

# DICOM Quick Guide FAQ Manual

# Intellectual Property Statement

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**Note:** Before using DICOM, please read the electronic file DICOM CONFORMANCE STATEMENT along with the device. At the same time, please verify that the SCU services provided by ultrasound machine can be supported by the SCP services provided by the systems such like PACS/RIS/HIS and so on.

This system supports the following DICOM functions:

- Verify Connectivity
- DICOM Storage
- DICOM Worklist

Workflows of DICOM Applications are briefly described as follows:

1. DICOM preset (Server Setting, and Set DICOM Service).
2. Verify connectivity.
3. DICOM application (Image Storage, Worklist).

**Abbreviation introduction:**

The followings are the abbreviations in this chapter.

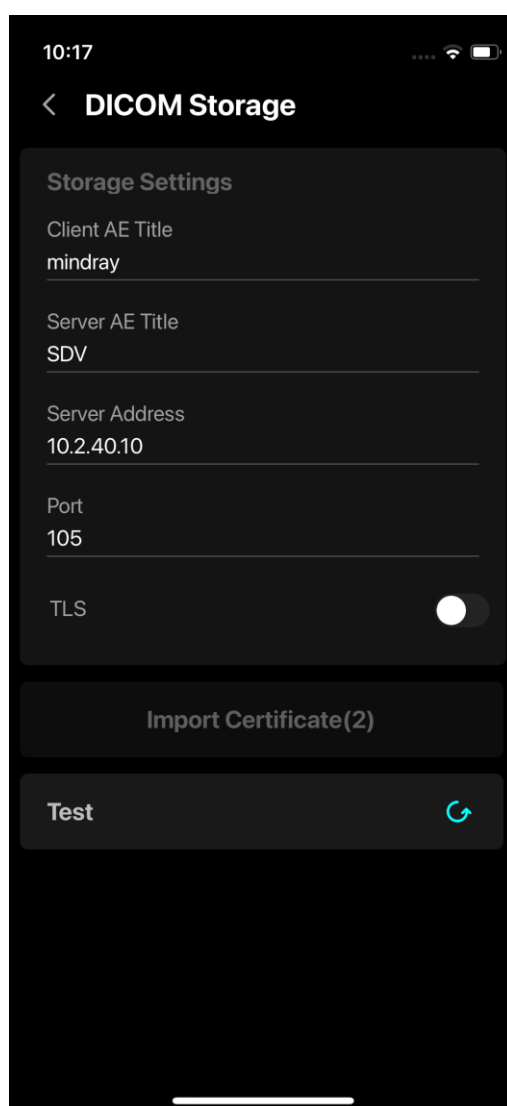
Abbreviation	Description
DICOM	Digital Imaging and Communications in Medicine
AE	Application Entity
SCU	Service Class User (DICOM client)
SCP	Service Class Provider (DICOM server)
SOP	Service-Object Pair

# 1 Preset

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## 1.1 DICOM Service Preset

### 1.1.1 DICOM Storage Preset



**Figure 1** DICOM Storage Preset Screen

The main parameters of DICOM Storage are described as below:

Name	Description
Client AE Title	Application Entity title.
Service AE	Application Entity title, here, it should be consistent with that of the

Title	storage server.
Server Address	IP address of the server.
Port	DICOM communication port, 101 is default. Here, the port should be consistent with that of the storage server port.
TLS	Transmission encryption when it is selected.
Import Certificates	Pop “Import Certificates” dialogue, the Type combobox value have PEM and CER.
Test	Click to verify if the two DICOM application entities are normally connected.

Tip:

- AE Title and Port must be consistent with those of server.

## 1.1.2 Worklist Preset

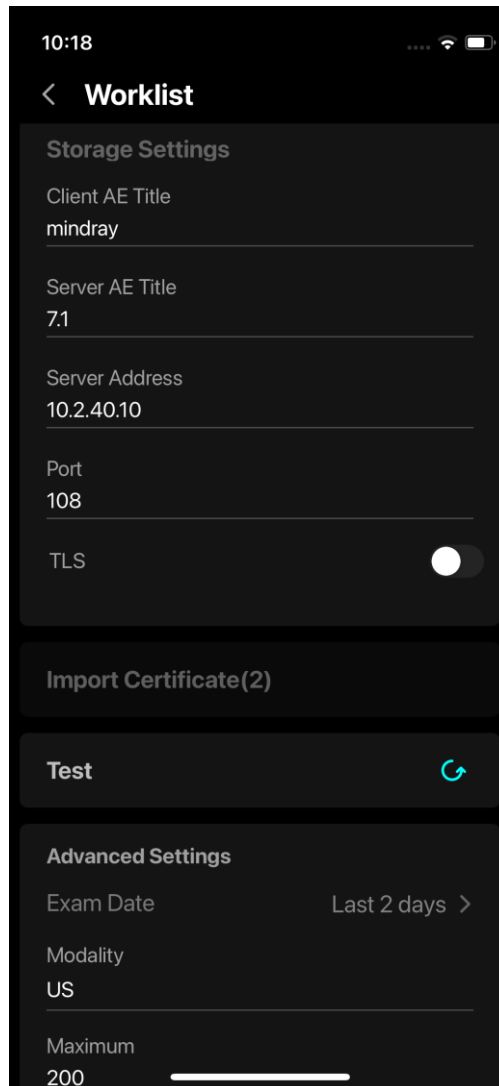


Figure 2 DICOM Worklist Preset Screen

The main parameters of DICOM Worklist are described as below:

<b>Name</b>	<b>Description</b>
Client AE Title	Application Entity title.
Service AE Title	Application Entity title, here, it should be consistent with that of the Worklist server.
Server Address	IP address of the server.
Port	DICOM communication port, 104 is default. Here, the port should be consistent with that of the Worklist server port.
TLS	Transmission encryption when it is selected.
Import Certificates	Pop “Import Certificates” dialogue, the Type combobox value have PEM and CER.
Test	Click to verify if the two DICOM application entities are normally connected.
Exam Date	Today,Last 2 Days,Last 1 Week,All.Today is default.
Modality	US is default.
Maximum	Maximum number of patients obtained.200 is default.

# 2 Services

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## 2.1 Verify Connectivity

If you want to verify connectivity (it is not a must), you can click [Test] button on Storage, or Worklist pages respectively. If the verification succeeded, the system prompts “√”. Otherwise, it prompts “×”, which means the connection is wrong. Please reconfirm it.

## 2.2 DICOM Storage

DICOM Storage is used to send images to DICOM storage server for remote storage. The entrances of storage include:

- ◆ Patient information management (iStation)
- ◆ Review status (Review)

DICOM storage supports:

- ◆ Single file transfer
- ◆ Exam transfer
- ◆ Batch transfer

Batch transfer means multiple exam records can be selected and sent for storage with one DICOM task for each exam. Multiple files in one exam will be sent in one DICOM connection.

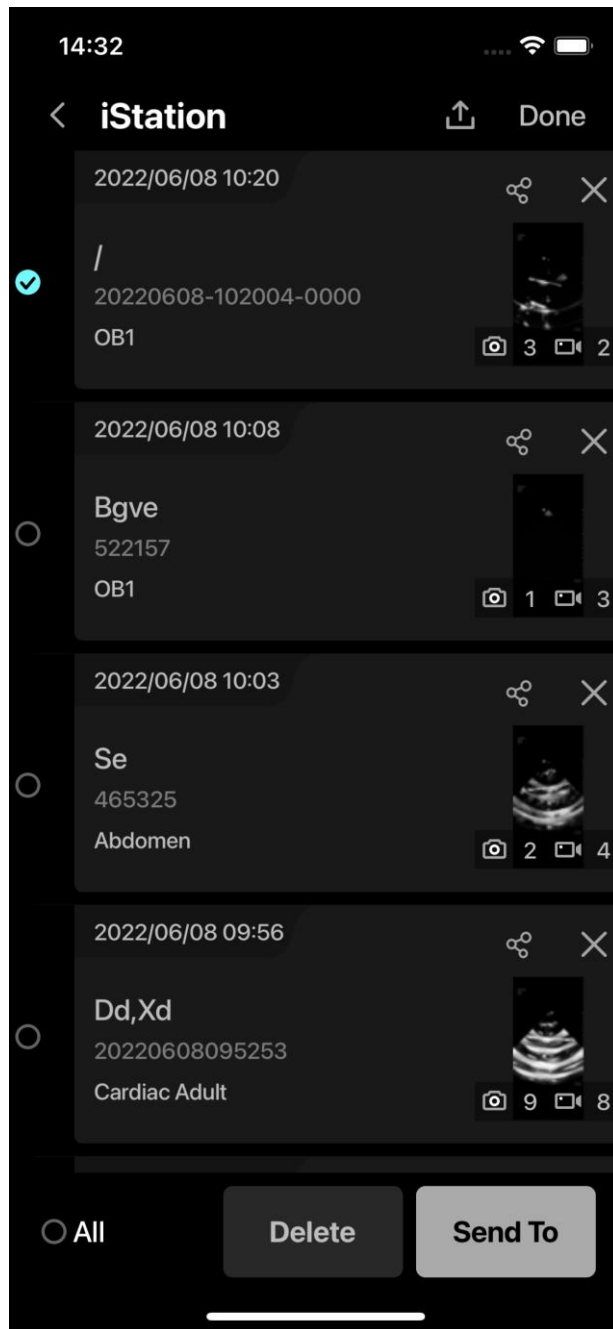
### 2.2.1 Storage Operation

The system supports manual storage.

The operations for manual storage service are described below:

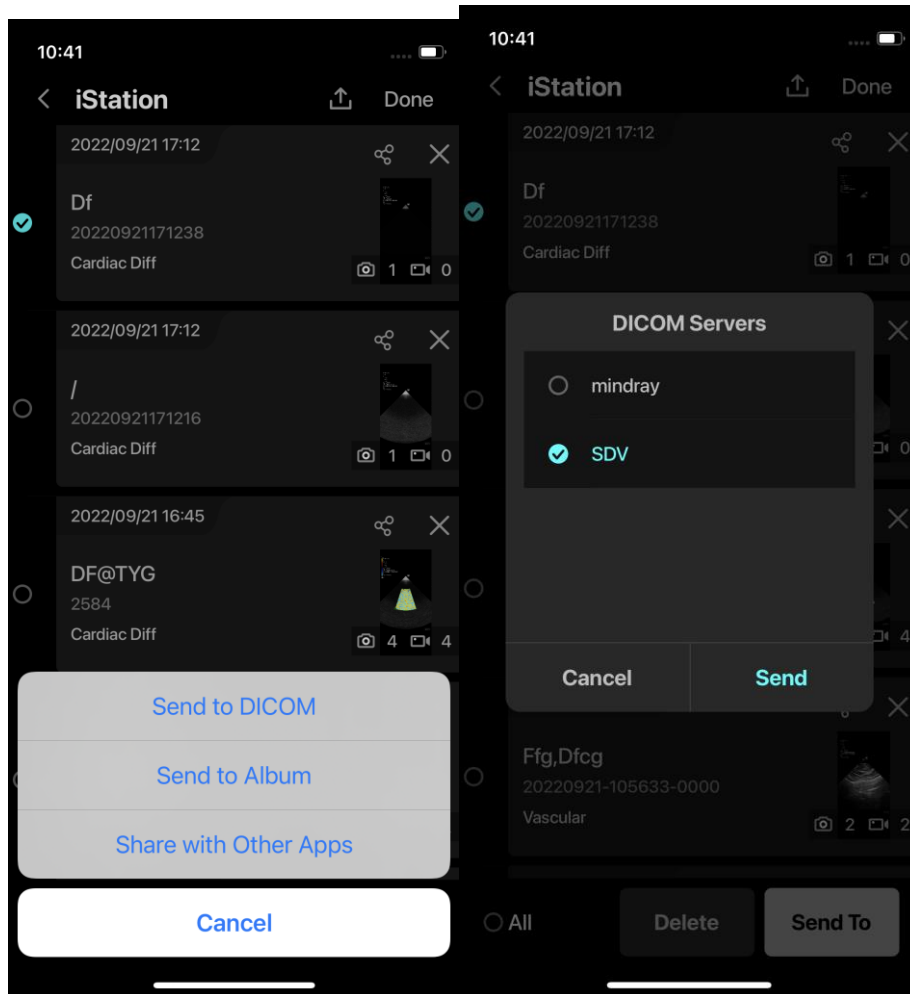
Take “send to DICOM storage” in iStation page as an example, the operations are:

1. Configure the storage server according to the above descriptions about service preset.
2. Press <iStation> on the menu to enter the patient information management page.
3. Click <Select> select one or more exam records in exam list, or select one or more images in an exam, as shown in Figure 3 iStation Screen.




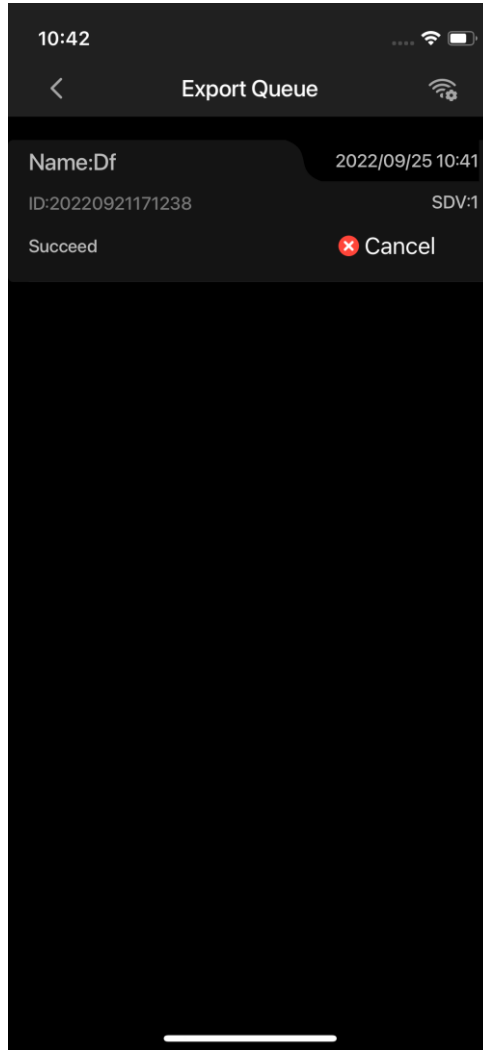
**Figure 3** iStation Screen

4. Click [Send to] to pop up the [Send To] dialog box.
5. Select the remote DICOM Server; click [OK] to send, as shown in Figure 4 DICOM Send To Screen.



**Figure 4** DICOM Send To Screen

6. Click  in the right corner of the screen to open Management, in which, you can review sending status. Select one record, and there is sending result in prompt dialog box, as shown in Figure 5 Task Management.



**Figure 5** Task Management

## 2.2.2 Common Reasons of Failure and Troubleshooting

### ■ Failure:

The server disconnects to the system automatically.

#### ● Potential Reasons:

The storage service of connected server cannot support JPEG compression.

### ■ Failure:

The net is disconnected during transmission.

#### ● Potential Reasons:

The wireless network is disconnected during transmission.

#### ● Troubleshooting:

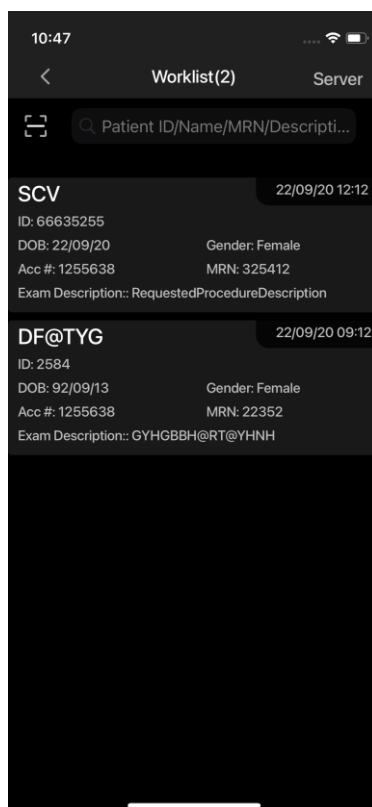
Ensure normal wireless network.

## 2.3 DICOM WorkList

The user can set query conditions when finding exam record(s) from the RIS or other Worklist server, and import the patient information selected in the query result.

Steps:

1. Press <Patient&Review> to open the Patient Info screen.
2. Click [WorkList] to enter the WorkList screen.
3. Query the patient information by pull down the screen. The default Exam Date is “today” of the system time. Patient records will be listed after clicking [Query].



**Figure 6** Query in WorkList

4. After the first query is finished, you can perform the second query within the range of the scheduled patients in the first time. The scheduled patients in the list will change in real time.
5. Select a patient record, the system import this patient and start the exam.

NOTE:

The modality type can be entered by the user.

Second query are still available during off-line.

Check the DICOM preset and network connection if a query error occurs.

# 3 Common Failures and Troubleshooting

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## 3.1 Common Failure: Service Verification Failed

Potential Reasons:

- Failed network connect, please check the network cable and connection;
- Verification service is not supported by the server;
- The verification is supported but not activated on the server; check the server setting if the verification service is activated.

Troubleshooting:

- Check the network cable and connection.
- Check the DICOM Conformance Statement if the SCP is supported;
- Enable the SCP service referring to the Server Manual or DICOM Conformance Statement.

## 3.2 Common Failure: Server disconnects the ultrasound system during implementing storage

Potential Reasons:

- The JPG compression is enabled on local device but is not supported on the server;
- Wrong AE TITLE settings on local device and the server.

Troubleshooting:

- Set the correct local AE TITLE and server AE TITLE on local device according to the DICOM Conformance Statement or settings of the server.

## 3.3 Common Failure: Network disconnected during transmission

Potential Reasons:

- The network cable or wireless network is disconnected during transmission;
- The connected switch, router or hub is down or in failure.

Troubleshooting:

- Connect the network;
- Reset the switch, router or hub, or replace a network device with higher performance.

### **3.4 Common failure: Worklist query succeeded, but no patient is shown**

Potential Reasons:

- Records on the server database are not accordant with the query conditions on local ultrasound system

Troubleshooting:

- The ultrasound system is defaulted only to inquire the patient information that the Modality is US, and the patient needs the server to provide US attribute. Change the query conditions (e.g. date) to make the server find the record accordingly. Based on DICOM standard, Patient ID cannot support fuzzy inquiry, only can support the whole word match. Please confirm the entered Patient ID is right or not.