

**XPert Version 5.1 and  
Acquisition software Version 3.2  
DICOM Conformance Statement**

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## Introduction

This Document provides the DICOM conformance statement for the **XPert and Acquisition** software implementation of the DICOM-3.0 standard.

Int the following text the words 'XPERT' and 'XPert' refer to both **XPert** version 5.1 and **Acquisition** software version 3.2.

## Chapter 1 - Implementation Model

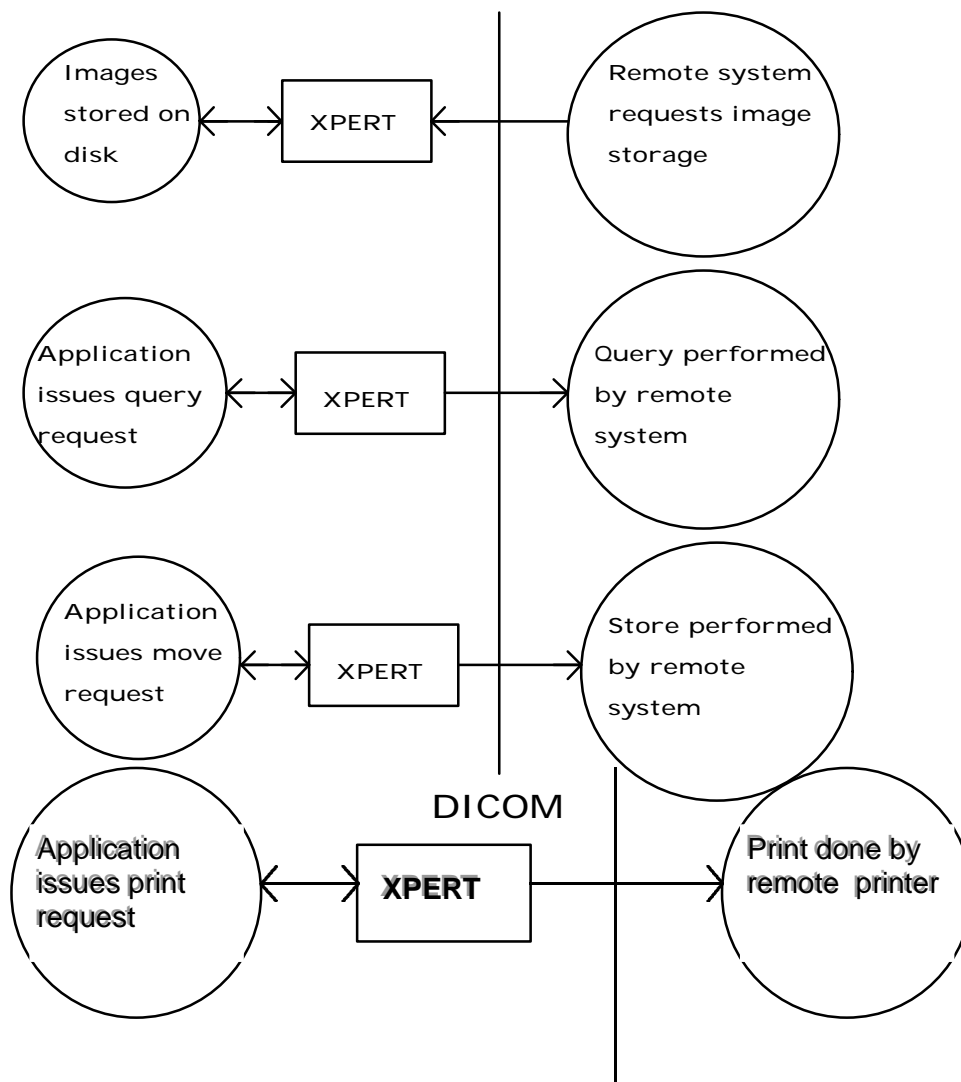
**XPert** are a multi-modality view and processing station. It uses the DICOM protocol to provide the following services:

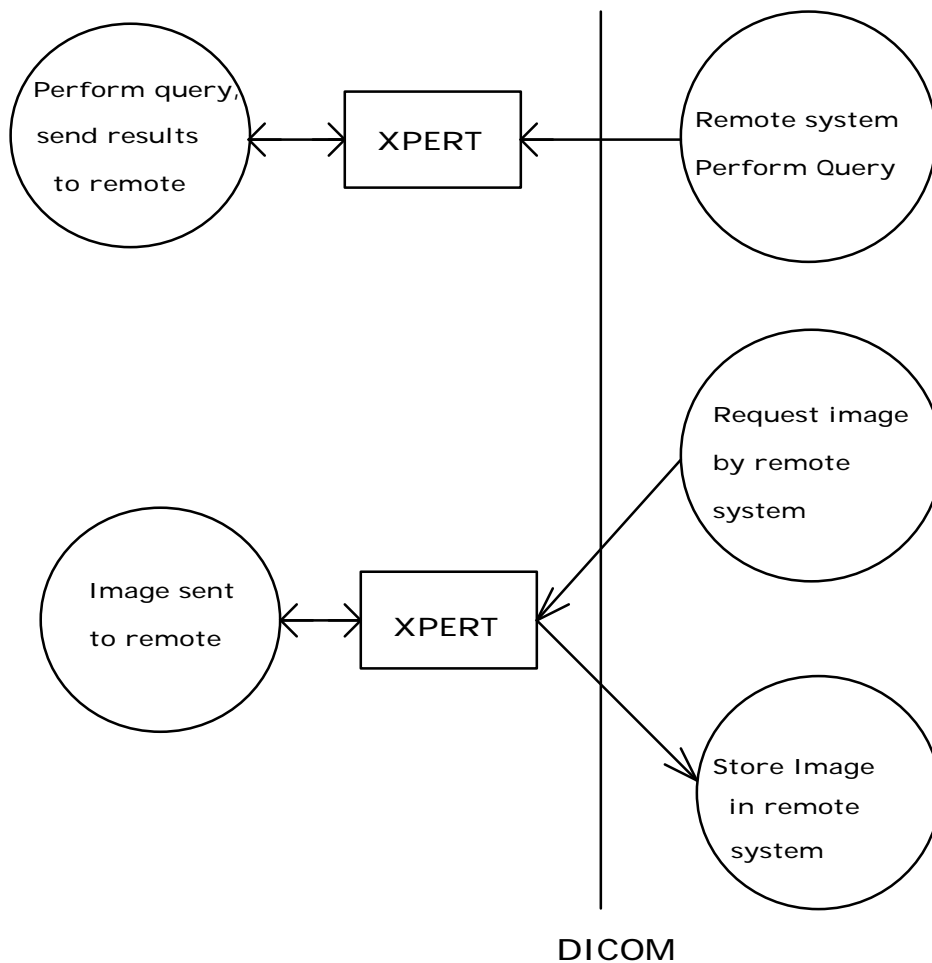
- Query remote data bases.
- Retrieve images from remote data bases.
- Print images on remote printers
- Enable access to its data base
- Store images to remote stations
- Store images sent by remote stations

### 1.1 Application Data Flow Diagram

The **XPert** system uses and provide DICOM services using the following Application Entities:

**XPERT** - This AE serves as the interface to all DICOM services as SCU and SCP.  
 As SCP it provides the DICOM find, move, storage and verification services.  
 As SCU it uses DICOM find, move print and verification services.





## 1.2 Functional Definitions of AE's

XPERT AE enables users of XPert system to perform a query using DICOM protocol from remote stations. The XPERT AE gives the following services to the local application as an SCU:

- Establish an association with a remote AE
- Release an association with a remote AE
- Query for studies (using all models)
- Query for images (using all models)
- Initiates Move operation to receive images
- Initiates Store operation to send images to remote
- Initiates Print Management services

As SCP XPERT waits for another application to connect at the presentation address configured for its AE title, XPERT will accept associations with Presentation

Contexts for SOP classes of the Storage, Query Retrieve (C-MOVE and C-FIND only) and Verification Classes.

When performing a Storage Service Class, XPERT will receive images and store them into the system's disk.

When performing a Query-Retrieve Service Class (C-FIND) XPert will query its data base according to the request's parameters, and will send the results to the issuer.

Performing a Query-Retrieve Service Class (C-MOVE) XPert will issue a C-STORE (to the target AE) for every image in the request.

### **1.3 Sequencing of Real World Activities**

Not Applicable.

## Chapter 2 - AE Specifications

### 2.1 XPERT - Specification

XPERT provides Standard Conformance to the following DICOM V3.0 Classes as an SCU:

SOP Class Name	SOP Class UID
Study root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Patient root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1
Patient/Study only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1
Study root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Patient root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2
NM Image Information Object	1.2.840.10008.5.1.4.1.1.20
CT Image Information Object	1.2.840.10008.5.1.4.1.1.2
MR Image Information Object	1.2.840.10008.5.1.4.1.1.4
Secondary Capture Image Information Object	1.2.840.10008.5.1.4.1.1.7
Basic Greyscale Print Management Meta	1.2.840.10008.5.1.1.9
Basic Color Print Management Meta	1.2.840.10008.5.1.1.18
Verification	1.2.840.10008.1.1

XPERT provides standard conformance to the following DICOM V3.0 SOP Classes as an SCP:

SOP Class Name	SOP Class UID
Study root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Study root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
NM Image Information Object	1.2.840.10008.5.1.4.1.1.20
CT Image Information Object	1.2.840.10008.5.1.4.1.1.2
MR Image Information Object	1.2.840.10008.5.1.4.1.1.4
Secondary Capture Image Information Object	1.2.840.10008.5.1.4.1.1.7
Verification	1.2.840.10008.1.1

#### 2.1.1 Association Establishment Policies

##### 2.1.1.1 General

The maximum PDU size which the XPERT AE will is configurable, with a minimum of 2K byte.

### 2.1.1.2 Number of Associations

The number of simultaneous associations which will be accepted by XPERT is limited only by the kernel parameters underlying TCP/IP implementation. XPERT will spawn a new process for each connection request it services. Therefore XPERT can have multiple simultaneous connections, and there is no inherent limitation on the number of simultaneous associations which the Application Entity represented by XPERT can maintain.

### 2.1.1.3 Asynchronous Nature

XPERT will only allow a single outstanding operation on an association. Therefore XPERT will not perform asynchronous window negotiation.

### 2.1.1.4 Implementation Identifying Information

XPERT will provide a single implementation Class UID which is 1.2.840.113704.3.1.1

## 2.1.2 Association Initiation Policy

XPERT initiates an association as part of an execution of a C-ECHO, C-FIND, C-MOVE and PRINT commands.

### 2.1.2.1 Local system requests verification

#### 2.1.2.1.1 Association Real-World Activity

XPERT initiates a C-ECHO to sense existence and availability of remote AE

#### 2.1.2.1.2 Proposed Presentation contexts

XPERT will use the Presentation Context which are shown in the following table:

Presentation Context Table

Abstract Syntax	Transfer Syntax
-----------------	-----------------

Name	UID	Name	UID	Role	Ext Neg
Verification	1.2.840.10008.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Verification	1.2.840.10008.1.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2	SCU	None

#### 2.1.2.1.2.1 SOP Specific Conformance statement for Verification SOP Class



XPERT provides standard conformance to the DICOM V3.0 Verification Service Class as an SCU for the Verification Class, UID = 1.2.840.10008.1.1 .

## 2.1.2.2 User clicks on remote system icon, User Selects a Study

### 2.1.2.2.1 Association Real-World Activity

XPERT initiates a C-FIND as a result of user request to see entries in remote station or to obtain information about a specific study.

### 2.1.2.2.2 Proposed Presentation contexts

XPERT will use the Presentation Context which are shown in the following table:

Presentation Context Table

Abstract Syntax		Transfer Syntax			
Name	UID	Name	UID	Role	Ext Neg
Patient Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Patient Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Study Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/ Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Patient/Study Only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1	Explicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Patient/Study Only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

### 2.1.2.2.1 SOP Specific Conformance statement for C-FIND SOP Class

XPERT provides standard conformance to the DICOM V3.0 FIND Service Class as an SCU for the following SOP Classes:

- Patient Root Query/Retrieve Information Model - FIND, UID=1.2.840.10008.5.1.4.1.2.1.1
- Study Root Query/Retrieve Information Model - FIND, UID=1.2.840.10008.5.1.4.1.2.2.1
- Patient/Study Only Query/Retrieve Information Model - FIND, UID=1.2.840.10008.5.1.4.1.2.3.1

### 2.1.2.3 Application Request for Image Transfer

#### 2.1.2.3.1 Association Real-World Activity

XPERT initiates a C-MOVE to request the remote system to send an image to the local station.

#### 2.1.2.3.2 Proposed Presentation contexts

XPERT will use the Presentation Context which are shown in the following table:

Presentation Context Table  
Abstract Syntax       Transfer Syntax

Name	UID	Name	UID	Role	Ext Neg
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Patient Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

#### 2.1.2.3.2.1 SOP Specific Conformance statement for C-MOVE SOP Class

XPERT provides standard conformance to the DICOM V3.0 MOVE Service Class as an SCU for the following SOP Classes:

- Patient Root Query/Retrieve Information Model - MOVE, UID=1.2.840.10008.5.1.4.1.2.1.2
- Study Root Query/Retrieve Information Model - MOVE, UID=1.2.840.10008.5.1.4.1.2.2.2

## 2.1.2.4 Remote system Request Image Transfer

### 2.1.2.4.1 Association Real-World Activity

The associated Real-World activity associated with the C-Move command is retrieval of images from the XPERT archive and storage of the images to the requesting remote station using a C-STORE command.

### 2.1.2.4.2 Proposed Presentation contexts

XPERT will use the Presentation Context which are shown in the following table:

Presentation Context Table  
Abstract Syntax Transfer Syntax

Name	UID	Name	UID	Role	Ext Neg
CT Image	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
CT Image	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
MR Image	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
MR Image	1.2.840.10008.5.1.4.1.1.4	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
NM Image	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
NM Image	1.2.840.10008.5.1.4.1.1.20	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
SC Image	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
SC Image	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

### 2.1.2.4.2.1 SOP Specific Conformance statement for C-STORE SOP Class

XPERT provides standard conformance to the DICOM V3.0 STORAGE Service Class as an SCU for the following SOP Classes:

- CT Image Storage , UID = 1.2.840.10008.5.1.4.1.1.2
- MR Image Storage , UID = 1.2.840.10008.5.1.4.1.1.4
- NM Image Storage , UID = 1.2.840.10008.5.1.4.1.1.20
- SC Image Storage , UID = 1.2.840.10008.5.1.4.1.1.7

### 2.1.2.5 Local system requests to print image

#### 2.1.2.5.1 Association Real-World Activity

XPERT initiates a Print Management request to print image on a remote printer.

#### 2.1.2.5.2 Proposed Presentation contexts

XPERT will use the Presentation Context which are shown in the following table:

Presentation Context Table  
 Abstract Syntax Transfer Syntax

Name	UID	Name	UID	Role	Ex Neg
Basic Greyscale Print Management Meta	1.2.840.10008.5.1.1.9	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Color Print Management Meta	1.2.840.10008.5.1.1.18	DICOM Explicit VR Little Endian	1.2.840.10008.1.2	SCU	None

#### 2.1.2.5.2.1 SOP Specific Conformance statement for Print Management Meta SOP Class

XPERT provides standard conformance to the DICOM V3.0 Print Management Service class an SCU for the following Meta SOP classes:

- Basic Greyscale Print Management Meta, UID = 1.2.840.10008.5.1.1.9 .
- Basic Color Print Management Meta, UID = 1.2.840.10008.5.1.1.18 .

## 2.1.3 Association Acceptance Policy

XPERT places no limitation on who may connect to it, nor on the number of simultaneous connections it will support.

### 2.1.3.1 Remote System Request Verification

A remote system request verification from XPERT using the C-ECHO command.

#### 2.1.3.1.1 Associated Read-World Activity

XPERT performs the verification Service Class by responding with C-ECHO-RSP.

#### 2.1.3.1.2 Presentation Context Table

Any of the Presentation Contexts show in the following table are acceptable for XPERT:

Presentation Context Table

Abstract Syntax		Transfer Syntax			
Name	UID	Name	UID	Role	Ext Neg
Verification	1.2.840.10008.1.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Verification	1.2.840.10008.1.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

#### 2.1.3.1.2.1 SOP Specific Conformance to Verification SOP Class

XPERT provides standard conformance to the DICOM V3.0 Verification Service Class as an SCP for the Verification Class, UID=1.2.840.10008.1.1 .

#### 2.1.3.1.3 Presentation Context Acceptance Criterion

XPERT will accept any Presentation Context from the table in section 2.1.3.1.2 .

#### 2.1.3.1.4 Transfer Syntax Selection Policies

XPERT will receive requests encoded using the following transfer syntax in the following order:

- DICOM Implicit VR Little Endian (Default)
- DICOM Explicit VR Little Endian

### 2.1.3.2 Remote System Request Image Storage

A remote system request image storage from XPERT, as a result of a C-MOVE command issued by XPERT itself.

### 2.1.3.2.1 Association Real-World Activity

The associated Real-World activity associated with the C-STORE operation is the storage of the image to disk of the system upon XPERT is running. XPERT will issue a failure status if it is unable to store the image on the disk.

### 2.1.3.2.2 Presentation Context Table

Any of the Presentation Contexts show in the following table are acceptable for XPERT:

Presentation Context Table

Name	UID	Name	UID	Role	Ext Neg
NM Image	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
NM Image	1.2.840.10008.5.1.4.1.1.20	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
CT Image	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
CT Image	1.2.840.10008.5.1.4.1.1.2	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
MR Image	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
MR Image	1.2.840.10008.5.1.4.1.1.4	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
SC Image	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
SC Image	1.2.840.10008.5.1.4.1.1.7	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

#### 2.1.3.2.2.1 SOP Specific Conformance to Storage SOP Class

XPERT provides standard conformance to the DICOM V3.0 Storage Service Class as an SCP for the following SOP Classes:

- NM Image Storage, UID = 1.2.840.10008.5.1.4.1.1.20
- CT Image Storage, UID = 1.2.840.10008.5.1.4.1.1.2
- MR Image Storage, UID = 1.2.840.10008.5.1.4.1.1.4
- SC Image Storage, UID = 1.2.840.10008.5.1.4.1.1.7

XPERT conforms to the SOP's of the Storage Service Class at Level 2. In case of a successful C-STORE, the stored image is recorded on the disk, otherwise an error is returned.

#### 2.1.3.2.3 Presentation Context Acceptance Criterion

XPERT will accept any Presentation Context from the table in section 2.1.3.2.2 .

### 2.1.3.2.4 Transfer Syntax Selection Policies

XPERT will receive requests encoded using the following transfer syntax in the following order:

- DICOM Implicit VR Little Endian (Default)
- DICOM Explicit VR Little Endian

### 2.1.3.3 Remote System Request Image Transfer

A remote system request image transfer using the C-MOVE command.

#### 2.1.3.3.1 Associated Read-World Activity

The associated Real-World activity associated with the C-MOVE command is retrieval of images from the XPERT's archive and storing the images to the requesting remote system using C-STORE command. XPert will issue a failure status if it is unable to process the transfer request..

#### 2.1.3.3.2 Presentation Context Table

Any of the Presentation Contexts show in the following table are acceptable for XPERT

Presentation Context Table

Abstract Syntax		Transfer Syntax			
Name	UID	Name	UID	Role	Ext Neg
Study Root MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root MOVE	1.2.840.10008.5.1.4.1.2.2.2	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

#### 2.1.3.3.2.1 SOP Specific Conformance to C-MOVE SOP Class

XPERT provides standard conformance to the DICOM V3.0 Query/Retrieve Service Class as an SCP for the Study Root Query/Retrieve Information Model class - MOVE, UID=1.2.840.10008.5.1.4.1.2.2 .

#### 2.1.3.3.3 Presentation Context Acceptance Criterion

XPERT will accept any Presentation Context from the table in section 2.1.3.3.2 .

#### 2.1.3.3.4 Transfer Syntax Selection Policies

XPERT will receive requests encoded using the following transfer syntax in the following order:

- DICOM Implicit VR Little Endian (Default)
- DICOM Explicit VR Little Endian

#### 2.1.3.4 Remote System Initiate Query Request

A remote system initiate a query request using the C-FIND command.

##### 2.1.3.4.1 Associated Read-World Activity

XPERT performs the query and send the responses to the issuer.

##### 2.1.3.4.2 Presentation Context Table

Any of the Presentation Contexts show in the following table are acceptable for XPERT:

Presentation Context Table

Abstract Syntax		Transfer Syntax			
Name	UID	Name	UID	Role	Ext Neg
Study Root FIND	1.2.840.10008.5.1.4.1.2.2.1	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root FIND	1.2.840.10008.5.1.4.1.2.2.1	DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

##### 2.1.3.4.2.1 SOP Specific Conformance to C-FIND SOP Class

XPERT provides standard conformance to the DICOM V3.0 Query/Retrieve Service Class as an SCP for the Study Root Query/Retrieve Information Mode Class - FIND,,  
UID=1.2.840.10008.5.1.4.1.2.2.1

##### 2.1.3.4.3 Presentation Context Acceptance Criterion

XPERT will accept any Presentation Context from the table is section 2.1.3.4.2 .

#### 2.1.3.4.4 Transfer Syntax Selection Policies

XPERT will receive requests encoded using the following transfer syntax in the following order:



- DICOM Implicit VR Little Endian (Default)
- DICOM Explicit VR Little Endian

## **Chapter 3 - Communication Profiles**

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

XPERT provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM standard.

### **3.2 TCP/IP Stack**

XPERT inherit its TCP/IP stack from the OS/2 system upon which it executes.

#### **3.2.1 Physical Media Support**

XPERT is indifferent to the physical medium over which TCP/IP executes.

## **Chapter 4 - Specialization**

Not Applicable

## **Chapter 5 - Configuration**

### **5.1 AE Title/Presentation Address Mapping**

This mapping is defined during the XPERT installation procedure.

### **5.2 Configurable Parameters**

- Maximum PDU size
- Time out

## **Chapter 6 - Support of Extended Character Sets**

No Extended Character Set is supported.