Sentinel 10 DICOM Configuration Guide

98200

Sentinel

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1 INTRODUCTION

1.1 PURPOSE

This document describes the configuration settings which allow the Cardiology Information Management System product ***Sentinel*** **version 10** to be tailored to individual customer operational requirements.

2 LOCALISING XML CONFIGURATION FILES

Some XML configuration files contain information which will be printed, displayed, or passed to a file or another system. Where this is the case it will be necessary to enter text into the configuration file in the language appropriate for the country where the configuration is to be used. When doing this ensure that the line of XML shown below is included as the very first line of the configuration file (i.e. before any other XML and before any comment text).

```
<?xml version=”1.0” encoding=”utf-8” ?>
```

Replace the “utf-8” with the character encoding required for the text entered into the XML file. For example if editing the configuration file using *WordPad* and saving the file using **File/Save As/Save as type: UTF-8** use an encoding of “unicode” in the XML line shown above.

3 DICOM SUPPORT OVERVIEW

DICOM/PACS communication and HL7/EMR communication should not both be used in the same Sentinel installation.

Sentinel DICOM support allows Sentinel to receive orders from a PACS system and to return encapsulated PDF reports and resting ECG waveform data to the PACS system.

Sentinel can also export resting ECG to DICOM (DCM) files containing ECG waveform data and the reports from all other test modalities to DICOM files containing encapsulated PDF reports.

Sentinel has a DICOM conformance statement which covers what features of the DICOM standard are supported.

3.1 DICOM ENCAPSULATED PDF REPORT

This DICOM file takes a PDF report and puts it inside a DCM file. There are some important points to understand about these files.

1. They don't know about test modalities, order ids, case numbers, test status, report status and other Sentinel fields. This means that importing these files cannot recreate the "test as it was".
2. The PDF is a fixed PDF file. This means that it will contain all the overlaid report information when it is exported to a DCM file (the status and signing information for example). This means importing the same file as you exported can have information overlaid in the same places as the original information was overlaid making it difficult to read.
3. Sentinel cannot export these files for resting ECG tests. Instead it will export resting ECG tests as waveform ECG DICOM files. The reason for this is that much less information is lost compared with encapsulated PDF DICOM.

3.2 DICOM WAVEFORM

This DICOM file takes a resting ECG recording and puts it inside a DCM file. This kind of file is only exported when exporting native resting ECG tests to DCM file.

3.3 DICOM WINDOWS SERVICE

The DICOM functionality relies on the **Sentinel DICOM Service** which is a Windows Service that communicates with the PACS system asking it for work lists and supplying DICOM files and status information. This Windows Service is not normally running (because not every customer uses DICOM). After setting up DICOM it will be necessary to set this Windows Service to run automatically. By default it is manually started.

4 DICOM WINDOWS SERVICE SETTINGS

All of the following DICOM settings are defined in the XML configuration file:

C:\Program Files (x86)\Del Mar Reynolds Medical\Sentinel Dicom Service\DicomService.config

4.1 MAXIMUM SEND RETRIES

The setting **MaxRetries** is an integer (default: 5) which determine the number of times Sentinel will attempt to send DICOM files to the PACS system before giving up.

4.2 PACS APPLICATION ENTITY TITLE

The setting **PACSAETitle** contains the Application Entity (AE) Title of the PACS system.

4.3 PACS HOST

The setting PACSHost contains the host name of the PACS system.

4.4 PACS HTTP PORT

The setting **PACSPort** contains the HTTP port number of the PACS system.

4.5 SENTINEL DICOM APPLICATION ENTITY TITLE

The setting **DicomServiceAETitle** contains the Application Entity (AE) Title by which Sentinel identifies itself to the PACS system.

4.6 FOLDER TO SOURCE DICOM FILES TO SEND TO PACS

The setting **BaseFolder** contains the folder from which the DICOM files exported by Sentinel are sourced to send them to the PACS system. Note the XML comment for this setting is not very helpful.

4.7 PACS DICOM WORKLIST SERVER APPLICATION ENTITY TITLE

The setting **WorklistAETitle** contains the Application Entity (AE) Title of the PACS system DICOM worklist server.

4.8 DICOM WORKLIST HOST

The setting **WorklistHost** contains the host name of the PACS system DICOM worklist server.

4.9 DICOM WORKLIST HTTP PORT

The setting **WorklistPort** contains the HTTP port number of the PACS system DICOM worklist server.

4.10 MINUTES BETWEEN POLLS FOR WORKLIST ITEMS

The setting **WorklistPollingInterval** contains the number of minutes between each poll Sentinel makes of the DICOM worklist server to obtain the latest list of worklist items (i.e. orders).

4.11 ORDERS FROM PACS WORKLIST ITEMS

Sentinel must be able to identify the test modality of the worklist items received from the PACS worklist server. Sentinel can only accept orders for the following test modalities from PACS systems:

1. Resting
2. Rhythm
3. Holter
4. ABP
5. Stress
6. Ergo-spirometry

Note that Sentinel cannot receive orders for Event, Spirometry or Plethysmography tests or for any other custom tests.

The test modality is obtained from the DICOM worklist item in the **scheduled procedure step module**. The **code value** from the first sequence item of the **scheduled protocol code sequence list** from with the first sequence item in the **scheduled procedure step procedure list.**

Sentinel requests worklist items from the PACS system using the worklist IOD modality attribute set to "**ECG**" (i.e. as search criteria for the PACS system to decide which worklist items to send to Sentinel).

5 EXPORTING DICOM DATA TO THE PACS SYSTEM

In order to export tests to a PACS system, in addition to setting up the DICOM Windows Service (as described earlier in the document), the event engine configuration must be setup to automatically export DCM files to the DICOM Windows Service using the **ExportTestToFileEventHandler**.

A typical fragment of the Event Engine Configuration for exporting DCM files to the DICOM Windows Service is shown below.

```
<EventConfiguration EventName="TestCompletedEventArg">
   <EventHandlers>

      <EventHandler Name="ExportTestToFileEventHandler">
          <Conditions />
          <FileKind>.DCM</FileKind>
          <Folder>C:\DMR\Sentinel\DICOM</Folder>
     </EventHandler>

     <EventHandler Name="UpdateOrderStatusEventHandler">
          <Conditions/>
     </EventHandler>

 </EventHandlers>

</EventConfiguration>
```

This exports a DICOM file to the folder watched by the DICOM Windows Service whenever a user marks a test as completed. Of course this event handler could be fired from various different events depending on customer requirements and workflow.

The **UpdateOrderStatusEventHandler** will send the DICOM worklist order status (completed) to the PACS system if an order was created from a DICOM worklist entry.

6 DOCUMENT REVISION RECORD

REV	DATE	SECTION / PAGE(S)	DESCRIPTION AND DETAILS OF CHANGE	AUTHOR
A		All Sections	Initial Release of document, for Sentinel V9	GS