



BRIT Systems

# **DICOM Conformance Statement**

## **BRIT Scan**

### **Release 7.1**

**Document Number: DCS-BSN-007.1-0001**

January 2007



## DICOM Conformance Statement

---

### Revision History

<b>Date</b>	<b>Release Number</b>	<b>Revised By</b>	<b>Sections Affected</b>	<b>Comments</b>
Unknown	1	R. Barton	All	Initial Release
11/2004	2	R. Barton	All	Updates
1/2007	3	T. Harris	All	New Format



# Table of Contents

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	IMPLEMENTATION MODEL .....	1
1.1.1	<i>Application Data Flow Diagram .....</i>	<i>1</i>
1.1.2	<i>Functional Definitions of AEs .....</i>	<i>1</i>
1.1.3	<i>Sequencing of Real-World Activities .....</i>	<i>2</i>
<b>2</b>	<b>APPLICATION ENTITY SPECIFICATIONS .....</b>	<b>2</b>
2.1	ASSOCIATION ESTABLISHMENT POLICIES.....	2
2.1.1	<i>Association Establishment Policies .....</i>	<i>2</i>
2.1.2	<i>Association Establishment Policies .....</i>	<i>2</i>
2.1.3	<i>Association Initiation by Real-World Activity .....</i>	<i>3</i>
2.1.4	<i>Association Acceptance Policy.....</i>	<i>5</i>
<b>3</b>	<b>COMMUNICATION PROFILES .....</b>	<b>5</b>
3.1	SUPPORTED COMMUNICATION STACKS (PARTS 8,9) .....	5
3.2	OSI STACK.....	5
3.3	TCP/IP STACK .....	5
3.3.1	<i>Physical Media Support.....</i>	<i>5</i>
3.4	POINT-TO-POINT STACK.....	5
<b>4</b>	<b>EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS.....</b>	<b>5</b>
<b>5</b>	<b>CONFIGURATION.....</b>	<b>5</b>
<b>6</b>	<b>SUPPORT OF EXTENDED CHARACTER SETS .....</b>	<b>6</b>



# 1 Introduction

This document describes the conformance of the BRIT Scan (BRIT Scanning Workbench) to the DICOM 3.0 Standard. This conformance statement does not apply to other BRIT products or medical imaging devices.

## 1.1 Implementation Model

This implementation provides for simple transfer of images via the DICOM Storage Service Class as a Service Class User (SCU).

Transfers of images from the scanner to a remote SCP are initiated by an operator enabling the EXPORT application from the UTILITY menu and then selecting the destination and sets of Patients or Series to queue for transfer. Automatic export of new series, as they are completed, may also be configured by the operator.

The export engine Application Entity (AE) transfers one series of images per association established with a selected Storage SCP.

For complete user interface details, consult the BRIT Scan Operator's Guide.

### 1.1.1 Application Data Flow Diagram

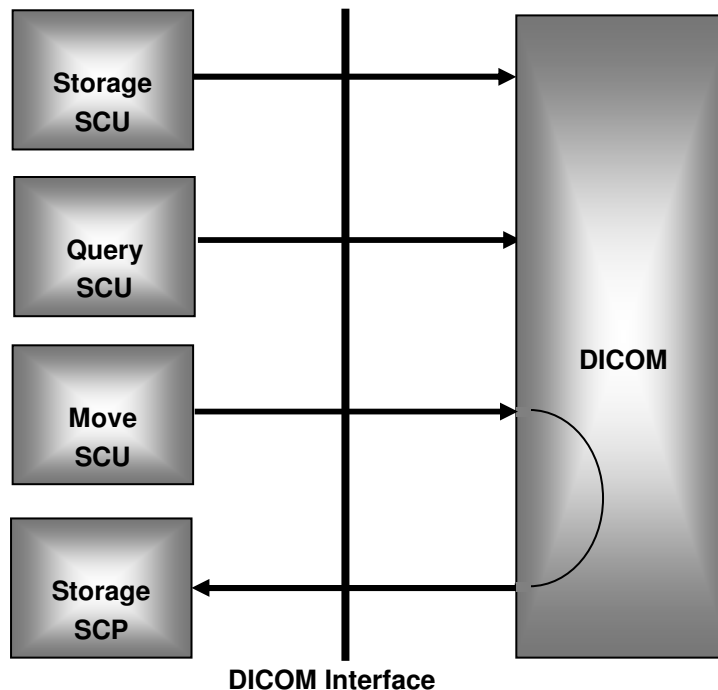


Figure 1 - Application Data Flow Diagram

### 1.1.2 Functional Definitions of AEs

The export engine AE begins execution when at least one series of images is queued for sending via DICOM. Normally, the export engine establishes an association with the remote Storage SCP, sends all images in the series, then terminates the association. If the export engine detects an error while sending an image, it will attempt to resend it; after three successive errors with the same image, the export will notify the operator and request operator intervention. If no errors are detected, the export engine continues to run until the export queue is emptied.



The scanner also supports exporting of a series of images available via a remote database from a BRIT Scanner. The scanner supports re-exporting of any multi-modality series of images that may have been imported into one of the above remote databases via DICOM.

### 1.1.3 Sequencing of Real-World Activities

Not applicable

## 2 Application Entity Specifications

### 2.1 Association Establishment Policies

#### 2.1.1 Association Establishment Policies

The BRIT Scan provides conformance with the following DICOM 3.0 Service Object Pair (SOP) Classes:

Table 1 - Supported SOP

SOP Class Name	SOP Class UID	Role
CR Image Storage	1.2.840.10008.5.1.4.1.1.1	SCU
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	SCU
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	SCU
NM Image Storage	1.2.840.10008.5.1.4.1.1.5	SCU
US Image Storage	1.2.840.10008.5.1.4.1.1.6	SCU
SC (Secondary Capture) Image Storage	1.2.840.10008.5.1.4.1.1.7	SCU

Note: The actual level of conformance may depend on the conformance of DICOM information objects originally received by the workstation.

#### 2.1.2 Association Establishment Policies

##### 2.1.2.1 General

The DICOM Application Context proposed is always 1.2.840.10008.3.1.1.1.

SOP Class extended negotiation is not supported.

The maximum PDU size allowed is 16KB.

##### 2.1.2.2 Number of Associations

The BRIT Scan establishes a new association for each series of images transferred, and determines the association after each series transfer is completed.

##### 2.1.2.3 Asynchronous Nature

There is no asynchronous activity in this implementation.



### 2.1.2.4 Implementation Identifying Information

The Implementation UID supplied for DICOM 3.0 associations is 2.16.840.1.113662.4.2.1.

## 2.1.3 Association Initiation by Real-World Activity

The following real-world activities initiate associations:

1. The BRIT Scan initiates an association for each series queued for transfer.
2. Selecting a new remote SCP (a new destination for DICOM EXPORT) initiates a temporary association to determine the roles and services supported by the remote SCP.

### 2.1.3.1 Real-World Activity – Sending a Series of Images

#### 2.1.3.1.1 Associated Real-World Activity

An operator:

- Enables MANUAL DICOM EXPORT; selects a valid Destination AE for DICOM EXPORT; selects interactively from the available databases sets of Patients, Studies, Series for DICOM EXPORT.
- Enables AUTO DICOM EXPORT; selects a valid Destination: AE for DICOM EXPORT; which will cause newly created series to be queued for DICOM EXPORT.
- Issues a “Continue” command when a series is unable to transfer completely possibly because of an error situation. The export engine will retry sending any given image a maximum of three times before notifying the operator that there is a problem (a message is posted in the system’s DICOM log file).
- For complete user interface details, consult the BRIT Scan Operator’s Guide.

#### 2.1.3.1.2 Presentation Contexts

The following table shows the presentation Contexts for sending a series of images:

Table 2 - Presentation Contexts for Sending a Series of Images

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
CR Image	1.2.840.10008.5.1.4.1.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
CT Image	1.2.840.10008.5.1.4.1.1.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
MR Image	1.2.840.10008.5.1.4.1.1.4	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
NM Image	1.2.840.10008.5.1.4.1.1.5	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
US Image	1.2.840.10008.5.1.4.1.1.6	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
SC Image	1.2.840.10008.5.1.4.1.1.7	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None



## DICOM Conformance Statement

### 2.1.3.1.3 SOP Specific Conformance to Storage SOP Classes

If the export engine AE detects any errors, a message suggesting to the operator an alternative course of action is always displayed. An operator may elect to: continue (retry), skip the series (delete it from the export queue), or cancel all remaining series in the queue. If the export engine AE is unable to open an association with a selected destination AE, an appropriate message is displayed on the screen. There are no special messages displayed when a successful response to the C-STORE operation is received.

When the export engine sends any image that was originally received via DICOM, the original information object received is typically re-sent. If this is not possible, a derived information object will be resent.

When exporting images, the following optional information may be included:

Level	Description	Tag	Type
Patient	Patient Name	00100010	R
Patient	Patient ID	00100020	U
Patient	Patient Birth Date	00100030	O
Patient	Patient Birth Time	00100032	O
Patient	Patient Sex	00100040	O

Level	Description	Tag	Type
Study	Study Date	00080020	R
Study	Study Time	00080030	R
Study	Accession Number	00800050	R
Study	Study ID	00200010	R
Study	Study Instance UID	00200000	U
Study	Referring Physician Name	00080090	O
Study	Study Description	00081030	O
Study	Patient's Age	00101010	O
Study	Patient's Size	00101020	O
Study	Patient's Weight	00101030	O

Level	Description	Tag	Type
Series	Modality	00080060	R
Series	Series Number	00200011	R
Series	Series Description	00081040	O
Series	Series Instance UID	0020000E	U
Series	Body Part Examined	00180015	O





Level	Description	Tag	Type
Image	Image Number	00200013	R

### 2.1.3.2 Associated Real-World Activity

#### 2.1.3.2.1 Associated Real-World Activity

#### 2.1.3.2.2 Presentation Context

These are the same as for real-world Activity 1 (see above).

### 2.1.4 Association Acceptance Policy

Does not apply

## 3 Communication Profiles

### 3.1 Supported Communication Stacks (Parts 8,9)

The BRIT Scan application provides DICOM 3.0 TCP/IP Network Communications Support as defined in Part 8 of the DICOM Standard.

### 3.2 OSI Stack

No OSI stack communications are provided with this implementation.

### 3.3 TCP/IP Stack

The TCP/IP protocol stack is supported.

#### 3.3.1 Physical Media Support

The following media are supported:

- Twisted pair Ethernet
- Thinnet Ethernet
- Thicknet Ethernet

### 3.4 Point-to-Point Stack

No point-to-point stack communications are provided.

## 4 Extensions/Specializations/Privatizations

No extensions, specializations, or privatizations are used in this implementation.

## 5 Configuration

DICOM applications, and other networking applications, must be configured by a BRIT Systems Field Service Engineer.



## 6 Support of Extended Character Sets

Extended Character Sets are not used or supported in this implementation.