Oracle® Forms Recognition
Runtime Server User Guide
10g Release 3 (10.1.3.5.0)

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ORACLE®

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Content

Chapter 1   About Oracle Forms Recognition Runtime Server

Oracle Forms Recognition with Supervised Learning is a product suite by Oracle Corporation for automatically processing incoming documents. In principle, Oracle Forms Recognition works with any electronically available document. This includes scanned images, faxes, e-mails, and files. Oracle Forms Recognition automatically classifies these documents and extracts meaningful information from them.

Oracle Forms Recognition uses a trainable, self-learning algorithm that minimizes user definition and intervention tasks. The product is based on Microsoft Windows NT service technology. As part of the Oracle Forms Recognition suite, Oracle Forms Recognition Designer enables you to customize the automatic processing of incoming documents: which document classes are relevant in your enterprise and which information is to be extracted from the classified documents. All custom settings are saved in an Oracle Forms Recognition project file.

To process large volumes of documents, Oracle Forms Recognition organizes documents into batches that are defined in the Oracle Forms Recognition project file. The project files and stored settings are automatically forwarded to Oracle Forms Recognition Runtime Server for production processing.

Oracle Forms Recognition Runtime Server runs in the background as a server process. Multiple instances of Oracle Forms Recognition Runtime Server can be started simultaneously in a network or on a single machine. Because all instances cooperate with each other, running multiple instances optimizes load distribution. Batches that cannot be entirely processed automatically by Oracle Forms Recognition Runtime Server are forwarded to the quality assurance application Oracle Forms Recognition Verifier to be corrected manually.

1.1   Remote Service Administration

System administrators can remotely administer machines that run Oracle Forms Recognition Runtime Server. This Remote Service Administration feature, based on Microsoft Management Console (MMC) technology, provides a host environment for administering remote service.

1.1.1.   Remote Administration Architecture

In the Oracle Forms Recognition Service Manager MMC snap-in, a hierarchical tree structure in the Tree view represents each individual machine and instance of Runtime Server. The Runtime Server pane displays batches for each instance. The management of the Oracle Forms Recognition batch takes place in the file system, and the batch root directory contains all information about a batch.

A system administrator can:

- Control the operation of each instance of Oracle Forms Recognition Runtime Server over an entire network.

- Change the settings of each instance, such as workflow, import/export folder and scripting parameters.
- Monitor the progress and status of the instances.

Chapter 2   About This User Guide

2.1   Intended Audience

This manual is for system administrators and others who will be customizing Oracle Forms Recognition Runtime Server or administrating its server.

Readers should have sound knowledge of the Microsoft Windows operating system they work with.

For purposes of readability, this manual occasionally shortens the term Oracle Forms Recognition Runtime Server to Runtime Server. These terms are synonymous.

2.2   Related Documentation

In addition to this manual, Oracle Forms Recognition is shipped with the following documentation:

- **Oracle Forms Recognition Installation Guide** Explains how to install Oracle Forms Recognition and how to set up the licensing file.
- **Oracle Forms Recognition Designer User's Guide** Explains how to use Oracle Forms Recognition Designer component to create custom applications.
- **Oracle Forms Recognition Verifier User's Guide** Explains how to use the Oracle Forms Recognition's quality assurance utility, Oracle Forms Recognition Verifier.
- **Oracle Forms Recognition Visual Basic Reference** Explains how to develop with the Oracle Forms Recognition Designer Visual Basic IDE.
- Comprehensive online Help for Microsoft MMC and for Runtime Server.

All manuals are included on the installation media.

Chapter 3   Getting Started

Oracle Forms Recognition Runtime Server requires some configuration after installing the program, including port assignment, creation of a batch path file, and set up of the Runtime Service Manager.

If the program was installed by Oracle personnel, Oracle Forms Recognition Runtime Server should already be configured. If not, all configurations must be done by someone with administrative privileges.

Before configuring the Runtime Service Manager, ensure that the users and groups discussed in Platform Requirements in the Oracle Forms Recognition Installation Guide exist. Specifically, check the domain user OracleFormsRecognitionRTSsvc. The Oracle Forms Recognition Runtime Service Manager runs under the identity of this user. If you are in a Workgroup environment, make sure this user is configured on all Oracle Forms Recognition servers.

3.1   Configuring the Batch Path File

This file is used to specify the UNC name of the machine that contains the batches. To create it, use NotePad or another text editor to create a new file under the Batch directory and name it SrvName.DAT. In the body of the file, type either the name of the computer or its IP address. Use the following format:

\\computer name

\\IP address

3.2   Configuring Runtime Service Manager

Below are the steps required for configuring the Runtime Service Manager. You must be logged on as an Administrator to do these steps.

1) Click the Start button on the lower left of your screen.
2) Click Run.
3) At the command prompt, type "services.msc" and press Enter.
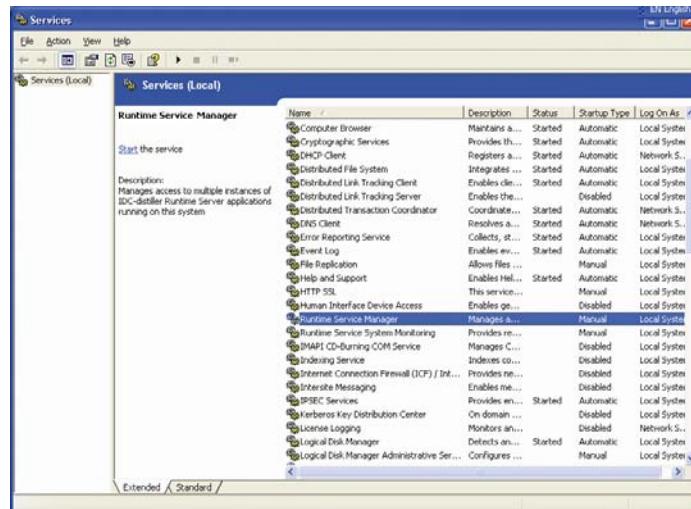
Figure 3-1: Services

4) In the Scope pane, double-click the Oracle Forms Recognition Runtime Service Manager. The Oracle Forms Recognition Runtime Service Manager Properties dialog box appears.
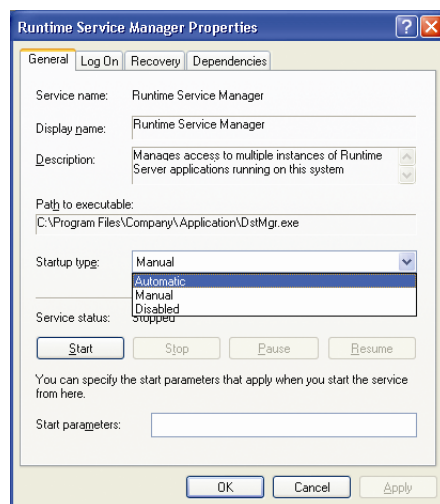
Figure 3-2: Oracle Forms Recognition Runtime Service Manager Properties dialog box

5) On the General tab, under Startup type, select Automatic from the drop-down list.
6) Select the Log On tab.
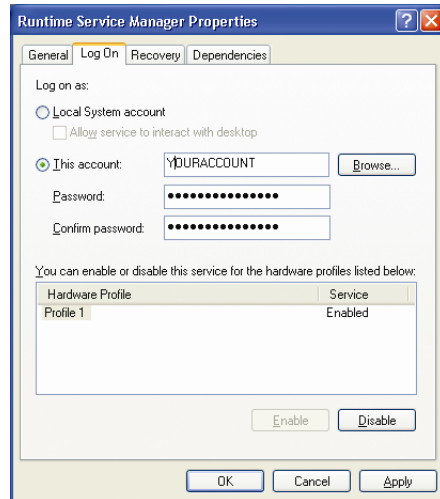
Figure 3-3: Log on tab for Oracle Forms Recognition Runtime Service Manager Properties dialog box

7) Under Log on as, select the "This account" radio button.
8) Click the Browse button.
9) Find and add the domain user with appropriate and sufficient for Oracle Forms Recognition processing network access rights (e.g., OracleFormsRecognitionRTSsvc) and click OK.
10) Type the domain password for the user in the fields provided.
11) Click OK and close the Computer Management MMC.

3.3   Exiting Runtime Server

To quit the Oracle Forms Recognition Service Manager MMC snap-in:

•   On the File menu, click Exit.

Chapter 4   The Concept of Batches

An Oracle Forms Recognition batch manages one or more documents — sometimes thousands — and controls the flow of these documents through the system. Inside a batch, a second structure called a folder can be created for documents that are related to each other.

4.1   Batch Structure

An Oracle Forms Recognition batch is managed in the file system. All information about a batch is located in the batch root directory. Only the images can be stored elsewhere.
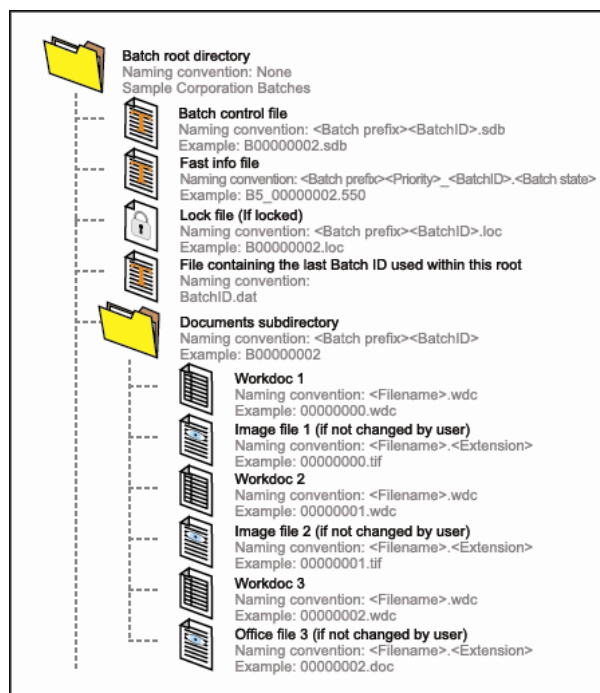
Figure 4-1: Structure of a batch

A batch has four parts:

- **Batch control file**: A text file containing all information about the status of the batch, its folders, and documents. The batch control file also contains information about the Oracle Forms Recognition project that should be used for processing, so you can say the batch is self-contained. Batch control files are saved with the extension *.sdb.
- **Fast info file**: A copy of the main information from the *.sdb file. It provides a quick way to determine the status of a batch without opening the *.sdb file. When the fast info file is deleted, it is automatically recreated from the *.sdb file. The second character of the file name is the priority, and the last eight characters are the batch ID. The extension of the fast info file indicates the status of the batch as a number between 000 and 999.
- **Lock file**: The lock file allows multiple instances of Oracle Forms Recognition Runtime Server to access the batch root directory. The lock file is created and removed by Oracle Forms Recognition Runtime Server for the currently processed batch. (Lock files are also created in Designer and Verifier.) It is removed by the operating system if the

program terminates abnormally. Lock files are saved with the extension *.loc.

- **Subdirectory**: The subdirectory is named after the batch ID. The subdirectory contains the Workdocs (*.wdc), usually the images (TIFF or similar) and attachments to a document, such as *.pdf files or fax header files.

4.2   Batch Control File Structure

The batch control file has the following structure:

```
[Batch]
BatchID=00000040                        // batch ID
BatchName=Checks                        // optional arbitrary name
BatchState=100                          // batch status (0-999)
BatchPriority=5                         // batch priority (0-9)
Client=User04532                        // client, i.e. license owner
LastModule=Capture                      // which module had processed
                                        // the batch before
LastUser=Anderson                       // operator which had processed
                                        // the batch before
CedarProjectName=D:\Proj\Sample.sdp     // path to the Designer
                                        // project
CedarProjectVersion=4                   // version of the Designer
                                        // project
FolderCount=3                           // number of folders in batch
MaxFolderID=2                           // maximum folder ID in batch
TotalDocCount=6                         // number of documents in batch

[Folders]
F0=F00000040_000000                     // enumeration of folders in
F1=F00000040_000001                     // the batch
F2=F00000040_000002

[F00000040_000000]                      // section of 1st folder
FolderID=F00000040_000000
FolderName=ChecksFolder_0000
FolderState=100
DocCount=1
Doc0=DB_00000250.wdc
Doc0_State=100
Doc0_Class=

[F00000040_000001]                      // section of 2nd folder
FolderID=F00000040_000001               // ID of second folder
FolderName=ChecksFolder_0001            // optional arbitrary name
                                        // of 2nd folder
FolderState=100                         // status of 2nd folder
DocCount=3                              // total number of documents in
                                        // the second folder
Doc0=DB_00000251.wdc                    // name of 1st doc. in the 2nd
                                        // folder
Doc0_State=100                          // state of 1st document in the
                                        // 2nd folder
Doc0_Class=                             // classification result of 1st
                                        // document in the 2nd folder
Doc1=DB_00000252.wdc
Doc1_State=100
Doc1_Class=
…
```

4.3   Batch Creation and Usage

In the Oracle Forms Recognition process, batches are the primary mechanism for routing documents.

During production, batches are typically created in one of two ways:

- They can be created as part of the scanning process and then imported by Oracle Forms Recognition Runtime for processing.
- Oracle Forms Recognition can create the batches from documents stored in the file system and then process them. The Cedar BatchControl Library enables you to create batches programmatically.

If a batch stops processing at a certain pre-defined status that indicates failure of either the classification step or the extraction step, the batch can be handed over to Oracle Forms Recognition Verifier for manual correction. Verified batches obtain a corresponding status value and are then further processed by Oracle Forms Recognition Runtime Server.

During application design, Oracle Forms Recognition Designer and Oracle Forms Recognition Verifier require batches as document input that can be provided either by Oracle Forms Recognition Runtime Server or by Capture.
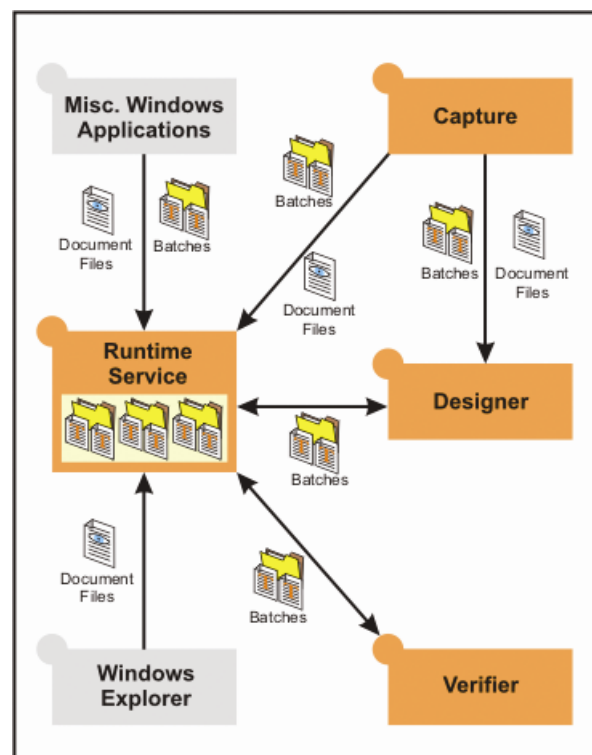
Figure 4-2: Exchange of batches and documents between applications

Chapter 5   Creating Batches

5.1   Creating Batches with the Cedar BatchControl Library

You can create batches programmatically using the Cedar BatchControl Library. The library can be used in Visual Basic or in Visual C++. It is installed with Oracle Forms Recognition and saved in the following path:

[INSTALL DIRECTORY]\Components\Cedar\CdrBatch.dll.[1]

You can use the library to create batches with arbitrary scan clients or e-mail application.

5.2   Creating Batches with Oracle Forms Recognition Runtime Server

To create batches in Oracle Forms Recognition Runtime Server, set up this option when you create configuration settings. The batches will be created as soon as you start processing. (Please see Section *8.1 Starting the Process*)

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[1]   Default installation directory and name of the corresponding environment variable is C:\Program Files\Oracle\Oracle Forms Recognition.

Chapter 6   Setting Up Runtime Administration

MMC provides a common host environment for snap-ins from a variety of software vendors. The administrator can customize tools to work more efficiently. MMC provides the ability to create multiple tools of varying levels of complexity for task delegation. By creating a custom MMC, you can avoid switching between various programs and various pre-configured MMCs.

The starting point for setting up runtime administration in Oracle Forms Recognition Runtime is to add the required number of servers to the console if you want more than one. Then, you build the Runtime Service Tree in the user interface by adding machines and adding instances of Runtime to those machines. Once you set up the machines and instances, you can process batches in Runtime Server and monitor the process. As the batches process, you can view statistics, documents, classification, extraction, and performance.

6.1   Setting up Snap-ins for Multiple Programs

When you start Oracle Forms Recognition Runtime, you will notice a screen with two panes, the Tree Pane and the Runtime Server pane. The Tree pane contains the Console Root. The Console Root includes only one default folder called Oracle Forms Recognition Runtime Server. If you want to run multiple instances of the application, or if you want to add other programs to customize your administration, you can add snap-ins. When you set up multiple snap-ins, you can remain in one program and within one configuration of MMC.

To add a snap-in:

1) On the Windows desktop, click Start and then click Run. Type mmc. A Console window appears. (*Figure 6-1*) Consoles are saved as files with an .msc extension. When you save a console, all of the settings of the snap-ins save and appear when you open the file, even if you open the file on another computer or network.
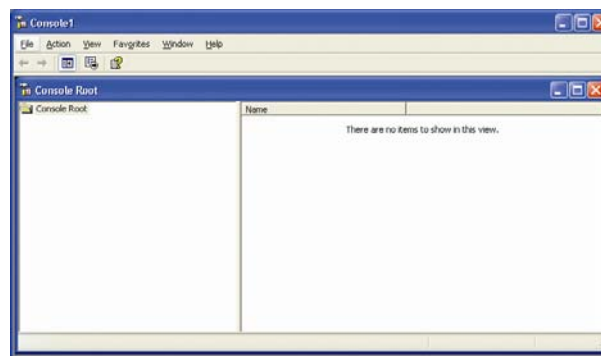
Figure 6-1: Console Window

2) Select the Console. From the File menu, select Add/Remove Snap-in. The Add/Remove Snap-in dialog box appears:
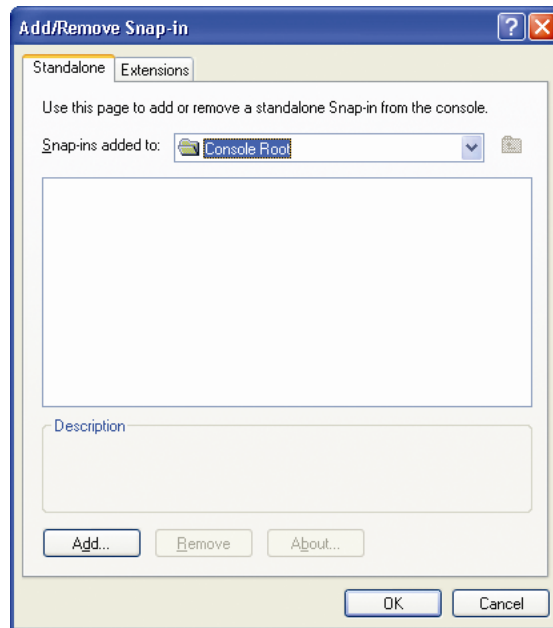
Figure 6-2: The Add/Remove Snap-In dialog box

3) Click Add. A list of programs will appear in the Add Standalone Snap-In dialog box.

Figure 6-3: The Snap-in selection box

4) Add the desired application. To add another snap-in of Runtime Server, select Oracle Forms Recognition Runtime Service Administration snap-in. The new instance appears in the tree as Oracle Forms Recognition Runtime Server. You can now add groups and server instances to the snap-in. Items that you add to the console tree appear under the console root. The contents of the snap-in appear in the Runtime Server pane.

6.2   The User Interface

The Oracle Forms Recognition Runtime Server user interface (*Figure 6-4*) consists of a main menu, a toolbar, a navigation pane that contains a tree with a Favorites tab, a result pane, and a status bar.
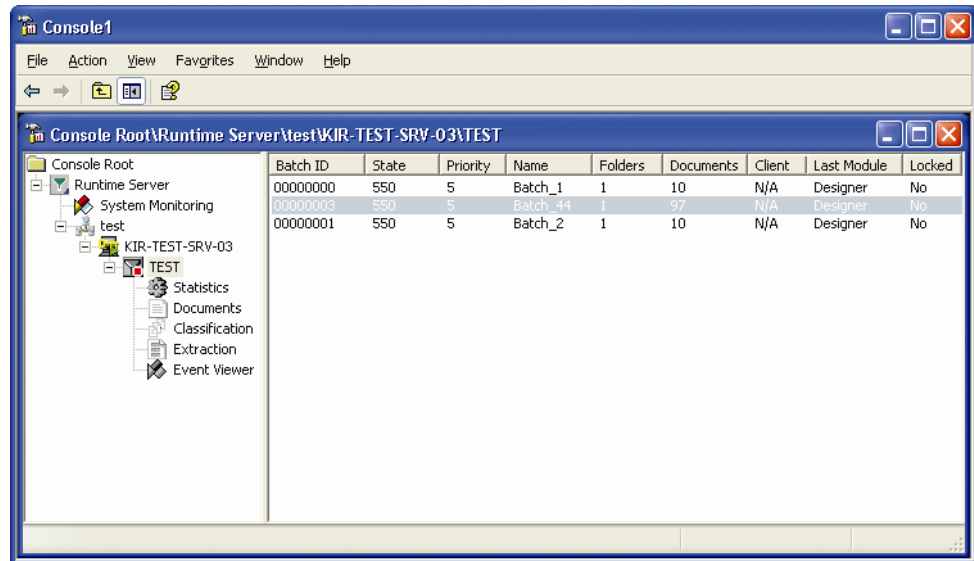
Figure 6-4: The Oracle Forms Recognition Runtime Server user interface

6.2.1.   The Title Bar

The title bar contains the name of the application and the path and name of the selected item in the scope pane.

6.2.2.   The Main Menu Bar

The main menu bar includes general tools for Runtime Server. It also contains standard toolbar buttons for saving, opening, and viewing.

Option	Description
Console	Select Console to add a snap-in of either Runtime Server or another application.
Window	Select Window to change the display type of the application. Select from cascade, tile, and arrange icons. You can also refresh your window to display any changes.
Help	Online help is available in the Help menu. You can also find version information about Runtime Server here.

Table 6-1: Main Menu options

6.2.3.   The Toolbar

This menu bar includes tools for using Runtime Server, and for viewing options and Favorites information. The toolbar contains buttons for performing the most common tasks. Depending on the item you select in the scope pane, the options on this menu will vary.

6.2.3.1. Options for Oracle Forms Recognition Runtime Server Directory

Item	Description
New Oracle Forms Recognition RTS Group	Adds a new Oracle Forms Recognition RTS Group. From here, you can add machine groups that include one or more machine instances.
New Window from Here	Adds a new window to simultaneously view items such as statistics and the document window. This is a standard MMC option.
New Taskpad View	Adds a new Taskpad view, which is a customized view with shortcuts. This is a standard MMC function.
Export List	Exports list. This is a standard MMC function.
Help	Microsoft Management Console help. This is a standard MMC function.

Table 6-2: Toolbar Menu

6.2.3.2. Group Action Menu

Item	Description
New Machine	Adds a new machine from a list of Oracle Forms Recognition installations. From here, you can add one or more machine instances.
Start All	Starts processing all of the Runtime instances in the group.
Stop All	Stops processing all of the Runtime instances in the group.
Refresh	Same as calling Refresh on each machine level.
Delete	Deletes the group.
New Window from Here	Adds a new window from the group. You can set up multiple windows with different machines and instances.
New Taskpad View	Adds a new Taskpad view, which is a customized view with shortcuts. This is a standard MMC function.
Export List	Exports a list of machines as a text file. This is a standard MMC function.
Help	Microsoft Management Console help. This is a standard MMC function.

Table 6-3: Group Action Menu

6.2.3.3. Machine Action Menu

Item	Description
Start All	Starts all machine processes.
Stop All	Stops all machine processes.
Refresh	Refreshes display.
Delete	Deletes a machine.
License	Modifies or creates a license.
New RTS Instance	Adds a new Runtime Server instance.

View
   Choose Columns
   Large Icons
   Small Icons
   List
   Detail
   Customize
	Microsoft Windows view options for the view window.

New Window from Here	Adds a new window. You can set up multiple windows with different machines and instances.
New Taskpad View	Adds a new Taskpad view, a customized view with shortcuts.This is a standard MMC function.
Export List	Exports list of machines. This is a standard MMC function.
Help	Microsoft Management Console Help.This is a standard MMC function.

Table 6-4: Machine Action Menu

6.2.3.4. View Options

Item	Description
Choose Columns	Selects columns to make visible in a folder.
Large Icons	Displays large icons in the toolbars.
Small Icons	Displays small icons in the toolbars.
List	Views items as a list, sorted alphabetically without details.
Detail	Gives a view of items with details on file size, type, and when last modified.
Customize	Customizes the appearance of a folder.

Table 6-5: View Menu

6.2.3.5. The Scope Pane

The scope pane displays the console root, the Runtime Application folder, a group that contains one or more machines that run Oracle Forms Recognition Runtime Server instances on each machine, and a list of items that display monitoring options and control batch states. There are also options to operate and modify Oracle Forms Recognition Runtime Server.

6.2.4. The Favorites Tab

The Favorites tab is where you can place items that you may want to view again on each instance of Oracle Forms Recognition Runtime Server.

6.2.5. The Results Pane

The Results pane displays a batch window that you can access by clicking on an instance in the tree tab. This window includes information about each batch. The Results pane also displays each of the monitoring functions, including windows for statistics, document, classification, extraction, and performance when selected in the scope pane. Each monitoring function has options for viewing items related to that function. For more information on the displays for this window, see *Chapter 9*.

6.3   Adding Machine Groups

The flexibility of Oracle Forms Recognition Runtime Server enables you to add machine groups that include one or more machine instances. Machine instances contain Oracle Forms Recognition Runtime Server instances.

To add a machine:

1) Select the Oracle Forms Recognition Runtime Server folder. From the Action menu, select New Oracle Forms Recognition RTS Group or right-click on the machine group in the Navigation pane. Select New Oracle Forms Recognition RTS Group. The New Group dialog box appears.
2) Enter a name for the machine group. Click OK. The new group appears on the Tree.
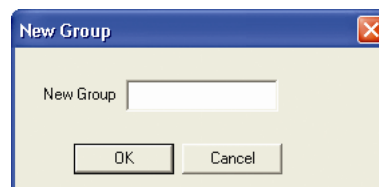
6.4   Adding Machines to a Group

Very Important! The Oracle Forms Recognition Service Manager must be started on the machine being added or the MMC will not connect to it.

After you set up a group, you need to add machines to that group. To add machines to a group:

1) Select the machine group and select Actions, machines.
2) Right-click on the machine group. Select New Machine. The Group Management dialog box appears. (*Figure 6-5*) It contains the names of all available Oracle Forms Recognition machines that are part of the Runtime Server domain and the group associated with the machine. You cannot add a machine that is being used in another group.
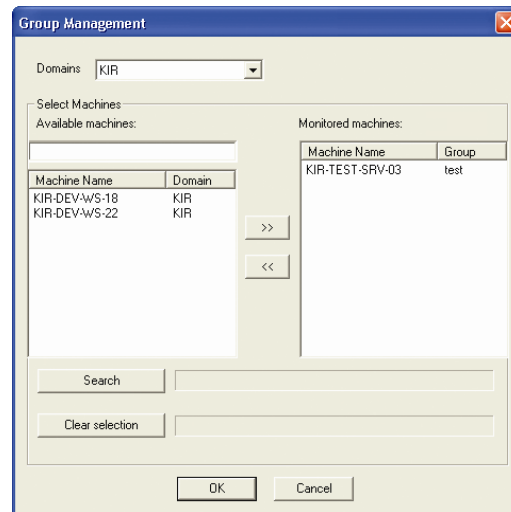
Figure 6-5: Group Management dialog box

3) Select a domain.
4) Type the machine name in the field provided. If you are configuring Runtime Server to run as a stand-alone system, enter "LocalHost" as the machine name.
5) Click OK. The new machine appears under the group name in the tree.

Avoid clicking the Refresh button on the Group Management dialog box. This starts a process that can take 30 minutes or more.

6.5 Working With Runtime Server Instances

Runtime Server instances include one or more batches. With Runtime Server, you can add, delete, or modify the characteristics of instances to customize a Runtime process. Each instance has Runtime Services, which are options for monitoring each step of the processing. The number of instances that you can run at one time depends on CPU utilization. If the CPU is running at 100 percent, any new instances will take longer to run than they would if the CPU was running at less than capacity.

6.5.1. Adding Instances to a Machine

In Oracle Forms Recognition Runtime Server, a list of instances appears under the machine name. You can add, modify, or delete instances to further customize the machine.

To add an instance to a machine:

1) On the main menu, click Action. Click New, and then select RTS Instance.
2) Enter a name for the new instance. Use a name that is logical and representative of the information being processed. Click OK. The new instance name appears under the selected machine name. The new instances appear in the Result Window.
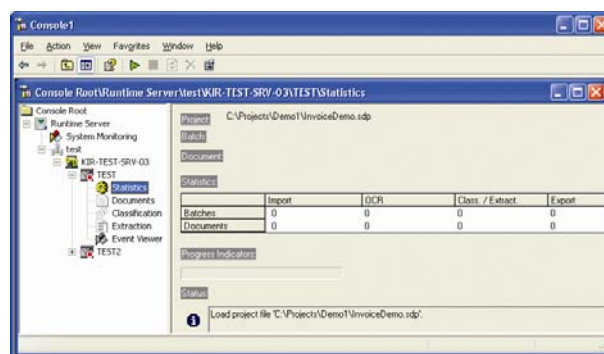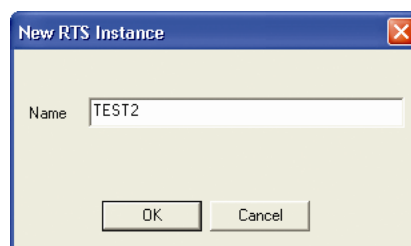
Figure 6-6: Runtime Server with Added Instances

6.5.2. Deleting Instances

To delete an instance from a machine:

1) Select the instance from the navigation pane.
2) Click Action, Delete
   or
   right-click on the desired instance to delete from the machine list. A shortcut menu appears. Click Delete. The instance disappears from that machine list.

6.5.3. Establishing Instance Settings

To modify settings from the remote administrator:

1) Select the instance from the navigation pane.

2) Click Action, Properties
   or
   right-click on the desired instance from the machine list. On the shortcut menu, click Properties. The Oracle Forms Recognition Runtime Server Properties dialog box appears. (*Figure 7-1*)

See *Chapter 7* for information on modifying, importing, and exporting instance settings.

Chapter 7   Configuring Oracle Forms Recognition Runtime Server

Configuring Oracle Forms Recognition Runtime Server enables you to generate new batches and to specify processing options for existing batches.

To configure Oracle Forms Recognition Runtime Server:

- On the Options menu, select Settings
  or
- On the toolbar, click the properties button:

This displays the Oracle Forms Recognition Runtime Server Properties.

7.1   General Settings

For general settings such as referenced directories and files and program control options, select the General tab.
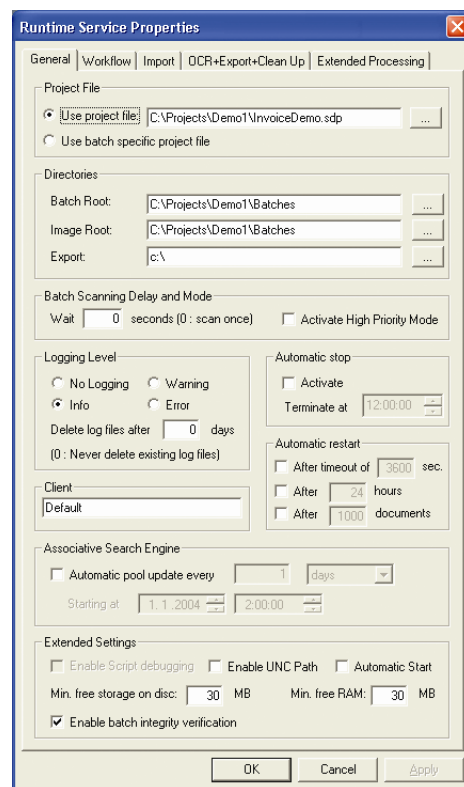
Figure 7-1: The General tab of RTS settings

Under Project File:

- Use project file: Lets you select path and file name of the Oracle Forms Recognition project that is used to process the documents. Select this option if Oracle Forms Recognition Runtime Server creates the batches or to import existing batches without project specification in the batch control file.
- Use batch specific project file: Uses the Oracle Forms Recognition project referenced in the batch control file. Select this option to import existing batches where the project is already specified in the batch control file.

Under Directories:

- Batch Root: This is the directory where the batch control file will be written to. Subdirectories for the Workdocs will be created there.
- Image Root: This is the directory where subdirectories with the scanned images will be created. As a rule, batch root and image root should be the same. In special cases such as security reasons, the image root can be different from the batch root. The image path can also be stored as an absolute path in the Workdoc. If so, the image root directory is ignored.
- Export: This is the directory used to export the results of the process. Exporting is normally script-controlled. The export directory is the standard path.

Under Batch Scanning Delay and Mode:

- Wait…: Oracle Forms Recognition Runtime Server constantly polls the batch root directory. This parameter specifies the seconds between two polling cycles. Use a defined polling interval for permanent operation. The value should not be too small to restrict the network load. To prepare batches for Oracle Forms Recognition Designer, scanning once is sufficient.
- Activate…: If this option is checked, the processing order is determined according to priority and then input state. Otherwise it is determined according to input state and then priority.

Under Logging Level:

- No Logging / Info / Warning / Error: Sets the scope of logging. The log file is created in the directory [Installation Directory]\ Oracle Forms Recognition\Log. A new log file is created daily. The naming convention is YYYYMMDD.log.
- Delete log files…: Sets the number of days after which log files are deleted automatically.

Under Automatic Stop:

- Activate: Shuts down the program automatically at a certain time, for example to allow backup processes at night. This option can be used in combination with an automatic start of the program via the Microsoft Windows task scheduler.
- Terminate at: Sets the time for automatic shutdown.
  The program will be blocked for a certain amount of time after the automatic shutdown. If the shutdown occurs during the first three quarters of an hour, you cannot activate the program within the same hour. If the shutdown occurs during the last quarter of an hour, you cannot activate the program within the same and the next hour.

Under Automatic Restart:

- After timeout…: In error situations, Oracle Forms Recognition Runtime Server can restart itself after a certain timeout. If the program gets stuck, it will mark the current document as processed with status invalid and restart automatically after the timeout you specify.
- After … hours: In this case, an automatic shutdown and restart occurs after the specified period of time in hours, regardless of whether an error has occurred. This option can be used to prevent error situations.

- After … documents: In this case, an automatic shutdown and restart occurs after a certain number of documents have been processed, regardless of whether an error occurred. This option can also be used to prevent error situations.

Under Client:

- Oracle Forms Recognition Designer may use global variables in scripts that affect document processing. For each variable, it is possible to use client-specific values. In this box, you can enter the client name that must match one of the client names used by Oracle Forms Recognition Designer. With the default entry, global variables do not vary by client

Under Extended Settings:

- Enable Script debugging: Some script options, for instance export over folders, can only be tested with Oracle Forms Recognition Runtime Server. This option enables script debugging with Oracle Forms Recognition Runtime Server (for expert users only.)
- Min. free storage / Min. free RAM: Stops processing when the limits have been reached. The system will remain idle until new resources are available.
- Automatic Start: Allows RTs to restart after a system reboot.
- Enable UNC Batch: Changes the UNC path of other machines connected to the main machine. This is useful when you run a project on an MMC machine with a server at a different location. Instead of pointing to the machine's own C Drive, it would point to the C Drive on the MMC machine running the project.
- Enable batch integrity verification

7.2   Workflow Settings

To specify the steps that should be carried out when processing documents, select the Workflow tab.
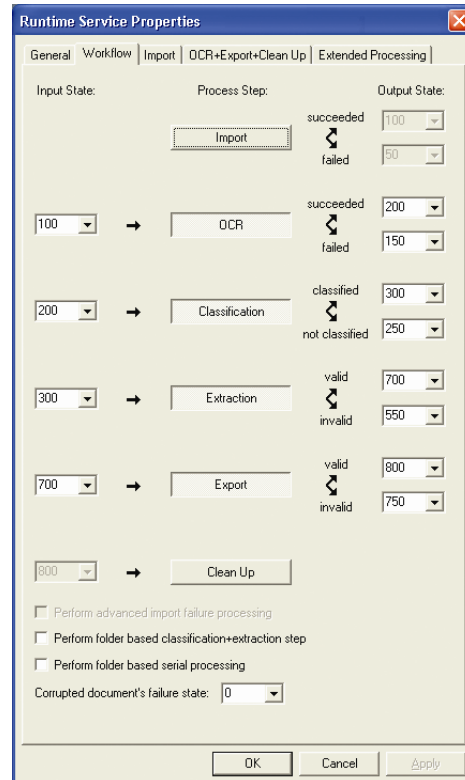
Figure 7-2: The Workflow tab of RTS settings

Process Step:

Lets you select the steps that should be done.
A step is enabled if the corresponding button appears pressed; it is disabled if the corresponding button does not appear to be pressed. Only enabled steps will be carried out by this instance of Oracle Forms Recognition Runtime Server. To switch selection, just click on the buttons.

For example, you can prepare batches for Oracle Forms Recognition Designer by activating the Import and the OCR step. Or you can process batches from Capture by activating all steps but Import.

Input State / Output State:

Oracle Forms Recognition Runtime Server polls the batch root directory. It processes batches from this directory only if their processing state corresponds to one of the defined input states.

When a processing step is finished, the batch assumes the corresponding defined output state. For some steps, there are two output states that indicate success or failure.

If the batch status indicates a failure, the batch will normally be handed to Oracle Forms Recognition Verifier, where the error is corrected. When the batch is verified, it again changes its status value to a valid input state for Oracle Forms Recognition Runtime Server, which will then resume

processing. Runtime Server displays the last 10 error messages in a table that includes the time that the error message appeared.

The status of the batch is calculated from the status of the folders. The status of the folders is in turn calculated from the status of the documents. On the batch level, steps succeed only if they were successful for all documents in the batch.

Use input and output states to control the flow of batches through the system. For successful steps, define output states with matching input states to ensure further processing. For failed steps, define output states that make sure that the system stops processing these batches. For instance, it doesn't make sense to perform the extraction if the classification failed.

For imported batches, make sure that their output state matches the input state of the next processing step.

You can use any integer between 0 and 999 for input and output states.

Type the values into the appropriate boxes.

Perform folder-based classification & extraction step:

A folder is a structure within a batch that can be used for documents that are related to each other. For example, several TIFF images may be stored as multiple files, but actually belong to the same document.

Select this option to control batch classification and extraction processing using folders instead of batches. This affects the interrupting options.
   This option must be checked as prerequisite for multipage detection. With multipage detection, classification and extraction must be performed together. See the *Oracle Forms Recognition Designer User's Guide* for more about multipage detection.

Perform folder- based serial processing:

Select this option to control serial processing using folders instead of batches. This affects the interrupting options.

Corrupted document's failure state:

This is a special output state indicating that processing failed because of an unexpected error, probably a damaged document. In this case, the document's status, and therefore the status of the corresponding batch, is reset to 0.

7.3   Import Settings

If you are creating batches within Oracle Forms Recognition Runtime Server, this happens during the import step. In this case, you need to define how and when your documents are to be organized in batches. Import settings are ignored if the batches have been prepared by an external program such as Oracle Document Capture or Oracle Distributed Document Capture.

To specify the import options for images, select the Import tab.
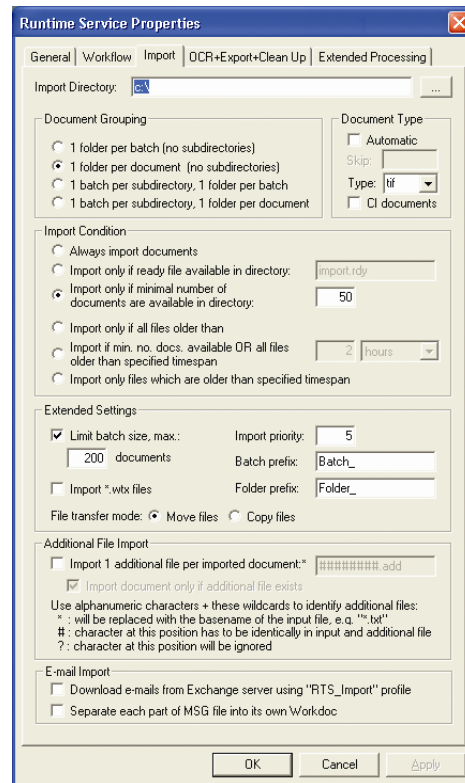
Figure 7-3: The Import tab of RTS settings

Import Directory:

- Select the directory where your images or files are stored.

Under Document Type:

- Type: Select or type the file name extension for the documents you want to process. Supported file types include *.tif, *.doc, *.msg. Others may work, but require individual testing.
- Skip: Defines a system extension which will not be imported, for example, sys. The "add" and "rdy" extensions are always considered as system extensions and ignored.

Notes for Automatic Documents Importing feature

When the "Automatic" check-box is activated, the Import workflow step is going to start importing all available documents distinguishing between "image" and "CI document" type automatically via internal predefined list of document extensions.

During the automatic importing of different documents, it is also possible to ignore one specific user-define document type, considering it as "system", i.e. as a document that is not supposed to be imported as a part of processed Workdoc. This extension to ignore can be specified in "Skip" edit box of the "Document Type" group box. Example: "sys". In the connection, the following two extensions are considered as "system" always: "add" and "rdy".

When importing image files into Oracle Forms Recognition, the system can automatically convert the imported image documents into one of 39 currently supported image formats. If the imported document is a multipage document, the system automatically splits the image pages into separate files in case the desired image format does not support multiple pages or combines them in one single image file. (See also Designer User Guide section 4.8.2.9 "Automatic Conversion of Documents during Import Phase")

Under Document Grouping:

Set the options for creating batches and folder from files and subdirectories within the import directory.

- 1 folder per batch (no subdirectories): You can select this option if your import directory contains no subdirectories. A single batch with a single folder will be created from all the documents in the import directory. Additional batches will only be generated if the number of documents within a batch is restricted (see below.)
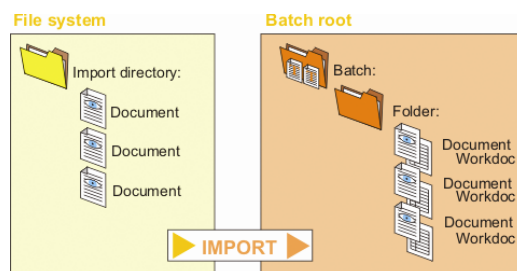

Figure 7-4: One folder per batch

- 1 folder per document (no subdirectories): You can select this option if your import directory contains no subdirectories. A single batch will be created from the documents. Within the batch, a folder will be created for each document. You cannot use multipage detection if you select this feature.

Figure 7-5: One folder per document

- 1 batch per subdirectory, 1 folder per batch: You can select this option if your import directory contains subdirectories. A separate batch will be created for each subdirectory. Each batch will contain a single folder.

Figure 7-6:One batch per subdirectory, one folder per batch

- 1 batch per subdirectory, 1 folder per document: You can select this option if your import directory contains subdirectories. A separate batch will be created for each subdirectory. Within a batch, a separate folder will be created for each document. You cannot use multipage detection if you select this feature.
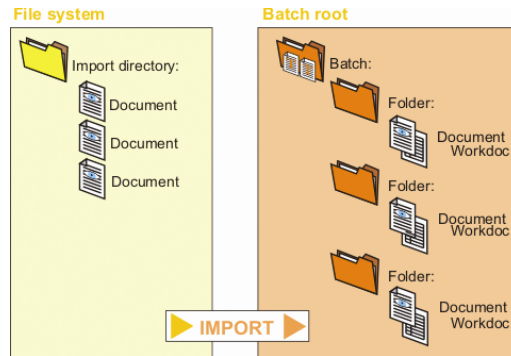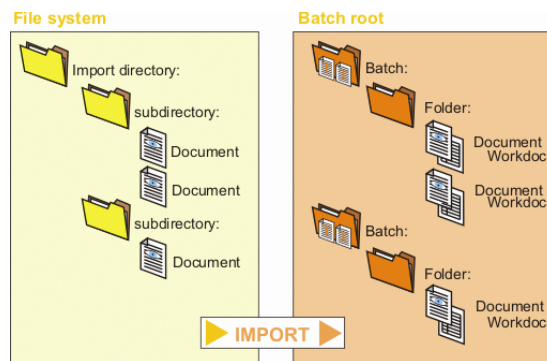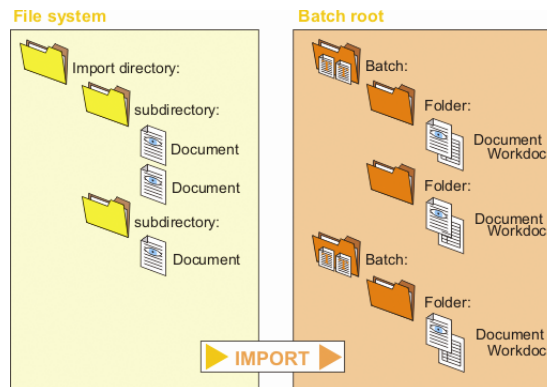

Figure 7-7: One batch per subdirectory, one folder per document

Under Import Condition:

Set the conditions that start the import and thus trigger the generation of batches. Set the file transfer mode (see below) accordingly.

- Always import documents: The import starts continuously.
- Import only if ready file…: The import directory is monitored for the presence of a trigger file called import.rdy, which may be located in a directory or subdirectory.
  The import.rdy file is created by an external system at the end of data transfer to the shared directory. Runtime Server regularly scans the import.rdy file. If Runtime Server finds the *.rdy file, it deletes it and then imports data for OCR, classifying, extracting, and exporting. Use this option when you want to import files from external systems.
- Import only if minimal number…: The import starts if the import directory including subdirectories contains a minimum number of documents. This is useful to pool the output of a fax or mail server.
- Import only if all files older…: The import starts if all files in the import directory including subdirectories are older than the specified period. If you use this option and move documents from the import to the batch root directory, the import starts at regular intervals.
- Import if min. no. docs OR…: Combines the previous options.

Under Further Settings:

- Limit batch size: Creates a new batch after the specified number of documents. This option is important if you want to have large batches in scanning to minimize operation costs but small batches in processing to optimize load balancing. Choose this option if you have large input directories and want to create small batches that can be distributed better.
- Import priority: Sets the batch priority and thus the processing order. Enter an integer between 0 (very low priority) and 9 (very high priority.) The default value is 5.
- Batch prefix: Sets a prefix for the batch name that will be complemented by a serial number. The batch name is visible in Oracle Forms Recognition Runtime Server and Oracle Forms Recognition Designer.
- Folder prefix: Sets a prefix for the folder name that will be complemented by a serial number. The folder name is visible in Oracle Forms Recognition Designer.
- File transfer mode: Specifies whether documents will be copied from the import directory to the batch root directory, or moved. If you copy documents, there will always be input in the import directory. This can cause continuous batch generation unless the files are removed by another process.

Under Additional File Import:

Used alone or in conjunction with Import only if ready file… to check for additional associated files.

- Import 1 Additional File…: This method checks for additional files that might be associated with documents and makes sure that you import only the desired associated files. Additional files could be faxes and associated header files. There must be a well-defined relationship between the file name of the image and the name of the associated file. To express this relationship, use literal characters, the * as a

wildcard character that represents the base name without the extension, and the special characters # and ?.

```
Example 1:
You are processing e-mails that are written to the file system using the
file name <subject>.msg. Some of these e-mails contain a Word document
as attachment which is saved separately, but in the same directory. The
e-mail and attachment have the same file name, but the Word document is
saved as <subject>.doc. In this case, enter the expression *.doc.
        e-mail:              Final.msg
        Attachment:          Final.doc
        Additional File name:       *.doc

Example 2:
You are processing e-mails that are written to the file system using the
file name <subject>.msg. Some e-mails contain attachments. The
attachment's file name is constructed using the following naming
convention: <first 8 characters of the subject>_att.doc. In this case,
enter the expression ########_att.doc.
        e-mail:          Department.msg
        Attachment:          Departme_att.doc
        Additional File Name:         ########_att.doc
```

If this option is used with the Import only if ready file…: option, Oracle Forms Recognition Runtime Server will delete the *.rdy file first. Then it will check for additional files and will import them.
Though most often used with a *.rdy file, you can also use this option independently, even if there are no additional files.

- Import Document Only…: Check this option if a missing additional file indicates that there is something wrong. For instance, if you are processing faxes, there should be a header file for each fax. Use this feature in conjunction with Additional File Import.

Note: If you use this option in conjunction with the import condition "Import only when ready file available in directory," and at the time of import, no imports occur, the *.rdy file will be deleted.

Note: Only TIFFS with additional files present will be imported. Any extra TIFF files not associated with additional files will remain in the directory. In any case, the *.rdy will be deleted even if no files had been imported.

Under E-mail import:

- Download e-mails from Exchange server using "RTS_Import" profile. The Runtime Server host instance attempts to download e-mails from the Exchange server to the "Import" folder using the MAPI profile called "RTS_Import" (this name is predefined and cannot be changed). Only the "Inbox" (default message) folder is processed.
  After a message is successfully downloaded, it should be moved to the "Deleted Items" folder on the Exchange server. If an error occurs, the message is moved to the "_Bad_Mail" folder on the Exchange server.
- Separate each part of MSG file into its own Workdoc.
  By default the message and its attachments of each downloaded e-mail are extracted but put into a single multi-file document (i.e. a Workdoc).
  If the option is checked, the system splits the message file and its attachments into individual Workdocs. Afterwards each item is processed independently by the system.
  The separation of the MSG file into the message and its attachments can be applied either during the downloading of e-mails (if download is

enabled) or directly in "Import" folder before the Import step starts. In other words, if a customer prefers to process already downloaded MSG files, it is still possible to take the advantage of the "Separate each part of MSG file into it's own Workdoc" feature.
To import both message files and all the attachments, enable "Automatic" option in the "Document Type" group box.

General Notes for E-mail Importing feature:

- For exact instructions as to how the environment for e-mails importing is supposed to be configured please refer to the Oracle Forms Recognition Installation Guide document.
- The main properties of the processed e-mail document can be retrieved from the Workdoc interface in Oracle Forms Recognition custom script via "ISCBCdrEmailProperties". The currently supported properties are: E-mail subject, List of e-mail senders, List of e-mail recipients, List of carbon copy recipients, Date and time the e-mail was sent at, Date and time the e-mail was received at, Priority the e-mail was sent with and Unique message identifier. For information regarding usage of these properties and interface please refer to the Oracle Forms Recognition Scripting Guide document.
- The "PreImport" event is fired for every part of e-mail and one more time if "additional file" is going to be imported.
- In case the custom script returns "CancelImport", it is considered as failure for the first (MSG) file, but ignored for subsequent parts. In both cases warning message is logged.
- The "PostImport" event is fired once per Workdoc after all parts have been successfully imported.
- Attachments are always processed like "Automatic" extension.
- Actual grouping (like "one Folder per Batch" or one "Folder per document" remains valid.
- In order to import MSG files, in group box "Document type" should be either "*.msg" (to process MSG files only ignoring attached files) extension selected or "Automatic" check box activated.
- After separation, the attachments are removed from the downloaded / original MSG file.
- For testing purposes moving of the downloaded images to the "Deleted Items" directory can be switched off via a special Windows Registry setting. When required, this setting has to be created manually in the "HKEY_LOCAL_MACHINE \ Software \ Oracle \ Services" key as "DWORD" variable "LeaveDownloadedMessagesInInbox". Set this variable to "1" if you would like to keep your messages in Inbox in order to download the same set of documents on each next Runtime Server import iteration.

7.4   OCR Settings

In general, OCR settings are defined in the Oracle Forms Recognition Designer project. You can override some OCR options from within Oracle Forms Recognition Runtime Server.

To change OCR settings, select the OCR+Export+Clean Up tab. The OCR group is located at the top.
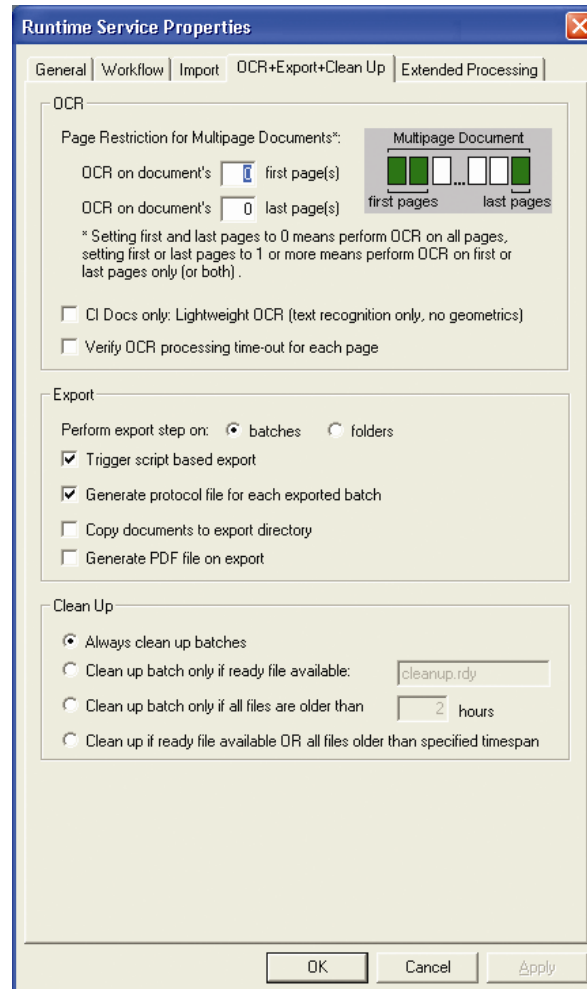

Figure 7-8: The OCR + Export + Clean Up tab of RTS settings

Page Restrictions…:

- With Oracle Forms Recognition, by default, a full page OCR is done during the first processing step for all document pages. You can restrict the initial OCR to specified pages. If additional OCR results are required later, the recognition is performed on demand during the classification and extraction steps. On demand means that each processing step requires certain regions in a document to be recognized. The OCR results are stored in the Workdoc.
  To specify a range for the initial OCR, enter numbers into the corresponding text boxes. The default value is 0 in either case, meaning that OCR is done for all pages.
- Verify OCR processing time-out for each page:
  This option can be used in case there are documents with huge amount of pages (e.g., over 50). If this option is activated the system is going to apply the so-called "time-out" check after processing of each

next page to OCR (see description of "After timeout…" option in the section *7.1* "General Settings" above). The point is in case this setting is not set and a 50-pages document is being processed with, e.g., 30 minutes timeout setting, the system may not be on time to process all 50 pages within 30 minutes and therefore the whole document will be considered as hanging causing useless loss of OCR results for such a document.

7.5   Export Settings

In general, export settings are defined in the Oracle Forms Recognition Designer project using script programming. Some export options can only be set from within Oracle Forms Recognition Runtime Server.

To change the export settings, select the OCR+Export+Clean Up tab. The Export group is located in the centre.

- Perform export step…: A folder is a structure within a batch that can be used for documents that have a relationship with each other. For instance, several TIFF images may be stored as multiple files, but actually belong to the same document. Select one of these options to export every time a folder is processed or to export every time a batch is processed.
- Trigger script based export: Use this option to switch export scripts on or off. This is useful for test purposes.
- Generate protocol file for each exported batch: Generates a separate log file each time a batch is exported.
- Copy documents to export directory: Copies the processed documents from the base directory to the image root directory.
- Generate PDF files…: Select this option if you want to create PDF documents from your images and associated Workdoc. You keep the original layout and you can use the OCR results for full-text search within the PDF documents. The Workdoc is not visible.

7.6   Clean Up Settings

Clean up means automatic removal of batch files from the batch root directory if they are no longer required.

To change the clean up settings, select the OCR+Export+Clean Up tab. The Clean Up group is located at the bottom.

- Always clean up batches: Removes batch files once the batch's last output state is reached.
- Clean up batch only if ready file available: The batch root directory is monitored for the presence of a trigger file. Clean up starts if the file is found. You can use this option to trigger the clean up from external systems.
- Clean up batch only if all files are older than…: The clean up starts if all files in the batch root directory including subdirectories are older than the specified period. If you use this option and move documents from the import to the batch root directory, the clean up starts at regular intervals.
- Clean up if ready file available OR… : Combines the previous options.

7.7   Extended Processing Settings

If you use information from external files such as databases to process your batches and you need to update these files from time to time, or if you want to synchronize Oracle Forms Recognition Designer project files with Oracle Forms Recognition Verifier, select the Extended Processing tab. With extended processing, you can update an arbitrary number of target files with the information from the source files.
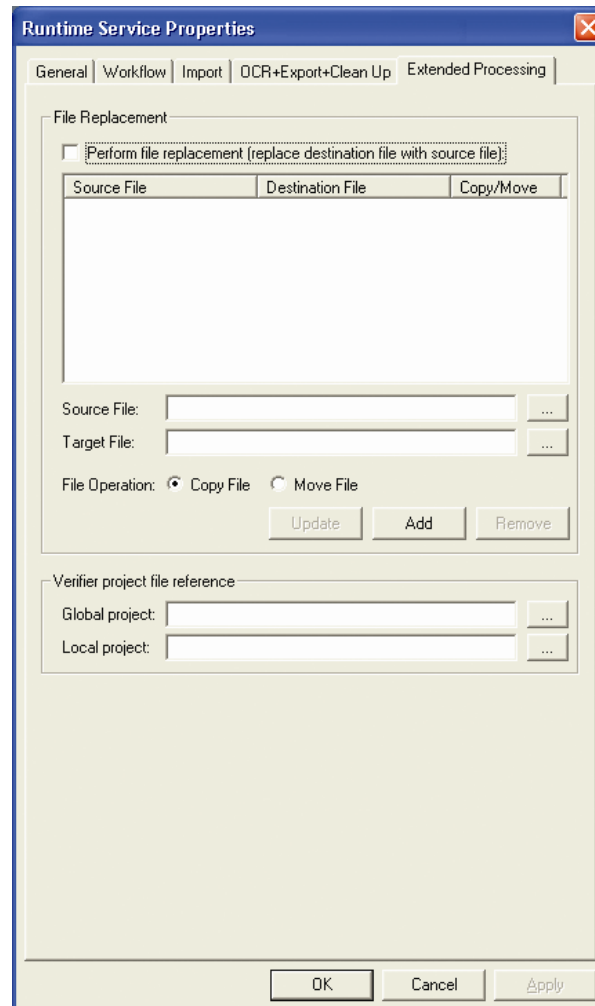

Figure 7-9: The Extended Processing tab of RTS settings

7.7.1.   File Replacement Options

- Perform file replacement:
  Select this option to replace the target file with the source file. Clear this option if you only want to generate the target file if it does not yet exist.
- Source File:
  Select the file that contains up-to-date information.
- Target File:
  Select the file that is to be updated with information from the source file.
- File Operation:
  Select whether you want to copy or to move the source file to the target file.

- Add:
  Click this button to add a pair of source and target files to the list box.
- Remove:
  Click this button to remove the selected entry from the list box.
- Update:
  Click this button to perform the update for the selected entry in the list box.

7.7.2. Verifier Project Reference Options

There are two file paths to be set: Global Project and Local Project.

These options are useful for two purposes:

- For Standard Verifiers referencing projects across mapped network drives, these options enable the system to substitute local mapping for the network mapping. Working with a local copy of the global project speeds up processing time by circumventing potential network bottlenecks.
- For Advanced Verifiers, these paths are references to the local and global projects for the Supervised Learning Workflow. These options enable Advanced Verifiers to use different global projects with a local project. This is the most common use for these options. Usually, these options are used when you need to use different project files with similar Verifier/RTS configurations. For example, consider a project that uses one Import RTS instance to process U.S. invoices and another Import RTS instance to process German invoices, which have distinct formats for dates. Although the project imports all American and German invoices to the same batch root, one Import RTS instance looks to a project settings file called US.sdp to validate and extract U.S. dates, and the other instance looks to another file, DE.sdp, to validate and extract German dates.

The folders supplied for these paths may not exist when the RTS Import instance is working; they are created when the system writes this information into the batch structure in the *.sdp file during batch creation. If Use Batch Specific Project File is enabled in the Verifier settings, the system automatically loads either the U.S. or German project settings file, depending on the location of the imported documents' source.

7.7.3. Automatic Start of Specific Runtime Server Instances at Desired Time

7.7.3.1. Description

As a logical extension to the previously available "Terminate at" option of the Runtime Server instances' configuration, Oracle Forms Recognition

provides a pair option "Start at" that allows starting specific Runtime Server host instances at desired time.

The screenshot below shows the Runtime Server configuration for a host instance that is to be started every day at 11:00 PM and then terminated at 2:00 AM:
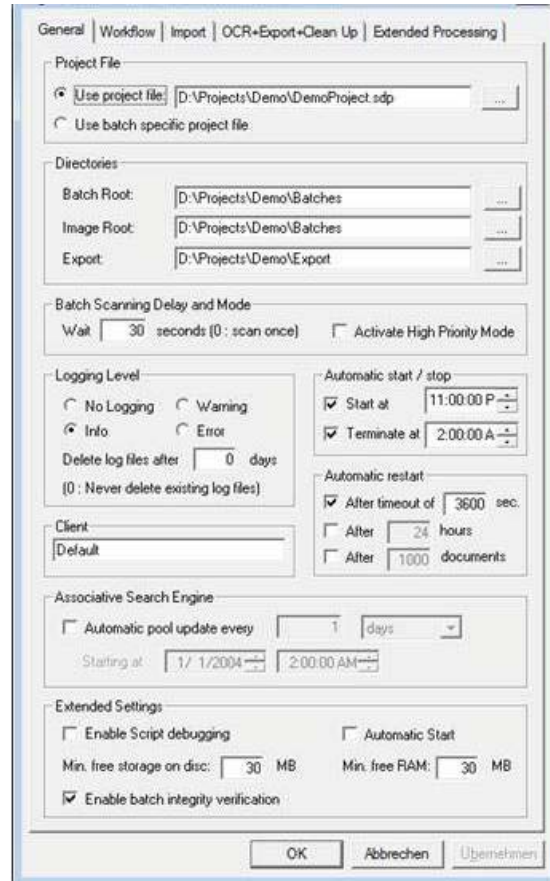
7.7.3.2. Usage

This feature can be used to configure specific Runtime Server processes to be started at certain time of the day, for example, when the overall system's workload is not that high, e.g. at night time.

7.8   Prepare an instance for "Page Separation" Feature

To configure a RTS instance for automatic document separation, we have to insert the ADS project (*see Designer User Guide Section 6.9.4 Project Properties for Page Separation*) as a project file in general tab of the RTS instance properties.

Also, the batch root folder that contains the single page documents for merging has to be referenced.

7.8.1. Batch Properties

To create a batch for the "page separation" feature, configure a RTS instance for Import and OCR.

- The documents to import must consist of single-sided documents.
- The import creates batches with one folder per document.
- The workflow states should be different to the default workflow states. Otherwise, there will be conflicts with the other instances using RTS that have their own state numbers.

7.8.2. Workflow for ADS

The most important setting for ADS is the checkbox for "Folder-based processing with automatic Document Separation", which is found on the "workflow" tab of the instance settings just below the "Workflow Step Definitions". This option has to be checked.

Configure the classification and the extraction step (No other step must be activated).

Pay particular attention to the incoming and outgoing states. These state numbers must be completely different to those of the other instances. Both failed outgoing states for each workflow step have to be set a special state allocated for "manual validation of page separation required" case. In this connection, the real classification applied via Page Separation project is supposed to be always successful as all documents will be classified to the base class, which is defined as default result class (*see Designer User Guide Section 6.9.4 Project Properties for Page Separation*). Extraction will also be successful, in case Page Separation engine makes a secure split / merge decision, as well as unsuccessful, in case the decision is for any reason unsure, i.e. below the defined Threshold value.

Close the settings by clicking the OK button. Now we are able to run the "Automatic Document Separator" instance.

7.8.3. Run of the ADS Instance

The first run of the ADS instance can take a while. There are two main reasons for this:

- Before the document separation can start, the ADS learnset has to be generated. The documents in the prepared ADS learnset folder (*see Designer User Guide Section 6.9.2 Page Separation Learnset*) must be parsed and the learnset information must be stored in the files: "Ads.dsf", "Ads.ptb", and "LearnTemp.ptb", which will be created in the ADS learnset folder. This task is executed only once before first-time processing, when no learnset information exists.
- The processing is folder based. This means that all documents of the batch are loaded to memory before processing starts.

After the automatic page separation followed by the manual validation of its results in Oracle Forms Recognition Verifier has been finished for the next batch and goes to "page separation succeeded" state (e.g., 240 in the example above), the system is now ready for applying of next workflow steps like classification, extraction, validation, export and so on. These workflow steps have to start from the "succeeded page separation" state as the input one.

Chapter 8   Processing Batches

8.1   Starting the Process

Once Oracle Forms Recognition Runtime Server is configured, you can start processing batches.

To start processing do one of the following:

- From the Action menu, select Start All.
- In the toolbar, click button with the green arrow.
- Right-click on the desired instance. On the shortcut menu, click Start.

8.2   Stopping the Process

To stop processing, do one of the following:

- On the Control menu, click Stop.
- In the toolbar, click the button with the red square.
- Right-click on the desired instance. On the shortcut menu, click Stop.

8.3   Refreshing

You can refresh groups when processing:

1) Select the group name in the scope pane.
2) Right-click on the name.
3) On the shortcut menu, select Refresh.
   or
   Select Action, Refresh from the menu. This selection refreshes all machines by deleting them and re-adding the connections.

8.4   Script Debugging

If script debugging was enabled for the project (Section *7.1*) you can debug script from Oracle Forms Recognition Runtime Server. When a script fails while processing, you will be given the option of debugging the script in RTS. If you choose to debug the script in RTS, a script window will open in which you can modify the code.

8.5   The Batch View

Figure 8-1: The Batch view

The Batch view displays a list view of all batches with the following information:

- Batch ID
- Batch state

- Batch priority
- Batch name (optional)
- Total number of folders in the batch
- Total number of documents in the batch
- Client (the owner of the license)
- Last User (Name of the operator who previously processed the batch)
- Last module (name of the application that previously processed the batch)
- Locked. Yes indicates that the batch is locked because it is currently being accessed by another instance of Oracle Forms Recognition Runtime Server or by an instance of Oracle Forms Recognition Verifier.

The column size of the Batch List view is now held in local Windows Registry. If you change the size of a column, close and then open Runtime Server, the column sizes show the last changes.

If processing is stopped, you can right-click on any entry in the list view.
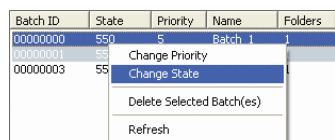
Figure 8-2: Batch list shortcut menu

A context menu with the following commands appears:

- Change Priority: You can manually enter a new priority for the selected batch. When you select Change Priority, a Change Batch Settings dialog box appears. Enter a different priority in this box, then press OK.
- Change State: You can manually enter a new state for the selected batch.
- Delete Selected Batches: You can delete the selected batch, including the batch control file, the fast info file, and the documents in the subdirectory. If there is a separate image root directory, the images will not be deleted.
- Refresh: Updates the entire list view with new batch information.

Double-click on a batch list item to change the priority and state. The Batch Properties dialog box appears.
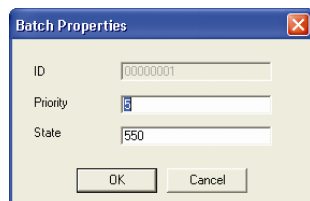

Figure 8-3: Batch Properties dialog box

Chapter 9   Monitoring the Process

9.1   With Oracle Forms Recognition Runtime Server

The View window of the Oracle Forms Recognition Runtime Server MMC snap-in contains several windows that display information about the current processing state. This window enables administrators to monitor local and remote Oracle Forms Recognition machines.

9.1.1.   The Statistics View

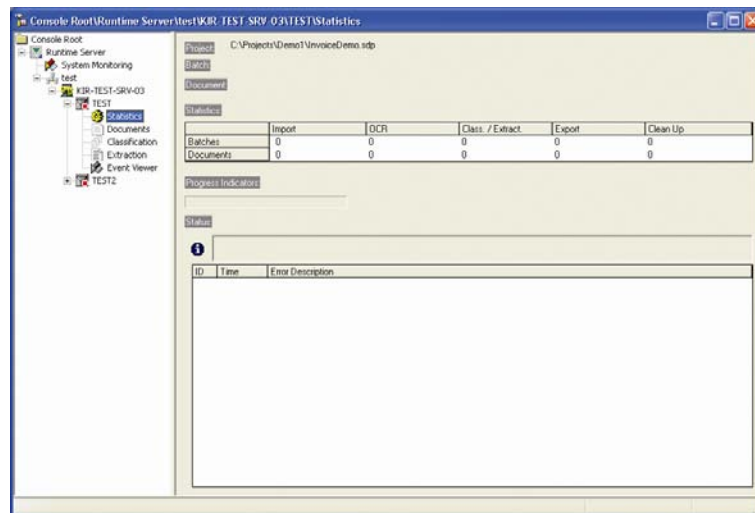To access the Statistics View, click on Statistics in the Navigation pane.

Figure 9-1: Statistics View

The Statistics View displays the following information:

- Project: The path to the currently used project file.
- Batch: For the currently processed batch, the name, the ID, the serial number, and the total number of batches in the batch root directory.
- Document: The path to the Workdoc of the currently processed document.
- Statistics: Progress since the last time the program was started.
- Under Status:
  - Informative messages
  - Error messages
- Reset: Counts the statistics from zero, starting with the next statistics change. To reset the counts, right-click on the Statistics node in the scope pane. Select Reset.

9.1.2.   The Document View

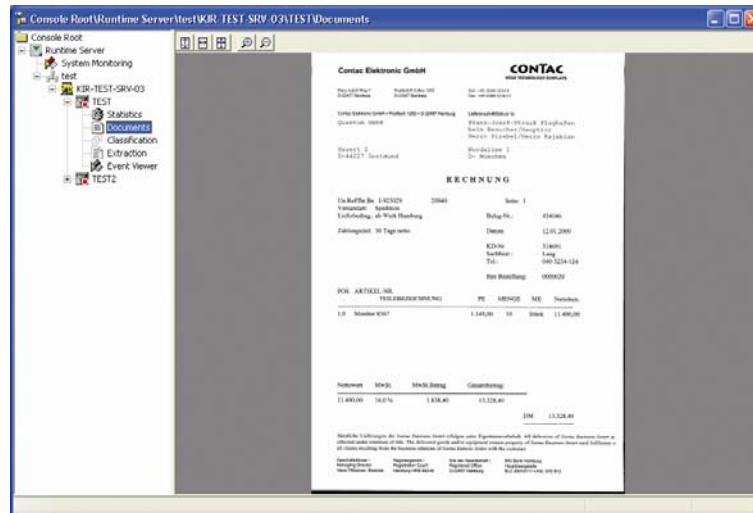To access the Document View, click on Document in the Navigation pane.

Figure 9-2: Document View

The Document View displays the first page of the currently processed document. Options for viewing the document appear in a toolbar above the document.

Button	Description	Keyboard Shortcut
	Adjusts the document display to the height of the viewer window.	n/a
	Adjusts the document display to the width of the viewer window.	n/a
	Adjusts the document display to the height or the width of the viewer window so that the entire page is displayed.	n/a
	Zooms in.	+
	Zooms out.	-

Table 9-1: Buttons available in Document View.

9.1.3.   The Classification View

To access the Classification View, click on Classification in the Navigation pane.
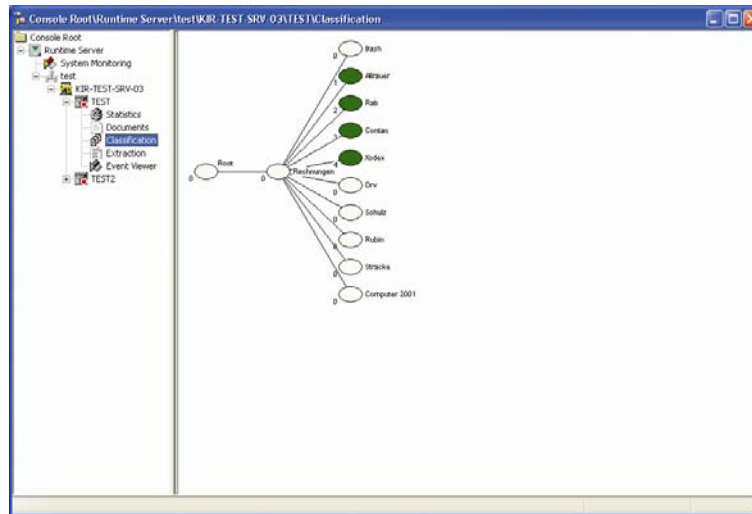

Figure 9-3: Classification View

The Classification view displays the first page of the currently processed document with a continuously updated tree view of classification results, or just the updated tree view of classification results. Double-click on a class to collapse or expand its subtree. Right-click on the classification tree to view the document or toggle off the document view.

9.1.4.   The Extraction View

To access the Extraction View, click on Extraction in the Navigation pane.

Figure 9-4: Extraction View

The Extraction View displays the first page of the currently processed document with a continuously updated list view of extraction results. On the document, valid fields are highlighted in green and invalid fields are highlighted in red. Point to the highlighted area to display the field name. Right-click on the extraction window to view the document.

9.2   Event Viewer

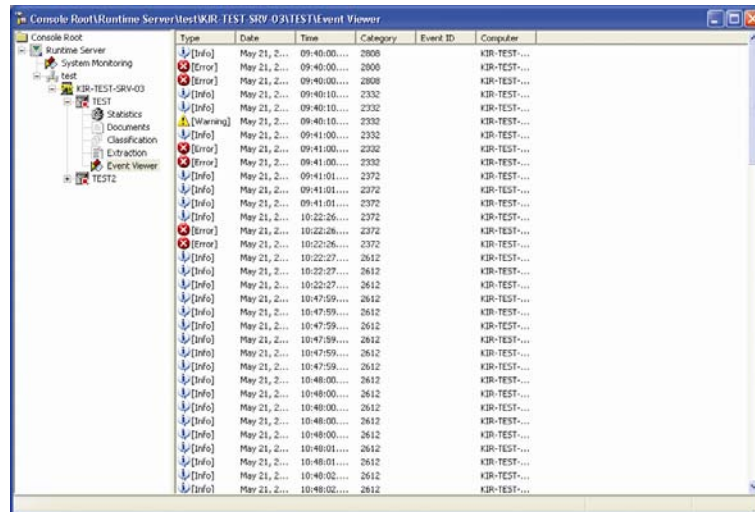To access the Event Viewer, click on Event Viewer in the Navigation pane.

Figure 9-5: EventViewer

Using the event logs in the RTS Event Viewer you can gather information about RTS errors, warnings, and successful processes.

The Event Log starts automatically when you start an RTS instance. Events are separated into pages. To move from one page of events to another, use the black errors on the toolbar

9.2.1.   The Event Log

Information about RTS events is stored in a log file at [Application directory]\Log\Log.txt.
For example:
C:\Program Files\Oracle\Forms Recognition\Log\Log.txt

This event log records three types of events:

- 🛇 Error
- ⚠ Warning
- ⓘ Information.

An error is a significant problem, such as loss of functionality.

 A warning is an event that is not necessarily significant, but that may indicate a possible future problem.

An info is an event that describes the successful completion of a major processing step that would otherwise have an adverse affect on the system.

9.2.2. Monitoring Event Properties

Each event includes a description that you can use for troubleshooting or for gathering information.
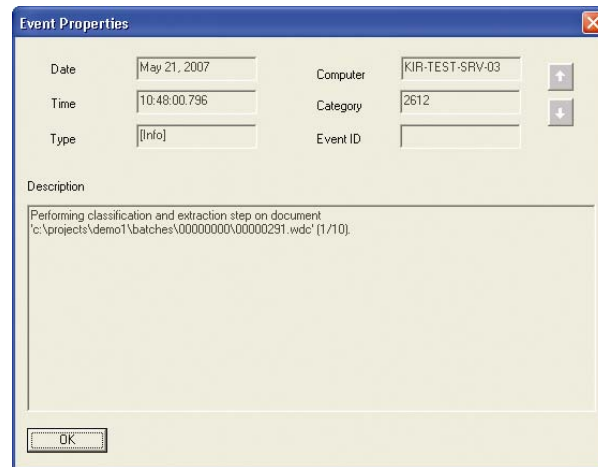
To view event properties, double-click an event.

Figure 9-6: Event Properties

The Event Properties dialog box describes the event. This description is taken from the log file.

9.3   Centralized Remote System Monitoring

Oracle Forms Recognition Runtime Server can cumulatively monitor all critical events in a distributed Runtime Server environment. Errors, warnings and informational messages can be stored; filtered by date and type; and e-mails can be sent automatically to notify an administrator of critical events.

9.3.1. Configuring System Monitoring without E-mail Notification

Below are the steps required to start System Monitoring without e-mail notification.

Launch the Computer Management MMC from the Administrative Tools program group on the Oracle Forms Recognition server. To do this:

1) Click the Start button at the bottom of your screen, select Settings, and select Control Panel. Double-click on Administrative Tools and select Computer Management.
2) Double-click on the Services and Applications node to expand it.
3) Select the Services sub-node.
4) Click the Standard tab at the bottom of the window.
5) In the scope pane, right-click the Oracle Forms Recognition System Monitoring service and select Start.

The Oracle Forms Recognition System Monitoring service running on a specific workstation can only those Runtime Server machines that were configured from that workstation via the Runtime Server administration console.

The Oracle Forms Recognition System Monitoring service has to be restarted after the RTS machines have been reconfigured in the MMC console; for example, after adding of a new remote RTS service.

9.3.2. Configuring System Monitoring with E-mail Notification

To configure the Oracle Forms Recognition System Monitoring service to perform automatic e-mail notification, its registry settings must be configured:

1) Open "Runtime Server Monitor Configuration.reg" Registry file located in "\Forms Recognition" folder using Windows Notepad.
2) Modify the e-mail parameters as desired and then run the Registry file with regedit.exe or regedt.exe utility (see table below for more details regarding available parameters).
3) Restart the "Oracle Forms Recognition System Monitoring" NT service (see section *9.3.1*).

Note: the service does not send e-mail messages immediately upon receipt but collects them into a messages group. The next group of messages is sent as a single e-mail periodically. If the group does not contain any messages nothing is sent. The default e-mail notification frequency of 5 minutes can be changed by editing the "Email_Everymin" parameter.

```
Example:

"Email_Everymin"=dword:00000005

"Email_Recipient"="alexey@esterkin.com;administrator@johnsmithcompany.com"

"Email_SenderAddress"="administrator@johnsmithcompany.com"

"Email_SendUsing"="Pickup"

"Email_SMTPServer"="smtp.johnsmithcompany.com"

"Email_UserName"="SysMon"

"Email_UserPassword"="smpassword"
```

Name	Description
Email_Everymin	Defines how often (in minutes) the e-mail notification service will check for messages and send them if any are available.
Email_Recipient	Semi-colon separated list of system administrators to receive the e-mail notifications.
Email_SenderAddress	Valid e-mail address to send the notifications from.
Email_SendUsing	"Pickup" value means that the e-mails are to be sent via the local SMTP service. If this is the case the rest of configuration parameters below can be ignored as everything has to be configured via Windows SMTP service settings. "Port" means that the e-mails are to be sent via a direct connection to a remote SMTP server. Below are the additional parameters for "send using port" method only.
Email_SMTPServer	SMTP server (or "smart host" server).
Email_UserName	User name for Email_SenderAddress's account.
Email_UserPassword	User password for Email_SenderAddress's account.

Table 9-2: Setting Email notification for system monitoring

9.3.3. Configuring System Monitoring with E-mail Notification

The System Monitoring view can be activated via mouse click on "System Monitoring" item available in "Runtime Server Administration" node.
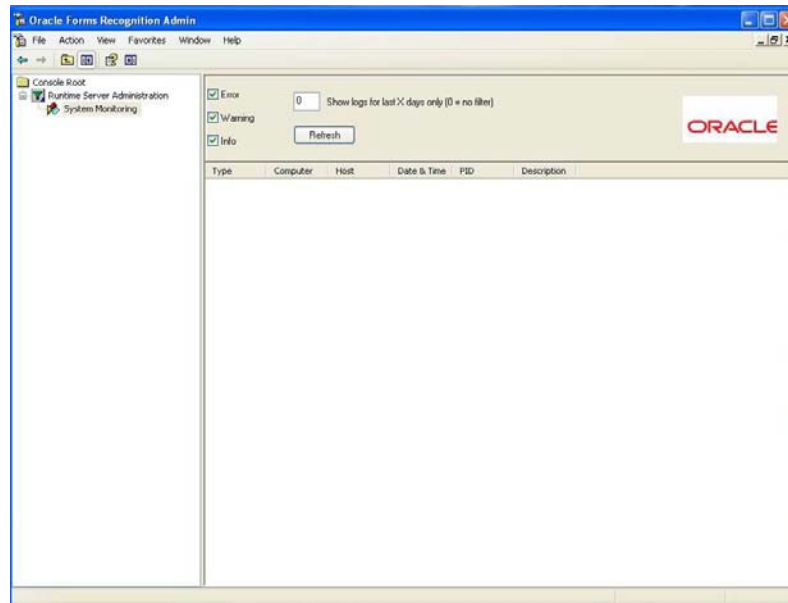
Figure 7: System Monitoring view.

In order to refresh the view to see the latest download message the user should click on "Refresh" button.

The following messages properties are available in the system monitoring view:

Column Name	Column Description
Type	Type of the received message (can be either error, warning or info).
Computer	Network name of the machine the message was sent from.
Host	Name of the Runtime Server host instance the message was sent by. If this name is empty, this means the message was sent by the Runtime Server Manager service.
Date & Time	Date and time the message was sent at.
PID	Windows Process ID of the processed the message was sent from.
Description	Message content.

Currently displayed messages can be sorted by all properties listed above by clicking on the corresponding column header button.

The following filters are available for the downloaded messages (see the screenshot above):

Filter	User Action to Activate	Description & Comments
Errors filter	Click on "Error" check-box at the top of system monitoring view to enable or disable the filter.	When unchecked, filters all messages with error type.
Warnings filter	Click on "Warning" check-box at the top of system monitoring view to enable or disable the filter.	When unchecked, filters all messages with warning type.
Info filter	Click on "Info" check-box at the top of system monitoring view to enable or disable the filter.	When unchecked, filters all messages with info type.
Time frame filter	Enter number of days value in "Show logs for last X days only" edit box.	As soon as this setting is entered the system will start filtering all messages received earlier than X days ago. In this connection, "0" value means "no filtering".

All downloaded messages stored in system "M_*" files placed into "Log" sub-directory of the application folder where Oracle Forms Recognition software was installed. All filtering settings affect representation in the system monitoring view only, i.e. setting up a filter does not mean that some entries are going to be removed from the original storage files, which means that the filtering can be always roll-backed.

The preferred (last used) filtering and sorting options are saved in Windows Registry every time a user modifies them and shall be restored next time the user starts Runtime Server Administration console.

9.4   Unified Custom Logging

User-defined errors, warnings and informational messages can be written to the Runtime Server log files reserved for calling applications with custom scripting. Supplementary information is written for every logged entry including the date and time the message was generated, the available virtual memory, the process identifier, and Windows resource usage. The user-defined messages can be added to the custom script via a new "LogScriptMessageEx" method of the Project interface (please refer to the Oracle Forms Recognition Scripting Guide for more information about usage of this new method).

All logs are written into Oracle Forms Recognition's log folder where all Runtime Server component-level logs, crash logs, etc. are collected. The log files generated by the Verifier application have file names prefixed with "V_"; by Designer with "D_"; by Runtime Server with "H_" and with "U_" when logging from any other Oracle Forms Recognition tool.

The message is always written to the log file but depending on the severity of the message, it can also be sent to the system monitoring service of the Runtime Server or via e-mail to the registered system administrator recipients see section *9.3*.

For the script-generated log entries of severity "CDRSeveritySystemMonitoring" the corresponding message is going to be forwarded to the cumulative System Monitoring pane of the Runtime Server. For particular Runtime Server instance this is though going to happen only if at least one instance of System Monitoring service is running on any machine in local area network being correctly configured to accept system notification from the machine (physical server), where the host instance is running and logging messages.

For the script-generated log entries of severity "CDRSeverityEmailNotification" the message is going to be additionally sent via e-mail to the pre-configured list of Oracle Forms Recognition system administrators / professional services members. The mandatory requirement (in addition to the requirements listed above for the system monitoring notification) for such a message to be sent is correct configuration of e-mail sub-system of the System Monitoring service.

9.5   Advanced Logging

The standard Runtime Server Log includes System Level Resource information and, in the event of a system crash or failure, special error logs.

9.5.1. System Resource Logging

The following System Resource information has been added to the Standard Service Manager and Host Log files:

- Available physical memory (in kb).
- Used physical memory (in kb).
- Available virtual memory (in kb).
- Used virtual memory (in kb).
- Virtual memory used by this RTS host instance process (in kb).
- Physical memory used by this RTS host instance process (in kb).
- Handles used by the process (in number of handles)
- GDI resources used by the process (in number of handles).
- User Objects used by the Process (in number of Objects)

These values are written to the Standard Service Manager:

- [Application directory]\Log\S_yyyymmdd.log
  For example:
  C:\Program files\Oracle\Forms Recognition\Log\S_20070521.log

and the Host Log files:

- [Application directory]\Log\H_<instance name>_yyyymmdd.log
  For example:
  C:\Program files\Oracle\Forms Recognition\Log\H_Test_20070521.log

using the following format:

```
LoggingLevel | Date | Time | ErrorNumber | ProcessId |
UsedPhysicalMemory/AvailablePhysicalMemory |
UsedVirtualMemory/AvailableVirtualMemory |
UsedVirtualMemoryByThisHost/UsedPhysicalMemoryByThisHost |
ProcessHandles | GDIResources/UserObjects| Message | ServerName
```

For example,

```
[Info]    | August 03, 2005 | 15:46:47 | 010 |  1804 | 330564k/193172k |
366240k/911160k | 12176k/15388k | 183 | 43/59 | Check batches for
further processing | W2K-MQUIJANO
```

9.5.2. Crash / Failure Logging

In the case of a System or Application Crash or Failure an additional error log file will be created with a format:

```
Err_<Process ID>_yyyymmdd.log
```

This will log crashes under the following circumstances.

- Import Crashes - The log file will have stack information specific to the status of the system when the crash/failure occurred.
- OCR Engine Crashes - The log file will have an "ReadZone" entry for the specific OCR engine for which the crash occurred and stack information specific to the status of the system when the crash/failure occurred.
- Classification Engine Crashes - The log file will have an "Classify" entry for the specific Classification engine for which the crash occurred, the specific Class name where the crash occurs, and stack information specific to the status of the system when the crash/failure occurred.
- Extraction Engine Crashes - The log file will have an "EvalZone" entry for the specific Extraction engine for which the crash occurred, the field where the crash occurs, and stack information specific to the status of the system when the crash/failure occurred.
- Export crashes - The log file will have an "StepExport" and stack information specific to the status of the system when the crash/failure occurred.
- Clean-up crashes - The log file will have an "ProcessDocumentsCleanUp" and stack information specific to the status of the system when the crash/ failure occurred.
- Script Events - The name of the script event, the kind of sheet, which could be project level or a certain class, and, For script events on field level, the field name will added to the crash/failure log.

Appendix A Launching the Runtime Service

Starting and Stopping the Runtime Service

To start the Oracle Forms Recognition Runtime Service Manager, click on Windows "Start" button, select "Programs", "Oracle Forms Recognition", "Oracle Forms Recognition Runtime Service" group and click on "Start Service". This option starts the Oracle Forms Recognition Runtime Server NT service and then launches the MMC console automatically.

To stop the Oracle Forms Recognition Runtime Service Manager, click on Windows "Start" button, select "Programs", "Oracle Forms Recognition", "Oracle Forms Recognition Runtime Service" group and click on "Stop Service". This option stops the Oracle Forms Recognition Runtime Server NT service.

Getting Started: Configuring Runtime Service for the First Use

Before configuring the Oracle Forms Recognition Runtime Service Manager, please read the Oracle Forms Recognition Installation Guide.

Below are the steps required to configure the Runtime Service Manager if you plan to start and stop the service regularly. You must be logged on as an Administrator.

Launch the Computer Management MMC from the Administrative Tools program group on the Oracle Forms Recognition server. To do this:

1) Click the Start button at the bottom of your screen, select Settings, and select Control Panel. Double-click on Administrative Tools and select Computer Management.
2) Double-click on the Services and Applications node to expand it.
3) Select the Services sub-node.
4) Click the Standard tab at the bottom of the window.
5) In the scope pane, double-click the Oracle Forms Recognition Runtime Service Manager service. The Oracle Forms Recognition Service Manager Properties dialog box appears.
6) On the General tab, under Startup type, there are three selections for Runtime Server.
    – Select Automatic to start Runtime Service when the machine boots up.
    – Select Manual to manually start the service each time.
    – Select Disabled to stop the service.
7) Click the Log On tab.
8) Under Log on as, select the "This account" radio button.
9) On the Log On tab, click the Browse button.
10) Click the Location button and browse to the domain that has the account.
11) Under Enter the object name to select, type OracleFormsProcessingRTSsvc (the name of the domain user.) Click Check Names to verify your and click OK.
12) If necessary, type the domain password for the user in the fields provided.
13) Click OK
14) On the Computer Management MMC screen:
    – Start the service by clicking the Start arrow on the toolbar.
    – Stop the service by clicking the black square on the toolbar.
    – To stop and restart the service, click the square and arrow button.
15) When done, close the Computer Management MMC.

Using the Auto-Start Feature

The details steps necessary to configure an RTS instance to automatically start after a system reboot are given below, as well as the steps needed to stop the RTS instance in case of problems.

In order to enable autostart on reboot do the following:

- Ensure that the Oracle Forms Recognition Service Manager is configured for Automatic Start.

- Stop the RTS instance you wish to configure for auto-start.
- Bring up the Oracle Forms Recognition RTS Properties (see Figure A-5).
- In the General tab, Extended Settings, check the Automatic Start checkbox.
- Click OK.

In order to disable autostart use the MMC. If the RTS is in a hanged state and does not respond to the MMC do the following (this assumes that you are familiar with the Windows Registry):

- Stop the Oracle Forms Recognition Service
- Go into the Registry Editor (for example RegEdit32.exe)
- Navigate to the key:
  Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Oracle\Services\project
  Where "project" is the name of the RTS instance to stop.
- Change the AutoStart key value from 1 to 0

Scheduling Runtime Service machines

With the help of third-party scheduling services, for example, Microsoft Windows "Scheduled Tasks" tool, it is possible to configure the start and stop times for Runtime Servers. This allows additional servers to be deployed to perform heavy duty work at off hours or to be stopped while scheduled backups take place.

The following batch files are preinstalled by Oracle Forms Recognition software and can be found in \Oracle\Forms Recognition folder:

Batch file name	Purpose and Description
Start RTS as NT Service.bat	Starts the Oracle Forms Recognition Runtime Service as an NT service and launches the MMC administration console after the service starts. Remove "start /B mmc.exe…" line from this batch file if you do not want the MMC console to be launched.
Stop RTS running as NT Service.bat	Stops the Oracle Forms Recognition Runtime Service that is running as NT service.
Start System Monitoring Service.bat	Starts the Oracle Forms Recognition System Monitoring service to monitor Runtime Server machines configured in the MMC console.
Stop System Monitoring Service.bat	Stops the Oracle Forms Recognition System Monitoring service.

Table 9-3: Windows Batch Files.

User (script) initiated restarts of Runtime Server instances

In addition to standard functions of Oracle Forms Recognition Runtime Server used to configure stop, start and restart frequency of particular working (host) instances, it is now also possible to manage stopping and restarting of the instances per custom script calls. A new method "PerformScriptCommandRTS" of the public Project interface allows commands to be invoked to control Runtime Server instances from custom scripts in Oracle Forms Recognition. See Oracle Forms Recognition Scripting Guide for more details as to how this new method is supposed to be utilized.

Appendix B Troubleshooting

B.1 Configuring a Port for Oracle Forms Recognition Runtime Server

In case of a conflict in port assignments or for the purpose of firewall configuration, it may appear to be required to set up a specific port for TCP/IP communication channel used by the Runtime Server.

Otherwise, you do not have to configure a port.

Do these steps after you have installed Oracle Forms Recognition. This registry entry will be used by the main service as well by the Runtime Server instances and by the MMC. So its not possible to use two different port numbers by different
Oracle Forms Recognition applications on the same machine.

To set up the port, you will be editing the system's registry.

To do this:

1) Click the Start button on the lower left of your screen.
2) Click Run.
3) At the command prompt, type RegEdit and press Enter.
4) Expand to HKEY_LOCAL_MACHINE\SOFTWARE.
5) Expand the Oracle key.
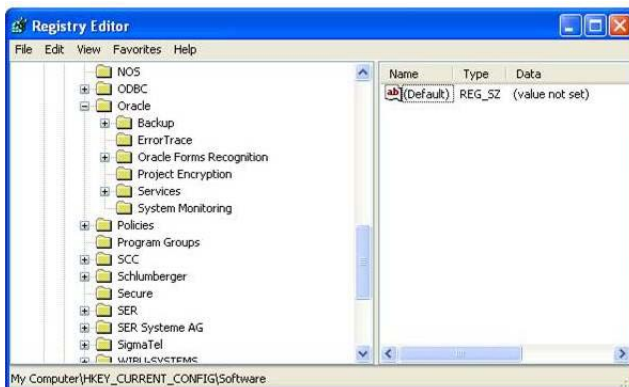
Figure 9-8: Registry

6) Right-click on Services and select New, and then select String Value.
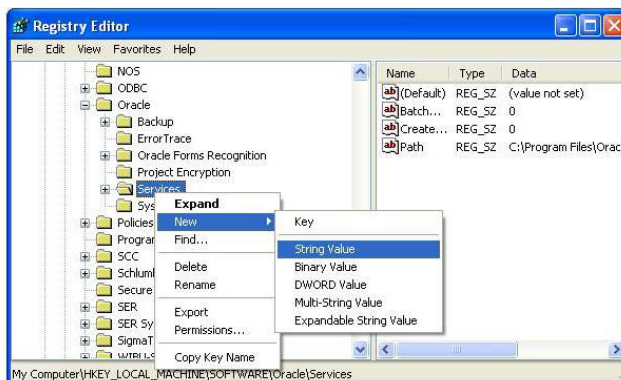
Figure 9-9: Selecting String Value

7) Change the name of the new value to Port
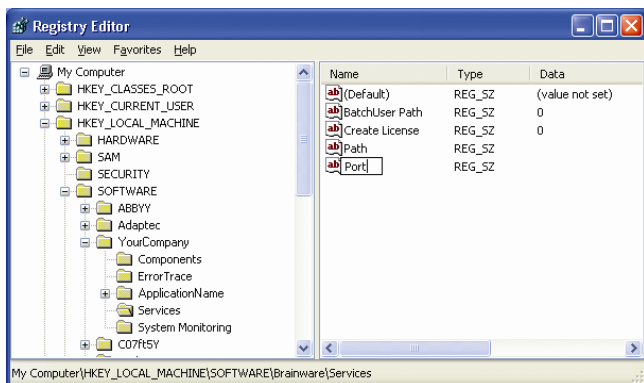
Figure 9-10: Changing the name of the new value to Port

8) For string, set the value at 50657 if this port is available (if not, set to any available open port) and click OK.

Figure 9-11: Setting the string value for the port

If this port is already in use by another application, you must edit the system registry and set the port to a non-conflicting number on all Oracle Forms Recognition servers. The new port number would then be used by all Oracle Forms Recognition processes for communication.

Appendix C Index of figures and tables

Figures

Tables

Glossary

Absolute path	A designation of the location of a file in relation to the root directory
Batch	A logical organizational structure to control a set of documents during the process. A batch is normally created during the scan process from a batch of paper. The status of a batch is used to manage the input flow.
Batch control file	A text file containing all information about the status of the batch, its folders, and documents.
Batch root directory	The root directory for batch storage. Usually the same as the image root directory.
CI	A setting used to import text documents that were created electronically, such as with a word processor or e-mail application. Should not be used to import image files. CI documents are not supported with Oracle Forms Recognition.
Classification	The process of assigning one or more classes and corresponding confidence values to one or more unknown documents.
Clean up	Automatic removal of batch files that are no longer required from the batch root directory.
Console	In Runtime Server, refers to a collection of administrative tools available in Microsoft MMC.
Designer	Oracle Forms Recognition's design application.
Document	Any electronic file mainly consisting of ASCII text. If this is not the case in the first place, OCR or filtering must be applied to create the text representation. A document can be classified, a document can have fields for extraction, and a document can have one or more images attached.
Domain	In Windows 2000, a domain is a set of network resources (applications, printers, and so forth) for a group of users. The user need only to log in to the domain to gain access to the resources, which may be located on a number of different servers in the network.
Error event	A significant problem, such as loss of data or loss of functionality.
Event log	Functionality in the event viewer. Enables you gather information about hardware, software, and system problems and to monitor RTS.
Extended processing	Used for updating Oracle Forms Recognition files with information from external source files.
Extraction	Extraction is the process of automatically finding specified information in a document and writing the information to data fields associated with the document. Extraction is used for automatic indexing. In extraction, selected data from a document is automatically written to an extraction file.
Extraction view	Displays the first page of the currently processed document with a continuously updated list view of extraction results. On the document, valid fields are highlighted in green and invalid fields are highlighted in red.
Fast info file	A copy of the main information from the *.sdb file. It provides a quick way to determine the status of a batch without opening the *.sdb file. When the fast info file is deleted, it is automatically recreated from the *.sdb file. The second character of the file name is the priority, and the last eight characters are the batch ID. The extension of the fast info file indicates the status of the batch as a number between 000 and 999.
Folder	A logical structure inside a batch for coherent documents. A folder may consist of all pages of a correspondence with many folders inside one batch.
IDE	Integrated development environment. A programming environment packaged as an application program, typically consisting of a code editor, a compiler, a debugger, and a GUI builder.
Image	A digital raster image normally created during the scan process. The image is compressed and stored in a specific format. Internally, Oracle Forms Recognition uses a structure called an image that represents the raster image. The image possesses methods to load, store and manipulate it. The image can be displayed in the viewer.
Image root	The root directory for image storage. Usually the same as the batch root directory.
Information event	An event that describes the successful Runtime Server operation.
ISV	Independent software vendor
Lock file	Allows multiple instances of Oracle Forms Recognition Runtime Server to access the batch root directory. The lock file is created and removed by Oracle Forms Recognition Runtime Server for the currently processed batch. It is removed by the operating system if the program terminates abnormally. Lock files are saved with the extension *.loc.
Log file	File that keeps a record of computer transactions.
MDI	Multiple document interface.
MMC	Microsoft Management Console. An ISV-expandable common presentation service for management applications used to manage Windows-based hardware, software, and networking components, and include items such as controls, wizards, tasks, documentation,

	and snap-ins may be from Microsoft or other software vendors, or user-defined.
OCR	Optical Character Recognition. The reading and recognition of symbols of text from a piece of paper or a scanned image. OCR detects the symbols and converts them into characters and words that can be read electronically.
Parallel processing	Dividing programs among multiple processors with the objective of running a program in less time.
PDF	Portable Document Format. A file format that has captured all the elements of a printed document as an electronic image that can be viewed, navigated, printed or forwarded.
Performance	The speed at which a computer operates.
Results pane	Displays information about each batch, each of the monitoring functions, including windows for statistics, document, classification, extraction, and performance when selected in the scope pane. Each monitoring function has options for viewing items related to that function.
Scope pane	Displays the console root, the Runtime Application folder, a group that contains one or more machines that run Oracle Forms Recognition runtime instances on each machine, and a list of items that display monitoring options and control batch states.
Oracle Forms Recognition Runtime Server	A Windows process used by Oracle Forms Recognition to process work based on a defined worfklow step.
Oracle Forms Recognition Service Manager	A Windows service used to instantiate each defined Oracle Forms Recognition Runtime Server.
Cedar BatchControl Library	Library that enables you to create batches programmatically.
Serial processing	Processing that occurs sequentially. There is an explicit order in which operations occur and in general the results of one action are known before a next action is considered.
Snap-in	An object that can be attached to another object and then function as part of the whole. A snap-in is a program designed to function as a modular component of another application. Snap-ins are basic components of Microsoft's Management Console (MMC). The MMC snap-ins are the actual management tools; the console - sometimes referred to as a "tools host" - is simply a framework into which the snap-ins are added.
Subdirectory	Contains the Workdocs (*.wdc), usually the images (TIFF or similar) and attachments to a document, such as PDF files or fax header files. Named after the batch ID.
Subtree	A tree that is a child of a node.
Timeout	A period of time after which an error condition is assumed if some event has not occurred.
Tree	A parent-child data structure.
UNC	Universal Naming Convention.
Verifier	Oracle Forms Recognition's QA application.
Warning event	An event that is not necessarily significant, but that may indicate a possible future problem.
Workdoc	An internal structure representing the logical structure of a document. The Workdoc represents the data created during processing of a single document and is stored in a file with the extension *.wdc. Because, a Workdoc includes all OCR and analysis results, it may be larger than the document files.

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