Personnel Actions ~ Change Employee’s Job/Position ~ Change Job Position</td>
<td>Within text, shows the path or navigation to a process, task, or tab.</td>
</tr>
</tbody>
</table>
## Table 1. Documentation Conventions (cont.)

<table>
<thead>
<tr>
<th>Documentation Convention</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="What's next" /></td>
<td>Indicates that you have reached the end of one step in a multiple-step process. Instructions are given after this convention to help you find the next step in the process and other related information.</td>
</tr>
<tr>
<td><img src="image2" alt="End of procedure" /></td>
<td>Indicates that you have reached the end of a procedure. If additional information is available, it is noted after this convention.</td>
</tr>
<tr>
<td><img src="image3" alt="More info" /></td>
<td>Indicates where you can find a complete description of every field on a panel. This convention is placed either to the left or, less often, to the right of a screen illustration.</td>
</tr>
<tr>
<td><img src="image4" alt="Tasks" /></td>
<td>Lists each step in a multi-step process, and indicates which step the current section is documenting. In this example, the third step is currently being documented. Note that this step is highlighted in bold and is preceded by a check mark. If you are viewing an online manual, click the highlighted text to jump to the desired section.</td>
</tr>
</tbody>
</table>

*For a description of the fields on this panel, press F1.*
### Chapter 1: Understanding Workflow

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>1-3</td>
<td>What is a Workflow Business Process?</td>
</tr>
<tr>
<td>1-4</td>
<td>Components of a Workflow Business Process</td>
</tr>
<tr>
<td>1-6</td>
<td>Sample Workflow Business Processes</td>
</tr>
<tr>
<td>1-15</td>
<td>Why Use Workflow?</td>
</tr>
<tr>
<td>1-16</td>
<td>Automating Business Processes in ADP Enterprise HR</td>
</tr>
<tr>
<td>1-17</td>
<td>How Workflow Automates a Business Process</td>
</tr>
<tr>
<td>1-18</td>
<td>Extending the ADP Enterprise HR Application</td>
</tr>
<tr>
<td>1-21</td>
<td>Using Worklists</td>
</tr>
<tr>
<td>1-25</td>
<td>Understanding the Workflow Worklist</td>
</tr>
<tr>
<td>1-27</td>
<td>Routing Work Items with Workflow Rules</td>
</tr>
<tr>
<td>1-28</td>
<td>Monitoring the Database with Database Agents</td>
</tr>
<tr>
<td>1-29</td>
<td>Entering Panel Data Through the Message Agent Server</td>
</tr>
<tr>
<td>1-30</td>
<td>Integrating Third-Party Applications</td>
</tr>
</tbody>
</table>
Workflow enables you to logically move information throughout your company, across application and functional boundaries. When you incorporate workflow business processes into your ADP Enterprise HR application, you are leveraging a combination of workflow tools, email, and intelligent agents.

Workflow business processes automate common business processes, such as hiring new employees. ADP Enterprise HR also provides the ability to integrate with other applications. As with Enterprise Tools, Workflow tools provide a flexible development environment that you can use to customize the ADP Enterprise HR application to your unique business requirements.

The power of ADP Enterprise HR comes from its ability to automate vital business tasks. Workflow tools significantly expand the types of tasks that you can automate. Using Workflow, you can create a single, flexible business process that integrates the activities of multiple users. You can re-engineer and streamline essential business processes to increase efficiency, cut costs, and keep up with rapidly changing customer and competitive challenges.

The basic principles of workflow technology and the ADP Enterprise HR approach to workflow design are introduced in this chapter.
What is a Workflow Business Process?

Many of the tasks that you perform throughout the day are part of larger tasks that involve several steps and several people working together. When you enter an invoice, for example, you kick off an approval and payment process: someone else reviews and approves the invoice, and a third person submits payment to the vendor. A workflow business process automates an overall business process, such as entering an invoice.

Workflow tools help you build the business process into your ADP Enterprise HR application. Use Workflow to tie the individual process steps together to coordinate everyone’s activities. You define the big picture so Workflow knows what you are trying to accomplish, and ADP Enterprise HR automatically starts each step in the workflow business process at the right time.

Non-ADP Enterprise HR users can be included in the workflow business process. For more information about incorporating third-party applications into your workflow business process, see Appendix A, “Third-Party Application Integration.”

Workflow challenges you to change how you look at your core business processes—that is, to evaluate your business processes so you can find more efficient ways to work within your company. Once you understand how to implement workflow business processes, you may be in a better position to integrate departmental applications and streams of information across your company, thus improving the timeliness and flow of work throughout your organization.
Components of a Workflow Business Process

A workflow business process is made up of the following components:

- **Tasks**
- **Rules**
- **Roles**
- **Routings**

**Tasks**

Tasks represent an activity in the Workflow process. The task is either performed by a user or it is completed automatically. The most common type of Workflow task is the Panel Task. A Panel Task is actually an ADP Enterprise HR Panel Task that is used to enter data by either a human operator or an external program. Other examples of a Workflow task, would be the sending of an email or the automatic launching of an external program. In each instance, some sort of activity is initiated through the Workflow business process.

The following types of tasks are available through the Workflow Designer:

- Panel Task
- Email Task
- Program Launcher Task

**Rules**

Rules represent your company’s business practices. Rules define which activities are required to process your business data.

In most organizations, rules are defined in policies and procedures documents that are often outdated or not easily accessible. By incorporating rules into a workflow business process, you can ensure that people follow them without requiring someone to manually check for compliance.

The rules are implemented through the Workflow Designer by defining Enterprise Code programs and the existing edit rules on panel tasks.
Roles

Roles describe how people fit into a workflow business process. A role is a class of users who perform the same type of work, such as clerks or managers. Your business rules typically specify which user role should perform each activity.

Roles direct work to types of people rather than to specific individuals. Identifying roles instead of individual users makes your workflow business process more flexible—roles make a workflow business process easier to maintain. Roles remain stable even as people change jobs.

Roles may also be based on database queries. For example, the Manager Query role. These types of roles are very flexible and powerful, but they are slightly complex to set up.

This flexible approach for defining roles is useful for several reasons:

• A rule statement makes it clear why a specific individual is the right person to approve your requests—because he or she fills the role of manager.

• A rule can be stated more generally. It can apply to any number of departments, not just those that a single individual manages.

• A rule does not need to be changed when a new manager takes over a department or when an employee moves to a new department with a different manager.

ADP Enterprise HR application data is the basis for defining roles throughout your organization. The roles and relationships in your enterprise are defined in a security tree. Using the Tree Editor you have already defined employees, managers, job positions, reporting levels, department structures, and so forth. This powerful tree capability carries over to workflow role definitions. For more information about using the Tree Editor, see the Application Administrator’s Guide.

Routings

Routings connect the activities in a workflow business process. This allows information to move from one place to another, from one step to the next. Routings specify where information goes and what form it takes, such as email messages or worklist entries.

Routings put the flow into a workflow business process. The network of routings in a workflow group isolates activities into an integrated business process. The right information flows to the right people at the right time, enabling users to work together to accomplish the company’s goals.

Routings coordinate roles throughout the different levels and departments in a company. Overall, they automate communication for complex tasks. Routings are triggered by Enterprise Code programs that are defined for the workflow business process steps. These Enterprise Code programs include a firing of an event that causes data to be passed to the next workflow process step.
Sample Workflow Business Processes

ADP delivers ADP Enterprise HR with sample business processes in the DEMO database. These business processes can be easily enabled. You have complete access to these business processes through the Workflow Designer within ADP’s Enterprise HR with Enterprise Builder. You can use these examples, and the specialized panels built to support them, as templates to customize for your specific needs. Then, if necessary, you can take the next step and create your own business processes using your own rules, roles, and routings.

You have access to the Enterprise Tools that build the database tables, panels, and reports that make up your ADP Enterprise HR application. You can use the existing functionality of the ADP Enterprise HR application as is, or you can use it as a starting point for your customization.

It is easiest to review these workflow business processes from the DEMO database—all the accompanying roles and role users have already been created for you. The pre-defined roles include the following:

- ANALYST
- MANAGER
- BENEFITS ADMINISTRATOR
- PAYROLL ADMINISTRATOR
- HR ADMINISTRATOR
- SYSTEM ADMINISTRATOR
- TRAINING COORDINATOR
- VICE PRESIDENT
- MIS ADMINISTRATOR
- FACILITIES MANAGER
- EMPLOYEE

To create your own roles and role users, refer to Chapter 4, “Defining Business Process Roles.”
Workflow business process are delivered inactivated in both the DEMO and the master databases. See “Activating a Sample Business Process” on page 1-12 for a description of how to activate the events and worklists in a delivered business process.

The following sections give an overview of the delivered business processes.

- The Hire Employee Business Process
- The Terminate Employee Business Process
- The Employee Review Business Process

Emails and worklist items are triggered for the Benefits Administrator only if Benefits Administration is not selected on the Basic Options panel (Installation task).

### The Hire Employee Business Process

The Hire Employee business process automates a very simple business process. Each time a new employee is hired, several groups in your organization need to be notified: benefits, payroll, facilities, computer systems, and so forth. The Hire Employee business process notifies a manager in each of these areas (via both an email message and a worklist item) that a new hire needs to be set up. Hiring a new employee and saving the new hire information triggers the Hire Employee business process.

After you complete a Hire worklist task, you need to mark the worklist item as “Complete.” This is not automatically done for you. This enables you to complete multiple tasks for the same worklist item before the item is removed from the worklist. For more information, see “Using Worklists” on page 1-21.

Table 1-1 gives a brief description of each business event, role user, and the routing in the Hire Employee business process.

<table>
<thead>
<tr>
<th>Hiring an Employee Triggers These Tasks...</th>
<th>Which Creates This Type of Routing...</th>
<th>Completed by This Workflow Role...</th>
</tr>
</thead>
</table>
| Benefits enrollment tasks                | • A worklist routing that, when worked, takes the role user to Health Benefits to enter benefits for the new employee  
• An email routing that sends notification that a Hire Employee worklist item has been sent to the role user’s worklist | Benefits Administrator* |
| ADP’s Enterprise HR payroll solution tax setup tasks (for Enterprise Payroll users) | • A worklist routing that, when worked, takes the role user to the Federal Taxes to set up tax information  
• An email routing that sends notification that a Hire Employee worklist item has been sent to the role user’s worklist | Payroll Administrator |
Table 1-1. Hire Employee Business Process Components (cont.)

<table>
<thead>
<tr>
<th>Hiring an Employee Triggers These Tasks...</th>
<th>Which Creates This Type of Routing...</th>
<th>Completed by This Workflow Role...</th>
</tr>
</thead>
</table>
| ADP’s Enterprise HR payroll solution tax setup tasks (for Autolink users only) | • A worklist routing that, when worked, takes the role user to Federal Taxes to set up tax information  
• An email routing that sends notification that a Hire Employee worklist item has been sent to the role user’s worklist | Payroll Administrator |
| Facilities setup tasks | • A worklist routing that, when worked, takes the role user to the Company Property table to enter information about the employee’s phone, desk, PC, and other property assignments  
• An email routing that sends notification that a Hire Employee worklist item has been sent to the role user’s worklist | Facilities Manager |
| MIS Setup tasks | • An email routing that sends notification to set up the new employee’s MIS access.  
| | | No worklist item is sent—there are no application screens for entering computer systems information | MIS Administrator |

* Note that emails and worklist items are triggered for the Benefits Administrator only if Benefits Administration is not selected on the Basic Options panel (Installation task).

This simple business process doesn’t use the advanced Workflow features, such as query roles, database agents, and so forth. This basic business process design is a good introduction for new Workflow users—it is also a good companion to the Terminate Employee business process described in the next section.
The Terminate Employee Business Process

The Terminate Employee business process is very similar to the Hire Employee business process. Each time an employee is terminated, several groups in your organization need to be notified: such as benefits, payroll, facilities, computer systems, training and development.

The Terminate Employee business process notifies a manager in each of these areas (via both an email message and a worklist item) that an employee needs to be terminated. Terminating an employee, and saving the termination information, triggers the Terminate Employee business process.

After you complete a Terminate worklist task, you need to mark the worklist item as “Complete.” This is not automatically done for you. This enables you to complete multiple tasks for the same worklist item before the item is removed from the worklist. For more information, see “Using Worklists” on page 1-21.

Table 1-2 gives a brief description of each business event, role user, and routing in the Terminate Employee business process.

Table 1-2. Terminate Employee Business Process Components

<table>
<thead>
<tr>
<th>Terminating an Employee Triggers These Tasks...</th>
<th>Which Creates This Type of Routing...</th>
<th>Completed by This Workflow Role...</th>
</tr>
</thead>
</table>
| Benefits cancellation tasks                   | • A worklist routing that, when worked, takes the role user to Health Benefits to cancel the employee’s benefits  
• An email routing that sends notification that a Terminate Employee worklist item has been sent to the role user’s worklist | Benefits Administrator* |
| Payroll Termination tasks                     | • A worklist routing that, when worked, takes the role user to Earnings Amount to terminate payroll information.  
• An email routing that sends notification that a Terminate Employee worklist item has been sent to the role user’s worklist | Payroll Administrator |
| COBRA Action task                             | • A worklist routing that, when worked, takes the role user to Quality Events to terminate COBRA information.  
• An email routing that sends notification that a Terminate Employee worklist item has been sent to the role user’s worklist | Benefits Administrator* |
Table 1-2.  Terminate Employee Business Process Components (cont.)

<table>
<thead>
<tr>
<th>Terminating an Employee Triggers These Tasks...</th>
<th>Which Creates This Type of Routing...</th>
<th>Completed by This Workflow Role...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company Property retrieval task</strong></td>
<td>• A worklist routing that, when worked, takes the role user to the Company Property task to remove information about the employee’s phone, desk, PC, and other property assignments.  &lt;br&gt;• An email routing that sends notification that a Terminate Employee worklist item has been sent to the role user’s worklist</td>
<td>Facilities Manager</td>
</tr>
<tr>
<td><strong>MIS (computer systems) cancellation tasks</strong></td>
<td>• An email routing that sends notification to cancel the employee’s MIS access.  &lt;br&gt;• No worklist item is sent—there are no application screens for cancelling computer systems information.</td>
<td>MIS Administrator</td>
</tr>
<tr>
<td><strong>Course Cancellation tasks</strong></td>
<td>• A worklist routing that, when worked, takes the role user to the Training summary panel to cancel the employee’s course enrollment.  &lt;br&gt;• An email routing that sends notification that a Terminate Employee worklist item has been sent to the role user’s worklist</td>
<td>Training Coordinator</td>
</tr>
</tbody>
</table>

_emails and worklist items are triggered for the Benefits Administrator only if Benefits Administration is not selected on the Basic Options panel (Installation task)._

As explained in Table 1-2, each business event sends an email routing to the appropriate role user.

This simple business process application does not use advanced Workflow features such as query roles, database agents, and so forth. This basic business process design is a good place for new Workflow users to start—it is also a good companion to the Hire Employee business process described in the previous section.
The Employee Review Business Process

The Employee Review business process and any other task related to Employee Review are only examples of workflow processes that a client can add to ADP Enterprise HR. Employee review is not a workflow delivered by ADP.

Most Human Resource departments have a well-defined employee review and performance appraisal process. This process can include number of manual steps, such as the following:

1. As an employee’s anniversary date approaches, Human Resources sends notification to the department manager or other reporting authority that an employee appraisal and compensation review needs to be conducted. The manager requests the appropriate forms and receives them from HR.

2. The manager completes the employee review profile and contacts the Human Resources department to obtain position compensation guideline information.

3. The manager makes a recommendation for a merit increase and makes an appointment to discuss the evaluation with the employee.

4. After discussing and signing the performance appraisal, the manager submits the forms to HR, where a compensation analyst reviews the recommendation and verifies that it complies with company position and compensation guidelines.

5. The forms are routed to another specialist, who will enter the merit increase. The performance appraisal becomes part of the employee’s permanent record.

In addition to the time delays involved in manually routing this information to multiple individuals, this process has several significant shortcomings. For example, there is a risk that information may be misplaced or routed incorrectly. Manually tracking the location of information at each step in the process would be a difficult task. This type of manual process is an ideal candidate for workflow application.
Figure 1-1 illustrates the *business process* that automates the overall process of performing an employee review.

![Employee Review Business Process Diagram](image)

**Figure 1-1. Employee Review Business Process**

### Activating a Sample Business Process

The sample business processes described in the last three sections are delivered inactive. Before a business process can be triggered by either user action or a database agent, it must be activated.

You can activate the business processes in the DEMO database immediately. However, no roles or role users are defined for the business processes in the master database. You should create these objects before activating a business process. For more information, refer to Chapter 4, “Defining Business Process Roles.”

To activate a delivered business process, follow these steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Setup ~ Business Event and Worklist Options**
The Business Process Controls dialog box displays.

![Figure 1-2. Business Process Controls Dialog Box](image)

2. Enter a **Business Process Name** and click **OK**. The Business Process Controls panel displays.

   ![Figure 1-3. Business Process Controls Panel](image)

   - If this is a new business process, click **(Insert Row)** to preserve history and add each event in the business process.

3. Select the **Active** check box for each workflow event.

4. Set the **Application Worklist Options** for each worklist in the business process.
   - **Worklist Name** - Select the name of the worklist.
   - **Notify of Related Entries** - Select this option to send a message to the user if another role user has either worked an item or is in the process of working an item that also appears on the user's worklist. **Notify of Related Entries** does not allow the user to work the item. This option works when the user works the item directly from the worklist. If the item is worked outside of the worklist, then this option is irrelevant. This functionality must be implemented in Enterprise Code.
• **Delete Related Unworked Entries** - Select this option to make a non-shared worklist operate like a shared worklist. With a shared worklist, all worklist users select from a shared list of work items, and the first user who selects the item works it. With non-shared lists, every member of the role gets their own copy of each work item, and they all have to work it. If **Delete Related Unworked Entries** is selected, all other copies of a work item are deleted as soon as any user works it. To use this option, the panel WF_FUNCTIONS_01 must be added to the target panel group.

• **Work from WL only** - Select this option to prevent access to application data records when there are pending worklist entries, even if the user has Operator Security access to the panel group. An error message displays telling the user to access their worklist to make panel updates. This functionality must be implemented in Enterprise Code.

5. Click ![Save](Save) to save the business process control settings.
Why Use Workflow?

The ADP Enterprise HR application gives you a common database that is shared by all other ADP Enterprise HR users. But users who have access to the same data are not necessarily working together. Without an automated business process, users manually track work from outside the ADP Enterprise HR system. They have to coordinate their activities with other users as they try to keep the business process flowing.

When you use Workflow, your application does more of the work. An automated business processes typically eliminates the job tasks associated with controlling paper flow. It frees the people who once performed clerical functions to do more meaningful work.

Workflow gives you the opportunity to revise and improve your business processes. When you implement a business process, you don’t want to merely automate existing procedures. When properly managed, Workflow enables you to monitor the work your organization is doing and how it is being done. It facilitates continuous process improvement. It also helps you gauge how your underlying business is changing. As changes occur, Workflow enables you to be well positioned to respond promptly and to proactively implement new business processes.
Automating Business Processes in ADP Enterprise HR

Workflow tools broaden the range of tasks you can automate, including:

- Tasks that don’t require user involvement.

- Tasks that involve non-ADP Enterprise HR users.

Through the ADP Enterprise HR Panel Processor, you can include third-party applications in your automated business processes. These third parties may receive email notifications from ADP Enterprise HR. Additionally, these third-party applications may be integrated with ADP Enterprise HR and actually place data into the product. For more information about integrating third-party applications with ADP Enterprise HR processes, see Appendix A, “Third-Party Application Integration.”

- Tasks that several users work on together.

  The strength of Workflow is its ability to link together the various activities that make up a business process.

Putting these capabilities together in your ADP Enterprise HR application, you can automate, streamline, and control the flow of information throughout your company.

In addition to customizing the sample business processes included in ADP Enterprise HR, as described in “Sample Workflow Business Processes” on page 1-6, you can also integrate other applications and build your own automated business processes. For example, the following business processes would be good candidates for becoming Workflow business processes:

- You could automate how an employee registers and obtains approval for an internal or external training. The employee would no longer have to submit paperwork and wait for approval.

- You could automate the request for and approval of job changes, so these processes could be accomplished more quickly and efficiently.

Like Enterprise Tools, Workflow tools provide a flexible development environment that you can use to tailor ADP Enterprise HR to meet your unique business requirements. The rich functionality and flexibility of these tools enable you to incorporate an automated business process solution that enhances the way you do business.
How Workflow Automates a Business Process

Workflow consists of three major components: the Workflow Designer, the Workflow Processor, and the Workflow Administrator.

The Workflow Designer contains the tools you use to design and build the components of your business processes: the rules, roles, and routings. Specifically, the Workflow Designer is composed of the Workflow Editor, the Role Editor, and the Message Agent Editor. All of these components of the Workflow Designer reside within Enterprise Builder.

The Workflow Processor is a suite of online agents that run and control your business processes once you activate it. After you define a business process, you have to set up workflow agents to do the work for you. The following describes how the Workflow Processor automates your business processes:

- Work is routed to ADP Enterprise HR users via worklist items. Worklists are associated with an individual task within a workflow business process. Worklist entries are prioritized in the order in which they are defined. To work on a particular item, the user selects it from a worklist. The user is then automatically taken to the proper system task to perform the necessary work.

- The Message Agent Server processes data that is retrieved through the ADP Enterprise HR interface from either Database Agents or external third-party sources.

- Database agents monitor the ADP Enterprise HR database to identify items that need to trigger a business process.

The Workflow Administrator gives you the ability to access, monitor, analyze, and control workflow in your organization—you can use the Workflow Administrator to detect if a particular worklist has too many entries in it, so you can assign additional staff to help clear the backlog. It also facilitates your workflow reporting—you can easily see how long a business process takes, which activities take the longest, which worklists are overloaded, and when you need to reassign work because an employee is out sick.
Extending the ADP Enterprise HR Application

ADP Enterprise HR has adopted an approach to workflow that compliments what you already know about using ADP Enterprise HR:

- Workflow is panel-based. For more information, see the next section, “Panel-Based Operation.”

- Workflow processing uses automated queries. For more information, see “Automated Queries” on page 1-19.

- The Workflow Designer functions similarly to other Enterprise Tools editors. For more information, see “The Workflow Designer” on page 1-19.

- Workflow processing uses event-driven routings. For more information, see “Event-Driven Routings” on page 1-19.

- Workflow has an open architecture. For more information, see “Open Architecture” on page 1-20.

Panel-Based Operation

Either a panel task or a process group is at the heart of most ADP Enterprise HR activities. Panel tasks provide you with a brief view of the database. When you perform a function, such as updating employee information, you navigate to the appropriate task panel and enter or update data. As you enter data and save your work, the application engine manages the data behind the scenes, verifying your data, displaying prompt lists and translate values, running Enterprise Code, and updating the database tables as necessary.

Adding workflow does not change this basic process—you continue to interact with the database through task panels. Workflow tools give you new options, however, for navigating to the task panels and entering data into them.

Worklists are automated “to-do” lists. They are prioritized queues of work that need to be done. When a user selects a work item from a worklist, he or she is taken directly to the task panel that requires action. When the user completes the task panel action, the work item is routed to the next worklist as necessary.

You can even use the Message Agent Server to populate a task panel with data from an automated workflow query, as described in the next section. ADP Enterprise HR performs the same edits and security checks that occur during normal panel processing.
Automated Queries

ADP Enterprise HR makes it easy to create queries to retrieve information for your database. Most organizations regularly run queries that determine if work needs to be done.

Using Workflow, you can instruct ADP Enterprise HR to run queries that automate these types of processes. Database agent queries run “behind the scenes” and pass query results to the Message Agent Server. The Message Agent Server enters the query results into a panel, which can then trigger a business event, thus kicking off a workflow.

The Process Scheduler runs queries—report queries or database agent queries—on a regular schedule. A scheduled database agent can periodically check for conditions that trigger business events. It can then trigger the events through the Message Agent Server.

For more information about creating database agents, see Chapter 8, “Creating Database Agents.” For more information about creating workflow queries, see Chapter 13, “Creating and Running Workflow Queries,” and Chapter 14, “Advanced Workflow Query Features.”

The Workflow Designer

When customizing ADP Enterprise HR, you use familiar Enterprise Builder editors: the Record Editor, the Panel Editor, the Navigation Editor, and so forth. Workflow development is no different—you create workflow elements using the Workflow Designer, then fit them into your overall ADP Enterprise HR application.

You use the Workflow Designer to define worklists, message definitions, user roles, and the business processes. The Workflow Designer is composed of the following Enterprise Builder components:

- Workflow Editor
- Role Editor
- Message Agent Editor

Event-Driven Routings

When you work with an ADP Enterprise HR panel, the Application Processor takes over at certain times to run Enterprise Code. For example, when you move the cursor out of a text field that you’ve updated, the Application Processor checks the standard system edits for that field, then executes any FieldEdit and FieldChange Enterprise Code. Using FieldChange Enterprise Code, you can perform processing based on the new value of the field.

Workflow rules kick off workflow routings in the same way. Panels can have Workflow Enterprise Code assigned to them. When you save the panel, the workflow rules for that panel executes the Workflow Enterprise Code, which can trigger a business event and its related routings.
Open Architecture

ADP Enterprise HR provides you with the flexibility to integrate with the best information systems solutions available. You can choose the hardware configuration and database platform that best meet the needs of your organization. The Message Agent Server programming interface (API) enables such applications as interactive voice response and electronic kiosks to communicate with ADP Enterprise HR. The API interface used to communicate with the Message Agent Server is discussed in Chapter 13, “Creating and Running Workflow Queries.”

In Workflow, you can choose from among the best email, database, and workflow vendors to support the features and functions that solve your business problems.
When beginning to use a workflow-enabled application, the most obvious change in your day-to-day operations is the use of worklists. When you select work items from a worklist, you are automatically taken to the panel group in which you need to work. You won’t need to navigate to the window and menu to open the panel group.

You have to create a worklist for every activity in your business process, so Workflow can maintain your work items. A worklist is a prioritized list of the work items awaiting activity. Each activity is performed by a role. The users who fill a role select to work items from the activity’s worklist.

To access and perform a worklist item, follow these steps:

1. From the ADP Enterprise HR Support Applications toolbar, click on the (Worklist) icon.

The Worklist window displays as illustrated in Figure 1-4.
2. Click on the **Expander** icon to view all worklist items.

   Only the worklists with *To Do* items currently assigned to the list are displayed.

   The example shown in Figure 1-5 illustrates the full worklist listing.

   ![Figure 1-5. Viewing Worklist Items](image)

3. Double-click on the worklist task, such as *Benefits Enrollment* in our example.
The worklist items are displayed in the output window.

Figure 1-6. Worklist Panel

4. Double-click a worklist item. The application panel for that work item displays.

Figure 1-7. Benefits Enrollment Panel
Worklist Features

Worklists provide the following features:

• Prioritizing work items

  When you create a worklist, you specify the order in which work items appear. Users typically work on items in the order that they appear.

• User choice or priority order

  You can allow users to select work items from anywhere in the worklist.

• Shared lists or specific assignments

  All users assigned to a particular role can work from a shared list of work items, or you can allocate items only to specific users. For example, you could put all requests for courses into a worklist for training administrators, so that the first available administrator processes the highest priority request. Or, you could allow each administrator an opportunity to review or act on a particular worklist task. This is called a non-shared worklist.

• Time-out exception processing

  Work items can be automatically reassigned to other worklists if they’ve been waiting to be worked for too long.

  This involves executing an SQR to accomplish this.
Understanding the Workflow Worklist

In this section the components of the Workflow worklist is discussed. Figure 1-8 provides an example of a workflow worklist displayed in ADP Enterprise HR.

Figure 1-8. Workflow Worklist Components
Worklist Icons

Refresh Icon

The Refresh icon is located at the bottom of the Worklist panel. Use this icon to refresh the rows listed on this panel. Refer to Figure 1-8 to see an example of this icon. Each row represents a worklist item that the current user is eligible to access.

Mark Complete Icon

The Mark complete icon is located at the bottom of the Worklist panel. Refer to Figure 1-8 to see an example of this icon. This icon is used to mark a worklist item as completed.

The workflow properties must be set appropriately to use this button.

Re-route Icon

The Re-route icon is located at the bottom of the Worklist panel. Refer to Figure 1-8 to see an example of this icon. This icon is used to re-route the selected worklist item to another worklist user, if applicable.
Routing Work Items with Workflow Rules

Workflow rules determine how worklist items are placed on worklists. Remember that worklists are lists of work items awaiting a particular activity. Remember, too, that the workflow tells ADP Enterprise HR the order in which activities occur in your business process. A work item is added to a worklist when someone finishes the preceding activity in the business process.

In the Employee Review business process (as shown in Figure 1-1, on page 12), ADP Enterprise HR adds a work item to the Employee Review Due worklist when an employee’s review is due. Similarly, it adds a work item to the Model Compensation worklist, and removes it from the Employee Review Due worklist, when the manager completes the review.

At the heart of your workflow definition is a set of business events and the routings associated with each event:

- A business event is a condition that tells ADP Enterprise HR when an activity is complete: when a new record has been created, when a field contains a particular value, when a due date has passed.

- A routing is an instruction that tells ADP Enterprise HR to forward information to the next step in the business process. It specifies what information to forward and where it should be forwarded.

When a user saves data on a task panel, the workflow rules check whether an event has occurred and, if it has, triggers the associated routings. In addition to adding work items to worklists, routings can send email messages.

For more information about workflow rules, see Chapter 7, “Defining Workflow Rules: Enterprise Code and Worklist Panels.”
Monitoring the Database with Database Agents

Sometimes business events are based on the status of the database rather than the actions of a user. You can use a database agent to detect business events and trigger associated routings.

A database agent executes a query and passes the results to the Message Agent Server. As it does with data from external programs, the Message Agent Server transfers the query results to a panel, which can trigger a business event. For more information about the Message Agent Server, see the next section, “Entering Panel Data Through the Message Agent Server.”

You generally want a database agent to check database status on a periodic basis. To do this, you need to add database agents to the Process Scheduler, the ADP Enterprise HR tool for running behind the scenes processes. The Process Scheduler enables you to schedule recurring database agents for any time interval required, such as monthly, daily, hourly, or even once a minute. For more information about the Process Scheduler, see the Application Administrator’s Guide.

For more information about database agents, refer to Chapter 8, “Creating Database Agents.”
Entering Panel Data Through the Message Agent Server

Even though some of the key users in your business process do not use ADP Enterprise HR, you can still implement Workflow. While you may choose not to provide all employees with direct access to ADP Enterprise HR, there are times when they should be able to query their benefits status or enroll in a training program without a human intermediary.

The Message Agent Server enables non-ADP Enterprise HR applications to participate in a business process using third-party applications. The Message Agent Server is an intelligent agent that can act as an electronic clerk to process requests for information, according to rules that you define.

The Message Agent Server runs ADP Enterprise HR panels in response to electronic messages. Using the Message Agent Server application programming interface (API), you can write programs that add data to ADP Enterprise HR just as a user would.

In essence, the Message Agent Server is an automated user workstation. Rather than taking input from the keyboard, it receives messages from Java programs. The messages tell the Message Agent Server to do the same things that a user would: navigate to a panel group, enter data into the panel fields, and save the panel. ADP Enterprise HR performs the same data edits and security checks that it always does, including running any Enterprise Code associated with a panel.

Third-party data entered through the Message Agent Server could trigger a business event, thus kicking off a business process. As a result, you can treat information entered by distributed personnel just as you would ADP Enterprise HR application data.

For more information about incorporating third-party applications into your business process, see the next section, "Integrating Third-Party Applications." For more information about the Message Agent Server, see Chapter 9, "Message Definitions." For more information about the Workflow API, see Appendix A, "Third-Party Application Integration."
Integrating Third-Party Applications

ADP Enterprise HR provides an API to facilitate the integration of third-party workflow-related technologies, such as interactive voice response (IVR) systems, information kiosks, and other media-solution applications. This enables customers to integrate innovative third-party technology with ADP Enterprise HR. The growing list of partners supported by ADP Enterprise HR includes TALX Corporation for IVR, Resumix for resume scanning and tracking, and Criterion Affirmative Action Management System (CAAMS) for affirmative action management.

Workflow solutions enable you to structure the flow of work within ADP Enterprise HR, and then to reach out to other systems, passing information through them to penetrate the walls of the enterprise. As these systems evolve, ADP Enterprise HR intends to support the leading workflow products, just as ADP Enterprise HR does today with relational database engines. This open system approach enables you to choose a workflow solution that is suitable for your company.

For more information about the API for third-party application integration, see Appendix A, “Third-Party Application Integration.”
# Chapter 2

## Designing Your Workflow

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>2-3</td>
<td>Preparing for Implementing a Workflow System</td>
</tr>
<tr>
<td>2-5</td>
<td>Anatomy of a Business Process</td>
</tr>
<tr>
<td>2-7</td>
<td>Understanding the Employee Review Example</td>
</tr>
<tr>
<td>2-11</td>
<td>The Workflow Development Process</td>
</tr>
</tbody>
</table>
Introduction

The process of planning your workflow strategy and designing your business process is the most critical phase of the workflow development cycle. You must complete this step before you begin developing the workflow application.

This chapter takes you through the process of designing your workflow business process:

- Analyzing your business processes and documenting them through business models and process flows.
- Designing and building Workflow systems that effectively complement and automate your business processes.
- Designing workflow-aware applications that anticipate and respond to the flow of work and information within your enterprise systems.

As you use Workflow to customize ADP Enterprise HR, you need to consider how you’ll define and incorporate rules, roles, and routings into your application. You’ll also want to tailor your workflow-enabled applications to reflect the way you perform various tasks and business processes within your organization. For more information about rules, roles, and routings, see “How Workflow Automates a Business Process” on page 1-17.

Before you begin this or any other implementation project, make sure you allocate sufficient time to plan and document your approach. You also need to familiarize yourself with how existing ADP Enterprise HR functions have been customized in the three sample business processes described in “Sample Workflow Business Processes” on page 1-6. The Employee Review business process example is used throughout this book to explain how to use Workflow.

The Employee Review Due process is only an example of a workflow process that a client can add to ADP Enterprise HR. Employee review is not a workflow delivered by ADP.
Preparing for Implementing a Workflow System

Regardless of the development and design tools at your disposal, workflow systems are not implemented overnight. Your workflow design must correctly reflect how work is done, who is responsible for doing the work, and how the flow of work in an organization should be implemented. No off-the-shelf software can automate the task of analyzing and defining your workflow system.

*Before you try to implement a workflow system, you should make sure that both management and your project team are aware of the magnitude of the task at hand.* The remainder of this sections offers a few questions to consider as you move forward.

**Executive Sponsorship**

As you implement a workflow system, you have the opportunity to seriously reevaluate the way you do business. However, as with any reengineering effort, you may encounter resistance to change, even in the division and departments poised to benefit the most from it. That’s why it is essential to have executive sponsorship of workflow projects before you begin, so you and your project team are empowered to change your organization.

**Time Allocation**

The analytical process of understanding your business and determining how best to perform it requires a significant investment of time and resources—either your company’s resources or those of consulting firms familiar with workflow automation and reengineering.

You may want to start small, with one department or business function, and use this small application as a test case to determine the scope of subsequent workflow analyses and implementation projects.

**Process Redefinition**

To get the most benefit from implementing a workflow system, you must be willing to consider new and improved ways of accomplishing your goals. Workflow tools offer a range of possibilities that weren’t available when you developed your current processes. Try to take advantage of them.

Workflow typically reduces a lot of bureaucratic overhead and frees people from clerical functions to do more meaningful work. Change management will be crucial during your analysis and design phase. You need to prepare and work with your staff as their roles and responsibilities change. As employees assume new, more challenging responsibilities, they’ll need training to become familiar with new procedures and policies—and reassurance that their positions are not being replaced by software.
Project Team

The foundation of a successful workflow implementation is a well-rounded, formally trained team that is dedicated to the success of ADP Enterprise HR. An unfocused, poorly trained project team may not achieve the benefits that you hope to gain from adding a workflow system.

While the size of your team will vary depending on the scope of the project, a successful workflow team will always include the following:

- A functional expert knowledgeable about the business process you are automating.
- A programmer analyst who is skilled in the use of Enterprise Tools.
- A workflow administrator whose on-going responsibility will be to monitor your workflow system once it’s in place to make sure that work flows smoothly.

Implementing a workflow system, and the reengineering that goes with it, is an ongoing task. You won’t want your project team to automate a business processes and then move on to the next project.
Anatomy of a Business Process

Before you can implement a workflow system, you must first closely analyze, decompose, and document the business process that you want to automate. Although few standards exist for how you should approach functional decomposition and process modeling, the underlying philosophy is fairly straightforward.

When you develop a business model, you capture the essence of your business objectives, policies, and programs by defining your information needs, business rules, and underlying business processes. Your business model should describe, at a high level, what you do and why, but not how. This type of model allows you to focus on processes, rather than existing procedures.

Keep the following goals in mind as you build your business model:

- Document your business objectives and events by documenting your overall business strategies, objectives, and critical success factors.
- Define the data that supports your business policies, programs, and information needs.
- Define the processes that support your business policies, programs, and procedures.
- Assess your business model to determine how it should impact the information systems that support your business processes.
- Define the roles and functional responsibilities of the people within your organization.

The resulting business model provides a point of reference, a road map, for discussing system issues, business rules, process reengineering, and workflow system requirements.

Defining Your Business Model

Understanding how to implement a workflow system requires an understanding of the functional elements of your organization. You must first define the operating areas in your organization, and then define each specific operation. This process is known as functional decomposition.

Functional decomposition is a technique for breaking complex elements down into successively smaller components. The smaller elements can then be viewed within the context of the larger whole—ADP Enterprise HR, the organization, the larger process, and so forth. This decomposing can be done for a range of processes, structures, organizational elements, and so forth. You may find functional decomposition helpful when you are examining the areas where workflow applications can be developed.

For example, within your company, you most likely have several functional groups, such as Payroll, Benefits, or Human Resources. These groups are responsible for performing certain functions. Each function can be broken down further into a series of activities performed by various people. Each activity, in turn, results in events or actions that are performed either by people or a system.
As shown in Figure 2-1, decomposing the process of managing a company allows you to see where each functional activity fits into the larger picture. This is, of course, a very narrow slice of all the functions that take place in an entire organization, but the concept of decomposition applies to any complex business functions.

![Figure 2-1. Decomposing the Process of Managing a Company](image-url)
Understanding the Employee Review Example

The Employee Review business process described in “Sample Workflow Business Processes” on page 1-6 is referenced throughout this user’s guide. The remainder of this section summarizes the roles, activities, and business events in the Employee Review business process, as shown in Figure 2-2.

The Employee Review business process and any other task related to Employee Review are only examples of workflow processes that a client can add to ADP Enterprise HR. Employee review is not a workflow delivered by ADP.

![Figure 2-2. The Employee Review Business Process, Viewed Through Enterprise Builder](image)

You can use the information in Table 2-1 to explore the business process’ features.

**Table 2-1. Employee Review Role Users**

<table>
<thead>
<tr>
<th>Role User</th>
<th>Title</th>
<th>Profile ID/Password</th>
<th>Employee ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joseph Davis</td>
<td>Employee</td>
<td>employee/eprise</td>
<td>555160081</td>
</tr>
<tr>
<td>Elizabeth Zimmer</td>
<td>Manager</td>
<td>manager/eprise</td>
<td>555909997</td>
</tr>
<tr>
<td>Keith Cannon</td>
<td>Compensation Analyst</td>
<td>analyst/eprise</td>
<td>555220085</td>
</tr>
</tbody>
</table>
The Employee Review Business Process

The easiest way to understand a workflow business process is to review the activities and business events that it performs. The role users listed in Table 2-1 are responsible for working Employee Review worklist items and performing the workflow activities.

The remainder of this section briefly describes the activities and business events in the four Employee Review workflow segments.

The Employee Review Due Workflow Segment

The Process Scheduler runs the database agent which queries the database for employees with reviews due in the next 30 days. Employee review information is written to the Employee Review Due DBAG panel. The user does not need access to this panel. When the Panel Processor saves the panel, a worklist item is sent to the employee’s manager, as shown in Figure 2-3. A Role Query selects the employee’s manager.

Figure 2-3. Worklist Panel - Selecting a Worklist Item

Each worklist panel is specific to the profile ID (operator ID) and password used to sign onto ADP Enterprise HR. A manager logging on as MANAGER, for example, would see a worklist like the one above. An employee or compensation analyst would use EMPLOYEE or ANALYST, respectively in the DEMO database, and see their role-specific work lists.
The Review Employee Workflow Segment

The employee’s manager works the work item, and the Performance Review task panel displays. The manager completes the review information.

![Performance Review Task Panel](image)

*Figure 2-4. Work List Item - Performance Review Task Panel*

When the manager saves the review information, the panel’s workflow rules route a work item to the compensation analyst’s Model Compensation worklist.

The Model Compensation Workflow Segment

The compensation analyst logs onto ADP Enterprise HR, and selects the Model Compensation work item. The Compensation Analysis panel displays.

![Model Compensation Panel](image)

*Figure 2-5. Worklist Item - Model Compensation*

The compensation analyst models different scenarios in both percentage and dollar amounts. When the compensation analyst saves the panel, the workflow rules route a Review/Approve work item back to the employee’s manager.
The Approve Model Workflow Segment

The employee’s manager logs into ADP Enterprise HR and selects the new worklist item. The Compensation Analysis panel displays.

Figure 2-6. Worklist Item - Approve Compensation Model

The manager selects a compensation model and selects the **Update Employee** button to enter the new rate. ADP Enterprise HR routes an email to the employee, the compensation analyst, and the manager to document the new salary rate.

- You must add your own profile IDs (operator IDs) and role users to your production database. For more information on adding role users, see Chapter 5, “Defining Role Users.”
Table 2-2 gives an overview of how to use Workflow to automate a business process.

<table>
<thead>
<tr>
<th>Development Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build any ADP Enterprise HR application components</td>
<td>Perform any customizations of the ADP Enterprise HR system now. You want to finalize your application process before you start to automate your workflow process. For more information about customizing ADP Enterprise HR, refer to the <em>Application Developer’s Guide</em>.</td>
</tr>
<tr>
<td>Test your initial application thoroughly</td>
<td>Before you add workflow businesses process to your application, make sure that your application is tested thoroughly and functions correctly.</td>
</tr>
<tr>
<td>Design and model your business process</td>
<td>The most critical success factor in implementing a workflow business process is having a clear idea of the processes that you are automating, and the resources that it will take to implement them. This chapter explains how to make sure your organization is ready to automate a workflow business process. “Anatomy of a Business Process” on page 2-5 explains how to create a flowchart that illustrates the flow of work.</td>
</tr>
<tr>
<td>Set up any third-party applications that need to work with your workflow business process</td>
<td>If your workflow business process needs to send or receive email, you need to set up your email software to communicate with ADP Enterprise HR and vice versa. Email addresses are set up through using the Users tasks under Workflow Administration in ADP Enterprise HR. Appendix A, “Third-Party Application Integration,” describes how to use Workflow’s application programming interface (API) to integrate third-party products into your workflow business processes.</td>
</tr>
</tbody>
</table>
### Table 2-2. Developing a Workflow Business Process (cont.)

<table>
<thead>
<tr>
<th>Development Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Define roles and role users</strong></td>
<td>As you build a workflow business process, you need to specify who performs each activity. <a href="#">Chapter 4, “Defining Business Process Roles,”</a> explains how to define the roles that users play in the business process. To define the people who fill workflow roles, follow the steps in <a href="#">Chapter 5, “Defining Role Users.”</a> You create roles and role users so work can be routed to the appropriate people.</td>
</tr>
</tbody>
</table>
| **Define the business process** | Completing the previous steps lays the foundation for your business process—now the overall business process can be developed. [Chapter 3, “Defining Workflow Business Processes: The Workflow Editor,”](#) describes the multi-step process of defining the workflow business process. These steps are outlined below:  
  - Create the new workflow business process through the use of Enterprise Builder.  
  - Add workflow tasks to the workflow business process.  
  - Link the business processes together with routes or group routers.  
  - Fine-tune the Enterprise Code programs that were automatically generated during the creation of the workflow business process.  
  - Define database agents for business events that are triggered by database status.  
  - [Chapter 8, “Creating Database Agents,”](#) explains how to create database agents that monitor the database for conditions that you want to trigger business events.  
  - Create message definitions for the Message Agent Server. [Chapter 9, “Message Definitions,”](#) shows you how to map data from an external application or a database agent query into ADP Enterprise HR record definition fields. You have to create a message definitions for the database agent or external application used to add data to ADP Enterprise HR. |
# Chapter 3

## Defining Workflow Business Processes: The Workflow Editor

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>3-3</td>
<td>Opening an Existing Workflow Business Process</td>
</tr>
<tr>
<td>3-5</td>
<td>Creating a New Workflow Business Process</td>
</tr>
<tr>
<td>3-6</td>
<td>Creating a Workflow Panel Task</td>
</tr>
<tr>
<td>3-13</td>
<td>Creating a Workflow Email Task</td>
</tr>
<tr>
<td>3-16</td>
<td>Creating a Program Launch Task</td>
</tr>
<tr>
<td>3-21</td>
<td>Creating a Route</td>
</tr>
<tr>
<td>3-26</td>
<td>Creating a Group Router</td>
</tr>
<tr>
<td>3-28</td>
<td>Understanding the Workflow Toolbars</td>
</tr>
<tr>
<td>3-35</td>
<td>Modifying the Workflow Editor Options</td>
</tr>
</tbody>
</table>
Introduction

This chapter describes how to use Enterprise Builder’s Workflow Editor to build and modify your workflow business processes for the ADP Enterprise HR application. It is assumed that you have completed the following workflow development tasks:

- Complete and document your workflow design, as described in Chapter 2, “Designing Your Workflow.”
- Create your User List Roles and Query Roles, as described in Chapter 4, “Defining Business Process Roles.”
- Create your role users, and assign role users to the necessary User List Roles, as described in Chapter 5, “Defining Role Users.”
- Create worklist record definitions as necessary, as described in Chapter 6, “Worklist Record Definitions.” Several general worklist record definitions are delivered with the initial software, of which one of these will most-likely suite your needs. The creation of new worklist record definitions should be completed by an advanced Enterprise Tools user.

You should also be familiar with the basic Workflow concepts described in Chapter 1, “Understanding Workflow.” You should have a basic understanding of how to use Enterprise Tools. The tasks in this chapter may be completed by an intermediate Enterprise Tools user. For more information regarding these development tools refer to the Application Developer’s Guide.
Opening an Existing Workflow Business Process

This section describes how to open an existing business process so you can modify it.

To open an existing business process, follow these steps:

1. From Enterprise Builder, make the following selections:

   File ~ Open

   The Open dialog box displays.

2. Select Workflow from the Objects of type field.

3. Highlight the workflow business process to be opened and click Open.

   You may also double-click on the workflow business process to access it from this dialog box, or double-click on an item listed in the WorkflowView panel of the Navigation window.
The Workflow Editor window displays.

![Workflow Editor Image]

*Figure 3-2. Employee Review Workflow Business Process*

You are now ready to modify the workflow business process.

The **Employee Review** workflow business process is only an example of a workflow process that a client can add to ADP Enterprise HR. Employee review is not a workflow delivered by ADP.
Creating a New Workflow Business Process

Building a workflow business process is a multi-step process. This section outlines the steps you should follow to build the components of your workflow business process through the Workflow Editor. Cross references are included to future sections that discuss each of these steps in more detail.

While the procedures in this chapter describe how to create a business process, you can use the same procedures to modify an existing business process. To start modifying an existing business process, see the section, "Opening an Existing Workflow Business Process."

To create a new workflow business process, follow these steps:

1. From Enterprise Builder, make the following selections:

   File ~ New ~ Workflow

   The New workflow window displays.

   ![Figure 3-3. New Workflow Window](image)

2. You are now ready to modify the workflow business process.
Creating a Workflow Panel Task

This section provides the procedural steps for adding a workflow panel task to a workflow business process.

- A workflow panel task is typically the starting point of a workflow business process.

Follow these steps:

1. Open a new workflow business process or open an existing workflow.

2. Define the initiating Panel Task of the workflow business process.

   This is accomplished in one of two ways, you can either access the NavigationView panel and drag a Panel Task from the tree structure into the Workflow Editor window (which is the quickest method) or you can select Add ~ Workflow Object ~ Panel Task or click on the (Panel Task) toolbar button.

In our example, we have dragged an existing Panel Task from the NavigationView panel to the Workflow Editor window.

![Figure 3-4. Workflow Panel Task Object](image)
3. If you choose one of the other two methods of defining a Panel Task, then the Panel Task Properties dialog box displays.

![Panel Task Properties dialog box](image)

**Figure 3-5. General Panel**

- The **Diagram ID** field is a unique identifier that appears in the comments of the automatically generated Enterprise Code programs for this task. This field may not be modified.

4. Enter the **Name** of this Panel Task.

   The value entered in this field should be unique. No two workflow items should share the same name with the exception of the incoming and outgoing routes connected to a group router.

   For workflow panel tasks, the object name is also used as the name of the underlying worklist, if it has an *incoming* route.

   For routes or group routers, the value entered in this field is used as the name of the Enterprise Code event that is automatically generated.

5. Enter the **Label** for this Panel Task.

   This label is displayed on top of the Panel Task icon in the Workflow Editor window.

6. Enter the **Description** for this Panel Task. This is an optional field.
7. Click on the **Task Selection** tab. The Task Selection panel displays.

![Task Selection Panel](image)

**Figure 3-6. Task Selection Panel**

8. Use this panel to define the initiating Task within ADP Enterprise HR. Click on the expander icon to drill down to the appropriate initiating navigation path for this Panel Task.

9. Use the options in the **Data Action Type** area to define the action mode for the Panel Task when it is accessed from a workflow worklist.

The **Data Action Type** option selected for this Panel Task must be a valid action type for the selected Panel Task.

This area is only enabled when the Task has a worklist, which therefore gives it an incoming route in the Workflow Designer.
10. If the Advanced tab is present, click on it. Otherwise if the External Settings tab is present, click on this tab and proceed to step 17. The Advanced panel displays.

![Advanced Panel](image)

**Figure 3-7.** Advanced Panel

- This panel is only available when the Panel Task has an incoming route in the Workflow Editor window.

  The Worklist Name field displays the name of the worklist. This field may not be modified and displays the same value entered for the object’s name on the General panel. The General panel is illustrated in Figure 3-5.

11. Select the appropriate Worklist Record.

  The worklist record is the database record that stores the set of key data that is used to launch the task. A default value is placed in this field if the Automatically create Route data mappings option is activated through the Workflow Options task.

  - The worklist record should end in the characters "_WL", which is the record naming convention used to represent worklist. For additional details on worklist record definitions, see Chapter 6, “Worklist Record Definitions.”
12. Enter the appropriate option for the Task is completed when it is options. These options determine when the task is marked as completed. The following options are available:

<table>
<thead>
<tr>
<th>Task Completed Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saved</td>
<td>When the user accesses this task from the worklist and saves the displayed panel, this task is marked as completed. Select this option if the workflow task requires data to be entered by a workflow user.</td>
</tr>
<tr>
<td>Selected</td>
<td>When this task is selected from the worklist and is displayed to the user, this task is marked as completed. Select this option if the workflow task does not require any data to be entered.</td>
</tr>
<tr>
<td>User marks it as complete</td>
<td>The user has to manually mark the worklist item as complete with the Mark Complete Icon which is discussed on page 1-26. Select this option if you want the workflow user to explicitly acknowledge the completion of the workflow task.</td>
</tr>
</tbody>
</table>

13. Select the Automatically generate ADP Enterprise Code for this task check box to automatically generate default Enterprise Code for a task. This option determines if the Workflow Designer will generate and maintain for this task automatically. If this check box is not selected, this implies that you want to write your own Enterprise Code and place it somewhere besides the default location.

Note that this option is enabled for Panel Tasks only, not Program Launcher tasks. For more information about Program Launcher tasks, refer to “Creating a Program Launch Task” on page 3-16.

14. Select the Shared Worklist check box if this worklist item may be shared with all workflow users assigned to the same role.

When this check box is selected, the Role field is enabled. Select the appropriate workflow role from this list that may share this worklist task.

15. Select the Completion Deadline Exists check box if there is a targeted deadline for this worklist task. Use the following steps to specify the specifics about the deadline.

a. Use the Deadline (Days/Hours/Mins) fields to define the length of time the worklist task may remain on the worklist before the completion deadline expires.

b. Use the Route to Task field determine where this task is routed to if the completion deadline expires.

- The task selected by this field must have the same worklist record as the current task. Additionally, the worklist must be a shared worklist.

c. The Worklist Copy Record is an identical record definition of the Worklist record. It is used a temporary holding place for worklist data when a completion deadline has expired and the worklist is in the process of being re-routed.
d. Select the **Remove from this Worklist if Task is rerouted** check box to remove the original worklist item from the worklist, when the worklist item is rerouted to another workflow user within ADP Enterprise HR.

**16.** Continue with step 21.

**17.** The External Settings panel displays.

![External Settings Panel](image)

**Figure 3-8.** External Settings Panel

The information displayed on this panel is provided for reference purposes only. The fields on this panel do **not** impact the operations of the workflow business process.

- This panel is only available when the Panel Task does **not** have an *incoming route* in the Workflow Editor window.

**a.** Select from the first two options if this task is completed by a human operator or an external program.

**b.** Select the **Database Agent** check box if the external program that is to complete this task is the database agent.

- This field is only enabled when the **Task Completed by an External Program** option is selected.
c. If the **Database Agent** check box is selected, then select the appropriate **Message Definition** that is used by the Database Agent to complete the entry of data into the panel task.

- This field is only enabled if the **Database Agent** check box is selected.

Use the **Edit** or **New** buttons to edit an existing message definition or define a new message definition. Additionally, the **Query Editor** button may be used to launch the query editor from this dialog box.

18. If applicable, define Email tasks in the workflow business process. For more information, see “Creating a Workflow Email Task” on page 3-13.

19. Define the routings in the workflow business process. For more information, see “Creating a Route” on page 3-21.

20. If applicable, define group routings in the workflow business process. For more information, see “Creating a Group Router” on page 3-26.

21. Save the workflow business process. Type the workflow business process name in the object named field and click **OK**.
Creating a Workflow Email Task

This section provides the procedural steps for adding an Email task to a workflow business process.

An Email task is the ending point of a workflow business process.

Follow these steps:

1. Open a new workflow business process or open an existing workflow business process.

2. Click on the (Email task) toolbar button on the Workflow Objects toolbar.
   - For more information, see “Workflow Objects Toolbar” on page 3-28.

3. Click inside the workflow editor window to determine where the new Email task will be created. The new Email task displays in the Workflow Editor window.

4. Assign an incoming route to the Email task.
   - This is necessary to activate the fields on the E-mail Properties dialog box that is used in the following step. If you do not assign an incoming route to the E-mail task, then all fields on the E-mail Properties dialog box are disabled.
5. Right-click and select **Workflow Properties** from the context menu. The General panel of the E-mail Properties dialog box displays.

![E-Mail Properties dialog box](image)

**Figure 3-10. General Panel**

6. Enter the **Name** of this Email task.

   The value entered in this field should be unique. No two workflow items should share the same name with the exception of the incoming and outgoing routes connected to a group router.

7. Enter the **Label** for this Email task.

   This label is displayed on top of the Email task icon in the Workflow Editor window.

8. Enter the **Description** for this Email task. This is an optional field.
9. Click on the **EMail Contents** tab. The EMail Contents panel displays.

![Email Contents Panel]

If the **Automatically create Route data mappings** field is activated on the Workflow panel of the Options dialog box, then default email content is defaulted for this email. For more information, see "Modifying the Workflow Editor Options" on page 3-35.

10. Use the **To** field to specify all recipient of the email.

   Use the right-mouse button to insert records and roles in this field. The use of this feature allows you to create dynamic content for the email.

11. Use the **CC** field to specify all recipients of a copy of this email.

12. Use the **BCC** field to specify all recipients of a blind carbon copy of this email.

13. Use the **Subject** field to specify the subject of this email.

14. Use the **Message** field to compose the contents of this email.

15. Click **OK** to save this email Task definition.
Creating a Program Launch Task

A program launch task is one that executes an external program from a workflow business process.

Follow these steps to create a workflow program launch task:

1. Open a new workflow business process or open an existing workflow business process.

2. Click on the (Program Launch task) toolbar button on the Workflow Objects toolbar.

   For more information, see “Workflow Objects Toolbar” on page 3-28.

The new Program Launch task displays in the Workflow Editor window.

3. Right-click on the new Program Launcher task to display the context menu.

![Figure 3-13. General Panel]

- The **Diagram ID** field is a unique identifier that appears in the comments of the automatically generated Enterprise Code programs for this task. This field may not be modified.

5. Enter the **Name** of this Program Launcher task.

The value entered in this field should be unique. No two workflow items should share the same name with the exception of the incoming and outgoing routes connected to a group router.

6. Enter the **Label** for this Program Launcher task.

This label is displayed on top of the Program Launcher task icon in the Workflow Editor window.

7. Enter the **Description** for this Program Launcher task. This is an optional field.
8. Click on the **Details** tab. The Details panel displays.

![Details Panel](image.png)

Figure 3-14. Details Panel

This panel is only available when the current task has an *incoming route* in the Workflow Editor window.

9. Enter the full path and program name of the program to be launched, in the **Path** field.
10. Click on the **Advanced** tab. The Advanced panel displays.

![Advanced Panel](image)

**Figure 3-15. Advanced Panel**

- This panel is only available when the current task has an *incoming route* in the Workflow Editor window.

  The **Worklist Name** field displays the name of the worklist. This field may not be modified and displays the same value entered for the object’s name on the General panel. The General panel is illustrated in Figure 3-13.

11. Select the appropriate **Worklist Record**.

   The worklist record is the database record that stores the set of key data that is used to launch the task. A default value is placed in this field if the **Automatically create Route data mappings** option is activated through the Workflow Options task.

   - The worklist record should end in the characters "_.WL", which is the record naming convention used to represent worklist. For additional details on worklist record definitions, see Chapter 6, "Worklist Record Definitions."
12. Enter the appropriate option for the **Task is completed when it is** options. These options determine when the task is marked as completed. The following options are available:

### Table 3-1. Options for the Task is Complete when it is Field

<table>
<thead>
<tr>
<th>Task Completed Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| Saved                 | When the user accesses this task from the worklist and saves the displayed panel, this task is marked as completed.  
|                       | Select this option if the workflow task requires data to be entered by a workflow user. |
| Selected              | When this task is selected from the worklist and is displayed to the user, this task is marked as completed.  
|                       | Select this option if the workflow task does **not** require any data to be entered. |
| User marks it as complete | The user has to manually mark the worklist item as complete with the *Mark Complete Icon* which is discussed on page 1-26.  
|                       | Select this option if you want the workflow user to explicitly acknowledge the completion of the workflow task. |

13. Select the **Shared Worklist** check box if this worklist item may be shared with all workflow users assigned to the same role.

When this check box is selected, the **Role** field is enabled. Select the appropriate workflow role from this list that may share this worklist task.

14. Select the **Completion Deadline Exists** check box if there is a targeted deadline for this worklist task.

   a. Use the **Deadline (Days/Hours/Mins)** fields to define the length of time the worklist task may remain on the worklist before the completion deadline expires.

   b. Use the **Route to Task** field determine where this task is routed to if the completion deadline expires.  
   
   The task selected by this field **must** have the **same** worklist record as the current task. Additionally, the worklist **must** be a shared worklist.

   c. The **Worklist Copy Record** is an identical record definition of the Worklist record.  
   It is used a temporary holding place for worklist data when a completion deadline has expired and the worklist is in the process of being re-routed.

   d. Select the **Remove for this Worklist if Task is rerouted** check box to remove the original worklist item from the worklist, when the worklist item is rerouted to another workflow user.

15. Click **OK** to save these settings for this task.
Creating a Route

Routings are the flow in a workflow business process. They represent transportation of information from one place to another, setting the stage for the next step in the process.

Routes are used to designate the desired flow from one workflow task to another. A route may go in one direction only. You cannot add a route to the workflow business process until you have the two workflow objects created within the Workflow Editor window.

Routes are used to make the following workflow connections:

- Panel Task to a Panel Task
- Panel Task to an Email Task
- Panel Task to a Program Launch task
- Panel Task to a Group Router
- Group Router to an Email Task
- Group Router to a Program Launch task
- Group Router to a Panel Task

Follow these steps to create routes within the Workflow Editor:

1. Before you add a route, you must have an initiating and ending workflow object defined.

![Image of workflow objects](Figure 3-16. Workflow Objects)
2. Click on the (Route) toolbar button, on the Workflow Objects toolbar. For more information, see “Workflow Objects Toolbar” on page 3-28.

3. Click on the initiating workflow object, which is the Schedule Interview task, in Figure 3-16.

   - Release the mouse button, do not keep the mouse button depressed.

4. Move the mouse cursor to rest over the ending workflow object and click the mouse button again.

   - This make take a few seconds if the Automatically create Route data mappings option is activated on the Workflow panel of the Options dialog box. For more information, see “Modifying the Workflow Editor Options” on page 3-35.

This is the Email Notify task, in Figure 3-16.

The route displays in the workflow editor window. (The route is represented by an arrow.) The route is illustrated in Figure 3-17.

- If you receive a warning message indicating that the two tasks are incompatible, do not worry. This message is generated because the Workflow Designer could not generate any automatic data mappings between the two tasks. Also, this means that there isn’t a worklist definition that fits the target task. You will need to review the data mapping definitions and create a new worklist record definition. Refer to Chapter 6, “Worklist Record Definitions.”

![Figure 3-17. Adding a Route](image-url)
5. Right-click on the route, which is represented by an arrow and select **Workflow Properties** from the context menu. The General panel of the Route Properties dialog box displays.

   ![Route Properties Dialog Box](image)

   **Figure 3-18. General Panel**

6. Enter the **Name** of the route.
   
   Use a *unique* name for this field. The name entered in this field is used as the name of the Enterprise Code event that is automatically generated for this route. This is done when the workflow business process is saved.

7. Enter a **Label** for this route.

8. Enter the **Description** for the route. This is an optional field.
9. If present, click on the **Data Mappings** tab. The Data Mappings panel displays.

![Figure 3-19. Data Mappings Panel](image)

All worklist fields for the target task are listed in the **Worklist Field** column. The Data Mappings panel is only present when the targeted workflow object is a panel task. Fields are not added or deleted from this column.

**a.** Use the **Value Type** field to specify the type of data mapping. Valid values for this column include the following:

- Not Mapped
- Role
- Record.Field
- Text

**b.** Use the **Value** column to specify what will be passed to the next task through the worklist field. The following types of values are entered for this field:

- If **Text** is entered in the **Value Type** column, then this field becomes a multi line edit box.

- If **Role** is entered in the **Value Type** column, then this field is a combo box that contains the values of all workflow roles.

If you select a *query-based role* then you may need to supply bind variables as well.
• If **Record.Field** is entered in the **Value Type** column, then this field is a combo box that contains all record.field combinations.

  The record.field combinations that appear in this field are all determined by listing all of the records used on the **Source Workflow task** panels. The Source Workflow task panel is the source task that is connected to the end of the **route** which does not contain the point of the arrow.

• If **Not Mapped** is entered in the **Value Type** column, then this field is not used.

  If the target task is *non-shared* worklist then the **OPRID** field must be mapped to a role.

  If the target task is a *shared* worklist then the **OPRID** field does not appear in the mapping list.

  Failing to map fields which are keys in the source task’s search record may cause your workflow business process to fail at runtime. Therefore, it is recommended to map these key fields to the target task.

10. Click **OK** to save the settings for this route.
Creating a Group Router

A group router is used when multiple workflow tasks are initiated for a single workflow task. Group routers are used when the same Enterprise Code programs are used to launch two or more workflow objects. In other words, all outgoing routes from the group router are initiated, because the same Enterprise Code logic handles all of these outgoing routes.

If different Enterprise Code programs need to be used before the workflow objects are launched, then you should assign different routes from the initiating workflow task to the workflow tasks.

- You may not connect one group router to another group router.

1. Before you add a route, you must have an initiating and ending workflow object defined.

2. Click on the \( \mathbf{G} \) (Group Router) toolbar button on the Workflow Objects toolbar.

   For more information, see “Workflow Objects Toolbar” on page 3-28.
3. Click on the area in the Workflow Editor window that you want the group router to be created. An example of the group router object is illustrated in Figure 3-21.

![Figure 3-21. Group Router Example](image)

4. Use the (Route) toolbar button, on the Workflow Objects toolbar to define the routes. The routes are illustrated in Figure 3-22.

![Figure 3-22. Routes Added for the Group Router](image)
Understanding the Workflow Toolbars

There are four distinct toolbars available for the Workflow Editor within Enterprise Builder. Most of the features provided by these toolbars are also available on Enterprise Builder’s menus. In this section the following the Workflow toolbars are discussed:

- Workflow Objects Toolbar
- Visual Objects Toolbar
- Layout Toolbar
- Canvas Toolbar

Workflow Objects Toolbar

The Workflow Editor provides a Workflow Objects toolbar that allows you to add workflow objects to a workflow business process within the Workflow Editor window. The Workflow Objects toolbar may only be accessed when a Workflow Editor window is opened in the application workspace. The Workflow Objects toolbar is displayed or hidden by the following menu selections:

View ~ Toolbars ~ Workflow Objects

The Workflow Objects toolbar is illustrated in Figure 3-23.

![Workflow Object Toolbar](image-url)
The items on the Workflow Objects toolbar are described in Table 3-2.

**Table 3-2.  **Workflow Objects Toolbar

<table>
<thead>
<tr>
<th>Toolbar Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Object Selector" /></td>
<td><strong>The Object Selector</strong> button.&lt;br&gt;Use this button to activate the object selector within the Workflow Editor window. This enables a user to click on an existing workflow object to select it for modifications.</td>
</tr>
<tr>
<td><img src="image" alt="Panel Task" /></td>
<td><strong>The Panel Task</strong> button.&lt;br&gt;Use this button to add a new Panel Task to the current Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Email Task" /></td>
<td><strong>The Email Task</strong> button.&lt;br&gt;Use this button to add a new Email Task to the current Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Program Launch Task" /></td>
<td><strong>The Program Launch Task</strong> button.&lt;br&gt;Use this button to add a new Panel Task to the current Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Route" /></td>
<td><strong>The Route</strong> button.&lt;br&gt;Use this button to add a new route to the current Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Group Router" /></td>
<td><strong>The Group Router</strong> button.&lt;br&gt;Use this button to add a new group router to the current Workflow Editor window.</td>
</tr>
</tbody>
</table>

**Visual Objects Toolbar**

The Workflow Editor provides a Visual Objects toolbar that allows you to add graphical objects into the workflow diagram. All items on this toolbar are provided to aid you in documenting the features of the workflow business process by enhancing the visual representation of the workflow diagram. None of the objects provided by this toolbar alter the underlying function of the workflow business process.

The Visual Objects toolbar may only be accessed when a Workflow Editor window is opened in the application workspace. The Visual Objects toolbar is displayed or hidden by the following menu selections:

**View ~ Toolbars ~ Visual Objects**
The Visual Objects toolbar displays.

![Visual Objects Toolbar](image)

Figure 3-24. Visual Objects Toolbar

The items on the Visual Objects toolbar are described in Table 3-3.

<table>
<thead>
<tr>
<th>Toolbar Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Object Selector" /></td>
<td>The <strong>Object Selector</strong> button. Use this button to activate the object selector within the Workflow Editor window. This enables a user to click on an existing workflow object to select it for modifications.</td>
</tr>
<tr>
<td><img src="image" alt="Line" /></td>
<td>The <strong>Line</strong> button. Use this button to draw a straight line in the Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Polyline" /></td>
<td>The <strong>Polyline</strong> button. Use this button to draw a poly line in the Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Triangle" /></td>
<td>The <strong>Triangle</strong> button. Use this button to draw a triangle in the Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Rectangle" /></td>
<td>The <strong>Rectangle</strong> button. Use this button to draw a rectangle in the Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Poly Curve" /></td>
<td>The <strong>Poly Curve</strong> button. Use this button to draw a poly curve in the Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Closed Curve" /></td>
<td>The <strong>Closed Curve</strong> button. Use this button to draw a closed curve in the Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Ellipses" /></td>
<td>The <strong>Ellipses</strong> button. Use this button to draw an ellipse in the Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Text" /></td>
<td>The <strong>Text</strong> button. Use this button to add text in the Workflow Editor window.</td>
</tr>
<tr>
<td><img src="image" alt="Image" /></td>
<td>The <strong>Image</strong> button. Use this button to add an image in the Workflow Editor window.</td>
</tr>
</tbody>
</table>
Layout Toolbar

The Workflow Editor provides a Layout toolbar that allows you to manipulate the visual object location within the Workflow Editor window.

The Layout toolbar may only be accessed when a Workflow Editor window is opened in the application workspace. The Layout toolbar is displayed or hidden by the following menu selections:

View ~ Toolbars ~ Layout

The Layout toolbar is illustrated in Figure 3-25.

![Layout Toolbar](image)

Figure 3-25. Layout Toolbar

The items on the Layout toolbar are described in Table 3-4.

<table>
<thead>
<tr>
<th>Toolbar Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Group" /></td>
<td>The Group button. Workflow objects may not be grouped together.</td>
</tr>
<tr>
<td><img src="image" alt="Ungroup" /></td>
<td>The Ungroup button.</td>
</tr>
<tr>
<td><img src="image" alt="Bring to Front" /></td>
<td>The Bring to Front button.</td>
</tr>
<tr>
<td><img src="image" alt="Send to Back" /></td>
<td>The Send to Back button.</td>
</tr>
<tr>
<td><img src="image" alt="Bring Forward" /></td>
<td>The Bring Forward button.</td>
</tr>
<tr>
<td><img src="image" alt="Send Back" /></td>
<td>The Send Back button.</td>
</tr>
<tr>
<td><img src="image" alt="Space Across" /></td>
<td>The Space Across button.</td>
</tr>
<tr>
<td>Toolbar Item</td>
<td>Function</td>
</tr>
<tr>
<td>--------------</td>
<td>----------</td>
</tr>
<tr>
<td><img src="image" alt="Space Down button" /></td>
<td>The <strong>Space Down</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Same Width button" /></td>
<td>The <strong>Same Width</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Same Height button" /></td>
<td>The <strong>Same Height</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Same Size button" /></td>
<td>The <strong>Same Size</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Align Top button" /></td>
<td>The <strong>Align Top</strong> button. Aligneds the top of multiple objects.</td>
</tr>
<tr>
<td><img src="image" alt="Align Vertical Center button" /></td>
<td>The <strong>Align Vertical Center</strong> button. Aligneds the center of multiple objects.</td>
</tr>
<tr>
<td><img src="image" alt="Align Bottom button" /></td>
<td>The <strong>Align Bottom</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Align Left button" /></td>
<td>The <strong>Align Left</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Align Horizontal Center button" /></td>
<td>The <strong>Align Horizontal Center</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Align Right button" /></td>
<td>The <strong>Align Right</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Nudge Up button" /></td>
<td>The <strong>Nudge Up</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Nudge Down button" /></td>
<td>The <strong>Nudge Down</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Nudge Left button" /></td>
<td>The <strong>Nudge Left</strong> button.</td>
</tr>
</tbody>
</table>
Table 3-4. Layout Toolbar (cont.)

<table>
<thead>
<tr>
<th>Toolbar Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Image" /></td>
<td>The <strong>Nudge Right</strong> button.</td>
</tr>
</tbody>
</table>
| ![Image](image2) | The **Rotate** button.  
Allows object to be clicked on and rotated with mouse. |
| ![Image](image3) | The **Rotate Left** button.  
Rotates the object 90 degrees counter-clockwise. |
| ![Image](image4) | The **Rotate Right** button.  
Rotates the object 90 degrees clockwise. |
| ![Image](image5) | The **Flip Vertical** button.  
Vertically rotates the object 180 degrees. |
| ![Image](image6) | The **Flip Horizontal** button.  
Horizontally rotates the object 180 degrees. |
Canvas Toolbar

The Workflow Editor provides a Canvas toolbar that allows you to manipulate the background canvas of the Workflow Editor window.

The Canvas toolbar may only be accessed when a Workflow Editor window is opened in the application workspace. The Canvas toolbar is displayed or hidden by the following menu selections:

View ~ Toolbars ~ Canvas

The Canvas toolbar displays.

The items on the Canvas toolbar are described in Table 3-5.

Table 3-5. Canvas Toolbar

<table>
<thead>
<tr>
<th>Toolbar Item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Zoom" /></td>
<td>The <strong>Zoom</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Zoom to Fit" /></td>
<td>The <strong>Zoom to Fit</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Zoom to Selection" /></td>
<td>The <strong>Zoom to Selection</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Pan" /></td>
<td>The <strong>Pan</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Grid on/off" /></td>
<td>The <strong>Grid on/off</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Snap to Grid" /></td>
<td>The <strong>Snap to Grid</strong> button.</td>
</tr>
<tr>
<td><img src="image" alt="Page Boundaries on/off" /></td>
<td>The <strong>Page Boundaries on/off</strong> button.</td>
</tr>
</tbody>
</table>
Modifying the Workflow Editor Options

Enterprise Builder provides a feature to update the options for the Workflow Editor. Options such as the automatic generation of Enterprise Code programs and data mappings are available for customization. Follow these steps to update the Workflow Editor options:

1. From Enterprise Builder, make the following selections:

   **View ~ Options**

2. Click on the **Workflow Editor** tab. The Workflow Editor panel displays.

   ![Workflow Editor Panel](image)

   **Figure 3-27. Workflow Editor Panel**

3. Select the **Automatically generate E Code** check box to automatically generate default Enterprise Code programs for workflow tasks with outgoing routes, when a workflow process is saved.

4. Select the **Automatically save E Code** check box to save all automatically generated Enterprise Code programs. If you do not select this check box, then you will have to manually save the automatically generated Enterprise Code programs.

5. Select the **Automatically create Route data mappings** check box to automatically generate route data mappings when two workflow tasks are connected.

6. In the **Default Role Name** field, select a profile ID (operator ID) to be the default profile ID used when mapping to non-shared worklists and also to be used as the default value for the **To** field for workflow emails.

   This field is only enabled when the **Automatically create Route data mappings** check box is selected.

7. Select the **Automatically insert Workflow Panel** check box to automatically specify the WF_FUNCTIONS_01 panel in the panel group. The presence of this panel in the panel group is necessary when the Enterprise Code programs are executed.

8. Click **OK** to save the modifications to the Workflow Editor options.
Chapter 4
Defining Business Process Roles

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>4-3</td>
<td>What is a Role?</td>
</tr>
<tr>
<td>4-6</td>
<td>What is a Role User?</td>
</tr>
<tr>
<td>4-7</td>
<td>Developing Roles</td>
</tr>
<tr>
<td>4-10</td>
<td>Defining a Workflow Role</td>
</tr>
<tr>
<td>4-12</td>
<td>Example: The Employee Review Manager Role</td>
</tr>
</tbody>
</table>
Your workflow business process must specify who performs each activity. When ADP Enterprise HR routes a work item to the next activity in a business process, it forwards the item to the users who fills the role assigned to the activity. You use roles to tell your workflow business events how to send workflow routings to your users.

Workflow users are identified according to the roles that they play in your organization and in the workflow business process. Using the Role Editor within Enterprise Builder, you will define each role and add each role user that will participate in the workflow business process.

For information about creating role users, see Chapter 5, “Defining Role Users.”
What is a Role?

A workflow role tells ADP Enterprise HR which user(s) will perform an activity or worklist item. A role can represent multiple users that perform the same function.

Business rules are more efficient when they reference roles rather than specific users. It is much better to say that the manager of your department needs to perform a specific task than to refer to your current manager by name—the role definition will still be valid even if a new department manager is hired.

There are several advantages to referencing roles rather than specific users when you define a business rule:

- The business rule statement will more clearly identify the correct user to perform each activity. Often, an entire group of role users will perform a specific activity.
- The business rule statement can be defined more generally. For example, if a business rule uses the manager role, it could apply to more than one department.
- The business rule won’t need to be changed when one employee replaces another.

Roles can be as specific or as general as needed. For example, many different people may fill the manager role, but only one person will fill the HR department manager role. You will typically make roles as general as possible, so that business rules will be widely applicable.

When you define your business processes, you specify which role performs each activity. Based on this information, Workflow determines which role users can work on each work item. For more information about role users, see “What is a Role User?” on page 4-6.

User List Roles and Query Roles

Table 4-1 describes the two types of workflow roles.

<table>
<thead>
<tr>
<th>This Type of Role...</th>
<th>Contains This Type of User Information...</th>
</tr>
</thead>
<tbody>
<tr>
<td>User list role</td>
<td>A fixed list of individual role users that can perform an activity</td>
</tr>
<tr>
<td>Query role</td>
<td>A query that will select one or more role users, at run time, that can perform an activity</td>
</tr>
</tbody>
</table>
User List Roles

You can create a user list role to perform the following functions:

- When you want more than one user to work an item from the same worklist and it doesn’t matter which user performs the work assigned to the role.

  The Model Compensation business event in the Employee Review workflow (as shown in Figure 4-1) forwards a single work item to the ANALYST worklist. The first analyst to select the worklist item performs the model compensation activity.

- When you want each user in the list to receive a copy of the work item in his or her own worklist. For example, you may want a business event to send an email message to several users at the same time.

- When you want only one user to work the items routed to the role.

  ADP Enterprise HR is delivered with a default set of user list roles that correspond to the levels within an organization, such as Employee, Manager, and Vice President.

Figure 4-1. Employee Review Business Process
Query Roles

If you want to send a work item to different users, depending on current application information, you should use a query role.

When a query role is used, ADP Enterprise HR decides who to send a work item to based on the value of one or more fields in the panel group that triggers the routing. It uses information from the current record to determine which user should receive the work item. In this example, the Manager query role uses the Employee ID from the Employee Review task panel to look up the employee’s manager’s ID.

You typically use query roles more often than user list roles because they make your business processes more flexible.
What is a Role User?

Role user is another term for a workflow user. A Role User ID allows ADP Enterprise HR to uniquely identify a workflow user and to determine what data the user can access. When you define a Role User ID, you select the roles that the user can perform in a workflow business process.

If you want to route work items to a user’s worklist, you must link the user’s Role User ID to his or her ADP Enterprise HR profile ID (operator ID). The Role User ID is used to determine which roles are assigned to the user. The profile ID is used to route work items to the user’s worklist(s). ADP Enterprise HR determines which worklists the user may view, based on the application access set up for his or her profile ID.

You use the Define Workflow Users task to define a role user’s profile ID. For more information, see “Adding Role Users” on page 5-3. For more information about setting up profile IDs and user access, see the Application Administrator’s Guide.

You can also define role users that do not use the ADP Enterprise HR application. These role users will not use worklists, and they won’t have ADP Enterprise HR profile IDs. This type of role user may be an email user, for example, who will receive email or routings sent from a workflow business process.
Developing Roles

A role defines a class of users who perform the same kind of work, but roles do not route work items to users. You must define a routing in the Workflow Designer before work items can be forwarded to a role. For more information, see “Creating a Route” on page 3-21.

You can define two types of workflow roles: a user list role, and a query role. For a description of these two types of roles, refer to Table 4-1 on page 4-3.

Creating User List Roles

A user list role is used to define a list of role users that will perform an activity

To create a user list role, follow these general steps:

1. Use the Role Editor, within Enterprise Builder, to define the role definition as described in “Defining a Workflow Role” on page 4-10.

2. Use the Workflow Administrator, located within ADP Enterprise HR, to add role users to the role.

   You can use the User Definition panel (as shown in Figure 5-2) to assign the role to a user when you create a role user ID, or you can use the Role Users panel (as shown in Figure 5-4) to assign a group of role users to a user list role.

   If you want to use the user list role to route work items to a Shared Worklist, you have to make special selections when you create the worklist in the Workflow Designer. For more information about selecting a user list role for a Shared Worklist, see “Advanced Panel” on page 3-9.

   If you want to route work items to each user individually, you have to assign the user list role to the worklist routing, as described in the “Advanced Panel” on page 3-9.
Creating Query Role Definitions

A query role is used to determine which users perform a particular role. Rather than assigning role users to the role, you write the query that searches and finds the appropriate users.

A role query selects role user IDs. A routing uses a role query to determine which role users to send a work item to. In fact, the \texttt{ROLEUSER} field, from the ROLEXLATOPR record definition, is the only field that a role query selects. No matter how complex the query is, no matter how many joins or selection criteria are used, only the \texttt{ROLEUSER} field is returned.

To create a query role definition, follow these general steps:

1. Use the Query Utility to write a query that identifies the users you want to route to.
   - Remember that workflow routings are triggered by business events. Your query will use some value on the panel that triggers the business event to search for and return a list of possible role users for the routing. Profile ID (operator ID) and Employee ID are common panel values used to query for role users.

   For more information, see the next section “Creating a Role Query in the Query Utility.” Also see Chapter 13, “Creating and Running Workflow Queries.”

2. Use the Role Editor to define the role definition, as described in “Defining a Workflow Role” on page 4-10. When you define the role, you will pick the query you want to use to find role users.
   - You have to assign the query role to a worklist routing, as described in “Advanced Panel” on page 3-9. You will most likely have to define runtime bind variables so the routing will know which panel field values to copy into the query.

Creating a Role Query in the Query Utility

This section provides specific instructions that you should consider when you create a role query. Chapter 13, “Creating and Running Workflow Queries,” provides more detailed instructions for using the Query Utility.

- Make sure you identify your query as a role query using the Query Utility’s \texttt{ChangeQueryType} option. If you don’t, the query may fail at run time.

To create a role query, follow these general steps:

1. Select the record definition that you want to query. A role query returns a set of role users, so you will query one of the following record definitions:

   \begin{table}[h]
   \centering
   \begin{tabular}{|l|l|}
   \hline
   Record Definition & Description \\
   \hline
   PSROLEUSER & Lists role users and the role they are assigned to \\
   ROLEXLATOPR & Lists role users and their IDs \\
   \hline
   \end{tabular}
   \end{table}
2. Specify your selection criteria:

   - Select the **ROLEUSER** field in the record definition.
   
   - Select other fields and join to other record definitions to specify the selection criteria to use when the query searches for role users.

   For example, to define the Manager role in the Employee Review business process (as shown in Figure 4-1), the query joins the ROLEXLATOPR record definition with a record definition that identifies each user’s manager.

3. Set up role query bind variables (runtime prompts).

   Your query probably includes at least one runtime prompt. The runtime prompts (or bind variables) correspond to the panel data on which you want to base the routing decision. You create query roles when you want to route items differently, based on some panel value: which employee created the item, which class is being requested, which manager the employee reports to. At run time, the values of the variables are set based on the panel data that triggers the event.

   ![See the next section, “Understanding Bind Variables,” for a more complete description of role query bind variables.]

   If your role-based query relies on newly entered data (such as in a new hire workflow), then the Enterprise Code that triggers the event must be in a SavePostChange Enterprise Code event rather than in a Workflow event.

4. Save your role query using a name that begins with ROLE, so you can identify it as a role query.

**Understanding Bind Variables**

Every role query contains at least one **bind** variable that will be set at run time with data that you have selected to base your routing decision on.

At run time, bind variable values are set based on data from the panel that triggers the routing. Each bind variable in your query should be matched with a field from the triggering activity’s task panel.

In the Employee Review example the Employee Review Due worklist item needs to be routed differently based on the EMPLID of the employee being reviewed. A bind variable is, therefore, included in the query. It will be set at run time to EMPLID on the Employee Review Due DBAG panel.
Defining a Workflow Role

In this section the creation of workflow roles are discussed. To define a role, follow these steps:

1. Launch the Role Editor by making the following selections from Enterprise Builder:

   File ~ New ~ Role

   The Role Definition dialog box displays.

   ![Role Definition Dialog Box](image)

   **Figure 4-2. Role Definition Dialog Box**

   2. Enter the name of the role in the Name field.

      Make the name as descriptive and distinctive as possible. When you define routings, you will select from a list of role names.

      It is recommended that you establish naming conventions for roles, so that you can easily tell which are user list roles and which are query roles. Following are the ADP role naming conventions:

      - For user list roles, enter the name in ALL CAPS. For example: MANAGER
      - For query roles, give the role the same name as the query it uses, without the [ROLE] prefix, and add Qry to the end of the name. For example: Manager Qry

   3. If this is a query-based role, then select the Query-Based Role check box.

      For more information about these two types of roles, see "Creating User List Roles" on page 4-7 and "Creating Query Role Definitions" on page 4-8.
4. If you selected query role, select an existing role query from the **Query Name** field or click on the **New Query** button to define a new query.

 If this is a user list query, you need to use the Workflow Administrator to add users to the role. For more information, see “Assigning Users to User List Roles” on page 5-6.

5. Enter a detailed description of the role in the **Description** field.

 It is recommended that you give a general description of who fills this role - do not include specific user names. You might also want to identify the activities this role performs.

6. Click **OK** to save the role definition.
Example: The Employee Review Manager Role

The demonstration database includes two manager roles which are used in the Employee Review business process.

Table 4-3. Employee Review Manager Roles

<table>
<thead>
<tr>
<th>This Employee Review Role...</th>
<th>Is This Type of Role...</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANAGER</td>
<td>A user list</td>
</tr>
<tr>
<td>ManagerQry</td>
<td>A query role based on the Mgr query</td>
</tr>
</tbody>
</table>

When an employee’s review is due, the review is routed to the employee’s manager (Mgr). Since reviews are routed to different managers, depending on whose review is due, the Mgr role is a role query.

The role query returns the employee’s manager’s role user ID by querying on the EMPLID saved on the Employee Review DBAG panel that triggers the Employee Review Due business event.

The Employee Review DBAG panel is the panel that the database agent writes its results to. This is not a panel that users would ever need to access unless they wanted to manually kickoff a workflow business process. The Employee Review DBAG panel is located within the Workflow Administration process group within ADP Enterprise HR. For more information about database agents, see Chapter 8, “Creating Database Agents.”

The following SQL statement is used for the Manager query (with the effective date logic removed to simplify matters). If you’re not comfortable with SQL, you can open the ManagerQry in the Query Utility to see how it is defined. For more information about using the Query Utility, see Chapter 13, “Creating and Running Workflow Queries.”

```sql
SELECT C.ROLEUSER
FROM PS_JOB A, PS_DEPT_TBL B, PS_ROLEXLATOPR C
WHERE B.DEPTID = A.DEPTID
  AND A.EMPLID =:1
  AND C.EMPLID = B.MANAGER_ID
```
Chapter 5

Defining Role Users

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>5-3</td>
<td>Adding Role Users</td>
</tr>
<tr>
<td>5-6</td>
<td>Assigning Users to User List Roles</td>
</tr>
<tr>
<td>5-8</td>
<td>Disabling Role Users</td>
</tr>
</tbody>
</table>
Introduction

A role user is defined as a workflow user who participates in one or more automated business processes. Role users can be people who don't have access to ADP Enterprise HR, but who send data to or receive data from a workflow business process. For example, a workflow business process could route email to vendors—the vendors would need to be defined as role users, even though they don’t use the ADP Enterprise HR system.

The process of administering and maintaining role user IDs also includes such tasks as making sure that users are assigned to the proper roles and verifying that work items are being sent to the right users.

It is assumed that you have already defined workflow roles, as described in “Defining a Workflow Role” on page 4-10.
Adding Role Users

When you define a role user, you tell Workflow when and how to contact a user by providing the following information:

- The user’s ADP Enterprise HR profile ID (operator ID), if they have one
- The user’s email address
- The workflow roles the user participates in

This information is used to route worklists and email messages to the role user.

Don’t forget that you should create a role user ID for everyone who participates in the workflow business process. You’re not limited to just ADP Enterprise HR application users. Even your customers or vendors can be role users, as long as they have an email address.

To add a role user, follow these steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Users**

2. Click **Add** next to the **Define Workflow Users** task. The Add dialog box displays.

   ![Add Dialogue Box](image)
3. Enter a **Role User** ID and click **OK**. The User Definition panel displays.

![User Definition Panel](image)

**Figure 5-2. User Definition Panel**

4. Complete the fields on this panel as needed to identify the role user:

5. Enter a **Description** to describe the user or the user’s position in the company.

6. Select a profile ID from the **Operator ID field**. Identifying the user’s profile ID enables you to write role queries that select role users based on their profile ID.

   *The user’s profile ID must already be set up in ADP Enterprise HR. For more information on setting up security and user access, see the Application Administrator’s Guide.*

   If the role user is not an ADP Enterprise HR user, leave this field empty.

   For more information about defining role queries, see “Creating Query Role Definitions” on page 4-8.

7. Select an **Employee ID**. Identifying the user’s employee ID enables you to write role queries that select role users based on their EMPLID.

   *If the role user does not have an employee ID, leave this field empty.*

   If the selected profile ID is defined with a corresponding employee ID (EMPLID) in ADP Enterprise HR, the EMPLID automatically appears after you enter the profile ID.

   For more information about defining role queries, see “Creating Query Role Definitions” on page 4-8.

8. Enter the **Email Address** to use to send email messages to this user. Use an address that your email software will recognize.

9. Select an **Alternate Role User**. The role user’s work items are automatically re-routed to his or her alternate.

   You would typically enter an alternate role user if a user is going to be temporarily out of the office, on vacation for example.
Remember that when the current role user returns, you’ll need to remove the name from the list box.

New work items are forwarded to the Alternate Role User. It doesn’t reassign items already in the user’s worklist. To reassign the existing work items, you need to use the Role User Archiving panel group. For more information, see “Disabling Role Users” on page 5-8.

10. Under Routing Preferences, select to deliver work items to two types of places:

   - A worklist
   - An email mailbox

   By default, both routing preferences are selected. To prevent one of these types of routings, deselect the appropriate option.

11. Under Currently In Roles, pre-assign role users to User Lists roles. The purpose of a Query Role sets the preference for role users at run time, so you don’t preassign role users to this type of role.

   If the role user participates in more than one User List Role, click (Insert Row) to preserve history and add a new row. A new or edit box appears so you can select another role.

   To add or remove a group of users from a user list role, see the next section “Assigning Users to User List Roles.”

12. Click (Save) to save the role user.
Assigning Users to User List Roles

You can pre-assign a role user to a user list role when you define the role user, as described in the previous section “Adding Role Users.” You use the User List Assignment panel (as shown in Figure 5-4) to add or remove a group of users from a role.

You only assign role users to user lists roles. The purpose of a Query Role is to set your preference for role users at run time, so you don’t preassign role users to this type of role.

To add or remove a group of role users from a user list role, follow these steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Users**

2. Double-click on the **Manage Role Assignments** task. The Search dialog box displays.

   ![Figure 5-3. Search Dialog Box](image)

3. Enter the name of the user list role and click **OK**.

   ![Figure 5-4. Role Users Panel](image)

   You can also display a list of available roles by leaving the dialog blank and clicking **OK**.

   The left half of the panel lists role users who are currently assigned to the role. The right half lists role users who aren’t assigned to the role.
When this panel first displays, both lists are empty. This does not mean that there are no role users. To display one of the lists, click on (the single left arrow button).

Click this button in both lists to see which role users are assigned to the user list role and which aren’t. You can also enter search criteria (a portion of a Role User name for example) in the field provided to display only specific role users.

Not all employees are listed on this panel, only those who have been entered as role users through Define Workflow Users task.

4. Use the double arrow buttons in the middle of the panel to move role users between the two lists:
   
   • Click \( \leftarrow \rightarrow \) to add users to a role, click the check boxes next to their names in the right list and then click this button.
   
   • Click \( \Rightarrow \Rightarrow \) to remove users from a role, click the check boxes next to their names in the left list and then click this button.

5. Click (Save) to save the role user assignments.
Disabling Role Users

You may want to disable a role user if the user will not be available to process work items for a while, but you don’t want to remove their information entirely. The role user ID is retained and its associated data, but doesn’t route any work items to the user. When the user returns, you can enable their role user ID.

Disabled role user IDs are not available on the User Definition panel, which is illustrated in Figure 5-2 on page 5-4.

When you disable a role user, you can also reassign their current workload to another user. This feature is different from the alternate role user option on the User Definition panel, as discussed on page 5-3. When you identify an alternate role user, new work items are forwarded to the alternate user, but leaves existing items untouched. When a role user is disabled, existing work items (if selected) are reassigned and prevented from any future items being sent to the user.

You don’t have to archive a role user to reassign their work. You can select the Re-assign Work To check box without selecting the Archive User check box.

To disable a role user, or enable a role user, follow these steps:

1. From ADP Enterprise HR, click System Admin and make the following selections:
2. Double-click on the **Enable/Disable Workflow Users** task. The User Management panel displays.

The **Role User Details** area displays the following information about the role user being activated or archived. The **Member of Roles** area displays the roles that the role user participates in.

- You must select a user in either the **User to Archive** or the **User to Activate** list box and then press the TAB key to display roles in the **Member of Roles** area.

![User Management Panel](image)

**Figure 5-5. User Management Panel**

Complete the fields in the User Management panel as needed to archive the role user and reassign the role user’s work items:

- If you don’t reassign pending work items when you archive a role user, the work items will remain unprocessed.

3. In the **User to Archive** field, select the role user you want to archive from the list provided.

- You must select a user to archive and then press TAB to select the **Archive Role User** and **Re-assign Work To** check boxes.

After you select the **User to Archive**, the **Total Pending Worklist Entries** field displays the number of pending worklist items that the Archive Role User has not completed.

4. In **User to Activate** field, select the role user you want to activate from the list provided.

If no role users have been archived, the prompt button does not return any values - there are no valid archived role users to select.

- You must select a user to activate and then press TAB to select the **Activate Role User** check box.
5. Select the **Activate Role User** check box to activate the archived user in the **User to Activate** list box.

   You must select a user in the **User to Activate** list box and then press the TAB key to select the **Activate Role User** check box.

6. Select the **Archive Role User** check box to archive the user in the **User to Archive** list box.

   You must select a user in the **User to Archive** list box and then press TAB to select the **Archive Role User** check box.

7. Select the **Re-assign Work To** check box to reassign all pending and future work list items from the user selected in the **User to Archive** list box.

   Select the role user you want from the list provided.

   You must select a user in the **User to Archive** list box and then press the TAB key to select the **Re-assign Work To** check box.

   You do not have to use the **Archive Role User** option if you don't want to, but a user must be selected in the **User to Archive** list box. This will reassign the role users work items without archiving the Role User ID.

8. Click **Save** (Save) to save the role user archive information.
Chapter 6
Worklist Record Definitions

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>6-3</td>
<td>Reviewing the Existing Worklist Records</td>
</tr>
<tr>
<td>6-4</td>
<td>Understanding Worklist Record Definitions</td>
</tr>
<tr>
<td>6-6</td>
<td>Creating Worklist Record Definitions</td>
</tr>
</tbody>
</table>
Introduction

Like other types of ADP Enterprise HR data, work items are stored in database tables. When you create a worklist record definition, you define the data structures used to store worklist items.

A worklist record definition defines a database table that holds pending work items that appear in one or more worklists. When a business event routes a work item to a worklist, it adds a row to the corresponding worklist table. When a work item is completed, the row is marked in the table as worked.

You create a worklist record definition using the same procedures that you use to create other ADP Enterprise HR record definitions. This chapter describes some special requirements that you should keep in mind when you create worklist record definitions. It is assumed that you have already created and documented your workflow design, as described in Chapter 2, “Designing Your Workflow.”

For more information about creating worklists, see Chapter 3, “Defining Workflow Business Processes: The Workflow Editor.” For more information about creating record definitions, refer to the Application Developer’s Guide.
Reviewing the Existing Worklist Records

The ADP Enterprise HR software is delivered with several worklist records already created. These existing worklist records will most-likely fulfill your needs for your customized workflow business processes.

The following provides a list of the existing worklist records delivered with ADP Enterprise HR:

- AL_FILENBR_WL
- COMP_ANALYS_WL
- EMPLID_WL
- EMPL_COMPANY_WL
- EMPL_RCD_NBR_WL
- GEN_MSG_WL
- WF_MON_WL

To review the contents of these workflow record definitions use Enterprise Builder’s Record Editor or refer to the data dictionaries.
Understanding Worklist Record Definitions

Items are grouped in worklists that users can check to review which activities need to be performed. Worklist items are used to ensure that work is processed correctly. When you create a worklist record definition, you define what the work item looks like and how the workflow business process should process the work.

ADP Enterprise HR uses a worklist record definition in the following ways:

- It is used to link each work item with its workflow tracking information. Workflow tracking information is stored in a workflow system record (PSWORKLIST).

- It is used to display relevant information about each work item in the Select Worklist dialog box, as shown in Figure 6-1. The user opens this dialog box to select work items to work.

- It is used to determine the order of work items in the worklist.

- It is used to retrieve the record associated with a work item.

System Fields

Table 6-1 describes the three system fields that must always be the first three fields in a worklist record definition.

<table>
<thead>
<tr>
<th>System Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSPROCNAME</td>
<td>The business process that the work item is part of</td>
</tr>
<tr>
<td>WORKLISTNAME</td>
<td>The worklist the work item is waiting in</td>
</tr>
<tr>
<td>INSTANCEID</td>
<td>The assigned ID for the work item</td>
</tr>
</tbody>
</table>

These fields must be defined as ascending key fields. Workflow uses system fields to link worklist items to their tracking information. Worklist tracking information is stored in the ADP Enterprise HR-defined table PSWORKLIST.
Application Fields

The remaining worklist record definition fields are specific to the task that creates the worklist. These are the fields that a user sees in the Worklist panel, as shown in Figure 6-1. When a user selects a work item, the application fields are used to retrieve the associated record from the database.

Keep the following guidelines in mind when you choose which application fields to include in your worklist record definition:

- Include the key fields used in the search record that you select to retrieve the associated database record.
- Order the application fields carefully. The work items are sorted in a worklist based on the field immediately following the INSTANCEID field, then on the next field, and so on. The worklist table is sorted by all key fields in the record definition.
- Include any additional fields that will help the user prioritize their work.

You can use the same worklist record definitions for any worklists that share the same data structure.
Creating Worklist Record Definitions

Figure 6-2 illustrates a worklist record definition. You can create a worklist record definition from scratch, or you can clone an existing record definition and modify it as needed. This section briefly describes how to create a worklist record definition. For more information about creating record definitions in the Record Editor, see the *Application Developer’s Guide*.

This task should be completed by the advanced Enterprise Tools developer.

Follow these steps while creating a worklist record definition:

1. Add the following fields to the record definition:
   - **BUSPROCNAM**E (character field)
   - **WORKLISTNAME** (character field)
   - **INSTANCEID** (numeric field)

   These should be the first three fields in the record definition. Identify them as key fields, and use ascending sort order.
2. Add the application key fields that should be used to sort the work items.

The work items are sorted based on the order of system and application key fields. Users cannot change this sorting order. Even though you cannot change the sort order of the worklist in these definitions, the end-user can resort the list by clicking on the column heading in the search list.

Add each key field needed to populate the search record used to access the task panel. These key fields are used to locate the worklist record. For example, EMPLID is added to the example in Figure 6-2, because it is the only key field needed to access the Compensation Analysis panel.

The application key field sort order does not have to be the same as the search record’s sort order.

3. If a third-party system will be used to work an item, you should include a character field named COMMAND_PARM. This parameter will hold any command-line arguments that you want to pass to the external program (like a filename). For more information, see Appendix A, “Third-Party Application Integration.”

4. Add any other application data fields that are needed to describe the work item in the Worklist panel, as shown in Figure 6-1.

5. Save the record definition using a name that ends with “_WL” so it can be easily identified as a worklist record definition. Create a database table using this record definition.

**Using the Timeout Feature and Copy Record Definitions**

Workflow provides a Timeout feature that supports exception processing. You can use this feature to forward a work item from one worklist to another when the item remains unworked beyond a set period of time.

If your worklist uses timeout processing, you need to create a worklist copy record definition. The copy record definition holds a temporary copy of a work item when it is moved between worklists. The copy record definition should be identical to the work item record definition.

You don’t need to create a worklist copy record if you will not be using the timeout exception processing feature. For more information about adding timeout processing to your worklist, see “Advanced Panel” on page 3-9.

To create a worklist copy record definition, follow these steps:

1. Open the worklist record definition and save it with a new name (by changing the _WL suffix to _WC).

2. Create a table for the copy record definition.
<table>
<thead>
<tr>
<th>Page</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>7-3</td>
<td>Discussing Workflow Work Panels</td>
</tr>
<tr>
<td>7-4</td>
<td>Adding Workflow Enterprise Code to the Record Definition</td>
</tr>
</tbody>
</table>
Introduction

This chapter explains how to enable panel groups that trigger workflow business events. Workflow rules are loaded into memory with an ADP Enterprise HR task panel. When it detects that a business rule has been triggered, it determines the appropriate action to take.

Workflow rules link workflow business events to ADP Enterprise HR task panels. As you defined your workflow business process, you identified the application panel tasks that trigger each workflow business event, as described in “Creating a Workflow Panel Task” on page 3-6.

Workflow rules consist of two things: a workflow work panel, and Enterprise Code programs that define the business rules that are used to determine which action to take when the workflow panel is saved.

You perform the work described in this chapter using the Navigation Editor and the Record Editor. For details about using these tools, see the Application Developer’s Guide.
Discussing Workflow Work Panels

Every panel group that triggers a business event must include the WF_FUNCTIONS_01 panel. This special work panel loads several important workflow Enterprise Code functions into memory.

The Workflow Designer, automatically adds the WF_FUNCTIONS_01 panel for you, if the **Automatically insert Workflow Panel** option is activated on the Workflow Editor panel of the Options dialog box. Do *not* delete this panel from a process group. We wanted to inform you of the reason that you will see this panel through the Navigation Editor. For more information, see “Modifying the Workflow Editor Options” on page 3-35.

Typically, after you add a panel to a group, you will want to grant users access to the panel. Since WF_FUNCTIONS_01 is a work panel, however, and you don't want users to see it or have access to it, do not grant access to it.
Adding Workflow Enterprise Code to the Record Definition

To trigger business events from a panel group, you need to add workflow Enterprise Code to the record definition for one of the tables that the panel writes to.

If you’re triggering business events from a panel that includes scrolls, make sure you add the workflow Enterprise Code to the record definition at the appropriate scroll level.

If, for example, you add it to the record definition associated with a level 1 scroll, the workflow rules will run it once for each row at that level. A workflow Enterprise Code program can reference record fields from record definitions at the same scroll level or lower scroll level.

If you chose to relocate an automatically generated Enterprise Code program to a different location, this Enterprise Code program will no longer be able to be automatically updated by the Workflow Editor.

When you activate the Automatically generate ADP Enterprise Code option and the Automatically save ADP Enterprise Code option on the Workflow Editor panel of the Options dialog box, the Workflow Editor automatically generates default Enterprise Code for you when you save the workflow business process. This Enterprise Code is placed in the lowest data record (level 0 or level 1) in the task unless you indicate otherwise by selecting the Automatically generate ADP Enterprise Code for this task option on the Advanced panel for Panel Task Properties. Specifically, the Enterprise Code is assigned to the first key field of that record. For more information, see “Modifying the Workflow Editor Options” on page 3-35.

The Workflow Editor also updates the automatically generated Enterprise Code programs if a workflow business process name, a route name, or a work list name is changed. As long as the Enterprise Code program remains in the same location where it was originally generated.

Workflow Enterprise Code is one of the categories of Enterprise Code associated with a record definition. For more information about Enterprise Code categories and writing Enterprise Code, see the Enterprise Code Developer’s Guide.

Workflow Enterprise Code Processing Rules

Workflow Enterprise Code is processed according to the following rules:

- Workflow Enterprise Code is processed after the user saves the panel group.

- Workflow Enterprise Code is processed before the database is updated with the data saved from the panel group.


Workflow Enterprise Code programs typically review the data in the saved record and then decide which business event to trigger, if any. Each program includes at least one instance of TriggerBusinessEvent(), which is the Enterprise Code function that triggers events.
You can add the workflow Enterprise Code to any field in the record definition. For clarity, however, it’s a good idea to add it to a field that the program itself references.

**Workflow Enterprise Code Functions**

Special Enterprise Code functions are available for workflow development. Some of these functions are used in workflow Enterprise Code programs, while others can be used to customize or maintain workflow objects.

Table 7-1 summarizes the available workflow Enterprise Code functions.

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>@</td>
<td>Returns the value of a field.</td>
</tr>
<tr>
<td>CheckBPEventActive</td>
<td>Checks to see if a business process is active. For more information, see “CheckBPEventActive()” on page 7-5.</td>
</tr>
<tr>
<td>GetWLFieldValue</td>
<td>Retrieves data from the application worklist record.</td>
</tr>
<tr>
<td>MarkWLItemWorked</td>
<td>Marks the current worklist entry as worked if you have invoked a panel from the worklist.</td>
</tr>
<tr>
<td>PurgeWorklist</td>
<td>Use this function to delete worklist items that accumulate over time in the PSWORKLIST table.</td>
</tr>
<tr>
<td>TriggerBusinessEvent</td>
<td>Triggers a defined business event. For more information, see “TriggerBusinessEvent()” on page 7-5.</td>
</tr>
</tbody>
</table>

For more information about workflow Enterprise Code functions, see the *Enterprise Code Developer’s Guide*.

**TriggerBusinessEvent()**

You need to use the TriggerBusinessEvent() function in every workflow Enterprise Code program. TriggerBusinessEvent() triggers a specified business event and the workflow routings associated with that event. Its syntax is as follows:

```
TriggerBusinessEvent(BUSPROCESS "<BusProcName>", BUSEVENT. "<BusEventName>")
```

The BusProcName and BusEventName parameters are the names of the business process and event. They are both strings, enclosed in quotes.

**CheckBPEventActive()**

The CheckBPEventActive function should be used to check whether an event in a business process is active. The function checks the options set on the Business Process Controls panel, as shown in Figure 1-3 on page 1-13.

For more information about how to activate the events and worklists in a business process, refer to “Activating a Sample Business Process” on page 1-12.
Workflow Enterprise Code Programs

Every workflow Enterprise Code program follows the same basic structure:

1. Check for the condition, or *business rule*, under which a business event should be triggered.

2. If the condition is true, check whether the event is active. For more information about checking event activity, see the previous section, “CheckBPEventActive().”

3. If the event is active, trigger it. For more information about triggering an event, see “TriggerBusinessEvent()” on page 7-5.
# Chapter 8

## Creating Database Agents

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>8-3</td>
<td>Understanding Database Agents</td>
</tr>
<tr>
<td>8-5</td>
<td>Adding Database Agents to Your Workflow</td>
</tr>
<tr>
<td>8-7</td>
<td>Running Database Agents</td>
</tr>
<tr>
<td>8-9</td>
<td>Assigning Database Agents to Panel Groups</td>
</tr>
<tr>
<td>8-10</td>
<td>Monitoring Database Agent Logs</td>
</tr>
</tbody>
</table>
A database agent is a workflow program that performs a simple function: it runs a query against your ADP Enterprise HR database and passes the results to the Message Agent Server. This has the effect of being a virtual user which is equivalent to a program completing a task behind the scenes. This function, when combined with other workflow tools, significantly extends the range of tasks you can automate with your workflow business process.

For the database agent to work, there must also be a message definition defined, which is named exactly the same as the database agent. Also, the query field alias (query definition header) must match the field names found in the message definition.

A database agent can run any query that is defined through the Query Utility. The where clause in a workflow query is a business rule that looks for exception conditions. When these conditions are met, the database agent (DBAGNT) triggers the appropriate event(s) through the Message Agent Server. For more information about the Query Utility, see Chapter 13, “Creating and Running Workflow Queries.”

Figure 8-1. Overview of the Use of Database Agents

At this point in the workflow development process, it is assumed that you have already done the following:

- Created your business process, as described in Chapter 3, “Defining Workflow Business Processes: The Workflow Editor.”
- Identified the workflow rules that trigger each of your business events, particularly the events triggered by each database agent, as described in Chapter 7, “Defining Workflow Rules: Enterprise Code and Worklist Panels.”
Understanding Database Agents

Although database agents perform a simple task, they play an important role in a workflow business process. By running predefined queries on a regular basis, they periodically check your ADP Enterprise HR database for data that is relevant to your business processes. Data passed through the Message Agent Server is responded to automatically. Database agents are commonly used to initiate, or “kick-off” a business process.

Monitoring the Database

Most routings in a business process are triggered by a user entering data onto a panel. Workflow rules link workflow business events to the application panels that trigger them. For more information about defining workflow rules, see Chapter 7, “Defining Workflow Rules: Enterprise Code and Worklist Panels.”

However, there are situations where you’d like to trigger routings based on some event that involves no user action at all. Database agents make such routings possible.

To implement a database agent, you must first write a query that will monitor the database for data that needs to be processed. Using the Process Scheduler, you can schedule a database agent to run a query at certain intervals and then kick off a workflow business process when the query’s business rule, or condition, is met. Once you schedule a database agent, no user intervention is required.

Triggering Events through the Message Agent Server

Database agents trigger business events indirectly, by passing the results of their queries to the Message Agent Server. Workflow rules trigger a business event when a user enters and saves data on a panel that contains workflow Enterprise Code. A database agent, however, cannot pass data to a panel—the Message Agent Server provides that function. For more information about defining workflow rules by adding workflow Enterprise Code to a panel, see “Adding Workflow Enterprise Code to the Record Definition” on page 7-4.

The Message Agent Server uses a message definition to map a database agent’s query results to an ADP Enterprise HR panel. If the panel has workflow Enterprise Code associated with it, a business process is triggered when the Message Agent Server saves the panel. For more information about creating message definitions, see Chapter 9, “Message Definitions.”

If a database agent query returns multiple rows of data, the agent passes the rows to the Message Agent Server one at a time. The Message Agent Server invokes the panel group that triggers the business event once for each row it receives.
Why Use a Database Agent Instead of a Batch Process?

You process some ADP Enterprise HR activities interactively (online processes), while other activities are processed behind the scenes (batch processes). Batch processes provide three major benefits:

- You can schedule a batch of items to run at a later time, on a recurring schedule.
- You can group several activities in a batch, rather than having to process each activity individually online.
- You can offload a batch processing to a server, so that time-consuming tasks don’t tie up your machine.

Batch processes have one significant drawback: they connect to the database directly, rather than working through ADP Enterprise HR panels. You won’t be able to use the Panel Processor to validate incoming data or run Enterprise Code programs. Also, because business events are triggered when data is saved on a panel, batch processes can’t kick off a workflow business process.

Database agents overcome these limitations. Like online processes, database agents enter data through ADP Enterprise HR panels (using the Message Agent Server as an intermediary). Like batch processes, they can handle a batch of items. In essence, you can have an agent run a batch of online processes.

For example, suppose you have a batch process that enrolls students on a waiting list into a new course, and you want to notify (via email) all affected students. The batch process itself couldn’t trigger an email routing, but a database agent could query for newly enrolled students and then send an email to each one. You could also replace the batch process entirely with a database agent that enrolls students. Because this database agent would enter data through the Course Enrollment panel, it could trigger an email routing as it enrolls each student.

You can experience some performance problems when you use database agents. Most ADP Enterprise HR batch processes use “set” SQL processing; that is, they use SQL statements that process large volumes of data at once. Database agents process individual rows of data at a time.
Adding Database Agents to Your Workflow

A database agent is a simple program, but fitting it into the workflow business process requires a good deal of planning. This section gives an overview of the steps required to incorporate a database agent into a workflow business process.

To add a database agent to your workflow business process, follow these steps:

1. Use the Query Utility to write a query. For more detailed information about using the Query Utility, see “Creating and Running Workflow Queries” on page 13-1.

   Most of the time, your query retrieves only key information from the database. When the Message Agent Server passes the information to the panel, the panel can retrieve the rest of the data for the item identified because it is a key field.

Keep the following in mind when you define the query:

   • Make sure that the query checks for the trigger conditions you defined when you designed your business process in Chapter 2, “Designing Your Workflow.”
   
   • Define the query to retrieve the information that you need to pass to the Message Agent Server.
   
   • Make sure you identify the query as a database agent query using Change ~ Query Type. You should also use a query name that begins with [DBAG].

2. Create a message definition that maps the query result fields to the record definition fields for the panel that you identified in Chapter 7, “Defining Workflow Rules: Enterprise Code and Worklist Panels.”

   The name of the message definition must be the same name as the query. The field names are generated automatically. You must change the field names because the query heading must match the message definition field names.

   The message definition tells the Message Agent Server how to transfer the query result data to the panel record. For more information, see “Creating Message Definitions” on page 9-6.

3. Test the query using the Query Utility first, to make sure it returns the correct data.

4. Test the database agent.

   Run the database agent program using the ADP Enterprise HR Window ~ DBAGENT menu selection or create an icon in the Program Manager. Check for the following expected results:

   • The database agent should retrieve the correct data
   
   • And the correct business process should be triggered.
5. For more information, see “Running Database Agents” on page 8-7.

6. Add the database agent to the Process Scheduler.

   Once you’ve verified that the database agent runs correctly, add the database agent to the Process Scheduler. The Process Scheduler determines which panel users can run the database agent, and how the agent will be run.
Running Database Agents

To test your database agent, you can run it from Microsoft Windows or start it using the information in “Starting Workflow Database Agents” on page 10-10.

Remember that when you put the database agent into production, you will use the ADP Enterprise HR Window ~ DB Agent menu item. See “DB Agent Dialog Box” on page 11-7. For more information about adding a database agent to the Process Scheduler, refer to the Application Administrator’s Guide.

Use the following command line to start a database agent:

```
DBAGNT -U user_ID -P password -S app_server_name
-Q [DBAG] query_name -I process_instance [-Topt_filename -E error_threshold]
```

For example, the following command line will start the Employee Review database agent:

```
DBAGNT -Q [DBAG] Employee Reviews Due -T
```

The Employee Review workflow process is only an example of a workflow process that a client can add to ADP Enterprise HR. Employee review is not a workflow delivered by ADP.

When you type the command line to start a database agent, keep the following in mind:

- Spaces are not included between the command-line switches and their arguments: for example, between -Q and [DBAG] Employee Reviews Due.
- You can include spaces in the argument itself, like [DBAG] Employee Reviews Due, and you don’t need to include the argument in quotes, unless it contain a hyphen.
- The order of parameters in the command line is not important.

Table 8-1 describes the database agent command-line switches and their arguments.

<table>
<thead>
<tr>
<th>Command</th>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Q</td>
<td>query_name</td>
<td>Replace query_name with the name of the query that the database agent runs.</td>
</tr>
<tr>
<td>-U</td>
<td>user_ID</td>
<td>Replace user_ID with the ADP Enterprise HR profile ID (operator ID).</td>
</tr>
<tr>
<td>-P</td>
<td>password</td>
<td>Replace password with the corresponding password for the profile ID (operator ID).</td>
</tr>
<tr>
<td>-S</td>
<td>app_server_name</td>
<td>The application server name is identified through this command-line switch.</td>
</tr>
<tr>
<td>-I</td>
<td>process_instance</td>
<td>The process_instance is used by the Process Scheduler.</td>
</tr>
</tbody>
</table>
Table 8-1. Database Agent Command-Line Switches (cont.)

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Topt_filename</td>
<td>Use this command to turn the trace file on while the database agent runs. If you specify a filename immediately after the -T command switch, the trace file is written to that filename in the Windows TEMP directory. If you do not specify a filename immediately after the -T switch, then the trace file is written to the SQLTrace.log file in the Windows TEMP directory.</td>
</tr>
<tr>
<td>-Error_threshold</td>
<td>Replace error_threshold with the number of errors you want the database agent to tolerate before aborting. If you do not include this command, the default error_threshold is 1. If you use this command to set a error_threshold greater than 1, the trace file will contain only the last error encountered - the error that causes the database agent to abort the query.</td>
</tr>
<tr>
<td>-kbind1=bind_value1</td>
<td>Replace bind_value1 with the first bind variable used in the database agent query. Do not use this command if the database agent query does not include any bind variables. If the database agent query includes more than one bind variable, include the following commands as well: -kbind2, -kbind3, and so on. You need to include a command for each bind variable used in the database agent query.</td>
</tr>
</tbody>
</table>
Assigning Database Agents to Panel Groups

When you added the database agent to the Process Scheduler, you specified the panel groups from which users can start the database agent. To schedule a process, you pass the Process Scheduler a run control. So, the panel group you assign the database agent to must be one that creates run control records.

For more information about run controls, see the Application Administrator’s Guide.

If the query that your database agent runs doesn’t include runtime bind variables, you can assign the database agent to an existing panel group that creates run controls. The Process Scheduler within ADP Enterprise HR sends the necessary run control information. It is recommended that you assign these database agents to the RUN_DBAGENT panel group, which appears in the Workflow Administrator (System Admin ~ Workflow Administration ~ Database Agents).

If the query includes runtime bind variables, you need to do the following:

- Create a run control record definition that includes the necessary fields.
  
  For example, if the database agent queries for all employees in a specified department, you need to create a run control record that includes a DEPTID field and a panel with an entry field for DEPTID.

- For more information about creating record definitions, see the Application Developer’s Guide.

- Build a panel on which the user can enter values for the fields. For more information about creating a panel, see the Application Developer’s Guide.
Monitoring Database Agent Logs

Whenever a database agent query runs, there is a log that is produced and stored in a `c:\temp\~dba*nnn*.tmp` file, where `nnnn` are random numbers and letters. Use this log to verify that the appropriate data is being processed and matching worklist entries were delivered.

```
Workflow Database Agent
Process Instance = 0
Query Name = [DBAG] Employee Review Due
10.55.51: run query
10.55.52: fetch rows
10.55.52: process rows

Empl ID=100
Empl Rcd#=0
Next Revw=1998-02-20

Empl ID=555160081
Empl Rcd#=0
Next Revw=1998-03-01

10.55.57: done
```

Figure 8-2. Sample Database Agent Query Log
<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>9-3</td>
<td>Understanding Message Definitions</td>
</tr>
<tr>
<td>9-4</td>
<td>Opening an Existing Message Definition</td>
</tr>
<tr>
<td>9-6</td>
<td>Creating Message Definitions</td>
</tr>
<tr>
<td>9-12</td>
<td>Mapping Output Fields</td>
</tr>
<tr>
<td>9-13</td>
<td>Debugging the Panel Processor</td>
</tr>
<tr>
<td>9-14</td>
<td>Cross-Reference Reports for Message Definitions</td>
</tr>
</tbody>
</table>
Message definitions are used when an entity other than a human operator needs to transfer data into an ADP Enterprise HR panel. Thus, the data is also written to the ADP Enterprise HR database, from the ADP Enterprise HR task panel. Message definitions are created through the Workflow Designer, which is located within Enterprise Builder.

The Message Agent Server is the entity responsible for using the message definitions to extract data out of external programs and import the data into ADP Enterprise HR.

The term *electronic document* is frequently used in this chapter. For the purposes of this guide, the term represents an external program’s collection of data.
Understanding Message Definitions

A workflow message definition tells the Panel Processor how to process a task panel. A message definition maps data passed to the Panel Processor to the fields on an ADP Enterprise HR task panel. For more information about how to create a message definition, see “Creating Message Definitions” on page 9-6.

When you define a message definition, you define the following information:

Table 9-1. Components of a Message Definition

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message Definition name</td>
<td>When an application, such as a database agent, sends a message to a Panel Processor, it tells the Panel Processor which message definition to use.</td>
</tr>
<tr>
<td>Panel and record definition information</td>
<td>When the Panel Processor receives a document, or the results of a database agent query, it navigates to the corresponding ADP Enterprise HR panel just as a user would: by selecting the panel name from a menu, selecting an action mode from the cascading menu, and entering key data into a search dialog box.</td>
</tr>
<tr>
<td>Data field mapping information</td>
<td>The Panel Processor maps the values from the message definition client or calling of specified Windows application fields to the corresponding fields on the ADP Enterprise HR panel.</td>
</tr>
<tr>
<td>Scrollable panel field processing information</td>
<td>A panel that has scroll bars can include multiple rows of data. The message definition specifies whether the Panel Processor can add rows to the scroll, update existing rows, or delete rows.</td>
</tr>
</tbody>
</table>

In order for the database agent to work, there must also be a message definition defined, which is named exactly the same as the database agent. Also, the query field alias (query definition header) must match the field names found in the message definition. For more information about database agents, refer to Chapter 8, “Creating Database Agents.”
Opening an Existing Message Definition

This section describes how to open an existing message definition so you can modify it.

To open an existing business process, follow these steps:

1. From Enterprise Builder, make the following selections:

   File ~ Open

   The Open dialog box displays.

   Figure 9-1. Open Dialog Box

2. Select Message Definition from the Objects of type field. Existing message definitions display.

   Figure 9-2. Message Definitions in Open Dialog Box
3. Highlight the message definition to be opened and click **Open**.

You may also double-click on the message definition to access it from this dialog box. To search for the message definition, enter the first letters of the message definition name in the **Named** field and click on the **(Find) button** (the **Named** field is not case-sensitive).

The Open Message Definition dialog box displays.

![Open Message Definition Dialog Box](image)

**Figure 9-3. Open Message Definition Dialog Box**

To copy this message definition click **Save As**, enter a new message definition name in the Save As dialog box, and then click **Save**.

The remaining functionality for the Open Message Definition dialog box is the same as that described for the New Message Definition dialog box beginning with Step 2 on page 9-6.
Creating Message Definitions

Message definitions tell the Panel Processor how to apply the data to the panel. It serves as a bridge between the data passed from an external program to the record fields underlying the ADP Enterprise HR task panel.

You use the Workflow Designer to create message definitions. To create a message definition, follow these steps:

1. From Enterprise Builder, make the following selections:

   File ~ New ~ Message Definition

   The New Message Definition dialog box displays.

2. Select who will use this Message Agent Definition from the options in the User of Message Definition area.

   Search options are available only for Web Services functionality at this time.

   If the Database Query user is selected, then you can select the appropriate option from the Database Query field. Use the Query Editor button to access the Query Editor.

   If the Search Record Match user is selected, then the message definition will return search record match results. Not all search keys are required when Search Record
Match is specified, but keys that are supplied return rows based on an *exact* key match. For example, a specified key of 100 will return only a key value of 100.

If the **Search Record List** user is selected, then the message definition will return a search record list. Not all search keys are required when **Search Record List** is specified, but keys that are supplied return rows based on *similar* key matches. For example, a specified key of 100 will return key values of 100, 1000, 1001, and 1002. Both exact and similar rows are returned.

If either the **Search Record Match** or **Search Record List** user is selected:

- You should select the appropriate option from the **Search Record** field.
- Only the **General** and **Field Mapping** tabs are available. (The **Task Selection** tab and the **Scroll Bar Settings** tab do not appear.) Enter a **Description** for this Message Definition, and skip to Step 12 on page 9-9.

If appropriate, enter an **Alias Name** if you want to provide an alternate name for the search record.

3. If either the **Task Selection** or **Database Query** user is selected, enter a **Description** for this Message Definition and continue with the following step.

4. Click on the **Task Selection** tab. The Task Selection panel displays.

5. Use the tree structure to select the appropriate panel task.

6. Select the **Data Action Type**.
7. Click on the **Scroll Bar Settings** tab.

   This is where the Message Definition defines how the external application interacts with the data found or not found in ADP Enterprise HR scroll records.

   As an example, Figure 9-6 illustrates an existing message definition.

![Figure 9-6. Scroll Bar Settings Panel](image)

8. If desired, enter an **Alias Name** for the scroll record.

   The **Scroll Record** column lists the records of the selected task panel which are connected to one or more scroll bars. The **Occurs Level** column lists the scroll bar’s Occurs Level on the panel task.

9. Use the **If Record Found** column to select the action that you want the Panel Processor to perform when it maps data to a scroll record which already contains a row with the same key fields:

   - **Update**—Replaces the existing row with values from the electronic document or query. The values of unmapped fields remain unchanged.
   - **Skip**—Ignores the values from the electronic document or query. The existing row remains unchanged.
   - **Replace**—Deletes the existing row and inserts a new row using the values from the electronic document or query. Unmapped fields are cleared and returned to their default values.
   - **Delete**—Removes the existing row and does not insert a new one.
   - **Error**—Reports an error and does not change the existing row.
10. Use the **If Record Not Found** column to select the action that you want the Panel Processor to perform when it maps data to a scroll record that does *not* contain a row with the same key fields:

- **Insert**—Adds a row to the scroll record using the values from the electronic document or query. The electronic document or query must provide values for all required fields.
- **Skip**—Ignores the values and *does not* change the existing row.
- **Error**—Reports an error and *does not* change the existing row.

11. Select the **Delete Remaining Rows** check box if you want the Panel Processor to replace any existing rows, rather than adding to them. The Panel Processor will remove any rows in the scroll region for which the electronic document or query does not provide values.

12. Click on the **Field Mapping** tab. The Field Mapping panel displays. This panel is used to define fields for the Message Definition, which are used as aliases for database record values or constant strings. By selecting this panel, rows containing a key search record.field may automatically be generated, if available. These search fields are automatically defaulted, based on the panel task selected. The database query or external application uses these field definitions when importing data into the panel task or retrieving data from a panel task.

---

As an example, Figure 9-7 illustrates an existing message definition.

![Field Mapping Panel](image)

**Figure 9-7. Field Mapping Panel**

💡 Use the **New Field** button to create a new row on this panel. Use the **Delete Field** button to delete a row from this panel. Use the **Up** or **Down** buttons to move a selected row for any field. Right-click the mouse to display the context menu.

💡 The add and delete options are also available on the pop-up context menu.
The Field Name is the alias used by the Message Agent Definition clients, which are the database query or the external application.

The Type of Mapping column contains a value of Constant or Record, where Record represents a record field.

The Mapping Destination column is used to define the record.fieldname value or a text string for constant values.

The In/Out/Both column defines if the alias field is used for input purposes, output purposes, or both. This is from the external application’s point of view which is the database query or the external application.

Table 9-2 provides a listing of the available options for this field:

<table>
<thead>
<tr>
<th>When You Use This Option...</th>
<th>The Panel Processor Will Do This...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Copy data from the specified field to the panel record field.</td>
</tr>
<tr>
<td>Output</td>
<td>Copy data from the panel record field to the specified field.</td>
</tr>
<tr>
<td>Both</td>
<td>Copy data in both directions.</td>
</tr>
</tbody>
</table>

The Translate column is used when the value of Record is present in the Type of Mapping column. When this is the case, then this column determines if the database field value is copied directly from the database or the Translate tables are used to convert the field value from the database to another value.

Table 9-3 lists the available options for this field.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copy</td>
<td>The value is assigned directly to the output field.</td>
</tr>
<tr>
<td>Xlat-S</td>
<td>The short translate value is assigned from the translate table to the output field.</td>
</tr>
<tr>
<td>Xlat-L</td>
<td>The long translate value is assigned from the translate table to the output field.</td>
</tr>
</tbody>
</table>

The Xlat-S and Xlat-L options are only available for this field if there exists Translate table values associated with the selected record.

For more information about using the Map Mode and Map When options to set up output fields, see “Mapping Output Fields” on page 9-12.

13. Click Save to save this Message Definition.

To copy an existing Message Definition, you can click Save As.
Creating Valid Message Maps

To create a valid message map, you must map an input field to every required field on the panel, including keys on record definitions included in the panel group that you are mapping to. Each electronic document or query that uses the message definition must also contain values in these required fields.

The Panel Processor can not map data into fields that have default processing associated with them. For example, it can not map into a Request ID field that automatically fills in the next available Request ID. If the search dialog box for a panel has default processing, do not add the field to the message map.
Mapping Output Fields

The features described in this section are available for message definitions that process external information, depending on how you design the interface program. These features are not available for message definitions that process database agent queries (query message definitions).

Although the primary purpose of a message definition is to map external data to ADP Enterprise HR, the Panel Processor actually supports two-way communication with external communication programs. After the Panel Processor transfers data from the electronic document to the panel, it builds a list of output fields and makes their values available to the third-party application.

When you define the message definition map, use the **In/Out** field to identify each field as either an input field, an output field, or both.

An input field is an electronic document field. The Panel Processor copies the data from this field to the corresponding ADP Enterprise HR panel record field. An output field is a panel record field in ADP Enterprise HR. After all input fields have been mapped, the Panel Processor copies the data from the output fields to the corresponding electronic document fields.

You also need to use the **Translate** field to define how you want the Panel Processor to map data to each output field.

For example, suppose you associate an **Employment Status** field from the electronic document with the record field PERSONAL_DATA.PER_STATUS. If the PERSONAL_DATA.PER_STATUS field holds an abbreviation that translates to a value on the Translate table, you can do either of the following:

- Map the abbreviation to the electronic document field by using the copy Map Mode.
- Map the corresponding Translate table value by using either the Xlat-S or the Xlat-L Map Mode.

**Mapping Data to Panels with Scroll Regions**

For example, an electronic document for specifying beneficiaries could have fields named **BENEFICI1** and **BENEFICI2**, both of which you would map to the level one record field **BENEFICIARY**. When the Panel Processor maps these fields, it will create two rows in the scroll, one for each value from the electronic document.
Debugging the Panel Processor

If you are having difficulty getting the results you expect from a message definition, run a SQL Trace. The debug file that the Trace SQL option creates will give a detailed listing of what the Panel Processor is trying to do. The most common problems are incorrect message definitions and the incoming data failing an online edit.

For more information regarding Trace SQL, see the Application Developer’s Guide.

To use SQL Trace feature, follow these steps:

1. From ADP Enterprise HR, click System Admin and make the following selections:

   Application Administration ~ Debugging

2. Double-click on the SQL Trace Options task. The SQL Trace panel displays.

3. Select the appropriate tracing options:
   - Select Trace SQL Statement to show SQL statements as they are executed.
   - Select Trace SQL Bind to show all in-line bind variables.
   - Select Trace SQL Cursor to show open and closed cursors.
   - Select Trace SQL Fetch to show all application programming interfaces.
   - Select Trace SQL Set Select Buffer to show set select buffers.

4. Click (Save).
Cross-Reference Reports for Message Definitions

The cross-reference reports scan Enterprise Tools tables containing definitions for ADP Enterprise HR objects to generate reports designed specifically as an Enterprise Tools customization reference tool. These reports are delivered with ADP Enterprise HR. Cross-reference reports are identified by their three-character prefix: XRF.

Table 9-4 lists and describes the message definition cross-reference reports delivered with ADP Enterprise HR.

You can access cross-reference reports from the System Admin function group in ADP Enterprise HR. From there, choose Admin Reports, then Cross-Reference.

For more information on cross-reference reports and for a complete list of available reports, see the Application Developer’s Guide.

Table 9-4. Enterprise Tool Cross-Reference Reports

<table>
<thead>
<tr>
<th>Topic</th>
<th>Report</th>
<th>Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fields and Message Definitions</td>
<td>XRFFLMSG</td>
<td>Creates a cross-reference report of fields and message definitions.</td>
</tr>
<tr>
<td>Message Definitions</td>
<td>XRFMSGDF</td>
<td>Creates a cross-reference report of message definitions.</td>
</tr>
<tr>
<td>Panels and Message Definitions</td>
<td>XRFPNMSG</td>
<td>Creates a cross-reference report of panels and message definitions.</td>
</tr>
<tr>
<td>Records and Message Definitions</td>
<td>XFRRCMSG</td>
<td>Creates a cross-reference report of records and message definitions.</td>
</tr>
</tbody>
</table>
Chapter 10

Initial Workflow Administration

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>10-3</td>
<td>Setting Up the Administration Environment</td>
</tr>
<tr>
<td>10-4</td>
<td>Setting System Defaults</td>
</tr>
<tr>
<td>10-6</td>
<td>Creating Default Email Messages</td>
</tr>
<tr>
<td>10-8</td>
<td>Sending Workflow Messages</td>
</tr>
<tr>
<td>10-10</td>
<td>Starting Workflow Database Agents</td>
</tr>
</tbody>
</table>
Introduction

This chapter discusses the initial workflow administration. Ongoing administrative Workflow tasks are discussed in Chapter 11, “Monitoring a Business Process: The Workflow Administrator.”

You can perform two different types of Workflow Administrator tasks:

• Startup tasks that you perform when you set up a workflow business process for the first time.

• Ongoing tasks that you perform to monitor and fine-tune the workflow business processes as they run.

This chapter assumes that your workflow system is completely developed and ready to start routing work items. For a description of how to create a workflow business process, refer to Chapter 2, “Designing Your Workflow.”
Setting Up the Administration Environment

You need to set up the administration environment before you start routing work items. This environment will be the same for all workflow business processes that you run, so it only needs to be set up once, for your first workflow business process. You need to perform the following tasks before you start using Workflow for the first time:

• Define default routing information. Specifically, setting up the System Default Role user and Panel Server Defaults through the Routing Defaults task. For more information, see the next section, “Setting System Defaults.”

• Define default email and worklist messages for common status notifications. For more information, see “Creating Default Email Messages” on page 10-6.
Setting System Defaults

You set up workflow system defaults to handle certain issues as they arise during daily workflow usage. Specifically, you need to provide information about the following:

- The user that should be routed work items when work isn’t specifically assigned to another role user.
- The email logon ID and password that ADP Enterprise HR should use when it logs onto an external electronic mail system.

To set up Workflow Administrator system defaults, follow these steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Setup**

2. Double-click on the **Routing Defaults** task. The Defaults panel displays.

   ![Defaults Panel](image)

   **Figure 10-1. Defaults Panel**
3. Click the prompt button to the right of the **Role User** field to select a System Default Role user.

Work items are routed to this default user if no other user match the criteria for the role being routed to.

The default role user should be someone in your IS department who is an expert in Workflow. This administrator is typically responsible for reassigning the work items to another user.

The System Default Role user must have a valid ADP Enterprise HR profile ID (operator ID) and email address. For more information about defining an profile ID and email address for a role user, refer to Chapter 5, “Defining Role Users.”

4. Enter the **Email Logon** and **Email Password** that you want ADP Enterprise HR to use when it routes an electronic mail message.

The users will see the **Logon Name** in the **From** field when they receive messages.

5. Click **Save** to save the defaults.
Creating Default Email Messages

You will frequently need to communicate information to the workflow users. For example, you might need to send the backup schedule to all users or send managers a weekly summary of their work groups’ performance. Messages can either be sent to a user’s worklists or through electronic mail. The Workflow Administrator provides a panel for creating and sending these general messages.

To help you avoid the repetitive task of repeatedly creating standard messages, the Workflow Administrator enables you to define default messages and routings. Common messages can be saved as default messages that can be used over and over again.

When the system administrator opens the Worklist/Email Message panel to send a message, they can select from the list of default messages. A default message can always be modified before it is sent.

You can also use a default message to set up a standard mailing list. For example, you could set up a blank default messages that included a list of users in a group, like managers, but no text. If you needed to send a message to the managers group, you could then select the default message and add the appropriate text. You wouldn’t need to individually select all of the managers each time you needed to send a message to the group.

To define a default message, follow these steps:

1. From ADP Enterprise HR, click System Admin and make the following selections:

   Workflow Administration ~ Communication (Worklist and email)

2. Click Add next to the Define Recurring Messages task. The Add dialog box displays with the profile ID (operator ID) defaulted to your current ID.

   Figure 10-2. Add Dialog Box
3. Enter a descriptive name for the Message ID and click OK. The Default Message and Routing panel displays.

- **Operator ID** is the default message’s key field. Other users will not be able to use your default messages.

![Default Message and Routing Panel](image)

**Figure 10-3. Default Message and Routing Panel**

4. Complete the Message Defaults information:

- **Message Defaults area**—Enter information in this group to define the details of the message.
  - **Subject**—Enter the message’s subject.
    - The subject appears when the message is delivered.
  - **Message**—Enter the message’s body text.
    - If you are creating a default mailing list, you may want to leave the information in this group blank. The message details can be added later when you send a message to the group.

- **Routing Method**—Select whether you want this message to be sent to the users’ worklists or via email.

- **Priority**—Select the desired priority: low, medium, or high.

- **Default Routing area**—Select the role users that you want to send the message to.

  Click (Insert Row) to preserve history and add additional role users to the mailing list.

  - You can only send messages to users who are set up as Role Users. For more information about creating role users, see Chapter 5, “Defining Role Users.”

5. Click (Save) to save the default message definition.
You send both default and ad hoc email messages from the same place within ADP Enterprise HR.

To send a workflow message, follow these steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Communication (Worklist and email)**

2. Click **Add** next to the **Send Message** task. The Add dialog box displays with the current date and time defaulted.

   ![Add Dialog Box](Figure 10-4)

3. Click **OK** to accept the default time stamp provided. The Message Content and Addressees panel displays.

   ![Message Content and Addressees Panel](Figure 10-5)

4. Select a default **Message ID**. The information from the default message appears, including the list of roles users to **Deliver To**. You can modify or add any message information.

5. Enter the message’s **Subject**—the subject appears when the message is delivered.
6. Type the complete file path for the Attachment that you want to send with an email routing. The Attachment option is not available for a worklist routing.

7. Enter the body text of the Message.

8. For the Routing Method, select whether you want this message to be sent to the users’ worklists or via email.

9. Select the desired Priority: low, medium, or high.

10. In the Deliver To field, click the prompt button to select the role users that you want to send the message to.

    Click (Insert Row) to preserve history and add additional role users to the mailing list.

    You can only send messages to users who are set up as Role Users. For more information about creating role users, see Chapter 4, “Defining Business Process Roles.”

11. Click (Save) to send the message.
Starting Workflow Database Agents

This section discusses how to launch a workflow database agent from the ADP Enterprise HR application. Follow these steps to complete this task.

1. Make the following menu selections from ADP Enterprise HR:

   Window ~ DB Agent

   The DB Agent dialog box displays. Note that more options may appear in the Query Name list box.

   ![DB Agent Dialog Box](image)

   **Figure 10-6. DB Agent Dialog Box**

2. Select one of the following database agents from the Query Name field:

   - Select Monitor WL by Group if you did not select the Total by Individual option when you set up the worklist volume monitor.
   - Select Monitor WL by Individual if you selected the Total by Individual option when you set up the worklist volume monitor.

   For more information, see the discussion of the Total by Individual field on the worklist monitor Setup panel in “Configuring a Worklist Volume Monitor” on page 11-3.

3. Click OK to save the setting on this dialog box.
# Chapter 11

## Monitoring a Business Process: The Workflow Administrator

<table>
<thead>
<tr>
<th>Page</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>11-3</td>
<td>Configuring a Worklist Volume Monitor</td>
</tr>
<tr>
<td>11-6</td>
<td>Running a Worklist Volume Monitor</td>
</tr>
<tr>
<td>11-9</td>
<td>Checking for Worklist Time-outs</td>
</tr>
<tr>
<td>11-11</td>
<td>Reviewing Work Items Online with the Worklist Monitor</td>
</tr>
<tr>
<td>11-20</td>
<td>Clearing a Worklist</td>
</tr>
</tbody>
</table>
Introduction

The Workflow Administrator helps you ensure that work items continue to flow smoothly through a business process. If work items stall halfway through processing, you lose the benefits of an automated workflow business process.

This chapter assumes that you have started your workflow system and that work items are being routed.

\[ For \text{ more information about other workflow administration tasks, see Chapter 10, "Initial Workflow Administration."} \]
Configuring a Worklist Volume Monitor

You can use the Workflow Administrator to enable database agents that monitor for overloaded worklists. These database agents are called Worklist Volume Monitors. They check for worklists that contain more than a specified number of work items, and they send a warning message if the volume limit is exceeded.

Each Worklist Volume Monitor is dedicated to a particular worklist. You need to create one or more volume monitor for each worklist that you want to keep tabs on.

To set up a worklist volume monitor, follow these steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Setup**

2. Double-click on the **Worklist Volume Monitor Options** task. The Search dialog box displays.

   ![Figure 11-1. Search Dialog Box](image)

3. Enter a name that describes the new workflow monitor and click **OK**. The Volume Monitor Setup panel displays.

   ![Figure 11-2. Volume Monitor Setup Panel](image)
Complete the information on this panel to select a worklist to monitor, to specify the number of work items to allow in the worklist, and to select the message that you want to send when the number of items in the worklist exceeds the volume limit.

4. In the **Notification Criteria** area, specify which worklist you want to monitor and when you want to start monitoring the volume of worklist entries:

   - **Bus Process**—Click the prompt button to select a business process.

   - **WL**—Click the prompt button to select a worklist. The list includes all worklists defined for the selected business process. For more information about defining worklists for a business process, see Chapter 3, “Defining Workflow Business Processes: The Workflow Editor.”

   - **From Datetime**—When you create a new worklist monitor, the From Datetime defaults to the current date. You can change the date to start monitoring later than the default date.

   - **To Datetime**—When you create a new worklist monitor, the To Datetime defaults to one year from the current date. If you want to stop monitoring earlier or later than the default date, change the date or time.

   - **Status**—Select a status from the list provided. The volume monitor will only notify you about worklist items that have the selected status.

     The default status is Available: a work item with this status has not received user attention. Other statuses available include the following: selected, worked, and cancelled.

   - **Max WL Items**—Enter the number of work items that should trigger a warning message. The worklist volume monitor will send a warning message when the number of work items reaches this limit.

     You can also use the **Total by Individual** check box to track the maximum worklist items for each individual user.

     - **Total by Individual**—Select this check box to have the worklist volume monitor track the total worklist items for each individual users.

       If this check box is not selected, the total worklist items are tracked.

5. In the **Notification Message** area, define the message that you want the worklist volume monitor to send when the worklist volume limit is reached:

   - **Set**—Select a message set. The default message set is 107, Workflow Administrator.

   - **Message**—Select a message from the message set. The default message from the 107 message set is 10, High Volume Worklist Warning.

   - **Notify by Worklist**—Select this check box to send the notification to the role user’s worklist. The message is sent to the user specified in the **Role User Notification List** box.

   - **Notify by Email**—Select this check box to send the notification to the role user’s email address. The message is sent to the user specified in the **Role User Notification List** box.
The user’s email address is defined when you set up the Role User ID. For more information, see Chapter 5, “Defining Role Users.”

- **Subject**—You cannot change the subject from this panel. The subject is controlled by the message and set you select.

- **Message Text**—You cannot change the subject of the message text from this panel. The message text is controlled by the message that you select.

6. In the **Role User Notification List** field, select the role user to which you want to send the worklist volume warning message to.

   Click (Insert Row) to preserve history and add additional role users.

7. In the **Worklist Operator Pool** field, select which users (profile ID) you want to monitor. The worklist volume monitor will only count the work items assigned to the profile ID included in this box.

   Click (Insert Row) to preserve history and add additional operators to the list.

   Since worklist volume monitors review work items based on the profile ID they’re assigned to, they can’t monitor shared worklists for Available work items.
Running a Worklist Volume Monitor

Worklist volume monitors do not automatically start running when you set them up. You have to create run controls to schedule Process Scheduler requests to configure when, where, and how often to run each worklist volume monitor.

For more information about the Process Scheduler and run controls, see “Starting Workflow Database Agents” on page 10-10, and the Process Scheduler documentation in the Application Administrator’s Guide.

To schedule workflow volume monitors to run, follow these steps:

1. From ADP Enterprise HR, click System Admin and make the following selections:

   Workflow Administration ~ Worklist Management

2. Click Add next to the Monitor Worklist Volume task. The Add dialog box displays.

   Figure 11-3. Add Dialog Box
3. Enter a **Run Control ID** and click **OK**. The Worklist Volume panel displays.

![Figure 11-4. Worklist Volume Panel](image)

4. Click the prompt button to the right of the **Workflow Monitor Setup ID** edit box to select a worklist volume monitor.

   - The **Total by Individual** check box indicates whether or not you choose to monitor worklist volume by individual users.

   For more information, see the discussion of the **Total by Individual** check box on the **Volume Monitor Setup panel** on “Configuring a Worklist Volume Monitor” on page 11-3.

5. Make the following menu selections:

   **Window ~ DB Agent**

   The DB Agent dialog box displays. Note that more options may appear in the **Query Name** list box.

![Figure 11-5. DB Agent Dialog Box](image)
6. Select one of the following database agents from the Query Name field:

   - Select **Monitor WL by Group** if you did not select the **Total by Individual** check box when you set up the worklist volume monitor.

   - Select **Monitor WL by Individual** if you selected the **Total by Individual** check box when you set up the worklist volume monitor.

   For more information, see the discussion of the **Total by Individual** check box on the Volume Monitor Setup panel in “Configuring a Worklist Volume Monitor” on page 11-3.

7. Click OK to schedule the worklist volume monitor database agent to run.
Checking for Worklist Time-outs

When you define a worklist, you have the option of specifying a timeout condition. The timeout condition specifies how long a work item should sit unworked in a worklist before it is forwarded to another worklist.

For more information about worklists and their timeout conditions, see the discussion of Exception Processing in "Advanced Panel," on page 3-9.

To start the Worklist Timeout Processing task to monitor for worklist timeouts, follow these steps:

1. From ADP Enterprise HR, click System Admin and make the following selections:

   Workflow Administration ~ Worklist Management

2. Double-click on the Worklist Timeout Processing (WLEXCP) task. The Timeout Processing panel displays.

   ![Timeout Processing Panel](image)

   **Figure 11-6. Timeout Processing Panel**

3. Type the timeout interval in the appropriate field if you selected the Days, Hours, or Minutes timeout type.

   If you select Days, Hours, or Minutes, this task checks only those worklists whose timeout interval matches the amount of time you enter in the corresponding text box. For example, if you select Hour and enter 3 in the Timeout Hours list box, the SQR will only check worklists whose timeout interval is three hours.
4. Click Run Report. You will receive a message notifying you that your process has been submitted. Click OK. When the process has completed, click \( \text{Report Outputs-NEW} \) to view the report.

5. Locate the entry named \textit{wlexcp.lis} and click the View button.

For additional information on running, viewing, and printing reports, refer to the \textit{Using ADP Enterprise HR Guide}. For details on sources, sort order, and an illustration of the report, see the \textit{Standard Reports Guide}. 
Reviewing Work Items Online with the Worklist Monitor

The Worklist Monitor enables you to review the work items in your workflow business process, regardless of where they are in the business process. You can obtain detailed status information about the progress of each work item. It also enables you to update individual work items: you can assign them to different users, change their status, and edit their worklist entries.

You can use the Worklist Monitor to search for work items in different two ways:

- You can search for work items based on their workflow properties, such as their status or the users to which they are assigned. When you search this way, you can find items in any worklists in the workflow business process.

- You can search for work items based on the fields within their worklist entries. When you search this way, you can locate items within a single worklist.

**Searching Workflow Properties**

To search for work items based on their workflow properties, follow these steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Worklist Management**
2. Double-click on the **Search All Worklists** task. The Search Criteria panel displays.

![Search All Worklists](image)

**Figure 11-7. Search Criteria Panel**

3. Select the check boxes for the properties that you want to include in the search, and enter search criteria in the corresponding edit boxes. To search for all worklist entries, clear all the check boxes.

- **Bus Proc / WL**—Search for work items in that you select using the Business Process and Worklist list boxes. You can select a Business Process and no Worklist to see a list of all worklists.
- **WL Datetime Range**—Search for work items that were created during the time that you specify in the From and To text boxes.
- **Operator Assigned**—Search for work items assigned to the profile ID that you select in the Operator list box.
- **Originator**—Search for work items that have entered the workflow business process due to an action taken by the profile ID you selected in the Originator list box.
- **WL Status**—Search for work items with the status you select in the Status list box. Choices include Available, Selected, Worked, Cancelled.
- **WL Instance ID**—Search for a specific work item with the Instance ID that you enter in the Instance text box.

4. Click the search button. The search button, at the bottom of the Search Criteria panel, includes a picture of a flashlight.

After entering your search criteria, use the search button to start locating Worklist Entries.

When the search is complete, the Worklist Monitor displays the number of worklist entries that meet your criteria in the **Total Worklist Entries Found** field.
5. Click on the **Worklist Entries** tab to review the work items returned by the search. The Worklist Entries panel displays. Each line in the Worklist Entries panel summarizes information about a single worklist entry that meets the search criteria.

![Worklist Entries Panel](image)

**Figure 11-8. Worklist Entries Panel**

6. Use the **C**, **T**, and **U** buttons to process the worklist items returned by your search. For a description of how to use these options, see “Using the Worklist Entries Panel” on page 11-14.

Both the **Transfer (T)** and **Entry Updates (U)** options are one-directional. If you complete either of these and exit, you do not automatically return to the Worklist Monitor panel.

The Worklist Monitor panel is not updated to reflect changes that you make when you work an item or update its status until you click the search button to refresh the search.
Using the Worklist Entries Panel

Figure 11-9 illustrates the Worklist Entries panel that displays when you use the Worklist Monitor to search for worklist items. For more information about how to reach this panel, see “Searching Workflow Properties” on page 11-11 and “Searching for Work Items from a Worklist” on page 11-16.

Follow the steps below to process worklist items returned from Worklist Entries panel:

1. Click the \textbf{C} button to display additional information about the worklist item. The additional information appears in the \textbf{WL Context} list box at the bottom of the panel.

2. Click the \textbf{T} button to transfer to the panel group to work the work item. You can work the work item as if you had selected it from a worklist.
3. Click the U button to display the Worklist Items panel. You use this panel to update the status of the work item.

You can also access the Worklist Items panel by selecting Use, Worklist Entry Updates. For more information, see “Updating Work Items” on page 11-18.

---

Both the Transfer (T) and Entry Updates (U) options are one-directional. That is, if you complete either of these and exit, you do not automatically return to the Worklist Monitor panel.

The Worklist Monitor panel is not updated to reflect changes that you make when you work an item or update its status until you click the search button to refresh the search.
Searching for Work Items from a Worklist

To search for work items within a specific worklist, follow these steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Worklist Management**

2. Double-click on the **Search a Specific Worklist** task. The Search Criteria panel displays.

3. Click the prompt button to the right of the **Business Process** that you want to search.

4. Click the prompt button to the right of the **Worklist** field to select the worklist that you want to search.

   When you tab out of the **Worklist** field, the user-defined fields from the worklist record definition appear in the **Worklist Search Criteria** area.

5. Enter search criteria in the **Search Value** boxes to indicate which values you want to search for.

   You can enter criteria for any or all of the worklist fields.
6. Click the search button. The search button, at the bottom of the Search Criteria panel, includes a picture of a flashlight.

After entering your search criteria, use the search button to start locating Worklist Entries.

When the search is complete, the Worklist Monitor displays the number of worklist entries that meet your criteria in the **Total Worklist Entries Found** Field.

7. Click on the **Worklist Entries** tab to review the work items returned by the search. The Worklist Entries panel displays. Each line in the Worklist Entries panel summarizes information about a single worklist entry that met the search criteria.

8. Use the **C**, **T**, and **U** buttons to process the worklist items returned by your search. For a description of how to use these options, see “**Using the Worklist Entries Panel**” on page 11-14.

Both the **Transfer (T)** and **Entry Updates (U)** options are one-directional. If you complete either of these and exit, you do not automatically return to the Worklist Monitor panel.

The Worklist Monitor panel is not updated to reflect changes that you make when you work an item or update its status until you click the search button to refresh the search.
Updating Work Items

Figure 11-15 illustrates the worklist Updates panel. You can use this panel to change a worklist item’s worklist entry. Most importantly, you can change the user to which the item is assigned, or you can change the item’s status in the worklist.

"Using the Worklist Entries Panel" on page 11-14 describes how you can reach this panel by clicking the U button on the Worklist Entries panel.

To change a worklist item’s worklist entry, follow these steps:

1. From ADP Enterprise HR, click System Admin and make the following selections:

   Workflow Administration ~ Worklist Management

2. Double-click on the Manage Worklist Items task. The Search dialog box displays.

   Figure 11-14. Search Dialog Box
3. Enter the Business Process Name, Worklist List Name, and Instance ID for the worklist item that you want to update and click OK. The Worklist Items panel displays.

![Figure 11-15. Worklist Items Panel](image)

4. Click the prompt button to the right of the Operator Assigned field to select a new user to work the worklist item.

5. To change the status of the worklist item, select one of the options available in the Worklist Status area: Available, Selected, Worked, Cancelled.

6. To change one of the Datetime fields, correct the date and time information.
   - To delay the processing of a work item, change its Available Datetime to a future time.

7. Click (Save) to save the updates.

**Reassigning Multiple Work Items**

The Manage Worklist Items task enables you to reassign individual work items by changing the Operator Assigned. The Workflow Administrator offers another way to reassign work items: using the Enable/Disable Workflow Users task. You can use this task to reassign all work items from one role user to another. You don’t have to disable a user to take advantage of the feature.
Clearing a Worklist

After a workflow business process has been implemented and running for a while, you may want to clear the workflow tables. Use a database query tool to clear out the rows of data that have accumulated over time in the PSWORKLIST table. The query statement you should use to clear out the application worklist will depend on the status of the worklist items in the PSWORKLIST table.

The following is an Enterprise Code function that can be executed to purge the worklist:

PurgeWorklist (BusProcName, WorklistName, Status)
# Chapter 12
## Troubleshooting Workflow Business Processes

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>12-3</td>
<td>A Quick Workflow Review</td>
</tr>
<tr>
<td>12-4</td>
<td>Is the Workflow Process Enabled?</td>
</tr>
<tr>
<td>12-5</td>
<td>Workflow Designer Tips</td>
</tr>
<tr>
<td>12-6</td>
<td>Verifying the Workflow Roles</td>
</tr>
<tr>
<td>12-7</td>
<td>Workflow User Setup</td>
</tr>
</tbody>
</table>
Introduction

In this chapter, the frequently asked questions involved in the process of getting a newly created workflow processes running are presented. For example, issues such as verifying if a workflow process is enabled and how to verify the setup of a workflow user are discussed.
A Quick Workflow Review

When worklist items are not generated after completing the first task in the Workflow business process, use the checklist listed in the following table to help you determine the source of the problem.

<table>
<thead>
<tr>
<th>Verification Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>❑ Verify that the workflow process is enabled by referring to the section “Is the Workflow Process Enabled?” on page 12-4.</td>
</tr>
<tr>
<td>❑ Verify that you have logged on to ADP Enterprise HR with the proper profile ID (operator ID). It is important to remember that an ADP Enterprise HR profile ID corresponds to a workflow user. Refer to “Workflow User Setup” on page 12-7, for additional information.</td>
</tr>
<tr>
<td>❑ Verify that the workflow user is assigned to the appropriate role. Refer to “Verifying the Workflow Roles” on page 12-6, for more details.</td>
</tr>
<tr>
<td>❑ If you are receiving a strange error message when saving a panel task within the workflow business process, refer to “Workflow Designer Tips” on page 12-5.</td>
</tr>
</tbody>
</table>
Is the Workflow Process Enabled?

In this section, the individual events that make up a workflow business process are reviewed to ensure that they are enabled. Follow these steps to complete this task:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Setup**

2. Double-click on the **Business Event and Worklist Options** task.

3. Enter the appropriate **Business Process Name** in the Search dialog box that displays and click **OK**. The Business Process Controls panel displays.

   ![Business Event and Worklist Options](image)

   **Figure 12-1. Business Process Controls Panel**

4. Verify that all Event names are marked as active.

   ![Don’t forget to use the scroll bars to review all event names.](image)
Workflow Designer Tips

Use the following Workflow Designer tips listed in Table 12-1 to assist you in troubleshooting your workflow business process:

💡 Launch Enterprise Builder to access the Workflow Designer.

Table 12-1. Workflow Designer Tips

<table>
<thead>
<tr>
<th>Verification Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>❑ Verify the task by right-clicking on each Panel Task and display the Workflow</td>
</tr>
<tr>
<td>Properties dialog box. Verify that this is assigned to the correct process group/</td>
</tr>
<tr>
<td>process/task.</td>
</tr>
<tr>
<td>❑ Verify the workflow role (OPRID) mapping. This is accomplished by right-clicking</td>
</tr>
<tr>
<td>each route and displaying the Workflow Properties dialog box. Review the OPRID</td>
</tr>
<tr>
<td>field mappings. It is most likely mapped to a workflow role, of which this</td>
</tr>
<tr>
<td>information will be used later.</td>
</tr>
<tr>
<td>❑ Verify the existences of Enterprise Code programs by right-clicking on each</td>
</tr>
<tr>
<td>Panel Task and selecting the Display ECode context menu item. There should be a</td>
</tr>
<tr>
<td>section of Enterprise Code which matches the workflow business process and task.</td>
</tr>
<tr>
<td>❑ If necessary, use the Application Debugger to step through the Enterprise Code</td>
</tr>
<tr>
<td>program.</td>
</tr>
<tr>
<td>☉ This step is reserved for advanced Enterprise Tools users that are familiar with</td>
</tr>
<tr>
<td>Enterprise Code programs. You will run the Panel Processor in 2-tier mode and</td>
</tr>
<tr>
<td>step through the Enterprise Code program to verify the proper execution.</td>
</tr>
</tbody>
</table>
Verifying the Workflow Roles

This section provides helpful hints in verifying the workflow roles.

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Users ~ Manage Role Assignments**

2. Click on the right arrow in the **Role Users in Role** area. This generates a listing of the Workflow Users that are assigned to a specific role.

3. If you did not locate your the expected workflow role in the preceding hint, you must create the new roles for this Workflow business process. (It appears that someone may have deleted your workflow role(s) for the workflow business process.)
Workflow User Setup

In this section, the setup of the workflow user is verified. Follow these steps to complete this validation:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Workflow Administration ~ Users ~ Define Workflow Users**

2. Enter the ID for the **Role User** that is being validated in the Search dialog box and click **OK**. The User Definition panel displays.

![User Definition Panel](image)

   **Figure 12-2. User Definition Panel**

3. Verify the **Description** field. This should be the name of the workflow user.

4. Verify the **Operator ID** field. This is the profile ID that the workflow user uses to log into the ADP Enterprise HR application.

   The workflow user must use this profile ID to view the worklist items within the ADP Enterprise HR application.

5. Verify the **Employee ID** field. This is an optional field. It is not necessary for the workflow user to be an employee. But if they are an employee, enter their employee ID in this field.

6. Verify the **Email Address** field. This field is used to define a fully qualified internet email address for the workflow user.
7. Review the values within **Currently in Roles** area. Verify that each respective user is suppose to be in the respective roles listed in this area.

💡 Don’t forget to use the scroll bar, if multiple roles are set up for this workflow user.
<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>13-3</td>
<td>Types of Workflow Queries</td>
</tr>
<tr>
<td>13-4</td>
<td>Running Predefined Queries</td>
</tr>
<tr>
<td>13-6</td>
<td>Creating a Query</td>
</tr>
<tr>
<td>13-8</td>
<td>Selecting Record Definitions</td>
</tr>
<tr>
<td>13-11</td>
<td>The Field View Panel</td>
</tr>
<tr>
<td>13-19</td>
<td>Selecting Query Output Fields</td>
</tr>
<tr>
<td>13-20</td>
<td>Formatting Query Output</td>
</tr>
<tr>
<td>13-22</td>
<td>Specifying Output Selection Criteria</td>
</tr>
<tr>
<td>13-25</td>
<td>Setting Up Workflow Query Security</td>
</tr>
</tbody>
</table>
Introduction

You use the Query Utility to extract the data that you want to use in a workflow business process. Using visual representations of your ADP Enterprise HR database, you can make your workflow queries as simple or complex as necessary, without having to write SQL statements.
Types of Workflow Queries

You can create two types of workflow queries to extract the data from your ADP Enterprise HR database: database agent queries and role queries. There are several ways to use these queries to meet your different workflow data needs:

- You can create a database agent query to check the database for conditions that should trigger a workflow event.

  Using Workflow, you can specify certain conditions that will result in an email message or a worklist item being sent to a user. You can write queries to detect these conditions, and then you can schedule database agents to run them periodically.

  For more information about creating database agents for your workflow business process, see “Adding Database Agents to Your Workflow” on page 8-5. For more information about scheduling database agents to run, see “Starting Workflow Database Agents” on page 10-10.

- You can use a role query to send an email message or worklist entry to a role user.

  When you create workflow queries, you also need to use the query `change` and `type` option. For more information, see “Advanced Query Options” on page 14-31.
Running Predefined Queries

Often, the Query Utility is used to run a previously defined query. Follow these steps to run an existing query:

1. From the Windows Start menu, select the following to launch the Query Utility:

   Programs ~ ADP Enterprise Tools ~ Query Utility

The Query Utility Access Group panel displays. The tree diagram lists the record definitions that you have access to.

2. Select Run from the File menu to display the Run Query dialog box. The existing queries are listed for you.

3. Select the query that you want to run from the list provided.

4. Click the OK button, or double-click the query name, to run the query.

If the query you are looking for does not appear in either the Run Query or Open Query dialog box, this usually means that the query uses a record definition that you do not have
access to. It could also mean that the author of the query did not make it public. For more information granting access to record definitions, see the *Application Administrator’s Guide*.
Creating a Query

You will typically create a workflow query for each database agent required to trigger your business events. You can also create role queries that determine which users a workflow business process will send email messages or worklist items to.

This section outlines the steps required to create a workflow query. These steps include references to other sections in this chapter which provide more detailed instructions for creating a query.

To create a new query, follow these steps:

1. From the Windows Start menu, make the following selections:

   Programs ~ ADP Enterprise Tools ~ Query Utility

   The Query Utility Access Group panel displays. This tree diagram lists the access groups to which you’ve been given access.

   For more information about how access groups are created, see “Defining Your Query Tree” on page 13-27. For more information about how security access is granted to access groups, refer to “Access Group Security” on page 13-28.

   ![Query Utility Access Group Panel]

   Figure 13-3. Query Utility Access Group Panel

2. Expand the desired access group until the record definition you want to use in your query appears. For more information about how to expand access groups, see “Selecting Record Definitions” on page 13-8.

3. Select the record definitions that contain the fields that you want to include in your query. See “Selecting Record Definitions” on page 13-8 for a complete description of how to use the Access Group panel’s buttons and menus to view and select record definitions.
4. Use the options available on the Field view panel to set up the query structure. See “The Field View Panel” on page 13-11 for a description of how use the Field view panel’s menu bar and views to set up the query structure.

5. Select the fields that you want to include in the query output. See “Selecting Query Output Fields” on page 13-19 for a complete description of how to select Field view panel fields.

6. Format the query output. For more information, see “Formatting Query Output” on page 13-20.

7. Specify additional criteria to further restrict the data you want to retrieve. For more information, see “Specifying Output Selection Criteria” on page 13-22.

8. Save the query by selecting Save from the File menu. Type the name of the new query in the field provided and click OK.

9. Run the query by selecting Run Current Query from the File menu. The Query Utility retrieves the requested data from the database and displays the search status.

![Figure 13-4. Query Status](image)

The result of the query is displayed in the Query Results dialog box.

![Figure 13-5. Query Results Dialog Box](image)

10. If the data returned in the Query Results dialog box does not meet the requirements of your workflow business process, you can modify the query by adding or changing record and field selections as needed.

11. Add the necessary workflow query security to control the query operations that a user can perform and to limit the data that a user can access through a workflow query. For more information, see “Setting Up Workflow Query Security” on page 13-25.
Selecting Record Definitions

The first step in creating a query is to select the database tables that contain the data you want. In your ADP Enterprise HR database, tables are represented as record definitions. For more information about creating record definitions, see Chapter 6, “Worklist Record Definitions,” and the Application Developer’s Guide.

You select a record definition from the Access Group panel that appears when you open the Query Utility, as shown in Figure 13-6. The tree structured diagram lists access groups that contain the record definitions that you can query.

To select a record definition, follow these steps from the Query Utility’s Access Group panel:

1. Expand the desired access group until the record definition you want to select displays, as shown in Figure 13-7. There are two ways to expand an access group:
   - Click the rectangle to the left of the access group name. If the rectangle contains a “+” sign, the access group can be expanded. If it contains a “-” sign, the access group cannot be expanded further.
• Select the access group and use the expand buttons on the side panel. For more information about the options available on this panel, see the next section “Using the Query Utility Side Panel.”

![Figure 13-7. Expanding the Query Access Group Panel](image)

When an access group is fully expanded, an ellipse symbol appears before each record definition name.

2. Do one of the following to open the desired record definition:

    • Double-click the record definition.
    
    • Select the record definition and click the Select! option on the Query Utility menu.

The Field view panel displays. Each field in the record definition is listed.

If you've selected the record definition of an effective-dated table, the Effective Date dialog box displays first, asking how you want to handle the effective dates in the query. For information about the effective date options, see “Specifying Effective Date Criteria” on page 14-26.

For a description of the features available on the Field view panel, see “The Field View Panel” on page 13-11. For a description of how to select record definition fields and how
to build a query from the Field view panel, see “Selecting Query Output Fields” on page 13-19.

![Query Utility - Field View](image)

**Figure 13-8. Query Utility - Field View**

3. To add an additional record definition to the query, you need to create a join. You join records based on a matching field that both record definitions have in common. The join then combines the rows in both records that share a common value in that field. **EMPLID** is a common field on which record definitions are joined.

To add an additional record definition to the query, see “Joining Records in a Query” on page 13-18.

**Using the Query Utility Side Panel**

**Figure 13-9** illustrates the Access Group side panel. You use this panel to locate the record definitions you need for your query.
The Field View Panel

Figure 13-10 illustrates the Field view panel. You access this panel by selecting a record definition from the Access Group panel. For more information, see “Selecting Record Definitions” on page 13-8.

Figure 13-10. Query Utility - Field View Panel

The **Record** box contains record definition information. It includes the name of each record definition used in the query, as well as any expressions needed to define the relationships between the record definitions.

Each record definition is listed with an alias such as “A”. This alias is used in the **Field** list box at the bottom of the panel to indicate which fields belong to which record definitions.

The **Field** list box lists the record definition fields that you use to define your query. Initially, the only fields listed are those in the selected record definition—this is the Fields in Record view. To change which fields you see in the **Field** list box, you can choose another field view, like the Selected Fields in Record view. You will need to select a different view from time to time, depending on the type of record definition information you need to see. For more information about field list views and how to select a different view, see “Selecting a Field View” on page 13-12.

You can also change the order in which fields appear in the **Field** list box. Ordering fields helps you structure your query. For more information, see “Changing the Order of Fields” on page 13-17.

A Query Structure toolbar is available to help you select views and structure you query. For more information about this toolbar, see the next section, “Using the Query Structure Toolbar.”
Using the Query Structure Toolbar

Figure 13-11 illustrates the Query Structure toolbar, which is available on the Field view panel.

You use options on this toolbar to perform the following activities:

- Use the top five buttons on the toolbar to change to different field views, as described in the next section “Selecting a Field View.”

- Use the last four buttons on the toolbar to change the order of the fields in the listbox, as described in “Changing the Order of Fields” on page 13-17.

Selecting a Field View

In the Field view panel as shown in Figure 13-8, you can use several different field views while you build, modify, or run your queries. The view you select determines which fields display in the Field list box. You can change field views either by selecting the desired option from the View menu or by clicking the view buttons on the toolbar, as described in “Using the Query Structure Toolbar” on page 13-12.

The following sections provide a brief description of the available views and give you an example of what the record list box will look like when each view is selected.
Fields in Record View

Figure 13-12 illustrates the Fields in Record view. In this view, you see the fields in only one record definition at a time. The **Field** list box contains all the fields in the selected record—the record definition is highlighted in the **Record** list box. Even if you select multiple record definitions in your query, the Fields in Record view displays only the fields in the highlighted record.

Since Job Data is highlighted in this example, the Fields in Record view only lists Job Data fields (as denoted by the alias “B”).

![Figure 13-12. Query Utility - Fields in Record View](image-url)
Selected Fields in Record View

Figure 13-13 illustrates the Selected Fields in Record view. In this view, you see all the fields selected for the entire query.

In this example, this query uses fields from two records, JOB and PERSONAL_DATA. Fields from both records are listed in the Field list box, regardless of which record is selected in the Record list box: PERSONAL_DATA fields are denoted by the alias “A,” and ABSENCE_HIST fields are denoted by the alias “B.”

In the SQL statement that the Query Utility builds, the fields in Selected Fields in Record view follow the SELECT command.
Ordering Fields View

Figure 13-14 illustrates the Ordering Fields view. In this view, you see all the fields selected in the query, as well as the ordering information used to determine how the fields display in the query output.

In the SQL statement that the Query Utility builds, the fields in Ordering Fields view are used in the ORDER BY clause.
Fields with Criteria View

Figure 13-15 illustrates the Fields with Criteria view. In this view, you see all fields selected for the query, as well as any selection criteria used to select query data.

In this example, selection criteria is listed for the Effective Date (EFFDT) field: the query will only return those rows that have an effective date the same as or earlier than the current date.

Figure 13-15. Fields with Criteria View

For more information about specifying selection criteria for a query, see “Specifying Output Selection Criteria” on page 13-22.

In the SQL statement that the Query Utility builds, the fields in the Fields with Criteria view are used in the WHERE clause.
All Above Fields View

Figure 13-16 illustrates the All Above Fields view. In this view, you see a combination of the previous views: all selected fields are listed, along with their ordering and selection criteria information.

![All Above Fields View](image)

Figure 13-16. All Above Fields View

Changing the Order of Fields

You can use the **Order** option to change the order of the fields in the **Field** list box.

- Some order options work better with a particular view. For example, Order By Order works best with the Ordering Fields view.

You can change the order of **Field** list box fields either by selecting the desired option from the **View** menu or by clicking buttons on the toolbar, as described in “Using the Query Structure Toolbar” on page 13-12.

The following table describes each option available to order the fields in the **Field** list box.

<table>
<thead>
<tr>
<th>When You Select This Order Option...</th>
<th>This Happens...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Record Order</td>
<td>The fields display in the order in which they appear in the record definition. Only the fields in the highlighted record are shown.</td>
</tr>
<tr>
<td>Column Order</td>
<td>The fields display in the order in which they will be displayed in your query output. If you’re using a view that displays fields that have not been selected for output, these fields follow the selected fields and appear in record order. When this option is active, you can change the column order by “dragging and dropping” the field rows.</td>
</tr>
</tbody>
</table>

Chapter 13: Creating and Running Workflow Queries

*Workflow User’s Guide*
Joining Records in a Query

The query in Figure 13-17 is using data taken from both the employee Personal Data and employee Absence History records. To build this type of query, you need to join records based on a matching field that both record definitions have in common. The join then combines the rows in both records that share a common value in that field. Record definitions are frequently joined in a query based on the EMPLID field.

When You Select This Order Option... | This Happens...
--- | ---
‘OrderBy’ Order | The fields used to order the output rows are listed at the top of the Field list box, followed by the rest of the fields, in record order. The Order column indicates which fields have been selected for ordering. For more information about ordering output fields, see “Setting the Output Sort Order” on page 13-21.
Field Name Order | The fields display in alphabetical order.

To join a new record definition to the current query, follow these steps from the Field view panel:

1. Select Join Any Record from the Join menu. The Access Group panel displays.
2. Highlight the new record definition and click the Select! option. The Field view panel displays again, and the new record has been added to the Record box, denoted by a new prefix.

For more information about joins, refer to the section “Advanced Query Options” on page 14-31.
Selecting Query Output Fields

Once you’ve selected the record definitions containing the data that you want to access, and once you’ve used the views and order options available in the Field view panel to structure your query, you need to specify which fields to include in the query results.

The Field list box shows the fields for the record definition highlighted in the Record list box. The alias, or letter, used to prefix each field in the list matches the prefix of its corresponding record definition in the Record list box.

To include a field in the query results, double-click the name of the field. A number appears in the Col column, as shown in Figure 13-18. The numbers in this column indicate the order of the columns in the query results. The first field you select appears as column one, the second as column two, and so on. You can select output fields in any order—they do not need to be in record definition order.

In this example, the NAME and EMPLID fields were selected, in that order.

Figure 13-18. Selecting Fields in the Field View Panel
Formatting Query Output

The Query Utility offers several different options for formatting query output:

- You can change column headings.
- You can specify the sort order of output row.
- You can display Translate table values instead of codes.

![Figure 13-19. Formatting Query Output](image)

Viewing and Changing Column Headings

To view headings select the **Headings** button, as shown in Figure 13-19. The last column in the **Field** list box shows the column heading for each query output field. For more information about selecting query output fields, see the previous section, “Selecting Query Output Fields.”

To change a heading, double-click the current heading and enter the new heading in the dialog box that displays.

- The headings **must** match the field names you chose in the message definition. This is applicable only if you are dealing with database agent queries.
Setting the Output Sort Order

The **Order** column, as shown in Figure 13-19, is used to sort the order in which the rows of data appear in the query output.

To sort rows according to their values in a particular field, double-click the **Order** column for that field. A number appears in the **Order** column, indicating its position in the sort order. The output rows are sorted by the column with a sort order of “1” first.

Double-click the **Order** column for a second field to create a secondary sort field - the number “2” appears. You can sort query output by as many fields as needed. You can sort by any field—even fields that do not actually display in the output.

Displaying Translate Values

You can use the **Xlat** column, as shown in Figure 13-19, to replace an output field’s code with its corresponding Translate table value. By default, the letter “N” appears in this column, indicating that the codes will not be replaced.

To display a field’s translate value in the query output, follow these steps:

1. Double-click the **N** in the **Xlat** column. The Change Translate dialog box displays.
2. Select either the long or short translate value from the dialog box. L or S appears in the **Xlat** column.
Specifying Output Selection Criteria

In most cases, you won’t want your query output to include every row of data from the selected records. You will only want to see those rows that meet certain conditions.

To limit which rows are returned, you can define selection criteria. Selection criteria corresponds to the WHERE clause of the a SQL SELECT statement.

To set up selection criteria for a workflow query, follow these steps from the Access Group panel:

1. Select Criteria from the View menu. The query Criteria view panel displays.

   ![Figure 13-20. Query Utility - Criteria View](image)

   You set up a separate condition bar for each set of selection criteria that you want to use. Each criteria bar contains four fields and several edit boxes.

   The remaining steps in this procedure explain how to set up a single selection criteria bar.

2. On the first line of a selection criteria bar, click the down arrow to the right of the first list box to select a record definition. In this example, the ABSENCE_HIST record is selected.

   You can only use record definitions that are selected on the Field view panel. For more information, see “Selecting Record Definitions” on page 13-8.

3. Click the down arrow to the right of the second list box to select a record definition field. The field you select will be compared to a value that you define on the second line of the selection criteria bar. In this example, the ABSENCE_TYPE field is selected.
4. On the second line of the selection criteria bar, click the down arrow to the right of the first list box to choose a comparison operator. In this example, the “equal to” comparison operator is selected.

5. Click the down arrow to the right of the second list box to select the “value type” that you want to compare to the record definition field. In this example, the “Constant” value type is selected. For a description of the different value types, see “Advanced Query Options” on page 14-31.

6. Click the grey edit box to the right of the value type list box. A dialog box displays where you will enter the value that you want to compare to the record definition field. In this example, the Edit Constant Value dialog box displays.

![Figure 13-22. Edit Constant Value Dialog Box](image)

The type of dialog box that displays depends on which value type you selected: constant, field, expression, subquery, or prompt. For more information about how to enter a value in each type of dialog box, see “Advanced Query Options” on page 14-31.

7. Enter the value and click **OK**.

8. Click **Save** from the **File** menu to save the query.

9. Enter the name of the query in the field provided and click **OK**.

**Specifying Selection Criteria for Aggregate Functions**

Like the Criteria view panel, the Having view panel enables you to define selection criteria for your query. In the Having view panel, you specify query functions for aggregated data—multiple table rows that have been grouped into a single row of output. You do this by specifying an aggregate function using a HAVING clause.

SQL doesn't support the use of aggregate functions in WHERE clauses. So, once you've applied an aggregate function to a field, you cannot use that field in your selection criteria, which corresponds to a SQL WHERE clause. You will need to create a HAVING criteria.

In SQL, a HAVING clause is like a WHERE clause for table rows that have been grouped together into a single row of output. The WHERE clauses are evaluated by first looking at the individual table rows before they're grouped together by the aggregate function. It then evaluates the HAVING clauses after applying the function.
If your query includes one or more aggregate functions, follow these steps to define your Having selection criteria from the query Criteria view panel:

1. After defining the selection criteria for the fields that don't have aggregate functions applied to them, select Having from the View menu on the Criteria view panel. The Having Criteria view panel displays.

   The Having Criteria view panel looks exactly like the Criteria view panel. The procedure for building Having selection criteria is the same as that described for the Criteria view panel in the last section “Specifying Output Selection Criteria.”

2. Complete the selection for the HAVING clause. Follow the same steps that you used to set up selection criteria on the Criteria view panel. Keep in mind that the Query Utility will be comparing the result of the aggregate function to the comparison value.
Setting Up Workflow Query Security

To run a query, a user must have access to both query operations and to the data that is retrieved. Before a user can run queries, you have to specify which operations and data a user can access.

ADP has integrated standard security features into the Query Utility. You can use user profiles and row-level security to control which Query Utility query operations a user can perform and what data they can access in a query.

The following sections give you an overview of how to set up security for the workflow queries. It is assumed that you are already familiar with the concepts of user profile and row-level security, and that you understand how ADP Enterprise HR handles security. For more information about ADP Enterprise HR security, see the Application Administrator’s Guide.

To perform the activities described in this section, you will use other Enterprise Tools besides the Query Utility, such as the Tree Editor and Enterprise Builder’s Record Editor. The procedures in this section focus on the work that you need to do in the Query Utility. For more information about the other ADP Enterprise HR development tools, refer to the Application Developer’s Guide.

The following workflow security activities are covered in this section:

• Building query trees to organize your record definitions into logical security access groups. For more information, see the next section, “Building Query Trees.”

• Setting up security access groups that define which record definitions a user can select in the Query Utility’s Access Group panel. For more information, see “Access Group Security” on page 13-28.

• Defining row-level security to control which rows of data a workflow query user can access from application panels. For more information, see “Row-Level Query Security” on page 13-32.

• Setting up the query security record definition in your security tree. For more information, see “Setting Query Security Record Definitions” on page 13-32.

• Defining query profiles to specify which query operations are available to users. For more information, see “Query Security Profiles” on page 13-34.

You need to set up user access to the Query Utility when you define their profile ID in ADP Enterprise HR. Otherwise, they won’t be able to run queries.
Building Query Trees

ADP Enterprise HR trees are a graphical way of presenting hierarchical information. The Query Utility uses query trees to control security access to ADP Enterprise HR database tables. When you create a security tree, you define the logical and functional groupings of record definitions—called access groups. You can give users access to one or more access groups. Users can use the Query Utility to retrieve information from only those tables whose record definitions are included in their access groups.

You create and update query trees using the Tree Editor. For more information about using the Tree Editor, see the Application Administrator’s Guide.

Some sample query trees have been included with your ADP Enterprise HR application. Which sample trees are included in your system is dependent on which ADP Enterprise HR product lines you’ve installed. Each sample tree contains access groups and record definitions categorized by function. When you define a users’ security rights to a tree, you specify which groups the user can access. For more information about assigning access groups to users, see “Access Group Security” on page 13-28.

Query Tree Considerations

You should create your own query trees based on your organization’s needs and on the customizations that you have made to the ADP Enterprise HR system. You can clone the sample trees included in your system to help you create your own security tree structures.

Remember that the sample trees provided may be overwritten when you update to a later ADP Enterprise HR release. If you modify the samples rather than create your own trees, you may lose your customizations.

Every record definition that you want users to be able to query must be in a query tree. However, they don’t all have to be in the same query tree. One strategy is to use the sample query trees to provide access to the standard ADP Enterprise HR record definitions and then create separate query trees for record definitions that you add while making customizations. This way, you take advantage of the sample trees but avoid overwriting your changes during future upgrades.

How you organize the contents of your query tree depends on the needs of your organization and your users. For example, you might want to create small trees that are not intimidating to non-technical or casual users. The sample query trees provided in your ADP Enterprise HR application are divided by functions, but, to simplify the trees, you may want to create separate trees that contain subcategories of each function.
Defining Your Query Tree

The following steps outline how to set up a workflow query security tree. This section is intended to be used as a guideline, not a step-by-step procedure. For complete information about how to create security trees and nodes, see the Tree Editor chapter in the Application Administrator’s Guide.

To create a query security, complete the following tasks:

1. Use the Tree Editor to define your query tree. When you enter the information about the new query tree, keep the following in mind:

   • Prefix the Tree Name with “QRY”, so you can easily identify it as a custom query tree. The default query trees begin with “QUERY.”
   • For a query tree, the Structure ID should always be ACCESS_GROUP.
   • The value you enter in the Description field is the caption that appears when you select the tree from a list box.
   • If you use the active status and if the effective date is active, query trees are immediately available for use. You do not need to run an SQR utility like you do for organizational security trees.
   • Detail Values are not necessary for query trees.

2. Create the access group nodes (root nodes) that will control security access to groups of record definitions. The name that you give a root node is the high-level access group name that appears on the Access Group panel in the Query Utility, as shown in Figure 13-1 on page 13-4.

   If you want to include more than one word in the access group name, the words don't have to be connected with an underline (_). In fact, you'll find it easier to distinguish between access group and record definition nodes if you don't use underlines.

3. Add each record definition (insert a child node) that you want to group under the access groups.
Access Group Security

When you first open the Query Utility, a list of access groups appears in the Access Group Panel, as shown in Figure 13-23. Access groups are used to logically organize security access to record definitions within the Query Utility. Access groups are not physical objects within your database.

Understanding Access Group Security

In the ADP Enterprise HR DEMO database, record definitions are separated into functionally related groups, such as People, Benefits, Autolink, Payroll, Enterprise Tools, and Workflow.

Figure 13-23. Access Groups Available when you Open the Query Utility
When you expand an access group, the record definitions you can access within that group display:

- A rectangular symbol appears before each access group.
- An ellipse symbol appears before each record definition within an access group.

For more information about selecting access groups and record definitions, see “Creating a Query” on page 13-6.

When a user creates a query, information can only be retrieved from tables whose record definitions are included in the user’s access groups. If, for example, a user wants to query an employment table and then display data from a prompt table, the user must have security access to both tables.
**Setting Up Access Group Security**

Before you can set up access group security, your security tree must be set up in the Tree Editor. Once your security tree is built, you can grant user access to one or more of its branches. Users cannot generate queries against any table until you grant the user security access to the appropriate access group.

If a profile ID (operator ID) is assigned to a class and you want to grant that profile ID access to the query views, you must grant query access to the entire class.

For more information about setting up security trees, see “Setting Up Access Group Security” on page 13-30.

To set up security for access groups, follow these steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   ![Security Administration ~ Application](image)

2. Double-click on the **Workflow Query Access** task. The Search dialog box displays.

   ![Search Dialog Box](image)

3. Specify the profile ID of the user you want to set up security for in the **Operator ID** field, and click **OK**.

   ![If a user profile is assigned to a class](image)

   If a user profile is assigned to a class, use the query profile for the class rather than using the user’s individual profile ID.
The Access Group Security panel displays.

![Workflow Query Access](image1)

**Figure 13-26. Access Group Security Panel**

4. Insert a new security tree by clicking (Insert Row).

5. Click the prompt button to the right of the Tree Name edit box to select a security tree.

6. Click the prompt button to the right of the Access Group edit box. The Valid Values for Tree Name dialog box displays.

![Valid Values for Tree Name](image2)

**Figure 13-27. Valid Values for Tree Name Dialog Box**

Only the access groups that are included in the selected query tree are listed.

7. Highlight the highest-level access group that you want the profile ID (operator ID) or class to be able to access, and click the Select button. You are returned to the Security Access Groups panel.

   The Accessible option is automatically selected, indicating that the profile ID or class can access the selected group and all levels below that group in the security tree.

8. To restrict access to the group, clear the Accessible check box beside the group.

   To retain access to all of the record definitions in a high-level access group, except to one lower-level group to which you want to restrict access, add a new row for the lower-level
access group and clear the **Accessible** check box. Users can access all record definitions within the higher-level group except for those you explicitly made inaccessible.

To maximize system performance, it is not recommended that you restrict the **Accessible** option for lower-level access groups. If you need to restrict access to record definitions on a particular branch of a tree, you should create a new tree containing them.

**Row-Level Query Security**

Many ADP Enterprise HR tasks offer row-level security: users can be given access to a table without being given access to all rows in that table. This type of security is typically applied to tables that hold sensitive data.

For example, you might want users to be able to review personal data for employees in their own department, but not for people in other departments. You would give everyone access to the PERSONAL_DATA table, but would enforce row-level security so that they could only see rows where the DEPTID matches their own.

In ADP Enterprise HR, row-level security is implemented by using a SQL view that joins a data table with an authorization table. When a user searches for data in the table, the related records are joined between the view and the data table rather than searching the table directly. Based on the row-level security criteria you set up, security views add a security check when users search data tables from within an application.

For more information about creating security views and implementing row-level security for application panels, see the *Application Developers Guide*.

**Setting Query Security Record Definitions**

When you grant a user rights to an access group, as discussed in “Access Group Security” on page 13-28, you are granting them unrestricted access to all the data in the tables that use the record definitions in that access group. You can use query security record definitions to restrict user access to certain rows in those tables.

A Query security record definition is similar to the search record definition that you use to enforce row-level security on a panel (as discussed in “Row-Level Query Security” in the previous section). The Query Utility uses the query security record definition to determine which query data a user can display. In fact, the security record definition that you use to query a table is usually the same record definition that you use as the search record for the panel that manages the table.

All you have to do to use row level security for workflow queries is identify the appropriate security record definition when you create the base data table’s record definition.

To enable row level security for a base data table used in a workflow query, follow these general steps. For more information about setting up row-level security, see the *Application Administrator’s Guide*.

1. Open the database table’s record definition through Enterprise Builder’s Record Editor.
2. Right-click on the Record Editor window and select **Record Properties** from the context menu.

3. Click on the **Use** tab of the Record Properties dialog box. The Use panel of the Record Properties dialog box displays.

![Figure 13-28. Use Panel on the Record Properties Dialog Box](image)

The **Parent record name** list box is also relevant to Query. It identifies the current definition’s parent record, meaning that it holds related data and that its keys are a subset of the current record definition’s keys. If you designate a Parent record name, Query automatically knows what fields to use when you join these two tables for a query. For more information, see “Formatting Query Output” on page 14-5.

4. Click the down arrow to the right of the **Query security record** box to select a security record from the list provided.

You will usually select a security view. For example, for records dealing with employee-related information (particularly when EMPLID is the primary key), you will usually select PERSONAL_SRCH as the Query Security Record. In most cases, the Query security record definition you want is the same one you use as the search record definition for the panel that manages this table.

If you’re enforcing one of the standard row-level security options from an ADP Enterprise HR task, select the ADP-supplied security view for that option. Refer to the application documentation for a list of the available views.

5. Click **OK** to save the changes to the Record Properties dialog box.

6. Make the following menu selections to save the record definition:

    ```
    File ~ Save
    ```
A query profile specifies the type of access a user has when the user works in the Query Utility. For example, you may want certain users to only be able to run existing queries, not create new ones. Or you might want to restrict the types of queries that a user can run.

You associate query profiles with the classes and profile IDs that are defined in ADP Enterprise HR. By default, the query profile gives users access to all Query features, assuming that the user has access to the Query Utility.

To limit the features available to a user profile or class, follow these general steps:

1. From ADP Enterprise HR, click **System Admin** and make the following selections:

   **Security Administration ~ Application**

2. Double-click on the **Workflow Query Access** task. The Search dialog box displays.

   ![Figure 13-29. Search Dialog Box](image)

3. Specify the profile ID of the user you want to set up security for in the **Operator ID** field, and click **OK**.

   If a user profile is assigned to a class, use the query profile for the class rather than using the user’s individual profile ID.

4. Click on the **Query Access** tab. The Query Access panel displays.

   ![Figure 13-30. Query Access Panel](image)
5. Under **Query Use**, select the options in this group to define how a user can access a query:

- **Only Allowed to run Queries**—Select this check box to prevent the user from being able to create queries.

- **Allow creation of Public Queries**—Select this check box to allow the user to create public queries.

- **Allow creation of Workflow Queries**—Select this check box to allow the user to create workflow queries (either database agent or role queries).

- **Maximum Rows Fetched**—Use this field to restrict the number of data rows retrieved by a query. The default value, “0”, means that unlimited rows can be returned.

   It is a good idea to restrict less experienced users from generating complex queries.

6. Under **Advanced SQL Features**, select the options in this area to control the user’s ability to use advanced SQL features.

   For more information about Advanced SQL options, see “Advanced Query Options” on page 14-31.
Chapter 14
Advanced Workflow Query Features

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>14-3</td>
<td>Selecting Output Fields</td>
</tr>
<tr>
<td>14-5</td>
<td>Formatting Query Output</td>
</tr>
<tr>
<td>14-10</td>
<td>Saving Queries</td>
</tr>
<tr>
<td>14-11</td>
<td>Printing Queries</td>
</tr>
<tr>
<td>14-12</td>
<td>Running Queries</td>
</tr>
<tr>
<td>14-14</td>
<td>Entering Selection Criteria</td>
</tr>
<tr>
<td>14-31</td>
<td>Advanced Query Options</td>
</tr>
<tr>
<td>14-40</td>
<td>Creating Query Joins</td>
</tr>
<tr>
<td>14-44</td>
<td>Creating Query Unions</td>
</tr>
<tr>
<td>14-45</td>
<td>Viewing Query SQL Statements</td>
</tr>
<tr>
<td>14-46</td>
<td>Reporting Queries</td>
</tr>
<tr>
<td>14-47</td>
<td>Database Agent Queries</td>
</tr>
</tbody>
</table>
Introduction

This chapter provides more detailed information about the features and options available in the Query Utility. Additional query functions are discussed that were not covered in detail in Chapter 13, “Creating and Running Workflow Queries.” You will need to use many of these functions when you create, run, format, and save queries.

This chapter is intended to be used as a reference when you have specific questions about Query Utility options. For a more general overview of creating and running queries in the Query Utility, see Chapter 13, “Creating and Running Workflow Queries.”
Selecting Output Fields

You add fields to a query from the Field view panel. For more general information about accessing and using this panel, see “The Field View Panel” on page 13-11.

To add a field to your query, double-click either the field name or any of the first three columns of the field’s row. A number appears in the first column, indicating which column the field will be in the query results.

The Query Utility adds columns to the output record in the order you select them. The first field you select appears as column one, the second as column two, and so on. You can select fields in any order. You don’t need to use the record definition order.

Changing Field Output Order

To change the order in which fields appear in the query output, you need to change the column numbers associated with the fields. This section describes the three ways you can change the field’s column number, and, thereby, its order in the output record. When you move a field using any of these methods, Query renumbers the remaining fields to reflect the new column order.

For more information about the views and order options available on the Query Structure toolbar, see “Using the Query Structure Toolbar” on page 13-12.

Using the Column Number Option

To change a field’s column number, follow these steps:

1. Highlight the field that you want to move and select Column Number from the Change menu. The Change Column Number dialog box displays.

2. Enter the new Column Number and click OK.
Using the Right Mouse Pop-up Menu

To change a field’s column number using the Right Mouse drop-down box, follow these steps:

1. Highlight the field and click the right mouse button.
   A popup menu displays.

2. Select Column Number.
   The Change Column Number dialog box displays, as shown in Figure 14-1.

3. Enter the new Column Number and click OK.

Using the Query Structure Toolbar

To use Query Structure toolbar options to change column output order, follow these steps:

1. Select the Selected Fields view button on the toolbar.

2. Select the Column Order option on the toolbar.

3. Click the field that you want to move and drag it to its new position.

Deselecting a Field

To deselect a field that you do not want to include in the query output, double-click the field. Query removes the field’s column number and renumbers the remaining fields.
Formatting Query Output

After you select the query output fields, you need to format the query output. The Query Utility offers three options for formatting query results:

- You can specify a heading for each output columns. For more information, see the next section, “Specifying Column Headings.”
- You can replace translate codes with descriptions from the Translate table. For more information, see “Using Translate Table Values” on page 14-6.
- You can provide a sort order for the output rows. For more information, see “Specifying Output Row Sort Order” on page 14-8.

Specifying Column Headings

When you select a field to include in the query output, a heading is automatically assigned to the field. This heading will be display at the top of the column in the query output. By default, the Query Utility uses the field’s short name (RFT Short) from the record definition.

To change a field’s heading, follow these steps:

1. Display the current headings by clicking the **Headings** button (or by selecting **Show Headings** from the **View** menu). The right column of the field list box displays the column heading for each field.

2. Open the Change Heading dialog box, as shown in Figure 14-2 using one of the following methods:
   - Double-click on the current heading.
   - Highlight the field’s row and select **Heading** from the **Change** menu.
   - Highlight the field’s row, click the right mouse button, and select **Heading** from the popup menu.

![Figure 14-2. Change Heading Dialog Box](image)
3. Choose one of the following options from the Change Heading dialog box:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>The column does not have a heading</td>
</tr>
<tr>
<td>Text</td>
<td>The column heading is the text you’ve entered in the text box.</td>
</tr>
<tr>
<td></td>
<td>If you start typing text into the text box, Query automatically selects the <strong>Text</strong> option.</td>
</tr>
<tr>
<td>RFT Short</td>
<td>The column heading is the field’s short name from the record definition.</td>
</tr>
<tr>
<td>RFT Long</td>
<td>The column heading is the field’s long name from the record definition.</td>
</tr>
</tbody>
</table>

Using Translate Table Values

The table you’re querying may include fields that use the Translate table. If so, it means that the field itself contains a short code of some kind—the Translate table provides a set of corresponding values for this code.

For example, the **EFF_STATUS** field can have a value of either “A” or “I”. The Translate table “translates” these codes into either Active and Inactive, respectively.

For more information about fields that use the Translate table, see the *Application Developer’s Guide*.

If a field has values on the Translate table, a letter appears in the **Xlt** column for that field, as shown in Figure 14-3. By default, the letter is **N** (for None), meaning that the Query Utility will not be replacing the codes with the corresponding translate values.
To use the Translate table values for a field, follow these steps:

1. Double-click on the letter in the Xlt column.

2. Highlight the field’s row and select Translate from the Change menu.

3. Highlight the field’s row, then click the right mouse button. Select Translate from the popup menu. The Change Translate dialog box displays.

   ![Change Translate Dialog Box](image)

   **Figure 14-4. Change Translate Dialog Box**

4. Specify which Translate table value you want to display in the query results.

   Since the Translate table is effective dated, you also need to select the effective date to use:

   - For most tables, the Query Utility defaults to Current Date—it will use the currently active list of Translate table values. If the table you’re querying is also effective dated, however, the Query Utility defaults row’s EFFDT value—using the values that were active at of that row’s effective date.

   - If the table you’re querying includes another date field, you can use the value in that field as the effective date for Translate table values. Click the Field button, then select the field name from the field that appears next to it.

   - You can use an expression to set the effective date for the Translate table. For example, you could enter a fixed effective date or prompt the user for one. To define an expression, select the expression and click the ellipsis button. For details about writing expressions, see “Advanced Query Options” on page 14-31.

5. Click the OK button to close the Change Translate dialog box.

   N, S, or L appears in the Xlt column, depending on whether you selected None, Short, or Long respectively.
Specifying Output Row Sort Order

You can select to sort output rows by one or more fields. The fields you use to sort the output rows don’t have to be displayed. You can sort by fields that you haven’t selected for output.

When you select fields to sort by, you might find it useful to use the Order By Order option on the Query Structure toolbar, which displays the Field box in sort order. For more information about the Query Structure toolbar options, see “Using the Query Structure Toolbar” on page 13-12.

Adding Sort Order

The simplest way to pick an “order by” field is to double-click in the field’s Order column, as shown in Figure 14-5. The Query Utility puts a number in the column: if this field is the first sort field you’ve selected, it puts a 1; if it’s the second, it puts a 2; and so on.

You can sort by as many fields as you like. The Query Utility sorts the rows by the first sort field, and then uses the second field to sort rows with the same value in the first field.

When you select a sort field by double-clicking in the Order column, Query sorts the rows in ascending order. If you want Query to sort them in descending order, you need to use a different method for choosing the sort field.
Changing Sort Order

To change a field’s sort order, follow these steps:

1. Highlight the field’s row.

2. Select Order By from the Change menu (or click the right mouse button and select Change from the popup menu). The Change Order By dialog box displays.

```
Change Order By

Sort Sequence Number: 2  OK  Cancel

Descending
```

Figure 14-6. Change Order By Dialog Box

3. Enter the new sequence number in the field provided.

4. Select the Descending check box if you want to sort by this field in descending order.

5. Click OK.
Saving Queries

Once you generate a query, you may want to save it so you can run it again later. To save a query, follow these steps:

1. Select **Save As** from the **File** menu. The Save As dialog box displays.

   ![Save As Dialog Box](Figure 14-7)

2. Enter a query name in the field provided. The name can be up to 30 characters long.

   Once you save a query, the **Save** option on the **File** menu becomes available. This option saves the currently open query using the same name, overwriting the previously saved version.
Printing Queries

It’s a good idea to regularly print the query definition while the query is under development. You will also want to keep a printed copy of the query once it is complete, particularly a common query that is will be run on a regular basis. You can refer to the documentation to answer questions about how the query works.

To print a query definition, follow these steps from the Access Group panel:

1. Select **Print** from the **File** menu. The Print Query Definition dialog box displays.

2. Highlight the query or queries whose definitions you want to print in the **Queries Available to print** list box.

3. Click the > button to move the selected queries to the **Queries Selected to print** list box.

4. To print the SQL statement generated by the query definition, select the **Include SQL** check box.

5. Use the other options on the Print dialog box to define how you want to print the query definitions: you can adjust the margin settings and choose to print a header, footer, and border.

6. Click **OK** to print the selected query definitions.

Figure 14-8. Print Dialog Box
Running Queries

To run the query that is currently open in the Field view panel, select Run Current Query from the File menu. For information about the Field view panel, see “The Field View Panel” on page 13-11.

The output of the query is directed to the view-only list box.

To run a query that you is not currently open, follow these steps:

1. Select Run from the File menu. The Run Query dialog box displays listing the queries that you can access.

   ![Run Query Dialog Box](image)

   **Figure 14-9. Run Query Dialog Box**

2. Highlight a query in the list box and click the Run button. If needed, the Enter Value(s) dialog box displays, prompting you to enter any information that is needed to process the query.

   ![Enter Value(s) Dialog Box](image)

   **Figure 14-10. Enter Value(s) Dialog Box**

3. Enter the required information and click OK. While the query is running, a status box displays the query’s progress.

   ![Query Status Box](image)

   **Figure 14-11. Query Status Box**
The progress—how quickly rows are “fetched”—depends on the query’s complexity as well as the size of the database.

The Query Results dialog box displays when the query is completed. The rows matching your query criteria are listed in the dialog box.

![Figure 14-12. Query Results Dialog Box](image)
Entering Selection Criteria

Your query can identify every individual piece of data you want to retrieve by specifying the columns (fields) and rows (records) that you want to retrieve from the database.

You select which columns of data you want using the Query’s Field view panel, as described in “The Field View Panel” on page 13-11. You select the columns by choosing fields from record definitions, as discussed in section “Selecting Record Definitions” on page 13-8. If you run the query after selecting the fields, the data is retrieved from the selected columns for every row in the selected tables.

To selectively retrieve the data you want a query to return, you define selection criteria. The selection criteria serves as a test that is applied to each row of data in the tables you’re querying. If the row passes the test, the data is retrieved. For example, you can query for only those phone numbers with a certain area (instead of all phone numbers).

A criteria expression defines the WHERE clause for the query’s SQL SELECT statement.

To specify selection criteria from the Field view panel, follow these steps:

1. Open the Criteria view from the Field view panel—the Criteria view can be opened in one of three ways:
   - Click the Criteria View button on the toolbar. Select Criteria from the View menu.
   - With the Criteria button selected, double-click in the right column of the Field list box.
   - Select Criteria from the View menu.
The Criteria view panel displays. The Query Utility automatically starts a criterion expression for the field selected in the Field view panel.

Figure 14-14. Entering Selection Criteria

2. To add a new criterion bar, click the Add button on the toolbar.

3. Complete the fields in the criterion bar to define the new selection criteria. For descriptions of the criterion bar fields, see the next section “The Criteria View Panel.”

4. Select Save from the File menu to save the selection criteria.

The Criteria View Panel

You define selection criteria on the Criteria view panel. For more information about how to open and use the Criteria view panel, see the previous section “Entering Selection Criteria.”

Figure 14-15. Query Utility Panel

The Criteria view panel consists of one or more criterion bars. Each criterion bar defines a different criterion expression. The features available one each criterion bar are outlined in Figure 14-16.

Figure 14-16. Criterion Bar
Following are field descriptions for the criterion bar.

<table>
<thead>
<tr>
<th>This Criterion Bar Feature...</th>
<th>Provides This Function...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Record definition</strong></td>
<td>Select a record definition.</td>
</tr>
<tr>
<td><strong>Field definition</strong></td>
<td>Select the record definition field on which you want to base the selection criterion.</td>
</tr>
<tr>
<td><strong>Operator</strong></td>
<td>Select an operator. The operator determines how the Query Utility compares the selected record field’s values to the comparison value(s). For more information, see “Criteria Operator Field” on page 14-17.</td>
</tr>
<tr>
<td><strong>Value type</strong></td>
<td>Select a Value Type. Examples of value types include constants, other record fields, and runtime prompts. The operator you choose determines which value types you to choose from.</td>
</tr>
<tr>
<td><strong>Comparison value</strong></td>
<td>Enter the value that you want to compare to the record field value. A Comparison Value dialog box displays. The Value Type you choose determines which Comparison Value dialog box displays. For more information, see “Entering Comparison Values” on page 14-18.</td>
</tr>
<tr>
<td><strong>AND/OR</strong></td>
<td>Specify how you want this criterion to be combined with another criteria that you have defined: it can be an alternative criterion (OR) or an additional criterion (AND). The AND/OR options are not available for the first criterion you define. The default for subsequent criteria is AND. For more information, see “The Logical Operators: AND and OR” on page 14-29.</td>
</tr>
<tr>
<td><strong>NOT</strong></td>
<td>To negate a criterion, highlight it and click the NOT button in the toolbar. For more information, see “Criteria Operator Field” on page 14-17. Click this option to specify that you want to query for rows that do not meet the criterion.</td>
</tr>
<tr>
<td><strong>Parentheses</strong></td>
<td>Parentheses enable you to group together multiple criteria. Grouping criteria ensures that the Query Utility uses the criteria in the appropriate order. For more information, see “Grouping Criteria with Parentheses” on page 14-30.</td>
</tr>
</tbody>
</table>
Criteria Operator Field

The Operator field specifies a relationship between the selected record field and the comparison value.

If you’ve selected the `EFFDT` field on an effective-dated table, the Query Utility provides some special effective date operators. For information, see “Specifying Effective Date Criteria” on page 14-26.

You can use the “not” option to reverse the effect of each Operator option. For example, “not equal to” returns all rows that “equal to” would not return.

It is always a better idea to use the “not” version of an operator rather than the NOT operator itself. When you use the NOT operator, the Query Utility can’t use SQL indexes to speed up the data search. When you use the “not” version of an operator, Query can translate it into a SQL expression that allows it to use the indexes.

The following table describes the Operator options available on the criteria bar.

<table>
<thead>
<tr>
<th>This Operator...</th>
<th>Returns A Row When This Condition Is Met...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal to/not equal to</td>
<td>When the value in the selected record field exactly matches the comparison value.</td>
</tr>
<tr>
<td>Greater than/not greater than</td>
<td>When the value in the selected record field is greater than the comparison value.</td>
</tr>
<tr>
<td>Less than/not less than</td>
<td>When the value in the selected record field is less than the comparison value.</td>
</tr>
<tr>
<td>In list/not in list</td>
<td>When the value in the selected record field matches one of the comparison values in a list. See “Entering Comparison Values,” on page 14-18, for information about creating a list of comparison values.</td>
</tr>
<tr>
<td>Between/ not between</td>
<td>When the value in the selected record field falls between two comparison values.</td>
</tr>
<tr>
<td></td>
<td>The range of comparison values is used inclusively. See “Entering Comparison Values,” on page 14-18, for information about creating a range of comparison values.</td>
</tr>
<tr>
<td>Exists/does not exist</td>
<td>This operator is different from the others. It doesn’t compare a record field to the comparison value.</td>
</tr>
<tr>
<td></td>
<td>This option can only be used if the comparison value is a subquery. If the subquery returns any data, the Query Utility returns the corresponding row. You don’t select a record definition or field for this operator.</td>
</tr>
<tr>
<td></td>
<td>For information about subqueries, see “Creating Subqueries” on page 14-38.</td>
</tr>
</tbody>
</table>
Entering Selection Criteria

The procedure for entering comparison values differs depending on what kind of value you’re entering:

- If you’re comparing one record field to another, pick the second record field.
- If you’re comparing one record field to a constant value, enter the constant.

You must first specify the type of comparison value that you want to enter, as described in the next section, “Available Value Types.” You then enter the actual comparison value(s). For more information about entering each type of comparison value, see the following sections:


### Comparison String Wildcard Values

<table>
<thead>
<tr>
<th>Wildcard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>Matches any string of 0 or more characters. For example, ‘C%’ matches any string starting with C, including C alone.</td>
</tr>
<tr>
<td>_</td>
<td>Matches any single character. For example, ‘_ones’ matches any five-character string ending with “ones,” such as Jones or Cones.</td>
</tr>
</tbody>
</table>

Query also recognizes any wildcard characters that your database software supports. Refer to your database management system documentation for details.

To use one of the wildcard characters as a literal character (for example, to include a “%” symbol in your string), precede the character with a “\".

### Is null/is not null

When the selected record field doesn’t have a value in it.

You don’t specify a comparison value for this operator.

Note that key fields, required fields, character fields, and numeric fields do not allow null values.
• “Entering a Subquery Comparison Value,” on page 14-21.
• “Entering a Prompt Value,” on page 14-22.
• “Entering a Comparison List Value,” on page 14-25.

Available Value Types

Table 14-2 describes the available value types.

Not all value types are available for all operators. The Query Utility displays only the value types that are available for that operator you select. For example, when you select the Exists operator, Subquery is the only available value type.

Table 14-2. Comparison Value Types

<table>
<thead>
<tr>
<th>Use This Value Type...</th>
<th>To Compare theSelected Record Field to This Type of Comparison Value...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>A single fixed value.</td>
</tr>
<tr>
<td>Field</td>
<td>The value in another field, usually a field in another record definition.</td>
</tr>
<tr>
<td></td>
<td>To compare the values from fields in two records, you need to join the record definitions. For more information about joining record definitions, see “Creating Query Joins” on page 14-40.</td>
</tr>
<tr>
<td>Expression</td>
<td>An expression you enter, which Query evaluates before comparing the result to the value in the selected field.</td>
</tr>
<tr>
<td></td>
<td>Query evaluates the expression once for each row it tests.</td>
</tr>
<tr>
<td>Subquery</td>
<td>The data returned by a subquery.</td>
</tr>
<tr>
<td></td>
<td>For information about subqueries, see “Creating Subqueries” on page 14-38.</td>
</tr>
<tr>
<td>Prompt</td>
<td>A value that a user enters when he or she runs the query.</td>
</tr>
<tr>
<td></td>
<td>You are prompted for a value.</td>
</tr>
<tr>
<td>List</td>
<td>A list of values that you enter.</td>
</tr>
<tr>
<td></td>
<td>This value type is available only when you use the IN List or Not In List operator.</td>
</tr>
</tbody>
</table>
**Entering a Constant Value**

To enter a constant value to compare to selected record’s value, follow these steps:

1. Select the **Constant** value type.
2. Click in the comparison value box. The Edit Constant Value dialog box displays.

![Figure 14-17. Edit Constant Value Dialog Box](image)

3. Enter the value that you want to compare to the record field value.

   How the constant value appears in the text box depends on the type of field you selected from the record definition. For example, if the record field you are comparing the constant to is an uppercase character field, the text box displays all characters as uppercase.

   - If the record field has an associated prompt table, the standard prompt options are active—F4, Shift-F4, and Ctrl-F4.

4. Click the **OK** button to close the dialog box. The comparison value appears in the comparison value box on the criterion bar.

**Entering a Field Value**

To select a field to compare to the record field value, follow these steps:

1. Select the **Field** value type.
2. Click in the **Comparison Value** box. The Select Field dialog box displays.

![Figure 14-18. Select Field Dialog Box](image)

3. Click the down arrow to the right of the **Record Name** box to select a record definition.

4. Click the down arrow to the right of the **Field Name** box to select a record definition field.

5. Click the **OK** button. The selected field name appears in the comparison value box on the criterion bar.

   - The Query Utility checks whether the field you’ve selected has the same data type as the field you’re comparing it to. If it doesn’t, a warning message is displayed: the values you are comparing may never match.
Entering an Expression Value

To enter a SQL expression as the comparison value, follow these steps:

1. Select the Expression value type.
2. Click in the comparison value box. The Edit Expression dialog box displays.

![Figure 14-19. Edit Expression Dialog Box](image)

3. Enter the desired SQL expression in the text box.

To add a record field or user prompt to the expression, click the Add Field or Add Prompt buttons. Either the Select Field dialog box or the Runtime Prompt dialog box displays, respectively. Use the dialog box fields to define the field or prompt.

See the previous section, "Entering a Field Value," for information about selecting a field on the Select Field dialog box. See “Entering a Prompt Value,” on page 14-22, for information about adding a prompt from the Runtime Prompt dialog box.

The selected field or prompt is added to your expression (at the cursor insertion point).

4. Click OK to save the expression.

Entering a Subquery Comparison Value

To build a subquery to be used as a comparison value, follow these steps:

1. Select the Subquery value type.

If you selected the In List or Not in List operator, the only available value types are Subquery and List.
2. Click the comparison value box. The Access Group panel displays so you can start building a new query.

![Figure 14-20. Access Group Panel](image)

3. Create the subquery and click the **Return to Parent** button to return to the Criteria view panel.

   For information about creating subqueries, see “Creating Subqueries” on page 14-38.

### Entering a Prompt Value

Defining a Prompt comparison value enables users to further refine a query when they run it. For example, you can create a query that displays all students who have taken classes within the last year. You could add a prompt to the query that allows the user to enter a state, so the query would only return customers from that state.

To use a prompt as a comparison value, follow these steps:

1. Select the Prompt value type.
2. Click in the **Comparison Value** box.
The Runtime Prompt dialog box displays, as shown in Figure 14-21.

![Figure 14-21. Runtime Prompt Dialog Box](image)

3. Define the prompt value. In most cases, the correct information is already provided for you by default:

- **Field**—Click the down arrow to select a prompt field. This field defaults to the field selected on the Criteria view panel.
  - You can only select prompt fields from the record definition selected in criterion bar.
  - **Type**—Select the field type.
  - **Format**—Select the field format.
  - **Length**—Enter the field length.
  - **Decimals**—Enter the number of decimals in the field.
  - **Edit Type**—Select the field edit type. The field defaults to the type of edit specified in the field’s record definition.
    - It is recommended that you do not change the defaulted Edit Type. If you need to make a change to the Edit Type, make the change in the record definition so it can be used consistently in all Enterprise Tools applications.
  - **Prompt Table**—This list box is only active when you select the Prompt Table edit type. Select a prompt table.

When you select a prompt table based on a record definition that has multiple keys, you must prompt for all higher-level keys before you can prompt for the lower-level keys. The query needs values for the higher-level keys to generate the correct prompt list. Because of this complication, we recommend that you don’t use multi-key prompt tables.

- **Prompt Table**—This list box is only active when you select the Prompt Table edit type. Select a prompt table.
  - If you selected the Translate table edit type, the prompt values are determined by the field in the Field list box. It is assumed that the specified field has Translate table values associated with it, and that the record definition field is identified as a Translate table field.

- **Heading Type**—Select the Heading Text format that you want to use. The default is RTF Long—the field’s long name.
• **Heading Text**—The heading defaults, based on the heading type you selected. You cannot change the heading text when the RTF Long and RTF Short heading types are selected.

To change the heading text, select the Text heading type. The heading text appears beside the prompt field on the Enter Values dialog box, as shown in Figure 14-23 on page 14-24.

4. Click **OK** to save the prompt information and return to the Criteria view panel.

For information about adding additional runtime prompts to the Criteria view panel, see “Adding Multiple Prompts” on page 14-24.

**Adding Multiple Prompts**

After you add one prompt on the Criteria view panel, the Runtime Prompts dialog box displays the next time you add a prompt. This dialog box also displays when you double click a prompt comparison value field—so you can edit the prompt information. The Runtime Prompts box contains a list of all the runtime prompts that have been added to the Criteria view.

![Figure 14-22. Runtime Prompts Dialog Box](image)

To add a new prompt, click the **New** button. To edit a prompt, select the prompt and click the **Edit** button. The Runtime Prompt dialog box described in “Entering a Prompt Value” on page 14-22.

**Running a Query with a Prompt Comparison Value**

When a user runs a query that contains a prompt comparison value, the Enter Value(s) dialog box displays, prompting the user to enter a comparison value.

![Figure 14-23. Enter Value(s) Dialog Box](image)

The user can either enter a value in the box provided or press **F4** to select a value from the prompt list.
Entering a Comparison List Value

If you select the In List or Not In List operator, the only available value types are Subquery and List. For more information about creating a subquery comparison value, see “Entering a Subquery Comparison Value” on page 14-21.

You use the List comparison value to build a list of values. You can add one or more prompts to a list, so users can specify the comparison values when they run the query.

To create a comparison List, follow these steps:

1. Select the **List** value type.

2. Click in the **comparison value** box. The Edit List dialog box displays.

   ![Edit List Dialog Box]

   **Figure 14-24. Edit list Dialog Box**

3. To add a new comparison value to the list, click the **Add Value** button. Type the new value in the Edit Constant Value dialog box, and click **OK**.

   Repeat this step for each value that you want to include in the list.

4. To edit a list value, select the value and click the **Edit** button. Type the new value and click **OK**.

5. To delete a list value, select the value and click the **Delete** button. You are not asked to confirm the delete, it is deleted automatically.

6. To add a prompt to the list, so users can enter comparison values when they run the query, click the **Add Prompt** button to open the Runtime Prompt dialog box, as shown in Figure 14-21.

   Use this dialog box to add the new prompt, as described in the previous section “Entering a Prompt Value” and click **OK**. The new prompt appears in the **List Members** box.

7. To select an existing prompt, or to add additional prompts to the list, click the **Add Prompt** button. Because a prompt already exists, the Runtime Prompts dialog box displays, as described in “Adding Multiple Prompts” on page 14-24. You can select a prompt from the list or add a new prompt.

   The last prompt you create is automatically used as the prompt for the list. To select a different prompt, Double-click the prompt in the **List Members** box and select the desired prompt from the prompts listed in the Runtime Prompts dialog box. When you click **OK**, the new prompt is listed in the **List Members** box.
Specifying Effective Date Criteria

Record definitions that include the EFFDT field are known as effective dated tables. The Effective Date field is used throughout ADP Enterprise HR to give you an historical perspective, allowing you to see how data changes over time:

- Whenever someone adds a row of data to the table, they specify the date on which that data becomes effective.
- Whenever someone changes a row of data, they specify a new effective date, and the previous version of the row as history is saved.

For information about effective dating and how ADP Enterprise HR uses it, refer to the Application Developer’s Guide.

When you use ADP Enterprise HR for day-to-day processing, you usually want to see the currently effective rows of data—the rows whose EFFDT value is closest to today’s date, without being in the future. You don’t usually want to see the history rows, which are no longer accurate, nor do you want to see future-dated rows, which aren’t yet in effect.

You may, however, want to query effective dated tables for rows that aren’t currently in effect. You might want to see all the rows, regardless of their effective date, or you might want to see the rows that were effective on some past date.

To specify effective dated selection criteria, follow these steps:

1. From the Access Group panel, create a query for the record definition of an effective-dated table, as described in “Selecting Record Definitions” on page 13-8. The Effective Date dialog box displays (as shown in Figure 14-25).

2. Select the dialog box options that specify which row(s) of data you want the query to retrieve for each item in the table. The default is the currently effective row—the row where the effective date is less than or equal to today’s date.

   For a description of the options available is this dialog box, see the “Criteria View Options” on page 14-28.

3. Click OK to save the effective date criteria. The Field view panel displays.
Effective Date Dialog Box

Figure 14-25 illustrates the Effective Date dialog box. When you query an effective dated table, you can choose to compare each row’s effective date against some date other than the current date.

The following table describes the options available on the Effective Date dialog box.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earliest Effective Date</td>
<td>Returns a single row of data that contains the earliest effective date.</td>
</tr>
<tr>
<td>Latest Effective Date</td>
<td>Returns a single row of data that contains the most recent effective date.</td>
</tr>
<tr>
<td>No Effective Date</td>
<td>Returns all rows in the table, regardless of the effective date.</td>
</tr>
<tr>
<td>Defined as</td>
<td>Select the operator and date option that describes your effective date choice.</td>
</tr>
<tr>
<td>Effective Sequence</td>
<td>Select an effective date sequence.</td>
</tr>
</tbody>
</table>

If you want to use a subset of the record definition’s rows (all future-dated rows or all history rows, for example), select the No Effective Date option in this dialog box, then enter a selection criterion on the EFFDT field using the procedure described in “Entering Selection Criteria” on page 14-14. Use the standard comparison operators rather than the Eff Date comparison operators. For more information about creating selection criteria for your query, see “Entering Selection Criteria” on page 14-14.
When you enter selection criteria for an effective dated table, keep the following in mind:

- You can use the Constant value type to enter a date, or you can use a SQL expression that evaluates a date. This will query for rows that were effective as of a past date or will be effective on some future date. For more information, see “Entering a Constant Value” on page 14-20, and “Entering an Expression Value” on page 14-21.

- You can use the Prompt value type so the user can enter the desired effective date when they run the query. For more information, see “Entering a Prompt Value” on page 14-22.

- You can use the Field value type to select the record definition field that holds the date that you want to compare to selected record’s effective date: you can query for rows that were effective at the same time as some other record. For more information, see “Entering a Field Value” on page 14-20.

### Relating Multiple Criteria

When you specify two or more selection criteria for a query (two or more criterion bars), you need to tell the Query Utility how to coordinate the different criteria.

For example, suppose you’re querying the list of ADP Enterprise HR customers, and you have defined two criteria: one that selects customers from the state of Georgia and another that selects customers who don’t work for ADP Enterprise HR. You may want Query to return only those rows that meet both conditions (Georgia customers that don’t work for ADP Enterprise HR), or you may want to use the rows that meet either one of the conditions (all Washington customers plus all non-ADP Enterprise HR customers).

### Criteria View Options

Selection buttons are provided at the top of the Criteria view panel.

![Figure 14-26. Criteria View Options](image)
The Logical Operators: AND and OR

When your query includes multiple criteria (more than one criterion bar), you link them together using either AND or OR:

- AND means that the Query Utility will only return rows that meet both the first criterion and the second criterion.

- OR means that the Query Utility will return rows that meet either the first criterion or the second criterion. A row doesn’t have to satisfy both criteria.

When you add a new criterion, the AND operator is displayed in the AND/OR box by default: the query will only return rows that meet all criteria specified.

To link the criterion using OR instead, do one of the following:

- Click in the criterion’s AND/OR box to activate the OR option.

- Highlight the criterion and click the OR button in the Criteria view toolbar.
Grouping Criteria with Parentheses

When you run a query that includes multiple criteria (more than one criteria bar), the criteria is combined according to the rules used by mathematical operations. It evaluates criteria linked by ANDs before those linked by ORs. It also evaluates criteria within parentheses before evaluating criteria outside parentheses.

By default, an open parenthesis is included at the beginning of each criterion (before the record definition name), and a close parenthesis is included at the end of the criterion (just after the comparison value). You can add as many additional parentheses as needed.

To add additional parentheses to a list of criteria, follow these steps:

1. Select the first criterion you want to include inside the parentheses.
2. Click the Add Left Parentheses button, as shown in Figure 14-16. An “open” parenthesis and the number “1” appears at the beginning of the criteria bar, to the left of the Field Description field. The “1” indicates that this is the first parenthesis you have added at that location.

The number beside the parenthesis indicates how many parentheses appear in that location. It is not meant to identify which open parentheses match with which close parentheses.

3. Select the last criterion you want to include inside the parentheses.
4. Click the Add Right Parentheses button, as shown in Figure 14-16. A “close” parenthesis and the number “1” appears to the right of the criteria bar, to the right of the Comparison Value field.

To delete a parenthesis, follow these steps:

1. Select the criterion that contains the open parenthesis.
2. Click the Remove Left Parentheses button, as shown in Figure 14-16. The open parenthesis is removed.

If the criterion uses more than one open parenthesis, the parenthesis remains, and “1” from the “number” of parenthesis is subtracted.

3. Select the criterion that contains the close parenthesis.
4. Click the Remove Right Parentheses button, as shown in Figure 14-16.
Advanced Query Options

The Query Utility offers an advanced option that you can use to create more sophisticated queries. The following advances topics are discussed in this section:

- Aggregate functions
- Expressions
- Subqueries
- Joins
- Unions
- Viewing the SQL statements that the Query Utility builds

This section assumes that you are familiar with creating SQL queries.

You should be aware that the Query Utility does not prevent you from creating queries that return an infinite number of rows.

Creating Aggregate Functions

In a standard query, each row in the query result corresponds to an individual row in the table you’re querying. Aggregate query functions, however, allow you to return a summary of data from multiple rows. For example, instead of just querying for the total number of customers, you might want to query for the total number of customers in each state.

Understanding Aggregate Functions

An aggregate function is a special type of operator that returns a single value based on multiple rows of data. When your query includes one or more aggregate functions, the Query Utility summarizes the data from related rows and displays a single row as the query result.

For example, suppose you have an Order table that contains a Customer ID and an Amount for each item ordered. To find out how much each customer has ordered, you can query both the Customer ID and the Amount fields. A standard query would return the same number of rows as there were in the table: if Stuart Schumacher ordered 10 items, you’d see 10 rows with his ID in the Customer ID column. A query that applied the Sum function to the Amount field, however, would return just one row—you would see only the total amount that Stuart Schumacher ordered.

When you use an aggregate function, the query collapses all the rows that have the same value in the non-aggregated column (in this example, the Customer ID) into a single “summary” row. The value of the Amount field in Stuart Schumacher’s row is calculated to be the sum of the amount values in his the 10 rows.
Table 14-3 lists the aggregate functions you can apply to a field using Query.

Table 14-3. Using Query Functions on a Field

<table>
<thead>
<tr>
<th>Use This Function...</th>
<th>To Do This...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sum</strong></td>
<td>Total the values of the aggregate column for each unique occurrence of the non-aggregate column.</td>
</tr>
<tr>
<td><strong>Count</strong></td>
<td>Count the number of rows for the aggregate column.</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Check the value of the aggregate column in each row and returns the lowest value.</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>Check the value of the aggregate column in each row and returns the highest value.</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>Sum the values of the aggregate column and divides the result by the total number of rows.</td>
</tr>
</tbody>
</table>

Applying Aggregate Functions to Record Fields

You apply aggregate functions to a query from the Field view panel.

Figure 14-28. Query Utility
To apply an aggregate function to a field, follow these steps:

1. Double-click in the field’s Agg column. The Change Aggregate dialog box displays.

![Change Aggregate Dialog Box](image)

2. Pick the aggregate function that you want to use. For a description of each function see the previous section, “Understanding Aggregate Functions.”

   If a function is not available for the field you’ve selected, it is grayed out. For example, you can’t use Sum with a Character field.

3. Click the OK button.

   The abbreviation for the selected function appears in the Agg column.

**Combining Aggregate Functions with Other Selection Criteria**

When you apply an aggregate function to a field, you’re redefining how the Query Utility uses that field throughout the query. Essentially, Query replaces the field, wherever it occurs, with the results of the selected aggregate function. If you select the field as a display column, the aggregate values are displayed; if you use the field as an “order by” column, the query results are ordered based on the aggregate values.

If you don’t want Query to redefine the field in this way—for example, if you want to display both the individual row values and the results of the aggregate function—create an expression that includes the aggregate function rather than applying the function directly to the field. For more information, see “Creating Query Expressions” on page 14-35.
Using Having Criteria

The use of aggregate functions in WHERE clauses is not supported in SQL. Once you have applied an aggregate function to a field, you can’t use that field in your selection criteria—which would correspond to a WHERE clause in SQL.

You can set up HAVING criteria to select rows that result from aggregate functions. For example, you might want the query to return a list of the departments whose minimum salary is greater than $100,000.

In SQL, a HAVING clause is used to query table rows that have been grouped by an aggregate function. If you want to check the value returned by the function, you need to define HAVING criterion. HAVING clauses work in combination with WHERE clauses:

- The WHERE clause is evaluated by looking at the individual table rows before they’re grouped together by the aggregate function.
- It then evaluates the HAVING clause after the aggregate function is applied.

If your query includes one or more aggregate functions, follow these steps to define your selection criteria on the Criteria view panel:

1. Define the selection criteria for the fields that don’t have aggregate functions applied to them.
   
   For more information, see “Specifying Output Selection Criteria” on page 13-22.

2. Select Having from the View menu.
   
   The Having Criteria view panel displays. This panel looks just like the Criteria view panel, and the procedures for adding criteria are the same.

3. Define the selection criteria for the fields that have aggregate functions applied to them. Keep in mind that the comparison value will be compared to the result of the aggregate function. For more information about the results of aggregate functions, see “Understanding Aggregate Functions” on page 14-31.
Creating Query Expressions

The **Record** list box on the Field view panel displays the names of the record definitions defined in the query. The **Expressions** option appears after the last record definition name.

![Figure 14-30. Field View Panel](image)

You use expressions to calculate values that are not available in the query’s record definitions. For example, you might want to add the values from two fields together or multiply a field value by a constant.

A query uses the result of your expressions in two different ways:

- Expression results can be used as comparison values for selection criteria. For more information, see “Entering Selection Criteria” on page 14-14.
- Expression results can be used as columns in the query output.

**Viewing Expressions**

To view the expressions added to a query, click the **Expressions** field in the **Record** list box. The view in the **Field** list box is changed to display the query’s prompts and expressions, as shown in **Figure 14-30**.

To change the Field view back to a listing of record definition fields, click a record definition name in the **Record** list box.
Adding Expressions

To add an expression to the query, follow these steps:

1. Double-click **Expressions** in the **Record** list box. The Edit Expression dialog box displays.

   ![Edit Expression Dialog Box](image)

   *The number in the Expressions box refers to a prompt value*

   **Figure 14-31. Edit Expression Dialog Box**

2. Click the down arrow to select a data type for the expression’s return value.

3. Type the length of the expression’s return field in the box provided.

   If you selected either the Number or Signed Number expression types, enter the maximum size of the number in the Integer and Decimal text boxes—enter the total number of digits in the Integer box and the number of digits to the right of the decimal point in the Decimal box.

4. Select the **Aggregate Function** check box if your expression includes an aggregate function, such as **SUM**, **AVG**, or **COUNT**.

5. Enter the expression in the Expression text box:
   - To include a record field in the expression, you can either type the field name or click the **Add Field** button to select a field from the Select Field dialog box.
   - To add a prompt to an expression, click the **Add Prompt** button and complete the Runtime Prompt dialog box. For information about prompts and using the Runtime Prompt dialog box, see “Entering a Prompt Value” on page 14-22.

6. Click the **OK** button to save the expression and close the Edit Expression dialog box.

   The Field view panel displays with the new expression displayed in the **Field** list box.

   Use the expression as you would any other field in the query. You can use expression’s return in the output record, you can change its column heading, or you can choose to use it as an order by column.
Editing Expressions

To edit an expression, follow these steps:

1. Highlight the expression in the Field list box.
2. Select Edit Expression from the Change menu.
   
   The Edit Expressions dialog box displays, as shown in Figure 14-24.

3. Edit the expression as needed and click OK to save the changes.

Deleting Expressions

To delete an expression, highlight the expression and select Delete Expression from the Change menu. You are not prompted to confirm the deletion—the expression is deleted immediately.

Making Query Results Distinct

Figure 14-32 illustrates the Distinct option available on the Field view panel. You select the Distinct button on the Query Utility toolbar to eliminate duplicate rows in a query result.

Some queries may return the same row more than once. The Distinct button removes the duplicate rows from the result set. If the values in the query’s selected columns are identical for more than one row, the query output displays only one row.

For example, a query that searches for all JOBCODES used in the Job record definition, will probably return numerous identical rows, because the same JOBCODE can be shared by many employees. If the Distinct button is selected for that query, however, the query result only includes one occurrence of each JOBCODE.
Creating Subqueries

A subquery, sometimes called a sub-SELECT, is a query whose results are used by another query. The main query uses the subquery’s result set as the comparison value for a selection criterion. You create a subquery when you need to compare a field's value to the results of another query.

For example, a supplied database agent—[DBAG] Monitor WL by Group—can be used to monitor the total number of work items pending for a specified worklist operator pool. The database agent periodically monitors work items and checks for volume conditions. The query constructed to monitor the worklist contains a subquery that checks the OPRID in the WORKLIST_VW record.

To create a subquery, follow these steps:

1. Select the Subquery option as the subquery type.
2. Click the comparison value box. The Access Group panel displays.
3. A subquery can return data from only one record definition.
4. Click the CANCEL! option to exit without saving the subquery.
3. Select the subquery’s record definition. For more information, see “Selecting Record Definitions” on page 13-8. The Field view panel displays for the subquery.

Click **Cancel** on the Access Groups panel menu to exit without saving the subquery.

![Figure 14-35. Field View Panel](image)

4. Build the subquery as you would any other query.

5. Click **Return to Parent** from the Field view panel to return to the original query’s Criteria view panel.
Creating Query Joins

You can create queries based on multiple-table joins. Joins retrieve data from more than one underlying table—the query result presents the data as if it comes from only one table. The Query Utility links the tables based on common columns, and it combines the tables’ data based on common values in shared columns. Using joins when you query your relational database, you define relationships among fields when you query the records.

You join additional tables to your query from the Field view panel. The procedure that you use when joining tables depends on how the tables are related to each other.

The Query Utility recognizes three types of joins:

- Hierarchical joins that join a parent table to a child table
- Related record joins that join a table to its prompt table
- Any record joins that join any two tables in the database

Creating Hierarchical Joins

To create a hierarchical join between two record definitions, follow these steps:

1. Highlight a record definition in the Record list box.

2. Select Show Record Hierarchy from the Join menu. The Record Hierarchy dialog box displays listing the associated record definitions that you can choose from.

   The record definitions listed share common fields with the selected record definition. The hierarchy in the Record Hierarchy dialog box reflects the actual relationship between the record definitions, as defined in the Record Editor using the Parent Record Name feature.

   Hierarchical joins require you to define parent records in the Record Editor. If your records are not defined this way, values won’t appear in the dialog box. For more information about the Record Editor, see the Application Developer’s Guide.

   ![Record Hierarchy Dialog Box](image)

   **Figure 14-36. Record Hierarchy Dialog Box**
3. Double-click the record definition you want to add to your query, or highlight it and click the **Join** button.

You are returned to the Field view panel, and the **Record** list box is updated to include the selected record definition.

The Query Utility automatically knows the relationship between the record definitions, based on the parent record definition you set up in the Record Editor.

### Creating Related Record Joins

You use a Related Record join to link two tables based on a shared field that aren’t a key fields. You will most often use a Related Record join to link a table to its prompt table.

When you add a record definition field, you can identify a prompt table for it. The prompt tables is used to validate the data entered into that field. You can also design panels so that users can select prompt list of valid values.

A field that has been assigned an associated prompt table appears in the **Field** list box with an X in the **Related Record** column.

![Figure 14-37. Query Utility Panel - Field View](image)
To join a related record definition to the current record, follow these steps:

1. Double-click the X in the Related Record column, or highlight the field and select **Show Related Record** from the Join menu. The Related Record dialog box displays.

![Figure 14-38. Related Record Dialog Box](image)

2. Double-click the record definition you want to add to your query, or highlight it and click the **Join** button. The **Record** list box displays the joined record definitions, including the name of the field that is shared by the two records.

![Figure 14-39. Field View Panel](image)
Creating Any Record Joins

Use the Any Record Join to join a record definition to any other database record, regardless of whether or not the records share key or common fields.

1. Select **Join Any Record** from the **Join** menu. The Access Groups panel displays so you can select the second record definition.

   - Click **Cancel** on the Access Groups panel menu to return to the Field view panel without selecting a record definition.

2. Double-click the desired record definition to select it, or highlight the record definition and click **Select!** from the **Access Groups** menu.

   The Field view panel displays with the new record definition listed in the **Record** list box. Unlike a Related Record join, no information is included about how the records are joined.

3. To complete the Any Record join, add selection criteria that links the two tables. An understanding of SQL is recommended to ensure that you create logical, sensible, and efficient joins. For more information about adding selection criteria to a query, see “Specifying Output Selection Criteria” on page 13-22.
Creating Query Unions

Figure 14-40 illustrates the **New Union** option. You can create unions to retrieve results from two or more separate queries at the same time. Combining two queries through a union is different from creating a subquery, where the result of one query is used as selection criteria for another. For more information about creating a subquery, see “Creating Subqueries” on page 14-38.

You can only create a union of multiple queries when all the queries have the following characteristics:

- The same number of selected fields
- The same data types for all fields
- The same column display order

You should be familiar with the SQL language, so you can create logical query unions.

To create a union between queries, follow these steps from the Field view panel:

1. Click the **New Union** option, as shown in Figure 14-40.

   The Access Groups panel displays.

   Query determines the order of the rows and columns in the union based on what you specify for the first query. It also bases the union’s column headings on the column headings defined for the first query.

2. Define the second query just as you would any other query.

3. Use the `< and >` buttons on either side of the **New Union** button to move between the queries in the union.
Viewing Query SQL Statements

The Query Utility uses SQL to communicate with the database. As you define your query, the instructions you enter from the Field view and Criteria view panels are converted into an SQL statement that retrieves the data you want.

To view a query’s SQL statement, select SQL from the View menu. The query’s SQL SELECT statement appears in the SQL dialog box. You cannot edit the text in the SQL dialog box.

You can copy the SQL statement to the Microsoft Windows clipboard, by highlight the text you want and using the standard Windows keyboard shortcuts (Ctrl-C) to copy it to the clipboard. From there, you can paste the SQL statement into a SQL script file or some other application.
When you define a custom report, you often include runtime variables that the user will specify when he or she runs the report. For example, you might want users to be able to define which department, location, or time period to report on. To do this, your reporting query will include one or more runtime prompt variables. For more information about creating runtime prompts, see “Entering a Prompt Value” on page 14-22.

You need to define how a user will enter the runtime parameters included in your query. If the user runs the report from the Query Utility, he or she will enter the runtime values in the dialog box provided by the Query. If you want the user to be able to run the query from the Process Scheduler, however, you will need to do the following:

- You need to add a process definition to the Process Scheduler. For more information about the Process Scheduler, see the Application Administrator’s Guide.

- You may need to create or modify a panel that will collect the necessary input parameters. For more information about working with panels in the Panel Editor, see the Application Developer’s Guide.

- Depending on the input parameters required for the query, you may need to create or modify a record definition. For more information about working with record definitions in the Record Editor, see the Application Developer’s Guide.
Database Agent Queries

A database agent is a workflow program that runs a query and passes the results to ADP Enterprise HR. The database agent query checks the database for items that require further processing.

You can define a database agent query in the Query Utility. The query selection criteria defines the business rule that looks for the database agent’s exception conditions. Since database agents pass their query results to ADP Enterprise HR, the query usually selects just the key fields for the panel that ADP Enterprise HR will fill out. Once ADP Enterprise HR enters the key field values, the panel displays the rest of the data for that record.

When you create a database agent query, it’s very important that you use the Query Utility’s Change Query Type option to identify it as a database agent query. Workflow doesn’t run the same security checks for database agent queries as it does for other queries. If you forget to use change the query type to Database Agent, the query may not be run successfully.

You should save your database agent queries with names that begin with [DBAG], so that you can easily identify them as database agent queries.

You need to create a message definition for each database agent query, so the database agent can transfer the query results to ADP Enterprise HR. For more information about creating message definitions, see Chapter 9, “Message Definitions.”
# Third-Party Application Integration

<table>
<thead>
<tr>
<th>PAGE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-2</td>
<td>Introduction</td>
</tr>
<tr>
<td>A-3</td>
<td>Understanding the Panel Processor API</td>
</tr>
<tr>
<td>A-5</td>
<td>API Operations</td>
</tr>
<tr>
<td>A-15</td>
<td>Process Flow Messages</td>
</tr>
<tr>
<td>A-17</td>
<td>Error Handling</td>
</tr>
<tr>
<td>A-18</td>
<td>Security Impact</td>
</tr>
</tbody>
</table>
Introduction

This appendix discusses the interaction of third party interfaces with the ADP Enterprise HR panel processor. This API utilizes a Message Map Definition to indicate navigation to a specific task panel or task, and allows the definition of user named fields, which map to Record/Field values associated with a task panel. A message definition can be used to get, and set data in a task panel which will allow an Enterprise Code program to execute on all fields as if a user were entering and saving data to the task panel. This is performed without the use of a graphical user interface.

Third-party applications can integrate with Workflow in two ways:

- Users of email applications can receive emails generated by a business event in the workflow. For example, you can send email to employees at the completion of an employee review.

- Third-party applications can use forms to send data to Workflow for processing. For example, a user could complete a change of address form using forms software or an interactive kiosk.

Another example would be when an order entry clerk takes a telephone order, Workflow could automatically generate a completed order form and send it to the customer for verification. These workflow-generated forms are referred to as outgoing forms.

An interface program forwards their data to an ADP Enterprise HR panel processor for entry into the ADP Enterprise HR database.

This appendix describes the programming interfaces between Workflow and third-party products. It does not cover internal design issues for either Workflow or the third-party products.
Understanding the Panel Processor API

Third-party applications enter data into Workflow by using the ADP Enterprise HR panel processor. Using the panel processor application programming interface (API), you can write programs that add data to ADP Enterprise HR just as a user would.

In essence, the panel processor is an automated user workstation. Rather than taking input from the keyboard, it receives messages from java programs. These messages tell the panel processor to do the same things that a user would: navigate to a panel group, enter data into the panel fields, and save the panel. ADP Enterprise HR performs all the same edits and security checks that it always does, including running any Enterprise Code associated with the panel. The data you enter could trigger a business event, thus kicking off a workflow.

What is a Message?

A message is a data transfer between two applications. In the case of the panel processor, the transfer is between an application that supports ADP Enterprise HR’s documented panel processor API and ADP Enterprise HR that has been message-enabled through the Workflow Designer. Messages can be used to do anything that can be implemented by an ADP Enterprise HR panel.

How Do I Message-Enable an ADP Enterprise HR Panel?

If you want to map data to an ADP Enterprise HR panel using the panel processor, you have to create a message definition for that panel. The message definition tells the panel processor what fields in the panel to map data into and what values to return to the calling program.

For more information about using the Workflow Designer to create message definitions, see “Creating Message Definitions” on page 9-6.

How Do I Message-Enable a Third-party Application?

Like a server application, the panel processor runs passively on the machine (possibly in the background), waiting for incoming messages. When it receives a message, it processes it, then goes back to waiting. If you want to automatically transfer data to the panel processor, you need to write a program that sends data to the panel processor using the panel processor API.
How Do I Send Messages to the Panel Processor?

Your application submits messages to the panel processor through Java. The overall protocol for communicating with the panel processor is described below:

1. Send a message to connect your application to the panel processor.

2. Do the following for each panel group that you want to transfer data to:
   • Specify which message definition to use—this determines which ADP Enterprise HR process groups are accessed.
   • Set a value for each field that you want to fill in. You must set values for all required fields.
   • Tell the panel processor to process the message—to access the panel group, fill in the fields, and save the work.
   • Check the results. When the process is successful, you can check the values in the output fields specified in the Workflow Designer message definition. If an error occurred, you can request the text of the error message.
API Operations

You can group API into the following three functional categories:

<table>
<thead>
<tr>
<th>Functional Category</th>
<th>Message Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Session level operations</strong></td>
<td>Connect</td>
</tr>
<tr>
<td><strong>Message level operations</strong></td>
<td>MessageAgentMgr</td>
</tr>
<tr>
<td></td>
<td>startMessage</td>
</tr>
<tr>
<td></td>
<td>getMessage</td>
</tr>
<tr>
<td></td>
<td>processMessage</td>
</tr>
<tr>
<td></td>
<td>setOptions</td>
</tr>
<tr>
<td></td>
<td>setUseDisplayFormat</td>
</tr>
<tr>
<td></td>
<td>reset</td>
</tr>
<tr>
<td><strong>Field level operations</strong></td>
<td>setTabularFlag</td>
</tr>
<tr>
<td></td>
<td>getField</td>
</tr>
<tr>
<td></td>
<td>getMaxFieldNameLength</td>
</tr>
<tr>
<td></td>
<td>getMaxValueLength</td>
</tr>
<tr>
<td></td>
<td>findField</td>
</tr>
<tr>
<td></td>
<td>findFirstField</td>
</tr>
<tr>
<td></td>
<td>findNextField</td>
</tr>
<tr>
<td></td>
<td>getFieldNameLength</td>
</tr>
<tr>
<td></td>
<td>getName</td>
</tr>
<tr>
<td></td>
<td>getValueLength</td>
</tr>
<tr>
<td></td>
<td>findFirstValue</td>
</tr>
<tr>
<td></td>
<td>findNextValue</td>
</tr>
<tr>
<td></td>
<td>getValue</td>
</tr>
<tr>
<td></td>
<td>getValues</td>
</tr>
<tr>
<td></td>
<td>findNextOutputRow</td>
</tr>
<tr>
<td><strong>Error message operations</strong></td>
<td>getErrorTextLength</td>
</tr>
<tr>
<td></td>
<td>addErrorText</td>
</tr>
<tr>
<td></td>
<td>getFirstErrorText</td>
</tr>
<tr>
<td></td>
<td>getNextErrorText</td>
</tr>
<tr>
<td></td>
<td>getErrorText</td>
</tr>
</tbody>
</table>
Connect

Connects to an ADP Enterprise HR server, and validate a given ID and PIN, or password.

Java Syntax

```java
public int connect(int p_connectType,
    java.lang.String p_serverName,
    java.lang.String p_id,
    java.lang.String p_verificationString)
```

Parameters

- **p_connectType**: Type of connection. MessageAgentMgr.OPRCONNECT indicates the `p_id` is an operator ID/password combination. MessageAgentMgr.PINCONNECT indicates SSN or Employee ID/PIN combination.
- **p_serverName**: ADP Enterprise HR server.
- **p_id**: Employee ID, or Social Security Number.
- **p_verificationString**: Personal identification number, or password.

Return Value

MessageAgentMgr.OK if successful, MessageAgentMgr.ERROR if unsuccessful.

MessageAgentMgr

Used to construct a MessageAgentMgr.

Java Syntax

```java
public MessageAgentMgr()
```
**startMessage**

Clear the message agent value lists and get the message definition for a given message.

**Java Syntax**

```java
public int startMessage(java.lang.String p_msgName)
```

**Parameters**

- `p_msgName` Message Name

**Return Value**

MessageAgentMgr.OK if successful, MessageAgentMgr.NOTFOUND the map definition was not found.

---

**getMessage**

Get data based on a given message definition.

**Java Syntax**

```java
public int getMessage()
```

**Return Value**

MessageAgentMgr.OK if successful, MessageAgentMgr.ERROR if unsuccessful.

---

**processMessage**

Save data based on a given message definition.

**Java Syntax**

```java
public int processMessage()
```

**Return Value**

MessageAgentMgr.OK if successful, MessageAgentMgr.ERROR if unsuccessful.
setOptions

Sets runtime options for the message agent.

Java Syntax

public void setOptions(int p_options)

Parameters

p_options MessageAgent.VALIDATEKEYS

If in Add mode and a key match is found, message “This item already exists” will be issued.

If in update mode and no match is found, message “No matches were found” will be issued.

If in update mode and more than one match is found, message “More than one search result returned” will be issued.

MessageAgent.SAVEINVALIDDATA

If this option is set and there is an error, the data will still be saved.

Return Value

None

setUseDisplayFormat

Informs the message agent of the expected format of inbound data.

Java Syntax

public void setUseDisplayFormat(boolean p_value)

Parameters

p_value If pass true, then the message agent assumes the values are in an unformatted form which is usable by the panel processor.

If false, then the message agent will attempt to unformat the field values.

Return Value

None
**reset**

Clears the inbound, outbound, and messages from the current message context.

**Java Syntax**

```java
public void reset()
```

**Parameters**

None

**Return Value**

None

---

**setTabularFlag**

Set the tabularList flag.

**Java Syntax**

```java
public void setTabularFlag(boolean p_tabularList)
```

**Parameters**

- `p_tabularList` if true then list is tabular

---

**setField**

Add a field and value to the form field list. The form field list is used to set key values, and field data.

**Java Syntax**

```java
public int setField(java.lang.String p_fieldName, java.lang.String p_value)
```

**Parameters**

- `p_fieldName` The field name to set a value for.
- `p_value` Value for the field.

**Return Value**

A value of MessageAgentMgr.OK if successful, or MessageAgentMgr.OUTOFSEQUENCE if called prior to startMessage.
**getMaxFieldNameLength**

Get the maximum field name length.

**Java Syntax**

```java
public int getMaxFieldNameLength()
```

**Return Value**

The maximum field name length, or MessageAgentMgr.ERROR if unsuccessful.

**getMaxValueLength**

Get the maximum value length.

**Java Syntax**

```java
public int getMaxValueLength()
```

**Return Value**

The maximum value length or MessageAgentMgr.ERROR if unsuccessful.

**findField**

Find a given field.

**Java Syntax**

```java
public int findField(java.lang.String p_fieldName)
```

**Parameters**

- `p_fieldName` Name of the field to find.

**Return Value**

MessageAgentMgr.OK if successful or MessageAgentMgr.NOTFOUND if field not found.
findFirstField

Set the location of the current field to the first field.

Java Syntax

public int findFirstField()

Return Value

MessageAgentMgr.OK or MessageAgentMgr.NOTFOUND if no fields found.

findNextField

Set the location of the current field to the next field in the list.

Java Syntax

public int findNextField()

Return Value

MessageAgentMgr.OK or MessageAgentMgr.NOTFOUND if no fields found or if you are at the end of the list.

gFieldNameLength

Get the length for current field name.

Java Syntax

public int getFieldNameLength()

Return Value

The length of the current field name if successful or MessageAgentMgr.NOTFOUND if field not found.

gFieldName

Get the current field name.

Java Syntax

public java.lang.String getFieldName()

Return Values

Current field name if successful. A null is returned if unsuccessful.
**getValueLength**

Get the length for current field value.

**Java Syntax**

```java
public int getValueLength()
```

**Return Value**

Length of the current field value if successful or MessageAgentMgr.NOTFOUND if field not found.

**findFirstValue**

Set position to the first value of the current field.

**Java Syntax**

```java
public int findFirstValue()
```

**Return Value**

MessageAgent.OK if successful or MessageAgentMgr.NOTFOUND if no values.

**findNextValue**

Set position to the next value of the current field.

**Java Syntax**

```java
public int findNextValue()
```

**Return Value**

MessageAgent.OK if successful or MessageAgentMgr.NOTFOUND if no more values.

**getValue**

Get the current field value.

**Java Syntax**

```java
public String getValue()
```

**Return Value**

Current field value if successful. A null value is returned if unsuccessful.
getValues

Get list of values for a given field.

Java Syntax

public java.lang.String[] getValues(java.lang.String p_fieldName)

Parameter

p_fieldName Field name to get values for.

Return Value

List of values if successful. A null value is returned if unsuccessful.

findNextOutputRow

Set current row position to the next row.

Java Syntax

public int findNextOutputRow()

Return Value

MessageAgentMgr.OK if successful, or MessageAgentMgr.NOTFOUND if no more rows to read.

getAddressLength

Get the length for current error text.

Java Syntax

public int getErrorTextLength()

Return Value

Length of the current field value if successful, MessageAgentMgr.ERROR if no error text.
addErrorText

Used to add error text.

Java Syntax

public void addErrorText(java.lang.String p_message)

Parameter Value

p_message Error text to add.

getFirstErrorText

Used to get current error text.

Java Syntax

public int getFirstErrorText()

Return Value

MessageAgentMgr.OK if successful, or MessageAgentMgr.NOTFOUND if no messages.

getNextErrorText

Used to get current error text.

Java Syntax

public int getNextErrorText()

Return Value

MessageAgentMgr.OK if successful, or MessageAgentMgr.NOTFOUND if no more messages.

getErrorText

Used to get current error text.

Java Syntax

public java.lang.String getErrorText()

Return Value

Current error text if successful, null if no error text.
Process Flow Messages

The messages discussed in this section are used to promote message communications.

**Construct MessageAgentMgr**

Construct one MessageAgentMgr object per user. The object can be used for multiple message request, as long as you call startMessage() prior to calling getMessage, or processMessage().

**Connect**

Next connect with the Message Agent middle tier passing server name, ID (Employee ID, or Social Security Number), and Verification String (Personal Identification Number (PIN), or Password. The ID, and Verification String will be verified. Connect should only be called once.

**StartMessage**

Next call startMessage() to clear, and initialize the MessageAgentMgr context. You must call startMessage() when you want to clear the value list contents and set up for a new Message transaction.

**setField**

Call setField to add a field name, and values to the MessageAgentContext. SetField is used to pass key information to a getMessage(), or update data in a message using processMessage().

**GetMessage**

GetMessage is used to retrieve data using a given Message Definition.
ProcessMessage

ProcessMessage is used to put data using a given Message Definition.

The following is a list of assessors methods used to get map field values:

- getMaxFieldNameLength
- getMaxValueLength
- findFirstField
- findNextField
- getFieldNameLength
- getFieldName
- getValueLength
- getValue
- getValues
- findNextOutputRow
Error Handling

All exceptions and errors are accessed through the use of the following API messages:

- `getErrorText`
- `getErrorTextLength`
- `getNextErrorText`
- `getFirstErrorText`
- `getErrorText`
Security Impact

The ID (Employee ID, SSN, or Operator ID) and Verification String (PIN, or Password) will be verified to the requested Message Agent Server.
Symbols  
@ function 7-5

A
Access groups  
security 13-27
Activate Role User field 5-10
Active option 1-13
Add dialog box 10-8, 11-6
addErrorText operation A-5
ADP Enterprise HR  
automating business processes 1-16
extending functionality 1-18
Advanced panel 3-9, 3-19
Aggregate functions  
applied to fields 14-32
combining 14-33
creating 14-31
selection criteria 13-22
Alias Name field 9-7
Align Bottom button 3-32
Align Horizontal Center button 3-32
Align Left button 3-32
Align Right button 3-32
Align Top button 3-32
Align Vertical Center button 3-32
All Above Fields view  
Query Utility 13-16
Alternate Role User field 5-4, 5-5
AND operator 14-29
API  
operations A-5
panel processor A-3
Application fields 6-5
Application Processor 1-19
Application Worklist Options area 1-13
Architecture 1-20
Archive Role User field 5-10
Attachment field 10-9
Audience for this guide xiii
Automatically create Route data mappings  
option 3-9, 3-19, 3-35
Automatically generate Enterprise Code for this task  
option 3-10, 7-4
Automatically generate Enterprise Code  
option 3-35, 7-4
Automatically insert Workflow Panel option 3-35
Automatically save Enterprise Code option 3-35, 7-4
Average function 14-32

B
Basic Options panel 1-7, 1-8, 1-10
BCC field 3-15
Benefits Administration  
activating 1-7, 1-8, 1-10
Bind variables 4-9
Bring Forward button 3-31
Bring to Front button 3-31
Building workflow processes 2-11
Bus Proc / WL field 11-12
Business models 2-5
Business Process Controls panel 1-13, 12-4
Business Process field 11-16
Business Process Name field 1-13, 11-19
Business processes  
activating 1-12
anatomy of 2-5
automating 1-16, 1-17
business models 2-5
components 1-4
creating new 3-5
database agents 2-12
defining 2-12
designing 2-11
Employee Review business process 1-11
events
database agents 2-12
Hire Employee business process 1-7
linking with routings 2-12
opening 3-3
opening existing 3-3
Business processes (cont.)
routings
creating 2-12
sample processes
activating 1-12
customizing 1-16
overview 1-6, 1-12, 1-16
Terminate Employee business process 1-9
third-party applications 2-11
user list roles 4-3
worklists
creating 6-6
shared worklists 4-7
Business rules
roles 4-3
workflow rules 7-2
BUSPROCNAME field 6-4, 6-6

C
Canvas toolbar 3-34
CC field 3-15
Change Aggregate dialog box 14-33
Change Column Number dialog box 14-3
Change Heading dialog box 14-5
Change Order By dialog box 14-9
Change Translate dialog box 14-7
CheckBPEventActive function 7-5
Closed Curve button 3-30
Column number option 14-3
Column Order option 13-16
COMMAND_PARM field 6-7
Comparison values
available value types 14-19
constant value 14-20
entering 14-18
expression value 14-21
field value 14-20
list value 14-25
prompt value 14-22
subquery 14-21
Completion Deadline Exists option 3-10, 3-20
Connect operation A-5, A-6
Constant value type
comparison values 14-20
Count function 14-32
Criteria grouping 14-30
Criteria view
  Query Utility 13-21, 14-28
Criterion bars 14-15, 14-28
Cross reference reports
  overview 9-14
Currently In Roles field 5-5

D
Data Action Type area 3-8
Data Mappings panel 3-24
Database Agent option 3-11, 3-12
Database agents
  adding 8-5
  automating business processes 1-17
  command-line switches 8-7
  creating 8-2
  defining 2-12
  implementing 8-3
  monitoring 8-3
  overview 1-28, 8-3
  panel groups 8-9
  Process Scheduler 8-3, 10-10, 11-8
  queries 14-47
  running 8-7
  scheduling 10-10
  Worklist Volume Monitor 11-6
DB Agent dialog box 10-10, 11-7
DBAG Monitor WL by Group 14-38
DBAGNT
  see Database agents
Deadline (Days/Hours/Mins) field 3-10, 3-20
Default Message and Routing panel
  accessing 10-7
  illustration of 10-7
Default messages 10-6
Default Role Name field 3-35
Default Routing area 10-7
Defaults panel 10-4
Define Recurring Messages task 10-6
Define Workflow Users task 4-6
Defined as option 14-27
Deliver To field 10-9
Description field 3-7, 3-14, 3-17, 3-23, 5-4
Details panel
  Program Launcher Task Properties dialog box 3-18
Development process
  the Workflow 2-11
Distinct option 14-37
Documentation
  audience for this guide xiii
  contents of this guide xiv
  conventions xvii
  providing comments xix
  related guides xvi

E
Earliest Effective Date option 14-27
Edit Constant Value dialog box 13-22, 14-20
Edit expression dialog box 14-21, 14-36
Edit list dialog box 14-25
EFF_STATUS field 14-6
EFFDT field 14-26
Effective date
  specifying criteria 14-26
Effective Date dialog box 14-27
Effective Sequence area 14-27
Ellipse button 3-30
Email Address field 5-4
EMAIL Contents panel 3-15
Email Logon field 10-5
Email Password field 10-5
E-mail Properties dialog box 3-14, 3-15
Email task 3-13
Email Task button 3-29
Employee Hire business process 1-7
Employee ID field 5-4
Employee Review business process
  diagram 1-12, 2-7, 4-4
  overview 1-11, 2-7, 2-8
  roles 2-7
    manager 4-12
  routing worklist items 1-27
Employee Review workflow business process 3-4
Enter Value(s) dialog box 14-12, 14-24
Enterprise Code
  @ function 7-5
  adding to record definition 7-4
  CheckBPEventActive function 7-5
  FieldChange event 1-19
  FieldEdit event 1-19
  functions 7-5
  GetWLFieldValued function 7-5
  MarkWLItemWorked function 7-5
  PurgeWorklist function 7-5
  TriggerBusinessEvent 7-5
  workflow
    processing rules 7-4
    programs 7-6
Enterprise Code (cont.)
  workflow rules 7-2
Events
  database agents 2-12
  definition 1-27
  event-driven routings 1-19
  overview 1-27
Expression value type
  comparison values 14-20
External Settings panel 3-9, 3-11

F
Field Mapping panel 9-9
Field Name order option 13-17
Field value type
  comparison values 14-20
Field view
  Query Utility 13-9, 13-10, 13-11, 13-18
Fields
  application 6-5
  applying aggregate functions 14-32
  for output 14-3
  system 6-4
Fields and Message Definitions report
  (XRFFLMSG) 9-14
Fields in Record view
  Query Utility 13-12
Fields toolbar
  in the Record Editor 3-28, 3-30, 3-31, 3-34
Fields with Criteria view
  Query Utility 13-15
findField operation A-5
findFirstField operation A-5
findFirstValue operation A-5
findNextField operation A-5
findNextOutputRow operation A-5
findNextValue operation A-5
Flip Horizontal button 3-33
Flip Vertical button 3-33
Forms
  message definitions
    output fields, mapping 9-12
    products, message enabling A-3

G
General panel
  Panel Task Properties dialog box 3-7
Route Properties dialog box 3-23
General tab
E-mail Properties dialog box 3-14
Program Launcher Task Properties dialog box 3-17
getErrorText A-5
getErrorTextLength A-5
getFieldName operation A-5
groupFieldNameLength operation A-5
ger-firstErrorText operation A-5
getMaxFieldNameLength operation A-5
getMaxValueLength operation A-5
getMessage operation A-5
getNextErrorText A-5
getValue operation A-5
getValueLength operation A-5
GetWLFieldValue function 7-5
Grid on/off button 3-34
Group button 3-31
Group routers
  creating 3-26
    Group Router button 3-29
    Group Router toolbar button 3-26
HAVING clause 13-22, 13-23, 14-34
Hierarchical joins 14-40
Hire Employee business process 1-7
Image button 3-30
Implementation preparation 2-3
In/Out field 9-12
Instance ID field 11-19
INSTANCEID field 6-4, 6-6
Introducing Workflow 1-2
Join Any Record menu option 14-43
Join menu option 14-43
Joins
  queries 14-40
  related records 14-41
Label field 3-7, 3-14, 3-17, 3-23
Latest Effective Date option 14-27
Layout toolbar 3-31
Line button 3-30
Logical operators
AND 14-29
OR 14-29
Mapping
  scroll regions 9-12
MarkWLItemWorked function 7-5
Max function 14-32
Member of Roles area 5-9
Message Agent Server
  automating workflow 1-16
  database agents 1-17, 1-28
Message Content and Addressees panel
  accessing 10-8
  illustration of 10-8
Message Defaults area 10-7
Message Definition field 3-12
Message definitions
  components of 9-3
  creating 2-12, 9-6
  database agents 8-3
  message maps 9-11
  opening 9-4
  output fields 9-12
  overview 9-3
  understanding 9-3
Message Definitions report (XRFMSGDF) 9-14
Message enabling
  forms products A-3
  panels A-3
Message field 3-15, 10-7, 10-9
Message ID field 10-7, 10-8
Message Maps
  see Message definitions
MessageAgentMgr operation A-5
Messages
  defining default messages 10-6
  overview A-3
  sending 10-8, A-4
Min function 14-32
Monitor Worklist Volume task 11-6
Monitoring the database 1-28
Name field 3-7, 3-14, 3-17, 3-23
New Message Definition dialog box 9-6
No Effective Date option 14-27
Not Mapped option 3-25
Notification Criteria field 11-4
Notification Message field 11-4
Nudge Down button 3-32
Nudge Left button 3-32
Nudge Right button 3-33
Nudge Up button 3-32

Object Selector button 3-29, 3-30
Open dialog box
  business processes 3-3
  message definitions 9-4
Open Message Definition dialog box 9-5
Operator Assigned field 11-12, 11-19
Operator ID field 5-4
Operators
  selecting for query 14-17
OPRID field 14-38
OR operator 14-29
OrderBy order option 13-17
Ordering Fields view
  Query Utility 13-14
Originator field 11-12
Output fields
  deselecting 14-4
  ordering 14-3
  selecting 14-3

Page Boundaries on/off button 3-34
Pan button 3-34
Panel Processor
  API A-3
  debugging 9-13
  entering data A-2
  message definitions 9-3, 9-12
  message maps 9-11
  message sent to A-4
Panel Task
  creating 3-6
Panel Task button 3-29
Panel Task object 3-6
Panels
  message enabling A-3
  WF_FUNCTIONS_01 7-3
Panels and Message Definitions report (XRFPNMSG) 9-14
Performance Review task panel 1-23, 2-9
Poly Curve button 3-30

Polyline button 3-30
Print dialog box
  for queries 14-11
Priority option 10-7, 10-9
Processes
  understanding 1-3
  workflow 1-3
processMessage operation A-5
Program Launch Task button 3-29
Program Launcher Task Properties dialog box 3-19
Project team 2-4
Prompt value
  comparison values 14-22
PSROLEUSER record 4-8
PSWORKLIST record 6-4
PurgeWorklist function 7-5

Queries
  advanced options 14-31
  automated 1-19
  bind variables 4-9
    See also Roles, query roles
  understanding 4-9
  comparison values
    available value types 14-19
    constant 14-20
    expression 14-21
    field 14-20
    prompt 14-22
    subquery 14-21
  creating 13-5
  criteria
    grouping 14-30
    database agent 14-47
    effective date 14-26
  joins
    any record 14-43
    creating 14-40
    hierarchical 14-40
    related record 14-41
  output
    column headings 14-5
    fields 13-18
    formatting 13-19, 14-5
    sort order 13-20, 14-8
    translate values 13-20
  printing 14-11
  query roles 4-3, 4-5, 4-8
Queries (cont.)
record definitions 13-7
selecting 13-7
reporting 14-46
results
distinct 14-37
running 13-4, 14-12
saving 14-10
security
profiles 13-33
record definitions 13-31
row-level security 13-31
setting up 13-24
selection criteria
comparison values 14-18
effective date criteria 14-26
overview 14-14
relating multiple criteria 14-28
sort order
adding 14-8
order column 14-8
overview 14-8
subqueries 14-21
types of 13-3
unions 14-44
viewing SQL statements 14-45
Workflow 13-3
Query Editor button 3-12
Query expressions
deleting 14-37
editing 14-37
overview 14-35
viewing 14-35
Query Results dialog box 13-6, 14-13
Query roles
creating 4-8
overview 4-3
Query Security panel 13-30, 13-33
Query status box 14-12
Query Structure toolbar 13-11, 14-4
Query trees 13-25
Query Type option 4-8
Query Use area 13-34
Query Utility
access groups 13-5, 13-7, 13-27
aggregate functions 13-22, 14-32
changing field order 13-16
creating queries 13-5
Field View 13-9, 13-10, 13-11, 13-18
introducing 13-2
joining records 13-17
output selection criteria 13-21
Query Utility (cont.)
Query Structure toolbar 13-11
side panel for access groups 13-9
views
All Above Fields 13-16
Criteria 13-21
Field 13-9, 13-10, 13-18
Fields in Record 13-12
Fields with Criteria 13-15
Ordering Fields 13-14
Ordering Fields view 13-14
Selected Fields 13-13
Selected Fields in Record 13-13
Query Utility Access Group Panel 13-4
Query Utility panel 13-4, 13-5, 14-14, 14-15
building subqueries 14-38
R
Re-assign Work To field 5-10
Record definitions
query security 13-31
workflow queries 13-7
worklists
application fields 6-5
copying record definitions 6-7
overview 6-2
required fields 6-4
save using _WL 6-7
understanding 6-4
worklist record definition 6-6
Record Hierarchy dialog box 14-40
Record Order option 13-16
Records
joining 14-43
Records and Message Definitions report (XRFRCMSG) 9-14
Rectangle button 3-30
Related Record dialog box 14-42
Remove for this Worklist if Task is rerouted option 3-20
Remove from this Worklist if Task is rerouted option 3-11
Reports
Fields and Message Definitions report (XRFFLMSG) 9-14
Message Definitions report (XRFMSGDF) 9-14
Panels and Message Definitions report (XRFPNMSG) 9-14
Records and Message Definitions report (XRFRCMSG) 9-14
Reports (cont.)
workflow queries 14-46
Requirements
for Workflow 2-3
reset operation A-5
Role Definition dialog box 4-10
Role Editor
user list roles 4-7
Role field 3-10, 3-20
Role User Details area 5-9
Role User field 10-5
Role User Notification List 11-5
Role users
adding 5-3
defining 2-12
disabling 5-8
overview 4-6, 5-2, 5-5
Role Users panel 4-7, 5-6
Roles
business rules 4-3
creating 4-7, 4-10
defining 2-12, 4-2, 4-10
Employee Review business process example 2-7
manager role 4-12
naming conventions 4-10
overview 1-5, 4-3
query roles
creating 4-8
Operator ID field 5-4
overview 4-3, 4-5
query bind variables 4-9
record definitions 4-8
ROLEUSER record 4-9
role users 5-9
See also Query roles
See also User list roles
user list roles
creating 4-7
overview 4-3, 4-4
pre-assigning role users 5-5
ROLEUSER field 4-9
ROLEXLATOPR record 4-8
Rotate button 3-33
Rotate Left button 3-33
Rotate Right button 3-33
Route button 3-29
Route to Task field 3-10, 3-20
Route toolbar button 3-22, 3-27
Routes
creating 3-21
Routing field 10-7
Routing Method field 10-9
Routing Preferences field 5-5
Routings
creating 2-12
definition 1-27
Employee Review example 1-27
event-driven 1-19
overview 1-5
setting defaults 10-4
workflow rules 1-27
Row-level security
enabling 13-31
Rules
creating 1-4
Run menu command 13-4
Run Query dialog box 13-4, 14-12
RUN_DBAGENT panel group 8-9
Runtime Prompt dialog box 14-23
Runtime Prompts dialog box 14-24
S
Same Height button 3-32
Same Size button 3-32
Same Width button 3-32
Sample business processes 1-6
Save As dialog box
queries 14-10
Scroll Bar Settings panel 9-8
Search Criteria panel
accessing 11-12
illustration of 11-12
Security access groups 13-29
Security panels 13-30
Select Field dialog box 14-20
Selected Fields in Record view
Query Utility 13-13
Selected Fields view
Query Utility 13-13
Selection criteria
queries 14-14
Send Back button 3-31
Send Message task 10-8
Send to Back button 3-31
Sending messages 10-8
setField operation A-5
setOptions operation A-5
setTabularFlag operation A-5
setUseDisplayFormat operation A-5
Shared Worklist option 3-10, 3-20
Snap to Grid button 3-34
Sort order
queries 14-8
Space Across button 3-31
Space Down button 3-32
SQL dialog box 14-45
SQL statements
  viewing 14-45
startMessage operation A-5
Subject field 3-15, 10-7, 10-8
Subqueries 14-21, 14-38
Sum function 14-32
System fields 6-4

T
Task Completed by an External Program option 3-11
Task Selection panel 3-8
Terminate Employee business process 1-9
Text button 3-30
Third-party applications
  entering data A-3
  integrating 1-30, A-2
  worklist record definitions
    COMMAND_PARM field 6-7
    overview 6-7
Time allocation 2-3
Timeout feature 6-7
Time-out processing 1-24
Timeout Processing panel 11-9
Timeouts
  worklist 11-9
To field 3-15
Toolbars
  Canvas toolbar 3-34
  Layout toolbar 3-31
  Visual Objects toolbar 3-29
  Workflow Objects toolbar 3-28
Total by Individual option 11-7
Total Pending Worklist Entries field 5-9
Total Worklist Entries Found field 11-12
Trace SQL Bind field 9-13
Trace SQL Cursor field 9-13
Trace SQL Fetch field 9-13
Trace SQL Set Select Buffer field 9-13
Trace SQL Statement field 9-13
Translate field 9-12
Translate tables 14-6, 14-7
Tree Editor 1-5
Triangle button 3-30
TriggerBusinessEvent function 7-5
Triggers
  events 8-3
  routings 8-3

U
Ungroup button 3-31
Unions 14-44
Use panel
  Record Properties dialog box 13-32
User Definition panel
  accessing 5-4, 12-7
  illustration of 5-4, 12-7
  using 4-7
User Definitions panel
  illustration of 12-7
User list roles
  creating 4-7
  overview 4-3, 4-4
User Management panel
  accessing 5-9
  illustration of 5-9
User to Activate field 5-9
User to Archive field 5-9

V
Valid Values for Tree Name dialog box 13-30
Value column 3-24
Value Type column 3-24
Value Type field 3-24
Visual Objects toolbar 3-29
Volume Monitor Setup panel
  accessing 11-3
  illustration of 11-3

W
WF_FUNCTIONS_01 panel
  workflow work panels 7-3
WHERE clause 13-22, 14-34
WL Context list box 11-14
WL Datetime Range field 11-12
WL Instance ID field 11-12
WL Status field 11-12
Work items
  reassigning 11-19
  updating 11-18
Workflow
  panel-based 1-18
  queries 13-3
Workflow (cont.)
  third-party applications
integrating 1-30
uses for 1-15
Workflow Administrator
  automating business processes 1-17
database agents
  scheduling 10-10
messages
  defining default 10-6
monitoring business processes 11-1
roles
  assigning users 4-11
set up 10-3
system defaults
  defining 10-4
user list roles
  adding role users to 4-7
Workflow Designer
  automating business processes 1-17
business processes
  designing 2-12
  opening 3-3
overview 1-19
roles 4-10
Workflow Editor tab 3-35
Workflow Editor window 3-4
Workflow Monitor Setup ID field 11-7
Workflow objects
  example of 3-21
Workflow Objects toolbar 3-28
Workflow properties
  searching 11-11
Workflow Query Utility
  Database agents 8-2
  PSROLEUSER record 4-8
query type 8-5
role query 4-8
ROLEUSER record 4-9
ROLEXLATOPR record 4-8
Workflow rules
  Enterprise Code
    adding to record definition 7-4
    functions 7-5
  processing rules 7-4
  workflow programs 7-6
linking events to panels 7-2
routing work items 1-27
WF_FUNCTIONS_01 panel 7-3
Workflow Volume Monitor
  Monitor WL by Group 10-10, 11-8
  Monitor WL by Individual 10-10, 11-8
Worklist Copy Record field 3-10, 3-20
Worklist entries
  locating 11-12
Worklist Entries panel 11-13, 11-14, 11-17
Worklist field 11-16
Worklist items
  triggering for Benefits Administrator 1-7, 1-8, 1-10
Worklist Items panel 11-15, 11-19
Worklist List Name field 11-19
Worklist Monitor panel 11-17
Worklist Operator Pool field 11-5
Worklist panel 2-8, 6-7
Worklist Record field 3-9, 3-19
Worklist Search Criteria area 11-16
Worklist status area 11-19
Worklist Timeout Processing (WLEXCP) task 11-9
Worklist Volume Monitor 11-3, 11-6
Worklist Volume Monitor Options task 11-3
Worklist Volume panel 11-7
WORKLIST_VW record 14-38
WORKLISTNAME field 6-4, 6-6
Worklists
  clearing 11-20
  copying record definitions 6-7
  creating 6-6
  Employee Review example 1-27
  features 1-24
  items 1-17
  query roles
    assigning 4-8
  record definitions
    application fields 6-5
    BUSPROCNAME field 6-4, 6-6
    COMMAND_PARM field 6-7
    creating 6-6
    INSTANCEID field 6-4, 6-6
    overview 6-2
    PSWORKLIST field 6-4
    required fields 6-4
    save using _WL 6-7
    understanding 6-4
    WORKLISTNAME field 6-4, 6-6
searching for work items 11-16
shared worklist 4-7
timeouts 1-24, 6-7, 11-9
updating work items 11-18
using 1-21
X
XRFFLMSG Fields and Message Definitions report) 9-14
XRFMSGDF (Message Definitions report) 9-14
XRFPNMSG (Panels and Message Definitions report) 9-14
XRFRCMSG (Records and Message Definitions report) 9-14

Z
Zoom button 3-34
Zoom to Fit button 3-34
Zoom to Selection button 3-34