

Codonics Integrity Compression Support

Overview

This document provides the instructions to configure the Codonics® Integrity™ Medical Image Importer to import and store compressed images. DICOM supports the capability of receiving and processing of various types of compressed pixel data. The features described in this technical brief are supported in Integrity software Version 1.4.0 or higher.

Operational Description

Integrity will import compressed studies and preserve the transfer syntax for storing. Integrity can also negotiate the transfer syntax of a study being stored to a destination.

In DICOM, the Service Class User (SCU) initiates the negotiation of the transfer syntax with the Service Class Provider (SCP). When sending the presentation context to the SCP, the SCU provides a list of one or more transfer syntaxes that it can use for transferring the study. Typically, the first transfer syntax in the list is the one that the SCU prefers. As a result, the SCU can use the study's encoded transfer syntax as the preferred transfer syntax when negotiating the presentation context with the SCP. To do that, the SCU would place the study's encoded transfer syntax at the beginning of the list of transfer syntaxes that it sends to the SCP.

The SCP is responsible to choose the transfer syntax that it desires to use for the transfer. The SCP responds to the presentation context negotiation in one of two ways:

1. It accepts the presentation context and indicates the transfer syntax that it wants to use for the transfer.
2. It rejects the presentation context which means that it does not accept any of the transfer syntaxes proposed by the SCU.

Importing Compressed Studies

Integrity will attempt to preserve the compression syntax of images that it receives from a disc or SCU. Integrity supports the following transfer syntaxes:

1. JPEG Baseline (lossy); process 1
2. JPEG Extended (lossy); processes 2 and 4
3. JPEG Lossless; process 14 and first-order prediction process 14
4. JPEG 2000 Lossy
5. JPEG 2000 Lossless
6. Implicit Little Endian
7. Explicit Big Endian
8. Explicit Little Endian

WARNING: If a study contains a series with more than one transfer syntax for the same SOP class, Integrity will import the study but will need to change one of the transfer syntaxes.

When two different transfer syntaxes are present for a single SOP class, a lossless or uncompressed transfer syntax is chosen.

If all series are in a lossy format, they are decompressed to Explicit Little Endian.

NOTE: A message is logged in the StoreJobProcessor log when a study is stored in a transfer syntax other than its original one.

NOTE: Any imported study that contains a lossy image will contain an Alert ICON, yellow triangle, in the Status column on the Study page. Additionally, an alert in the Studies Detail screen lets a user know that there is a compressed lossy image contained in the study.

Storing Compressed Studies

Integrity will allow the user to choose the preferred transfer syntax that Integrity uses when providing the list of transfer syntaxes during the negotiation phase of the DICOM association.

NOTE: Storing to a PACS may take longer if the PACS does not support the imported study's transfer syntax and a different transfer syntax needs to be negotiated.

Two new configuration parameters are provided in the \profiles\storeclient\destination.xxx.txt file to support choosing the preferred transfer syntax.

Parameter: **preferredTransferSyntax**
Settings:

Table 1: Supported Transfer Syntaxes

Friendly Name	Tag Value	Description
explicitBigEndian	1.2.840.10008.1.2.2	Explicit VR Big Endian
jpeg2000 Lossy	1.2.840.10008.1.2.4.91	JPEG2000 Image Compression
jpeg2000 Lossless	1.2.840.10008.1.2.4.90	JPEG2000 Image Compression (Lossless Only)
jpegBaselineProcess1 Lossy	1.2.840.10008.1.2.4.50	JPEG Baseline (Process 1)
jpegLosslessFirstOrder PredictionProcess14	1.2.840.10008.1.2.4.70	JPEG Lossless, Non-Hierarchical, First-Order Prediction
implicitLittleEndian	1.2.840.10008.1.2	Implicit VR Little Endian
explicitLittleEndian	1.2.840.10008.1.2.1	Explicit VR Little Endian

Default: **useTransferSyntaxFromStudy**
Description: This parameter negotiates the transfer syntax with the store destination. If the parameter is set to the default, Integrity will preserve the transfer syntax of the imported study when storing it to a destination. If the parameter is set to any of the other transfer syntaxes listed, using either the "Friendly Name" or the "Tag Value," Integrity will change the transfer syntax of the imported study when storing to a destination.

NOTE: Both jpegExtendedProcess2and4Lossy (1.2.840.10008.1.2.4.51) and jpegLosslessProcess14 (1.2.840.10008.1.2.4.57) are **not** supported transfer syntaxes. However, this does not affect receiving studies in these formats, or storing them while preserving their original transfer syntax.

Parameter: **includeListOfTransferSyntaxes**

Settings: **true or false**

Default: **true**

Description: Integrity provides an optional list of transfer syntaxes when negotiating the presentation context with the store destination. The list is created by Integrity and sent to the store destination when negotiating the presentation context with the SCP. If the parameter is set to **true**, when Integrity sends the list of supported transfer syntaxes, the list will include:

- ◆ Explicit little endian
- ◆ Explicit big endian
- ◆ Implicit little endian

If the parameter is set to **false**, Integrity will only include the transfer syntax configured by **preferredTransferSyntax** when negotiating the presentation context with the store destination.

Technical Support

If problems occur during software installation, contact Codonics Technical Support between the hours of 8:30 AM and 5:30 PM EST (weekends and U.S. holidays excluded).

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