

DICOMBurner, version 3

DICOM 3.0 Conformance Statement

Summary:

This document presents the DICOM Conformance Statement of the DICOMBurner software, that implements both as Service Class Provider (SCP) and as a Service Class User (SCU) the following DICOM 3.0 Meta SOP Classes and SOP Classes:

- Verification SOP Class
- Computed Radiography Image Storage SOP Class
- CT Image Storage SOP Class
- Enhanced CT Image Storage SOP Class
- Digital Intra-Oral Image Storage – For Presentation SOP Class
- Digital Intra-Oral Image Storage – For Processing SOP Class
- Digital Mammography Image Storage – For Presentation SOP Class
- Digital Mammography Image Storage – For Processing SOP Class
- MR Image Storage SOP Class
- Enhanced MR Image Storage SOP Class
- Nuclear Medicine Image Storage SOP Class
- RT Image Storage SOP Class
- RT Dose Storage SOP Class
- RT Structure Set Storage SOP Class
- RT Beams Treatment Record Storage SOP Class
- RT Plan Storage SOP Class
- RT Brachy Treatment Record Storage SOP Class

RT Treatment Summary Record Storage SOP Class
Secondary Capture Image Storage SOP Class
Ultrasound Image Storage SOP Class
Ultrasound Multi-frame Image Storage SOP Class
X-Ray Angiographic Image Storage SOP Class
X-Ray Radiofluoroscopic Image Storage SOP Class
Grayscale Softcopy Presentation State Storage SOP Class
Color Softcopy Presentation State Storage SOP Class
Pseudo-Color Softcopy Presentation State Storage SOP Class
Positron Emission Tomography Image Storage SOP Class
Basic Text SR SOP Class
Enhanced SR SOP Class
Comprehensive SR SOP Class
Key Object Selection SOP Class
Patient Root Query/Retrieve Information Model – FIND
Study Root Query/Retrieve Information Model – FIND
Patient Root Query/Retrieve Information Model – MOVE
Study Root Query/Retrieve Information Model – MOVE

It applies to version 3 of DICOMBurner.

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1 Introduction

1.1 Scope and field of application

This document describes DICOMBurner conformance to the DICOM 3.0 standard.

It contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntaxes.

It should be read in conjunction with the DICOM standard and its addenda.

This statement is conformant with the recommended format as described in PS 3.2 of the DICOM standard.

DICOMBurner acts as a SCP and as a SCU for the following SOP Classes:

Verification SOP Class

Computed Radiography Image Storage SOP Class

CT Image Storage SOP Class

Enhanced CT Image Storage SOP Class

Digital Intra-Oral Image Storage – For Presentation SOP Class

Digital Intra-Oral Image Storage – For Processing SOP Class

Digital Mammography Image Storage – For Presentation SOP Class

Digital Mammography Image Storage – For Processing SOP Class

MR Image Storage SOP Class

Enhanced MR Image Storage SOP Class

Nuclear Medicine Image Storage SOP Class

RT Image Storage SOP Class

RT Dose Storage SOP Class

RT Structure Set Storage SOP Class

RT Beams Treatment Record Storage SOP Class

RT Plan Storage SOP Class

RT Brachy Treatment Record Storage SOP Class

RT Treatment Summary Record Storage SOP Class

Secondary Capture Image Storage SOP Class

Ultrasound Image Storage SOP Class

Ultrasound Multi-frame Image Storage SOP Class

X-Ray Angiographic Image Storage SOP Class

X-Ray Radiofluoroscopic Image Storage SOP Class
Grayscale Softcopy Presentation State Storage SOP Class
Color Softcopy Presentation State Storage SOP Class
Pseudo-Color Softcopy Presentation State Storage SOP Class
Positron Emission Tomography Image Storage SOP Class
Basic Text SR SOP Class
Enhanced SR SOP Class
Comprehensive SR SOP Class
Key Object Selection SOP Class
Patient Root Query/Retrieve Information Model – FIND
Study Root Query/Retrieve Information Model – FIND
Patient Root Query/Retrieve Information Model – MOVE
Study Root Query/Retrieve Information Model – MOVE

DICOMBurner allows creating CD-R or DVD-R conforming to *General Purpose CD-R Image Interchange Profile*.

1.2 Acronyms and abbreviations

The following acronyms and abbreviations are used in this document:

- ACR American College of Radiology
- ANSI American National Standards Institute
- DICOM Digital Imaging and Communications in Medicine
- DIMSE DICOM Message Service Element
- DIMSE-C DICOM Message Service Element – Composite
- DIMSE-N DICOM Message Service Element – Normalized
- GUI Graphical User Interface
- NEMA National Electrical Manufacturers Association
- PDU Protocol Data Unit
- SCP Service Class Provider
- SCU Service Class User
- SOP Service Object Pair
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier

1.3 References

[DICOM]

The Digital Imaging and Communications in Medicine (DICOM) standard:

NEMA PS 3.1 to 3.16 and Supplements

National Electrical Manufacturers Association (NEMA) – Publication Sales – 1300 N. 17th Street, Suite 1847
– Rosslyn, Va. 22209, United States of America.

1.4 Intended audience

This Conformance Statement is intended for:

- Potential users;
- System integrators of medical equipment;
- Software designers implementing DICOM interfaces.

1.5 Warning to the Reader

It is assumed that the reader is familiar with the DICOM standard.

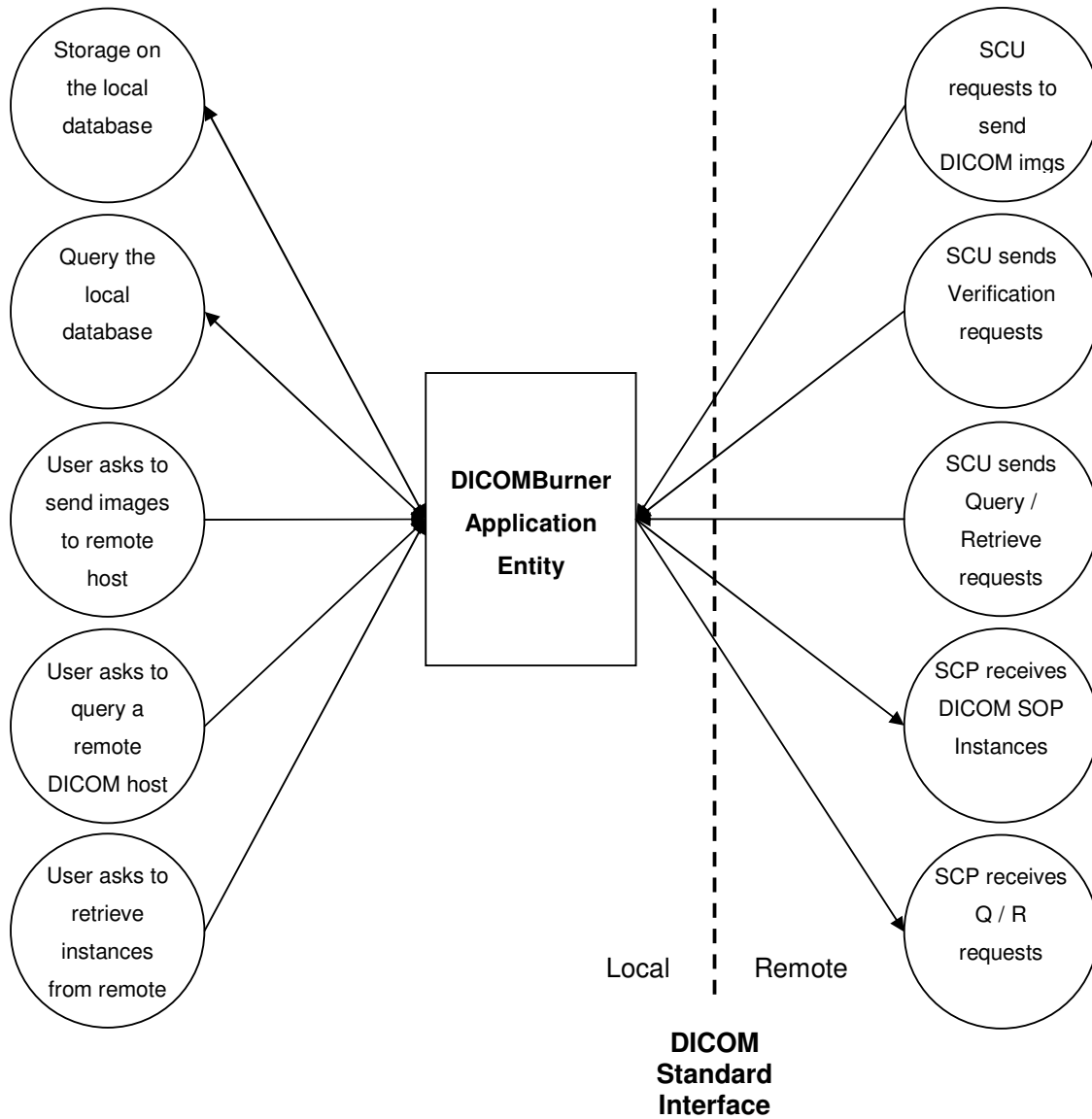
If another device matches this Conformance Statement based on the comparison with its own Conformance Statement, there is a chance, but no guarantee, that they interoperate. DICOM only deals with communication; it is not a standard which specifies what is needed for certain applications to run on a device.

2 Networking

2.1 Implementation model

2.1.1 Application data flow diagram

DICOMBurner is a Windows application for the transfer and storage of DICOM images. DICOMBurner appears as an icon in the system tray of the Windows task bar and it runs continuously until stopped. DICOMBurner has a local database where it stores the DICOM images coming from other DICOM peers, through the DICOM Store operation.



2.1.2 Functional definitions of AE's

2.1.2.1 Verification Service as SCP

DICOMBurner waits for another application to connect at the presentation address configured in the DICOM Configuration section. When another application connects, DICOMBurner expects it to be a DICOM application. DICOMBurner will accept associations with Presentation Contexts for the Verification Service SOP Class.

2.1.2.2 Storage Services as SCP

DICOMBurner waits for another application to connect at the presentation address configured in the DICOM Configuration section. When another application connects, DICOMBurner expects it to be a DICOM application. DICOMBurner will accept associations with Presentation Contexts for SOP Classes of the Storage Service Class. It will receive images on these Presentation Contexts and it will store them to files in a format compliant with Part 10 of the DICOM standard.

2.1.2.3 Query/Retrieve as SCP

DICOMBurner waits for another application to connect at the presentation address configured in the DICOM Configuration section. When another application connects, DICOMBurner expects it to be a DICOM application. DICOMBurner will accept associations with Presentation Contexts for SOP Classes of the Query/Retrieve Service Class (Patient Root and Study Root, FIND and MOVE).

2.1.2.4 Verification Service as SCU

When certain functionalities of the software are called, DICOMBurner will connect to other DICOM peers, acting as a SCU. Upon association establishment, DICOMBurner will always propose a Presentation Contexts for the Verification Service SOP Class.

2.1.2.5 Storage Services as SCU

When requested to send DICOM instances to a remote DICOM peer, DICOMBurner will connect to a remote DICOM host, acting as a SCU. Upon association establishment, DICOMBurner will propose Presentation Contexts for the Storage SOP Classes which correspond to the DICOM SOP Instances to transfer.

2.1.2.6 Query/Retrieve as SCU

When requested to query a remote DICOM archive for its content, DICOMBurner will connect to that remote DICOM host, acting as a SCU. Upon association establishment, DICOMBurner will propose Presentation Contexts for the Query / Retrieve SOP Classes (Patient Root and Study Root, FIND and MOVE).

2.1.3 Sequencing of Real-World activities

DICOMBurner receives DICOM images from other DICOM modalities or DICOM workstations. It then stores these images to a local database. DICOMBurner is also able to import DICOM images from local disks or from remote DICOM hosts: also in this case, the imported images are stored to a local database. In addition, as an independent functionality, DICOMBurner is able to send images to remote DICOM archives. No particular sequencing is associated with this last functionality.

2.2 Application Entity specifications

DICOMBurner provides Standard Conformance to the following DICOM V3.0 SOP Classes, both as a SCP and as a SCU:

Table 2.2-1: Supported SOP Classes for DICOMBurner (SCP and SCU roles)

SOP Class	
Name	UID
Verification	1.2.840.10008.1.1
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.1.2
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1
Digital Intra-Oral Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3
Digital Intra-Oral Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2
Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1
RT Dose Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.2
RT Structure Set Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.3
RT Beams Treatment Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.4
RT Plan Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.5
RT Brachy Treatment Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.6
RT Treatment Summary Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.7
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
Grayscale Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.1
Color Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.2
Pseudo-Color Softcopy Presentation State	1.2.840.10008.5.1.4.1.1.11.3
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128

Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2

2.2.1 Association establishment policies

2.2.1.1 General

The Maximum PDU Length offered by DICOMBurner (SCP role) at association establishment time can be configured by the user, and may range between the following minimum and maximum values:

- Minimum value for Maximum PDU Length: 8192 bytes
- Maximum value for Maximum PDU Length: 524288 bytes (default setting)

When acting as a SCU, DICOMBurner will offer a Maximum PDU Length of 32 KB (32768 bytes).

2.2.1.2 Number of associations

In its standard configuration, DICOMBurner (SCP role) supports up to 10 (ten) simultaneous associations by remote SCUs. A different (lower) setting may be chosen by the user in the DICOM Configuration Section of DICOMBurner.

As a SCU, DICOMBurner will open new DICOM associations depending on the operations requested by the user through the GUI. Several SCU and SCP associations may be active simultaneously.

2.2.1.3 Asynchronous nature

DICOMBurner does not support asynchronous operations.

2.2.1.4 Implementation identifying information

DICOMBurner will respond to association requests with the following implementation identifying parameters:

Table 2.2-2: Application identifying information for DICOMBurner

Name	Value
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Implementation Class UID	1.3.6.1.4.1.18047.1.5
Application Context Name	1.2.840.10008.3.1.1.1
Implementation Version Name	DICOMBURNER

2.2.2 Association initiation by Real-World activity

DICOMBurner initiates associations for the following activities:

- Verifying DICOM communication between DICOMBurner and a remote system.
- Sending DICOM SOP instances from the local database to a remote DICOM host.
- Querying content of remote DICOM archives.
- Retrieving DICOM SOP instances from remote DICOM hosts.

2.2.2.1 Real-World activity: Verifying DICOM communication

2.2.2.1.1 Associated Real-World activity

Through the DICOMBurner configuration interface, the user selects a host from the list of configured DICOM hosts, then press the “Verify” button.

2.2.2.1.2 Presentation Context Table

DICOMBurner proposes the following Presentation Contexts for Verification:

Table 2.2-3: Verification Presentation Contexts as SCU

Abstract Syntax		Transfer Syntax	Role
Name	UID		
Verification SOP Class	1.2.840.10008.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	SCU

2.2.2.1.3 SOP Specific Conformance for Verification SOP Class (SCU)

DICOMBurner provides standard conformance to the DICOM Verification Service Class as a SCU.

2.2.2.2 Real-World activity: Sending DICOM SOP instances

2.2.2.2.1 Associated Real-World activity

Through the DICOMBurner GUI, the user selects one or more patient(s), study(s), series or instance(s), then press the “Send” button.

2.2.2.2.2 Presentation Context Table

DICOMBurner proposes the Presentation Contexts for the Storage SOP Classes which correspond to the DICOM SOP Instances to transfer. The following table shows the Storage SOP Classes supported in the SCU role.

Table 2.2-4: Storage Presentation Contexts as SCU

Abstract Syntax		Transfer Syntax	Role
Name	UID		
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	ALL Transfer Syntaxes	SCU
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1.2	ALL Transfer Syntaxes	SCU
Enhanced CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2.1	ALL Transfer Syntaxes	SCU
Digital Intra-Oral Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	ALL Transfer Syntaxes	SCU
Digital Intra-Oral Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	ALL Transfer Syntaxes	SCU
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	ALL Transfer Syntaxes	SCU
Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	ALL Transfer Syntaxes	SCU
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	ALL Transfer Syntaxes	SCU
Enhanced MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4.1	ALL Transfer Syntaxes	SCU
Nuclear Medicine Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.20	ALL Transfer Syntaxes	SCU
RT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.1	ALL Transfer Syntaxes	SCU
RT Dose Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.2	ALL Transfer Syntaxes	SCU
RT Structure Set Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.3	ALL Transfer Syntaxes	SCU
RT Beams Treatment Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.4	ALL Transfer Syntaxes	SCU
RT Plan Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.5	ALL Transfer Syntaxes	SCU

RT Brachy Treatment Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.6	ALL Transfer Syntaxes	SCU
RT Treatment Summary Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.7	ALL Transfer Syntaxes	SCU
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	ALL Transfer Syntaxes	SCU
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	ALL Transfer Syntaxes	SCU
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	ALL Transfer Syntaxes	SCU
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	ALL Transfer Syntaxes	SCU
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	ALL Transfer Syntaxes	SCU
Grayscale Softcopy Presentation State SOP Class	1.2.840.10008.5.1.4.1.1.11.1	ALL Transfer Syntaxes	SCU
Color Softcopy Presentation State SOP Class	1.2.840.10008.5.1.4.1.1.11.2	ALL Transfer Syntaxes	SCU
Pseudo-Color Softcopy Presentation State SOP Class	1.2.840.10008.5.1.4.1.1.11.3	ALL Transfer Syntaxes	SCU
Positron Emission Tomography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.128	ALL Transfer Syntaxes	SCU
Basic Text SR SOP Class	1.2.840.10008.5.1.4.1.1.88.11	ALL Transfer Syntaxes	SCU
Enhanced SR SOP Class	1.2.840.10008.5.1.4.1.1.88.22	ALL Transfer Syntaxes	SCU
Comprehensive SR SOP Class	1.2.840.10008.5.1.4.1.1.88.33	ALL Transfer Syntaxes	SCU
Key Object Selection SOP Class	1.2.840.10008.5.1.4.1.1.88.59	ALL Transfer Syntaxes	SCU

2.2.2.2.3 SOP Specific Conformance for Storage SOP Classes (SCU)

DICOMBurner provides standard conformance to the DICOM Storage Service Classes as a SCU.

2.2.2.3 Real-World activity: Querying content of remote DICOM archives

2.2.2.3.1 Associated Real-World activity

Through the DICOMBurner GUI, the user selects the “Import” functionality, then the “Import from DICOM peer” option. At each one of the “Patient”, “Study”, “Series” and “Instance” levels, the user is able to specify search criteria and then press the “Filter” button.

2.2.2.3.2 Presentation Context Table

DICOMBurner proposes the following Presentation Contexts for the Query SOP Classes:

Table 2.2-5: Query Presentation Contexts as SCU

Abstract Syntax		Transfer Syntax	Role
Name	UID		
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	SCU
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	SCU

2.2.2.3.3 SOP Specific Conformance for Query SOP Classes (SCU)

DICOMBurner supports all “Required” (R) and “Unique” (U) Patient, Study, Series and Image level keys for Patient Root and Study Root information models. In addition, certain Optional (O) keys are supported.

The complete list of supported attributes is reported in the following table.

Table 2.2-6: Supported Query attributes (as SCU)

Query Level	Attribute Description	Tag	Type
Patient, Study	Patient’s Name	(0010,0010)	R
Patient, Study	Patient ID	(0010,0020)	U
Patient, Study	Patient’s Birth Date	(0010,0030)	O
Patient, Study	Patient’s Sex	(0010,0040)	O
Study	Study Date	(0008,0020)	R
Study	Study Time	(0008,0030)	R
Study	Accession Number	(0008,0050)	R
Study	Study ID	(0020,0010)	R
Study	Study Instance UID	(0020,000D)	U
Study	Referring Physician’s Name	(0008,0090)	O
Study	Study Description	(0008,1030)	O
Series	Modality	(0008,0060)	R
Series	Series Number	(0020,0011)	R
Series	Series Instance UID	(0020,000E)	U
Series	Series Date	(0008,0021)	O
Series	Series Time	(0008,0031)	O
Series	Series Description	(0008,103E)	O
Image	Instance Number	(0020,0013)	R
Image	SOP Instance UID	(0008,0018)	U
Image	Acquisition Date	(0008,0022)	O

2.2.2.4 Real-World activity: Retrieving DICOM SOP instances

2.2.2.4.1 Associated Real-World activity

Through the DICOMBurner GUI, the user selects the “Import” functionality, then the “Import from DICOM peer” option. At each one of the “Patient”, “Study”, “Series” and “Instance” levels, the user is able to specify search criteria and then press the “Filter” button. Once a list of Patients, Studies, Series or Instances appear, the user is able to select one or more items from the list and press the “Retrieve” button.

2.2.2.4.2 Presentation Context Table

DICOMBurner proposes the following Presentation Contexts for the Retrieve SOP Classes:

Table 2.2-7: Retrieve Presentation Contexts as SCU

Abstract Syntax		Transfer Syntax	Role
Name	UID		
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	SCU
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	SCU

2.2.2.4.3 SOP Specific Conformance for Retrieve SOP Class (SCU)

DICOMBurner provides standard conformance to the DICOM Retrieve Service Classes (MOVE) as a SCU.

2.2.3 Association acceptance policy

DICOMBurner accepts DICOM associations according to the DICOM SOP Classes it supports. In particular, associations may be accepted for the following activities:

- Verifying DICOM communication between DICOMBurner and a remote system.
- Transferring DICOM SOP instances from a remote DICOM host to DICOMBurner.
- Processing queries from remote DICOM hosts.
- Initiating a transfer of SOP instances to a remote DICOM host, in response to a “retrieve” request.

DICOMBurner does not perform any check on the Called AE Title at association acceptance time.

2.2.3.1 Real-World activity: Verifying communication and transferring SOP instances

2.2.3.1.1 Associated Real-World activity

The application entity waits for incoming associations. No operator action is required to receive DICOM store requests or verification requests.

2.2.3.1.2 Presentation Context Table

DICOMBurner accepts the following Presentation Contexts:

Table 2.2-8 Storage and Verification Presentation Contexts as SCP

Abstract Syntax		Transfer Syntax	Role
Name	UID		
Verification SOP Class	1.2.840.10008.1.1	ALL Transfer Syntaxes	SCP
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	ALL Transfer Syntaxes	SCP
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1.2	ALL Transfer Syntaxes	SCP
Enhanced CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2.1	ALL Transfer Syntaxes	SCP
Digital Intra-Oral Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	ALL Transfer Syntaxes	SCP
Digital Intra-Oral Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	ALL Transfer Syntaxes	SCP
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	ALL Transfer Syntaxes	SCP
Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	ALL Transfer Syntaxes	SCP
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	ALL Transfer Syntaxes	SCP
Enhanced MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4.1	ALL Transfer Syntaxes	SCP
Nuclear Medicine Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.20	ALL Transfer Syntaxes	SCP
RT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.1	ALL Transfer Syntaxes	SCP
RT Dose Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.2	ALL Transfer Syntaxes	SCP
RT Structure Set Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.3	ALL Transfer Syntaxes	SCP
RT Beams Treatment Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.4	ALL Transfer Syntaxes	SCP
RT Plan Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.5	ALL Transfer Syntaxes	SCP

RT Brachy Treatment Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.6	ALL Transfer Syntaxes	SCP
RT Treatment Summary Record Storage SOP Class	1.2.840.10008.5.1.4.1.1.481.7	ALL Transfer Syntaxes	SCP
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	ALL Transfer Syntaxes	SCP
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	ALL Transfer Syntaxes	SCP
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	ALL Transfer Syntaxes	SCP
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	ALL Transfer Syntaxes	SCP
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	ALL Transfer Syntaxes	SCP
Grayscale Softcopy Presentation State SOP Class	1.2.840.10008.5.1.4.1.1.11.1	ALL Transfer Syntaxes	SCP
Color Softcopy Presentation State SOP Class	1.2.840.10008.5.1.4.1.1.11.2	ALL Transfer Syntaxes	SCP
Pseudo-Color Softcopy Presentation State SOP Class	1.2.840.10008.5.1.4.1.1.11.3	ALL Transfer Syntaxes	SCP
Positron Emission Tomography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.128	ALL Transfer Syntaxes	SCP
Basic Text SR SOP Class	1.2.840.10008.5.1.4.1.1.88.11	ALL Transfer Syntaxes	SCP
Enhanced SR SOP Class	1.2.840.10008.5.1.4.1.1.88.22	ALL Transfer Syntaxes	SCP
Comprehensive SR SOP Class	1.2.840.10008.5.1.4.1.1.88.33	ALL Transfer Syntaxes	SCP
Key Object Selection SOP Class	1.2.840.10008.5.1.4.1.1.88.59	ALL Transfer Syntaxes	SCP

2.2.3.1.3 SOP Specific Conformance for Verification SOP Class (SCP)

DICOMBurner provides standard conformance to the DICOM Verification Service Class as a SCP.

2.2.3.1.4 SOP Specific Conformance for Storage SOP Class (SCP)

DICOMBurner conforms to the SOP's of the Storage Service Class at Level 2 (Full). No elements are discarded or coerced by DICOMBurner. In the event of a successful C-STORE operation, the image has successfully been written to disk as a standard file. As such, it may be accessed in the same manner as any other file. DICOMBurner will never delete a file which it has received; the duration of the storage of the image is determined by the user of the system (storage management policies).

The filename of the files stored to the local hard drive has the following syntax: *UID.dcm*, where UID is the SOP Instance UID of the image. The file will be stored in a folder having the following name: *MC*, where MC is the modality code specifying the modality (US, CT, EnhancedCT, ...).

2.2.3.1.5 Presentation Context Acceptance Criterion

N/A

2.2.3.1.6 Transfer Syntax Selection Policies

N/A

2.2.3.2 Real-World activity: Processing queries

2.2.3.2.1 Associated Real-World activity

The application entity waits for incoming associations. No operator action is required to receive DICOM query (FIND) requests.

2.2.3.2.2 Presentation Context Table

DICOMBurner accepts the following Presentation Contexts:

Table 2.2-9: Query Presentation Contexts as SCP

Abstract Syntax		Transfer Syntax	Role
Name	UID		
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	SCP
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	SCP

2.2.3.2.3 SOP Specific Conformance for Query SOP Classes (SCP)

DICOMBurner supports all “Required” (R) and “Unique” (U) Patient, Study, Series and Image level keys for Patient Root and Study Root information models. In addition, certain Optional (O) keys are supported.

The complete list of supported attributes is reported in the following table.

Table 2.2-6: Supported Query attributes (as SCP)

Query Level	Attribute Description	Tag	Type
Patient, Study	Patient's Name	(0010,0010)	R
Patient, Study	Patient ID	(0010,0020)	U
Patient, Study	Patient's Birth Date	(0010,0030)	O
Patient, Study	Patient's Sex	(0010,0040)	O
Study	Study Date	(0008,0020)	R
Study	Study Time	(0008,0030)	R
Study	Accession Number	(0008,0050)	R
Study	Study ID	(0020,0010)	R
Study	Study Instance UID	(0020,000D)	U
Study	Referring Physician's Name	(0008,0090)	O
Study	Study Description	(0008,1030)	O
Series	Modality	(0008,0060)	R
Series	Series Number	(0020,0011)	R
Series	Series Instance UID	(0020,000E)	U
Series	Series Date	(0008,0021)	O
Series	Series Time	(0008,0031)	O
Series	Series Description	(0008,103E)	O
Image	Instance Number	(0020,0013)	R
Image	SOP Instance UID	(0008,0018)	U
Image	Acquisition Date	(0008,0022)	O

2.2.3.2.4 Presentation Context Acceptance Criterion

N/A

2.2.3.2.5 Transfer Syntax Selection Policies

N/A

2.2.3.3 Real-World activity: Initiating transfer of SOP instances

2.2.3.3.1 Associated Real-World activity

The application entity waits for incoming associations. No operator action is required to receive DICOM retrieve (MOVE) requests.

2.2.3.3.2 Presentation Context Table

DICOMBurner accepts the following Presentation Contexts:

Table 2.2-10: Retrieve Presentation Contexts as SCP

Abstract Syntax		Transfer Syntax	Role
Name	UID		
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	SCP
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	SCP

2.2.3.3.3 SOP Specific Conformance for Retrieve SOP Classes (SCP)

DICOMBurner provides standard conformance to the DICOM Retrieve (MOVE) Service Class as a SCP.

2.2.3.3.4 Presentation Context Acceptance Criterion

N/A

2.2.3.3.5 Transfer Syntax Selection Policies

N/A

2.3 Communication Profiles

2.3.1 Supported Communications Stacks

DICOMBurner provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3-8 of the DICOM Standard.

2.3.2 TCP/IP Stack

DICOMBurner inherits its TCP/IP stack from the Windows system upon which it executes.

2.3.3 Physical Media Support

DICOMBurner is indifferent to the physical medium over which TCP/IP executes; it inherits this from the system upon which it executes.

2.4 Extensions/Specialization/Privatization

No extensions defined.

2.5 Configuration

DICOMBurner configuration is included in the application user interface through the Configuration Dialog.

2.5.1 AE Title/Presentation Address Mapping

Not Applicable.

2.5.2 Configurable Parameters

2.5.2.1 Standard Configuration

DICOMBurner configurable parameters may be defined in the configuration dialog boxes of the user interface. They main configuration parameters related to the DICOM communication are:

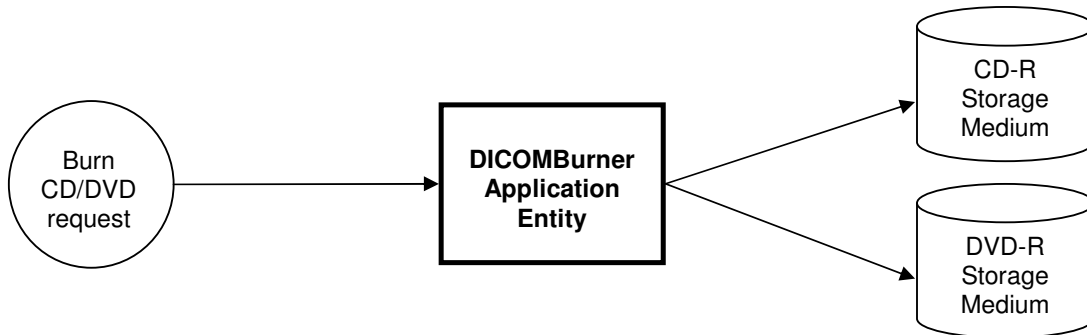
- TCP/IP port: default is 104
- AE Title: default is DICOMBURNER
- Maximum number of associations: default is 10 (from 1 to 10)
- Image folder: the directory in which the incoming images are stored. Default is a folder contained into the working directory
- Support of Verification service (on/off, default is on)
- Support of Computed Radiography Image Storage (on/off, default is on)
- Support of CT Image Storage (on/off, default is on)
- Support of Enhanced CT Image Storage (on/off, default is on)
- Support of Digital Intra-Oral Image Storage - For Presentation (on/off, default is on)
- Support of Digital Intra-Oral Image Storage - For Processing (on/off, default is on)
- Support of Digital Mammography Image Storage - For Presentation (on/off, default is on)
- Support of Digital Mammography Image Storage - For Processing (on/off, default is on)
- Support of MR Image Storage (on/off, default is on)
- Support of Enhanced MR Image Storage (on/off, default is on)
- Support of Nuclear Medicine Image Storage (on/off, default is on)
- Support of RT Image Storage (on/off, default is on)
- Support of RT Dose Storage (on/off, default is on)
- Support of RT Structure Set Storage (on/off, default is on)
- Support of RT Beams Treatment Record Storage (on/off, default is on)

- Support of RT Plan Storage (on/off, default is on)
- Support of RT Brachy Treatment Record Storage (on/off, default is on)
- Support of RT Treatment Summary Record Storage (on/off, default is on)
- Support of Secondary Capture Image Storage (on/off, default is on)
- Support of Ultrasound Image Storage (on/off, default is on)
- Support of Ultrasound Multi-frame Image Storage (on/off, default is on)
- Support of X-Ray Angiographic Image Storage (on/off, default is on)
- Support of X-Ray Radiofluoroscopic Image Storage (on/off, default is on)
- Support of Grayscale Softcopy Presentation State Storage (on/off, default is on)
- Support of Color Softcopy Presentation State Storage (on/off, default is on)
- Support of Pseudo-Color Softcopy Presentation State Storage (on/off, default is on)
- Support of Positron Emission Tomography Image Storage (on/off, default is on)
- Support of Basic Text SR (on/off, default is on)
- Support of Enhanced SR (on/off, default is on)
- Support of Comprehensive SR (on/off, default is on)
- Support of Key Object Selection (on/off, default is on)
- Log events : Log all events or not (verbose) in the log window of the application
- Debug : creates a detailed log file in a *logfiles* subdirectory besides the application

3 Media Interchange

3.1 Application data flow diagram

DICOMBurner is a Windows application intended to record DICOM Compact Disc Recordable (CD-R or DVD-R) with images coming from a local storage directory.



DICOMBurner burns DICOM files to CD or DVD in response to user actions performed through the DICOMBurner Graphical User Interface (GUI). These actions normally correspond to the selection of the Patients, Studies, Series and Instances to be copied to the optical medium.

DICOMBurner acts as a File-set Reader (FSC): it stores DICOM files that are compliant with the Part 10 of the DICOM 3.0 standard.

3.1.1 Functional definitions of AE's

DICOMBurner supports and initializes CD-R or DVD-R media, and writes new DICOM File Sets onto those media.

3.1.2 Sequencing of Real-World activities

Through the GUI of the DICOMBurner software application, the operator selects entries from the patient-study-series-instance hierarchy and initiates the transfer of DICOM images to the optical medium. The entries appearing in the patient-study-series-instance hierarchy have been previously received through the DICOM protocol or imported from local disks.

3.2 Application Entity specifications

3.2.1 DICOMBurner AE

DICOMBurner provides Standard Conformance to the Interchange Option of the Media Storage Service Class.

Table 3.2-1: Supported SOP Classes for DICOMBurner (SCP role)

Application Profile	Real World Activity	Role	SC Option
STD-GEN-CD (see below)	Create CD	FSC	Interchange

3.2.1.1 File Meta Information for the Application Entity

DICOMBurner writes the following Meta Information attributes in the Part 10-compliant DICOM files it produces:

Table 3.2-2: Meta Information Attributes

Name	Value
Implementation Class UID	1.3.6.1.4.1.18047.1.5
Source Application Entity Title	DICOMBURNER (can be configured)
Implementation Version Name	DICOMBURNER

3.2.1.2 Real World Activities

There is only one real world activity associated with the media creation by DICOMBurner.

3.2.1.2.1 Real World Activity: Create CD Request

DICOMBurner acts as an FSC using the interchange option when requested to export SOP Instances from the local database to a CD-R medium.

3.2.1.2.1.1 Media Storage Application Profiles

The DICOMBurner Application Entity supports the STD-GEN-CD Application Profile. In particular, it strictly adheres to what specified by the STD-GEN-CD profile when the burnt images are encoded with the Transfer Syntax supported by this profile. The current version of the DICOMBurner does not support Transfer Syntax conversion: the DICOM images are stored and burnt to CD with the original Transfer Syntax used during the DICOM Store operation.

3.2.1.2.1.1.1 Media Storage Directory IOD for STD-GEN-CD

The following tables specify the directory record keys and optional attributes used by DICOMBurner in the Media Storage Directory IOD (DICOMDIR file):

PATIENT Record Keys:

Description	Tag
Patient's Name	(0010,0010)
Patient ID	(0010,0020)

STUDY Record Keys:

Description	Tag
Study Date	(0008,0020)
Study Time	(0008,0030)
Accession Number	(0008,0050)
Study Description	(0008,1030)
Study Instance UID	(0020,000D)
Study ID	(0020,0010)

SERIES Record Keys:

Description	Tag
Modality	(0008,0060)
Series Description	(0008,103E)
Series Instance UID	(0020,000E)
Series Number	(0020,0011)

INSTANCE Record Keys:

Description	Tag
Image Type	(0008,0008)
Instance Number	(0020,0013)

3.3 Extensions, Specializations, Privatizations of SOP Classes and Transfer Syntaxes

None.

3.4 Other Extensions

None.

3.5 Configuration

The DICOMBurner software supports several application-level configurations, available through its GUI. Nevertheless, none of these configuration parameters affects the conformance of DICOMBurner with media profiles.

3.6 Character Sets

The DICOMBurner application supports SOP Instances containing the following character sets:

- DICOM Default repertoire as defined in PS 3.5
- DICOM Hebrew ISO_IR 138

3.7 Codes and Controlled Terminology

The SOP Classes supported by this implementation do not support the use of Codes and Controlled Terminology