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October 22, 2014

Product Implementation Training (PIT)

IBM FileNet Content Manager 5.2.1GA

Video Streaming Enhancements in CPE 5.2.1

Introduction

- Course Overview
  - Video Streaming Enhancements for CPE 5.2.1
- Target Audience
  - Developers using Content Platform Engine API
- Suggested Prerequisites
  - Knowledge of P8 Application Development using Java or .NET CPE API
- Version Release Date: October 31, 2014

Course Objectives

After this course you will be able to:

- Explain the enhancements made to the CPE API to enable video streaming
- Explain the storage area types that are optimized for video streaming operations

Course Roadmap

➔ Overview

- API changes for video streaming
- Storage Area support

Overview

- CPE API has been enhanced to support retrieving content at arbitrary positions within the InputStream returned by the Content Platform Engine Java and .NET API, including being able to seek forward and backward within the stream
- In previous releases, retrieval of content was limited to reading sequentially over the content
- Using new extended stream support, applications can now efficiently retrieve very large file content – such as video and audio content – from any point in the file
- No changes required for applications not needing this capability
- Applications that do require this capability can cast the InputStream returned by the CPE API to the new extended stream class and invoke the new operations

Course Roadmap

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- ➔ API changes for video streaming
- Storage Area support

Java API Changes

com.filenet.api.util.ExtendedInputStream extends InputStream

public long position() throws IOException

- Returns the current position in this stream.

public void position(long newPosition) throws IOException

- Sets this input stream's position.

public int readAt(long position, byte[] b, int offset, int len) throws IOException

- Sets the input stream to the specified position, then reads up to len bytes of data from the input stream into an array of bytes.

public boolean sizeSupported()

- Returns true if this input stream can return the total size of the underlying content.

public long size() throws IOException

- Returns the total size of the underlying content.

.NET API Changes

FileNet.Api.Util.ExtendedStream : Stream

public bool CanReturnLength

- Returns true if this input stream can return the total size of the underlying content.

public int ReadAt (long position, byte[] buffer, int offset, int count)

- Sets the input stream to the specified position, then reads up to count bytes of data from the input stream into an array of bytes.

The .NET Stream class already has a Seek method, Length property, and Position property than can be used to perform similar functions as the operations added in the Java API

Getting the Input Stream

Same API used to get an input stream to content from the CPE server

Get an input stream from a Document:

- Document doc;
- InputStream istream = doc.accessContentStream(0);

Get an input stream from a ContentTransfer

- ContentTransfer ct = (ContentTransfer) doc.get_ContentElements().get(0);
- InputStream istream = ct.accessContentStream();

Cast the returned input stream to ExtendedInputStream and invoke operation

- ExtendedInputStream extendedStream = (ExtendedInputStream)is;
- extendedStream.position(123);

Course Roadmap

- Overview
- API changes for video streaming

➔ Storage Area support

Storage Area Support

- All storage areas are supported, although different storage area types support it better than others
- Storage areas with encryption and/or compression enabled are supported
- Content cache is supported
- Advanced storage whose content is accessed on a remote replica via CPE communication is supported

Native storage support for positioning the stream

- Although the new extended input stream supports all types of storage devices, the ability to efficiently seek within a content stream is limited to the capabilities of the underlying media and might not be appropriate for some types of storage devices

- Content stored in the following types of storage are able to use the native re-positioning facilities of the underlying media to efficiently seek within a content stream

  - File storage areas
  - File system storage device used by Advanced Storage Areas

- Content that has been compressed and/or encrypted can do efficient seeks as long as it is stored in storage that can do efficient seeks (i.e. the 2 listed above)
- Content accessed over server communication can do efficient seeks if the storage device at the remote site can do efficient seeks

  i.e. File system storage device used by Advanced Storage Areas

Content Cache support for positioning the stream

- The Content Platform Engine Content Cache can be used to cache content from any type of storage area or storage device
- Once content has already been added to the content cache, then seeking within that stream can be done efficiently
- Content that is preloaded during create into the content cache can perform efficient seeks
- Content that has not yet been added to the content cache or content in the process of being added to the content cache will not be able to perform efficient seeks, even if the native storage for that content does support efficient seeks.

  - For example, if a content's native storage is a file storage area and a content cache has been enabled for that storage area and is active for the current site, then during the time the content is being transferred from the file storage area to the content cache, efficient seeks cannot be performed. This is because the input stream returned by the CPE API is referencing the content in the content cache and not the content in the file storage area.

•Once the content has been fully copied into the content cache, then efficient seeks can be performed, even though the content is natively stored on a non-optimized media such as database storage, OpenStack storage device, or any type of fixed content device.

Course Summary

You have completed this course and can:

- Explain the enhancements made to the CPE API to enable video streaming

- Explain the storage area types that are optimized for video streaming operations

Contacts

- Product Marketing Manager:
  - Robert Finn
- Product Manager:
  - Stephen Hussy
- Subject Matter Experts (SME) / Area of Expertise:
  - Roger Bacalzo (Java API)
  - Michael Seaman (.NET API)
- Support:
  - Eric Fonkalsrud Jr (L3 Manager)

Product Help/Documentation/Resources

P8 5.2.1 Information Center (available October 31st)

http://www.ibm.com/support/knowledgecenter/SSNW2F_5.2.1/

Troubleshooting and support>Release notes and what's new for FileNet P8>What's new in . . .>What's new in IBM FileNet Content Manager V5.2.1>

What's new in Content Platform Engine V5.2.1>What's new for developers>

Enhanced input stream for content retrieval

Developing FileNet P8 applications>Content Engine Development>

Content Engine Java API Reference>com.filenet.api.util>ExtendedInputStream

Content Engine .NET API Reference>FileNet.Api.Util Namespace>ExtendedStream Class