

# Ambu<sup>®</sup> aView<sup>™</sup> 2 Advance DICOM Conformance Statement



This document is property of Ambu A/S. No part of it may be reproduced or used in any form or by any means without written permission of the owner.

## Abstract

This document is the result of the DICOM requirements definition phase of the Ambu® aView™ 2 Advance monitor.

## Revision History

Version	Date	Author	Description
1.0	03 May 2020	AGE (ICT), HETH	Final version for release of Ambu® aView™ 2 Advance

# Contents

Page

1. Conformance Statement Overview.....	4
2. Introduction.....	4
2.1. Audience.....	4
2.2. Remarks.....	4
2.3. Terms and abbreviations.....	5
2.4. Basics of DICOM Communication.....	6
2.5. References.....	7
3. Networking.....	7
3.1. Implementation Model.....	7
3.1.1. Application Data Flow.....	7
3.1.2. Functional Definition of AEs.....	8
3.1.2.1. Functional Definition of Storage SCU Application Entity.....	8
3.1.3. Sequencing of Real World Activities.....	8
3.2. AE Specifications.....	9
3.2.1. Storage SCU Application Entity Specification.....	9
3.2.1.1. SOP Classes.....	9
3.2.1.2. Association Policies.....	9
3.2.1.2.1. General.....	9
3.2.1.2.2. Number of associations.....	9
3.2.1.2.3. Asynchronous nature.....	9
3.2.1.2.4. Implementation identifying information.....	9
3.2.1.3. Association Initiation Policy.....	9
3.2.1.3.1. Activity – Send SOP instance to PACS.....	9
3.2.1.3.1.1. Description and sequencing of activities.....	9
3.2.1.3.1.2. Proposed presentation contexts.....	10
3.2.1.3.1.3. SOP specific conformance for VL Endoscopic Image Storage and Video Endoscopic Image Storage.....	10
3.2.1.3.2. Activity - Verify DICOM communication.....	11
3.2.1.3.2.1. Description and sequencing of activities.....	11
3.2.1.3.2.2. Proposed presentation contexts.....	11
3.2.1.3.2.3. SOP specific conformance for Verification.....	11
3.3. Network Interfaces.....	11
3.3.1. Physical Network Interface.....	11
3.3.2. Additional Protocols.....	11
3.3.3. IPv4 and IPv6 Support.....	11
3.4. Configuration.....	12
3.4.1. AE Title/Presentation Address Mapping.....	12
3.4.1.1. Local AE Titles.....	12
3.4.1.2. Remote AE Titles.....	12
3.4.2. Parameters.....	12
4. Media Interchange 14	
5. Transformation of DICOM to CDA.....	12
6. Support of Character Sets.....	12
7. Security.....	12
7.1. Security Profiles.....	12
7.2. Association Level Security.....	12
7.3. Application Level Security.....	12
8. Annexes.....	13
8.1. IOD Contents.....	13
8.1.1. Created SOP Instances.....	13
8.1.1.1. VL Endoscopic Image IOD.....	13
8.1.1.2. Video Endoscopic Image IOD.....	13
8.1.1.3. Common Modules.....	14
8.1.1.4. VL Endoscopic Image IOD Modules.....	15
8.1.1.5. Video Endoscopic Image IOD Modules.....	16
8.1.2. Usage of Attributes from Received IODs.....	17
8.1.3. Attribute Mapping.....	17
8.1.4. Coerced/Modified Fields.....	17
8.2. Data Dictionary of Private Attributes.....	17
8.3. Coded Terminology and Templates.....	17
8.4. Grayscale Image Consistency.....	19
8.5. Standard Extended/Specialized/Private SOP Classes.....	19
8.6. Private Transfer Syntaxes.....	19

# 1. Conformance Statement Overview

This DICOM Conformance Statement describes the DICOM interface of the Ambu® aView™ 2 Advance monitor and its environment.

The aView 2 Advance is a device with its own software that captures endoscopic images and videos of a patient and produces VL Endoscopic Image and Video Endoscopic Image DICOM instances.

The aView 2 Advance provides PACS communication for transfer of the produced VL Endoscopic Image and Video Endoscopic Image DICOM instances and supports DICOM echo for communication verification.

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
<b>Transfer</b>		
VL Endoscopic Image Storage	Yes	No
Video Endoscopic Image Storage	Yes	No
Verification	Yes	No

Table 1 – Network Services

## 2. Introduction

### 2.1. Audience

This document is written for those that need to understand how the aView 2 Advance will integrate into their healthcare facility. This includes both those responsible for overall image network policies and architecture, as well as those responsible for integration of the software, who need to have a detailed understanding of the DICOM features of the product. This document contains some basic DICOM definitions so that any reader may understand how this product implements DICOM features. However, integrators are expected to have full understanding of all the DICOM terminology, including knowledge about how the tables in this document relate to the product's functionality, and how that functionality integrates with other devices that support compatible DICOM features.

### 2.2. Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between aView 2 Advance and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

This Conformance Statement is not supposed to replace validation with other DICOM equipment to ensure proper exchange of intended information. In fact, the user should be aware of the following important issues:

- The comparison of different Conformance Statements is just the first step towards assessing interconnectivity and interoperability between the product and other DICOM conformant equipment.
- Test procedures should be defined and executed to validate the required level of interoperability with specific compatible DICOM equipment, as established by the healthcare facility.

## 2.3. Terms and abbreviations

Term	Description
Abstract Syntax	The information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.
Application Entity	An end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.
Application Entity Title	The externally known name of an Application Entity, used to identify a DICOM application to other DICOM applications on the network.
Association	A network communication channel set up between Application Entities.
Attribute	A unit of information in an object definition; a data element identified by a tag. The information may be a complex data structure (Sequence), itself composed of lower level data elements.
Information Object Definition	The specified set of Attributes that comprise a type of data object; does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties.
Module	A set of Attributes within an Information Object Definition that are logically related to each other.
Presentation Context	The set of DICOM network services used over an Association, as negotiated between Application Entities; includes Abstract Syntaxes and Transfer Syntaxes.
Protocol Data Unit	A packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.
Service Class Provider	Role of an Application Entity that provides a DICOM network service; typically, a server that performs operations requested by another Application Entity (Service Class User).
Service Class User	Role of an Application Entity that uses a DICOM network service; typically, a client.
Service/Object Pair Class (SOP Class)	The specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification.
Service/Object Pair Instance (SOP Instance)	An information object; a specific occurrence of information exchanged in a SOP Class.
Transfer Syntax	The encoding used for exchange of DICOM information objects and messages.
Unique Identifier	A globally unique "dotted decimal" string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier.
Value Representation	The format type of an individual DICOM data element, such as text, an integer, a person's name, or a code.

Abbreviation	Description
AE	Application Entity
DICOM	Digital Imaging and Communications in Medicine
IE	Information Entity
IOD	Information Object Definition
PDU	Protocol Data Unit
SCU	Service Class User
SCP	Service Class Provider
SOP	Service-Object Pair
UID	Unique Identifier
VL	Visible Light
VR	Value Representation

## 2.4. Basics of DICOM Communication

This section describes terminology used in this Conformance Statement for the non-specialist. The key terms used in the Conformance Statement are highlighted in *italics* below. This section is not a substitute for training about DICOM, and it makes many simplifications about the meanings of DICOM terms.

Two *Application Entities* (devices) that want to communicate with each other over a network using DICOM protocol must first agree on several things during an initial network "handshake". One of the two devices must initiate an *Association* (a connection to the other device), and ask if specific services, information, and encoding can be supported by the other device (*Negotiation*).

DICOM specifies a number of network services and types of information objects, each of which is called an *Abstract Syntax* for the Negotiation. DICOM also specifies a variety of methods for encoding data, denoted *Transfer Syntaxes*. The Negotiation allows the initiating Application Entity to propose combinations of Abstract Syntax and Transfer Syntax to be used on the Association; these combinations are called *Presentation Contexts*. The receiving Application Entity accepts the Presentation Contexts it supports.

For each Presentation Context, the Association Negotiation also allows the devices to agree on *Roles* - which one is the *Service Class User* (SCU - client) and which is the *Service Class Provider* (SCP - server). Normally the device initiating the connection is the SCU, i.e., the client system calls the server, but not always.

The Association Negotiation finally enables exchange of maximum network packet (*PDU*) size, security information, and network service options (called *Extended Negotiation Information*).

The Application Entities, having negotiated the Association parameters, may now commence exchanging data. Common data exchanges include queries for worklists and lists of stored images, transfer of image objects and analyses (structured reports), and sending images to film printers. Each exchangeable unit of data is formatted by the sender in accordance with the appropriate *Information Object Definition*, and sent using the negotiated Transfer Syntax. There is a Default Transfer Syntax that all systems must accept, but it may not be the most efficient for some use cases. Each transfer is explicitly acknowledged by the receiver with a *Response Status* indicating success, failure, or that query or retrieve operations are still in process.

Two Application Entities may also communicate with each other by exchanging media (such as a CD-R). Since there is no Association Negotiation possible, they both use a *Media Application Profile* that specifies "pre-negotiated" exchange media format, Abstract Syntax, and Transfer Syntax.

## 2.5. References

Reference	Document ID	Description
DICOM Standard	PS3 2018b	NEMA PS3 Digital Imaging and Communications in Medicine (DICOM) Standard, available free at <a href="http://medical.nema.org/">http://medical.nema.org/</a>
SRD	ICT005087.02.03-001	Ambu aView DICOM Module Software Requirements Document

## 3. Networking

### 3.1. Implementation Model

#### 3.1.1. Application Data Flow

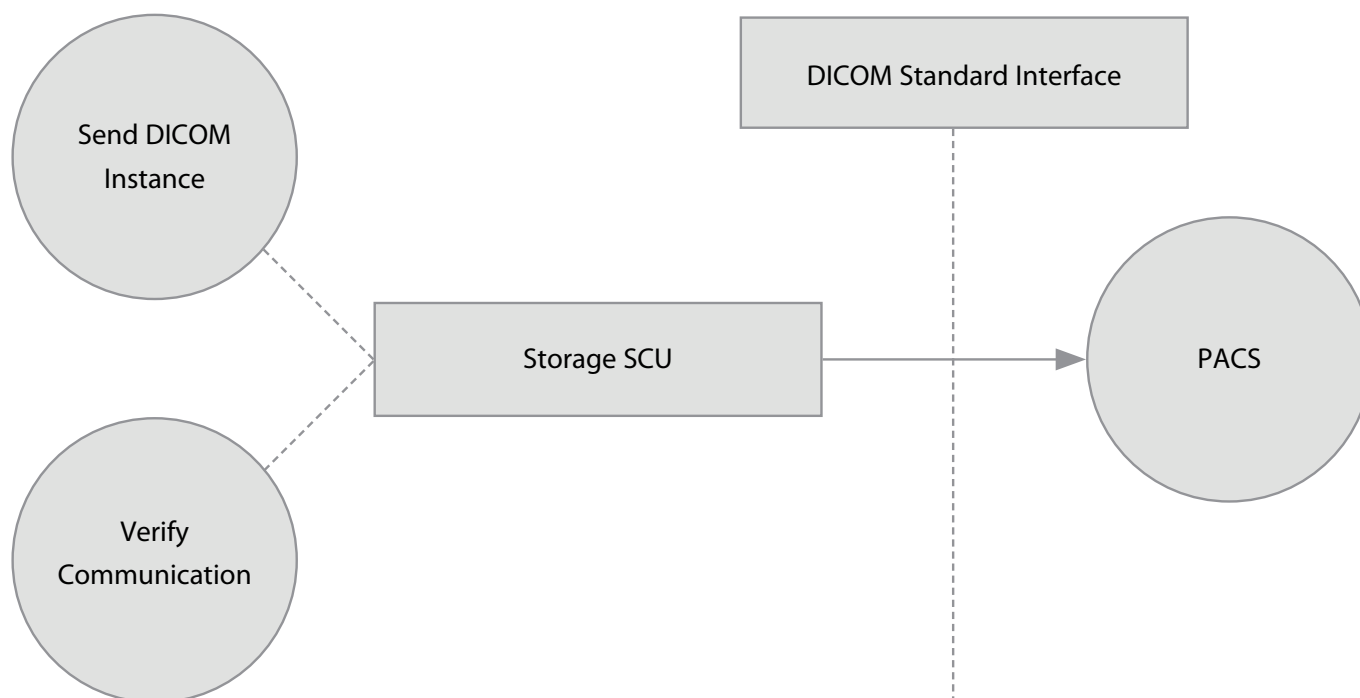


Figure 1 – Application data flow

The aView 2 Advance has the option to verify the DICOM communication with a PACS and send produced VL Endoscopic Image and Video Endoscopic Image SOP instances to a PACS.

### 3.1.2. Functional Definition of AEs

#### 3.1.2.1. Functional Definition of Storage SCU Application Entity

When triggered, the Storage SCU will send storage request for a VL Endoscopic Image or Video Endoscopic Image SOP instance to a remote AE, i.e. PACS. The Storage SCU can also be triggered to verify communication with a remote AE by sending C-ECHO request DICOM message. Storage SCU shall not accept DICOM association requests.

#### 3.1.3. Sequencing of Real World Activities

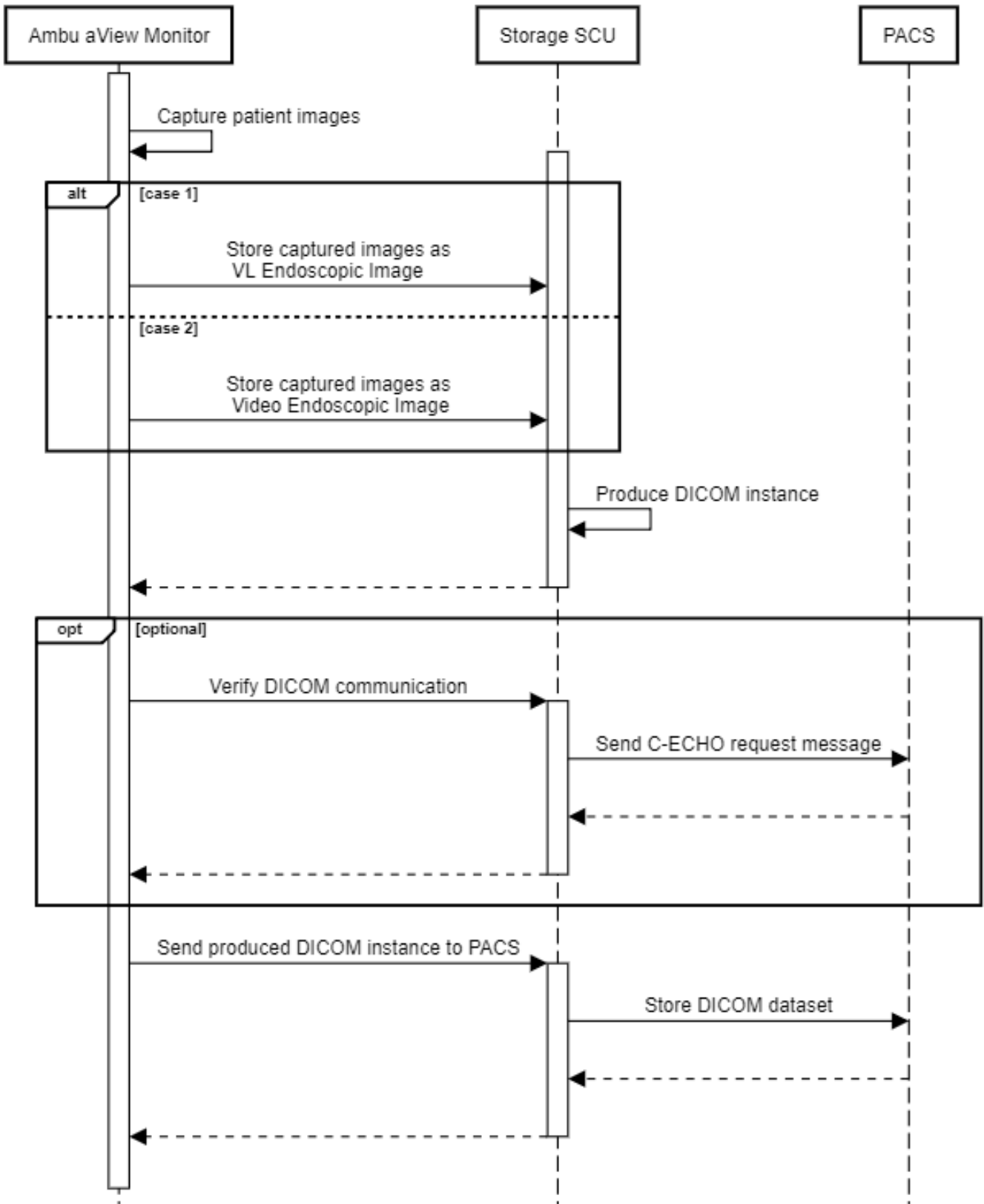


Figure 2 – Sequencing Constraints



Under normal workflow conditions the sequencing constraints illustrated in Figure 2 apply:

1. Capture patient images or videos.
2. Produce either a VL Endoscopic Image SOP instance or Video Endoscopic SOP instance.
3. Optionally verify DICOM communication with the PACS.
4. Send desired produced SOP instances to the PACS with either a VL Endoscopic Image Storage or Video Endoscopic Image Storage request.

## 3.2. AE Specifications

### 3.2.1. Storage SCU Application Entity Specification

#### 3.2.1.1. SOP Classes

This application entity provides standard conformance to the following SOP classes:

SOP Class Name	SOP Class UID	SCU	SCP
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Yes	No
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Yes	No
Verification	1.2.840.10008.1.1	Yes	No

*Table 2 - SOP Classes for Storage SCU Application Entity*

#### 3.2.1.2. Association Policies

##### 3.2.1.2.1. General

The DICOM standard application context name for DICOM 3.0 (1.2.840.10008.3.1.1.1) is always proposed.

##### 3.2.1.2.2. Number of associations

The maximum number of simultaneous associations is 1.

##### 3.2.1.2.3. Asynchronous nature

Asynchronous communication isn't supported.

##### 3.2.1.2.4. Implementation identifying information

The implementation information for this Application Entity is:

Implementation Class UID	Implementation Version Name
1.2.276.0.7230010.3.0.3.6.3	OFFIS_DCMTK_363

*Table 3 - DICOM Implementation Class and Version for Storage SCU Application Entity*

#### 3.2.1.3. Association Initiation Policy

This describes the conditions under which the AE will initiate an association.

##### 3.2.1.3.1. Activity – Send SOP instance to PACS

###### 3.2.1.3.1.1. Description and sequencing of activities

When triggered by the user, the Storage SCU will initiate a DICOM association with a remote DICOM AE to send a storage request for a VL Endoscopic Image or Video Endoscopic Image instance.

### 3.2.1.3.1.2. Proposed presentation contexts

The Storage SCU will propose the presentation contexts shown in the following table:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little	1.2.840.10008.1.2.1	SCU	None
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	MPEG-4 AVC/H.264 High Profile / Level 4.1	1.2.840.10008.1.2.4.102	SCU	None

Table 4 - Proposed presentation contexts for Send SOP instance to PACS activity

For VL Endoscopic Image Storage if both presentation contexts are accepted by the remote SCP, Storage SCU will use the Explicit VR Little Endian transfer syntax.

For Video Endoscopic Image Storage if the presentation context the produced Video Endoscopic Image SOP Instance encoded with is not accepted, Storage SCU will not send the storage request and release the association.

### 3.2.1.3.1.3. SOP specific conformance for VL Endoscopic Image Storage and Video Endoscopic Image Storage

The behaviour of Storage SCU AE for different status codes in a C-STORE DICOM response message is summarized below:

Service Status	Further Meaning	Status Code	Behaviour
Success	Success	0000	Sending of the instance is considered completed with no errors detected by the remote SCP.
Warning	Coercion of Data Elements	B000	Sending of the instance is considered completed but with warnings from the remote SCP.
	Elements Discarded	B006	Sending of the instance is considered completed but with warnings from the remote SCP.
	Data Set does not match SOP Class	B007	Sending of the instance is considered completed but with warnings from the remote SCP.
Failure	Refused: Out of resources	A7xx	Sending of the instance is considered failed. Storage SCU will inform the user that the remote SCP was unable to perform the request.
	Refused: Data Set does not match SOP Class	A9xx	Sending of the instance is considered failed. Storage SCU will inform the user that the provided data set did not match the requested SOP Class in the storage request.
	Any other failure	Cxxx	Sending of the instance is considered failed. Storage SCU will inform the user that storage operation has failed.

Table 5 - DICOM C-STORE response message status handling behaviour

The behaviour of Storage SCU AE during communication failure is summarized in a table below:

Exception	Behaviour
Timeout	The association will be aborted using A-ABORT. Storage SCU will inform the user that a timeout has occurred.
Association aborted	Storage SCU will inform the user that the remote SCP has aborted the association.
Network problem	Storage SCU will inform the user that the remote SCP is not reachable due to network issues.

Table 6 – SOP instance storage communication failure behaviour

### 3.2.1.3.2. Activity - Verify DICOM communication

#### 3.2.1.3.2.1. Description and sequencing of activities

When triggered by the user, the Storage SCU will initiate a DICOM association with a remote DICOM AE to send a C-ECHO request DICOM message.

#### 3.2.1.3.2.2. Proposed presentation contexts

The Storage SCU will propose the presentation contexts shown in the following table:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Table 7 - Proposed presentation contexts for verify DICOM communication activity

#### 3.2.1.3.2.3. SOP specific conformance for Verification

Upon the receipt of C-ECHO response DICOM message from the remote DICOM AE after sending C-ECHO request DICOM message, Storage SCU will determine that communication verification is complete successfully.

Any other case or timeout will result in a communication verification failure.

## 3.3. Network Interfaces

### 3.3.1. Physical Network Interface

The application is indifferent to the physical medium over which TCP/IP executes, which is dependent on the underlying operating system and hardware.

### 3.3.2. Additional Protocols

Not applicable.

### 3.3.3. IPv4 and IPv6 Support

Only IPv4 is supported.

## 3.4. Configuration

### 3.4.1. AE Title/Presentation Address Mapping

#### 3.4.1.1. Local AE Titles

Only permitted users can configure the local application entities used by the aView 2 Advance.

Application Entity	Default AE Title	Default TCP/IP Port
Storage SCU	No default	No default

Table 8 - Local AE Title Configuration Table

#### 3.4.1.2. Remote AE Titles

Only permitted users can configure the remote application entities (one or more entries for PACS) used by the aView 2 Advance. No default values are provided for remote application entities.

Application Entity	Default AE Title	Default TCP/IP Address	Default TCP/IP Port
PACS	No default	No default	No default

Table 9 - Remote AE Title Configuration Table

#### 3.4.2. Parameters

Parameter	Configurable (Yes/No)	Default Value
Time-out waiting for verification activity results	Yes	5 seconds
Time-out waiting for storage activity results	Yes	30 seconds
Max PDU Receive Size	No	65536 (64k)
Max PDU Send Size	No	65536 (64k)
Number of simultaneous associations	No	1

## 4. Media Interchange

Not applicable.

## 5. Transformation of DICOM to CDA

Not applicable.

## 6. Support of Character Sets

The aView 2 Advance supports the default Character Repertoire (ISO-IR 6) and ISO-100 for the SOP instances it produces.

## 7. Security

### 7.1. Security Profiles

Not applicable.

### 7.2. Association Level Security

Storage SCU will send DICOM association requests only to the configured DICOM AEs.

### 7.3. Application Level Security

Not applicable.

## 8. Annexes

### 8.1. IOD Contents

#### 8.1.1. Created SOP Instances

The following tables use a number of abbreviations.

The abbreviations used in the "Presence" column are:

- **VNAP:** Value not always present (attribute sent zero length if no value is present)
- **ANAP:** Attribute not always present
- **ALWAYS:** Always present with a value
- **EMPTY:** Attribute is sent without a value

The abbreviations used in the "Source" column:

- **STORED:** The attribute value has previously been stored using the DICOM interface
- **USER:** The attribute value source is from User input
- **AUTO:** The attribute value is generated automatically

#### 8.1.1.1. VL Endoscopic Image IOD

IE	Module	Reference	Presence
Patient	Patient	Table 13	ALWAYS
Study	General Study	Table 14	ALWAYS
Series	General Series	Table 15	ALWAYS
Equipment	General Equipment	Table 16	ALWAYS
Image	General Image	Table 17	ALWAYS
	Image Pixel	Table 18	ALWAYS
	Acquisition Context	Table 19	ALWAYS
	VL Image	Table 20	ALWAYS
	SOP Common	Table 21	ALWAYS

Table 11 – Definition of created VL Endoscopic Image SOP instances

#### 8.1.1.2. Video Endoscopic Image IOD

IE	Module	Reference	Presence
Patient	Patient	Table 13	ALWAYS
Study	General Study	Table 14	ALWAYS
Series	General Series	Table 15	ALWAYS
Equipment	General Equipment	Table 16	ALWAYS
Image	General Image	Table 17	ALWAYS
	Cine	Table 23	ALWAYS
	Multi-frame	Table 22	ALWAYS
	Image Pixel	Table 18	ALWAYS
	Acquisition Context	Table 19	ALWAYS
	VL Image	Table 24	ALWAYS
	SOP Common	Table 25	ALWAYS

Table 12 – Definition of created Video Endoscopic Image SOP instances

### 8.1.1.3. Common Modules

Attribute Name	Tag	VR	Value	Presence	Source
Patient's Name	(0010,0010)	PN	Value entered by user	VNAP	USER
Patient ID	(0010,0020)	LO	Value entered by user	ALWAYS	USER
Patient's Birth Date	(0010,0030)	DA	Value entered by user	VNAP	USER
Patient's Sex	(0010,0040)	CS	Value entered by user	VNAP	USER

Table 13 – Definition of Patient Module

Attribute Name	Tag	VR	Value	Presence	Source
Study Instance UID	(0020,000D)	UI	Generated	ALWAYS	AUTO
Study Date	(0008,0020)	DA	Date of first acquisition for that study	ALWAYS	AUTO
Study Time	(0008,0030)	TM	Time of first acquisition for that study	ALWAYS	AUTO
Referring Physician's Name	(0008,0090)	PN	-	EMPTY	AUTO
Study ID	(0020,0010)	SH	Generated	ALWAYS	AUTO
Accession Number	(0008,0050)	SH	-	EMPTY	AUTO
Study Description	(0008,1030)	LO	-	EMPTY	AUTO
Patient's Sex	(0010,0040)	CS	Value entered by user	VNAP	USER

Table 14 – Definition of General Study Module

Attribute Name	Tag	VR	Value	Presence	Source
Modality	(0020,000D)	CS	'ES'	ALWAYS	AUTO
Series Instance UID	(0008,0020)	UI	Generated	ALWAYS	AUTO
Series Number	(0008,0030)	IS	-	EMPTY	AUTO

Table 15 – Definition of General Series Module

Attribute Name	Tag	VR	Value	Presence	Source
Manufacturer	(0008,0070)	LO	'Ambu'	ALWAYS	AUTO
Stations Name	(0008,1010)	SH	System name.	ALWAYS	USER
Manufacturer's Model Name	(0008,1090)	LO	'Ambu Monitor' together with hardware version	ALWAYS	AUTO
Software Versions	(0008,1020)	LO	Version of the aView 2 Advance in application	ALWAYS	AUTO

Table 16 – Definition of General Equipment Module

Attribute Name	Tag	VR	Value	Presence	Source
Instance Number	(0020,0013)	IS	'1'	ALWAYS	AUTO
Patient Orientation	(0020,0020)	CS	-	EMPTY	AUTO

Table 17 – Definition of General Image Module

Attribute Name	Tag	VR	Value	Presence	Source
Rows	(0028,0010)	US	Number of rows in the image	ALWAYS	AUTO
Columns	(0028,0011)	US	Number of columns in the image	ALWAYS	AUTO
Pixel Data1	(7FE0,0010)	OB	Captured image or video	ALWAYS	AUTO

Table 18 – Definition of Image Pixel Module

**Note:** General Image Module attributes that have a more specialized definition in VL Image Module are listed only under the VL Image Module definitions for VL Endoscopic Image and Video Endoscopic Image SOP instances.

**1:** For Video Endoscopic Image SOP Instances encoded with Implicit VR Little Endian, VR of Pixel Data attribute is OW.

Attribute Name	Tag	VR	Value	Presence	Source
Acquisition Context Sequence	(0028,0008)	SQ		EMPTY	AUTO

Table 19 – Definition of Acquisition Context Module

#### 8.1.1.4. VL Endoscopic Image IOD Modules

Attribute Name	Tag	VR	Value	Presence	Source
Image Type	(0008,0008)	CS	'ORIGINAL/PRIMARY'	ALWAYS	AUTO
Samples per Pixel	(0028,0002)	US	'3'	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	'RGB'	ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	'8'	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	'8'	ALWAYS	AUTO
High Bit	(0028,0102)	US	'7'	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	'0'	ALWAYS	AUTO
Planar Configuration	(0028,0006)	US	'0'	ALWAYS	AUTO
Lossy Image Compression	(0028,2110)	CS	-	EMPTY	AUTO

Table 20 – Definition of VL Image Module for created VL Endoscopic Image SOP instances

Attribute Name	Tag	VR	Value	Presence	Source
SOP Class UID	(0028,0008)	UI	'1.2.840.10008.5.1.4.1.1.77.1.1'	ALWAYS	AUTO
SOP Instance UID	(0028,0009)	UI	Generated	ALWAYS	AUTO
Timezone Offset From UTC	(0008,0201)	SH	Local timezone offset from UTC.	ALWAYS	AUTO

Table 21 – Definition of SOP Common Module for created VL Endoscopic Image SOP instances

### 8.1.1.5. Video Endoscopic Image IOD Modules

Attribute Name	Tag	VR	Value	Presence	Source
Number of Frames	(0028,0008)	IS	Number of frames in the captured video	ALWAYS	AUTO
Frame Increment Pointer	(0028,0009)	AT	18H,00H,63H,10H	ALWAYS	AUTO

Table 22 – Definition of Multi-frame Module

Attribute Name	Tag	VR	Value	Presence	Source
Frame Time	(0018,1063)	DS	Nominal time (in msec) per individual frame	ALWAYS	AUTO

Table 23 – Definition of Cine Module

Attribute Name	Tag	VR	Value	Presence	Source
Image Type	(0008,0008)	CS	'ORIGINAL/PRIMARY'	ALWAYS	AUTO
Samples per Pixel	(0028,0002)	US	'3'	ALWAYS	AUTO
Photometric Interpretation	(0028,0004)	CS	'YBR_PARTIAL_420' for MPEG 'RGB' for Implicit VR Little Endian	ALWAYS	AUTO
Bits Allocated	(0028,0100)	US	'8'	ALWAYS	AUTO
Bits Stored	(0028,0101)	US	'8'	ALWAYS	AUTO
High Bit	(0028,0102)	US	'7'	ALWAYS	AUTO
Pixel Representation	(0028,0103)	US	'0'	ALWAYS	AUTO
Planar Configuration	(0028,0006)	US	'0'	ALWAYS	AUTO
Lossy Image Compression	(0028,2110)	CS	'0'	VNAP	AUTO



Anatomic Region Sequence	(0008,2218)	SQ	Shall contain a single item. Defined CID 4040 "Endoscopy Anatomic Regions" is defined for the Video Endoscopic Image IOD	ALWAYS	AUTO (See note 1)
> Code Value	(0008,0100)	SH	See Table 26	ALWAYS	USER
> Coding Scheme Designator	(0008,0102)	SH	See Table 26	ALWAYS	USER
> Code Meaning	(0008,0104)	LO	See Table 26	ALWAYS	USER

Table 24 – Definition of VL Image Module for created Video Endoscopic Image SOP instances

**Note 1:** The "Anatomical Region" field is set automatically according to the type of the endoscope was used.

Attribute Name	Tag	VR	Value	Presence	Source
SOP Class UID	(0008,0016)	UI	'1.2.840.10008.5.1.4.1.1.77.1.1.1'	ALWAYS	AUTO
SOP Instance UID	(0008,0018)	UI	Generated	ALWAYS	AUTO
Timezone Offset From UTC	(0008,0201)	SH	Local timezone offset from UTC	ALWAYS	AUTO

Table 25 – Definition of SOP Common Module for created Video Endoscopic Image SOP instances

### 8.1.2. Usage of Attributes from Received IODs

Not applicable.

### 8.1.3. Attribute Mapping

Not applicable.

### 8.1.4. Coerced/Modified Fields

None.

## 8.2. Data Dictionary of Private Attributes

The aView 2 Advance does not use any private attributes.

## 8.3. Coded Terminology and Templates

The content of Anatomic Region Sequence (0008,2218) in created Video Endoscopic Image SOP instances will be filled with an anatomic code selected by the user from a catalogue. The default catalogue of anatomic codes corresponds to CID 4040 "Endoscopy Anatomic Regions". Below table that is taken from DICOM Standard 2018b PS3.16 "CID 4040 Endoscopy Anatomic Regions" lists the possible values that can be selected from the catalogue.

<b>Coding Scheme Designator</b>	<b>Code Value</b>	<b>Code Meaning</b>
SRT	T-D4000	Abdomen
SRT	T-59490	Anus, rectum and sigmoid colon
SRT	T-60610	Bile duct
SRT	T-74000	Bladder
SRT	T-DD123	Bladder and urethra
SRT	T-26000	Bronchus
SRT	T-83200	Cervix
SRT	T-D3000	Chest
SRT	T-DD163	Esophagus, stomach and duodenum
SRT	T-AB200	External auditory canal
SRT	T-63000	Gallbladder
SRT	T-D7000	Inguinal region
SRT	T-15001	Joint
SRT	T-71000	Kidney
SRT	T-D9200	Knee
SRT	T-59000	Large intestine
SRT	T-24100	Larynx
SRT	T-40230	Lumen of blood vessel
SRT	T-D3300	Mediastinum
SRT	T-2300C	Nasopharynx
SRT	T-22000	Paranasal sinus
SRT	T-55000	Pharynx
SRT	T-20101	Pharynx and larynx
SRT	T-59600	Rectum
SRT	T-D2220	Shoulder
SRT	T-59470	Sigmoid colon
SRT	T-D04FF	Spine
SRT	T-DD006	Trachea and bronchus
SRT	T-7000B	Upper urinary tract
SRT	T-73000	Ureter
SRT	T-88920	Uterus and fallopian tubes

*Table 26 – Endoscopy anatomic regions*

## **8.4. Grayscale Image Consistency**

The aView 2 Advance does not support the Grayscale Standard Display Function.

## **8.5. Standard Extended/Specialized/Private SOP Classes**

The aView 2 Advance does not claim conformance to any Extended, Specialized or Private SOP Classes.

## **8.6. Private Transfer Syntaxes**

The aView 2 Advance does not employ any Private Transfer Syntaxes.

**Ambu A/S**

Baltorpbakken 13,  
DK-2750 Ballerup, Denmark

T +45 72 25 20 00

F +45 72 25 20 50

[ambu.com](http://ambu.com)