Enterprise Security Solutions using Adobe® LiveCycle® Rights Management ES

Using Adobe AIR® technologies, design a desktop interface that enables drag-and-drop policy-setting

This technical guide provides an overview of the Adobe LiveCycle Rights Management ES solution component and how it can be used to protect sensitive information stored in your electronic documents, even after they have been transmitted outside your firewall. The paper also outlines how a desktop application based on Adobe AIR technology can give end users the ability to create and execute security policies via a drag-and-drop interface, enabling protection of sensitive data throughout the document lifecycle.

Protecting electronic documents

Most organizations rely on their abilities to generate and process the information stored in electronic documents to complete key business functions. These documents can contain highly sensitive and business-critical information, such as customer data, invoice histories, cost data, and established business processes. Adobe LiveCycle Rights Management ES is an effective, standards-based solution for document management that helps maintain the confidentiality of electronic data by enabling broad-reaching security policies that govern access, use, and distribution by third parties.

Organizations must protect personally identifiable information in every context, both to follow sustainable business practices and to comply with government regulations such as the Data Protection Act of 1998. Every company is responsible for maintaining a secure IT infrastructure that allows safe, efficient information transmittal within and between organizations. Protecting electronic documents should be the highest priority, and businesses are advised to carefully evaluate their chosen security mechanisms to ensure data assets are protected adequately.

The ultimate business goal is to have an unimpeded flow of information through an organization and enable safe sharing of sensitive data with appropriate third parties, ensuring that data is controlled and protected at every point. LiveCycle Rights Management ES software is designed to deliver consistent security mechanisms inside and outside the firewall, and it enables businesses to gain the efficiencies of electronic processes: reduced paper waster, lowered cost of operation, and faster process cycle times.

Security for the entire document lifecycle

Many information security solutions have an inherent weakness: They attempt to protect electronic documents at various points in the organization's infrastructure, such as at the file system level, by using SSL for network communications or by encrypting a hard drive. These solutions, however, do not protect the entire lifecycle of an electronic document, especially after it has been transmitted to an outside party.

Security policies must be enforceable outside the firewall to eliminate vulnerabilities such as:

- Hackers who break into, modify, or redistribute documents.

- Exposure of security protocols and intellectual property, whether intentional or not.

- Regulatory noncompliance.

The most effective solutions protect any document by providing information-centric security that is intrinsically linked to the information itself. Information security policies are stored centrally and external to the document. This means that the business has complete control and can develop security policies that map the sensitivity level of the information to data protection measures, without compromising ease of use.

LiveCycle Rights Management ES software is designed to provide effective security functionality that can enable a business to:

- Protect intellectual property, maintain corporate confidentiality, and comply with regulatory requirements.

- Help guard against accidental or malicious disclosure of sensitive information without impeding productivity, collaboration, or innovation.

- Ensure that internal and external recipients have access to the latest version of a document, whenever and wherever they need it.

- Integrate existing login credentials into the document authentication mechanism—for example, the user's desktop login—so that security measures do not impact normal business practices.

- Track and audit all user actions and access to sensitive information assets.

- Dynamically control policy so that you can change who is authorized to view content no matter where the files reside, including websites, portals, CD-ROMs, employee laptops, partners' computers, and download sites.

- Ensure ease of deployment by using ubiquitous and free Adobe Reader® software, with the ability to integrate tightly with many other applications, formats, repositories, and authentication mechanisms.

LiveCycle Rights Management ES software is designed to be a centralized information user access and control solution, simplifying the process of protecting sensitive electronic documents and forms inside and outside the organization. Protected documents can be secured, controlled, and managed centrally, allowing the internal business user to focus on business initiatives and objectives.

Adobe technology is non-invasive and easy to configure and implement. Because of its open standards approach, an organization can quickly integrate LiveCycle Rights Management ES into its current technical architecture and business processes. Organizations are mindful that widespread adoption and acceptance only come with a simple and seamless user experience where the security mechanism is ubiquitous and unobtrusive. Adobe technology ensures that this is the case by leveraging the free Adobe Reader.®

Integrating LiveCycle Rights Management ES

Adobe software allows organizations to work and collaborate electronically with confidence and helps foster innovation. It is platform-independent and enables dynamic, persistent, and robust information policy management framework for systemically lowering information risk in your environment.

A security solution should include a comprehensive set of desktop and server-based software. The LiveCycle Rights Management ES solution provides a centralized batch security mechanism for any document that needs to be protected. You can also create a desktop application, based on AIR technologies such as Adobe Flex®, that encourages users to keep information secure by offering an intuitive way to protect document data quickly and easily.

Protecting documents involves more than basic security and cryptography. It requires end-to-end content protection that respects the owner's intent and mitigates risk while enabling human workflows that increase communication with other applications, business processes, and the user community.

Current approaches to information protection focus on initial distribution or access. For example, you can encrypt data during transit using SSL during web sessions or create file access control lists. But after electronic information is distributed, protecting confidentiality and privacy becomes more difficult. Organizations cannot dynamically change access rights after initial distribution. In contrast, LiveCycle Rights Management ES gives organizations the confidence to use sensitive business documents electronically by providing a centralized solution. Access is controlled by encrypting all information using industry-standard and government-approved FIPS-140 strong cryptographic algorithms. This helps ensure confidentiality and document integrity.

LiveCycle Rights Management ES is designed to be always available, to provide real-time access and authorization to documents, and to integrate with a centralized authentication mechanism, typically LDAP or Active Directory. Organizations no longer need to be concerned about files that reside on network shares, unprotected websites, or CDs or DVDs that have been distributed, because all documents are now controlled and managed centrally. Also, the core solution components have the ability to provide an offline policy lease that enables the document to not connect to the solution for a defined length of time. This ensures that confidentiality and privacy can be maintained independent of network availability. LiveCycle Rights Management ES can also be used to more securely and centrally manage offline access to electronic data.

Centralizing document access control enables persistent version management. You can manage the current document version, regardless of where the document physically exists. Recipients can be redirected automatically to the latest version of the document whenever they attempt to open an outdated version of a file.

LiveCycle Rights Management ES maintains an audit log of access and usage, providing a fully documented chain of events.
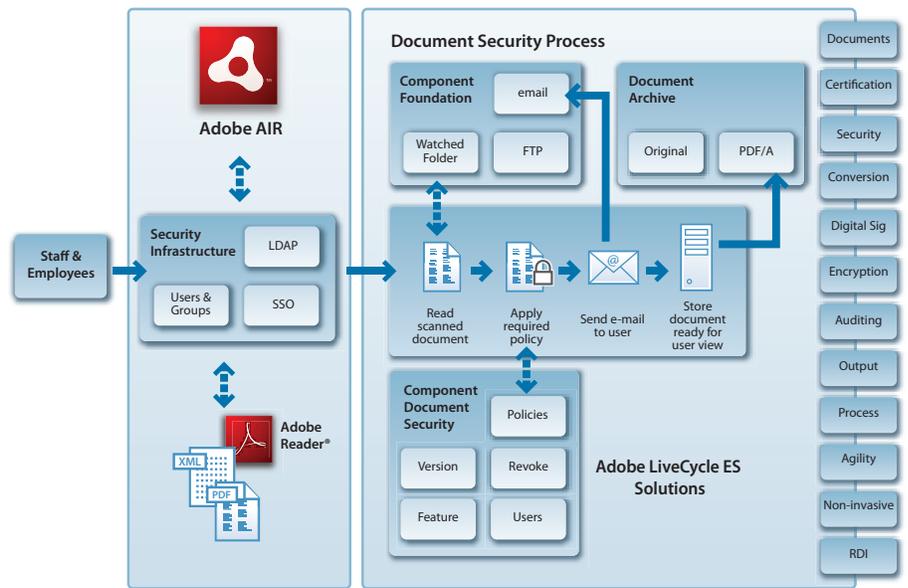
Architecture of a security system built on LiveCycle Rights Management ES software

Persistent access management

Security policies are stored within the server and include user access rights and permissions. Document authors select the appropriate policy and apply it to the PDF, PowerPoint, Excel, or Word document. These file formats can also be protected natively without converting to PDF. In addition, Adobe software supports PTC Pro/ENGINEER files, Dassault CATIA files, and Lattice XVL files.

Dynamic security policy management

LiveCycle Rights Management ES provides dynamic policy management so that organizations can manage access and usage even after the document have been published and distributed. Authors and administrators can update a security policy stored on the server to change or terminate user permissions, add recipients, revoke access rights, track the appropriate version and so on. When a document recipient is offline, any changes are automatically applied to the document when the recipient next contacts LiveCycle Rights Management ES.

Network independence

Whether used online or offline, inside or outside the firewall, on the network or off, the security policy applied to a document remains active.

Document auditing

Authors and administrators can easily monitor the use of protected PDF documents with the auditing capabilities in Adobe LiveCycle Rights Management ES. For each user permission assigned to a document, Adobe LiveCycle Rights Management ES provides a detailed audit trail that keeps track of what each recipient did with the document, when, and how often.

Enterprise integration

LiveCycle Rights Management ES software can be integrated with current user administration and content management technologies for cost-efficient, centralized document control administration. LDAP implementations can be utilized to check recipients' credentials and maintain a security policy assigned to a document in a content management system and wherever the document may travel. Server-based authentication and authorization software development kits (SDKs) allow for integration with a broad range of customized solutions.

LiveCycle Rights Management ES provides a document service that can be used by other LiveCycle ES solution components to facilitate automated processes. Organizations can expand the use of cost-effective automated business processes with greater assurance that documents are protected and meet regulatory requirements for maintaining information privacy.

Integration with Adobe Acrobat® and Adobe Reader
Authoring and viewing protected documents is simple and convenient. Authors can assign document control policies to documents with the same controls they use to create PDF files from popular applications such as Microsoft PowerPoint, Excel, and Word. Recipients can access PDF files controlled by LiveCycle Rights Management ES using Adobe Reader on Mac OS, Microsoft Windows, or Linux® client platforms.

LiveCycle Rights Management ES software can integrate with client applications built using Adobe AIR. A customized solution can provide an easy-to-use, drag-and-drop interface that helps ensure that users can easily interact with and set policies that effectively invoke the robust set of capabilities in LiveCycle Rights Management ES, without the need for extensive training or learning a new set of proprietary tools.

PDF documents
Document authors can use Adobe Acrobat software to create Adobe PDF documents and to apply encryption, permissions, or even digital signatures to Adobe PDF files. The ease and convenience of assigning security parameters to electronic documents using Acrobat encourages users to keep information private and confidential.

Protected Adobe PDF documents can be viewed using free Adobe Reader software. With more than 900 million copies distributed worldwide, Adobe Reader provides multiplatform access to PDF files, enabling organizations to share secured documents with users outside the firewall and on a wide variety of client computers.

Adobe PDF is a general document representation language that has been in use for document exchange on the Internet since 1993. RFC 3778 provides updated information on the registration of the MIME Media Type "application/pdf," with particular focus on the features that help to mitigate security concerns.

Developing with Adobe AIR & Flex technologies
You can develop rich UI functionality using AIR and Adobe Flex technologies, enabling you to deploy a single desktop application across many operating systems, and centralize maintenance tasks required for that application. In addition, AIR applications can provide local data access and enhanced opportunities for branding across many client systems.

When used to access key functionality in LiveCycle Rights Management ES software, Adobe AIR and Flex applications can provide a user-friendly way to set policies and track permissions from the desktop. Flex and Adobe AIR applications put security controls in the hands of document authors, thus protecting sensitive information at the source.

An Adobe AIR application offers familiar rich Internet application (RIA) functionality on the user's desktop. A document author can drag a file, such as a Word document, Excel spreadsheet, or a JPG or TIFF image file from a local source or from the network, convert it to a PDF file, apply a security policy to it, and choose a distribution mode. Distribution options include e-mail, CD-ROM, DVD, and other portable media types. Using an intuitive UI to access complex security features in LiveCycle Rights Management ES software can dramatically flatten the learning curve for end users and encourage the use of protective policies at every level of the organization.

Required feature	Adobe AIR
Multiple operating system support	Adobe AIR applications are cross-platform, so they can be installed and run on multiple operating systems.
Background capability	Applications can run in the background or provide notifications like traditional desktop applications.
Persistence	RIAs are installed and available on the desktop. They store information locally and operate offline.
Desktop integration	Applications can access a desktop file system, clipboard, drag-and-drop events, system tray notifications, and more.
User interface control	RIAs have a customizable user interface and desktop integration, enabling branded experiences.
Data storage	Applications have local storage and access to a local database, plus encrypted local storage.

Summary and benefits

Adobe's mission is to revolutionize how the world engages with ideas and information. Since 1994, with the release of Acrobat 2 introducing PDF security and protection, Adobe has been providing information assurance solutions. The goal is to provide technologies that enable effective communications and collaboration while protecting sensitive business information.

With a comprehensive set of desktop and server-based products and solutions, Adobe offers end users the ability to control document access in a way that fits into existing workflows and communicating processes.

The benefit for the document author is substantial control over which documents are accessible. At the same time, the impact on consumers is minimized. The solution can tie into existing systems that control authorization and authentication to make the experience of using rights-managed documents similar to that of using unprotected files. Adobe's products and solutions are based on industry-wide and government-approved security standards as well as cryptographic algorithms, all of which protect confidential data.

The ubiquity of Adobe Reader minimizes the cost and effort of deployment. In addition, the flexibility of PDF means that many types of data can be shared for electronic collaboration and knowledge transfer.

This solution provides the following benefits:

- Frees up physical storage space, which could be better used by the organization to provide other services.

- Eases the burden on retrieving records and realizes administrative savings.

- Enables significantly faster (and cheaper) access to requests and protects these records adequately. This ensures that confidential information is protected and covers the organization from disclosure of information breaches as the documents are encrypted and a full audit trail is available.

- Enables access to all the notes for any patient via one single interface.

- Maximizes efficiency within the organization.

The combination of information protection and version control can improve operational efficiency in distributed, worldwide collaborations and supply chains, reducing costs while increasing customer and end-user satisfaction.

For more details about LiveCycle Rights Management ES, visit *www.adobe.com/products/ livecycle/rightsmanagement.*

To find resources for developing using Adobe AIR and Flex, visit *www.adobe.com/devnet/air/flex.*