Technical Publication

DICOM CONFORMANCE STATEMENT

BrainLAB DICOM Service 3.03

Revision 1.05

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Introduction

Purpose

This is a conformance statement for the DICOM extension of the BrainLAB products. The extension (Windows NT Service) supports DICOM storage services as a Service Class Provider (SCP).

This DICOM Conformance Statement is written according to part PS 3.2 of [1].

Abbreviations

ACR	American College of Radiation
AE	DICOM Application Entity
NEMA	National Electrical Manufactures Association
SCU	DICOM Service Class User
SCP	DICOM Service Class Provider
SOP	Service Object Pair
UID	Unique Identifier
VR	Value Representation

References

[1] Digital Imaging and Communications in Medicine (DICOM) 3.0,
NEMA PS 3.1-3.13

The BrainLAB DICOM implementation is based on the MergeCOM-3 DICOM library from Merge Healthcare.

Implementation Model

The BrainLAB DICOM Application Entity is an implementation of a DICOM Storage Service Class Provider (SCP) which can receive DICOM images from a DICOM Storage Service Class User (SCU).

Application Data Flow Diagram

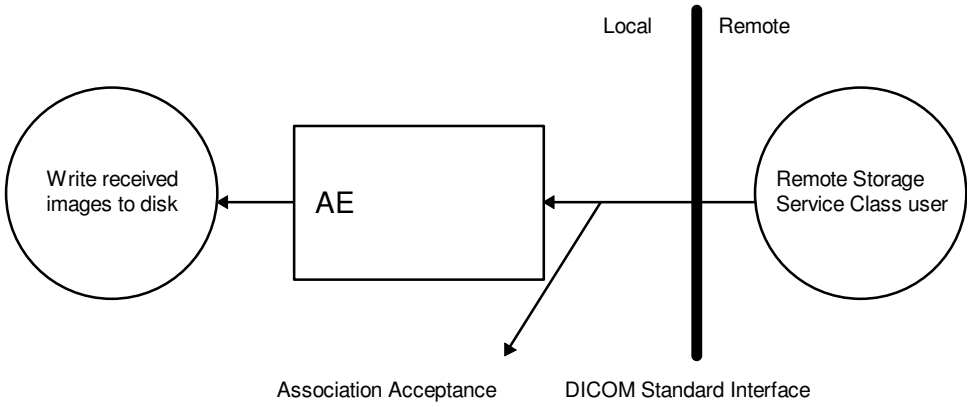

Figure 2A: BrainLAB_SCP application data flow diagram

Functional definition of Application Entity (AE)

All communications and image transfer with the remote application is accomplished utilizing the DICOM protocol over a network using the TCP/ IP protocol stack.

The BrainLAB_SCP will respond, if asked, with the Verification SOP Class UID as a SCP for one of its implemented SOP classes.

BrainLAB_SCP waits for an association to accept at the TCP/ IP port number that is configured at the time this application is initiated. When an association request is received with valid connection criteria, BrainLAB SCP responds with a list of SOP class UIDs that it will accept. It then waits for a Store request. If a Store is received, then all incoming images that are conferment to the association are written to files on disk.

Sequencing of real World Activities

Not applicable.

Application Entity Specifications

Storage AE specifications

BrainLAB_SCP provides Standard Conformance to the following DICOM v3.0 Service Object Pair (SOP) Class as a Verification Service Class Provider (SCP). As a SCP it sends out an Echo response after it receives an Echo request from a remote AE.

SOP Class UID	SOP Class Name
1.2.840.10008.1.1	Verification SOP Class

Table 3A: Valid SCP Verification SOP Class for the BrainLAB SCP AE

BrainLAB_SCP provides Standard Conformance to the following DICOM v3.0 Service Object Pair (SOP) Classes as a Storage Service Class Provider (SCP).

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.1.1	CR Image Storage
1.2.840.10008.5.1.4.1.1.2	CT Image Storage
1.2.840.10008.5.1.4.1.1.9	Stand-alone Curve Storage
1.2.840.10008.5.1.4.1.1.10	Stand-alone Modality LUT Storage
1.2.840.10008.5.1.4.1.1.8	Stand-alone Overlay Storage
1.2.840.10008.5.1.4.1.1.7	Secondary Capture (SC) Image Storage
1.2.840.10008.5.1.4.1.1.6.1	Ultrasound (US) Image Storage
1.2.840.10008.5.1.4.1.1.3.1	US Multi-frame Image Storage
1.2.840.10008.5.1.4.1.1.11	Stand-alone VOI LUT Storage
1.2.840.10008.5.1.4.1.1.20	Nuclear Medicine (NM) Image Storage
1.2.840.10008.5.1.4.1.1.12.1	X-Ray Angiographic Image Storage
1.2.840.10008.5.1.4.1.1.12.3	X-Ray Angiographic Bi-plane Image Storage
1.2.840.10008.5.1.4.1.1.12.2	X-Ray Radiofluoroscopic (RF) Image Storage
1.2.840.10008.5.1.4.1.1.4	MR Image Storage

Table 3B: Valid SCP Storage SOP Classes for the BrainLAB SCP AE

Association establishment policies

General

The BrainLAB_SCP application will wait for an association as a SCP of Storage Services. When a Store request is received, the corresponding images are saved to files on disk.

The maximum PDU size is 16384 bytes.

Number of associations

The BrainLAB_SCP AE allows multiple simultaneous Store associations.
The maximum number of simultaneous associations is 5.

Asynchronous nature

BrainLAB_SCP does not support asynchronous communication (multiple outstanding transactions over a single association).

Implementation identifying information

The Implementation Class Unique Identifier (UID) for the BrainLAB_SCP Application Entity is: 1.2.276.0.20.1.1

Association acceptance by real-world activity

The BrainLAB_SCP client application accepts an association for the appropriate Storage Service Class that corresponds to the set of images requested to be transferred. The association is closed by the Storage Service Class user, which initiated the association.

BrainLAB_SCP is able to abort the association when an error occurs.

Real-world activity for Receive Image operations

BRAINLAB_SCP waits for an association and offers to do the Image Storage Service. The association is closed after an error or when the initiator requests that it be closed.

Associated real-world activity for Receive Image operations

Once the association has been established, the BRAINLAB _SCP waits for transmission of conferment Storage Service messages.

Presentation Context Table				
Abstract Syntax	Transfer Syntax		Role	Extended Negotiation
	Name List	UID List		
All Services listed in Table 3B	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

Table 3C: Receive Image Presentation Contexts of BrainLAB_SCP

SOP specific conformance for all storage SOP Classes

No known SOP specific conformance issues.

Presentation context acceptance criterion for Receive Image operations

BRAINLAB_SCP will accept the verification or storage SOP classes that are listed above. In the event of receiving an unknown presentation context the BRAINLAB_SCP will reject the association request.

Transfer syntax selection policies for Receive Image operations

BRAINLAB_SCP supports only the Implicit VR Little transfer syntax.
A proposed presentation context, which includes Implicit VR, will be accepted. Any other presentation will be rejected.

Communication profiles

Supported Communication Stacks

BrainLAB_SCP supports the DICOM upper layer using TCP/IP.

TCP/IP Stack

The TCP/IP stack is inherited from the Windows® NT™ Operating system.

Physical Media Support

Ethernet v2.0, IEEE 802.3

Point to Point Stack

The 50-pin ACR-NEMA connection is not applicable to this product.

Extensions/ specializations/ privatizations

Standard extended/ specialized/ private SOP's

None supported.

Private Transfer Syntaxes

None supported.

Configuration

The BrainLAB_SCP application references one configuration file. This configuration file (BSCAN.INI) is located in the operating systems directory.

AE title/ presentation address mapping

Presentation address mapping is configured in the bscan.ini file. The Presentation Address of a SCP application as a provider is specified by configuring the Listen Port in the bscan.ini file, and specifying the AE title for the SCP within the application itself.

Configurable parameters

The bscan.ini file can be used to set the basic configuration parameters. This includes the TCP/IP listen port and other parameters.

Support of extended character sets

Not supported.

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