

# IBM Enterprise Content Management and Box

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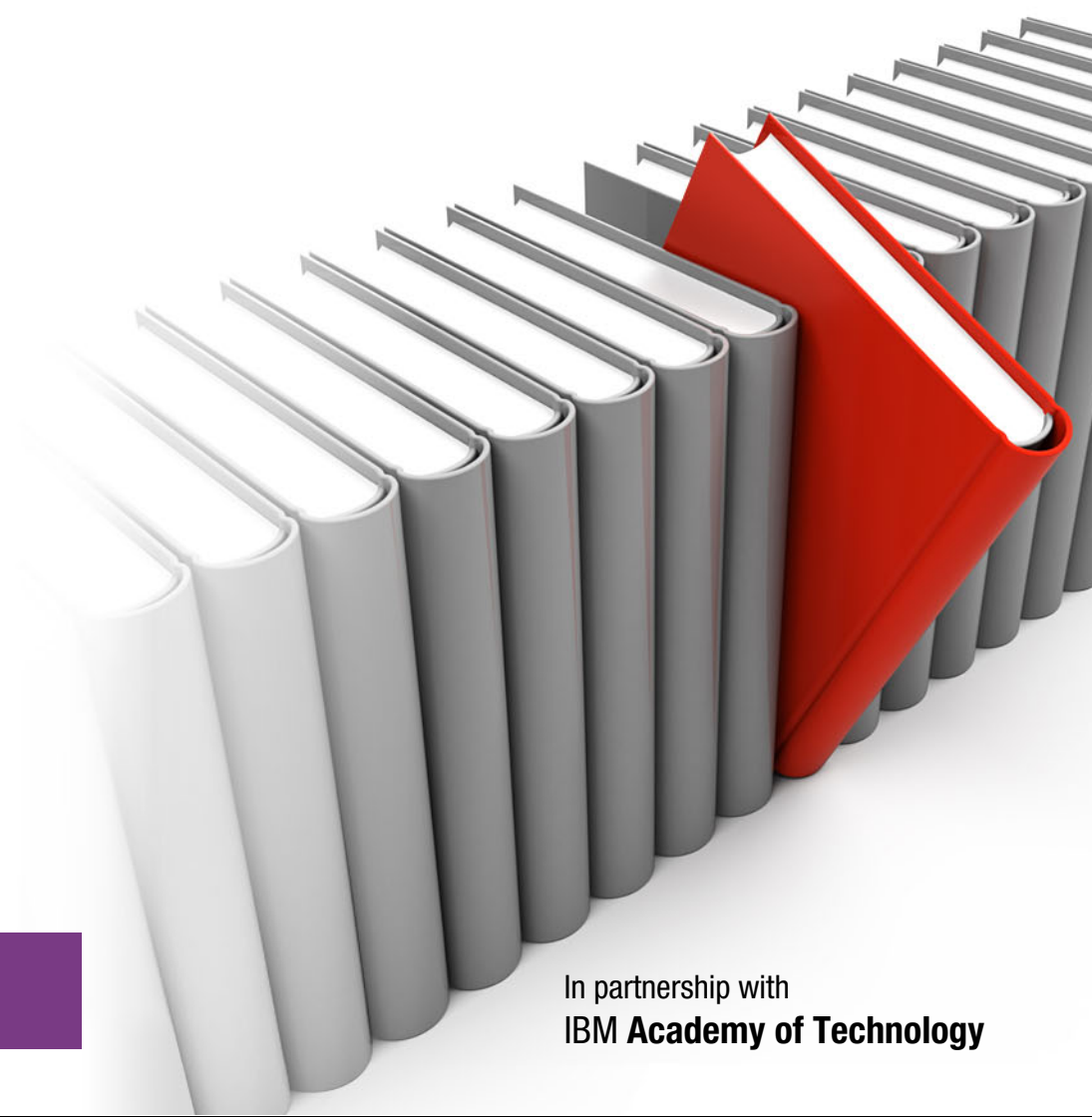
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**Note:** Before using this information and the product it supports, read the information in “Notices” on page vii.

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# Preface

The integration of IBM® Enterprise Content Management (ECM) products with the Box for secure file sharing and collaboration opens new possibilities for achieving higher levels of capability within ECM. This IBM Redpaper™ publication describes how the integration of Box, IBM Content Navigator, IBM Case Manager, IBM Datacap, and IBM StoredIQ® products enables higher maturity in ECM, and distills the capabilities provided by each integration and the combination as a whole. By leveraging these IBM ECM technologies with Box, clients can realize the power of hybrid capabilities between on-premises and cloud systems. This paper shows you how to create an integrated, end-to-end solution that uses the capabilities of those IBM ECM products in conjunction with Box.

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# Introduction to IBM ECM and Box integration

The integration of IBM Enterprise Content Management (ECM) products with Box for secure file sharing and collaboration opens new possibilities, including achieving higher levels of capability within ECM.

This chapter describes how the integration of products enables higher maturity in ECM and distills the capabilities provided by each integration and the combination as a whole:

- ▶ Box provides secure off-premises, sync-and-share, and collaboration capabilities with an enterprise's internal and external staff and clients.
- ▶ IBM Content Navigator allows a view into Box by using a unified user experience.
- ▶ IBM Case Manager taps into Box for inclusion of temporary external collaboration between knowledge workers and clients of a case.
- ▶ IBM Datacap ingests documents directly into Box and can be used to reprocess the content.
- ▶ IBM StoredIQ organizes and prepares relevant content for storage within Box and ultimately into the final system of content.

## 1.1 Executive overview

The confluence of a simple, readily accessible, cloud-based synch-and-share capability provided by Box is augmented and the IBM ECM product suite, providing enterprise users with a higher set of capabilities that offer even greater business value than the individual products alone.

This powerful combination of Box and IBM capabilities also enables new and enhanced patterns of collaboration as described in the following sections.

Here are some highlights of capabilities that this powerful integration brings:

- ▶ IBM Content Navigator enables a uniform way of accessing, sharing, and collaborating on content, using different devices, across diverse content management solutions across the enterprise.

Box can now be accessed as one of those repositories.

- ▶ IBM Case Manager allows users within the organization, in other departments, or external collaborators such as customers and vendors, who are not part of the case management business application on a regular basis, to engage in the “external collaboration” process of the case without compromising the security of sensitive information that should not be exchanged through email. For current Box users, this integration with Case Manager brings support for dynamic, flexible, and complex workflow processes and provisions for compliance, auditing, and retention management. Two specific capabilities of this integration are as follows:

- Including Box as an additional, external repository for Case Manager
- Ability to use Box to share documents in a case with external users securely

- ▶ IBM Datacap enables ingestion of data, document, and metadata content to and from Box repositories.

- Ingestion from Box extends Datacap reaching to an ever wider range of collaborators and content sources where the ingestion folder is specified for Datacap, which can then process any document that is put in that folder. Datacap can also be selective in processing only certain types of documents.
- The Datacap captured content can then be shared with both internal and external collaborators within an organization.
- Datacap can export to multiple repositories depending on the document or business process. This ability allows a business process to be designed to further process content in a knowledge-worker system while also allowing collaboration on the content to begin immediately through features and functions provided by Box.

- ▶ IBM StoredIQ provides the ability to search, index, classify, move, copy, or delete on data. StoredIQ provides insight into how data is distributed across multiple data sources, supporting information lifecycle governance activities involved in creating and enforcing data management policies.

- Integration with Box as one of the data sources is enabled through a connector, allowing StoredIQ to read and write content and metadata.
- Using this combination of StoredIQ and Box, you can discover and assess the content and metadata in Box in conjunction with other on-premises content repositories.

In summary, the rapid setup, ease of use, and secure off-premises access to shared content through Box is magnified as a business value proposition when augmented with ingestion, uniform cross-repository access, workflow, and information lifecycle management capabilities of the IBM ECM product suite.

## 1.2 Increasing business value with more mature ECM

Many organizations use only a fraction of the ECM capabilities available either with their existing products or in the marketplace as whole. As their needs grow, we have seen a progression of capabilities in organizations that have been employing ECM to go through several phases.

Many typically start with an image-centric use of ECM. Over time, they add the electronic fields, metadata, and content of the documents to enter into a more document-centric usage of ECM.

Eventually, organizations mature into a customer-centric paradigm that uses ECM to support their customer or client requirements. The capabilities of ECM that are used often reflect the stages of maturity: stable content repository strategy, increasingly automated ingestion and processing content, activation of content through a case construct (content in motion), information lifecycle governance (ILG) capabilities such as e-discovery, defensible disposal, records retention and redaction become critical underlying themes, and finally the commonality of user experience across these aspects of ECM. See Figure 1-1.

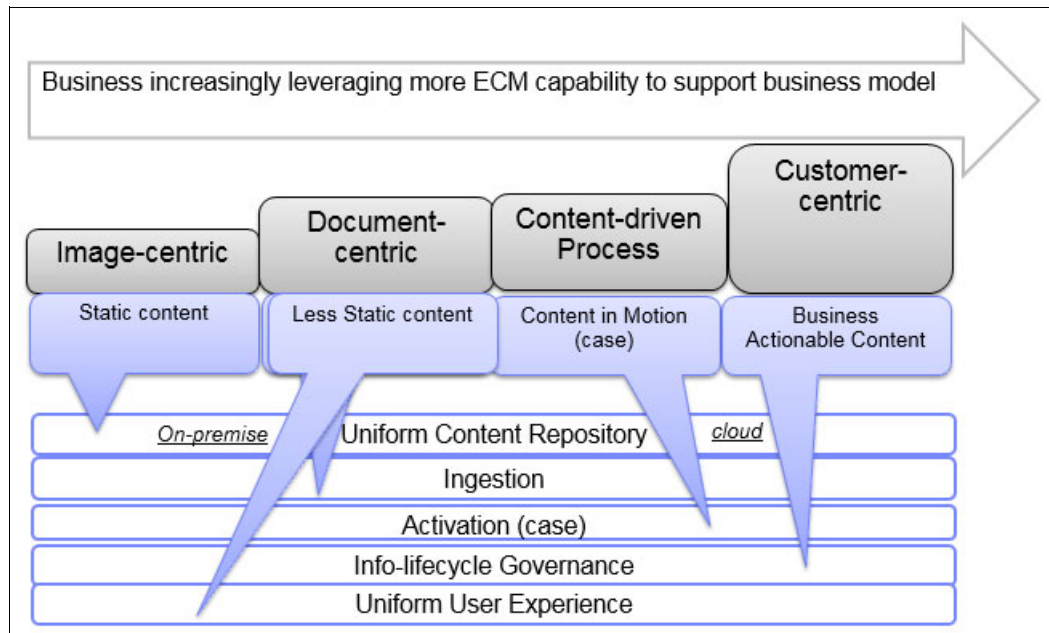


Figure 1-1 Increasing degrees of using enterprise content management

However, where are the images, documents, and customer-centric cases stored? The content repository capability started from on-premises secure data centers and covers a spectrum into off-premises solutions within a software as a service (SaaS) or platform as a service (PaaS) cloud-based paradigm.

## 1.3 A roadmap for increased ECM capabilities: An ECM maturity model

To realize more benefits and increase business value through incorporating more ECM capabilities, a good plan is to have a strategy for using these capabilities. A good start is to realize what the art of the possible might be, and where is the organization along that path.

The IBM ECM Maturity Model depicted here helps outline a roadmap to show a gradually increasing set of business and IT capabilities and the characteristics of being at a given level of maturity.

To realize the business benefits associated with each level of maturity, a set of IT capabilities must be put in place. This is done through the incorporation of various products from the IBM ECM suite, and now augmented by Box.

The gradual progression and growing of needs and capabilities that are expressed as a set of characteristics described in 1.2, “Increasing business value with more mature ECM” on page 3 can be further elaborated through the ECM maturity model shown in Figure 1-2.

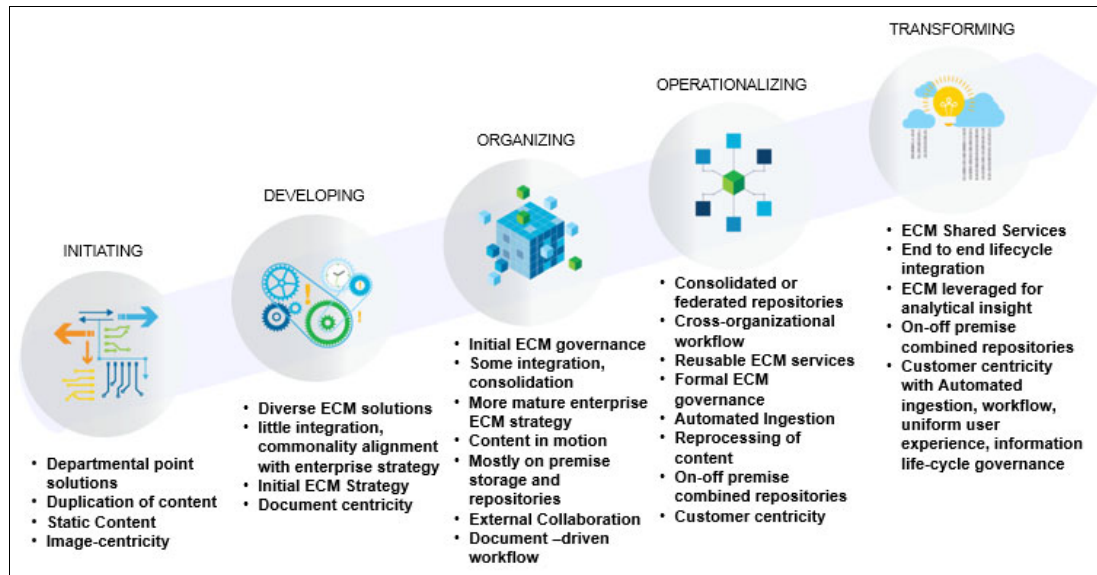


Figure 1-2 ECM maturity model overview

### 1.3.1 Initiating

Organizations often start with departmental or even project-specific solutions, and often involve a significant duplication of content with conflicting versions that are difficult to track, reconcile, discover, and audit.

The static content used at this level might be as simple as using document images that can be viewed by knowledge workers.

### 1.3.2 Developing

The ECM solutions have somewhat proliferated, some integration and commonality is in sight, and early discussion about alignment of ECM with a business enterprise strategy is conducted.

Documents are now being used more for their data (electronic usage versus human reading of the content). Sync-and-share begins to gain importance, versions and metadata start to become more important and are now driving more of the business interactions around documents. On-premises storage is gradually and cautiously augmented with sync-and-share needs.

### 1.3.3 Organizing

An ECM strategy for document repositories and object stores are put in place and content is put in motion in the context of business processes through document-centric business processes and workflows that are driven by case, knowledge workers, and the decisions they make within the context of a case.

External collaboration patterns are formalized as a more secure way, and ad hoc collaboration is conducted in the ordinary course of business.

Content repositories are mostly on-premises and the exploration of cloud-based solutions beyond sync-and-share start gaining in momentum.

### 1.3.4 Operationalizing

Consolidated or federated repositories and multiple object store strategies start to become available based on the need for scaling, diversification, and supporting multiple lines of business with shared needs.

Cross-organizational workflow driven by knowledge-worker decisioning that is based on analysis of documents is growing and maturing in new dimensions of supporting increased ad hoc processes, uniform access to multiple repositories, and with the increased need for federated search.

Reusable ECM services or shared services are sought to address the need for cost-cutting, reuse, and commonality and uniformity of addressing content management issues and opportunities.

Formal ECM governance is instituted to support the shared services, manage the diverse portfolio of systems, and support the business in a consistent and yet nimble way.

Automated ingestion increases in terms of number of projects requiring it and number of systems that now want to capitalize on the content processing, automatic classification, and metadata tagging of the content and unstructured data.

Reprocessing of content becomes a required norm: ingestion is not done solely to obtain an electronic copy, but reprocessing of data already ingested allows categorization, tagging, and enrichment of metadata content that serves as a driver for the document-driven business processes that knowledge workers are engaged in.

Combined on-premises and off-premises repositories gain in prominence to augment on-premises repositories, especially as a means for external collaborations, or ad hoc collaborations without the need for time-consuming setup and deletion.

Customer centricity gains prominence within the business model, and the structured and unstructured data and documents are reflecting that trend and need.

### 1.3.5 Transforming

In addition to the capabilities described in the previous level of maturity, the following trends in business transformation are occurring:

- ▶ ECM Shared Services are put in place through a strong governance body such as Center of Competency or Excellence. Information lifecycle governance strategies are widely implemented and enforced, less manually but with increased automation.
- ▶ End-to-end lifecycle integration of activities for ECM, such as Ingestion, Access, Case, ILG are common.
- ▶ ECM is now being used for greater analytical insight, and unstructured data augments traditional analytics using structured data.
- ▶ Combined on-premises and off-premises federated repositories designated for various ad hoc, permanent tasks for different business lines become more explicit: temporary cloud storage.
- ▶ Customer centricity with automated ingestion, workflow, uniform user experience, and information life-cycle governance.

### 1.3.6 The maturity assessment and roadmap workshop

A preferable practice is to conduct a periodic (for example, biannual) maturity assessment to assess the current progress and map out the desired and targeted states of the organization, business, and IT domains within the context of ECM capabilities that are desired to be achieved and used to support business value. In this way, the capability shortfalls can be identified and planned to be gradually put in place and operationalized, either through training, mentoring, outside consultants, or through acquisition of products that will augment the existing suite of tools and products with capabilities that will take the organization or line of business to the next level of maturity and realize the business benefits of that level of capability.

In 1.3.4, “Operationalizing” on page 5 and 1.3.5, “Transforming” on page 6, we provided a short description of capabilities at each stage of maturity along your journey for increased business value in the adoption roadmap for ECM.

A more detailed assessment and roadmap uses the following domains (or categories):

- ▶ Business:
  - Content strategy and scope
  - Ingest and capture strategy
  - Classification strategy
  - Enterprise search strategy
  - Collaboration
  - Digital document services
  - Assessing business centricity and focus: image, document, customer-centricity, and so on
- ▶ Governance and organization:
  - Implementation process
  - Enterprise commitment
  - Content management standards and policies
  - ECM technology investment process

- ▶ Methods, case, and processes:
  - Agile integration with release management and business commitments
  - Design and implementation process artifacts, work breakdown structure
  - Analytics metrics and key performance indicators definition, instrumentation, and monitoring
  - Case Management Approach, Data, Information and Content-driven approaches
  - Smarter process spectrum
- ▶ Architecture:
  - Frameworks and reference models, architectures in use
  - Data
  - Content models
  - Object store strategy
  - Product migration paths and plans
  - Virtualization enablement
  - Content location
- ▶ Applications:
  - Capture
  - Access
    - Employee access
    - Customer access
  - Manage
    - Taxonomy
    - Classification
    - Records management
    - eDiscovery
  - Transform
  - Process
  - Analyze
  - Dispose
- ▶ Information and content:
  - Environment and Data Discovery
  - Analyze
  - Return on investment (ROI)
  - Data classification
  - Manage data
- ▶ Infrastructure management:
  - Store
  - Document repositories
  - Environments
  - Identity management
  - Permissions
  - Privacy

Each of these seven categories or domains within ECM have a set of questions pertaining to the attributes listed. These questions are posed to assess the current and future desired states. You can find details about them by engaging with IBM ECM Lab Services in a Strategy and Roadmap Workshop that IBM conducts for and with clients to best identify gaps and opportunities, and to plan for gradual progression of capabilities appropriate to a given scope of the organization.

## 1.4 The ECM collaboration patterns

Looking across various industries and observing commonalities in the capabilities and use of technology to support emerging business needs, several patterns emerge. This section focuses on the collaboration patterns group and elaborates a few patterns showing capabilities that can begin to be used as a result of IBM ECM and Box integrations.

### 1.4.1 Pattern 1: Request additional documents

This pattern has an outbound request from inside the enterprise to an external party for additional documents. The external party might be a client, an external adviser, or other external participants.

The following list describes a typical business scenario:

1. An enterprise offers a service or product.
2. A client applies for the service or product, often providing initial documentation and information.
3. A knowledge worker is assigned to the case. The assigned knowledge worker is often a subject matter expert (SME), such as an underwriter (insurance), patent examiner (patent disclosure evaluation), specialist (healthcare), quality assurance expert (manufacturing). The worker evaluates the current submitted application, information package, and case using a combination of organizational policy, personal expert judgement, or based on experience, to decide on the next course of action in this “unstructured” or “ad hoc” workflow.

**Note:** The *unstructured* or *ad hoc* workflow is called this, not because the workflow is ad hoc or unstructured but in the sense that it is non-deterministic: the next set of steps are not known in advance and are contingent on the decision provided by the subject matter expert.

4. After a decision is made, the next step becomes clear. Thus, this document or content-driven case workflow consists of a set of well-defined sub-workflows (business processes or subprocesses), the exact sequence of which cannot usually be determined beforehand. The decision made by the SME will determine the next subprocess, although the overall sequence of the larger workflow (macroprocess) might be indeterminate, each time an expert evaluates the documents to arrive at a context for making a decision based on company policy and professional experience and judgement. The SME either approves or rejects the application, or might engage in multiple iterations where the SME might issue a request for further supporting documents, approvals, signatures, or acknowledgements.
5. This process often requires a series of external collaborations between client, SME, case worker and then between the case worker and colleagues or between case worker and external collaborators, which each require secure, ad hoc, off-premises collaboration.

During these *external collaboration iterations*, there is likely to be incomplete documents passed back and forth, often edited, other times requiring signatures, acknowledgements of terms, and so on.



## Problem

Requesting and submitting the supporting documentation through commonly used services, such as public email, is often risky. It might compromise information that is considered sensitive information, such as US Social Security number (SSN), bank account numbers, personal identification number (PIN) codes, patient record numbers, and financial records.

## Solution

A combination of IBM ECM products and Box can be used to solve the problems. The pattern has two similar solutions:

- ▶ Using Content Navigator, as part of an enterprise document management application
- ▶ Using Case Manager, as part of a case management workflow application

The documents can be submitted securely using the following capabilities:

- ▶ Provide a means of secure, cloud-based (elastic) repository for collaboration by using the Box repository as a temporary repository for external collaboration to fulfill a specific request for submission of documentation.
- ▶ Ability to work with documents in the Box folder, in the same way as other documents within the context of the enterprise business application.

This pattern of interactions has the following process:

1. The user creates a folder in Box and requests the supporting documentation from the external client by providing a link to a secure Box folder through email.
2. The client puts the document in the secure Box folder using any device.
3. The uploaded document automatically triggers notification of arrival to the case worker, as configured.
4. The user works with the documents using the familiar enterprise application:
  - In the context of an enterprise management application, the user works with the documents in the Box folder through the Content Navigator client interface. The user also has the ability to use other features, such as PDF conversion.
  - In the context of a case management process, the user, working with the Case Manager application, decides to file the document in Box to the case folder as external documents, so that the documents can be available for use in subsequent workflow steps.

The case workflow process continues until an outcome is reached.

Depending on the requirements of the business application, a beneficial step might be to move the documents from Box to the case repository and consolidate all the documents of the case together. These can be stored along with the case data, other case documents and audit information for compliance.

## Benefits

This solution has the following benefits:

- ▶ Using the secure sharing capabilities of Box allows external collaboration.
- ▶ Ability to interact with document in Box in the same way as documents in other enterprise repositories through a unified user interface.
- ▶ For customers who already use Box, the integration with Case Manager adds a powerful tool to support complex and document-driven workflow processes.

## Examples

An example of this pattern is a uniform user experience, and access to all content with the integration of IBM Content Navigator and Box (described in see 3.4, “Integration use case” on page 44). The key of the application is the time-sensitive, secure, external collaboration coupled with the ability to view the documents in multiple repositories using Content Navigator.

Another example of this pattern is an application for employee review, employee onboarding, and employee human resource self-service that use IBM Case Manager and Box integration capabilities. The key is to share the data-sensitive documents securely with only authorized people, both internal and external. See 4.5, “Example integration use cases” on page 63.

## 1.4.2 Pattern 2: Share documents securely

In this pattern, the ECM user needs to allow an external participant to view selected documents stored in an ECM repository securely.

### Problem

Sharing documents with external users can expose sensitive information about the case to the risk of unintended access. This exposure to risk happens when using public email systems, paper-based transfers, and other commonly used services. In some business use cases, the access is might also be subjected to extra constraints such as time-period.

**Note:** This pattern is not about exchanging documents or working on them collaboratively. It is about providing read-access of certain documents to external users.

### Solution

The user selects the document and initiates a *Share* action, which first copies the document to Box, then uses the sharing function from Box to send a secure link of document through email to the external participant.

The Share action can be invoked directly from either Content Navigator or Case Manager client interface. The powerful options as supported by Box are also available directly in the ECM applications, including options to define password, expiration time, and the download permission.

### Benefits

This solution offers the following benefits:

- ▶ Secure sharing of documents with external participants through secure links.
- ▶ Ease of use of Box sharing capabilities directly from the ECM client interface, Content Navigator, or Case Manager client.

### Examples

See the examples in 1.4.1, “Pattern 1: Request additional documents” on page 8.

### 1.4.3 Pattern 3: Reiterative processing

This pattern is also called repeated Ingestion or reprocess content for additional value. The context of this pattern can be a scanned document that resides in Box that must be processed.

#### **Problem**

The problem is being able to automate the annotations and the tagging that aid in the automated categorization of the document used for subsequent processing.

#### **Solution**

Use the IBM Datacap ingest from Box capabilities and recapture the document, lifting data fields this time based on rules that are defined within Datacap. Reprocess the document for further categorization.

This reprocessing allows each cycle to add even greater value with input from the previous cycle, including the following items:

- ▶ Data capture
- ▶ Content processing
- ▶ Field definition
- ▶ Categorization
- ▶ Content and metadata correction
- ▶ Cognitive capture
- ▶ Contextual Analysis

#### **Example**

A use case of this pattern is an application for an insurance company that allows uploading documents from the field to fill forms and capture pictures, which are necessary to update policies and document incidents, and to detect fraud. This case uses the Datacap and Box integration to exercise the reiterative processing described in this section and the mobile capture function and content refinement that are described in the next sections. Details of this use case are in 5.6, "Integration use case" on page 84.

### 1.4.4 Pattern 4: Extending mobile capture

Datacap brings more image enhancement tools, classification, recognition, data mining, and verification tools to Box. Box provides an easier external mobile capture and collaboration interface to Datacap.

#### **Problem**

Because of security risks, companies have strict policies regarding exposing internal capabilities, such as data and content capture.

#### **Solution**

The ability to ingest from both systems simultaneously allows companies to extend their content ingestion and processing capabilities to their clients.

## 1.4.5 Pattern 5: Content refinement

This pattern relates to and collaborates with reiterative processing, but is more focused on engaging in content refinement through contextual analysis, deeper cognitive processing, and increased precision of content processing, to name a few refinement instances that might be needed on a document.

### **Problem**

Refining unstructured data into structured data or extracting aspects of structure from unstructured data is a probabilistic and iterative activity that is fundamentally error-prone, requiring multiple passes, iterations, and refinements.

### **Solution**

Use reiterative processing for the purposes of refining the precision of capture, deeper contextual or cognitive processing, and categorization. This requires not only enhanced and intelligent ingestion and capture capabilities, but also external secure cloud storage to be used as a temporary storage area until the processing completes, whereupon the documents can be moved to a semi-permanent location. Box's off-premises farm-based storage can seamlessly adapt to content repository needs, much easier than on-premises storage. Companies can now deliver content from Datacap to Box until the volatile stage passes, then allowing the content to return to on-premises storage for lifecycle management.

Another step that might also be necessary is to store and disseminate multiple versions with each refinement to downstream workflow, indicate completion notification, and pass documents to a workflow downstream upon completion.



## Box overview

This chapter introduces the capabilities of Box and some of the features available to enhance enterprise collaboration and content management. Box is a cloud content management and collaboration system that helps you securely store, share, and manage all your company's content. Whether you need to secure confidential business information, develop a custom mobile application, or simplify paper-based office processes, Box can help you do more with your content.

This chapter covers the following topics:

- ▶ Product capabilities
- ▶ Extend Box capabilities to all users

**Note:** All figures in this chapter are presented courtesy of Box, Inc.

## 2.1 Product capabilities

Every business, no matter what size, has documents and information that are the foundation of the company. Team members need to access and collaborate on critical documents, presentations, and files, and that information needs to stay secure through multiple levels of reviews and approvals. Box serves as a central content system that provides best-in-class security for your information, the robust collaboration capabilities that your team needs to be productive, and keep your business competitive in an ever-changing market.

### 2.1.1 Administrative controls in the Admin Console

Box Business, Enterprise and Elite accounts are equipped with a comprehensive administrative console (Admin Console) that gives administrators complete control of their accounts. With rich customization and configuration options, Box administrators can define and enforce security policies, integrate across their entire IT stack, manage users and groups, control corporate content, generate detailed audit reports, and much more. With Box, you get advanced control over collaboration and file sharing that other tools like email and simple sync-and-share services lack. Plus, as a cloud service, Box relieves you of unnecessary administrative work, such as managing servers and storage for files and collaboration.

Figure 2-1 shows the home page of the Admin Console with an overview of a company's Box account.

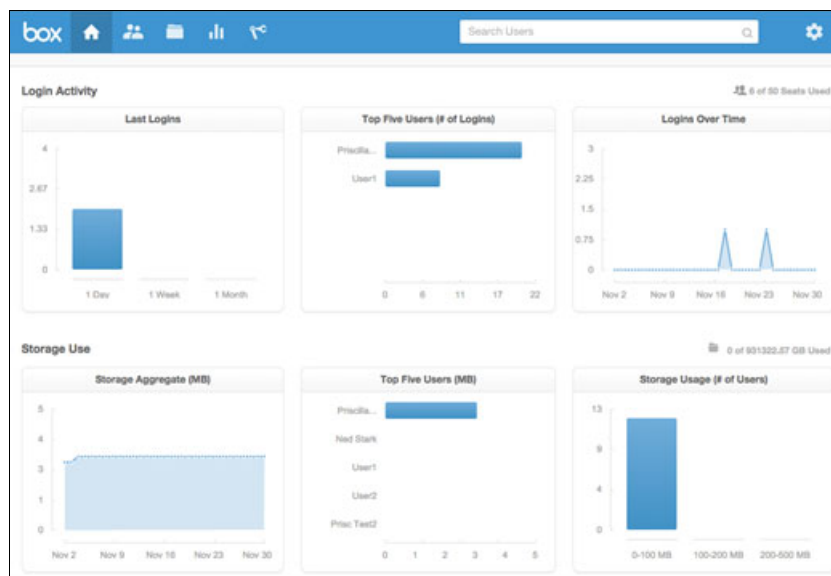


Figure 2-1 Admin Console home page

### Content Manager

Box enterprise customers often have the challenge of managing complex deployments, with thousands of users and millions of documents. The Content Manager tab in the Admin Console gives administrators a powerful set of tools for managing files and users across an organization. The Admin Console is a powerful command center that gives quick insights into what is going on in your entire Box account, who is sharing content and with whom, what the entire folder structure looks like, and moving content between users. This console provides the functionality that you need to find issues and take action instantly. Figure 2-2 on page 15 shows the Content Manager tab in the Admin Console.

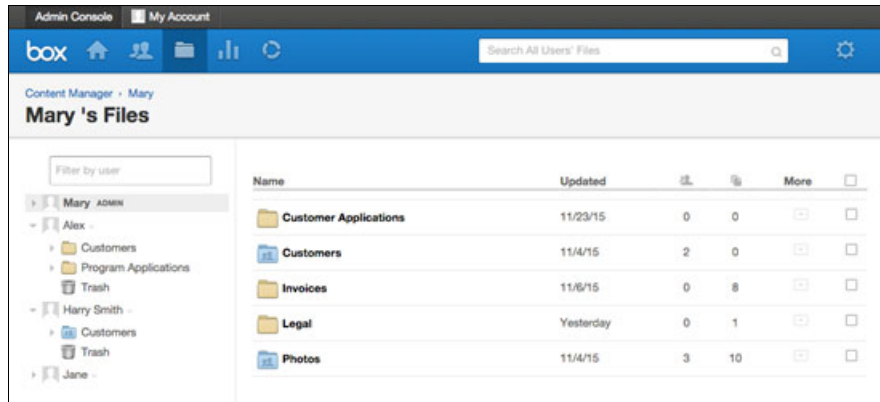


Figure 2-2 Content Manager in Admin Console

## Security policies

With the security policies tool in Box, administrators can directly monitor, control, and quarantine the upload of unwanted content into Box, and prevent the loss of sensitive data. Administrators can set policies to prevent the upload of confidential information such as Social Security numbers, credit card data, and even specific keywords. Notifications can also be triggered when content unexpectedly leaves Box, or when users from specific domains are added as collaborators to help prevent data loss.

## Automation

Built on a powerful rules engine, the automation rules in Admin Console make content in Box even more dynamic and secure. The administrator can create simple rules for automating common processes such as invoice approvals, collateral review, and contract management. These automation rules help to simplify management of how data and content flows across an organization. Figure 2-3 shows the Automation page in the Admin Console.

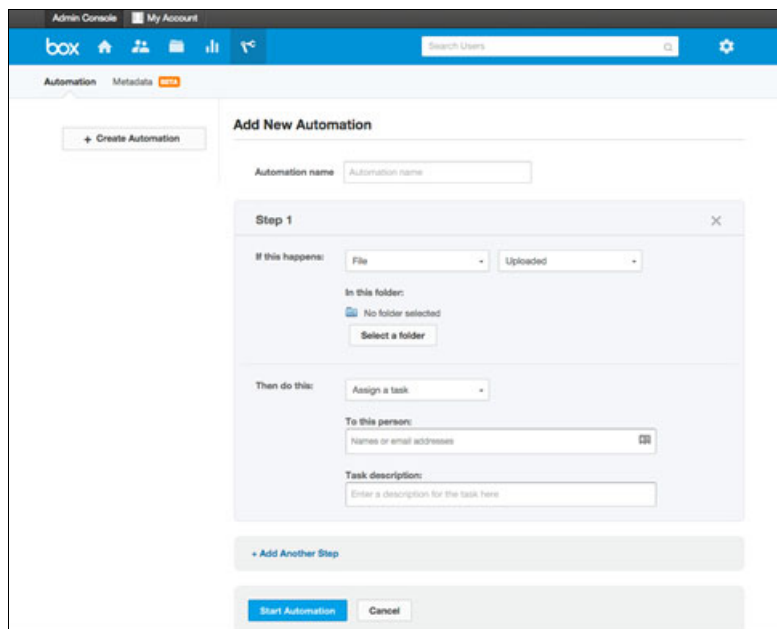


Figure 2-3 Automations page in Admin Console

For example, you can set an automation rule so that on an event, when a file is uploaded in a folder, you can assign a task to a user to review the newly uploaded file. To implement more sophisticated automations not available in the automation tab of the Admin Console, you can use the Box Content API. For more information about the Box Content API, see the following web page:

<https://box-content.readme.io/reference>

## Users and Permissions

With Box, you can extend your existing security policies to protect access to corporate content. Administrators can modify security settings of user accounts to meet corporate requirements and get the comfort that comes from knowing your business information is protected. Through the Admin Console, you can configure and control password policies, federate groups, and identity with Active Directory or single sign-on (SSO), and manage default permissions for sharing.

## Reporting

In a highly collaborative environment, your security team needs a set of reporting and monitoring tools to ensure the integrity and availability of your organization's most sensitive content. Through the ready-for-use reporting and analytics capabilities of the Box Admin Console, your team obtains perfect visibility and deep intelligence over all the content, users, devices, and activity across your account. Every user and administrative action (over 70 events), including changes to security settings, is logged and available through the reports. In addition, with the Box reporting API, your business can integrate up to-the-minute information about what is happening with your content into a business intelligence (BI) or security information and event management (SIEM) tool, such as IBM Cognos®.

## 2.1.2 Collaboration

With Box, you can quickly and easily work securely with anyone, even if they are outside your firewall. Share large files, view, and comment on any kind of document, and connect with coworkers, no matter what device they use.

### Collaborator access controls

A *collaborator* is an individual who has been invited into a folder. Collaboration invitations are a great way to share content for long-term projects. This function allows you to invite people to a folder and monitor updates over time. To access a folder as a collaborator, a person needs a Box account (or see “Shared Links” on page 17 for sharing with users who do not have a Box account); the folder is listed under **All Files** when users log in to their Box account. If you send a collaboration invitation to a person who does not have a Box account, that person is prompted to sign up with Box before being able to access the content.

**Permissions:** In Box, permissions are applied to folders, not to individual files within a folder.



Box access controls include the following functions:

- ▶ Granular authorization: With seven levels of permission for access, preview, editing, and sharing, you can ensure individual users and groups can see only what they need to. Figure 2-4 shows a description of the access levels and what permissions each level has.

Access Levels	Upload	Download	Preview	Get Link	Edit	Delete	Owner
Co-owner	•	•	•	•	•	•	•
Editor	•	•	•	•	•	•	
Viewer Uploader	•	•	•	•	•		
Previewer Uploader	•		•				
Viewer		•	•	•			
Previewer			•				
Uploader	•						

Figure 2-4 Access levels

- ▶ Waterfall permissions: Permission levels on Box follow a “waterfall” design in which individuals have access to only the folder they are invited to and any subfolders beneath it. Note that users can be invited into folders but not individual files. If you want to send a document to someone who is not a collaborator in the folder, use a shared link.
- ▶ Domain Whitelist: Box supports for domain-based collaboration whitelists that control who you can invite into your Box instance and where your users can be invited as collaborators. This allows administrators to control which organizations your users are able to collaborate with.

You must consider all of these access control functions when building your folder structures for collaboration. For example, if you have a working folder for a client but you want to share only some files in the folder externally, you can create the following folders and invite external members to the external folder:

- ▶ “<Client Name> - EXTERNAL”
- ▶ “<Client Name> - INTERNAL”

## Shared Links

Shared links, one of the most popular features on Box, allows users to quickly share links to content stored on Box with users both inside and outside the company. Different from full collaborators, individuals accessing your content through a shared link have read-only access and cannot make changes to your files, but do not need a Box account. They can continue to reference that link for the most up-to-date version of the content. Think of a shared link as a secure email attachment replacement. A shared link provides a one-way relationship, allowing the recipient to preview or download a given file or folder. With customizable permission levels and a URL that is easy to copy and paste, shared links can be used to send important content to coworkers and friends.

When creating a shared link, you see the following options (shown in Figure 2-5 on page 18):

- ▶ People with the link: People with the link can access shared files and no Box account is required. For extra security, you can also set a password or expiration for the link, and restrict download and preview access for link viewers.
- ▶ People in your company: Users with a Box account and a validated email address matching your domain (or your account administrator’s domain for business and enterprise users) can access content through the shared link. You can set an expiration date and restrict download and preview access for link viewers. When accessing the link, users are

asked to log in to Box to verify their identity. This option is disabled if you are not using a legitimate, validated business domain to access Box, but can be enabled if you change your login email address.

- ▶ **People in this folder:** Only users who are invited to the folder can access the content in the folder. Note that collaborators already have access to their content, but can easily direct one another to a specific file or folder using the shared link.
- ▶ **Remove Link:** This option removes and deletes the shared link assigned to that file or folder so it can no longer be accessed, even if someone has the old link.

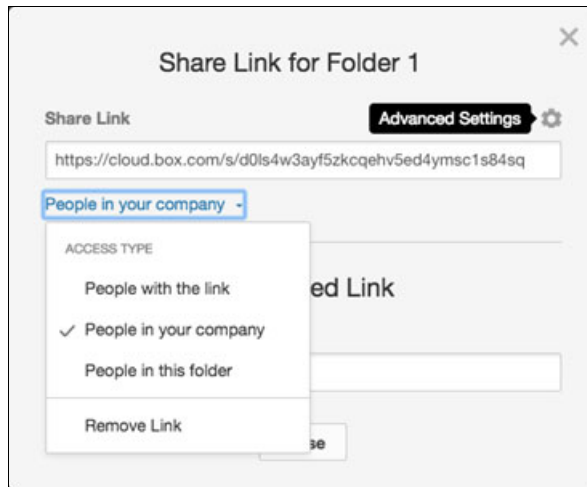


Figure 2-5 Shared links permission levels

Customizable permission levels, expiration dates, and optional password-protection make Box shared links a secure, simple way to share important content. Upon clicking advanced settings, the user sees additional settings for shared links (Figure 2-6). Users can create a customized URL for easy access, disable a shared link after a specific date, and even disable the option for someone to download shared content, ensuring that highly secure content remains in your company's control.

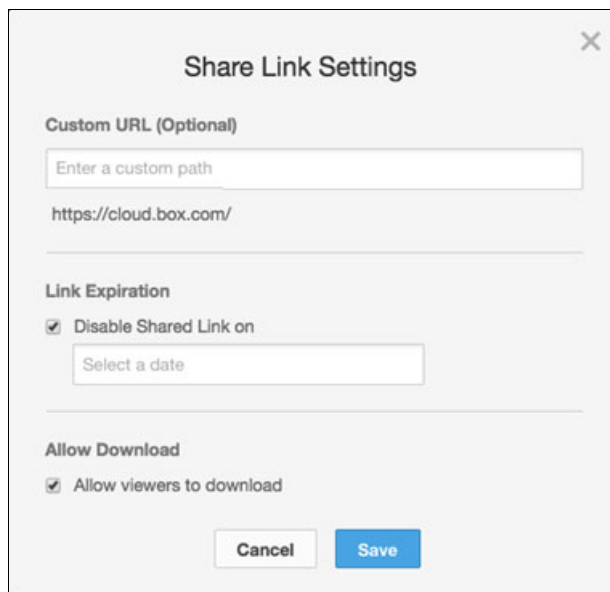


Figure 2-6 Shared link settings

## 2.1.3 Security

Box empowers IT and security staffs to secure business communications, reduce data loss, improve compliance, and simplify governance. Box does this by centralizing and protecting your content and extending your security controls to cloud and mobile. In addition to the deep investments in infrastructure and application security controls, Box maintains a comprehensive compliance program to provide transparency about the operations to global customers and throughout regulated industries. Every file for every user is encrypted in transit between the user (independent of platform such as web, desktop, or mobile) and Box data centers. Box supports Transport Layer Security (TLS) 1.0 through 1.2 for encryption in transit with Box web application and API. Box uses 2048-bit public keys in the certificates, and supports only high-strength symmetric ciphers. When encrypted data reaches the Box network, files stored on the Box are 256-bit Advanced Encryption Standard (AES), encrypted at all times and protected by a sophisticated key-wrapping strategy. This design protects your data and keys from unauthorized disclosure, and the key management best practices include regular key rotation processes.

### Privacy

Box takes every precaution to make sure your confidential information stays that way.

- ▶ Health Insurance Portability and Accountability Act (HIPAA) compliance: Box provides the administrative, technical, and physical safeguards to support your organization's compliance with HIPAA.
- ▶ Certified for European Union (EU): Frameworks for the collection and use of personal data from European member countries.

### Event monitoring

With Box, you can continuously monitor the events and activity that occur as employees manage content, update information, and collaborate with internal and external partners. Through the Box reporting API, businesses gain the ability to extract log information directly from Box and use it to drive both traditional BI and SIEM activity with integrations such as IBM Cognos and IBM Tivoli®.

Every action on Box is logged for a full audit trail, allowing you to track events by date, time, user, email, IP address, and action. Administrators can access this activity trail through the Admin Console, or by using the Box API directly.

### Data loss prevention (DLP)

Box native content security policies detect abnormal download activity, prevent sharing of files with US Social Security numbers, credit cards, and special terms, and send alerts when users share content with domains on watch lists. For companies looking to extend more advanced DLP policies into the cloud, Box offers deep integrations with DLP providers such as Seclore, Fasoo, Symantec, Skyhigh Networks, Netskope, CipherCloud, and Code Green Networks. In this way, businesses can more effortlessly identify restricted content and pull it from shared folders, ultimately, helping protect against the loss of confidential and restricted information.

### Single sign-on (SSO)

Box supports SAML 2.0 and other SSO providers for easy integration with a variety of identity providers. To ensure that businesses of all sizes can protect access to their content, Box also provides native multi-factor authentication verification to all users. Box partners with identity management leaders, such as Okta, Ping, and One Login. In this way, Box customers can manage identity and access to Box and other services centrally, reducing the complexity of today's IT landscape. It also simplifies group membership management and automates provisioning and deprovisioning of accounts.

## 2.1.4 Mobile

With native apps for iPhone, iPad, Android, Windows Phone, and Blackberry, plus the [m.box.com](http://m.box.com) mobile site, you can work with your files on any device. You can easily upload files, and backup photos, video, and files from your mobile device to Box. With the Box Mobile App, you can easily get to your work documents, presentations, and photos while you are traveling. To obtain the Box mobile app, visit the app store for your device.

### Box Capture

Box Capture is Box's first purpose-built mobile app, built on Box mobile iOS SDK, and is designed to ensure that remote or field workers are just as connected to core business processes and workflows as their colleagues in the office. With Box Capture, mobile workers can easily take photos videos, and then save them to the cloud, automatically triggering notifications to colleagues who can react to information. By default, photos and videos shared with Box Capture are never stored to a field worker's personal camera roll, ensuring that your organization's information is always secure.

Box Capture can work together with IBM Datacap to provide more advanced capabilities such as document scanning. Imagine a scenario where a business user can use Box Capture to easily take simple photos of documents that are uploaded to Box, and then Datacap can monitor the upload location on Box, grabbing the photos and cleaning them, performing optical character recognition (for easy search in the future), and classification. Then, based on classification, a case worker declares the document as a record, starts a workflow in IBM Case Manager, and stores the resulting document in Box or the IBM ECM system, or in some cases, both Box and ECM system. For instance, perhaps you want to take photos of documents and have someone at the main office, using Datacap classify them and put sensitive documents into your in-house records management system, but for certain sensitive documents that are related to a legal matter, also put a copy in Box temporarily for your legal counsel to work with.

### Mobile security

Box mobile applications (Box for iOS v2.7.3+, Box for Android v1.7.5+, and Box for Windows Phone/8 v1.6+) have admin-controlled settings that allow users to more securely access their Box accounts on their mobile devices and give admins control over how their employees access company data. These settings provide granular controls for administrators through the Admin Console and allow more security and control over how employees should access company data. Administrators can use these settings to manage and customize access of enterprise users to sensitive data and prevent instances of data leakage to or from Box applications.

Device pinning allows administrators to limit from which devices a user can access Box, ensuring that access is allowed on only trusted devices. This feature allows enterprise administrators to pin their user's corporate-managed Box account to a particular mobile device or Box Sync client. For more information about device pinning, visit this web page:

<https://community.box.com/t5/For-Admins/Device-Pinning-Overview-And-FAQs/ta-p/172>

Box fosters a rich ecosystem of Enterprise Mobility Management (EMM) providers, such as Fiberlink® and MaaS360®, to help Box customers better manage their mobile portfolios. Box for EMM is a mobile application that helps your company securely manage access to company content through mobile devices.

The following features are offered:

- ▶ Allows enterprises to restrict Box usage to company-approved mobile devices secured by EMM providers that have integrated with Box for EMM.
- ▶ Validates EMM credentials through server-to-server API calls between Box and the EMM provider.
- ▶ Checks managed application configurations before allowing access to content on Box.
- ▶ Ensures devices are in compliance with security policies set by the EMM provider before allowing access to content on Box.

For more information about Box for EMM, go to the following web page:

<https://community.box.com/t5/Mobile/Box-for-EMM-Overview-and-FAQs/ta-p/285>

## 2.1.5 Box APIs

Companies are reimagining how they connect internal business processes with their extended ecosystem of customers, suppliers, and partners. Whether it is a financial advisor connection with private wealth clients, healthcare providers coordinating to provide high-quality patient care, or construction companies building project management tools with external contractors, companies are creating custom applications to transform how they interact across their value chain. Content is at the heart of many of these interactions.

Box provides rich content services for your custom web and mobile applications, so you can create secure apps faster and deliver amazing, engaging experiences to your users. Make your apps more useful and engaging using the same underlying technology as Box. Figure 2-7 shows the capabilities of Box.

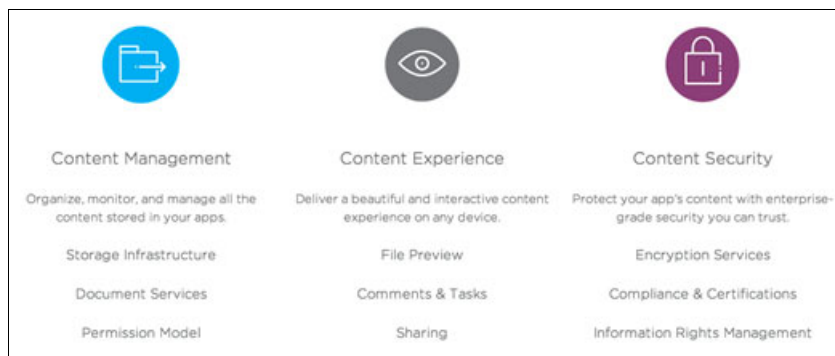


Figure 2-7 Box capabilities

### Box metadata

At its core, metadata allows users and applications to define and store custom data associated with their files. Metadata consists of key:value pairs that belong to files. For example, an important contract might have the following key:value pairs:

- ▶ "clientNumber": "12345"
- ▶ "clientName": "Mary Smith"

Features of the metadata service are as follows:

- ▶ **Metadata templates:** Customers can create their own metadata templates directly in the Admin Console. IT administrators can distribute these templates across the enterprise, making them available to all users, on all files, and in advanced searches. Figure 2-8 shows a sample metadata template creation page in the Admin Console.

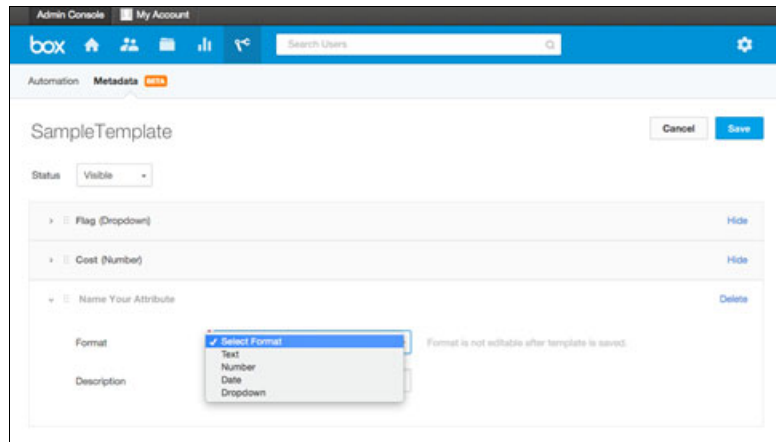


Figure 2-8 Metadata page in Admin Console

- ▶ **Metadata APIs:** Developers can attach metadata capabilities to existing or new content in their software through the add and edit metadata templates API, and the advanced search API.

For more information about metadata, go to the following web page:

<https://box-content.readme.io/reference#metadata-object>

## Box Content API

With Box Content API, you can take advantage of best-in-class content management and collaboration features to power or customize your business apps.

Features of the Box Content API are as follows:

- ▶ **Built for business:** Use the Content API to integrate with existing systems, automate work processes, and build custom apps on the same enterprise grade API that powers the Box application.
- ▶ **Highly secure:** With support for single sign-on, file encryption in transit and at rest, built-in granular permissions, and access settings, you can focus on innovation instead of worrying about security.
- ▶ **Delivering intelligence:** Use audit data and event notifications to view, analyze, and react to what is happening in your account, organization, or app in real time.

For more information about the Box Content API, go to the following web page:

<https://box-content.readme.io/reference>

## Box View API

Box View powers the most elegant content interaction on any screen by easily converting PDF and Microsoft Office documents to formats that display beautifully in web and mobile apps.

Features of the Box View API are as follows:

- ▶ Crisp rendering: Vector-based rendering ensures your content looks its best on any screen, the way it was intended to be shared.
- ▶ Fast file load: With smooth scrolling, zooming, and text selection, your audience can quickly access what they need, without having to download large PDF and Office files.
- ▶ Easy to customize: Whether it is by applying custom branding or stunning visual animations, join hundreds of customers including Oracle, Xero, and UberConference using Box View within their applications.

For more information about the Box View API, go to the following web page:

<https://box-view.readme.io/reference>

## 2.2 Extend Box capabilities to all users

Extend the functionality of Box to apps serving any user, whether or not they have a Box account through Box App Users accounts. App Users are full-featured enterprise Box accounts that belong to your application, not a Box user. Unlike typical Box accounts, these accounts do not have an associated login and can be accessed through only the Content API by the controlling application and associated Box User ID. This new user model allows your application to take advantage of groups, permissions, collaborations, comments, tasks, and the many other features offered by the Box. Through Box App Users, you can focus on building amazing experiences for your extended ecosystem and reimagine how you interact with anyone in your supply or demand chain in completely new ways.

Implementing App Users consists of two components:

- ▶ App Auth: Establish a trusted connection to Box with a new server-to-server authentication service that allows your app to authenticate on behalf of your users.
- ▶ App Users: This component is a new type of user designed specifically for your apps. Behind the scenes, a new type of account is provisioned on your instance of Box, without the users ever knowing they are logging into Box.

These are example use cases:

- ▶ Customer or Vendor Portals: Enable customers or clients to log in to a customized interface, upload content dedicated to their account, and securely store it in the cloud.
- ▶ Project Collaboration and Deal Rooms: Create a common, secure place in the cloud where content can be stored, edited, and shared among any number of stake-holders.
- ▶ Content Distribution Tools: Upload and share content to an extended network of stakeholders, knowing that the correct content goes securely to the correct people.

Two plans are available to start developing on Box:

- ▶ Developer is a no-charge plan designed for customers and developers to quickly begin building and testing Box content services in their apps.
- ▶ Enterprise is a Box paid plan that allows customers and partners to bring Box content services to production applications.

For more information about App Users, contact your Box Sales Representative or see the following web page:

<https://box-content.readme.io/docs/app-users>







## Integration: IBM Content Navigator and Box

This chapter discusses the integration between IBM Content Navigator and Box. Content Navigator provides a unified user experience and a robust framework for working with IBM Enterprise Content and other Enterprise Content Management repositories. Box provides excellent secure document management and collaboration services on the web. Combined, IBM Content Navigator and Box enable your organization to share, access, and manage enterprise content from virtually any device, anywhere, at any time.

This chapter covers the following topics:

- ▶ Integration architecture overview
- ▶ Planning considerations
- ▶ Integration implementation
- ▶ Integration use case

## 3.1 Integration architecture overview

One of the greatest challenges experienced by organizations using enterprise content management (ECM) today is the diverse use of many different content management solutions across the enterprise. This diversity requires your business users to use multiple interfaces on different devices without any uniform way of accessing, sharing, and collaborating about content with coworkers, partners, customers, and vendors.

The IBM Content Navigator framework provides capabilities to integrate with all IBM Content Management repositories in addition to other vendor repositories using APIs and Content Management Interoperability Services (CMIS). CMIS is an OASIS standard that allows different content management systems to provide basic content management functionality across vendors. The capability of integrating with content management solutions across the organization, regardless of its managed repository, allows the business users to work with their content in a single unified interface, in a consistent manner, from anywhere using virtually any device.

### 3.1.1 Integration occurs by using the Box Content API

IBM Content Navigator integrates with Box by using the Box Content API, exposing Box as a first-class repository connector, similar to IBM FileNet® Content Manager, IBM Content Manager, and IBM Content Manager OnDemand.

For more information about Box Content API, see the following web page:

<https://box-content.readme.io/reference>

### 3.1.2 Capabilities

By integrating IBM Content Navigator and Box, user of Box can continue to work with their Box content in an intuitive way and the familiar features that they know. Your organization can take control of and use Box content in these ways:

- ▶ Using Box content in organizational processes and solutions such as case management and information lifecycle governance.
- ▶ Using Box content as part of an approval workflow.
- ▶ Storing content ingested by IBM Datacap or discovered by IBM StoredIQ in Box, saving on infrastructure and storage costs.

IBM Content Navigator users will have the same user experience working with their Box content alongside their enterprise content plus the ability to share their content with external users on the web. This type of functionality transforms the way your organization does business by providing new functionality that can be leveraged to provide extra valued services to your customers.

The way the IBM Content Navigator and Box integration works is by providing your users custom views of their content with *Content Navigator Desktops*. Content Navigator Desktops allow an administrator to create a custom desktop designed for a particular user role that includes those enterprise content repositories they need access to. For example, a legal clerk might need a simple desktop that provides read-only search functionality to search for a custodian's content across all repositories and then share it with outside counsel using Box. Alternatively, a paralegal might need a more functional Desktop where the paralegal can save content to a secure IBM FileNet folder, collaborate on it with specific internal and external users in Box, then include the content in a final approval process in FileNet.

Figure 3-1 shows an IBM Content Navigator Legal desktop that includes both a FileNet repository named *ECM* and a Box repository named *Box*. The Box repository is the selected repository.

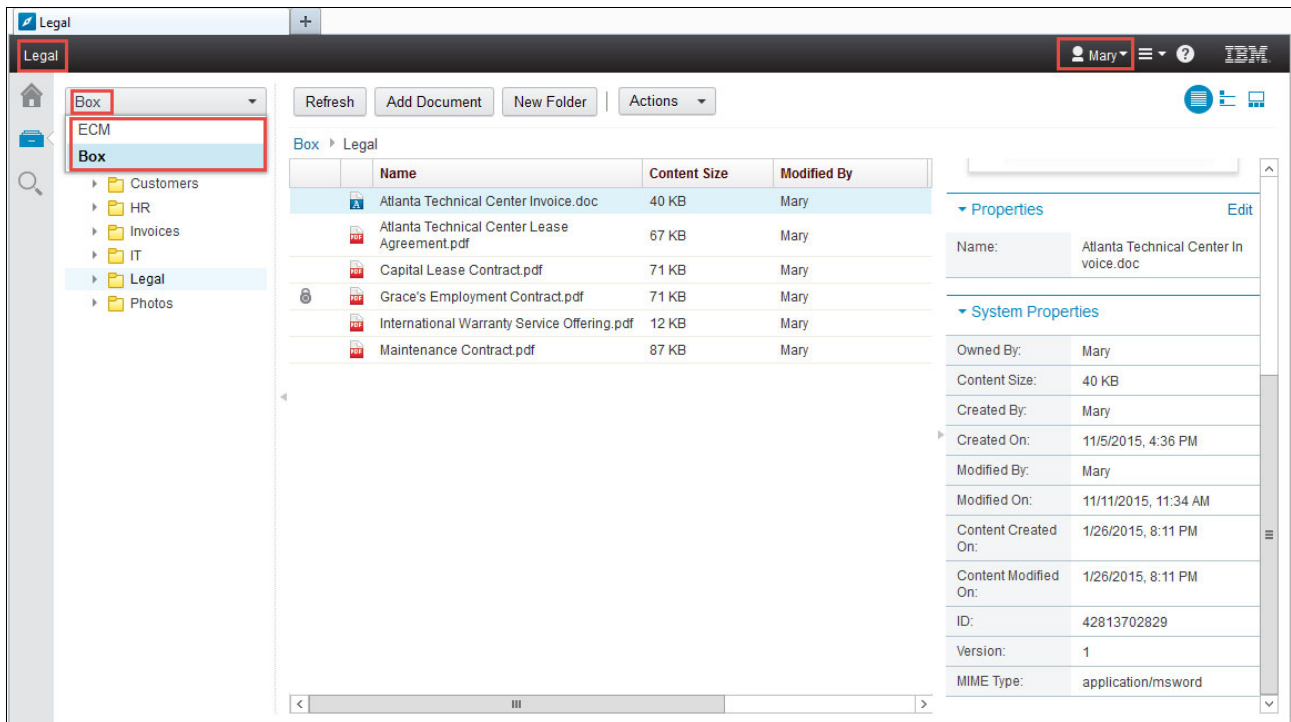


Figure 3-1 A Box repository shown in IBM Content Navigator

The following major supported capabilities within the Box repository are exposed by an IBM Content Navigator Desktop:

- **Documents.** Users can add local documents and web links directly to Box from within Content Navigator by clicking **Add Document**. First select the Box folder to save it in, then select **Web Link** or **Local Document**. If you select Web Link, you can enter a URL. If you select Local Document, as shown in Figure 3-2, browse for the document that you want to add. By default, the file name is used as the document name in Box.

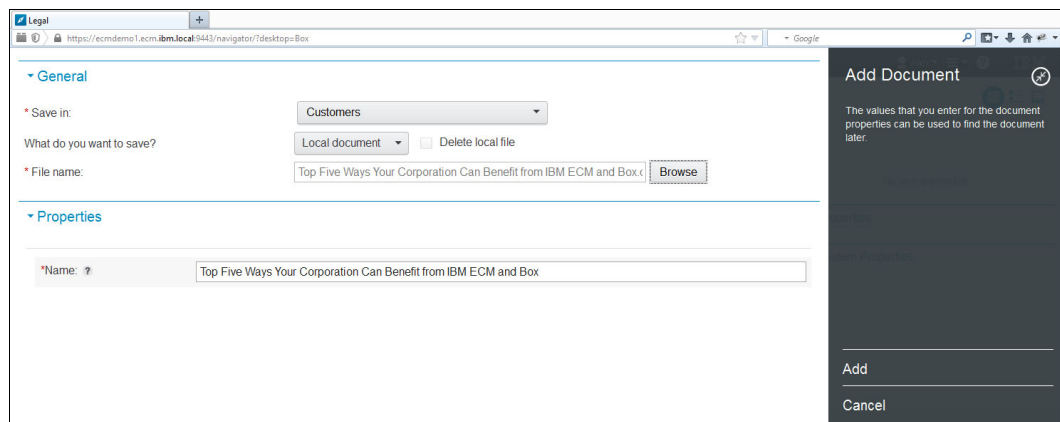


Figure 3-2 Adding a Document to Box in IBM Content Navigator

When working with Box documents in Content Navigator, users can take advantage of IBM Content Navigator features such as viewing content with the IBM Daeja™ viewer, checking-in and checking-out, and adding to Favorites.

- ▶ **Folders.** Users can create Box folders from within IBM Content Navigator by clicking **New Folder**.
- ▶ **Copy.** Users can copy one or more documents between folders in Box and IBM FileNet or IBM Content Manager by right-clicking a document and selecting **Box** → **Copy**. In the dialog window that opens, you can select the repository and the folder you want to copy the document to. Properties are mapped when possible, such as the document name. You can edit the document name (in Box, FileNet, and Content Manager) and the class or Item Type, and version (in FileNet or Content Manager) before finishing the copy. For example, while at a customer location, you can collaborate on a document with a customer using the Box App on a tablet. Later, while in the office, you can copy that document to the FileNet repository from within Content Navigator on your desktop. After the document is in FileNet or Content Manager, it can then be included as part of a process and stored as the document of record.

**Note:** If you copy a document from Box to FileNet or Content Manager, make changes, then copy it back, clicking the same document in Box creates a new version of the document. If you click a folder, a new document is created in that folder, adding an incrementing number at the end of the document name if it has a duplicate name.

- ▶ **Share.** Users can share content from FileNet or Content Manager using Box. For example, you might want to share the latest copy of a contract with a customer. The process of sharing a document copies it to a hidden shared folder in Box where a read-only copy is made available to whomever has the link. The only user who has access to the document in Box is the administrator account that is assigned to manage Box shares.

To share a document, right-click the document and select **Box** → **Share**, as shown in Figure 3-3. In the dialog window that opens, you can specify the *Send from* address (if configured to allow editing, there are also options to auto-populate this field), the *Send to* address, a message dialog, and *Share Options* such as setting a password, allowing the recipient to download, and the ability to set an expiration date.

The screenshot shows a 'Box Share' dialog box. At the top, it says 'Send email that includes a link for the shared file. Anyone with the link can access the file.' Below this is a document icon and the text 'Share version 1.0'. There are two input fields: '\*Send from:' with 'alex@mymail.com' and 'Send to:' with 'debbie@mail.com'. A 'Message:' field contains the text 'Your application has been approved, you can now begin using your benefits.' Below the message field is a section titled 'Share Options' with a sub-header 'The download, expiration, and password settings apply to the shared file in Box.' This section includes a checked checkbox for 'Allow download', a 'Set link expiration' dropdown menu set to 'Never expires', and a 'Set password:' field with 'Optional' entered. At the bottom right of the dialog are 'Share' and 'Cancel' buttons.

Figure 3-3 Box Share dialog

When sharing is complete, the recipient is notified through email and provided a link to access the document. By default, only the current version is shared. You can share an updated version by right-clicking the document and selecting **Box** → **Share** again.

As shown in Figure 3-4, sharing is an asynchronous process meaning the sharing process takes place in the background. A light gray icon indicates a share is pending. It turns black when the process is complete. This allows you to continue working while the sharing process occurs.

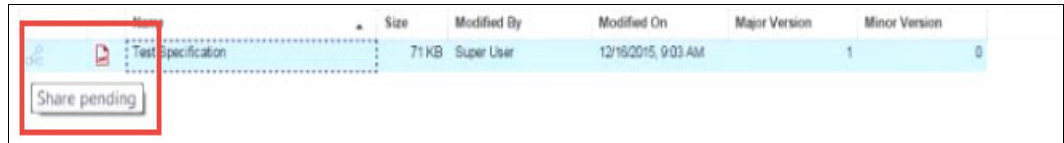


Figure 3-4 Sharing pending

- ▶ **Metadata.** Box supports three types of metadata that are exposed in IBM Content Navigator:
  - File (required). This type is sometimes referred to as *system* metadata and is present on all Box documents. Only the Name and Description can be edited.
  - Custom (optional). These types are ad hoc properties that users can create and add to content dynamically. This metadata can be viewed in the document's Properties and dialog areas in IBM Content Navigator.
  - Templates (optional). Box administrators can create metadata templates for users to add extra metadata to content. This metadata can be viewed in the document's Properties and dialog areas in IBM Content Navigator.

Figure 3-5 compares how metadata is displayed in Box and IBM Content Navigator.

The image compares metadata display in two systems. On the left, 'Document metadata created in Box' shows a form with sections: FILE METADATA (File Name: Atlanta Technical Center Lease Agreement.pdf, Description, Owner: Mary, Uploader: Mary, Size: 66.7 KB, Created: Jan 26, 2015, Modified: Jan 26, 2015), METADATA TEMPLATES (Add Template), CONTRACTS (Contract Type: Lease), and CUSTOM METADATA (Contract Year: 2014, Add Attribute). On the right, 'Document metadata displayed in IBM Content Navigator' shows a table with sections: Properties (Name: Atlanta Technr Agreement.p), Contracts (Contract Type: Lease), Custom Properties (Contract Year: 2014), and System Properties (Owned By: Mary, Content Size: 67 KB, Created By: Mary, Created On: 11/5/2015, 4:36 PM, Modified By: Mary, Modified On: 11/11/2015, 11:35 AM, Content Created On: 1/26/2015, 8:11 PM, Content Modified On: 1/26/2015, 8:11 PM, ID: 42813704041, Version: 1). Red callout boxes label 'Box Template Metadata' (pointing to the Contracts section in both), 'Box Custom Metadata' (pointing to the Custom Metadata section in Box and Custom Properties in IBM), and 'Box Template Metadata' (pointing to the Properties section in IBM).

Section	Property	Value
Properties	Name	Atlanta Technr Agreement.p
Contracts	Contract Type	Lease
Custom Properties	Contract Year	2014
System Properties	Owned By	Mary
	Content Size	67 KB
	Created By	Mary
	Created On	11/5/2015, 4:36 PM
	Modified By	Mary
	Modified On	11/11/2015, 11:35 AM
	Content Created On	1/26/2015, 8:11 PM
	Content Modified On	1/26/2015, 8:11 PM
	ID	42813704041
	Version	1

Figure 3-5 Box metadata displayed in Box versus IBM Content Navigator (Courtesy of Box)

- **Document Versions.** As shown in Figure 3-6, document versions created in Box can be viewed from within IBM Content Navigator in the Content List, the Properties view on the right, and the Properties Dialog Version tab.

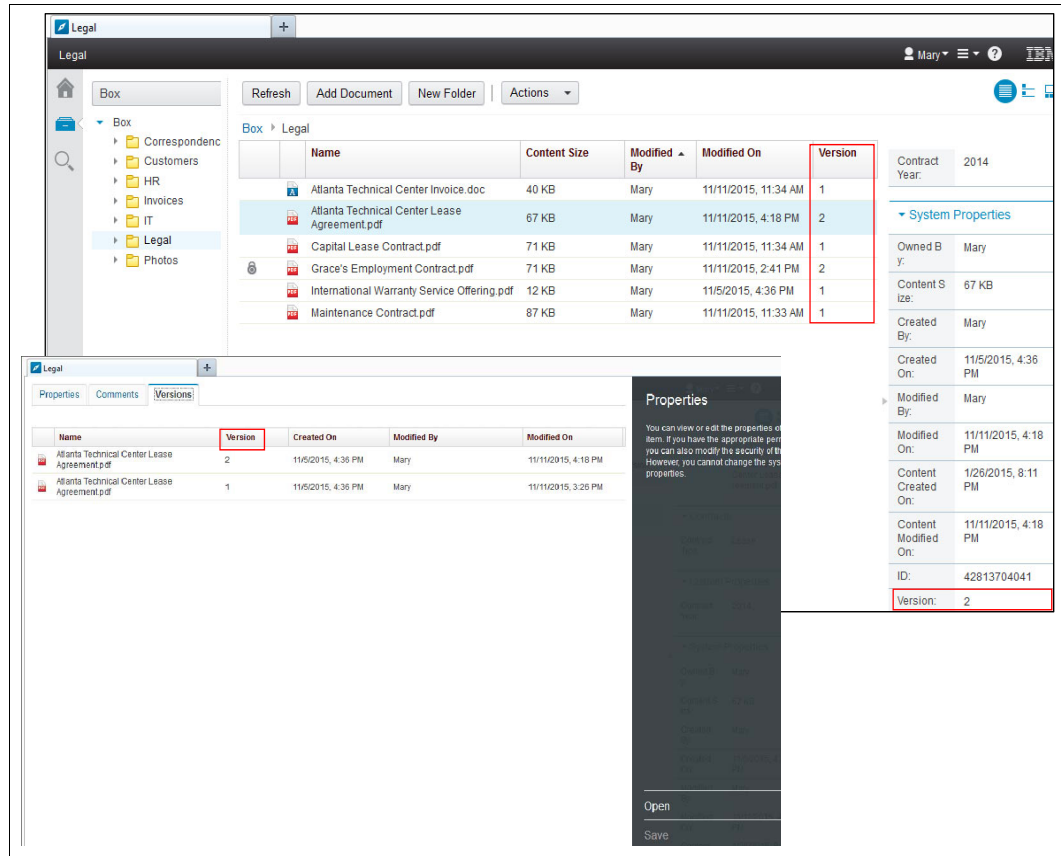


Figure 3-6 Document versions

- **Search.** You might need to search for content in the Box repository from within IBM Content Navigator. For example, you might need to locate all leases created this year for an upcoming audit. To search for Box content from within IBM Content Navigator, use the following sample steps:
  - Click **New Search** and enter a required search term, for this example, lease. Note that a search term is required by Box.
  - In the Created On fields, select a date and select **Greater Than**.
  - You can optionally change your Search options and Search scope if you need to. By default, all file types, all sizes, and all properties are searched by default.
  - You can edit the columns included in the results by clicking **Results Display**.
  - After you enter your search criteria (Figure 3-7 on page 32), click **Search**. The search results are displayed under the columns selected in the Results display.

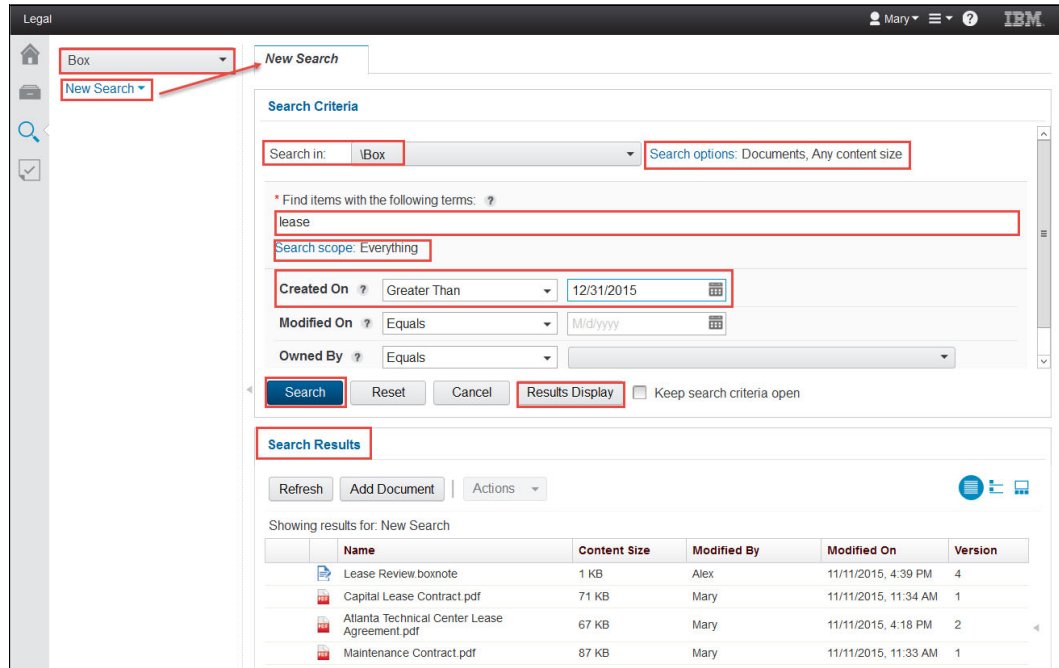


Figure 3-7 Box Search dialog and search results

You might also need to search not only the Box repository, but all repositories from within Content Navigator. This is done using a *Cross-Repository Search*, as follows:

- Select **New Cross-Repository Search** from the New Search drop-down list.
- Add the IBM Content Navigator repositories that you want to search.
- Create property mappings to map properties in Box to properties in the other content management repositories. An example mapping is shown on Figure 3-8.

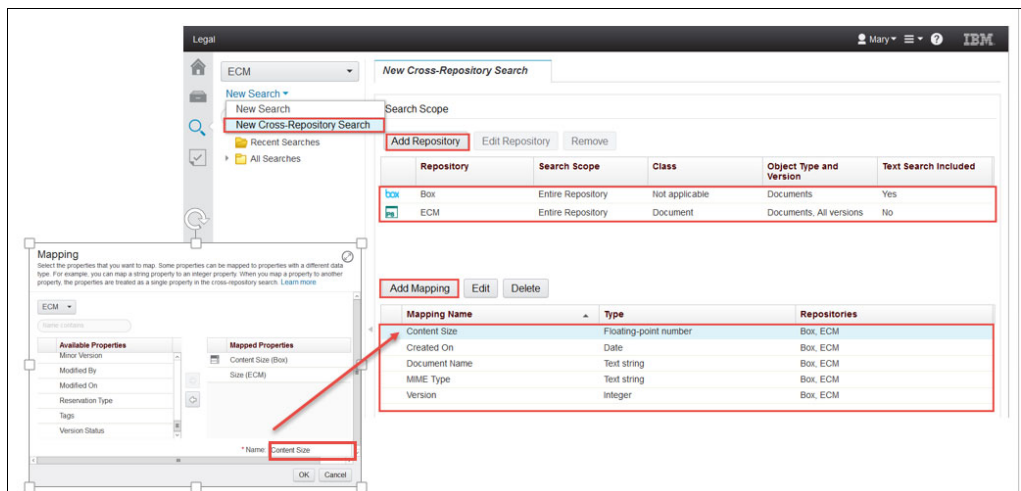


Figure 3-8 Cross Repository Search setup and property mapping

- Complete the **Search Criteria** and edit the **Results Display** to show the columns you want to see in the Search results, then click **Search**.
- After you find all the leases, you can copy them to a collaboration folder in Box for easy access by the auditors without giving the auditors access to all content management repositories.



- **Web Links.** Web Links, known as Bookmarks in Box, are links to content on the web. For example, you might want to create links to an informative website about products you use and that you can easily access. You can create a bookmark in Box or a web link in IBM Content Navigator, and it displays in Box or Content Navigator, respectively (Figure 3-9).

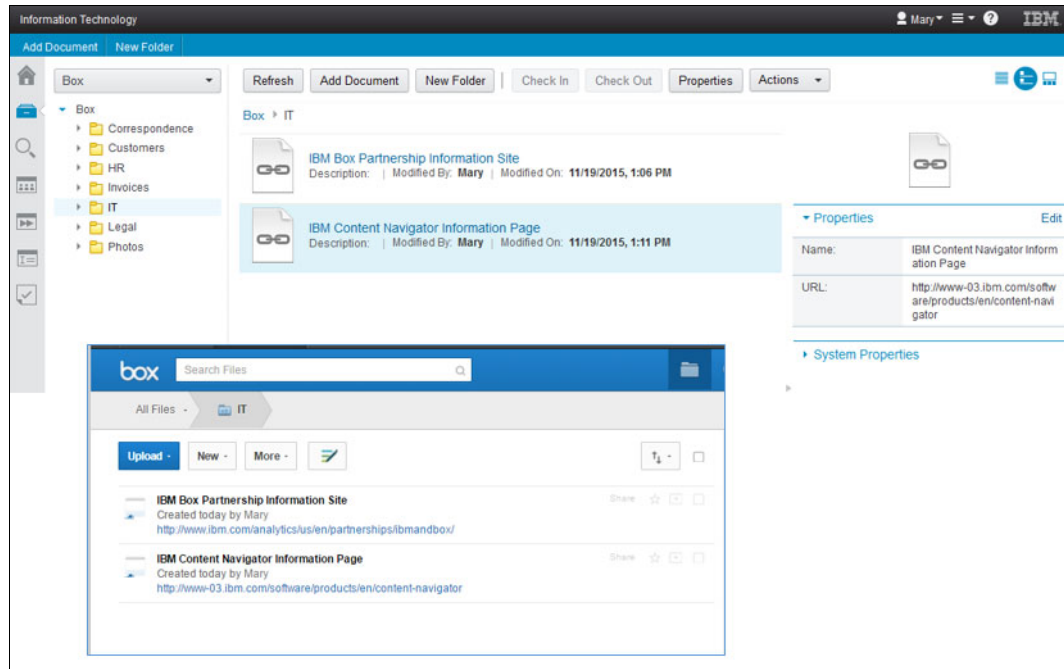


Figure 3-9 Web links in Box versus IBM Content Navigator (Courtesy of Box)

- **Tags and comments.** Tagging allows you to add extra metadata to content, so that you can more easily find and describe what it is about. Tags can be created in either user interface, Box or IBM Content Navigator, and can be displayed in each. Comments allow your users to collaborate on a particular document. Comments can be added and viewed in both Box and Content Navigator. For example, your human resource (HR) department is working on a special project regarding ergonomics. By tagging content with the proper tags, and commenting on the helpful documents, users save time and frustration by knowing which content to work with and where it is located. Tags and comments are also searchable using the Content Navigator Search functionality. Figure 3-10 on page 34 shows both comments and tags in the Box repository in IBM Content Navigator.

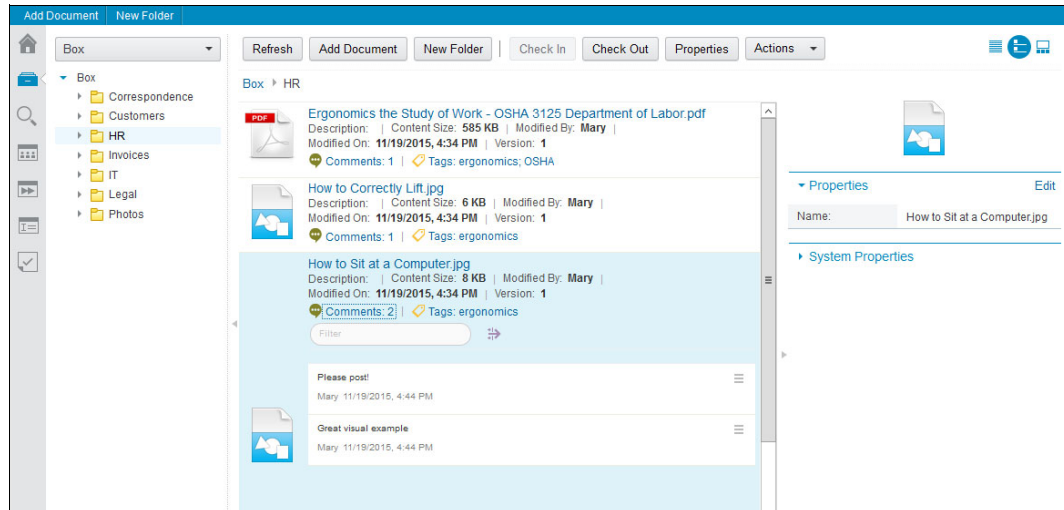


Figure 3-10 Comments and tags in Box repository in IBM Content Navigator

- **Box Notes.** Box Notes is a document creation tool that you can use to take notes, share ideas, and collaborate in real-time from within Box. Box Notes can be viewed in the content list from within IBM Content Navigator (Figure 3-11). Right-click a Box note and click **Open** to view it.

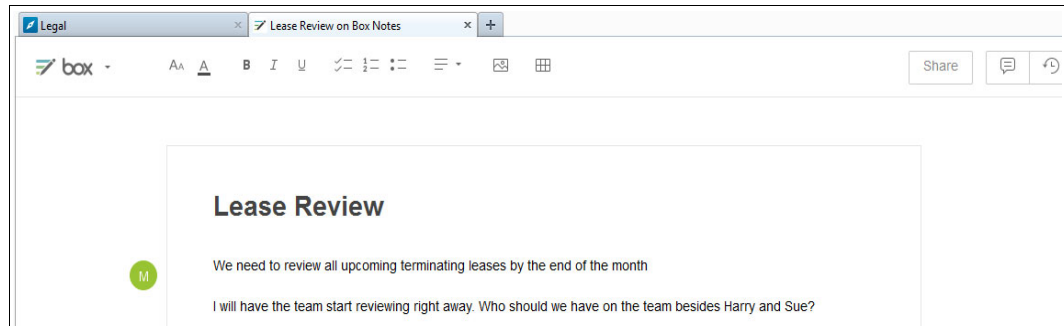


Figure 3-11 Box Note example as viewed in IBM Content Navigator

### 3.1.3 Integration architecture

Figure 3-12 shows the architecture of the IBM Content Navigator and Box integration. Note that the addition of Box as one of the connectors at the bottom of the diagram.

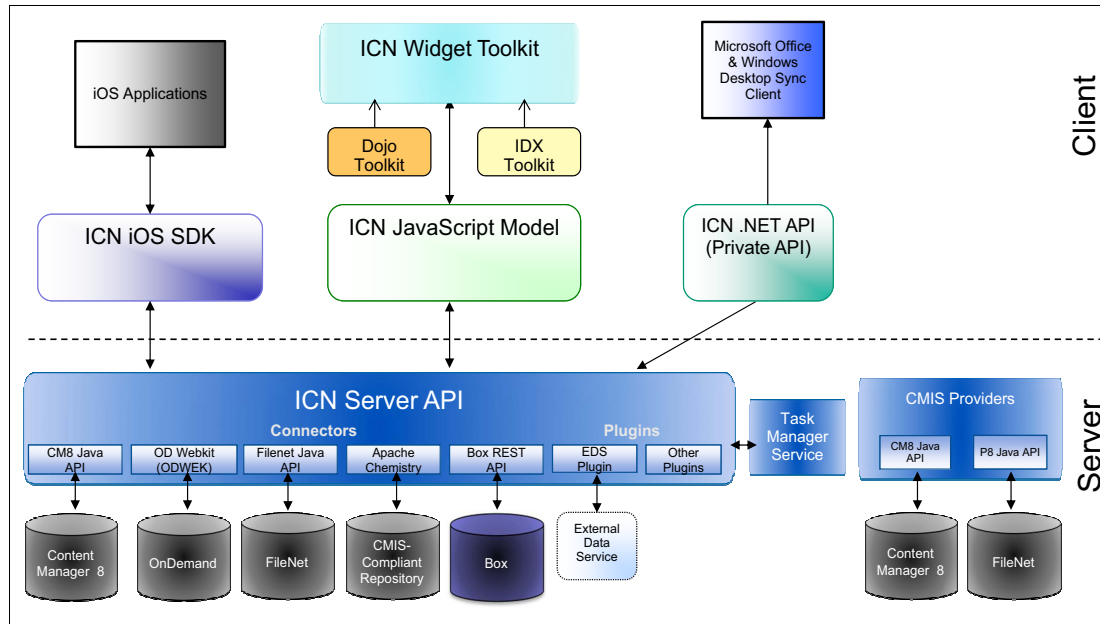


Figure 3-12 IBM Content Navigator and Box architecture

## 3.2 Planning considerations

The IBM Content Navigator and Box integration is installed as part of an IBM Content Navigator fix pack, beginning with IBM Content Navigator 2.0.3 Fix Pack 5. You should be familiar with installing IBM fix packs. You must understand the prerequisites, the fix pack installation steps, and how to configure it.

See the following resources for more information:

- ▶ Planning, installing, and configuring IBM Content Navigator:

[https://www.ibm.com/support/knowledgecenter/SSEUEX\\_2.0.3/com.ibm.installingeuc.doc/euca000.htm](https://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/euca000.htm)

- ▶ Hardware and software requirements for IBM Content Navigator 2.0.3:

<http://www.ibm.com/support/docview.wss?uid=swg27042879>

- ▶ Upgrading to IBM Content Navigator 2.0.3:

[https://www.ibm.com/support/knowledgecenter/SSEUEX\\_2.0.3/com.ibm.installingeuc.doc/eucup000.htm](https://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/eucup000.htm)

The task manager component of IBM Content Navigator is a requirement for many features of the Content Navigator and Box integration. However, it is an optional component of the Content Navigator web application and is a Java Platform, Enterprise Edition REST application that enables you to schedule and run tasks.

To configure and deploy the task manager interface, complete the following steps:

1. Complete and run the Configure the Task Manager Component task when you configure and deploy IBM Content Navigator.
2. Enable email notifications for the task manager application. This step is required for email notifications to work.
3. Associate users with the task manager roles that are created on the web application server.

To enable and configure task manager for your application server, see this web page:

[https://www.ibm.com/support/knowledgecenter/SSEUEX\\_2.0.3/com.ibm.installingeuc.doc/eucde052.htm?lang=en](https://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/eucde052.htm?lang=en)

Your users should be part of an enterprise Box system and have Box accounts. At minimum, you need one Box account that you can convert to a Box Developer account for setup and testing.

For more information about Box Developer, see the Box FAQs:

<https://developers.box.com/developer-account-faq/>

You should be familiar with IBM Content Repository security, Box security, and IBM Content Navigator administration. A more detailed overview of IBM Content Navigator is in *Customizing and Extending IBM Content Navigator*, SG24-8055.

### 3.2.1 Folder structure and security considerations

Box works with folder structures. Security in Box works as a waterfall effect where you start with most restrictive access at the top folder to least restrictive access at the bottom folder as you add collaborators to the folders. For more information about Box security, see Chapter 2, “Box overview” on page 13.

IBM Content Repository security can be more refined and depends on the type of repository. For example, IBM FileNet security can be set at the folder or document level. It can also be inherited from the parent folder or changed at any level. In some cases, a folder structure is not used at all in an IBM Content Repository, rather a shared search is used. This is common with IBM Content Manager 8. Consider this information when designing your Box repository.

### 3.2.2 SSL requirement for production use

Box requires configuring Secure Sockets Layer (SSL) for production use of Box integration with IBM Content Navigator. To configure SSL for Box, see the “Integrating IBM Content Navigator with Box” topic at the following web page:

<http://www.ibm.com/support/docview.wss?uid=swg27046488>

### 3.2.3 Downloading the fix pack

The Box integration is installed and configured through a fix pack. The first fix pack supporting Box as an additional repository is IBM Content Navigator 2.0.3, Fix Pack 5.

Complete the following steps to download the fix pack:

1. Log in to IBM Fix Central with your IBM ID to download the most recent fix pack:

<http://www.ibm.com/support/fixcentral/>

**Note:** You can browse the available fix pack without logging in to Fix Center. If you do not log in at this step, you will be prompted to log in when you select a fix pack to download. You can also create an IBM ID from the login page if you do not have one.

2. Under Product Group, select **Enterprise Content Management**. In the “Select from Enterprise Content Management” drop-down list, select **Content Navigator**. Select your installed version and platform.
3. Click **Continue**.
4. Select **Browse for Fixes**, then click **Continue**. A list of fix packs available for download by platform are listed. Select the latest fix pack beginning with Fix Pack 5 for Box integration with IBM Content Navigator. Fix Pack 6 adds new functionality, which includes Box Share, Copy to and from Box, and Cross-Repository Search.
5. Click **More Information** to obtain additional information about the fix pack for your platform.
6. Select the **Fix Pack** check box to select it along with other platforms for multiple downloads. You can also click the fix pack name to go to the page which will allow you to individually download the Fix Pack and readme files.

After the Fix Pack is downloaded, extract it to a folder. Be sure to review the readme file for installation and configuration information.

## 3.3 Integration implementation

The implementation and configuration of the Box integration with IBM Content Navigator can be divided into these steps:

1. Install the Fix Pack.
2. Create a Box Application for the IBM Content Navigator server.
3. Configure the New Box repository in IBM Content Navigator.
4. Enable the Task Manager service in IBM Content Navigator.
5. (Optional) Enable Box Copy in IBM Content Navigator.
6. (Optional) Enable Box Share in IBM Content Navigator.
7. (Optional) Configure the email mapping plug-in.
8. Add the repository to a an IBM Content Navigator Desktop.

### 3.3.1 Install the fix pack

The readme file included with the fix pack includes all the information needed to install the fix pack. You can review the readme file during planning. See the list of all IBM Content Navigator Readme files in the IBM Knowledge Center:

[https://www.ibm.com/support/knowledgecenter/SSEUEX\\_2.0.3/com.ibm.developingeuc.doc/eucdi000.htm](https://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.developingeuc.doc/eucdi000.htm)

### 3.3.2 Create a Box application for the IBM Content Navigator server

A Box application must be created using Box Developer where you obtain an OAuth2 client\_id and client secret. You need these items when configuring security for the Box repository in IBM Content Navigator for production use. For information about creating a Box application see the “Integrating IBM Content Navigator with Box” topic at the following web page

<http://www.ibm.com/support/docview.wss?uid=swg27046488>

For information about how Box uses the OAuth 2.0 standard for authentication and authorization, see the following web page:

<https://developers.box.com/oauth/>

### 3.3.3 Configure the Box repository in IBM Content Navigator

After you obtain the OAuth2 client\_id and client secret, you can add Box as a new repository in the IBM Content Navigator administration client. For information about accessing the IBM Content Navigator administration tool, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSNW2F\\_5.1.0/com.ibm.installingeuc.doc/eucco005.htm](http://www.ibm.com/support/knowledgecenter/SSNW2F_5.1.0/com.ibm.installingeuc.doc/eucco005.htm)

Add the new repository to IBM Content Navigator by completing the following steps:

1. In the Content Navigator administrator client, click **Repositories** in the left-side pane. See Figure 3-13 on page 39
2. Click **New Repository**, select **Box** from the list, then specify the repository Display name.
3. Select **Authenticate with OAuth2** to enable OAuth2 authentication. If you do not enable this option, developer tokens that expire in 60 minutes are used. Developer tokens are temporary tokens that you can generate in the Box application. When a Box repository in IBM Content Navigator is configured to use a developer token, the developer token must be specified as the password during login. The user that is specified with this can be any value.
4. Enter the OAuth2 client\_id, which you can get from the Box application that you created in 3.3.2, “Create a Box application for the IBM Content Navigator server” on page 38.
5. Enter the OAuth2 client\_secret, which you can get from the Box application that you created in 3.3.2, “Create a Box application for the IBM Content Navigator server” on page 38.
6. Enter your OAuth2 subdomain if you have one.

7. If you plan to use Box Share, enter the Box administrator who will be the owner of the shared folder for shared document links.

**Note:** The configuration of a Box Administrator is required for Box Share Services. However, for access to Box as an external repository only, a Box Administrator configuration is not necessary.

8. Save the settings. Saving the settings enables the Connect button.
9. To test the newly created repository, click **Connect** and log on by using a valid Box user ID and password.

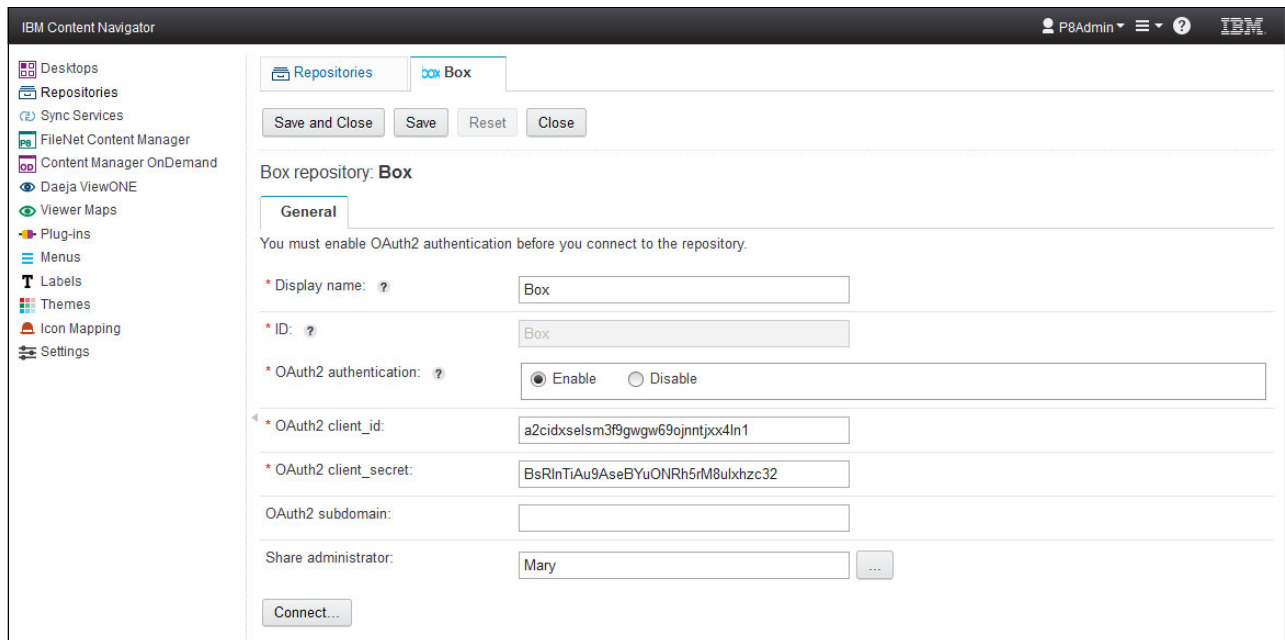


Figure 3-13 Adding the new Box repository to IBM Content Navigator

### 3.3.4 Enable the task manager service in IBM Content Navigator Settings

To use many of the integration features between IBM Content Navigator and Box, the task manager service must be enabled in Settings in the IBM Content Navigator administration tool. To check that it is enabled, click **Settings** and scroll to the **Task Manager Configuration** section on the General tab. Ensure that the task manager service is enabled and all the information is entered correctly.

For more information about configuring task manager service in the Content Navigator administration tool, see the IBM Knowledge Center:

[https://www.ibm.com/support/knowledgecenter/SSEUEX\\_2.0.3/com.ibm.installingeuc.doc/eucco113.htm?lang=en](https://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/eucco113.htm?lang=en)

### 3.3.5 Enable Box Copy (IBM Content Navigator Fix Pack 6 or later)

Box copy is an optional feature that allows users to copy documents to and from a Box repository using IBM FileNet Content Manager or IBM Content Manager. As shown in Figure 3-14 on page 41, Box Copy must be enabled in each of the IBM FileNet Content Manager and IBM Content Manager repositories that you want to copy to and from, using the IBM Content Navigator administration tool.

For more information about accessing the Content Navigator administration tool, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSNW2F\\_5.1.0/com.ibm.installingeuc.doc/eucco005.htm](http://www.ibm.com/support/knowledgecenter/SSNW2F_5.1.0/com.ibm.installingeuc.doc/eucco005.htm)

### 3.3.6 Enable Box Share (IBM Content Navigator Fix Pack 6 or later)

Box Share is an optional feature that allows users to select a document to share, then IBM Content Navigator creates a link to the specific version of the document. You can send the link to other people if you specify one or more email addresses.

**Note:** You must also configure Box Share if you want to share IBM Case Manager documents to Box.

To use this feature, Box Share must be enabled on an IBM FileNet Content Manager or IBM Content Manager repository using the IBM Content Navigator administration tool.

For more information about accessing the Content Navigator administration tool, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSNW2F\\_5.1.0/com.ibm.installingeuc.doc/eucco005.htm](http://www.ibm.com/support/knowledgecenter/SSNW2F_5.1.0/com.ibm.installingeuc.doc/eucco005.htm)

To enable Box Share, complete the following steps:

1. Enable task manager in the IBM Content Navigator administration tool Settings (described in 3.3.4, “Enable the task manager service in IBM Content Navigator Settings” on page 39).
2. Set the Box Share administrator in the Box repository that you plan to use for sharing, see step 7 on page 39 (in 3.3.3, “Configure the Box repository in IBM Content Navigator” on page 38). You can use different Box repositories for different desktops.
3. Configure Box Share for each IBM Content Navigator Desktop (described in 3.3.7, “Add the Box repository to an IBM Content Navigator Desktop” on page 42). You must also set the task manager connection administrator.
4. If sharing from an IBM FileNet Content Manager repository, enable Box Share in the FileNet Content Manager repository settings, in the Configuration Parameters tab. When you save this configuration setting, an add-on is installed on the repository.
5. If sharing from an IBM Content Manager repository, enable Box Share in the Content Manager repository settings and select the item types that you want users to be able to share. When you save this configuration setting, the item types that you selected are modified on the repository.



Figure 3-14 depicts the settings for Box Share and Box Copy in the IBM FileNet Content Manager repository.

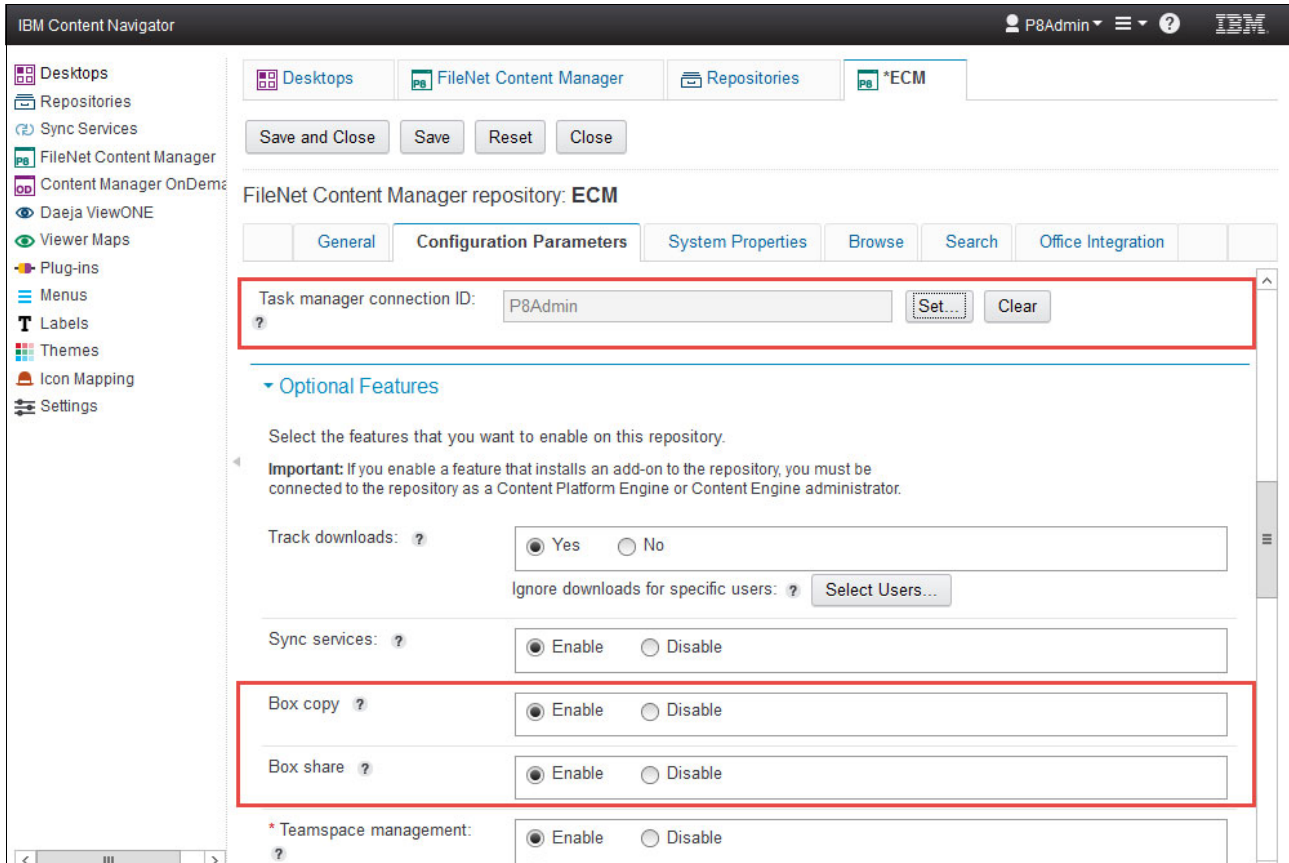


Figure 3-14 Configuring Box Share and Copy in IBM FileNet Content Manager Repository settings

### 3.3.7 Add the Box repository to an IBM Content Navigator Desktop

You can add the Box repository to a new or already created IBM Content Navigator desktop using the Content Navigator Administration tool. To do so, select or create a new desktop (you can also copy a current desktop and rename it) and add the Box repository. Figure 3-15 shows how to select the Box repository from the list and add it to the desktop.

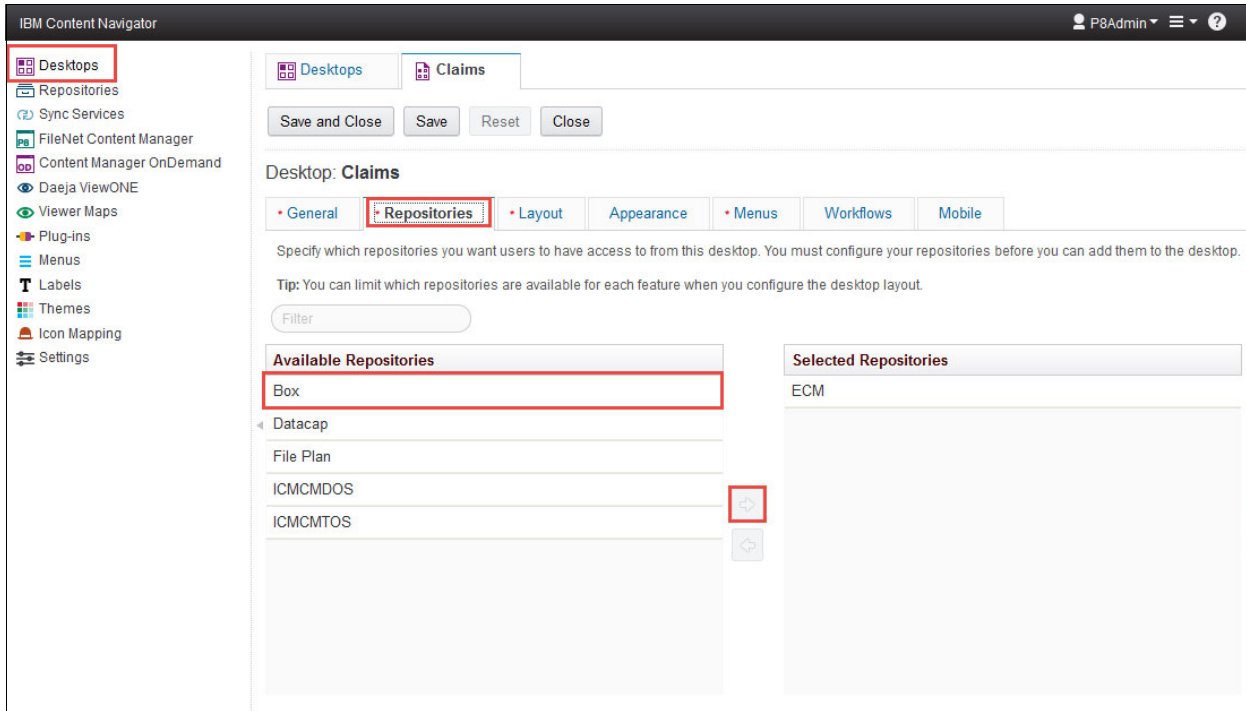


Figure 3-15 Adding the Box repository to a desktop

If you want to configure Box sharing, then after you add the Box repository to the desktop, click the **General** tab of the desktop (Figure 3-16). Then, select **Enable** for the “Box share services” option under the Desktop Configuration section. Select the Box repository where the shared files will be stored. You may also select the option to allow users to edit the share’s *Send from* email address.

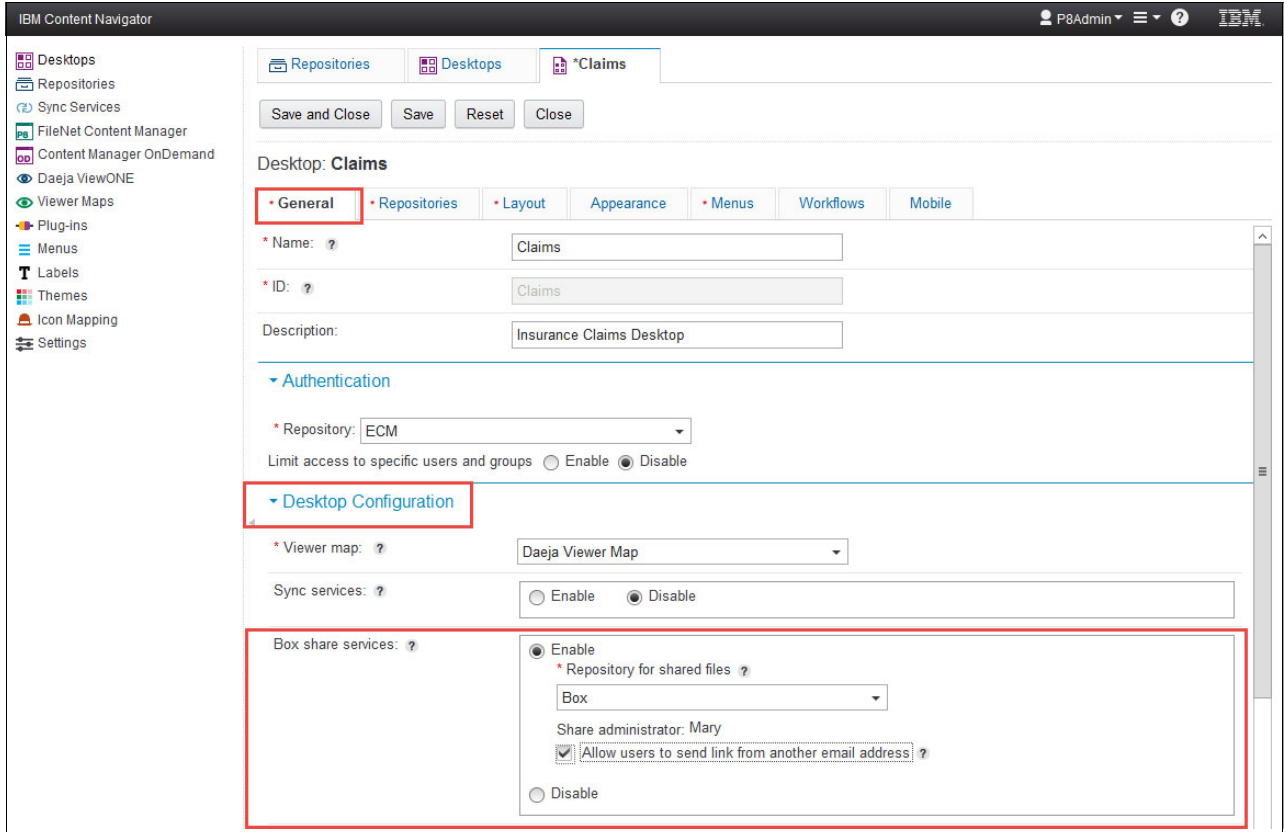


Figure 3-16 Enable Box share services

Click **Save** and **Close** after you complete configuring the desktop. For more information about configuring IBM Content Navigator desktops, see the IBM Knowledge Center:

[https://www.ibm.com/support/knowledgecenter/SSEUEX\\_2.0.3/com.ibm.installingeuc.doc/eucco006.htm?lang=en](https://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/eucco006.htm?lang=en)

### 3.3.8 Configure the Email mapping plug-in (IBM Content Navigator Fix Pack 6 or later)

The Email mapping plug-in provides a service that returns an email address that is associated with an IBM Content Navigator user. If you enable a desktop and repository for Box Share, a mapping of user IDs and email addresses is required so that the user’s email address can be displayed and used to send the link to the document. For more information about how to set up the mapping, see the following web page:

<http://www.ibm.com/support/docview.wss?uid=swg27047212>

## 3.4 Integration use case

This simple ready-for-use example explores using the IBM Content Navigator and Box integration with IBM FileNet. The solution can be expanded upon through customization by using APIs or using additional integrations with IBM Enterprise Content Management solutions such as IBM Case Manager, IBM Datacap, and IBM StoredIQ.

### 3.4.1 Use case example overview

A government program has an application process that, in some cases, requires the applicant to send additional supporting documentation (such as a valid ID and birth certificate) to complete the application. The application must then go through a final approval process. After the application is approved, the applicant is notified of acceptance into the program.

The following process was configured using IBM FileNet, IBM Content Navigator (which is included with all of the IBM repositories at no cost), and Box (requires only a FileNet and Box license):

1. An application clerk assigned to the application requests the supporting documentation from the applicant and provides the applicant with an email address for sending the scanned supporting documentation as an attachment using a desktop, notebook, tablet, or smartphone.
2. When the attachments are received, they are automatically stored in a secure Box folder. The application clerk configured notifications on the Box folder in order to be automatically notified by email that content is added to the folder.
3. The application clerk creates a PDF package that includes the original application and supporting documentation, and copies it to a permanent folder in the IBM FileNet repository where an automatic five-year retention is set and an approval workflow is automatically triggered. The workflow forwards the package to the application specialist selected by the application clerk, based on the specialist's area of expertise, for approval. The application specialist reviews the package and approves or rejects it (which automatically sends it back to the application clerk for further action). After the application is approved, the applications clerk receives notification that the approval process is complete and the application has been approved. The application clerk then notifies the applicant that the application is complete.

#### Roles and actors

This example involves the following roles and actors:

- ▶ Applicant: Debbie
- ▶ Application clerk: Alex
- ▶ Application specialist: Charles
- ▶ IBM FileNet administrator: Mary

#### Benefits

The following benefits are received from this process:

- ▶ Satisfied customers because their applications are approved quickly and they have access sooner to the program benefits
- ▶ Cost savings because the process allows for a lower head-count of application specialists to complete the application process and no programming time to design a custom solution

### 3.4.2 Use case process

The process of this example is as follows:

1. Alex, the application clerk, receives Application 12345 that was completed online and reviews it. He sees that additional supporting documentation is needed to finalize the application.
2. Choosing to use some of the unique functionality available in the Box web interface, Alex creates a temporary Box folder where he adds the application. He accesses the folder's settings (Figure 3-17) and configures email uploading, sets the folder to auto-delete 30 days from the date he created it, and sets notification when there is content uploaded into the folder. He sends to Debbie, the applicant, the email address for the folder and instructions for how she can use her tablet or phone to take a photo of the documentation and email it to the folder email address.

The screenshot displays the settings for a Box folder, organized into three main sections:

- Email Uploads:** This section allows users to control email uploads. It includes a checkbox for "Allow uploads to this folder via email" (checked), a text input for "Upload Email Address" (containing "upload.Support.qp2v0rk1ye@u.box.com"), and two other checkboxes: "Only allow email uploads from collaborators in this folder" (unchecked) and "Overwrite same-name files when uploading by email or widget" (unchecked).
- Automated Actions:** This section is titled "Deletion and Unshare". It includes a checkbox for "Auto-delete this folder on a selected date" (checked), a date picker for "Delete this folder on" (set to "Mon Dec 28 2015"), and a checkbox for "Un-share this folder on a selected date" (unchecked).
- Email and Notifications:** This section is titled "Notifications". It includes a checkbox for "Disable all email notifications for all collaborators in this folder and all subfolders" (unchecked), a checkbox for "Use my default notification settings" (unchecked), and a "Notify me when someone" section with checkboxes for "Previews" (unchecked), "Downloads" (unchecked), "Uploads" (checked), "Deletes" (unchecked), and "Adds a comment" (unchecked).

Figure 3-17 Setting email, auto-delete, and notification on the Box folder (Courtesy of Box)

3. After Debbie emails the supporting documentation, Alex is notified through email that there is an upload to the folder (Figure 3-18 on page 46).

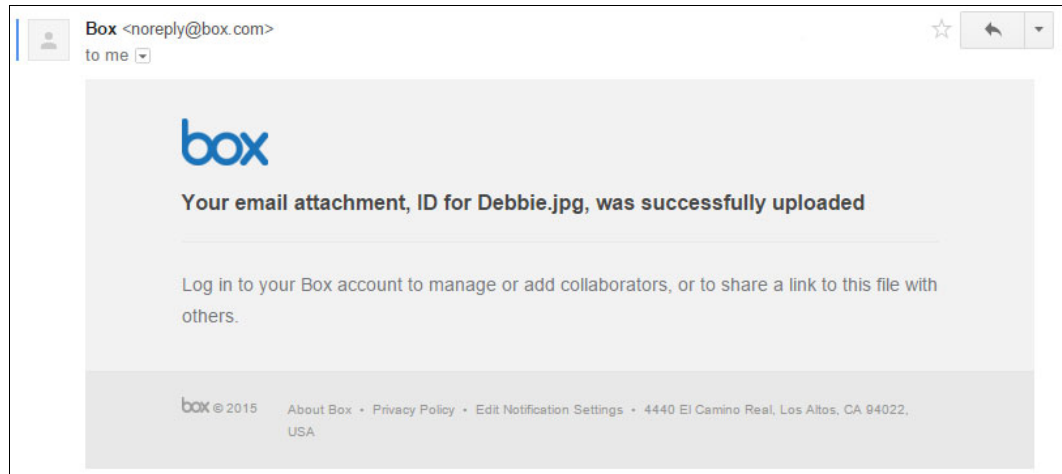


Figure 3-18 Attachment receipt notification (Courtesy of Box)

4. Alex completes the remainder of the process using IBM Content Navigator. Alex creates a new permanent application folder (Figure 3-19), Application 12345 under the parent application folder in the IBM FileNet repository (named ECM).

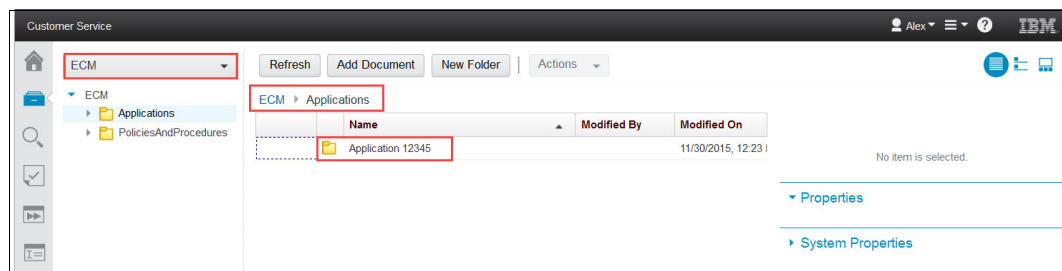


Figure 3-19 An application folder in the IBM FileNet repository

5. Before Alex created the new application folder, Mary, the FileNet administrator, had created a new Document Class named Application. She set default retention of 5 years on the Application class, meaning applications will be eligible for deletion five years from their creation date. She then created a Content Navigator Entry Template named Application Entry Template and assigned it to the parent folder Applications. She configured the Entry Template to classify the Application as follows:
  - Document Class: Application.
  - Security: Application Specialists Group- Owner, hide the security section.
  - Workflow: Parallel Pattern Workflow, allow user to modify the launch step (this triggers a workflow and allows the application clerk to select one or more application specialists needed in the approval workflow). Note that a simple parallel and serial workflow is included with IBM FileNet.
  - Version: Major Version, hide version options.

**Note:** An Entry Template allows an authorized user to configure content defaults such as metadata values, versioning, security, workflow settings, and launch criteria that can occur when it is added to a folder. After an Entry Template is created, it can be shared and assigned to one or more folders through the Folder Properties dialog. For more information about Entry Templates, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSNW2F\\_5.2.1/com.ibm.p8.fimo.user.doc/ae\\_help/workplace/fimo\\_wp\\_entrytemplate.htm?lang=en](http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.fimo.user.doc/ae_help/workplace/fimo_wp_entrytemplate.htm?lang=en)

The new Application 12345 folder that Alex created inherits the default metadata, security, versioning, and workflow settings configured in the Application Entry Template.

- In IBM Content Navigator, Alex accesses the Box folder from the repository drop-down list, creates a single PDF package that includes the original application and the supporting documentation, and then copies the package to the permanent Application folder in IBM FileNet ECM repository.
- An approval workflow is automatically triggered when the application is added to the folder (Figure 3-20). Alex adds Charles as the approver, adds a note to review the application package, and clicks **Launch Workflow**.

The screenshot shows a web browser window titled "IBM Case Manager Process Work Item - Mozilla Firefox". The address bar shows a URL: "ecmdemo1.ecm.ibm.local:9080/navigator/launchpattern.jsp?workflowVersion=&subject=ICNParallelDocumentApproval For Application.pdf&attachmentId=Application.pdf|3". The page content includes:

- Started by: Alex
- Two tabs: "Properties" (selected) and "Attachments".
- \* Reviewers: A dropdown menu with "Charles" selected.
- \* Workflow name: A text input field containing "Review for Application.pdf".
- If the work item is rejected: Radio buttons for "Return to me" (selected) and "Return to the previous reviewer".
- Approvals required: A dropdown menu with "All" selected.
- Instructions for reviewers: A text area containing "Please review the application".
- Additional settings: Checkboxes for "Allow reviewers to reassign this review" (unchecked) and "Notify me when the review is complete" (checked).
- At the bottom right, there are two buttons: "Launch Workflow" and "Cancel".

Figure 3-20 Application approval workflow

- Charles, the application specialist, is notified through email that he has an application approval task, accesses his work basket in IBM Content Navigator, reviews the application, and approves it.
- Alex receives notification that the application is approved. He opens the Application 12345 folder, right-clicks the application package, and uses Box Share to share the package with Debbie. Alex completes the dialog window (Figure 3-21 on page 48), notifying Debbie that her application is approved and she can begin using the program services. He can optionally set an expiration date and password.

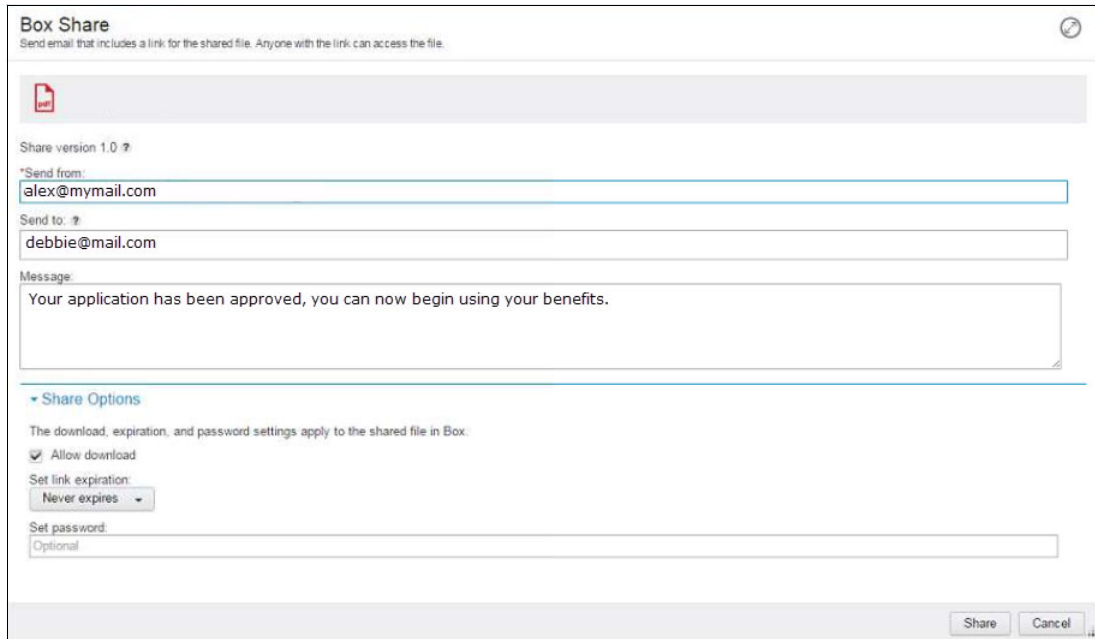


Figure 3-21 Box Share dialog

This simple example demonstrates using the ready-for-use functionality of IBM Content Navigator, IBM FileNet, and Box. You can expand on this functionality in the following chapters by using other integrations provided with IBM Enterprise Content Management products and Box.





# Integration: IBM Case Manager and Box

This chapter describes the integration between IBM Case Manager and Box, outlines the components, implementation considerations, and provides an example use case.

A set of sample custom code is also included in this chapter and can be use to interact with Box documents directly within workflow processes.

This chapter covers the following topics:

- ▶ Integration overview
- ▶ Planning considerations
- ▶ Integration implementation
- ▶ Sample code using Box Java API
- ▶ Example integration use cases

## 4.1 Integration overview

This chapter describes the integration features with Box that are available in IBM Case Manager. The integration between Box and IBM Case Manager are highly complementary and mutually beneficial.

Figure 4-1 shows a basic diagram of the current integration of IBM Case Manager with Box.

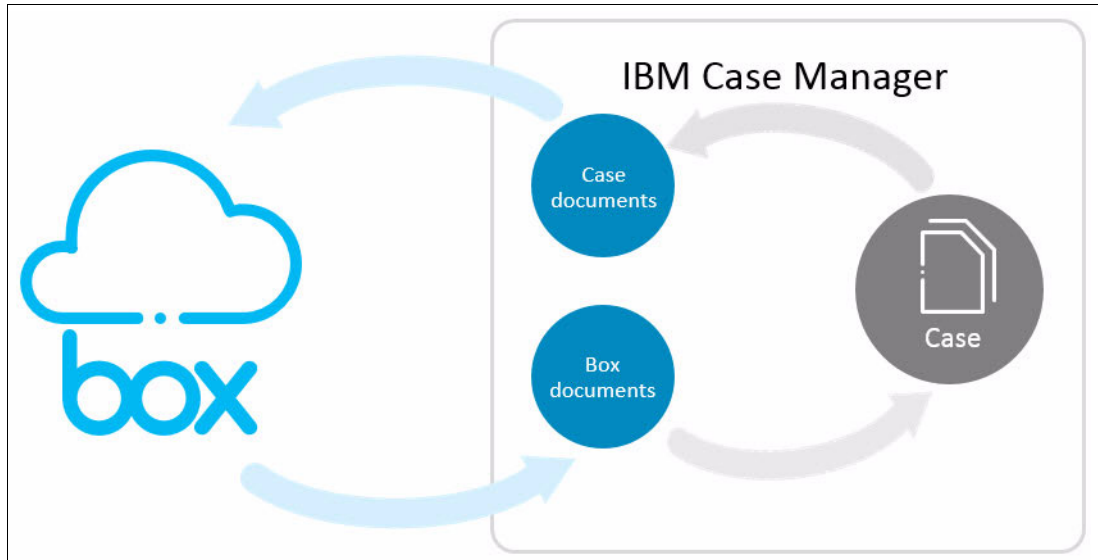


Figure 4-1 IBM Case Manager and Box

For customers who are already using IBM Case Manager, this integration provides an easy way to collaborate or share documents with users outside the normal scope of the defined Case Manager users, while maintaining the work in the context of a case. Sometimes, defining all users who collaborate in the case as “full” Case Manager users is not practical, so integration with Box is a good way to support that need.

The “external” collaborators do not necessarily have to be external to the organization, but simply external to the defined scope of the Case Manager users. For example, other users within the organization, in other departments, who are not part of the case management business application on a regular basis.

Traditional methods of sharing information with external parties, such as by using email, are generally not considered to be secure enough for sensitive information but are often involved in case management business applications. The secure sharing capabilities of Box are another benefit of the integration.

For customers who are already using Box, this integration adds a powerful tool to support complex workflow processes and compliance. Case Manager brings task-oriented workflow capabilities, which are dynamic and flexible, and at the same time, adds capabilities needed for compliance, such as case audit history.

Case Manager takes advantage of the integration between Box and IBM Content Navigator to provide case workers access and use of Box for case management.

From a technical perspective, the following features are available for the first level of integration in IBM Case Manager 5.2.1 Fix Pack 3:

- ▶ Incorporating Box repository as an external repository for Case Manager
- ▶ Sending of share links of case documents to external users

For details about the Content Navigator integration with Box, see Chapter 3, “Integration: IBM Content Navigator and Box” on page 25.

### 4.1.1 Box documents as external documents

IBM Case Manager provides access to documents in Box by extending the external document feature to support Box repository. In this way, case workers can use most standard document operations such as view, download, and delete with Box documents.

The external document feature supports integrating documents residing in repositories other than the standard Case Repository. In this way, these documents can be involved in the case management process without having to copy them into the case. The external document feature is also used to integrate documents from other repositories including these:

- ▶ IBM Content Manager
- ▶ IBM Content Manager OnDemand
- ▶ Content Management Interoperability Services (CMIS) based repositories configurable through IBM Content Navigator:
  - Alfresco
  - SharePoint

**Note:** For more details about external documents, see the IBM Knowledge Center:

[https://www.ibm.com/support/knowledgecenter/SSCTJ4\\_5.2.1/com.ibm.casemgmt.installing.doc/acmin147a.htm](https://www.ibm.com/support/knowledgecenter/SSCTJ4_5.2.1/com.ibm.casemgmt.installing.doc/acmin147a.htm)

IBM Case Manager users can search for selected documents residing in the Box repository by using the standard search dialog, and then add them into the current case folder. This search dialog supports full-text searches and predefined search templates.

To add a document from the Box repository to a case folder, click the **Add document** menu from the case folder or from the attachment widget. Click **Select item from repository**, and then select **Box** from the “Search in” drop-down menu.

Figure 4-2 shows the user dialog to search for documents in Box repository to add to the case folder

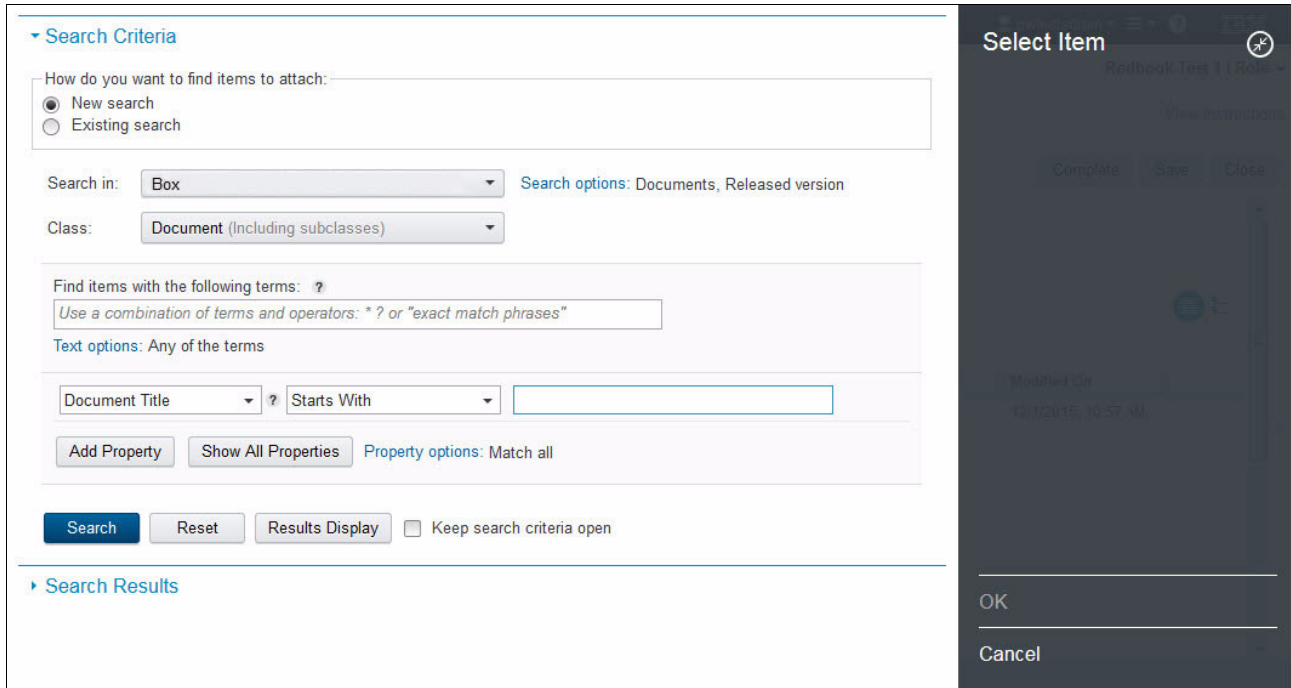


Figure 4-2 Search and add documents from Box to the case folder

### 4.1.2 Share case documents using Box

Case workers can also share case documents with external users using the Box repository, directly from the Case Client user interface, in a similar way as in IBM Content Navigator.

An email is sent to the recipient with a link to the shared document. The case worker can also use other optional features to enable the link to be password-protected, to expire after a certain date, or to disable a download.

To share a case document through Box, the case worker first selects the case document from the case folder, and then uses the Box **Share** action (Figure 4-3).

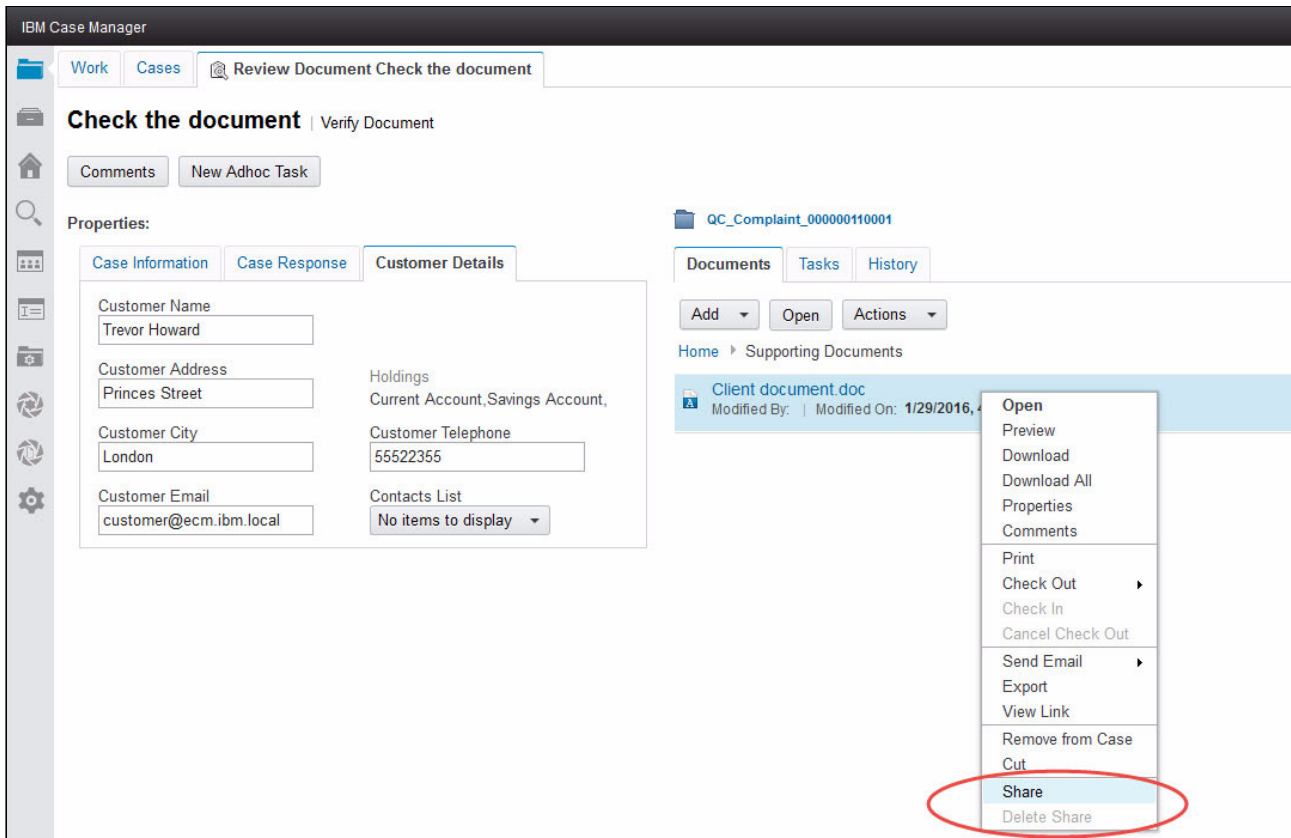


Figure 4-3 Box Share action

The Box Share window opens (Figure 4-4 on page 54) where the case worker can enter the following information to specify how the file should be shared:

- ▶ Recipient email address
- ▶ Message content for the email
- ▶ Download allowed or not allowed
- ▶ Expiration for the link
- ▶ Password for access

An email is sent to the recipient with a URL link to the shared document. This method of sharing is designed to give the recipient view-only access to the document.

**Note:** At the time of writing, sharing of case documents to Box is supported only for IBM FileNet documents. Also, the Share action is not logged as part of the case history.

Figure 4-4 shows the dialog for sharing a case document as a link with a user through email.

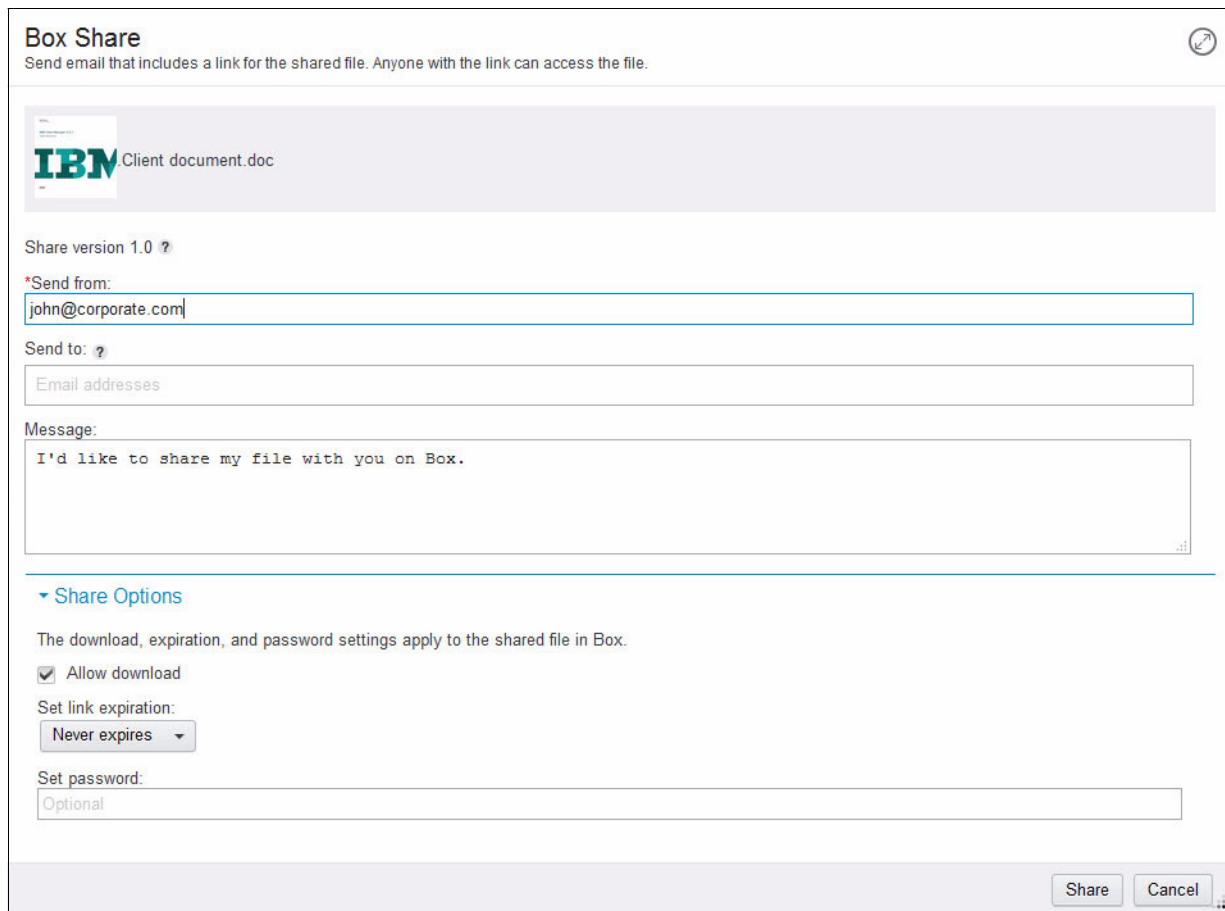


Figure 4-4 Box Share dialog

## 4.2 Planning considerations

This section discusses various considerations when you plan to use IBM Case Manager and Box to build a business application.

### 4.2.1 Workflow

Box provides a lightweight document-based workflow capability that typically involves single documents and moving them to various folders to indicate changes in status.

For example, putting a document into a “review” folder triggers a task to be assigned to review it. When finished, you move the document to an “approved” folder to indicate that it is done. This works well for simple review requirements.

For more complex business workflow requirements where, for example, larger sets of data or documents are involved for each step, or where multiple people are involved with various tasks in parallel, or where complex business rules must be followed, a more advanced set of tools is required.

We can use the integration features between IBM ECM and Box to build solutions that enable advance workflow using the documents and folders in Box.

You can use IBM Case Manager for these features:

- ▶ Add documents and folders in Box to the Case folder, and work on them.  
The case worker can see the range of documents in the context of the case, and work on them accordingly, avoiding any inadvertent silos. Documents from a case repository and other repositories including Box can be used for case management.
- ▶ Use Box documents as attachments for Case Manager workflow tasks.  
Case Manager can handling complex processes with multiple participants and workflow tasks that run in sequence or in parallel as required; Box documents can be used in these workflow tasks.
- ▶ Copy and share documents from the case folder to box and invite an external user to view the documents.  
This allows external users to view and comment on documents in a secure fashion.
- ▶ Set various features such as expiration and download for the shared link.  
This allows for managed sharing of documents and better administration.

Currently, there is no automatic non-programming mechanism for IBM Case Manager to monitor incoming documents to a Box folder. However, this can be achieved by using Box automation and IBM Datacap to monitor incoming documents. Datacap can then release the documents to Case Manager. The action of adding new documents to the Case Manager system can in turn automatically trigger creation of new cases or new tasks for existing cases. For an example of this situation, see Chapter 7, “Scenario: Putting it all together” on page 111.

## 4.2.2 Case repository versus Box repository

When planning a case management solution for a business application, consider the use of the Case Manager repository, the Box repository, and their respective value to the business application.

Consider the entire lifecycle of the business application when planning for a project, there might be different phases of the project where different capabilities are key. Also, as shared folders and documents proliferate, consider longer term needs.

The Box repository is designed to provide secure content management for collaboration, file sharing, and accessing files in the cloud.

The Box repository offers many capabilities, including these, among others:

- ▶ Easy sharing of files with people inside and outside the organization
- ▶ Secure file sharing in the cloud with encryption and authentication
- ▶ Expiration of shared links to documents and folders
- ▶ Easy-to-use integration with Microsoft Office and other applications.

The case repository is based on the IBM FileNet Enterprise repository and is designed to support the requirements of dynamic, content-intensive, knowledge-worker-based business processes, and to meet compliance needs.

The case repository offers many capabilities, including these, among others:

- ▶ Flexible and extensive metadata management for documents.
- ▶ Granular access control for folders, individual documents and metadata.

- ▶ Integration of document events with IBM Case Manager workflow. For example document events can be configured to automatically trigger actions in cases, such as create a new task when a document is uploaded.
- ▶ Full auditing for access and events related to documents and case processes.
- ▶ Encryption at rest for documents in case repository file stores.
- ▶ Configurable standard retention management.
- ▶ Advanced retention and records management using Enterprise Records.
- ▶ On-premises and cloud-based offerings.

The combination of IBM Case Manager and Box provides a hybrid environment where business users can easily collaborate and yet be supported by powerful workflow and compliance tools.

## 4.3 Integration implementation

This section describes the steps to implement the integration of Box and IBM Case Manager.

### 4.3.1 Installation prerequisites

The IBM Case Manager uses the IBM Content Navigator to provide access of Box documents and folders to the case worker.

Installation prerequisites of IBM Content Navigator are listed in Chapter 3, “Integration: IBM Content Navigator and Box” on page 25.

See the “Integrating IBM Content Navigator with Box” topic at the following web page:

<http://www.ibm.com/support/docview.wss?uid=swg27046488>

Download IBM Case Manager fix pack including IBM Case Manager 5.2.1 Fix Pack 3 from IBM Fix Central:

<http://www.ibm.com/support/fixcentral/>

### 4.3.2 Install and configure the IBM Case Manager integration with Box

To install and configure the Box integrations for IBM Case Manager, complete these steps:

1. Install IBM Case Manager 5.2.1 Fix Pack 3 according to the instructions.
2. Configure the Box repository for the IBM Content Navigator, including configuring of the Scheduled Tasks for Box Share, described in 3.3, “Integration implementation” on page 37.
3. For the desktop used by Case Manager, complete these steps:
  - a. Add the Box repository to the list of repositories available to the desktop being used by the IBM Case Manager application.
  - b. Enable Box Share Services, the desktop being used by the IBM Case Manager application.
  - c. Include the Box repository in the Browse and Search settings.

Figure 4-5 on page 57 shows a window of the configuration of the Case Manager desktop, to enable Box Share capability.



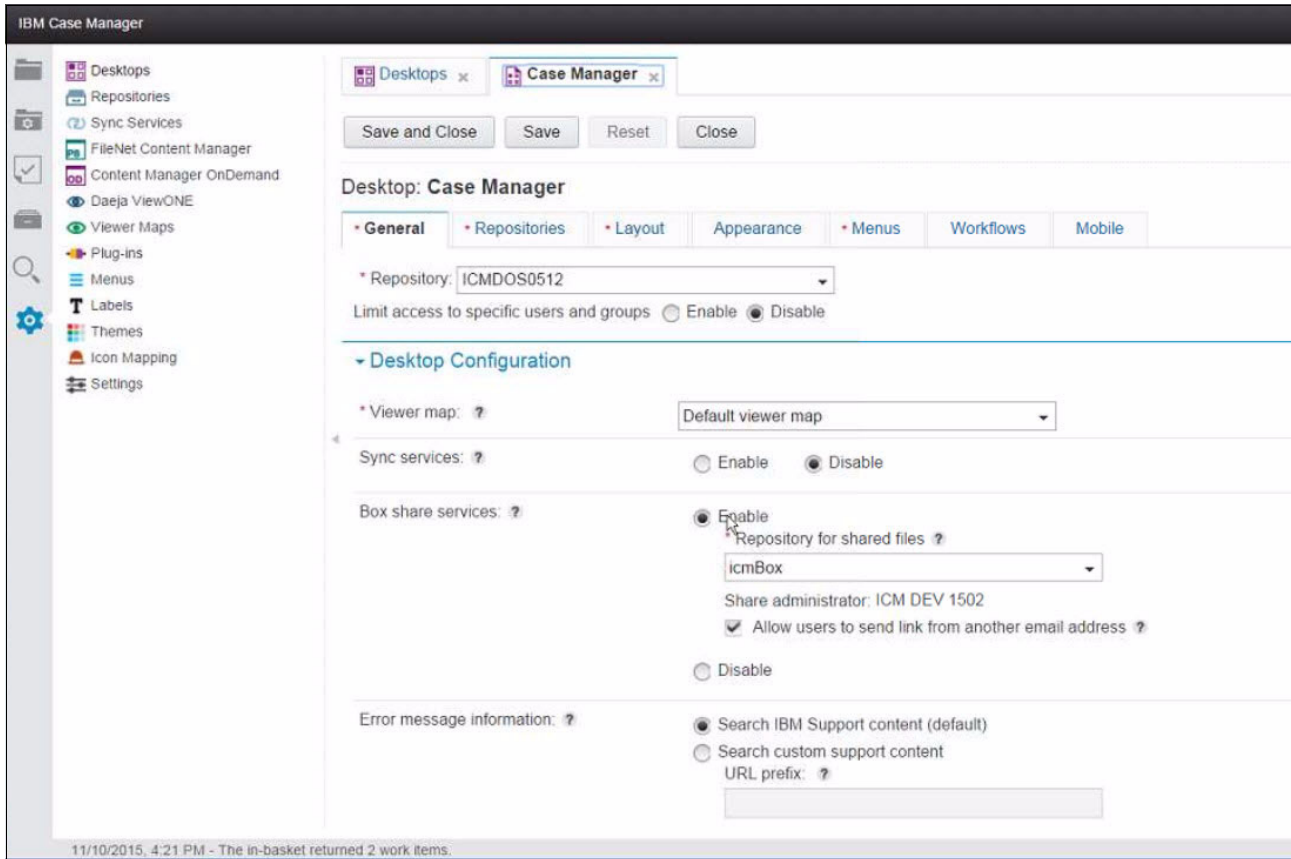


Figure 4-5 Enable Box Share

Figure 4-6 shows the settings including Box for the Search.

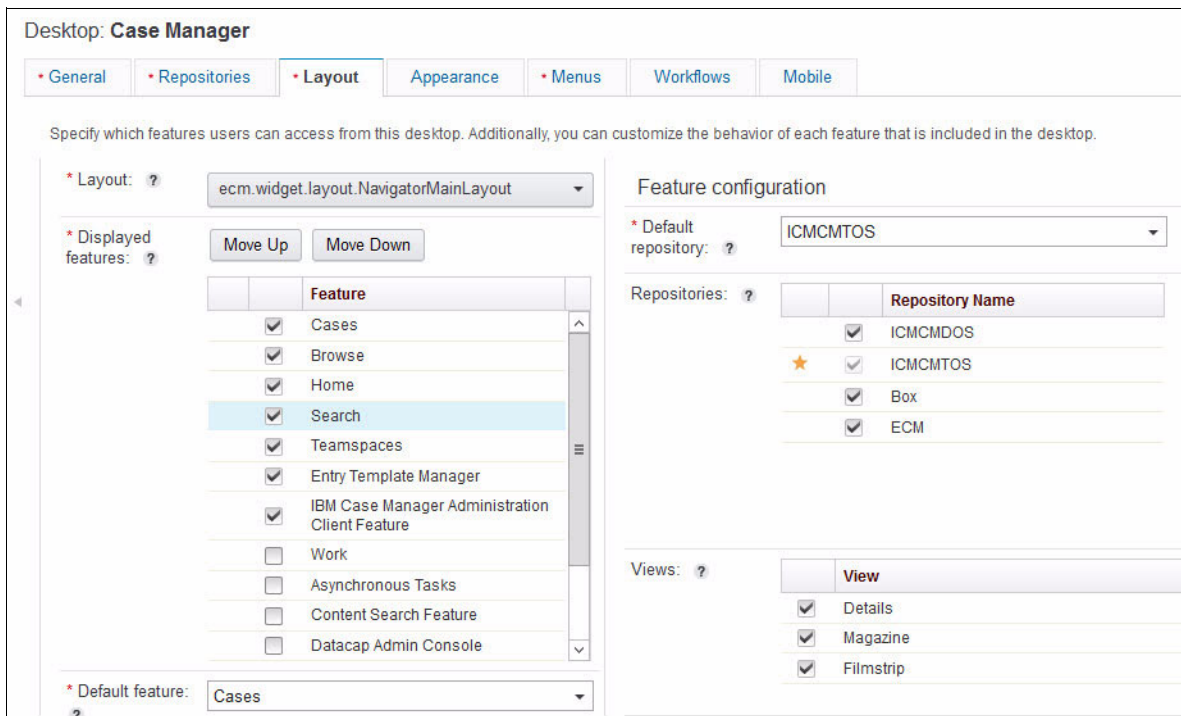


Figure 4-6 Search settings for the Case Manager desktop

4. Enable External Document feature by using IBM Case Manager Builder:
  - a. Open the solution in the Case Type configuration.
  - b. In the External Repository section, select **Allow documents and attachments from repositories other than the case manager object stores**.
5. (Optional) Add the “Box Share” and “Delete Box Share” menu actions in the Case Information widget:
  - a. Edit the solution in IBM Case Manager Builder.
  - b. Open all the relevant pages using Page Designer.
  - c. Edit the Case Information Widget configuration to add the Box Share and Delete Box Share menu actions from the available actions list.

**Note:** The Box Share and Delete Box Share menu actions are automatically added to the default context menus for solution created with Version 2.0.3 Fix Pack 6 and later. However, for older solutions, extra steps are needed to add the menu actions.

Figure 4-7 shows the configuration for the Case Information widget menu actions.

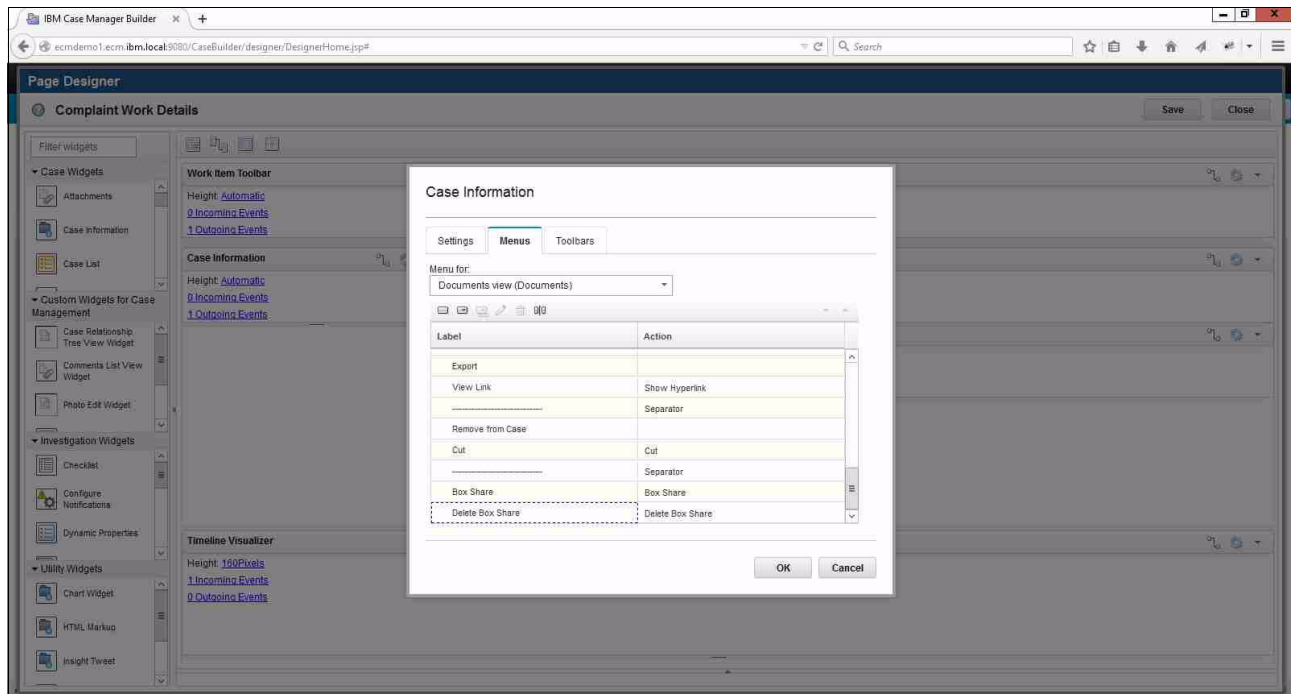


Figure 4-7 Configuration for the Case Information widget menu actions

## 4.4 Sample code using Box Java API

In the IBM Case Manager 5.2.1.3 release, the product integration capabilities (described in 4.1, “Integration overview” on page 50) allow the case worker to manually interact with Box documents from the Case Client user interface. Sometimes however, being able to interact with documents in Box automatically by using workflow tasks is useful. This can be achieved by using Box API calls. Although, at the time of writing, this function is not available in the product release of IBM Case Manager, a set of sample custom code is provided with this paper to show how this can be done. The sample code uses the Component Integrator, which

is an extensible integration framework provided by the underlying IBM Case Foundation platform. The Component Integrator enables the importing of Java or JMS components and interfaces to make them available from steps in workflows.

A number of Box API calls were packaged in the Box Operations for the Component Integrator. The Box Operations provides the ability to perform operations on Box documents and folders such as search, share, and exchanging documents between Box and the Case repository.

Figure 4-8 shows the high-level architecture of the IBM Case Manager integration with Box, including the sample Box Operations.

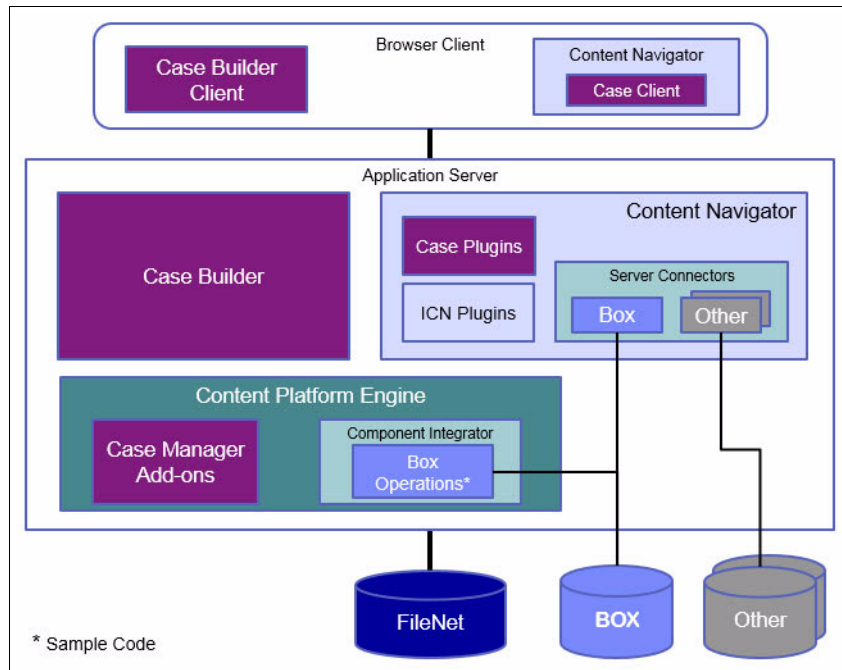


Figure 4-8 integration architecture of Box with Case Manager 5.2.1.3, including sample Box Operations

Figure 4-9 on page 60 shows the Process Designer with the Component Step using Box Operations.

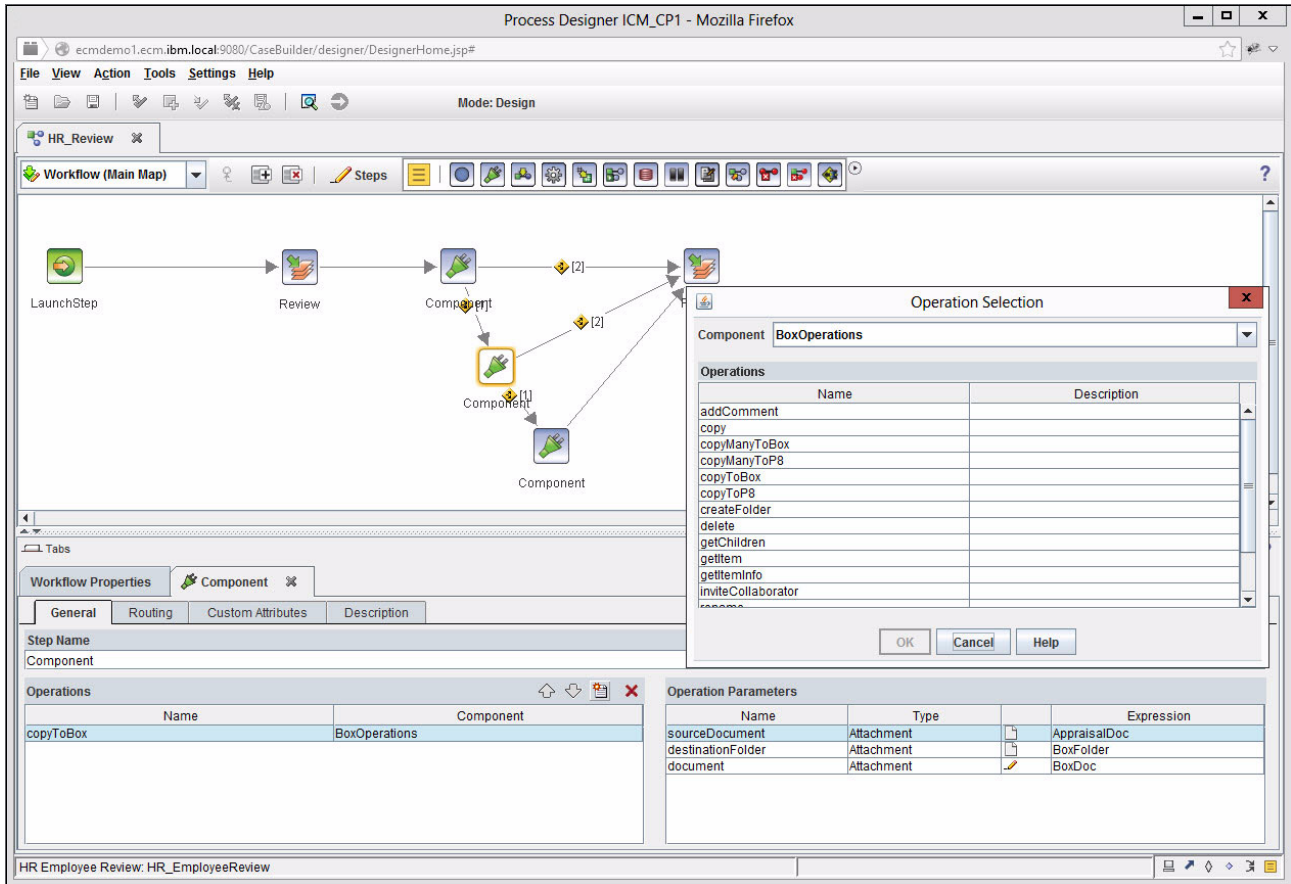


Figure 4-9 Box Operation in Process Designer

**Note:** Box Operations is a set of Component Integrator-based work performer operations that are available within the workflow system.

For more details about Component Manager and Work Performers, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSNW2F\\_5.2.1/com.ibm.p8.pe.dev.doc/custom/dev\\_work\\_performer\\_overview.htm?lang=en](http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/com.ibm.p8.pe.dev.doc/custom/dev_work_performer_overview.htm?lang=en)

Table 4-1 lists the functions available in the Box Operations sample code.

Table 4-1 Box operations

Operation name	Description
addComment	Adds a comment to Box document.
copy	Copies a Box document to another Box folder.
copyManyToBox	Copies more than one P8 document to Box.
copyManyToP8	Copies more than one Box document to FileNet.
copyToBox	Copies one FileNet document to Box.
copyToP8	Copies one Box document to FileNet.

Operation name	Description
createFolder	Creates a folder in Box.
delete	Deletes a Box document or folder.
getchildren	Gets a list of documents and subfolders from a Box folder.
getItem	Gets a Box document or folder based on path.
getItemInfo	Gets specified information about the specified item, for example, name, description, shared-link.
inviteCollaborator	Invites a collaborator to a Box folder.
rename	Renames the Box document or folder.
search	Searches the specified Box folder and all its subfolder using the specified query.
setItemInfo	Sets the information for a specified document or folder, for example, name, description.
shareLink	Updates or creates a shared link for the specified item.

**Error handling:** This source code is provided as a sample and has only limited error handling in place. The CopyToBox call will fail if a file of the same name already exists in the folder. (Also check the Trash folder in Box).

For sample code download information, see Appendix A, “Additional material” on page 163.

#### 4.4.1 Prerequisites for using Box API

A developer or enterprise Box account is needed to use the Box API calls. All enterprise users automatically have access to all enterprise features through the API.

A developer account offers access to all of Box enterprise features, including advanced collaboration and the Admin Console, through both the Box web app and the API. The process of creating a developer account creates a single-seat enterprise and associates that enterprise with your account. This is a good way to carry out testing if you do not have an enterprise account. Box developer accounts are offered at no charge.

For more information about Box account, see Box documentation:

<https://developers.box.com/>

#### 4.4.2 Deploying Box Operations component sample code

The Box Operations sample code that accompanies this Redpaper publication is provided as a downloadable ZIP file from the IBM Redbooks website. For download instructions, see Appendix A, “Additional material” on page 163.

The following high-level steps outline how to deploy the Box Operations sample code:

1. Add and configure a Component Queue for Box Operations.
2. Create a Box developer account unless you already have an Enterprise account.
3. Create and configure a Box application for use by the Box Operations component.

4. Configure the Box Operations authentication settings.
5. Configure the SSL certificate in the application server (for example, IBM WebSphere® Application Server) for Box.
6. Restart the application server.
7. Verify that the Box Operations are available inside the Process Designer.

**Note:** The detailed steps for deploying the Box Operations Component sample code are included in the downloadable package.

Figure 4-10 shows the Process Configuration Console with the Box Operations component queue.

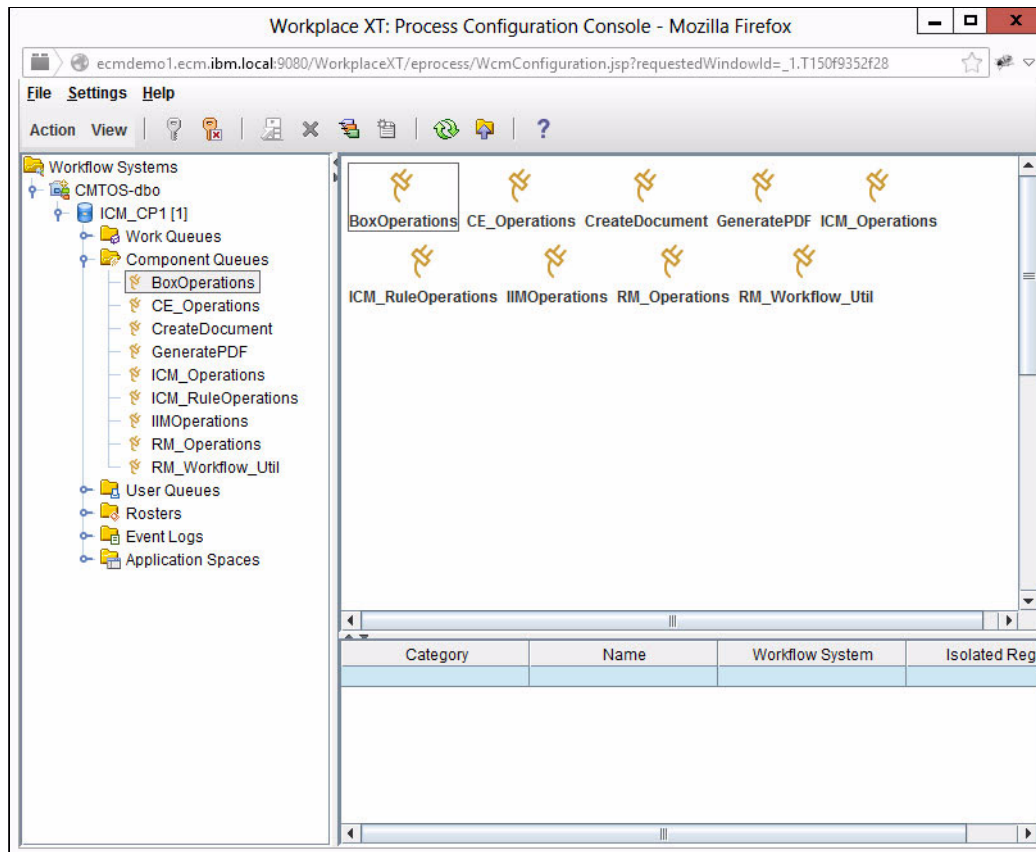


Figure 4-10 Box Operations Component Queue

## 4.5 Example integration use cases

This section discusses examples for using IBM Case Manager with Box Integration.

Consider a Human Resource (HR) department within a large organization, which uses IBM Case Manager to handle a number of business applications, including Employee Review, Employee Onboarding, and Employee HR Self-Service.

The HR department employees normally handle their work by using the Case Manager application, the employee documents are stored in the underlying Content Foundation repository (FileNet), and the sensitive HR documents are managed securely with controlled access to authorised users only. The Case Manager repository also supports the retention and disposition of employee records. Generally, only the HR department users have access to the employee records.

### 4.5.1 Employee transfer process

When a department manager is considering an employee who has applied to be transferred to the manager's department, the manager makes a request to the HR department to view the employee's previous appraisal reports.

The HR user reviews such requests and determines if the request is approved. If approved, the HR user selects the relevant document from the employee's records and shares it with the requesting department manager. In the past, this process often involved sending the document through email or on paper, but these methods are not secure and the confidential information is at risk of unauthorized access.

Also the document is only intended to be available for the department manager for a limited time while the manager is reviewing the current job application; ideally, the manager should not have access to that employee information for longer than intended. This time period is difficult to control when using email and paper-based methods.

Using the Box integration, the HR user shares the link of the selected document with the department manager, giving the manager view-only access with password, and setting the link to expire automatically after a period of 30 days.

Select **Box** → **Share** (Figure 4-11) to share a document.

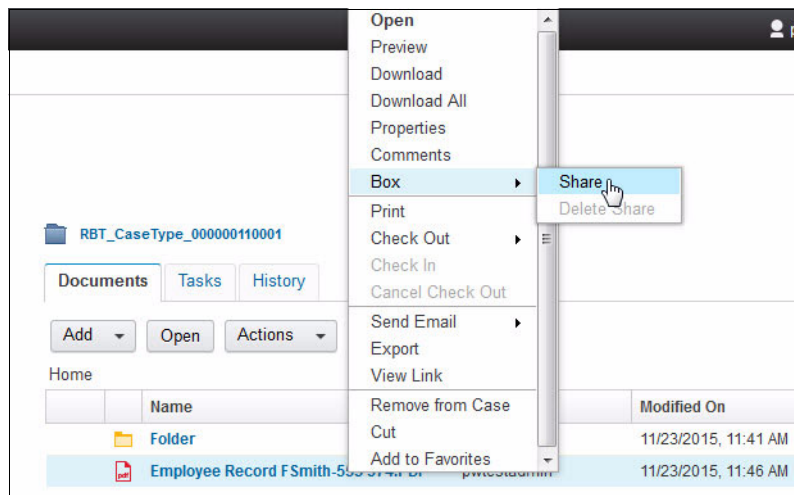



Figure 4-11 Share document from case folder

The Box Share dialog opens (Figure 4-12).

### Box Share

Send email that includes a link for the shared file. Anyone with the link can access the file.

 Employee Record FSmith-555 374.PDF

\*Send from:  
Mary@HR.corp.com

Send to: ?  
JohnSmith@sales.corp.com ×

Message:  
Your request to view the confidential employee record has been approved. Please use this link to access it.  
The link will expire after 30 days. The password for access has been sent to you separately.

---

▾ Share Options

The download, expiration, and password settings apply to the shared file in Box.

Allow download

Set link expiration:  
12/18/2015 ▾

Set password:  
●●●●●●

Share Cancel

Figure 4-12 Share document dialog



Figure 4-13 shows the view that the recipient sees when accessing the link.

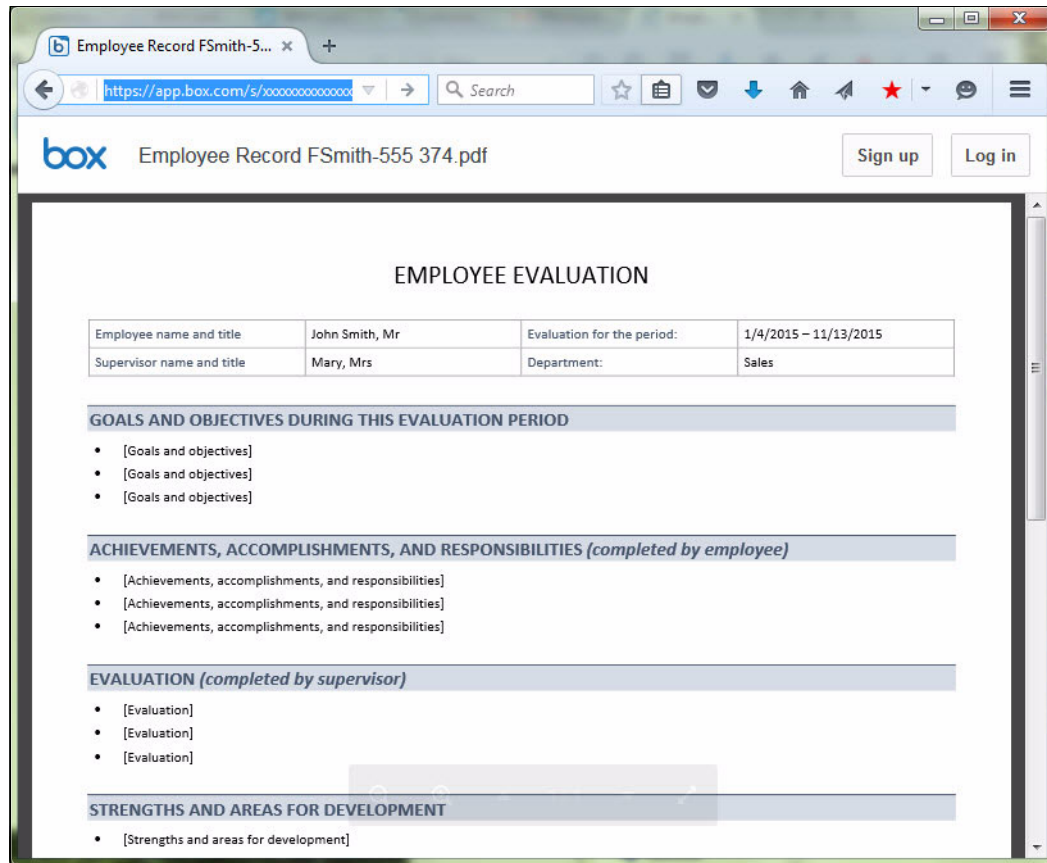


Figure 4-13 Open shared link (Courtesy of Box)

The HR department also uses the IBM Case Manager integration with Box to support a number of other use cases. For example, using a similar strategy to the one outlined for the department manager request. Employee self-service types of requests are also supported. Employees request to view their own records, which are first approved using the Case Manager application and then the information is shared in a time limited and secure fashion using Box integration.

## 4.5.2 Employee onboarding process

Another example is the use of the Box integration by the HR department to make the new-hire onboarding process easier and more secure. The HR user handles the onboarding process by using IBM Case Manager, ensuring that the business guidelines and processes are followed.

The IBM Case Manager user invites the new hire as a collaborator to a Box folder, and uses the Box folder to exchange documents in a secure and efficient manner. When the process is completed, all the documents are moved into the employee records system. Box can also be integrated with DocuSign to support electronic signatures, so that employment offer contracts can be sent to the shared folder and signed directly.

This process is implemented by using a *Copy and Invite* discretionary task that, by default, opens the Add Task page (Figure 4-14) when invoked by the HR case user. On the Add Task page, the case user can adjust the properties, and also select a list of files to be copied to the Box folder, by listing them in the Attachments list.

Figure 4-14 shows the Add Task page after the discretionary task is launched.

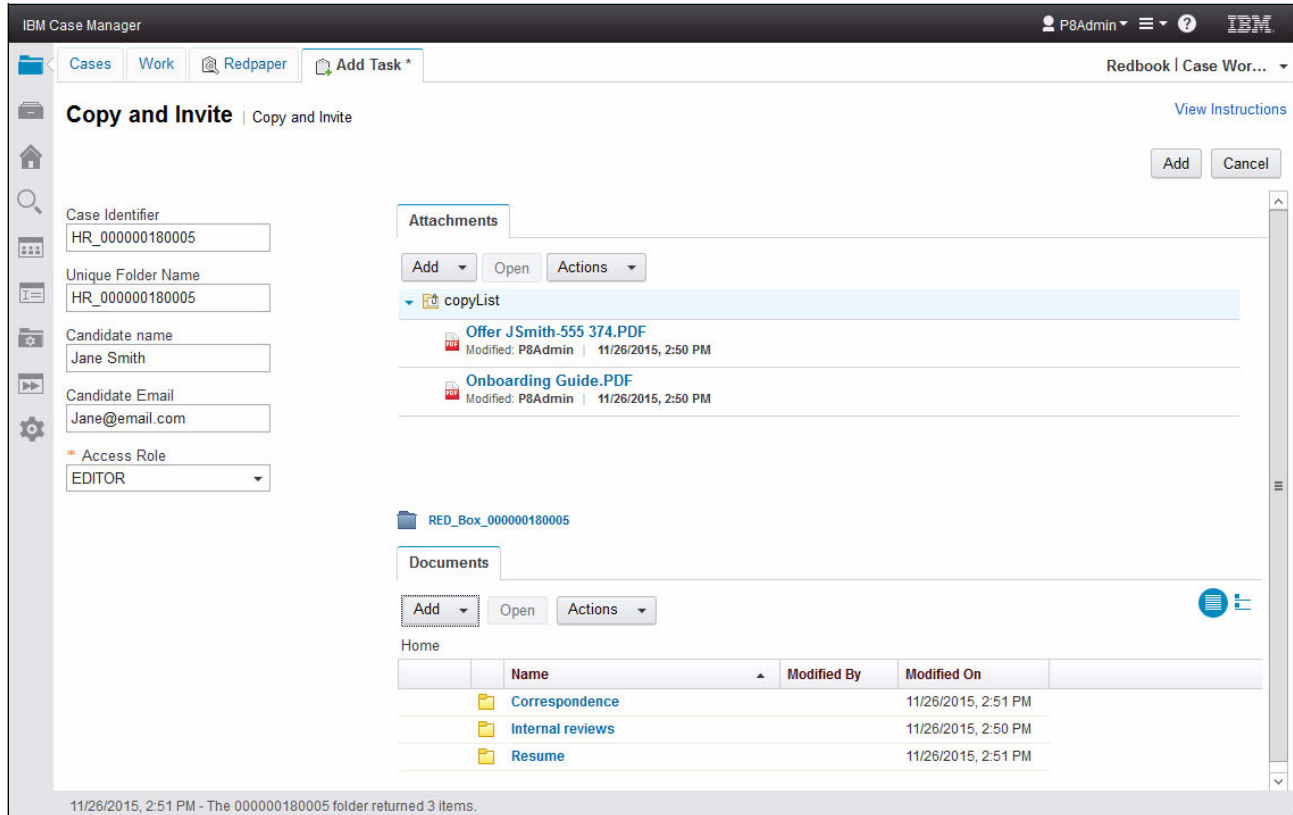


Figure 4-14 The Copy and Invite task

Note that the email of the onboarding candidate employee is given here, and also the name of the unique subfolder to be created in Box. This example uses the Case Identifier as the name of the subfolder for collaboration.

The Copy and Invite task uses a number of the Box Operations from our sample code to first create a unique folder in the Box HR repository, then add the onboarding documents there, and finally invite the onboarding employee candidate to collaborate in this folder.

The recipient of the invitation opens the Box through the link in the email, and is able to complete the onboarding process and upload the signed documents.

Figure 4-15 shows the invitation that is sent from Box to the employee.

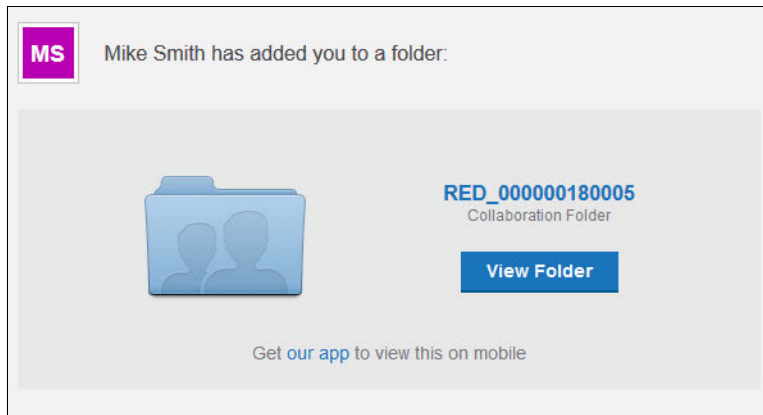


Figure 4-15 Email to the employee (Courtesy of Box)

Figure 4-16 shows the folder that is shared with the employee for collaboration.

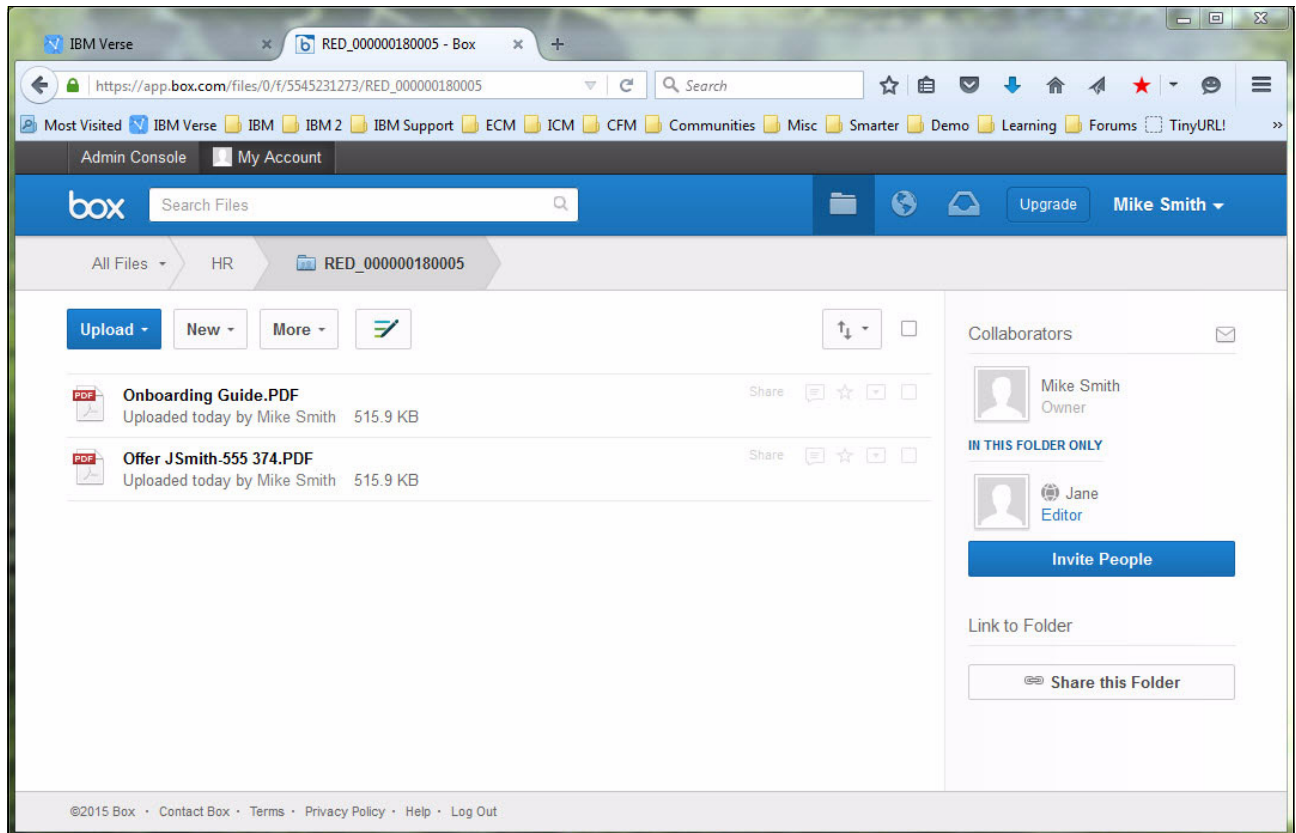


Figure 4-16 Open the collaboration folder (Courtesy of Box)

The following configuration steps are used for the Copy and Invite task:

1. Define the parameters needed for the workflow task.

Figure 4-17 shows the discretionary Copy and Invite task, which is used for this example.

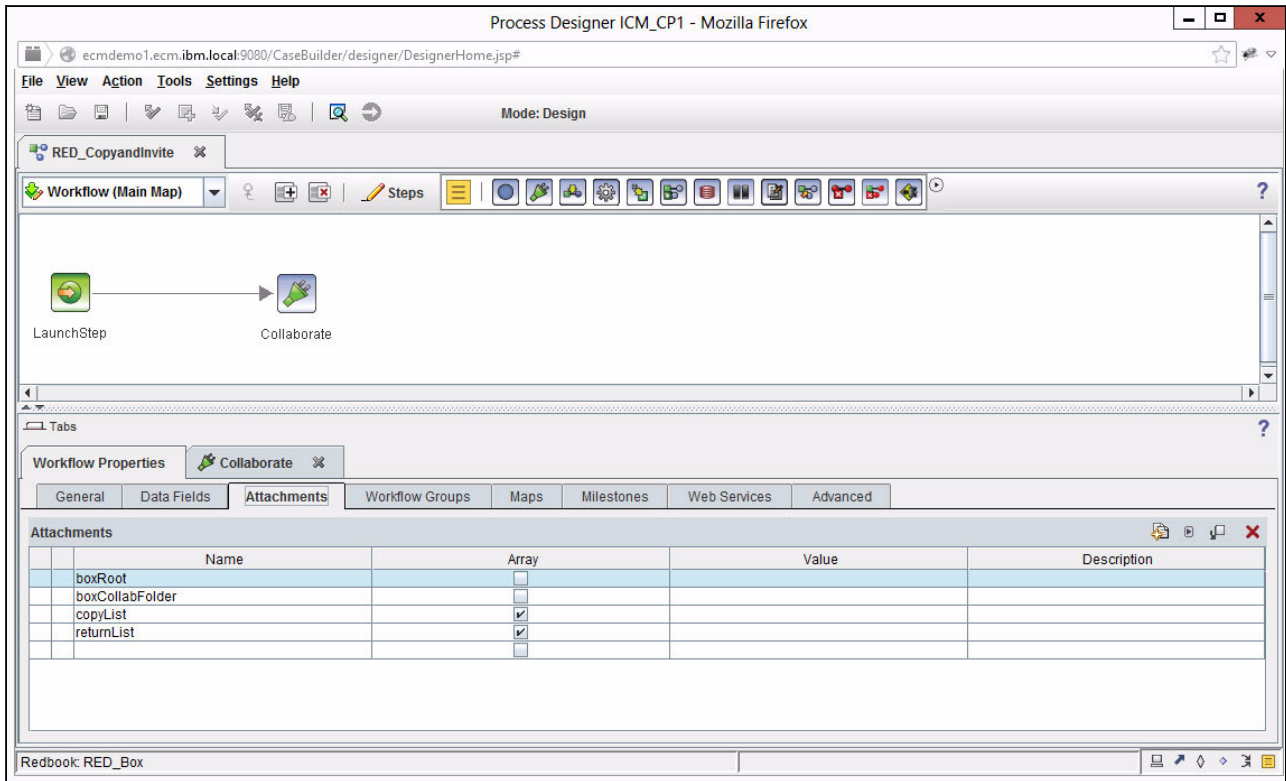


Figure 4-17 The Copy and Invite task

Get the HR root folder in the Box repository (Figure 4-18). This figure shows the configuration of the first component step.

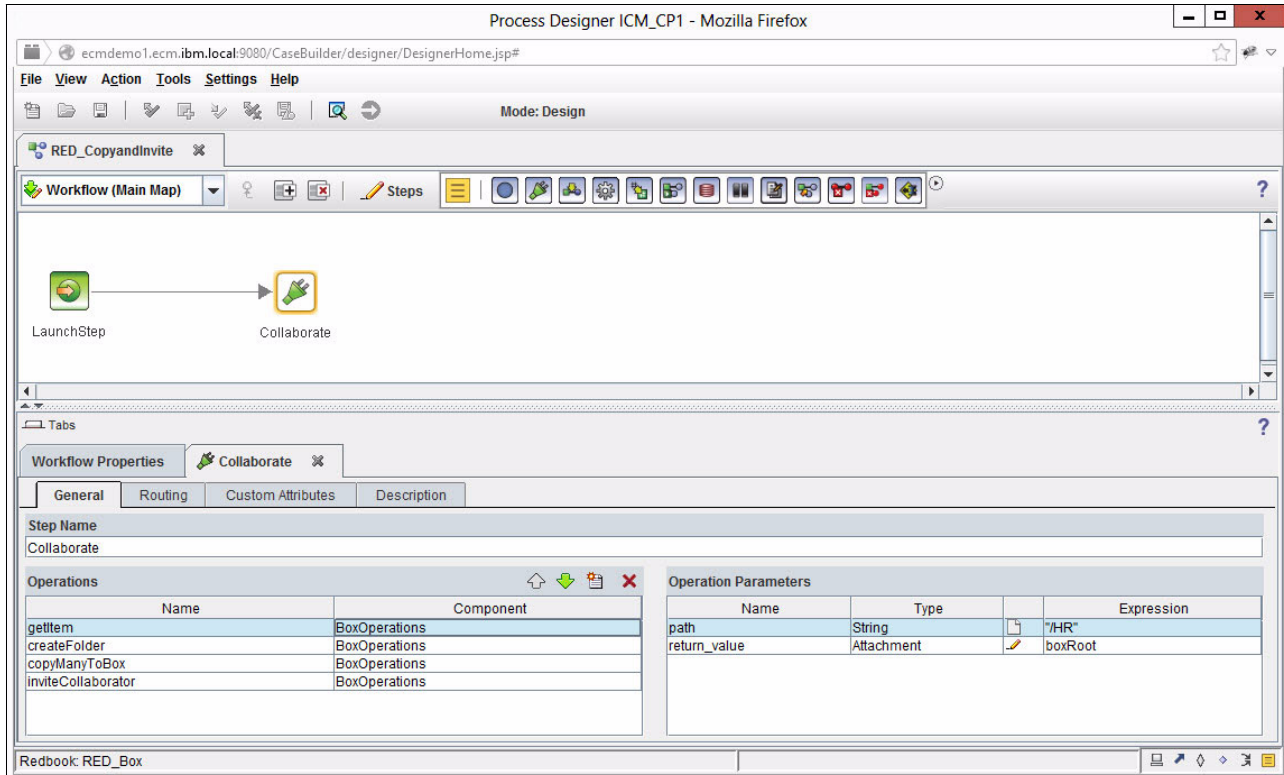


Figure 4-18 The operation to get the HR folder

2. Create a new subfolder in the HR folder by using the unique case ID (Figure 4-19).

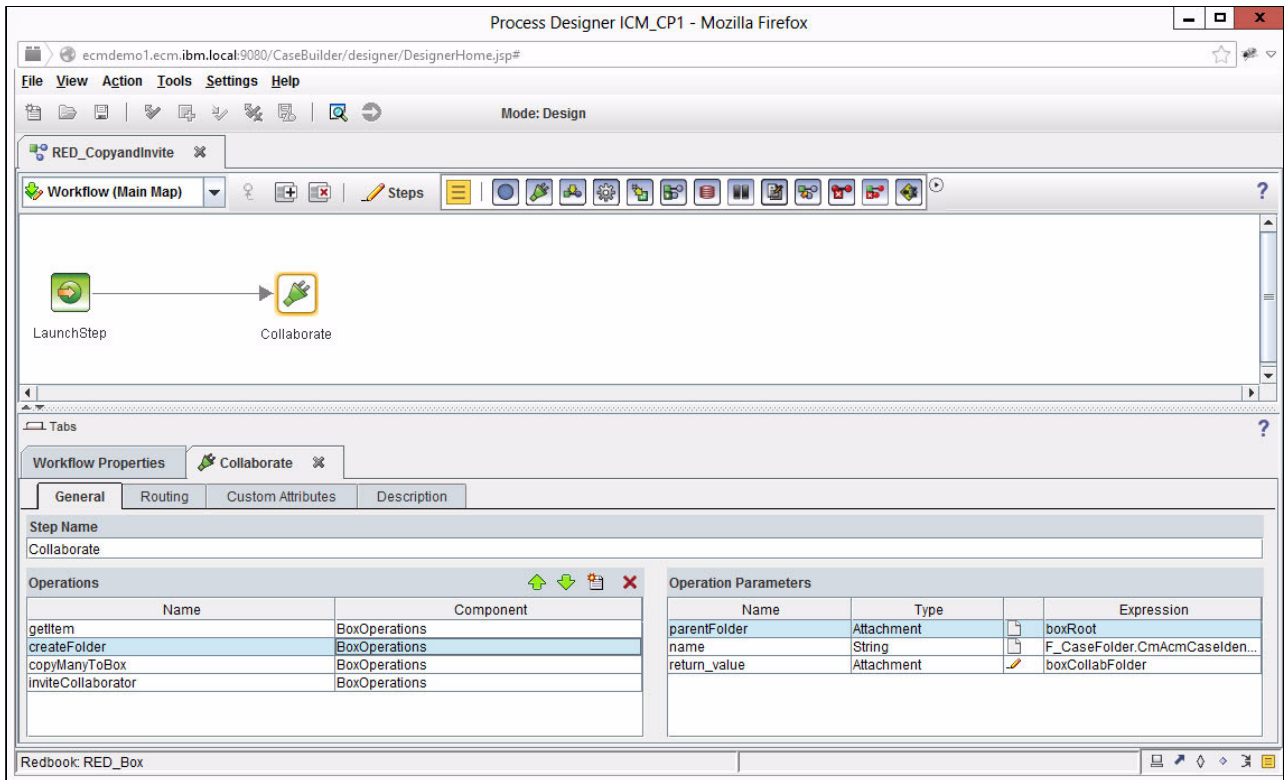


Figure 4-19 The operation to create the new subfolder for collaboration

3. Copy the onboarding documents to the subfolder (Figure 4-20).

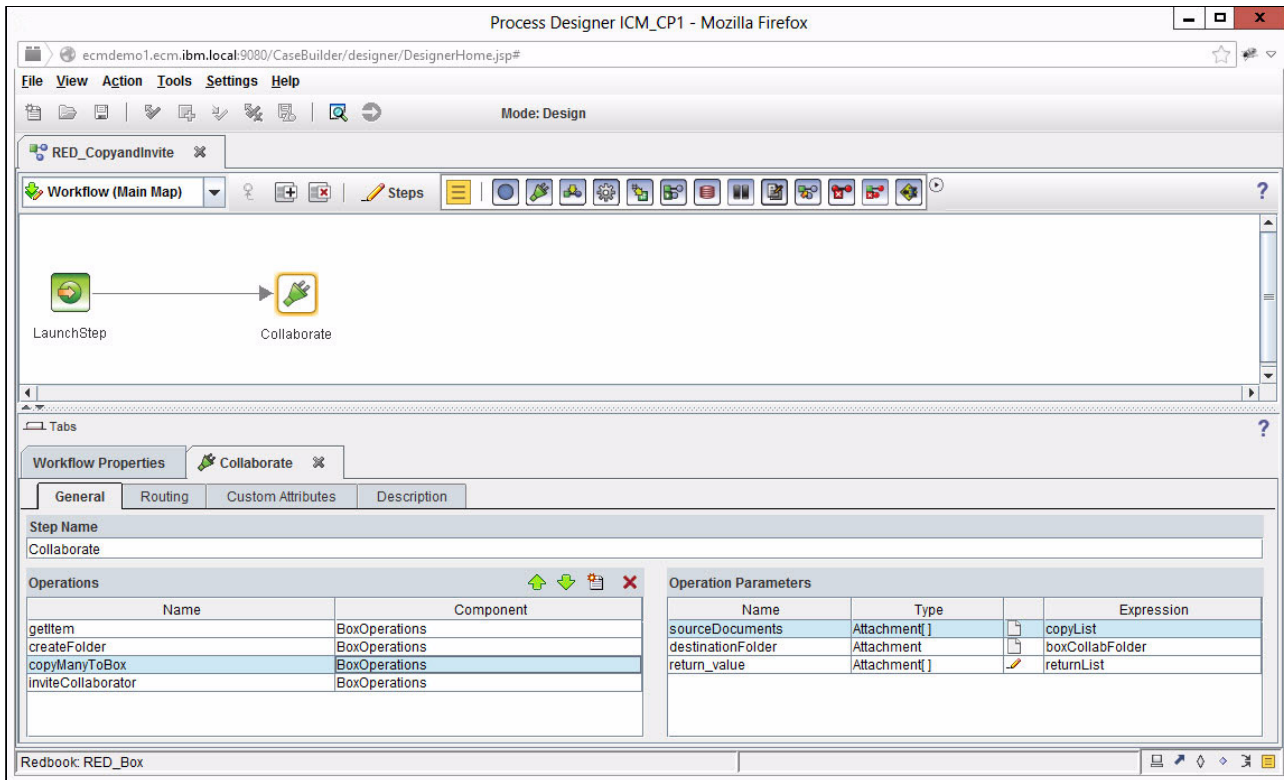


Figure 4-20 The operation to copy files to Box

4. Invite the employee to collaborate in the Box folder by using the email address (Figure 4-21).

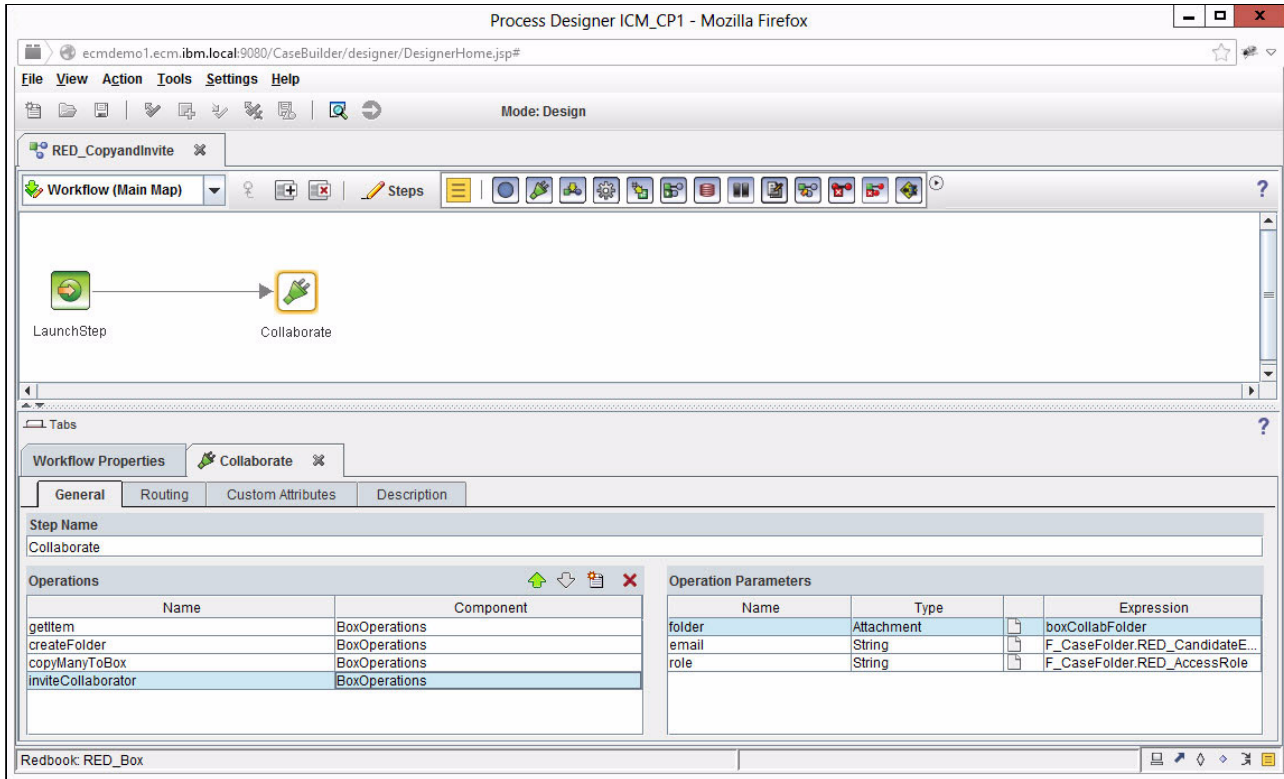


Figure 4-21 The operation to invite to collaborate





## Integration: IBM Datacap and Box

IBM Datacap is a complete solution for document and data capture. It scans, classifies, recognizes, validates, verifies, and exports data and document images quickly, accurately, and cost effectively. Datacap can capture machine print, hand print, bar codes, and check box data. By using the Datacap rules engine, data capture can be tailored to fit the most demanding business requirements and be changed quickly when business needs change.

Box provides to IBM Datacap a new repository for ingestion and export. Two new Box libraries were added to Datacap release 9.0.0.3 to allow Datacap to ingest content from Box and export content and metadata to Box.

Ingestion from Box gives Datacap the ability to bring in documents from a wide variety of collaborators and sources. The Datacap ingestion folder can be shared with internal and external clients. Any industry that needs to process documents from external sources can point the Datacap ingestion process to a shared Box folder. Datacap picks up and processes any document that lands in the folder. Datacap can process only certain types of documents if the shared folder has multiple purposes.

Datacap can export to multiple repositories depending on document or business process needs. Datacap uses separate export procedures to export documents to the Box repository and others such as IBM FileNet. This ability allows a business process to be designed to further process content in a strong workflow or knowledge worker system while also allowing collaboration on the content to begin immediately through Box capabilities.

This chapter covers the following topics:

- ▶ Integration architecture overview
- ▶ Planning considerations
- ▶ Integration implementation
- ▶ Implementing Box in a Datacap application
- ▶ Extending Datacap and Box through customization
- ▶ Integration use case
- ▶ Implementation patterns

## 5.1 Integration architecture overview

Box is added to Datacap architecture as an external repository. The connection to this repository is managed by Datacap Server. As a repository, Box can instantly provide off-premises storage of documents and metadata, while at the same time Datacap continues to deliver the same or other content to traditional on-premises repositories. The business need will determine to which repository Datacap delivers content.

As a repository, Datacap has a library of actions to export documents and metadata to Box. New to Datacap is the ability to ingest from Box. This ability allows Datacap to poll Box folders for batch creation in addition to uploading or exporting content and metadata to Box at the end of processing.

Box API structure can be used to further extend collaborative tools to Datacap through custom developed dotNet actions, while Datacap brings rich classification and data mining tools to Box.

Figure 5-1 depicts the architecture of Datacap with Box.

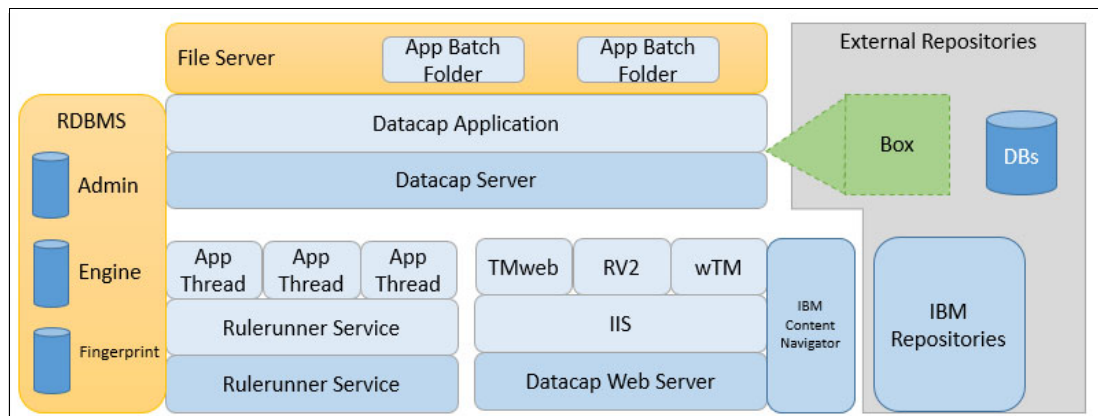


Figure 5-1 Datacap architecture including Box as a repository

### 5.1.1 Ingestion from Box

Datacap has long allowed a network folder location to be used as a point of ingestion for new documents and content. The Box repository, or more specifically folders designated within the repository, can now be polled for content much like a network folder.

The new actions available for ingestion are as follows:

- ▶ Backup folder <define>
- ▶ Import as Document Type
- ▶ Look for Extensions
- ▶ Source Folder
- ▶ Download

## 5.1.2 Export to Box

Datacap supports a number of external systems for exporting or handing over content and metadata for further processing, collaboration, and retention. Exporting to Box operates similarly to other repositories.

The new actions available for export are as follows:

- ▶ Add Parent Data To Age Metadata
- ▶ Create Batch SubFolder <define>
- ▶ DCO Vars Are Metadata
- ▶ Documents To PDF
- ▶ Fail If File Exists
- ▶ Fields Are Metadata
- ▶ Overwrite Existing Files
- ▶ Process Children
- ▶ Replace Metadata
- ▶ Target Folder
- ▶ Upload

## 5.2 Planning considerations

Enterprise content management systems are deployed as strategies requiring sizing estimates, future scaling models, and security authentication and authorization. Any implementation of Datacap and Box must carefully consider deployment methodologies that bridge the needs of business requirements with infrastructure.

### 5.2.1 Scaling and content storage

Datacap easily scales horizontally to meet processing needs. As an off-premises repository, Box scales to meet the need of ever growing content.

For a complete document on system scalability, performance, and availability of Datacap see *Implementing Document Imaging and Capture Solutions with IBM Datacap*, SG24-7969.

One of the primary considerations of storing content *off-premises* is to reduce *on-premises* storage needs. A combination of Datacap and Box can considerably reduce on-premises storage needs. Datacap can be configured to delete all records on any time table while still effectively reporting on processing. Box stores, as off-premises storage, the documents and metadata processed by Datacap leaving a small onsite footprint.

### 5.2.2 Content management

Datacap transactional processing can add hundreds of thousands of documents to a repository a day. This content should be planned, administered, and managed with great care.

When managing content with Datacap, consider the following common practices:

- ▶ Have Datacap move documents after it ingests them so the document will not be ingested repeatedly, and delete them after fully processing.
- ▶ Use Datacap smart parameters to intelligently export documents into an easily searchable and indexed folder structure with proper naming conventions.
- ▶ Make correct use of waterfall or inherited security to the document folder structure.

## 5.2.3 Security

Robust enterprise content management systems require tight controls on authentication and authorization. Datacap uses a Federal Information Processing Standards (FIPS) and Advanced Encryption Standard (AES) 128-bit encryption for all authentication and special variables. Box has built a proprietary 256 bit encryption for all content in motion and at rest to maintain platform independence.

Datacap uses the OAuth2 standard to connect to Box for all communication.

**Note:** Box requires initial authentication to occur in a graphical user interface. Subsequent authentication using the request and access tokens can happen programmatically.

Datacap FastDoc application is designed to handle this graphical user interface (GUI) requirement easily. Due to the nature of running export tasks in a background Rulerunner server where no user interface exists, the suggestion is not to configure an export to Box through DStudio for a production environment.

## 5.2.4 Environment considerations

Connection to Box is made through the Datacap server and not the Datacap Web Server. Ensure the Datacap server has sufficient HTTP access.

If the Datacap server is isolated from the Internet and cannot directly communicate with Box, configure your machine to use a proxy server. Because the Box rulesets do not support proxy servers, external configuration of a proxy service is necessary to support network traffic to and from Box. For example, you might configure your Windows system to use the WinHTTP proxy service to direct traffic to your HTTP proxy server. Regardless of the way that you implement the proxy server, the server must handle the Microsoft HTTP API functions that Datacap uses for the Box rulesets.

## 5.3 Integration implementation

Integration to Box is made through Box APIs. Datacap actions are dotNet methods that call the Box API for each action's functionality.

To allow Datacap to ingest from and export to Box, a Box developer account creates a Box application that allows Datacap to interact with the repository. The actions and configuration files to integrate with Box must also be deployed in Datacap.

Primary authentication to Box requires a manual step. For each subsequent step, a set of tokens are used. If the tokens time out, the manual authentication is required again. For this reason, Datacap FastDoc is the primary production tool used with Box integration.

### 5.3.1 Box configuration

For Datacap to use Box as a repository, the following items are required:

- ▶ A Box application
- ▶ Box authentication parameters to the application

## 5.3.2 Create application

Create a “Box Content” application with an appropriate name to be used as a repository:

1. Sign in to a Box account at the following address:  
<https://app.box.com/developers/services/edit/>
2. Name the application appropriately.
3. Choose **Box Content** (Figure 5-2) and then click **Create Application**.

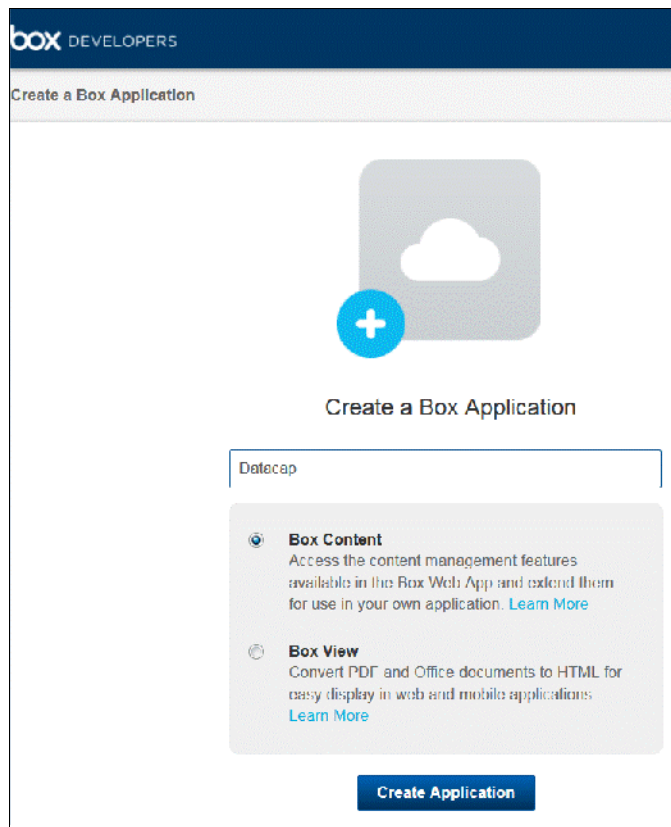


Figure 5-2 Use a globally unique name to create the Box Content application (Courtesy of Box)

4. If the name is unique and the application is created successfully, a message is displayed (Figure 5-3). Click **Configure your application**.

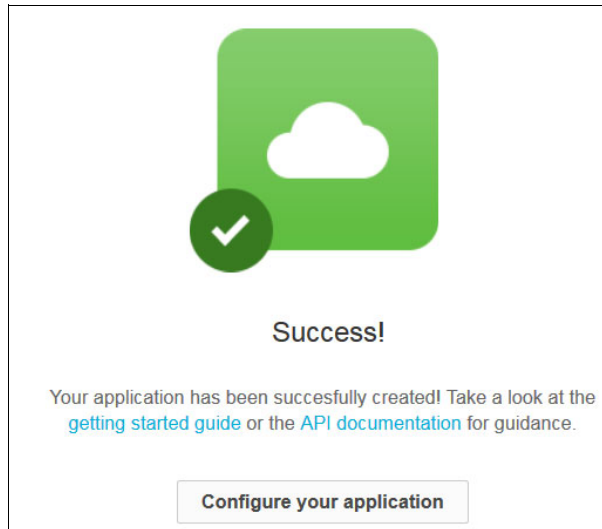


Figure 5-3 Application created successfully (Courtesy of Box)

5. Enter the OAuth2 credentials next (Figure 5-4).

The screenshot shows the 'Editing DatacapApp' page on the Box Developers portal. The page is divided into two main sections: 'General Information' and 'OAuth2 Parameters'. In the 'General Information' section, there are fields for 'Application name' (DatacapApp), 'Application description' (empty), 'Support email' (support@client.com), and 'Website URL (optional)' (empty). There are also two radio button options: 'Content API Access Only' (selected) and 'View API Access Only' (unselected). The 'OAuth2 Parameters' section contains three fields: 'client\_id' (1234567890abcdefg), 'client\_secret' (abcdefghijklnop1234567), and 'redirect\_uri' (http://localhost). Each field has an example value provided to its right.

Field	Value	Example
Application name:	DatacapApp	Ex: MyBoxApp
Application description:		Ex: MyBoxApp is an online productivity suite
Support email:	support@client.com	Ex: support@myboxapp.com
Website URL (optional):		Ex: http://myboxapp.com
Content API Access Only:	<input checked="" type="radio"/>	This key can only call the Box Content API
View API Access Only:	<input type="radio"/>	This key can only call the Box View API
client_id:	1234567890abcdefg	client_id as specified in the OAuth2 spec
client_secret:	abcdefghijklnop1234567	client_secret as specified in the OAuth2 spec (leave blank to reset)
redirect_uri:	http://localhost	redirect_uri as specified in the OAuth2 spec

Figure 5-4 The Box app page with OAuth2 parameters (Courtesy of Box)

### 5.3.3 Datacap configuration

The Box actions are deployed to the Datacap/RRs/Box directory. The actions can be copied for global deployment to be used by all applications, or to a specific application folder to be used by that application only.

### 5.3.4 Global action deployment

The Box actions are not normally deployed as global actions. Because the DatacapBox.d11.config file must be edited with OAuth2 credentials, the same credentials are used for all applications if the file is deployed to the RRs folder as global actions.

**Note:** Backup the Datacap/RRS/dcsmart.d11 file before deploying the Box actions globally.

For global action deployment, copy all files from Datacap/RRS/Box to Datacap/RRS. This action overwrites the dcsmart.dll file. The Box actions will be available in the global action list as shown in Figure 5-5.

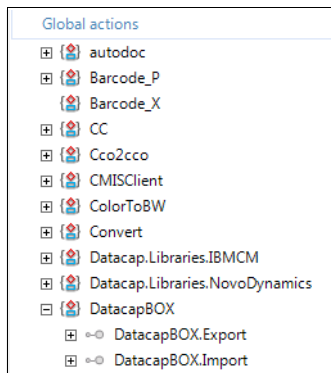


Figure 5-5 Global action deployment

### 5.3.5 Application specific deployment

For application-specific deployment, copy the files from the Datacap\RRS\Box directory to the rules directory of your application. For example, you might copy files from the following folder:

C:\Datacap\RRS\Box to C:\Datacap\Apt\dco\_APT\rules

The Box actions are available in the Application specific actions list (Figure 5-6).

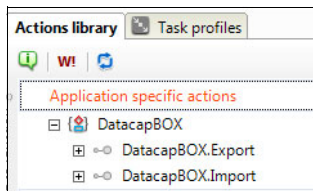


Figure 5-6 The actions shown in the application library

### 5.3.6 Authentication: OAuth2 parameters

Datacap connects to Box using OAuth 2.0, the standard used by most APIs for authenticating and authorizing users. The configuration for these parameters can be found by editing the Box application that will be used by Datacap.

#### The client\_id, client secret, and redirect\_uri values

In your application's rules directory, edit the DatacapBox.dll.config file to substitute the appropriate OAuth parameter values for occurrences of the following text:

- ▶ Your client\_id
- ▶ Your client\_secret
- ▶ Your redirect\_uri, for example, http://localhost

#### The DatacapBox.dll.config file

Map the following Box credentials to their counterparts in the DatacapBox.dll.config file:

- ▶ client\_id to client\_left
- ▶ client\_secret to client\_right
- ▶ redirect\_uri to redirect\_url



## The resulting file

Figure 5-7 shows the DatacapBox.dll.config file with the updated OAuth 2 parameters.

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <configSections>
    <sectionGroup name="applicationSettings" type="System.Config
      <section name="DatacapBOX.Properties.Settings" type="System
        requirePermission="false" />
    </sectionGroup>
  </configSections>
  <appSettings>
    <add key="client_left" value="1234567890abcdefg" />
    <add key="client_right" value="abcdefghijklmnop1234567" />
    <add key="redirect_url" value="http://localhost" />
    <add key="num_of_retries" value="3" />
    <add key="retry_delay_ms" value="250" />
    <add key="upload_timeout_sec" value="-1" />
  </appSettings>
</configuration>
```

Figure 5-7 The DatacapBox.dll.config file with the updated OAuth parameters

## 5.4 Implementing Box in a Datacap application

The Box actions can be implemented in any application for any business need through either Fastdoc or DStudio.

For a better understanding of how to implement capture solutions with Datacap, see *Implementing Document Imaging and Capture Solutions with IBM Datacap*, SG24-7969.

Two Box rulesets are automatically configured and available for use. The ruleset only needs to be configured for imports or exports that are to be used and provides basic sync capabilities between Box folders and Datacap Batch folders.

## 5.5 Extending Datacap and Box through customization

Datacap can be further extended to use more Box capabilities through custom action development. Datacap uses dotNet architecture, and C# actions can be developed in Microsoft Visual Studio to take advantage of Box APIs.

For a better understanding of how to write custom actions in Datacap, see *IBM Datacap 9.0 DDK custom actions* from IBM developerWorks® website:

<http://www.ibm.com/developerworks/data/library/techarticle/dm-1412datacap-developer-kit/DevWorks-Datacap-9.0-CustomActions.html>

For a better understanding of the available Box APIs, see the following web page:

<https://box-content.readme.io/reference#api-docs-directory>

### 5.5.1 Implement through DStudio

Box requires manual authentication on the first login. Subsequent logins are made through tokens. The Rulerunner service authenticates through background service code only. Therefore, using an application in production that is designed to authenticate to Box solely through code is not advisable.

The Box export and import rulesets must be added to a task and attached to the Datacap Object (DCO). The default Box ruleset available handles most standard implementations that do not require versioning of content. The default ruleset is configured to overwrite existing files and metadata instead of creating new versions. The functionality can easily be changed by configuring the ruleset with the actions you want.

Using the default Box Export ruleset uploads all documents to a target folder and creates ad hoc metadata from fields and variables, including parent data. Any PDF created earlier in the batch processing is uploaded.

Figure 5-8 shows the Export to BOX ruleset in DStudio.

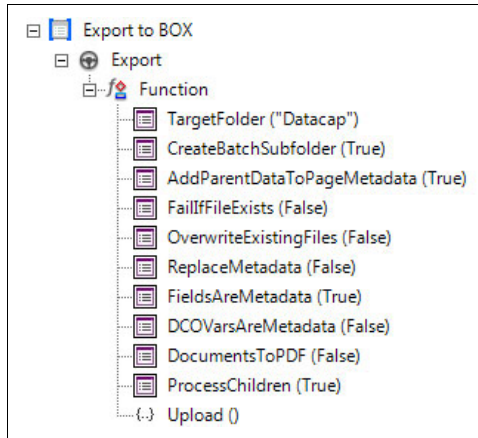


Figure 5-8 The standard Box export ruleset

The Export to BOX ruleset is attached to the Export task, as shown in Figure 5-9.

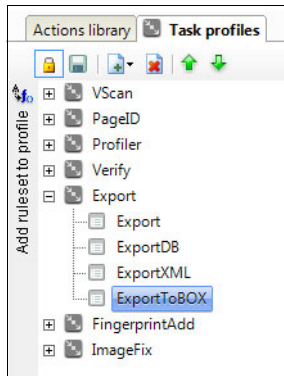


Figure 5-9 The Box ruleset added to the Export task

Finally, the Export to BOX ruleset is attached to the documents that are uploaded to the Box repository. Theoretically, the ruleset can be added to any level of the DCO but consider how the documents are managed in the repository.

Figure 5-10 shows the Export to BOX ruleset is assigned to DCO documents.

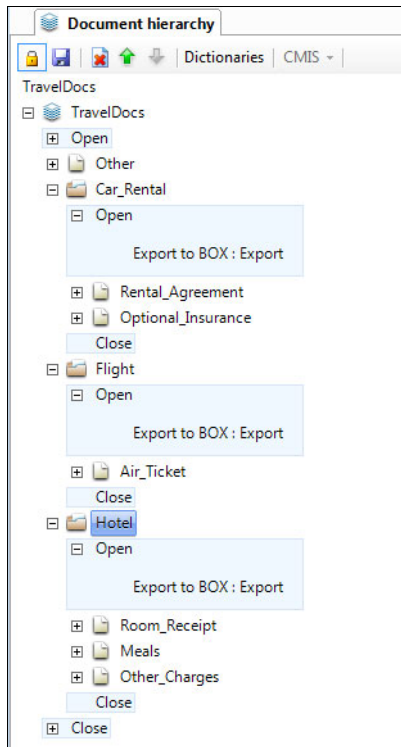


Figure 5-10 The Box ruleset added to the DCO of TravelDocs

## 5.5.2 Implementation through FastDoc

You can use Datacap Fastdoc (admin) to edit an application. Figure 5-11 shows that the Export to BOX ruleset is moved to Export task.

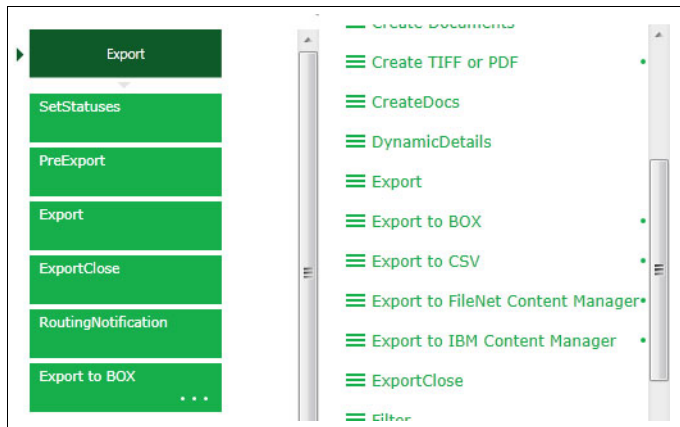


Figure 5-11 Drag the Export to Box ruleset to the Export task in Fastdoc

Edit the Export to BOX ruleset by clicking the three dots on the bottom right of the ruleset.

Figure 5-12 shows the Export to BOX RuleSet configuration window.

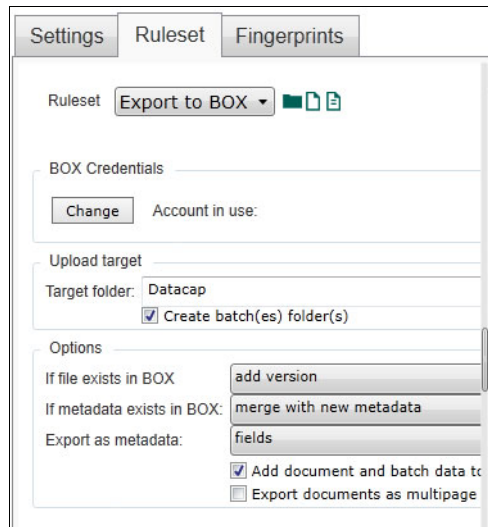


Figure 5-12 Setting the one time manual Box credentials

Click **Change** to set the authentication and ensure it is correct.

### 5.5.3 Collaboration

Collaboration through Box is an extension to Datacap. Shared links is one of the collaboration tools that allows Datacap to present documents to external users, but it is not part of the default export to Box ruleset. Use of Box Shared links requires a developer to write custom .Net actions in Datacap that calls Box API methods.

An initial document export to Box returns a list of metadata. Shared link is one of those metadata but is initially set to null. A Datacap custom action, written in C#, uses the Box API method `Create Shared Link` to share the folder and set access to the folder.

Similarly, the API `Create Collaboration` is used to grant access to Box users.

## 5.6 Integration use case

The most compelling new use case is the ability to reprocess documents in Datacap on demand from an external workflow. This capability comes from ingesting documents from the Box repository.

Consider an insurance company that allows clients, external auditors, and investigators to upload documents from the field. A wide range of forms and pictures are necessary to update policies, document incidents, and detect fraud.

Documents can be captured through Box mobile capture into a Datacap ingestion folder, or captured through Datacap mobile capture application and processed immediately in Datacap. After classified, verified, and exported to both Box and IBM FileNet, a knowledge worker can decide that a document might need to be further processed by Datacap.

The case worker sends the document to another Datacap ingestion folder to start the second processing, and Datacap employs more user processing of the document before exporting to FileNet, also updating the version in Box.

In this scenario, an insurance customer starts an injury auto claim over the phone. The customer is instructed to submit documentation of the injury by uploading a picture and the medical claim to a Box folder share. Internally, an investigator uploads a police report through Datacap mobile capture.

Datacap processes the documents and exports to a Box folder and FileNet along with metadata. A knowledge worker suspects fraud and sends the documents back to Datacap. Datacap collects all documents from a private internal Box folder, further mines for data, and exports the new documents to a new FileNet document class for fraud investigation.

For this scenario, the Box mobile capture app is available for IOS devices for an insurance customer.

### 5.6.1 Multiple capture jobs

Datacap uses multiple ingestion jobs to capture from different resources. Three separate jobs are created to manage the ingestion streams:

- ▶ Datacap Mobile Job: This ingestion job takes content from the mobile device for further processing.
- ▶ Box Job: This ingestion job imports content from the Datacap folder in Box.
- ▶ Reprocess or Fraud Job: The Fraud ingestion job imports content from a *different* folder in Box, for example, the Fraud folder.

By separating the jobs, Datacap can separate the processing of documents coming from Box capture versus documents coming from Datacap Mobile. The Fraud folder allows the knowledge worker to ask for reprocessing from Datacap while being able to keep the process separate and secure from other collaborators.

The processing steps are as follows:

1. The customer uploads the injury picture and the injury claim to the Box folder Datacap.
2. An investigator uploads a police report to the Box folder Datacap.

### 5.6.2 Ingestion and processing

Datacap ingests each set of documents according to the ingestion rules. The Datacap Mobile capture can index and use OCR on the mobile device in Datacap 9.0.1 release.

The ingestion and processing steps are as follows:

1. Datacap ingests from Box the injury picture and form to batch 1.
2. Datacap ingests from Box the investigation report into batch 2.
3. The documents from both batches are classified.
4. The documents are mined for data and that data is shown to an operator for verification.

### 5.6.3 Export to Box and FileNet

The standard Export to BOX ruleset exports all documents to the same folder. Adding a new “Target Folder” action allows Datacap to upload documents based on hard-coded values or smart parameters, such as client name.

Datacap exports both the client information and the investigator information to the same client folder. Authorization on the folder can be shared as needed.

Datacap also exports all of the document and content to the FileNet repository so that a knowledge worker can review and continue business processing.

The export processing steps are as follows:

1. Batch 1 documents and ad hoc metadata are uploaded to the client folder.
2. Batch 1 documents and content are exported to the FileNet repository
3. Batch 2 documents and ad hoc metadata are uploaded to the client folder.
4. Batch 2 documents and content are exported to the FileNet repository.

#### 5.6.4 Reiteration or reprocessing documents

A knowledge worker in a case management system or a workflow step can identify a need to reprocess documents. Simply by placing the document back into a Datacap ingestion folder on Box, Datacap will process it again. If the document is placed in the original folder, Datacap will reprocess the document using the exact same methodology.

However, when a second Datacap ingestion folder is created on Box, and a new ingestion job is created in Datacap, an entirely new processing dynamic is created. A knowledge worker or workflow engine can determine that documents need to be processed in a different manner or more in depth than they were originally. The documents can be put in the second ingestion folder and a second Datacap ingestion job will execute new rulesets on the content.

The reiteration process steps are as follows:

1. A knowledge worker suspects fraud in a case and collects documents to send to the fraud department.
2. The documents are placed in a special fraud ingestion folder on Box.
3. Datacap ingests the documents from the fraud folder to batch 3.
4. Batch 3 reclassifies the documents to special status, mines data further from the documents, and uses integrations with third-party systems to ensure new data is correct.
5. All documents and content are exported to the secure fraud repository for further investigation.

#### 5.6.5 Version updating

Datacap can update document versions on Box. The standard `Export to BOX` ruleset overwrites versions, but a combination of the `OverwriteExistingFiles("False")` and `FailIfFileExists("False")` actions automatically updates the version of the existing file.

The version updating steps are as follows:

1. Datacap processes and exports to Box as version 1.
2. Datacap re-process the same document and exports to Box as version 2.

## 5.7 Implementation patterns

The IBM and Box partnership brings new patterns to Datacap and Box, each able to extend the functionality of the other.

### 5.7.1 Reiterative or 360-degree processing

The ability to ingest from Box to Datacap and version control on export to Box, brings the ability to reprocess documents. This reprocess ability brings more document and content corrective capabilities. It also allows ever deeper cognitive and contextual analysis of documents and content.

#### Content and metadata correction

Processing, updating, and adapting are no longer finished at export. Knowledge workers and workflow steps can recognize if a classification or any content identification assignment is incorrect. Communication through manual human to human contact, email, comment, or image annotation to the image can be used to request a change to the content.

The document is placed in the Datacap ingestion folder and it is processed again. A different ingestion folder with a different ingestion job that requires more manual intervention is the best approach, but a second pass through an OCR engine after external manipulation of the image is also possible.

#### Deeper cognitive and contextual analysis

Companies that use an ever-refining-context approach to content can make use of reprocessing content. The first processing pass data mines a small subset of the information from a document for fast processing.

If a decision is made later during further processing that content is related, needs special attention, or simply requires more data, the content can be sent back to Datacap for further processing.

This can be done for a multitude of reasons:

- ▶ Maintain a healthy system with a high rate of content classification and data integrity.
- ▶ Maintain a high rate of standard processing while also handling exception processing.
- ▶ Ease the processing burden of other workflow systems.
- ▶ Simplified transfer, versioning, and management of content between repositories.

Every pass through Datacap and subsequent workflows provides a more cognitive understanding of the content.

### 5.7.2 Extending mobile capture

Datacap brings more image enhancement tools, classification, recognition, data mining, and verification tools to Box. Box provides an easier external mobile capture and collaboration interface to Datacap.

The ability to ingest from both platforms simultaneously allows companies to extend their content ingestion and processing capabilities to their clients.

### **5.7.3 Exporting to on-premises and off-premises repositories**

Datacap can quickly export content to both Box and on-premises repositories allowing the content to be shared, edited, approved, and so on while downstream workflow systems continue processing the content of the version one per business requirements.

Being able to push versioned content to a secure external collaborative environment while storing the original version in a permanent repository with strong taxonomy and lifecycle management gives companies many processing options.

### **5.7.4 Managing the volatile stage of content**

Content requires heavy processing, collaboration, and versioning during the early stages of its lifecycle. Datacap, downstream workflows, and knowledge workers help manage this content volatility through use of off-premises content versioning.

Content experiences a number of versions during its lifecycle. Most of the changes that cause versioning can come from collaboration editing and approving on Box and deep cognitive learning, ever refined contextual analysis, and the self-healing aspect of content correction on the IBM processing side.

The versioning volatility of content eventually slows and switches to records or lifecycle management. Administering on-premises infrastructure that manages this content during its volatile stage is a heavy burden on physical resources.

Box's off-premises farm-based storage can seamlessly adapt to content repository needs much easier than on-premises storages. Companies will now deliver content from Datacap to Box until the volatile stage passes, then allow the content to return to on-premises storage for lifecycle management.





## Integration: IBM StoredIQ and Box

IBM StoredIQ provides a complete solution to manage data in place. StoredIQ connects to your data source and indexes the data in it, a process known as *harvesting*. StoredIQ can connect to a number of data sources through its connector interface.

After a data source is harvested, you can search, classify, and perform actions on your data such as move, copy, and delete. StoredIQ helps you understand how data is distributed across multiple data sources, to aid in creating and enforcing data management policies.

Box is the latest addition to the list of data sources supported by StoredIQ. This is made possible through the Box connector which enables StoredIQ to read and write both content and metadata. Indexing data on Box enables you to identify and assess the content on Box in addition to any on-premises data sources.

This chapter covers the following topics:

- ▶ Integration architecture overview
- ▶ Planning considerations
- ▶ Integration implementation
- ▶ Administration and maintenance
- ▶ Integration use case

## 6.1 Integration architecture overview

StoredIQ not only manages multiple data sources in place but it does so at scale. This is possible because of the multitier distributed architecture.

### 6.1.1 Overview of IBM StoredIQ architecture

IBM StoredIQ has three distinct tiers:

- ▶ Application stack

The application stack is the top tier that houses all user-facing applications. StoredIQ has five applications:

- IBM StoredIQ Administrator
- IBM StoredIQ Data Workbench
- IBM StoredIQ eDiscovery
- IBM StoredIQ Data Script
- IBM StoredIQ Policy Manager

- ▶ Gateway

This is the middle tier responsible for distributing work and aggregating results. It communicates between data servers and the application stack.

- ▶ Data Servers

The StoredIQ Data Server is responsible for connecting to data sources. It is the workhorse for indexing, reading, and writing data from data sources. There might be one or more data servers based on business needs such as total data under management.

Data sources are considered to be logical volumes within a data server. A primary volume serves as a primary data source. StoredIQ requires that you have at least one primary volume. The same data source can be added to any number of data servers and it is treated as a distinct volume within that data server. Conversely, a single data server can house multiple volumes of the same or a different type.

Figure 6-1 depicts a high-level StoredIQ architecture.

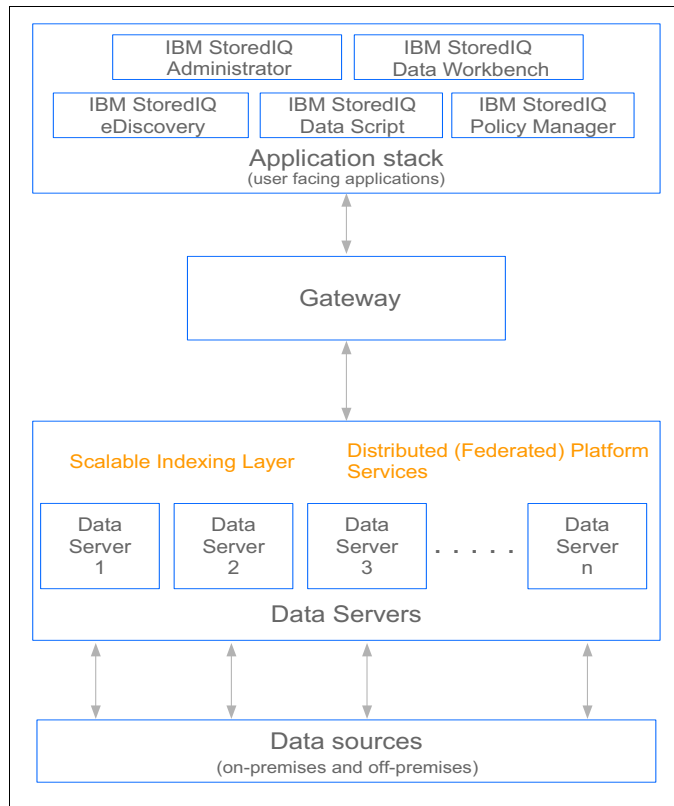


Figure 6-1 StoredIQ architecture

### 6.1.2 Box as an IBM StoredIQ data source

Similar to other data sources, Box is treated as a volume in StoredIQ. The data server is responsible for establishing and managing connections to Box. StoredIQ serves as a bridge between off-premises repositories like Box and on-premises repositories like IBM FileNet.

The combination of the data server's modules and the Box Content APIs constitutes a *box connector*, which enables StoredIQ to read and write content on Box. The Box Python SDK, which is a wrapper over the Box Content APIs, provides programmatic access to content on Box.

Communications with Box Content APIs are done over Hypertext Transfer Protocol Secure (HTTPS) to ensure all data is encrypted. Further, accessing Box Content APIs requires OAuth2 based authentication.

Figure 6-2 depicts Box as a StoredIQ data source.

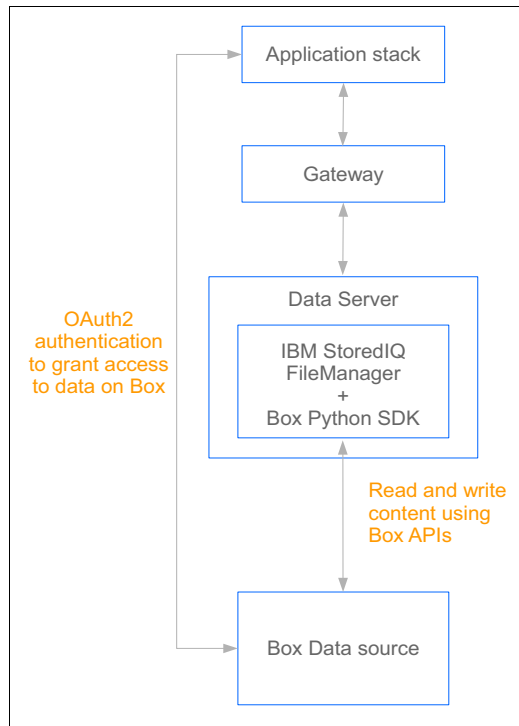


Figure 6-2 Box as a StoredIQ data source

## 6.2 Planning considerations

This section provides an overview of what to consider before StoredIQ can be set up to use Box as a data source.

### 6.2.1 Data under management

One or more StoredIQ data servers might be required depending on how much data is managed. Estimating the amount of data that is expected to be managed can help determine the number of data servers that will be required.

Starting with more data servers can be helpful when volumes are harvested for the first time. This approach can increase the speed of the harvest by distributing the work across several data servers. After the first harvest is complete, the number of data servers can be reduced. Because the index size depends on the data under management, additional data servers might be required as the data grows over time.

One of the advantages of cloud-based storage like Box is the ability to scale as required without having to worry about adding new hardware. This is an important step toward reducing content stored on-premises by moving them to cloud storage such as Box. The combination of the Box cloud storage capabilities and the ability of StoredIQ to move content between multiple repositories can help reduce the proportion of content stored on-premises.

## 6.2.2 Scalability

StoredIQ data servers use multi-processor hardware for concurrent processing and can scale horizontally by distributing work across multiple data servers. This is especially useful when harvesting large volumes.

Box currently enforces rate limits on all its APIs. This means that despite the support for concurrent processing, the total time spent to process a volume is determined by Box's rate limits. This rate can be partially overcome by using IBM StoredIQ distributed data server architecture.

## 6.2.3 Environment setup for Box

In addition to business needs, also ensure technical considerations are met before setting up an environment for Box and StoredIQ.

The first step to support Box and StoredIQ is to register an application with Box. This step can be done by logging in at the following website and creating a new application:

<https://developer.box.com>

To take advantage of all of StoredIQ functions, be sure to grant all permissions to the application. The application provides the details required to authenticate through OAuth2.

In addition, StoredIQ requires an administrator account on Box to add the volume. This way ensures that the user who granted access to StoredIQ on that user's behalf has the privilege of accessing any part of the volume.

### Network access

On-premises data sources can generally be accessed by StoredIQ as long as they are on the same network. However, accessing Box requires a working Internet connection.

**Note:** Data servers and application stack require a working Internet connection to interact with the Box Content APIs.

Internet connections can be obtained in the following ways:

- ▶ Dual Network Interface Card (NIC): The data servers and application stack are provisioned with two network cards, one for accessing the intranet (within firewall) and the other for external access.
- ▶ Proxy: When dual NIC is not an option, StoredIQ supports using a proxy server to establish external connections. This requires a proxy server.

## Creating a Box application

Box requires a registered application to access their API. This one-time process ensures that enterprise administrators can monitor the operations performed by using the APIs.

Use the following steps to create a Box application for your enterprise:

1. Sign in at the following website. If enterprise single sign-on is enabled, you can log in with your enterprise credentials, which then redirects to your enterprise Box page.

<https://developer.box.com>

2. Click **Create a Box application**. On the application creation page, provide a suitable name, select **Box Content** option, and click **Create a Box Application** to register and create a Box application (Figure 6-3).

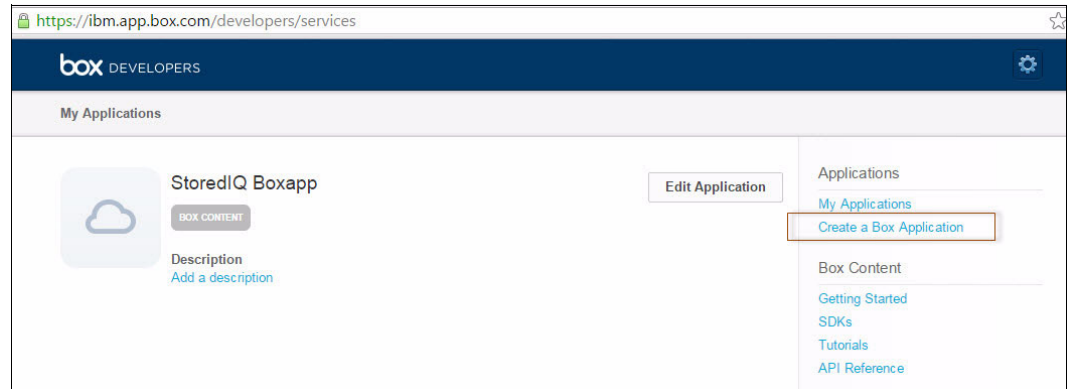


Figure 6-3 Creating a Box application (Courtesy of Box)

3. On the next page, you can view the **Client ID** and **Client Secret** values; these values are required in the application stack later. The `redirect_uri` field is a special field required for OAuth2 authentication. This must be a URL that points to a server where the necessary tokens are stored. These tokens are used for making calls to Box APIs.

Under the Content section, select **Read and write all files and folders**.

**Note:** The application must have the **As-User** capability enabled to allow data to be indexed with the correct user information. Customers can contact their Box support representative to enable this.

4. Under the Enterprise section, select all the options. See Figure 6-4 for a complete list of options required.

**Note:** The Application Settings for the Box Enterprise Account must allow unpublished applications to access the account. Keep the **Unpublished Applications** check box as unselected when configuring Application Settings for the account.

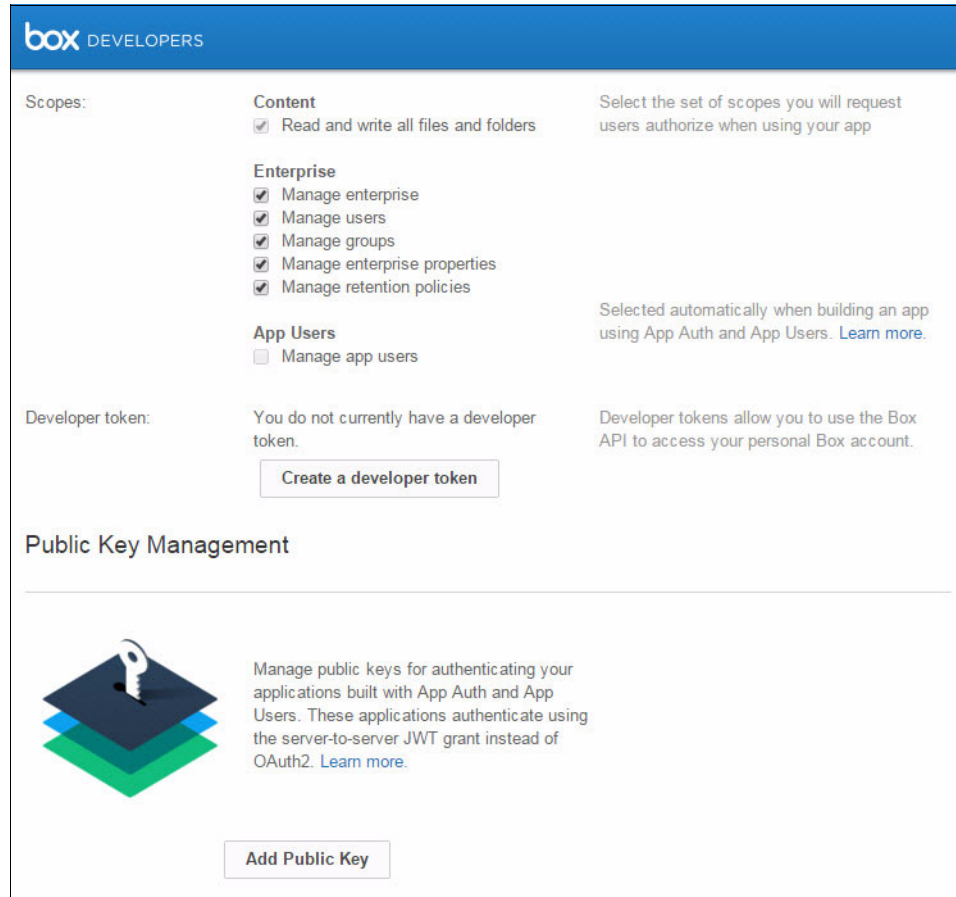


Figure 6-4 Options for using Box with StoredIQ' (Courtesy of Box)

5. Click **Save Application** to complete application creation.

### Enable HTTPS on IBM StoredIQ Application stack

Box requires the redirect Uniform Resource Identifier (URI) to be a HTTPS endpoint. The HTTPS endpoint is of the form as follows:

`https://<application-stack-hostname>/proxy/ename1/1.0/oauthtokengenerator`

For this to work, HTTPS support must be turned on. For detailed configuration steps, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSSHEC\\_7.6.0/deploy/tsk/tsk\\_config\\_apps\\_tack.dita?lang=en](http://www.ibm.com/support/knowledgecenter/SSSHEC_7.6.0/deploy/tsk/tsk_config_apps_tack.dita?lang=en)

## 6.3 Integration implementation

This section explains how a Box Enterprise Account can be managed using StoredIQ.

### 6.3.1 Adding and configuring Box as a data source

To manage a Box Enterprise Account, StoredIQ must be configured to connect to the account. This section explains the processes involved in adding a Box account as a data source in StoredIQ.

#### OAuth configuration on the Application stack

StoredIQ requires some information about the Box application to connect to Box APIs. Complete the following configuration steps to provide the connection information:

1. Open the `/etc/siq/oauth.conf` file in an editor.
2. Copy the `client_id`, `client_secret`, and `redirect_uri` from the Box application page to `oauth.conf` file as shown in Figure 6-5.

```
[box]
client_id=CLIENT_ID
client_secret=CLIENT_SECRET
redirect_uri=https://appstack-hostname/proxy/enamel/1.0/oauthtokengenerator/box
auth_url=https://app.box.com/api/oauth2/authorize
token_url=https://app.box.com/api/oauth2/token
```

Figure 6-5 OAuth configuration for StoredIQ

#### Adding a Box volume using StoredIQ administrator

Adding Box as a volume is done using the StoredIQ Administrator application. Complete the following steps to add a Box volume:

1. Open the StoredIQ Administrator application in a web browser.
2. In the Data Servers and Volumes tab, select a data server and click **Add Volume**.
3. From the Volume Type drop-down menu, select **Primary** and from the Source Type drop-down menu, select **Box** and click **Authenticate with Box** (Figure 6-6).

The screenshot shows the 'Add Volume' dialog box in the StoredIQ Administrator application. The dialog is divided into two columns. The left column contains the following fields and options:

- Volume Type:** A dropdown menu set to 'Primary'.
- Source Type:** A dropdown menu set to 'Box'.
- Server:** A text input field containing 'api.box.com'.
- Authenticate with Box:** A button highlighted with a red box.

The right column contains the following fields and options:

- Assign To Data Server:** A dropdown menu set to 'DS2'.
- Volume Name:** A text input field with the placeholder text 'Enter a name for the volume'.
- Include Users:** A text input field with the placeholder text 'Enter a valid regular expression'.
- Indexing Options:** Two checkboxes: 'Include metadata for contained objects' and 'Include content tagging and Full-Text Index', both of which are currently unchecked.

At the bottom of the dialog, there are two buttons: 'Cancel' on the left and 'Save' on the right.

Figure 6-6 Adding a Box volume in StoredIQ Administrator



4. In the Box authentication window that opens (Figure 6-7), you can provide access to your Box accounts. Enter your Box credentials and click **Authorize**.

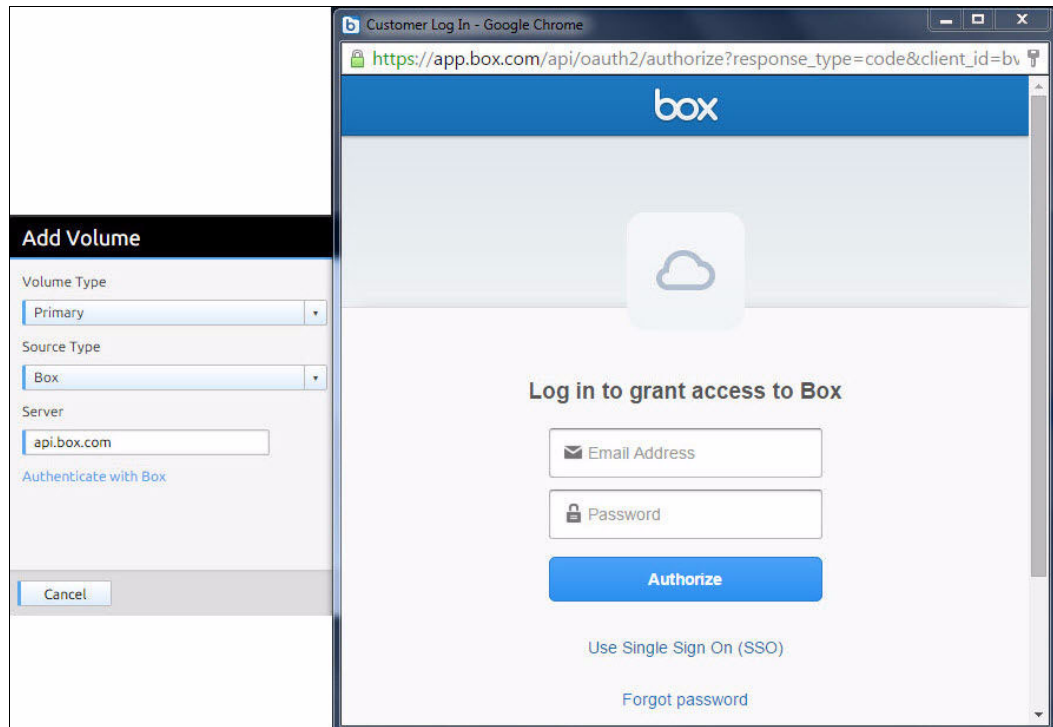


Figure 6-7 Box authentication

5. On successful authentication, click **Grant Access** to continue. Close the grant window and click **Save**. The Box volume is now added.

## Harvesting a Box volume

After a Box volume is added, it can be harvested to index the data and perform data discovery. Harvesting a Box volume can be done from StoredIQ Administrator as follows:

1. Select the Box volume to be harvested from the **All Volumes** tab or select a specific data server and click **View Volume(s)** and select a Box volume.
2. Click **Harvest**.
3. Provide a name for the harvest and select **Full**. Full harvests generally take longer and are usually required when a new volume is added. Subsequent harvests can be incremental which uses the existing index to determine additions, updates, and deletions.

Harvests can also be scheduled to run at a later time. Select **Immediate** to run the harvest immediately, or select **Schedule** to run it later.

Harvesting is generally a continuous process and must be run periodically to ensure that indexes are up-to-date with the actual data. Because harvests can take a long time to complete, especially with significantly large volumes, a good practice is to run them when the number of users accessing the volumes is lower.

Figure 6-8 shows the Harvest Volume interface.

The screenshot shows a dialog box titled "Harvest Volume". It has a white background and a black title bar. The dialog is organized into several sections:

- Harvest Name:** A text input field containing "Box Volume Harvest".
- Harvest Volume:** A text input field containing "Box Volume-pv29".
- Schedule Harvest:** Two radio buttons. The first is selected and labeled "Immediate - This harvest will be queued to run when you complete this dialog.". The second is labeled "Schedule".
- Schedule:** A date field "On YYYY-MM-DD" and a time field "at [ ] UTC+05:30".
- Harvest Options:** Two radio buttons. The first is labeled "Incremental". The second is selected and labeled "Full".

At the bottom of the dialog are two buttons: "Cancel" on the left and "Save" on the right.

Figure 6-8 Harvest Box Volume

## Mapping custom metadata

StoredIQ allows data to be copied from multiple repositories into Box. By default, system metadata is also copied along with the data. In some cases, you can require custom metadata, for example SharePoint properties, to also be copied along with the data. In such cases, StoredIQ allows a repository specific property to be mapped to a custom property in Box. This is done using a mapping file.

For the steps to create and use a mapping file, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSSHEC\\_7.6.0/admin/cpt/cpt\\_boxvolumesconfigurationnote.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSSHEC_7.6.0/admin/cpt/cpt_boxvolumesconfigurationnote.html?lang=en)

## Creating system infosets

An information set (infoset) is a subset of data under management. Infosets are created to collect and manage specific data. StoredIQ supports two types of infosets:

- ▶ System infoset
- ▶ User infoset

System infosets allow StoredIQ administrators to create a specific subset of data that provides a starting point for users to further refine and build infosets tailored to their purpose. StoredIQ provides two system infosets, by default:

- ▶ All Data Objects: an infoset containing all objects across all volumes under management
- ▶ All System-Level Objects: an infoset containing only the system-level objects across all volumes under management

System infosets can be created from one or more volumes allowing administrators to tailor them to volumes of interest for each business case. System infosets are updated whenever a volume is harvested.

Use the following steps to create a system infoSet:

1. In StoredIQ Administrator, select the **System InfoSets** tab and click **Create InfoSet**.
2. On the Create System InfoSet window (Figure 6-9), enter a name and description for the infoSet.

There are two levels of access for an infoSet:

- Public: accessible to all StoredIQ users
- Private: accessible only to selected StoredIQ users

3. Select the volumes to be included in the system infoSet. Multiple volumes can be selected for the same system infoSet. These volumes need not exist on the same data server, which means that a system infoSet can be created from any number and type of volume from any data server.
4. Click **Save**.

The screenshot shows the 'Create System InfoSet' window. It has a title bar 'Create System InfoSet'. The main area is divided into several sections:

- InfoSet Name:** A text input field with the placeholder 'Enter infoSet name'.
- Description of InfoSet:** A larger text area with the placeholder 'Enter infoSet description'.
- Access:** Two radio buttons, 'Public' (selected) and 'Private'.
- Volume List:** A large section containing:
  - Selected Volumes:** An empty list box with the placeholder 'Ctrl+Click for multiple selections'.
  - Available Volumes:** A list box containing several items: 'DS1: a1', 'DS1: a2', 'DS1: a3', 'DS1: a9', 'DS1: b10', 'DS1: b2', 'DS1: b4', and 'DS1: b8'. It also has the placeholder 'Ctrl+Click for multiple selections'.
  - Between the two lists are two buttons: '« Add' and 'Remove »'.

At the bottom of the window are two buttons: 'Cancel' on the left and 'Save' on the right.

Figure 6-9 Create system infoSet

## 6.3.2 Data assessment with IBM StoredIQ Data Workbench

StoredIQ Data Workbench allows users to refine data across all volumes into smaller subsets based on specific needs and business cases. After a user narrowed a subset of data, the user can perform several actions on it. Users can also generate reports to understand data topology, duplication, and compliance.

### Data filtering and user infosets

User infosets are a subset of data created from system infosets. User infosets are immutable and can be considered to be a snapshot of the data in fixed time. The easiest way to create a user infoaset is by using *filters*.

#### Creating filters

Filters can be applied to system and user infosets to further refine them. They can be created using the filter form interface which provides a limited set of properties and values to build the filter. StoredIQ Data Workbench also has a code view which provides a larger number of properties filter by. More details about using the code view to create filters is available in the “Filter condition reference and expression language” section of the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSSHEC\\_7.6.0/working/cpt/cpt\\_append1\\_filtersyntax.dita?cp=SSSHEC\\_7.6.0&lang=en](http://www.ibm.com/support/knowledgecenter/SSSHEC_7.6.0/working/cpt/cpt_append1_filtersyntax.dita?cp=SSSHEC_7.6.0&lang=en)

A filter can be applied only after it is saved. All saved filters are listed under the filter library.

Filters can be created from the Build Filter interface, available under the Create tab in the StoredIQ Data Workbench. Filters can be applied to metadata and textual content. The Full Text option is an example of content based filtering and can be used to search using keywords or complex regular expressions. Full-text searching requires a full-text harvest or a Step-up Full-text action to be run on an infoaset. StoredIQ provides regular expression macros for commonly searched terms such as credit card numbers, US Social Security numbers, and so on. For a list of macros available in StoredIQ, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSSHEC\\_7.6.0/working/cpt/cpt\\_append1\\_full-textmacros.dita?cp=SSSHEC\\_7.6.0&lang=en](http://www.ibm.com/support/knowledgecenter/SSSHEC_7.6.0/working/cpt/cpt_append1_full-textmacros.dita?cp=SSSHEC_7.6.0&lang=en)

The Auto-Classify option allows data to be filtered using a learning based classification model.

Figure 6-10 shows the filter creation interface in StoredIQ Data Workbench.

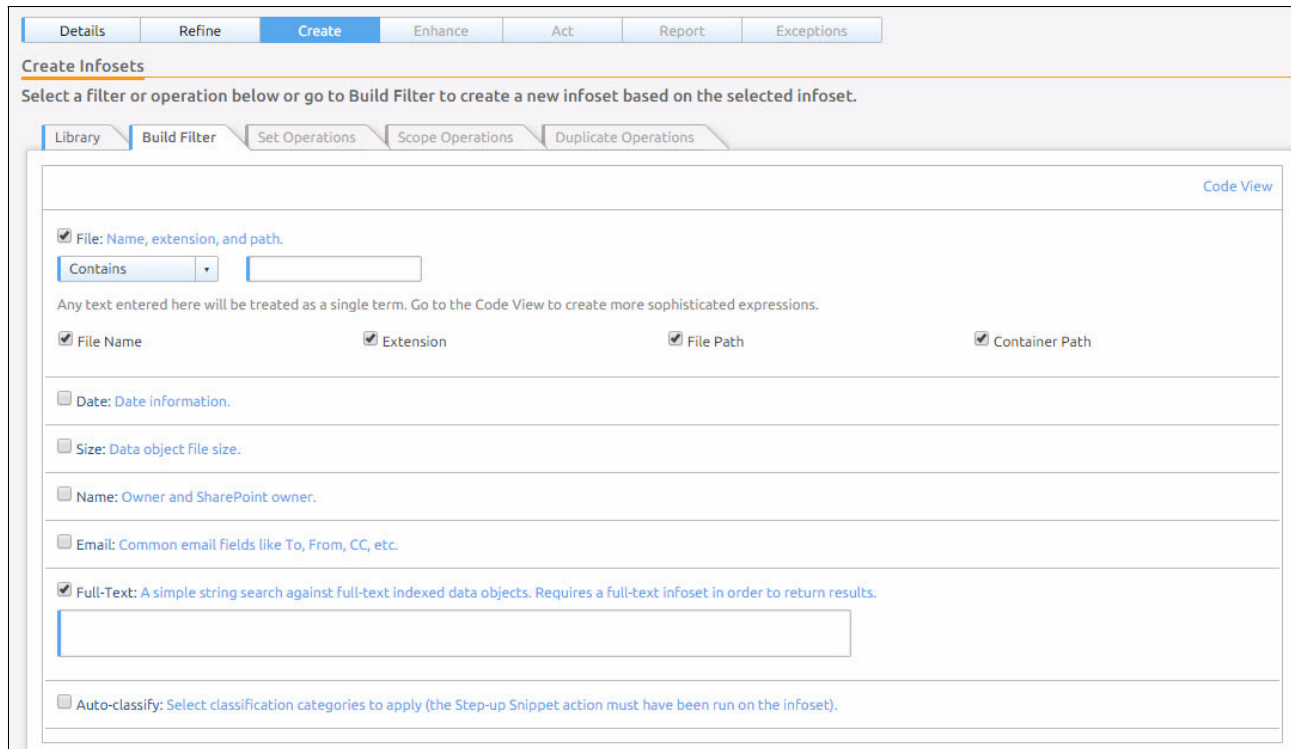


Figure 6-10 Creating Filters in StoredIQ Data Workbench

### Creating user infosets

User infosets can be created by using an existing filter from the filter library or by creating a new filter with the following steps:

1. From StoredIQ Data Workbench, click the infoset picker. A list of available infosets is displayed. The search bar can be used to find a specific infoset. Select an infoset and click **Select Infoset**.
2. Click the **Create** tab, select a filter from the filter library, and click **Create New Infoset**. The infoset creation interface opens (Figure 6-11 on page 102). Alternatively, you can click the **Build Filter** sub-tab to save a new filter and click **Create New Infoset**.
3. Provide a name and description for the infoset and click **Save** to create the infoset. When selected, the **Include Data Map for the Refine tab** option creates a data map of the infoset based on the distribution of data.

### Create New Infoset

New Infoset Name:

Description:

Include Data Map for the Refine tab  
 To add overlays used on the Data Map, click Select Overlays.

Send email when the process is complete.  
  
 Separate multiple email addresses with commas.

Figure 6-11 Create user infoset

## Visual refining

StoredIQ Data Workbench allows data distribution across volumes to be visualized using data maps. Data maps can be accessed from the Refine tab. Figure 6-12 shows a visual representation of all data under management using the All Data Objects infoset.

The screenshot shows the 'Data Map' interface in StoredIQ Data Workbench. The top navigation bar includes tabs for Details, Refine, Create, Enhance, Act, Report, and Exceptions. The left sidebar is divided into three sections: '1 Group By' with a dropdown for 'Data Source Type' and checkboxes for Box, CIFS, and FileNet; '2 View By' with a dropdown for 'Category View' and a list of categories like Collaboration, Computer programm..., Container files and a..., Email, Images, Miscellaneous, Multimedia, and Presentation; and '3 Select Data Overlay' with a dropdown for 'Overlays not available'. The main content area is titled 'Data Map' and shows 'Viewing 73 of 436 total objects'. It features a treemap visualization of 'All Data Objects' with a slider for object count. The treemap is divided into 'Box' and 'FileNet' categories. Under 'Box', there is a large blue area labeled 'Word processing'. Under 'FileNet', there are two smaller blue areas, one labeled 'Miscellaneous' and another labeled 'Word processing'.

Figure 6-12 Visual refining in StoredIQ Data Workbench

Data maps provide two options for visualizing data:

- ▶ **Group By:** Allows the data in an infoset to be grouped. Grouping can be performed with the following options:
  - **Data Source Type:** Displays the data source types that constitute that infoset. Users can select or deselect each data source type to reconfigure the data map.
  - **None:** Removes the data source types and lists all data in the infoset.
- ▶ **View By:** After data in an infoset is grouped, it can be viewed according to the following options:
  - **Category View**
  - **Size View**
  - **Created View**
  - **Last Modified View**
  - **Last Accessed View**

For more information about these options, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSSHEC\\_7.6.0/working/cpt/cpt\\_DataMap.dita?lang=en](http://www.ibm.com/support/knowledgecenter/SSSHEC_7.6.0/working/cpt/cpt_DataMap.dita?lang=en)

The Refine tab in StoredIQ Data Workbench provides another option: **Select Data Overlay**. This option allows you to visually compare the data distribution of the current infoset with another infoset or filter. To use this option, the infosets and filters used as overlays must be specified at the time of infoset creation by selecting **Select Overlays**.

Data maps are displayed according to the object size and the object count as indicated by the “Viewing x of x total objects” text. By default, data maps are shown according to object count, however, you can switch between the object count and object size by selecting **Object Count** and **Object Size** respectively. After a bucket is selected, infosets can be refined by unchecking the options listed within that bucket. After the infoset is refined sufficiently (the slider on the top left indicates this), a new infoset can be created.

### Report generation

StoredIQ provides different types of reports that can be generated based on the data in user infosets. Reports can be used to gain more insight into how data is distributed across an enterprise and be used as an input for other tools.

Reports supported by StoredIQ Data Workbench are available at the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSSHEC\\_7.6.0/working/cpt/cpt\\_ReportingonData.dita?lang=en](http://www.ibm.com/support/knowledgecenter/SSSHEC_7.6.0/working/cpt/cpt_ReportingonData.dita?lang=en)

### 6.3.3 Running actions on data

StoredIQ allows effective data management at scale and actions play an important role in this. As the name suggests, *actions* are executable operations that can be run on an infoset. Actions are available under the Act tab in the StoredIQ Data Workbench. The actions available in StoredIQ Data Workbench are created and managed in StoredIQ Administrator by an administrator.

## Creating actions using IBM StoredIQ Administrator

Actions are created using the Actions tab in StoredIQ Administrator. The following actions are available:

- ▶ Copy
- ▶ Copy to Retention
- ▶ Delete
- ▶ Modify Attribute
- ▶ Move, Discovery Export XML
- ▶ Discovery Export DAT
- ▶ Discovery Export DAT Light
- ▶ Step-up Full-Text
- ▶ Step-up Snippet
- ▶ Watson Curation

For more information about these actions, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSSHEC\\_7.6.0/admin/cpt/cpt\\_actionmanagement.dita](http://www.ibm.com/support/knowledgecenter/SSSHEC_7.6.0/admin/cpt/cpt_actionmanagement.dita)

### **Target sets**

Some actions, such as copying or moving data, require a *target set* to be created before the action can be created. The target set specifies the destination volume for an action on each data server. For example, if a user has two data servers, A and B, with volumes A1, A2, and B1, B2, B3 respectively, a target set can be created to specify A2 as the destination volume on data server A and volume B3 on data server B. For a given target set, each data server can specify at most one volume. A target set can be created using the Target Sets tab in StoredIQ Administrator.

Complete the following steps to create a target set:

1. In StoredIQ Administrator, select the **Target Sets** tab to view the Target Set Management interface.
2. Click **Create Set** to open the Add Target Set interface.
3. Enter a name and description for the target set.
4. Select the type of target set and data source type.
5. Click **Add Data Servers** to select one or more data servers. For each data server added, Data Workbench displays the list of volumes available based on the target set type and source type.
6. Select a volume for each data server added.
7. Click **Save** to complete target set creation.

For more details about creating an action, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSSHEC\\_7.6.0/admin/tsk/tsk\\_create\\_targetset.dita](http://www.ibm.com/support/knowledgecenter/SSSHEC_7.6.0/admin/tsk/tsk_create_targetset.dita)

### **Creating actions**

Use the following steps to create an action:

1. In StoredIQ Administrator, select the **Action** tab to view the Action Management interface.
2. Click **Create Action** to open the Add Action interface.
3. Enter a suitable name in the Action Name field and select a type from the Action Type drop-down menu.



4. If the action type requires a target set, select the appropriate target set from the table shown.
5. Click **Next** to specify parameters specific to the action selected.
6. Click **Save** to complete action creation.

For more details about creating an action, see the IBM Knowledge Center:

[http://www.ibm.com/support/knowledgecenter/SSSHEC\\_7.6.0/admin/tsk/tsk\\_create\\_action.dita](http://www.ibm.com/support/knowledgecenter/SSSHEC_7.6.0/admin/tsk/tsk_create_action.dita)

## 6.4 Administration and maintenance

Several common administrative tasks must be done periodically to ensure ideal operating conditions.

- ▶ Monitor data server health and status using StoredIQ Administrator.
  - a. Click the **Data Servers and Volumes** tab in StoredIQ Administrator.
  - b. Select a data server and click **View Details** to view the details of that data server.
  - c. Some details that must be monitored are Free RAM Memory, Free Swap Memory, Load Average, and Available Space.
- ▶ If required, restart services or reboot the data server by selecting **Restart Services** and **Reboot Data Server** respectively.
- ▶ Ensure Retention and Discovery Export volumes have sufficient space to support any copy, move, or export actions that might be run.
- ▶ Monitor completed harvests to identify long running harvests. You can view the running harvest job under the Harvests tab in StoredIQ Administrator.

## 6.5 Integration use case

This section has example use cases for using StoredIQ with Box. Enterprises generate large amounts of data that can run into several terabytes. This data is usually distributed across multiple sources such as email servers, content management systems, and repositories.

Storing this data on-premises requires physical storage; as an enterprise's data keeps growing, the need for storage increases also. A cloud service such as Box can provide on-demand storage when required. StoredIQ can help an enterprise manage their data to ensure that data can be efficiently distributed between on-premises and cloud storage.

### 6.5.1 Migration from multiple repositories to Box

StoredIQ allows data to be migrated from multiple repositories to a target (destination) repository. This is possible because of infosets, which can hold data from multiple repositories, and actions, which can be performed on these infosets.

This section discusses one such example where data from several on-premises repositories can be migrated to Box using StoredIQ.

## Create copy action for Box

After the info set is created, you can run a copy action on the info set's members. To run an action, it must first be created using StoredIQ Administrator. This is a one-time process to be performed by the administrator.

The following steps describe how an action can be created for copying objects to Box:

1. In StoredIQ Administrator click the **Target Sets** tab.
2. From the Target Set Management interface, click **Create Set**. In the Add Target Set interface, provide a name and description for the set. Ensure the Type of Target Set is **Primary** and Source Type is **Box**.
3. Click **Add Data Servers** to select the data server on which the Box volume is available. From the list of volumes available on that data server, select the Box volume that will act as the destination volume (Figure 6-13). Then click **Save** to create the target set.

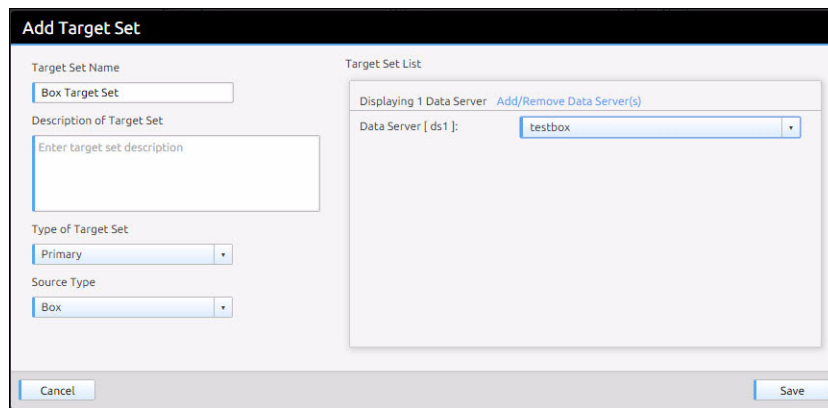
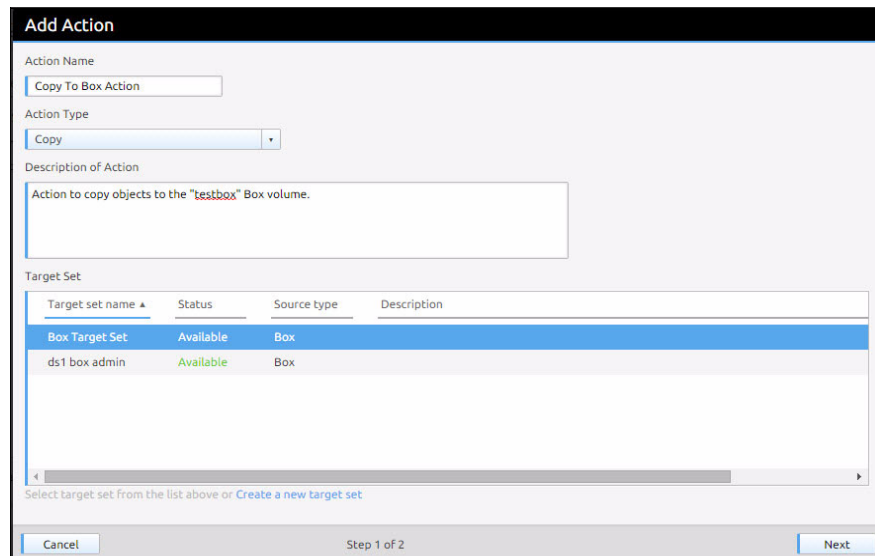


Figure 6-13 Creating a Box target set

4. Click the **Actions** tab and from the Action Management interface, click **Create Action**.
5. In the **Add Action** interface, provide a name and description for the action. Ensure that **Action Type** is set to **Copy**.
6. Select the target set created previously and click **Next** (Figure 6-14).



Target set name	Status	Source type	Description
Box Target Set	Available	Box	
ds1 box admin	Available	Box	

Figure 6-14 Creating a copy action for Box

7. Provide additional parameters for the copy action and click **Save** to create the action. The action is now available for use in StoredIQ Data Workbench.

## Create a delete action

The copy action copies objects in an infoset to a Box volume. The copy action alone is not sufficient to free space in the on-premises storage. A delete option following a copy action ensures that objects in the source infoset are removed from on-premises storage and available only in Box. To run the delete action, a delete action must be created using StoredIQ Administrator.

Complete the following steps to create a delete action:

1. Click the **Actions** tab and from the Action Management interface, click **Create Action**.
2. In the Add Action interface, provide a name and description for the action. Ensure that Action Type is set to **Delete**, and click **Next**.
3. Click **Save** to create the action and make it available in StoredIQ Data Workbench.

## Identify data and create infoset

To comply with regulations, restrictions exist for what data can be kept on the cloud. This varies depending on country and industrial sector. The first step in such migrations is identifying data that can be safely moved to Box without legal implications in the future.

For example, consider a financial institution. A customer's documents containing confidential information such as US Social Security numbers or credit card numbers cannot be stored in Box. Also, the institution prefers to preserve email on the institution's own servers. This gives a baseline filter with which to create an infoset.

Use the following steps to create a user infoset:

1. Open StoredIQ Data Workbench, from the infoset picker, select the **All Data Objects** infoset.
2. Click the **Refine** tab to view the data map for the selected infoset.
3. In the Group By section on the left, ensure that **Data Source Type** is selected in the drop-down menu. Clear the check box options for **Box** and **Exchange** to refresh the data map. Figure 6-15 shows how specific repositories can be selected using data maps.

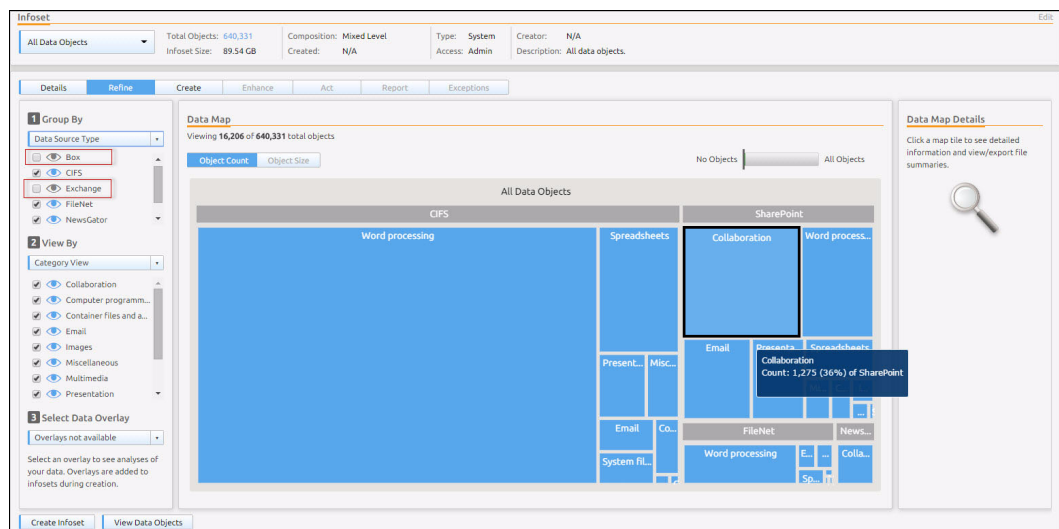


Figure 6-15 Select specific repositories using data maps

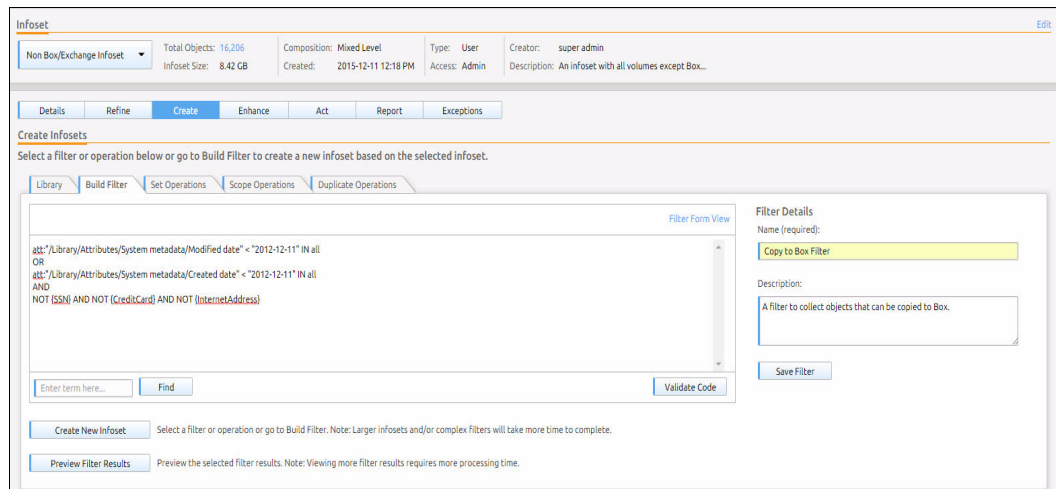
4. Click **Create InfoSet** to open the **Create New InfoSet** interface. Provide an appropriate name for the infoSet and click **Save** to create a new user infoSet.
5. After the user infoSet is created, select the same from the infoSet picker.
6. Click the **Create** tab and then the **Build Filter** sub-tab. Click the **Filter Form View** link.
7. The filter shown in Example 6-1 can be used to identify objects that are older than three years and do not contain Social Security numbers, credit card numbers, or IP addresses. Those fields are generally considered confidential, and regulations mandate that such data must be stored on-premises.

*Example 6-1 Sample filter for identifying objects to be copied to Box*

```
att: "/Library/Attributes/System metadata/Modified date" < "2012-12-11" IN all
OR
att: "/Library/Attributes/System metadata/Created date" < "2012-12-11" IN all
AND
NOT {SSN} AND NOT {CreditCard} AND NOT {InternetAddress}
```

**Note:** This is an example of simple filter. Complex filters can also be created to suit the situation.

8. Provide a name and description for the filter and click **Create New InfoSet** (Figure 6-16).



*Figure 6-16 Building a filter for objects that can be copied to Box*

9. Click **Create New InfoSet** to validate the filter; if successful, the **Create New InfoSet** window opens. Provide a name for the infoSet and click **Save**. This creates the user infoSet that you want.

## Running actions

After the appropriate user infosets and actions are ready, the objects can be migrated to Box with the following steps:

1. In StoredIQ Data Workbench, select the infoset created previously.
2. Click the **Act** tab and select the **Copy to Box Action**.
3. Click **Run Action** and select **Immediate** from the Action Scheduling interface.
4. Click **Run** to initiate the copy action (Figure 6-17).

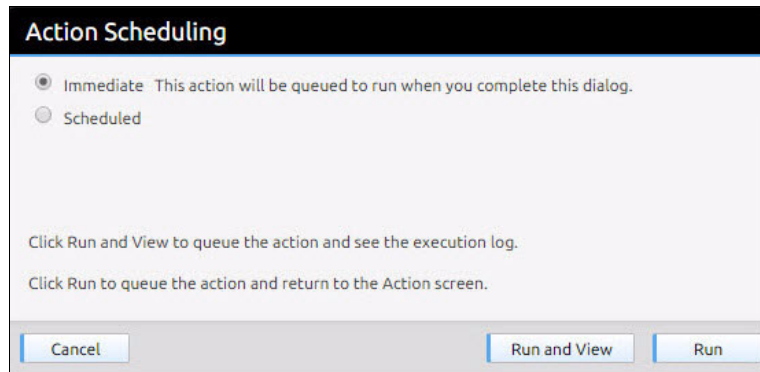


Figure 6-17 Run Copy to Box action

5. The status of the action execution is available in the Execution Log sub-tab under the Details tab. When the status changes to **Completed**, the execution is complete. Figure 6-18 shows the execution status.

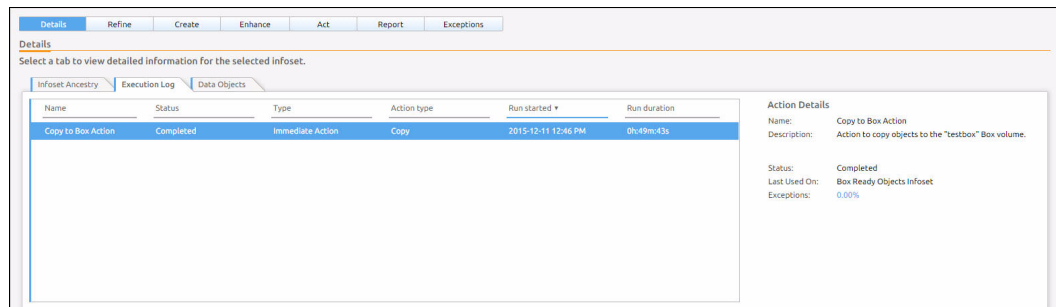


Figure 6-18 Copy to Box Action execution status

6. After the execution completes, click the link next to the Exceptions field. This is an indication of any exceptions that might have occurred during the copy operation. Exceptions can arise as a result of missing data objects, unavailable data source, or the gateway or data server becoming unavailable during the copy. Exceptions can be fixed by creating an infoset from the exception objects and running the same action on the infoset.
7. After the copy action is complete and any exceptions are corrected, the objects in the source infoset can be deleted. To do this, run the delete action on the infoset.

## 6.5.2 Managing data on Box

One of the biggest advantages of a cloud storage like Box is the ease of access it provides to users, both within and outside an enterprise. For example, a financial institution can ask its customers to upload their documents to a shared, publicly accessible Box folder instead of relying email. Similarly, a Box folder can also be used by employees to share documents within the enterprise. As a result, it cannot be as tightly managed as on-premises solutions.

After a Box volume is added to StoredIQ, StoredIQ can index the contents of the volume and identify how the Box volume is utilized. This can be done in the following ways:

- ▶ After a Box volume is added using StoredIQ Administrator, a system infoset can be created for this volume. The data maps in StoredIQ Data Workbench can be used to identify how the data is distributed within this infoset. For example, a large number of media files (in terms of size and count) are present in the infoset, it can be an indication that the Box volume is being used to store personal data of employees.
- ▶ By using StoredIQ's full-text filters, you can identify confidential data that is stored in Box and that might be in violation of state or federal regulations. The filter in Example 6-2 can be used to identify some known confidential objects.

*Example 6-2 Filter for identifying confidential information*

---

```
{SSN} OR {CreditCard} OR {USPhone}
```

---

- ▶ Confidential objects identified in a Box volume can be exported using “CSV Infoset Data Object Export” in StoredIQ Data Workbench for further processing.
- ▶ In addition to identifying confidential data on Box, identifying stale data that is not of value to the enterprise but continues to occupy storage is possible. StoredIQ's extensive filters can help identify such data that is no longer of any value and a candidate for defensible disposal.
- ▶ StoredIQ accesses a Box volume using an administrator account, therefore objects belonging to all user accounts on Box are visible. This is helpful in identifying duplicate objects by using the “Duplication Summary Report” in StoredIQ Data Workbench.
- ▶ “Data Assessment Report” and “Data Topology Report” in StoredIQ Data Workbench provide extensive details about how data is distributed across an organization. The “Compliance Report” in StoredIQ Data Workbench can be used to analyze compliance with government policies.



## Scenario: Putting it all together

This chapter demonstrates an end-to-end scenario of a customer complaints resolution application. This solution-based scenario is built on the integration of the following components:

- ▶ IBM Content Navigator for a unified user experience with both on-premises and Box content
- ▶ IBM Case Manager for support of goal-driven, unpredictable processes that are highly dependent on knowledge workers
- ▶ IBM Datacap for high speed document capture and data extraction from captured documents
- ▶ IBM StoredIQ for identification and analysis of potentially risky content in documents that are used and processed during case resolution and are shared with external entities
- ▶ Box for secure and efficient document sharing and collaboration with external entities during case resolution

## 7.1 Business background of the Complaints resolution solution

Fictional Financial Company A is a financial institution that provides banking and insurance services to both retail and corporate clients. For banking, the services include checking and savings accounts, residential and consumer loans, and financial planning. For insurance services, life, pension, and property insurance are provided. Financial Company A also provides additional financial services, such as financial portfolio management, for its clients.

All these services are closely related to and dependent on document creation, securely storing documents, and processing the documents with careful controls on access to the information.

Financial Company A has used the IBM FileNet for customer-related document processing including contract, invoice, order payment, and account statements. The company also uses IBM Case Foundation (formerly IBM FileNet Business Process Manager) for core business process support such as mortgage and loan approval, credit card issuing, and order processing.

Financial Company A implemented IBM Content Navigator as a unified internal user experience for working with documents. The customized Content Navigator replaces old document-related business applications that are based on FileNet Workplace. The company also implemented a unified customer folder exposed through Content Navigator and stored in FileNet. Every authorized Financial Company A employee can quickly find and see all client-related documents in the unified structure that significantly simplify internal communication about clients during mortgage approval processes, for instance. The unified customer folder also helps call center workers to satisfy customer requests, for example explaining figures in account statements because call center workers are also able to quickly find the related customer's documents.

The company implemented IBM Datacap for data capture and extraction for payment orders, client signature templates, and for incoming invoices recently. Datacap enables Financial Company A significantly in increasing the speed of their business processes and increased client satisfaction with services.

Financial Company A also uses the IBM Cognos platform for reporting its key performance indicators such as revenue, profit, customer satisfaction, and others. Cognos, together with IBM Watson™ Content Analytics, enables Financial Company A to perform advanced analytics of these indicators based on structured and unstructured data and obtain causes of potential deviations from history or from planned figures of key performance indicators.

### 7.1.1 Introduction of the business issue

Financial Company A monitors its key performance indicators carefully. When observed a 5% loss of their most profitable segment clients, the company conducted a deep analysis with Cognos and Watson Content Analytics. The analysis result revealed that one of the major causes of this business loss was due to unsatisfied resolution of their complaints.

The company immediately evaluated its complaints resolution process and found many problems to be unpredictable, inflexible, slow, and difficult for external parties to share documents and collaborate. The company also found a need to control and audit the whole complaints resolution process including external party involvement for a correct, fast, and client-oriented complaints resolution.

Based on the analysis, Financial Company A decided to focus on the complaints resolution process to improve client retention and its reputation.



The company defined the following key requirements to improve its complaints resolution process:

- ▶ Complaints are unpredictable and any solution must provide flexible process support for this unpredictability.
- ▶ Task execution for every instance of complaints resolution must be dependent on knowledge workers
- ▶ External entities such as clients or suppliers must be able to actively collaborate on complaints resolution if it is needed
- ▶ Internal complaints resolution and external document sharing and collaboration must be available from mobile devices
- ▶ Solution must be able to capture and process documents in any format
- ▶ All activities during complaints resolution must be logged for audit
- ▶ Solution must provide identification and protection of personal or business sensitive information and documents on the environment that is used for sharing and collaboration with external entities

## 7.1.2 Solution

Financial Company A evaluated several potential approaches and decided to build a *Complaints* resolution solution on the IBM Enterprise Content Management platform including IBM Case Manager, IBM Datacap and IBM StoredIQ integrated with Box for collaboration and sharing with external entities.

An important criteria considered for the new Complaints resolution solution is to capitalize the existing investment in information technologies. The existing FileNet, Datacap, and Content Navigator are used for document management, document and data capturing, and user interface. Case Manager and IBM StoredIQ are added for business process management and scalable analysis and governance of unstructured data.

All these components are well-integrated to support the complex, unpredictable complaint processes and the external sharing and collaboration needs.

## 7.2 Architecture of integration used for solution

The architecture of the Complaints resolution solution is based on business requirements identified by Financial Company A during evaluation of current complaints resolution process.

Figure 7-1 depicts the projection of business requirements to the solution architecture.

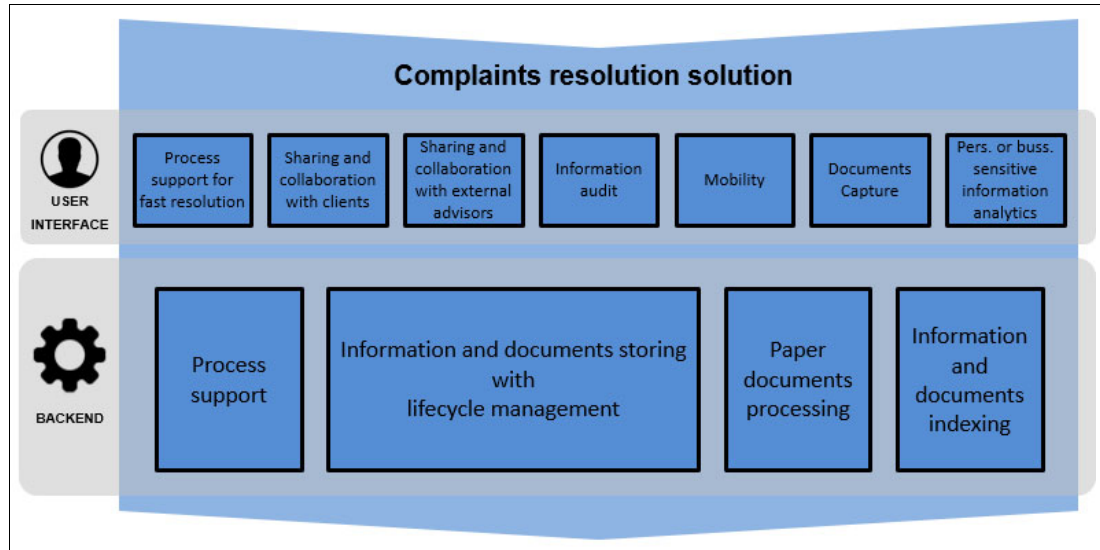


Figure 7-1 Business requirements mapping to solution architecture

The Complaints resolution solution supports fast but flexibility processing of complaints with sharing content with external entities including clients and external advisors of Financial Company A. Stored content is secured and auditable. Any internal or external participants are able to access the solution from workstation or mobile devices and are able to capture documents in any format. Strong analytics for personal and business-sensitive information are provided on information and documents harvested from multiple sources.

## 7.2.1 Functional architecture

The Complaints resolution solution includes integrated functional modules that cover business requirements as shown in Figure 7-2.

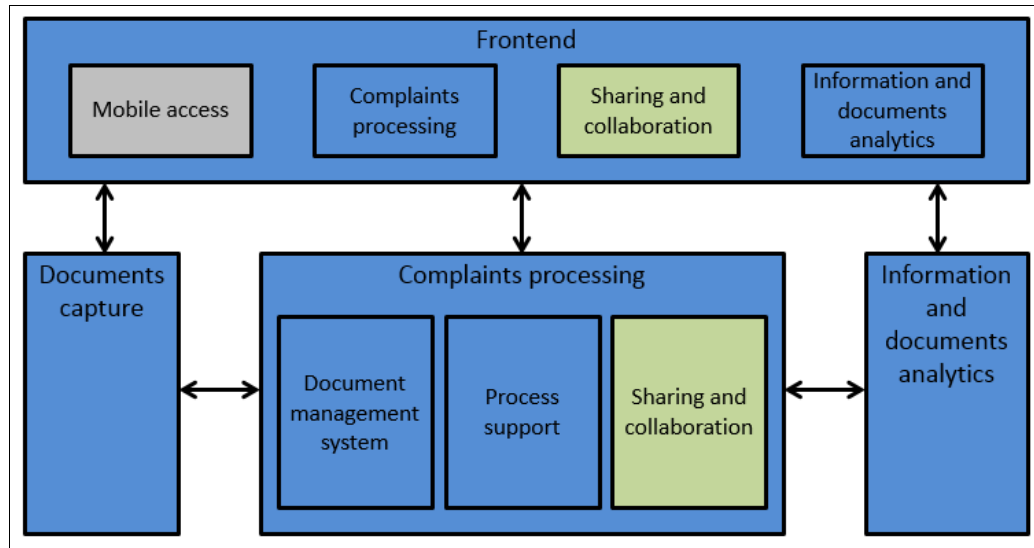


Figure 7-2 Functional architecture

The *Complaints processing* module includes a Document management system for storing, securing, and lifecycle managing of all documents and other complaint information. Fast and flexible support of unpredictable instances of the complaint process is provided by the *Process support* module. The *Complaints processing* module also covers functionalities for document sharing and collaboration with external entities.

The *Documents capture* module provides scan and digitalization of paper-based documents and business information extraction of digitalized documents and other electronic documents, which are inserted by internal or external users to the complaints resolution process.

*Information and documents analytics* continuously indexes documents and other unstructured content from various data sources including document management system or share and collaboration system. Advanced analyses are performed based on the index, and analytical outputs are qualified foundations for actions when moving documents with sensitive information to more secured environment for long-term preservation archiving.

Internal or external users of the Complaints resolution solution can use any functionality from their workstation or mobile devices because mobility support is a feature of all modules.

## 7.2.2 Software architecture

Financial Company A decided to rely on trusted IBM ECM platforms. The Complaints processing module is implemented by the integration of IBM Case Manager for flexible and fast process support and for a robust secure document management system. Box is used for external sharing and collaboration. The Documents capture module is provided by IBM Datacap. IBM StoredIQ is used for advanced analytics within the Information and documents analytics module. IBM Content Navigator is the main presentation layer for internal users.

Figure 7-3 shows an overview of the integration among IBM Case Manager, IBM Datacap, IBM StoredIQ, IBM Content Navigator, and Box.

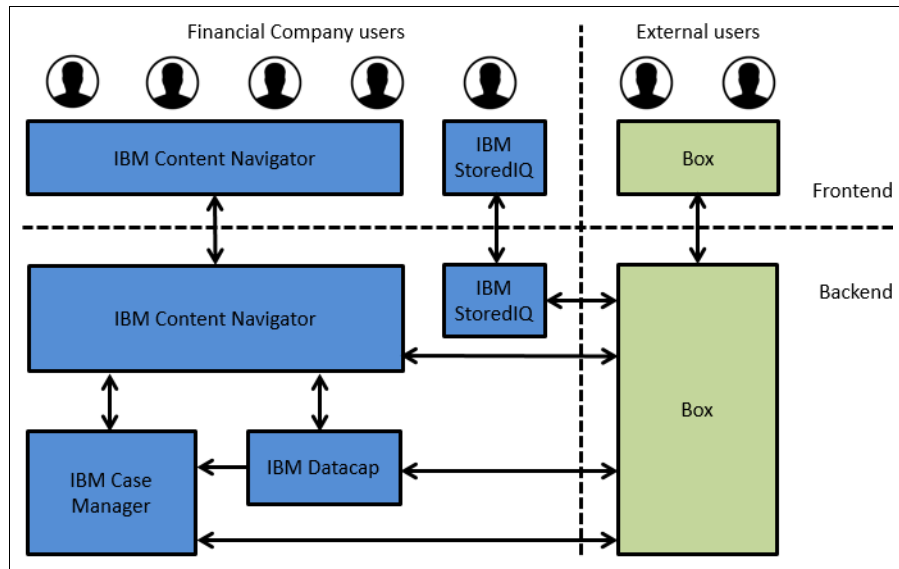


Figure 7-3 Software architecture

The main presentation layer for users of the Complaints resolution solution is IBM Content Navigator. Content Navigator is used by Case Manager and by Datacap through plug-ins configured in Content Navigator Administration.

### IBM Case Manager and Box integration

The Case Manager is integrated with Box for the following uses:

- ▶ Sharing and copying client documents between an on-premises repository and Box for external users by using Box integration plug-ins, which are part of IBM Content Navigator 2.0.3 Fix Pack 6 and IBM Case Manager 5.2.1 Fix Pack 3.

The integration plug-ins must be properly configured in IBM Content Navigator Administration. For details about installation and configuration, see 4.3.2, “Install and configure the IBM Case Manager integration with Box” on page 56.

- ▶ Sharing Case Manager documents with clients and other external users for follow-up collaboration on these documents can be achieved by using the sample Box Operations. See 4.4, “Sample code using Box Java API” on page 58.

The sample Box Operations use the Component Integrator, which is an extensible integration framework provided by the underlying Case Foundation platform. Another such extension that is used in the examples in this paper is the Content Extended Operations (CE Operations), which calls Content Platform Engine APIs.

Figure 7-4 shows the integration of IBM Case Manager and IBM Content Navigator with Box.

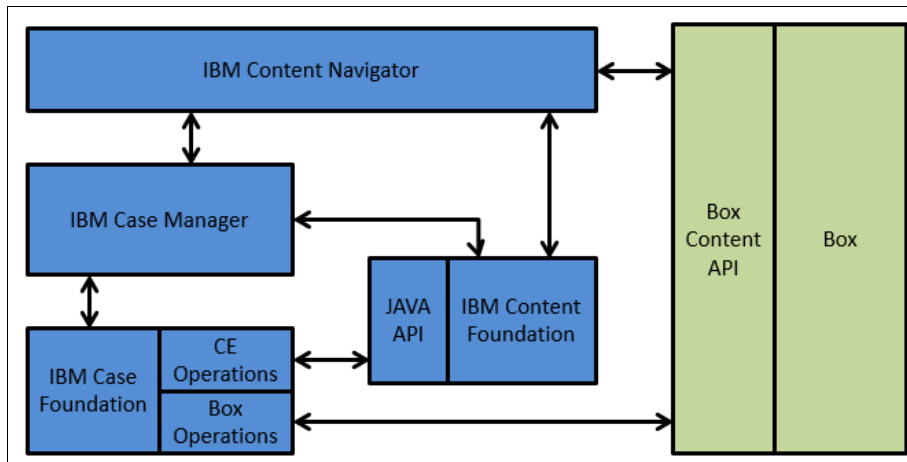


Figure 7-4 IBM Case Manager and Box integration

### IBM Datacap and Box integration

Datacap is integrated with Box for document ingestion. The documents are added to Box by external users. Datacap can release the processed documents to specific folders in Box if required. This integration is provided by special actions available in IBM Datacap 9.0.0 Fix Pack 3. For more information about installation and configuration of Datacap 9 Fix Pack 3 for integration IBM Datacap with Box, see 5.3, “Integration implementation” on page 76.

Datacap is also integrated with Case Manager for releasing processed documents to a related case. IBM Content Foundation client must be installed on the Datacap server. Datacap releases processed documents to IBM Case Foundation as a specific document class using Datacap actions.

Datacap releases processed documents to the Case repository as specific document classes using Datacap actions. Datacap actions are .Net or VBScript code that call Case Foundation .NET API methods with proper parameters. When using predefined subscriptions on specific document classes or folders, a specific “case matching” workflow is triggered when any new document is added. This workflow finds related case-based documents in the document properties and files those documents to the case folder. Note that IBM Content Foundation client must be installed on the Datacap server. For more details about subscriptions, see *Advanced Case Management with IBM Case Manager*, SG24-7929.

Figure 7-5 depicts the integration of Datacap, Case Manager, and Box.

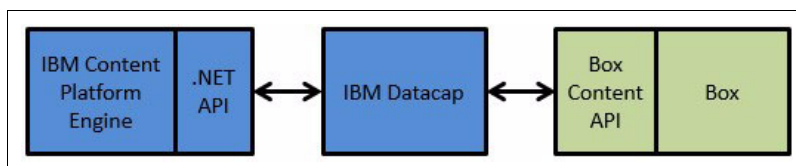


Figure 7-5 IBM Datacap and Box integration

### IBM StoredIQ and Box integration

IBM StoredIQ is integrated with Box for indexing, analyzing, and managing content stored in Box. Due to its ability to communicate with a vast number of on-premises repositories, StoredIQ can provide powerful tool sets to migrate content into Box at scale, thereby, helping customers move to a cloud storage solution. The Box connector which is a combination of Box Content APIs and modules on StoredIQ data servers, enables reading and writing data

from and to Box. This connector is required for communication with Box and is available in IBM StoredIQ 7.6.0 Fix Pack 5. For the installation and configuration details, see 6.2.3, “Environment setup for Box” on page 93 and 6.3, “Integration implementation” on page 96.

The Box Python SDK, which is a wrapper over the Box Content APIs, provides programmatic access to content on Box as shown on Figure 7-6. The process of indexing a data source is known as “harvesting”. After a Box account is harvested, StoredIQ provides a number of operations that can be performed on the Box content such as, searching (includes full-text searching), visual analysis using reports and data maps, and exporting the indexed data in formats such as Comma Separated Values (CSV).

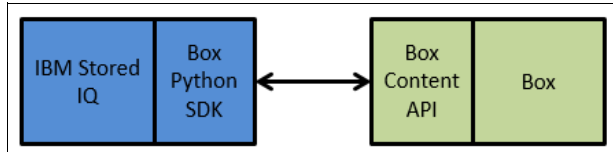


Figure 7-6 IBM StoredIQ and Box integration

## 7.3 Implementation patterns

The Complaints resolution solution uses “common” implementation patterns for IBM Case Manager and IBM Datacap integration with Box, related to effective case resolution for following uses:

- ▶ Sharing documents with external entities
- ▶ Sharing documents with external entities for collaboration
- ▶ Adding documents in Box to a case as external documents
- ▶ Processing external documents added by all external entities to Box for a case
- ▶ Processing external documents added by specific external entity to Box for a case

### 7.3.1 Share documents with external entities

For sharing case documents with external entities, you can use the ready-for-use integration features of Case Manager with Box that is based on the share link feature of Box. For more information, see 4.1.2, “Share case documents using Box” on page 52.

The following list describes the implementation and usage of this pattern:

- ▶ Prerequisites:
  - IBM Content Navigator 2.0.3 Fix Pack 6
  - IBM Case Manager 5.2.1 Fix Pack 3
  - Configured plug-ins in IBM Content Navigator
- ▶ Usage:
  - IBM Case Manager
    - case worker uses the Share function from a document context menu in the Documents tab of the Case Information Widget to open a page with sharing options.
    - case worker specifies the external party address and sets up other sharing options.
    - Case Manager automatically copies the document to the configured system folder in Box and sets up share link in Box based on the specified information by the case worker.

- Box:
  - Sends invitations for accessing the document automatically to the external entity through share link.
  - If the external entity does not have a Box account, Box provides an easy way to create a new account.

**Note:** The external entity can only preview the shared document and download the document if download option is enabled by the case worker. No advanced collaboration is available.

### 7.3.2 Share documents with external entities for collaboration

For collaborating with external entities using case documents such as editing shared documents or adding new documents, use custom code such as Box Operations (described in this chapter) to integrate Case Manager with Box and set up collaboration. For more information about Box Operations, also see 4.5, “Example integration use cases” on page 63.

The following list describes implementation and usage of this pattern:

► Prerequisites:

Box Operations is installed and configured.

► Usage:

– Case Manager:

- In the Documents tab of Case Information Widget, the case worker saves documents to a case folder.
- The case worker starts the prepared discretionary task. See the *Copy and Invite* task example in 4.5.2, “Employee onboarding process” on page 65.
- The case worker specifies the email address of the external entity and the name of the folder that will be created in Box, finds the saved documents that will be shared with the external entity through Box, and launches the task.
- Case Manager creates the folder automatically in Box by using Box Operations.
- Case Manager automatically adds the selected documents to the newly created folder in Box using Box Operations.
- Case Manager sets collaboration automatically with external entity for the newly created folder in Box using Box Operations.

– Box:

- Sends invitations for collaboration automatically to external entity.
- If the external entity does not have a Box account, Box will provide an easy way to create a new account.

**Notes:**

- Box Operations is a set of sample custom code.
- Because the case documents have been copied from the internal repository to the collaboration folder in Box, any further editing should be done in the Box folder, which is also visible in IBM Case Manager, and not in the original documents.

### 7.3.3 Add Box documents to a case as external documents

For adding documents from Box to Case Manager, use the ready-for-use functionalities of Case Manager that allows a case worker to add external documents to a case folder. This pattern is similar to adding a document to a case from a Content Manager repository.

The following list describes the implementation and usage of this pattern:

- ▶ Prerequisites:
  - IBM Content Navigator 2.0.3 Fix Pack 6
  - IBM Case Manager 5.2.1 Fix Pack 3
  - Configured plug-ins in IBM Content Navigator
- ▶ Usage:
  - Box:
    - A document is added or changed in a specific Box folder by the external user.
    - A case worker is notified automatically by Box that a document was added or changed.
  - Case Manager:
    - The case worker opens a related case in Case Manager Client and browses to the related folder in the Documents tab of Case Information Widget.
    - To add document, the case worker clicks **Add document** in the Documents tab of the Case Information Widget, and then clicks **Add Document** from the repository.
    - The case worker creates a search for documents by using Box repository with the **Search in** parameter.
    - The case worker chooses documents from the search result to add them to the case folder as external documents.

**Note:** The external document added to the case folder is available for viewing, searching, and updating as supported through the Content Navigator framework. The Case Manager is not aware of it if the document is deleted from the external system.

### 7.3.4 Process external documents added by general external entities to Box for a case

If a document added to a Box folder by external entities requires further processing, you can use Box standard notification functionalities to send notification to the case worker to manually copy the document from Box to Case Manager.

The following list describes the implementation and usage of this pattern:

- ▶ Usage:
  - Box:
    - An external user adds or changes a document in a specific Box folder.
    - The case worker is automatically notified by Box email that a document was added or changed.
  - Case Manager:
    - The case worker clicks the link from the Box notification email to open the document as a preview.
    - The case worker downloads the document to its local file system.



- The case worker opens the case in IBM Case Manager client and browses to the related folder in the Documents tab of Case Information Widget.
- To add the document to Case Manger, the case worker clicks **Add document** in the Documents tab of Case Information Widget, and then clicks **Add document** from the local system.
- The case worker browses to the document stored in the local file system, chooses a specific document class, specifies properties, and adds the document to the case.
- Alternatively, the case worker can drag the document to the case folder.

**Notes:**

- ▶ Adding a document from Box to IBM Case Manager for processing is a manual task.
- ▶ No metadata is automatically extracted from documents added to Box by external users.

### 7.3.5 Process external documents added by a specific external entity to Box for a case

Automating the process of adding documents Box for external users (for example external lawyer) who participate in case resolution on regular basis is suggested. Use a combination of ready-for-use integration features of IBM Datacap with Box and IBM Case Manager for document processing.

The following list describes the implementation and usage of this pattern:

- ▶ Prerequisite:
  - IBM Datacap 9.0.0 Fix Pack 3
- ▶ Usage:
  - Box:
    - The external user adds a document to a Box folder. This folder is specific for Datacap to ingest and process the document.
  - Datacap:
    - Datacap ingests the document from a specific folder. The document is immediately removed from this specific folder after ingestion.
    - Datacap processes and extracts identification information from the document.
    - Datacap releases the document to IBM Case Manager through the standard FileNet release script.
    - (Optional) Datacap releases the document back to a case-related folder in Box based on the extracted information.

**Notes:**

- ▶ Datacap uses a specific, unique shared folder in Box for document ingestion.
- ▶ Users might notice that the documents added to the Box shared folder for Datacap are not visible for a short time (generally only several seconds) after the document is added. The reason is because Datacap deletes the document immediately after the document is ingested. Datacap places the documents back to the Datacap specific folder in Box after processing the document.

## 7.4 Implementation of the Complaints resolution solution

This section describes the implementation details of the Complaints resolution of Financial Company A that. The solution is implemented with the patterns described in 7.3, “Implementation patterns” on page 118.

### 7.4.1 Box

The Box administrator at Financial Company A sets up a Box solution by using these steps:

1. Logs in to Box with an administration account.
2. Creates accounts for internal users (Figure 7-7).

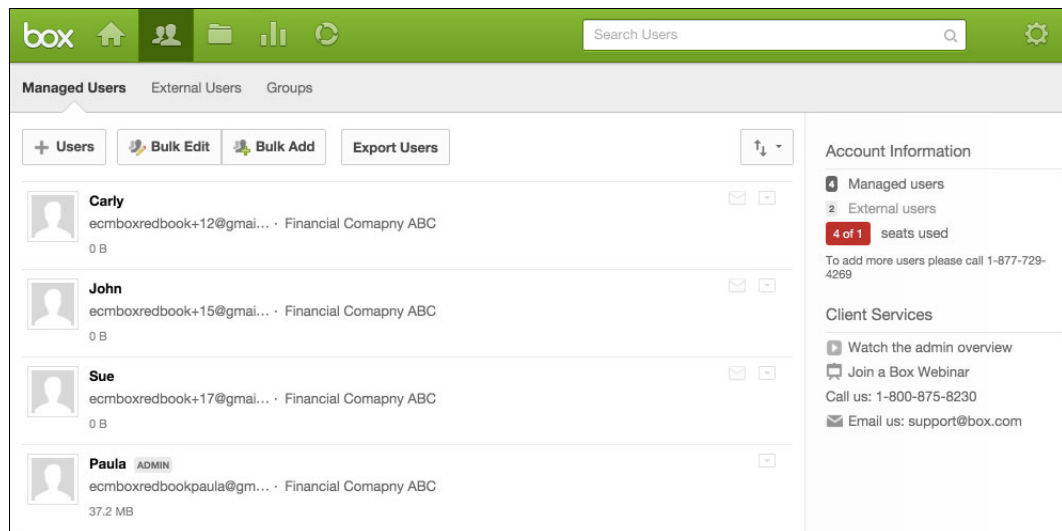


Figure 7-7 Account creation in Box (Courtesy of Box)

3. Creates a Complaints folder and an Inputs for processing subfolder, and sets the collaboration role to Editor for internal users (Figure 7-8).

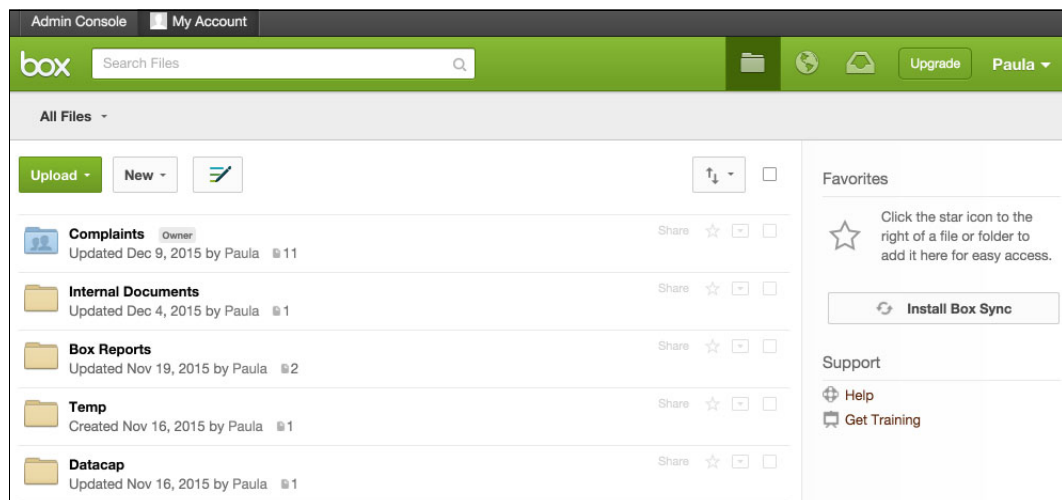


Figure 7-8 Folder creation in Box (Courtesy of Box)

- Creates a Box application, Rdbook\_Scenario\_ICN, for IBM Content Navigator, as shown in Figure 7-9 and Figure 7-10.

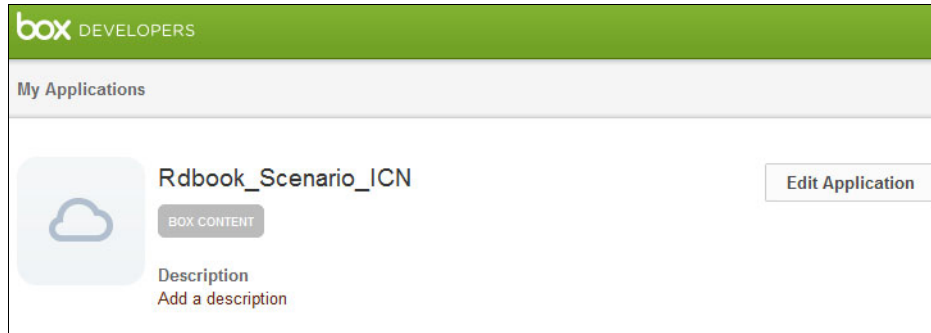


Figure 7-9 Box application created (Courtesy of Box)

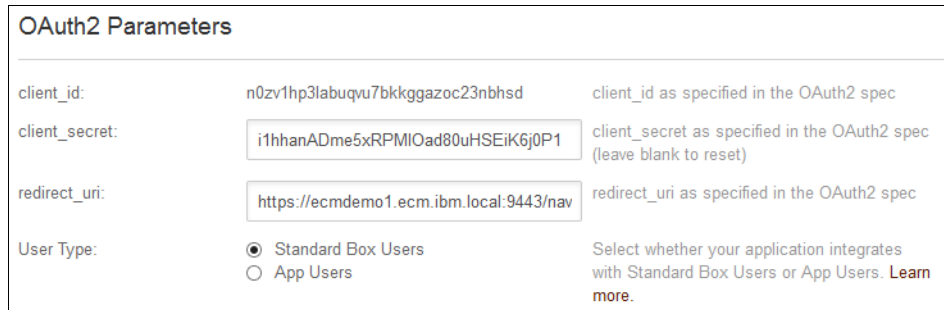


Figure 7-10 Authentication parameters in Box Application (Courtesy of Box)

- Creates a Box application for Box Operations by using in IBM Case Manager.
- Creates a Box application for IBM Datacap.
- Creates a Box application for IBM StoredIQ.

## 7.4.2 IBM Content Navigator

The Complaints resolution solution in Financial Company A uses IBM Content Navigator as the main user interface. IBM Case Manager plug-ins and IBM Datacap plug-ins were installed and configured during installation of Case Manager and Datacap.

The new Complaints resolution desktop was created in Content Navigator by the administrator. This desktop contains Home, Browse, Solutions, and Search features for case workers.

IBM Content Navigator was integrated with Box within the frame of the Complaints resolution solution in accordance with general integration guidelines, which are described in Chapter 3, “Integration: IBM Content Navigator and Box” on page 25.

The administrator installed Fix Pack 6 for IBM Content Navigator 2.0.3 and configures these new features in Content Navigator Administration feature by using the following steps:

1. Adds Box as a new repository (Figure 7-11).

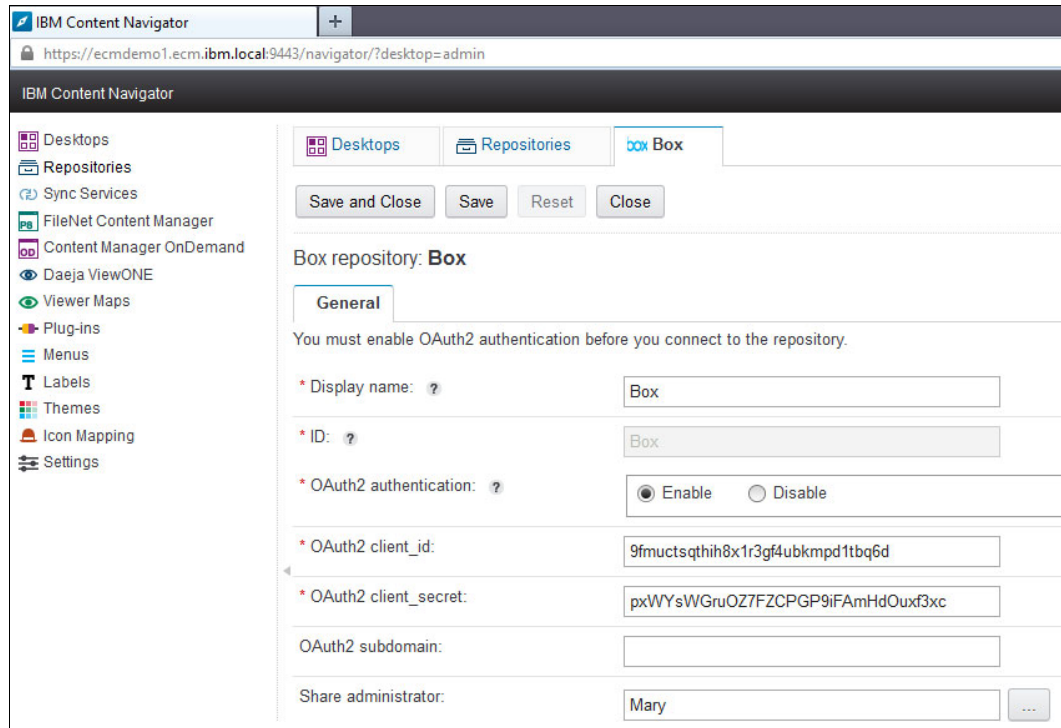


Figure 7-11 Box repository configuration in Content Navigator Administration

2. Adds the defined Box repository to the newly created IBM Content Navigator desktop (Figure 7-12).

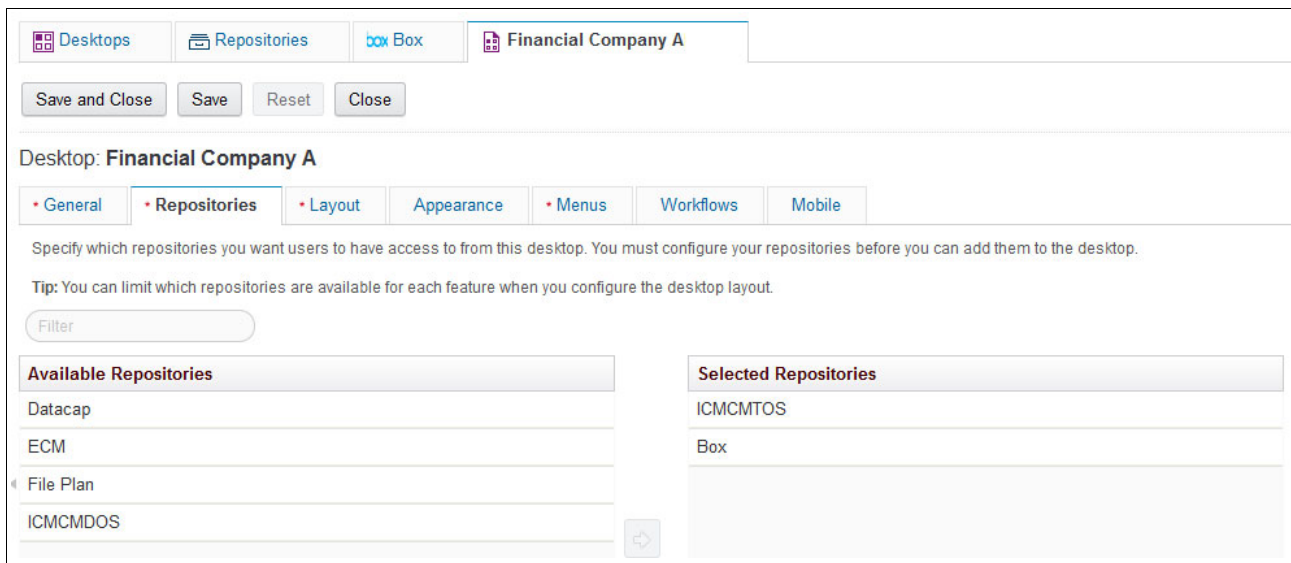


Figure 7-12 Desktop configuration in Content Navigator Administration (part 1 of 2)

3. Enables **Box share services** within the Content Navigator desktop (Figure 7-13).

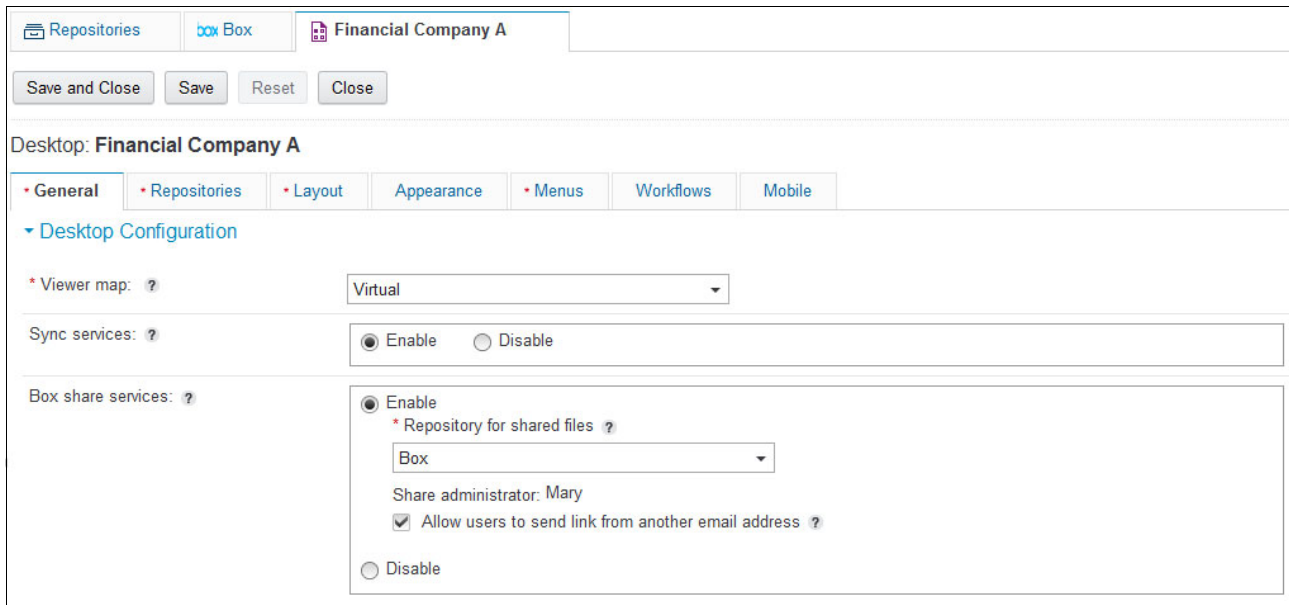


Figure 7-13 Desktop configuration in Content Navigator Administration (part 2 of 2)

4. Determines if Box actions are presented in the Default document context menu and this menu is linked to the desktop (Figure 7-14).

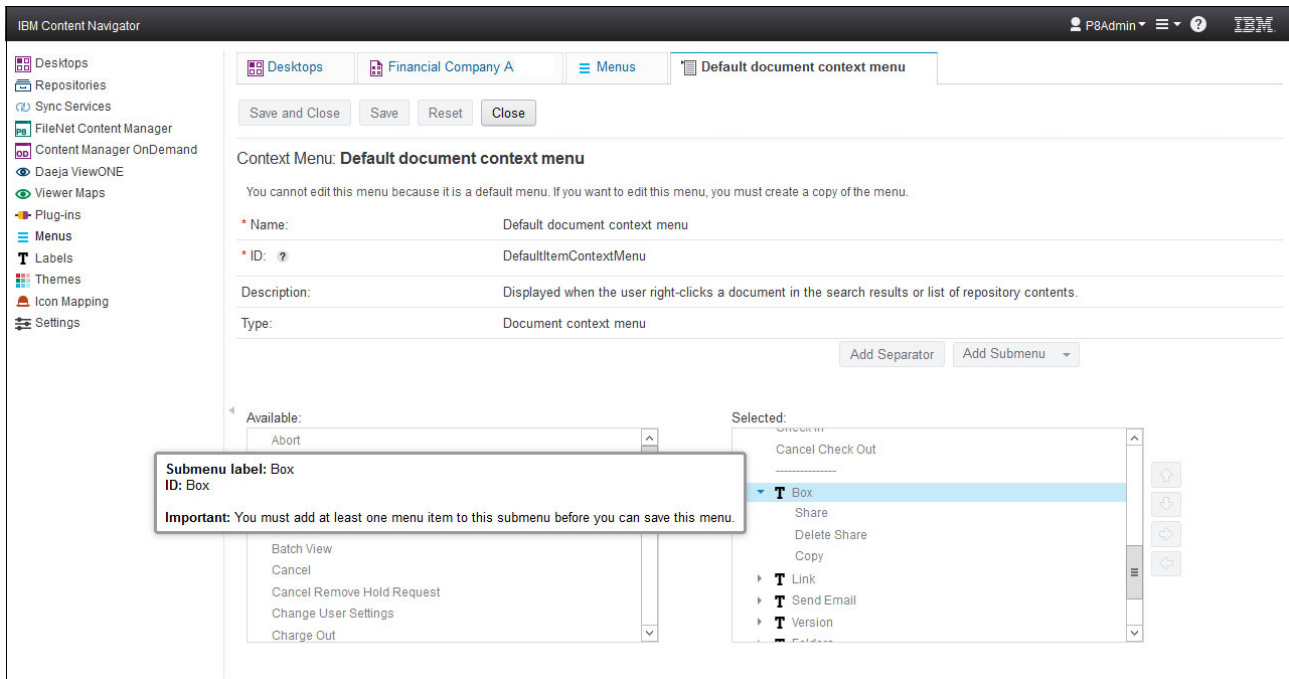


Figure 7-14 Menu actions configuration in IBM Content Navigator Administration

### 7.4.3 IBM Case Manager

The solution implemented in IBM Case Manager is the heart of the Complaints resolution solution in Financial Company A and it was designed for processing any type of complaint. Figure 7-15 on page 126 shows the complaint process model. The *complaint specialist* is

responsible for investigation of any complaint instance. When needed, the complaint specialist engages other internal or external participants by prepared discretionary tasks or by creating his or her own custom task. The complaints specialist suggests a settlement of the complaint. This suggestion must be reviewed and approved by a manager. The complaints specialist offers an approved settlement and negotiates with client.

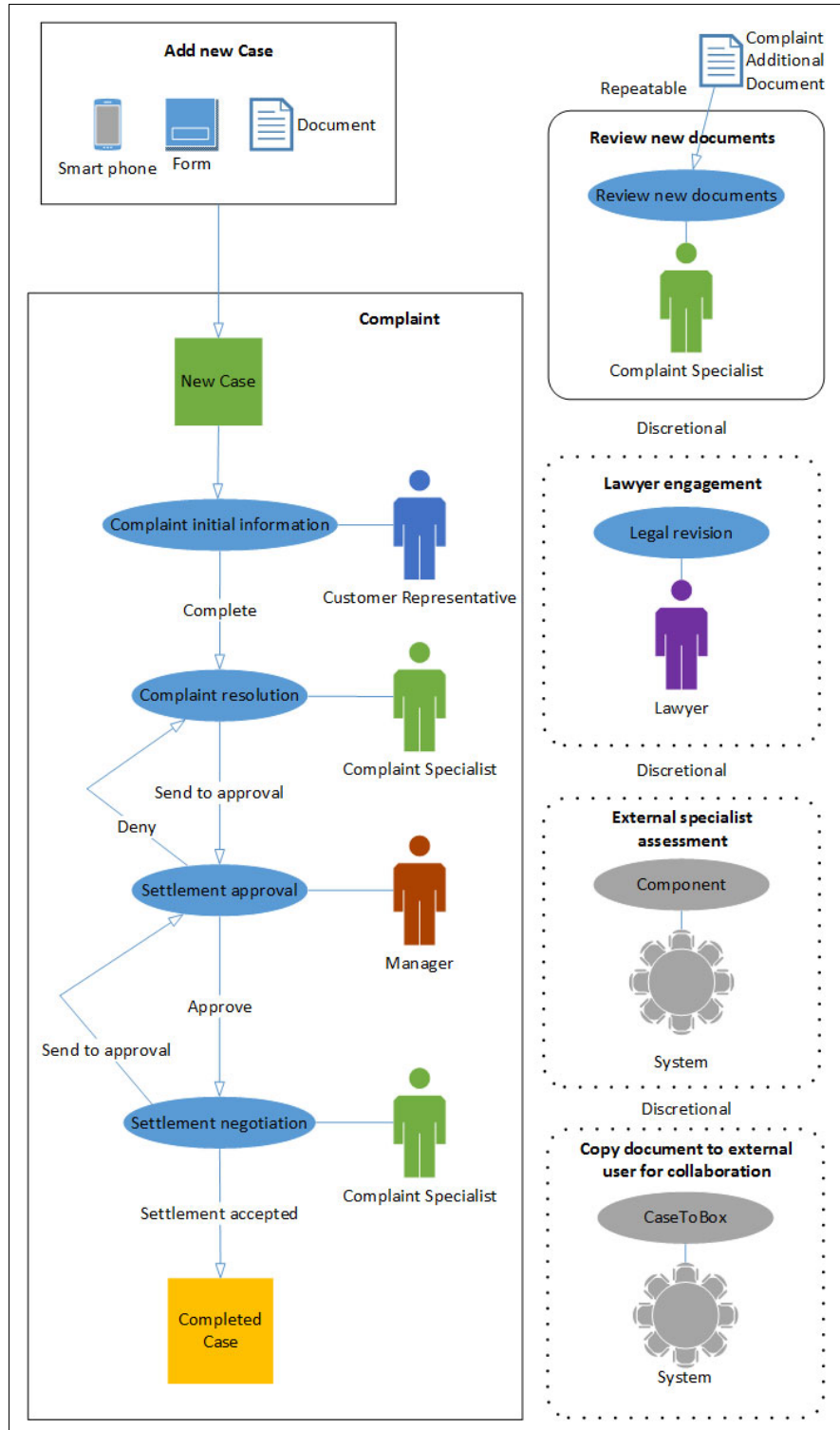


Figure 7-15 Complaints resolution solution model

The Financial Company A administrator installed and configured IBM Case Manager 5.2.1 and Fix Pack 3. IBM Case Manager was also integrated with Box within the frame of Complaints resolution solution in accordance with general integration guidelines, which are described in Chapter 4, “Integration: IBM Case Manager and Box” on page 49.

The administrator develops the IBM Case Manager solution by using the following steps:

1. Opens the IBM Case Manager Builder page and creates a new solution named **Complaints** (Figure 7-16).

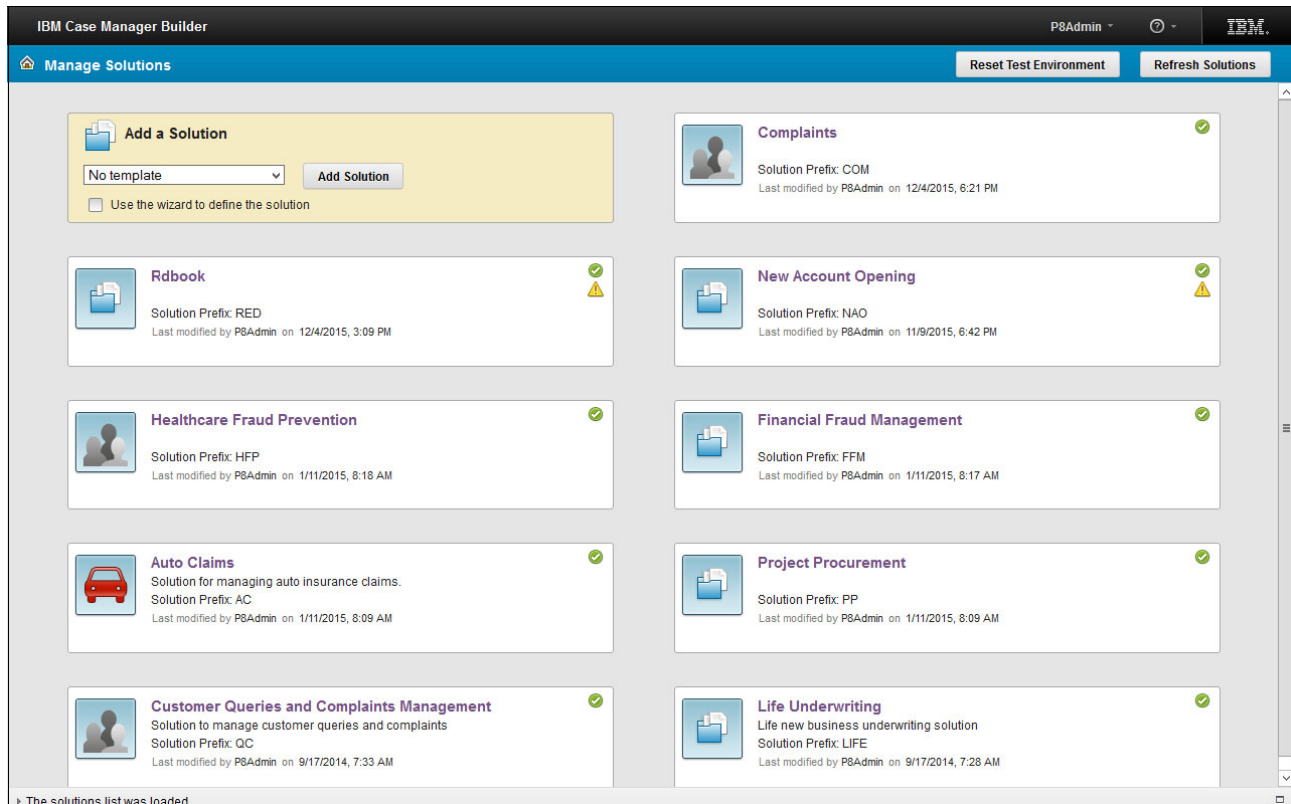


Figure 7-16 Complaints resolution solution definition in IBM Case Manager Builder

2. Defines properties for a client, client contact person, complaint description, complaint processing, and integration with Box in the newly created solution (see Figure 7-17).

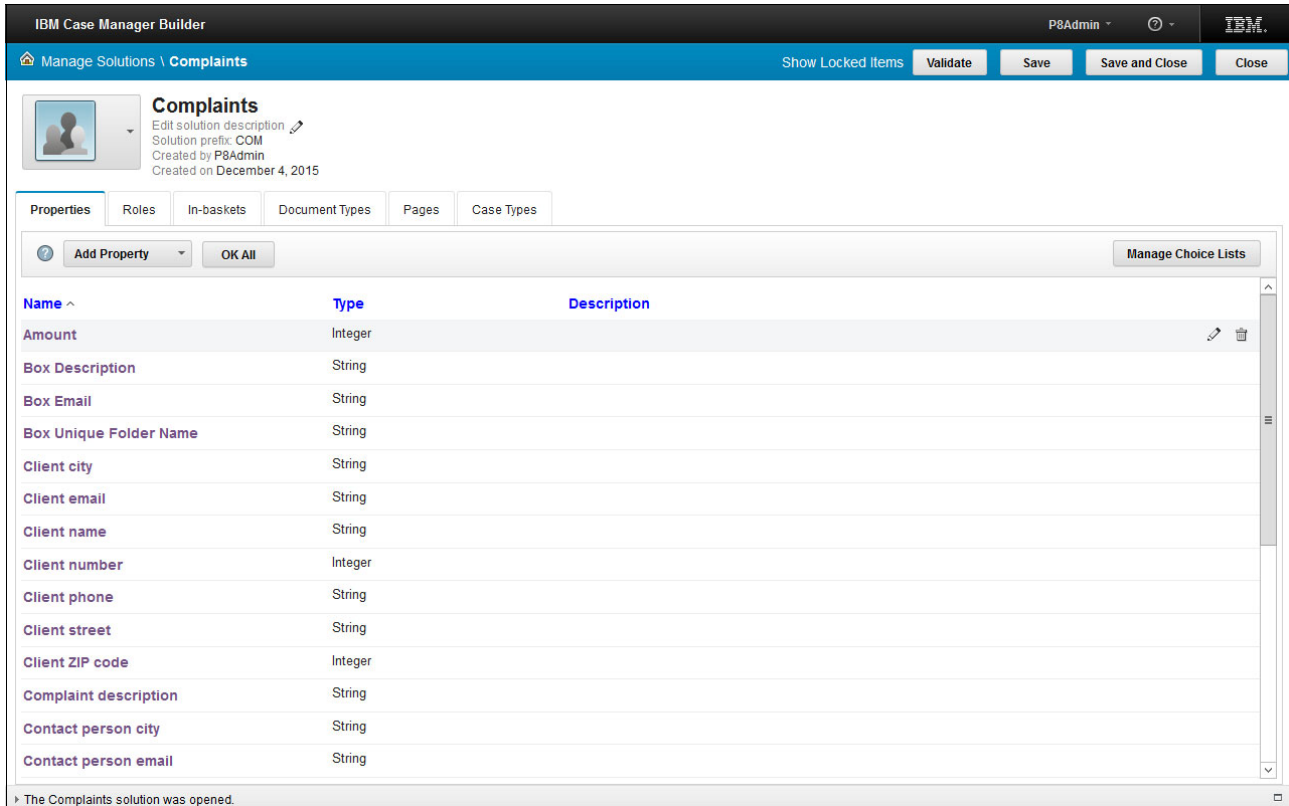


Figure 7-17 Properties definition in IBM Case Manager Builder

3. Creates roles and in-basket items (Figure 7-18): Complaint specialist, Customer representative, General user, Lawyer, and Manager.

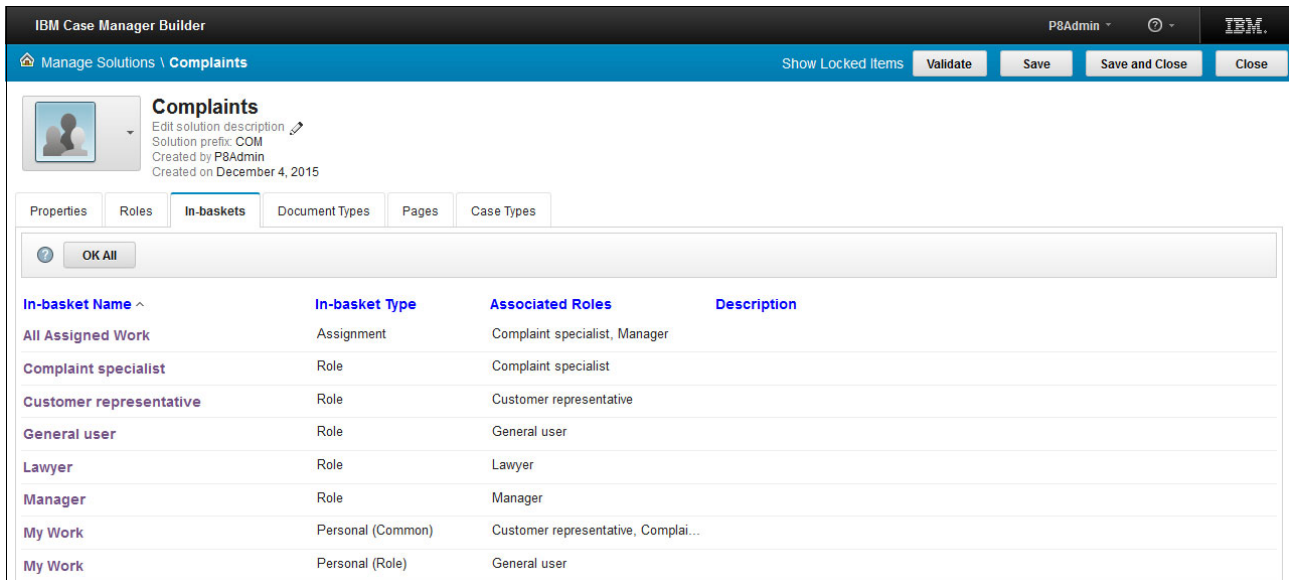


Figure 7-18 In-baskets definition in IBM Case Manager Builder



- Creates complaints-specific document types (Figure 7-19): Complaint, Complaint – additional document, and Settlement offer letter.

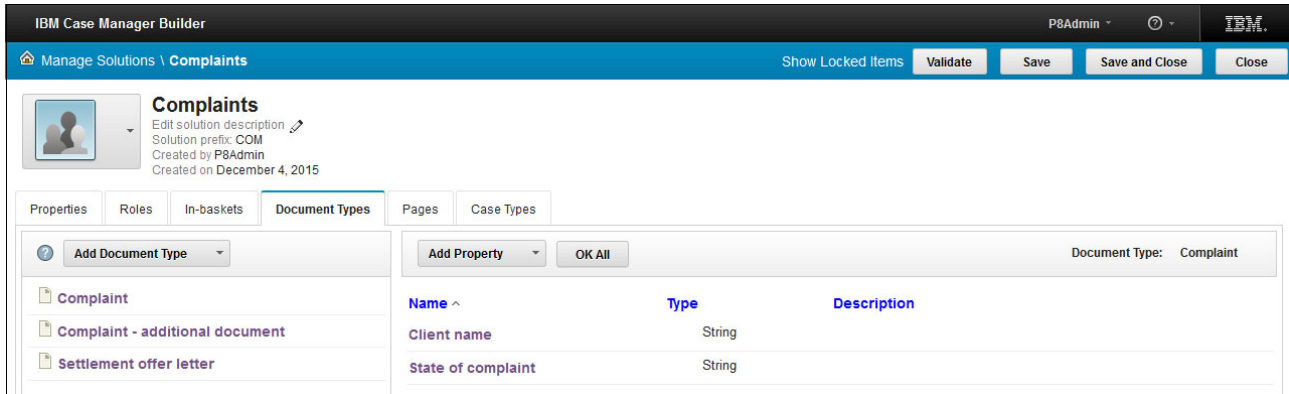


Figure 7-19 Document types definition in IBM Case Manager Builder

- Creates a new page, External Sharing, for adding new discretionary tasks in single column design (Figure 7-20): Work Item Toolbar, Properties, and Attachments widgets.

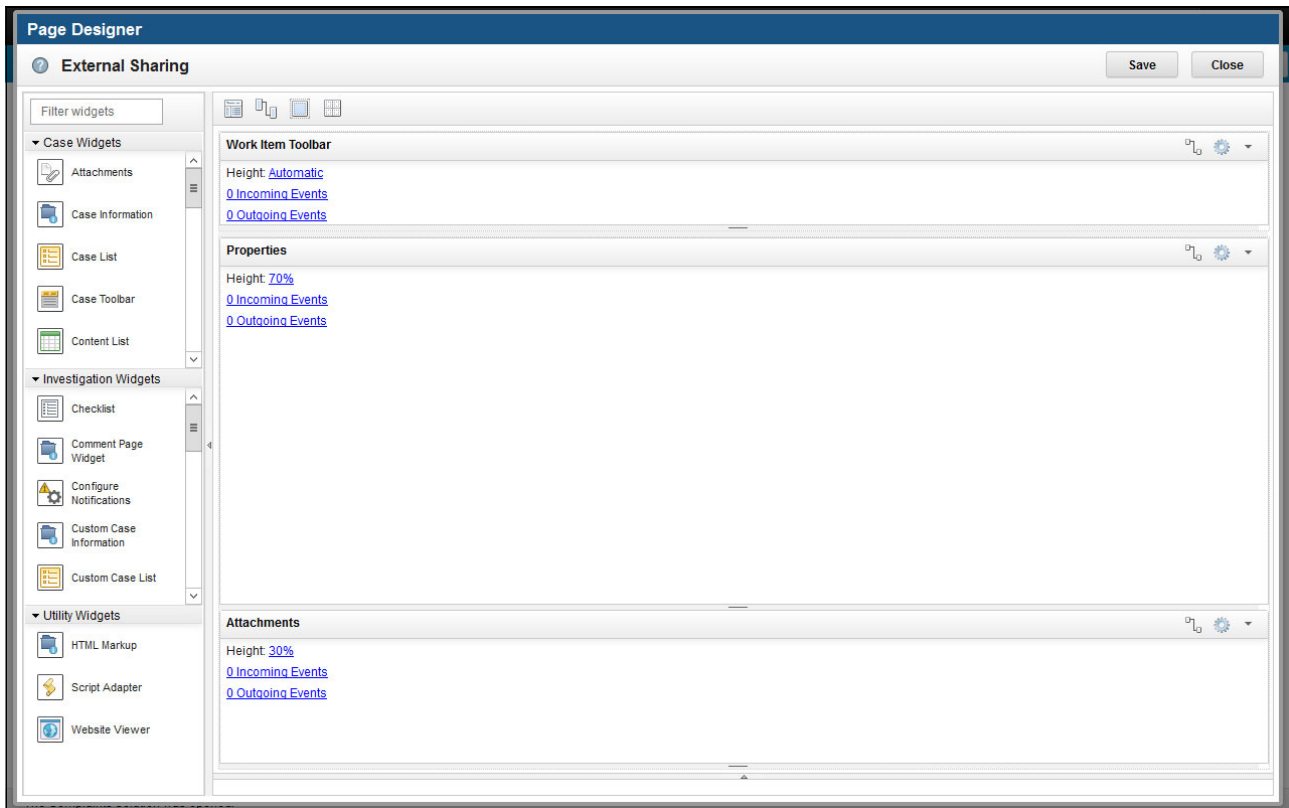


Figure 7-20 "External Sharing" page definition in IBM Case Manager Builder

6. Creates a new case type named **Complaint** (Figure 7-21).

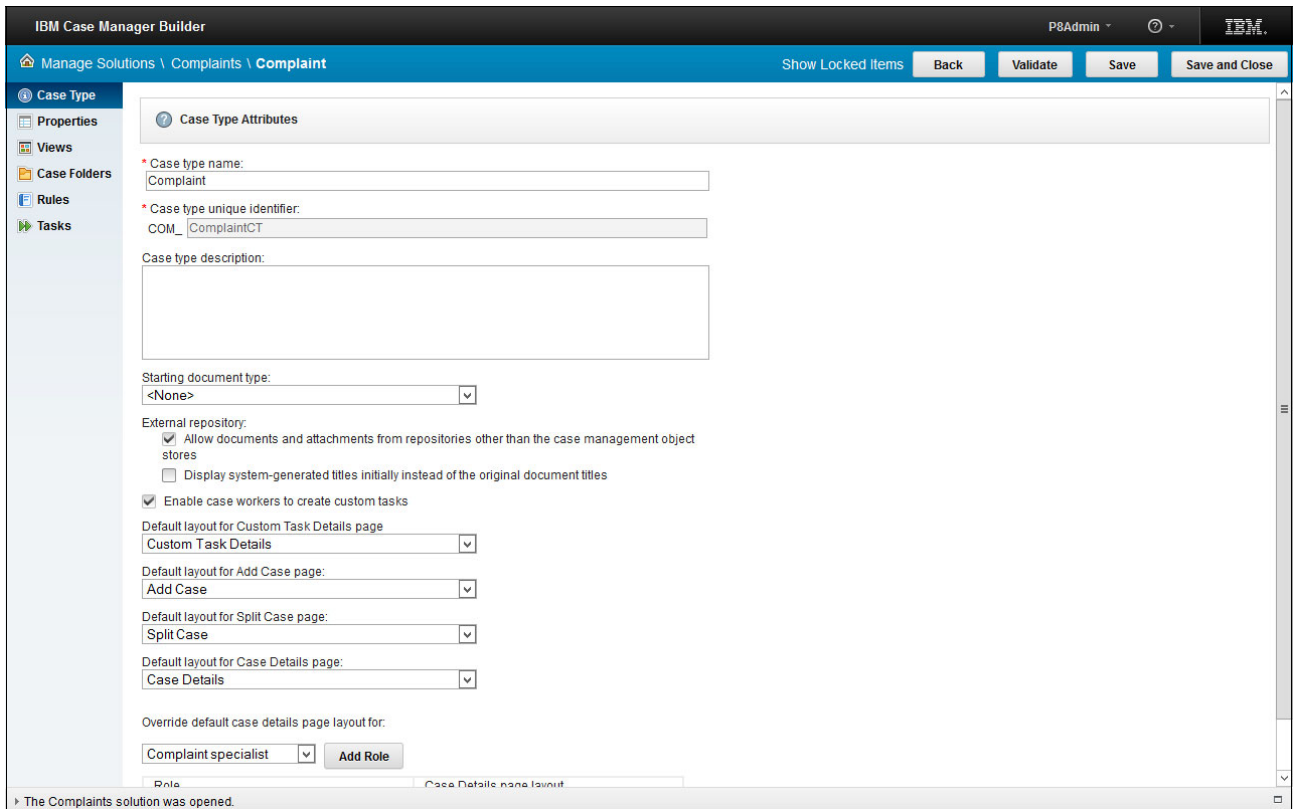


Figure 7-21 "Complaint" case type definition in IBM Case Manager Builder

7. Defines case summary properties, case search properties, and new view case resolution for the well-arranged view of case properties (Figure 7-22).

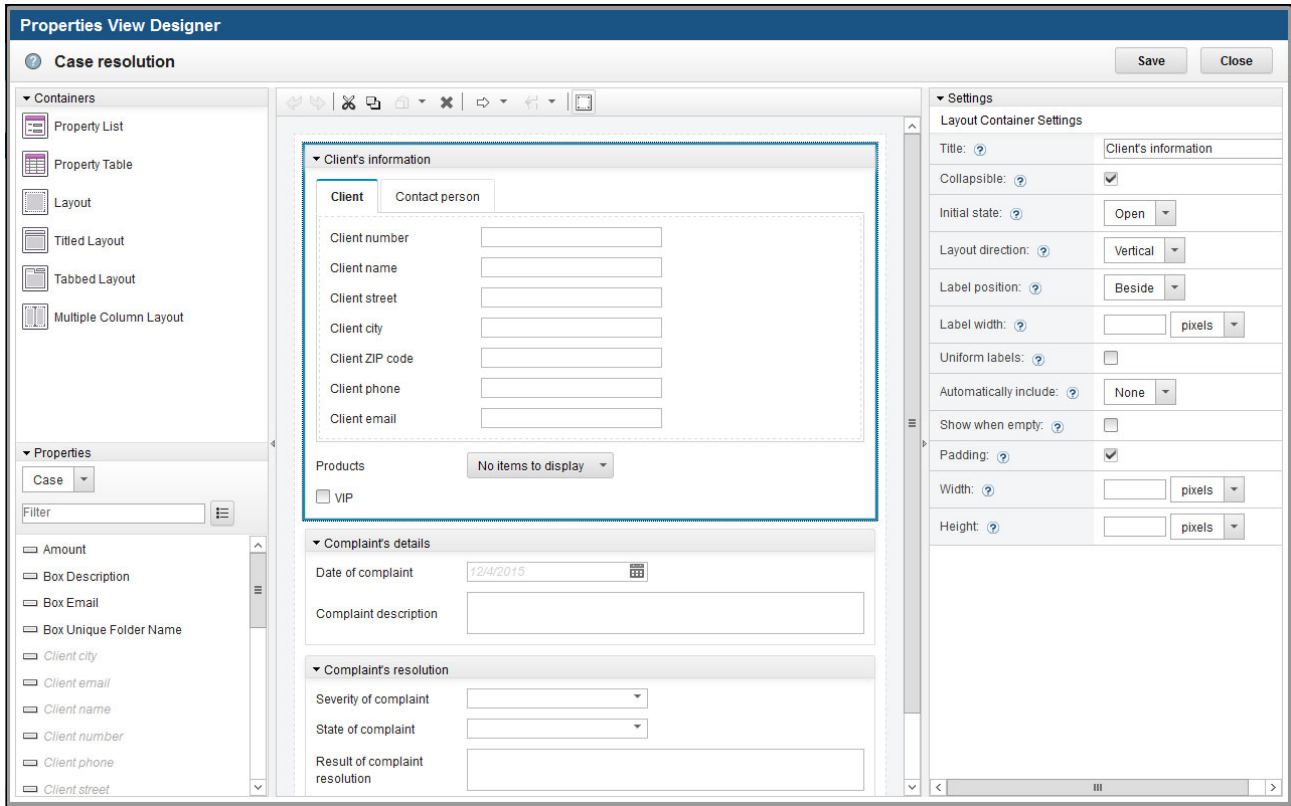


Figure 7-22 “Case resolution” view definition in IBM Case Manager Builder

8. Creates case folders templates Clients documents, Communication, and External Entities. These folder templates will be used later for automatically creating folders within any new instance of case (Figure 7-23).

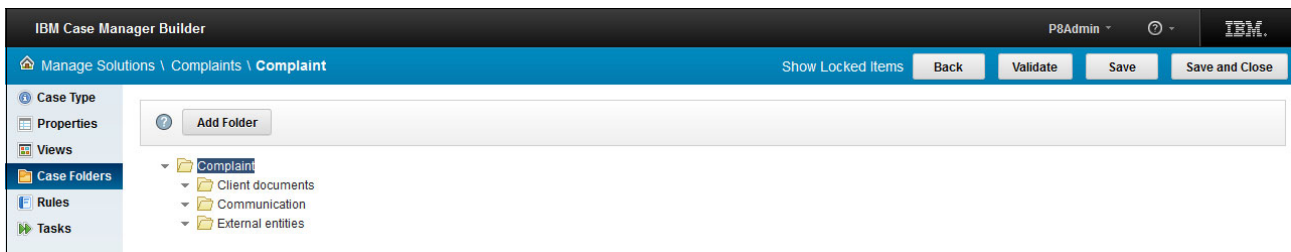


Figure 7-23 Case folder definition in IBM Case Manager Builder

9. Creates the following tasks (Figure 7-24):

- Complaint: This task is required for case resolution and is also the main task for capturing information about the client's complaint by the customer representative, solving the complaint by the complaint specialist, and approving the suggested settlement of the complaint by the manager.
- Review new documents: This task is optional for the complaint specialist. This task is launched automatically when the new “Complaint – additional document” is added to the case.
- Lawyer engagement: This discretionary task is for the internal lawyer if lawyer involvement is required during case resolution.
- External specialist assessment: This discretionary task is for sharing documents and collaboration on case resolution with an external specialist by copying documents from IBM Case Manager to Box.
- Copy document to external user for collaboration: This discretionary task is for sharing additional documents from IBM Case Manager to Box for collaboration with the external specialist.

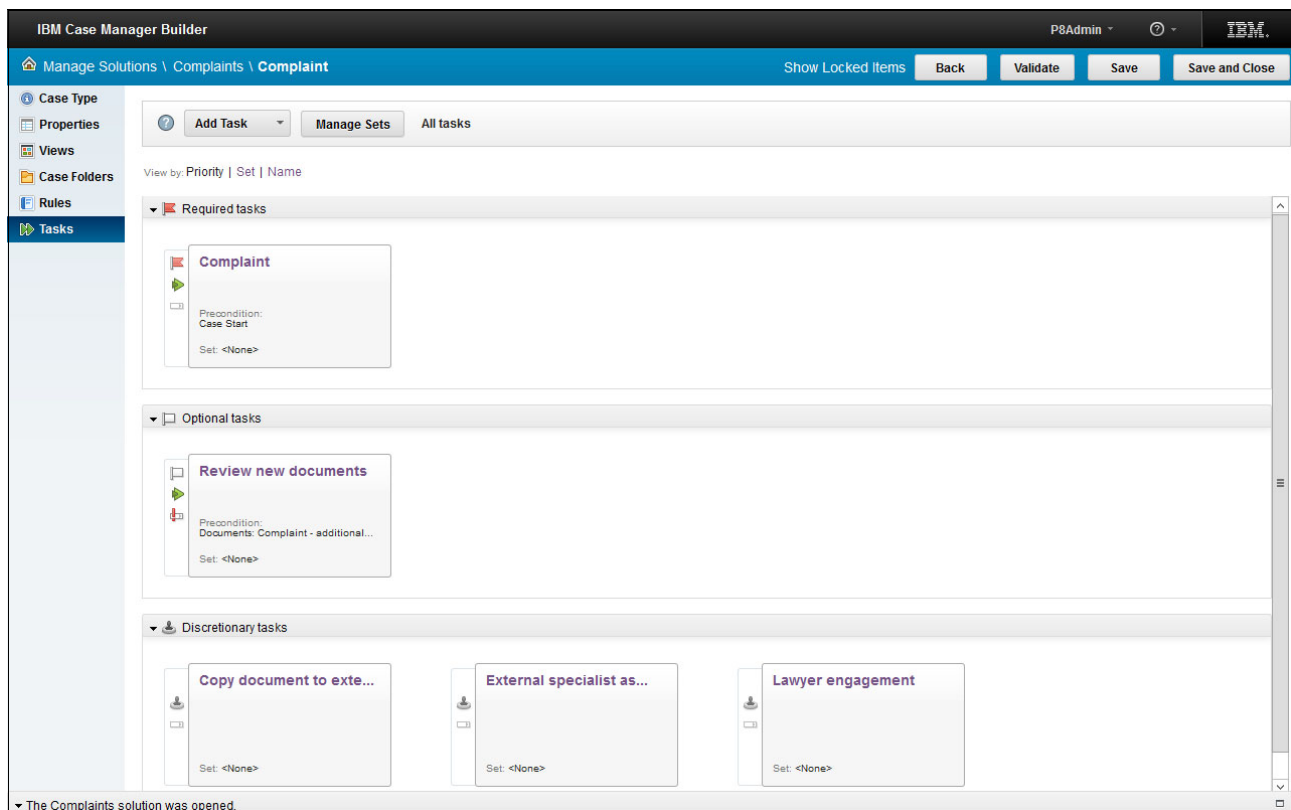


Figure 7-24 Tasks definition in IBM Case Manager Builder

10. Creates user steps in the Complaint task for the customer representative, complaint specialist, and manager roles; creates system steps that change the “State of complaint” property regarding progression of case resolution (Figure 7-25).

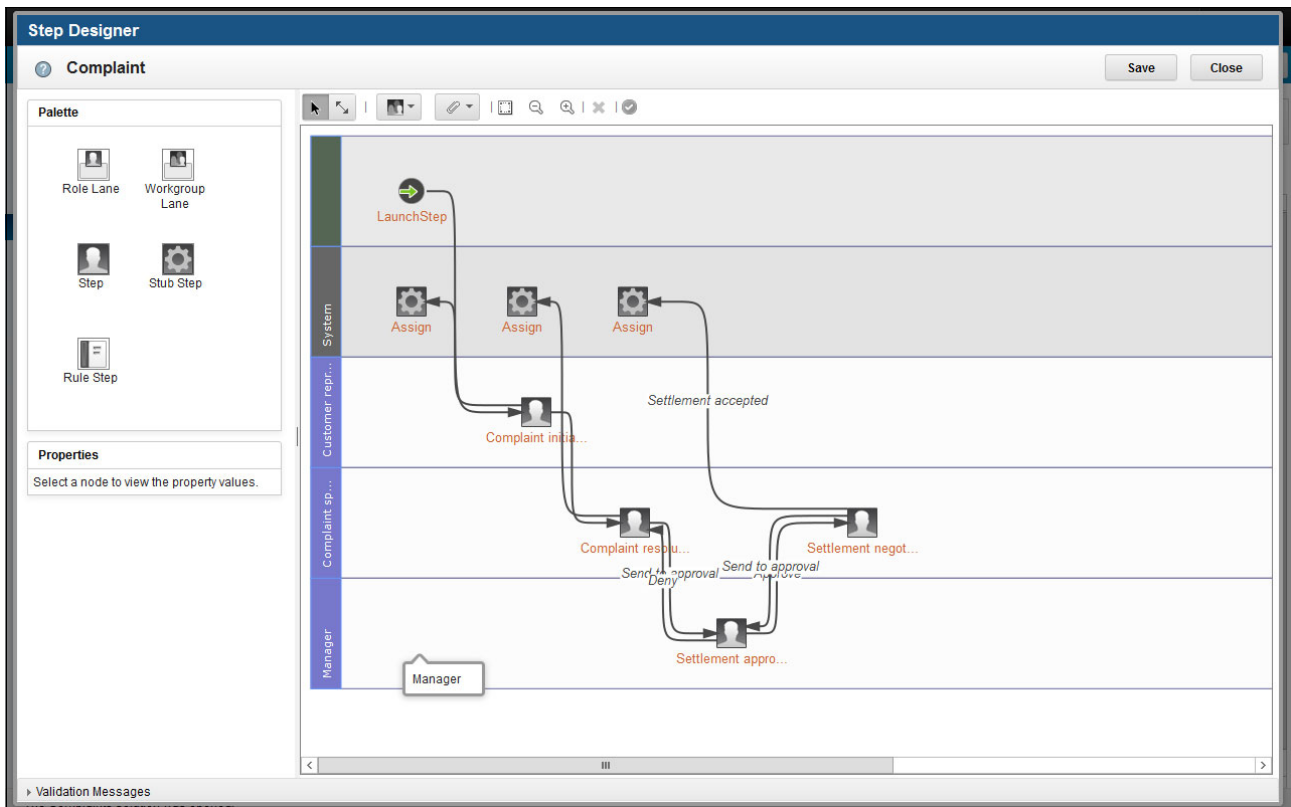


Figure 7-25 “Complaint” task definition in IBM Case Manager Builder

11. Creates a user step in the Review new documents task for the complaint specialist role, and configures the task to have a document condition be invoked when a new document is filed to the case (Figure 7-26).

The screenshot shows the 'Add a task' dialog box with the 'Preconditions' tab selected. The 'General' tab is also visible. The 'Preconditions' section has a dropdown menu with 'A document is filed in the case' selected. There are two checkboxes: 'Task is repeatable' (checked) and 'Any document type' (checked). Below this, there is a section for 'Document types' with the text 'No document is available.' At the bottom, there are buttons for 'Add Condition' and 'Delete All Conditions', and a 'Match: All' dropdown.

Figure 7-26 “Review new document” task definition in IBM Case Manager Builder

12. Creates a user step in the Lawyer engagement task for the Lawyer role.
13. Configures the “External specialist assessment task (Figure 7-27) by adding a system component step, CaseToBox, in the Process Designer tool. Adds related Box Operations for the following purposes:
  - Getting the root folder in the Box repository
  - Creating a new subfolder in the root folder using a unique reference for the case
  - Creating a new subfolder in the newly created case subfolder using a unique reference for the external specialist
  - Copying the documents to the subfolder
  - Inviting the recipient to collaborate in the Box folder by email

See the details of this task in Chapter 4, “Integration: IBM Case Manager and Box” on page 49.

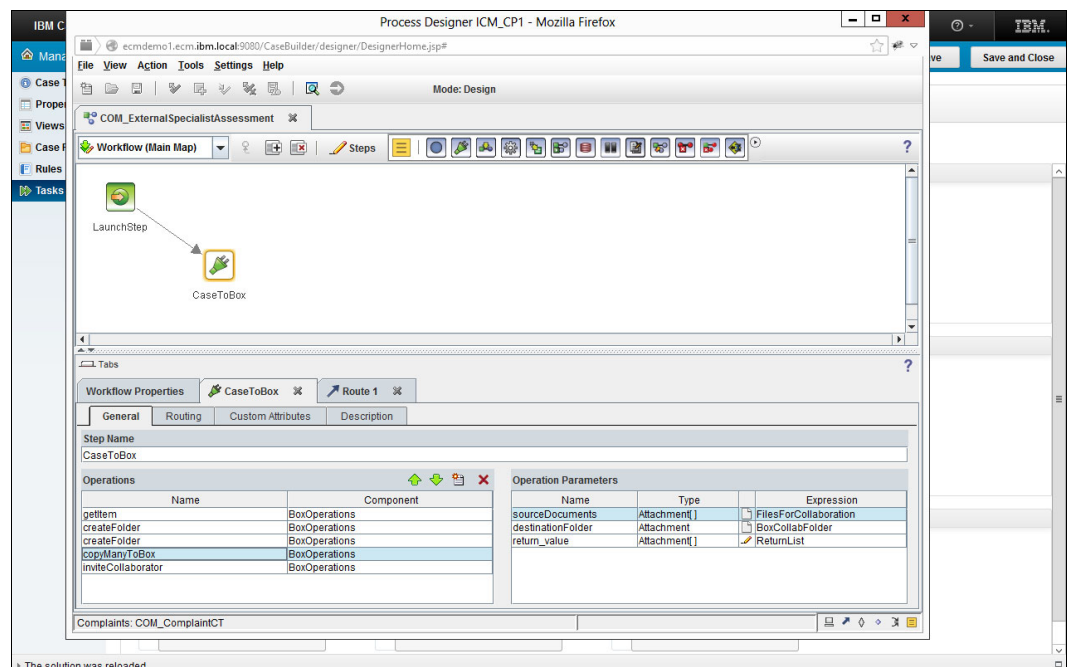


Figure 7-27 CaseToBox component definition in Process Designer

14. Configures the “Copy document to external user for collaboration” task (Figure 7-28) by adding system a component step CaseToBox in the Process Designer tool. Adds the related Box Operations for the following purposes:

- Getting the folder that is related to the external user in the Box repository
- Copying the documents to the subfolder

See the details of this task in Chapter 4, “Integration: IBM Case Manager and Box” on page 49.

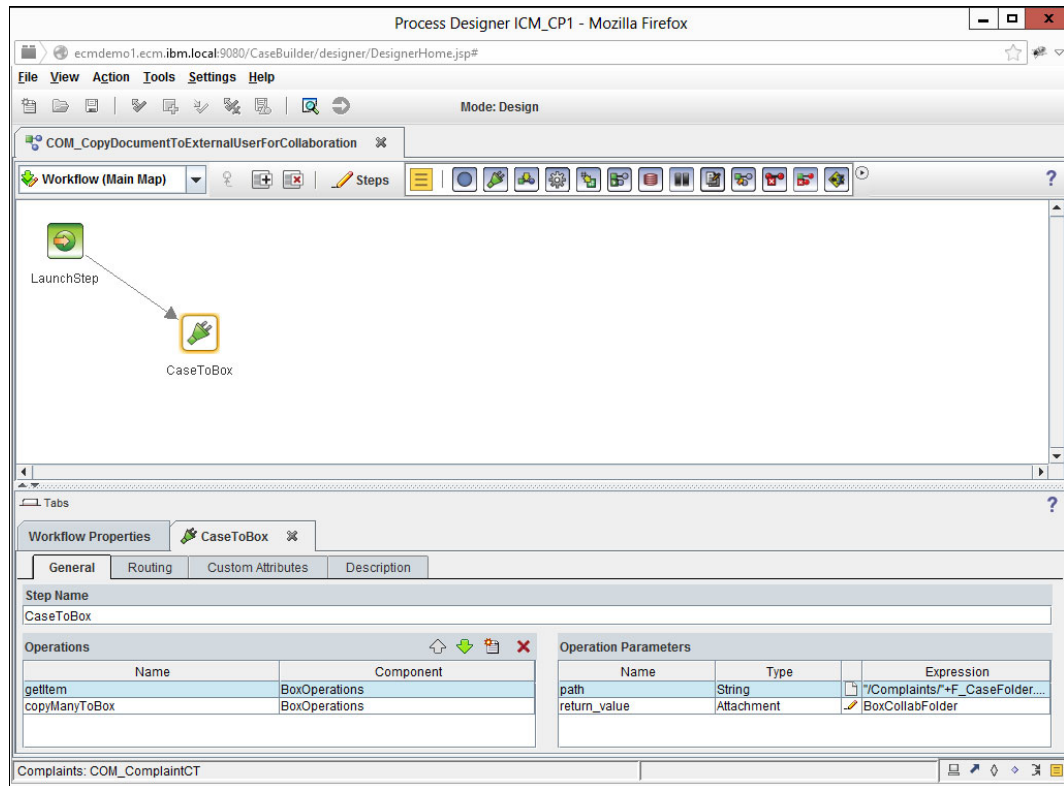


Figure 7-28 CaseToBox component definition in Process Designer

**Note:** The sample code of the Complaints resolution solution for IBM Case Manager is available at IBM Redbooks website. For download details, see Appendix A, “Additional material” on page 163.

### 7.4.4 IBM Datacap

The Financial Company A administrator installed IBM Datacap 9.0.0 and Fix Pack 3 and configured Datacap to be integrated with Box for the Complaints resolution solution in accordance with the general integration guidelines described in Chapter 5, “Integration: IBM Datacap and Box” on page 73.

The Administrator also develops a Datacap application by following these steps:

1. Opens Datacap Studio and uses the Application Wizard to create a new application:
  - a. Enters Complaint as the name of the application (Figure 7-29).

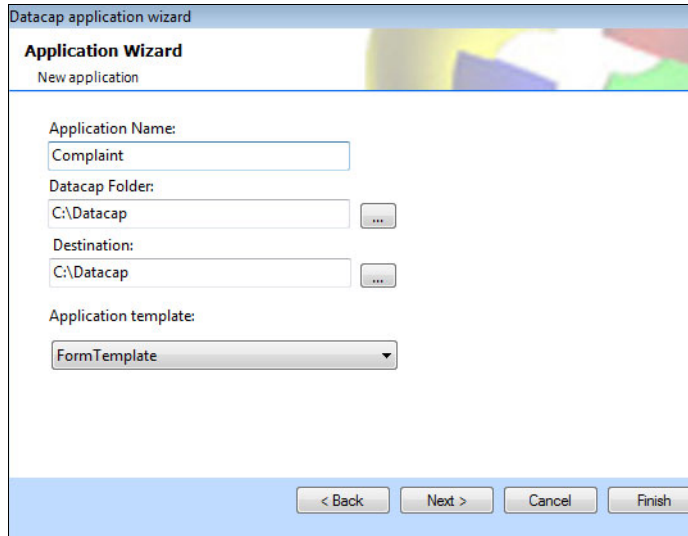


Figure 7-29 Create new Datacap Application

- b. Sets the Datacap Object (DCO). Figure 7-30 shows the parameters that are set for this scenario:
      - Batch: Complaint
      - Document: Complain with page Com\_Main\_Page and two fields (Client\_Name and Contact\_Name)
      - Document: POA with page POA\_Main\_Page
      - Document: Finance with page Fin\_Main\_Page

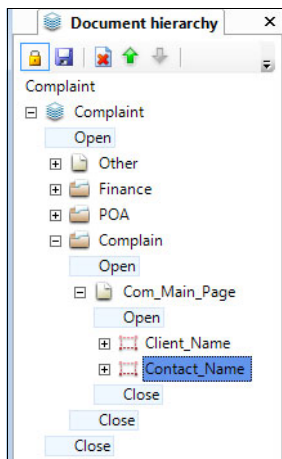


Figure 7-30 Setting document hierarchy



2. Logs in to the FastDoc Admin console (Figure 7-31) and switches to **Config Workflow** and does these steps:
  - a. Imports the global ruleset by dragging **Import from BOX** to **VScan**.

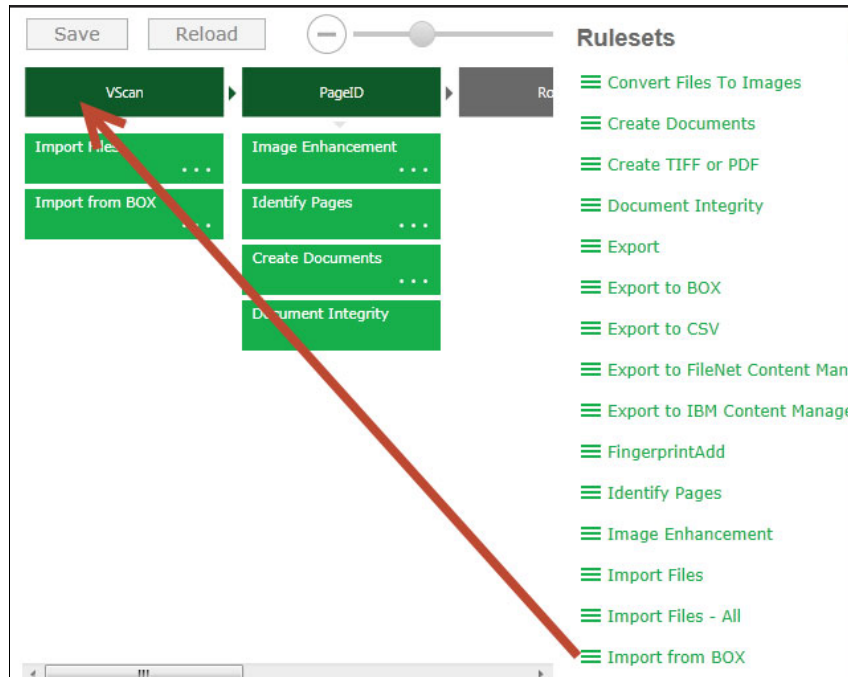


Figure 7-31 Import from Box action in FastDoc Admin console

- b. Clicks the configure icon (...) to set the credentials.
  - c. Ensures the credentials are set correctly by clicking **Change** (Figure 7-32) and setting the Box credentials (as outlined in Chapter 5, "Integration: IBM Datacap and Box" on page 73).

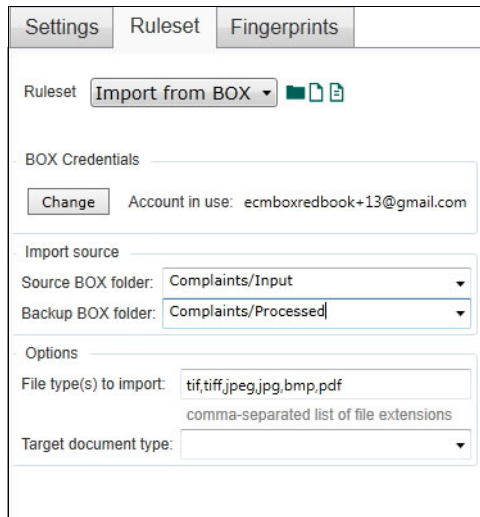


Figure 7-32 Setting import from Box

- d. Saves and switches back to **Workflow**.
  - e. Scrolls to and selects **Export**.

To allow Datacap to export to both FileNet and Box, drags both global rulesets (**Export to BOX** and **Export to FileNet**) to the Export task, similar to what was done in the VScan task (Figure 7-33).

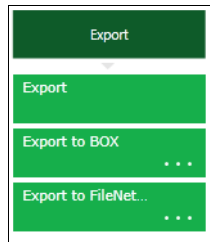


Figure 7-33 Export to Box and FileNet actions in FastDoc Admin console

- f. Configures the Box export credentials in a way similar to the Box import credentials.
- g. Adds the smart parameters for the target folder as in Figure 7-34.

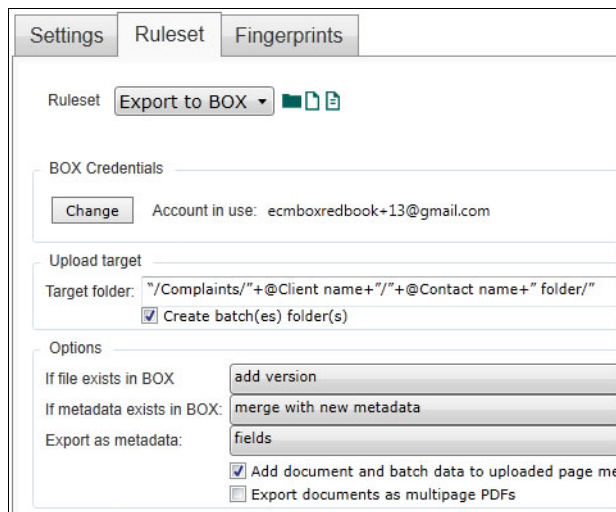


Figure 7-34 Setting export to Box

- h. Returns to the Workflow and configures the FileNet export (Figure 7-35 on page 139).

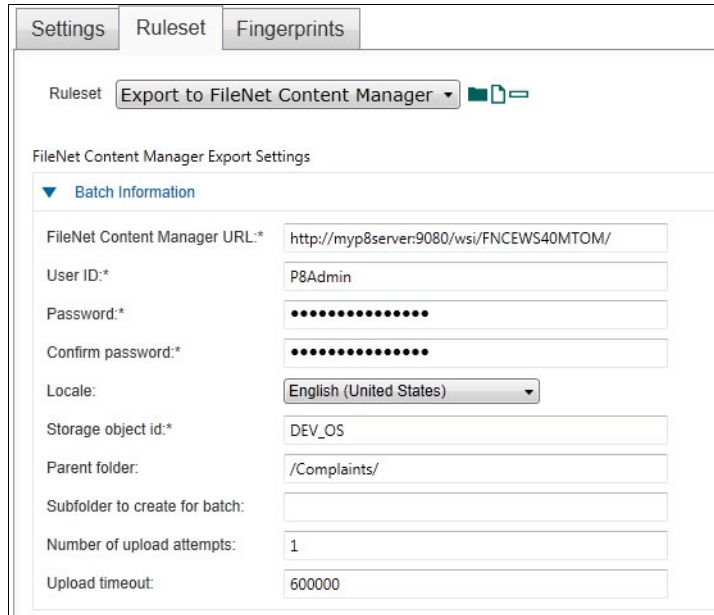


Figure 7-35 Setting export to FileNet Content Manager

- i. Saves and returns to Workflow.
- j. Configures Identify Pages (Figure 7-36) by clicking the configure icon (...). This identifies how classification will be performed on the various pages.

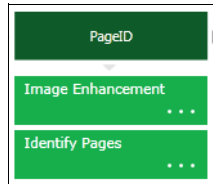


Figure 7-36 Configuring Identify pages

- k. Selects **Barcode Recognition** and selects this information (Figure 7-37):
  - Selects type as **Code 39**.
  - Maps barcode value **complaint** to **Com\_Main\_Page**.

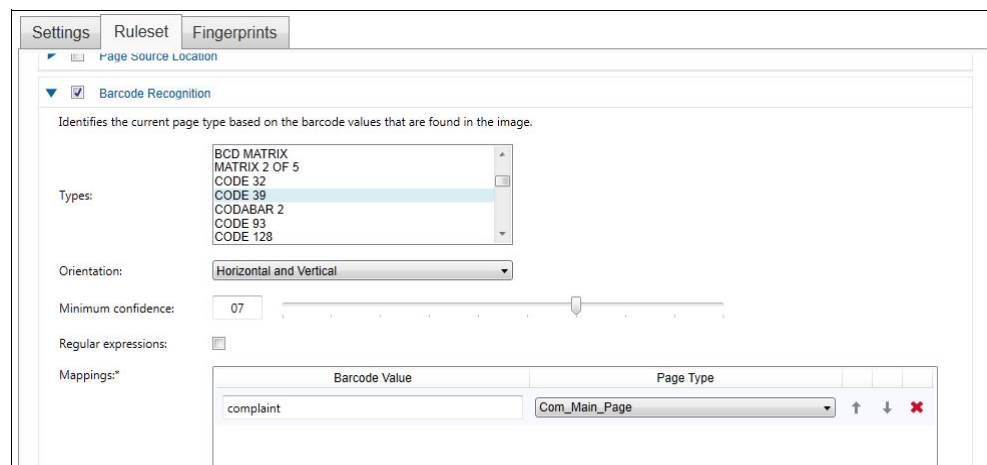


Figure 7-37 Mapping barcode value

- I. Opens the **Fingerprints** tab (Figure 7-38) and adds this information:
  - Complaint fingerprint class
  - Fingerprint for each document type because the Complaint form is identified by barcode but needs a fingerprint for zonal recognition
  - Zones for Client Name and Contact name

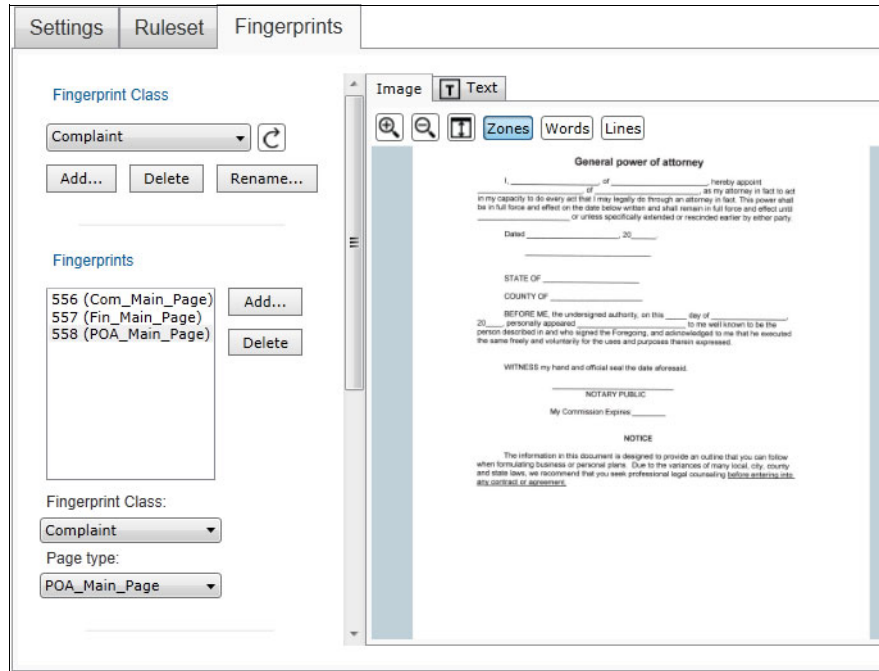


Figure 7-38 Setting fingerprints

3. Configures the Recognize Pages and Fields ruleset from Profiler (Figure 7-39):
  - a. Switches to **Complaint** document.
  - b. Switches to **Com\_Main\_Page**.
  - c. Selects the **Read Page** check box.
  - d. Selects the **Load zones for fields** check box.

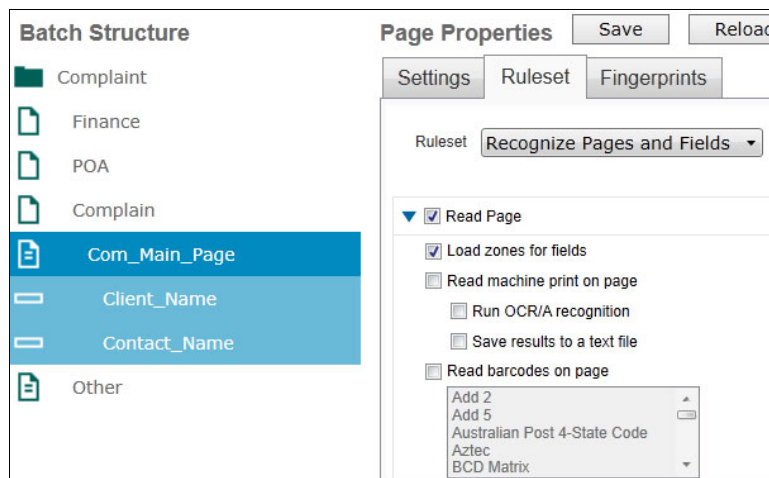


Figure 7-39 Setting "Recognize Page and Fields" ruleset

4. Runs the application in FastDoc.

## 7.4.5 IBM StoredIQ

IBM StoredIQ is also integrated with Box. IBM Stored IQ 7.6.0 and Fix Pack 5 is installed within the frame of Complaints resolution solution in accordance with general integration guidelines, which are described in Chapter 6, “Integration: IBM StoredIQ and Box” on page 89.

An administrator adds a new Box volume by following these steps:

1. Logs in to IBM StoredIQ Administrator.
2. In the “Data Servers and Volumes” interface, selects a data server onto which the Box volume must be added.
3. Clicks **Authenticate with Box** to authenticate with enterprise single sign-on (SSO) to the Box account. This must be a Box administrator account to ensure that StoredIQ has access to data from all accounts for that enterprise.
4. After authentication is complete, provides a name for the volume and selects the options **Include metadata for contained objects** and **Include content tagging and Full-Text Index**. See Figure 7-40.
5. Clicks **Save** to complete adding the volume.

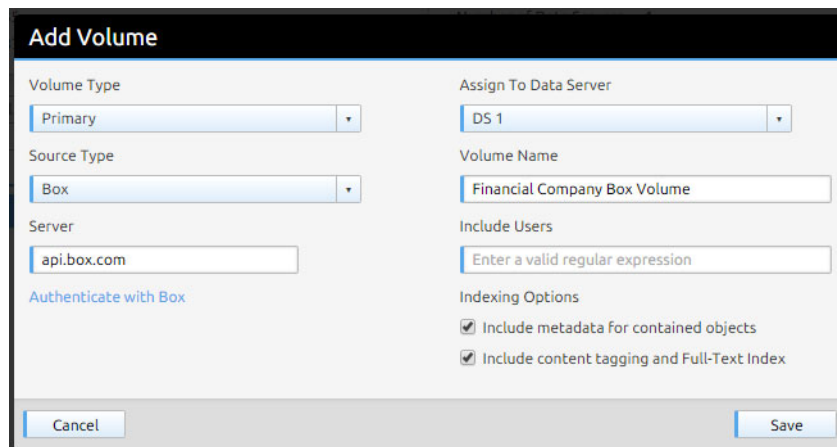


Figure 7-40 Adding volume

After a volume is added, it must be harvested for the index to be generated. This can be done as follows:

1. Double-click the data server in which the Box volume was added.
2. Click the Box volume to select it and click **Harvest** to open the **Harvest Volume** interface.
3. Provide a name for the harvest, select **Full** under Harvest Options, and select **Immediate**, under Schedule Harvest to start the harvest immediately after clicking **Save** (in the next step).
4. Click **Save** to begin the harvest. Depending on the content on the volume, this process can take several minutes to several hours to complete.
5. The status of the harvest can be tracked under the Harvests tab in StoredIQ Administrator.

After the volume is harvested, the administrator can expose the index of the volume to other applications, particularly to IBM StoredIQ Data Workbench. This is done by using system infosets. For more information about infosets, see Chapter 6, “Integration: IBM StoredIQ and Box” on page 89.

A system infoaset that is specific to Box can be created by using the following steps:

1. In StoredIQ Administrator, click the **System Infosets** tab, and then click **Create Infoset**.
2. Provide a suitable name and description for the system infoaset as shown in Figure 7-41. Ensure that Access is set to **Public** to enable access to other users.
3. Select the Box volume that was created earlier and click **Add**.
4. Click **Save** to complete system infoaset creation. The system infoaset is now available in StoredIQ Administrator and StoredIQ Data Workbench.

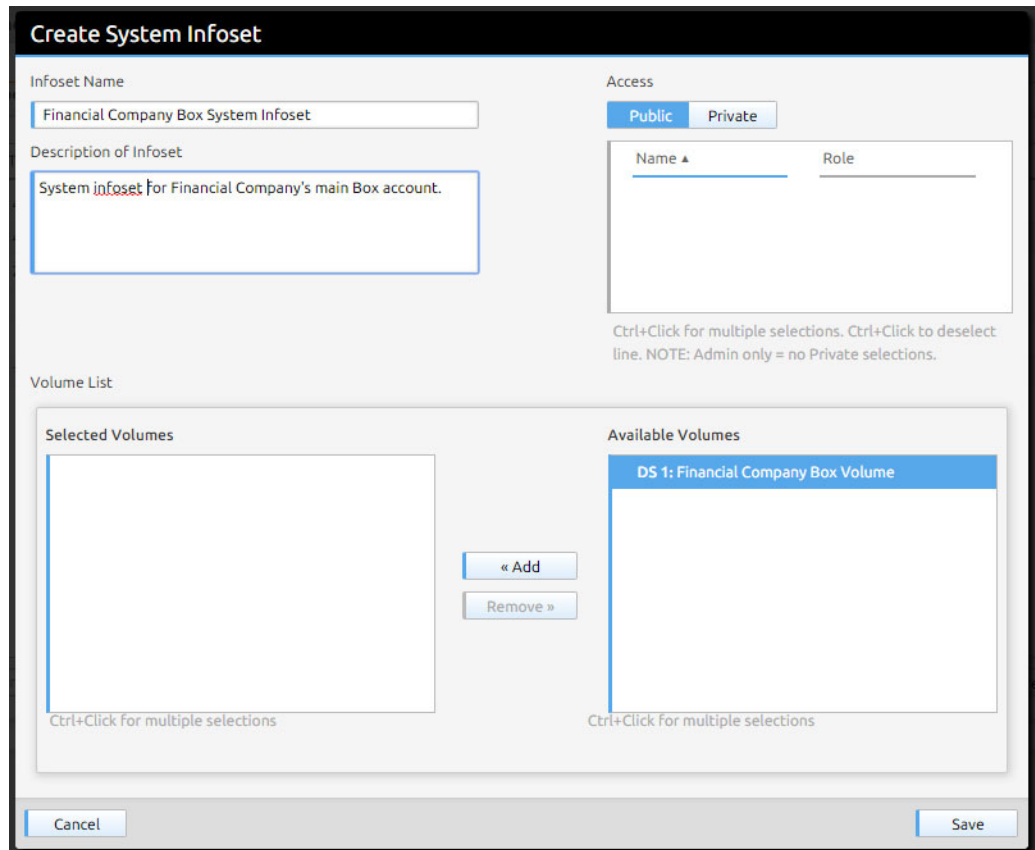


Figure 7-41 Creating a system infoaset

After the system infoaset is created, it can be used by data users in StoredIQ Data Workbench to search and filter content. However, system infosets cannot be used for running actions or reports that are an important aspect of analyzing and managing data. This requires creation of user infosets. Any number of user infosets can be created depending on business requirements.

User infosets can be created by using filters or through data maps. In this case, the Box account in use is accessed by employees of the enterprise, customers, and other applications used by the enterprise. As a result, some files and folders might not be relevant to the data user. These files and folders are valid for a fixed period of time beyond which they can be safely removed.

In this scenario, two user infosets are created, one to track the primary data and another for application data in Box. This can be done using multiple filters as follows:

1. In StoredIQ Data Workbench, click the infuset picker and select the system infuset created previously (Financial Company Box System Infuset, as shown in Figure 7-41 on page 142).
2. Click the **Create** tab and select **Build Filter**. Click the **Code View** link.
3. Specify a filter and provide a name and description for the filter.
4. Click **Preview Filter Results** to preview the objects that will be returned by this filter.
5. Click **Save** to save the filter. The filter is now available in the Filter Library.

The following filters can be used by the Financial Company A to manage data on Box:

- ▶ Filter to identify primary Box data:  
`att: "/Library/Attributes/System metadata/System path" DOES NOT CONTAIN any ( "Datacap" ,"Temp") IN all"`
- ▶ Filter to identify application data in Box:  
`att: "/Library/Attributes/System metadata/System path" CONTAINS any ( "Datacap" ,"Temp") IN all"`
- ▶ Filter to identify sensitive personal information:  
`{SSN} OR {CreditCard} OR {InternetAddress} OR {EmailAddress}`
- ▶ Filter to identify objects that were created or modified before a relative time, for example, three years ago:  
`att: "/Library/Attributes/System metadata/Created date" >= 3 years ago IN all OR  
att: "/Library/Attributes/System metadata/Modified date" >= 3 years ago IN all`

User infosets represent data at a fixed point in time. If the content on a data source changes after a user infuset is created, the user infuset not updated to reflect these changes even if the data source is harvested again. Saved filters can be reused from the Filter Library to re-create infosets whenever required.

Using a filter, a user infuset for primary Box data can be created by using the following steps:

1. In StoredIQ Data Workbench, click the infuset picker and select the system infuset created earlier (Financial Company Box System Infuset).
2. Click **Create** and select the **Build Filter** tab.
3. Click the **Box Primary Data** filter to select it and click **Create New Infuset** to open the infuset creation interface.
4. Provide a name and description for the infuset. Select the **Include Data Map for the Refine tab** option to enable data maps for this user infuset. Click the **Select Overlays** to choose filters that can be used as overlays in the data maps. See Figure 7-42 on page 144.

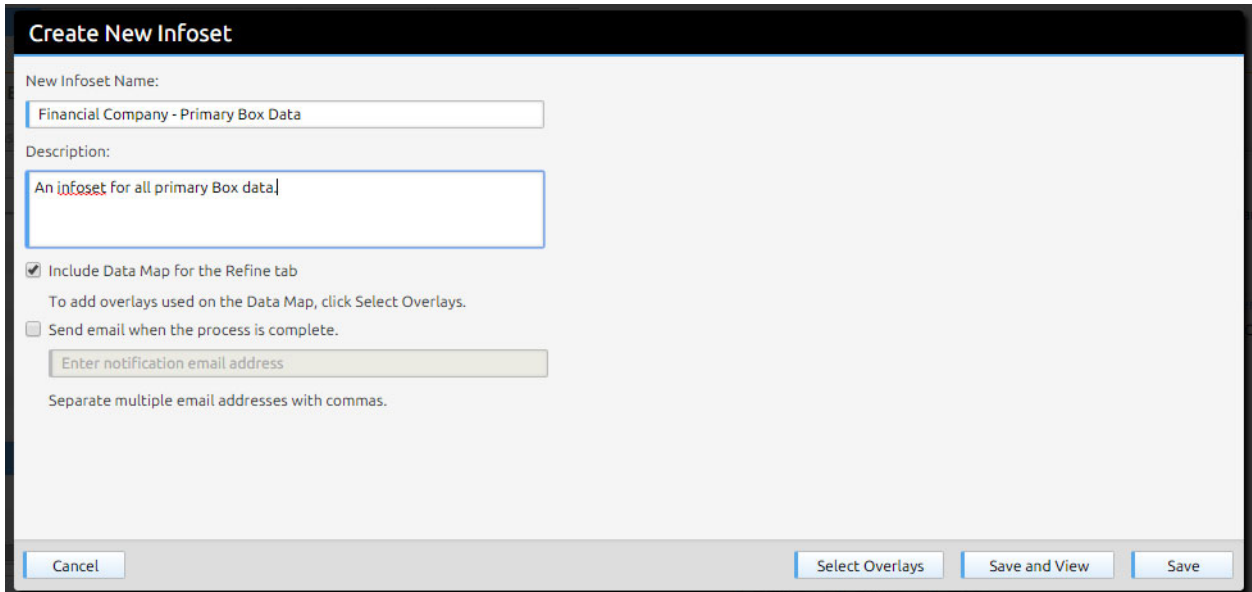


Figure 7-42 Create New Infoset

5. Select the **Sensitive Personal Information** filter created previously and click **Add** (Figure 7-43).

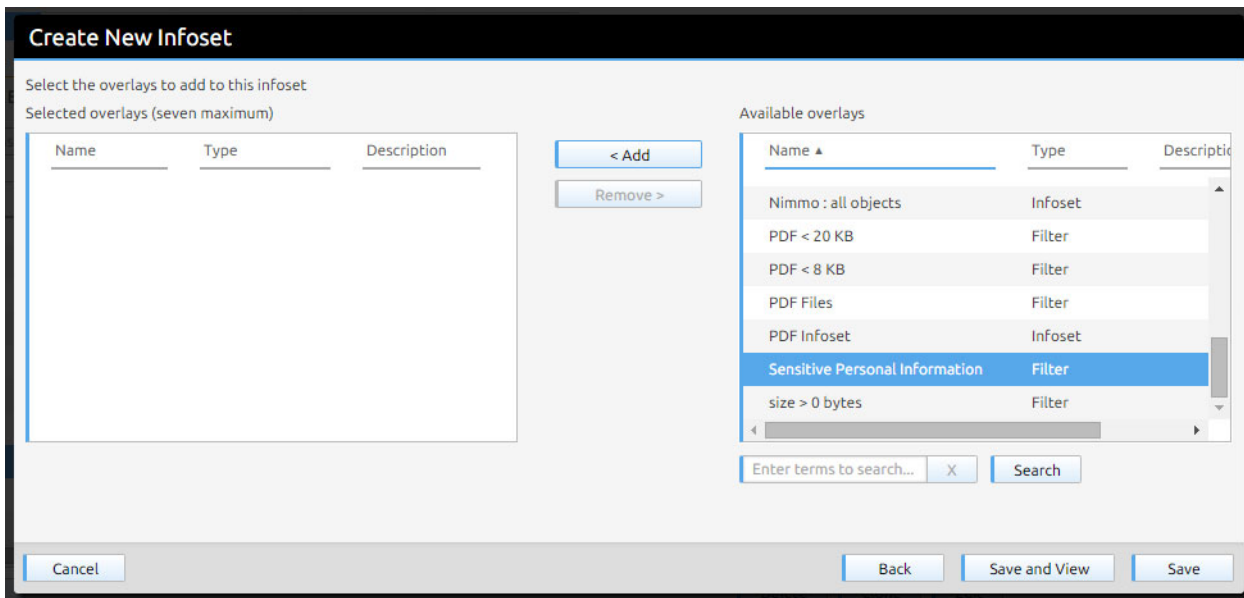


Figure 7-43 Sensitive Personal Information filter

6. Click **Save** to create the user infoset.

These steps can be repeated to create another user infoset, Financial Company - Box Application Data, with the overlay as “Created/Modified 6 months ago”.



## 7.5 Scenario: Using the Complaints resolution solution

Lucy Smith, a long-standing client of Financial Company A, was about to be a pensioner. A year ago before Lucy was eligible to receive pension, she discussed her pension fund options with her advisor in Financial Company A with a goal to maximize pension and fund return. The Financial Company A advisor recommended change of funds allocation. By the time that Lucy was eligible to receive her pension, she discovered that she was not eligible for several pension-related benefits due to her new fund status. Her son, Ian Smith, complained to the Financial Company A advisor on behalf of his mother. Subsequently, Ian learned that the Financial Company A advisor made mistakes in his calculations.

Lucy Smith's complaint case was handled with the new Complaints resolution system of Financial Company A.

### 7.5.1 Steps in the scenario

Ian Smith went to a Financial Company A branch office in person to file a formal complaint regarding to the advise his mother received from her financial advisor. Ian brought all the complaint documents including power of attorney and statement of funds.

The customer representative Carly logged the complaint in the Complaints resolution system. She created an instance of case type Complaint and entered basic data: identification of client Lucy Smith, identification of contact person for communication (Ian Smith), and the complaint description as shown in Figure 7-44.

The screenshot displays a web-based form titled "Complaint initial information" for a "Complaint" case. The form is organized into several sections:

- Client's information:** This section contains two columns of input fields. The left column includes fields for Client number (789,456,123), Client name (Lucy Smith), Client street (Princess Street), Client city (London), Client ZIP code (56,443), Client phone (234789129), and Client email. The right column includes fields for Contact person name (Ian Smith), Contact person street (Princess Street), Contact person city (London), Contact person ZIP code (56,443), Contact person email (iansmith@email.com), and Contact person phone (1567430902).
- Products:** A dropdown menu is set to "Saving accounts, Pension, Complex financial plans".
- Complaint's details:** This section includes a "Date of complaint" field set to 11/27/2015 and a "Complaint description" text area containing the text: "Complaint for our advice about client's savings and planning of her funds shortly before retirement."

At the top right of the form, there are buttons for "Complete", "Save", and "Close", along with a "View Instructions" link. The status bar at the bottom of the application window shows the date and time as 12/22/2015, 8:27 AM, and a notification that "The in-basket returned 1 work items."

Figure 7-44 New complaint instance opening

Carly also used the advanced features of Datacap Mobile application to effectively scan paper documents with her tablet and sent the documents to Datacap, shown in Figure 7-45.

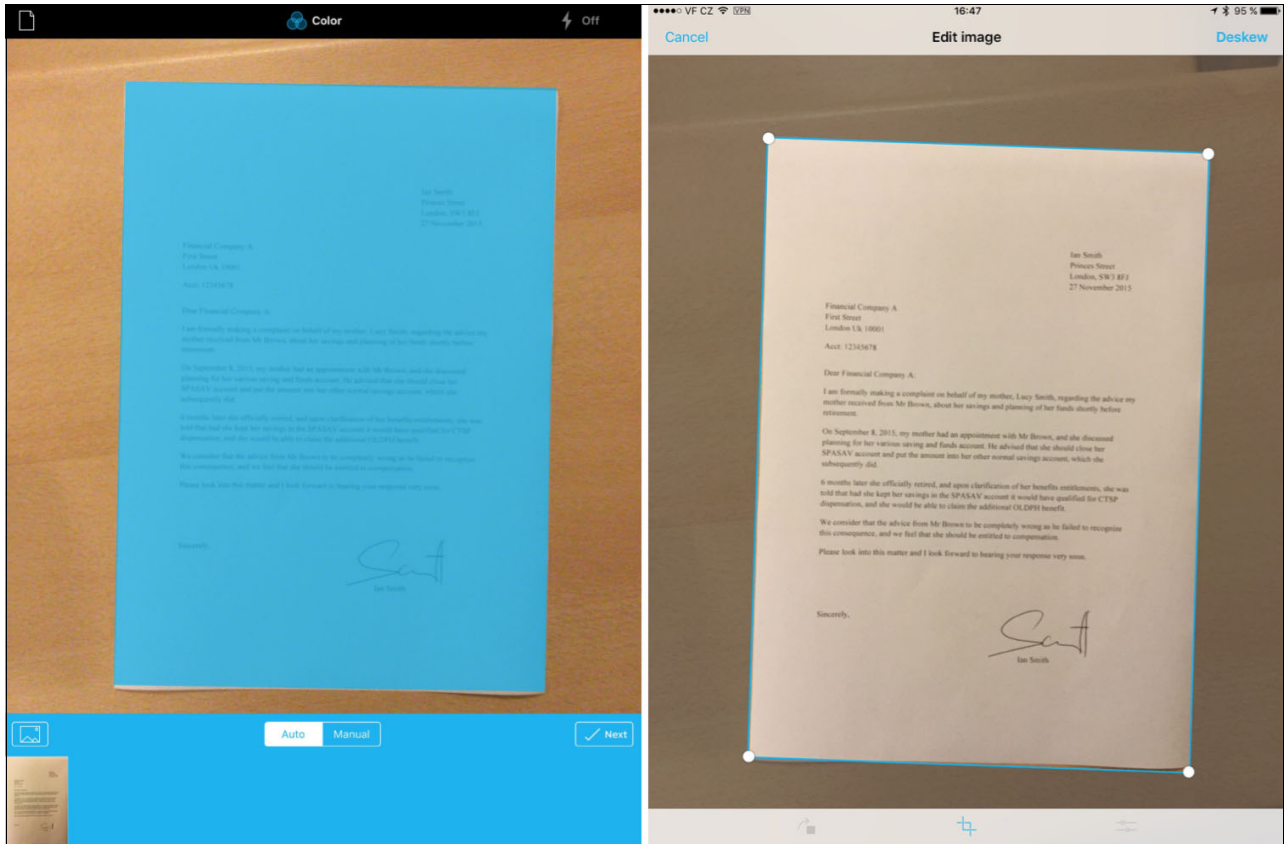


Figure 7-45 Scanning and image enhancement in IBM Datacap Mobile on tablet

Datacap processes documents, extracts important information such as names of client and contact person and complaint description, then releases digital documents with extracted information to the related case so the case worker can immediately start working in case resolution.

The complaint specialist, Paula, was responsible for quick and careful complaints resolution. She used all advantages of case management. Paula had all structured and unstructured information including history in one place; she can proactively engage other internal and external specialists for collaboration on case resolution; all activities were tracked and can be audited.

Paula reviewed all documents provided by the client within document viewer and can open and annotate any type of document directly in a web browser as shown in Figure 7-46.

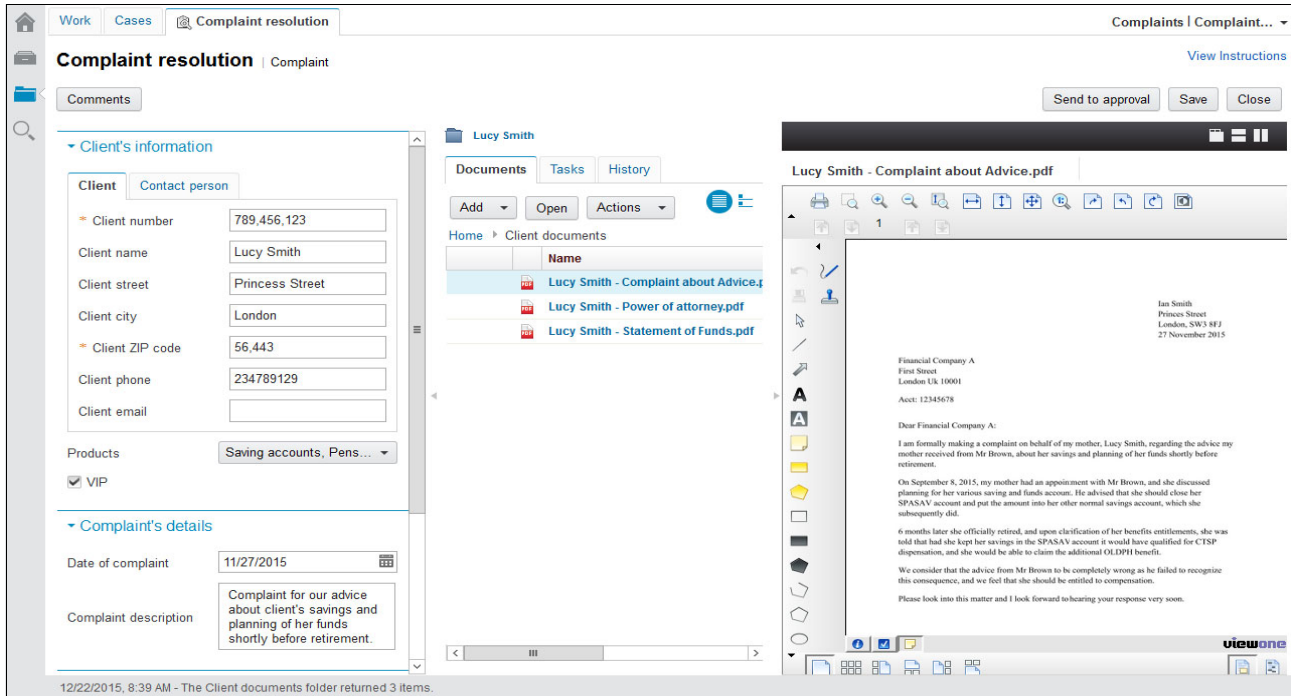


Figure 7-46 Complaints resolution page in web browser: all information in one place

Paula did not find a statement from the pension office stating the reduced benefits. Therefore, she requested that the client supply this missing evidence through Box. Paula logged in to her Financial Company A Box account through a web browser. In the Complaints folder, she created subfolders for client and contact person for collaboration on this case. She added Ian Smith for collaboration as Viewer Uploader, which has the authorities to preview, download, and upload documents. See Figure 7-47.

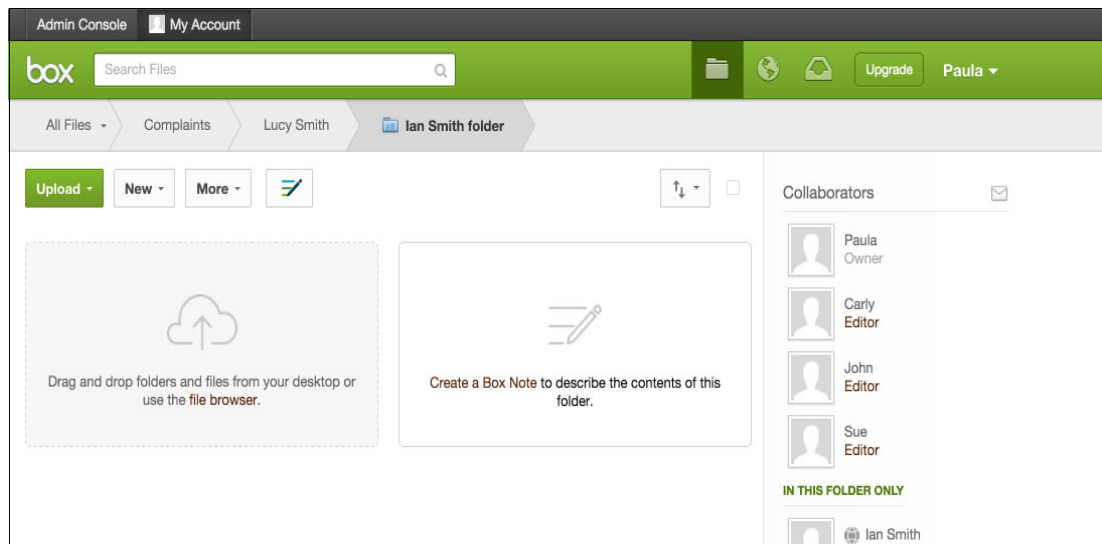


Figure 7-47 Creating case and client folder in Box (Courtesy of Box)

An invitation for collaboration was generated automatically and the invitation was sent by email to Ian Smith. Paula also sent an email to Ian asking him to upload the letter, from the pension office, that states the reduced benefits.

Based on a document review, Paula determines a legal review for this case is needed. Financial Company A uses external legal advisors, and management approval is required for engaging a legal service. Paula generates an ad hoc custom task with Case Manager. She creates ask for an external legal advisor for her manager (Figure 7-48).

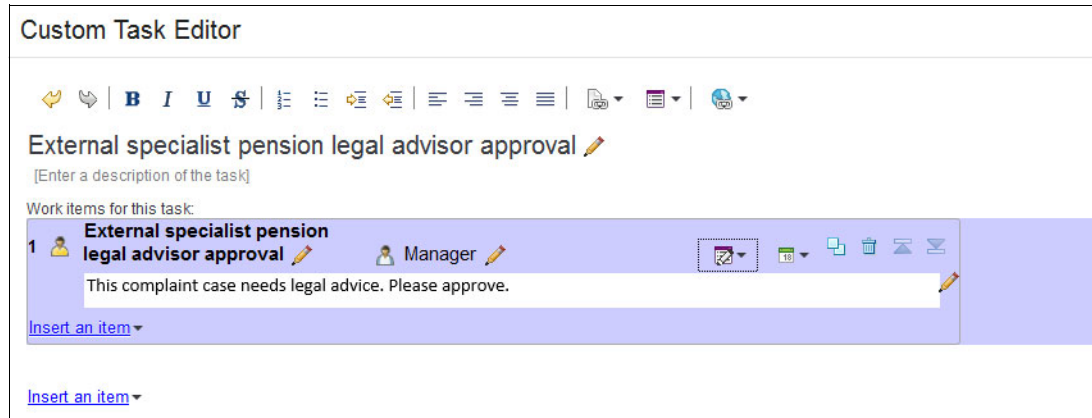


Figure 7-48 Custom task creation for ad hoc approval

Paula's manager John can see all important details of the task in Case Manager web client (Figure 7-49).

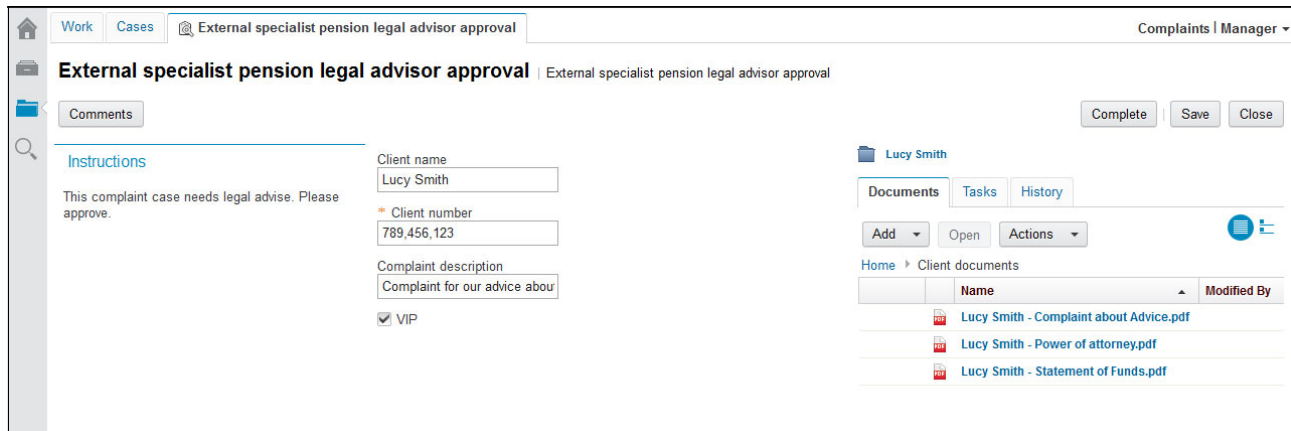


Figure 7-49 Ad hoc task for approval in web browser

John travels often and uses tablet and mobile devices as main working tool. With the IBM Case Manager Mobile application, John received Paula's request quickly, saw all relevant information and documents, and approved legal advisor request directly from his mobile phone. Figure 7-50 on page 149 shows access to properties, documents, and process from a mobile phone.

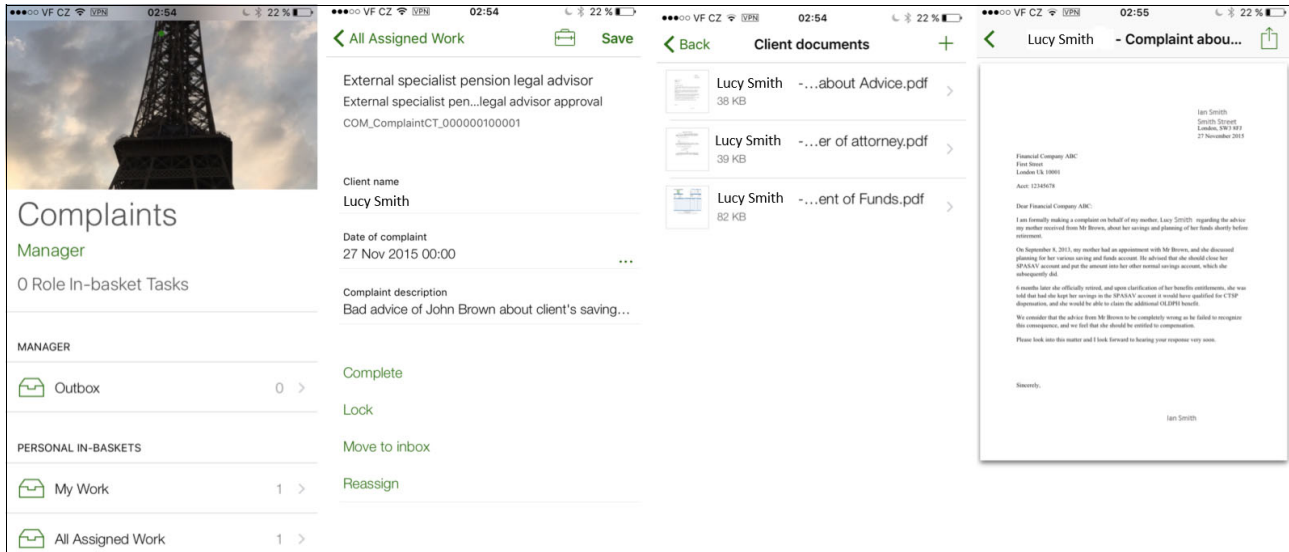


Figure 7-50 Ad hoc task for approval in Case Manager Mobile

Paula was instantly notified about her manager’s approval and started cooperation with external pension legal advisor Ken. Because Financial Company A and Ken’s law firm have a long-term working relationship, settings for smooth and fast sharing, and collaboration between these two companies have been established through the Case Manager and Box integration. Paula created an instance of the predefined discretionary task “External specialist assessment” as shown in Figure 7-51. She entered relevant information including description, email address of the legal advisor, name of the unique subfolder, “Ken folder” in the Box Complaint folder, and chose files to collaborate by adding them to the Attachment by searching through the case repository.

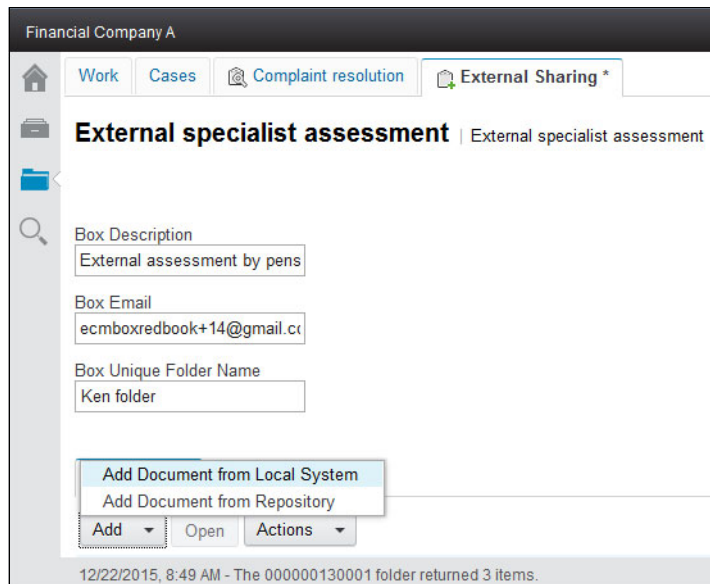


Figure 7-51 External specialist engagement

These properties are used by Box Operations, which automatically creates a subfolder for Ken Fuller, copies relevant documents to this folder, and invites Ken for collaboration.

The client's son, Ian Smith, received email about a missing statement of fund document from the complaint specialist Paula and also received email notification from Box that a subfolder for collaboration was created for him as shown in Figure 7-52.

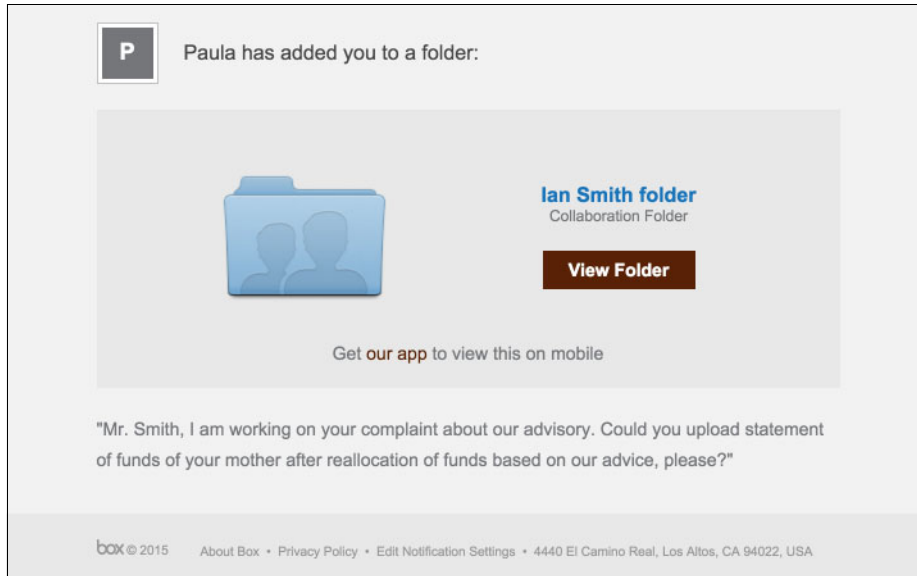


Figure 7-52 Box invitation email for collaboration in client mailbox (Courtesy of Box)

Ian opened the invitation in the Box mobile application with his mobile device. He reviewed the PDF documents, which he provided as paper documents to Financial Company A. He took a photo of the missing statement from the pension office stating the reduced benefits within the application and uploaded the photo to the Box repository. He also added appointment confirmation email of her mother and the financial advisor. See Figure 7-53.

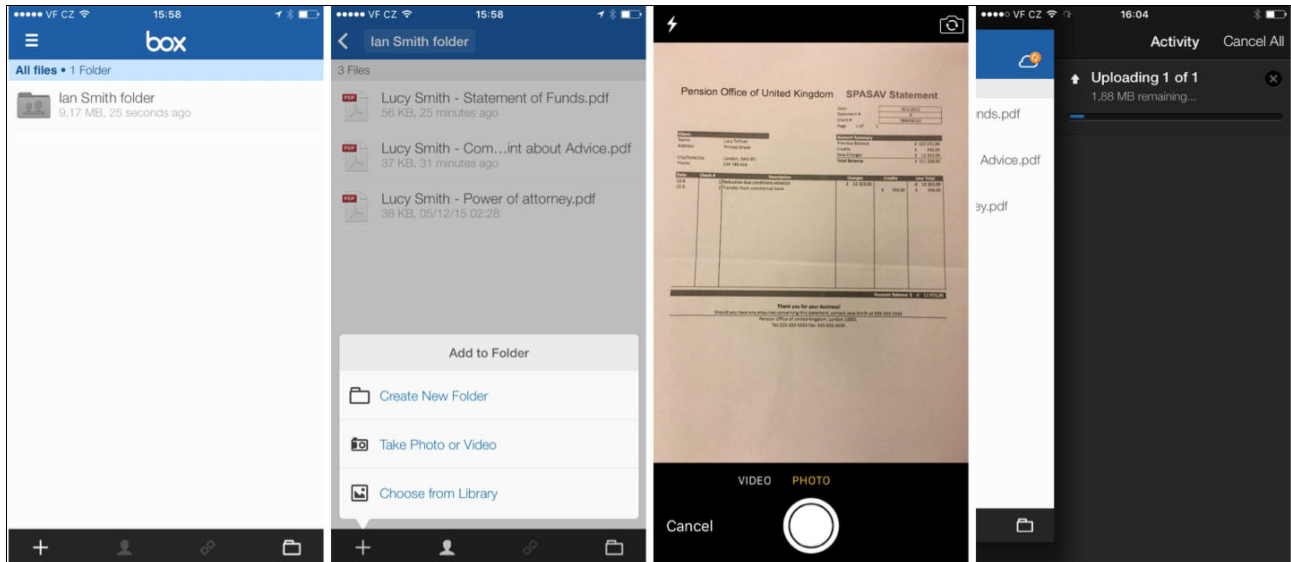


Figure 7-53 Adding document to Box by client from mobile phone (Courtesy of Box)

The complaint specialist, Paula, is automatically notified through Box notification email about newly uploaded documents. She previewed these documents in Content Navigator with Box integration in the same way she worked with documents in the case-based system.

Paula downloaded the documents to her workstation (Figure 7-54).

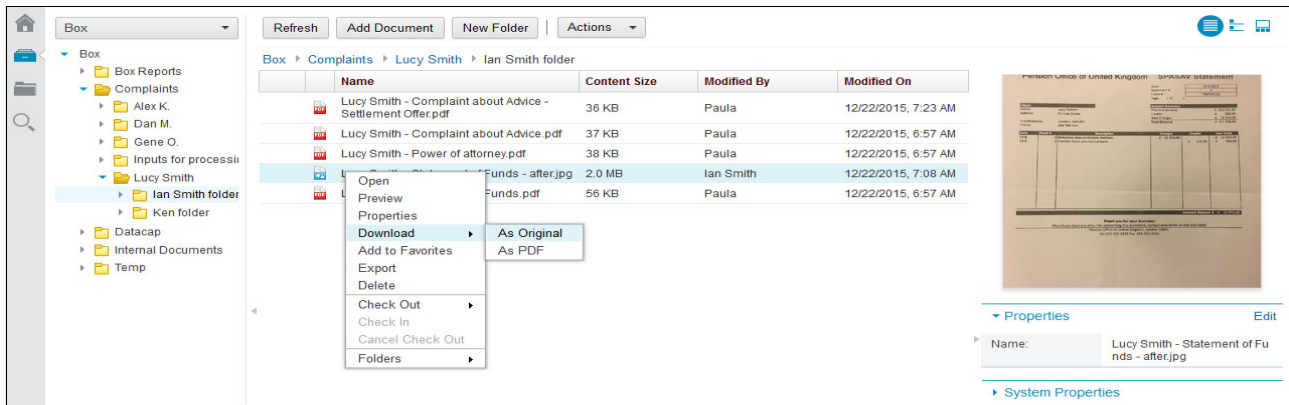


Figure 7-54 Accessing Box repository from IBM Content Navigator

Paula opened her complaints resolution task in Case Manager web client and added the downloaded document to the case by a drag-and-drop action and reviewed them, as shown in Figure 7-55.

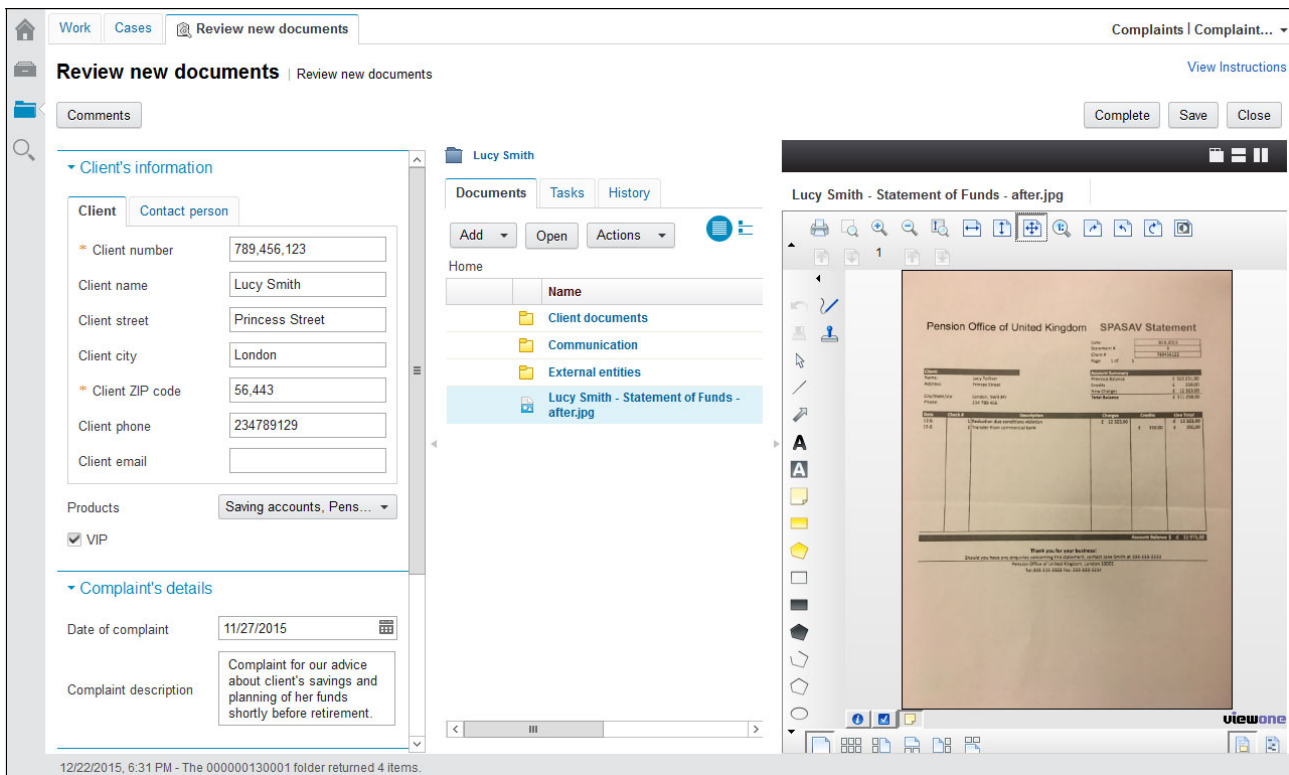


Figure 7-55 Review of newly added document by the complaints specialist

Because the fund statement from the pension office is a critical document in this case, Paula wanted to share this document with Ken, the external legal advisor. She used the prepared discretionary task: Copy document to external user for collaboration. Paula completed the fields for description, email address of the pension legal advisor, and the unique subfolder name of Ken folder in Box Complaint folder to be sure that the recipient is correct. She then selected the statement of funds by adding the document in the Attachments section by searching the case repository as shown in Figure 7-56.

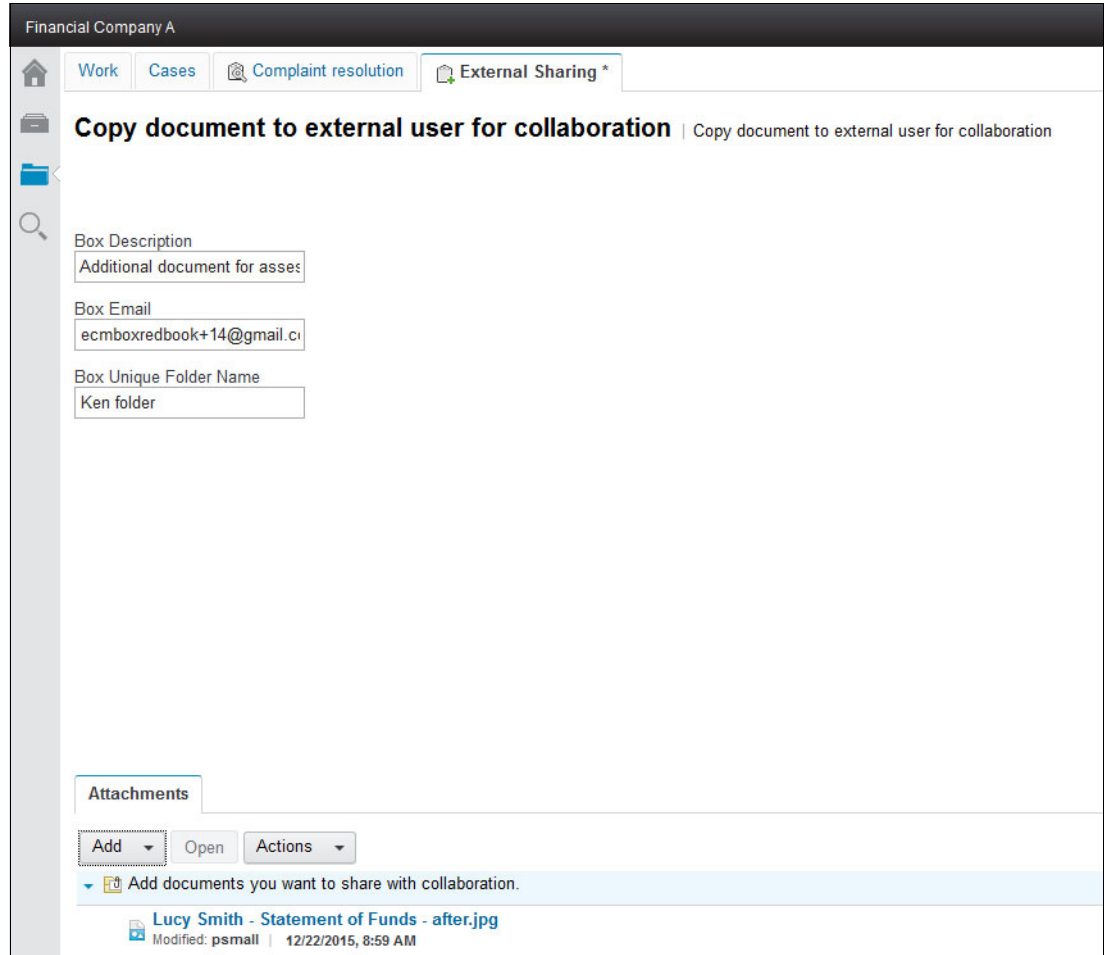


Figure 7-56 Copying new clients document to external specialist to Box

These properties are used again by Box Operations to automatically copy relevant documents to Ken's subfolder and notify Ken about the new document.



The external legal advisor Ken reviewed all relevant documents and provided his legal advice through a legal document uploaded to a special Box folder name Inputs for processing, as shown in Figure 7-57.

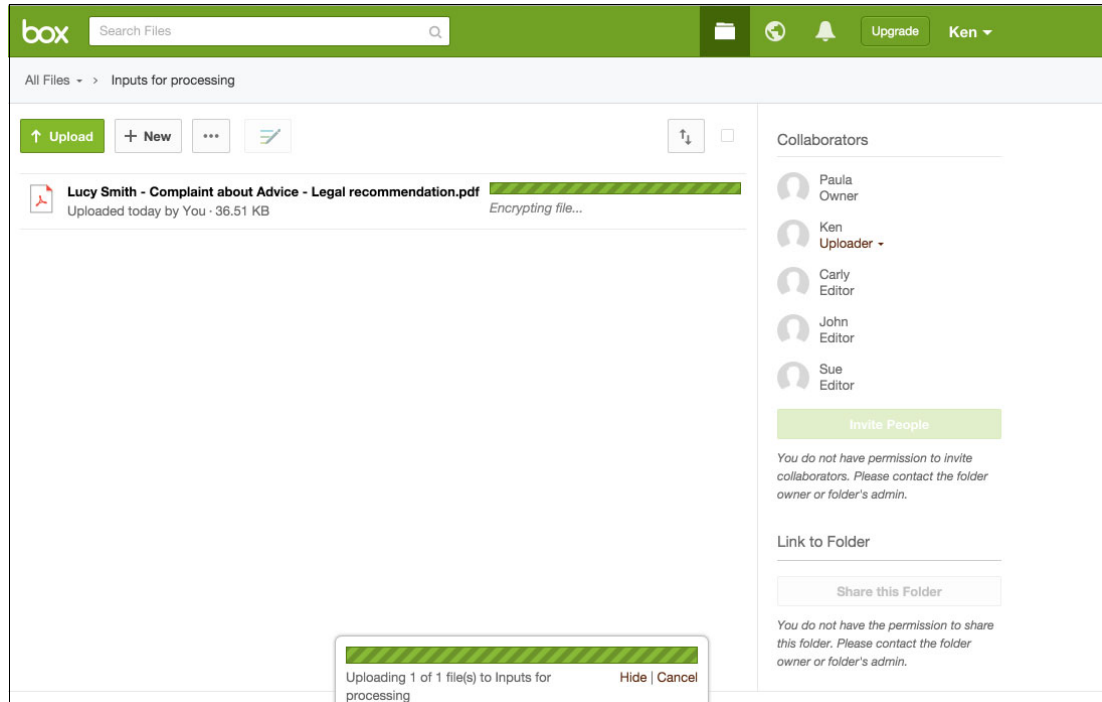


Figure 7-57 Uploading “Legal recommendation” to special Box folder (Courtesy of Box)

Datacap is integrated with Box and automatically ingests any new document in the Inputs for processing Box folder. The Legal recommendation document is processed by Datacap, important information is extracted, and the document is then released to the Content Foundation repository and also to the Box subfolder of the external legal advisor (Figure 7-58).

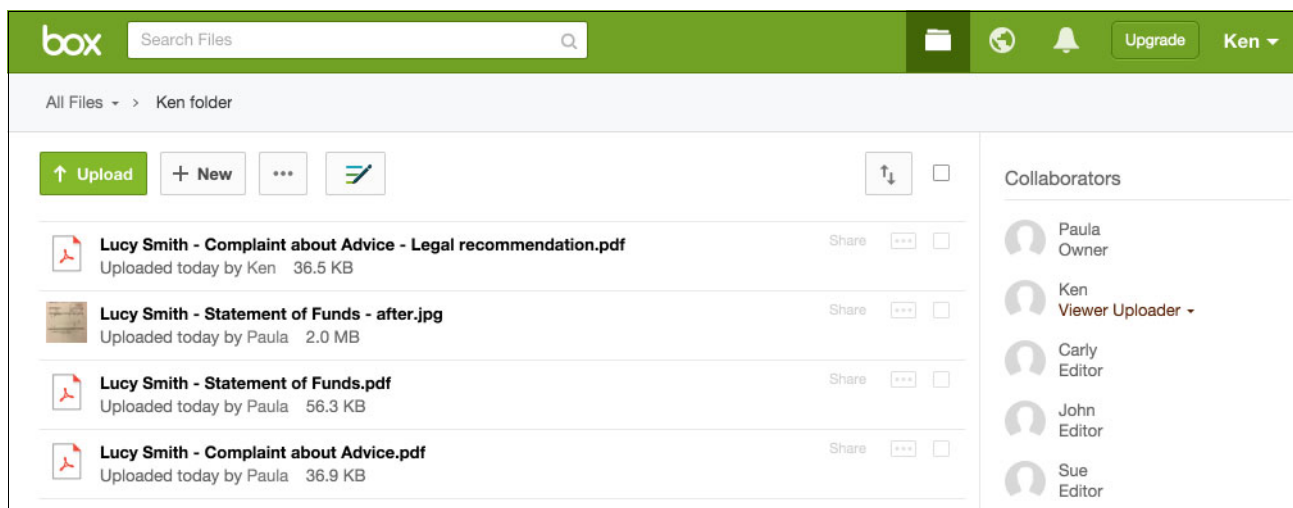


Figure 7-58 “Legal recommendation” document exported to the external advisor’s folder by Datacap (Courtesy of Box)

A new Review Documents task was automatically launched when the new Legal recommendation document was filed to the case repository for Paula, the complaints specialist, to review. See Figure 7-59.

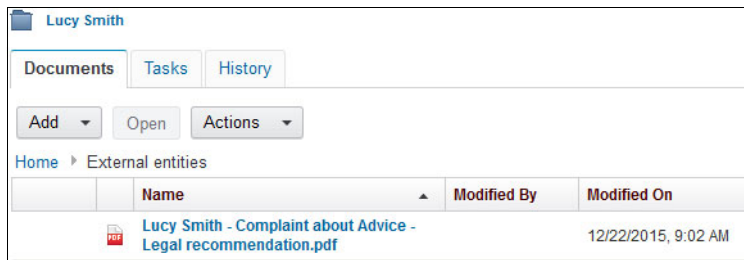


Figure 7-59 “Legal recommendation” document within “Review Documents” task in Case Manager

Paula discussed this case with her manager, over the IBM Sametime® instant messaging platform, and decided to follow the legal advice to offer a settlement to the client. Paula prepared the settlement offer letter and uploaded this document to the case folder in Case Manager (Figure 7-60).

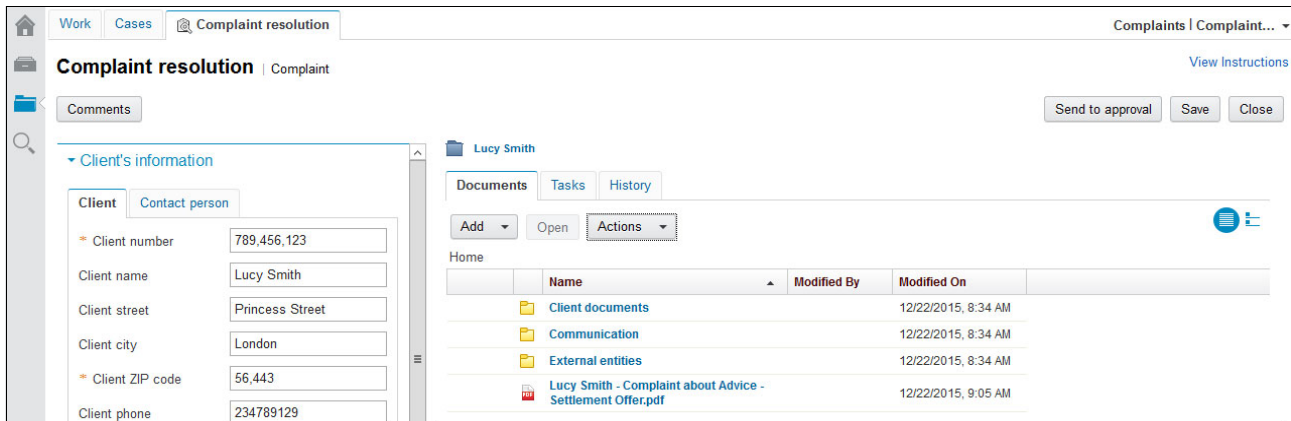


Figure 7-60 Settlement offer in the Case Manager folder

Paula started a discretionary task for an internal lawyer to review the prepared settlement offer letter.

The internal lawyer, Sue, reviewed the settlement offer letter and other supporting documents. She collaboratively edited the settlement offer letter online with Paula in IBM Docs and approved the settlement offer letter.

The final approval was done consequently by John, the manager, in the IBM Case Manager web client. Figure 7-61 shows the manager's approval.

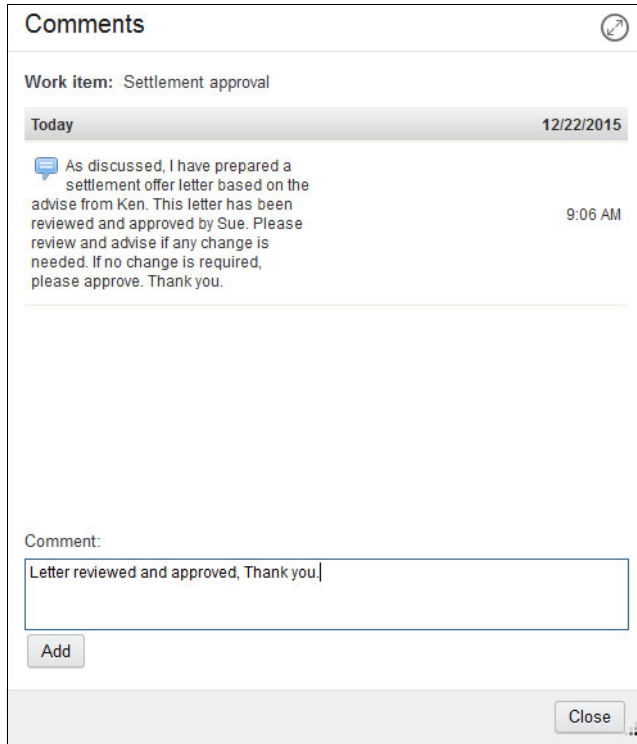


Figure 7-61 Manager's approval for the settlement offer letter

To share this settlement offer letter with client Lucy Smith and her son Ian Smith, complaint specialist Paula used the Case Manager context menu Share action in the integration with Box (Figure 7-62).

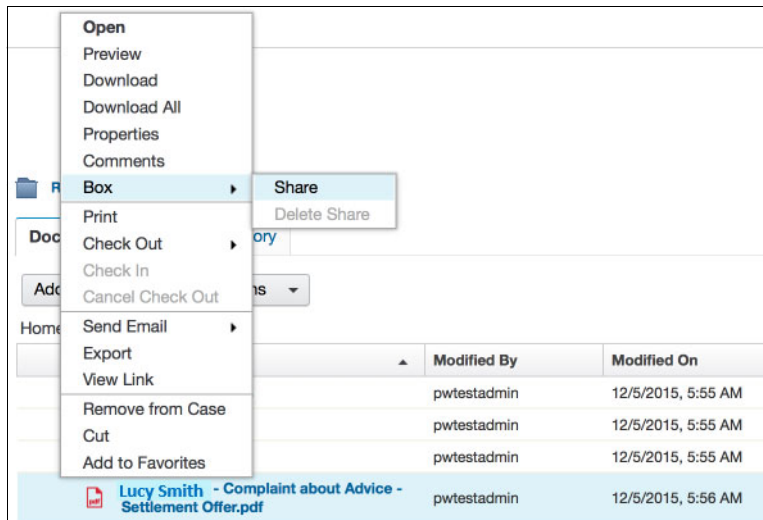
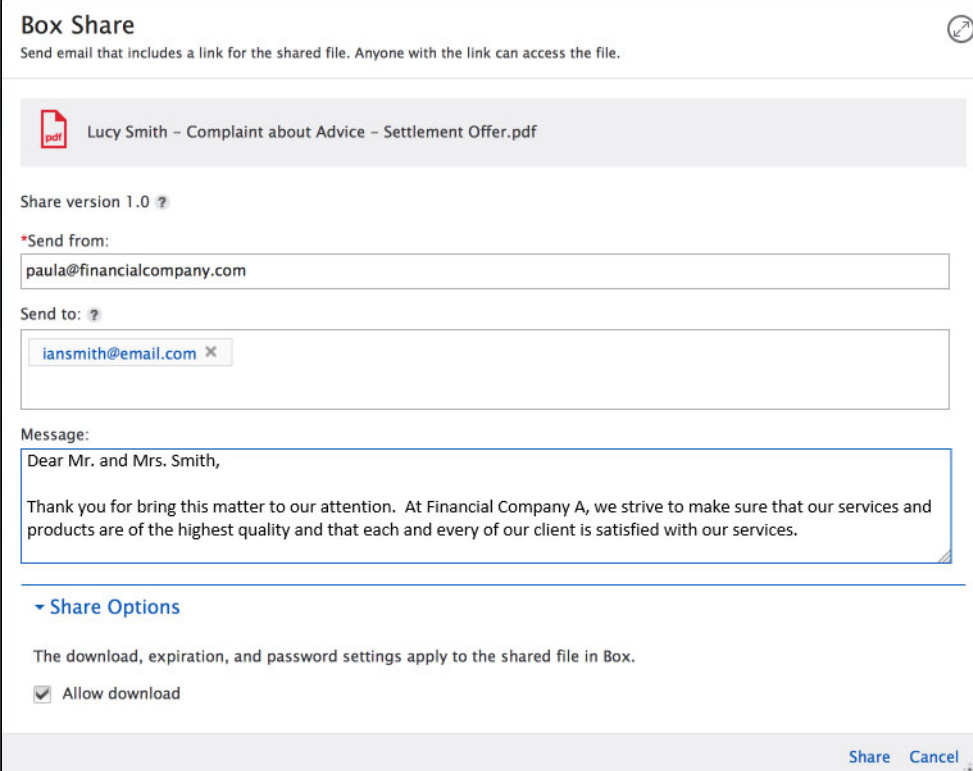


Figure 7-62 Sharing settlement offer letter with client

Paula specified Ian's email address and comment to settlement offer letter and clicked **Share** to send the offer letter to Ian (Figure 7-63).



The screenshot shows a 'Box Share' dialog box. At the top, it says 'Send email that includes a link for the shared file. Anyone with the link can access the file.' Below this, a PDF file is listed: 'Lucy Smith - Complaint about Advice - Settlement Offer.pdf'. Underneath the file name, it says 'Share version 1.0'. There are two input fields: '\*Send from:' with the value 'paula@financialcompany.com' and 'Send to:' with the value 'iansmith@email.com'. Below these is a 'Message:' field containing the text: 'Dear Mr. and Mrs. Smith, Thank you for bring this matter to our attention. At Financial Company A, we strive to make sure that our services and products are of the highest quality and that each and every of our client is satisfied with our services.' Below the message field is a section titled 'Share Options' with a sub-header 'The download, expiration, and password settings apply to the shared file in Box.' There is a checked checkbox labeled 'Allow download'. At the bottom right, there are 'Share' and 'Cancel' buttons.

Figure 7-63 Sharing settlement offer letter options

The IBM Case Manager and Box integration feature transfers the document to the Case Manager temporary folder in Box and invites the client for sharing. This sharing allows Ian only to preview or download the document within Box. The document is accessible only through the shared link and no collaboration is set.

Figure 7-64 shows that Ian received email notification from Case Manager about the settlement offer letter.

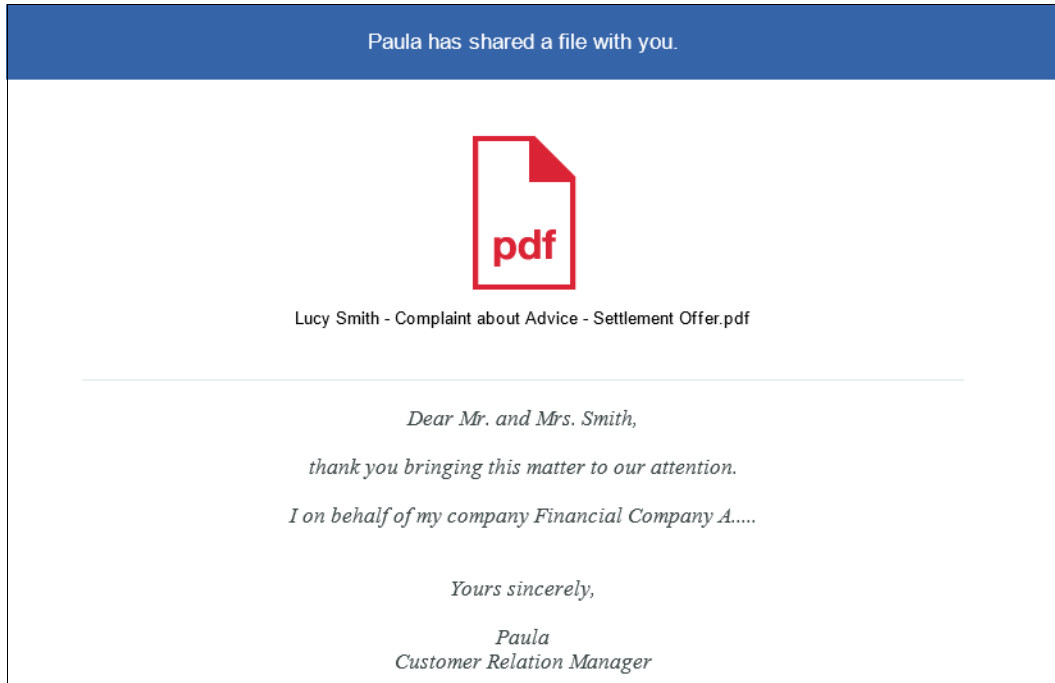


Figure 7-64 Notification email for client about new settlement offer document

The client decided to accept the settlement offer from Financial Company A. Figure 7-65 shows Ian's acceptance letter to Financial Company A.

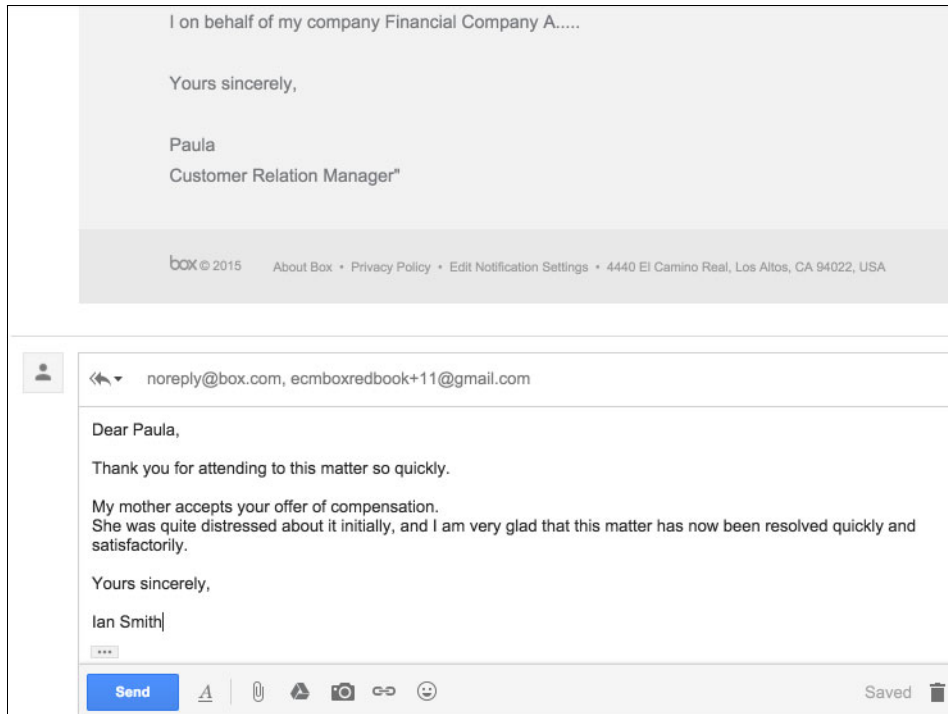


Figure 7-65 Acceptance email of settlement offer from client (Courtesy of Box)

Complaint specialist Paula added Ian's final agreement email to the case communication folder, closed the case, and sent a request for settlement payment.

All related documents from Box are copied to the Case Folder in IBM Content Foundation and also to the client's folder in Unified Client Folder. These documents are kept for single view across the company according to the legal regulation. In Box, the subfolders related to this case in the Complaint folder are set to be automatically deleted after a certain amount of time.

### **Personal and business sensitive information identification**

Financial Company A implemented StoredIQ for continuous document lifecycle management across all repositories used in the company including email system, portals, and Box. StoredIQ harvests the Box repository on a regular basis, and performs analytics by using a user info set. The StoredIQ analyst visually refines data by reviewing the heat maps and by applying filters to obtain documents with personal and business-sensitive content. StoredIQ analyst generates reports (.csv files) about the documents resided in Box that must be cleaned up. The Financial Company A Box administrator then deletes these files from Box repository.

Two types of documents are suitable candidates for identification and removal from Box:

- ▶ Documents with sensitive personal or business information
- ▶ Documents that are no longer relevant to business

Documents with sensitive information are those that contain information such as Social Security numbers (SSN), credit card numbers, IP addresses, or email addresses. Some regulations mandate that this information cannot be retained on cloud storage. Using the filters created earlier with StoredIQ Data Workbench, you can identify such documents as follows:

1. In IBM StoredIQ Data Workbench, click the info set picker and select the **Financial Company - Primary Data** user info set.
2. Click the **Refine** tab to view data maps.
3. Under Select Data Overlay, select the **Sensitive Personal Information** overlay. The data map automatically shows the parts of the Box volume with sensitive information such as SSN, credit card numbers, and so on.

Figure 7-66 shows that 18% of “Word processing” documents such as Word files, PDFs contain such information. The object count in this example is significantly smaller for demonstrative purposes, StoredIQ can replicate this process for infosets with much larger object count.

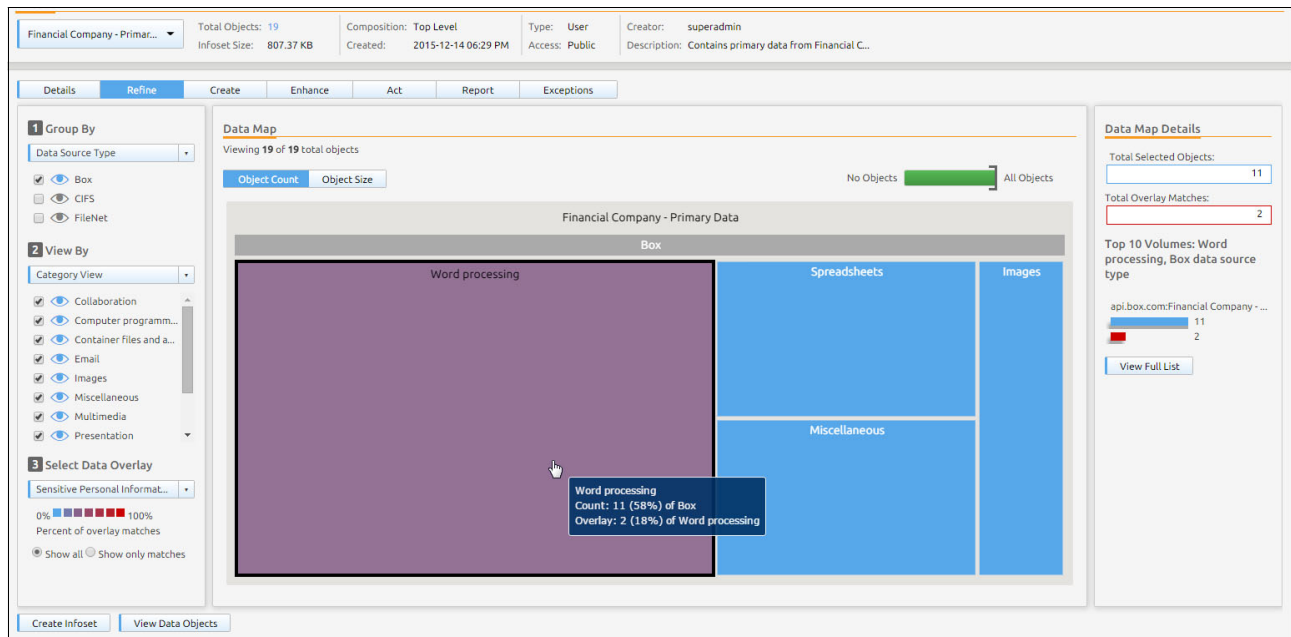


Figure 7-66 Finding file with sensitive personal information

4. The selection can be further refined based on other facets such as category, size, created, modified, and accessed date. When satisfied with the selection, click **Create Infoset** to open the infoset creation interface.
5. Provide a name (this example uses **Financial Company- Box Sensitive Information**) and description for the infoset and click **Save**. This user infoset contains all objects that are considered sensitive or pose a business risk.
6. The refinement can be performed iteratively on successive infosets. This provides granular control over the objects that go into the final infoset.
7. Select the an infoset from the infoset picker and click the **Reports** tab.
8. Select **CSV Infoset Data Object Export** and click **Generate Report**.
9. Provide a name for the report and click **Generate**.
10. The status of the CSV report can be viewed in the **Execution Log** tab under **Details**. When the status changes to Finished, you may download the CSV report by clicking the link in the Action Details section. The CSV report can be used by the Box Administrator to act on these documents.

Documents that are no longer relevant to business can fall under several different categories. In this scenario, we consider only the temporary documents created by other Box applications. The administrator and other stake holders decide that documents older than three years are not relevant to business and can be deleted. Use the following steps to identify those documents:

1. In the StoredIQ Data Workbench, click the infoset picker and select the **Financial Company - Box Application Data** user infoset.
2. Click the **Refine** tab to view data maps.

3. Under Select Data Overlay, select the **Created/Modified before 3 years** overlay. The data map automatically shows portions of the infoset that were created or modified more than three years ago.
4. Provide a name (for example, **Financial Company- Outdated Information**) and description for the infoset and click **Save**. This user infoset contains all objects that are considered sensitive or pose a business risk.
5. The refinement can be performed iteratively on successive infosets. This provides granular control over the objects that go into the final infoset.
6. Select the desired infoset from the infoset picker and click the **Reports** tab.
7. Select **CSV Infoset Data Object Export** and click **Generate Report**.
8. Provide a name for the report and click **Generate**.
9. The status of the CSV report can be viewed in the Execution Log tab under Details. When the status changes to Finished, the CSV report can be downloaded by clicking the link in the Action Details section.

Figure 7-67 shows the CSV report. The Box Administrator can use this report to act on these documents.

name	path	volume_name	object_type	owner	size	ctime	mtime	atime
Lucy Smith - Statement of Funds.pdf	ecmboxredbookpaula@gmail.com/Complaints/Lucy Smith/lan Smith folder	api.box.com:Financial Company - Box Volume	Simple_file	Paula	81973	04/12/15 16:55	04/12/15 16:55	04/12/15 16:55
Lucy Smith - Statement of Funds.pdf	ecmboxredbookpaula@gmail.com/Complaints/Lucy Smith/Ken folder	api.box.com:Financial Company - Box Volume	Simple_file	Paula	81973	04/12/15 16:55	04/12/15 16:55	04/12/15 16:55

Figure 7-67 CSV report

## Sharing additional documents

A year later, Lucy Smith needed the settlement offer letter for a particular reason but could not find it. Her son called Customer Care Center of Financial Company A asking for the settlement offer letter. The call center specialist used IBM Content Navigator and found the document in the Unified Client Folder as shown in Figure 7-68.

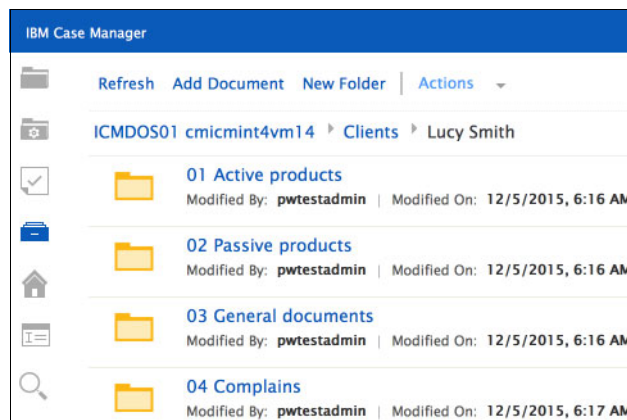


Figure 7-68 Unified Client Folder in IBM Content Navigator





The call center specialist specified Ian's email address, and set the expiration date of sharing and download permission (Figure 7-70).

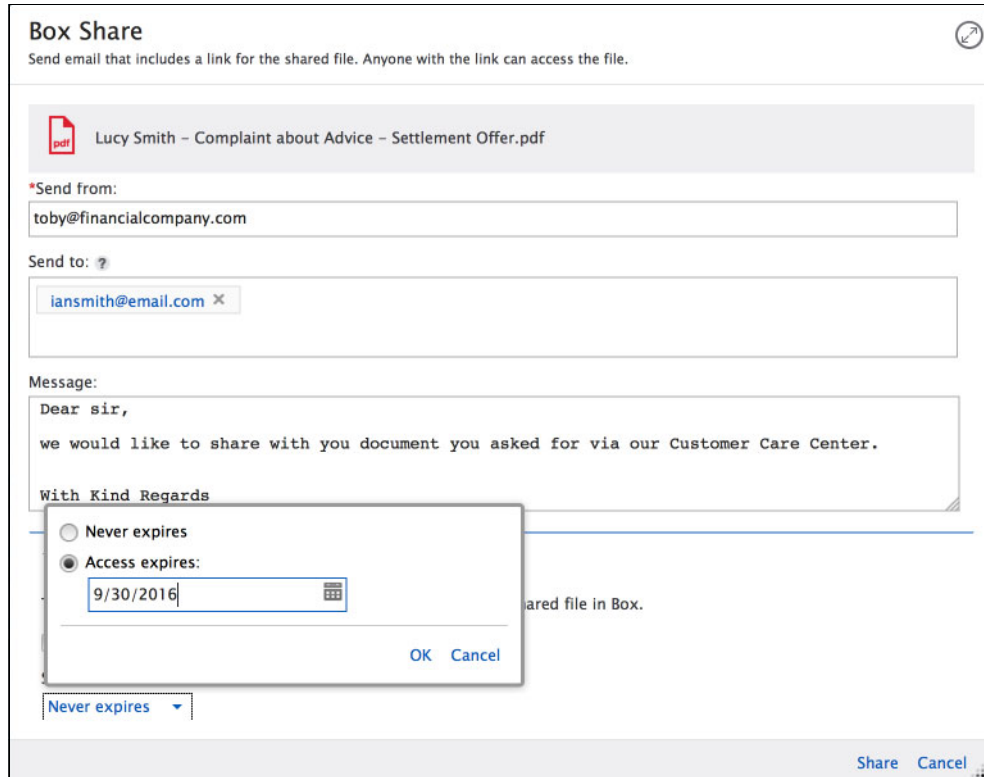
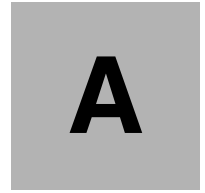


Figure 7-70 Sharing document details

The IBM Content Navigator and Box integration feature transfers document to the Content Navigator temporary folder in Box and invites client for sharing. This sharing allows Ian to only preview and download the document in Box. The document is accessible only through the shared link and no collaboration is set.

Within seconds, Ian received email notification from Content Navigator about sharing. He was able to preview and download the settlement offer letter from Box and provided it to his mother.

This scenario shows how a company can take the advantages of the integration of IBM ECM and Box for the communication internally among the business units and externally with clients to provide better services, improve productivity, gain customer confidence and satisfaction, and increase compatibility.



## Additional material

This paper refers to additional material that can be downloaded from the Internet as described in the following sections.

### Locating the web material

The web material associated with this paper is available in softcopy on the Internet from the IBM Redbooks Web server:

<ftp://www.redbooks.ibm.com/redbooks/REDP5230>

Alternatively, you can go to the IBM Redbooks website:

[ibm.com/redbooks](http://ibm.com/redbooks)

Select **Additional materials** and open the directory that corresponds with the IBM Redpaper form number, REDP5230.

### Using the web material

The additional Web material that accompanies this paper includes the following files:

<b>File name</b>	<b>Description</b>
2015_Box_Operations_Componenet.zip	Box Operations Component
2015_BoxOperationsProject.zip	Sample source project
Readme.text	

### System requirements for downloading the Web material

The web material requires the following system configuration to download the ZIP files:

<b>Hard disk space:</b>	15 MB minimum
<b>Operating system:</b>	Windows

## **Downloading and extracting the web material**

Create a subdirectory (folder) on your workstation, and extract the contents of the web material .zip file into this folder.

# Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this paper.

## IBM Redbooks

The following IBM Redbooks publications provide additional information about the topic in this document. Note that some of these might be available in softcopy only.

- ▶ *Advanced Case Management with IBM Case Manager*, SG24-7929
- ▶ *Customizing and Extending IBM Content Navigator*, SG24-8055
- ▶ *Implementing Document Imaging and Capture Solutions with IBM Datacap*, SG24-7969

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[ibm.com/redbooks](http://ibm.com/redbooks)

## Online resources

These websites are also relevant as further information sources:

- ▶ IBM Content Navigator in the IBM Knowledge Center:  
[https://www.ibm.com/support/knowledgecenter/SSEUEX\\_2.0.3/com.ibm.installingeuc.doc/euca000.htm](https://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/euca000.htm)
- ▶ IBM Content Navigator 2.0.3 software requirement:  
<http://www.ibm.com/support/docview.wss?uid=swg27042879>
- ▶ Upgrading to IBM Content Navigator 2.0.3:  
[https://www.ibm.com/support/knowledgecenter/SSEUEX\\_2.0.3/com.ibm.installingeuc.doc/eucup000.htm](https://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/eucup000.htm)
- ▶ Enabling the IBM Content Navigator Task Manager feature in the web client:  
[https://www.ibm.com/support/knowledgecenter/SSEUEX\\_2.0.3/com.ibm.installingeuc.doc/eucco113.htm](https://www.ibm.com/support/knowledgecenter/SSEUEX_2.0.3/com.ibm.installingeuc.doc/eucco113.htm)
- ▶ IBM Case Manager in the IBM Knowledge Center:  
<https://www.ibm.com/support/knowledgecenter/SSCTJ4/welcome>
- ▶ IBM Datacap custom actions:  
<http://www.ibm.com/developerworks/data/library/techarticle/dm-1412datacap-developer-kit/DevWorks-Datacap-9.0-CustomActions.html>
- ▶ IBM StoredIQ:  
<http://www.ibm.com/software/info/storediq/>
- ▶ Box Developer:  
<https://developers.box.com/developer-account-faq/>

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