

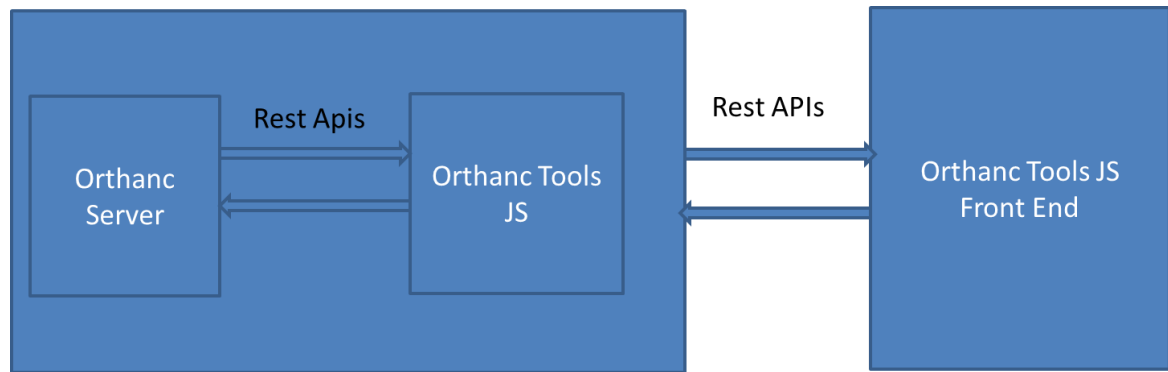
Orthanc-Tools-Js

Documentation Guide

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I. Architecture



Orthanc Tools JS create a Restful API server on the top of Orthanc, this server extends Orthanc capabilities of Orthanc server to add some automation features like user identification and automations of tasks like anonymization or batch retrieve.

This server exposes new APIs that can be used by different client. One of these possible clients is the provided web Front end which is a React web app that can be accessed by simple connexion at the server address on port 4000 with any browser.

This web app notably includes OHIF as dicom viewer.

II. Installation & upgrade

a. On Windows / Mac OS

Requirements:

- Install NodeJS LTS version: <https://nodejs.org/fr/>

Nb : In case of failed install, deactivate ETW option in the NodeJS installer (see <https://github.com/nodejs/node/issues/17025>)

- Install Orthanc with Osimis installer (<https://www.orthanc-server.com/download.php>)

Install Procedure:

A) Download Orthanc-Tools-JS from GitHub :

- a. Go To : <https://github.com/salimkanoun/Orthanc-Tools-JS/releases>
- b. In the last Release, in the assets, download the OrthancToolsJS.zip file.

B) Extract zip content in a folder with write access granted (ex : user folder)

C) Open the terminal and put the current directory the extracted folder (cmd in windows than "cd c:\{my_Destnation}")

D) Download and Install dependencies by running : "npm install" in terminal (internet access is required)

E) Start Orthanc-Tools-JS server by running "npm start" in terminal

F) Browser should open automatically or go to <http://{you-server-ip}:4000> (The interface can be accessed remotely)

G) Configure Orthanc (orthanc.json) :

To Benefit for AET/Peers declaration from OrthancToolsJS and to benefit for OHIF integration, edit the following settings in orthanc JSON

- ORTHANC__DICOM_MODALITIES_IN_DATABASE: "true"
- ORTHANC__ORTHANC_PEERS_IN_DATABASE: "true"
- *ORTHANC__DICOM_WEB__ENABLE: "true"*
- *ORTHANC__DICOM_WEB__ROOT: "/dicom-web/"*
- *ORTHANC__DICOM_WEB__ENABLEWADO: "true"*
- *ORTHANC__DICOM_WEB__WADOROOT: "/wado"*
- *ORTHANC__DICOM_WEB__STUDIESMETADATA: "MainDicomTags"*
- *ORTHANC__DICOM_WEB__SERIESMETADATA: "Full"*
-

Italicized item are for OHIF integration

b. With Docker

Orthanc deployment is preferred as it ship a full install ready to use (NodeJS + OrthancToolsJs)

The Docker Image name is in DockerHub: salimkanoun/orthanctoolsjs

A docker compose sample for deployment of Orthanc and OrthancToolsJs is available here:
<https://github.com/salimkanoun/Orthanc-Tools-JS/blob/master/docker-compose.yml>

c. Upgrade

To upgrade :

- For windows install download new source and replace existing file by new ones, execute “npm install” et “npm start”
- For Docker : update container

Warning: Until version 1.0.0 will be reached, the database schema is not stable. If upgrading for a version <1.0.0 you will have to manually erase the database file in the data/database/database.sqlite3

And so you preferences will be lost at upgrade. Starting 1.0.0 the database versioning will be managed to provide a smooth upgrade.

III. Login

Default Access :

Login : admin

Password : admin



IV. Orthanc Server declaration

By default the Orthanc server connexion settings is set to <http://localhost:8042>, with no login or password.
If you have a different Orthanc location or if you add login / password, go to Options -> General and fill the form accordingly, click “update” to apply new connexion settings.
Press “test connexion” to check that your Orthanc server can be correctly reached

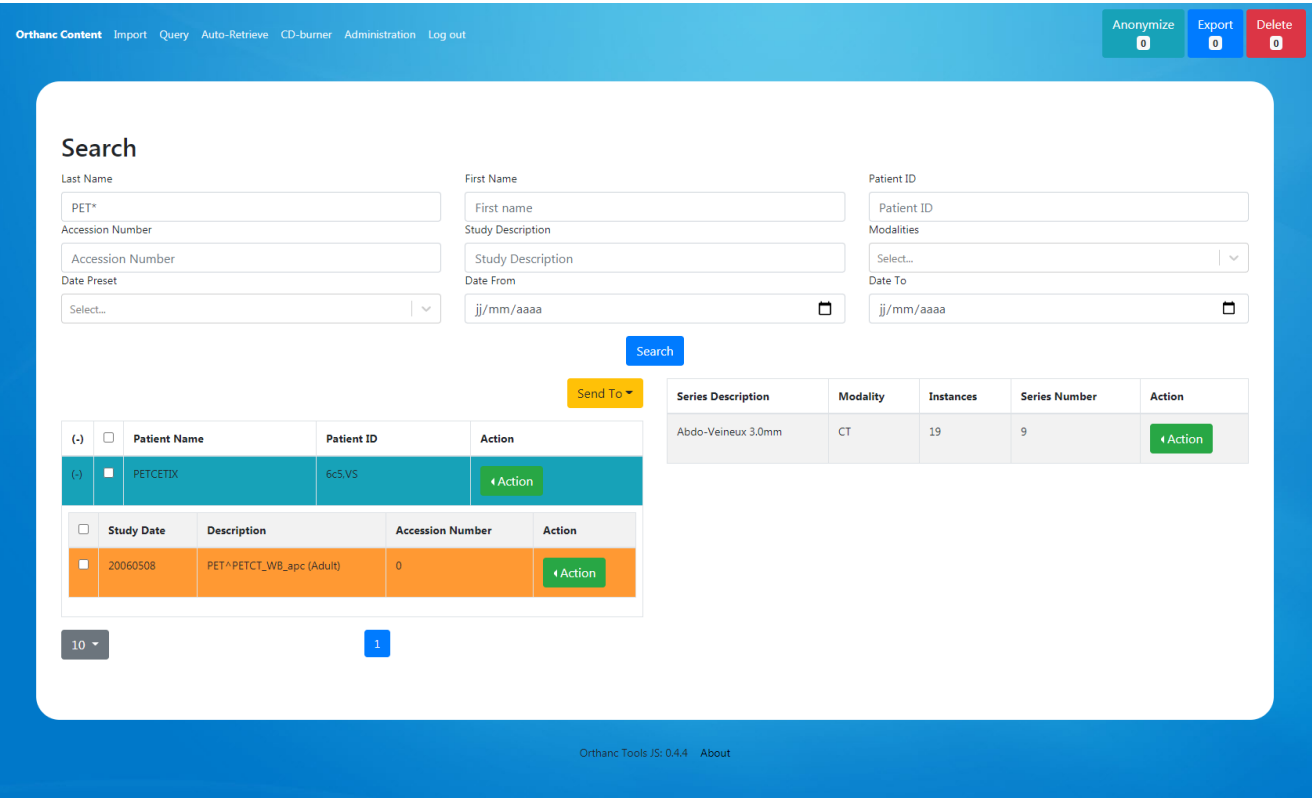
V. Main features

a. Orthanc Content

The Orthanc Content tab, allows you to search for resources in your Orthanc Server.

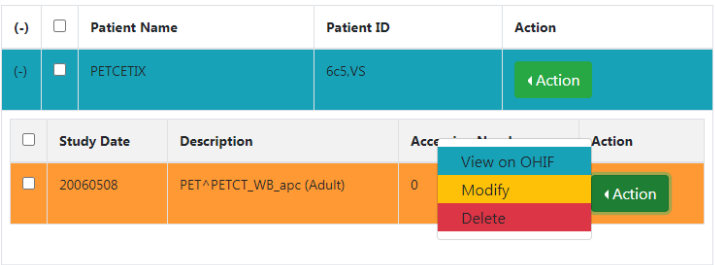
You can use the search form to search for specific queries (done at Study level).

The results appears in dynamic table, the left column displays the Patient / Study level, at a study click the right column displays the series level.



At each Level an “Action” button gives you access to additional functionalities such as:

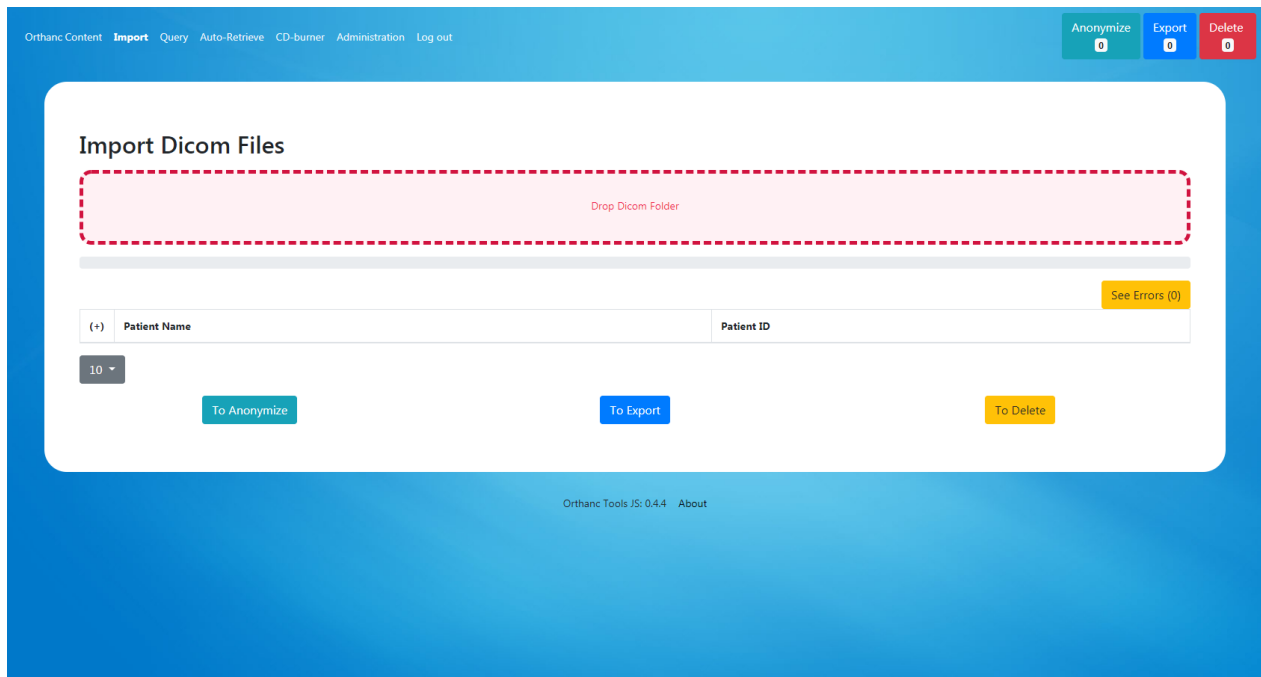
- Modify (Dicom Edition, all levels)
- Delete (all levels)
- View on OHIF (Study level)
- Metadata (Series level)



b. Import Dicom files

To import local dicom in Orthanc Server, simply drag and drop the dicoms files and folder in the dropzone.

The import is recursive in all folders and non dicoms files will not break import.



c. Anonymize / Export / Delete

At the right upper corner of Orthanc Tools JS you will see three tools: Anonymize, Export, Delete.

These tools can be seen as “baskets” to perform the anonymization, export or deletion action on a batch of resources.

You can add resources (patients, studies) from many other modules of Orthanc Tools JS using the “To Anon List”, “To Export List”, “To Delete List” that you will find in several place of the software, allowing the dicom resources to jump from a tool to another.

i. Anonymize

You can define a list of anonymisation, the anonymization is done at study level.

The GUI shows the patient level at the left table and study level in the right table.

The tables are editable to define, new patient name, patient ID, study description.

The Anonymization process follows the NEMA 2017c Guideline.

Two anonymization profile are predefined in Orthanc Tools JS :

- Full Anonymization will follow the full Nema 2017c guideline
- Default Anonymization will keep body characteristics (weight, height...) and dates (acquisition date ...) this profile is recommended to anonymize nuclear medicine procedures (NM and PT).

Orthanc Content Import Query Auto-Retrieve CD-burner Administration Log out

Anonymize 1 Export 0 Delete 0

Anonymize

Original Name	Original ID	New Name	New ID	Remove
PETCETIX	6c5.VS	<input type="text"/>	<input type="text"/>	<button>Remove</button>

10 1

prefix AutoFill Empty List

Anon Profile :

Study Date	Description	New Description	Accession Number	New Accession Number	Remove
20060508	PET^PETCT_WB_apc (Adult)	PET^PETCT_WB_apc (Adult)	0	OrthancToolsJS	<button>Remove</button>

10 1

Orthanc Tools JS: 0.4.4 About

Once done, a result table will be shown allowing to push anonymized resources to Export / Delete tool.

ii. Export

The export is a list of resources that can be export to:

- A simple browser download with transcoding capabilities
- To an AET
- To an Orthanc Peer
- To a FTP/SFTP/WebDav server (not yet ready)

Orthanc ContentImportQueryAuto-RetrieveCD-burnerAdministrationLog out

Anonymize0Export3Delete0

Export

Patient Name	Patient ID	Study Date	Description	Accession Number	Anonymized ?
gfhgfh0	gfhgfh0	20180713		OrthancToolsJS	Yes
gfhgfh0	gfhgfh0	20180713		OrthancToolsJS	Yes
Femoral trombenarterectomy^Case Report:	Case Report 1	20110824			No

10

1

Empty List

Download

Send To Modality

Send To Peer

Send To FTP

Send To WebDav

Implicit VR Endian

Remove

Remove Study

Orthanc Tools JS: 0.4.4About

iii. Delete

The deletion tool is a simple list a resource that will be deleted when the deletion process will be triggered.

Delete List

Empty List

10

1

Delete List

(+)	Patient Name	Patient ID	Remove
(+)	Anonyme	3682	Remove

Delete

1

d. Query / Retrieve

Using a similar way to Orthanc Content you can do Query / Retrieve in your declared AETs.

The Study results are expandable to display related series.

Orthanc Content Import **Query** Auto-Retrieve CD-burner Administration Log out

Anonymize 0 Export 0 Delete 0

Query

Last Name: g*

First Name: First name

Patient ID: Patient ID

Accession Number: Accession Number

Study Description: Study Description

Modalities: Select...

Date Preset: Select...

Date From: jj/mm/aaaa

Date To: jj/mm/aaaa

PACS

Patient Name	Patient ID	Accession Number	Acquisition Date	Study Description	Modalities	Series	Instances	Retrieve
(-) Enter Patient Name	(-) Enter Patient ID...	(-) Enter Accession Nu	jj/mm/	Enter Study Descri	Enter Modalities...	1	1200	Retrieve

Serie Description	Modality	Serie Number	Instances	Retrieve
	MR	11	1200	Retrieve

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Orthanc Tools JS: 0.4.4 About

e. Auto Retrieve

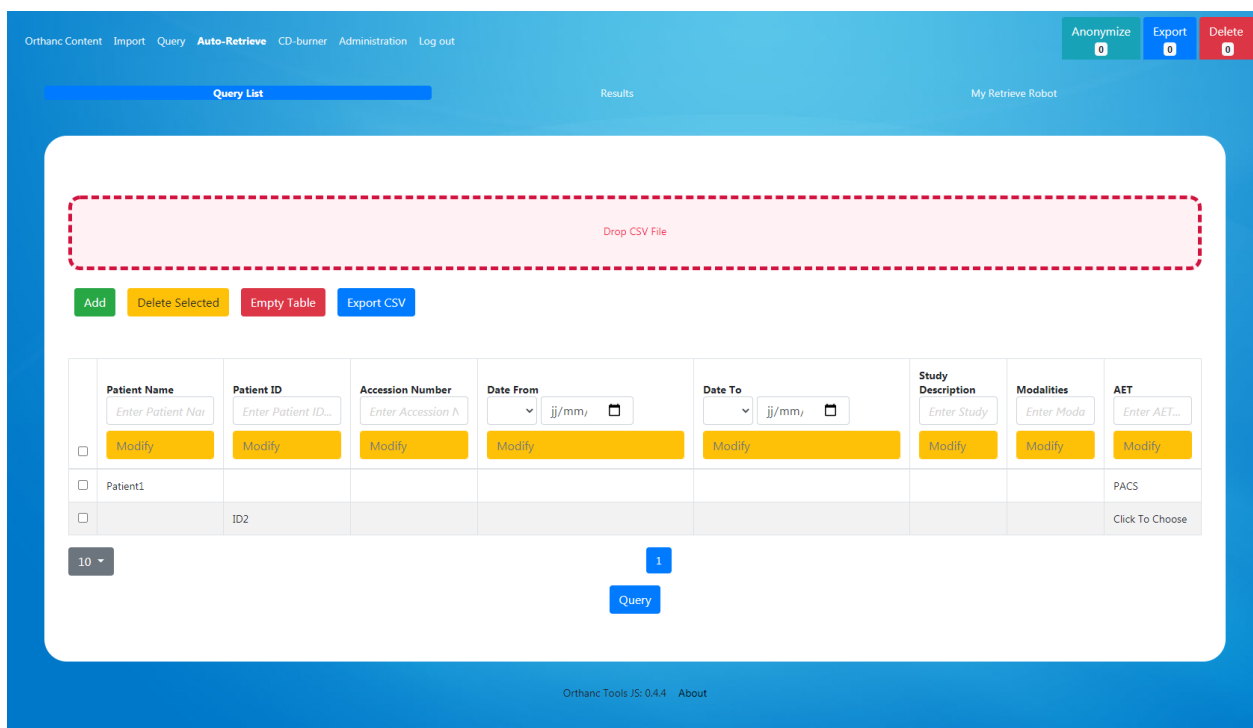
This feature allows you to make mass retrieve of DICOM from a PACS.

You can predefine a list of query to be done and retrieved and schedule it to be started outside working hour.

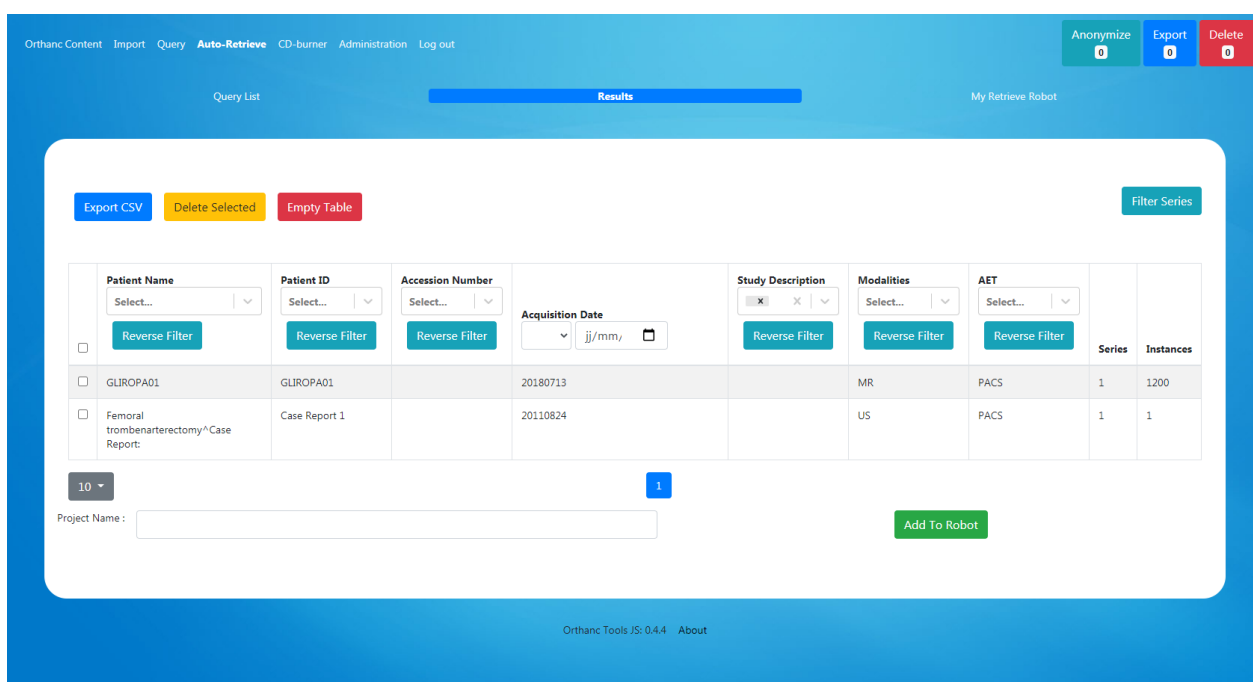
A robot will retrieve resources one by one to your Orthanc Server.

In the Query tab, define the list of queries you want to do:

- Click the "Add" button to open a new line and edit the wanted filed
- The table can be saved / imported using CSV file



By clicking the “Query” Button, the defined queries will be done and results shown in the “results” tab.



If you want to see series level click “filter series”, each query will be reprocessed at series level.

You can use the filters, search function of this table to search for your wanted resources. Remove all unwanted results, using the “delete selected” button.

At the bottom of this table you can define a project name and click “Add to Robot” the resources listed in the results table will be scheduled for automatic retrieve.

Orthanc Content
Import
Query
Auto-Retrieve
CD-burner
Administration
Log out

Anonymize0
Export0
Delete0

Query List
Results
My Retrieve Robot

Robot for user salim, project : myRobot

Progress : 0%

	level	Patient Name	Patient ID	Study Date	Modality	Study Description	Series Description	Accession Number	AET	Validated	Status	Remove Query	View in OHIF
		Enter Patient Name...	Enter F...	<div> <div></div> <div>jj/mm/yy</div> <div></div> </div>	Enter	Enter S...	Enter S...	Enter	E...	Enter	Ente...		
<input type="checkbox"/>	study	GLIOPA01	GLIOPA01	20180713	MR				PACS	false	Pending	Remove	View on OHIF
<input type="checkbox"/>	study	Femoral trombenarterectomy^Case Report	Case Report 1	20110824	US				PACS	false	Pending	Remove	View on OHIF

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To Anonymize
To Export
To Delete

Orthanc Tools JS: 0.4.4 About

You retrieve robot is scheduled. It needs to be validated by the administration (see administration panel).

It will start at the time set by the administrator.

Once retrieved the resources status will be marked “Retrieved” and you will be allowed to send retrieved ressources to the anonymization / export tools of Orthanc Tools JS

f. CD Burner – Epson / Primera DiscProducers

This feature allows you to automatically trigger CD/DVD burning in commercial DiscProducers such as Epson (PP100, PP100N...) or Primera (SE, SE-3, II, Pro...)



The software can send burning request at the study (1 study per CD/DVD) or Patient level (multiple Study of a patient per CD/DVD). The burning request is automatically triggered when the dicom is stored in Orthanc (60 seconds after the last Dicom reception, see “StableAge” in Orthanc configuration if needed).

Along with Dicom files you can specify a viewer folder distribution to be associated with DICOM (such as Radiant for instance), and you can specify your own label to be printed in the CD/DVD which can include tags such as PatientName etc...

i. Setting up burning solution

To setup your burning solution, first go into the options tab and define:

- The Monitored Folder (Folder monitored by Epson or Primera application)
- The Viewer Folder containing viewer files to be included with Dicoms
- The Label File (see Epson/Primera template editor)
- The Transfer Syntax of Dicoms (if you want to burn a specific Dicom transfert syntax)
- The CD Burner Manufacturer (Epson or Primera)
- The monitoring Level (Study or Patient level)
- The Support Type (CD/DVD/Auto)
- If you want to automatically delete resources from Orthanc once sent to CD/Burner (to avoid infinity usage of disk space in Orthanc Server)

Orthanc Content Import Query Auto-Retrieve CD-burner **Administration** Log out

Anonymize 0 Export 0 Delete 0

General
Aets
Peers
Robots
Jobs
CD Burner
Plugins
User Management

CD/DVD Burner Options

Monitored Folder :
C:\Users\kanoun_s\Documents\cdBurner

Viewer Folder :
C:\Users\kanoun_s\Documents\Viewer

Label Path :
C:\Users\kanoun_s\Documents\label.ext

Transfer Syntax :
JPEG Lossless

Manufacturer :
Epson

Monitoring Level :
Patient

Support Type :
Auto

Delete Original Images From Orthanc ☒

Send

Orthanc Tools JS: 0.4.1 About

For CD/DVD labels templates:

Use Epson / Primera software to generate your CD/DVD printing and save it (.tdd file for Epson, .std for Primera) you can include the following tags (for Epson) or their respective position (for Primera)

“{patientName}” - Position 1

“{patientId}” – Position 2

“{studyDate}” - Position 3

“{studyDescription}” – Position 4

“ {patientDOB}” – Position 5

“ {accessionNumber}” – Position 6

to automatically print their respective value in the label.

ii. Starting burning service

Go do “CD-Burner” main tab and Start CD Burner Service, each time Orthanc will receive a Study / Patient, a burning request will be triggered and will appear in the interface (the burning service will continue to run even if the browser is closed)

Orthanc Content Import Query Auto-Retrieve **CD-burner** Administration Log out

Anonymize 0 Export 0 Delete 0

CD Burner Service

☒ Start ☐ Stop

Patient Name	Patient ID	Patient Birth Date	Study Date	Study Description	CD Status	Cancel
10						

Orthanc Tools JS: 0.4.1 About

VI. Administration of Orthanc-Tools-JS

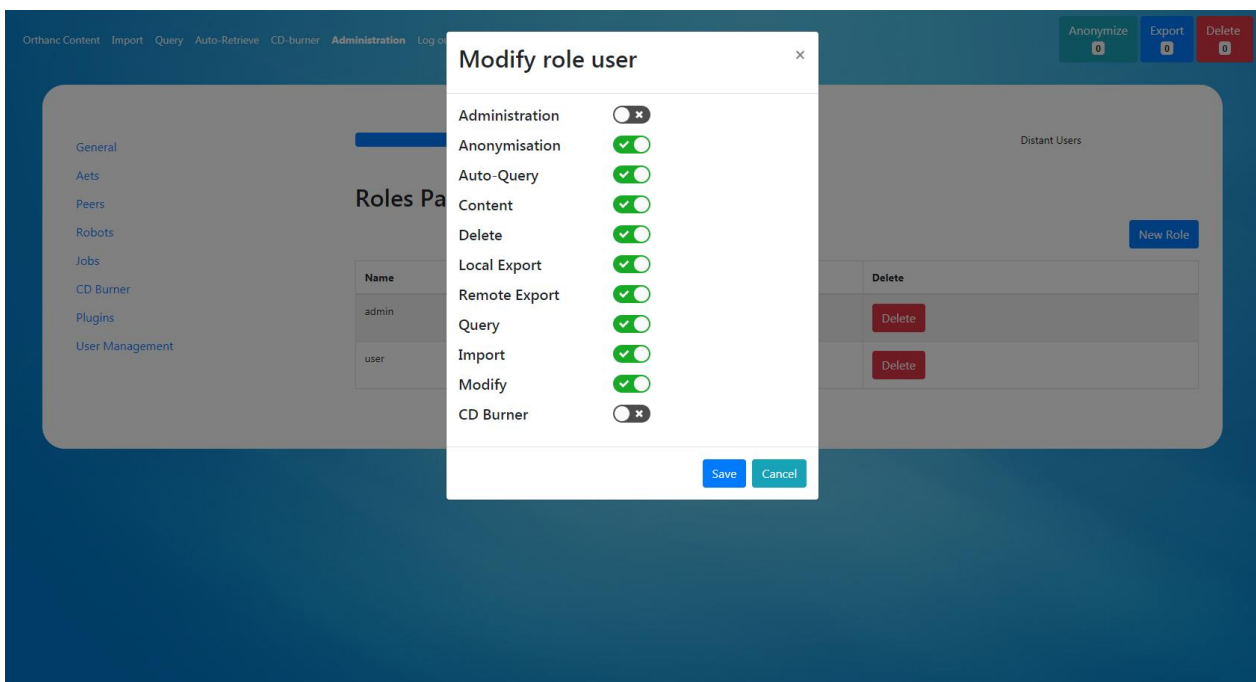
a. User Access

Two kinds of user definitions can be used

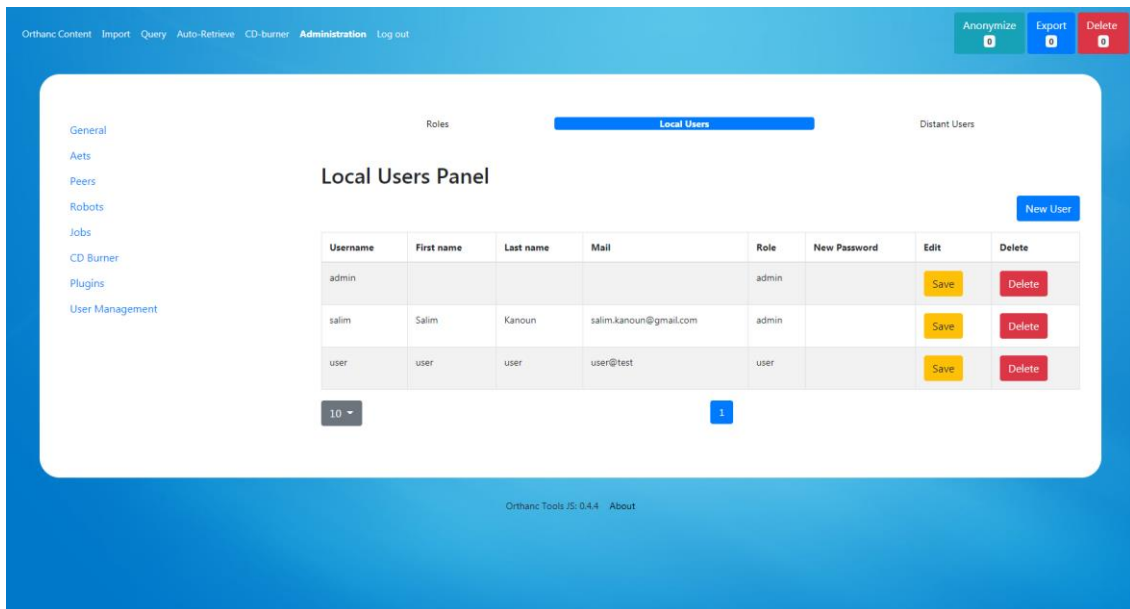
- Local users defined in the local database
- Distant users defined in an Active Directory

For each user a Role needs to be defined.

You can create how many Roles you want in the Role panel, each role is attached with a set of permission for each functionality of Orthanc-Tools-JS

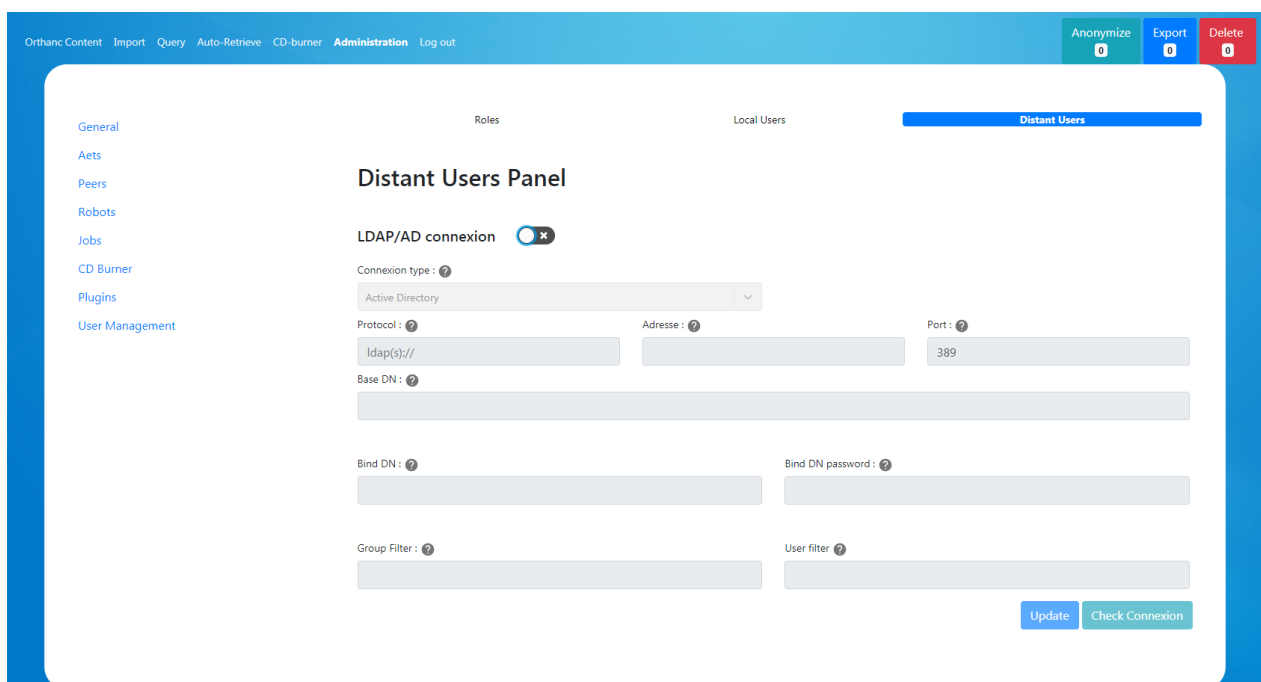


In the “Local User” tab you can define your local user, declared in database



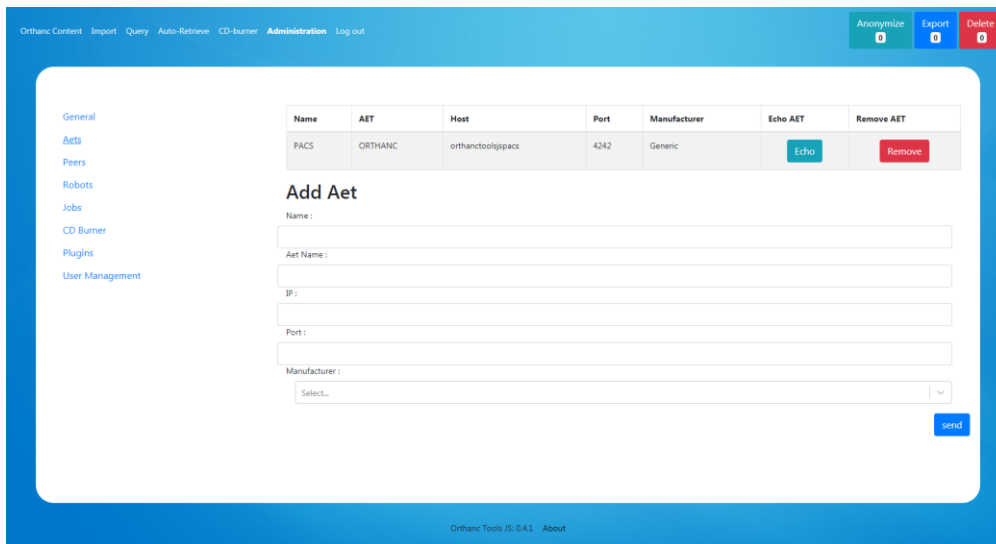
Last you can declare an Active Directory server, from with user will be granted access.

The Role definition is made by mapping the “Group Name” of the AD to one of your defined Role in Orthanc Tools JS



b. AET / Orthanc Peers Declaration

You can simply define / remove AET and Orthanc Peer in the Orthanc Server using the administration panel



c. Orthanc Jobs / Plugins

This interface allows you to see Orthanc asynchronous Jobs (and pause / cancel / resubmit them)

The plugin page list the available plugin in the current orthanc installation

d. Auto Retrieve Robot

You can see robot request for automatic retrieve, asked by users.

The robot needs to be validated to be executed, during the validation, OrthancToolsJS will check that each query request provide only 1 answer in the PACS (to avoid too general queries that could lead to infinite retrieve).

You can see the robot query details and modify it if needed. You can also erase a retrieve job.

Last you can define the schedule hour in which the retrieve procedure will start (the retrieve are sequential)

