



# ICCP v3.3.0.4 User Manual

Imbio Core Computing Platform (ICCP)



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## Languages

If a French translation of this user manual is required by Health practitioner from Canada, Imbio shall provide it within 30 business days.

## User Interface

The user interface (also known as the portal) is used to perform various tasks related to the job life cycle for data processed by the platform.

## Access To the Portal

The portal can be accessed from your browser. For the correct URL please check the Quick Tech Guide or the email you received from Imbio Support.

When you log in for the first time, you will be prompted to update your password and accept the terms and conditions.

## Default User Roles & Permissions

### Clinical User

Users with Clinical User access level can:

- Create jobs
- Deidentify PHI for jobs
- Download input for jobs
- Download output for jobs
- Download single CSV for a job
- Download an aggregated CSV report for many jobs
- Download the PDF reports for jobs
- Edit segmentation for jobs (if compatible with the algorithm)
- Filter jobs
- Check additional info about the job
- Reset password
- Contact Imbio support for help

Additional menu items are view only.

## GroupAdmin

Users with Group Admin user access level can:

- Perform all functions available to the Clinical User
- Edit users in group
- Edit Skins
- Review group statistics

Additional tabs are view only

## Reviewer

Users with Reviewer access level can see jobs in the 'Ready for Review' status. Jobs in this status will not be visible to clinical users until the review process has been completed. For this Click the pencil icon to open the job output with the editor attached to the software. See SET user manual for more details on its uses. Once the job is reviewed a new job will be started with the output of this job. The result of this will be visible to the clinical users.

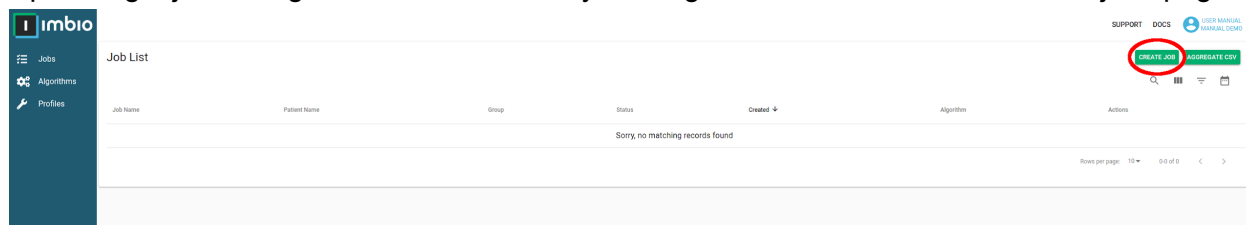
## Features of Imbio Portal

### Job creation

All users have access to this feature

### Through Portal

Uploading a job through the Portal is done by clicking the CREATE JOB icon on the jobs page.



This will pop-up a new dialogue box where the parameters and job images can be uploaded.

## Create New Job

Job Name

Example

Only '-', '\_' and alphanumeric characters are allowed for the job name. The maximum length is 40 characters.

NOTE: Job names are used in email reports and notifications. Please refer to internal security & privacy policy to before using PHI in a job name.

Groups \*

imbio

Algorithm \*

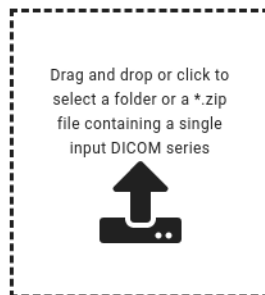


LDA Inspiration  
3.0.3

Input DICOM Series \*

LDA Inspiration v3.0.3

Performs a Lung Density Analysis (LDA) of an inspiration lung CT image. The lung is segmented from the image and thresholding is performed to identify low attenuation areas.



Deidentify

\* Required

### 1 Full Inspiration DICOM Series

- Axial Image Type
- non-edge-enhancing kernel (Standard or Soft kernel reconstruction)
- 2.5mm or less slice thickness

Upload new input series or click below to select prior.

[SELECT PRIOR](#)

CANCEL

SUBMIT

Insert the desired name (whitespaces and special characters not allowed, replace whitespaces with '-' or '\_'), select the algorithm and upload the images series and then click Submit. If multiple series are uploaded, the portal will suggest valid studies for the given algorithm. Once you have uploaded an image series or a study it can be processed again without uploading a second time using the SELECT PRIOR.

## Deidentify PHI (optional)

If you do not wish PHI to be visible in the output of the results, then check the Deidentify box (found below the drag and drop square). This will fill PHI values with random characters. Note, if

your institution has mandated that data be deidentified, deidentification will be performed automatically. If this feature is not available, please contact your system administrator.


### Create New Job

Job Name  
Example

Only ',', '\_' and alphanumeric characters are allowed for the job name. The maximum length is 40 characters.


NOTE: Job names are used in email reports and notifications. Please refer to internal security & privacy policy to before using PHI in a job name.

Groups \*  
imbio

Algorithm \*  
 LDA Inspiration 3.0.3

Input DICOM Series \*  
LDA Inspiration v3.0.3  
Performs a Lung Density Analysis (LDA) of an inspiration lung CT image. The lung is segmented from the image and thresholding is performed to identify low attenuation areas.

Drag and drop or click to select a folder or a \*.zip file containing a single input DICOM series



1 Full Inspiration DICOM Series

- Axial Image Type
- non-edge-enhancing kernel (Standard or Soft kernel reconstruction)
- 2.5mm or less slice thickness

Upload new input series or click below to select prior.

[SELECT PRIOR](#)

Deidentify

\* Required

[CANCEL](#) [SUBMIT](#)

When the job has finished process and the status is in the COMPLETE or finished you can interact with the job in different ways:

- Download the input
- Download the csv output
- Download the pdf report

### DICOM Push via PACS or CT Scanner

This feature is only available for Enterprise and Bridge + Cloud installations.

DICOM data can be automatically or manually pushed to ICCP via a DICOM send protocol. The new job will automatically be started with no additional user interaction required via the portal interface. Refer to the Quick Reference Guide provided by Imbio Support for the specific algorithm AETitle, IP and Port. Jobs sent directly from the scanner or pushed from PACS will be displayed via the interface and the job status will be shown in the Imbio portal. When it is finished you can interact with the job in different ways:

- Download the input series
- Download the algorithm outputs
- Download the csv output
- Download the pdf report
- Edit the segmentation


Additionally, if configured to, results will be pushed to a DICOM location (e.g. PACS). Reference the Quick Reference Guide for more information.

## Downloading data from jobs


All available actions that can be performed on a job can be found in the Actions column.




### Download Input Series

The icon for downloading the input series:   
This will use your browser's settings for download prompt/location.

### Download Algorithm Outputs

The icon for downloading the algorithm output:   
This will use your browser's settings for download prompt/location.

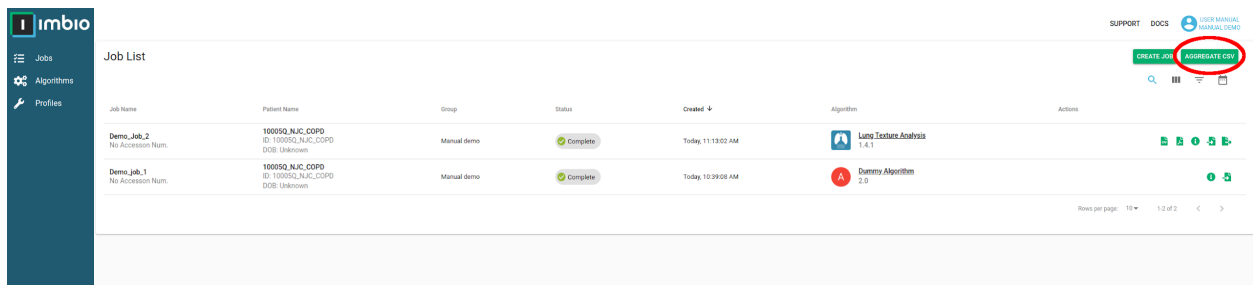
### Download Single CSV Report






The icon for downloading the csv report:   
This will use your browser's settings for download prompt/location.

### Download Aggregated CSV Report

The icon for downloading the aggregated csv report:





Job Name	Patient Name	Group	Status	Created	Algorithm	Actions
Demo_Job_2 No Accession Num.	10005Q_NJC_COPD ID: 10005Q_NJC_COPD DOB: Unknown	Manual demo	Complete	Today, 11:13:02 AM	Loop Texture Analysis 1.4.1	   
Demo_Job_1 No Accession Num.	10005Q_NJC_COPD ID: 10005Q_NJC_COPD DOB: Unknown	Manual demo	Complete	Today, 10:39:08 AM	Dummy Algorithm 2.0	


This will create a report of all jobs matching the filter criteria. To change the number or type of jobs in the csv report, use the filter.

## Download PDF Report

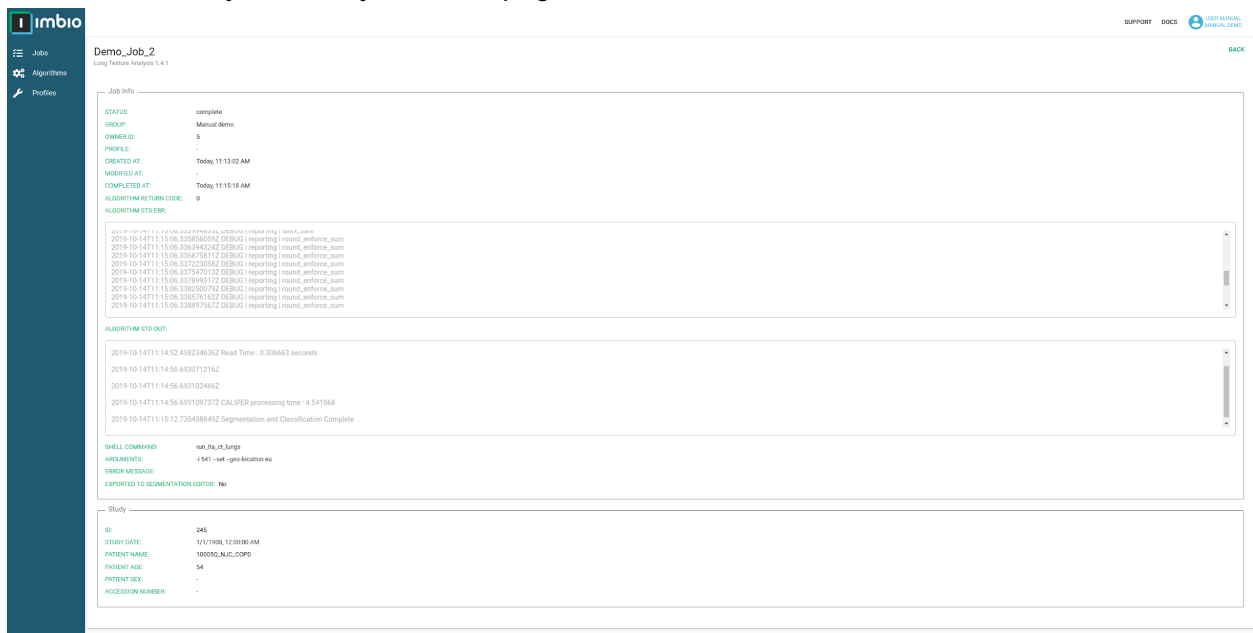
The icon for downloading the PDF report: 

This will use your browser's settings for download prompt/location.

## Check job info

The icon for getting more information about the job: 

This will redirect you to the job details page.



**Demo\_Job\_2**  
Loop Texture Analysis 1.4.1

**Job Info**

STATUS: complete  
 GROUP: Manual demo  
 OWNER ID: 5  
 PROFILE: -  
 CREATED AT: Today, 11:13:02 AM  
 MODIFIED AT: -  
 COMPLETED AT: Today, 11:15:18 AM  
 ALGORITHM RETURN CODE: 0  
 ALGORITHM STD ERR:

```

2019-10-14T11:15:06.335856059Z DEBUG | reporting | round_enforce_sum
2019-10-14T11:15:06.336394262Z DEBUG | reporting | round_enforce_sum
2019-10-14T11:15:06.336839112Z DEBUG | reporting | round_enforce_sum
2019-10-14T11:15:06.337283882Z DEBUG | reporting | round_enforce_sum
2019-10-14T11:15:06.337728673Z DEBUG | reporting | round_enforce_sum
2019-10-14T11:15:06.338173464Z DEBUG | reporting | round_enforce_sum
2019-10-14T11:15:06.338618255Z DEBUG | reporting | round_enforce_sum
2019-10-14T11:15:06.339063046Z DEBUG | reporting | round_enforce_sum
2019-10-14T11:15:06.339507837Z DEBUG | reporting | round_enforce_sum
2019-10-14T11:15:06.339952628Z DEBUG | reporting | round_enforce_sum
  
```

**ALGORITHM STD OUT:**

```

2019-10-14T11:14:52.458234636Z Read Time: 0.306663 seconds
2019-10-14T11:14:56.693071216Z
2019-10-14T11:14:56.693102466Z
2019-10-14T11:14:56.693109737Z CALIPER processing time: 4.541568
2019-10-14T11:15:12.735408492Z Segmentation and Classification Complete
  
```

**SHELL COMMAND:** nat\_its\_of\_large  
**ARGUMENTS:** -s41 -set -geo-location eu  
**ERROR MESSAGE:**  
**EXPORTED TO SEGMENTATION EDITOR:** No

**Study**

ID: 245  
 STUDY DATE: 1/1/1900, 12:00:00 AM  
 PATIENT NAME: 10005Q\_NJC\_COPD  
 PATIENT AGE: 54  
 PATIENT SEX: -  
 ACCESSION NUMBER: -

## Reset Password

All users have access to this feature.

Your password can be reset at any time by clicking your username on the top right hand corner and selecting profile



After clicking 'Change my Password' you will see the following pop-up screen

### Password Change

For your security, you have to change your password.

Password

Your current password

New Password \*

Set the new password you have chosen. You have to type it twice to avoid typo issues. You can verify that your password are in compliance with the password rules below the password fields.

.....

Retype your password

- ✓ Minimum password length
- ✓ Lower case letter
- ✓ Upper case letter
- ✓ Number

\* Required

CANCEL SUBMIT

Enter your current password and then your newly desired password. The checkbox at the bottom shows if a when you have given a password of sufficient strength.

- ✓ Minimum password length
- ✓ Lower case letter
- ✓ Upper case letter
- ✓ Number

## Forgot Password

All users have access to this feature



If you have forgot your password click the forgot password link on the login page

## Login

Email address \*  
admin@imbio.com

Password \*  
.....

[Contact support](#)

\* Required

[I FORGOT MY PASSWORD](#)

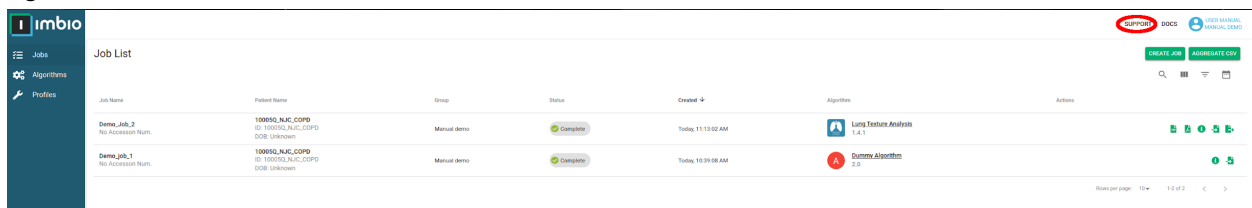
[LOGIN](#)

This will show a dialogue box that will ask for your email address. Give your email address used for ICCP and an automated email will be sent with password reset options.

## Request support from Imbio Staff

All users have access to this feature.

If you have any questions that were not answered in this manual, Imbio support will be happy to help out. They can be contacted from the Portal, by clicking the support menu located in the top right hand corner



This will redirect you to the official Imbio support page.



## WE'RE HERE TO HELP

Your satisfaction with Imbio and our solutions is a priority for us. Please initiate a support case using the form on this page. You will receive an automatic email confirmation with your case number and an Imbio support team member will contact you shortly.

### SUPPORT HOURS

8:00 AM – 6:00 PM CST (GMT -5:00)  
Although we recommend using our online case submission, you can also reach Imbio support by phone or email.

### PHONE SUPPORT

U.S. Support Line: +1 612-520-7360  
Toll Free Number: +1 844-247-4458

### EMAIL SUPPORT

[SUPPORT@IMBIO.COM](mailto:SUPPORT@IMBIO.COM)

[User Manuals and Bibliography](#)

Contact Name


Company

Email

Phone

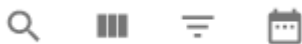
Support Needed:

Description

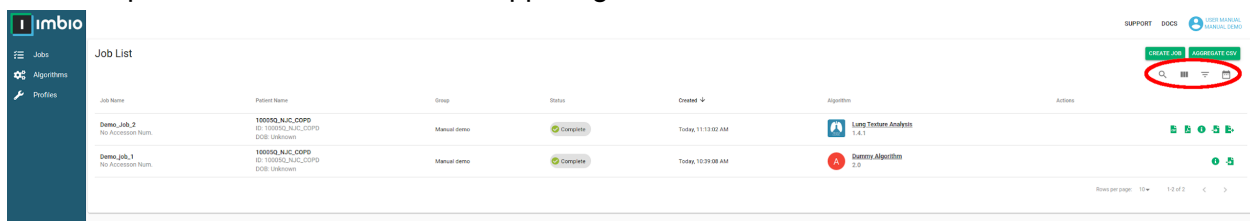
I'm not a robot  reCAPTCHA  
Privacy - Terms

## Filtering jobs

All users have access to this feature.



All filter options can be located in the upper right side of the UI



The screenshot shows the Imbio Job List interface. In the top right corner, there are links for 'SUPPORT', 'DOCS', and 'USER MANUAL'. Below these, there are two buttons: 'CREATE NEW' and 'ADD NEW CASE'. A red circle highlights a set of filtering icons: a magnifying glass (search), a list icon, a funnel icon, and a calendar icon.

Job Name	Patient Name	Group	Status	Created	Algorithm	Actions
Demo Job 2 No Accession Num.	100192_ALJC_COPIE ID: 100192_ALJC_COPIE DOB: Unknown	Manual demo	Completed	Today, 11:13:02 AM	Litec Texture Analysis 1.4.1	
Demo Job 1 No Accession Num.	100192_ALJC_COPIE ID: 100192_ALJC_COPIE DOB: Unknown	Manual demo	Completed	Today, 10:29:08 AM	Quantex Algorithm 2.0	

Filtering jobs has 3 main options:

- Filter by date
- Listed columns in the UI
- Filter by content

## Filter by date

The icon for filtering by date: 

Once the filter is set only the jobs created between the set intervals will be displayed.

## Table filter

The icon for filtering job detail level: 

This will display all available options. Click the desired checkboxes to add/remove the selected columns.

## Content Filter

The icon for filtering by content: 

This will display all available options. Select the desired values, multiple can be chosen. Only results with the selected values will be displayed. If multiple are selected values only jobs with all selected values are visible in the UI.

## Search for job(s)


The icon for searching for jobs: 

The filter can be used for job name, accession number or patient name.

Searching for the job name will result in a single job displayed, however searching by accession number or patient name can return multiple records.

## Edit segmentation


Reviewers have access to this feature.

The icon for editing the segmentation: 

Click [here](#) for the segmentation editor tools user manual for detailed instructions on using the tool.

## Deleting jobs

GroupAdmin has access to this feature.

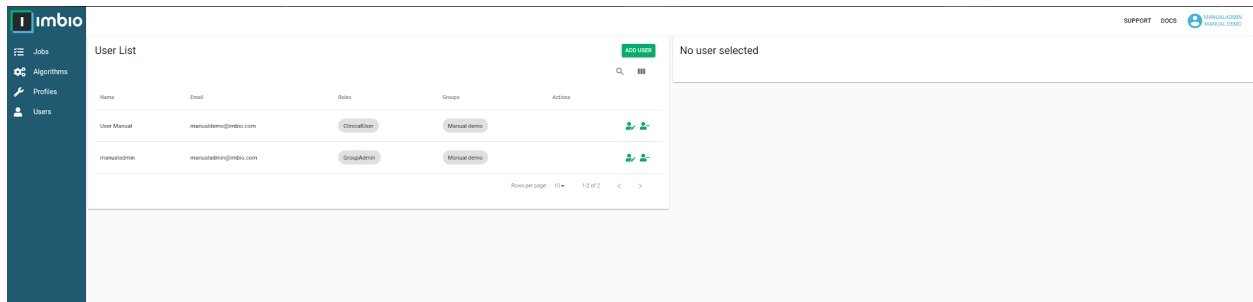
The icon for deleting the PHI of a job: 

Clicking this icon will prompt a warning that must be accepted. This action will not remove the record from the user interface, but all personal health information and assets linking the job of the specific patient will be removed. Deleting one job will delete all jobs with that specific patient.

## User Management

GroupAdmins have access to this feature.

User management is done in the users tab found on the left side of the UI. User management can only be done to users that are in your group.



## Add user



To create a new user click the button labeled add user. This will pop-up a new window

### Add new User

Name\*  
Name

Email\*  
user@example.com

**Password\***  
For the first login, you have to provide a temporary password for the newly created user. It will have to be changed after the first login by the user. Enter a password or Generate one by the wizard icon at the right side.

Enter a password or click "generate"  

- ✘ Minimum password length
- ✘ Lower case letter
- ✘ Upper case letter
- ✘ Number

Groups\*  
Manual demo

Roles\*  
Select...

**Rights of the User**

<input type="checkbox"/> Access everything	<input type="checkbox"/> Can see jobs waiting for review	<input type="checkbox"/> Can modify skins
<input type="checkbox"/> Delete patient	<input type="checkbox"/> Create user	<input type="checkbox"/> Delete user
<input type="checkbox"/> Edit user	<input type="checkbox"/> View user	<input type="checkbox"/> Change user password
<input type="checkbox"/> Create job	<input type="checkbox"/> Edit job	<input type="checkbox"/> View jobs
<input type="checkbox"/> Create algorithm and profile	<input type="checkbox"/> Edit algorithm and profile	<input type="checkbox"/> View algorithm and profile
<input type="checkbox"/> Delete algorithm and profile	<input type="checkbox"/> Add credits to groups	

\* Required

CANCEL
SUBMIT

Fill in all needed information (ones shown with a star are required for the form to be accepted) and click submit. New users will be prompted to change their passwords on first login. The email address is used as the username for the Imbio Portal.

## Delete user

The icon for deleting a user: 

This is found next to each user. Multiple deletion is not permitted on the portal. After clicking the icon a prompt will appear with a warning.

## Modify user

The icon for modifying a user: 

Modify a user to change their role/name.

## Edit Skins

GroupAdmins have access to this feature.  
All options can be done individually if needed.

1. Click [the Skins menu](#)




2. Change the colouring to the desired Scheme
3. Change the logo for the UI (Upper logo menu)
4. Change the report log (Lower logo menu)



## Check Statistics

GroupAdmins have access to this feature

1. Click the groups menu
2. Click the statistics icon on the right side of the desired group to view statistics 

## DEID/REID

Imbio has the ability to de-identify PHI when uploading a dataset and re-identifying the output when viewing it in the PACS configured with Imbio Portal.

### DEID forced

Select  enabled  on  the  group  page

Deidentification  
Enabled

### DEID optional

Select Optional (with default). In this case the jobs will not be re-identified when output is uploaded to the PACS server

Deidentification  
Optional (default: enabled)

## REID

This feature is only available when DEID is forced. In this case select reidentification as bridge user. NOTE: This will only work when viewing the output uploaded to the PACS server.

### As bridge user

These settings have effect only if the user is a 'Bridge' user. If you do not aware of the meaning of 'Bridge' user contact your administrator.

Reidentification



## Email Notifications

Email notifications can be received if the following criteria are met:

Enabled Notifications

**Reviewer notifications**

Daily QA

Overdue aggregate       Waiting for QA       Waiting for QA timeout

Waiting for Overread

**ICCP failure**

Orthanc input failure       Export failure       SET export failure

Orthanc export failure       Input review       Failure

**Job status**

QA failure       Alg failure       Complete

**Qualified Candidate**

Qualified Candidate

Selecting any of these features will give the users in your group access to these email notifications. To not force the users to receive notifications select the following option:

Allow Notification Suppress

Uncheck, if you do not want to let the users disabling any notification in their profiles.

## Selecting Needed Notifications

To disable/enable notifications navigate to your user profile



Then in the profile page select the needed notifications by clicking the checkboxes next to the notification:

Enabled Notifications

Reviewer notifications

<input checked="" type="checkbox"/> Daily QA Overdue aggregate ⓘ	<input checked="" type="checkbox"/> Waiting for QA ⓘ	<input checked="" type="checkbox"/> Waiting for QA timeout ⓘ
--	--	--

ICCP failure

<input checked="" type="checkbox"/> Orthanc input failure ⓘ	<input checked="" type="checkbox"/> Export failure ⓘ	<input checked="" type="checkbox"/> SET export failure ⓘ
<input checked="" type="checkbox"/> Orthanc export failure ⓘ	<input checked="" type="checkbox"/> Input review ⓘ	<input checked="" type="checkbox"/> Failure ⓘ

Job status

<input checked="" type="checkbox"/> QA failure ⓘ	<input checked="" type="checkbox"/> Alg failure ⓘ	<input checked="" type="checkbox"/> Complete ⓘ
--	---	--

## Internet Explorer 11 Limitation

### Folder upload

Uploading a folder is not possible with IE11. To upload multiple slices, navigate inside the folder and select all slices and drag and drop or upload to have the slices visible to ICCP. Alternatively you can use zip files containing the slices instead.



## On-Premise Installation

The hardware specifications below will provide enough resources to run a single algorithm at a time. If additional jobs are submitted while one is running, those jobs will be queued. If a customer requires a higher number of concurrent jobs, additional VMs will need to be obtained.

The application is deployed as two or more VMware vSphere-compatible OVA “appliance” files, one “core” VM, which provides Imbio’s core automation functions and one or more “compute” VMs, on which the actual image processing is performed.

### Hardware Requirements

Imbio Core Computing Platform (ICCP) is deployed into a VMware vSphere environment. As such, all of the below hardware specifications assume that they are assigned to the ESXi guests, and are reserved for their use.

#### CCP Core VM Requirements

- Quad-core, 64-bit capable CPU, 2.0GHz minimum
- 32GB RAM
- 200GB Disk Storage minimum (more may be required depending on usage<sup>1</sup>)
- 1 GigE Virtual NIC

#### CCP Compute VM Requirements (Only needed for Enterprise installations)

- Quad-core, 64-bit capable CPU, 2.0GHz minimum
- 32GB RAM (more may be needed depending on use case and algorithms needed)
- 200GB Disk Storage
- 1 GigE Virtual NIC

### Firewall Requirements

These firewall rules (if required by customer’s network policy) need to be applied to the customer’s network equipment. It is assumed that the core and compute VMs reside on the same layer 2 network and as such, have no restrictions on communication between them. If this is not the case, please contact Imbio support.

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<sup>1</sup> Dependent on volume and SET configuration



## Egress Rules

- 443/tcp to mc.scripzo.com (Package and license updates)
- 443/tcp to sumologic.com (logging manager)
- 123/udp and 123/tcp to local NTP server
- 53/udp and 53/tcp to local DNS resolvers
- 80/tcp and 443/tcp to \*.ubuntu.com (operating system updates)
- 443/tcp to download.docker.com (package updates)
- 443/tcp to \*.amazonaws.com
- Misc. ports as needed for DICOM network transfers

## Ingress Rules

- 8443/tcp from administrative subnet (Imbio CCP management interface)
- Misc. ports as needed for DICOM network transfers

## Network Service Requirements

- DNS resolvers
- NTP Server or Servers (if these cannot be provided, then Imbio CCP will require access to a set of external NTP servers)
- 1 static IPv4 address for each VM (1 for CCP Core and 1 each for CCP Compute instances)
- A VPN tunnel to the Imbio Core server and Imbio Compute servers.

# Installation Steps

## Overview

The installation of Imbio CCP involves downloading the Imbio CCP OVA. Imbio support will work with you to either provide download links for the OVA images or upload them to a customer-owned file transfer service.

Generally speaking, both components (CCP Core and CCP Compute) follow a similar installation path:

1. Download and import the OVA into the vSphere environment. This will be the Core VM.
2. Clone the instance once; this will be the first Compute VM.
3. Add DHCP reservation(s) for the two VMs.
4. Power on each instance.
5. Grant remote access to the Imbio support team for completion of installation by setting up VPN access to the machine.



6. Imbio support staff will complete the installation.

## Installation of Imbio CCP Core

The Imbio CCP Core service needs to be installed first. The process is as follows:

1. Import the Imbio CCP OVA.
2. Create a DHCP reservation for Imbio Core's MAC address.
3. Power on Imbio Core VM. The IP address is printed to the console's login screen after boot up. Inspect the console output to verify that the correct IP address is assigned.
4. Grant Imbio support VPN access to the machine.
5. Imbio support will finish the configuration.

Imbio Core is now configured. Proceed to "Installation of Imbio Compute" to complete the installation.

## Installation of Imbio CCP Compute

Your site may be licensed for a number of Imbio CCP Compute instances. The configuration of the Imbio Compute software is identical on all instances. The installation procedure involves installing and validating the first instance, then cloning to the licensed number instances.

1. Clone the Imbio CCP Core VM.
2. Create a DHCP reservation for Imbio Compute's MAC address.
3. Power on Imbio Compute VM. The IP address is printed to the console's login screen after boot up. Inspect the console output to verify that the correct IP address is assigned.
4. Grant Imbio support VPN access to the machine.
5. Imbio support staff will finish the configuration.

If multiple compute instances are warranted in this installation, the CCP Compute VM can be shut down at this point, and cloned as many times as needed. Steps 2-4 above will need to be completed for each CCP Compute VM.

At this point, Imbio support will validate that the CCP application is fully functional and will work with you to ensure proper integration with your existing DICOM tools.