



**PacsSCAN™**  
**DICOM Conformance Statement**

September 8, 2008

PG-ENG-PS-DCMCS-REVD

**PACSGEAR, Inc. - Proprietary**

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**Any Comments or questions regarding the contents of this document  
should be directed to the author.**

Revision History

Date	Revision	Author(s)	Description
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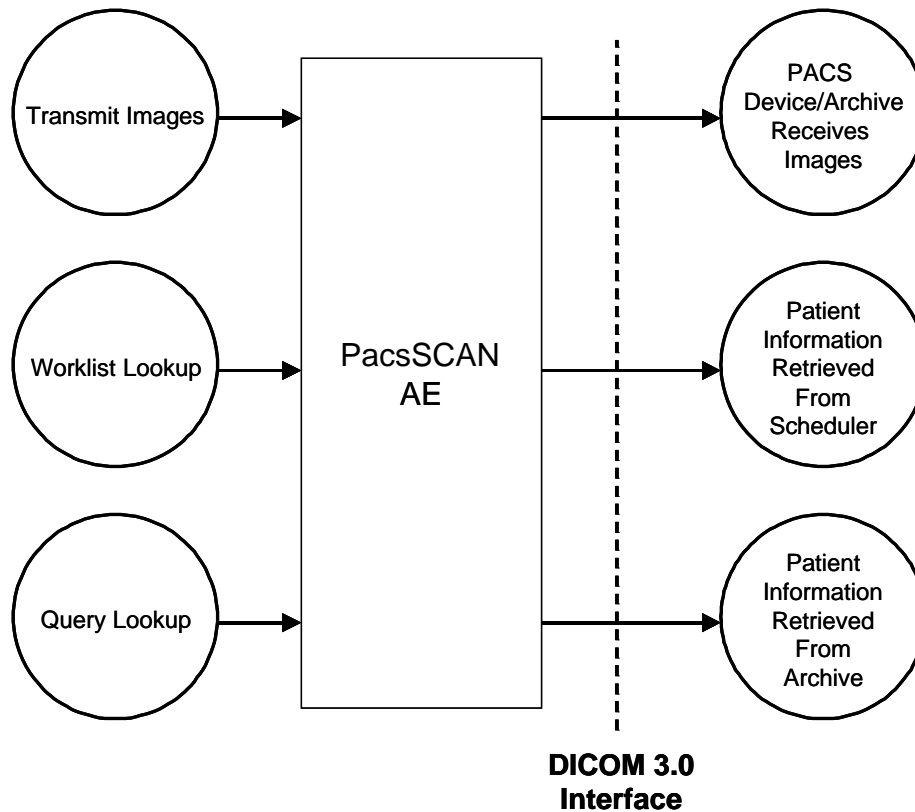
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## 1 Introduction

This conformance statement is designed to communicate technical information about the PacsSCAN product and its compliance to the DICOM 3.0 standard. PacsSCAN is designed to scan documents, create electronic forms, capture video, import JPEG/AVI/MPEG or import DICOM CDs/DVDs from any department to any PACS via DICOM. Patient demographics are either entered by the user, or can be selected using DICOM Modality Worklist functionality or DICOM Study Root Query/Retrieve-Find functionality.

## 2 Implementation Model

### 2.1 Application Data Flow Diagram



**Figure 1. PacsSCAN Implementation Model**

PacsSCAN is typically used to acquire an image from a paper scanner or other non-DICOM source, and transmit it to a PACS device via DICOM. Patient demographic information can be entered manually, or it can be downloaded from an external scheduling system via DICOM Modality Worklist or an archive via DICOM Study Root Query/Retrieve (Q/R) -Find requests.

## 2.2 Functional Definition of AE's

- The PacsSCAN Application Entity supports the following three SCU functions (one at a time):**Transmit Images**  
This AE is responsible for the management of DICOM Storage SCU activities.
- **Worklist Lookup**  
This AE provides patient demographic and study information lookups utilizing DICOM Modality Worklist requests as an SCU.
- **Query Lookup**  
This AE provides patient demographic and study information lookups utilizing DICOM Study Root Q/R-Find requests as an SCU.

## 2.3 Sequencing of Real-World Activities

Not Applicable.

## 3 AE Specifications

### 3.1 PacsSCAN AE Specifications

The PacsSCAN AE provides Standard Conformance to the following DICOM 3.0 SOP Classes as an SCU.

SOP Class Name	SOP Class UID
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2
Modality Worklist	1.2.840.10008.5.1.4.31
Study Root Q/R Information Model – Find	1.2.840.10008.5.1.4.1.2.2.1

When importing DICOM CD's or other DICOM media PacsSCAN will provide standard conformance as an SCU to the SOP Class defined by the DICOM image being imported.

### 3.1.1 Association Establishment Policies

#### 3.1.1.1 General

The maximum PDU size for any association establishment that is offered is 16 Kbytes.

#### 3.1.1.2 Number of Associations

The PacsSCAN AE will only establish one association at a time.

#### 3.1.1.3 Asynchronous Nature

The PacsSCAN AE does not support asynchronous communication.

#### 3.1.1.4 Implementation Identifying Information

The implementation identifying information for this DICOM 3.0 implementation is:

<b>Implementation Class UID</b>	1.2.7741.122
<b>Version Name</b>	pacsgear_dicom

**Figure 2. Implementation Identifying Information**

### 3.1.2 Association Initiation by Real-World Activity

#### 3.1.2.1 Real-World Activity – Transmit Images

##### 3.1.2.1.1 Associated Real-World Activity

After a user has scanned, imported, acquired one or more images into the PacsSCAN system, the user will then select the Send Button. The PacsSCAN AE will request an association with a single configured AE. PacsSCAN will then transmit all of the images over this association, and will request an association release.

##### 3.1.2.1.2 Presentation Contexts

<b>Proposed Presentation Context Table</b>					
<b>Abstract Syntax</b>		<b>Transfer Syntax</b>		<b>Role</b>	<b>Extended Negotiation</b>
<b>Name</b>	<b>UID</b>	<b>Name</b>	<b>UID</b>		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	
		JPEG 2000 Lossless	1.2.840.10008.1.2.4.90		
		JPEG 2000 Lossy	1.2.840.10008.1.2.4.91		

**Figure 3. Presentation Context Table – Transmit Images**

##### 3.1.2.1.2.1 SOP Specific Conformance for Image Storage

Standard conformance is provided to for the supported SOP Classes. For specific attributes utilized during the storage operation please refer to Appendix A.

#### 3.1.2.2 Real-World Activity – Worklist Lookup

##### 3.1.2.2.1 Associated Real-World Activity

A user may query a DICOM Modality Worklist SCP and select a Worklist entry from which to populate the patient demographics within one or more images. When the user selects the Lookup

button from within PacsSCAN, the PacsSCAN AE requests an association with a configured Worklist AE. PacsSCAN will then issue a C-Find request that contains any of the search attributes entered by the user. The results are then presented to the user for selection. Once a patient is selected the corresponding worklist attributes are downloaded into the patient entry form.

### 3.1.2.2.2 Presentation Contexts

Presentation Context Table				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Modality Worklist Management	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	SCU	None

Figure 4. Presentation Contexts – Worklist Lookup

#### 3.1.2.2.2.1 SOP Specific Conformance for Modality Worklist Management

Standard conformance is provided to the DICOM Modality Worklist Management Service Class. For specific fields that are issued during the Modality Worklist C-Find request please refer to Appendix B.

### 3.1.2.3 Real-World Activity – Query Lookup

#### 3.1.2.3.1 Associated Real-World Activity

A user may query a DICOM Query/Retrieve SCP and select a patient from which to populate the patient demographics within one or more images. When the user selects the Lookup button from within PacsSCAN, the PacsSCAN AE requests an association with a configured Q/R SCP AE. PacsSCAN will then issue a C-Find request that contains any of the search attributes entered by the user. The results are then presented to the user for selection. Once a patient is selected the corresponding attributes are downloaded into the patient entry form.

#### 3.1.2.3.2 Presentation Contexts

Presentation Context Table				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Study Root Query/Retrieve Information Model – Find	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	SCU	None

Figure 5. Presentation Contexts – Query Lookup

#### 3.1.2.3.2.1 SOP Specific Conformance for Study Root Query/Retrieve

Standard conformance is provided to the DICOM Study Root Q/R Service Class. For specific fields that are issued during the C-Find request please refer to Appendix C.

### 3.1.3 Association Acceptance Policy

The PacsSCAN product does not accept incoming associations.

## **4 Communication Profiles**

### **4.1 Supported Communication Stacks**

The PacsSCAN AE provides DICOM 3.0 TCP/IP Network Communication Support as defined in PS 3.8.

### **4.2 TCP/IP Stack**

The PacsSCAN AE implements DICOM 3.0 on top of the Windows TCP/IP stack.

#### **4.2.1 Physical Media Support**

The PacsSCAN AE is indifferent to the physical medium over which TCP/IP executes.

## **5 Extension/Specialization/Privatization**

Not Applicable.

## **6 Configuration**

The following fields are configurable for the PacsSCAN AE:

- Local AE Title
- Remote Storage AE Title
- Remote Storage IP Address
- Remote Storage Port
- Field that determines if the Lookup operation utilizes DICOM Worklist Management or Query/Retrieve services.
- Lookup Provider AE Title
- Lookup Provider IP Address
- Lookup Provider Port
- Lookup Study Date Range
- Institution
- Department
- Station Name
- Manufacturer
- Model
- Serial #
- Version #
- Series Number
- Compression support

Please, note that one or more remote storage locations may be configured.

## **7 Extended Character Sets**

Not Applicable.

## Appendix A. Attribute List for DICOM Storage SCU

This list contains the DICOM attributes that are used by the PacsSCAN AE when issuing a DICOM Storage request as an SCU.

DICOM Attribute	Comment
(0008,0008) Image Type	ORIGINAL\SECONDARY
(0008,0016) SOP Class UID	1.2.840.10008.5.1.4.1.1.7 (Secondary Capture)
(0008,0018) SOP Instance UID	
(0008,0020) Study Date	
(0008,0030) Study Time	
(0008,0050) Accession Number	
(0008,0060) Modality	Selected by the user or set with Modality Worklist value
(0008,0064) Conversion Type	WSD
(0008,0070) Manufacturer	Configurable
(0008,0080) Institution	Configurable
(0008,0090) Referring Physician	Set when received via worklist or cfind query
(0008,1010) Station Name	Configurable
(0008,1030) Study Description	Entered/Selected by the PacsSCAN user
(0008,103e) Series Description	Entered/Selected by the PacsSCAN user
(0008,1040) Institutional Department Name	Configurable
(0008,1090) Manufacturer Model Name	Configurable
(0010,0010) Patient Name	
(0010,0020) Patient ID	Image may not be sent without this value
(0010,0030) Patient Birthdate	
(0010,0040) Patient Sex	
(0018,0015) Body Part Examined	
(0018,1000) Acq. Device Serial Number	Configurable
(0018,1012) Date of Secondary Capture	
(0018,1014) Time of Secondary Capture	
(0018,1016) Secondary Capture Device Manufacturer	PACSGEAR
(0018,1018) Secondary Capture Device Model Name	PacsSCAN
(0018,1019) Secondary Capture Device Software Version	
(0018,1020) Acq. Software Version	Configurable
(0020,000D) Study Instance UID	
(0020,000E) Series Instance UID	
(0020,0010) Study ID	
(0020,0011) Series Number	Configurable
(0020,0013) Image Number	
(0020,0020) Patient Orientation	
(0028,0002) Samples Per Pixel	1
(0028,0004) Photometric Interpretation	MONOCHROME2
(0028,0006) Planar Configuration	0
(0028,0010) Rows	
(0028,0011) Columns	

(0028,0100) Bits Allocated	8
(0028,0101) Bits Stored	8
(0028,0102) High Bit	7
(0028,0103) Pixel Representation	0
(7FE0,0010) Pixel Data	

**Figure 6. DICOM Storage SCU Attribute List**

## Appendix B. Attributes for DICOM Modality Worklist Management Requests

This table contains the DICOM attributes that are utilized by the PacsSCAN AE when issuing a DICOM Modality Worklist request.

<b>DICOM Attribute</b>	<b>Comment</b>
(0008,0050) Accession Number	User may attempt an exact match
(0010,0010) Patient Name	User may narrow the search
(0010,0020) Patient ID	User may attempt an exact match
(0010,0030) Patient Birthdate	
(0010,0040) Patient Sex	
(0040,0100) Scheduled Procedure Step Sequence	
>(0008,0060) Modality	User may search for a specific modality
>(0040,0002) Scheduled Procedure Step Start Date	The product can be configured to always perform a date range query

**Figure 7. DICOM Modality Worklist Attributes**

### Appendix C. Attributes for DICOM Q/R C-FIND Requests

This table contains the DICOM keys that are utilized by the PacsSCAN AE when issuing a DICOM Q/R C-FIND request. The C-FIND request will always use the Study Root Information model.

DICOM Attribute	Comment
(0008,0020) Study Date	The product can be configured to always perform a date range query
(0008,0050) Accession Number	User may attempt an exact match
(0008,0052) Query/Retrieve Level	The value is always "STUDY"
(0008,0060) Modality	User may search for a specific modality
(0010,0010) Patient Name	User may narrow the search
(0010,0020) Patient ID	User may attempt an exact match
(0010,0030) Patient Birth Date	
(0010,0040) Patient Sex	

**Figure 8. DICOM Q/R C-FIND Attributes**