

EMC Documentum Content Server OEM Edition

An Embeddable Platform for Rapid Application Development

Abstract

The EMC Documentum Content Server OEM Edition is an embeddable software platform for rapid application development. It includes the core technologies, the content-related services, and the application integration interfaces, together with the developer resources and support services, that are essential for building content-rich applications. (Content-rich applications manage content within the context of one or more business processes.) Application developers and ISVs can jump start their application development efforts by incorporating those platform-level capabilities and services for capturing, storing, organizing, retrieving, securing, and producing any type of content. By embracing and extending an embedded platform, application developers can ensure the success of their own solution offerings.

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Table of Contents

To build or to buy—that is the question	4
Content-rich applications	4
An unobtrusive infrastructure	4
Options for rapid application development	5
The EMC Documentum Content Server OEM Edition	6
A platform for the OEM market	6
Optimized for OEM deployment.....	7
Jump-starting application development efforts	7
The platform for content-rich applications	8
Repository services for ensuring effective content storage	8
Content services for structuring the flow of information.....	9
Developer services for leveraging the content platform	13
OEM services for embedded application management.....	14
Resources for rapid application development	16
Making it easy to develop content-rich applications	16
EMC Velocity ² ISV program	16
Designed for EMC partner accreditation.....	16
EMC Developer Network (EDN)	17
Making the smart business decision	17

To build or to buy—that is the question

Content-rich applications

In today's dynamic digital economy, an enterprise thrives on delivering the content that solves business problems. For instance, one firm needs a special application to print and mail personalized monthly statements to some of its clientele, while also distributing electronic messages to those who prefer working online. Another company faces the challenges of global brand management; this company must work with creative agencies and business partners in multiple geographies to develop and distribute multimedia advertising campaigns. A third corporation initiates scores of new contracts with partners and suppliers each month; it must manage and track the status of all contracts, as well as ensure compliance with external regulations.

Managing documents, images, multimedia files, and other types of content is no longer an end in itself. Rather, as these examples illustrate, the payoff comes from the process-centric applications that managing the content entails. We term these types of innovative enterprise applications, *content-rich applications*. To our way of thinking, content-rich applications manage content within the context of one or more business processes.

For the application developers and independent software vendors (ISVs) who design and develop content-rich applications, the value of their efforts lies in their results: providing the unique sets of capabilities that transform how a company operates. Entrepreneurial developers focus on the core business processes—creating the novel features and functions for delivering the right content, to the right people, in the right contexts, so that they can make better decisions and take action.

But content-rich applications begin with managed content. Underlying each application are the services for managing content in a systematic, secure, yet flexible fashion. These services, in turn, are provided by a content platform.

An unobtrusive infrastructure

Application developers and ISVs need to be able to quickly capture, easily organize, readily manage, securely store, rapidly retrieve, and effectively archive the business documents, files, and other digital assets that are part of their overall enterprise solution. They rely on these services to check content into and out of a repository, to share the content among predefined groups of knowledge workers, to organize and categorize the content for easy retrieval, and to ensure effective content delivery. Developers need to guarantee the security, scalability, extensibility, portability, and reliability of the content-rich applications they produce.

For example, a global manufacturing firm might seek to accelerate business with suppliers by relying on a content-rich application to support the seamless flow of engineering drawings and RFPs. Designers and manufacturing engineers might author or edit the design specifications and statements of work to post on a supplier's web site. Others will maintain the taxonomies of product names, parts lists, and service offerings for organizing the content. Only a select few engineering managers will approve the content and distribute it online. Along the way, the content platform manages the business processes, monitors the business events, reports results, and supports requests for information audits.

Herein lies the problem. The content platform per se adds little to the overall experience for the application's value added services—in this case, strengthening partner relationships. Rather the content platform is like the plumbing inside a building—solid and robust, simply doing what it's designed to do and remaining a largely unnoticed part of the infrastructure. When all is said and done, the content platform is the means to an end—and not an end in itself.

Options for rapid application development

Application developers and ISVs need to identify the foundations for their development efforts. Where should they begin? To what extent should they develop content services and technologies on their own? When should they build upon the platform-level capabilities of a third party product? The challenge of rapid application development is finding the right starting point—delivering the innovative (and elegantly designed) enterprise-scale application that solves the business problem, on time and within budget.

Beginning with the basics

On one hand, application developers and ISVs can begin with the basics—the file, print, and security services provided by a host operating system, (Windows or Linux) and object libraries supported by an application development framework (Java or .NET). They can develop on their own content management features and functions—addressing such factors as file locking (check-in/check-out), version control, security, categorization, and workflow, as shown in Illustration 1. Along the way they will often have to incorporate the capabilities of a relational database, a search engine, and an application server. All this increases the complexity as well as adds time and money to the development cycle—both of which are almost always in short supply.

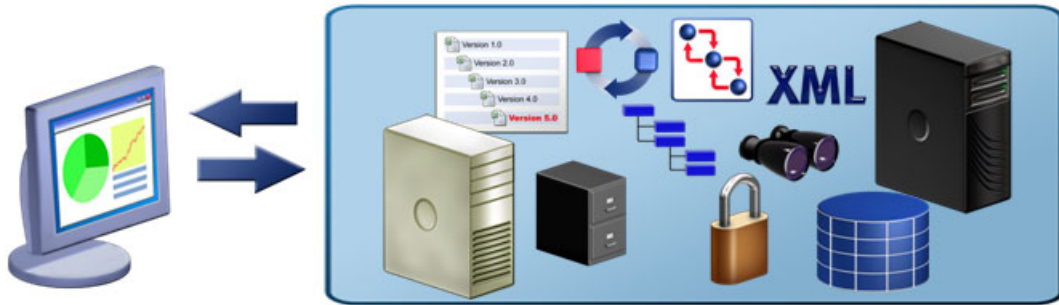


Illustration 1. Application developers and ISVs can develop on their own content management features and functions. This increases the complexity, and adds time and money to the development cycle—both of which are almost always in short supply.

Moreover, once they launch the content-rich application, developers then face the challenge of ongoing maintenance and support. What happens when the application gains popularity and needs to be adapted for a new situation? What happens as storage requirements grow and the application is now managing five to five hundred times the amount of content initially anticipated? What happens when the underlying technologies change and evolve? All too frequently, application developers and ISVs wind up devoting much of their scarce development resources to simply maintaining the core content infrastructure, rather than enhancing the value added capabilities of their unique product offering.

Leveraging a content platform

There is another alternative. Application developers and ISVs can jump start their efforts by embedding the necessary content services—developed, supported, and maintained by a third party—into their own applications. They can rely on an embeddable content platform to capture, organize, manage, store, retrieve, and archive the content that they then distribute through their value-added environment, as shown in Illustration 2. As a result, developers can focus on delivering the unique functionality and value proposition of their content-rich applications.

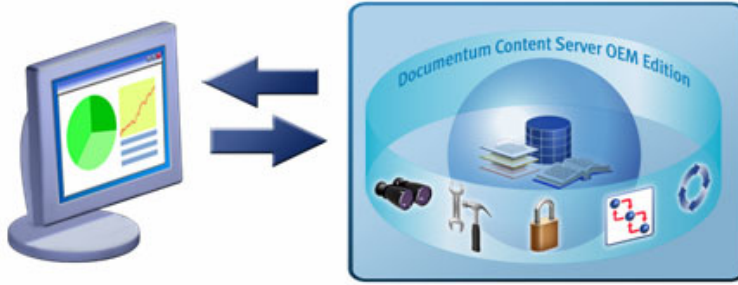


Illustration 2. Application developers and ISVs can jump start their efforts by relying on an embeddable content platform to capture, organize, manage, store, retrieve, and archive the content. As a result, developers can focus on delivering the unique functionality and value proposition of their content-rich applications.

Then there's the investment multiplier over the life of the application. Beyond faster time to market, there's also ongoing support at no extra expense. Application developers and ISVs can focus on supporting the features and functions of their own applications, rather than maintaining the core services provided by the content platform. Advances in technology are incorporated as part of the platform.

For application developers and ISVs intent on rapid application development, embedding a content platform into their applications is a smart business decision. Embedding offers better utilization of development resources. Application developers and ISVs can invest in their areas of expertise and continually enhance their unique application offering. They can depend on an embedded content platform to provide content management services on which their ongoing success depends.

The EMC Documentum Content Server OEM Edition

Application developers and ISVs can rely on EMC—an industry-leading provider of enterprise content management (ECM) products, services, and solutions—to deliver an embeddable platform for rapid application development. The EMC® Documentum® Content Server OEM Edition is an embeddable platform offering that delivers a comprehensive suite of application-level services for content-rich applications. Based on over 15 years of investment in content management and related technologies, this platform is designed to capture, store, organize, retrieve, secure, and produce content within an enterprise computing environment.

The Content Server OEM Edition leverages EMC's track record of successfully helping thousands of companies to solve their content management challenges. EMC understands the content management landscape that application developers and ISVs face. The company offers a wide range of technologies, complemented by proven development and support methodologies, to make OEM partners successful.

A platform for the OEM market

The Content Server OEM Edition is based on a flexible, standards-based architecture that is designed to work with any type of digital content. The platform can readily manage such content types as ordinary text documents, compound documents (containing interlinked and highly formatted text and graphics), web pages, XML files, music and other kinds of audio, photographs, scanned images, medical images, digitized video, and computer-aided design (CAD) drawings. For application developers and ISVs, the platform provides an embedded experience—the underlying content services and management capabilities are transparent from the end users' interactions with a content-rich application.

EMC provides the features, functions, services, and support for an embedded platform as a single offering, preconfigured for the OEM market. The Content Server OEM Edition supports both Windows and Linux platforms as well as Microsoft .NET or Java development environments. This platform includes:

- The Documentum Content Server, with no limitation in functionality compared to the company's market-leading enterprise version
- A full set of APIs as well as a business objects framework for building reusable application components
- An embedded relational database
- An embedded full-text search engine
- A silent installer
- Capabilities for low maintenance and zero application administration

Optimized for OEM deployment

The Content Server OEM Edition is preconfigured for OEM deployment scenarios. It is designed to operate within a single-site/single-server configuration (targeting a dual processor with 2GB/4GB RAM). The content platform is based on a single repository configuration, defined as one partner solution per repository and one repository per server. Moreover, it is optimized for typical OEM applications, characterized by such parameters as:

- Assuming an upper limit of 500 named users, with roughly 50 simultaneous users
- Managing upwards of ten million documents and other content objects over five years
- Having the capability to effectively manage roughly 5,000 files in a "busy hour"

Of course, the Content Server OEM Edition can be tuned to accommodate the requirements of your application.

The Content Server OEM Edition is designed for an environment with low system management resources. The IT staff does not have to have any special skills in managing the content repository. Rather all they need are the skills for managing the OEM-developed content-rich application.

Jump-starting application development efforts

For EMC, the Content Server OEM Edition is more than a technology platform. It's also a time-to-market accelerator, designed for the OEM marketplace. In particular, the EMC offering is bundled with developer resources and support services, designed to ensure that application developers and ISVs can readily deploy the platform and quickly gain competitive advantage for their solutions.

As part of its platform offering, EMC is rolling out resources and services for jump-starting application development efforts. These include:

- Documentation for application developers
- Best-practice guides for developing and deploying content-rich applications
- Application architecture consulting

Application developers and ISVs can access these developer support programs, online resources, and real time events (including Webinars, podcasts, developer workshops, and conferences), and thus accelerate the success of their application offerings.

The platform for content-rich applications

Let's consider how the Content Server OEM Edition ensures rapid application development. As shown in Illustration 3, the platform provides an integrated suite of technologies and core services that are essential for supporting robust, scalable, and extensible content-rich applications within an enterprise.

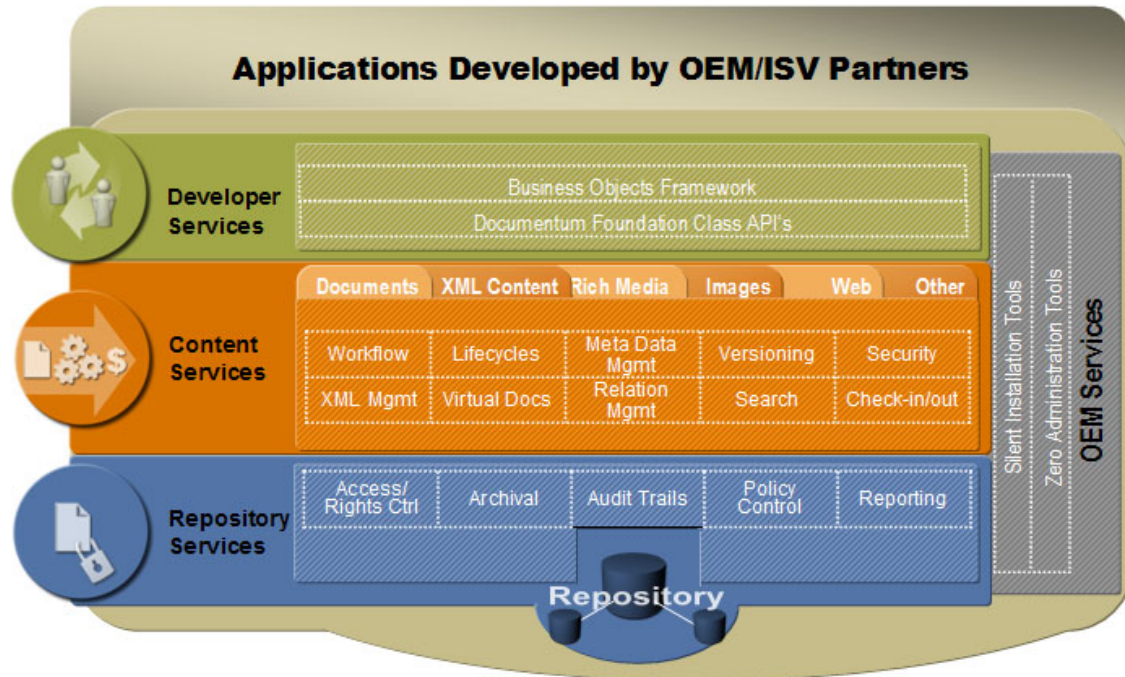


Illustration 3. The Content Server OEM Edition includes four sets of services—repository services, content services, developer services, and OEM services—that are designed to make it easy to embed the platform into a content-rich application.

The Content Server OEM Edition encompasses four interrelated sets of services:

- Repository Services for security, compliance, and storage management
- Content Services to capture, organize, and manage any type of content across its lifecycle, from creation to disposition
- Developer Services, encapsulated in a Service Oriented Architecture, for easy access to all content and process services
- OEM Services to support low maintenance and easy installation within the framework for the application

As a result, application developers and ISVs can build upon a solid, industrial-strength, and well tested foundation. They can leverage the extensive capabilities of this industry-leading content platform, and incorporate those services that meet their application's unique content management requirements.

Repository services for ensuring effective content storage

The Content Server OEM Edition begins with a core set of repository services, designed to store, protect, and chronicle the use of content within a central repository. The repository consists of three main components, which behave as a single entity from an application point of view.

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- A file store containing all the content assets
 - Attribute tables within a relational database
 - A full text index of all the stored content generated by a search engine

EMC delivers the Content Server OEM Edition as a single, integrated package, which includes:

- Sybase ASE as the relational database
- Lucene as the full-text search engine

Thus, application developers and ISVs have all the basic storage, access, and retrieval components they need for managing content within a self-contained, enterprise-scale repository.

In addition, EMC provides the essential repository services for content storage, access, management, tracking, and reporting.

- **Access rights and authentication controls.** Access rights and authentication controls ensure the platform-level security of all items stored within the repository. There's a flexible authentication schema that allows application developers and ISVs to choose the best method for securing content within their applications. In addition, there's LDAP support, integration with operating system security services, and support for custom authentication mechanisms.
- **Archival services.** Archival services for aging and transferring files from a primary storage environment to secondary, near-line, or off-line storage. Content archiving can be triggered either manually or automatically, based on policies, lifecycles, or a wide variety of other system-level events.
- **Auditing.** Audit trails can be captured for all methods, policies, workflows, and jobs managed within the repository. Application developers and ISVs can also create audit trails for custom or application defined events.
- **Policy controls.** The repository can attach business policies to any type of content object. The policies can then be enforced based on any object type or policy definition.
- **Reporting.** Reporting on repository activities include preformatted reports that describe workflow and server administration activities. Application developers can create custom reports using the Documentum Query Language (DQL), a superset of ANSI SQL. There's also a JDBC interface for using standard reporting tools.

These repository services ensure the robust and scalable capabilities of the central storage and management environment. As application developers and ISVs develop their value-added applications, they can base their efforts on the solid and secure capabilities of a well designed, well tested, and widely deployed central repository.

Content services for structuring the flow of information

The Content Server OEM Edition supports the wide range of application-level content services that are required for structuring the flow of business information within an application. These include:

- Core library services
- Security and access controls
- Search and discovery
- Virtual document management
- XML content services
- Workflow
- Lifecycle management

This set of content services adds business value to application development efforts by structuring the access to content, and the flow of content, within an organization.

Core library services

A critical aspect of any content management system is the ability to coordinate and control documents and other types of content as they are being created, authored, or produced. It's essential to ensure that only authorized users can access and modify content and to prevent overwriting. Thus the core library services provide three basic functions:

- **Check-in/check-out.** Check-in/check-out (or locking) capabilities ensure users with editing privileges do not overwrite one another's versions or make incompatible updates. For example, when one person is editing a document, another person cannot overwrite his or her edits.
- **Versioning.** Versioning capabilities track the multiple versions of documents or other content objects, and provide the ability to revert to prior versions as required. For example, the repository can maintain multiple versions of a set of digitized video files, and can revert to a prior version when needed. Versions can be tracked as major versions (1.0, 2.0, 3.0) or minor versions (1.0, 1.1, 1.2).
- **Renditioning.** Renditioning capabilities synchronize alternative representations of documents or other content objects in their different formats, resolutions, or natural languages. The Content Server OEM Edition can automatically generate renditions through embedded converters and maintain the relationship between the original object and its renditions, ensuring the object's integrity and enabling users to manage renditions individually or collectively. For example, content initially authored as a Microsoft Word document can be rendered as a fixed formatted Adobe Acrobat PDF file, or an HTML formatted web page with associated embedded image files.

In addition the core library services define sets of metadata that describe the documents and other types of content stored within the repository. The metadata in turn is managed through the relational database tables provided by the integrated RDBMS.

Thus application developers and ISVs no longer have to devote scarce resources to develop these basic content management capabilities. Rather, by relying on the Content Server OEM Edition as the underlying platform for their efforts, they can directly incorporate the EMC-developed, supported, and extensively tested library services into their application environment.

Security and access controls

These core library services, in turn, rely on an extensive set of security services to determine how users or applications are authenticated and authorized to access repository content. The Content Server OEM Edition provides the broad range of enterprise-scale security capabilities for authentication and authorization—determining that users or applications are who they say they are as well as that they then have permission to interact with particular documents or content objects.

The content platform includes an access control list (ACL) based security model with seven levels of basic security and additional extended permissions. These are:

- Basic Permissions—the access privileges that apply to the content itself: "none," "browse," "read," "relate," "version," "write," and "delete"
- Extended Permissions—access privileges for managing content within the repository: "change location," "change permission," "change owner," "execute procedure," and "change state"

These permissions are applied to all content objects stored within the central repository, as well as to all the metadata used to describe and access the content.

By developing value-added applications on top of the Content Server OEM Edition, application developers and ISVs no longer need to tackle the tough and often torturous issues of ensuring the security of the content they provide online. Rather they can simply leverage EMC's considerable experience and expertise to provide the comprehensive set of platform-level security services.

Search and discovery

Once application developers and ISVs store business documents, images, photos, and other types of content within a central repository, they need to be able to rapidly retrieve them by various predefined or ad hoc criteria. Sometimes the search criteria are obvious and other times they depend on the situation at hand.

The Content Server OEM Edition is designed to support the content search and retrieval capabilities for finding content within a self-contained repository. Lucene, a full-featured Open Source text search engine, is included as an integrated component within the content platform. Application developers and ISVs can rely on this engine to retrieve any type of content, based on:

- The metadata, used to categorize the documents and other content objects, that is stored within the relational database
- Arbitrary text contained within the body of the content object, such as the words and phrases within an electronic document, or the captions and legends within a slide presentation, that is indexed by the full-text search engine

The search engine normalizes content queries, as well as handles word stemming and synonym look-ups. In addition, it can be configured to optimize retrieval for particular application requirements, such as a product catalogue.

Thus application developers and ISVs can rapidly discover content in context, based on preconfigured or ad hoc criteria. Without any additional investment of development resources, they can incorporate high-performance search and retrieval capabilities into their value-added applications.

Virtual document management

Application developers and ISVs can rely on the Content Server OEM Edition to manage and maintain the relationships among the component parts of virtual documents. These are the logical containers containing interlinked and highly formatted text and graphics that, by their interconnections, define compound documents. The components for these virtual documents are stored separately and managed independently of one another.

For example, the design document for a new medical device might contain:

- Drawings, tables, and text produced by medical researchers
- Manufacturing plans developed by manufacturing engineers
- Safety data collected by the quality and regulatory affairs group.

Each group produces its own content, which is then automatically compiled into a virtual document.

The virtual document management services maintain the links among related content items within a central repository. Thus various text and graphical elements that are stored in the central repository as discrete content objects can be dynamically assembled and presented as a virtual document—one that consists of links to other content items.

Virtual document management provides several business benefits.

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- Self-contained documents or discrete content items can be reused efficiently in multiple contexts.
 - Authors only need to create the content once, and have it reused in many different situations.

Thus an application developer building a contracts management application can include the capability for managing standard terms and conditions as a feature of the solution. Rather than needing to define and develop the content linkage and relationship management functionality as part of the project, this developer can simply incorporate the virtual document management services provided by the content platform, and thus accelerate the pace of application development efforts.

XML content services

For application developers and ISVs, managing the content and metadata defined by XML documents is a critical aspect of many new business initiatives. The Content Server OEM Edition provides the core set of XML content services for supporting these initiatives.

XML documents are a special type of content: text files encompassing predefined sets of XML elements, where the elements are identified by XML-formatted tags. As an industry standard, XML itself is a platform-neutral, structured markup language that separates content from format. Content tagging and separating content from formatting have many benefits for content management, including enhanced content intelligence and content reuse; for instance, content can be queried by predefined tags and values to enhance searching precision. Content can also be stored as a single source, and then repurposed and rendered in multiple formats on various types of display devices. In recent years, XML has emerged as the common language for automatically exchanging content among disparate applications running within web-based environments.

The Content Server OEM Edition preserves the hierarchical structure and links among XML components and documents. XML content services manage XML documents in their native format. These services provide the ability to automatically parse, validate, transform, map, and store incoming XML documents. XML content services also support XML applications that directly store XML-tagged content to (and manage the content within) the content repository.

- **Validation.** XML content validation ensures that the XML elements within an XML document are well formed and conform to a predefined definition. An XML document can be validated against a DTD (Document Type Definition) or an XML schema (items which are also stored within the repository). The content platform can validate XML documents at any time, including during ingestion into the repository.
- **XML chunking.** When segmenting (or chunking) an XML document into its elements, the resulting chunks are then managed separately as discrete content objects. These chunks are just like other content objects: each has its own predefined security levels and content attributes. The overall document structure is maintained as a virtual document.

XML content services facilitates reuse. A set of discrete content objects can be combined and rendered in different contexts to meet various business situations.

Moreover, XML content services are essential for developing innovative, often industry-transforming, content applications based on XML-defined tag sets and taxonomies, such as XBRL in financial services, SPL in pharmaceuticals, DITA in technical publishing, and S1000D in aerospace. Application developers and ISVs can accelerate their application development efforts for these kinds of industry solutions by adopting the Content Server OEM Edition.

Workflow

Application developers and ISVs often need to structure the flow of content among knowledge workers within an organization. For example, a set of engineering design specifications might be developed by a

group of engineers, reviewed by technical subject matter experts, and vetted by the quality control department, before being approved for distribution by a vice president. All of these approval steps (as well as disapproval steps and exception handling conditions) can be incorporated into a predefined workflow.

The Content Server OEM Edition provides the workflow capabilities for automating the flow of content to support business policies and activities. A workflow is defined by a model, the sequence of steps that comprise the process, and the actions that must occur at each step.

The workflow capabilities provided by the Content Server OEM Edition comprise:

- A graphical process modeler
- Ability to define complex process models, including serial and parallel tasks
- Reusable tasks and palettes
- Manual and automated decision tasks
- Continuous reporting tools

The Content Server OEM Edition persistently manages the state of multiple instances of each workflow—often hundreds or thousands of instances—by storing workflow objects in the content repository. Similarly, workflow templates are stored as repository objects so various services, such as security, versioning, and retention, can be applied. Thus application developers and ISVs can readily incorporate a robust and extensible workflow capability into their value-added application by leveraging these underlying platform-level services.

Lifecycle management

Application developers and ISVs often need to manage content across its lifecycle, to reinforce the business policies established by an enterprise. For example, when a set of engineering design drawings is in draft form then a number of knowledge workers might access and edit it. Once the set is approved, the final-form versions of the documents are published and only a designated manager can access the revisable form of the document.

The Content Server OEM Edition provides lifecycle management capabilities for documents and other content objects stored within the central repository. It manages content through stages—such as "create/capture," "change," "route," "approve," "apply," and "retire." Each document or content object has only a single lifecycle. Lifecycles can be triggered automatically when predefined conditions are met, or manually with a knowledge worker's intervention. All of these stages and triggers leverage the platform-level security services to ensure authentication and access controls.

Application developers and ISVs can substantially enhance their value-added capabilities by adding lifecycle management services to their content-rich applications. As they begin to manage large numbers of documents and other content objects, they can automate and verify the flow of content through the different states in its lifecycle. This ensures that business policies are enforced and reduces the likelihood of mistakes and errors through manual processes.

Developer services for leveraging the content platform

The Content Server OEM Edition includes a wide range of developer services for developing third-party applications with the content platform. It is based on a standards-based architecture, incorporating the wide range of standards—developed and maintained by such groups as W3C, OASIS, UDDI.ORG, and XML.ORG—for developing and deploying content-rich applications.

Predefined components APIs

Developer services include a consistent set of APIs as well as a unified object and programming model. Application developers and ISVs can use these components and services to create either client-side or server-based applications that interact with the content server and its content.

Application developers and ISVs have several integration options, depending on the granularity of their integration efforts and the level of abstraction for representing application-level objects. EMC provides two approaches for integrating with the Content Server OEM Edition—a fundamental level, the Documentum Foundation Class libraries (DFC), and an abstracted application-construct level, the Business Object Framework (BOF).

- DFC defines the published and supported programming interfaces for accessing the functionality of the content platform. It exposes the object model and services of the content repository for other applications to use. DFC provides Java and component object model (COM) class libraries that expose the functions of the content platform.
- BOF is a structured environment for developing content applications. The BOF shields application developers from the implementation details of the platform's APIs and the underlying object model on which the DFC is based. Thus BOF enables application developers and ISVs to easily develop highly reusable components that can be shared by multiple applications. Business objects are entities with pre-defined classes and properties (attributes) and can have unstructured content associated with them. The business objects encapsulate the application-level business logic for directly accessing the entire content platform.

Application developers and ISVs have a range of choices when deciding how they will integrate with the Content Server OEM Edition. They can use the two approaches together. For instance, they can develop unique application capabilities by relying on the Business Objects Framework (BOF) for most content management functions, and then develop reusable, specialized objects, based on DFC, for specialized functions.

Web services framework

The Content Server OEM Edition includes a web services framework, an application development environment for developing and deploying web services. The web services framework provides application developers with an environment for developing libraries of content-related components that expose the capabilities of the content platform. The web services framework leverages the Business Objects Framework for service-based business objects. Specifically, application developers use the web services framework to generate the Web Services Description Language (WSDL), and then package and deploy them in a standards-based manner.

Application developers can use the web services framework to implement their own set of web services, encapsulating unique business logic that utilizes the underlying capabilities of the content platform. For example, a web service could use the check-in/check-out capabilities of library services and the authentication and authorization mechanisms of security services to access content objects.

OEM services for embedded application management

The Content Server OEM Edition includes a set of OEM services for embedded application management. Application developers and ISVs can provide a single management environment for their own applications which include seamless integration with the content platform.

The features and functions required for managing the Content Server OEM Edition are designed to be exposed within the context of the developer's content-rich application, making the underlying content

platform an embedded, "turnkey" system. EMC delivers the features and services for simplifying the management of the content platform: silent installer tools and zero administration tools.

Silent installer

When application developers and ISVs develop the tools for installing their unique, content-rich applications, they also install all of the components for the Content Server OEM Edition. Developers create the installation experience for their own target markets. The content management components are designed to be installed within the context of the content-rich application.

The silent installer tools provide a command line installer with optional parameters. Application developers and ISVs can thus integrate with the functions that install or uninstall all components of the embedded content platform—including the Documentum content server, Sybase ASE, Lucene, and application programming interfaces (DFC and BOF).

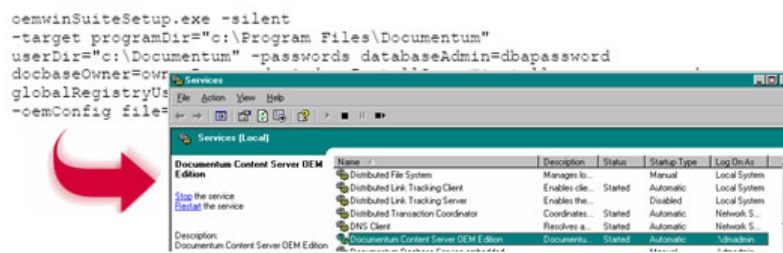


Illustration 4. The silent installer embeds the installation process for the Content Server OEM Edition within the content-rich application installation. After running the installer, all environment variables are set, Windows services or startup scripts for Linux are created, and any application templates are installed.

EMC sets all of the environment variables for optimum single platform performance and stores all of the installation and configuration options within an XML file. Developers or application managers can modify these variables as needed.

Zero administration

The Content Server OEM Edition includes application management capabilities that approach the goal of zero administration. Application developers and ISVs can focus on developing the application management capabilities for their content-rich applications as a whole. They can embed the various functions and services for administering the content platform into their application management framework.

The result is almost transparent application management for the content platform. For instance, events and notifications that require human assistance, such as approaching an out of space condition or a file format that cannot be indexed, are passed back to the embedding application so that a system administrator can correct them.

To simplify application management for the content platform, content-related administrative tasks are designed to run at predetermined intervals. Many of these tasks are wizard driven. Application management for the Content Server OEM Edition is designed to ensure that application administrators do not need to have any specialized know-how or expertise to administer the content platform.

Resources for rapid application development

Making it easy to develop content-rich applications

An embeddable content platform is also a strategy for accelerating the application development process. As part of its offering for the OEM market, EMC provides the developer resources and support services that make it easy for application developers and ISVs to rapidly design, deploy, and deliver content-rich applications.

These resources and support services ensure that:

- Developers who are unfamiliar with the capabilities of the Content Server OEM Edition can quickly get up to speed with the basics.
- Developers with content platform experience can continuously learn about the latest tools, tips, and best practices for producing content-rich applications.

EMC sponsors multiple OEM programs that are tailored to meet developers' needs for back-end technical support and development assistance. Application developers and ISVs can select the types of developer resources that they need, based on their application requirements as well as their business and investment strategies.

EMC Velocity² ISV program

The EMC Velocity² ISV program is designed for OEM partners that want to take advantage of the power and range of EMC's software and network storage platforms. As Velocity² ISV partners, application developers and ISVs are able to:

- Develop and sell applications that run on top of EMC technology
- Embed EMC components into their own products/solutions through an OEM agreement
- Offer a hosted on-demand or application service provider (ASP) solution based on the EMC platform

Through this program, entrepreneurial developers can enhance their presence in OEM markets by promoting their solutions and services as value-added applications that leverage the underlying content platform.

Designed for EMC partner accreditation

EMC maintains another program, Designed for EMC, as a set of resources and services for guiding and certifying the development of third party applications on the content platform. This program is designed to accelerate the application development process, provide best practice technical advice, and verify the quality of the integrated offering.

The Designed for EMC program combines quickstart developer assistance with accreditation for the development methodology and certification for the integrated application. Application developers and ISVs that are integrating their applications with the Content Server OEM Edition can turn to EMC for application design guidance and developer support.

The quickstart program includes:

- Architectural consulting about how best to design a content-rich application
- Developer advice for resolving implementation issues that arise during development

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- Technical support, including access to prerelease software

The partner application accreditation service includes a code inspection, testing for standardized naming conventions, and a review of objects stored within the content repository, all designed to verify the quality and integrity of the content-rich application and how it utilizes the services provided by the content platform.

EMC Developer Network (EDN)

The EMC Developer Network (<http://developer.emc.com>) is an online environment built for developers working with EMC platforms and technologies. The EDN serves tens of thousands of developers actively building applications on top of the content platform. The center features:

- Component exchange
- Code snippets
- Sample code
- Application roadmap
- Discussion forums
- Podcasts
- Articles/tips

This center is designed to reinforce the community of application developers through ad hoc information sharing and hands-on problem solving, supplemented by scheduled Webinars as well as periodic face-to-face meetings.

Making the smart business decision

In sum, the Content Server OEM Edition is a comprehensive, embeddable platform for rapid application development. It includes the core technologies, the content-related services, and the application integration interfaces, together with the developer resources and support services, that are essential for building compelling content-rich applications. The Content Server OEM Edition is a reliable, scalable, and flexible platform, delivered by a company with a well-earned track record for delivering content management solutions to thousands of enterprises around the world.

For application developers and ISVs intent on rapidly capturing a presence within the enterprise for their unique content-centric solution, embedding the EMC offering is a smart business decision. Developers can build their content-rich applications on the solid foundation of a robust and well tested platform. They no longer need to invest their scarce development resources on basic content management features and functions. Rather they can jump start their application development activities by incorporating those capabilities and services for capturing, storing, organizing, retrieving, securing, and producing any type of content, and thus ensure the success of their own solution offerings.

For entrepreneurial developers, the end result is a first mover advantage—faster time to market, better use of development resources, and a faster revenue stream, all of which are important factors for producing the ongoing profits that demonstrate a solid return on investment.