Techniques for Configuring Applications for LiveCycle® Workspace ES

Adobe® LiveCycle® Workspace ES

July 2009

Update 1

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Adobe® LiveCycle® Workspace ES (8.2) Techniques for Configuring Applications for LiveCycle Workspace ES for Microsoft® Windows®, Linux®, and UNIX®

Edition 1.1, July 2009

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1 About This Document

The primary objectives of this document are as follows:

- To provide techniques and guidelines for configuring LiveCycle ES applications for use with Adobe® LiveCycle® Workspace ES.
- To direct you to specific topics that are available in existing Adobe LiveCycle ES (Enterprise Suite) Update 1 (8.2) documentation.

To use this document, you must have access to Workspace ES, Adobe LiveCycle Workbench ES, Adobe Acrobat® Professional or Acrobat Standard, a LiveCycle ES server, and administrator privileges, which is typical for a development environment. You can also use Adobe LiveCycle Designer ES, but the steps described in this document pertain to using Designer ES in Workbench ES. In addition, you must have an internet connection to access references this document points to.

Who should read this document?

This document is intended for experienced developers who want to create and configure applications specifically for use with Workspace ES. Typically, these applications include the participation of users to complete the process. To use this document, it is assumed that you have experience creating forms and processes, and configuring services for LiveCycle ES. If you have not developed an application for use with Workspace ES, it is recommended that you perform the following tasks before you read this document:

- Complete *Developing Your First LiveCycle Application*.
- If you install the samples on the server, walk through some of the process and form samples.

It is also assumed that you have working knowledge of Workbench ES, Designer ES, Workspace ES, and the Applications and Services component, which is available from the LiveCycle Administration Console. To maximize the benefits of this document, you also need to be familiar with services such as Forms, User, Reader Extensions, Encryption, and Signature.

Conventions used in this document

This document uses the following naming conventions for common file paths.

Name	Default value	Description
[Workbench root]	/Program Files/Adobe/LiveCyleES/WorkbenchES/	Default location where Workbench ES is installed on the computer
[Server root]	/Adobe/LiveCycle82/	Default location where LiveCycle ES is installed on the server
[server name]	None	Name of the LiveCycle ES server
[port]	None	Port used by the LiveCycle ES server

Additional information

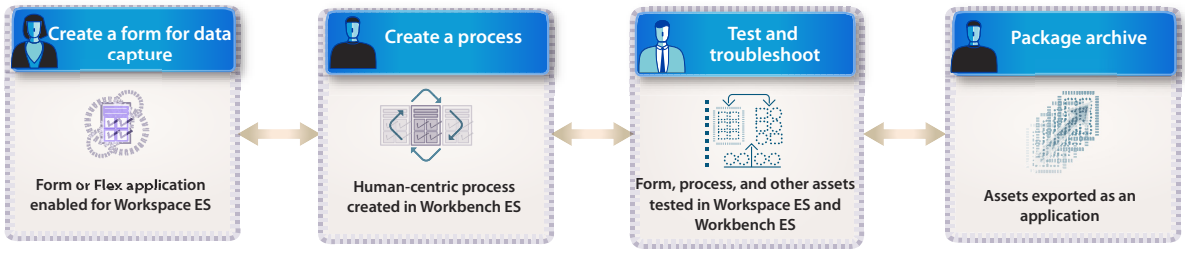
The resources in this table can help you learn more about LiveCycle ES and includes many of the common documents that this document references.

For information about	See
Developing a LiveCycle ES application and configuring it for use with Workspace ES	*Creating Your First LiveCycle ES Application*
Services described in this document, such as Forms, Reader Extensions, and Signature services	*LiveCycle ES Services*
LiveCycle ES features and how they work with each other	*LiveCycle ES Overview*
Using Designer ES to create forms for data capture	*LiveCycle Designer ES Help*
Using Workbench ES to create forms and processes for human-centric processes	*LiveCycle Workbench ES Help*
Customizing the Workspace ES user interface	*Customizing the LiveCycle Workspace ES User Interface*
Creating Flex applications for data capture purposes in LiveCycle ES	*Creating Flex Applications Enabled for LiveCycle Workspace ES*
Creating form guides for provided guided data capture	*Getting Started with Form Guides*
Creating Acrobat forms for data capture	*Acrobat Pro Help*
Administering and configuring processes that you activate as services	*Applications and Services Administration Help*
Administering credentials	*Trust Store Management Help*
Administering policies	*Rights Management Administration Help*
Administering users and roles	*User Management Help*
Using Workspace ES	*LiveCycle Workspace ES Help*
Other services and products that integrate with LiveCycle ES	www.adobe.com
Patch updates, technical notes, and additional information about this product version	LiveCycle Support Center

2 About Configuring Applications for Workspace ES

A LiveCycle ES *application* is a solution that consists of a process and its associated assets (forms, images, SWF files, and fragments). When you develop applications for LiveCycle Workspace ES, the applications involve users in business processes. A process that involves people is known as a *human-centric process*. Typically, after you finish developing an application for Workspace ES, you export it out of LiveCycle Workbench ES as an archive file. The archive file can be deployed to another server for further testing or pushed out to production.

The following illustration shows a typical workflow that you use for developing an application for Workspace ES.



Create a form for data capture: Create a form, determine the form type to use, and enable the form for process management. (See Designing forms for data capture.)

Design a human-centric process: Use services to automate your business processes and involve users in your automated processes. (See Designing human-centric processes.)

Test and troubleshoot: Test the process and form in Workspace ES. After you activate your process as a service, you can invoke and debug the service directly from Workbench ES. During testing, bugs are often found; therefore, you must debug the process or form. (See Testing and troubleshooting.)

Package archives: Export the associated assets as a complete solution or an *application*. An application is packaged as an *archive file*, which can be moved to another server. (See Exporting the archive.)

As part of developing an application, you configure how a user completes tasks and starts processes from Workspace ES. To configure applications for an improved user experience, you can use various form creation, process creation, and server configuration techniques. (See Improving User Interaction withWorkspace ES.)

You may be required to use other services from LiveCycle ES to meet the requirements of your business process. Each of the following services have different techniques for form creation, process creation, and server configuration that you use with human-centric processes:

- Signature (See Signing and Certifying Forms with Workspace ES.)
- Encryption (See Using Document Security in Workspace ES.)

- Rights Management (See Using Document Security in Workspace ES.)
- Reader Extensions (see Applying Usage Rights to PDF forms)

File types referred to in this document

You can choose from several file types to design the data capture experience. The following file types are used in this document:

Adobe PDF File (*.pdf): Adobe PDF files that are created using Acrobat. PDF forms contain one or more form fields. In this document, PDF forms created in Acrobat are called *Acrobat forms*.

Adobe Static PDF Form (*.pdf): Static PDF forms are created using LiveCycle Designer ES. Static PDF forms render once and are displayed on the client in the Acrobat or Adobe Reader®. They are not rerendered in response to user interaction. The PDF form may have been designed with a flowable layout; however, when the static PDF form is created, its layout is fixed and the resulting PDF form will not rerender on the client. Static PDF forms can be interactive or non-interactive.

Adobe Dynamic XML Form (*.pdf): Dynamic PDF forms are created using Designer ES. Dynamic PDF forms render on the client in Adobe Reader and, depending on the end-user interactions, can rerender on the client several times. The dynamic PDF form can contain dynamic elements. Changes to the appearance of an object are possible in Adobe Reader because Adobe Reader has enough information to rerender the final output. For example, objects can change color, pagination can change, and objects can appear or disappear. If the end user clicks a button that adds a new row to a table, the form is rerendered in Adobe Reader.

Adobe XML Form (*.xdp): XML forms are created in Designer ES. XDP is the XML-based file format created by Designer ES. XML forms are used with Adobe LiveCycle Forms ES to render various output types that include PDF forms, form guides, or HTML forms.

Adobe Flex application (*.swf): Flex® applications are created using Flex or Flex Builder™ and are displayed in Adobe Flash® Player. In this document, the Flex applications capture data and have form-like characteristics.

Designing forms for data capture

In Workspace ES, a *form* is the front end for capturing data for use in a process. Before you begin, you must understand what data needs to be captured from users participating in the process and how the data is used in the process. It is recommended that you first identify the data that is used in your process and develop a data schema. A stable and well-developed data schema makes it easier for you to create the form and process.

Perform the following tasks to design a form for data capture:

- Choose a form type. (See Choosing a form type.)
- Create the form. (See Creating the form.)
- Enable the form for use in Workspace ES. (See Enabling forms for Workspace ES.)

Choosing a form type

An important step in developing an application is determining the type of form to create. You can use various form types for data capture, including Acrobat forms, static PDF forms, dynamic PDF forms, or Flex applications. (See File types referred to in this document.) The following factors can influence the form type you choose:

- The services and operations that you plan to use in your process. For example, if you plan to use digital signatures on the server, you may want to use a static PDF form because static PDF forms are not rerendered. Rerendering a PDF form with existing digital signatures invalidates the signature.
- The type of output you want displayed to a user, such as an HTML form, a PDF form, a form guide, or a Flex application. For example, if your process requires that you display multiple outputs using the same form, use an XML Form.
- The data that your process uses, such as XML data, XDP (XML Data Package) data, or PDF data. For example, if your form manipulates and extracts data for use in the process, you may want to use XDP data. In this situation, use a dynamic PDF form instead of an Acrobat form.

For more information about the types of forms to use, see the following resources:

- Save a form design: XDP or PDF? in *LiveCycle Designer ES Help*.
- Forms and form data and Types of forms in *LiveCycle Workbench ES Help*.
- Leveraging Flex applications in LiveCycle Workspace ES in *LiveCycle Workbench ES Help*
- *Understanding the Differences Between Static and Dynamic PDF forms*.

Creating the form

The creation of the form is specific to the requirements of your application and the data you want to capture. You use Designer ES to create static PDF forms, dynamic PDF forms, and XML forms. The design-time version of the form in Designer ES is called a *form design*. You can also create Acrobat forms using Acrobat or Flex applications that behave like forms using Flex Builder. Most configuration techniques described in this document relate to the forms created using Designer ES.

Many requirements can affect the creation of your form including the nature of the business process, the target user, security, data capture requirements, and usability. For example, consider the following scenarios during your planning and design stage, before you actually create the form.

- The user must apply a digital signature to the form.
- A form must be populated with data using a web service.
- The form must be accessible to users with disabilities.
- A single form design must render to multiple outputs, such as HTML and form guides.

For more information about creating forms using Designer ES, see the following resources:

- Steps to creating a form design in *LiveCycle Designer ES Help*.
- Creating Forms for Optimal Performance in *LiveCycle Designer ES Help*.
- Creating Forms for LiveCycle Forms ES in *LiveCycle Designer ES Help*.
- Using Guide Builder in *LiveCycle Designer ES Help*.
- Scripting in *LiveCycle Designer ES Help*.
- Designing Forms for Output ES.
- *Strategies for Creating Forms Using Adobe LiveCycle Designer 8*.

For more information about creating forms using Acrobat, see “Forms” in *Acrobat Pro Help*.

For more information about creating Flex applications, see *Creating Flex Applications Enabled for LiveCycle Workspace ES*.

Enabling forms for Workspace ES

After you have created the form, you must enable it for Workspace ES. Here is a summary of the types of forms that you can use and a brief description of how to enable them for Workspace ES:

Acrobat form: Use Acrobat to prepare the form for use in a process by adding hidden fields and a submit button that runs JavaScript.

Static PDF form, dynamic PDF form, and XML form: Use Designer ES to prepare a form for use with Workspace ES by adding a submit button or a Process Fields object. Optionally, add a Form Bridge object.

Flex application: It is recommended that you use Flex Builder to add specific event handlers to your Flex application.

For more information about enabling forms for Workspace ES, see:

- Leveraging Acrobat forms in LiveCycle Workspace ES in *LiveCycle Workbench ES Help*.
- To insert a submit button that embeds a PDF in *LiveCycle Designer ES Help*.
- Preparing a form for use in Workspace ES in *LiveCycle Designer ES Help*.
- "Enabling Flex Applications for Workspace ES" in *Creating Flex Applications Enabled for LiveCycle Workspace ES*.

Designing human-centric processes

In Workbench ES, you create a process diagram and configure properties for each service operation you use to automate your business process. Processes that involve people are called *human-centric processes*. You add a User service operation to indicate that a person is to participate in the process. The intention here is not to describe the steps to create a human-centric process. Instead, the intention is to describe the tasks you should consider when you use other services in your process in the following areas:

- Choosing a form variable data type (See Choosing form variable data types.)
- Configuring the Render and Submit services (See Creating custom render and submit processes.)
- Adding a User service operation to the process diagram (See Configuring the Assign Task operation.)

For more information about designing human-centric processes, see:

- "User Service" in *LiveCycle ES Services*
- Designing Human-centric Processes in *LiveCycle Workbench ES Help*.

Choosing form variable data types

Form variables pass data that is captured from one step in the process to another step in the process. You configure the form variable to determine which form to display in Workspace ES. The data type that you choose for the form variable depends on the data you want to submit. Here is a summary of the data types to use for displaying a form in Workspace ES and when to use them.

xfaForm: Use this data type when the process requires you to extract data and manipulate form data or when you want to use the same XML form to display different types of output including HTML forms, form guides, and PDF forms. For example, in your process, you can display the form as an HTML form for one user and as a form guide for another user.

Document Form: Use this data type when the process requires you to submit PDF data or you want to perform operations on the PDF data during process execution. The results of the operation are applied

to the PDF data, which is important when you use certain operations. For example, for the Signature service operation, digital signatures need to be preserved on the PDF form when it gets routed to another user.

Form: Use this data type when you need to submit XML data back to the process or retrieve information with a predefined data schema. You can use predefined schemas in Flex applications, Acrobat forms, and static PDF forms.

For more information about form variables, see the following list of resources in *LiveCycle Workbench ES Help*:

- Variables for form data
- Form
- xfaForm
- Document Form
- Using variables to store process data

For information about creating processes using specific variable types and outputs, see:

- Rendering Adobe XML forms as HTML forms
- Leveraging Flex applications in LiveCycle Workspace ES
- Leveraging Acrobat forms in LiveCycle Workspace ES
- Rendering Adobe XML forms as form guides
- Rendering Adobe XML forms as PDF forms

For more information about using schemas in Flex applications, see *Creating Flex Applications Enabled for LiveCycle Workspace ES*.

Creating custom render and submit processes

The render and submit processes provided with Adobe LiveCycle Process Management ES are suitable for basic form display and data capture. Optionally, you can create custom render and submit processes to create reusable services. You may want to create custom render and submit processes when you need to perform specific operations each time a form is displayed to a user or data is submitted by the user. For example, you may need to apply usage rights to a PDF form in a custom render process because the Workspace ES users in your organization use Adobe Reader®. Applying usage rights to a PDF form permits users that use Adobe Reader to perform additional actions, such as digitally signing PDF forms to complete tasks. You may also choose to implement applying usage rights in a custom render service so that you do not need to apply usage rights in the main process each time.

For more information about render and submit processes, see the following resources in *LiveCycle Workbench ES Help*:

- Default Render ES Update 1
- Render Form Guide ES Update 1
- Render HTML Form ES Update 1
- Render PDF Form ES Update 1
- Submit Form Guide ES Update 1

For more information about using render and submit processes with form variables, see Configuring render and submit services for form variables.

For more information about customizing render and submit processes, see Using custom render and submit processes.

Configuring the Assign Task operation

To include users in a process, add an Assign Task operation (User service) to your process diagram. On the Assign Task operation, you can configure the interaction with the user and also the types of features your want to use. The following required properties must be configured to include a user:

- The initial user in the Initial User Selection property group. This setting determines the person that is first assigned the task.
- Input form variable and Output form data in the Form Data Mappings property group. This setting determines the form that is used for rendering to the user.

It is also recommended that you modify the following properties, which affect the information that is displayed on a card and the buttons that are displayed for completing a task in Workspace ES:

- Name and Description in the General property group
- Task instructions in the Task Instructions property group

Various other properties can be modified to enable other features for the Assign Task operation that improve the user experience. (See Improving User Interaction withWorkspace ES.)

For more information about configuring the User service in a human-centric process, see the following resources in *LiveCycle Workbench ES Help*:

- Assign Task.
- Configuring task functionality.
- Involving users in the process.

Testing and troubleshooting

After you complete the development of your application, activate it for testing. As part of testing, add a Task Manager endpoint in Applications and Services in the LiveCycle Administration Console. A Task Manager endpoint permits users to start the process from Workspace ES.

You should test the process by using Workspace ES. Here are some general best practices:

- Test using realistic scenarios and data.
- Confirm whether you can perform actions such as forwarding, consulting, and adding attachments.
- Test all route buttons to test different conditions.

Often, as a result of testing, bugs are found in the process or form. You can troubleshoot by using Workbench ES, which allows you to step through the process diagram and view the values of variables. This capability helps you isolate the problem area in your process.

For more information about configuring endpoints, see Adding endpoints to services and Task Manager endpoint settings in *Applications and Services Administration Help*.)

For information about testing and troubleshooting processes, see the following resources in *LiveCycle Workbench ES Help:*

- Testing and troubleshooting process versions.

- Testing form designs.
- Testing a Service using Workspace ES.

Exporting the archive

After you complete testing, you can stage your process or submit it to production. To move your process, export the process version and its associated assets (forms, images, files, and fragments) as an application to an archive file. Using the archive file, move your application to a staging or production server. For information about creating archive files, see Creating archive files in *LiveCycle Workbench ES Help*.

In your staging or production environment, import the archive file by using Applications and Services in the LiveCycle Administration Console. (See Importing archives in *Applications and Services Administration Help.)*

3 Improving User Interaction with Workspace ES

You can modify various settings to simplify the behavior of LiveCycle Workspace ES when users start processes, complete tasks, and participate in automated business processes. These guidelines focus on techniques for improving the user's experience:

- Configuring cards (See Configuring cards.)
- Configuring organization of processes and tasks (See Assigning categories names.)
- Configuring completing tasks (See Configuring task completion for users.)
- Configuring form output (See Improving the data capture experience.)

For information about the User service, see "User Service" in *LiveCycle ES Services* and User in *LiveCycle Workbench ES Help*.

Configuring cards

In Workspace ES, users can work in Card view to start processes and complete tasks that are assigned to them. Cards provide titles and task instructions so that users can quickly scan all their tasks. In card view, users can perform some actions without opening the task by clicking the buttons that appear on the card when the mouse pointer pauses over it. The available actions depend on the process.

You can improve the information that appear on cards by configuring the following items:

- Titles (See Adding titles to cards.)
- Instructions (See Providing task instructions and process descriptions.)
- Images (See Changing card images.)
- Complete Task button (See Displaying the Complete button.)
- Forward Task button (See Displaying the Forward Task button.)
- Setting the priority (See Displaying task priority.)

Adding titles to cards

Provide meaningful and unique titles so that users know which process they are starting or which task is assigned to them.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

When creating the process, consider the following techniques for adding titles to cards that appear in Workspace ES.

- Limit titles to 50 characters, including white spaces, to avoid truncating text in the Card view.

- Provide titles for tasks that are assigned to users by configuring the Name property in the Assign Task operation (User service). This is useful because Users see titles for their tasks on the To Do page in Workspace ES. You can configure the Assign Task operation to display titles that reflect what the user must do as part of the step in the process. Consider titles such as, Approve Loan or Verify Insurance Claim, to provide context to what the user must do to complete the task.
- Avoid displaying sensitive information, such as bank account numbers.

For information about adding titles to a task that is assigned to a user, see Card titles in *LiveCycle Workbench ES Help*.)

Server configuration guidelines

To add titles that appear on the Start Processes page, you need to add a new Task Manager endpoint or configure an existing one. When configuring the server, consider the following techniques to configure the Task Manager endpoint using Applications and Services in LiveCycle Administration Console.

- Limit text to 50 characters in the Name field, including whites spaces. Text that is less than 50 characters does not truncate the text in the Card view.
- Do not include a less-than sign (`<`); it truncates the text in the card view.
- Avoid displaying sensitive information, such as bank account numbers.

For information about creating a Task Manager endpoint, see Adding endpoints to services in *Applications and Services Administration Help*.

Providing task instructions and process descriptions

Instructions are intended to describe how to start a process or complete a task assigned to users. To help users effectively complete assigned tasks and start processes, provide instructions to users about how to complete the task.

When you create and configure your process, you provide task instructions in the Assign Task operation (User service) for each step in your process. You can make instructions be dynamic by including values from variables in the process using the Template option.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

When creating the process, consider the following techniques for creating instructions on cards that appear in Workspace ES.

- Use HTML tags, such as `<br>`, `<b></b>`, and `<p></p>`, to structure and format your instructions.
- Use template expressions, such as `{$/process_data/@name$}`, to build a string that includes process information that helps users select a task to complete.
- Avoid displaying sensitive information from the process in cards.
- Limit text to 256 characters, including white spaces, to avoid truncating text in the Card view. Task instructions that exceed 256 characters are still visible in the List view and on the Task Details tab.

For information about adding instructions to a task that is assigned to a user, see Process data exposed to users and Task instructions on task cards in *LiveCycle Workbench ES Help*.

Server configuration guidelines

To configure the text that is displayed to start a process in Workspace ES, you need to add a new Task Manager endpoint or configure an existing one. For initial tasks, the text in the Description field is used instead of the text in the Task Instructions field. When configuring the server, consider the following techniques to configure a Task Manager endpoint.

- Use HTML tags, such as `<br>`, `<b></b>`, and `<p></p>`, to structure and format your instructions.
- Limit text to 256 characters, including white spaces, to avoid truncating text in the Card view. Text in the descriptions that exceed 256 characters is visible in the List view and on the Task Details tab.
- Avoid displaying sensitive information from the process in cards.

For information about creating a Task Manager endpoint, see Adding endpoints to services in *Applications and Services Administration Help*.

Changing card images

The same default image is displayed on all cards in Workspace ES. You can change the default image so that users can easily distinguish one task from another.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

To make cards easily identifiable by the user, you can change the default images for displayed on cards in Workspace ES. Use images that users are familiar with.

When creating the process, consider the following techniques for changing card images.

- Use images that have white backgrounds. In Workspace ES, the default background for process and task cards is white.
- Use 150x150 pixel images that are PNG files to minimize data exchanged between Workspace ES and the LiveCycle ES server.

For information about best practices to configure image sizes for a process, see Images size in process cards in *LiveCycle Workbench ES Help*.

For information about how to add an image to a process, see Creating a process in *LiveCycle Workbench ES Help*.)

Server configuration guidelines

No guidelines are required for server configuration.

Displaying the Complete button

The Complete button (or multiple buttons when routes are configured to complete a task) appears on cards of tasks that are assigned to users. By default, users can complete tasks without opening the form that is associated with process that are participating in by clicking the Complete button on the card. You can remove the Complete button from the card so that users must open and view the form to complete the task. (See also Enabling task completion buttons.)

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

You can configure the Assign Task operation (User service) so that users who are assigned to the task cannot see the Complete button on cards in their To Do list. The absence of the Complete task button forces users to open the task and view the form in order to complete the task. Forcing users to view a form is important in industries where laws stipulate that the form must be reviewed.

For information about removing the complete task icon from a card, see Forcing the opening of tasks for completion in *LiveCycle Workbench ES Help*.)

Server configuration guidelines

No guidelines are required for server configuration.

Displaying the Forward Task button

The Forward Task button appears on cards of tasks that are assigned to users. Users can click the Forward Task button so that they do not have to open the form to forward the task. Allowing users to forward a task without opening the task is useful for routing work. You may want to configure this button for users who often manually route work to others.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

Configure the Assign Task operation (User service) so that users see a Forward button on the card. To display a Forward task button on the card, select Forward in the Task Access Control List property for the User service. (See Configuring access to task functionality in *LiveCycle Workbench ES Help*.)

Server configuration guidelines

You can configure a process so that users can forward the initial task before they initiate the process. This may be useful when filling a form with information or providing attachments for another user to start the process. In LiveCycle Administration Console, use Applications and Services to create a Task Manager endpoint and, in the Options area, select User Can Forward Task.

For more information about configuring a Task Manager endpoint, see Adding endpoints to a service in *Applications and Services Administration Help*.

Displaying task priority

You can display the task priority and set a higher priority for a task to make it easier for users to distinguish and complete tasks that require immediate attention.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

Configure the Assign Task operation (User service) so that users see color-coded exclamation marks on the card. Using a priority of HIGH and HIGHEST is useful for tasks that require immediate attention. To specify the priority, select the Assign Task operation and, in the Routes and Priority property group, select a priority from the Select Priority For This Task list. (See Specifying task priority in *LiveCycle Workbench ES Help*.)

Server configuration guidelines

No guidelines are required for server configuration.

Assigning categories names

In Workspace ES, in the Start Process tab, category names appear in the left navigation pane and are used to designate groups of processes the user can start. You can only configure the names in Category Management of Applications and Services in LiveCycle Administration Console.

Note: When you save a process in Workbench ES, the name of the category that the process is saved to does not appear in Workspace ES. This category is different from the category you configure in Category Management of Applications and Services in LiveCycle Administration Console.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

No guidelines are required for process creation.

Server configuration guidelines

You configure category names in the Category Management area of Applications and Services in LiveCycle Administration Console.

When configuring the server, configure the names of categories to have a maximum of 24 characters (using the default fonts).

For more information about configuring categories, see Tips for creating categories for Workspace ES in *Applications and Services Administration Help*.

For information about configuring a Task Manager endpoint, see Adding endpoints to services in *Applications and Services Administration Help*.

Configuring task completion for users

You can improve the way users complete their tasks, how information is displayed to users, and the activities that users can perform when completing at task.

You can perform the following configurations to improve the way that users complete tasks:

- Configure email notification. (See Configuring email notifications.)
- Display multiple buttons to complete a task. (See Enabling task completion buttons.)
- Configure time constraints such as reminders, escalations, or deadlines. (See Configuring reminders, deadlines, and escalations.)
- Limit the actions that users can perform on specific tasks. (See Configuring usage restrictions on tasks.)

Configuring email notifications

Email notifications can be sent to users when they are assigned to a task, and when reminders and deadlines occur. Email notification settings are configured globally by using the Task Notification web pages in LiveCycle Process Management ES found in LiveCycle Administration Console. You must have email configured on the server to use email notifications.

For more information on configuring the server to use email notifications, see "LiveCycle ES Email" in *LiveCycle E S Overview*.

Form creation guidelines

You must include the Process Fields object in your form design in order to use a PDF form offline and for returning it to the LiveCycle ES server as an email attachment.

Process creation guidelines

When you configure email notifications, consider adding process data to the content of the email message and configuring a custom email template specific to the task. You can configure the format of the email, and include process data for email notifications that are specifically for reminders, deadlines, and assigned tasks to users. You configure the email template by using the Custom Email Template property group in the Assign Task operation (User service).

For information about best practices when you customize email notifications, see Email notifications in *LiveCycle Workspace ES Help*.

Server configuration guidelines

To avoid email-related errors, the following server-configuration techniques can help you configure email for LiveCycle ES.

- In LiveCycle Administration Console, select LiveCycle Process Management ES > Server Settings > Task Notifications to configure email notification templates. These notification templates are used by default and are overridden when the Assign Task operation (User service) is configured.

  For information about configuring notifications templates and email settings for Workspace ES, see Customizing the content of notifications and Configuring outgoing mail in *Process Management Administration Help*.

- In LiveCycle Administration Console, use LiveCycle Process Management ES > Server Settings > Email Settings to configure email for Workspace ES.

  For information about configuring email on LiveCycle ES, see "LiveCycle ES Email" in *LiveCycle ES Overview*.

Enabling task completion buttons

You can configure tasks so that the names of routes appear as buttons for users to complete their tasks. Displaying route names as buttons is useful for letting users determine the next step in the process based on their selection. When a form guide, PDF form or, Flex application is rendered for data capture, the route buttons appear in Workspace ES. However, when an HTML form is rendered, the route buttons do not appear in Workspace ES. Instead, a Submit button that has a drop-down list appears inside the HTML form. To complete the task, users select the route from the drop-down list.

Form creation guidelines

When you plan to render an XML form to HTML, position the Process Fields object near the top of the form. The Submit button, which is part of the Process Fields object, appears directly on the HTML form. The default text is "Submit" and the routes that a user can select are available in a drop-down list beside it.

For more information about form design guidelines, see Preparing a form for use in Workspace ES in *LiveCycle Designer ES Help*

Process creation guidelines

Configure the Routes and Priority property group in the Assign Task operation (User service) so that the name of routes appears in buttons in Workspace ES. (See Assign Task in *LiveCycle Workbench ES Help.)* When you create the process, consider the following techniques to configure the button labels that are visible to users who complete tasks.

- Localized versions of Workspace ES will automatically translate route names Approve or Deny. When you do not use Approve or Deny, the text you provide is displayed and is not localized. For example, if you configure a route with *Approve*, when a task is viewed from Workspace ES in French, the button name appears as *Approuver*.
- If localization is not important, use route names that are meaningful for a user.

  For more best practices about configuring routes to display route names, see Using route names as submit options in *LiveCycle Workbench ES Help*.

Server configuration guidelines

No guidelines are required for server configuration.

Configuring attachments and notes

You can configure Workspace ES so that users can attach files or notes to your task. When attachments are configured, an Attachments tab appears in Workspace ES. The Attachments tab is not the same as the tab for attachments in Acrobat and Adobe Reader. In Workspace ES, the Attachments tab appears beside the Form and Task Details tabs.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

Configure attachments and notes in the Attachments and Notes property group in the Assign Task operation (User service). (See Assign Task in *LiveCycle Workbench ES Help.)* This enables users who are assigned to tasks to add attachments and notes. (See Configuring access to task functionality in *LiveCycle Workbench ES Help*.)

When creating the process (assuming the Assigned Task operation is configured) consider the following techniques to configure attachments and notes for users who are completing tasks in Workspace ES.

- (Optional) To access the attachments, you can create a `list` of `document` variables to access the list of attachments and notes. Using a variable allows you to access the list at any time during process execution and allows you to manipulate notes and attachments more easily.
- If you plan to allow users to add attachments and notes, or open attachments, for the task, configure the Assign Task operation. In the Attachments and Notes property group, select the Show Attachment For This Task option. If Show Attachment For This Task is not selected, the Attachments tab in Workspace ES for the task that the user is assigned to is not displayed. To see attachments and notes in subsequent Assign Task operations, in the Attachments and Notes property group, select Copy All Notes And Attachments From Previous Task.

For information about configuring attachments and notes, see Configuring attachments and notes in *LiveCycle Workbench ES Help*.

Server configuration guidelines

In LiveCycle Administration Console, using Applications and Services, you can allow users to add attachments to the process when they start a process in Workspace ES. To configure attachments, select the Show Attachment Window and Allow Attachment Adding options when you create a Task Manager endpoint for your human-centric process.

For information about configuring the Task Manager endpoint, see in Adding endpoints to services in *Applications and Services Administration Help*.

Configuring reminders, deadlines, and escalations

Place time constraints on tasks to ensure that tasks get completed and important tasks are displayed to users. Time constraints include reminders, deadlines, and escalations. It is recommended that you set time constraints when completing a task on time is critical. When you use reminders, escalations, and deadlines with email notifications, you can include process-specific data in the email.

For more information, see Configuring email notifications.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

When creating the process, consider the following techniques to configure reminders, deadlines, and escalations for tasks.

- Use business calendars when you configure reminders, escalation, and deadlines. Business calendars are useful for automatically determining the correct date. For example, if you have a deadline that occurs within three business days but a holiday occurs the next day, when you use business calendars, it automatically determines the correct date. To use business calendars, select the Use Business Calendars in the Reminders, Deadlines, and Escalations property group.
- Create custom email templates for reminders, escalations, and deadlines for processing data that can provide useful information directly in emails.

For more information about configuring reminders, escalations, and deadlines in business calendars, see Setting time constraints, About business calendars, and Assign Task in *LiveCycle Workbench ES Help*.

For more information, see Email notifications and Overriding task notification settings in *LiveCycle Workbench ES Help*.

Server configuration guidelines

If you plan to use email notifications, you must configure email on the LiveCycle ES server. (See Configuring email notifications.)

Configuring usage restrictions on tasks

You can restrict which actions users can perform with tasks that they are assigned. For instance, you may want to restrict the people the user is able to consult with or forward tasks to. For example, for large mortgage amounts, you may only want consultations to occur only with a bank manager.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

When creating the process, consider the following techniques for configuring restrictions on tasks that are assigned to users.

- In the Task Access Control List (ACL) property group, click Add User and select the user name in the User List. Select the actions that you want the user to use and deselect any actions you do not want the user to use. For example, deselect Forward if you do not want the user to be able to forward the task.
- In the Delegation and Consultation property group, select Forward To And Share With Only Members Of This Group to limit forwarding or sharing of tasks to specific users or groups.

For more information about configuring tasks, see:

- Configuring task functionality in *LiveCycle Workbench ES Help*.

- Configuring task delegations and consultations and Configuring the sharing of forwarded tasks in *LiveCycle Workbench ES Help*.

Server configuration guidelines

Using Applications and Services in the LiveCycle Administration Console, you can configure whether a user can add ACLs to shared queues and whether a user can forward a task when you configure the Task Manager endpoint.

For more information about configuring the Task Manager endpoint, see Adding endpoints to a service in *Applications and Services Administration Help*.

Improving the data capture experience

You can improve how forms are rendered for display and how data is captured in Workspace ES.

Use the following techniques to improve the data capture experience for the user:

- Prepopulate forms with data. (See Prepopulating data on forms.)
- Validate data on forms. (See Validating data in forms incorrectly displays the AWS_ACTION field.)
- Force users to use specific versions of Adobe Reader or Acrobat. (See Displaying PDF forms in Acrobat or Adobe Reader versions.)
- Use form guides. (See Displaying form guides.)
- Use HTML forms. (See Displaying HTML Forms.)

Prepopulating data on forms

You can prepopulate data in forms for users who start processes from Workspace ES. Prepopulating a form with data simplifies the data-entry process for users and can also prevent data-entry errors.

Form creation guidelines

When you create the form, consider the following techniques for prepopulating a form with data by using scripts.

- In Designer ES, add scripts to get data for prepopulating a form. When you use static PDF forms, dynamic PDF forms, or XML forms you can add scripts to the form that call web services or make database calls. If you use scripts, apply additional usage rights to your form based on the Adobe Reader version that Workspace ES users use. Use the `initialize` event and connect to a content provider or Web Services Description Language (WSDL).
- Create a schema that you can use for the form. A schema makes it easier for you to populate the form with data when you create your scripts.
- When designing forms for use with Adobe Reader, if a form uses web services or database calls to populate fields with data, apply additional usage rights to the form based on the Adobe Reader version that Workspace ES users use.

For information about adding scripts to forms, see Scripting Using LiveCycle Designer ES in *LiveCycle Designer ES Help*.

For more information about adding usage rights to a form, see "Adding usage rights to forms that populate fields with data" in *LiveCycle ES Service* and in Applying Usage Rights to PDF forms.

Process creation guidelines

During process execution, you can prepopulate a form with data by using an XML file on the file system that you specify when you configure the form variable. Use a `Form` or an `xfaForm` variable as the form variable for the process, and set the Default Data field to an XML file based on the schema you created for the form design. You can specify the default values in the XML file that is read from the file system, such as shared location. You may want to implement a separate mechanism that creates the XML file with values.

For information about populating the form with default data, see Specifying default form data in *LiveCycle Workbench ES Help*.

Server configuration guidelines

No guidelines are required for server configuration.

Validating data in forms incorrectly displays the AWS_ACTION field

You can use WSDL or scripting in form designs to validate data. When you use scripting in a form design, the `AWS_ACTION` field incorrectly becomes visible in a static PDF form or dynamic PDF form. The `AWS_ACTION` field is provided when you use the Process Fields object to enable a form design for Workspace ES and should not be visible when the PDF form is used to complete a task in Workspace ES.

Form creation guidelines

Note: The following information is available in the LiveCycle ES 8.0.1 SP2 Release Notes.

When a form design connects to a WSDL data source and an object exists on the form that contains scripting on its `form:ready` event, import the WSDL data without forcing a remerge the form itself. If you remerge the form and WSDL data, the drop-down list named `AWS_ACTION` is displayed incorrectly on the rendered form in Workspace ES. To ensure that the process fields are displayed correctly, you must make the following changes to the script.

JavaScript: `xfa.connectionSet.DataConnection.execute(0);`

FormCalc: `xfa.connectionSet.DataConnection.execute(0)`

Process creation guidelines

When creating the process, consider the following techniques to avoid displaying the `AWS_ACTION` field when the form design includes scripting to a WSDL data source.

- Avoid remerging the rendered PDF form when possible. If you choose to remerge the form and WSDL data, the drop-down list named `AWS_ACTION` is displayed incorrectly on the rendered form in Workspace ES.
- To use the merged PDF form, save the PDF form in the `document` attribute of a `Document Form` variable and then configure the render service to render the form only once. To configure the render service to render once, select the Call The Render Service Only Once option on the Render Service tab.

  For more information, see Default Render ES Update 1 in *LiveCycle Workbench ES Help*.

Server configuration guidelines

No guidelines are required for server configuration.

Displaying PDF forms in Acrobat or Adobe Reader versions

You can force users to use a specific Acrobat or Adobe Reader version to complete tasks in Workspace ES. You may want users to use a specific version in order to have only specific Acrobat or Adobe Reader features available.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

Create a custom version of the Render PDF Form ES Update 1 process and modify settings to render a PDF form in a specific Acrobat or Adobe Reader version. Specify the version by selecting the Render PDF Form step (renderPDFForm operation) and, in the Acrobat Version option, in the PDF Form Render Options property, select the Acrobat or Adobe Reader version you want.

For more information, see Render PDF Form ES Update 1 and renderPDFForm in *LiveCycle Workbench ES Help*.

Server configuration guidelines

No guidelines are required for server configuration.

Displaying form guides

Instead of rendering forms as PDF or HTML, you can render them as form guides. Form guides are an alternative view of a form, based on Adobe Flash technology, that steps users through the form-filling process. Each form guide is a collection of layouts, sections, panels, and controls that together provide an alternative interface of a form for users to view and fill.

Form creation guidelines

When creating the form, consider using the following techniques for static PDF forms, dynamic PDF forms, or XML form to display form guides in Workspace ES.

- Create a form by using Designer ES and create the form guide structure by using Guide Builder. To have a form guide that is consistent with the Workspace ES interface, use the default form guide layout called *Workspace*.
- To execute scripts in form guides for calculations or for validating values entered by the user, add an indirect submit button. An *indirect submit button* is a regular button that points to a submit button by using a script.

For more information, creating form guides, see “Using a Form Guide in LiveCycle Workspace ES” and “About Form Guides” in *Getting Started with Form Guides*.

For information about how Workspace ES uses indirect submit and submit buttons, see:

- How LiveCycle Workspace ES handles buttons in PDF forms in *LiveCycle Designer ES Help*.
- Inject Form Bridge in *LiveCycle Workbench ES Help*.

Process creation guidelines

Create an `xfaForm` variable to handle form guides. Configure Render and Submit services for the `xfaForm` variable to use the Render Form Guide ES Update 1 and Submit Form Guide ES Update 1 services.

For information about configuring a process to render form guides, see Rendering XML Forms as form guides in *LiveCycle Workbench ES Help*.

Server configuration guidelines

No guidelines are required for server configuration.

Server configuration guidelines

No guidelines are required for server configuration.

Displaying HTML Forms

You can render XML forms as HTML. This may be useful for users who access Workspace ES and may not have Acrobat or Adobe Reader, and they may not need a form guide.

Form creation guidelines

Unlike PDF form or form guide renditions, the Complete button in Workspace ES is not displayed for HTML forms. The location where you positioned the Process Fields object in the form design is where the buttons in the HTML form are displayed. In a long form, position the Process Fields object at the top of the form.

For more information about preparing XML forms to be rendered as HTML forms, see Preparing a form for use in Workspace ES in *LiveCycle Designer ES Help*.

Process creation guidelines

When creating the process, consider the following techniques to display HTML forms in Workspace ES.

- Use an `xfaForm` variable as a form variable. (See Variables for form data in *LiveCycle Workbench ES Help*.)
- Use the provided Render HTML Form and Submit HTML Form services with an `xfaForm` variable. (See Rendering Adobe XML forms as HTML forms in *LiveCycle Workbench ES Help*.)

Server configuration guidelines

No guidelines are required for server configuration.

4 Applying Usage Rights to PDF forms

You can apply usage rights to PDF forms created in LiveCycle Designer ES or Acrobat so that LiveCycle Workspace ES users who are using Adobe Reader can complete tasks. These guidelines assume that you have an understanding of the Reader Extensions service. (See "Reader Extensions Service" in *LiveCycle ES Services* and "LiveCycle Reader Extensions ES" in *LiveCycle ES Overview*.

Applying usage rights to a PDF form enables Workspace ES users who use Adobe Reader to perform the actions that Adobe Reader does not support by default, such as digitally signing a document and saving filled-in copies of forms. In usual situations, Adobe Reader users cannot perform such tasks.

Applying usage rights to a PDF form does not permit users access to Workspace ES features, which are different from PDF usage rights. For example, when you apply the usage right to add attachments, it is not the same as enabling the Add Attachments and Notes feature in Workspace ES.

A challenge when you use the Reader Extensions service is to ensure that usage rights do not break during the execution of the human-centric process. The following list describes techniques for applying usage rights to a PDF form:

- Applying usage rights by using Acrobat (See Using Acrobat to apply usage rights to PDF forms.)
- Applying usage rights by using Adobe LiveCycle Reader® Extensions ES (8.2) web application (Using Reader Extensions ES to apply usage rights to PDF forms.)
- Applying usage rights during process execution for PDF forms (See Applying usage rights to PDF forms.)
- Applying usage rights to Adobe XML forms during process execution (See Applying usage rights to XML forms during process execution.)
- Applying usage rights to enable the commenting bar in Adobe Reader (See Applying usage rights to enable the commenting bar.)

Using Acrobat to apply usage rights to PDF forms

You can use Acrobat to apply usage rights to PDF forms created in Designer ES (static PDF forms and dynamic PDF forms) or Acrobat (Acrobat forms) before they are used in processes.

Tip: In Acrobat, use the Extend Features in Adobe Reader command in the Advanced menu to apply usage rights to a PDF form.

Acrobat extends only a subset of the available usage rights that you can apply to a PDF form.

For information about other available usage rights, see "Applying usage rights to PDF documents" in *LiveCycle ES Services*.

Acrobat applies the following usage rights to a PDF form.

- Saving filled-in copies of forms that users complete
- Adding comments to the PDF
- Taking the PDF form offline
- Adding attachments

- Using the Typewriter tool
- Digitally signing a form

When you apply usage rights to PDF forms by using Acrobat, the PDF form can be filled up to five hundred times. Therefore, it is recommended that you use the Reader Extensions ES web application to apply usage rights to PDF forms that are used in processes because Reader Extensions ES has no limit. (See Using Reader Extensions ES to apply usage rights to PDF forms.)

For information about using Acrobat to apply usage rights to PDF forms, see *Acrobat Pro Help*.

Form creation guidelines

When your process is used by Workspace ES users who use Adobe Reader, apply usage rights to the PDF form you created in Acrobat or Designer ES after you enable the form for Workspace ES.

The following tasks describe how to use Acrobat to apply usage rights to a PDF form created in Designer ES or Acrobat.

1. Create a PDF form by performing one of the following tasks:
   - In LiveCycle Designer ES, create a static or dynamic PDF form, enable it for Workspace ES and add a Form Bridge object to the form design. The Form Bridge object prevents the render service from injecting the form script that breaks usage rights on the form.
   - In Acrobat, create a PDF form and enable it for Workspace ES.
2. In Acrobat, open the PDF form and then select Advanced > Extend Features in Adobe Reader.

For more information about form creation guidelines, see:

- To prepare form designs for use in LiveCycle Workspace ES in *LiveCycle Designer ES Help*
- Leveraging Acrobat forms in LiveCycle Workspace ES

Process creation guidelines

When creating the process, consider using the following techniques when you use a PDF form that has usage rights applied to it.

- Use a `Document Form` variable so that PDF data, instead of the form data, is passed from operation to operation.
- If your process requires that you secure the form by using the Encryption or Rights Management service, or certifying the PDF form, remove the usage rights on the form by using the Remove Usage Rights operation. (See Remove Usage Rights in *LiveCycle Workbench ES Help.)*

Server configuration guidelines

No guidelines are required for server configuration.

Using Reader Extensions ES to apply usage rights to PDF forms

You can use the Reader Extensions ES (8.2) web application to apply usage rights to a PDF form created in Designer ES or Acrobat before it is used in a process. However, in this case, you cannot use perform

operations from the Encryption, Rights Management, and Signatures services until you remove the usage rights from the PDF form.

For information about using the Reader Extensions service to apply usage rights, see the following resources:

- "Applying usage rights to PDF documents" section in *LiveCycle ES Services*.
- *LiveCycle Reader Extensions ES Help*.

Form creation guidelines

When you apply usage rights to a PDF form for use with Adobe Reader, consider applying usage rights after you enable the form for Workspace ES and save it in the repository.

The following tasks describe how to apply usage rights to a PDF form created in Designer ES or Acrobat before you use it in a process.

1. Create a PDF form by performing one of the following tasks
   - In LiveCycle Designer ES, create a static or dynamic PDF form, enable it for Workspace ES, and add a Form Bridge object to the form design. The Form Bridge object prevents the render service from injecting the form script that breaks usage rights on the form.
   - In Acrobat, create a form design and enable it for Workspace ES.
2. Use the Reader Extensions ES web client to apply usage rights.
3. Save the form in the repository. You can drag the form into the repository in Workbench ES.

For more information about applying usage rights to a form, see:

- Preparing a form for use in Workspace ES in *LiveCycle Designer ES Help*.
- To prepare form designs for use in LiveCycle Workspace ES in *LiveCycle Designer ES Help.*
- Leveraging Acrobat forms in LiveCycle Workspace ES.
- *LiveCycle Reader Extensions ES Help*.

Process creation guidelines

When creating the process, consider using the following techniques when you use a PDF form that has usage rights applied to it.

- Use a `Document Form` variable so that the PDF data is passed from operation to operation instead of the form data.
- If your process requires that you secure the form by using the Encryption or Rights Management service, or by certifying the PDF form, remove the usage rights first by using the Remove Usage Rights operation.

For more information, see Remove Usage Rights in *LiveCycle Workbench ES Help*.

Server configuration guidelines

You must configure a valid credential before you can configure your Apply Usage Rights operation. The credential that you use is referenced in your process with an alias. When you move your process from your

development environment to a staging or production environment, your credential alias must exist on the LiveCycle ES server you are connected to.

For more information about configuring credentials, see:

- "Configuring the credential" in "Reader Extensions Service" chapter of *LiveCycle ES Services*
- *LiveCycle Reader Extensions ES Help*
- Importing and exporting local credentials in *Trust Store Management Help*

Applying usage rights to PDF forms

You can apply usage rights to PDF forms created in Designer ES (static PDF forms and dynamic PDF forms) or Acrobat (Acrobat forms) by using the Apply Usage Rights operation from the Reader Extensions service. Using this operation permits you to apply the specific usage rights when you require them during process execution.

For information about available usage rights, see:

- *Apply Usage Rights* in *LiveCycle Workbench ES Help*
- "Applying usage rights to PDF documents" in *LiveCycle ES Services*.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

You can use the Apply Usage Rights operation from the Reader Extensions service to apply usage rights to a PDF created in Designer ES or Acrobat. Apply usage rights during process execution for the following reasons:

- The PDF form has the usage rights only when necessary.
- You require more control over the granularity of usage rights.
- You require usage rights that are not available with Acrobat.

When you apply usage rights to a PDF form, for the form variable, configure a custom render service that includes the Apply Usage Rights operation.

A simple way to create a custom render process is to copy the original render service that you planned to use.

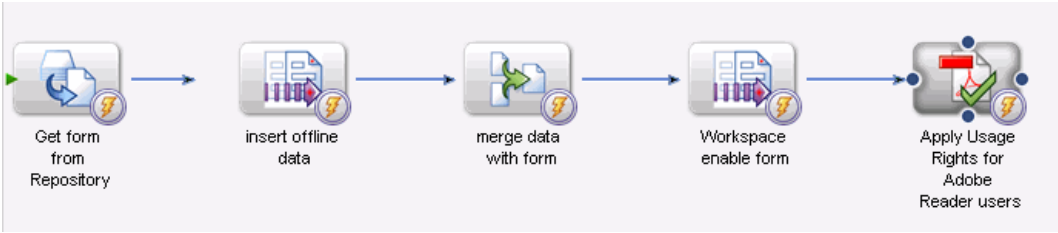
Note: When you plan to use other operations from the Encryption, Signature, and Rights Management service in your custom render process, you must use a particular sequence of operations.

For more information, see Certifying policy-protected documents in *LiveCycle Workbench ES Help* and "Order of operations" in the "Reader Extensions Service chapter" of *LiveCycle ES Services*.

The following tasks describe how to create a custom render process that applies usage rights.

1. Copy an existing render service to base your custom render service on and add the Apply Usage Right operation as the last step. For example, if you copy the Default Render ES Update 1 process, add the Apply Usage Rights step after the Workspace Enable Form step (Inject Form Bridge operation). The

following illustration shows a custom render service that copies the Default Render ES Update 1 process.



2. Configure the Apply Usage Rights operation by performing the following tasks:
   - Set the Input PDF Document and Output PDF Document properties to the `outPDFDoc` variable from the process.
   - Type the name of the credential alias that is configured on the server.
   - Specify the usage rights to apply to the PDF form.

For more information about configuring the properties of the Apply Usage Rights operation, see Apply Usage Rights in *LiveCycle Workbench ES Help*.

Server configuration guidelines

You must configure a valid credential before you can configure your Apply Usage Rights operation. The credential that you use is referenced in your process using an alias. When you move your process from your development environment to a staging or production environment, your credential alias must exist on the LiveCycle ES server you are connected to.

For more information about configuring credentials, see:

- "Configuring the credential" in "Reader Extensions Service" chapter of in *LiveCycle ES Service*.
- Importing and exporting local credentials in *Trust Store Management Help*.

Applying usage rights to XML forms during process execution

When you use an XML form (XDP file), you must render the form design as a PDF form in Workspace ES and then enable the PDF form for Adobe Reader. For XML forms, you can configure the render service so that the usage rights are not broken.

Caution: You cannot use Acrobat or the Reader Extensions ES web application to apply usage rights to XML forms because XML forms are rerendered by the Forms service each time it is displayed to the user.

Form creation guidelines

No guidelines are required for form creation.

Process creation guidelines

To prevent users from breaking usage rights and losing any attachments to the PDF form when they click Save in Adobe Reader, create a custom render service and configure it as the render service for your `xfaForm` variable.

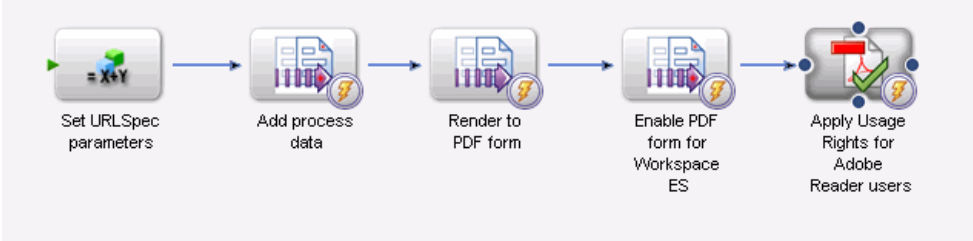
A simple way to create a custom render process is to create a copy the original Render PDF Form ES Update 1 process and then, add the Apply Usage Rights operation as the last step in the process.

Note: When you plan to use other operations from the Encryption, Signature, and Rights Management service in your custom render process, a particular sequence of operations must be observed.

For more information, see Certifying policy-protected documents in *LiveCycle Workbench ES Help* and "Order of operations" (Reader Extensions Service chapter) in *LiveCycle ES Services*.

The following tasks describe how to create a custom render process that applies usage rights:

1. Copy the Render PDF Form ES Update 1 process and add the Apply Usage Rights step after the Workspace Enable Form step (Inject Form Bridge operation). Apply usage rights to your PDF form as the last step in the process. The following illustration shows accustom render service that copies the Render PDF Form ES Update 1 process.



2. Configure the Apply Usage Rights operation by performing the following tasks:
   - Set the Input PDF Document and Output PDF Document to the outFormDoc variable from the process.
   - Type the name of the credential alias configured on the server.
   - Specify the usage rights to apply on the PDF form.

   For more information about configuring the properties of the Apply Usage Rights operation, see Apply Usage Rights in *LiveCycle Workbench ES Help*.

3. Select the Render to PDF form step (renderPDFForm operation) and change the following settings in the PDF Form Render Options property group to render a dynamic PDF form:
   - Acrobat Version property to Acrobat and Adobe Reader 7.0.5 or later or the latest version used your users.
   - Render At Client property to a value of `Yes`.

   For information about configuring the Render PDF Form operation, see renderPDFForm in *LiveCycle Workbench ES Help*.

   For information about configuring the Render PDF Form ES Update 1 service, see*Render PDF Form* ES Update 1, also in *LiveCycle Workbench ES Help*.

Server configuration guidelines

Before you can configure your Apply Usage Rights operation, you must configure a valid credential. The credential that you use is referenced in your process with an alias. When you move your process from your development environment to a staging or production environment, your credential alias must exist on the LiveCycle ES server you are connected to.

For more information about configuring a valid credential, see:

- "Configuring the credential" in "Reader Extensions Service" chapter of *LiveCycle ES Services*
- Importing and exporting local credentials in *Trust Store Management Help*.

Applying usage rights to enable the commenting bar

To enable commenting on a rendered PDF form, you must add additional usage rights to enable the commenting bar for Adobe Reader 8.0 and later. This is a known issue.

For more information, see "Review & Comment toolbar missing" in *Adobe LiveCycle ES Update 1 Service Pack 1 (8.2.1.1) Release notes*.

Form creation guidelines

When you use Reader Extensions ES web application to apply usage rights, in addition to the Commenting and Online Commenting rights, add the Digital Signatures usage right to enable use of the commenting bar in Adobe Reader.

For more information, see Using Reader Extensions ES to apply usage rights to PDF forms.

Process creation guidelines

The easiest way to create a custom render service is to create a copy of the render service you are planning to use with the form variable, such as the Default Render ES Update 1, and then add the Apply Usage Rights operation as the last step.

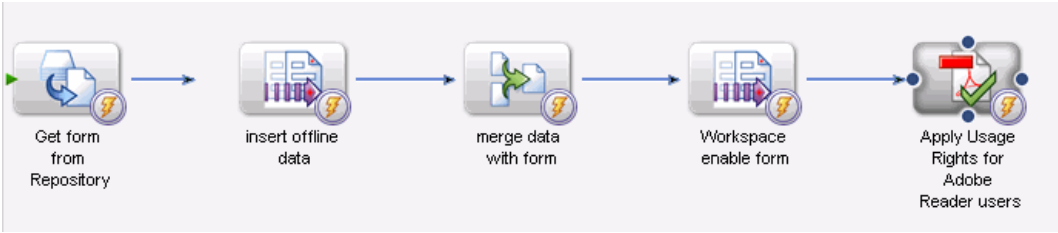
Note: When you plan to use other operations from the Encryption, Signature, and Rights Management service in your custom render process, a particular sequence of operations must be observed.

For information about the sequence, see Certifying policy-protected documents in *LiveCycle Workbench ES Help* and "Order of operations" in Reader Extensions Service" chapter of *LiveCycle ES Services*.

The following tasks describe how to create a custom render that applies usage rights:

1. Copy an existing render service to base your custom render service on and add the Apply Usage Right operation as the last step. For example, if you copy the Default Render ES Update 1 process, add the Apply Usage Rights step after the Workspace Enable Form step (Inject Form Bridge operation). The

following illustration shows a custom render service that copies the Default Render ES Update 1 process.



2. Configure the Apply Usage Rights operation. After you add this operation, set the Input PDF Document and Output PDF Document properties to the outFormDoc variable from the process, and configure the Credential Alias property. For the Apply Usage Rights Options property, select the following usage right options:
   - Commenting
   - Commenting Online
   - Digital Signatures

   For more information, see Apply Usage Rights in *LiveCycle Workbench ES Help*.

Server configuration guidelines

You must configure a valid credential before you can configure your Apply Usage Rights operation. The credential that you use is referenced in your process with an alias. When you move your process from your development environment to a staging or production environment, your credential alias must exist on the LiveCycle ES server to which you are connected.

For more information about configuring a valid credential, see:

- "Configuring the credential" in "Reader Extensions Service" chapter of *LiveCycle ES Services*
- Importing and exporting local credentials in *Trust Store Management Help*

5 Signing and Certifying Forms with Workspace ES

As part of a human-centric process, it is common to allow users to digitally sign PDF forms within LiveCycle Workspace ES. (See Designing human-centric processes to sign PDF forms in LiveCycle Workspace ES.) This type of signing is known as *client-side signing*. It is also common to use the Signature service to certify or validate the contents of PDF forms or to digitally sign PDF forms on the server. Performing operations on the server is useful when users have a large volume of work.

One challenge when working with the Signature service is to ensure that existing digital signatures are not invalidated and certifications are not broken within Workspace ES. Sometimes they occur for the following reasons:

- During the rendering of a form, form objects are modified to hide the submit button.
- The form is augmented by adding the Form Bridge object, which is required for users to take a PDF form offline.

In general, when you use the Signature service, the type of form you choose determines the techniques and design guidelines to use to prevent signatures from being invalidated and certified forms from being broken. The following guidelines describe techniques to use to digitally sign and certify forms in human-centric processes.

- To use digital signatures with human-centric processes, see Designing human-centric processes for digital signatures.
- To use certified forms with human-centric processes in Workspace ES, see Certifying forms for human-centric processes.

Note: These guidelines assume that you understand the Signature service. (See "Signature service" in *LiveCycle ES Services* and "LiveCycle Digital Signatures ES" in *LiveCycle ES Overview*.)

Designing human-centric processes to sign PDF forms in LiveCycle Workspace ES

As part of designing a human-centric process, you can have Workspace ES users sign a PDF form created in LiveCycle Designer ES or Acrobat. Client-side signing is possible by using the hosted Adobe Acrobat or Adobe Reader plug-in from Workspace ES. For example, as part of a loan approval process, you can require a Workspace ES user to approve the loan request by first digitally signing the PDF form and then clicking the Complete button.

The following design guidelines are useful when designing processes that require a Workspace ES user to digitally sign a form.

Form creation guidelines

When creating the form, consider the following techniques to allow Workspace ES users to digitally sign the form. The form creation technique you choose depends on the type of form that is used with the human-centric process.

Acrobat form: Enable the form by using the techniques described in Leveraging Acrobat forms in LiveCycle Workspace ES in *LiveCycle Workbench ES Help*.

Static PDF form and dynamic PDF form: Enable the PDF form for Workspace ES by adding the Process Fields object to the form design. In the Process Fields object, select the AWS_Submit button and set it to submit PDF data instead of the default XDP data. You can use static PDF forms and dynamic PDF forms when digital signatures are applied by Workspace ES users (client-side).

XML form: You can use XML forms to have different types of output in the human-centric process. Enable the form for Workspace ES by adding the Process Fields object to it. You cannot use digital signatures when XML forms are rendered as HTML forms; you can only use PDF forms. You can use signatures when you render to form guides if a PDF form is rendered with it. Ensure that you configure the XML form to render as a static PDF form and submit PDF data.

Flex application: You cannot use Flex applications with digital signatures. However, you can take the data from the Flex application, merge it with a PDF form, and the permit Workspace ES users to digitally sign it.

Process creation guidelines

When creating the process, consider the following techniques so that Workspace ES users can digitally sign PDF forms.

- Design the process so that form filling activities are completed on the form before users digitally sign it. When you follow this design practice, it avoids unsigned changes in the PDF form.
- Use a form variable of type `Document Form`. Using this type as a form variable, you can pass the PDF data, not the XDP, or XML as data, which prevents the form from being remerged and rerendered. In addition, configure the render service for the form variable to render the PDF form only once.
- Apply the Basic Form Fill-in and Digital Signatures usage rights to the PDF form in the render service that you use for the form variable. Applying usage rights to the PDF form ensures that Workspace ES users can use Adobe Reader to complete tasks.
- Use a short-lived process to implement Signature service operations. Human-centric processes execute as long-lived processes.

For more information about how to design processes that require a Workspace ES user to digitally sign a form, see:

- Variables for form data in *LiveCycle Workbench ES Help*.
- Forms and form data in *LiveCycle Workbench ES Help*.
- Applying Usage Rights to PDF forms.
- Short-lived processes and long-lived processes in *LiveCycle Workbench ES Help*.

Server configuration guidelines

No additional guidelines are required for server configuration.

Designing human-centric processes for digital signatures

As part of automating your process, you can also sign a PDF form by using the Signature service. This means that digital signature operations are completed on the server, not by using the Acrobat or Adobe Reader plug-in within Workspace ES. This is useful when you have large volumes of PDF forms that you must sign or validate digitally.

The following common guidelines are not dependent on the form type you choose when using digital signatures in a human-centric process.

Form creation guidelines

When creating the form, consider the following techniques when your process digitally signs PDF forms or validates signatures on PDF forms. For more information, follow the relevant link based on the form type you choose.

Acrobat form: You must enable the PDF form for Workspace ES. (See Using Acrobat forms with digital signatures.)

Static PDF form and dynamic PDF form: It is recommended that you use static PDF forms when you use the Signature service. (See Using static PDF forms with digital signatures). Avoid using dynamic PDF forms because it always causes miscellaneous changes to occur and the Document Modified warning to trigger. When you use dynamic PDF forms, you cannot use certain operations that are available from service. For example, you cannot sign forms on the server. (See Using dynamic PDF forms with digital signatures.)

XML form: You can use XML forms (XDP files created using Designer ES) to have different types of output in the human-centric process. You cannot use digital signatures when forms are rendered as HTML forms, only PDF forms and form guides (assuming that a PDF form is rendered with it). (See Using Adobe XML forms with digital signatures.)

Flex application: You cannot use Flex applications with digital signatures. However, you can take the data from the Flex application and merge with a PDF form and the permit Workspace ES users to digitally sign it.

For more information about designing forms for signatures, see To use digital signatures in dynamic PDF forms in *LiveCycle Designer ES Help*.

For information form design guidelines, see “About the Signature service and form types” and “Requirements for form design and Workspace ES” in the “Signatures Service” chapter of *LiveCycle ES Services*.

Process creation guidelines

When you create the process, consider the following techniques to digitally sign PDF forms or validate signatures on PDF forms. Additional process creation techniques are available based on the form type you choose:

- Design the process so that changes to the fields and form filling are completed before users digitally sign it. When you follow this design practice, it avoids unsigned changes in the PDF form.
- Use a form variable of type `Document Form`. Using this type as a form variable allows you to pass the PDF, not the XDP data or XML as data, which prevents the form from being remerged and rerendered. Configure the render service for the form variable to render the PDF form only once. (See Variables for form data and Forms and form data in *LiveCycle Workbench ES Help*.)

- Use a short-lived process to implement Signature service operations. Human-centric processes execute as long-lived processes. (See Short-lived processes and long-lived processes in *LiveCycle Workbench ES Help.)*
- When you use operations from the Encryption, Reader Extensions, or Rights Management service, you must follow a particular sequence of operations. In general, use Encryption and Rights Management service operations, certify and digitally sign the PDF form with the Signature service (if necessary), and then Reader Extensions service operations. (See "Order of operations" in "Signature Service" chapter of *LiveCycle ES Services*.)
- Apply the minimum usage rights of Basic Form Fill-in and Digital Signatures to the PDF form for Workspace ES users who use Adobe Reader. Apply usage rights as the last step in your custom render service. (See Applying Usage Rights to PDF forms.)

For general process creation techniques, see Designing human-centric processes.

For general information when using digital signatures in processes, see "Best practices" in the Signature Service chapter of *LiveCycle ES Services.*

Server configuration guidelines

When you configure the server, consider the following techniques when your process digitally signs PDF forms or validates signatures on PDF forms.

- To improve security with processes, it is recommended that you configure the service that uses operations from the Signature service, such as the Sign Signature Field operation, to execute under a Named User account that has only the necessary permissions. For example, a human-centric process may invoke another service (created as a short-lived process) that signs a signature field on the form and performs other operations.

  By default, short-lived processes execute under the context of the human-centric process. Because human-centric processes are long-lived and they operate in the context of the system, short-lived processes execute with more permissions than necessary. Instead, use a Named User account to invoke the short-lived process so that it executes with only the required permissions and therefore improves security. To create a Named User account, create a separate user with a separate role. The new role should have only the necessary permissions, as follows, to invoke the operations in the short-lived process:

  - Certificate Read
  - Credential Read
  - Identity Impersonation Control
  - Repository Read
  - Service Invoke
- Configure a local credential or configure a Hardware Security Module (HSM) before you configure create processes. The credential that you use is referenced in your process using an alias. When you move your process from your development environment to a staging or production environment, your credential alias must exist on the LiveCycle ES server that you are connect to.

For more information about configuring the server, see:

- Modifying security settings in *Applications and Services Administration Help*.
- *User Management Help*.
- "Integrating with a security infrastructure" in "Signature Service" chapter of *LiveCycle ES Services*.

- LiveCycle Reader Extensions ES Help.
- Working with local credentials in *Trust Store Management Help.*

Using Acrobat forms with digital signatures

Use Acrobat PDF forms to provide a basic interactive form that you can use in human-centric processes. (See "Forms" in *Acrobat Pro Help*.)

Form creation guidelines

When you create the Acrobat form, in addition to the common form design guidelines (see Designing human-centric processes for digital signatures), consider the following techniques.

- Add digital signature fields to the form.
- Enable the Acrobat form for Workspace ES by adding a submit button, two hidden fields, and scripts.

For more information, see:

- "Signing PDFs" in *Acrobat Pro Help*.
- Leveraging Acrobat forms in LiveCycle Workspace ES in *LiveCycle Workbench ES Help.)*

Process creation guidelines

In addition to the common process creation guidelines (see Designing human-centric processes for digital signatures), use a form variable of type `Document Form` (instead of `xfaForm`) to configure the Default Render ES Update 1 service.

For more information, see Leveraging Acrobat forms in LiveCycle Workspace ES.

Server configuration guidelines

No additional guidelines are required for server configuration.

Using static PDF forms with digital signatures

It is recommended that you use static PDF forms for all the Signature service operations with human-centric processes.

Form creation guidelines

When creating the form, in addition to the common form design guidelines, consider the following techniques when you use static PDF forms.

- Add Signature Field objects to the form design so that Workspace ES users can digitally sign a form using Acrobat or Adobe Reader.
- Instead of adding the Process Fields object to enable your PDF form, add a *submit button*, which is a Button object that has the following properties configured:
  - Control Type set to Submit
  - Presence set to Invisible (not required for form designs as HTML forms)

- Submit Data set to PDF instead of the default XDP

  In addition, adding the Form Bridge object is always required when your PDF form is secured using Encryption or Rights Management operations, or when the form has usage rights applied to it.

- Avoid using scripts that modify the document between signatures. If your form design uses scripts, in Workbench ES, open the form, select Edit > Form Properties > Defaults and, in the Scripting area, select Manually from the Preserve Scripting Changes To Form When Saved list. The default value of Automatically invalidates existing digitally signatures.

For more information about form design guidelines, see:

- To add a data signature to a submit button in *LiveCycle Designer ES Help*.
- To add a data signature to a submit button in *LiveCycle Designer ES Help*
- To use digital signatures in dynamic PDF forms in *LiveCycle Designer ES Help*
- "Requirements for form design and Workspace ES" in "Signature Service" chapter of *LiveCycle ES Services*.
- Preparing a form for use in Workspace ES in *LiveCycle Designer ES Help*.

Process creation guidelines

In addition to the common process creation guidelines when using the Signature service in human-centric processes (see Designing human-centric processes for digital signatures), use a form variable of type `Document Form`. Configure the render service for the form variable to render a PDF form only once. Using a `Document Form` type as a form variable allows you to pass the PDF, not the XDP, or XML as data, which prevents the form from being remerged and rerendered. (See Variables for form data and Forms and form data in *LiveCycle Workbench ES Hel*p.)

For general information when using the Signature service, see "Best practices" in"Signature Service" chapter of *LiveCycle ES Services.*

Server configuration guidelines

No additional guidelines are required for server configuration.

Using dynamic PDF forms with digital signatures

It is not recommended that you use dynamic PDF forms with digital signatures. Dynamic PDF forms cause miscellaneous changes to occur and the Document Modified warning to trigger. Also, you cannot perform the following tasks when you use dynamic PDF forms with the Signature service:

- Validate signatures to a dynamic PDF form
- Add or modify signature fields to a dynamic PDF form
- Add a recipient signature to a dynamic PDF form

However, if you must use a dynamic PDF form, use the following design guidelines to prevent invalid signatures when you use it with Signature service operations.

Form creation guidelines

When you create the form, in addition to the common form design guidelines (see Designing human-centric processes for digital signatures), consider the following techniques when you use dynamic PDF forms.

- Add Signature Field objects to the form design so that Workspace ES users can digitally sign the form by using Acrobat or Adobe Reader.
- Instead of adding the Process Fields object to enable your PDF form, add a *submit button*, which is a Button object that has the following properties configured:
  - Control Type set to Submit
  - Presence set to Invisible
  - Submit Data set to PDF instead of the default XDP

  Optionally, add a Form Bridge object to the form design. Use the Process Fields object only when offline access and email routing takes precedence over signatures in your process.
- Save the form as Acrobat and Adobe Reader 7.0.5 and later in order to save it as a Dynamic XML Form (*.pdf). When you use dynamic PDF forms, use them only for data capture purposes to complete the task, and then convert the dynamic PDF form to a static PDF form that is signed or validated.

For more information about form design guidelines for dynamic PDF forms, see the following topics in *LiveCycle Designer ES Help*:

- To add a data signature to a submit button.
- To add a data signature to a submit button.
- To use digital signatures in dynamic PDF forms.

Process creation guidelines

When you create the process, in addition to the common process creation guidelines when using Signature service in human-centric process (see Certifying forms for human-centric processes), consider the following techniques when you use dynamic PDF forms.

- Design your form to only capture data from the user and convert the dynamic PDF form to a static PDF form that is signed by using operations from Signature service instead of having users sign the document by using Acrobat or Adobe Reader.
- Use a form variable of type `Document Form`. Configure the render service for the form variable to render the PDF form only once. Using a `Document Form` type as a form variable, allows you to pass PDF data, not the XDP data or XML, which prevents the need for the form to be re-merged and rerendered.
- Convert your dynamic PDF form to a non-interactive PDF document by using the Output service and sign it using the Sign Signature Field operation (Signature service).

For more information, see the following topics in *LiveCycle Workbench ES Help*:

- Variables for form data.
- Forms and form data.
- Output service.
- Forms service.
- Signature service.

Server configuration guidelines

No additional guidelines are required for server configuration.

Using Adobe XML forms with digital signatures

Use XML forms to render to different output types that include HTML forms, PDF forms, and form guides.

Form creation guidelines

When creating the form, in addition to the common form design guidelines (see Designing human-centric processes for digital signatures), consider the following techniques when you use XML forms rendered as PDF forms.

- Add Signature Field objects to the form design so that Workspace ES users can digitally sign the form by using Acrobat or Adobe Reader. (See To add a data signature to a submit button in *LiveCycle Designer ES Help*.)
- Instead of adding the Process fields object, add a submit button and, optionally, a Form Bridge object to the form design. Use the Process Fields object only when offline access and email routing takes precedence over signatures in your process.

  For information about the submit button, see Enabling forms for Workspace ES. Add the Form Bridge object to the form design when you use Encryption, Rights Management, Reader Extensions service operations on the rendered PDF form.
- If you plan to render form guides as output, create a form guide by using Guide Builder in Designer ES. (See *Getting Started with Form Guides*.)
- Avoid using scripts that modify the document between signatures. If your form uses scripts, in Workbench ES, select Edit > Form Properties > Defaults and, in the Scripting area, select Manually from the Preserve Scripting Changes To Form When Saved list. The default value of Automatically invalidates existing digitally signatures.

Process creation guidelines

When you create the process, in addition to the common process creation guidelines when using Signature service in human-centric process (see Certifying forms for human-centric processes), consider the following techniques when you use Adobe XML forms rendered as PDF forms.

- Use a form variable of type `xfaForm` (see Document Form and Variables for form data in *LiveCycle Workbench ES Help*). Configure the render service to render the form only once.
- To render a PDF form, create a custom render process based on the Render Form Guide ES Update 1 service. (See Creating custom render and submit processes.) In your custom render process, select the Render PDF Form step (see renderPDFForm in *LiveCycle Workbench ES Help*) and, in the PDF Form Render Options property, make the following changes:
  - In the Acrobat Version list, select Acrobat or Adobe Reader 7.0.5 or later. Use the latest version as a minimum. For example, if all users use Acrobat 8.0, configure Acrobat or Adobe Reader 8.0 or later.
  - In the Render At Client list, select No (see "Ensuring that no rendering occurs after signing" in "Signature Service" chapter of *LiveCycle ES Services*.)

  If you plan to render a form guide to users in Workspace ES, also render a PDF form to users; otherwise, users cannot provide a digital signature. If you are rendering a form guide, modify the renderFormGuide operation (Forms service) instead. Make the same changes to the PDF Form Render

Options property as described for the renderPDFForm operation above. (See renderFormGuide in *LiveCycle Workbench ES Help*.)

- When you render a form guide, ensure that you display the Show/Hide PDF option so that users can digitally sign the PDF form. (See Displaying form guides.)

Server configuration guidelines

There are no additional configuration techniques that are not described in Designing human-centric processes for digital signatures.

Certifying forms for human-centric processes

You can certify PDF forms to let users know that the form content is valid and authentic (verified by a trusted third-party vendor). Another benefit of certified PDF forms is that you can run high-privilege JavaScript. You can certify a form so that it allows a user to change the data in the form but not the content or layout of a form. For example, you can change the value of a field (data), but you cannot change the field, delete it, or add a new field because it causes a certification to break.

You can certify a PDF form by using Acrobat (see Using Acrobat to certify PDF forms) or during execution of your human-centric process. The following guidelines describe how to certify PDF forms during process execution.

Form creation guidelines

When creating the form, consider the following techniques when you want to certify PDF forms during process execution. For more information, follow the related link based on the form type you choose:

Acrobat form: You can use Acrobat PDF forms with digital signatures. (See Certifying Acrobat forms.)

Static PDF form and dynamic PDF form: It is recommended that you use static PDF forms. (See Certifying static PDF forms). You can use dynamic PDF forms; however, it is not recommended because it is easy to invalidate existing digital signatures on a PDF form. (See Using dynamic PDF forms with digital signatures.)

XML form: Use XML forms to have different types of output in the human-centric process. You cannot use digital signatures when forms are rendered as HTML forms or form guides (unless you render a PDF form with the form guide); you can use only PDF forms. (See Certifying static PDF forms.)

Flex application: You cannot use Flex applications with digital signatures unless you take data from the Flex application, and merge and create a PDF document for use your human-centric process.

For more form design guidelines, see “About the Signature service and form types” and “Requirements for form design and Workspace ES” in “Signature Service” chapter of *LiveCycle ES Services*.

Process creation guidelines

When creating the process, consider the following techniques when you certify PDF forms during process execution. Additional process creation guidelines are available based on the form type you choose to use.

- Design the process so that any changes to the fields and form-filling are completed before you certify the form. Following this design practice avoids the chance that the form contents are modified and it keeps signatures valid.

- When you use operations from the Encryption, Reader Extensions, or Rights Management services, you must follow a particular sequence of operations. In general, use Encryption and Rights Management service operations before you perform any certification operations from the Signature service. Only after you certify the PDF form can you use Reader Extensions service operations. (See "Order of operations" in the "Signature Service" chapter of *LiveCycle ES Services* and also see Certifying policy protected documents in *LiveCycle Workbench ES Help*)
- Use a short-lived process to implement any certification operations. Human-centric processes execute as long-lived processes. (See Short-lived processes and long-lived processes in *LiveCycle Workbench ES Help.)*
- Apply the minimum usage rights Basic Form Fill-in and Digital Signatures to the PDF form for Workspace ES users who use Adobe Reader. Apply usage rights as the last step in your custom render service. (See Applying Usage Rights to PDF forms.)

Server configuration guidelines

When configuring the server, consider the following techniques when you certify PDF forms in your process:

- To improve security with processes, configure the service that performs certification operations from the Signature service to run using a Named User account with only the required permissions. For example, a human-centric process may invoke another service (created as a short-lived process) that certifies a PDF form and performs other operations.

  By default, short-lived processes execute under the context of the human-centric process. Because human-centric processes are long-lived and they operate in the context of the system, short-lived processes execute with more permissions than necessary. Instead, use a Named User account to invoke the short-lived process so that it executes with only the required permissions and therefore improves security. To create a Named User account, create a separate user with a separate role. (See *User Management Help*.) The new role should have only the necessary permissions, as follows, to invoke the operations in the short-lived process:

  - Certificate Read
  - Credential Read
  - Identity Impersonation Control
  - Repository Read
  - Service Invoke
- Configure a local credential or HSM before you configure create processes. (See "Integrating with a security infrastructure" in "Signature Service" chapter of *LiveCycle ES Services* and also see LiveCycle Reader Extensions ES Help.) The credential that you use is referenced in your process using an alias. When you move your process from your development environment to a staging or production environment, your credential alias must exist on the LiveCycle ES server that you are connect to. (See Working with local credentials in *Trust Store Management Help)*

Using Acrobat to certify PDF forms

You can choose to certify a PDF form before saving it in the repository in LiveCycle ES for use in a process. Certifying a PDF form using Acrobat is useful when you do not want to certify a PDF form during process execution. You can certify PDF forms created in Designer ES and Acrobat. Use the following best practices if you choose to certify a form design and save it in the repository on the LiveCycle ES server:

- For Acrobat PDF forms, enable the PDF form for Workspace ES. (See Enabling forms for Workspace ES) and then certify the PDF form.)
- For PDF forms created in Designer ES, enable the PDF form for Workspace ES. (See Enabling forms for Workspace ES.) Ensure that you add the Form Bridge object and use a relative URL as the submit URL for the submit button on the form design before you certify the PDF form.
- In Acrobat, when you certify a PDF form, you can place a visible signature on the PDF form and also certify the PDF form. Ensure that you certify the PDF form with at least the Form Fill-in and Digital Signatures so that the form design can be used in Workspace ES. (See Digital Signatures > Signing PDFs > Certify a PDF in *Acrobat Pro Help*.)

Certifying Acrobat forms

Use the following design guidelines when you want to certify Acrobat forms by using the Signature service operations

Form creation guidelines

In addition to the common form design guidelines (see Certifying forms for human-centric processes), enable the Acrobat PDF form for Workspace ES by adding a submit button, two hidden fields, and scripts. (See Leveraging Acrobat forms in LiveCycle Workspace ES in *LiveCycle Workbench ES Help*.)

Process creation guidelines

There are no additional process design guidelines that are not described in Certifying forms for human-centric processes.

Server configuration guidelines

There are no additional configuration guidelines that are not described in Certifying forms for human-centric processes.

Certifying static PDF forms

You may want to certify a static PDF form, which is created in Designer ES. Use a static PDF form if you do not need the form to be rerendered.

Form creation guidelines

In addition to the common form design guidelines (see Certifying forms for human-centric processes), consider the following techniques when you use static PDF forms.

- Enable the form for Workspace ES by using one of the following methods. The method you choose is based on the version of Acrobat or Adobe Reader that Workspace ES users use:

  Acrobat or Adobe Reader 6 or earlier: Add the Process Fields and the Form Bridge objects to the form design. In the Process Fields object, select the AWS_Submit button and ensure that these properties are configured as follows:

  - Presence set to Hidden
  - Submit Data set to PDF instead of the default XDP
  - Submit To URL set to http://*[server name]*:*[port]*/workspace-server/submit, where *[server name]* is the name of the server LiveCycle ES is installed on and *[port]* is the port number used to access the server

  The disadvantage of adding the Form Bridge object is that users cannot take a form offline. (See Using certified forms with Acrobat or Adobe Reader version 6 or earlier in *LiveCycle Workbench ES Help*.)

  Acrobat and Adobe Reader 8 and earlier: Enable the form design for Workspace ES by adding the Process Fields object and a Form Bridge object. In the Process Fields object, select the AWS_Submit button and ensure that these properties are configured as follows:

  - Presence set to Hidden
  - Submit Data set to PDF instead of the default XDP
  - Submit To URL set to http://*[server name]*:*[port]*/workspace-server/submit, where *[server name]* is the name of the server LiveCycle ES is installed on and *[port]* is the port number used to access the server

  Acrobat and Adobe Reader 9: Add a submit button and a Form Bridge object, instead of the Process Fields object, to the form design. A *submit button* is a Button object that has the following properties configured:

  - Control Type set to Submit
  - Presence set to Hidden
  - Submit Data set to PDF instead of the default XDP
  - Submit To URL set to http://*[server name]*:*[port]*/workspace-server/submit, where *[server name]* is the name of the server LiveCycle ES is installed on and *[port]* is the port number used to access the server

  For information about configuring a submit button and working with certified forms, see Working with certified signatures in forms with Workspace ES in *LiveCycle Workbench ES Help*.

- To certify a form with a visible signature, change the default version of the form design. In Workbench ES, open the form, select Edit > Form Properties > Defaults and, in the Target Version area, select Acrobat And Adobe Reader 7.0.5 and Later from the Choose Version To Run Form In list. This setting allows you to certify a form with a visible signature.
- When you use scripts in your form design and want to use certifying signatures within Workspace ES, preserve scripting changes manually to prevent breaking certification. To avoid breaking certification, in Workbench ES, open the form, select Edit > Form Properties > Defaults and, in the Scripting area, select Manually from the Preserve Scripting Changes To Form When Saved list.

Process creation guidelines

In addition to the common techniques for process design guidelines when using the Signature service in human-centric process (see Certifying forms for human-centric processes), use a form variable of type

`Document Form`. Configure the Render Service for the form variable to render the PDF form only once. Using a `Document Form` type as a form variable allows you to pass PDF data instead of XDP data or XML data, which eliminates the need to remerge and rerender the form. (See Variables for form data and Forms and form data in *LiveCycle Workbench ES Help*.)

Server configuration guidelines

There are no additional configuration techniques that are not described in Certifying forms for human-centric processes.

Certifying dynamic PDF forms

You may want to use dynamic PDF forms because the layout of the form may change based on the input from a user. For example, you can provide table changes or increases in size when users enter multiple items.

Form creation guidelines

In addition to the common form design guidelines (see Certifying forms for human-centric processes), consider the following form creation techniques when you use dynamic PDF forms.

- Enable the form for Workspace ES by using one of the following methods. The method you choose is based on the version of Acrobat or Adobe Reader that the Workspace ES users use:

  Acrobat or Adobe Reader 6 or earlier: Add the Process Fields and the Form Bridge object to the form design. In the Process Fields object, select the AWS_Submit button and ensure that these properties are configured as follows:

  - Presence set to Hidden
  - Submit Data set to PDF instead of the default XDP
  - Submit To URL set to http://*[server name]*:*[port]*/workspace-server/submit, where *[server name]* is the name of the server LiveCycle ES is installed on and *[port]* is the port number used to access the server

  The disadvantage of adding the Form Bridge object is that users cannot take a form offline. (See Using certified forms with Acrobat or Adobe Reader version 6 or earlier in *LiveCycle Workbench ES Help*.)

  Acrobat and Adobe Reader 7 and 8: Enable the form design for Workspace ES by adding the Process Fields object and a Form Bridge object. In the Process Fields object, select the AWS_Submit button and ensure that these properties are configured as follows:

  - Presence set to Hidden
  - Submit Data set to PDF instead of the default XDP
  - Submit To URL set to http://*[server name]*:*[port]*/workspace-server/submit, where *[server name]* is the name of the server LiveCycle ES is installed on and *[port]* is the port number used to access the server

Acrobat and Adobe Reader 9: Add a submit button and a Form Bridge object, instead of the Process Fields object, to the form design. A *submit button* is a Button object that has the following properties configured:

- Control Type set to Submit
- Presence set to Hidden
- Submit Data set to PDF instead of the default XDP
- Submit To URL set to http://*[server name]*:*[port]*/workspace-server/submit, where *[server name]* is the name of the server LiveCycle ES is installed on and *[port]* is the port number used to access the server

For information about configuring a submit button and working with certified forms, see Working with certified signatures in forms with Workspace ES in *LiveCycle Workbench ES Help*.

- To certify a form with a visible signature, change the default version of the form design. In Workbench ES, open the form, select Edit > Form Properties > Default in the Target Version area, and select Acrobat And Adobe Reader 7.0.5 and Later from the Choose Version To Run Form In list. Also add a Signature Field object for visible certifications.
- When you use scripts in your form design and want to use certification within Workspace ES, preserve scripting changes manually to prevent breaking certification. To avoid breaking certification, in Workbench ES, open the form, select Edit > Form Properties > Defaults and, in the Scripting area, select Manually from the Preserve Scripting Changes To Form When Saved list.

Process creation guidelines

In addition to the common techniques for process design guidelines when using Signature service in human-centric process (see Certifying forms for human-centric processes), consider the following process creation techniques when you use dynamic PDF forms.

- Use a form variable of type `Document Form`. Configure the Render Service for the form variable to render the PDF form only once. Using a `Document Form` type as a form variable, allows you to pass PDF data instead of XDP data or XML data, which eliminates the need to remerge and rerender the form.
- There are some limitations when you certify dynamic PDF forms:
  - If you use dynamic PDF forms, you cannot sign a visible Signature Field object.
  - You cannot certify invisible Signature Field objects.
  - You can certify visible Signature field objects on a form only if the Signature service is configured to process documents that are compatible with Acrobat 9, and the form is viewed using Acrobat or Adobe Reader 9.

For more information about the creating a process design when using the Signature service and dynamic forms, see the following topics in *LiveCycle Workbench ES Help*:

- Variables for form data.
- Forms and form data.
- "Signature Service" chapter of *LiveCycle ES Services*.

Server configuration guidelines

There are no additional configuration techniques that are not described in Certifying forms for human-centric processes.

Certifying Adobe XML forms

Use Adobe XML forms to display a form in multiple outputs in a human-centric process.

Form creation guidelines

In addition to the common form design guidelines (see Certifying forms for human-centric processes), consider the following form creation techniques when you use XML forms rendered as PDF forms:

- Add Signature Field objects for visible certifications.
- To certify a form, in Workbench ES, open the form, select Edit > Form Properties > Defaults and perform the following configuration:
  - In the Target Version area, select Acrobat And Adobe Reader 7.0.5 and Later from the Choose Version To Run Form In list. This setting allows you to certify a form with a visible signature.
  - In the Scripting area and, in the Scripting area, select Manually from the Preserve Scripting Changes To Form When Saved list, to use certifying signatures. This setting prevents certification from being broken when scripts are used on the form.
  - In the Server area, select Dynamic XML Form from the PDF Render Format list. Do not use Static PDF Form because when rendered in Workspace ES, it breaks certification.
- When you use scripts in your form design and want to use certifying signatures within Workspace ES, preserve the scripting changes manually to prevent breaking the certification. To avoid breaking certification, in Workbench ES, open the form, select Edit > Form Properties > Defaults and, in the Scripting area, select Manually from the Preserve Scripting Changes To Form When Saved list.
- For PDF forms that have usage rights applied to them, when viewed using Adobe Reader 9, a yellow triangle is inaccurately displayed to indicate that certification has been invalidated. For XML forms, add a submit button instead of the Process Fields custom component to avoid a yellow triangle from being displayed. Also, set the submit type of the submit button to PDF instead of the default XDP.
- Enable the form for Workspace ES by using one of the following methods. The method you choose is based on the version of Acrobat or Adobe Reader that Workspace ES users use:

  Acrobat or Adobe Reader 6 or earlier: Add the Process Fields and the Form Bridge object to the form design. In the Process Fields object, select the AWS_Submit button and ensure that these properties are configured as follows:

  - Presence set to Hidden
  - Submit Data set to PDF instead of the default XDP
  - Submit To URL set to http://*[server name]*:*[port]*/workspace-server/submit, where *[server name]* is the name of the server LiveCycle ES is installed on and *[port]* is the port number used to access the server

  The disadvantage of adding the Form Bridge object is that users cannot take a form offline. (See Using certified forms with Acrobat or Adobe Reader version 6 or earlier in *LiveCycle Workbench ES Help*.)

  Acrobat and Adobe Reader 7 and 8: Enable the form design for Workspace ES by adding the Process Fields object and a Form Bridge object. In the Process Fields object, select the AWS_Submit button and ensure that these properties are configured as follows:

  - Presence set to Hidden
  - Submit Data set to PDF instead of the default XDP

- Submit To URL set to http://*[server name]*:*[port]*/workspace-server/submit, where *[server name]* is the name of the server LiveCycle ES is installed on and *[port]* is the port number used to access the server

Acrobat and Adobe Reader 9: Add a submit button and a Form Bridge object to the form design instead of the Process Fields object. A *submit button* is a Button object that has the following properties configured:

- Control Type set to Submit
- Presence set to Hidden
- Submit Data is set to PDF instead of the default XDP.
- Submit To URL set to http://*[server name]*:*[port]*/workspace-server/submit, where *[server name]* is the name of the server LiveCycle ES is installed on and *[port]* is the port number used to access the server

For information about configuring a submit button and working with certified forms, see Working with certified signatures in forms with Workspace ES in *LiveCycle Workbench ES Help*.

Process creation guidelines

In addition to the common techniques for process design guidelines when using Signature service in human-centric process (see Certifying forms for human-centric processes), when creating the process, consider the following techniques when you use Adobe XML forms rendered as PDF forms.

- Use a form variable of data type `xfaForm`.
- For Workspace ES users who use Acrobat and Adobe Reader 7 and later, create a custom render service based on the Render PDF Form ES Update 1 service. Configure the renderPDFForm operation in the process to render a dynamic PDF form instead of a static PDF form because when static PDF forms are rendered, certification is broken.

Tip: To improve performance, configure the renderPDFForm operation so that it renders the PDF form on the server so that the form is rendered only once.

For more information about the creating a process design when using the Signature service and Adobe XML forms, see the following topics in *LiveCycle Workbench ES Help*:

- xfaForm.
- Forms and form data.
- Modifying the Render PDF Form ES Update1 process to use certified signatures in a form with Workspace ES.

Server configuration guidelines

There are no additional configuration techniques that are not described in Certifying forms for human-centric processes.

6 Using Document Security in Workspace ES

You can use the Encryption or Rights Management service to secure PDF forms created in LiveCycle Designer ES (static PDF forms and dynamic PDF forms) or Acrobat (Acrobat forms). It is assumed that you have an understanding of the Encryption and Rights Management services.

You may want to secure a PDF form after the user fills it. For example, after a user enters personal information, such as a telephone number, you may want to secure the PDF form as part of your process. You can also secure your PDF forms before they are used in a human-centric process. If a PDF form is secured when you pass it to an Assign Task operation (User service), the LiveCycle Workspace ES user must provide a password or certificate to open the PDF form. It is useful to secure information that is passed between users in a process in order to prevent exposure of sensitive information.

You secure forms by using the Encryption or Rights Management service during process execution. However, using Acrobat may be useful to secure PDF forms before they are used in a process.

The following reasons explain why you would use the Encryption service or Rights Management service to secure your PDF form during process execution.

- When you want enterprise level security, use the Rights Management service, which provides features such as, dynamic permission change and document revocation. The Rights Management service provides the level of security that is required for enterprise organizations. It is recommended that you use Rights Management service operations to secure PDF documents in your processes.
- When you need basic security, use the Encryption service to secure a PDF form when your human-centric process does not need to define different permissions for various users. Also, use this service when you want to have static security for the PDF document when you do not need full enterprise-level security.

Tip: When you encrypt the PDF file that the user submitted in Workspace ES, it is recommended that you use a certificate because the encryption is more robust. However, if you choose to use a password, it is highly recommended that you not use a master password for all your PDF files and you always provide a Document Open password. Ensure that Document Open password is never empty, and never use well-know default passwords, such as *password*.

For more information about securing PDF forms, see:

- "LiveCycle Rights Management ES" in *LiveCycle ES Overview*.
- "Encryption Service" in *LiveCycle ES Services*.
- "Rights Management Service" in *LiveCycle ES Services*.
- Securing PDF forms with Acrobat and Rights Management ES.
- Securing forms using the Rights Management service.
- Securing PDF forms using the Encryption service.

Securing PDF forms with Acrobat and Rights Management ES

You can choose to secure PDF forms created in Designer ES (static PDF forms and dynamic PDF forms) or Acrobat (Acrobat forms) before they are used in a process. This choice can be useful for doing simple

testing. Consider securing PDF forms that are external to process execution by using one of these methods:

- Use Acrobat to secure a PDF form by encrypting it with passwords and certificates.
- You can also use LiveCycle Rights Management ES to secure a PDF form.

For more information securing PDF forms, see:

- "Security" in *Acrobat Pro Help*.
- *LiveCycle Rights Management ES Help*.

Form creation guidelines

When creating the form, consider using the following techniques to secure a form design before using it in a process.

- Before you secure a PDF form design, enable it for Workspace ES by adding the Process Fields object or a submit button. In addition, also add the Form Bridge object to the form design.
- Secure the contents of the PDF form before you apply certification.

After you secure the form design, copy it to the repository.

For more information about securing a form design, see:

- Enabling forms for Workspace ES.
- "Signature Service" in *LiveCycle ES Services*.
- Creating folders and resources in *LiveCycle Workbench ES Help*.

Process creation guidelines

No guidelines are required for process creation.

Server configuration guidelines

No guidelines are required for server configuration.

Securing forms using the Rights Management service

The Rights Management service dynamically protects PDF forms created in Designer ES (static PDF forms and dynamic PDF forms) and Acrobat (Acrobat forms). Using the Rights Management service is recommended for enterprise organizations. However, if permission changes are required, you can also apply those changes dynamically without having to reencrypt and resend the form.

When you use the Rights Management service, apply policies that allow you to change permissions to PDF forms without having to apply the changes directly. For example, if you used the Encryption service to secure a PDF form and you wanted to add print permissions for a group of users, you need to reencrypt the PDF form and resend it to the group of users. If you used the Rights Management service to secure the PDF form, you only need to change permissions in the policy so that the group of users can print the file immediately. The Rights Management service also includes the functionality for you to revoke access to a document. For example, if you want to send out a new version of a PDF form, you can also prevent a user from opening older versions of the PDF form.

For more information about Rights Management ES and the Rights Management service, see the following resources:

- "Rights Management Service" in *LiveCycle ES Services*
- "LiveCycle Rights Management ES" in *LiveCycle ES Overview*.
- *LiveCycle Rights Management ES Help*.
- *LiveCycle Rights Management ES Administration Help*.

Form creation guidelines

In Designer ES, enable the PDF form for Workspace ES by adding a submit button instead of the Process Fields object. When the PDF form is secured before it is rendered for displaying, also add the Form Bridge object to the form design.

A *submit button* is a Button object that has the following properties configured:

- Control Type is set to Submit.
- Presence is set to Invisible (not required for form designs as HTML forms).
- Submit Data is set to PDF instead of the default XDP.

➤ **To configure the form to submit a PDF:**

1. In Workbench ES, in the Resources view, navigate to and open the PDF form.
2. In the Hierarchy palette, select the **Submit** button. This field is an invisible field in the Process Field object.
3. In the Object palette, click the **Submit** tab and select **PDF** from the **Submit As** list.
4. Select **File** > **Save** to save your form.

For more information about specifying the format for submission types and the objects in the Process Fields object, see the following topics in *LiveCycle Designer ES Help*:

- Specifying the format for submitting data.
- Fields in Process Fields object.

Process creation guidelines

When creating the process, consider the following techniques to secure a PDF using Rights Management service operations.

- Use a form variable of data type `Document Form` to pass the secured PDF form from one Assign Task operation (User service) to another.
- Encrypt the PDF form as a separate operation and copy the encrypted form to the `document` attribute in the form variable of data type `Document Form`.
- Unlock a policy-protected document in a short-lived process and perform any operations to it in the same short-lived process. If you use a long-lived process, data is serialized for each operation; therefore, you will not be able to access the unlocked document.
- Use the Unlock policy-protected PDF operation to unlock the PDF file. Use the Remove Policy Security operation only to remove protection from the form that was encrypted using a certificate. To change the policy, use the Switch Policy operation.

- When you use operations from the Signature service or Reader Extensions service, apply the operations in a specific order. For example, to encrypt a PDF form that has usage rights applied to it, remove the usage rights before you encrypt the PDF form.

For more information about securing a PDF using Rights Management service operations, see the following topics in *LiveCycle Workbench ES Help*:

- Rights Management.
- Short-lived processes and long-lived processes.
- Unlock policy-protected PDF.
- Switch Policy.
- Remove Policy.
- Certifying policy protected documents.

Server configuration guidelines

When configuring the server, consider the following techniques to secure PDF forms when you use Rights Management service operations in the process.

- Before you can use the Rights Management service operations, you must configure policies, policy sets, permissions, and invited user accounts.
- To improve security with processes, it is recommended that you configure the service that uses operations, such as Unlock Policy-protected PDF, from the Rights Management service to execute under a Named User account with only the necessary permissions. For example, a human-centric process may invoke another service (created as a short-lived process) that unlocks a policy-protected PDF and performs other operations.

  By default, short-lived processes execute under the context of the human-centric process. Because human-centric processes are long-lived and they operate in the context of the system, it means that short-lived processes execute with more permissions than necessary. If you use a Named User account instead to invoke the short-lived process, it executes with only the required permissions and therefore improves security. To create a Named User account, create a separate user with a separate role. The new role should have only the necessary permissions, as follows, to invoke the operations in the short-lived process:

  - Certificate Read
  - Credential Read
  - Rights Management Policy Set
  - Identity Impersonation Control
  - Repository Read
  - Service Invoke

For more information about configuring user accounts and configuring Rights Management ES in the LiveCycle Administration Console, see:

- *Trust Store Management Help*
- *Rights Management Administration Help*
- Modifying security settings in *Applications and Services Administration Help*
- *User Management Help*

Securing PDF forms using the Encryption service

Passwords or certificates can be used to encrypt PDF forms that you created in Designer ES (static PDF forms and dynamic PDF forms) and Acrobat (Acrobat forms). It is recommended that certificates be used to encrypt PDF forms. Using passwords to encrypt PDF forms does not provide adequate security for enterprise organizations.

Caution: It is recommended that when possible you use Rights Management ES and operations from the Rights Management service to secure documents in an enterprise organization.

Use the operations from the Encryption service for the following purposes:

- Encrypting the contents of a PDF form. For example, you can encrypt a PDF form so that users must provide a certificate before they fill the fields of the PDF form.
- Removing encryption from the PDF form by using passwords or certificates. For example, you can automatically remove encryption from a PDF form before a user fills it.
- Unlocking a PDF form to perform operations on it. For example, in a separate short-lived process, you can temporarily unlock a PDF form to perform additional operations.

For more information about the Encryption service, see:

- "Encryption Service" in *LiveCycle ES Services*.
- Encryption in *LiveCycle Workbench ES Help*.

Form creation guidelines

When creating the form, consider the following techniques to use Encryption service operations to secure the PDF form in human-centric processes.

- Enable the PDF form you want to use for Workspace ES by using the Process Fields object and the Form Bridge object. The Form Bridge object is necessary only when you secure a PDF form before it is displayed to a user in Workspace ES. (See Enabling forms for Workspace ES.)
- When your process requires that you use secure forms by using the Encryption service, it is recommended that you use PDF forms created in Designer ES (static PDF forms and dynamic PDF forms) or Acrobat (Acrobat forms) to secure the form. You cannot secure a Flex application because the Encryption service cannot encrypt SWF files. (See Choosing a form type.)
- After you enable the form design for Workspace ES, configure your form to submit PDF data instead of the default XDP data.

➤ **To configure a form to submit a PDF:**

1. In Workbench ES, in the Resources view, navigate to and open the PDF form.
2. In the Hierarchy palette, select **FSSUBMIT_ field**. This field is an invisible field in the Process Field object.
3. In the Object palette, click the **Submit** tab and select **PDF** from the **Submit As** list.
4. Select **File** > **Save** to save your form.

For more information about specifying the format for submission types and the objects in the Process Fields object, see Specifying the format for submitting data and Fields in Process Fields object in *LiveCycle Designer ES Help*.

For more form design guidelines, see "About the Signature service and form types" and "Requirements for form design and Workspace ES" in "Signature Service" of *LiveCycle ES Services*.

For general guidelines about form designs, see Designing forms for data capture.

Process creation guidelines

When you create the process, consider the following techniques to use Encryption service operations to secure a PDF form in human-centric processes:

- Use a `Document Form` type for your form variable to pass the secured PDF form from one Assign Task operation (User service) to another. You can access the encrypted PDF form by using the `document` attribute in the form variable if your process needs access to it.
- Design the process so that the encrypted PDF form is displayed. The user then enters a password or provides the certificate to decrypt the PDF form. Avoid using any Encryption operations in the render and submit processes. If you do not want users to provide a password or certificate, remove encryption from the PDF form before the Assign Task operation using the Remove PDF Certificate Encryption or Remove PDF Password Encryption operations.
- Instead of removing the encryption to perform operations on the PDF form, use the Unlock Password Encrypted PDF or Unlock Certificate Encrypted PDF operation to temporarily unlock the encrypted document. You remove encryption when you need to perform actions on the PDF form, such as applying a certification signature.
- Create a separate short-lived process that is called from the human-centric process when you use the Unlock Password Encrypted PDF operation (Encryption service). Data is serialized when you perform unlock operations; therefore, unless you use short-lived processes, you cannot perform operations on the unlocked document in subsequent operations.
- When you use operations from the Signature service or Reader Extensions service, apply them in a specific order. For example, before you encrypt a PDF form that has usage rights applied to it, remove the usage rights.

For more information about using Encryption service operations to secure a PDF form in human-centric processes, see:

- Variables for form data in *LiveCycle Workbench ES Help*.
- Unlock Password Encrypted PDF in *LiveCycle Workbench ES Help*.
- Unlock Certificate Encrypted PDF in *LiveCycle Workbench ES Help*.
- Short-lived processes and long-lived processes in *LiveCycle Workbench ES Help*.
- "Considerations for the Encryption service" in "Encryption Service" chapter of *LiveCycle ES Services*.

Server configuration guidelines

When you configure the server, consider the following techniques to configure the server when using the Encryption service operations to secure PDF forms.

- Before you encrypt a PDF form with a certificate, import the certificates to the trust store within the LiveCycle Administration Console.
- To improve security with processes, it is recommended that you configure the service that uses operations, such as Unlock Certificate Encrypted PDF, from the Encryption service to execute under a Named User account with only the necessary permissions. For example, a human-centric process may

invoke another service (created as a short-lived process) that unlocks a policy-protected PDF and performs other operations.

By default, short-lived processes execute under the context of the human-centric process. Because human-centric processes are long-lived and they operate in the context of the system, it means that short-lived processes execute with more permissions than necessary. Instead, if you use a Named User account to invoke the short-lived process, it executes with only the required permissions and therefore improves security. To create a Named User account, create a separate user with a separate role. The new role should have only the necessary permissions, as follows, to invoke the operations in the short-lived process:

- Certificate Read
- Credential Read
- Identity Impersonation Control
- Repository Read
- Service Invoke

For more information about configuring the server when using the Encryption service operations to secure PDF forms, see:

- Importing and exporting certificates in *Trust Store Management Help*.
- Modifying security settings in *Applications and Services Administration Help*.
- *User Management Help*.