

# Ngenea Hub

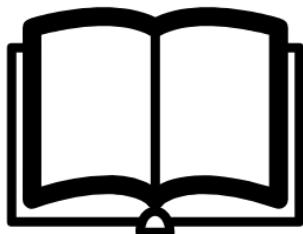
Ngenea Hub2 provides a management and control interface for data and systems across a global pixstor estate.

Using Hub2 users can create Spaces for datasets across multiple pixstors, enable data synchronisation, perform data manipulation through workflows and control system settings for all pixstors from one administrative interface.

## Move data based on business needs

With ngenea, you can quickly and securely transport data to and from globally distributed cloud, object storage, traditional NAS files and tape resources - automatically moving data into the 'right cost' resource according to value and usage as your work teams and business needs demand.

**Pick your area of interest:**



[User Guide](#)

[Administration Guide](#)

## User Guide

### Overview

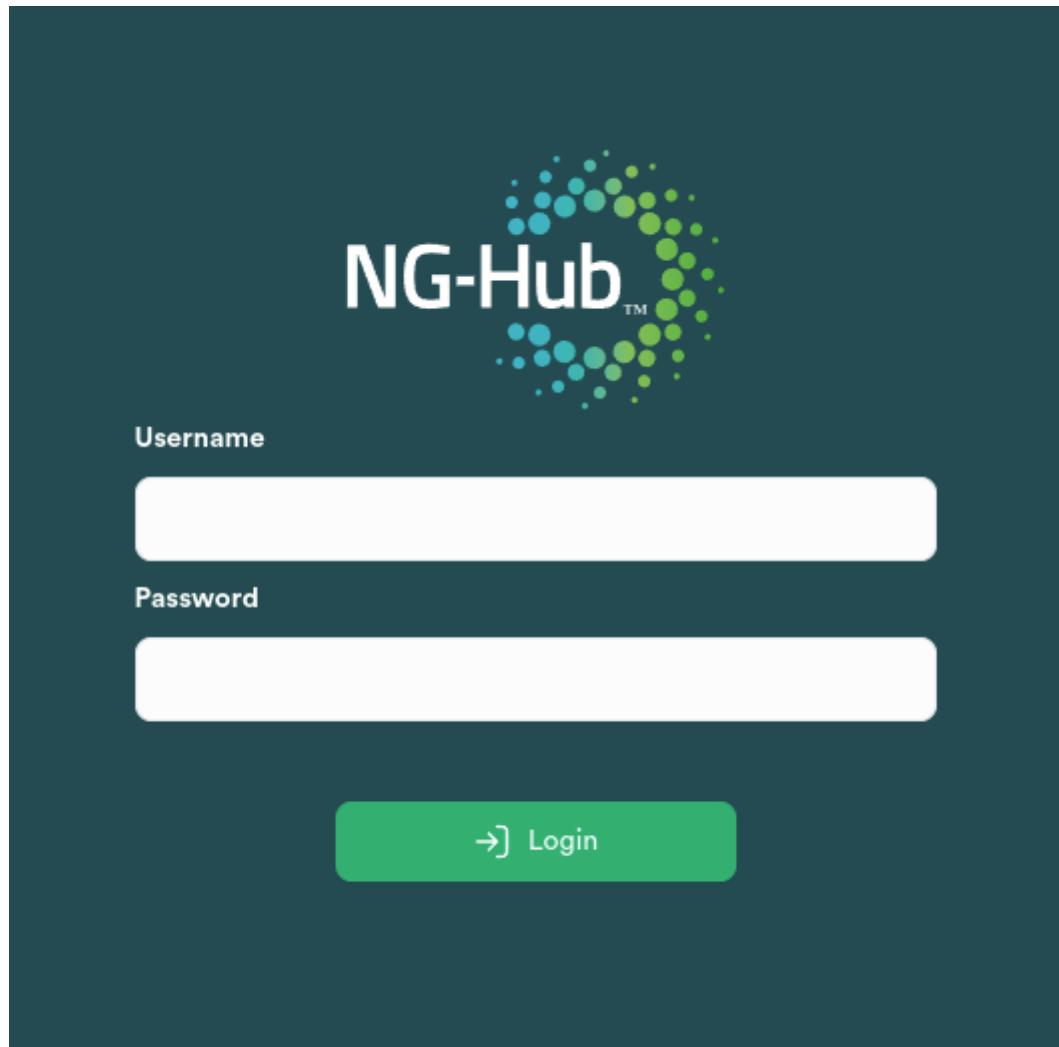
Ngenea Hub2 provides a management and control interface for data and systems across a global pixstor estate.

Using Hub2 users can create Spaces for datasets across multiple pixstors, enable data synchronisation, perform data manipulation through workflows and control system settings for all pixstors from one administrative interface.

### Accessing Hub

To login to Hub enter the URL of the hub into the browser address bar. E.G. <https://myhub>

On successful connection to the Hub a login page is presented.



Enter your Username and Password to authenticate with Hub and login.

## Logging Out Of Hub

After successful login, from the User Profile control in the top right of the screen select the Log out option.

## The Main Screen

The main Hub screen is comprised of several areas.

NG-Hub

Sites

h hubadmin

London LON

All alerts 2 Critical alerts 1 Warning alerts 0 Info alerts 1 5 spaces 0/0 GiB/s 0 Bps limit

nmve-mmfs1 nearline-mmfs1

Paris PAR

All alerts 1 Critical alerts 0 Warning alerts 0 Info alerts 1 3 spaces 0/0 GiB/s 0 Bps limit

nmve-mmfs1 nearline-mmfs1

Rome ROM

All alerts 1 Critical alerts 0 Warning alerts 0 Info alerts 1 3 spaces 0/0 GiB/s 0 Bps limit

nmve-mmfs1 nearline-mmfs1

## Menu Bar

The menu bar is positioned on the far left of the Hub screen.

## Menu Buttons

The menu buttons perform the following functions when clicked:

### Home



Navigates to the page first presented after Login

### Spaces



Navigates to the Spaces screen

### Jobs



Navigates to the Jobs screen

### Groups & Users



Navigates to the Groups & Users screen

### Sites



Navigates to the Sites screen

## Alerts



Navigates to the Global Alerts screen

## Global Settings



Navigates to the Global Settings screen

## Enlarge/Reduce



Clicking the toggle widens the menu bar to show:

- Menu button descriptions
- Hub version

Clicking the toggle button again shrinks the menu bar.

## Page Location

The page location is positioned to the top of the Hub screen.

## Main page content

The main page content is positioned to the center of the Hub screen.

The User Profile control is positioned to the top right of the Hub screen.

The User Profile control displays the name of the user logged into Hub using the current browser session.



Use this control to Log out of Hub and update your User settings.

## User Profile

Selecting the Profile option from the drop down menu presents the User settings dialog of the logged in user.

Clicking the Save button at the bottom of the User settings dialog saves any changes made.

**hubadmin****Basic information** Type the password

Leave empty to keep the password unchanged.

**First name** Hub **Last name** Admin **Email** hubadmin@mycompany.com **Groups** 1 group selected  Administrators**NAS User Settings**

Also create this user on all pixstors

**API Keys** Save**Password**

Enter a new Password to change your Password.

**First name**

Enter a new first name to change your First name.

**Last name**

Enter a new Last name to change your Last name.

**Email**

Enter a new valid email address to change your email address.

## Groups

A list of groups your user account belongs to is displayed.

## API Keys

Provides the capability to add and remove API keys.

An API key is typically used for by 3rd party software to connect to Hub to perform automation.

### Adding an API Key

**+** Add API key

To add a new API key, click the Add API key button.

Enter a name for the API Key .

Name

MyAPIKey

X

**Tip:** It is not possible to change the name of an API key once the key has been created.

Add additional API keys as required.

Upon pressing Save the API Key dialog is raised displaying the API Keys created.

API keys created

These are the created API keys. You won't be able to display them again. Please copy them before you close this window.



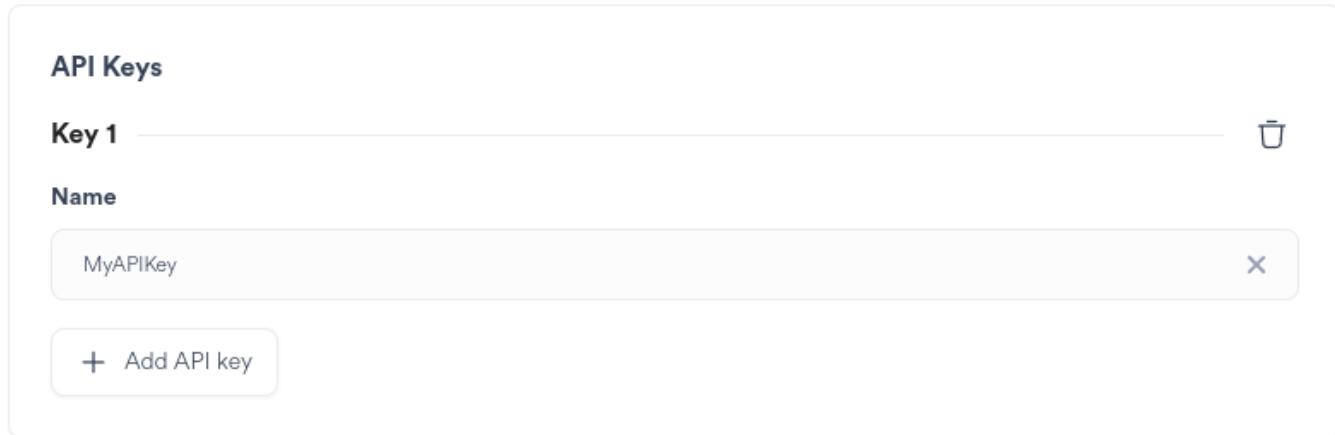
```
["root": [1 item]
  [0: {2 items
    "name": "MyAPIKey"
    "key": "9tbdetnY.jGbTyHBg8f5SHKQHQxwU7VFSLwBTWn7H"
  }]
]
```

Close

Ensure to save the generated keys safely as once the API Key dialog is closed the keys cannot be viewed again.

## Removing an API key

Created API Keys are listed



The screenshot shows a list of API keys. The first key is named 'Key 1' and has a 'Name' field containing 'MyAPIKey'. To the right of the name is a small trash can icon. Below the list is a button labeled '+ Add API key'.



To remove an API key, click the dustbin icon next to the API Key.

**Tip:** Deleted API Keys are non-recoverable. If an API Key has been inadvertently removed, do not press the Save button, instead click off the User settings dialog to the main area of the screen.

Clicking the Save button at the bottom of the User settings dialog saves any changes made.

## Search

Hub provides the ability to Search for assets across all Hub managed Sites.

Where proxies are enabled for Search supported asset types, thumbnails and proxies are displayed.

Asset locations, Spaces, metadata and Tags are searchable providing rich criteria to locate assets.

Located assets can be processed using the Jobs Panel to perform Workflow actions.

## Searching

Enter a term in the Search bar to start a Search. E.G.: football.

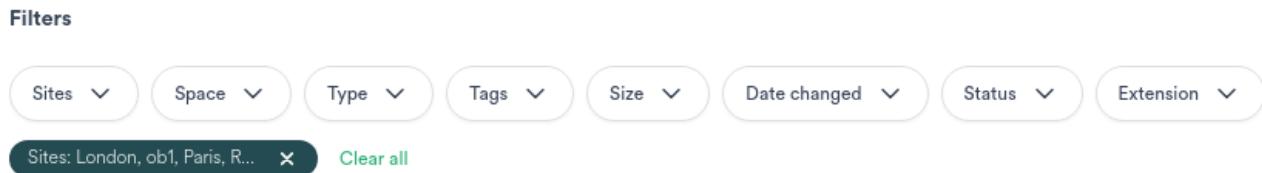
Terms are automatically wildcarded to enable wide Searching. E.G.: \*football\*.

## Global search

Q football

## Filters

Search provides several high level filters each of which apply additional criteria to narrow the Search to return only the required assets.



Click the filter button to display the available filters. The number of applied filters is displayed on the filter button.

## Sidebar



Clicking the toggle displays the side bar to show:

- Item Info
- Tags
- Metadata

Clicking the toggle button again hides the side bar.



#### Item info

Name football hd001.png

Path /mmfs1/data/datasync/footbal...

Size 3.2 MB

#### Tags

Empty (add tags)

#### Metadata (core)

accesstime 24.01.2024, 10:25 GMT

blocksize 8388608

changetime 24.01.2024, 10:25 GMT

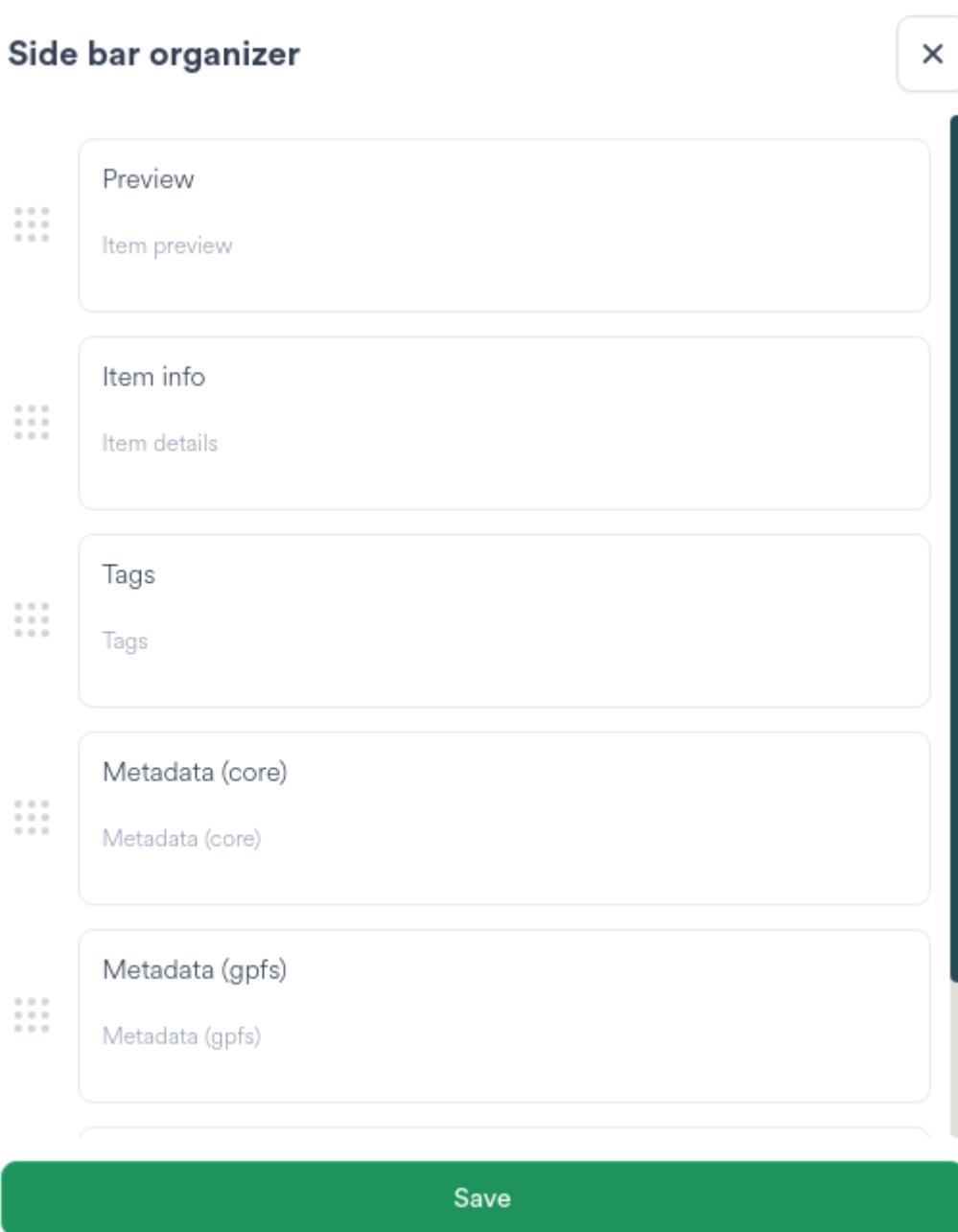
deviceid 250609814

directory /mmfs1/data/datasync/footbal...

## Reordering

Re-arrange items in top to bottom order by dragging vertically up or down.

### Side bar organizer



Click Save to store the sequence which is reflected in the Job side bar.

## Results

Search matches assets to the Search input returning collated results to screen.

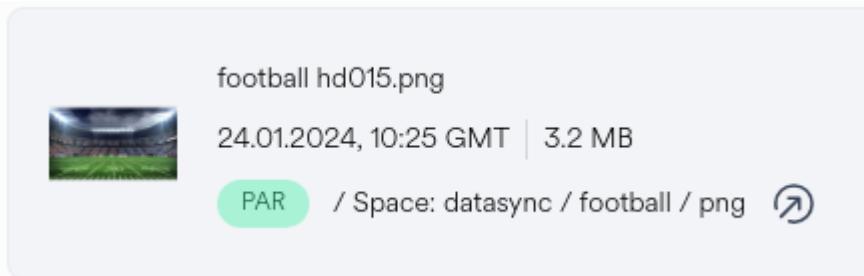
Searches are processed asynchronously, therefore some results may take longer to return to screen than others.

Where a Site is unavailable or takes too long to return results, information messages appear at the top of the screen allowing for deselection of the Site or Site(s).

The screenshot shows the NG-Hub Global search interface. The search bar at the top contains the query "football\*". Below the search bar, it says "342 results" and "football". The results list shows five items, each with a thumbnail, name, date, size, and a "ROM" site chip. The items are: "football hd000.png" (24.01.2024, 10:25 GMT | 3.2 MB), "football hd001.png" (24.01.2024, 10:25 GMT | 3.2 MB), "football hd002.png" (24.01.2024, 10:25 GMT | 3.2 MB), "football hd003.png" (24.01.2024, 10:25 GMT | 3.2 MB), and "football hd004.png" (24.01.2024, 10:25 GMT | 3.2 MB). A "ROM" site chip is present in the first four results, and a "PAR" site chip is present in the fifth result. A "2 instances" dropdown is visible in the top right corner.

## Result Card

Returned assets appear as a Result Card.



Where multiple instances of the same asset are present on more than one Site, the results are collated.

2 instances ▾

Open the instances drop down to display all the assets from all Sites

The Result Card displays:

Item	Description
Thumbnail	The generated thumbnail or a default icon where no thumbnail exists
Name	The name of the asset
Date and Size	The date and time of last modification, the size of the file on the pixstor file system
Site chip	The site on which the asset is found
Space Location	The location of the asset in the Space

Item	Description
	The filebrowser navigation button

## Tags

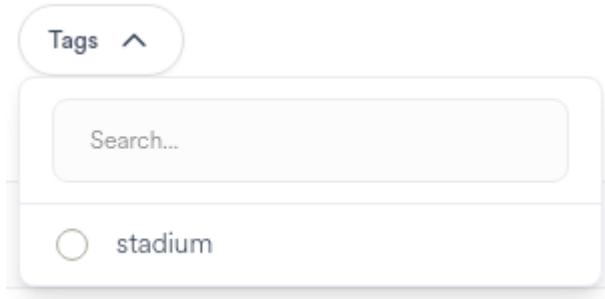
Search provides the ability to Tag assets.

Apply Search Tags to assets in order to collate assets into collections or curate as required.

**Tip:** Applied Tags are added to Site Search services asynchronously. Dependent on workload there may be a small delay between the addition of the Tag in the UI and the ability to Search for the asset by the Tag.

### Searching By Tag

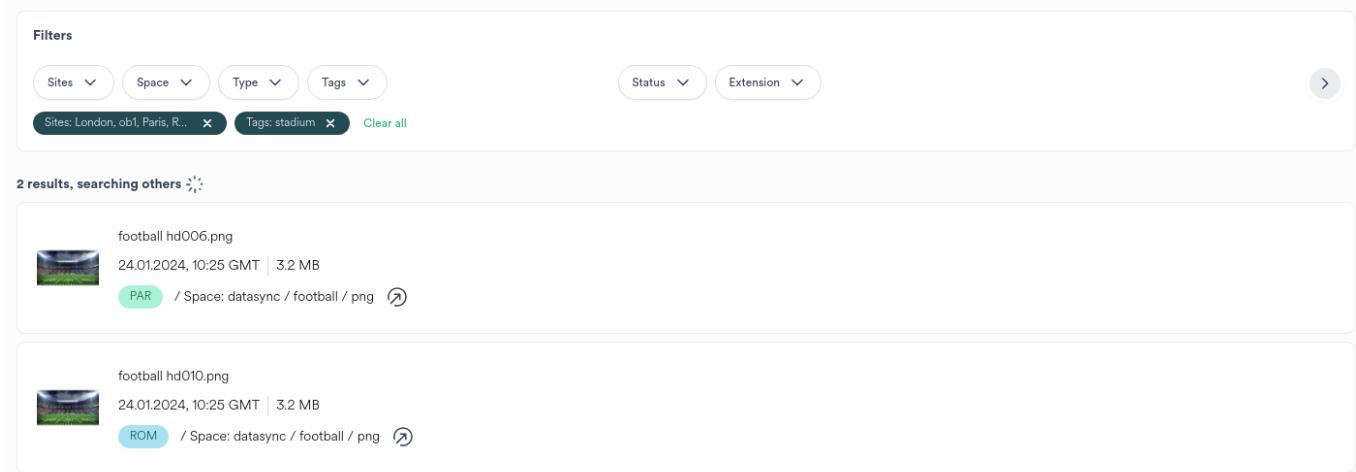
- To Search for an asset by Tag, open the Search filter bar and select the Tag from the drop down menu
- Entering text into the Tag filter matches available Tags to provide a shorter selection list



Applied Tags are denoted with a chip below the filter bar. Click the x to remove the Tag from the filter.



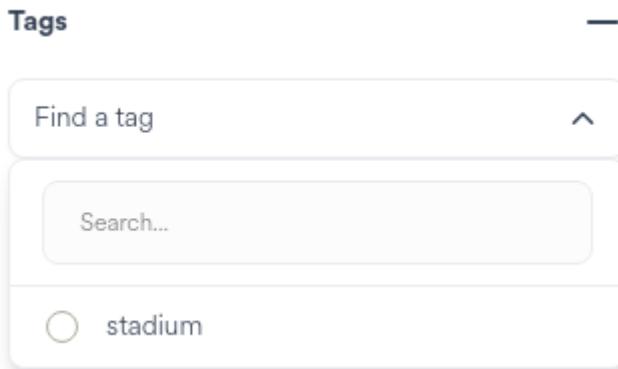
Example of Searching for assets where the Tag stadium is applied:


 A screenshot of the file browser interface showing search results. At the top, there are several filter buttons: 'Sites', 'Space', 'Type', 'Tags', 'Status', and 'Extension'. The 'Tags' button is highlighted. Below the filters, the text '2 results, searching others' is displayed. The results list shows two items:
 

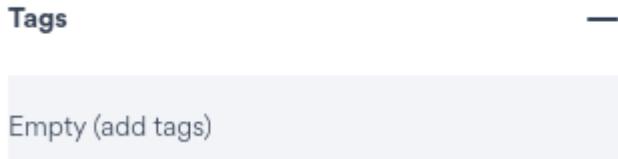
- 1. football hd006.png (Thumbnail, 24.01.2024, 10:25 GMT, 3.2 MB, PAR, / Space: datasync / football / png)
- 2. football hd010.png (Thumbnail, 24.01.2024, 10:25 GMT, 3.2 MB, ROM, / Space: datasync / football / png)

## Tagging An Asset

To add a Tag to an asset, open the side bar and locate the Tags section in the bar.



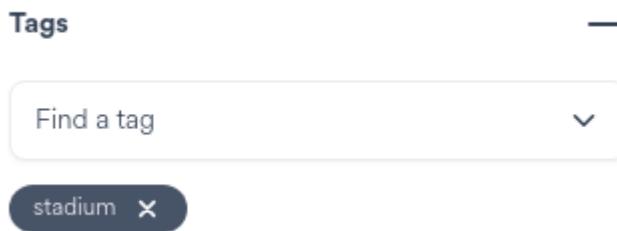
Where no Tags are set on the asset, a prompt to add Tags is shown. Click the entry box to start.



To apply an existing Tag to the asset, select the Tag.



Applied Tags are denoted with a chip below the filter bar. Click the x to remove the Tag from the filter.



If no Tags exist, enter a Tag (case sensitive) in the Tag entry box and press Enter to create and apply the new Tag.

## Tags

Find a tag ^

NFL X

No results found (Create new)

## Actions

Post Search, assets can be actioned by Workflows using the Job Panel.

To enable asset selection first select an individual Space from the Search filters.

Space ▼

Selecting an individual Space enables asset selection.

- Click the checkbox to the left of an asset to add the asset to the Job Panel selection list

 	football hd006.png 24.01.2024, 10:25 GMT   3.2 MB PAR / Space: datasync / football / png 
 	football hd010.png 24.01.2024, 10:25 GMT   3.2 MB ROM / Space: datasync / football / png 

Assets in the Job Panel are processed per Space, per Site. Selecting assets from additional Sites raises a confirmation dialog.

- Choose whether to retain the assets from the current Site or to clear all the current selections in order to add new selections from other Site(s)

## Different sources



You have files selected from a different source site/space in the selection list. You can either clear all selections, or go back to source site/space to continue adding from the same source.

[Clear selections](#)

[Go back](#)

When the Job Panel selection contains selected items, navigating to the Space on the selected Site retains the selections in the Job Panel selection list.



Click the filebrowser navigation button on the Space card to navigate to the selected Space, filtered by Site. Any assets already selected remain in the Job Panel selection list.

Example of asset selections after navigating to the Space on the Site with assets selected from the Search results:

The screenshot shows the NG-Hub filebrowser interface. The left sidebar has icons for Home, Spaces, DataSync, and Settings. The main header says 'Spaces' and shows a user 'hubadmin'. The breadcrumb navigation is 'datasync > football > png'. A dropdown shows 'Paris' and a search bar with 'Type to filter'. A 'Filters' button is on the right. The main area shows a list of files in the 'football' folder:

Name	Date modified	Size	File status	Number of files
football hd000.png	Wed, 24 Jan 2024, 10:25:00 GMT	3.2 MB	ROM	-
football hd001.png	Wed, 24 Jan 2024, 10:25:01 GMT	3.2 MB	ROM	-
football hd002.png	Wed, 24 Jan 2024, 10:25:00 GMT	3.2 MB	ROM	-
football hd003.png	Wed, 24 Jan 2024, 10:25:02 GMT	3.2 MB	ROM	-
football hd004.png	Wed, 24 Jan 2024, 10:25:01 GMT	3.2 MB	ROM	-
football hd005.png	Wed, 24 Jan 2024, 10:25:02 GMT	3.2 MB	ROM	-
football hd006.png	Wed, 24 Jan 2024, 10:25:01 GMT	3.2 MB	ROM	-
football hd007.png	Wed, 24 Jan 2024, 10:25:00 GMT	3.2 MB	ROM	-
football hd008.png	Wed, 24 Jan 2024, 10:25:02 GMT	3.2 MB	ROM	-
football hd009.png	Wed, 24 Jan 2024, 10:25:02 GMT	3.2 MB	ROM	-
football hd010.png	Wed, 24 Jan 2024, 10:25:02 GMT	3.2 MB	ROM	-

A modal window is open at the bottom, titled 'Job type: Hydrate'. It shows 'Source' and '4 items' (selected), 'Paris'. There are buttons for 'View selection list' and 'Clear selections', and a 'Next >' button.

## Spaces

A Space is an area of storage present on or across one or more pixstor which comprises the following capabilities:

- name
- location
- size
- data protection
- performance
- file share

## Viewing Spaces

To view available spaces, click the Spaces menu button to display a dialog to configure the selected site.



Navigates to the Spaces screen

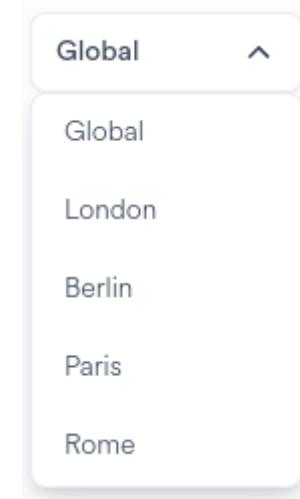
The ability to view spaces is restricted by group membership.

- Administrators can view and administrate all Spaces across all Sites
- Users can view and use all Spaces across all Sites
- Restricted users can view and use a defined subset of Spaces on associated Sites

Hub provides two views of Spaces - Global and Local.

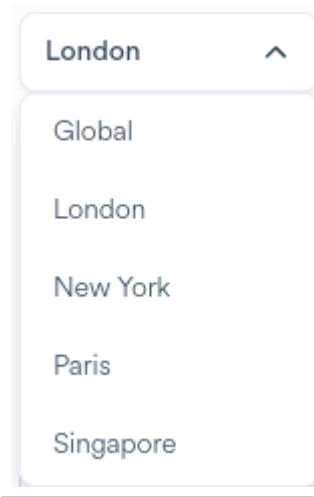
- Global displays all Spaces on all Sites
- Local displays the Spaces on a specific site

The default view of Spaces is Global.



To switch to a site-centric view, select the specific site from the Spaces drop-down menu.

To switch to Global view, select Global from the Spaces drop-down menu.



## Global View

Global view displays all Spaces on all Sites.

The example below displays all the Spaces across all Sites.

Global

Spaces

hubadmin

Sort

Create space

datasync

delivery

LocalSpace

mmfs1

project1

project2

PAR, ROM

LON, ROM

LON, PAR

LON, OB1, PAR, ROM

LON

LON

## Local View

Local view displays the Spaces on a specific Site.

The example below displays less Spaces than Global as the site is participating in fewer Spaces.

Spaces

London

Sort

Create space

hubadmin

delivery

LocalSpace

mmfs1

project1

project2

project1

project2

LON

ROM

PAR

OB1

LON

LON

## Filtering the Space View

To display Spaces matching keywords, enter the keywords in the filter bar.

Global

Sort

Create space

project

project1

project2

LON

LON

## The Space Card

A Space is displayed as a card in the Space view.

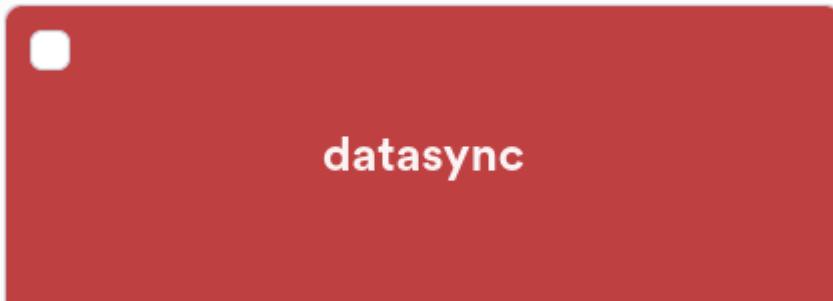
datasync

datasync

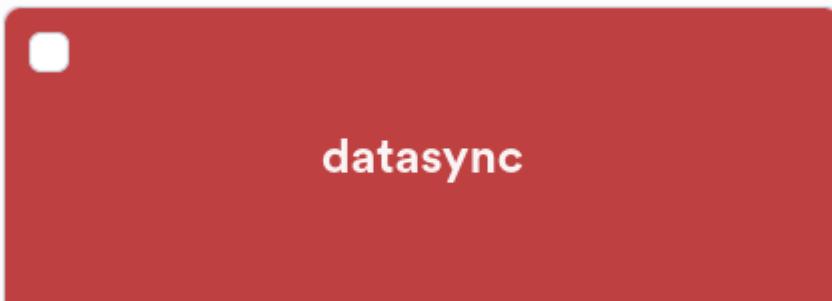
PAR

ROM

A Space Card comprises:



#### Space Card Header



Denotes the name of the Space.

**datasync**

Click the Header to view the Space File Browser.

#### Space Name



Denotes the name of the Space.

Click the Space Name to view the Space File Browser.

#### Space Site Chips

Site Chips denote the sites on which a Space is present.

Click a Site Chip to change the view to the Local View of the Space File Browser for a specific Site.

LON

NYC

PAR

SG

In Global view all sites are listed in alphabetical order.

In Local View, the selected site is identified with a dot.

• SG

LON

NYC

PAR

All other sites are listed in alphabetical order after the local site.

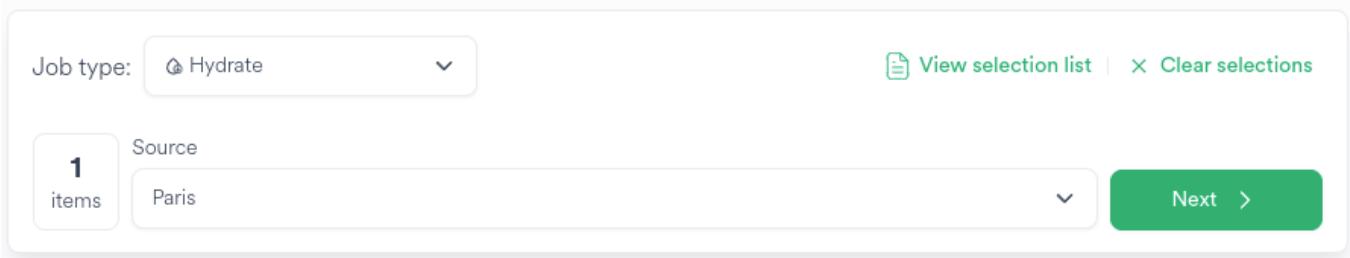
#### Space Selector Checkbox



Selecting the Space Selector Checkbox raises the Job Creator Panel to perform data operations on the entire Space.

**Tip:** To perform more granular operations on data inside the Space, refer to Selecting files and folders

The Job Creator Panel allows data operations on the Space as a whole.



Job type: **Hydrate** ▼

1 items **Source** Paris ▼

View selection list Clear selections

**Next >**

For further information refer to Using the Job Creator Panel.

## Space Settings



Clicking the Settings button on the Space card raises the Settings dialog for the Space.

### Space settings



#### Basic Space options

#### datasync

Job schedules

#### Basic Space options

Shares

#### Size

Space backup

#### Size

120



TB ▼

#### Space colour



Choose a colour to identify the space

#### Snapshot config

Pick how long you want to store the snapshots for and how often you want snapshots to be taken

#### Use snapshots

Configure frequency, time & storage duration for snapshots



#### Job schedules

Type to filter



Name

Controls



schedule-datasync

 Edit  Delete

Save

**Important:** Adding or Configuring a Space can only be performed by a Hub Administrator or User with Space Administration rights granted through group management.

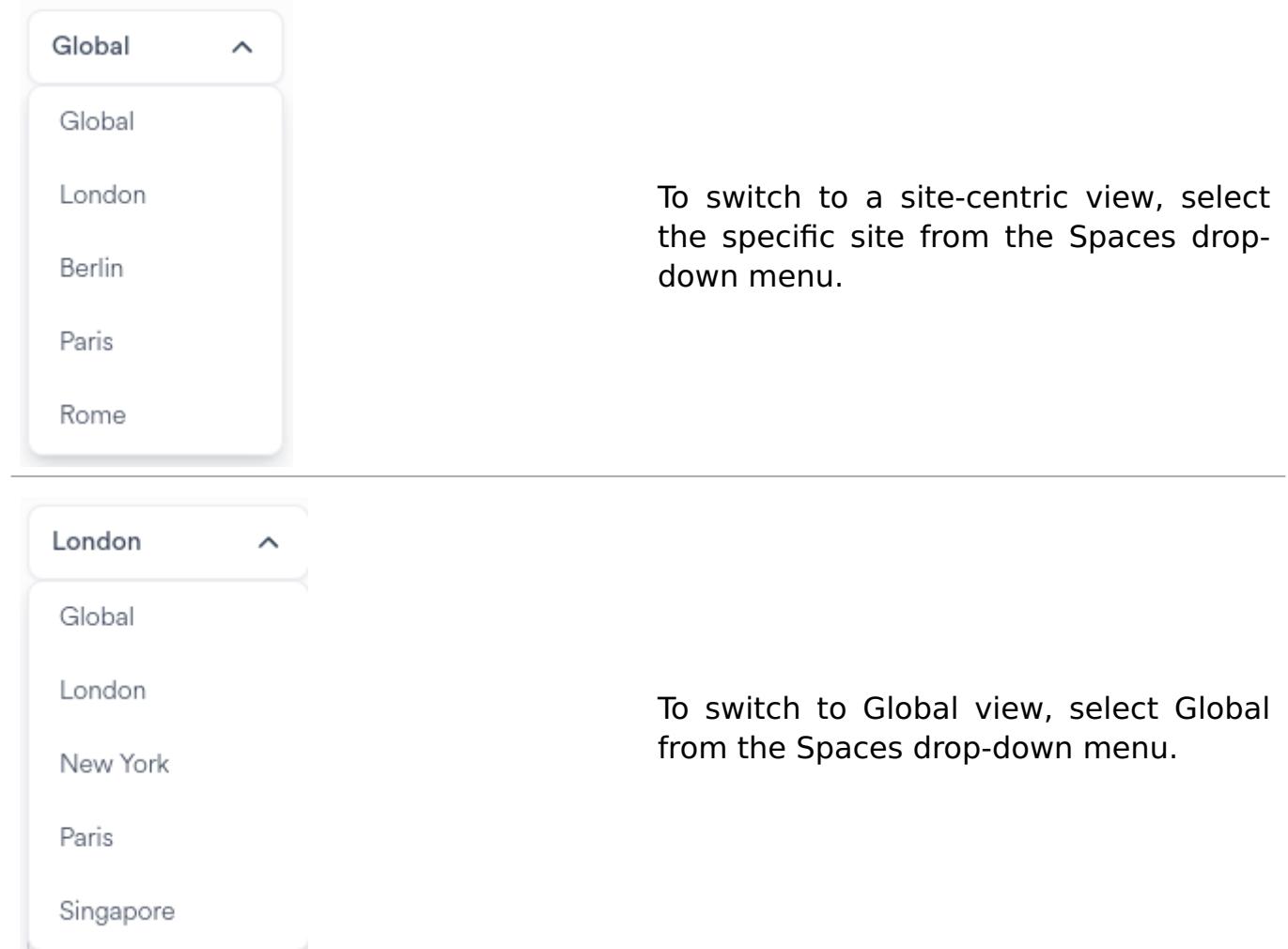
## Browsing Spaces

The Spaces File Browser displays the file and folder contents of a Space across multiple or specific sites including additional contextual information such as file counts, size, metadata and status.

The Space File Browser provides two views of Spaces file and folder content - Global and Local.

- Global displays the file and folder content for a Space across all Spaces on all associated Sites
- Local displays the file and folder content for a Space on a specific Site

The default view of the Spaces File Browser is Global.



The image contains two screenshots of the Spaces File Browser. The top screenshot shows a dropdown menu with 'Global' selected. The bottom screenshot shows the same dropdown menu with 'London' selected. Both screenshots list the following sites: Global, London, Berlin, Paris, and Rome (in the top) or New York, Paris, and Singapore (in the bottom). To the right of the dropdown menu in both screenshots is a text block with instructions: 'To switch to a site-centric view, select the specific site from the Spaces drop-down menu.' and 'To switch to Global view, select Global from the Spaces drop-down menu.'

Global

Global

London

Berlin

Paris

Rome

London

Global

London

New York

Paris

Singapore

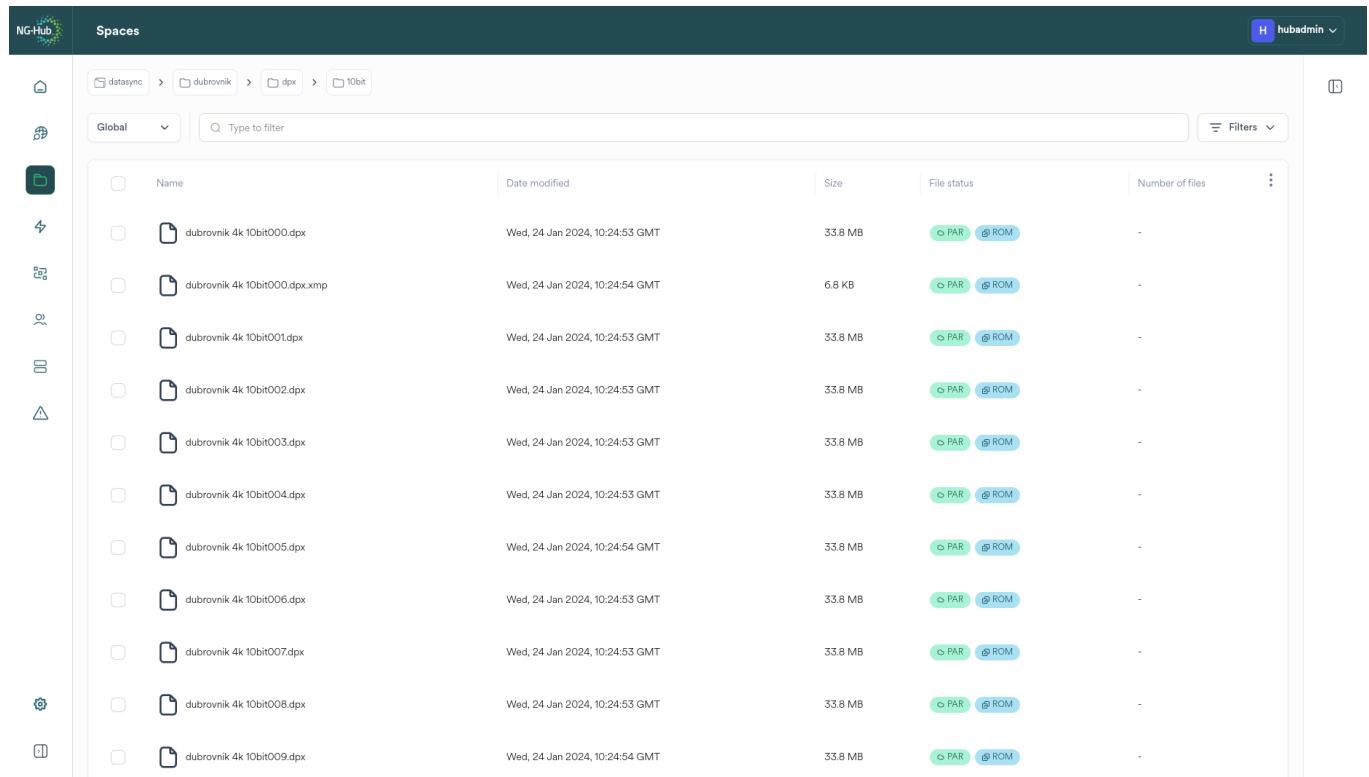
To switch to a site-centric view, select the specific site from the Spaces drop-down menu.

To switch to Global view, select Global from the Spaces drop-down menu.

## Spaces File Browser Global View

Global view displays the file and folder content for a Space across all Spaces on all associated Sites

The example below displays the file and folder content for the Spaces across all Sites.

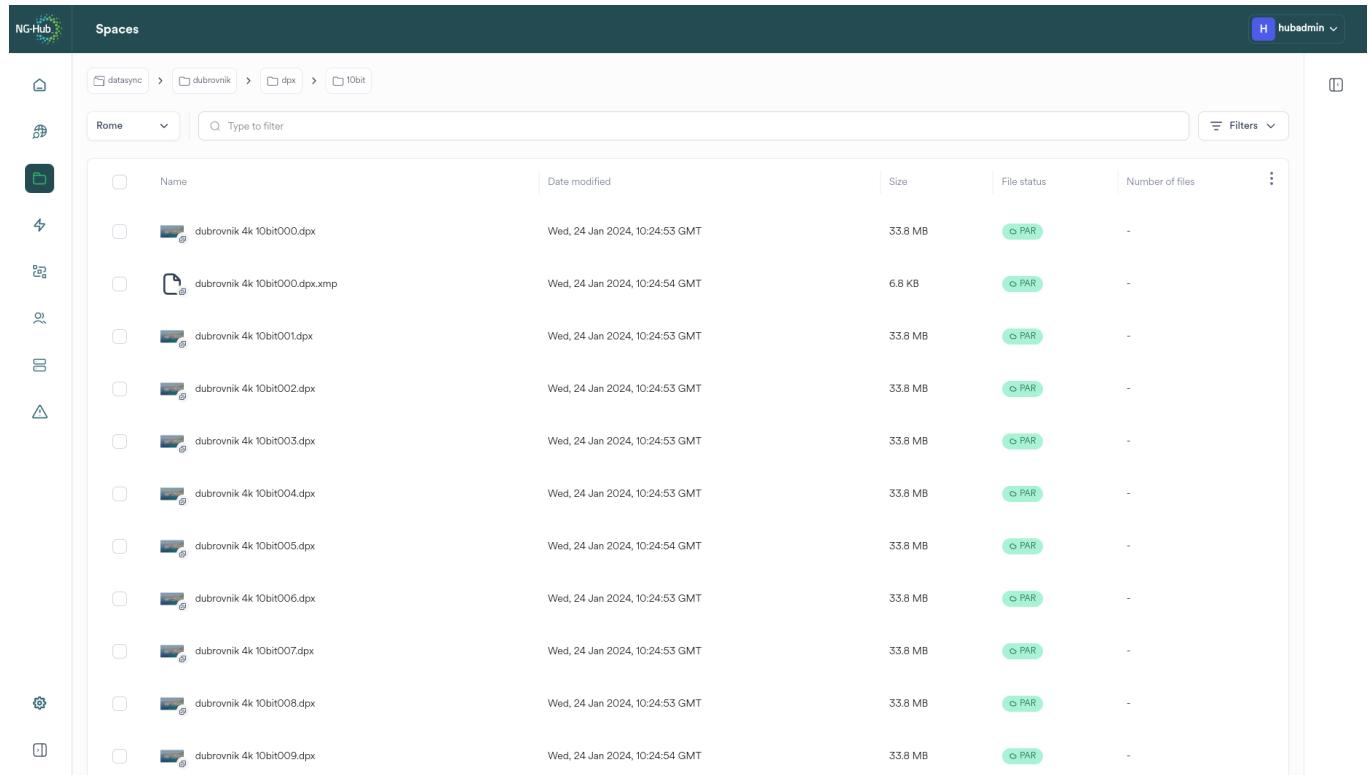


The screenshot shows the NG-Hub interface with the 'Spaces' tab selected. The left sidebar has icons for Home, Site, Spaces, and Help. The main area shows a breadcrumb path: dataasync > dubrovnik > dpx > 10bit. A search bar with 'Type to filter' and a 'Filters' dropdown are at the top. The table lists files in the 10bit folder of the dubrovnik space, showing columns for Name, Date modified, Size, File status, and Number of files. All files are 33.8 MB and marked as 'PAR' (Parity) and '@ROM' (Read-Only). The files are: dubrovnik 4k 10bit000.dpx, dubrovnik 4k 10bit000.dpx.xmp, dubrovnik 4k 10bit001.dpx, dubrovnik 4k 10bit002.dpx, dubrovnik 4k 10bit003.dpx, dubrovnik 4k 10bit004.dpx, dubrovnik 4k 10bit005.dpx, dubrovnik 4k 10bit006.dpx, dubrovnik 4k 10bit007.dpx, dubrovnik 4k 10bit008.dpx, and dubrovnik 4k 10bit009.dpx. All files were modified on Wednesday, 24 Jan 2024, 10:24:53 GMT.

## Spaces File Browser Local View

Local view displays the file and folder content for a Space on a specific Site

The example below displays the file and folder content for a Spaces across all Sites with a site-centric view.



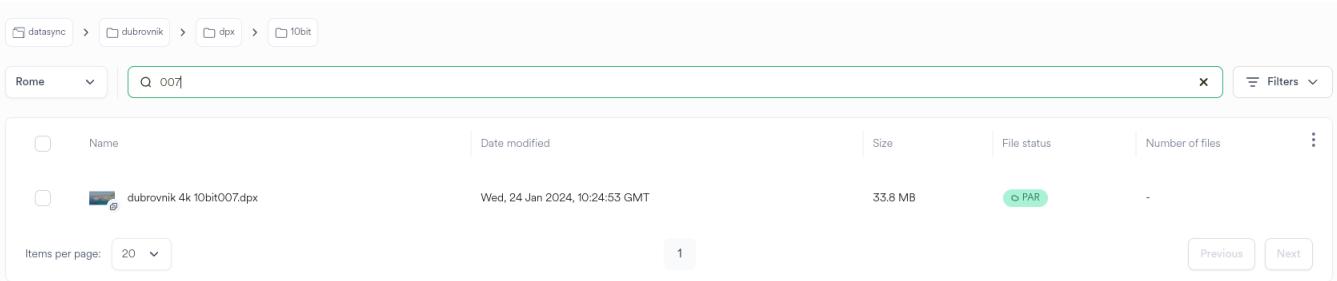
The screenshot shows the NG-Hub interface with the 'Spaces' tab selected. The left sidebar has icons for Home, Site, Spaces, and Help. The main area shows a breadcrumb path: dataasync > dubrovnik > dpx > 10bit. A search bar with 'Type to filter' and a 'Filters' dropdown are at the top. The table lists files in the 10bit folder of the dubrovnik space on the Rome site, showing columns for Name, Date modified, Size, File status, and Number of files. All files are 33.8 MB and marked as 'PAR'. The files are: dubrovnik 4k 10bit000.dpx, dubrovnik 4k 10bit000.dpx.xmp, dubrovnik 4k 10bit001.dpx, dubrovnik 4k 10bit002.dpx, dubrovnik 4k 10bit003.dpx, dubrovnik 4k 10bit004.dpx, dubrovnik 4k 10bit005.dpx, dubrovnik 4k 10bit006.dpx, dubrovnik 4k 10bit007.dpx, dubrovnik 4k 10bit008.dpx, and dubrovnik 4k 10bit009.dpx. All files were modified on Wednesday, 24 Jan 2024, 10:24:53 GMT.

## The Space File Browser Screen

The Spaces File Browser screen is comprised of several areas.

### Filtering the Space File Browser

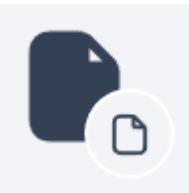
To display files or folders matching keywords, enter the keywords in the filter bar.



The screenshot shows the Spaces File Browser interface. At the top, there is a breadcrumb navigation: 'dataSync' > 'dubrovnik' > 'dpx' > '10bit'. Below this is a filter bar with a search input containing '007' and a 'Filters' dropdown. The main area displays a table of files. The columns are 'Name', 'Date modified', 'Size', 'File status', and 'Number of files'. A single file is listed: 'dubrovnik 4k 10bit007.dpx', with a date of 'Wed, 24 Jan 2024, 10:24:53 GMT', a size of '33.8 MB', a status of 'PAR', and a count of '1'. At the bottom, there are buttons for 'Items per page' (set to 20), a page number '1', and 'Previous' and 'Next' navigation buttons.

### Space File Browser Icon Statuses

In Local View the Spaces File Browser displays additional information to designate the status of the file on the Site's pixstor file system.



Spaces File Browser Local View displays the default file icon if the file or folder is unmanaged. An unmanaged file has not yet been processed by Ngenea operations.



Spaces File Browser Local View displays the cloud icon if the file or folder is Pre-Staged. A pre-staged file is present on the Site's pixstor file system and has an identical copy in the ngenea target (E.G. AWS cloud bucket).



Spaces File Browser Local View displays the cloud icon if the file or folder is dehydrated. A dehydrated file has only metadata present on the Site's pixstor file system and has a fully hydrated identical copy in the ngenea target (E.G. AWS cloud bucket).

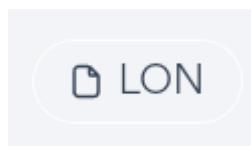
### Space File Browser File Statuses

Site Chips denote the sites on which a Space file or folder is present and their status.

In Global view all sites are listed in alphabetical order.

In Local View, the selected site is identified with a dot.

All other sites are listed in alphabetical order after the local site.



Spaces File Browser Local View displays the default file icon if the file or folder is unmanaged. An unmanaged file has not yet been processed by Ngenea operations.



Spaces File Browser Local View displays the cloud icon if the file or folder is pre-staged. A pre-staged file is present on the Site's pixstor file system and has an identical copy in the ngenea target (E.G. AWS cloud bucket).



Spaces File Browser Local View displays the cloud icon if the file or folder is dehydrated. A dehydrated file has only metadata present on the Site's pixstor file system and has a fully hydrated identical copy in the ngenea target (E.G. AWS cloud bucket).



Spaces File Browser Local View the file or folder displays a greyed out site with a circled dash where the file is not present on the associated site.

## Space File Browser File Attributes

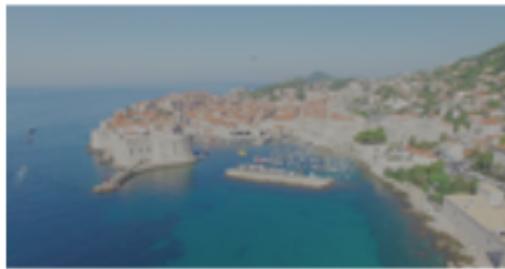
The Space File Browser displays information regarding the files and folders within the Space, globally on all Sites or local to a Site.

Option	Description
Name	The file or directory name
Date Modified	The date and time of last modification
Size	The size of the file on the pixstor file system
File Status	The file status per-site
Number of Files	If the item is a directory, displays the total file count within the directory tree thereunder

## Viewing File or Folder Metadata

### Metadata Panel

Click a file or directory name to view the associated metadata:



#### Item info

Name dubrovnik 4k 10bit000.dpx

Type file

Path /mmfs1/data/datasync/dubrovnik/000.dpx

Site names Rome

Size 33.8 MB

Date changed 24.01.2024, 10:24 GMT

Date accessed 24.01.2024, 10:24 GMT

Date modified 24.01.2024, 10:24 GMT

#### Hydration status

Rome Premigrated

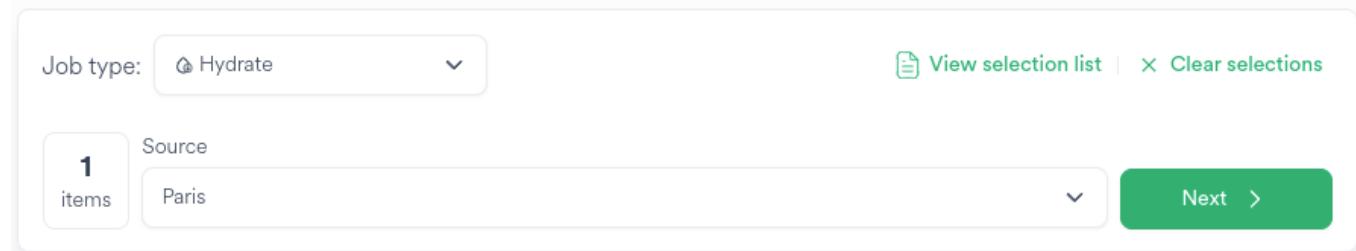
Paris Migrated

The metadata panel provides extended metadata, including a summary of the file status on each site participating within a Space.

Where an asset has been ingested via Search thumbnails are displayed for supported file types.

## Using the Job Creator Panel

Explain panel areas, buttons and operations

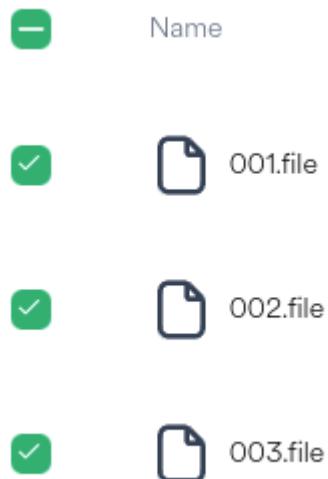


## Selecting files and directories

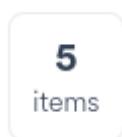
Selecting an individual file or directory populates the selection list with the item. A Selecting a directory populates all items within the chosen directory tree.

Selections of the entire Space or a directory are each counted as 1 item.

Select the 'select all' checkbox next to the Name field in order to select the entire Space.



As selections are added or removed, the selected item count is updated:



[View selection list](#)

Click the View Selection List button to show the files and directories selected to be processed by the chosen workflow

[X Clear selections](#)

Click the Clear selections to remove all files and directories currently selected from the selection list

Next >

Click the Next button to enact the Job

Jobs with Workflows which require additional user decisions prior to enacting the Job raise the Configure workflow fields dialog:

### Configure workflow fields



#### Sync Policy

Newest



#### Snapdiff rotate on error

Always rotate on error



#### Sync dirs acl

Sync folder ACL changes



Send

After entering the field information [if required], select the button at the bottom of the dialog to submit the Job.

Click the button at the bottom of the dialog to submit the Job. The button label is changed dependent on the workflow chosen.

Send

## Job Types (Workflows)

Job type:

[View selection list](#) | [X Clear selections](#)

1  
items

Source

Paris



Next >

## Default Workflows

### Dehydrate

The Dehydrate workflow transfers the file metadata and data to an Ngenea target (E.G. an AWS cloud bucket). After dehydration the file appears to be normally present alike any other file on the pixstor file system, but consumes no space. Reading the file automatically hydrates the file with data content allowing the user to read the file as normal.

### Pre-Stage

The Pre-Stage workflow transfers the file metadata and data to an Ngenea target (E.G. an AWS cloud bucket). After migration the file on Ngenea target is an identical instance of the file on the pixstor file system. The file on the pixstor file system is not dehydrated. Reading the file allows the user to read the file as normal. Pre-Staging can reduce the total time to Dehydrate the same data in future.

### Hydrate

The Hydrate workflow retrieves the file data from an Ngenea target (E.G. an AWS cloud bucket). After successful transfer the metadata and data content of the file is present on the destination site. Reading the file allows the user to read the file as normal.

### Sync Space to Site

The Sync Space to Site uses file system snapshots to discover changes between the last file system snapshot and when the workflow was run. Changes are applied by sending newly created or recently modified files and directories, including deleting or moving files or directories in place on the target site as necessary to match the source site.

### Send to Site (hydrated)

The Send to Site (hydrated) workflow transfers data from a source site to a destination site. After successful transfer the metadata and data content of the file is present on the destination site. Reading the file allows the user to read the file as normal.

### Send to Site (dehydrated)

The Send to Site (dehydrated) workflow transfers data from a source site to a destination site. After successful transfer the metadata of the file is present on the destination site. To a user the file appears to be normally present alike any other file on the pixstor file system. Reading the file automatically hydrates the file with data content allowing the user to read the file as normal.

## Additional Custom Workflows

Hub can support additional Custom Workflows providing custom operations to data through multiple task steps. Custom workflows are configured and provisioned by a

Hub Administrator using the Hub CLI. When provisioned Hub Custom Workflows will appear in the list of workflows available for users to use with their data.

## Adding a Space

Click the Create Space button to display a dialog to configure the selected site.

 + Create space

**Important:** This function can only be performed by a Hub Administrator

## Create a Space Wizard

Navigating the Wizard



Click the close button to exit the wizard. Changes are not saved.

 Next >

Click the Next button to advance to the next page of the wizard. The Next button is disabled until all required page elements are completed.

 ← Go back

Click the Go Back button to return to the previous wizard page.

 Finish & Create >

Click the Finish & Create button to apply the changes displayed on the wizard summary page.

## Basic Space Options

Spaces are created on pixstor file systems at /mmfs1/data/[Space] or at an alternative custom location.

Spaces can be restricted to a limited amount of data.

Spaces are defined to a specific file system.

## Name & Size

### Name

Type the space name

Name is required

### Size

0

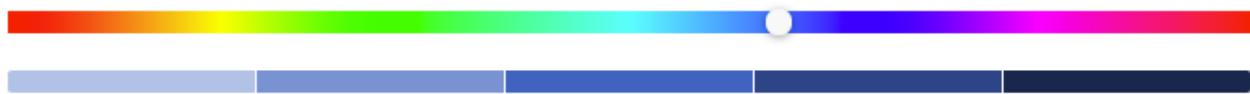
TB ▾

### Filesystem

Choose a filesystem



### Space colour



Choose a colour to identify the space

- Enter a name of the Space. The name is case-sensitive.
- Choose the data limit for the Space or unrestricted (Size = 0)
- Select the file system the Space will reside on across all pixstors
- Select a colour for the Space Card

Snapshots create safety copies of data on the pixstor file system.

Snapshots are not backups and should not be used as protection against media failures

## Snapshot config

Pick how long you want to store the snapshots for and how often you want snapshots to be taken

### Use snapshots



Configure frequency, time & storage duration for snapshots

#### Frequency

weekly



#### Time

05

:

00

UTC+0

#### Storage duration

weekly



- Choose whether snapshots are required for the Space
- Choose the frequency of the snapshot
- If the frequency is daily or longer, select the time of day in UTC+0 on the Site to snapshot the Space
- Choose how long to retain the snapshots

Select the Sites to create this Space on

A Space can exist across multiple Sites.

By default data does not move across multiple Sites. Scheduled workflows must be set up to enable cross-site data movement.

Hub provides the ability to synchronise a Space with two Sites - a bi-directional sync.

<input type="checkbox"/>	Name	Tier	Free/Total	<input type="button" value="::"/>
<input checked="" type="checkbox"/>	London	nmve	73 / 240 TB	
<input type="checkbox"/>	ob1	Select an option	No data available	
<input checked="" type="checkbox"/>	Paris	nearline	49.4 TB / 50 TB	
<input checked="" type="checkbox"/>	Rome	nmve	216 TB / 1.43 PB	

Items per page:

- Select the Sites on which to create the Space
- Select the pixstor file system tier on which to host the files for the Space. The tier is limited to those available for the file system selected in the prior wizard screen.

If two Sites are selected the Wizard will prompt to setup a bi-directional sync.

**Location**

**Use default location**

Create the space at /mmfs1/data/myspace

- To select an alternative custom location, deactivate the Use default location slider

Click the Pick location on filesystem button to open the location selector

## Select location



mmfs1 > data

London ▼

Type to filter

Name	Size	Number of files	Date created	⋮
delivery	512 B	-	Tue, 23 Jan 2024, 15:50:49 GMT	
LocalSpace	512 B	-	Wed, 24 Jan 2024, 15:18:54 GMT	
project1	4.8 GB	504	Tue, 23 Jan 2024, 15:50:49 GMT	
project2	5.5 GB	281	Thu, 29 Feb 2024, 22:00:49 GMT	

Items per page:

20 ▼

1

Previous

Next

Confirm

- Select a Site to browse. Parent directories not present on another Site will be added when a Space is created.
- Navigate to the directory under which to create the Space
- Click the Confirm button to return to the Space creation wizard

The chosen location is displayed and will be used for all Sites on which the Space is created.

Set up bi-directional sync

If two Sites are selected on the prior wizard page, Hub prompts to setup a bi-directional sync.

Only one bi-directional sync can run at a time.

This page can be skipped if no synchronisation is required.

**Source**  

▼

**Destination**  

▼

- Select the source Site to launch the first sync from
- Select the other Site as the destination site

## Schedule

Determine the required frequency of the synchronisation.

**Schedule**

**Frequency**

Mins or Hours
  Daily or Weekly

**Interval**

X
hours
▼

Choosing Mins or Hours will ensure that the schedule will run on the next interval set.

E.G: \* 1 hour: The synchronisation will run on the next hour (12.00, 13.00) \* 15 mins: The synchronisation will run on the next 15 minute interval past the hour (15, 30, 45, 00)

**Schedule**

**Frequency**

Mins or Hours
  Daily or Weekly

**Every**

Mon
Tue
Wed
Thu
Fri
Sat
Sun

**At**

:

UTC+0

Choosing Daily or Weekly allows the synchronisation to be scheduled once per chosen day at a specific time of day.

**Hint:** The schedule time is in UTC+0. You may need to account for any timezone offset of the site when scheduling.

## Shares

Prior to Space creation Shares can be assigned.

Shares are created across all Sites where the Space is provisioned.

As the Space is not yet created any Share created is assigned to the whole Space. To create Shares within the Space, edit the Space after creation and add the required Shares.



To create shares for directories within a Space can be created via the Edit Space button after successful Space creation. Shares are created identically across all Sites participating in a Space.

---

## Share 1



### Name of share

[Advanced settings >](#)

### Shared location

 Entire space

## Share 2



### Description of share

[Advanced settings >](#)

### Shared location

 Entire space[+ Add share](#)

- Select either protocol type to create a Share

SMB protocol creates a Share with the name provided.

NFS protocol creates a Share at the Space location on the pixstor file system. Set a suitable description of the share.

- Optionally choose to modify the Share configuration in the Advanced settings.

SMB Advanced

### Extended SMB options

Modifying the extended SMB options controls the Share capabilities:

<input type="checkbox"/>	Read only
<input checked="" type="checkbox"/>	Enable multi-threaded reads
<input checked="" type="checkbox"/>	Enable multi-threaded writes
<input checked="" type="checkbox"/>	Locking for root share
<input checked="" type="checkbox"/>	HSM Support
<input type="checkbox"/>	Guest OK

Select the available extended SMB options as appropriate:

Option	Description
Read only	If enabled then users of the Share may not create or modify files in the Space.
Enable multi-threaded writes	Enable asynchronous reads and writes
Locking for root share	Enforce file locking
HSM support	Supports genea operations to data within the Space
Guest OK	Access will be permitted as the default guest user

## SMB Custom Options

On occasion Administrators may find it necessary to further tailor SMB Shares in order to provide additional capabilities E.G. compatibility or performance tunings.

Pixstor supports additional SAMBA Custom Options per-share. Custom Options defined for a Space's Share are applied across all Sites where the Space is provisioned.

**Important:** SMB Custom Options are applied verbatim to the underlying SAMBA configuration. Incorrect entries can result in service outage.

Add a new Custom Option as follows:

**+ Add new key**

Click the Add new key to define a new custom option

## Keyword

Enter the name of the custom option setting in the Keyword field

String

Numeric

Boolean

Select the type of custom option from the drop down menu. Choose or enter the value for the custom option.

Example of added Custom Options:

The screenshot shows a list of custom options. Each option has a 'pencil' edit icon, a 'trash' delete icon, and a dropdown menu for type. The first entry, 'fullaudit', is of type 'String' with value 'success'. The second entry, 'level2 oplocks', is of type 'Boolean' with value 'False'. A button at the bottom left says '+ Add new key'.

Keyword	Type	Value
fullaudit	String	success
level2 oplocks	Boolean	False

To modify an existing custom option change the keyword, type or values as appropriate.

To delete a custom option select the bin icon next to the item.



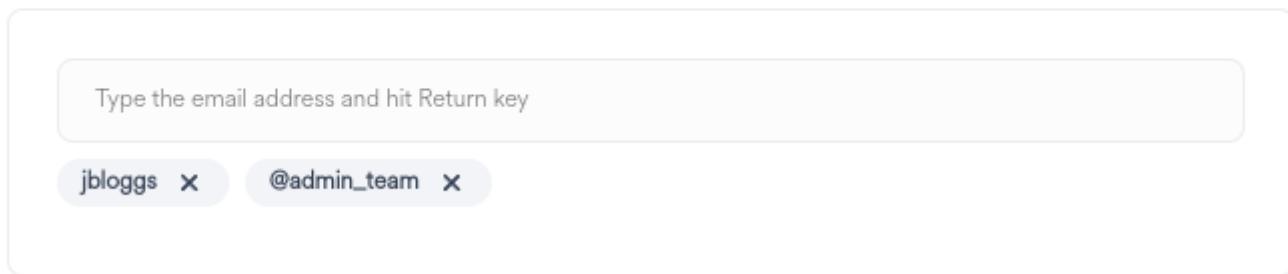
Click the delete button to remove a custom option

## Admin Users

Granted full permission to data in the Space to a specific set of users or groups:

## Admin users

Users (username) or groups (@groupname) which will always have full control of all files.



Type the email address and hit Return key

jbloggs X @admin\_team X

- Add users by username
- Add groups by prefixing the group name with an @ character

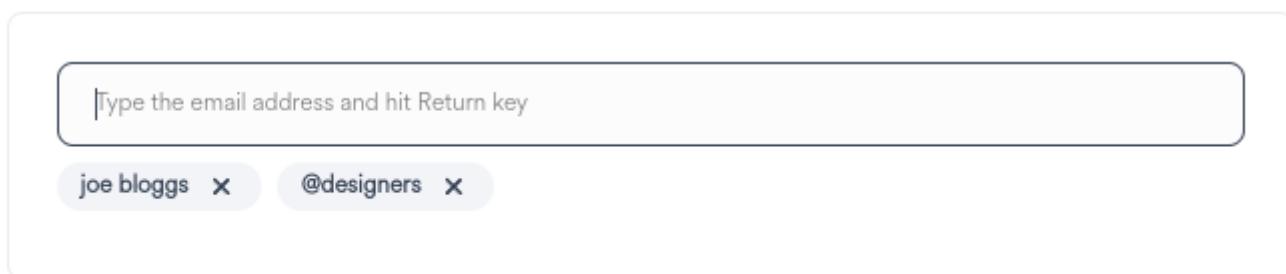
**Hint:** For users or groups containing spaces or symbols, etc. use quotes. E.G. @"Domain Admins"

## Allowed Users

Restrict the access to the share to a specific set of users or groups:

### Allowed users

Users (username) or groups (@groupname) which are permitted to connect to the SMB share.



Type the email address and hit Return key

joe bloggs X @designers X

- Add users by username
- Add groups by prefixing the group name with an @ character

**Hint:** For users or groups containing spaces or symbols, etc. use quotes. E.G. @"Domain Admins"

## Force permissions

In some scenarios it may be desirable to force the file and directory permissions to specific values in order to create a consistent known permission model. Typically this is observed where systems are not connected to Identity Management services such as Active Directory, LDAP or similar.

## Enable force permissions



Type	Read	Write	Execute	⋮
User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Group	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- Set the permission overrides as required

## Host access control

pixstor provides the ability to limit connectivity to specific network clients.

1. If no allow or deny options are defined pixstor will allow connections from any system.
2. If only a hosts allow option is defined for a share, only the network clients listed will be allowed to use the share. All others will be denied.
3. If only a hosts deny option is defined for a share, any network client which is not listed will be able to use the share.
4. If both a hosts allow and hosts deny option are defined, a network client must appear in the hosts allow and not appear in the hosts deny to access the share.

## Hosts allow

### Hosts to allow

10.20.30.41



27.33.111.62



+ Add host

- Add the required hosts by specifying the IP address

+ Add host

Click the Add host button to add additional hosts

---



Click the delete button to remove a host

---

## Hosts deny

Hosts to deny

126.211.200.89

x



86.22.11.72

x



+ Add host

- Add the required hosts by specifying the IP address

+ Add host

Click the Add host button to add additional hosts

---



Click the delete button to remove a host

---

## NFS Advanced

### Extended NFS options

Modifying the extended NFS options controls the Share capabilities:

## NFS Advanced settings



### Extended NFS options

#### Extended NFS options

Additional NFS share options

### ID mapping

### NFS network restrictions

Read only

Asynchronous

Write delay

Secure ports

Subtree check

### ID mapping

Save

Select the available extended SMB options as appropriate:

Option	Description
Read only	If enabled then users of the Share may not create or modify files in the Space.
Asynchronous	Enable asynchronous reads and writes
Write delay	Reply to I/O requests only after the changes have been committed to stable storage at a cost of performance reduction.
Secure ports	Requires that NFS requests originate from a TCP/IP port from 1-1024
Subtree check	Check the accessed file is in the appropriate filesystem and also within the Share

### ID Mapping All Squash

All Squash maps all User IDs (UIDs) and group IDs (GIDs) to the anonymous user. This is useful for NFS-exported public FTP directories, news spool directories

- All squash (map all uids and gids)

#### User ID

65534 X

#### Group ID

65534 X

## Root Squash

Root squash allows the root user on the client to both access and create files on the NFS server as root. This is conceptually equivalent to the Administrator in Windows.

Root Squash is needed if you are hosting root filesystems on the NFS server (E.G. for diskless clients). You should not use no\_root\_squash unless you are aware of the underlying implications.

- Root squash (map requests from uid/gid 0 only)

#### User ID

65534 X

#### Group ID

65534 X

## No Squash

No Squash allows the root user on the NFS client host to access the NFS-mounted directory with the same rights and privileges that the superuser would normally have.

- No squash (no uid/gid mapping)

## NFS network restrictions

pixstor provides the ability to limit connectivity to specific network clients.

- Available to all clients

- Select the Available to all clients option for no restrictions

## Restrict to single host

Restrict to single host

### IP address

Type the IP address

OR

### Hostname

Type the hostname

- Add the required host to restrict by specifying the IP address or the FQDN hostname

## Restrict to network range

Restrict to network range

### Range 1



#### IP address

#### CIDR

10.176.34.0



24



### Range 2



#### IP address

#### CIDR

179.63.16.8



32



**+** Add IP range

- Add the required IP address or network range and specify a valid CIDR mask to apply the restriction

**+** Add IP range

Click the Add IP range button to add additional restrictions



Click the delete button to remove a host

## Spaces backup

### Space backup

Configure backups of this space

- Select the Sites which will perform backups for this space
- Define file extensions which must be excluded from backups across all Sites.  
E.G. \*.tmp

Choosing Site(s) to backup presents further backup options.

For more information refer to Backups.

**Important:** Multiple Sites are not permitted to backup to the same Ngenea Target.

## Jobs

A job comprises one or more tasks, each of which perform an action.

Tasks can be data orientated (E.G. hydrate, dehydrate, SendToSite) or can be management or configuration tasks of pixstor sites and/or services.

### Viewing Jobs

To view Jobs executed on a specific Site, select the Site from the Sites drop down menu or choose Global to display all Jobs from all Sites.

Click and select the site to show the jobs from the selected site.

After selection the Jobs from the selected Site are displayed including high level information for each Job.

Click a Job ID to view in depth information for the job.

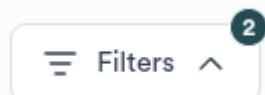
Job ID	Job creator	Description	Workflow	Date created	Progress	State
29644	System	Populating/updating settings from site london	-	Fri, 22 Mar 2024, 13:59:46 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29643	System	Populating/updating settings from site rome	-	Fri, 22 Mar 2024, 13:59:33 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29642	System	Populating/updating settings from site paris	-	Fri, 22 Mar 2024, 13:58:40 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29641	System	Applying settings to site 'rome'	-	Fri, 22 Mar 2024, 13:50:53 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29640	System	Applying settings to site 'paris'	-	Fri, 22 Mar 2024, 13:50:40 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29639	System	Applying settings to site 'london'	-	Fri, 22 Mar 2024, 13:50:28 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29638	System	Populating/updating settings from site rome	-	Fri, 22 Mar 2024, 13:50:11 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29637	System	Populating/updating settings from site paris	-	Fri, 22 Mar 2024, 13:50:07 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29636	System	Populating/updating settings from site london	-	Fri, 22 Mar 2024, 13:50:04 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29635	System	Checking space quota for 'mmfs1' on site 'ob1'	-	Fri, 22 Mar 2024, 13:39:57 GMT	<div style="width: 0%;"><div style="width: 0%;"></div></div>	Pending
29634	System	Checking space quota for 'mmfs1, project1, delivery, project2, localspace' on site 'london'	-	Fri, 22 Mar 2024, 13:39:57 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success
29633	System	Checking space quota for 'mmfs1, datasync, delivery' on site 'rome'	-	Fri, 22 Mar 2024, 13:39:57 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success

## Filtering the Jobs View

To display a specific Job ID, enter the ID in the filter bar.

Job ID	Job creator	Description	Workflow	Date created	Progress	State
29620	schedule-datasync	-	Bidirectional_sync	Wed, 20 Mar 2024, 14:50:00 GMT	<div style="width: 0%;"><div style="width: 0%;"></div></div>	Pending
29619	schedule-datasync	-	Bidirectional_sync	Wed, 20 Mar 2024, 14:48:00 GMT	<div style="width: 100%;"><div style="width: 100%;">✓</div></div>	Success

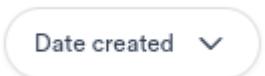
Jobs for a site can be additionally filtered through selection of various criteria.



Click the filter button to display the available filters. The number of applied filters is displayed on the Jobs filter button.



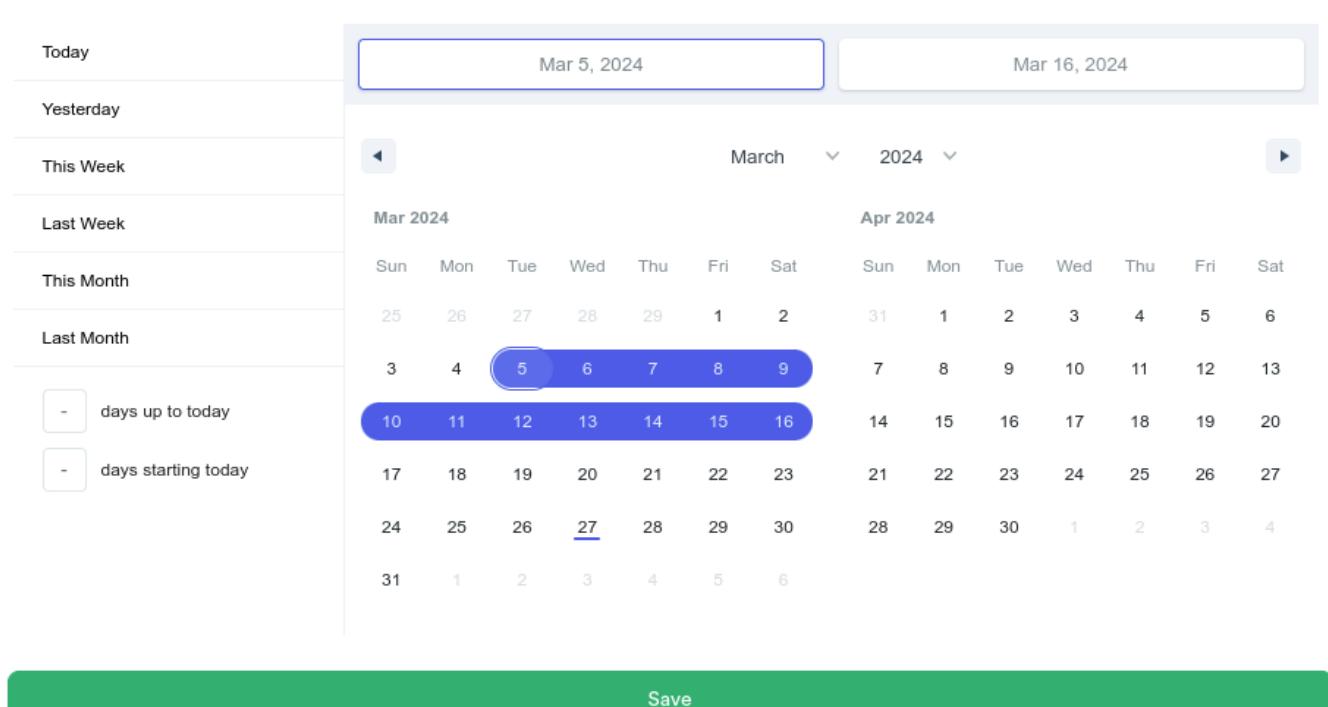
Select the Hide noop filter option to hide any job which did not perform any action as the job determined that no actions were required.



Click the Date Created button to filter for any job which was created between two date ranges.

Clicking the Date Created button raises the date selection dialog. Choose the criteria required and click the Save button to apply the date range.

Choose a date range



Click the Job State button to display jobs matching the status. Available statuses are:

Status	Description
New	A job has been created
Pending	The job is waiting to run
Started	The job is running
Succeeded	The job finished successfully
Error	The job finished with one or more error conditions

Status	Description
Failure	The job finished with one or more failure conditions
Skipped	The job was skipped as the work assigned to the job was not required to be undertaken - no change would have occurred if the job had run.
Cancelled	The job was cancelled
Cancelling	The job is in the process of cancelling
Pausing	The job is in the process of Pausing
Unknown	The job experienced a result which could not be matched to a Status
<div style="border: 1px solid #ccc; border-radius: 10px; padding: 5px; display: inline-block;">Workflow ▾</div>	

Type	Description
Bi-Directional Sync	Data synchronisation between two sites
Delete File	Deletion of a designated data
Dehydrate	Dehydration of data
Pre-Stage	Staging of data to an Ngenea target. Subsequent dehydrations save time as there is no requirement to stage data prior to dehydration.
Hydrate	Hydration of data
Reverse Stub	Creation of dehydrated files not prior existing which reference data in an Ngenea target
Send	Deliver data from a source to a destination site
Send to Site (hydrated)	Deliver data from a source to destination site as hydrated files
Send to Site (dehydrated)	Deliver data from a source to destination site as dehydrated files
Sync Space to Site	Synchronising data from a source to a destination site
Transparent Recall	User or application initiated hydration of data on reading
<div style="border: 1px solid #ccc; border-radius: 10px; padding: 5px; display: inline-block;">Job creator ▾</div>	

## Viewing a Job

Clicking a Job ID in the main Job screen displays the in depth information for the job.

Job 811

Task stats

File stats

Task list

Job info

Status: Success

Job ID: 811

Type: Recall

Description: -

Site name: Rome

Owner: hubadmin

Date created: 24.01.2024, 10:21 GMT

Date completed: 24.01.2024, 10:22 GMT

Runtime: 1 minute 7.54 seconds

Task stats

Success: 45

Skipped: 0

Aborted: 0

Cancelled: 0

Failure: 0

Started: 0

The Job View comprises:

## Task stats

The total count of types operation result per task is represented by the horizontal bar segments.

Hovering over the bar provides the count of each task status for the tasks processed.



## File/Item stats

The total count of types operation result per item is represented by the horizontal bar segments.

Items may be files, directories or Objects.



Hovering over the bar provides the count of each type processed.

Bi-Directional Sync and Site Sync workflows only provide File stats.



## The Job Side bar

### Enlarge/Reduce



Clicking the toggle displays the Job Side bar to show:

- Job info
- Task stats
- File Stats (Item stats)

Clicking the toggle button again hides the Job Side bar.

## Reordering

Re-arrange items in top to bottom order by dragging vertically up or down.

### Side bar organizer



Job info



Job details

Task stats



Job task statistics

File stats



Job file statistics

Save

## Job Controls

Jobs provide the following controls where supported by the Workflow:



If supported by the Workflow, click the Pause job button to pause the Job. Tasks which are not running will be paused.

 **Resume job**

If supported by the Workflow, click the Resume job button to resume a paused Job.

 **Cancel job**

Click the Cancel Job button to cancel any future tasks from running and no longer proceed with the Job

 **Re-submit job**

Click the Re-submit job button to launch an identical Job on the Job queue

 **Delete job**

Click the Delete Job button to remove the records of the Job and associated tasks from the Hub database

## Job Info Summary

Provides an overview of high level information of the Job.

### Job info

—

Status Success

Job ID 30232

Workflow Bidirectional\_sync

Description -

Site Paris

Owner schedule-datasync

Date created 28.03.2024, 12:46 GMT

Date completed 28.03.2024, 12:46 GMT

Runtime 24.23 seconds

## Job Info Task Stats

Jobs undertake tasks to process one or more actions, files, directories or objects as defined by the Workflow.

The Task stats displays the total count of types operation result per task.

Task stats	—
Success	7
Skipped	0
Aborted	0
Cancelled	0
Failure	0
Started	0
Pending	0
Unknown	0

## Item stats

The total count of types operation result per item is represented by the horizontal bar segments.

Items may be files, directories or Objects.

Hovering over the bar provides the count of each operation type for the files processed.

## Item stats

<span style="color: #00aaff;">●</span>	Pending	0
<span style="color: #2ecc71;">●</span>	Processed	240
<span style="color: #3498db;">●</span>	Aborted	0
<span style="color: #e69138;">●</span>	Cancelled	0
<span style="color: #e74c3c;">●</span>	Failed	0

## File stats

Bi-Directional Sync and Site Sync workflows only provide File stats.

The File stats displays the total count of types operation result per file or directory.

## File stats

<span style="color: #cccccc;">●</span>	All	1234
<span style="color: #27ae60;">●</span>	Pending	0
<span style="color: #2ecc71;">●</span>	Processed	1234
<span style="color: #9b59b6;">●</span>	Skipped	0
<span style="color: #3498db;">●</span>	Aborted	0
<span style="color: #e69138;">●</span>	Cancelled	0
<span style="color: #e74c3c;">●</span>	Failed	1

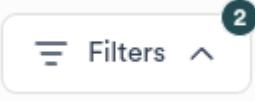
## The Job Task List

The Task list displays all tasks comprising a job, their ID, type, start time and status.

ID	Type	Date started	State	More
c9db871a-154c-467e-9136-fb56cc8677f0	dynamo.tasks.recursive_action	Thu, 17 Aug 2023, 12:16:03 GMT+1	Success	
f2e1e161-816f-403f-84ff-fb789498db7d	dynamo.tasks.reverse_stub	Thu, 17 Aug 2023, 12:16:08 GMT+1	Success	
99d4e4c4-c84a-4121-90ef-4cd58bb75fe1	dynamo.tasks.migrate	Thu, 17 Aug 2023, 12:16:08 GMT+1	Success	
c9b294c6-5a0b-4ebf-8fcc-f695b4cb0913	dynamo.tasks.remove_location_xattrs_for_moved	Thu, 17 Aug 2023, 12:16:08 GMT+1	Success	
f1b5c1b1-2bcd-426b-93ed-69131757b355	dynamo.tasks.recursive_action	Thu, 17 Aug 2023, 12:16:08 GMT+1	Success	

## Filtering the Job Task List

Tasks for a job can be additionally filtered through selection of various criteria.

 Filters

Click the filter button to display the available filters. The number of applied filters is displayed on the Task list filter button.

 State

Click the State button to display jobs matching the status. Available statuses are:

Status	Description
New	A task has been created
Pending	The task is waiting to run
Started	The task is running
Succeeded	The task finished successfully
Error	The task finished with one or more error conditions
Failure	The task finished with one or more failure conditions
Skipped	The task was skipped as the work assigned to the job was not required to be undertaken - no change would have occurred if the job had run.
Cancelled	The task was cancelled
Cancelling	The task is in the process of cancelling
Aborted	Whilst running, the task was unable to proceed correctly and aborted the in progress action
Paused	The task is paused
Pausing	The task is in the process of pausing
Unknown	The task experienced a result which could not be matched to a Status

Task type ▾

Click the Task type button to filter for a specific task type which comprises the Job. The task types are dynamic therefore the displayed types may differ per job type.

## Task information Dialog

Clicking a task ID in the Job Task List displays the information for the chosen task.

Task: c9db871a-154c-467e-9136-fb56cc8677f0

×



```
["root": { 18 items
  "url" : "http://hub:8000/api/tasks/c9db871a-154c-467e-9136-fb56cc8677f0/"
  "taskid" : "c9db871a-154c-467e-9136-fb56cc8677f0"
  "tasktype" : "dynamo.tasks.recursive_action"
  "state" : "SUCCESS"
  "started" : "2023-08-17T11:16:03.726630Z"
  "completed" : "2023-08-17T11:16:07.809412Z"
  "runtime" : 4.082782
  "numfiles" : 10
  "numprocessedfiles" : 0
  "numskippedfiles" : 0
  "numabortedfiles" : 0
  "numcancelledfiles" : 0
  "numfailedfiles" : 0}
```

Dependent on the number of operations and the quantity of inputs to the task, the information displayed can range from short to extensive.

Optionally select an action button to more easily view the Task Information.



Click the Full Screen button to display the Task Information in a larger view



Click the Copy button to copy the Task Information output to the clipboard.



Click the Download button to download the Task Information locally



Click the Close button to close the Task Information dialog

## Scheduling

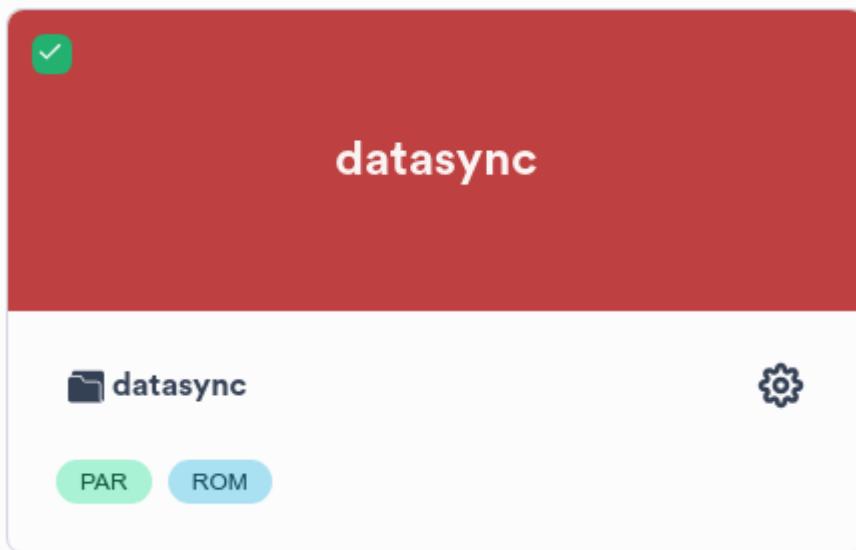
Hub can regularly perform the same action to a Space via Job Schedules.

Spaces which are deployed with Bi-Directional Sync automatically have a Schedule added.

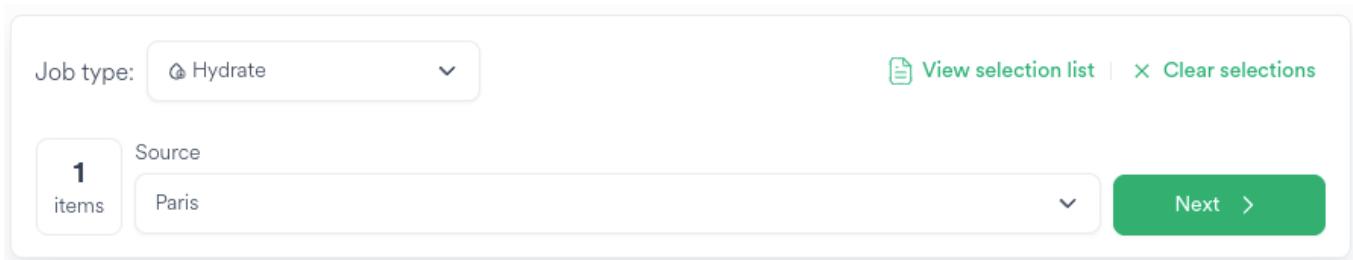
Schedules can be added to the entirety of a Space. It is not possible to schedule more granular activities within a Space (E.G. regular Hydration of an individual file or directory).

### Adding a Schedule

To add a Schedule to a Space, select the Space checkbox at the top left of the Space Card.



Selecting the checkbox shows the Job Creator Panel.



For further information refer to [Using the Job Creator Panel](#).

After selecting any chosen requirements for the Job Creator Panel, the Configure workflow fields panel is raised.

If the job is to be immediately run, click the larger titled button related to the chosen Workflow (E.G. Hydrate). Alternately the Job can be Scheduled to run later.

To Schedule the Job to run later, click the Schedule button.

Click the Schedule button to Schedule the Job for later



The Schedule button raises the Schedule Job dialog.

## Schedule job



### Recurring job name

myschedulename



### Frequency

Mins or Hours

Daily or Weekly

### Interval

1



mins



Schedule "Hydrate"

- Enter the name of the Schedule
- Select the desired Schedule settings
- Click the Schedule button to create the Schedule

## Editing Schedules

Schedule settings can be modified as required.



Clicking the Settings button on the Space card raises the Settings dialog for the Space.

**Important:** Adding or Configuring a Space can only be performed by a Hub Administrator or User with Space Administration rights granted through group management.

Click the Job Schedules menu item on the Space settings dialog.

## Space settings



### Job schedules

Basic Space options

#### Job schedules

Shares



Name

Controls



Space backup



schedule-datasync



Items per page:

20

1

Previous

Next

The Schedules for the Space are viewable.



Click the Edit button for the Schedule to be modified

Clicking the Edit button raises the Update job schedule dialog.

## Update job schedule



### Recurring job name

schedule-datasync



### Frequency

Mins or Hours

Daily or Weekly

Interval

2



mins

Save

- Modify the desired Schedule settings
- Click the Save button to store the modified Schedule settings

## Deleting Schedules

Schedules no longer required can be removed from Hub.



Clicking the Settings button on the Space card raises the Settings dialog for the Space.

**Important:** Adding or Configuring a Space can only be performed by a Hub Administrator or User with Space Administration rights granted through group management.

Click the Job Schedules menu item on the Space settings dialog.

The screenshot shows the 'Space settings' dialog with the 'Job schedules' tab selected. The interface includes a search bar labeled 'Type to filter', a table with two rows of data, and various navigation controls at the bottom.

Shares	Name	Controls
	schedule-datasync	Edit  Delete

Items per page: 20 1 Previous Next

The Schedules for the Space are viewable.



Click the Delete button for the Schedule to be deleted

**Tip:** Deleted Schedules are non-recoverable. If a Schedule has been inadvertently removed, do not press the Save button, instead click off the Space settings dialog to the main area of the screen.

Clicking the Save button at the bottom of the Space settings dialog saves any changes made.

## Groups & Users

Hub provides management of Groups and Users internally.

Users may be authenticated by external directory services such as LDAP or Active Directory.

Two default groups are provided:

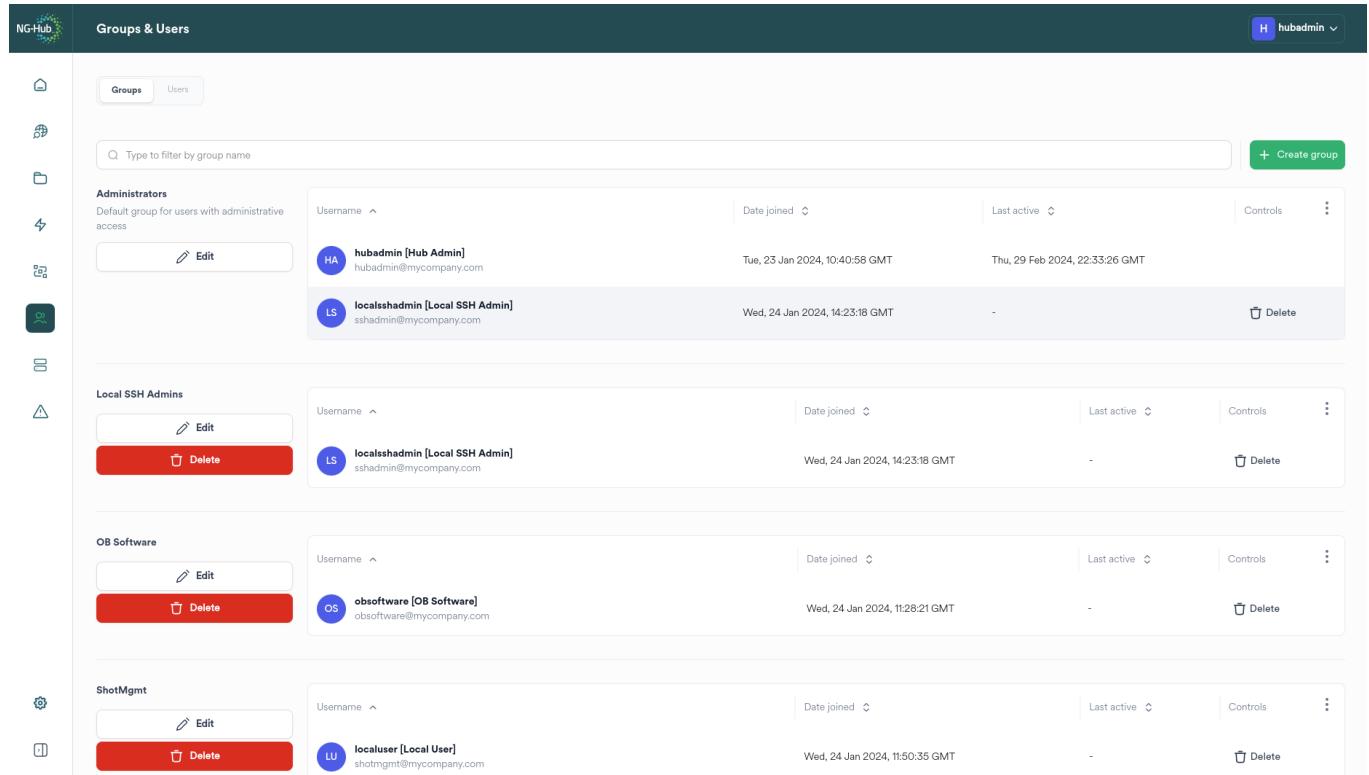
- Members of Administrators can configure and manage all Sites and Spaces
- Members of Users have read-only access to all Spaces

Additional groups can be deployed to provide restricted access for users to Sites and Spaces.

## Viewing Groups

To view the available Groups managed in Hub, select the Group tab.

**Important:** Group management can only be performed by a Hub Administrator.



The screenshot shows the NG-Hub Groups & Users interface. The Groups tab is selected. There are four group entries:

- Administrators**: Default group for users with administrative access. Contains two members: hubadmin [Hub Admin] (joined Tue, 23 Jan 2024) and localsshadmin [Local SSH Admin] (joined Wed, 24 Jan 2024). Actions: Edit, Delete.
- Local SSH Admins**: Contains one member: localsshadmin [Local SSH Admin] (joined Wed, 24 Jan 2024). Actions: Edit, Delete.
- OB Software**: Contains one member: obsoftware [OB Software] (joined Wed, 24 Jan 2024). Actions: Edit, Delete.
- ShotMgmt**: Contains one member: localuser [Local User] (joined Wed, 24 Jan 2024). Actions: Edit, Delete.

The Groups tab provides the following actions:

- Group creation
- Group deletion
- Group member management

[View all members](#) 

Click the View all members button to view all the members of the group

Clicking the View all members button raises the Group Membership dialog.

## vfx\_grading members



Type to filter by username



**localsshadmin [Local SSH Admin]**

sshadmin@mycompany.com

Remove



**localuser [Local User]**

shotmgmt@mycompany.com

Remove



**obsoftware [OB Software]**

obsoftware@mycompany.com

Remove



**readonly [Read Only]**

myuser@mycompany.com

Remove



**resolve2 [resolve 2]**

resolve2@mycompany.com

Remove

Save

To filter for a User within the list of group members enter a keyword in the Filter for...

Type to filter by username

The displayed Users is limited to the sites which match the keyword(s).

Remove

Click the Remove button to remove a User from the Group

**Tip:** If a User has been inadvertently removed, do not press the Save button, instead click off the Group members dialog to the main area of the screen.

Clicking the Save button at the bottom of the Group members dialog saves any changes made.

## Viewing Users

To view the available Users managed in Hub, select the Users tab.

**Important:** User management can only be performed by a Hub Administrator.

The screenshot shows the 'Groups & Users' section of the NG-Hub interface. On the left is a sidebar with various icons. The main area has a header with 'Groups & Users' and a search bar. Below is a table of users:

Username	Email	Date joined	Groups	Controls
hubadmin [Hub Admin]	hubadmin@mycompany.com	Tue, 23 Jan 2024, 10:40:58 GMT	1 Groups	<span>Edit</span> <span>Delete</span>
localsshadmin [Local SSH Admin]	sshadmin@mycompany.com	Wed, 24 Jan 2024, 14:23:18 GMT	3 Groups	<span>Edit</span> <span>Delete</span>
localuser [Local User]	shotmgmt@mycompany.com	Wed, 24 Jan 2024, 11:50:35 GMT	2 Groups	<span>Edit</span> <span>Delete</span>
localuser2 [Local User]	swrev@mycompany.com	Wed, 24 Jan 2024, 11:57:42 GMT	2 Groups	<span>Edit</span> <span>Delete</span>
obsoftware [OB Software]	obsoftware@mycompany.com	Wed, 24 Jan 2024, 11:28:21 GMT	2 Groups	<span>Edit</span> <span>Delete</span>
readonly [Read Only]	myuser@mycompany.com	Thu, 08 Feb 2024, 11:52:36 GMT	2 Groups	<span>Edit</span> <span>Delete</span>
resolve2 [resolve 2]	resolve2@mycompany.com	Tue, 23 Jan 2024, 16:43:39 GMT	1 Groups	<span>Edit</span> <span>Delete</span>
root		Tue, 23 Jan 2024, 17:35:42 GMT	0 Groups	<span>Edit</span> <span>Delete</span>

At the bottom, there are buttons for 'Items per page' (20), a page number (1), and 'Previous'/'Next' navigation.

## Restricting Users from Spaces

All users in the group Users have read-only access to all Spaces.

Should it be required to restrict a user from accessing specific spaces Spaces this can be achieved by:

1. Creating a new user group
2. Ensuring that only the specific spaces are assigned to the group
3. Add specific users to the group
4. Ensure the specific users are removed from the group Users

**Caution:** Adding a Space to a group's Administered Spaces and Used spaces will allow assigned Users to change the settings for a Space. If administrative operations are not required, do not assign Spaces to Administered Spaces - create an additional group to allow specific users to administrate specific spaces.

## Sites

A site is a physical or cloud based pixstor server managed by Hub.

The screenshot shows the 'Sites' view in the NG-Hub interface. It displays three site cards: London (LON), Paris (PAR), and Rome (ROM). Each card provides a summary of site health and performance metrics. The cards include sections for alert counts (All alerts, Critical alerts, Warning alerts, Info alerts), storage information (5 spaces, 0/0 GiB/s), and bandwidth limits (0 Bps limit). Below each card is a horizontal timeline bar showing activity over time, with specific segments for 'nmve-mmfs1' and 'nearline-mmfs1'.

## Filtering Sites

To filter for a site within the list of sites enter a keyword in the Search for...

The displayed sites is limited to the sites which match the keyword(s).

The screenshot shows the 'Sites' view with a search bar at the top containing the keyword 'lon'. The search results are displayed as site cards. The London (LON) site card is highlighted, indicating it is the selected or active site. The other site cards for Paris (PAR) and Rome (ROM) are also visible below.

## The Site Card

Each site is displayed as a site card.

A Site is displayed as a card in the Sites view.

The screenshot shows a detailed view of the Paris (PAR) site card. The card includes sections for alert counts (All alerts 1, Critical alerts 0, Warning alerts 0, Info alerts 1), storage information (3 spaces, 0/0 GiB/s), and bandwidth limits (0 Bps limit). Below the card is a horizontal timeline bar showing activity over time, with specific segments for 'nmve-mmfs1' and 'nearline-mmfs1'.

A Site Card comprises:

## Site Name

London

LON

Displays the designated friendly name of the site with the ngenea site chip

## Site Summary

The site summary displays high level totals for the number of files and folders present, the ngenea hydrated and dehydrated states and the number of Spaces the site hosts.

All alerts 2

Critical alerts 1

Warning alerts 0

Info alerts 1

5 spaces

0/0 GiB/s

0 Bps limit

## Alert Types

Numbered filter buttons display the count of each type of Alert for the Site.

Select a button to open the Alerts for the Site, filtered for the specific Alert type.

All alerts 6

Click the All alerts button to view all alerts

Critical alerts 3

Click the Critical alerts button to filter for all Critical alerts

Warning alerts 0

Click the Warning alerts button to filter for all Warning alerts

Info alerts 3

Click the Info alerts button to filter for all Info alerts

## Storage Info



Storage info

Click the Storage info button to open the Storage Info browser for the Site.

## Site Metrics



Metrics

Click the Metrics button to open the pixstor nexus site metrics in a new browser tab.

## Site Analytics



Analytics

Click the Analytics button to open the pixstor nexus site analytics in a new browser tab.

## Site Alerts



Alerts

Click the Alerts button to open the Alerts for the Site.

## Bandwidth Control

If bandwidth control has been enabled by a Hub Administrator with CLI access, the bandwidth of a site can be limited to a defined value. The current value is observed on the bandwidth limit button.

0 Bps limit

Click the bandwidth limit button to display the bandwidth control dialog.

The bandwidth control dialog allows limiting the bandwidth of a site to a defined value. Enter the limit in Megabits per second (Mbps) and press Save to apply the limit.

Limit traffic for Paris



Bandwidth in Mbps

10000



Save

**Hint:** If the bandwidth for a site has been inadvertently set do not press the Save button, instead click off the Bandwidth limit dialog to the main area of the screen.

**Important:** This function can only be performed by a Hub Administrator.

## Settings

**Important:** This function can only be performed by a Hub Administrator.



Settings

Click the site's Settings button to display a dialog to configure the selected site.

## Site settings



**Name** **London** Site: london

Network settings **Name**

Backup

Email SMTP settings

Identity management

**Site name & shortcode**

London  LON

**Type of site**

On premise  Cloud

**Public URL**

https://10.60.0.167

**Site colour**

Choose a colour to identify the site

---

**Network settings**

**NAS Interfaces**

**Group**

**Range 1**

IP range start	IP range end	CIDR	Gateway
10.70.0.167 <input type="button" value="X"/>	10.70.0.170 <input type="button" value="X"/>	24 <input type="button" value="X"/>	10.70.0.1 <input type="button" value="X"/>

**Save**

- Modify the Site settings as required. Refer to [Adding a Site](#) for settings guidance.

## Pool Space

One or more pixstor storage pools which comprise the pixstor file system are represented.

Hovering over the pool percentage bar provides the remaining capacity for the pool.



## Adding a Site

### Add Site Wizard

Hub allows remote configuration of all participating pixstor sites.

New sites are automatically joined to Hub awaiting optional configuration via the Site Wizard.

#### Navigating the Wizard



Click the close button to exit the wizard.  
Changes are not saved.

Next >

Click the Next button to advance to the next page of the wizard. The Next button is disabled until all required page elements are completed.

← Go back

Click the Go Back button to return to the previous wizard page.

Finish & Create >

Click the Finish & Create button to apply the changes displayed on the wizard summary page.

### Add Site

+ Add site

Click the Add site button to display a dialog to configure the selected site.

**Important:** This function can only be performed by a Hub Administrator.

#### Pick site to configure

Sites which have been automatically registered to Hub but not yet configured are shown:

## Pick site to configure

🔍 Type to filter...

Site ID: london	Configure this new site >
Site ID: new_york	Configure this new site >
Site ID: paris	Configure this new site >
Site ID: singapore	Configure this new site >

- Select a site to configure

Configure this new site >

Click the Configure this new site button to proceed

## Site Name

### Name

<b>Site name &amp; shortcode</b>	
London	X
LON	X
<b>Type of site</b>	
<input checked="" type="radio"/> On premise	<input type="radio"/> Cloud
<b>Public URL</b>	
https://10.60.0.167	X
<b>Site colour</b>	
	
Choose a colour to identify the site	

- Provide a friendly name for the Site
- Provide a 3 character short code for the site. The shortcode is displayed as the label on the Site's chip. E.G. LDN for London

- Specify whether the site is on-premise or a pixstor cloud deployment. Each site type provides different Network Setting options.
- Provide the URL IP or FQDN which refers to the pixstor management node of the Site
- Select a colour for the Site chip

## Network Settings (On premise)

Range 1

IP range start	IP range end	CIDR	Gateway
10.200.13.11	10.200.13.22	24	10.200.13.1

Range 2

IP range start	IP range end	CIDR	Gateway
10.200.17.63	10.200.17.79	24	10.200.17.1

+ Add IP range

Interface 1

Select server	Select interface
---------------	------------------

+ Add interface

- Add the required IP address or network range and specify a valid CIDR mask to apply the restriction
- Specify a gateway, if required
- Select the server(s) and interface(s) of the server where the IP range will be configured

+ Add IP range

Click the Add IP range button to add additional restrictions

+ Create another group

Click Create another group to add additional IP range to interface mapping groups



Click the delete button to remove an IP range or Interface group

## Network Settings (Cloud & General)

pixstor cloud systems use predefined network architectures.

Unlike on-premise pixstor systems there is no requirement to create IP ranges or interface groups. IP addressing is externally managed by the cloud / virtual environment.

Both on-premise and cloud systems share common network configuration for DNS, Timezone and NTP.

The screenshot shows the network configuration interface for pixstor. It is divided into four main sections:

- DNS Servers**: Contains a button to "Add DNS server".
- DNS search domains**: Contains a button to "Add DNS search domains".
- Timezone**: Shows "Europe/London" selected in a dropdown menu.
- NTP Servers**: Contains a text input field "Type in NTP" and a "Add NTP server" button.

- Specify the IP address or FQDN hostname of one or more DNS servers
- Specify one or more DNS search domains
- Specify the Timezone in which the server resides, or will participate in
- Specify the IP address or FQDN hostname of one or more DNS servers

**Hint:** If the pixstor site will be joined to an external Identity Mapping service such as Active Directory or LDAP, best practice is to ensure that the DNS and NTP servers match those of the service, or point at the service hosted DNS and NTP if it provides such capabilities. Should the pixstor become out of time sync with the Identity Mapping service login failures can occur.

## Backup

pixstor provides the capability to backup data within a Space on a per-Site basis to specific Ngenea Targets.

Hub enables configuration to be set for the Ngenea Backup service running on pixstor sites.

If the Site is enabled to participate in backups, each Space requires additional configuration to enable the per-Space backup.

For more information refer to Backups.

## Backup

**Enable backup**

Do you want this site to participate in backups?

---

**Frequency**

Mins or Hours

Daily or Weekly

---

Every  Mon  Tue  Wed  Thu  Fri  Sat  Sun

---

At  :  UTC+0

Determine the required frequency of the backup.

**Schedule**

**Frequency**

Mins or Hours

Daily or Weekly

---

Interval

Choosing Mins or Hours will ensure that the schedule will run on the next interval set.

E.G: \* 1 hour: The backup will run on the next hour (12.00, 13.00) \* 15 mins: The backup will run on the next 15 minute interval past the hour (15, 30, 45, 00)

## Schedule

### Frequency

Mins or Hours

Daily or Weekly

Every  Mon  Tue  Wed  Thu  Fri  Sat  Sun

At  :  UTC+0

Choosing Daily or Weekly allows the backup to be scheduled once per chosen day at a specific time of day.

**Hint:** The schedule time is in UTC+0. You may need to account for any timezone offset of the site when scheduling.

Optional tuning can be set for the backup operation in the Advanced Configuration.

Refer to the Ngenea Backup documentation prior to applying any parameters.

## Advanced configuration

Leave fields blank to use defaults

### Number of threads

Type a number

### Hashing threshold (MB)

Type a number

### Timeout (seconds)

Type a number

### Connection timeout (seconds)

Type a number

### Number of connection retries

Type a number

## Email SMTP Settings

pixstor provides the capability to notify an inbox if service issues arise.

## Email SMTP settings

Configure the email SMTP settings

**Server**

myrelay.mycompany.com X

**Port**

587 X

**Username**

relayuser X

**Password**

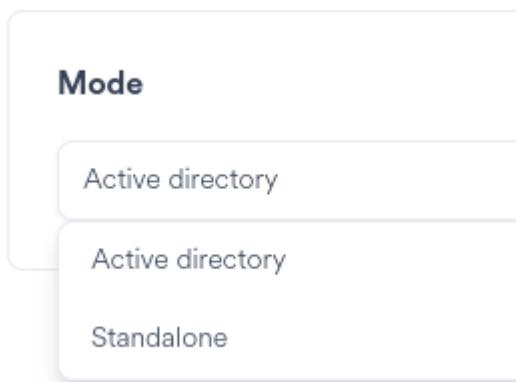
\*\*\*\*\* X

**Alert recipients**

Add the emails to send notifications about this site.

alerts@mycompany.com X

- Specify the SMTP configuration of an email server to which to send notification emails
- Specify one or more valid email addresses to receive the notification emails



## Identity Management

- Specify the Identity Management mode as appropriate:

Mode	Description
Active Directory	pixstor uses RFC2307 compliant identity mapping with Active Directory
Standalone	pixstor generates local UIDs and GIDs mapped to Active Directory SIDs

**Domain details**

**Domain name**

X

**Machine account name**

X

**ID mapping range**

X

X

---

**Domain Servers** toggle switch (green)

Use DNS to determine AD servers

- Specify the Domain to join
- Specify the Machine account name
- Specify the ID range to map to
- Specify whether to use DNS to locate an Active Directory Domain Controller or alternatively specify an IP address or hostname

**Domain join username**

X

**Domain join password**

X

- Specify a valid username and password with domain join capability

## Summary

Upon completing the wizard steps a summary is presented:

## Summary

Here are the summary of your selections

You have named the site as **london**

[Go back and edit](#)

You added **1 NAS group**

[Go back and edit](#)

You have added **1 DNS server**

[Go back and edit](#)

You have added **1 NTP server**

[Go back and edit](#)

You want to send notifications to **2 emails**

[Go back and edit](#)

You configured **1 domain**

[Go back and edit](#)

**Finish & Create >**

Click the Finish & Create button to apply the changes displayed on the wizard summary page.

Alternatively [Go back](#) and change the proposed configuration as required or [close](#) the wizard to cancel the creation of the ngenea target.

## Alerts

Hub provides a view of alerts across all Sites.

- Only active alerts are displayed
- Muted alerts are not displayed



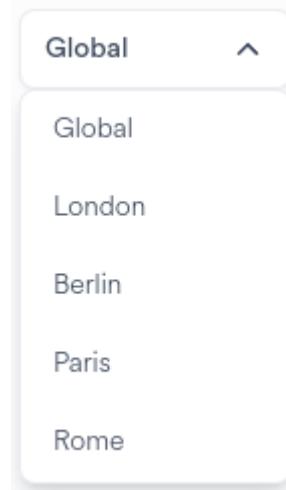
Click the alerts button to navigate to the Global Alerts screen

The screenshot shows the NG-Hub Alerts interface. The top navigation bar includes the NG-Hub logo, a search bar, and a user dropdown for 'hubadmin'. The main content area has a header with buttons for 'All alerts' (6), 'Critical alerts' (3), 'Warning alerts' (0), and 'Info alerts' (3). A filter dropdown is set to 'Global'. Below this is a table with columns for 'Alerting since', 'Alert name', 'Site', 'Node', 'Severity', and 'Summary'. The table lists six alerts: 1. 'PixStorPoolData' (Critical) on 'hw-dev-pixit-01' in London on 01 Mar 2024. 2. 'ServiceFailed' (Info) on 'hw-dev-pixit-01' in London on 22 Feb 2024. 3. 'ServiceFailed' (Info) on 'hw-dev-pixit-02' in Paris on 13 Feb 2024. 4. 'ServiceFailed' (Info) on 'hw-dev-pixit-03' in Rome on 13 Feb 2024. 5. 'SiteHealth' (Critical) on 'ob1' in London on 30 Jan 2024. 6. 'WorkerHealth' (Critical) on 'devpx6-jtucker-2lga-demo-77-1' in London on 30 Jan 2024. At the bottom are buttons for 'Items per page' (20), 'Previous', and 'Next'.

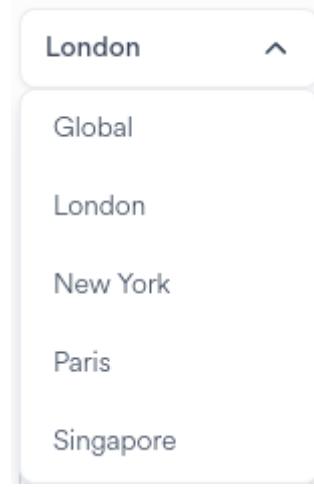
Hub provides two views of Alerts - Global and Local.

- Global displays all Alerts on all Sites
- Local displays the Alerts on a specific Site

The default view of Alerts is Global.



To switch to a site-centric view, select the specific site from the Alerts drop-down menu.



To switch to Global view, select Global from the Alerts drop-down menu.

Choosing a specific Site displays Alerts only from the chosen Site:

Alerting since	Alert name	Site	Node	Severity	Summary
Fri, 01 Mar 2024, 10:40:37 GMT	PixStorPoolData	London	hw-dev-pixit-01	Critical	PixStor pool data capacity alert
Thu, 22 Feb 2024, 10:52:21 GMT	ServiceFailed	London	hw-dev-pixit-01	Info	NetworkManager-wait-online.service has failed to ...

## Alert Types

Above the Alert table, numbered filter buttons display the count of each type of Alert.

Select a button to filter for the specific Alert type.

All alerts 6

Click the All alerts button to view all alerts

Critical alerts 3

Click the Critical alerts button to filter for all Critical alerts

Warning alerts 0

Click the Warning alerts button to filter for all Warning alerts

Info alerts 3

Click the Info alerts button to filter for all Info alerts

## Categories

To filter for an Alert category, enter text into the filter bar.

Alerts are filtered where the Alert name matches the text in whole or part.



Alerting since	Alert name	Site	Node	Severity	Summary
Tue, 30 Jan 2024, 09:48:08 GMT	SiteHealth	ob1	-	Critical	All workers are offline
Tue, 30 Jan 2024, 09:48:08 GMT	WorkerHealth	ob1	devpx6-jtucker-21ga-demo-77-1	Critical	Worker on devpx6-jtucker-21ga-demo-77-1 is offline

## Reordering

The alerts table columns can be reorganised for user preference.



 Reorder table

Click the vertical dots on the right hand side of the table and select the Reorder table button to open the table organizer

Re-arrange items in top to bottom order by dragging vertically up or down.

## Side bar organizer



Job info

Job details

Task stats

Job task statistics

File stats

Job file statistics

Save

## Global Settings

The global settings page controls settings which are applied across all pixstor sites participating in hub management.



Settings

Click the settings button to navigate to the Global Settings screen

## Ngenea Targets

ngenea provides the capability to off-site data or send data between pixstor sites. The destination for the data is known as a target.

ngenea targets provide the association between the pixstor file system and the target.

Typically a target is mapped to the location of a Space on the pixstor file system.

## Viewing Ngenea Targets

Clicking the global settings button in the main menu bar displays the list of ngenea targets:

Global Settings

Ngenea targets

Q Type to filter + Add Ngenea target

Status	Name	Type	Delete on recall?	Controls
Enabled	hwdev-datasync	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-delivery	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-localspace-backup-lon	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-localspace-backup-par	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-project1	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-project1-backup	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-project2-backup	S3	No	<span>Edit</span> <span>Delete</span>

Items per page: 20 1 Previous Next

## Filtering Ngenea Targets

Q Type to filter...

To filter the list of ngenea targets, type the target or part of a target name in the filter bar.

## Ngenea Target Wizard

### Navigating the Wizard



Click the close button to exit the wizard. Changes are not saved.

Next >

Click the Next button to advance to the next page of the wizard. The Next button is disabled until all required page elements are completed.

← Go back

Click the Go Back button to return to the previous wizard page.

Finish & Create >

Click the Finish & Create button to apply the changes displayed on the wizard summary page.

## Adding a Ngenea Target

**Important:** This function can only be performed by a Hub Administrator.

+ Add Ngenea target

Click the Add Ngenea target button to start the Ngenea Target Wizard

## Type & reference

Ngenea supports the following storage target types:

Storage Target Type	Description
S3	AWS S3 and S3 compatible targets
Microsoft Azure	Azure Blob Storage
SpectraLogic BlackPearl	Spectralogic DS3 targets
Google Object Storage	Google Cloud Storage

Select the required target type from the drop down menu.

### Type & reference

Configure Ngenea target basic settings

Storage target type

S3

Learn about [StorageTarget](#)

Ngenea Target reference

myproject

Reference key for the Ngenea Target, e.g myBucket

Enter a 'friendly name' for the ngenea target reference.

E.G.:

- myproject (such as 'deepspace')
- mydepartment (such as 'graphics')
- a descriptive phrase (such as 'referencematerial')

Depending on the Storage target type selected a Type-specific configu

## Type-specific config AWS S3 or compatible

### Type-specific config

Configure the Ngenea target according to the selected target type

#### Bucket

Type the bucket

Learn about [Bucket](#)

#### Access key ID

Type the access key ID

Learn about [AccessKeyId](#)

#### Secret access key

Type the secret access key

Learn about [SecretAccessKey](#)

#### Region

Type the region

Learn about [Region](#)

#### Storage server address

s3.amazonaws.com

X

Host name of the storage address. Learn about [Endpoint](#)

#### Storage server port

443

X

Port of the storage service. Learn about [Port](#)

#### Scheme

HTTPS

▼

Connection protocol. Learn about [Scheme](#)

#### Verify SSL

Validate SSL certificates of the target



Enter the settings as required, which must match those set in the S3 object storage provider:

Setting	Description
Bucket	The name of the storage bucket as specified at the object storage service.

Setting	Description
Access key ID	The unique access key for the AWS user account performing data transfers.
Secret access key	The unique security key for the AWS user account performing data transfers.
Region	The AWS (or S3 compliant provider) region hosting the S3 Cloud Storage
Storage server address	Not used for Amazon S3 Cloud Storage. For services which reside at specific IPs, such as AWS Snowball, MinIO or LocalStack, specific the host or IP address to connect to.
Storage server port	The TCP/IP port used to communicate
Scheme	HTTP or HTTPS transfer. HTTPS is recommended. Data integrity cannot be guaranteed over HTTP transfer schemes.
Verify SSL	Whether to verify the SSL connection of the target. Disabling the SSL verification allows connections to storage targets which do not provide valid SSL certificates. Connecting to invalid SSL certificates is insecure.

## Type-specific config Microsoft Azure

### Type-specific config

Configure the Ngenea target according to the selected target type

**Access key**

Learn about [AccessKey](#)

**Schema**

HTTPS
 ▼

Connection protocol. Learn about [Scheme](#)

**Container**

Learn about [Container](#)

**Storage account**

Learn about [StorageAccount](#)

Enter the settings as required, which must match those set in the Azure object storage provider:

Setting	Description
Access key ID	The unique access key for the Azure user account performing data transfers.
Scheme	HTTP or HTTPS transfer. HTTPS is recommended. Data integrity cannot be guaranteed over HTTP transfer schemes.
Container	The storage container for the blob data.
Storage account.	The Azure namespace containing the Container

## Type-specific config Spectra Logic BlackPearl

### Type-specific config

Configure the Ngenea target according to the selected target type

**Bucket**  
  
[Learn about Bucket](#)

**Access key ID**  
  
[Learn about AccessKeyId](#)

**Secret access key**  
  
[Learn about SecretAccessKey](#)

**Storage server address**  
  
Host name of the storage address. [Learn about Endpoint](#)

Enter the settings as required, which must match those set in the BlackPearl DS3 object storage provider:

Setting	Description
Bucket	The name of the storage bucket as specified at the object storage service.
Access key ID	The unique access key for the BlackPearl user account performing data transfers.
Secret access key	The unique security key for the BlackPearl user account performing data transfers.
Storage server address	The FQDN hostname of the BlackPearl.

## Type-specific config Google Object Storage

### Type-specific config

Configure the Ngenea target according to the selected target type

**Bucket**

[Learn about Bucket](#)

**Google authentication JSON**

```
{}
```

X

[Learn about CredentialsJSON](#)

Enter the settings as required, which must match those set in the Google Cloud Storage object storage provider:

Setting	Description
Bucket	The name of the storage bucket as specified at the object storage service.
Access key ID	Enter the contents of the JSON key for the user or service account granted permission to transfer data to Cloud Storage bucket. For more information refer to <a href="#">Google documentation</a>

**Important:** If the Ngenea Target is to be used as a backup only target, do not define JSON information in the Google Authentication JSON. Instead define keyword `CredentialsFile` with the path to the file containing JSON credentials on pixstor. For more information refer to [Backup Only Ngenea Targets](#).

## Type-specific config Filesystem Mount

### Type-specific config

Configure the Ngenea target according to the selected target type

**Target mount point**

Mount point of the storage target.  
Maps to `StoreObjectName`, `RetrieveObjectName` and `EnsureMountPoint`.  
[Learn about MigrationTargetFolder](#)

Enter the settings as required, which must match the location of the NAS mount point on the pixstor:

**Important:** Target mounts points are site-specific however Hub will create the target across all sites.

Setting	Description
Target mount point	The location of the POSIX compliant mounted storage. E.G. If the external POSIX storage is mounted on /mmfs1/myexternalnas enter /mmfs1/myexternalnas

## Migration

### Type-specific config

Configure the Ngenea target according to the selected target type

**Target mount point**

Type the target mount point

Mount point of the storage target. Maps to StoreObjectName, RetrieveObjectName and EnsureMountPoint. Learn about [MigrationTargetFolder](#)

Configure the migration settings as required to handle data migration accordingly:

Setting	Description
File match	Refer to the RegEx Filters example table below
Delete on recall	Determines whether to delete the recalled data from the external storage target after the data has been successfully recalled.
Backup-only target	Determines whether the target will be used to hold backup, not live data. Required to backup a Space. Refer to <a href="#">Backup Only Ngenea Targets</a>

Example regex filters where a space named myspace is present on the pixstor filesystem at location /mmfs1/data/myspace:

RegEx Filter Examples	Outcome
/mmfs1/data/myspace/( .*)	Data with the myspace folder is eligible for ngenea operations. Dehydrated files within the myspace folder are present at the root of the storage target.
/mmfs1/data/(myspace/.*)	The myspace directory and data within is eligible for ngenea operations. The myspace folder is present at the root of the storage target.
/mmfs1/data/myspace/subdirectory/( .*)	Data with the subdirectory of the myspace directory is eligible for ngenea operations. Dehydrated files within the subdirectory of the myspace directory are present at the root of the storage

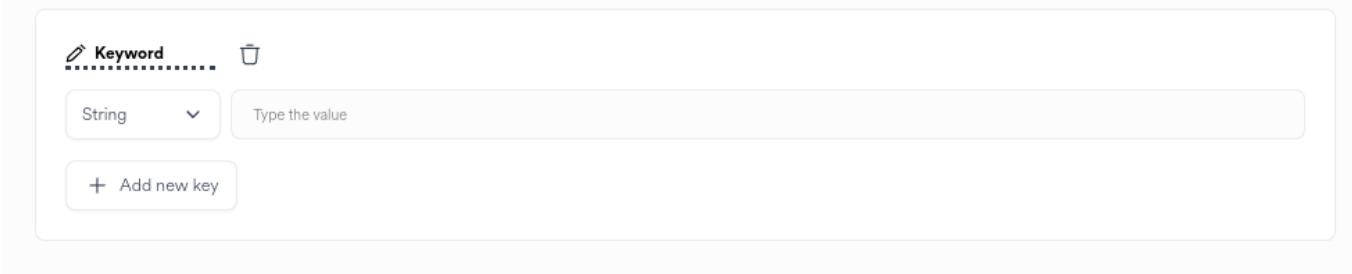
## RegEx Filter Examples

RegEx Filter Examples	Outcome
/mmfs1/data/myspace/ (subdirectory/.*)	target. The myspace directory is not present. Data immediately within the myspace directory (other than that within the subdirectory) is not eligible for ngenea operations.

## Advanced configuration

### Advanced configuration

Define a custom configuration setting for the ngenea target



The screenshot shows a user interface for defining a custom configuration setting. At the top, there is a field labeled "Keyword" with a pencil icon and a delete icon. Below this is a dropdown menu set to "String" with a "Type the value" input field next to it. At the bottom of the interface is a button labeled "+ Add new key".

To add configuration settings to a target to control specific behaviour during ngenea data operations.

+ Add new key

Click the Add new key to define a new configuration setting

Keyword

Enter the name of the configuration setting in the Keyword field

String

Numeric

Boolean

Select the type of configuration setting from the drop down menu. Choose or enter the value for the configuration setting.

Example of added Advanced configuration settings:

## Advanced configuration

Define a custom configuration setting for the ngenea target

The screenshot shows the 'Advanced configuration' section with two key-value pairs. The first pair is 'ACLSave' with a value of 'True'. The second pair is 'EscapeNames' with a value of 'False'. There is also a button to 'Add new key'.

ACLSave	True
EscapeNames	False

+ Add new key

## Summary

Upon completing the wizard steps a summary is presented:

The summary page lists the following configuration details:

- You named Ngenea target as **myclouddata** [Go back and edit](#)
- You configured '**mycloudbucket**' as bucket, '**eu-west-1**' as region [Go back and edit](#)
- You configured these advanced keys: **ACLSave, EscapeNames, ShadowFolderMetadataSave, StorageClass** [Go back and edit](#)

**Finish & Create >**

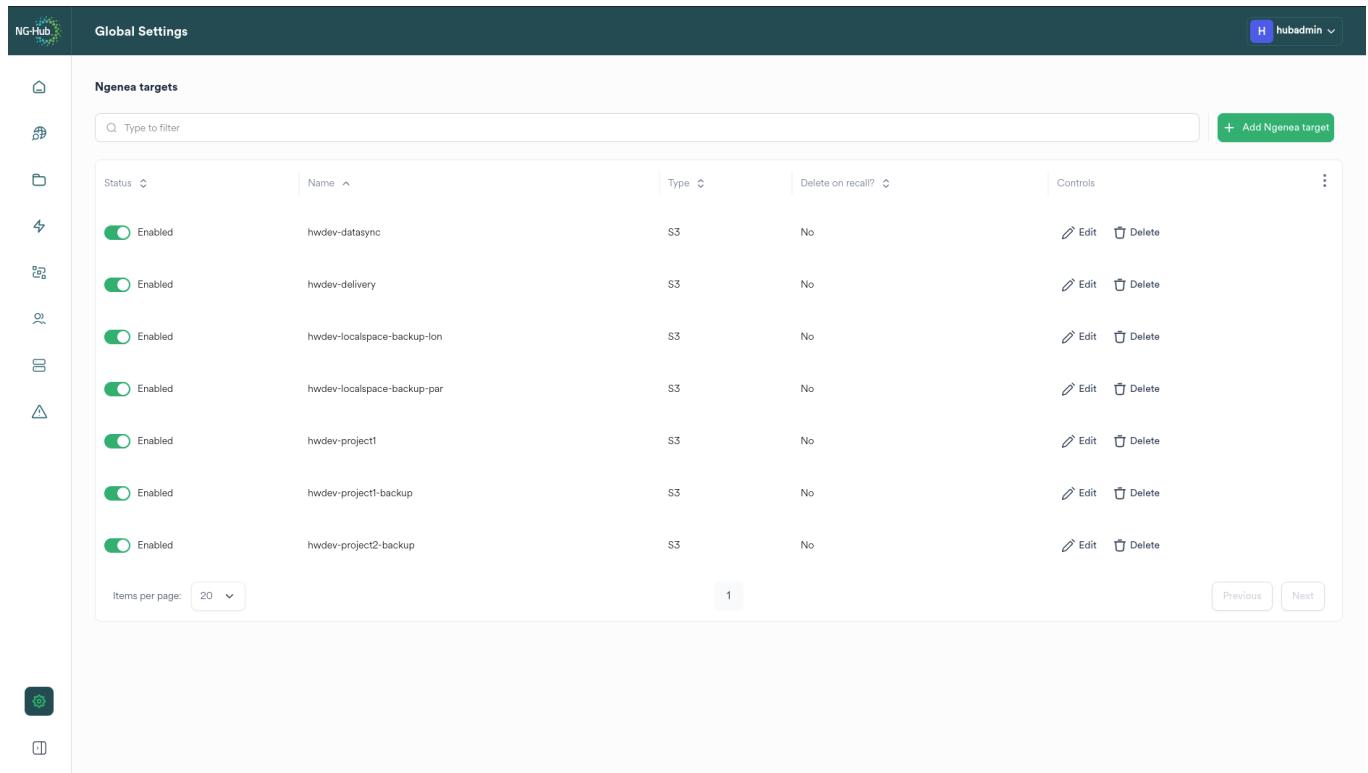
Click the Finish & Create button to apply the changes displayed on the wizard summary page.

Alternatively [Go back](#) and change the proposed configuration as required or [close](#) the wizard to cancel the creation of the ngenea target.

## Editing an Ngenea Target

**Important:** This function can only be performed by a Hub Administrator.

Clicking the global settings button in the main menu bar displays the list of ngenea targets:



The screenshot shows the NG-Hub Global Settings interface with the 'Ngenea targets' list. The left sidebar has icons for Home, Help, File, Refresh, Settings, and Help. The top right shows a user 'hubadmin' with a dropdown. The main area has a table with columns: Status, Name, Type, Delete on recall?, and Controls. A search bar at the top says 'Type to filter' and a green button says '+ Add Ngenea target'. The table lists seven targets, all of which are 'Enabled' and have 'S3' as the type. The 'Delete on recall?' column shows 'No' for all. The 'Controls' column for each row has 'Edit' and 'Delete' buttons. At the bottom, there are buttons for 'Items per page: 20', a page number '1', and 'Previous' and 'Next' buttons.

Status	Name	Type	Delete on recall?	Controls
Enabled	hwdev-datasync	S3	No	Edit  Delete
Enabled	hwdev-delivery	S3	No	Edit  Delete
Enabled	hwdev-localspace-backup-lon	S3	No	Edit  Delete
Enabled	hwdev-localspace-backup-par	S3	No	Edit  Delete
Enabled	hwdev-project1	S3	No	Edit  Delete
Enabled	hwdev-project1-backup	S3	No	Edit  Delete
Enabled	hwdev-project2-backup	S3	No	Edit  Delete



Click the edit icon on the required ngenea target row to edit the ngenea target

- Modify the ngenea target settings as required. Refer to [Adding a Ngenea Target](#) for settings guidance.

## Ngenea target settings



### Type & reference

#### hwdev-project1

Enabled

### Type-specific config

#### Migration

#### Key setup

##### Storage target type

S3

[Learn about StorageTarget](#)

### Type-specific config

##### Bucket

hwdev-project1



[Learn about Bucket](#)

##### Access key ID

Type the access key ID

Leave empty to keep this unchanged.

##### Secret access key

Type the secret access key

Leave empty to keep this unchanged.

##### Region

eu-west-1



[Learn about Region](#)

##### Storage server address

**Save**

## Deleting an Ngenea Target

**Important:** This function can only be performed by a Hub Administrator.

Clicking the global settings button in the main menu bar displays the list of ngenea targets:

NG-Hub

Global Settings

Hubadmin

**Ngenea targets**

Type to filter

+ Add Ngenea target

Status	Name	Type	Delete on recall?	Controls
Enabled	hwdev-datasync	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-delivery	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-localspace-backup-lon	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-localspace-backup-par	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-project1	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-project1-backup	S3	No	<span>Edit</span> <span>Delete</span>
Enabled	hwdev-project2-backup	S3	No	<span>Edit</span> <span>Delete</span>

Items per page: 20

1

Previous Next



Click the delete icon on the required ngenea target row to delete the ngenea target

A confirmation dialog is raised:

Delete Ngenea target



Do you wish to delete this Ngenea target?

Yes

No

- Click Yes to delete the ngenea target. This action is irreversible.
- Alternately click no, or close the confirmation dialog.

## Backups

pixstor provides the capability to backup data within a Space on a per-Site basis to specific Ngenea Targets.

Hub enables configuration to be set for the Ngenea Backup service running on pixstor sites.

**Important:** Best practice is to treat backup data separately from live data. Hub will only configure a backup to an Ngenea target set as a `backup-only` target type.

## Configuring Backups

To perform a backup for a Space on a Site, the following actions must be undertaken:

- An Ngenea Target is provisioned with `Backup-Only` enabled
- The Site from which to backup is enabled to participate in backups
- An appropriate backup schedule is set
- The Space is enabled for backup, selecting the Site and the Ngenea Target

## Backup Only Ngenea Targets

An Ngenea Target can be utilised for backups of a Space.

Where a Space exists across multiple Sites, optionally, each site can perform its own backup of the Space.

Multiple Sites are not permitted to backup to the same Ngenea Target.

### Backup-only target

Whether this target is for backups

## Enabling Site for Backup

pixstor provides the capability to backup data within a Space on a per-Site basis to specific Ngenea Targets.

Hub enables configuration to be set for the Ngenea Backup service running on pixstor sites.

If the Site is enabled to participate in backups, each Space requires additional configuration to enable the per-Space backup.

## Backup

**Enable backup** 

Do you want this site to participate in backups?

---

**Frequency**

Mins or Hours

Daily or Weekly

---

Every  Mon  Tue  Wed  Thu  Fri  Sat  Sun

At  :  UTC+0

Determine the required frequency of the backup.

**Schedule**

**Frequency**

Mins or Hours

Daily or Weekly

---

**Interval**    

Choosing Mins or Hours will ensure that the schedule will run on the next interval set.

E.G: \* 1 hour: The backup will run on the next hour (12.00, 13.00) \* 15 mins: The backup will run on the next 15 minute interval past the hour (15, 30, 45, 00)

## Schedule

### Frequency

Mins or Hours

Daily or Weekly

Every  Mon  Tue  Wed  Thu  Fri  Sat  Sun

At  :  UTC+0

Choosing Daily or Weekly allows the backup to be scheduled once per chosen day at a specific time of day.

**Hint:** The schedule time is in UTC+0. You may need to account for any timezone offset of the site when scheduling.

Optional tuning can be set for the backup operation in the Advanced Configuration.

Refer to the Ngenea Backup documentation prior to applying any parameters.

## Advanced configuration

Leave fields blank to use defaults

### Number of threads

Type a number

### Hashing threshold (MB)

Type a number

### Timeout (seconds)

Type a number

### Connection timeout (seconds)

Type a number

### Number of connection retries

Type a number

## Enabling Space Backup

### Space backup

#### Site(s) to backup

2 sites selected

LON x

ROM x



#### Global exclusion rules

##### Exclude folders

Pick folders to exclude ↗

##### Exclude filetypes

Type the file extension and hit Return key

- Select the Sites which will perform backups for this space
- Define any Global Exclusions

## Global Exclusion Rules

Global exclusions apply to all Site backup configurations for the Space unless overridden on a per-Site basis.

Pick folders to exclude ↗

Click the Pick folders to exclude button to raise the folder browser dialog

Use the folder browser to unselect items which will not be included (hence excluded) from backups.

#### Unselect items to exclude



dataasync > dubrovnik

Paris ▼

Name	Size	Number of files	Date created	⋮
<input checked="" type="checkbox"/> dpx	8.2 GB	251	Wed, 24 Jan 2024, 10:24:17 GMT	
<input checked="" type="checkbox"/> png	2.8 GB	250	Wed, 24 Jan 2024, 10:24:18 GMT	

Items per page: 20 ▼ 1 Previous Next

Confirm

#### Exclude filetypes

Type the file extension and hit Return key

Define file extensions which must be excluded from backups across all Sites. E.G. \*.tmp

**Hint:** If multiple Sites are selected, backup configuration is presented per-Site. Optionally each site can specify its own settings.

For each Site participating in Space backup a configuration panel is displayed:

**Exclusion rules**

Do you want to use the global exclusion rules from above for this site?

**Ngenea target**

Choose where to store the backed up files

**Number of versions**

2

**Inactive threshold (days)**

Type a number

If left blank or 0, automatic tier change of inactive files is disabled.

**ACL save**

Do you want ACL entries to be saved?

**Shadow folder metadata save**

Do you want shadow folder metadata to be saved?

Review the backup settings for each site:

Setting	Description
Exclusion Rules	By default the Site inherits the Global exclusion rules. To override the rules, deselect the slider and define any exclusions using the same methods as described above.
Ngenea Target	Choose an available Ngenea Target. Only targets configured as Backup-Only target and not currently in use for other Sites are available for selection.
Number of versions	Defines the maximum number of all file versions within a remote storage location for the targeted Fileset before Ngenea Backup prunes excess versions. If the number of versions of a file has exceeds the defined threshold, the oldest version will be deleted.
Inactive threshold(days)	

Setting	Description
	Defines the threshold of days for a defined CRITERIA (E.G.: modification) after which each file within the monitored Independent Fileset is validated when INACTIVE_THRESHOLD is enabled. Those files where their defined CRITERIA exceeds this value will be re-copied from the local PixStor filesystem to storage container into an in-active tier. All instances of the file in typical standard storage classes are transitioned to older file versions.
ACL save	If enabled, all of the related NFSv4 ACL entries for an ingested file will be included in the remote object's metadata when a file is backed up. This allows Ngenea to apply those NFSv4 ACL entries when recalled or stubbed.
Shadow folder metadata save	If enabled, additional data objects will be created within the remote storage target as this data is stored as an object within the cloud provider. If enabled, all the directory modification, creation and deletion operations between subsequent backup runs will be stored in remote storage. This allows the restoration or ngrecall of directories with NFSv4 ACL and POSIX permission support. This data will also be version controlled similarly to files. This operation will occur if the permissions or ACL entries are edited on any directories meaning that each change to ACLs will be updated with regular runs of backup.

## Administration Guide

Ngenea Hub harnesses the power of [Ngenea](#) to provide global workflows, enabling your data to be where you need it, when you need it.

## Installation

### Notice

Hub versions 1.18+ have additional requirements

If an upgrade is being performed from a version < 1.18 please note changes in the Installation and Upgrade guides

A deployment of Ngenea Hub comprises two main components:

- **Ngenea Hub** - the central management point, from which all tasks are managed
- **Ngenea Worker** - worker agents, installed on individual Ngenea servers, that execute the Ngenea tasks

Ngenea Worker are installed on one or more nodes in a Site, which typically represents a single Ngenea cluster or location.

Ngenea Hub needs to be accessible from all Ngenea Workers on the following ports:

- 6379/tcp
- 5672/tcp
- 8000/tcp

8000/tcp is required for Hub versions  $\geq 1.18$

## Installing Ngenea Hub

Ngenea Hub can be installed in a number of ways, use one of the methods described below.

### CentOS / Redhat - Online Installation

Configure Docker Authentication

**Note:** This step is not required on PixStor systems

Configure Docker authentication for `eurepo.arcapix.com`.

```
docker login eurepo.arcapix.com
```

Installing Ngenea Hub

Transfer the `ngenea-hub` rpm to the target system.

Install the `ngenea-hub` package via yum.

```
yum install ngenea-hub-<version>.rpm
```

Optionally, create an initial Ngenea Hub configuration file at `/etc/sysconfig/ngeneahub`. This file contains the credentials which will be required for deploying workers, and can also be edited to use external queue systems prior to starting the Ngenea Hub service. This file will be created automatically if it does not exist when the service is started.

```
ngeneahubctl createconfig
```

Enable and start the Ngenea Hub service.

```
systemctl enable --now ngeneahub
```

Enable and start the Ngenea Hub frontend service.

```
systemctl enable --now ngeneahub-frontend
```

Check the status of the service with:

```
ngeneahubctl status
systemctl status ngeneahub-frontend
```

## CentOS / Redhat - Offline installation

The `ngeneahub` service will attempt to pull the required docker images from the Ngenea software repository servers. In situations where this is not possible (due to network restrictions, for instance), the containers can be installed via additional RPM: `ngenea-hub-images`, available at the same location as the main RPM.

Once the RPMs are transferred to the target system, they can be installed using rpm.

```
rpm -ivh ngenea-hub-<version>.rpm ngenea-hub-images-<version>.rpm
```

## Cloud Deployment

Coming soon: image-based deployment of Ngenea Hub in the cloud.

## Container Native Deployment

It is possible to deploy Ngenea Hub using standard container management tools and processes.

Please [contact us](#) to discuss.

## Ngenea Worker

**Pre-requisite:** Ngenea Server software installed and configured

**Pre-requisite:** File systems accessible on nodes where `ngenea-worker` is installed are configured with `auto-inode-limit`.

This can be achieved via: `mmchfs <file system name> --auto-inode-limit`

Install the `ngenea-worker` package via rpm.

```
yum install ngenea-worker
```

Add the appropriate worker configuration.

**Note:** The following section is new for version 1.18+

Run the join command to ensure TLS communications. Provide the username and password of a registered hub admin user to successfully authenticate. Refer to [Hub Initial Configuration](#) to add a hub admin user.

```
ngenea-worker join --user <USERNAME>
```

Example of `ngenea-worker join` with worker configuration option `api_secure=false`:

```
root@myserver:/root ngenea-worker join --user hubadmin
hubadmin's password:
Attempting to auth the hub using the provided credentials...
Authenticated as user onprem-worker.
Storing the client certificates for the worker...
Client certificate stored at /etc/pki/tls/certs/onprem.crt
Client private key stored at /etc/pki/tls/private/onprem.key
Storing the root CA for NgeneaHub...
Root CA stored at /etc/pki/tls/certs/ng-hub-ca.crt
```

Enable and start the `ngenea-worker` systemd unit.

```
systemctl enable --now ngenea-worker
```

## Product Interoperability Matrix

Ngenea Hub requires specific versions of Ngenea.

- All Ngenea Hub managed sites must use the same version of Ngenea
- Mixed versions are unsupported

### Ngenea

The following table defines the supported Ngenea versions for each version of Ngenea Hub.

Ngenea Hub version	Ngenea version	minimum Ngenea version	maximum Ngenea version
2.2.5	1.28.0	1.28.0	
2.2.4	1.28.0	1.28.0	
2.2.3	1.28.0	1.28.0	
2.2.2	1.28.0	1.28.0	
2.2.1	1.28.0	1.28.0	
2.2	1.28.0	1.28.0	
2.1	1.27.0	1.27.0	
2.0.2	1.25.0	1.25.0	

<b>Ngenea Hub version</b>	<b>Ngenea version</b>	<b>minimum Ngenea version</b>	<b>maximum Ngenea version</b>
1.30.0	1.27.0	1.27.0	
1.29.0	1.27.0	1.27.0	
1.28.0	1.26.1	1.26.1	
1.27.0	1.25.0	1.25.0	
1.26.0	1.24.1	1.24.1	
1.25.0	1.24.1	1.24.1	
1.24.0	1.21.0	1.22.0	
1.23.0	1.21.0	1.22.0	
1.22.0	1.21.0	1.22.0	
1.21.0	1.21.0	1.21.0	
1.20.0	1.21.0	1.21.0	
1.19.0	1.21.0	1.21.0	
1.17.3	1.20.1	1.20.1	
1.17.0	1.19.0	1.19.0	
1.13.0-1.16.0	1.16.0	1.19.0	
1.10.0-1.12.0	1.15.0	1.16.0	
1.9.0	1.14.0	1.14.0	
1.8.0	1.13.0	1.14.0	
1.7.0	1.12.0	1.12.0	
1.6.0	1.12.0	1.12.0	
1.5.0	1.12.0	1.12.0	
<=0.6.0	1.9.0	1.11.0	

## Event Based Orchestration

The following table defines the supported Event Based Orchestration versions for each version of Ngenea Hub.

<b>Ngenea Hub version</b>	<b>Event Based Orchestration version</b>
1.30.0	1.0.0

Once installed, additional features such as Search may be set up as described in [Feature Set-up](#)

Ngenea Hub software must align with Ngenea software. Ensure to review the [Product Interoperability Matrix](#) and align software versions accordingly.

## Upgrade

**Note:** Hub versions 1.18+ have additional requirements

If an upgrade is being performed from a version < 1.18 please note changes in the Installation and Upgrade guides

Ensure to review the [Product Interoperability Matrix](#) and align software versions accordingly.

## Before you start

Before upgrading, you must wait for any pending or active jobs to complete, otherwise they may be lost or present an incorrect future state.

Scheduled workflows must be temporarily disabled prior to upgrading to prevent new jobs being submitted during the upgrade process.

## Backup Workflows

Ngenea Hub ships with some default workflows. New releases may make changes to these workflows, so any customisations to them may be lost during upgrade. For safety, workflows should be backed-up before upgrading.

The easiest way to backup workflows is using [ngclient](#)

```
ngclient workflows list > workflows_backup.json
```

See [NGCLIENT-WORKFLOWS](#) for more information.

## Stop Services

**Note:** Hub versions 2.1+ have additional requirements

When upgrading Hub 2.1+, the additional service `ngenea-worker-frontend` is required to be actioned

First, shutdown Ngenea Worker on all nodes

```
systemctl stop ngenea-worker
```

Note that any Ngenea Worker packages pre-1.12.0 will use the older syntax:

```
systemctl stop ngenea-worker@SITENAME
```

Then shutdown Ngenea Hub

```
systemctl stop ngeneahub
systemctl stop ngeneahub-frontend
```

**Warning:** Not stopping the workers before upgrading may result in jobs being stuck as `PENDING`. If this happens, restarting the workers using `systemctl restart ngenea-worker` will allow jobs to start running again.

## Upgrade Packages

Download the latest RPMs from the Download page.

Upgrade Ngenea Hub

```
yum upgrade ngenea-hub-<version>.rpm
```

As with [Installation](#), for offline situations, the Ngenea Hub base and image rpms can be upgraded with

```
rpm -Uvh ngenea-hub-<version>.rpm ngenea-hub-images-<version>.rpm
```

Upgrade Ngenea Worker on all nodes

```
yum upgrade ngenea-worker-<version>.rpm
```

## Upgrade Configurations

**Warning:** If upgrading from Ngenea Hub version 1.17 or older, you must convert worker configuration to 1.18+ format. Please refer to the appropriate worker configuration and worker join steps as described in [Ngenea Worker](#). Installation of the worker is not required as this has been achieved in the prior Upgrade Packages step.

## Restart Services

First, startup Ngenea Hub

```
systemctl start ngeneahub
systemctl start ngeneahub-frontend
```

Then start Ngenea Worker on all nodes

```
systemctl start ngenea-worker
```

If any scheduled workflows were disabled, they can now safely be re-enabled.

## Validation

Check the status of the Ngenea Hub service with:

```
ngeneahubctl status
systemctl status ngeneahub-frontend
```

Check the status of Ngenea Worker service with

```
systemctl status ngenea-worker
```

## Restoring Workflows

Check the workflows post-update. If there are any issue or inconsistencies with the upgraded workflows, they can be restored from the backup created pre-upgrade. This is also done using `ngclient`.

Any workflow which is missing can be re-imported using

```
ngclient workflows import <workflow_file>
```

Any workflow which has changed can be restored using

```
ngclient workflows update <id> <workflow_file>
```

Note, `ngclient` only allows importing or updating single workflows at a time. The `workflow_file` passed to the above commands must only contain a single workflow definition.

## Configuration

### Hub Initial Configuration

Once all services are up, create an admin user with:

```
ngeneahubctl adduser
```

Register an initial site (replacing `SITENAME`) (see [Worker Installation](#) for enabling a site's worker agents).

```
ngeneahubctl addsite SITENAME
```

Log into the UI at <http://server.address:8000>.

### Hub Configuration

#### Settings

The main configuration file for Ngenea Hub is at `/etc/sysconfig/ngeneahub`. This is an environment file which holds the information required for connecting to the various backend services.

#### Mandatory Settings

Setting	Description
<code>DJANGO_SECRET</code>	Secret string used secure signed data within django
<code>POSTGRES_DB</code>	Internal database name
<code>POSTGRES_USER</code>	Internal database username

Setting	Description
POSTGRES_PASSWORD	Internal database password
Optional settings	
Setting	Description
REDIS_HOST	Address of the Redis queue results store. Defaults to the container service address.
WORKERS	The number of gunicorn workers to spawn for serving API requests. Default to 8.
API_TIMEOUT	The timeout for requests against the API server, in seconds. Default: 30
GATEWAY_TIMEOUT	The timeout for requests going through nginx, in seconds. This should be set to greater or equal than API_TIMEOUT. Default: 60
CONSUMER_TIMEOUT	The timeout for rabbitmq consumer delivery acknowledgement in seconds. Default: 10800000 (3 hours)
HUB_PORT	User configurable hub port
WEB_BIND_IP	User configurable web bind IP
PUBLIC_URL	User configurable base url for the hub stack to be served from, must not end in a trailing slash.
WORKER_THREADS	The default number of celery concurrency threads to deal with multiple queued tasks for all celery based containers. This can be overwritten by container specific settings. Defaults to 2.
CELERY_THREADS	The number of main celery container concurrency threads to deal with multiple queued internal tasks. More threads means that more internal tasks and system tasks can run in parallel.
DAG_THREADS	The number of celery-dag container concurrency threads to deal with multiple queued DAG based tasks. Defaults to 7. More threads result in faster task resolutions for all job types and more frequent job updates.
EVENT_THREADS	The number of celery-events container concurrency threads to

Setting	Description
	deal with multiple queued event reporting tasks. More threads ensure that snapdiff events can be reported to the hub faster.
RESULT_THREADS	The number of celery-results container concurrency threads to deal with multiple queued result reporting tasks. More threads mean streamed task results can report the the hub faster.
HEARTBEAT	(bool) Key for Disabling/Enabling celery heartbeats, default: true (enabled)
GOSSIP	(bool) Key for Disabling/Enabling celery gossip, default: false (disabled)
MINGLE	(bool) Key for Disabling/Enabling celery mingle, default: false (disabled)
REDIS_HEALTH_CHECK_INTERVAL	(int) The Redis backend supports health checks. This value must be set as an integer whose value is the number of seconds between health checks. default: 60
REDIS_TCP_BACKLOG	(int) In high requests-per-second environments you need a high backlog in order to avoid slow client connections issues to redis. Default: 511
REDIS_SOCKET_TIMEOUT	(int) When there are network issues redis backend connection sockets can become stale, this timeout setting will reset the socket connection after this value in seconds after becoming idle and resume operation. Default: 60
CELERY_SOCKET_TIMEOUT	(int) When there are network issues redis broker sockets can become stale, this timeout setting will re-acquire the socket after becoming idle for this value in seconds and resume operation. Default: 60
CELERY_CONNECTION_TIMEOUT	(int) When there are network issues redis broker connection via the acquired sockets can become

Setting	Description
	stale, this timeout setting will reset the connection after becoming idle for this value in seconds and resume operation. Default: 60
EXPIRE_OLD_JOBS_INTERVAL	(cron) schedule for when old job expiration will be run. When the task runs, jobs older than the configured jobs_ttl will be expired. Default: 0 0 * * * (minutes can be random from 0-59)
REMOVE_OLD_SEARCH_RESULTS_INTERVAL	(cron) schedule for when search result removal will run. When the task runs, search results older than the configured search_result_ttl will be expired. Default: 0 0 * * * (minutes can be random from 0-59)
INVALIDATE_CANCELLED_JOB_TASKS_INTERVAL	(cron) schedule for when cancelled jobs are revoked. When the task runs, any tasks still active in a cancelled job will be automatically cancelled. Default: 0 * * * * (minutes can be random from 0-59)
CLEANUP_OLD_EVENTS_INTERVAL	(cron) schedule for when old snapdiff events will be cleaned up. When the task runs, events for all but the 2 most recent completed snapdiff jobs per workflow will be deleted. Default: 0 * * * * (minutes can be random from 0-59)
INACTIVE_TASKS_INTERVAL	(cron) schedule for when inactive tasks will be invalidated. When the task runs, any STARTED task which is not actually running in a worker will be marked as FAILED. Default: 0 * * * * (minutes can be random from 0-59)
SYNC_SITE_SETTINGS_INTERVAL	(cron) schedule for when sync of the site settings will be run. When the task runs, the site settings will be created or updated in the DB. Default: 0 * * * * (minutes can be random from 0-59)
SYNC_GLOBAL_SETTINGS_INTERVAL	(cron) schedule for when sync of the global settings will be run.

Setting	Description
	When the task runs, the global settings will be sent to sites to be in sync. Default: 0 * * * * (minutes can be random from 0-59)
REFRESH_SITE_ANALYTICS_INTERVAL	(cron) schedule for when refresh of the site analytics will be run. When the task runs, refresh of site analytics will be triggered. Default: 37 */12 * * *
SYNC_STORAGE_POOLS_INTERVAL	(cron) schedule for when sync of the storage pools will be run. When the task runs, storage pools will be synced. Default: */30 * * *
SYNC_REMOTE_SERVERS_INTERVAL	(cron) schedule for when sync of the remote servers will be run. When the task runs, remote servers will be synced. Default: 0 0 * * * (minutes can be random from 0-59)
SYNC_SPACES_QUOTA_INTERVAL	(cron) schedule for when sync of the spaces' quotas will be run. When the task runs, spaces' quotas will be synced. Default: */30 * * *
SYNC_SPACES_INTERVAL	(cron) schedule for when sync of spaces will be run. When the task runs, spaces will be synced. Default: 0 * * * * (minutes can be random from 0-59)
SYNC_ALERTS_INTERVAL	(cron) schedule for when sync of alerts will be run. When the task runs, alerts will be fetched from all sites. Default: * * * *

## Enabling LDAP/Active Directory Authentication

To enable LDAP/Active Directory Authentication, provide the following settings in the `/etc/sysconfig/ngeneahub` configuration file.

Setting	Description
LDAP_ENABLED	(bool) Key for Disabling/Enabling Authentication. default: false (disabled)
LDAP_HOSTNAME	The hostname of the LDAP/AD server
LDAP_USERNAME	The username to use for the LDAP/AD bind
LDAP_PASSWORD	The LDAP/AD bind password
LDAP_USER_SEARCH	

Setting	Description
LDAP_USER_SEARCH	An LDAPSearch object that identifies the set of relevant user objects. E.G. cn=Users,dc=MYDOMAIN,dc=MYCOMPANY,dc=COM
LDAP_GROUP_SEARCH	An LDAPSearch object that identifies the set of relevant group objects. E.G. ou=Security,ou=OurGroups,dc=MYCOMAIN,dc=MYCOMPANY,dc=COM
LDAP_MIRROR_GROUPS	(bool) If AUTH_LDAP_MIRROR_GROUPS is True, then every time a user logs in, LDAPBackend will update the database with the user's LDAP groups. default: false (disabled)

## Server Configurations

Some settings are stored in the Ngenea Hub DB.

They can be viewed and changed via the REST API `/api/configurations/` endpoint.

See [Configuration](#) for more details.

## Docker Compose configuration

The `docker-compose` file is stored in `/usr/share/ngeneahub/docker/docker-compose.yml`.

This can be extended by creating an override file at `/usr/share/ngeneahub/docker/docker-compose.override.yml`.

## Worker Configuration

**Note:** This configuration is new for versions 1.18+. Best practice is to backup any pre-1.18 worker configuration prior to conversion to the 1.18+ format.

The Ngenea Worker configuration should be added to `/etc/ngenea/ngenea-worker.conf`. The configuration is in ini format. For example:

```
[settings]
site = site1
api_host = localhost
api_port = 8000
api_secure = true
redis_port = 6379
gpfs_nodes = ["localhost"]
```

**Note:** `api_secure=true` requires a valid SSL certificate and is not compatible with self-signed SSL certificates.

`ngenea-worker` defaults to `api_secure=true` if the `api_secure` setting is not specified.

Refer to: [External SSL](#) for provisioning SSL certificates

Alternately, specify `api_secure=false` to disable use of SSL.

The following is a list of available settings:

Option	Type	Default	Required	Description
site	string		Yes	The name of the queue to listen to
api_host	string		Yes	The base url for Ngenea Hub, this will be the url without the https protocol or port.
api_port	string		Yes	The port that the Ngenea Hub is being hosted on, by default within Ngenea Hub it is 8000.
api_secure	string		No	If the API is behind a secure HTTPS connection, by default this is true. Refer to: <a href="#">External SSL</a> for provisioning SSL certificates if <code>api_secure=true</code> .
api_secure_verify	string		No	If the API requests should verify certificates, by default this is true.
threads	int	10	No	The number of concurrent tasks that can be run.
heartbeat	bool	true	No	Key for Disabling/Enabling celery heartbeats, by default Enabled.
gossip	bool	false	No	Key for Disabling/Enabling celery gossip, by default Disabled.
mingle	bool	false	No	Key for Disabling/Enabling celery mingle, by default Disabled.
redis_health_check_interval	int	60	No	The Redis backend supports health checks. This value must be set as an integer whose value is the number of seconds between health checks.

Option	Type	Default	Required	Description
redis_socket_timeout	int	60	No	The Redis results backend supports a socket connection timeout, this value must be set as an integer whose value is the number of seconds.
celery_socket_timeout	int	60	No	The Redis celery broker supports a socket timeout, this value must be set as an integer whose value is the number of seconds.
celery_connection_timeout	int	60	No	The Redis celery broker supports a socket connection timeout, this value must be set as an integer whose value is the number of seconds.
gpfs_nodes	list		No	A list of nodes to run the snapdiff policy scan on as a list of hostnames
enable_plugins	bool	false	No	Key for Disabling/Enabling worker plugin behaviour (currently in alpha), by default Disabled.
loglevel	str	INFO	No	Key for setting the worker loglevel (more specific to worker main process). valid choices are INFO, DEBUG, WARNING, CRITICAL, ERROR (by default INFO).

**Note:** The initial access credentials can be found in the `/etc/sysconfig/ngeneahub` configuration file on the Ngenea Hub server. By default, the `BROKER_PASSWORD` is used for both the `broker_url` and the `result_backend` passwords, and the `BROKER_USER` is used for the `broker_url` username.

## Passing Custom Config File to Ngenea Worker

The custom config file will be present in `/etc/ngenea/ngenea_config_arg.conf` file to run the systemd services. The format of the file is given below.

```
CONFIG=/etc/ngenea/ngenea-worker-custom.conf
```

**Note:** By default, this file will have the CONFIG commented to allow the default config to pass through if custom config file is not specified.

Uncomment the CONFIG in /etc/ngenea/ngenea\_config\_arg.conf file. Create a new worker config file (as ngenea-worker.conf) with different site name. Also site should be added to hub and worker using the commands listed below.

```
ngeneahubctl addsite <sitename>
ngenea-worker join --user <username> --site <sitename>
```

To Run ngenea-worker with multiple sites

To run services with two sites,

1. Create new service file same as /usr/lib/systemd/system/ngenea-worker.service with different filename (Eg: ngenea-worker-site1.service).
2. Create new custom config file same as /etc/ngenea/ngenea\_config\_arg.conf with different filename (Eg: ngenea\_config\_arg1.conf).
3. Create new worker config file same as /etc/ngenea/ngenea-worker.conf with different filename and give the filename in ngenea\_config\_arg1.conf.
4. In ngenea-worker-site1.service, change the value of EnvironmentFile=... to new custom config file created (Eg: EnvironmentFile=/etc/ngenea/ngenea\_config\_arg1.conf).
5. Now run systemctl start ngenea-worker.service and systemctl start ngenea-worker-site1.service.

### Setting Ngenea Worker debug level in systemd service script

In /usr/lib/systemd/system/ngenea-worker.service file, set the value of Environment=DYNAMO\_DEBUG=.. to true as below. It will be false by default. This debug level is more specific to tasks logging.

```
Environment=DYNAMO_DEBUG=true
```

### Feature Set-up

To use certain features in Ngenea Hub, additional set-up is required as described in this section.

### Search

The search feature provides the ability to search for files across one or more sites.

This page describes the steps required to set up the search feature.

For information on how to use the search feature, see [Search](#)

## Prerequisites

The search feature is only supported on workers running on a PixStor.

There are two backends which can provide search functionality to Ngenea Hub: **PixStor Search** and **PixStor Analytics**.

This document assumes that the desired backend has already been deployed, as described in the PixStor deployment guide. Be aware that neither backend will have been deployed by default.

## Configuration

### Search Backend

By default, Ngenea Hub will use the Analytics backend. If you want to use the PixStor Search backend instead, change the `search_backend` to `pixstor_search`, as described in [Global Configurations](#)

```
$ curl -s -X PATCH 'http://example.com/api/configurations/' -H 'Accept: application/json' -H "Authorization: Bearer $JWT_ACCESS_TOKEN" -H 'Content-Type: application/json' -d '{"search_backend": "pixstor_search"}'
```

All sites **must** use the same backend - all analytics or all PixStor Search.

### Elasticsearch URL

If you are using the Analytics backend and the worker is running on **PixStor 6**, you will need to change the `elasticsearch_url` for the site to `http://localhost:19200`, as described in [Site-specific Configurations](#)

```
$ curl -s -X PATCH 'http://example.com/api/sites/1/' -H 'Accept: application/json' -H "Authorization: Api-Key $APIKEY" -H 'Content-Type: application/json' -d '{"elasticsearch_url": "localhost:19200"}'
```

If not set, the `elasticsearch_url` will default to `localhost:9200`, which is correct for workers running on PixStor 5.

Different sites may configure a different `elasticsearch_url`, for example if one is PixStor 5 and another is PixStor 6.

## Search UI

Once configured, search can be used via the REST API as described in [Search](#)

To use search via the Ngenea Hub UI, you must first enable the `searchui` feature flag, as described in [Feature Flags](#)

For example, using `ngclient`

```
ngclient features enable searchui
```

## Cloud Functions

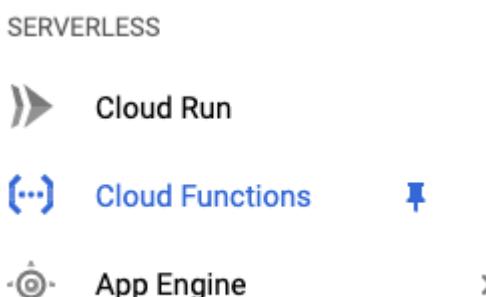
Cloud to Hub is a function intended to be running in the cloud. It runs in response to cloud storage events, triggering a job in Ngenea Hub to reflect the change onto another system (e.g. PixStor). This allows for keeping multiple systems in sync, using cloud storage as the source of truth.

The code is designed to work with any of the supported platforms (see above), and any event (create, delete, ...) with only changes to the `config.json` file, as described below.

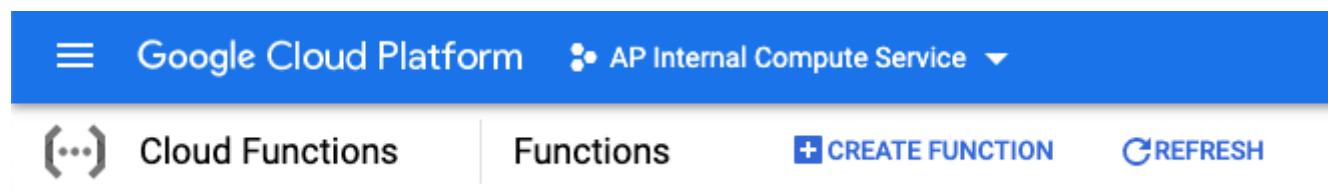
Currently supports:

### GCP Cloud Function

In the GCP console menu under Serverless, select **Cloud Functions**



Choose **Create Function**



In the first Configuration page:

1. Give the function a name
2. Select a region to run from. Usually best to be in the same region as the bucket we'll be using
3. Under trigger select **Cloud Storage** type
4. And **Finalise/Create** for the event type
5. Select the bucket to monitor

Then press **Save**

1 Configuration — 2 Code

## Basics

Function name \*  ?

Region  ?

## Trigger

### Cloud Storage

Trigger type  ?

Event type \*  ?

Bucket \*  BROWSE

Retry on failure ?

**SAVE**

CANCEL

If you wish to create a new service account for this function, use the following gcloud command to create a new service account and assign it the role `storage.objectViewer`

```
PROJECT_ID='GCP-PROJECT-1'
SERVICE_ACCOUNT_ID='ngeneahub-function'
ROLE_NAME='roles/storage.objectViewer'

gcloud iam service-accounts create $SERVICE_ACCOUNT_ID \
    --description='A service account to give the {{ brand_name }} \
function read access to GCS buckets' \
    --display-name=$SERVICE_ACCOUNT_ID

gcloud projects add-iam-policy-binding $PROJECT_ID \
    --member="serviceAccount:
```

```
$SERVICE_ACCOUNT_ID@$PROJECT_ID.iam.gserviceaccount.com" \
--role=$ROLE_NAME
```

Open up the **RUNTIME, BUILD AND CONNECTIONS SETTINGS** section

Under the **RUNTIME** tab at the bottom, select a **Runtime** service account that has the following permissions as a minimum (or the newly created service account from above):

- storage.objectViewer

Select **Next** to continue

**Runtime, build, connections and security settings** ^

**RUNTIME** **BUILD** **CONNECTIONS** **SECURITY**

Memory allocated \* ▼  
256 MB

Timeout \* seconds ?  
60

**Runtime service account** ?

Runtime service account –  
ngeneahub-function ▼

**Auto-scaling** ?

Minimum number of instances 0 Maximum number of instances 3000

If the Ngenea Hub doesn't have an external IP to connect to, you'll need a **VPC Connector** for the function to be able to access the Ngenea Hub private IP.

The creation of the **VPC Connector** is out of scope of these docs.

To select an existing **VPC Connector**, under the **RUNTIME, BUILD AND CONNECTIONS SETTINGS** section, select **Connections**.

From the VPC Connector drop down menu, select an existing connector and check the **Only route requests to private IPs through the VPC connector** radiobox.

## Runtime, build, connections and security settings

^

RUNTIME

BUILD

CONNECTIONS

SECURITY

### Ingress settings ?

Allow all traffic

Allow internal traffic only

Only traffic from VPC networks in the same project or the same VPC SC perimeter is allowed.

Allow internal traffic and traffic from Cloud Load Balancing

Traffic from VPC networks in the same project, the same VPC SC perimeter or from Cloud Load Balancing is allowed.

### Egress settings ?

By default, your function can send requests to the Internet, but not to resources in VPC networks. To send requests to resources in your VPC network, create or select a VPC connector already created in the same region as the function.

VPC Connector

ngeneahubtestfunctions

▼

⟳

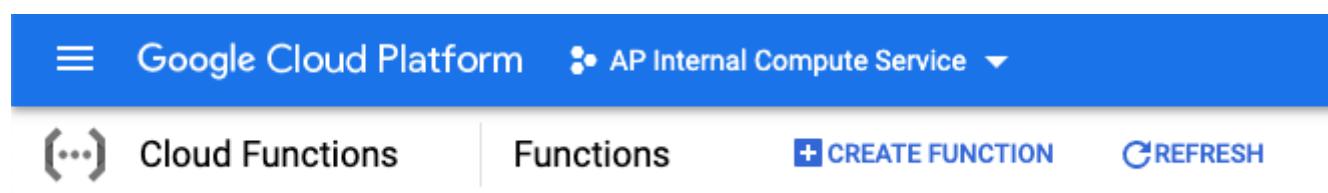
[Create a serverless VPC connector](#)

Only route requests to private IPs through the VPC connector

Route all traffic through the VPC connector

In the Code config section

1. Change the **Runtime** to **Python 3.9**
2. The **Entry Point** is **main**
3. Select **ZIP upload** in the **Source code**
4. Choose the GCP zip previously downloaded from the ../../download page
5. Select a **Stage bucket** for use while deploying. You can use the bucket we'll be monitoring
6. Select **Next** to build the **Cloud Function**



The screenshot shows the Google Cloud Platform Functions interface. At the top, there is a blue header bar with the text "Google Cloud Platform" and "AP Internal Compute Service". Below the header, there is a navigation bar with three items: "Cloud Functions" (selected), "Functions", and "CREATE FUNCTION". To the right of the navigation bar are two buttons: "REFRESH" and a "CREATE FUNCTION" button with a plus sign.

Once built you need to edit the default `config.json` file

Choose your new function and click **EDIT**

Select Next to get to the code edit section

Select the `config.json` file to edit

Runtime — Python 3.9

Source code — Inline Editor

+ main.py ... config.json requirements.txt ...

```

1  {
2      "version": 1.0,
3      "hub_access": {
4          "hub_ip": "52.212.107.49",
5          "hub_port": 8000,
6          "hub_protocol": "http",
7          "api_key": "DkKyQfyQ.SyVHFjou02nQ6wSQuSGMjyvGHL12nN2F"
8      },
9      "actions": {
10         "stub": [],
11         "premigrate": []
12     },
13     "optional": {
14         "ngenea_prefix": "",
15         "excludes": []
16     }
17 }

```

Edit the config file based on the docs from Cloud Functions

Select Deploy to save the changes. This can take 1-2 mins to update

## AWS Lambda Function

Create the IAM policy and role

In the AWS console go to the IAM service

The screenshot shows the AWS IAM dashboard. On the left, a sidebar menu includes 'Identity and Access Management (IAM)', 'Dashboard', and sections for 'Access management' (User groups, Users, Roles, Policies, Identity providers) and 'AWS services' (VPC, EC2, S3, Lambda, IAM, CloudFormation, CloudWatch, CloudTrail, AWS Glue, Athena, Control Tower, Serverless Application Repository). The main content area is titled 'IAM dashboard' and features a 'Security recommendations' section. It displays two items with green checkmarks: 'Root user has MFA' (Having multi-factor authentication (MFA) for the root user improves security for this account) and 'You have MFA' (Having multi-factor authentication (MFA) for the root user improves security for this account). A refresh button is located in the top right corner of the main content area.

Select the **Policies** then **Create Policy**

The screenshot shows the AWS IAM Policies page. The left sidebar is titled 'Identity and Access Management (IAM)' and includes a 'Policies' section. The main content area is titled 'Policies (983) Info' and contains a table with four columns: 'Policy name', 'Type', and 'Used as'. The table lists four policies: 'apbackup\_pixit-us-lab-apbackup' (Customer managed, Permissions policy), 'apbackup\_pixstor-apbackuptest1' (Customer managed, None), 'AWS-Chatbot-LambdaInvoke-Policy-a85ac3e5-8a91-4c1c-8e20-59f1aca6f86c' (Customer managed, Permissions policy), and 'AWS-Chatbot-NotificationsOnly-Pnlirv-4r55342f-f248-4f5d-9h7f-53eed43er48aR' (Customer managed, Permissions policy).

Move to the **JSON** tab and replace the text with the following:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "logs:CreateLogGroup",
      "Resource": "arn:aws:logs:*:<>AWS_ACCOUNT_ID>:*>"
    },
    {
      "Effect": "Allow",
      "Action": [
        "logs:CreateLogStream",
        "logs:PutLogEvents"
      ],
      "Resource": [
        "arn:aws:logs:*:<>AWS_ACCOUNT_ID>:log-group:/aws/
lambda/<>LAMBDA_NAME>:*>"
      ]
    },
    {
      "Effect": "Allow",
      "Action": "iam:GetUser",
      "Resource": "*"
    }
  ]
}
```

Replace **<>AWS\_ACCOUNT\_ID>** with your account id. This must be the Id without the **-** in the name, i.e. 123456789012, not 1234-5678-9012

Replace **<>LAMBDA\_NAME>** with the name of your Lambda function

Select **Next**

If you require a tag, add it now, otherwise just select **Review**

Name the policy **ngeneahub\_lambda\_policy**

Then select **Create Policy**

## Create policy

1 2 3

### Review policy

Name\*  Use alphanumeric and '+=, @-' characters. Maximum 128 characters.

Description  Maximum 1000 characters. Use alphanumeric and '+=, @-' characters.

Summary

Service	Access level	Resource	Request condition
CloudWatch Logs	Limited: Write	Multiple	None
IAM	Limited: Read	All resources	None

Allow (2 of 316 services) [Show remaining 314](#)

## Next create a new Role

Identity and Access Management (IAM)

Search IAM

Dashboard

Access management

User groups

Users

**Roles**

Policies

Identity providers

Account settings

IAM > Roles

Roles (92) [Info](#)

An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.

[Create role](#)

<input type="checkbox"/>	Role name	Trusted entities	Last acti...
<input type="checkbox"/>	aaa-del-role-566vn76r	AWS Service: lambda	-
<input type="checkbox"/>	AmazonNimbleStudioAdminRole	AWS Service: identity.nimble	285 days ago
<input type="checkbox"/>	AmazonNimbleStudioUserRole	AWS Service: identity.nimble	285 days ago

Select the **AWS service** for the trusted entity and a **Lambda** for the use case

# Select trusted entity

## Trusted entity type

- AWS service  
Allow AWS services like EC2, Lambda, or others to perform actions in this account.
- AWS account  
Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.
- Web identity  
Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.
- SAML 2.0 federation  
Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.
- Custom trust policy  
Create a custom trust policy to enable others to perform actions in this account.

## Use case

Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

### Common use cases

- EC2  
Allows EC2 instances to call AWS services on your behalf.
- Lambda  
Allows Lambda functions to call AWS services on your behalf.

Search for the policy we just created above and select it, to attach the policy to this role. Then select **Next**

IAM > Roles > Create role

Step 1  
[Select trusted entity](#)

Step 2  
[Add permissions](#)

Step 3  
Name, review, and create

### Add permissions

**Permissions policies (Selected 1/791)**  
Choose one or more policies to attach to your new role.

Filter policies by property or policy name and press enter  
"ngeneahub"

Policy name	Type	Description
ngeneahub_lambda_policy	Custom...	

**Set permissions boundary - optional**  
Set a permissions boundary to control the maximum permissions this role can have. This is not a common setting, but you can use it to delegate permission management to others.

Name the role **ngeneahub\_lambda\_role** and select **Create Role**

Step 1  
Select trusted entity

Step 2  
Add permissions

Step 3  
Name, review, and create

## Name, review, and create

### Role details

#### Role name

Enter a meaningful name to identify this role.

ngeneahub\_lambda\_role

Maximum 128 characters. Use alphanumeric and '+=,.@-\_' characters.

#### Description

Add a short explanation for this policy.

Allows Lambda functions to call AWS services on your behalf.

Maximum 1000 characters. Use alphanumeric and '+=,.@-\_' characters.

## Create the Lambda function

In the AWS console go to the **Lambda** service

The screenshot shows the AWS Lambda service in the AWS console. The search bar at the top contains the text 'Lambda'. The left sidebar has a 'Services' section with 'AWS Lambda' selected, and a 'Functions' link is highlighted. The main content area shows search results for 'Lambda', including 'Services (5)', 'Features (2)', 'Blogs (786)', and 'Documentation (53,531)'. A large box highlights the 'Lambda' service card, which has the text 'Run Code without Thinking about Servers'.

Click the **Create function** button

- Create a new function with the **Author from scratch** option selected
- Name the function
- And select **Python 3.7** from the **Runtime** list

# Create function Info

AWS Serverless Application Repository applications have moved to [Create application](#).

Author from scratch

Start with a simple Hello World example.

Use a blueprint

Build a Lambda application from sample code and configuration presets for common use cases.

Container image

Select a container image to deploy for your function.

## Basic information

Function name

Enter a name that describes the purpose of your function.

ngeneahub\_connection

Use only letters, numbers, hyphens, or underscores with no spaces.

Runtime Info

Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.

Python 3.7

Under **Change default execution role**, select **Use an existing role** and find the role we created above

Permissions Info

By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

Change default execution role

Execution role

Choose a role that defines the permissions of your function. To create a custom role, go to the [IAM console](#).

- Create a new role with basic Lambda permissions
- Use an existing role
- Create a new role from AWS policy templates

Existing role

Choose an existing role that you've created to be used with this Lambda function. The role must have permission to upload logs to Amazon CloudWatch Logs.

ngeneahub\_lambda\_role



[View the ngeneahub\\_lambda\\_role role on the IAM console](#).

If your Ngenea Hub doesn't have an external IP to connect to, you'll need to select the **Enable Network** option under the **Advanced settings**

- Select the **VPC** the Ngenea Hub is located in
- Choose the **Subnet** it's in
- And select a **Security group** that gives access to the Ngenea Hub over port 8000

## ▼ Advanced settings

### **Enable Code signing** Info

Use code signing configurations to ensure that the code has been signed by an approved source and has not been altered since signing.

### **Enable Network** Info

To provide network access for your Lambda function, specify a virtual private cloud (VPC), VPC subnets, and VPC security groups. VPC configuration is optional unless your user permissions require you to configure a VPC.

#### VPC

Choose a VPC for your function to access.

vpc-0bd7136b621f84a87 (10.10.0.0/24)



#### Subnets

Select the VPC subnets for Lambda to use to set up your VPC configuration.

Choose subnets



subnet-01c2a9d8719207552 (10.10.0.0/24) eu-west-1c X

Name: pixstor-demo

**⚠** We recommend that you choose at least 2 subnets for Lambda to run your functions in high availability mode.

#### Security groups

Choose the VPC security groups for Lambda to use to set up your VPC configuration. The table below shows the inbound and outbound rules for the security groups that you choose.

Choose security groups



sg-032d65f704d480aa5 (pixstor-demo-002-SG-FRONTEND)



Pixcloud Security Group

aws:cloudformation:logical-id: pixCloudSG aws:cloudformation:stack-name: pixstor-demo-002  
aws:cloudformation:stack-id: arn:aws:cloudformation:eu-west-1:918992847240:stack/pixstor-demo-002/af457060-d040-11eb-9b92-06df0d66bfc3  
Name: pixstor-demo-002-SG-FRONTEND

A policy will also have to be created to permit the function to traverse the VPC's networking, this can be done by adjusting the previously created IAM policy:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "logs:CreateLogGroup",
      "Resource": "arn:aws:logs:*<>:log-group:/aws/lambda/<>:*<>"
    },
    {
      "Effect": "Allow",
      "Action": [
        "logs:CreateLogStream",
        "logs:PutLogEvents"
      ],
      "Resource": [
        "arn:aws:logs:*<>:log-group:/aws/lambda/<>:log-stream:<>:*<>"
      ]
    },
    {
      "Effect": "Allow",
      "Action": [
        "logs:CreateLogStream",
        "logs:PutLogEvents"
      ],
      "Resource": [
        "arn:aws:logs:*<>:log-group:/aws/lambda/<>:log-stream:<>:*<>"
      ]
    }
  ]
}
```

```

        "Action": "iam:GetUser",
        "Resource": "*"
    },
    {
        "Effect": "Allow",
        "Action": [
            "iam:GetUser",
            "ec2:DescribeNetworkInterfaces",
            "ec2:CreateNetworkInterface",
            "ec2:DeleteNetworkInterface"
        ],
        "Resource": "*"
    }
]
}

```

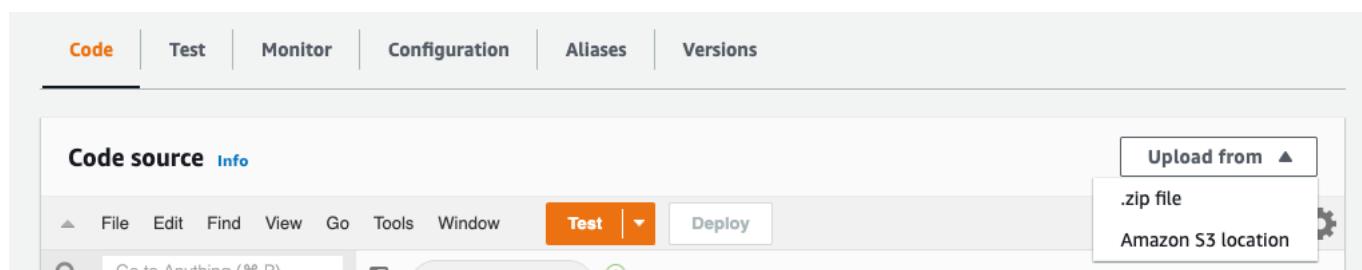
By adding this additional section, the function can traverse correctly.

With this configured, we can now create our function by selecting **Create function**

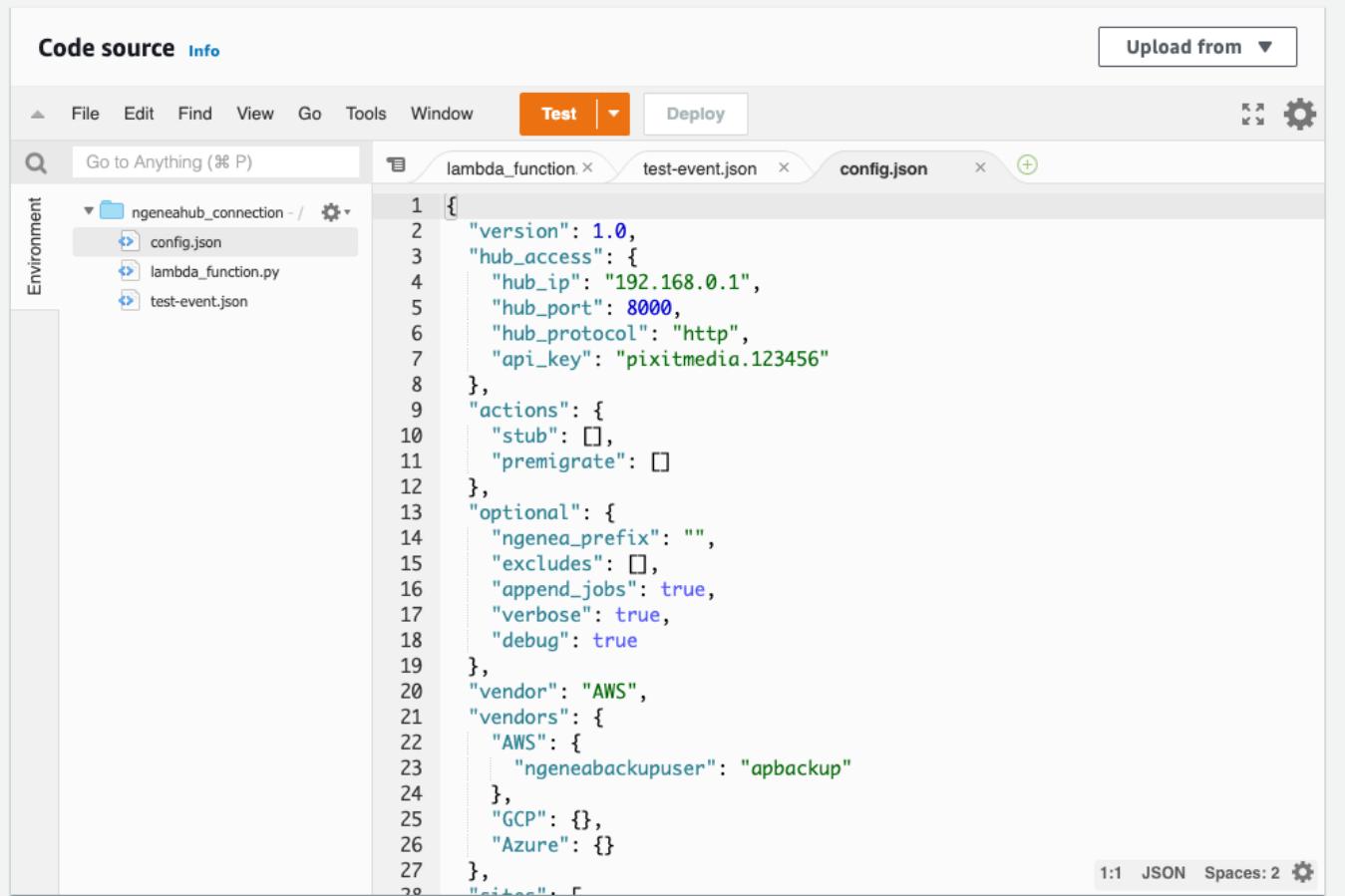
Once the function is created - This can take a few minutes if you've chosen to create the **Network** connection.

Under the **Code** tab, you'll need to upload the zip file containing all the code

Choose the AWS zip previously downloaded from the ../../download page



Once the code is uploaded, you need to edit the `config.json` file with all the relevant details based on the docs from [Cloud Functions](#)



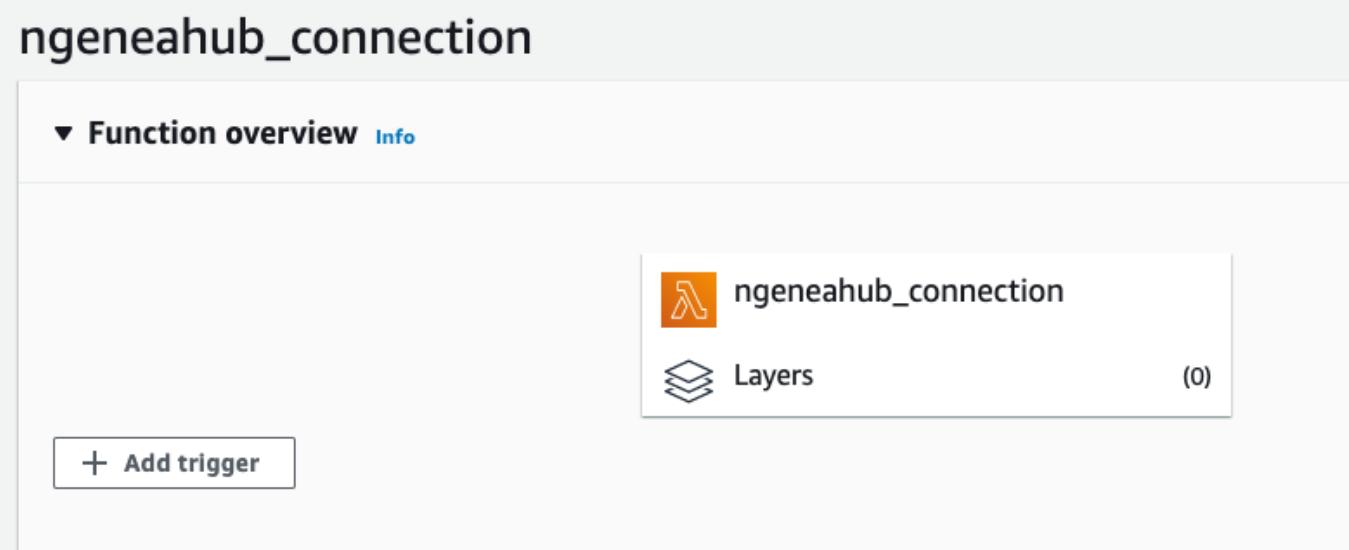
```

1  {
2      "version": 1.0,
3      "hub_access": {
4          "hub_ip": "192.168.0.1",
5          "hub_port": 8000,
6          "hub_protocol": "http",
7          "api_key": "pixitmedia.123456"
8      },
9      "actions": {
10         "stub": false,
11         "premigrate": false
12     },
13     "optional": {
14         "ngenea_prefix": "",
15         "excludes": false,
16         "append_jobs": true,
17         "verbose": true,
18         "debug": true
19     },
20     "vendor": "AWS",
21     "vendors": {
22         "AWS": {
23             "ngeneabackupuser": "apbackup"
24         },
25         "GCP": {},
26         "Azure": {}
27     },
28     "ngeneahub_connection": {
29         "aws_lambda": {
30             "function_name": "ngeneahub_connection"
31         }
32     }
33 }

```

Once you've updated the `config.json` file, save it by selecting the **Deploy** button

Now the Lambda function is created, we need to assign it to a bucket event. Select **Add trigger** under the **Function overview**



Choose:

- **S3 as the Trigger**
- Select your bucket
- **All object create events** for the **Event type**
- Check the **Recursive Invocation** checkbox warning

Then just press **Add**

# Add trigger

## Trigger configuration



S3

aws

storage

### Bucket

Please select the S3 bucket that serves as the event source. The bucket must be in the same region as the function.

dgoodbourn-playground2



### Event type

Select the events that you want to trigger the Lambda function. You can optionally set up a prefix or suffix for an event. However, for each bucket, individual events cannot have multiple configurations with overlapping prefixes or suffixes that could match the same object key.

All object create events

### Prefix - optional

Enter a single optional prefix to limit the notifications to objects with keys that start with matching characters.

e.g. images/

### Suffix - optional

Enter a single optional suffix to limit the notifications to objects with keys that end with matching characters.

e.g. .jpg

Lambda will add the necessary permissions for Amazon S3 to invoke your Lambda function from this trigger. [Learn more about the Lambda permissions model.](#)



### Recursive invocation

If your function writes objects to an S3 bucket, ensure that you are using different S3 buckets for input and output. Writing to the same bucket increases the risk of creating a recursive invocation, which can result in increased Lambda usage and increased costs. [Learn more](#)

I acknowledge that using the same S3 bucket for both input and output is not recommended and that this configuration can cause recursive invocations, increased Lambda usage, and increased costs.

Cancel

Add

You now have a trigger assigned to the Lambda function

To monitor the Lambda function, under the **Monitor** tab you can see all different types of monitoring

Using the **View logs in CloudWatch** is the best place to see any output from the Lambda function

CloudWatch Logs Insights [Info](#)

Lambda logs all requests handled by your function and automatically stores logs generated by your code through Amazon CloudWatch Logs. To validate your code, instrument it with custom logging statements. The following tables list the most recent and most expensive function invocations across all function activity. To view logs for a specific function version or alias, visit the **Monitor** section at that level.

1h 3h 12h 1d 3d 1w Custom [C](#) [▼](#) Add to dashboard

Coming soon:

- Azure

## Configuration

The configuration file is in JSON format.

version

Indicates the config format version. Currently, only `1.0` is supported.

hub\_access

Defines setting for interacting with Ngenea Hub

- **hub\_ip**: IP addresss of the Ngenea Hub REST API to use
- **hub\_port**: port for the Ngenea Hub REST API, typically `8000`
- **hub\_protocol**: either `http` or `https`
- **api\_key**: API 'client key' to authenticate Ngenea Hub with
- **workflow**: name of the workflow to submit for the event file, e.g. `reverse_stub`
- **workflow\_flags**: mapping of settings to pass to the workflow, e.g. `{"hydrate": true}`

For new files, one would typically use **workflow** `reverse_stub` or `recall`, which ship with Ngenea Hub by default. There is no default 'delete' workflow in Ngenea Hub, so one must be created - e.g.

```
{
  "name": "delete_file",
  "label": "delete_file",
  "icon_classes": [
    "fa fa-cloud fa-stack-2x text-success",
    "fa fa-angle-up fa-stack-2x text-light"
  ],
  "discovery": null,
  "enabled": true,
  "visible": true,
  "fields": [],
  "filter_rules": [
    {
      "type": "all",
      "state": "all",
    }
  ]
}
```

```

    "action": [
      {
        "name": "dynamo.tasks.delete_paths_from_gpfs",
        "recursive": false
      }
    ],
    "description": "Delete the file at a given path"
  }
}

```

## sites

List of sites to reflect the events to.

- **site**: name of the site, as registered in Ngenea Hub
- **default**: (optional) default mode for 'recall' type workflows. One of `stub`, `premigrate`
- **skip\_from\_ngenea**: (optional) if True then any file that was created via ngenea will be skipped for this site

**default** is used if the event path doesn't match any **action** (see below), and if `hydrate` isn't explicitly set in **workflow\_flags** (see above)

**skip\_from\_ngenea** is useful when e.g. Ngenea Hub is being used to sync files between sites. Files which are being transmitted via the cloud bucket don't need to be automatically recalled onto either site. On the other hand, files uploaded directly to the cloud still need to be recalled.

For GCP, we may not be able to determine the source of a delete event. In that case, deletes will always be reflected to all sites.

## actions

Mapping of actions -- `stub` or `premigrate` -- to path prefixes.

This is used to determine whether a file should be hydrated by a 'recall' type workflow. If a path matches multiple actions, the longest match wins. For example, using

```

{
  "stub": ["data"],
  "premigrate": ["data/cats"]
}

```

the path `data/cats/cat-01.jpg` would be premigrated, while `data/cats-02.jpg` would be stubbed.

If not specified, the site-specific **default** (see above) will be used, unless missing or unless `hydrate` is explicitly set in **workflow\_flags**. If none of these settings are configured, the default behaviour is to stub.

## optional

## Optional settings

- **ngenea\_prefix**: prefix which maps a cloud path to a local path, e.g. with prefix `/mmfs1` the cloud path `data/cats-01.jpg` is mapped to `/mfs1/data/cats-01.jpg`. Default: `''`
  - **excludes**: list of strings used to exclude paths. The strings are treated as substrings which can match anywhere in the (cloud) path string. Default: `[]`
  - **append\_jobs**: if `true`, tasks will be grouped under the same job id (per hour). If `false`, each task will get its own job. Default: `false`
  - **verbose**: set logging output to `info` level. Default: `false`
  - **debug**: set logging output to `debug` level. Takes precedence over **verbose**. Default: `false`

vendor

The vendor that the function is being run on.

Currently supported values: AWS, GCP

vendors

Vendor specific settings. Currently only used by AWS

**AWS**

- **ngeneabackupuser**: name of the user ngenea uses for AWS. Used to identify whether a file came from ngenea for **skip\_from\_ngenea**

## Complete Example

```
{  
  "version": 1.0,  
  "hub_access": {  
    "hub_ip": "192.168.0.1",  
    "hub_port": 8000,  
    "hub_protocol": "http",  
    "api_key": "pixitmedia.123456",  
    "workflow": "reverse_stub",  
    "workflow_flags": {  
      "hydrate": false,  
      "overwrite": true  
    }  
  },  
  "sites": [  
    {  
      "site": "uk",  
      "default": "stub"  
    }  
  ],  
  "actions": {  
    "stub": [],  
    "premigrate": []  
  },  
  "optional": {  
    "hub_ip": "192.168.0.1",  
    "hub_port": 8000,  
    "hub_protocol": "http",  
    "api_key": "pixitmedia.123456",  
    "workflow": "reverse_stub",  
    "workflow_flags": {  
      "hydrate": false,  
      "overwrite": true  
    }  
  }  
}
```

```
        "ngenea_prefix": "",
        "excludes": [],
        "append_jobs": true,
        "verbose": true,
        "debug": true
    },
    "vendor": "AWS",
    "vendors": {
        "AWS": {
            "ngeneabackupuser": ""
        },
        "GCP": {},
        "Azure": {}
    }
}
```

## Ngenea Worker Plugins

**Warning:** This feature is currently in alpha

When constructing workflows to run on Ngenea Hub, there may not be a task that covers the behaviour required for a given workflow. To alleviate this, there is now support for custom plugin tasks to be added to any instance of Ngenea Worker that can cover that missing behaviour.

These are defined as custom tasks for the celery <https://docs.celeryq.dev/en/stable/task-distribution.html> framework.

### Creating your plugin

**Warning:** This feature is currently in alpha.

A plugin for the hub is a python module that contains one or multiple celery tasks that can be discovered by the Ngenea Worker, these tasks can then be used in workflows in Ngenea Hub.

Example plugin creation

Using the plugin scripts located at `ngenea-worker plugins` a template plugin can be created in the plugin directory at `/var/lib/ngenea-worker/plugins`. All plugins will persist in this location and will need to be in this directory to be correctly installed.

For the following example, we will be creating a plugin named `echo_args` that will return the expected key word arguments provided to the task itself.

To begin, create a plugin template for the example `echo_args` using:

```
ngenea-worker plugins create echo_args
```

This will create the template plugin project at `/var/lib/ngenea-worker/plugins/echo_args`. To implement custom logic, navigate to `/var/lib/ngenea-worker/plugins/echo_args` in which contains the python module file `echo_args/echo_args.py`. Within this file there is the basic example task `example_task`:

```
@shared_task(bind=True, name="dynamo.custom.example_task")
def example_task(self, *args, paths: List = None, jobid: int = None,
**kwargs):
    print(paths)
    print(jobid)
    return {"status": "success"}
```

The logic within this task can be replaced along with the name of the function to our echo task:

**Note:** The name provided to `shared_task` will be the task name that is used to call the task within a workflow.

```
@shared_task(bind=True, name="dynamo.custom.echo_args")
def echo_args(self, *args, paths: List = None, jobid: int = None,
**kwargs):
    return {"paths": paths, "jobid": jobid, **kwargs}
```

With the new task in place, the entry point for the plugin will have to be adjusted in `setup.py`.

**Note:** Ensure that all custom task entry points are defined under `worker_plugin`

Initial `setup.py` entry points:

```
...
"worker_plugin": [
    "echo_args=echo_args.echo_args:example_task",
]
...
```

In this case, the changes are as follows:

```
...
"worker_plugin": [
    "echo_args=echo_args.echo_args:echo_args",
]
...
```

## External Dependencies

If the logic in the plugin requires an external dependency, it can be installed into the worker using the `setup.py` within the template plugin generated via `ngenea-worker plugins create`. To add additional dependencies, they can be added to the `install_requires` section:

**Note:** Ensure that the celery package and version is un-edited within the plugin requirements, otherwise it may have unexpected effects on the functionality of Ngenea Worker.

```
install_requires=[  
    "celery>=5.0.3",  
    "example-module==0.1.0"  
]
```

## Installing custom plugins

To install the newly created plugin refer to the [plugin installation page](#).

## Managing plugins

**Warning:** This feature is currently in alpha.

### Enabling your plugin

To enable worker plugin behaviour, the `enable_plugins` setting needs to be set to `true` in the `/etc/ngenea/ngenea-worker.conf` file

```
enable_plugins=true
```

By default, this setting will be `false`

After plugins have been created, they can be managed using the following scripts.

### Installing your plugin

All the plugins that have been created within `/var/lib/ngenea-/worker/plugins` can be installed through running:

```
ngenea-worker plugins install
```

This will install all of the plugin packages within the `plugins` directory. These packages will not update within the Ngenea Worker unless it has had a version number increase in the `setup.py`.

Single plugins can also be installed by providing the name of the package explicitly:

```
ngenea-worker plugins install PACKAGE_NAME
```

After installing the desired plugins, the Ngenea Worker service will need to be restarted:

```
systemctl restart ngenea-worker
```

### Uninstalling your plugin

Uninstalling any of the plugins can be done through the `uninstall` script:

**Warning:** This can remove any modules within the environment that Ngenea Worker runs within, use caution when uninstalling any modules that aren't directly within `/var/lib/ngenea-worker/plugins` as it could cause Ngenea Worker to not function correctly.

```
ngenea-worker plugins uninstall <PACKAGE_NAME>
```

To uninstall all of the modules in the plugin directory it can be done through:

```
pushd /var/lib/ngenea-worker/plugins/
ngenea-worker plugins uninstall * -y
popd
```

## Custom Tasks

**Warning:** This feature is currently in alpha

In addition to the [predefined tasks](#), Ngenea Worker plugins allow custom tasks to be defined.

Once [created](#), custom tasks can be included in [Custom Workflows](#).

Custom tasks must accept the same standard arguments, and return a payload in the same format, as predefined tasks do.

### The Structure of a Task Arguments

Tasks must accept the following keyword arguments:

name	description	example	default
jobid	ID of the job the task is associated with.	100	None
paths	List of paths (may be files, folders or symlinks) to be processed. Each path is given as a dict with a "path" key, and can also have other keys such as "size" and "message".	[{"path": "/mmfs1/data/my-fileset/file1", "size": 264321}, {"path": "/mmfs1/data/my-fileset/file2", "size": 1}]	None

To pass specific keyword arguments to a task, include these in the workflow definition as hardcoded values or [Runtime fields](#).

In addition, tasks should accept arbitrary other keyword arguments via a `**kwargs` parameter, but do not need to process them.

Here is an example function signature, from the definition of the predefined task `dynamo.tasks.migrate`:

```
def migrate(self, *args, jobid=None, paths=None,
skip_modified_during_migrate=False, **kwargs)
```

Return Payload

Ngenea Hub expects task results to be returned in a specific format.

There is a class `FileActionStatus` that the worker code uses as a convenience for constructing the return payload. This may be used as an alternative to constructing the return payload from scratch.

## Using the `FileActionStatus` class

The class is imported like this:

```
from arcapix.dynamo.server.status import FileActionStatus
```

A status object is instantiated like this:

```
status = FileActionStatus(taskname, input_paths, jobid, queue_name)
```

where `input_paths` is the list of path objects as passed to the task in the `paths` parameter, and `queue_name` is "`<site>-custom`" for worker plugins.

For each path operated on by the task, call the `.add(key, path)` method on the status object, where `key` is the state of the file:

```
status.add("processed", "/mmfs1/data/my-fileset/file1")
```

The status object keeps track of files as they are added. At the completion of the task, return the results like this:

```
return status.dump()
```

## Constructing a return payload from scratch

Tasks return a dict containing at least these 3 keys:

```
{
    "jobid": <job_id>,
    "paths": <list of path objects that were processed or skipped>,
    "status": {
        "task": <task_name>,
        "input_paths": <list of path objects input to the task>,
        "input_total": <number of paths input to the task>,
        "summary": <dict giving number of files keyed by state>,
    }
}
```

```

        "details": <dict giving list of file objects keyed by state>,
        "started": <timezone-aware datetime for when the task
started>
    }
}

```

The `paths` key lists the paths to be passed to the next task in the workflow.

Here is an example payload:

```

{
    "jobid": 100,
    "paths": [{"path": "/mmfs1/data/my-fileset/file1"}],
    "status": {
        "task": "my-plugin",
        "input_paths": [{"path": "/mmfs1/data/my-fileset/file1"}],
        {"path": "/mmfs1/data/my-fileset/file2"}],
        "input_total": 2,
        "summary": {
            "failures": 1,
            "processed": 1,
            "skipped": 0
        },
        "details": {
            "failures": [{"path": "/mmfs1/data/my-fileset/file2"}],
            "message": ["Reason xyz for the failure"]],
            "processed": [{"path": "/mmfs1/data/my-fileset/file1"}],
            "skipped": []
        },
        "started": "2023-04-25T14:56:31.253043",
    }
}

```

## Supported file states

These are the supported file states for tasks that perform operations on files:

- "processed": file was successfully processed
- "skipped": file was not processed because they were already in the desired state
- "aborted": file was not processed and should not be processed by subsequent tasks in the workflow
- "failures": file could not be processed because of an error
- "inprogress": file is still being processed (this state is rarely used)

Generally, the files that should be passed to the next task are those that were processed or skipped.

### Support for Streaming Paths from API

This applies to delete and move handlers in a snapdiff workflow.

To fetch the streaming paths, the function `expand_paths` from the module `arcapix.dynamo.server.utils.inputs` has to be used like below.

```
from arcapix.dynamo.server.utils.inputs import expand_paths
```

**Warning:** `expand_paths` provides a generator function fetching pages of paths on demand. Developers must ensure that memory starvation of Hub is negated by following the principles of generator functions thereby avoiding storing large number of values in memory concurrently.

## Example Plugins

**Warning:** This feature is currently in alpha

Here are a couple examples of functionality that can be added to the hub, these can be dropped into any template project.

### Email notification task

The intent of this plugin is to email a list of staff members at the end of a workflow to ensure that they are informed of its completion, it has extra key word arguments that allow the editing of the subject:

```
import sys

from email.mime.multipart import MIME Multipart
from email.mime.text import MIMEText
from email.utils import formatdate
from smtplib import SMTP
from typing import List

from celery import shared_task

def send_email(email_to: List[str], email_from: str, subject: str,
message: str, server: str = "localhost"):
    """
    Sends an email through an already configured SMTP server

    :param email_to: List of email recipients
    :param email_from: Address that email derives from
    :param subject: Email subject
    :param message: Message to send
    :param server: Target SMTP server address
    :return: None
    """

    smtp_message = MIME Multipart()
    smtp_message['From'] = email_from
    smtp_message['To'] = ', '.join(email_to)
    smtp_message['Date'] = formatdate(localtime=True)
    smtp_message['Subject'] = subject
```

```

smtp_message.attach(MIMEText(message))

try:
    smtp = SMTP(server)
    smtp.sendmail(email_from, email_to, smtp_message.as_string())
    smtp.close()
except OSSError as error:
    # All SMTP errors are derived from OSSError and catching all
    SMTP errors from the base exception is not allowed
    print('Error sending notification email: %s', error)

@shared_task(bind=True, name="dynamo.custom.email_staff")
def email_staff(
    self,
    *args,
    paths: List = None,
    jobid: int = None,
    staff_members: List = None,
    message: str = None,
    subject: str = None,
    server: str = None,
    from_address: str = None,
    **kwargs
):
    if not message:
        message = f"Job {jobid} has completed successfully
processing {len(paths)} paths"

    if not from_address:
        from_address = "ngenea-worker@pixitmedia.com"

    if not subject:
        subject = "Ngenea Worker Job completed successfully"

    if not server:
        server = "localhost"

    send_email(email_to=staff_members, email_from=from_address,
subject=subject, message=message, server=server)

    return {"status": "success"}

if __name__ == "__main__":
    sys.exit(0) # pragma: no cover

```

The `setup.py` will need editing to make the entry point the name of the function `email_staff` in the module that had been created for this example plugin.

To make use of this new task in the hub, here is an example workflow that will email staff members after all the data has been migrated with a custom subject and receiving email address:

```
{  
  "name": "migrate_notif",  
  "label": "Migrate with notif",  
  "icon_classes": [  
    "fa fa-cloud fa-stack-2x text-primary",  
    "fa fa-refresh fa-stack-1x text-light"  
,  
  "discovery": null,  
  "enabled": true,  
  "visible": true,  
  "fields": [],  
  "filter_rules": [  
    {  
      "type": "all",  
      "state": "all",  
      "action": [  
        {  
          "name": "dynamo.tasks.migrate"  
        },  
        {  
          "name": "dynamo.custom.email_staff",  
          "staff_members": [  
            "johnsmith@organisation.com",  
            "admin@organisation.com"  
          ],  
          "subject": "Project number 7 job complete",  
          "from_address": "notifications@organisation.com"  
        }  
      ]  
    }  
  ]  
}
```

## Running additional script

After running a set of tasks, you may need to execute a script on the host machine of the Ngenea Worker instance. The following plugin allows the execution of an arbitrary script located at `/opt/cloud_script.sh`:

**Note:** Any script run through this plugin will be run with root access

```
import sys  
  
from subprocess import run as run_script  
from subprocess import TimeoutExpired, SubprocessError, PIPE, STDOUT  
  
from typing import List  
  
from celery import shared_task
```

```

DEFAULT_SCRIPT = "/opt/cloud_script.sh"

@shared_task(bind=True, name="dynamo.custom.run_cloud_script")
def run_cloud_script(
    self,
    *args,
    paths: List = None,
    jobid: int = None,
    script_location: str = None,
    timeout: int = 600,
    additional_args: List = None,
    use_paths: bool = False,
    **kwargs
):
    status = {"success": False}

    try:
        args = [script_location if script_location else
DEFAULT_SCRIPT]
        if additional_args:
            args = args + additional_args

        if use_paths:
            # Appends the paths to the arguments
            args = args + [path["path"] for path in paths]

        result = run_script(
            args,
            stdout=PIPE,
            stderr=STDOUT,
            check=True,
            timeout=timeout,
        )

        status["log"] = str(result.stdout)

        if result.returncode == 0:
            status["success"] = True

    except TimeoutExpired:
        status["log"] = "Called script timed out"
    except SubprocessError as sp_err:
        status["log"] = str(sp_err)

    return {"status": "success"}


if __name__ == "__main__":
    sys.exit(0) # pragma: no cover

```

The `setup.py` will need editing to make the entry point the name of the function `run_cloud_script` in the module that had been created for this example plugin.

To make use of this new task in the hub, here is an example workflow that will run the default cloud script after all of the data has been migrated:

```
{  
  "name": "migrate_cloud_script",  
  "label": "Migrate with notif",  
  "icon_classes": [  
    "fa fa-cloud fa-stack-2x text-primary",  
    "fa fa-refresh fa-stack-1x text-light"  
,  
  "discovery": null,  
  "enabled": true,  
  "visible": true,  
  "fields": [],  
  "filter_rules": [  
    {  
      "type": "all",  
      "state": "all",  
      "action": [  
        {  
          "name": "dynamo.tasks.migrate"  
        },  
        {  
          "name": "dynamo.custom.run_cloud_script"  
        }  
      ]  
    }  
  ]  
}
```

## Disaster Recovery / Cold Failover

It's possible to configure Ngenea Hub to be able to cold-failover to another node if it's running on a PixStor.

### Setup

#### Configure datastore

Configure Ngenea Hub to store its persistent data on the GPFS filesystem so it can be read by multiple nodes. This is done by setting the following setting in `/etc/sysconfig/ngeneahub`

```
DATA_DIR=/mmfs1/.arcapix/ngeneahub/data
```

#### Configure Networking

It's strongly recommended to configure a floating IP that can be used for the Ngenea Worker to connect to. This will allow cold failover without having to reconfigure workers.

This can be done by setting the following settings in `/etc/sysconfig/ngeneahub`:

- `SERVICE_CIDR`. Set this to the IP and netmask of the IP you want to be managed by `ngeneahub`. e.g. `192.168.2.3/24` for the IP `192.168.2.3` on a network with a netmask of `255.255.255.0`
- `SERVICE_INTERFACE`. Set this to the name of the interface the IP address should be added to. e.g. `man0`

Configure the workers to use this IP by editing `/etc/ngenea/ngenea-worker.conf` on each worker node and modifying `broker_url` and `result_backend`

## Install Ngenea Hub

Install Ngenea Hub on multiple nodes as usual. Make sure `/etc/sysconfig/ngeneahub` are in sync across these nodes. Enable and start the service on one node only. Leave the service disabled and stopped on the other nodes.

## Performing failover

In the case of a node failure, after confirming the services are no longer running on the other node, the following steps can be performed to bring the service up on another node:

important You must be certain the service is not running anywhere else before continuing, otherwise data loss can occur.

- Remove the lock file from `DATA_DIR/.lock`.
- Start the Ngenea Hub service

## Migration from local datastore

After setting `DATA_DIR` in `/etc/sysconfig/ngeneahub` and restarting the service, data will automatically be migrated. This is a one-way operation.

## External SSL

This document provides information on

- NGINX Installation on vanilla centos 7
- Configuration for SSL Termination and Reverse proxies to `ngeneahub`

## Installing NGINX

Adding the EPEL Software Repository

```
sudo yum install epel-release
```

## Installing NGINX

```
sudo yum install nginx
```

Starting Nginx service

```
sudo systemctl start nginx
```

Check Nginx service Status

```
sudo systemctl status nginx
```

Nginx status output should look like this

### Output

```
● nginx.service - The nginx HTTP and reverse proxy server
  Loaded: loaded (/usr/lib/systemd/system/nginx.service; disabled;
  vendor preset: disabled)
  Active: active (running) since Mon 2022-01-24 20:14:24 UTC; 5s ago
    Process: 1898 ExecStart=/usr/sbin/nginx (code=exited, status=0/
SUCCESS)
    Process: 1896 ExecStartPre=/usr/sbin/nginx -t (code=exited,
status=0/SUCCESS)
    Process: 1895 ExecStartPre=/usr/bin/rm -f /run/nginx.pid
(code=exited, status=0/SUCCESS)
  Main PID: 1900 (nginx)
  CGroup: /system.slice/nginx.service
          └─1900 nginx: master process /usr/sbin/nginx
              ├─1901 nginx: worker process
```

```
Jan 24 20:14:24 centos-updates systemd[1]: Starting The nginx HTTP
and reverse proxy server...
```

```
Jan 24 20:14:24 centos-updates nginx[1896]: nginx: the configuration
file /etc/nginx/nginx.conf syntax is ok
```

```
Jan 24 20:14:24 centos-updates nginx[1896]: nginx: configuration
file /etc/nginx/nginx.conf test is successful
```

```
Jan 24 20:14:24 centos-updates systemd[1]: Started The nginx HTTP
and reverse proxy server.
```

The service should be **active**

To stop the Nginx service

```
sudo systemctl stop nginx
```

To disable the Nginx service

```
sudo systemctl disable nginx
```

To Enable the Nginx service

```
sudo systemctl enable nginx
```

## Configuration for SSL Termination and Reverse Proxy using OpenSSL

Create Self-Signed Certificates for Nginx

Create the Certificate Configuration file named `localhost.conf`

```
[req]
default_bits      = 2048
default_keyfile   = localhost.key
distinguished_name = req_distinguished_name
req_extensions    = req_ext
x509_extensions   = v3_ca

[req_distinguished_name]
countryName          = Country Name (2 letter code)
countryName_default  = US
stateOrProvinceName  = State or Province Name (full name)
stateOrProvinceName_default = New York
localityName          = Locality Name (eg, city)
localityName_default  = Rochester
organizationName      = Organization Name (eg, company)
organizationName_default = localhost
organizationalUnitName = organizationalunit
organizationalUnitName_default = Development
commonName            = Common Name (e.g. server FQDN or YOUR
name)
commonName_default    = localhost
commonName_max        = 64

[req_ext]
subjectAltName = @alt_names

[v3_ca]
subjectAltName = @alt_names

[alt_names]
DNS.1  = example.com
DNS.2  = 127.0.0.1
```

Create the Certificate using OpenSSL using below command

```
sudo openssl req -x509 -nodes -days 365 -newkey rsa:2048 -keyout
localhost.key -out localhost.crt -config localhost.conf
```

Copy the Certificate Key Pair to the Certificates folder `/etc/ssl/certs`

```
sudo cp localhost.crt /etc/ssl/certs/localhost.crt
sudo cp localhost.key /etc/ssl/private/localhost.key
```

Creating configuration file for Nginx

Create a configuration file in `/etc/nginx/conf.d/proxy.conf` and Update the Nginx Configuration File to Load the Certificate Key Pair

```
server {  
  
    listen 80;  
    listen 443 ssl http2;  
    listen [::]:443 ssl http2; #for IPv6  
  
    server_name example.com;  
  
    #specify the certificate files to use  
    ssl_certificate /etc/ssl/certs/localhost.crt;  
    ssl_certificate_key /etc/ssl/private/localhost.key;  
  
    ssl_protocols TLSv1.2 TLSv1.1 TLSv1;  
  
    root /usr/share/nginx/html;  
  
    #Serving index.html file when requesting /  
    index index.html;  
  
    #Reverse proxy for requests  
    location / {  
        proxy_set_header Host $host:8000;  
        proxy_set_header X-Real-IP $remote_addr;  
        proxy_set_header X-Forwarded-For  
$proxy_add_x_forwarded_for;  
        proxy_set_header X-Forwarded-Proto $scheme;  
  
        proxy_pass http://localhost:8000/;#if running  
outside docker you can use 127.0.0.1 or localhost instead of  
host.docker.internal, or with docker with network_mode: "host"  
        proxy_redirect off;  
    }  
}  
}
```

Reload the Nginx service after you have made some configuration changes

```
sudo systemctl reload nginx
```

Configuration for SSL Termination and Reverse Proxy using Certbot and LetsEncrypt  
(Another method)

Add trusted SSL Certificates from Letsencrypt

We need to redirect all unencrypted HTTP connections to HTTPS. This is done with certbot and letsencrypt certificates. The certbot will obtain free certificates and also handle the renewal process automatically. To do that we will install certbot and also a plugin for our NGINX server.

```
sudo yum install certbot python3-certbot-nginx
```

Once we have installed those packages, we can obtain our certificates.

```
sudo certbot --nginx -d example.com
```

It will ask you if you want to redirect all traffic from HTTP to HTTPS. Select yes (2). This automatically makes some changes to our NGINX default configuration.

```
server {  
    server_name example.com;  
  
    location / {  
        proxy_pass http://127.0.0.1:8000;  
    }  
  
    listen [::]:443 ssl ipv6only=on; # managed by Certbot  
    listen 443 ssl; # managed by Certbot  
    ssl_certificate /etc/letsencrypt/live/example.com/fullchain.pem;  
    # managed by Certbot  
    ssl_certificate_key /etc/letsencrypt/live/example.com/  
privkey.pem; # managed by Certbot  
    include /etc/letsencrypt/options-ssl-nginx.conf; # managed by  
Certbot  
    ssl_dhparam /etc/letsencrypt/ssl-dhparams.pem; # managed by  
Certbot  
}  
server {  
    if ($host = example.com) {  
        return 301 https://$host$request_uri;  
    } # managed by Certbot  
  
    listen 80 default_server;  
    listen [::]:80 default_server;  
  
    server_name example.com;  
    return 404; # managed by Certbot  
}
```

## HTTPS Configuration for NgeneaHub

To configure NgeneaHub for HTTPS, a configuration file named 'nghub.conf' should be created under etc/nginx/conf.d/pixstor/ folder. It should contain the configuration below:

```
location /ngeneahub/ {  
    proxy_pass http://localhost:8000;  
    proxy_http_version 1.1;  
    proxy_set_header Host $host;  
    proxy_set_header X-Forwarded-Proto $scheme;  
    proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
```

```

}
location /ngeneahub/ws {
    proxy_pass http://localhost:8000;
    proxy_http_version 1.1;
    proxy_set_header Host $host;
    proxy_set_header Upgrade $http_upgrade;
    proxy_set_header Connection "Upgrade";
    proxy_set_header X-Forwarded-Proto $scheme;
    proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
}

```

Reload the Nginx service after you have made some configuration changes

```
sudo systemctl reload nginx
```

To auto-renew the certificates, Run

```
certbot renew
```

## Active Directory

This section describes the Active Directory (LDAP) integration for Ngenea Hub.

### Configuration

The following settings control LDAP configuration.

The following are set in the main configuration file for Ngenea Hub at `/etc/sysconfig/ngeneahub`. Any setting which doesn't specify a default is required when `LDAP_ENABLED` is true.

Setting	Description
<code>LDAP_ENABLED</code>	Setting to enable or disable LDAP-based authentication. Default: False
<code>LDAP_HOSTNAME</code>	The URI of the LDAP server.
<code>LDAP_USERNAME</code>	The 'distinguished name' of the user to use when binding to the LDAP server
<code>LDAP_PASSWORD</code>	The password matching <code>LDAP_USERNAME</code> for binding the the LDAP server
<code>LDAP_USER_SEARCH</code>	Domain to search for users who may authenticate.
<code>LDAP_GROUP_SEARCH</code>	Domain to search for groups to populate when mirroring groups
<code>LDAP_MIRROR_GROUPS</code>	If True, LDAP groups will be auto-populated (see below). Default: False

### Example Configurations

```
LDAP_ENABLED=True
```

```
LDAP_HOSTNAME=ldap://localhost
LDAP_USERNAME=cn=bind,cn=Users,dc=tech,dc=local
LDAP_PASSWORD=password123

LDAP_USER_SEARCH=cn=Users,dc=tech,dc=local
LDAP_GROUP_SEARCH=cn=Groups,dc=tech,dc=local
LDAP_MIRROR_GROUPS=False
```

## Log in with an AD user

After enabling and configuring LDAP as above, an AD user can log in to Ngenea Hub using their AD credentials.

The username corresponds to the AD user's `sAMAccountName`

A Ngenea Hub user account will be automatically created for that user.

Only AD users belonging to the `LDAP_USER_SEARCH` domain may authenticate.

When LDAP is enabled, non-AD users can still be created and authenticate as before.

## Managing users and groups from AD in HUB

The user account which is generated for an AD user behaves the same as any other Ngenea Hub user. This means it can be assigned to Ngenea Hub groups, and will gain the permissions from those groups.

By default, a new AD user will not belong to any groups, and therefore will not have any permissions. A privileged user will need to assign the user to any appropriate Ngenea Hub groups.

If `LDAP_MIRROR_GROUPS` is enabled, then when a user logs in to Ngenea Hub, groups will be automatically be created for any AD groups the user belongs to (if the group doesn't already exist), and the user will be assigned to those groups.

Only groups belonging to the `LDAP_GROUP_SEARCH` domain will be populated.

Mirrored AD groups behave the same as any other Ngenea Hub group, meaning permissions can be assigned to them to apply role-based access controls (RBAC). By default, mirrored AD groups will have no permissions assigned.

Any user can be assigned to a mirrored AD group. This WILL NOT change group membership in AD itself.

## Usage

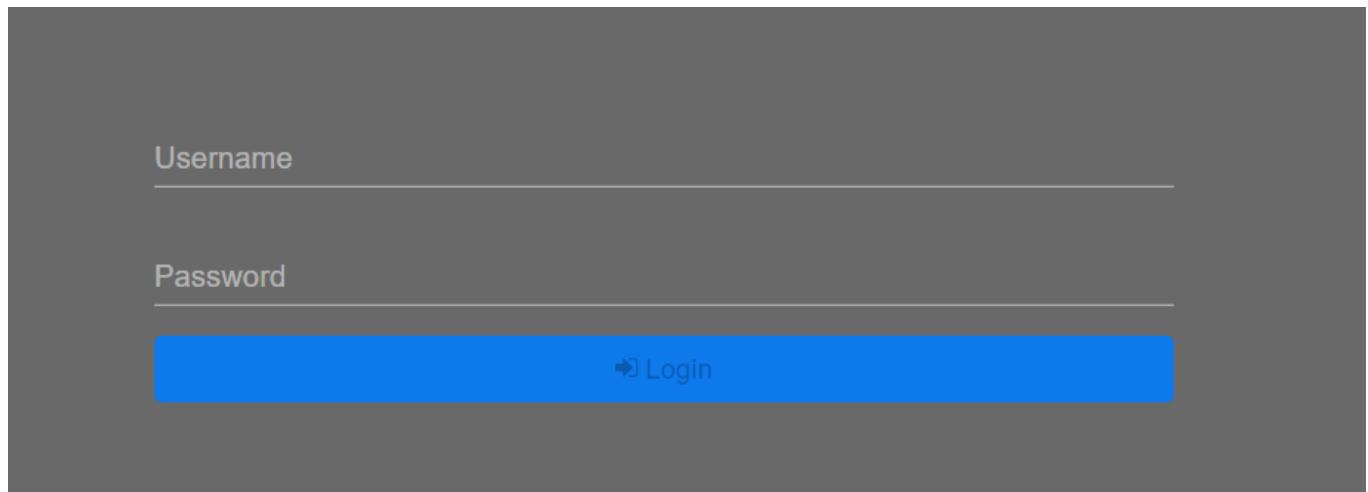
### Web Interface

To access Ngenea Hub, go to <http://example.com:8000/>.

## Authentication

### Login

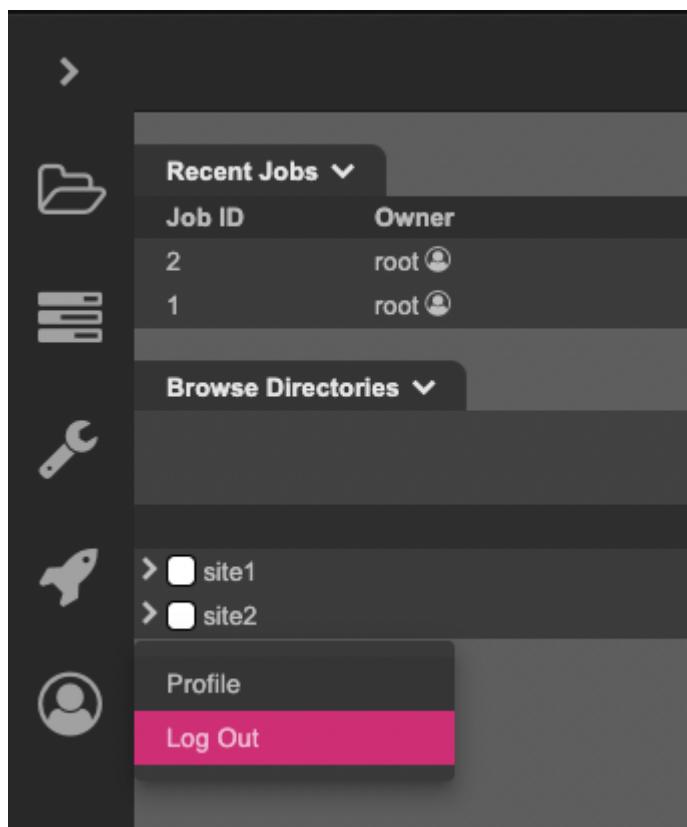
Upon navigating to the Ngenea Hub UI a login screen is presented.



Enter a valid username and password before pressing the **Login** button to authenticate.

### Logout

To end your session, select **Logout** from the **Man** Icon at the bottom left hand corner of the UI.



## Browser

Upon logging in, select the directory icon on the left hand side of the UI. This takes to the Browser page.

The screenshot shows the 'Recent Jobs' and 'Browse Directories' sections of the Browser page. The 'Recent Jobs' section has columns for Job ID, Owner, Type, Site, Created, and State, with a note that no records were found. The 'Browse Directories' section shows a tree view of sites and their contents. Under 'site1/mmfs1', there is a 'data' directory containing 'sample\_data' and 'sample\_data.tgz'. The 'sample\_data.tgz' file is marked as 'ONLINE'. A checkbox for 'Show hidden files' is checked. The sidebar on the left includes icons for Recent Jobs, Browse Directories, Actions, and other navigation options.

The Browser page allows users to see a list of recent jobs as well as browse all available directories across all Sites for the purpose of either migrating, pre-migrating, recalling, or sending files.

## Recent Jobs

The Recent Jobs section shows a list of the 5 most recent jobs that were initiated via the UI.

The view presents several columns:

Option	Description
<b>Job ID</b>	Shows the identification number associated with the job
<b>Owner</b>	Name of the user who created the job
<b>Type</b>	Shows the job's type, i.e. Migrate, Recall, Premigrate, or Send
<b>Site</b>	Name of the Site where files were migrated from
<b>Created</b>	Shows the job's creation time
<b>State</b>	Shows the job's state, i.e. success or failure

## Search

**Note:** Before you can use the search feature, additional set-up is necessary, as described in the [search feature](#) page.

Search section contains a search bar to discover the contents of the configured Sites.

The view presents a search bar, a button for managing the search filters and another button for starting and stopping the search. The view also presents (?) button to get more instructions about starting a search.

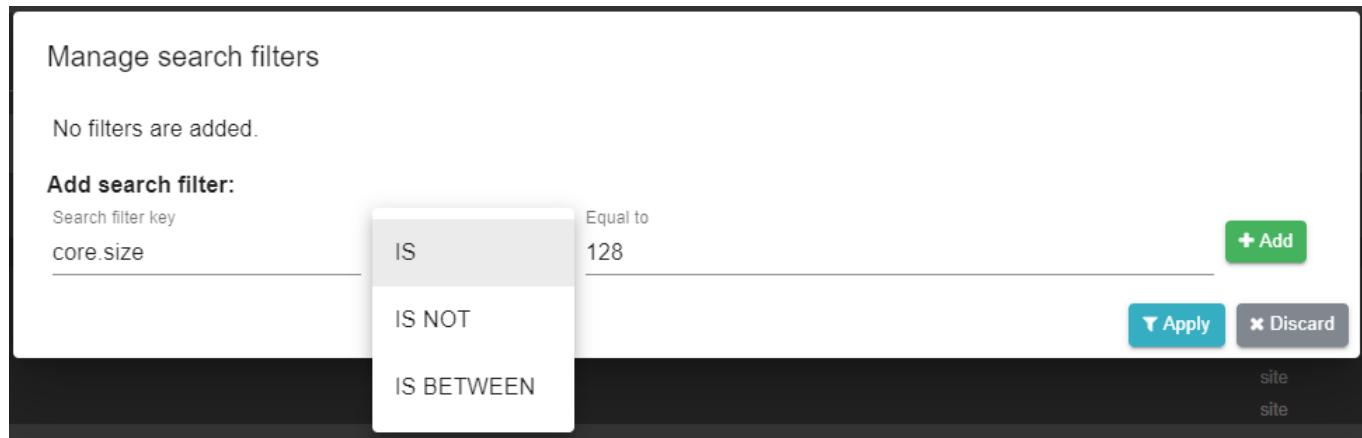
The screenshot shows the search section with a 'Search Items' dropdown, a search bar with placeholder 'Enter a search term', a 'Apply Filters' button, and a 'Search' button. A help (?) icon is also present.

To search for a term, type the search term in the search bar and click **Search** button (or hit Enter key) to start a search. The default search filter is "core.filename".

## Managing the search filters from the dialog

For more complex search operations, add more filters by clicking **Apply Filters** button and use the dialog opened after that. Type the search filter key in the input box with the label **Search filter key** and then pick an operator from the select box with the label **Operator**.

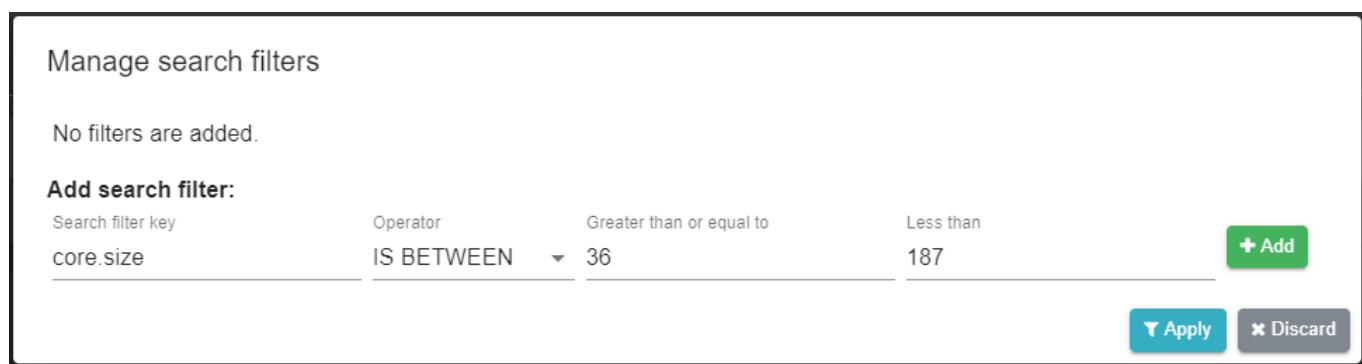
For the operator **IS**, the dialog is seen as in the image below:



For the operator **IS NOT**, the dialog is seen as in the image below:



For the operator **IS BETWEEN**, the dialog is seen as in the image below:



Click **Add** button to add the search filter. The dialog is seen as in the image below, when "core.size" is selected to be greater than or equal to 36 and less than 187, and "core.group.name" is selected to be "root".

Manage search filters

core.size: {"gte":36,"lt":187} 

core.group.name: root 

Add search filter:

Operator: IS ▾ Equal to

Search filter key:

**+ Add**  

**Apply**  **Discard** 

Once the selection is finished, click **Apply** button to save & close the dialog (this action does not submit the search). See that filters are shown as a query in the search bar and they are shown with badges under the search bar. The search section is seen as in the image below, after the search filters are selected:

Search Items 

Enter a search term

(core.size ("gte":36,"lt":187)) , (core.group.name:root)

core.size: {"gte":36,"lt":187}  core.group.name:root 

② **Apply Filters** **Search**

### Submitting the search and viewing search results

Click **Search** button, or hit **Enter** key to start the search. The search section will contain search results from each configured site, matching with the search filters. To stop the search, click **Stop** button. The search section is seen as in the image below after the search is in progress.

Search Items 

Enter a search term

(core.size ("gte":36,"lt":187)) , (core.group.name:root)

core.size: {"gte":36,"lt":187}  core.group.name:root 

② **Stop**

C Searching... 

The search section is seen as in the image below after some results are found.

Search Items 

Enter a search term

(core.size ("gte":36,"lt":187)) , (core.group.name:root)

core.size: {"gte":36,"lt":187}  core.group.name:root 

② **Apply Filters** **Search**

**Name**  **Path**  **Site** 

Name	Path	Site
file1.txt	/some/path/to/folder1	site1
file2.png	/some/path/to/folder2	site1
file3.png	/some/path/to/folder3	site2



### Advanced usage: Managing the search filters from the search bar

You can also make complex search operations by typing the search term in the format below:

**(<key1>:<value1>), (<key2>:<value2>), (<key3>:<value3>) ...**

For multiple search filters, you need to separate them by parenthesis. For using various comparison operators, here are the filter formats:

Operation	Format
<b>Equal to</b>	<b>(&lt;key1&gt;: &lt;value1&gt;)</b>
<b>Less than</b>	<b>(&lt;key2&gt;: {"lt": &lt;value2&gt;} )</b>

Operation	Format
<b>Greater than or equal to</b>	(<key3>: {"gte": <value3> })
<b>Combined</b>	(<key4>: {"gte": <value4>, "lt": <value5> })

## Browse Directories

The Browse Directories section contains a list of configured Sites and correspondent directories under the Sites' filesystems.

The view presents several columns:

Option	Description
<b>Name</b>	Shows the name of the Site, directories, and files
<b>Type</b>	Shows whether the listed item is a Site, directory, or file
<b>Size</b>	Shows the directories and files size
<b>Status</b>	Shows whether files are online or offline

User can select one or multiple directories, or one or multiple files to migrate, premigrate, recall them or send them to a different Site.

## Migrate

To Migrate a directory or file, expand the Site containing said directory and file. Select the directory or file you wish to Migrate by ticking their relevant boxes.

Click the "Actions" button at the top right hand side of the page and select "Migrate".

A new Job is created and it is shown at the top of the "Recent Jobs" list. Job's State will display a progress bar until completion.

Once job is complete, the State will either show as Success or Failed.

## Premigrate

To Premigrate a directory or file, expand the Site containing said directory and file. Select the directory or file you wish to Premigrate by ticking their relevant boxes.

Click the "Actions" button at the top right hand side of the page and select "Premigrate".

A new Job is created and it is shown at the top of the "Recent Jobs" list. Job's State will display a progress bar until completion.

Once job is complete, the State will either show as Success or Failed.

## Recall

To Recall a directory or file, expand the Site containing said directory and file. Select the directory or file you wish to Recall by ticking their relevant boxes.

Click the "Actions" button at the top right hand side of the page and select "Recall".

A new Job is created and it is shown at the top of the "Recent Jobs" list. Job's State will display a progress bar until completion.

Once job is complete, the State will either show as Success or Failed.

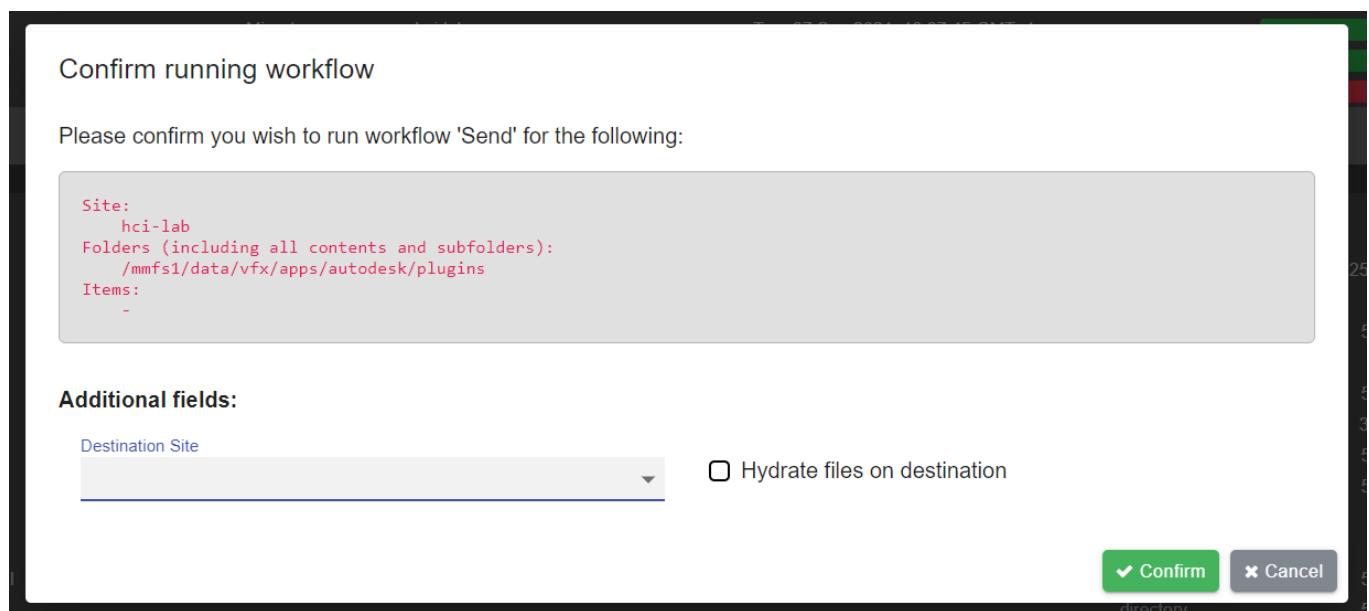
Send

**Premigrate behaviour change:** Prior to Ngenea Hub 1.8.0, the send workflow would migrate data on the source site. This has been changed to pre-migrate.

To Send a directory or file from one Site to another, expand the Site containing said directory and file. Select the directory or file you wish to Send by ticking their relevant boxes.

Click the "Actions" button at the top right hand side of the page and select "Send".

Select the Site you wish to send the directory and/or files to. Tick the "Hydrate files on destination" if required, and click "Confirm".



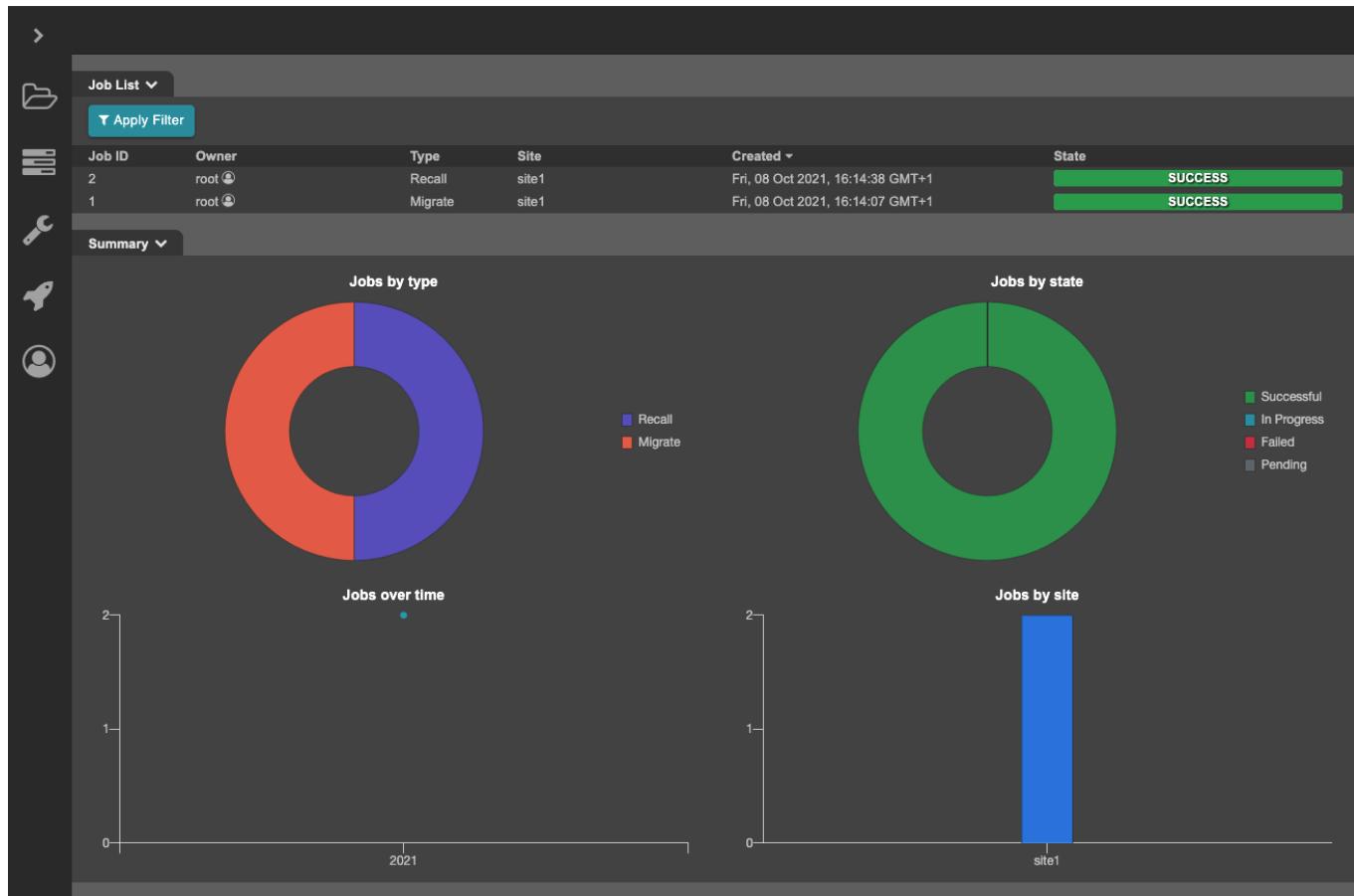
A new Job is created and it is shown at the top of the "Recent Jobs" list. Job's State will display a progress bar until completion.

Once job is complete, the State will either show as Success or Failed.

Expanding the receiving Site's Directories now shows the path that was replicated from the sending Site.

## Jobs

The Jobs page shows a list of all the jobs that were initiated via the UI.



The view presents several columns:

Option	Description
<b>Job ID</b>	Shows the identification number associated with the job
<b>Owner</b>	Name of the user who created the job
<b>Type</b>	Shows the job's type, i.e. Migrate, Recall, Premigrate, or Send
<b>Site</b>	Name of the Site where files were migrated from
<b>Created</b>	Shows the job's creation time
<b>State</b>	Shows the job's state, i.e. success or failure

Each column can be sorted in ascending and descending order.

Pagination

To select whether to view 20, 50, or 100 Jobs at the time, choose the relevant option in the "Items per Page" dropdown.

Clicking on the right and left arrow next to "Items per Page" will take you to the next/previous pages.

Apply Filter

Jobs list can be filtered by time period, job type, and job state.

To filter the list, select the "Apply Filter" button on the top left hand side of the UI.

Select one or a combination of filters, and click "Apply".

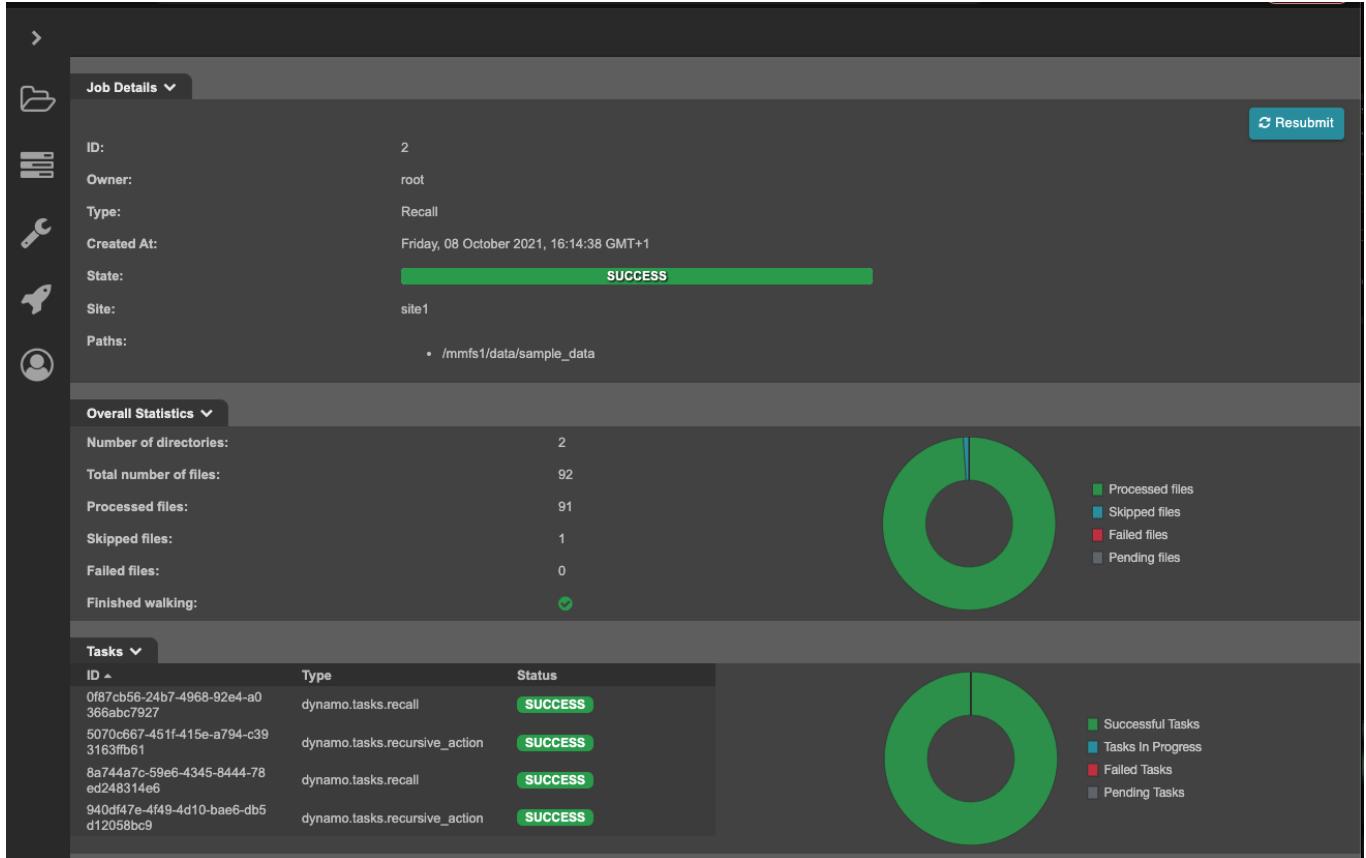
Job are now filtered as per your selection.

To remove a filter, simply select the "x" next to the applied filter.

## Job ID

On the Jobs page, click on a Job ID to see additional information regarding the Job.

The Job Details, Overall Statistics, and Tasks tab are displayed.



Each tab shows specific Job details, some of which are clickable:

- Overall Statistics --> Total number of files, processed files, skipped files, and failed files.
- Tasks --> ID

Selecting any of the clickable items opens a dialogue showing the relevant output.

Jobs can also be resubmitted by clicking the "Resubmit" button at the top right hand side of the page.

## Owner

On the Jobs page, click on any Owner to see additional information regarding the user who initiated the Job.

Selecting an Owner takes to a page that shows details about the user, as well as a list of Jobs initiated by said user.

The screenshot shows the 'User Details' section of a web application. On the left, there is a sidebar with icons for file management, system, and user. The main area displays the following user information:

Field	Value
Username:	root
First Name:	-
Last Name:	-
Email:	-
Date joined:	Friday, 08 October 2021, 15:54:35 GMT+1
Last Login:	Friday, 08 October 2021, 15:54:58 GMT+1
Active:	<input checked="" type="checkbox"/>

At the top right, there is a blue button labeled 'Update Profile' with a pencil icon.

Below this, the 'Job List' section is shown, with a table of two entries:

Job ID	Owner	Type	Site	Created	State
2	root	Recall	site1	Fri, 08 Oct 2021, 16:14:38 GMT+1	SUCCESS
1	root	Migrate	site1	Fri, 08 Oct 2021, 16:14:07 GMT+1	SUCCESS

If you selected your own user, you will see an "Update Profile" on the top right hand side of the page.

This takes you to the "Update User" page where you can change your own password, email, first name and last name.

The screenshot shows a modal dialog box titled 'Update user: root'. It contains the following fields:

- >Password
- Confirm Password
- Email
- First Name
- Last Name

At the bottom left is a green 'Save' button with a checkmark icon, and at the bottom right is a grey 'Cancel' button with a cross icon.

The Job List's layout is the same as the one shown in Jobs page and has the same functionalities.

## Administration

The Administration page allows you to add and delete Sites, add, activate and deactivate Users, as well as changing the name and colours of the labels found in the Browse Directories section.

The screenshot shows a dark-themed configuration interface with several tabs and sections:

- Sites** tab: Shows a list of sites with "site1" and "site2". Buttons for "+ Add" and "Delete" are available.
- Users** tab: Shows a list of users with "root". Buttons for "+ Add", "Activate", and "Deactivate" are available.
- File Status Types** tab: Shows a list of status types with columns for "Label" and "Appearance". Status types include offline, online, premigrated, and unknown. Appearance colors are OFFLINE (yellow), ONLINE (green), PREMIGRATED (teal), and UNKNOWN (grey).
- Client Keys** tab: Shows a list of client keys with a "+ Add" button. A message "No records found." is displayed.

## Sites

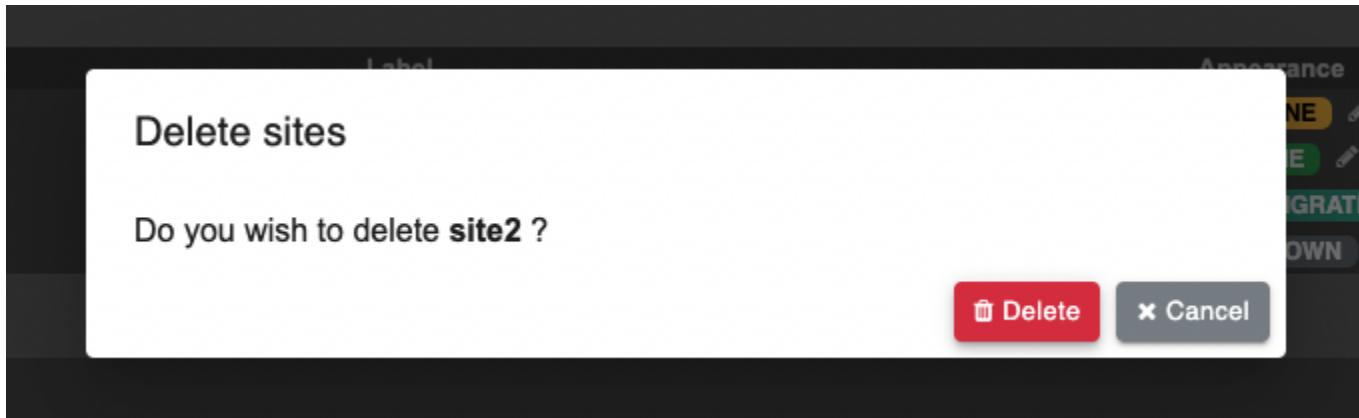
The Sites tab contains the list of Sites that have been configured. This list can be sorted by Site name in ascending and descending order.

### Add Site

To add a Site, select the "Add" button, enter a Site name, and confirm by clicking "Add"

### Delete Site

To delete a Site, select one or multiple Sites by ticking their correspondent boxes. Click "Delete" and then confirm deletion once the "Delete Site" dialogue is presented.



## Users

The Users tab contains the list of Users who are allowed to use the UI. This list can be sorted by Username in ascending and descending order.

### Add User

To add a new User, select the "Add" button, then enter a Username, Password, Email, First Name, and Last Name.

Add new user

Username

Password

Confirm Password

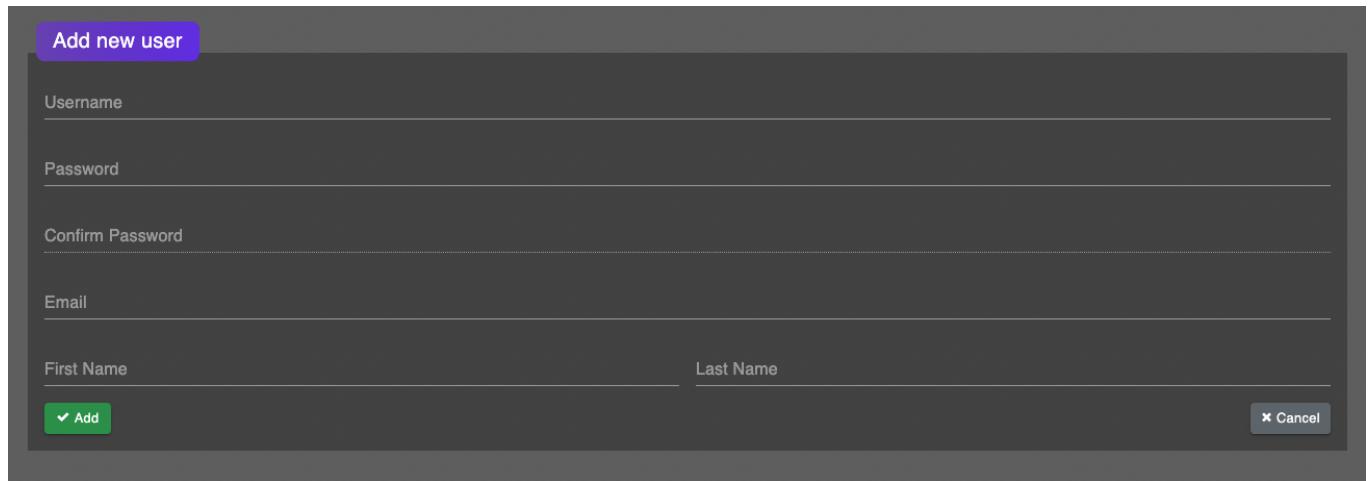
Email

First Name

Last Name

Add

Cancel



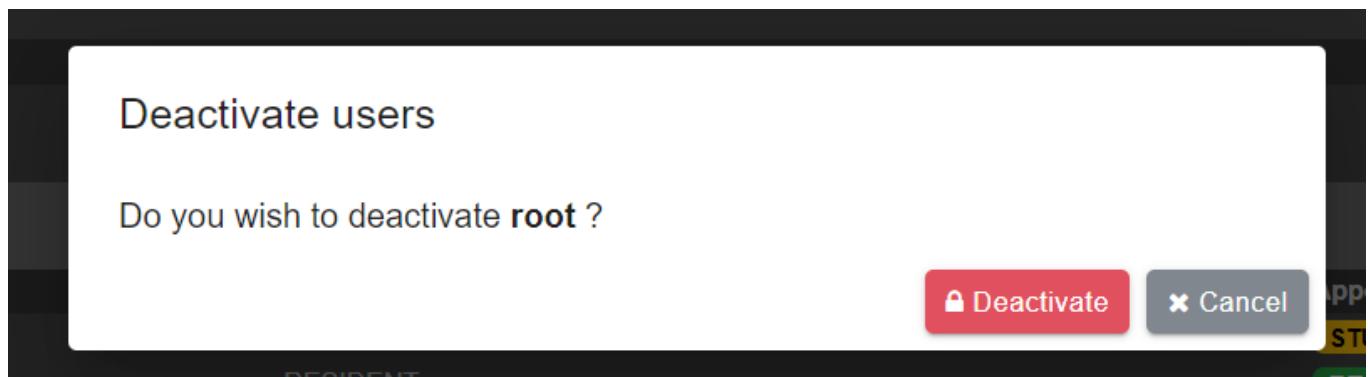
Confirm by clicking "Add".

### Activate User

To activate an existing User, select the "Activate" button, and then confirm activation once the "Activate user" dialog is presented.

### Deactivate User

To deactivate a User, select one or multiple Users by ticking their correspondent boxes. Click "Deactivate" and then confirm deactivation once the "Deactivate user" dialogue is presented.



User will no longer have access to the UI but still exists and can be reactivated at any time.

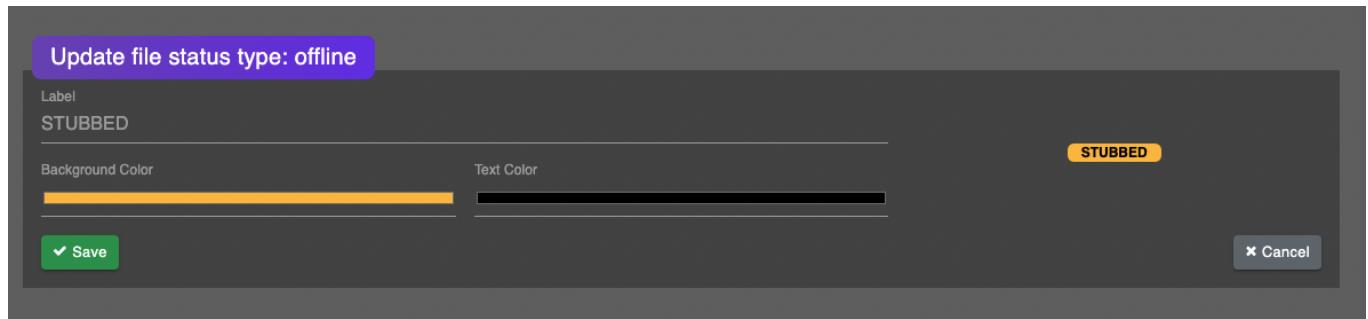
### File Status Types

The File Status Types tab lists the labels that are used to indicate a file's status.

The labels are customisable as both colour and label name can be changed.

To change the appearance of a label, select the pencil symbol next to the label that needs updating.

"Update File Status Type" page is displayed:



Change label name, background colour, or text colour as per your preference.

Click "Save" to confirm the update.

## API

### Reference

The API reference can be found at your Ngenea Hub install at `http(s)://myhub/api/docs/`. This section does not attempt to duplicate the reference, but instead provide some usage examples.

## Authentication

Authentication to the API can be performed in 2 ways

- JWT Authentication
- Client Keys

The first one is for interacting with the API interactively and is therefore most likely not suitable for building automated workflows. On the other hand, client keys are valid until they are revoked and are more suitable for automation.

## JWT Authentication

To use the API directly, authentication tokens should be generated to prevent sending the username and password repeatedly. You need to generate these tokens by sending your username-password pair to the login endpoint: `/auth/token/`

```
curl -s -X POST 'http://localhost:8000/api/auth/token/' -H 'Accept: application/json' -H 'Content-Type: application/json' -d '{"username": "dfoster", "password": "*****"}' | jq -r
{
  "access": <access_token>,
  "refresh": <refresh_token>,
}
```

There are 2 types of authentication tokens:

- Access token
- Refresh token

Access tokens are used for doing API requests. You need to include the token in the Authorization header to use any other endpoint:

```
curl -s -X GET 'http://localhost:8000/api/jobs/' -H 'Accept: application/json' -H 'Content-Type: application/json' -H "Authorization: Bearer $JWT_ACCESS_TOKEN" | jq
{
  "count": 0,
  "next": null,
  "previous": null,
  "results": [],
  "stats": {
    "type": {
      "migrate": 0,
      "premigrate": 0,
      "recall": 0
    },
    "state": {
      "SUCCESS": 0,
      "FAILURE": 0,
      "STARTED": 0,
      "PENDING": 0,
      "ERROR": 0
    },
    "created": {},
    "site": {}
  }
}
```

On the other hand, refresh tokens are used for refreshing the access token. For security purposes, access tokens expire in 1 hour and refresh tokens expire in 1 day. When an expired token is used, one of `HTTP 401 Unauthorized` and `HTTP 403 Forbidden` errors is received. In that case, you need to refresh the access token with `/api/token/refresh/` endpoint:

```
curl -s -X POST 'http://localhost:8000/api/auth/token/refresh/' -H  
'Accept: application/json' -H 'Content-Type: application/json' -d  
'{"refresh": "<refresh_token>"}' | jq -r  
{  
  "access": <new_access_token>,  
}
```

Refresh tokens can also be expired too. In that case, you need to send your credentials (username and password) again to obtain new token pair.

## Client Keys

### Creating Client Keys

**Note:** The UI does not currently support creating client keys and therefore have to be done via the API directly

Before we can authenticate using the client key, we need to temporarily authenticate using JWT to be able to create a client key.

To get a valid JWT access token using curl and jq:

```
export JWT_TOKEN=$(curl -s -X POST 'http://localhost:8000/api/auth/  
token/' -H 'Accept: application/json' -H 'Content-Type:  
application/json' -d '{"username": "dfoster", "password":  
"*****"}' | jq -r .access)  
echo $JWT_TOKEN  
<token>
```

This can now be used to create a client key:

```
curl -s -X POST 'http://localhost:8000/api/auth/clientkeys/' -H  
'Accept: application/json' -H 'Content-Type: application/json' -H  
"Authorization: Bearer $JWT_TOKEN" -d '{"name": "my_automation_key"}'  
| jq '.'  
{  
  "url": "http://localhost:8000/api/auth/clientkeys/1/",  
  "id": 1,  
  "name": "my_automation_key",  
  "api_key": "YOUR_API_KEY"  
}
```

{warning} This **is** the only time the client key will be visible, make sure it **is** recorded.

## Using Client Keys

The key created in the previous section can now be used by setting the header `Authorization: Api-Key YOUR_API_KEY` against an API endpoint. For example:

```
export API_KEY=YOUR_API_KEY  
  
curl -s -X GET 'http://localhost:8000/api/jobs/' -H 'Accept:
```

```
application/json' -H 'Content-Type: application/json' -H
"Authorization: Api-Key $API_KEY" | jq
{
  "count": 0,
  "next": null,
  "previous": null,
  "results": [],
  "stats": {
    "type": {
      "migrate": 0,
      "premigrate": 0,
      "recall": 0
    },
    "state": {
      "SUCCESS": 0,
      "FAILURE": 0,
      "STARTED": 0,
      "PENDING": 0,
      "ERROR": 0
    },
    "created": {},
    "site": {}
  }
}
```

## Submitting Workflow

To submit a workflow, the following parameters are required:

<b>name</b>	<b>description</b>
<code>workflow</code>	The name of the workflow to submit
<code>paths</code>	A list of paths to execute the workflow on
<code>site</code>	The name of the site where the workflow should be started from. Steps within a workflow may run on different sites.

In addition, the following optional parameters may be provided:

<b>name</b>	<b>description</b>
<code>discovery</code>	Name of the file discovery technique to use. Currently the only supported discovery is <code>recursive</code> . If no discovery is specified, <code>recursive</code> will be used as the default. If explicitly set to <code>null</code> , no discovery will be performed and the provided paths will be used 'as is'.
<code>fields</code>	Additional parameter for the workflow, typically used by custom workflows.

## Migrate

Using a Client Key stored in a environment variable `TOKEN`, the following is an example of migrating a file using curl.

```
curl -s -X POST 'http://example.com/api/file/workflow/' -H 'Accept: application/json' -H 'Content-Type: application/json' -H "Authorization: Api-Key $TOKEN" -d '{"paths": ["/mmfs1/data/sample_data.tgz"], "site": "dfoster1", "workflow": "migrate", "discovery": null}'
```

**Note:** Since we're only migrating a single file, we don't need recursive discovery, so discovery has been set to `null` to disable it.

## Trailing Slashes

In general, the endpoint used with `POST` requests must have a trailing slash.

For example, a `POST` request made to `http://example.com/api/file/workflow` would error, but if made to `http://example.com/api/file/workflow/` it would work.

## Monitoring and Management

### systemd service

Ngenea Hub is controlled via the `ngeneahub` systemd service

### ngeneahubctl cli tool

The `ngeneahubctl` tool can be used to manually stop/start the services, outside of systemd, for debugging

### Docker containers

Ngenea Hub uses a collection of docker containers, which can be managed by standard Docker monitoring/management tools and processes:

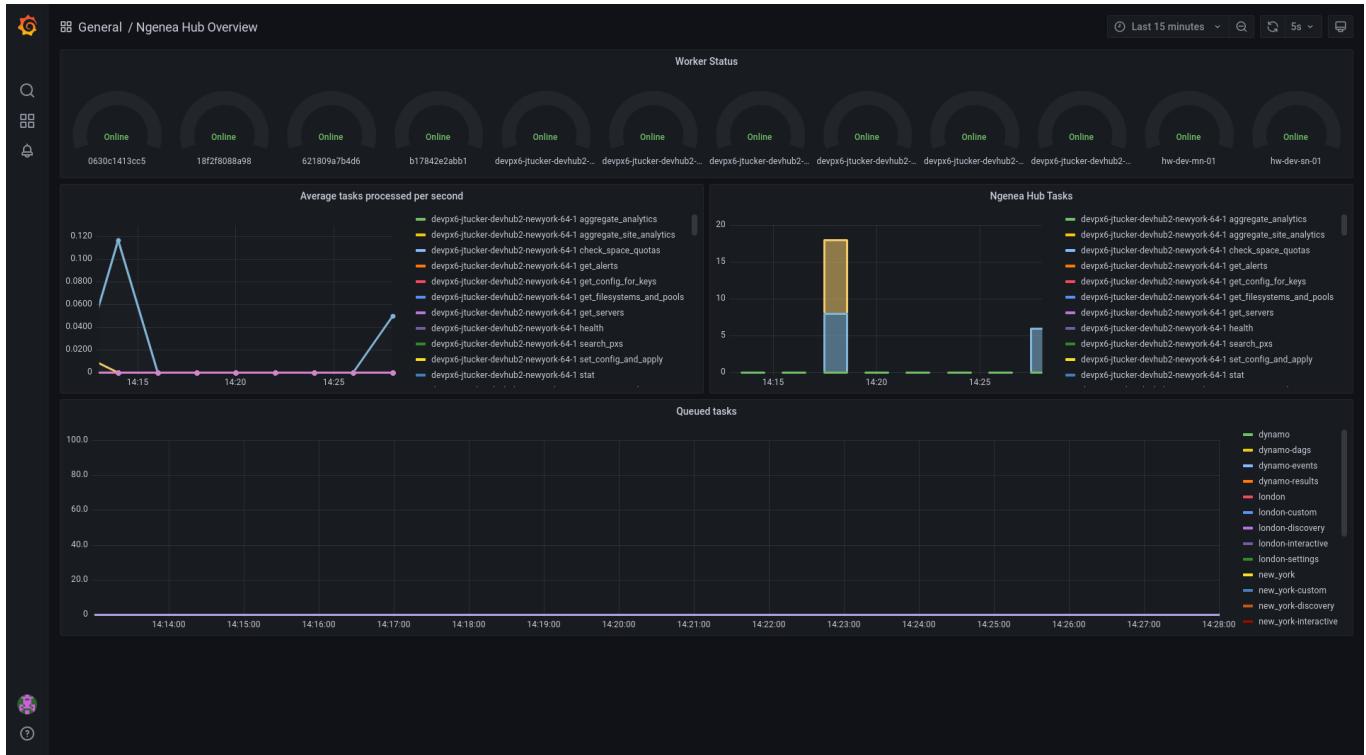
Container Name	Description
<code>ngeneahub_app_1</code>	Web application
<code>ngeneahub_jobrefresh_1</code>	Maintenance task controller
<code>ngeneahub_db_1</code>	Application database (Postgres)
<code>ngeneahub_redis_1</code>	Task results backend and celery broker

## Hub Task Metrics

Hub provides a Grafana panel of the Tasks in the Hub queue and the status of the Workers.

To view the Metrics open the URL as follows, substituting the location of your hub.  
[http\(s\)://myhub/hubmetrics](http://myhub/hubmetrics)

It is required to be authenticated to Hub in order to view the metrics.



## Health endpoints

To view the state of all sites and related nodes within known to Ngenea Hub, a GET request can be performed to `/api/health` to view all of the sites, nodes and the hub service itself. The states are currently based on how many nodes are online for each site using the following states:

State	Description
ok	All nodes are functional
warning	Some nodes are offline within a site
critical	One or more sites are completely offline

An example output of the health endpoint can be seen below:

```
```json {
  "overall_health": "ok", "hub_status": {
    "health": "ok"
  }, "site_status": [
    {
      "site": "site1", "health": "ok", "nodes": [
        {
          "node": "node1", "status": "ok"
        }, {
          "node": "node2", "status": "warning"
        }
      ]
    }
  ]
}```
```

```

        "name": "pixstor-east-ng-test", "health": "ok",
        "online": true

    }

]

}, {

    "site": "site2", "health": "ok", "nodes": [

        {

            "name": "pixstor-west-ng-test", "health": "ok", "online": true

        }

    ]

}

]
}

```

A request can also be performed to specific sites using `/api/sites/ID/health/` to view the site specific health status:

```

```json {
    "site": "site1", "health": "ok", "nodes": [

        {

            "name": "pixstor-east-ng-test", "health": "ok", "online": true

        }

    ]

}

```

## Custom Workflows

### Defining workflows

It's possible to define custom workflows which use pre-defined rules as building blocks to create your workflow.

**Note:** Custom workflows are not currently exposed via the UI. Use the API `/api/workflows/` endpoint to create custom workflows

A workflow definition requires the following parameters:

Name	Description
name	The unique name for this workflow. For easy of submission again the API, this should not contain spaces.
label	The human readable name for this workflow, can contain spaces.
icon_classes	List of icon classes to represent the workflow in the UI. Font Awesome is useful here.
filter_rules	A list of rules to apply to provided files that match defined states. Described in more detail below.
fields	A list of runtime fields. Described in more detail below.

Additionally, you can optionally provide:

Name	Description
discovery	Which discovery task the workflow should be used by default, this can be either recursive or snapdiff.
discovery_options	A json containing any additional options to pass to the workflow default discovery. Described in more detail below.

## Filter Rules

Filter rules are defined in JSON. They are a list of individual rules in a mapping format that will be performed on each matching file result when a discovery task is complete. If called through the API with no discovery task provided, rules will be applied to any states provided in the workflow input.

Steps are defined in JSON. Steps is a list of individual steps that will be performed serially. Each rule must contain the following:

Name	Description	Required
state	The state of a result provided by the discovery task with any given path, an example of that could be "processed" or "modified" more details about this are in the discovery section.	Yes
type	The type of result the rule will apply to, the only valid types are: file directory symlink all	Yes
action		Yes

Name	Description	Required
	A list of tasks to perform on files that match the state and type	
include	A list of globs to apply to provided files to limit No actions to just them.	
exclude	A list of globs to apply to provided files. Described in more detail below.	
ignore_site_includes	Whether to ignore any global includes defined on the site the workflow will run on	No
ignore_site_excludes	Whether to ignore any global excludes defined on the site the workflow will run on	No

These rules control which actions will be performed on certain files based on their given state that they have been given following specific discovery tasks such as `snapdiff` or provided in the initial input of a workflow. These states can allow direct control of workflows performed on files provided, allowing multiple workflow paths within the same job by utilizing multiple rules controlling specific states with additional control with include and exclude path rules.

Alongside rules bound to a state, there are two special states that rules can be used, these being `default` and `all`. Rule sets cannot have both `default` and `all` rules within them, but it is possible to have multiple of one type with different sets of exclude and include rules to allow for more granular control.

Rules defined with `default` as their `state` and `type` will perform their action on paths that have not been captured by all other rules within a given rule set. This means that if there are specific file states that need to be actioned differently, paths that do not match any other rules actioned against without ignoring those non-matching paths.

The other special rule type is rules with the `state` and `type` of `all`. This rule will perform its action on all paths regardless of their provided type and state. This is an additional operation so if another rule has an explicit rule provided it will perform multiple actions on the same path, for each matching rule in rule set. Simple workflows are typically composed of a single rule with the `state` and `type` of `all` as this will simply process all paths provided to it.

Within each rule, there must be a list of actions to perform on the resulting file provided within the `action` key. These actions will be performed serially. Each action must be a mapping that contain the following in each entry:

Name	Description	Required
name		Yes

Name	Description	Required
	The name of the task to run, e.g. <code>dynamo.tasks.migrate</code>	
site	The name of the site to run against, if this is not provided it will use the No site provided within the workflow call.	

If steps have optional arguments, these can be passed as additional key:value pairs in these step definition mapping to pass those optional arguments.

As an example we can define a generic rule that captures every type of file and state and sends it to a second site, this would be useful for a bulk move using the `recursive` discovery task to cover all types of files in directories provided to the task:

#### Example 1 - Send to london

```
{
  "state": "all",
  "type": "all",
  "action": [
    {
      "name": "dynamo.tasks.migrate"
    },
    {
      "name": "dynamo.tasks.reverse_stub",
      "site": "london"
    }
  ]
}
```

#### Runtime fields

A workflow needs to be able to accept parameters as it submitted. Taking example #1 above, "london" doesn't want to be hardcoded as the destination site, as that would mean a new workflow would need to be defined for each possible destination.

Instead, fields can be defined, that in turn will need to be provided at workflow submission time. Fields are defined as a mapping with the following keys:

Name	Description	Required
name	The name of the field.	Yes
label	The friendly name for this field, used for presenting in the UI	Yes
type		Yes

Name	Description	Required
	<p>The type of the field, valid options are:</p> <ul style="list-style-type: none"> <li>• <code>string</code> - a free text field</li> <li>• <code>int</code> - a free text field that will be validated a integer</li> <li>• <code>bool</code> - a checkbox</li> <li>• <code>choices</code> - A dropdown box representing a list of choices, populated from choices list of objects.</li> <li>• <code>enum[enum_type]</code> - A dropdown box representing a choice of option, populated from <code>enum_type</code>. <code>enum_type</code> can be one of the following <ul style="list-style-type: none"> <li>◦ <code>site</code> - A list of all the sites Ngenea Hub has defined</li> </ul> </li> <li>• <code>list</code> - a list of values of any scalar type</li> </ul>	
<code>default</code>	The default value for runtime fields	optional

The following is an example of a custom field definition for providing a site to an action step:

#### Example 2 - Custom field definition

```
[  
  {  
    "name": "target_site",  
    "label": "Site to migrate to",  
    "type": "enum[site]"  
  }  
]
```

#### Custom field defintion with default value

```
[  
  {  
    "name": "target_site",  
    "label": "site to migrate to",  
    "type": "enum[site]",  
    "default": "london"  
  }  
]
```

```
    }  
]
```

If default value is specified in runtime fields, it will take the default value for fields while running workflow if the user input is not given otherwise it will always use the user input.

Back in the definition of an action step, any value that is prefixed with a `*` will be used as a field name and the value replaced instead of a literal string.

The following example, modifies example #1 to use the custom field as defined in example #3:

#### Example 3 - Updated rule now using custom fields

```
{  
  "state": "all",  
  "type": "all",  
  "action": [  
    {  
      "name": "dynamo.tasks.migrate"  
    },  
    {  
      "name": "dynamo.tasks.reverse_stub",  
      "site": "*target_site"  
    }  
  ]  
}
```

So, a complete request to create a workflow that will process all file and state types with a dynamic "site" field will look like:

#### Example 4 - Full workflow request

```
{  
  "name": "send_file",  
  "label": "Send files from one site to another",  
  "icon_classes": ["fa fa-cloud fa-stack-2x text-primary", "fa fa-refresh fa-stack-1x text-light"],  
  "filter_rules": [  
    {  
      "state": "all",  
      "type": "all",  
      "action": [  
        {  
          "name": "dynamo.tasks.migrate"  
        },  
        {  
          "name": "dynamo.tasks.reverse_stub",  
          "site": "*target_site"  
        }  
      ]  
    }  
  ],  
  "fields": [  
  ]  
}
```

```

        {
            "name": "target_site",
            "label": "Site to migrate to",
            "type": "enum[site]"
        }
    ]
}

```

The following is an example of a custom field definition for providing a choices to an action step:

#### Example 5 - Custom field definition

```

[
{
    "name": "sync_policy",
    "label": "sync_policy",
    "type": "choices",
    "choices": [
        {
            "label": "Newest",
            "value": "newest"
        },
        {
            "label": "Sourcesite",
            "value": "sourcesite"
        }
    ]
}
]

```

choices support both string and integer type values.

Back in the definition of an action step, any value that is prefixed with a `*` will be used as a field name and the value replaced instead of a literal string.

The following example, uses the custom field in action:

#### Example 6 - Updated rule now using custom fields

```

{
    "state": "all",
    "type": "all",
    "action": [
        {
            "name": "dynamo.tasks.migrate"
        },
        {
            "name": "dynamo.tasks.reverse_stub",
            "sync_policy": "*sync_policy"
        }
    ]
}

```

So, a complete request to create a workflow that will process all file and state types with a static choices field will look like:

#### Example 7 - Full workflow request

```
{  
  "name": "send_file",  
  "label": "Send files from one site to another",  
  "icon": "<span class='fa-stack'><i class='fa fa-cloud fa-stack-2x text-primary'></i><i class='fa fa-angle-right fa-stack-2x text-light'></i></span>",  
  "filter_rules": [  
    {  
      "state": "all",  
      "type": "all",  
      "action": [  
        {  
          "name": "dynamo.tasks.migrate"  
        },  
        {  
          "name": "dynamo.tasks.reverse_stub",  
          "sync_policy": "*sync_policy"  
        }  
      ]  
    }  
  ],  
  "fields": [  
    {  
      "name": "sync_policy",  
      "label": "sync_policy",  
      "type": "choices",  
      "choices": [  
        {  
          "label": "Newest",  
          "value": "newest"  
        },  
        {  
          "label": "Sourcesite",  
          "value": "sourcesite"  
        }  
      ]  
    }  
  ]  
}
```

#### Running Workflows

Once a workflow has been defined, it can be performed through the file browser by selecting files and directories and clicking the actions button. It is then possible to select the workflow you wish to call, this workflow call will not use a discovery task unless a directory is selected, in that case it will make use of the `recursive` discovery step.

This can also be performed via a POST request to `/api/file/workflow`. When called through the API, you have the option to provide a discovery step, these steps can expand the initial paths provided to them to either recursively perform actions or perform something like a file difference scan.

Name	Description	Type	Required
paths	A list of paths to perform the workflows against, these can be just strings of file absolute file paths or can be JSON with the keys of "path" and "state", detailed example in example 7	JSON List	Yes
site	The site to perform the workflow against	String	Yes
fields	The runtime fields for a workflow	String	Yes
discovery	The discovery phase to use for this workflow run, this will override any defaults	String	No
job	The ID of a job that this workflow should be run within	Integer	No

Following the example workflow defined above, you can call the workflow to recursively send all files within any paths provided using the following POST to `/api/file/workflow`:

#### Example 8 - Calling example workflow

```
{
  "paths": [
    "/mmfs1/data/project_one",
    "/mmfs1/data/project_two"
  ],
  "site": "london",
  "workflow": "send_file",
  "discovery": "recursive",
  "fields": {
    "target_site": "dublin"
  }
}
```

This will now migrate all files within `/mmfs1/data/project_one` and `/mmfs1/data/project_two` and then recall them at the site defined as `dublin`.

If there is a more complex workflow that have been defined that includes rules for specific states, the input paths can include this state information. This behaviour can be only be used when no discovery state is provided, an example of a custom rule set using could be:

#### Example 9 - Calling workflow with state data

```
{  
  "name": "migrate_state",  
  "label": "Stateful file migration",  
  "filter_rules": [  
    {  
      "type": "all",  
      "state": "modified",  
      "action": {  
        "name": "dynamo.tasks.migrate"  
      }  
    },  
    {  
      "type": "all",  
      "state": "moved",  
      "action": {  
        "name": "dynamo.tasks.delete_paths_from_gpfs"  
      }  
    }  
,  
  "discovery": null,  
  "fields": []  
}
```

Here is a simple rule set that will migrate all paths provided with the state `modified` and will delete all paths provided with the state `moved`. With this example workflow provided you can perform a POST to `/api/file/workflow` with the following JSON:

#### Example 10 - Calling workflow with state data

```
{  
  "paths": [  
    {  
      "path": "/mmfs1/data/project_one",  
      "state": "modified"  
    },  
    {  
      "path": "/mmfs1/data/project_two",  
      "state": "moved"  
    }  
,  
  "site": "london",  
  "workflow": "migrate_state",  
  "discovery": null,  
  "fields": {}  
}
```

Using multiple state based rules with different include and exclude path filters, you could achieve more complex behaviour in workflow calls for more finite control.

## Discovery Steps

Discovery steps can make complex large bulk operations much more manageable to call, allowing you to provide a single path that expands to cover all the contents of a path, or to see time based differences for a given path.

**Note:** If a workflow is submitted without a discovery task explicitly provided, it will default to using the discovery task defined as the default during the workflow's creation, visible via the workflow's "discovery" attribute. To avoid this, it is possible to explicitly pass `null` as the discovery task via the API to skip any discovery phase and additional processing on the paths provided and instead process the actions specified using the rules, without any additional checks.

Name	Description	Supported states
<code>recursive</code>	Performs a recursive expansion of the initial provided paths. This allows paths to be expanded to cover all sub file and directories, it will then perform the defined action for all the generic rules in a workflow against all resulting files.	<code>all</code>
<code>snapdiff</code>	Performs a time based file scan on an independant filesset between the last time a scan was performed. It will retrieve all file differences between those moments in time and the state of that file.	<code>created updated moved deleted all</code>

For more complex discovery steps such as `snapdiff`, there are defined states that files, directories and links can be in once it has completed its scan. This allows more explicit control of file and state control within a single call to a workflow. If for example you want all results with the type of `file` that have the state `created` to be sent to another site without any temporary files, a rule to cover that could be:

### Example 11 - Custom rule for filtering snapdiff discovery results

```
{  
  "state": "created",  
  "type": "file",  
  "exclude": ["*.temp"],  
  "action": [  
    {  
      "name": "dynamo.tasks.migrate"  
    }  
  ]  
}
```

```

        },
        {
            "name": "dynamo.tasks.reverse_stub",
            "site": "*target_site"
        }
    ]
}

```

## Discovery Options

Additional options can be passed to the discovery task by setting `discovery_options` on the workflow. The supported options are those described in [Discovery Steps](#).

### Example 12 - Passing options to the discovery

```

{
    "discovery": "recursive",
    "discovery_options": {
        "skip_missing": false
    }
}

```

Discovery options will be used with the workflow default discovery only. If a different discovery is set at runtime, the discovery options will be ignored. Discovery options cannot currently be overwritten at runtime.

## Includes and Excludes

Includes and excludes can be used to select paths that individual filter rules should apply to, or generally limit which paths should be handled during a workflow run.

Include/exclude patterns behave like unix shell pattern matching ('globbing'). The 'wildcard' asterisk character `*` will match any characters within a string. Patterns must match whole paths; partial matches are not supported, except through the use of wildcards.

Includes and excludes are combined as "a path matching any includes and not any excludes". For example `{"include": ["/mmfs1/data/*"], "exclude": ["*.tmp"]}` would match only files in `/mmfs1/data`, but not files in that directory with the `.tmp` extension. If no includes are defined, then all files are considered included (unless explicitly excluded).

There are three places where path include and exclude patterns can be defined:

- on a site
- within a filter rule
- at runtime, when a workflow is submitted

Site patterns can be used to apply includes and excludes globally, to all workflows and workflow steps. If defined, these will be appended to any patterns defined within a filter rule or at runtime.

For example, if a rule defines `{"exclude": ["*.tmp"]}` and the site defines `{"exclude": ["*.cache"]}`, then the combined excludes for that rule would be `{"exclude": ["*.tmp", "*.cache"]}`

If not desired, this behaviour can be overridden by specifying `ignore_site_includes` / `ignore_site_excludes` either on a per-rule basis, or for all rules by passing those parameters when submitting a workflow run.

For workflows involving multiple sites, such as send and sync, only the primary (source) site patterns will be considered.

If includes and excludes are passed when submitting a workflow, they will be applied to all filter rules within the workflow, replacing any patterns already defined within the workflow rules. Any site patterns will be appended to the runtime patterns, unless 'ignore' is specified.

## Jobs

### Housekeeping

Job details are kept for a time after job completion. During this time, they can be viewed in the UI.

But older jobs are periodically culled from the database, to keep it to a manageable size. The housekeeping process runs once a day, and removes results for any job that completed more than 90 days ago (by default). A different 'time-to-live' (TTL) can be set using the `jobs_ttl` configuration - see [Configuration](#) for more information.

## Site Sync

Ngenea Hub provides the facility for syncing data from one site to another.

Site Sync applies changes in one direction. See also [Bidirectional Site Sync](#) for applying changes in both directions.

Synchronisation is achieved by utilising a scheduled workflow which periodically discovers file and directory changes within an Independent Fileset on a source site and applying those changes to a target site. Changes are applied by sending newly created or recently modified files and directories, including deleting or moving files or directories in place on the target site as necessary to match the source site.

The following walkthrough details how to set up a sync between two sites ('Site Sync') using the Ngenea Hub UI.

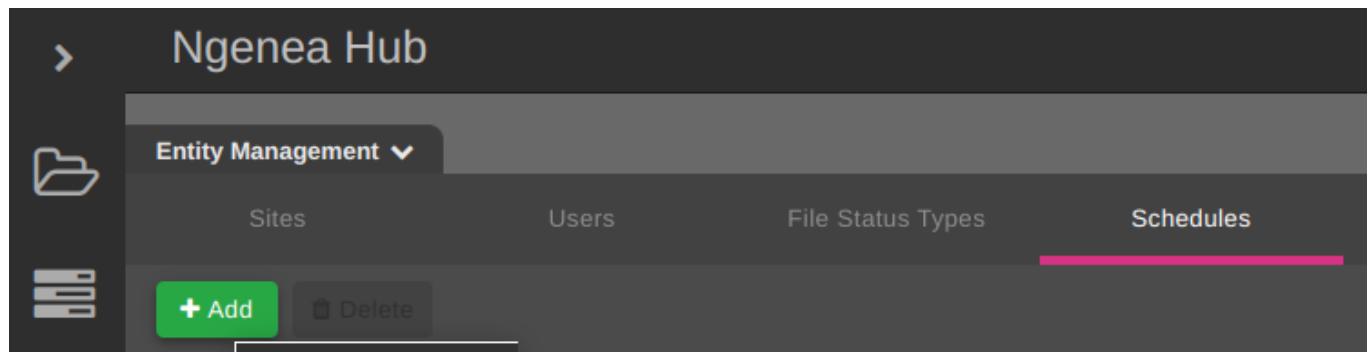
The [REST API](#) can also be utilised to achieve the same setup.

## Schedule

A schedule defines when and how often a sync occurs.

In the Ngenea Hub UI, navigate to the **Administration** page, and select the **Schedules** tab.

To create a new schedule, click the **Add** button.



Configure the schedule by entering appropriate details into the **Add new schedule** dialog:



1. Enter a descriptive **Name** for the schedule, E.G. "sync-to-site2"
2. Select the **source** site from the dropdown menu
3. Set the **Discovery** to **snapdiff**. Snapdiff discovery uses snapshots to track changes over time within an Independent Fileset.
4. Set the **Path** to the top level directory (path) of the Independent Fileset to be synchronised
5. Set the time criteria
6. Click the **Add** button to add the new schedule

## Time criteria

A schedule utilises **cron** syntax. By default, all the fields are populated with **\*** - this means the schedule will run every minute. This is likely too frequent as the calculation of file changes could take longer than the time between the schedule running every minute. Sizing for an ideal setup will balance the need to sync files quickly versus how long the sync snapdiff stage takes to run. This can be most effectively achieved through observation.

Examples:

- To enact the schedule every 5 minutes, specify the **Minute** field as follows: **\*/5**.

- To enact the schedule once an hour, set the **Minute** field to a number of minutes past the hour. Setting **Minute** to 5 will run the sync once an hour at 5 minutes past the hour.
- To enact the schedule at set times throughout the hour, change the **Minute** field separating entries by commas (E.G.) 7,23,46

## Workflow

Schedules enact a workflow. A workflow performs one or more series of tasks to files and/or directories.

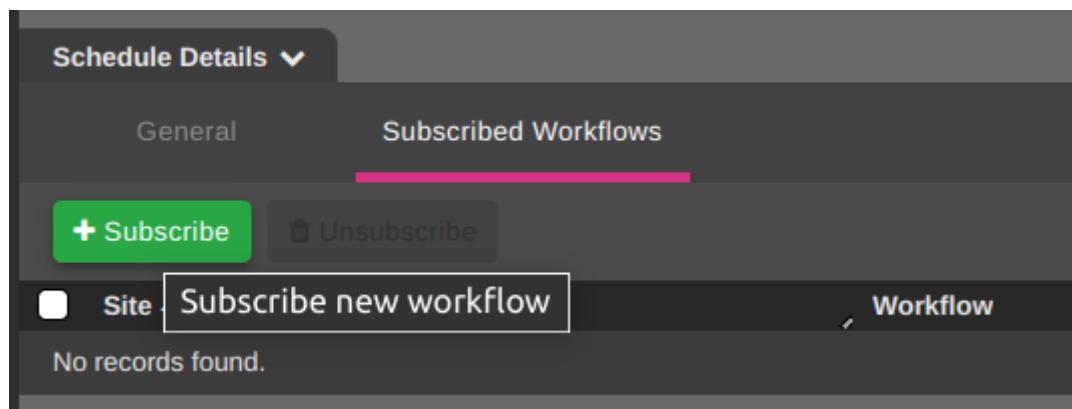
In the Ngenea Hub Hub UI, navigate to the **Administration** page, and select the **Schedules** tab.

Select the prior created schedule in the **Schedules** tab, which then displays the **Schedule Details** page.

### Subscribing a workflow

To associate a workflow with a schedule undertake the following actions:

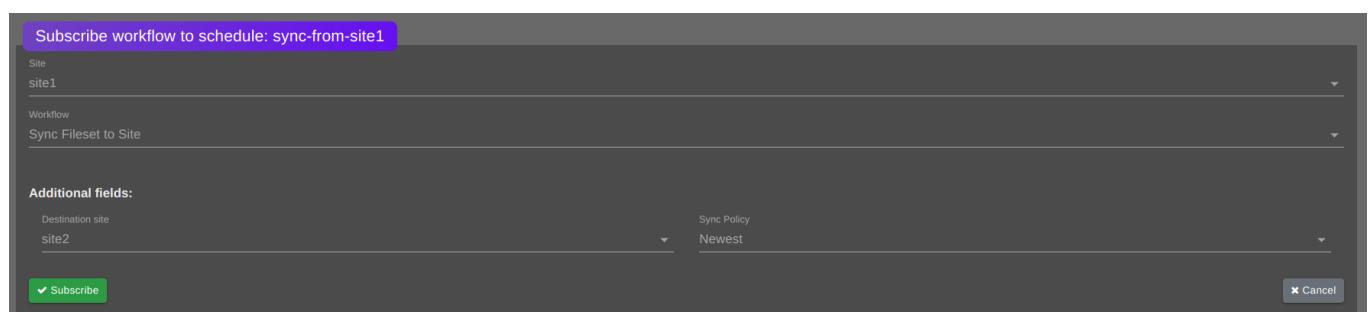
1. Click **Subscribe** and in the create dialogue set **Site** to the source site from which to synchronise.



Ngenea Hub provides a built-in workflow for synchronising changes from an Independent Fileset on a source site to a target site.

1. Select **Sync Fileset to Site** from the **Workflow** dropdown menu.

Configure the workflow subscription settings by entering appropriate details into the **Subscribe workflow to schedule** dialog:



1. Select the target site in the **Destination site**

2. Select an appropriate Sync Policy
3. Click **Subscribe** to associate the workflow to the schedule

## Sync Policy

The Sync Policy setting controls how conflicts are resolved. A conflict may occur if (E.G.) different versions of the same file exist on both source and target sites. By default, the newest version of the file will be retained.

## Outcome

Now associated (subscribed), files and/or directories will synchronise at the next scheduled execution time. When executing the scheduled workflow, two jobs appear within the schedule details page. One for the snapdiff discovery, and one for the subscribed sync workflow.

The first enactment of the sync will synchronise all files and directories in the Independent Fileset from the source site. Further enactments will synchronise files and/or directories created, modified, deleted or moved since the last enactment and the time of the most recent enactment.

## Additional Options

Associating more than one workflow to the same schedule can be utilised to synchronise from the same source site to another target site. Additional workflows cause creation of an additional job, and run simultaneously with other syncs enacted from the same schedule.

## Troubleshooting

If you encounter issues with sync, refer to the [sync troubleshooting guide](#) page for guidance.

## Bidirectional Site Sync

Ngenea Hub provides the facility for syncing data between sites.

Bidirectional Site Sync is similar to [Site Sync](#), but applies changes in both directions. If a Bidirectional Site Sync runs between sites A and B, changes on site A will be applied on site B, followed by changes on site B being applied on site A.

Synchronisation is achieved by utilising a scheduled workflow which periodically discovers file and directory changes within an Independent Fileset on each of the sites and applies those changes to the other site. Changes are applied by sending newly created or recently modified files and directories, including deleting or moving files or directories in place on the target site as necessary to match the other site.

A prerequisite for a working Bidirectional Site Sync is that the Independent Fileset has been created on both sites.

The principles of setting up Bidirectional Site Sync are similar (but with some differences explained below) to setting up a Site Sync, so please refer to the walkthrough on the [Site Sync page](#) for detailed instructions. It can be done using the Ngenea Hub UI or the REST API.

## Schedule

### Discovery

Create a new schedule. Unlike with Site Sync, for Bidirectional Site Sync set the schedule's `Discovery` to `bidirectional_snapdiff`.

This discovery type operates identically to the `snapdiff` discovery type, with snapshots used to track changes over time within an Independent Fileset.

A separation is enforced between `bidirectional_snapdiff` schedules and schedules with other discovery types. Whereas the `Discovery` of other schedules may be changed, a change from or to the `bidirectional_snapdiff` discovery type is not allowed. This is to ensure consistency of the specific workflow rules that apply to Bidirectional Site Sync.

### Time criteria

Unlike with Site Sync, a Bidirectional Site Sync will not be triggered if the previous sync is still running. This means that some syncs will be skipped if scheduled closer together than the time it takes to complete a sync.

## Workflow

### Subscribing a workflow

Select the `Bi-directional Site Sync` workflow.

This is the only workflow that may be subscribed to a `bidirectional_snapdiff` schedule, and it cannot be subscribed to other types of schedule.

A `bidirectional_snapdiff` schedule may have at most one subscribed workflow.

### Outcome

When executing the scheduled workflow, only one job is created and appears within the schedule details page. This job includes the tasks for both the snapdiff discoveries (one on each site), as well as the tasks that enact the sync in each direction.

## Troubleshooting

If you encounter issues with sync, refer to the [sync troubleshooting guide page](#) for guidance.

# Search

**Note:** Before you can use the search feature, additional set-up is necessary, as described in the [search feature](#) page.

The search endpoint provides the ability to search for files across multiple sites, and aggregate the results.

Search is performed in two steps - submitting a query, and retrieving the results.

## Submitting a query

Search performs a query by submitting asynchronous tasks to each requested site. The sites then perform the actual search and return results as available.

A search is initiated by POSTing a query to the search endpoint

```
curl -s -X POST 'http://example.com/api/search/' -H 'Accept: application/json' -H 'Content-Type: application/json' -H "Authorization: Api-Key $TOKEN" -d '{"path": "/mmfs1/data", "sites": ["site1"], "recursive": true, "filters": {"hsm.status": "migrated"}}'
```

The search request payload is made of

name	description
path	Directory to query
sites	List of one or more sites to search. Default: all sites
recursive	Whether to search the path recursively. Default: false, only immediate children of path will be returned.
filters	A collection of filters against arbitrary metadata, see below. Default: None
metadata_fields	A list of metadata fields to include in search results. This can include specific field names (e.g. hsm.status), or namespace wildcards (e.g. core.*) to select all fields in a given namespace. Default: all available fields.
merge	If the same file exists on multiple site, this will cause them to be merged in the results (see below). Default: false

Upon successful submission, the request will return status 201 (Created), and a response body which includes the url for retrieving search results (see below)

```
{"id":1,"url":"http://example.com/api/search/1/"}
```

## Filters

Filters are a collection of filters to apply to arbitrary file metadata.

The specific metadata available to be filtered on depends on the search backend being used. The fields in the following examples may not be available for all backends.

At a minimum, one can expect to be able to filter on `core.filename`, the file basename. For example to filter only jpeg files, `{"core.filename": "*.jpg"}`

Possible filter types are

type	description	example
exact match	match a value exactly	<code>{"core.filename": "cats-01.jpg"}, {"core.size": 0}</code>
match list	match any of the values in the list (value1 OR value2 OR ...)	<code>{"core.group.name": ["editor", "admin"]}</code>
wildcard	any string value containing an asterisk (*) is treated as a wildcard	<code>{"core.filename", "*.jpg"}</code>
range	numerical or date range, using any combination of less-than (lt), less-than-equal (lte), greater-than (gt), greater-than-equal (gte)	<code>{"core.modificationtime": {"gte": "2021-01-01", "lt": "2021-02-01"}}, {"core.size": {"gt": 1000000000}}</code>
negation	exclude anything matching a given filter	<code>{"not": {"core.filename": ".DS_Store"}}</code>

Filters are combined as AND, e.g. `{"core.extension": ".jpg", "hsm.status": "migrated"}` matches .jpg files which are HSM migrated.

## Retrieving results

When search results are read, they can be retrieved using the url returned when the query was submitted.

```
$ curl 'http://example.com/api/search/1/' -H "Authorization: Api-Key $TOKEN"
{
  "count": 1,
  "next": null,
  "previous": null,
  "items": [
    {
      "href": "http://example.com/api/file/?path=%2Fmmfs1%2Fdata%2Fhello.txt&site=site1",
      "site": "site1",
      "path": "/mmfs1/data",
```

```

    "name": "hello.txt",
    "metadata": {
        "core.accesstime": "2021-10-12T16:27:28",
        "core.changetime": "2021-10-12T16:28:45",
        "core.directory": "/mmfs1/data",
        "core.extension": ".txt",
        "core.filename": "hello.txt",
        "core.group.id": 0,
        "core.group.name": "root",
        "core.hash.sha512": "db3974a97...94d2434a593",
        "core.modificationtime": "2021-10-12T16:28:45",
        "core.pathname": "/mmfs1/data/hello.txt",
        "core.size": 12,
        "core.user.id": 0,
        "core.user.name": "root",
        "gpfs.filesetname": "root",
        "gpfs.filesystem": "mmfs1",
        "gpfs.kallocated": 0,
        "gpfs.poolname": "sas1",
        "hsm.status": "migrated"
        "ngenea.pathname": "data/hello.txt",
        "ngenea.size": 12,
        "ngenea.target": "awss3",
        "ngenea.uuid": "acf1a307-5b6a-43b0-8fb2-d2b366e88008",
    },
    "proxies": {
        "_thumbnail": "/media/123/456/789/123456789012345.png"
    }
},
"metadata_fields": ["core.accesstime", ...],
"complete": true,
"errors": {"site2": "Search backend is offline"}
}

```

Results from different sites may not arrive at the same time. The `complete` field indicates whether all sites what returned their results. This includes when a site returns with an error.

Results from different sites are 'concatenated', meaning if the same file exists on multiple sites, there will be separate result items for the file for each site.

The `metadata` field on each item contains arbitrary file metadata. The specific metadata will vary depending on the search backend being used. In the case of the PixStor Search backend, the available fields will vary depending on file type, and which plugins were used when the files were ingested.

If `metadata_fields` was specified when the query was submitted, the `metadata_fields` entry in the response will match, with any wildcards expanded to list the available fields which match those wildcards. Otherwise, the `metadata_fields` entry will list all the available metadata fields which could be returned from the search backend. Individual files may not have all the listed fields.

All search backends format results to be namespaced, similar to PixStor Search, for consistency.

If an error occurs while performing the search on any of the sites, the `errors` entries will provide a mapping of site names and error messages.

## Proxies

The `proxies` field on each item contains links to proxies of the file, such as thumbnails and previews.

These will only be available if the backend is `pixstor_search`, and PixStor Search itself has been configured and ingested in 'search plus' mode.

The links are relative urls, which must be combined with the `public_url` from the corresponding `/sites` endpoint to fetch the actual proxy files, e.g. `https://pixstor-site1/media/...`

Typical proxies may include:

- `_thumbnail` - a 150x150 px thumbnail image
- `image.preview` - a 400x300 px preview image
- `video.preview` - a 400x300 px, lower resolution version of a video
- `audio.preview` - a downscaled version of an audio file

Proxies may not be available for all file types, depending on which search plugins have been enabled and ingested.

## Parameters

Search results are paginated. The following parameters can be used to control what results are returned

<b>name</b>	<b>description</b>
<code>page</code>	Numbered page of results to fetch. Default: 1
<code>page_size</code>	Maximum number of results to return per page. Default: 20
<code>sort</code>	One or more fields to sort results on, separated by commas, e.g. <code>?sort=name,site</code> . Field names can be prefixed with <code>-</code> to reverse order. For fields in <code>metadata</code> , the field name is specified as is, e.g. <code>?sort=-core.accesstime</code> . Default: arbitrary order.
<code>group_by_name</code>	When this url parameter is 'true' results are merged based on matching name, e.g. <code>?group_by_name=true</code>

## Merged results

When a search is submitted with `"merge": true`, the search results will be 'merged'.

This means that entries for matching files from different sites will be combined. An entry is considered to be matching if it has the same full path.

```
$ curl 'http://example.com/api/search/2/' -H "Authorization: Api-Key $TOKEN"
{
  "count": 1,
  "next": null,
  "previous": null,
  "items": [
    {
      "path": "/mmfs1/data",
      "name": "hello.txt",
      "metadata": {
        "core.accesstime": "2021-10-12T16:27:28",
        "core.changetime": "2021-10-12T16:28:45",
        "core.directory": "/mmfs1/data",
        "core.extension": ".txt",
        "core.filename": "hello.txt",
        "core.group.id": 0,
        "core.group.name": "root",
        "core.hash.sha512": "db3974a97...94d2434a593",
        "core.modificationtime": "2021-10-12T16:28:45",
        "core.pathname": "/mmfs1/data/hello.txt",
        "core.size": 12,
        "core.user.id": 0,
        "core.user.name": "root",
        "gpfs.filesetname": "root",
        "gpfs.filesystem": "mmfs1",
        "gpfs.kallocated": 0,
        "gpfs.poolname": "sas1",
        "hsm.status": "migrated"
        "ngenea.pathname": "data/hello.txt",
        "ngenea.size": 12,
        "ngenea.target": "awss3",
        "ngenea.uuid": "acf1a307-5b6a-43b0-8fb2-d2b366e88008",
      },
      "status": {
        "site1": true,
        "site2": false
      }
    },
    "metadata_fields": ["core.accesstime", ...],
    "complete": true
  }
}
```

Merged results no longer have the `site` and `href` fields. In their place is a `status` field, which maps sites to whether the file is 'resident' on that site.

A file is considered resident if the file is not migrated, or is premigrated ('hydrated'). A file is considered not resident if the file is migrated (stuffed), or not present at all.

## Results grouped by name

To group search results by name, add the url parameter `group_by_name=true`.

This will return results from any of the requested sites. Results within a group may belong to different directories.

```
$ curl 'http://example.com/api/search/1/?group_by_name=true' -H  
"Authorization: Api-Key $TOKEN"  
{  
  "count": 60,  
  "next": "http://testserver/api/search/1/?  
group_by_name=true&page=2",  
  "previous": "http://testserver/api/search/1/?group_by_name=true",  
  "more_results": false,  
  "items": [  
    {"test-10": [  
      {  
        "site": "testsite",  
        "path": "/mmfs1/data",  
        "metadata": {...}  
      },  
      {  
        "site": "anothersite",  
        "metadata": {...}  
      }  
    ]},  
    {"test-11": [  
      {  
        "site": "testsite",  
        "path": "/mmfs1/data",  
        "metadata": {...}  
      },  
      {  
        "site": "anothersite",  
        "path": "/mmfs1/archive",  
        "metadata": {...}  
      }  
    ]},  
    {"test-19": [  
      {  
        "site": "testsite",  
        "path": "/mmfs1/data",  
        "metadata": {...}  
      },  
      {  
        "site": "anothersite",  
        "path": "/mmfs1/data",  
        "metadata": {...}  
      }  
    ]}  
  ]}  
}
```

```
        "metadata": {...}  
    },  
    ...  
]  
}  
,  
"complete": true,  
"metadata_fields": null,  
"errors": {}  
}
```

## Max Results

There is a hard limit on the number of results returned, per site. By default, each site will return, at most, 200 results.

Fetching a lot of results makes queries slower and, since results are stored in the DB, storing more results uses more space. On the other hand, the limiting may lead to some matches not being returned.

The maximum number of results per site is controlled by the `search_max_results` configuration - see [Configuration](#) for more info.

Result limiting is applied when the search query is submitted, not when results are retrieved. If you change `search_max_results`, you will need to resubmit your query to fetch any additional matches.

Note, some backends have a hard limit of 10,000 results.

## Housekeeping

The results from a query are stored, so they can be retrieved multiple times without performing a new query.

However, over time, the files on each site will change, and the stored results may no longer accurately reflect the active file system.

Therefore, old results are periodically culled. The housekeeping process runs once a day, and removes results for any search which was submitted more than a week ago (by default). A different 'time-to-live' (TTL) can be set using the `search_result_ttl` configuration - see [Configuration](#) for more information.

Results can also be manually removed by performing a `DELETE` request against the given search result endpoint

```
curl -X DELETE 'http://example.com/api/search/1/' -H "Authorization: Api-Key $TOKEN"
```

## Controlling Bandwidth Usage

Ngenea Hub can control the amount of traffic speed for each node within each site that processes files through Ngenea. This will limit both outgoing and incoming traffic with defined cloud services.

### Enabling the bandwidth feature in the UI

Regardless of enabling this feature, it is possible to change the bandwidth via REST and will enable changing of bandwidth when the `Site` instance has its `bandwidth` attribute changed.

This can be enabled by enabling the feature flag, details on how to do this can be found on the [Feature Flags](#) page.

This will enable the UI within the Site details page and represents the bandwidth limit in Mb/s.

### Checking Node status

Each site within Ngenea Hub is the collection of all nodes running an instance of Ngenea Worker using the name of a given site. These are nodes within a cluster that are collectively listening to the same queue for a given site. Each time any worker comes online on a new node or a known node, this is tracked within Ngenea Hub using `Node` objects. These are automatically created when first starting up a worker, after creation their online status can be monitored.

You can view the nodes for each site within `/api/nodes/` this will be a complete list of all nodes known to Ngenea Hub.

For bandwidth control, there will need to be existing nodes known to Ngenea Hub, otherwise the bandwidth rules cannot be applied. If your worker coming online was not tracked due to timing issues, you can manually scan for existing nodes using one of the [Actions](#).

### Registering Datastores

In order to control the bandwidth for all nodes under a site, the site will need to have the Ngenea policy targets defined as `Datastore` instances within Ngenea Hub.

The following example is for defining an AWS S3 target for Ngenea within Ngenea Hub:

```
{  
  "name": "site1_amazon",  
  "type": "S3",  
  "bucket": "bucket01",  
  "secretaccesskey": "secret-key",  
  "accesskey": "access-key"  
}
```

With this established datastore, all that is left to do is link the created datastore to a site so that when a change in bandwidth is applied, the site knows what service to limit the traffic to.

## Cloud IPAddresses

Each datastore that points to a cloud target will have access to a list of all known IP addresses that are associated with that specific service. This will be used to limit all traffic between those IP ranges and the nodes currently running a worker instance when a bandwidth limit is applied.

These IP ranges are updated internally once a day in a scheduled task.

### Using manual IP addresses

Manual IP addresses can be used to override the list of cloud related IPs, this can be useful to control bandwidth to custom endpoint targets such as services like minio making use of `POST api/ipaddresses/`. Using the following example to add an address to the list of IPAddresses:

**Note:** This will disable the use of all cloud addresses for a datastore and will instead only use the custom IP addresses.

```
{  
  "ipaddr": "208.65.153.237",  
  "datastore": 1  
}
```

This will ensure that all traffic between those nodes and the defined IP addresses will be limited to the max bandwidth limit

## Linking a Datastore to a Site

With our example site `site1` creating a `SiteLink` between `site1` and the datastore `site1_amazon` allows the bandwidth to be applied to all S3 targets on all nodes that are running the Ngenea Worker service.

For this example all local data for this Ngenea is located in `/mmfs1/data/aws_data` with data being placing data in the bucket `bucket01` under `aws_data/`.

The following `SiteLink` can be used to represent this:

```
{  
  "site": "site1",  
  "datastore": "site1_amazon",  
  "site_path": "/mmfs1/data/aws_data/",  
  "datastore_path": "aws_data/"  
}
```

This will ensure that each `Node` under `site1` will limit its traffic to all related addresses.

## Applying the bandwidth

**Note:** This will effect all traffic on each node running a worker to the cloud services defined with the sites linked datastores.

With the SiteLink in place, changing the bandwidth attribute to the Mb/s desire on the site instance via the API route PATCH /api/site/{id}:

```
{  
  "bandwidth": 1000  
}
```

Using this or the UI, this will cause the hub to signal the worker to limit traffic using the IP ranges defined for the datastores.

This total bandwidth will be divided between all nodes for any given site, so if a site has a bandwidth of 1Gb/s then both nodes will be limited to 500mb/s.

## Configuration

### Global Configurations

Some configurations are stored in the Ngenea Hub configuration file, as described in [Hub Configuration](#). These are generally static, or sensitive settings. Changes to these settings require a service restart.

In addition, there are configurations which can be changed on-the-fly, typically to change Ngenea Hub behaviour. These settings can be viewed and changed via the REST API, as described below.

### Available Settings

Name	Description	Default
jobs_ttl	How long job details should be stored after job completion, in days.	90
search_backend	Backend to use when performing searches. Currently supported backends: analytics, pixstor_search.	pixstor_search
search_result_ttl	How long search results should be stored, in days.	7
search_max_results	Maximum number of search results to fetch from the search backend, per site. Fetching more results will make queries slower and will require more storage space. Fetching fewer results may lead to some files being missing. Note, some backends have a hard limit of 10,000 results.	200

Name	Description	Default
snapshot_create_delete_retry_timeout	Time in seconds after which workers will give up retrying snapshot create and delete operations. These occur in the <code>dynamo.tasks.snapdiff</code> and <code>dynamo.tasks.rotate_snapshot</code> tasks. The default 1000s will give 4 or more retries. Set to 0 to disable retries.	1000
stat_timeout	How long to wait for results from the <code>/api/file/</code> endpoint, in seconds.	10
stat_refresh_period	How long a files details will be retained as a cache within the file browser, in seconds.	10
task_invalidation_timeout	How long in minutes for a task in the STARTED state will wait before being invalidated.	360
snapdiff_stream_timeout	Idle timeout when waiting for delete and move tasks to complete during snapdiff workflows, in minutes.	10
force_local_managed_users	Allow local NAS users to be managed on AD joined sites.	False
custom_statistics_tasks	A list containing the names of custom tasks that add their number of reported files to the job total, it will do so regardless of when these tasks are executed within a workflow.	<ul style="list-style-type: none"> <li>["dynamo.c...</li> <li>["dynamo.c...</li> </ul>
analytics_timeout	How long tasks which fetch data from PixStor Analytics should wait for a response from Elasticsearch, in seconds.	10

**Note:** If the file details are not returned for large fileset, increase the default value of `stat_refresh_period` in the configuration tab of hub admin page `http://admin` or do a patch on configuration API.

## REST API

Configurations can be listed and set via the Ngenea Hub REST API.

**Note:** The configurations endpoint does not support client key authentication. You must use [JWT Authentication](#).

To list the current configuration settings,

```
$ curl -s 'http://example.com/api/configurations/' -H 'Accept: application/json' -H "Authorization: Bearer $JWT_ACCESS_TOKEN"
{
  "search_backend": "analytics",
```

```
"search_max_results": 200,  
"search_result_ttl": 7,  
...  
}
```

To change one or more configuration settings, make a `PATCH` request the same endpoint

```
$ curl -s -X PATCH 'http://example.com/api/configurations/' -H  
'Accept: application/json' -H "Authorization: Bearer  
$JWT_ACCESS_TOKEN" -H 'Content-Type: application/json' -d  
'{"search_max_results": 500}'  
{  
    "search_max_results": 500,  
    ...  
}
```

## Settings Migration

In versions 1.9.0 and earlier, some of the above settings were configured via the Ngenea Hub config file ([Hub Configuration](#)).

Upon updating to version 1.10.0 or above, any values currently set in that config file will be captured. Thereafter, any changes to those settings within the config file will be ignored.

## Site-specific Configurations

Some configuration options can be set on a per-site level, and may differ between sites.

These can be viewed and changed via the REST API, as described below. They can also be viewed and changed in the Ngenea Hub UI, from the 'Sites' tab on the Administration page.

### Available Settings

Name	Description	Default
bandwidth	Limit the bandwidth for the site (In MB/s). In the UI, it is hidden behind the <code>bandwidth_controls</code> feature flag (see <a href="#">Feature Flags</a> )	not set (unlimited)
elasticsearch_url	URL used to interact with Elasticsearch when <code>search_backend</code> is set to <code>analytics</code> (see <b>Global Configurations</b> above). The URL is evaluated on the node(s) on which the site worker is running.	localhost: 9200
pixstor_search_url	URL used to interact with PixStor Search when <code>search_backend</code> is set to <code>pixstor_search</code> (see <b>Global Configurations</b> above). The URL is evaluated on the node(s) on which the site worker is running.	https://localhost/

Name	Description	Default
public_url	Public URL that can be used to reach this site. Typically this will be the hostname or external IP address of the site management node.	
file_batch_gb	Limit the total size of file data in a batch, in gigabytes. See <b>File Batching</b> below	1
file_batch_size	Limit the total number of files in a batch. See <b>File Batching</b> below	40
lock_threshold	The <code>snapdiff</code> discovery uses locking to prevent multiple <code>snapdiff</code> running against the same fileset at once. To prevent stale locks, lock are considered 'expired' after the <code>lock_threshold</code> , given in seconds.	86400 (one day)
include	A list of include glob patterns which will apply to all workflows run against this site	not set
exclude	A list of exclude glob patterns which will apply to all workflows run against this site	not set

## File Batching

The file list generated by [discovery tasks](#) may be broken into smaller batches before passing them to workflow steps.

This makes the overall job execution more granular. Individual tasks will be smaller and faster. This also makes it easier to cancel a job, given that only PENDING tasks can be cancelled.

On the other hand, if the batching is too small, the large number of tasks generated may saturate the job queue, blocking out tasks from other jobs.

File batching is based on both `file_batch_gb` and `file_batch_size`. Whichever limit results in a smaller batch is the one which is used. For example, given 100 files of 500MB each, a `file_batch_gb` of 1 and `file_batch_size` of 10 will result in 50 batches of 2 files each (1GB total per batch), because 1GB (2 files) is smaller than 10 files (5GB).

## REST API

Configurations can be listed and set via the Ngenea Hub REST API.

The sites endpoint supports client key authentication

To list the current site configuration settings,

```
$ curl -s 'http://example.com/api/sites/1/' -H 'Accept: application/json' -H "Authorization: Api-Key $APIKEY"
{
  "name": "site1",
  "elasticsearch_url": "localhost:19200",
  "file_batch_size": 100,
  ...
}
```

Note - configurations are only included when fetching a specific site, not when listing all sites.

To change one or more configuration settings, make a `PATCH` request the same endpoint

```
$ curl -s -X PATCH 'http://example.com/api/sites/1/' -H 'Accept: application/json' -H "Authorization: Api-Key $APIKEY" -H 'Content-Type: application/json' -d '{"file_batch_gb": 5}'  
{  
  "file_batch_gb": 5,  
  ...  
}
```

## Feature Flags

Feature flags control whether selected pre-release features are enabled.

Certain features may be included in a release which aren't yet fully implemented, or fully tested. By default, these features are disabled and 'hidden', so should not affect normal functionality.

However, these features may be enabled on a 'preview' basis, on the understanding that they may be incomplete or unstable.

**Warning:** **Do not** enable preview features unless you are willing to accept the potential risks.

Once a feature is finalised and stable, it will be released officially, and the corresponding feature flag will be removed.

## Available Features

The following features are currently available.

<b>name</b>	<b>description</b>	<b>stability</b>	<b>default</b>
searchui	Enable search features in the stable Ngenea Hub UI	True	
bandwidth_controls	Enable bandwidth controls in the stable Ngenea Hub UI	True	

## REST API

Features can be listed, enabled, or disabled via the Ngenea Hub REST API.

To list the available features, and whether they're currently enabled

```
$ curl -s 'http://example.com/api/features/' -H 'Accept: application/json' -H "Authorization: Api-Key $TOKEN"
{
  "count": 1,
  "next": null,
  "results": [
    {
      "name": "searchui",
      "description": "Enable search features in the Ngenea Hub UI",
      "enabled": false
    },
    {
      "name": "bandwidth_controls",
      "description": "Enable bandwidth controls in the Ngenea Hub UI",
      "enabled": false,
    }
  ]
}
```

Individual features are keyed by their name, e.g. `http://example.com/api/features/searchui/`

To enable a feature, make a PATCH request against the desired feature

```
$ curl -s -X PATCH 'http://example.com/api/features/searchui/' -H 'Accept: application/json' -H "Authorization: Api-Key $TOKEN" -H 'Content-Type: application/json' -d '{"enabled": true}'
[
  {
    "name": "searchui",
    "description": "Enable search features in the Ngenea Hub UI",
    "enabled": true
  },
  ...
]
```

And similarly, to disable a feature

```
curl -s -X PATCH 'http://example.com/api/features/searchui/' -H 'Accept: application/json' -H "Authorization: Api-Key $TOKEN" -H 'Content-Type: application/json' -d '{"enabled": false}'
```

**Note:** It may be necessary to restart the Ngenea Hub service for a feature change to take effect.

## ngclient

Alternatively, feature flags can be interacted with using `ngclient`.

To list available features and whether they're currently enabled

```
$ ngclient features list
[X]  searchui          Enable search features in the UI
[ ]  bandwidth_controls  Enable bandwidth controls in the UI
```

To enable a feature

```
ngclient features enable bandwidth_controls
```

And to disable a feature

```
ngclient features disable bandwidth_controls
```

See [ngclient features](#) for more information.

## Actions

Actions allow administrative users to perform certain operations, as described below.

### Available Actions

`discover_nodes`

Ngenea Hub monitors for when new nodes come online.

The `discover_nodes` action can be used to manually scan for nodes. This may be necessary if a node was previously manually removed from Ngenea Hub

This action takes no arguments.

## REST API

Actions are submitted via the `/api/actions/` endpoint, and typically execute asynchronously. The state of the action can be viewed via the same endpoint.

**Note:** The actions endpoint does not support client key authentication. You must use [JWT Authentication](#).

To submit an action, make a `POST` request against the `/api/actions/` endpoint

```
$ curl -s -X POST 'http://example.com/api/actions/' -H 'Accept: application/json' -H "Authorization: Bearer $JWT_ACCESS_TOKEN" -H 'Content-Type: application/json' -d '{"action": "discover_nodes"}'
{
  "id": 12345,
  ...
}
```

This returns a unique id, which can be used to check the status and results of the action

```
$ curl -s 'http://example.com/api/actions/12345/' -H 'Accept: application/json' -H "Authorization: Bearer $JWT_ACCESS_TOKEN"
{
  "action": "discover_nodes",
  "user": "myuser",
  "state": "SUCCESS"
  "results": {...}
}
```

## Limitations

### Site Sync

Site Sync must only be used in one direction

The intent of `site_sync` is for one source site to synchronise all required changes to any amount of destination sites and not consider the state of the destination site(s). Site Sync must only be utilised when data is required to be synchronised without concern for any active changes on destination site(s).

Site Sync only considers changes within an applicable time window for synchronisation

Synchronisation is not 'event driven'. Changes are collated within a window of time (defined by the associated schedule), and sent as a group.

The order in which certain events occurred cannot be determined. For example; delete determination; where no data point exists to determine the 'change time' [ctime] of a file or directory due to deletion prior to the sync time window.

During bidirectional synchronisation, when conflicting create/modify and delete events occur for files, the create/modify event takes precedence over the delete event to prevent data loss. In such scenarios, a newer version of the file which was prior deleted will be present after synchronisation. Directory behaviour is not affected.

Site Sync supports Independent Filesets

Site Sync methodology is incompatible with any requirement to synchronise an entire file system, nor is use of Dependent Filesets, or arbitrary directory trees supported.

Destination site Independent Filesets must exist prior to synchronisation

Site Sync does not create Independent Filesets on destination site(s) prior to synchronisation. Destination Independent Fileset creation is an administrative function and must be undertaken prior to configuration and operation of a Site Sync methodology to the destination site.

Directory deletion is not supported

Site sync does not support directory deletion. Deletion of a large file tree structure on a source site will delete files within the directory structure, resulting in an empty directory tree on the destination site.

## Bidirectional Site Sync

Bidirectional Site Sync implements eventual consistency

Site Sync adheres to the principle of eventual consistency whereby one or more subsequent Site Sync jobs or tasks are required to be enacted for source and destination sites to be in sync. Prior to all required Site Sync jobs enacting the synchronisation status is viewed as partially synchronised. Each subsequent job increases the totality of synchronisation.

Data which has failed to be synchronised in prior synchronisations is placed into subsequent synchronisation runs, leading to eventual consistency.

Bidirectional Site Sync is only supported via schedules

Ref: Schedules

A bidirectional Site Sync is created via defining a schedule using the `bidirectional_snapdiff` discovery and subscribing the `bidirectional_sync` workflow to the schedule.

A path may only be managed by one schedule per site, and at most one workflow may be subscribed to a `bidirectional_snapdiff` schedule.

Hub does not support multiple bidirectional synchronisation with the same source site for the same Independent Fileset (E.G. between site1 and site2, and between site1 and site3).

The `bidirectional_snapdiff` discovery causes all iterative Independent Fileset changes to be tracked. Identified changes are compared to across iterative runs. When both sets of changes have been evaluated, only appropriately valid changes are synchronised to the destination site.

Bidirectional synchronisation is sequential

When setting up a bidirectional site sync 'site1' is the site which is configured when creating the schedule, and 'site2' is the site configured as the `destinationsite` when subscribing the workflow to the schedule.

A bidirectional site sync will first synchronise changes from site1 to site2, and then from site2 to site1.

A failure while synchronising site1 to site2 will not block the reverse direction sync from enacting.

The sequential nature of synchronisation ensures conflict situations where the synchronisation from site2 to site1 wins by virtue of the last write [most recent write at any site] of a file taking precedence.

Swapping files / Last write wins

Synchronisation of a set of file moves whereby the actions include synchronisation determination of the paths of two files being swapped is complex and can result in conflicts. Where identical file paths exist at the destination site, file moves will fail rather than overwriting the existing files.

Manual intervention is required before a synchronisation will again succeed. N.B.: the replaying of the swap of the files on the destination site is not sufficient to resolve the conflict.

Renaming or deleting files and directories causes re-sending of data

Where a file is moved on site1 and the same file is deleted on site2 during an active synchronisation, the moved file from site1 will be resent to site2. This behaviour will be observed even if the delete event occurred later chronologically.

Renaming or files and directories on both bidirectional Site Sync sites causes duplication of data

This behaviour is observed when a file or directory is moved on both sites to different locations during an active synchronisation. E.G.:

- `/mmfs1/data/path1` is moved to `/mmfs1/data/path2` on site1
- `/mmfs1/data/path1` is moved to `/mmfs1/data/path3` on site2

This scenario results in duplicate data at both sites in both `/mmfs1/data/path2` and `/mmfs1/data/path3`.

Creation or deletion of empty directories on site 1 does not synchronise to site 2

Site Sync does not perform deletions of empty directories on a destination site and does not create empty directories on a destination site.

## Troubleshooting

This section outlines steps for troubleshooting issues with Ngenea Hub

### Service Status

To check the status of Ngenea Hub and its individual services

```
ngeneahubctl status
```

To check the status of Ngenea Worker

```
systemctl status ngenea-worker
```

### Service Logs

The full logs for Ngenea Hub can be viewed with

```
journalctl -u ngeneahub
```

To view Ngenea Worker logs

```
journalctl -u ngenea-worker
```

## Specific Features

### Site Sync

Site sync - both one-way and bidirectional - may fail due to conflicts which cannot be automatically resolved. This page outlines options for intervening to resolve such conflicts.

#### Snapshot Rotation

By default, snapdiff snapshots will always rotate, even if an error occurs during sync.

Traditionally, snapshots are rolled-back on error. However, this can lead to changes being replayed inappropriately, leading to further errors and conflicts. Because of this, the default behaviour was changed to always rotate.

The downside to this approach is that some changes may be missed by sync. For example, if network issues prevent a file from being synced, that file will not be re-synced unless or until it changes again. Note, however, there are retries within a sync run to mitigate such temporary issues.

If a sync job does fail, it will be necessary to determine the source of the error and manually resolve any issues. The job details will report on which paths failed overall. Looking at the individual task details will give more information on where and why a specific path failed.

To disable this behaviour, so that snapshots will rollback on error, set the runtime field `snapdiff_rotate_on_error` to False

**Note:** If the sync is run within a schedule, it will use the first subscribed workflow's `snapdiff_rotate_on_error` value. This does not apply to `bidirectional_sync` as it can only have one subscribed workflow.

#### Manual Resolution

In some cases it is possible to resolve conflicts by manually applying changes.

For example, if a file is moved on site A and deleted on site B, sync will fail because there is no file to move (or delete, depending on the sync direction) on the target site. In this case, manually deleting the file on site A, or re-sending the file (in its new location) onto site B will resolve the conflict. Thereafter, sync will be able to run without issue.

#### Re-sync all

Another option is to re-sync everything from scratch. This is the safest option, as it ensures that no file changes are lost.

Note that sync will skip any files which are already in the correct state, so a re-sync won't take as long as syncing to a brand new target.

Snapdiff-based sync uses filesystem snapshots to track file changes over time. The snapdiff discovery uses a 'last snap' file to record the last snapshot which was successfully synced.

This last snap file is located at `/mmfs1/.rotate/ngenea-worker.lastsnap.name.<fileset_name>.id.<fileset_id>`

By removing the last snap file, the next sync run will behave as if it has not been run before, and so will sync everything. Once sync has run successfully, you can safely delete the snapshot which was previously recorded in the last snap file (before that file was deleted).

#### Force rotate

The riskiest option is to force a snapshot rotation. This effectively says that you don't care about the current failure and just want the sync to move on.

As discussed above, this is the default behaviour. Note that this may result in some file changes not being synced. For a safer option, see **Re-sync all** above.

The following steps can be used as a one-off when the default rotate-on-error function has been disabled.

To force a rotate, you should first temporarily disable sync. This can be done by setting the sync schedule to disabled in the Ngenea Hub UI.

Next, create a new snapshot of the fileset. The name is expected to be of the form `ngenea-worker.snapdiff.<timestamp>`.

Update the 'last snap' file (described above), replacing the currently recorded snapshot name with the name of the new snapshot you just created.

This last snap file is located at `/mmfs1/.rotate/ngenea-worker.lastsnap.name.<fileset_name>.id.<fileset_id>`

Finally, re-enable sync. Sync will now pick up new file changes starting from the point at which the new snapshot was created.

Once sync has run successfully, you can safely delete the snapshot which was previously recorded in the last snap file (before that file was updated).

#### Locking Errors

Lock files are used to ensure that a sync for a given fileset will not run if one is already running.

In this case, any new sync job will fail, and under the snapdiff task details, you will see an error like

**SnapdiffLockError:** Could not perform snapdiff as one is currently running for provided fileset

Under rare circumstances, a lock may not be correctly cleaned up, preventing syncs from running, even though there are none currently active.

In that case, the lock file can be removed manually. First, ensure there aren't any syncs running. For extra safety, temporarily disable any scheduled syncs.

The lock file is located at `/mmfs1/.rotate/snapdiff.name.<fileset_name>.id.<fileset_id>.lock`

Any snapdiff lock file will automatically expire after 24 hours by default. The lifetime can be changed using the `lock_threshold` site setting

## Reference

### Default Workflows

This section documents all the workflows which come installed in Ngenea Hub by default. See [Custom Workflows](#) for guidance on how to create your own workflows.

#### `migrate`

Migrate one or more files from a site.

**discovery:** recursive

**steps:**

- `dynamo.tasks.migrate`

**fields:**

- `lock_level` (choice): Filesystem locking level for ngenea operations. One of: `partial`, `implicit`. Default=`partial`

#### `premigrate`

Premigrate one or more files from a site.

**discovery:** recursive

**steps:**

- `dynamo.tasks.migrate`
  - `premigrate: True`

**fields:**

- `lock_level` (choice): Filesystem locking level for ngenea operations. One of: `partial`, `implicit`. Default=`implicit`

**recall**

Recall one or more files on to a site.

**discovery:** `recursive`

**steps:**

- `dynamo.tasks.recall`

**fields:**

- `lock_level` (choice): Filesystem locking level for ngenea operations. One of: `partial`, `implicit`. Default=`implicit`

**send**

Send files from one site to another via cloud storage.

**discovery:** `recursive`

**steps:**

- `dynamo.tasks.remove_location_xattrs_for_moved`
- `dynamo.tasks.migrate`
  - `premigrate`: `True`
- `dynamo.tasks.reverse_stub`

**fields:**

- `destinationsite` (string): site to send files to
- `hydrate` (bool): hydrate files on the destination site

**site\_sync**

Sync a fileset from one site to another via cloud storage.

The `snapdiff` discovery looks for changes within the fileset on the source site since the last time the workflow was invoked. These changes are then synced to the destination site.

The workflow should be invoked with a single path which is the link point of the independent fileset to be synced.

**discovery:** `snapdiff`

**fields:**

- `destinationsite` (string): site to sync changes to
- `sync_preference` (string): determines how conflicts should be resolved on the remote site. One of: newest, local, ignore

created

Files with state `created` are sent to the destination site, subject to `sync_preference`

**steps:**

- `dynamo.tasks.remove_location_xattrs_for_moved`
- `dynamo.tasks.migrate`
  - `premigrate`: True
  - `overwrite`: True
  - `abort_missing`: True
- `dynamo.tasks.reverse_stub`
  - `overwrite`: True

updated

Files with state `updated` are sent to the destination site, subject to `sync_preference`

**steps:**

- `dynamo.tasks.check_sync_state`
- `dynamo.tasks.remove_location_xattrs_for_moved`
- `dynamo.tasks.migrate`
  - `premigrate`: True
  - `overwrite`: True
  - `abort_missing`: True
- `dynamo.tasks.reverse_stub`
  - `overwrite`: True

moved

Files with state `moved` are moved 'in-place' on the destination site

**steps:**

- `dynamo.tasks.move_paths_on_gpfs`

deleted

Files with state `deleted` are removed on the destination site

**steps:**

- `dynamo.tasks.delete_paths_from_gpfs`

## Hidden Workflows

This section documents all the workflows which come installed in Ngenea Hub by default that are not provided in the UI. Some of these are intended for advanced users making use of the API, and some are used for GPFS policy automation.

### transparent\_recall

This is the workflow that will be performed on dehydrated files on the system when accessed, if the policy is configured to make use of Ngenea Hub within its Transparent Recall policy.

Typically, all of these Transparent Recalls are placed into a single job within Ngenea Hub.

#### steps:

- `dynamo.tasks.recall`
  - `lock_level: "partial"`

### reverse\_stub

This workflow is designed to create stubs files or fully hydrated files using remote content on a given site without the need for an existing file on the site for a given path. Due to this requiring the data to be within the cloud and not present on the filesystem, it requires the paths to target cloud targets through the API.

#### steps:

- `dynamo.tasks.reverse_stub`

#### fields:

- `hydrate (bool)`: If the file should be fully hydrated during the recall operation
- `overwrite (bool)`: If the operation should overwrite a local file that already exists

### delete\_file

This workflow deletes one or more file/folder paths from the filesystem.

#### steps:

- `dynamo.tasks.delete_paths_from_gpfs`

#### fields:

- `recursive (bool)`: If non-empty directories should be deleted. If `recursive` is `false` additional jobs will be needed to delete empty directories. Defaults to `false`

## Discovery Steps

This section documents all the currently supported discovery steps in Ngenea Hub. See [Custom Workflows](#) for guidance on how to use these in your own workflows.

### `dynamo.tasks.recursive_action - recursive`

Navigates down any folder tree provided to it and actions any rule defined with `all` as its type and state on all found files.

Argument	Type	Default	Description
<code>skip_missing</code>	bool	<code>False</code>	Allows the processing of any files directly provided to the discovery step regardless of it being on the filesystem.

### `dynamo.tasks.snapdiff - snapdiff`

For use only with a GPFS Independent Fileset, it will create a GPFS snapshot and it will then process the list of differences between the time of the initial run and subsequent runs. On the first run of this, it will ingest all the files within that Fileset.

Argument	Type	Default	Description
<code>skip_old_ctimes</code>	bool	<code>False</code>	Skips any files within the snapdiff difference list if the ctime of the file is older than the oldest snapshot.
<code>condense_moves</code>	bool	<code>True</code>	If a directory is moved, this will condense all the move operations into a single operation for move based tasks, otherwise it will action against every effected file.

## Workflow Steps

This section documents all the currently supported steps in Ngenea Hub. See [Custom Workflows](#) for guidance on how to use these steps in your own workflows.

### `dynamo.tasks.migrate`

Migrates a list of files to a pre-defined remote target using Ngenea.

Argument	Type	Default	Description
<code>premigrate</code>	bool	<code>False</code>	retain the content of every migrated file and do not set the OFFLINE flag for the file.migrating.
<code>stub_size</code>	int	<code>0</code>	retain a segment of every migrated file starting from its beginning and having a specified approximate length in bytes.
<code>overwrite</code>	bool	<code>False</code>	

Argument	Type	Default	Description
			overwrite remote objects if they already exist--do not create remote object instances with various UUID suffixes
fail_on_mismatch	bool	False	fail a file migration if a remote object exists but has different hash or metadata. In that case, the task errors
lock_level	string	implicit	Defined the locking mode that ngenea will use when performing the migrate
endpoint	string		specify the endpoint to migrate
abort_missing	bool	False	allow the migrate task to make any missing files end up in the "aborted" state instead of "failed"

### dynamo.tasks.recall

Recalls a list of files to a pre-defined remote target using Ngenea.

Argument	Type	Default	Description
skip_hash	bool	False	If the recall should skip checking the hash of the file
endpoint	string		specify which endpoint(site) to recall from
lock_level	string	partial	Defines the locking level ngenea will use during the recall
default_uid	string		When a file is recalled, it uses this UID if one is not set on the remote object
default_gid	string		When a file is recalled, it uses this GID if one is not set on the remote object
update_atime	bool	false	When a files is recalled, update its access time (atime) to 'now'
update_mtime	bool	false	When a files is recalled, update its modification time (mtime) to 'now'
delete_remote	bool	false	If set, when a file is recalled, it deletes the file in the remote location

### dynamo.tasks.reverse\_stub

Recalls a list of files to a pre-defined remote target using Ngenea.

Argument	Type	Default	Description
hydrate	bool	False	If the file should be premigrated instead of a regular stub
stub_size	int	0	The max file size before files will be stubbed for this task
skip_hash	bool	False	If the recall should skip checking the hash of the file
overwrite	bool	False	

Argument	Type	Default	Description
			Overwrite local files if they already exist, except files with only metadata changes.
endpoint	string		specify which endpoint(site) to recall from.
retry_stale	string	None	Controls if the worker should attempt to retry file failures due to stale file handles. This string can be either stub for only removing reverse stubbed files or all.
lock_level	string	implicit	Defines the locking level ngenea will use during the recall
default_uid	string		When a file is recalled, it uses this UID if one is not set on the remote object
default_gid	string		When a file is recalled, it uses this GID if one is not set on the remote object
update_atime	bool	false	When a files is recalled, update its access time (atime) to 'now'
update_mtime	bool	false	When a files is recalled, update its modification time (mtime) to 'now'
conflict_preference	string	None	Dictates what state the local file should be to pass the check. Options are "newest" which passes if the local file is the latest version of the file on either site, "local" which accepts the local file version regardless of the check and "ignore" which always uses the other sites file version.

## dynamo.tasks.ngenea\_sync\_metadata

Sync the local ngenea metadata on a file with the remote target using Ngenea.

Argument	Type	Default	Description
skip_hash	bool	False	If the sync should skip checking the hash of the file
endpoint	string		Specify which endpoint(site) to recall from
default_uid	string		When a file is synced, it uses this UID if one is not set on the remote object
default_gid	string		When a file is synced, it uses this GID if one is not set on the remote object

## dynamo.tasks.delete\_paths\_from\_gpfs

Removes a list of files from a GPFS filesystem.

## Argument Type Default Description

recursive	bool	False	If any directory path is provided and this is set, it will remove the entire file tree, otherwise it will only remove empty directories. It is important to note that the recursive behaviour of removing the entire directory tree will not apply to files or if the target directory contains files or directories that are restricted from being deleted such as snapshots, in such cases the task will silently ignore those files or directories and report the task as successful.
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## dynamo.tasks.check\_sync\_state

Checks a provided site against the calling sites to ensure that the local file is in a specified state compared to another site. Using this task will also perform `dynamo.tasks.stat_paths` on the provided site before execution.

## Argument Type Default Description

sync_preference	string	ignore	Dictates what state the local file should be to pass the check. Options are "newest" which passes if the local file is the latest version of the file on either site, "local" which accepts the local file version regardless of the check and "ignore" which always uses the other sites file version.
site	string		The target site to compare
abort_outdated	bool	False	If this bool is set files that do not need to be executed will be marked as aborted as opposed to skipped
hash_includes_acl	bool	False	If this bool is set the metadata comparison for directories will also compare Access Control Lists

## dynamo.tasks.move\_paths\_on\_gpfs

Moves files on the filesystem using provided paths with a `source` key.

This task moves files in two steps (via an intermediate temporary location), to avoid move conflicts (for example, this task correctly handles cases where files are 'swapped': `fileA` moved to `fileB`, and `fileB` moved to `fileA`).

## Argument Type Default Description

delete_remote_xattrs	bool	False	If set, after a file has been moved all remote location xattrs will be removed
source_missing_signature	json	null	A signature to send any paths to where the source is missing. If this

Argument	Type	Default	Description
<code>target_max_age</code>	<code>int</code>	<code>null</code>	isn't set, a missing source is treated as a failure.
			If the target file exists, it is overwritten by default. If this optional parameter is set, the target has to have a ctime $\leq$ this timestamp for the move to proceed. Otherwise, the source file is removed. Given in seconds since epoch. Primarily used for sync workflows.

### `dynamo.tasks.one_step_move_paths_on_gpfs`

Moves files on the filesystem using provided paths with a `source` key.

This task is not used in the default Ngenea Hub workflows. It is less robust than `dynamo.tasks.move_paths_on_gpfs`, because it moves files directly from source to their new location (in one step). So for example, trying to 'swap' files (`fileA` moved to `fileB`, and `fileB` moved to `fileA`) with this task will effectively result in one of these files being deleted on the target site.

However, this task is for cases where doing moves in two steps is not an acceptable option.

Argument	Type	Default	Description
<code>delete_remote_xattrs</code>	<code>bool</code>	<code>False</code>	If set, after a file has been moved all remote location xattrs will be removed
<code>source_missing_signature</code>	<code>json</code>	<code>null</code>	A signature to send any paths to where the source is missing. If this isn't set, a missing source is treated as a failure.
<code>target_max_age</code>	<code>int</code>	<code>null</code>	If the target file exists, it is overwritten by default. If this optional parameter is set, the target has to have a ctime $\leq$ this timestamp for the move to proceed. Otherwise, the source file is removed. Given in seconds since epoch. Primarily used for sync workflows.

### `dynamo.tasks.remove_location_xattrs_for_moved`

This task removes all remote location xattrs on all provided paths.

This step takes no additional arguments.

## `dynamo.tasks.move_in_cloud`

Moves a file on the filesystem's related cloud storage platform using provided paths with a `source` key.

This step takes no additional arguments.

## `dynamo.tasks.remove_from_cloud`

Deletes a file on the filesystem's related cloud storage platform using provided paths.

This step takes no additional arguments.

## `dynamo.tasks.ensure_cloud_file_exists`

Ensures all files provided to the task exist on the filesystem's related cloud storage platform. If some do not, it will attempt to retry this check an additional two more times before failing.

This step takes no additional arguments.

## Job States

When jobs are created on the call of a workflow, they can end up in specific state that

<b>State</b>	<b>Description</b>
Pending	The job is being populated with tasks through its discovery task and will begin when paths have been collected
Started	Some tasks within the job have started to be processed
Success	All tasks in a job have completed successfully
Failure	There was an error or failure when attempting a task within a job, meaning the job could not complete
Skipped	Based on the output of the provided discovery task, no tasks needed to be created so there is no work to
Cancelled	The job has been manually closed via request and all remaining task have been cancelled

## Task States

When jobs create tasks, after performing their action on the provided files they can end up in specific state as seen below

<b>State</b>	<b>Description</b>
Pending	This task is has been created but has not yet been picked up by a site
Started	This task is now running on site
Success	This task has completed successfully

State	Description
Failure	There was an unexpected error when attempting a task within a job, meaning the job could not complete and could not provide structured output
Error	There was a captured error when attempting a task within a job, meaning the job will not have processed all paths but has structured output of what has been completed. Any paths which were successfully processed will be handled by subsequent tasks in a task chain.
Skipped	This task has will have no work to perform so it has been automatically skipped by another task
Cancelled	Either a previous task has failed or the job has been manually cancelled, causing this task to no longer run

**Note:** Job and task states are updated asynchronously. There may be, for example, a short delay between a job/task completing and its state being reported as such.

## File States

As a file is processed by a workflow, each task reports whether the state of the file following the task. The containing job reports the state of the file after all workflow steps have completed.

A file can have any of the following states

### Processed

The file was successfully processed by the workflow step without issues

### Skipped

The file was not processed because it was already in the expected state, e.g. a delete was skipped because the file wasn't found, a migration was skipped because the file was already offline.

Because it is in the expected state, skipped files can be processed by subsequent tasks in the workflow.

### Failed

An error occurred meaning the file couldn't be processed. Because of this error, the file will not be processed by later tasks in the workflow.

The overall job will be marked as failed if it contains any failed files. Workflows which use the `snapdiff` discovery will be 'rolled back' in this case.

Failed files typically indicate an issue that needs to be manually resolved, such as network issues.

## Aborted

An error occurred meaning the file couldn't be processed. Because the file was aborted, it will not be processed by later tasks in the workflow.

The overall job is **not** marked as failed if it contains aborted files. Workflows which use the `snapdiff` discovery will 'rotate' in this case.

The intended use case for this state is in scheduled (recurring) jobs, where any aborted files are expected to be successfully processed in a later run.

For example, if a file changes while it is being sent, the send will be aborted to prevent data corruption. But because the file was modified, it will be identified as modified in the next snapdiff scan and processed again; effectively retried.

## API

### GET /actions/

#### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between `20` and `100`. For disabling pagination and retrieving all results, `0` should be given. When page size parameter is empty or `<20`, `20` results are returned by default. When page size parameter `>100`, `100` results are returned by default.

#### Status Codes:

- `200 OK` --

#### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].action** (string) -- (required)
- **results[].id** (integer) -- (read only)
- **results[].state** (string) --

### POST /actions/

#### Request JSON Object:

- **action** (string) -- (required)

#### Status Codes:

- `201 Created` --

#### Response JSON Object:

- **action** (string) -- (required)

### GET /actions/{id}/

#### Parameters:

- **id** (string) --

#### Status Codes:

- `200 OK` --

### Response JSON Object:

- **action** (string) -- (required)
- **id** (integer) -- (read only)
- **results** (string) -- (read only)
- **state** (string) --
- **user** (integer) --

GET /alerts/

### Query Parameters:

- **name** (string) -- name
- **node** (string) -- node
- **site** (string) -- site
- **severity** (string) -- severity
- **summary** (string) -- summary
- **timestamp** (string) -- timestamp
- **suppressed** (string) -- suppressed

### Status Codes:

- 200 OK --

### Response JSON Object:

- **[].created** (string) -- Time that the alert was recorded in Hub
- **[].id** (integer) -- (read only)
- **[].name** (string) -- Name of of the alert (required)
- **[].node** (string) -- Hostname of the node the alert originated from
- **[].severity** (string) -- (required)
- **[].site** (string) -- (read only)
- **[].summary** (string) -- Summary description of the alert
- **[].suppressed** (boolean) -- Whether the alert is suppressed
- **[].timestamp** (string) -- Time when the alert was triggered (required)

GET /alerts/{id}/

### Parameters:

- **id** (integer) -- A unique integer value identifying this alert.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **created** (string) -- Time that the alert was recorded in Hub
- **id** (integer) -- (read only)
- **name** (string) -- Name of of the alert (required)
- **node** (string) -- Hostname of the node the alert originated from
- **severity** (string) -- (required)
- **site** (string) -- (read only)
- **summary** (string) -- Summary description of the alert
- **suppressed** (boolean) -- Whether the alert is suppressed
- **timestamp** (string) -- Time when the alert was triggered (required)

GET /analytics/

Retrieves list of files under given path for given site.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **path** (string) -- Target directory path
- **site** (string) -- Site name
- **children** (boolean) -- Include children directories
- **cache\_ttl** (integer) -- How long the cache will last for the target path
- **custom\_timeout** (integer) -- Timeout for fetching analytics
- **download** (string) -- Download details as file e.g. CSV ?download=csv.

### Status Codes:

- 200 OK --

## GET /auth/clientkeys/

API endpoint for managing client keys

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].id** (integer) -- (read only)
- **results[].name** (string) -- Name of the client key (required)
- **results[].url** (string) -- (read only)
- **results[].user** (string) -- (required)

## POST /auth/clientkeys/

API endpoint for managing client keys

### Request JSON Object:

- **api\_key** (string) -- (read only)
- **id** (integer) -- (read only)
- **name** (string) -- Name of the client key (required)
- **url** (string) -- (read only)

### Status Codes:

- 201 Created --

### Response JSON Object:

- **api\_key** (string) -- (read only)
- **id** (integer) -- (read only)
- **name** (string) -- Name of the client key (required)
- **url** (string) -- (read only)

## GET /auth/clientkeys/{id}/

API endpoint for managing client keys

### Parameters:

- **id** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **id** (integer) -- (read only)
- **name** (string) -- Name of the client key (required)
- **url** (string) -- (read only)
- **user** (string) -- (required)

## PATCH /auth/clientkeys/{id}/

API endpoint for managing client keys

### Parameters:

- **id** (string) --

### Request JSON Object:

- **id** (integer) -- (read only)
- **name** (string) -- Name of the client key (required)
- **url** (string) -- (read only)
- **user** (string) -- (read only)

### Status Codes:

- 200 OK --

### Response JSON Object:

- **id** (integer) -- (read only)
- **name** (string) -- Name of the client key (required)
- **url** (string) -- (read only)
- **user** (string) -- (read only)

## DELETE /auth/clientkeys/{id}/

API endpoint for managing client keys

### Parameters:

- **id** (string) --

### Status Codes:

- 204 No Content --

## POST /auth/token/

### Request JSON Object:

- **password** (string) -- (required)
- **username** (string) -- (required)

### Status Codes:

- 201 Created --

### Response JSON Object:

- **password** (string) -- (required)
- **username** (string) -- (required)

## GET /auth/token/publickey/

API endpoint for retrieving public key that is used for token verification.

### Status Codes:

- 200 OK --

## POST /auth/token/refresh/

Takes a refresh type JSON web token and returns an access type JSON web token if the refresh token is valid.

### Request JSON Object:

- **access** (string) -- (read only)
- **refresh** (string) -- (required)

### Status Codes:

- 201 Created --

### Response JSON Object:

- **access** (string) -- (read only)
- **refresh** (string) -- (required)

## POST /auth/token/verify/

Verifies that the token is not expired AND the token owner exists in the database AND the token owner is an active user.

### Request JSON Object:

- **token** (string) -- (required)
- **type** (string) -- Token type e.g: access or refresh (required)

### Status Codes:

- 201 Created --

### Response JSON Object:

- **token** (string) -- (required)
- **type** (string) -- Token type e.g: access or refresh (required)

## GET /configurations/

API endpoint for viewing and setting configurations.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **analytics\_timeout** (integer) -- Maximum time to wait for results from analytics in seconds
- **custom\_statistics\_tasks** (object) -- A list of custom tasks to be considered discovery tasks
- **force\_local\_managed\_users** (boolean) -- Allow NAS users to be managed on AD joined sites
- **jobs\_ttl** (integer) -- Time to store job details after the job completes, in days
- **search\_backend** (string) -- Search backend
- **search\_max\_results** (integer) -- Maximum search results

- **search\_result\_ttl** (integer) -- Maximum time to store search results in days
- **snapdiff\_stream\_timeout** (integer) -- Maximum amount of minutes to wait for task results
- **snapshot\_create\_delete\_retry\_timeout** (integer) -- Maximum time for workers to retry snapshot create and delete operations, in seconds
- **stat\_refresh\_period** (integer) -- Maximum time to wait for results from stat in seconds
- **stat\_timeout** (integer) -- Maximum time to wait for results from stat in seconds
- **task\_invalidation\_timeout** (integer) -- Maximum amount of minutes before a task in the STARTED state is considered invalid

## PATCH /configurations/

API endpoint for viewing and setting configurations.

### Request JSON Object:

- **analytics\_timeout** (integer) -- Maximum time to wait for results from analytics in seconds
- **custom\_statistics\_tasks** (object) -- A list of custom tasks to be considered discovery tasks
- **force\_local\_managed\_users** (boolean) -- Allow NAS users to be managed on AD joined sites
- **jobs\_ttl** (integer) -- Time to store job details after the job completes, in days
- **search\_backend** (string) -- Search backend
- **search\_max\_results** (integer) -- Maximum search results
- **search\_result\_ttl** (integer) -- Maximum time to store search results in days
- **snapdiff\_stream\_timeout** (integer) -- Maximum amount of minutes to wait for task results
- **snapshot\_create\_delete\_retry\_timeout** (integer) -- Maximum time for workers to retry snapshot create and delete operations, in seconds
- **stat\_refresh\_period** (integer) -- Maximum time to wait for results from stat in seconds
- **stat\_timeout** (integer) -- Maximum time to wait for results from stat in seconds
- **task\_invalidation\_timeout** (integer) -- Maximum amount of minutes before a task in the STARTED state is considered invalid

### Status Codes:

- 200 OK --

### Response JSON Object:

- **analytics\_timeout** (integer) -- Maximum time to wait for results from analytics in seconds
- **custom\_statistics\_tasks** (object) -- A list of custom tasks to be considered discovery tasks
- **force\_local\_managed\_users** (boolean) -- Allow NAS users to be managed on AD joined sites
- **jobs\_ttl** (integer) -- Time to store job details after the job completes, in days
- **search\_backend** (string) -- Search backend
- **search\_max\_results** (integer) -- Maximum search results
- **search\_result\_ttl** (integer) -- Maximum time to store search results in days

- **snapdiff\_stream\_timeout** (integer) -- Maximum amount of minutes to wait for task results
- **snapshot\_create\_delete\_retry\_timeout** (integer) -- Maximum time for workers to retry snapshot create and delete operations, in seconds
- **stat\_refresh\_period** (integer) -- Maximum time to wait for results from stat in seconds
- **stat\_timeout** (integer) -- Maximum time to wait for results from stat in seconds
- **task\_invalidation\_timeout** (integer) -- Maximum amount of minutes before a task in the STARTED state is considered invalid

## GET /datastores/

API endpoint for managing DataStores.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].accesskey** (string) --
- **results[].accesskeyid** (string) --
- **results[].bucket** (string) --
- **results[].container** (string) --
- **results[].credentialsfile** (string) --
- **results[].endpoint** (string) --
- **results[].id** (integer) -- (read only)
- **results[].name** (string) -- DataStore Name (required)
- **results[].region** (string) --
- **results[].secretaccesskey** (string) --
- **results[].storageaccount** (string) --
- **results[].type** (string) -- Site Type (required)
- **results[].url** (string) -- (read only)

## POST /datastores/

API endpoint for managing DataStores.

### Request JSON Object:

- **accesskey** (string) --
- **accesskeyid** (string) --
- **bucket** (string) --
- **container** (string) --

- **credentialsfile** (string) --
- **endpoint** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- DataStore Name (required)
- **region** (string) --
- **secretaccesskey** (string) --
- **storageaccount** (string) --
- **type** (string) -- Site Type (required)
- **url** (string) -- (read only)

#### **Status Codes:**

- 201 Created --

#### **Response JSON Object:**

- **accesskey** (string) --
- **accesskeyid** (string) --
- **bucket** (string) --
- **container** (string) --
- **credentialsfile** (string) --
- **endpoint** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- DataStore Name (required)
- **region** (string) --
- **secretaccesskey** (string) --
- **storageaccount** (string) --
- **type** (string) -- Site Type (required)
- **url** (string) -- (read only)

## **GET /datastores/{id}/**

API endpoint for managing DataStores.

#### **Parameters:**

- **id** (string) --

#### **Status Codes:**

- 200 OK --

#### **Response JSON Object:**

- **accesskey** (string) --
- **accesskeyid** (string) --
- **bucket** (string) --
- **container** (string) --
- **credentialsfile** (string) --
- **endpoint** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- DataStore Name (required)
- **region** (string) --
- **secretaccesskey** (string) --
- **storageaccount** (string) --
- **type** (string) -- Site Type (required)
- **url** (string) -- (read only)

## **PATCH /datastores/{id}/**

API endpoint for managing DataStores.

**Parameters:**

- **id** (string) --

**Request JSON Object:**

- **accesskey** (string) --
- **accesskeyid** (string) --
- **bucket** (string) --
- **container** (string) --
- **credentialsfile** (string) --
- **endpoint** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- DataStore Name (required)
- **region** (string) --
- **secretaccesskey** (string) --
- **storageaccount** (string) --
- **type** (string) -- Site Type (required)
- **url** (string) -- (read only)

**Status Codes:**

- 200 OK --

**Response JSON Object:**

- **accesskey** (string) --
- **accesskeyid** (string) --
- **bucket** (string) --
- **container** (string) --
- **credentialsfile** (string) --
- **endpoint** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- DataStore Name (required)
- **region** (string) --
- **secretaccesskey** (string) --
- **storageaccount** (string) --
- **type** (string) -- Site Type (required)
- **url** (string) -- (read only)

**DELETE /datastores/{id}/**

API endpoint for managing DataStores.

**Parameters:**

- **id** (string) --

**Status Codes:**

- 204 No Content --

**GET /features/**

API endpoint for managing feature flags.

**Query Parameters:**

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is

empty or `<20`, `20` results are returned by default. When page size parameter `>100`, `100` results are returned by default.

#### Status Codes:

- `200 OK` --

#### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].description** (string) -- Description of what the feature does (read only)
- **results[].enabled** (boolean) -- Whether the feature has been enabled
- **results[].name** (string) -- Name of the feature (read only)

### GET `/features/{name}/`

API endpoint for managing feature flags.

#### Parameters:

- **name** (string) --

#### Status Codes:

- `200 OK` --

#### Response JSON Object:

- **description** (string) -- Description of what the feature does (read only)
- **enabled** (boolean) -- Whether the feature has been enabled
- **name** (string) -- Name of the feature (read only)

### PATCH `/features/{name}/`

API endpoint for managing feature flags.

#### Parameters:

- **name** (string) --

#### Request JSON Object:

- **description** (string) -- Description of what the feature does (read only)
- **enabled** (boolean) -- Whether the feature has been enabled
- **name** (string) -- Name of the feature (read only)

#### Status Codes:

- `200 OK` --

#### Response JSON Object:

- **description** (string) -- Description of what the feature does (read only)
- **enabled** (boolean) -- Whether the feature has been enabled
- **name** (string) -- Name of the feature (read only)

### GET `/file/`

Retrieves list of files under given path for given site.

#### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between `20` and `100`. For disabling pagination and retrieving all results, `0` should be given. When page size parameter is

empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

- **path** (string) -- Target directory path
- **site** (string) -- Site name
- **details** (boolean) -- Show details of children objects
- **restricted** (boolean) -- Include restricted objects
- **cache\_ttl** (integer) -- How long the cache will last for the target path

#### Status Codes:

- 200 OK --

## GET /file/test/

API endpoint for managing files.

#### Status Codes:

- 200 OK --

## POST /file/workflow/

Performs a workflow on a list of files

#### Request JSON Object:

- **discovery** (string) -- Discovery name
- **exclude[]** (string) --
- **fields** (object) --
- **ignore\_site\_excludes** (boolean) --
- **ignore\_site\_includes** (boolean) --
- **include[]** (string) --
- **job** (integer) -- Job ID
- **paths[]** (object) --
- **site** (string) -- Site name (required)
- **workflow** (string) -- Workflow name (required)

#### Status Codes:

- 201 Created --

#### Response JSON Object:

- **discovery** (string) -- Discovery name
- **exclude[]** (string) --
- **fields** (object) --
- **ignore\_site\_excludes** (boolean) --
- **ignore\_site\_includes** (boolean) --
- **include[]** (string) --
- **job** (integer) -- Job ID
- **paths[]** (object) --
- **site** (string) -- Site name (required)
- **workflow** (string) -- Workflow name (required)

## GET /filesets/

Retrieve list of filesets on a given site.

#### Query Parameters:

- **site** (string) -- Site name

#### Status Codes:

- 200 OK --

## GET /filestatustypes/

API endpoint for managing file status types.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].background\_color** (string) -- (required)
- **results[].key** (string) -- (required)
- **results[].label** (string) -- (required)
- **results[].text\_color** (string) -- (required)
- **results[].url** (string) -- (read only)

## GET /filestatustypes/{key}/

API endpoint for managing file status types.

### Parameters:

- **key** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **background\_color** (string) -- (required)
- **key** (string) -- (required)
- **label** (string) -- (required)
- **text\_color** (string) -- (required)
- **url** (string) -- (read only)

## PATCH /filestatustypes/{key}/

API endpoint for managing file status types.

### Parameters:

- **key** (string) --

### Request JSON Object:

- **background\_color** (string) -- (required)
- **label** (string) -- (required)
- **text\_color** (string) -- (required)

### Status Codes:

- 200 OK --

### Response JSON Object:

- **background\_color** (string) -- (required)
- **label** (string) -- (required)

- **text\_color** (string) -- (required)

## GET /filesystems/

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].mountpoint** (string) -- Filesystem mount point (required)
- **results[].name** (string) -- Name of the filesystem (required)
- **results[].site** (string) -- Site the filesystem belongs to (required)

## GET /filesystems/{id}/

### Parameters:

- **id** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **mountpoint** (string) -- Filesystem mount point (required)
- **name** (string) -- Name of the filesystem (required)
- **site** (string) -- Site the filesystem belongs to (required)

## GET /groups/

API endpoint for managing groups.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].description** (string) -- (read only)
- **results[].id** (integer) -- (read only)

- **results[].name** (string) -- (required)
- **results[].nas\_group.gid** (integer) -- GID number for the user. This is automatically generated and cannot be changed. (read only)
- **results[].object\_permissions[].model** (string) -- (required)
- **results[].object\_permissions[].object\_pk** (string) -- (required)
- **results[].object\_permissions[].permission** (integer) -- (required)
- **results[].permissions[]** (integer) --
- **results[].users[].date\_joined** (string) --
- **results[].users[].email** (string) --
- **results[].users[].first\_name** (string) --
- **results[].users[].last\_login** (string) --
- **results[].users[].last\_name** (string) --
- **results[].users[].username** (string) -- Required. 150 characters or fewer. Letters, digits and @/./+/-/\_ only. (required)

## POST /groups/

API endpoint for managing groups.

### Request JSON Object:

- **description** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **nas\_group** (boolean) --
- **object\_permissions[].model** (string) -- (required)
- **object\_permissions[].object\_pk** (string) -- (required)
- **object\_permissions[].permission** (integer) -- (required)
- **permissions[]** (integer) --
- **users[]** (string) --

### Status Codes:

- [201 Created](#) --

### Response JSON Object:

- **description** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **nas\_group** (boolean) --
- **object\_permissions[].model** (string) -- (required)
- **object\_permissions[].object\_pk** (string) -- (required)
- **object\_permissions[].permission** (integer) -- (required)
- **permissions[]** (integer) --
- **users[]** (string) --

## GET /groups/{id}/

API endpoint for managing groups.

### Parameters:

- **id** (string) --

### Status Codes:

- [200 OK](#) --

### Response JSON Object:

- **description** (string) -- (read only)

- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **nas\_group.gid** (integer) -- GID number for the user. This is automatically generated and cannot be changed. (read only)
- **object\_permissions[].model** (string) -- (required)
- **object\_permissions[].object\_pk** (string) -- (required)
- **object\_permissions[].permission** (integer) -- (required)
- **permissions[]** (integer) --
- **users[].date\_joined** (string) --
- **users[].email** (string) --
- **users[].first\_name** (string) --
- **users[].last\_login** (string) --
- **users[].last\_name** (string) --
- **users[].username** (string) -- Required. 150 characters or fewer. Letters, digits and @/./+/-/\_ only. (required)

## PATCH /groups/{id}/

API endpoint for managing groups.

### Parameters:

- **id** (string) --

### Request JSON Object:

- **description** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **nas\_group** (boolean) --
- **object\_permissions[].model** (string) -- (required)
- **object\_permissions[].object\_pk** (string) -- (required)
- **object\_permissions[].permission** (integer) -- (required)
- **permissions[]** (integer) --
- **users[]** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **description** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **nas\_group** (boolean) --
- **object\_permissions[].model** (string) -- (required)
- **object\_permissions[].object\_pk** (string) -- (required)
- **object\_permissions[].permission** (integer) -- (required)
- **permissions[]** (integer) --
- **users[]** (string) --

## DELETE /groups/{id}/

API endpoint for managing groups.

### Parameters:

- **id** (string) --

### Status Codes:

- 204 No Content --

## GET /health/

### Status Codes:

- 200 OK --

## GET /ipaddresses/

API endpoint for managing IP addresses.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **datastore\_id** (integer) -- Data store ID that the IP is assigned to

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].datastore.id** (integer) -- (read only)
- **results[].datastore.name** (string) -- DataStore Name (required)
- **results[].datastore.url** (string) -- (read only)
- **results[].id** (integer) -- (read only)
- **results[].ipaddr** (string) -- IP Address (IPv4) (required)
- **results[].url** (string) -- (read only)

## POST /ipaddresses/

API endpoint for managing IP addresses.

### Request JSON Object:

- **datastore** (integer) -- (required)
- **id** (integer) -- (read only)
- **ipaddr** (string) -- (required)
- **url** (string) -- (read only)

### Status Codes:

- 201 Created --

### Response JSON Object:

- **datastore** (integer) -- (required)
- **id** (integer) -- (read only)
- **ipaddr** (string) -- (required)
- **url** (string) -- (read only)

## GET /ipaddresses/{id}/

API endpoint for managing IP addresses.

**Parameters:**

- **id** (string) --

**Status Codes:**

- 200 OK --

**Response JSON Object:**

- **datastore.id** (integer) -- (read only)
- **datastore.name** (string) -- DataStore Name (required)
- **datastore.url** (string) -- (read only)
- **id** (integer) -- (read only)
- **ipaddr** (string) -- IP Address (IPv4) (required)
- **url** (string) -- (read only)

**PATCH /ipaddresses/{id}/**

API endpoint for managing IP addresses.

**Parameters:**

- **id** (string) --

**Request JSON Object:**

- **datastore** (integer) -- (required)
- **id** (integer) -- (read only)
- **ipaddr** (string) -- (required)
- **url** (string) -- (read only)

**Status Codes:**

- 200 OK --

**Response JSON Object:**

- **datastore** (integer) -- (required)
- **id** (integer) -- (read only)
- **ipaddr** (string) -- (required)
- **url** (string) -- (read only)

**DELETE /ipaddresses/{id}/**

API endpoint for managing IP addresses.

**Parameters:**

- **id** (string) --

**Status Codes:**

- 204 No Content --

**GET /jobs/**

API endpoint for managing jobs.

**Query Parameters:**

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **created** (string) -- Time period string for filtering jobs by time. Leave **null** for displaying jobs in all times.

- **created\_time\_from** (string) -- Start time for filtering jobs by creation time in UTC. Discarded when `created` parameter is given.
- **created\_time\_to** (string) -- End time for filtering jobs by creation time in UTC. Discarded when `created` parameter is given.
- **completed\_time\_from** (string) -- Start time for filtering jobs by completion time in UTC.
- **completed\_time\_to** (string) -- End time for filtering jobs by completion time in UTC.
- **workflow** (string) -- Job workflow type
- **state** (array) -- Job states
- **owner\_ids** (array) -- Job owner user IDs. Send `-1` for the Unknown owner. Send `-2` for the System jobs.
- **clientkey\_ids** (array) -- Job clientkey IDs
- **schedule\_ids** (array) -- Job schedule IDs
- **site** (string) -- Job site name
- **site\_id** (integer) -- Job site ID
- **input\_paths\_prefix** (string) -- Path prefix for the job paths
- **search\_keyword** (string) -- Keyword to filter by
- **hide\_noop** (boolean) -- Hide successful jobs with no processed files

#### Status Codes:

- [200 OK](#) --

## POST /jobs/

API endpoint for managing jobs.

#### Status Codes:

- [201 Created](#) --

## GET /jobs/jobtype\_choices/

Get all custom jobtypes.

#### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between `20` and `100`. For disabling pagination and retrieving all results, `0` should be given. When page size parameter is empty or `<20`, `20` results are returned by default. When page size parameter `>100`, `100` results are returned by default.

#### Status Codes:

- [200 OK](#) --

## GET /jobs/recent/

Retrieves last N jobs as recent jobs. N = 5 by default (defined in dynamohub/settings/base.py).

#### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between `20` and `100`. For disabling pagination

and retrieving all results, `0` should be given. When page size parameter is empty or `<20`, `20` results are returned by default. When page size parameter `>100`, `100` results are returned by default.

#### Status Codes:

- `200 OK` --

### GET `/jobs/stats/`

API endpoint for managing jobs.

#### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between `20` and `100`. For disabling pagination and retrieving all results, `0` should be given. When page size parameter is empty or `<20`, `20` results are returned by default. When page size parameter `>100`, `100` results are returned by default.
- **created** (string) -- Time period string for filtering jobs by time. Leave `null` for displaying jobs in all times.
- **created\_time\_from** (string) -- Start time for filtering jobs by creation time in UTC. Discarded when `created` parameter is given.
- **created\_time\_to** (string) -- End time for filtering jobs by creation time in UTC. Discarded when `created` parameter is given.
- **completed\_time\_from** (string) -- Start time for filtering jobs by completion time in UTC.
- **completed\_time\_to** (string) -- End time for filtering jobs by completion time in UTC.
- **workflow** (string) -- Job workflow type
- **state** (array) -- Job states
- **owner\_ids** (array) -- Job owner user IDs. Send `-1` for the Unknown owner. Send `-2` for the System jobs.
- **clientkey\_ids** (array) -- Job clientkey IDs
- **schedule\_ids** (array) -- Job schedule IDs
- **site** (string) -- Job site name
- **site\_id** (integer) -- Job site ID
- **input\_paths\_prefix** (string) -- Path prefix for the job paths
- **search\_keyword** (string) -- Keyword to filter by
- **hide\_noop** (boolean) -- Hide successful jobs with no processed files

#### Status Codes:

- `200 OK` --

### GET `/jobs/{id}/`

API endpoint for managing jobs.

#### Parameters:

- **id** (string) --

#### Status Codes:

- `200 OK` --

### PATCH `/jobs/{id}/`

API endpoint for managing jobs.

**Parameters:**

- **id** (string) --

**Status Codes:**

- 200 OK --

## **DELETE /jobs/{id}/**

API endpoint for managing jobs.

**Parameters:**

- **id** (string) --

**Status Codes:**

- 204 No Content --

## **POST /jobs/{id}/cancel/**

Cancels the pending and started tasks currently on the MQ for the given ID's job.

**Parameters:**

- **id** (string) --

**Status Codes:**

- 201 Created --

## **GET /jobs/{id}/files/**

Retrieves the files related with a job, with their execution status.

**Parameters:**

- **id** (string) --

**Query Parameters:**

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **category** (string) --

**Status Codes:**

- 200 OK --

## **POST /jobs/{id}/pause/**

API endpoint to pause the active dag job

**Parameters:**

- **id** (string) --

**Status Codes:**

- 201 Created --

## **POST /jobs/{id}/resubmit/**

Resubmits the job with given id. If the job is not finished yet, this action will not have an effect.

**Parameters:**

- **id** (string) --

**Status Codes:**

- [201 Created](#) --

## POST /jobs/{id}/resume/

API endpoint to resume the paused dag job

**Parameters:**

- **id** (string) --

**Status Codes:**

- [201 Created](#) --

## GET /my-permissions/

API endpoint for viewing the requesting user permissions.

**Status Codes:**

- [200 OK](#) --

**Response JSON Object:**

- **group\_object\_permissions.app\_label** (string) -- (required)
- **group\_object\_permissions.codename** (string) -- (required)
- **group\_object\_permissions.id** (integer) -- (required)
- **group\_object\_permissions.model** (string) -- (required)
- **group\_object\_permissions.name** (string) -- (required)
- **group\_object\_permissions.object\_pk** (string) -- (required)
- **group\_permissions.app\_label** (string) -- (required)
- **group\_permissions.codename** (string) -- (required)
- **group\_permissions.id** (integer) -- (read only)
- **group\_permissions.model** (string) -- (required)
- **group\_permissions.name** (string) -- (required)
- **user\_object\_permissions.app\_label** (string) -- (required)
- **user\_object\_permissions.codename** (string) -- (required)
- **user\_object\_permissions.id** (integer) -- (required)
- **user\_object\_permissions.model** (string) -- (required)
- **user\_object\_permissions.name** (string) -- (required)
- **user\_object\_permissions.object\_pk** (string) -- (required)
- **user\_permissions.app\_label** (string) -- (required)
- **user\_permissions.codename** (string) -- (required)
- **user\_permissions.id** (integer) -- (read only)
- **user\_permissions.model** (string) -- (required)
- **user\_permissions.name** (string) -- (required)

## GET /nodes/

**Query Parameters:**

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between `20` and `100`. For disabling pagination

and retrieving all results, `0` should be given. When page size parameter is empty or `<20`, `20` results are returned by default. When page size parameter `>100`, `100` results are returned by default.

#### Status Codes:

- `200 OK` --

#### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].id** (integer) -- (read only)
- **results[].last\_heartbeat** (string) -- Time the node sent its last heartbeat event
- **results[].name** (string) -- Hostname for a given worker node (required)
- **results[].online** (string) -- (read only)
- **results[].site** (string) -- (required)
- **results[].url** (string) -- (read only)

**GET** `/nodes/{id}/`

#### Parameters:

- **id** (string) --

#### Status Codes:

- `200 OK` --

#### Response JSON Object:

- **id** (integer) -- (read only)
- **last\_heartbeat** (string) -- Time the node sent its last heartbeat event
- **name** (string) -- Hostname for a given worker node (required)
- **online** (string) -- (read only)
- **site** (string) -- (required)
- **url** (string) -- (read only)

**PATCH** `/nodes/{id}/`

#### Parameters:

- **id** (string) --

#### Request JSON Object:

- **id** (integer) -- (read only)
- **last\_heartbeat** (string) -- Time the node sent its last heartbeat event
- **name** (string) -- Hostname for a given worker node (required)
- **online** (string) -- (read only)
- **site** (string) -- (required)
- **url** (string) -- (read only)

#### Status Codes:

- `200 OK` --

#### Response JSON Object:

- **id** (integer) -- (read only)
- **last\_heartbeat** (string) -- Time the node sent its last heartbeat event
- **name** (string) -- Hostname for a given worker node (required)
- **online** (string) -- (read only)
- **site** (string) -- (required)
- **url** (string) -- (read only)

## **DELETE /nodes/{id}/**

### **Parameters:**

- **id** (string) --

### **Status Codes:**

- 204 No Content --

## **GET /permissions/**

API endpoint for viewing permissions.

### **Query Parameters:**

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

### **Status Codes:**

- 200 OK --

### **Response JSON Object:**

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].app\_label** (string) -- (required)
- **results[].codename** (string) -- (required)
- **results[].id** (integer) -- (read only)
- **results[].model** (string) -- (required)
- **results[].name** (string) -- (required)

## **GET /permissions/{id}/**

API endpoint for viewing permissions.

### **Parameters:**

- **id** (string) --

### **Status Codes:**

- 200 OK --

### **Response JSON Object:**

- **app\_label** (string) -- (required)
- **codename** (string) -- (required)
- **id** (integer) -- (read only)
- **model** (string) -- (required)
- **name** (string) -- (required)

## **GET /pki/ca/pub/**

### **Status Codes:**

- 200 OK --

## **GET /pki/redis/private/**

### **Status Codes:**

- 200 OK --

**GET /pki/redis/pub/**

**Status Codes:**

- 200 OK --

**POST /pki/site/**

**Status Codes:**

- 201 Created --

**GET /policies/**

**Query Parameters:**

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

**Status Codes:**

- 200 OK --

**Response JSON Object:**

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].condition\_groups[].date\_conditions[].age** (string) --
- **results[].condition\_groups[].date\_conditions[].condition\_group** (integer) -- (required)
- **results[].condition\_groups[].date\_conditions[].date\_field** (string) --
- **results[].condition\_groups[].date\_conditions[].id** (integer) -- (read only)
- **results[].condition\_groups[].date\_conditions[].include** (boolean) --
- **results[].condition\_groups[].date\_conditions[].older\_or\_newer** (string) --
- **results[].condition\_groups[].filesize\_conditions[].condition\_group** (integer) -- (required)
- **results[].condition\_groups[].filesize\_conditions[].greater\_or\_less** (string) -- (required)
- **results[].condition\_groups[].filesize\_conditions[].id** (integer) -- (read only)
- **results[].condition\_groups[].filesize\_conditions[].include** (boolean) --
- **results[].condition\_groups[].filesize\_conditions[].size** (integer) -- (required)
- **results[].condition\_groups[].filetype\_conditions[].condition\_group** (integer) -- (required)
- **results[].condition\_groups[].filetype\_conditions[].filetypes[]** (string) --
- **results[].condition\_groups[].filetype\_conditions[].id** (integer) -- (read only)
- **results[].condition\_groups[].filetype\_conditions[].include** (boolean) --
- **results[].condition\_groups[].id** (integer) -- (read only)
- **results[].condition\_groups[].name** (string) -- (required)
- **results[].condition\_groups[].policy** (integer) -- (required)
- **results[].created** (string) -- (read only)

- **results[].enabled** (boolean) --
- **results[].filesystem** (string) --
- **results[].id** (integer) -- (read only)
- **results[].name** (string) -- (required)
- **results[].order.by** (string) --
- **results[].order.id** (integer) -- (read only)
- **results[].order.reverse** (boolean) --
- **results[].policy\_type** (string) --
- **results[].schedule.day\_of\_month** (string) -- Cron Days Of The Month to Run. Use "\*" for "all". (Example: "1,15")
- **results[].schedule.day\_of\_week** (string) -- Cron Days Of The Week to Run. Use "\*" for "all". (Example: "0,5")
- **results[].schedule.first\_occur** (boolean) -- Whether the first occurrence will be at the stipulated time.
- **results[].schedule.hour** (string) -- Cron Hours to Run. Use "\*" for "all". (Example: "8,20")
- **results[].schedule.id** (integer) -- (read only)
- **results[].schedule.minute** (string) -- Cron Minutes to Run. Use "\*" for "all". (Example: "0,30")
- **results[].schedule.month\_of\_year** (string) -- Cron Months Of The Year to Run. Use "\*" for "all". (Example: "0,6")
- **results[].schedule.start\_date\_time** (string) -- Start date time based on the time provided, timezone and if self.first\_occur is true.
- **results[].schedule.time** (string) -- Time to start running on the policy's SITE. REMEMBER: The Ngenea hub and the site may be running in different timezones
- **results[].schedule.timezone** (string) -- (required)
- **results[].site** (integer) --
- **results[].spaces[]** (integer) --
- **results[].threads** (integer) -- Number of threads to run policy on
- **results[].triggers** (string) -- (read only)

## POST /policies/

### Request JSON Object:

- **created** (string) -- (read only)
- **enabled** (boolean) --
- **filesystem** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **order.by** (string) --
- **order.id** (integer) -- (read only)
- **order.reverse** (boolean) --
- **policy\_type** (string) --
- **schedule.day\_of\_month** (string) -- Cron Days Of The Month to Run. Use "\*" for "all". (Example: "1,15")
- **schedule.day\_of\_week** (string) -- Cron Days Of The Week to Run. Use "\*" for "all". (Example: "0,5")
- **schedule.first\_occur** (boolean) -- Whether the first occurrence will be at the stipulated time.

- **schedule.hour** (string) -- Cron Hours to Run. Use "\*" for "all". (Example: "8,20")
- **schedule.id** (integer) -- (read only)
- **schedule.minute** (string) -- Cron Minutes to Run. Use "\*" for "all". (Example: "0,30")
- **schedule.month\_of\_year** (string) -- Cron Months Of The Year to Run. Use "\*" for "all". (Example: "0,6")
- **schedule.time** (string) -- Time to start running on the policy's SITE. REMEMBER: The Ngenea hub and the site may be running in different timezones
- **site** (integer) --
- **spaces[]** (integer) --
- **threads** (integer) -- Number of threads to run policy on
- **triggers[].is\_cloud** (boolean) --
- **triggers[].lower\_threshold** (number) --
- **triggers[].max\_utilisation** (number) --
- **triggers[].pool\_name** (string) -- (required)
- **triggers[].premigrate\_threshold** (number) --
- **triggers[].upper\_threshold** (number) --

#### Status Codes:

- [201 Created](#) --

#### Response JSON Object:

- **created** (string) -- (read only)
- **enabled** (boolean) --
- **filesystem** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **order** (integer) --
- **policy\_type** (string) --
- **schedule.day\_of\_month** (string) -- Cron Days Of The Month to Run. Use "\*" for "all". (Example: "1,15")
- **schedule.day\_of\_week** (string) -- Cron Days Of The Week to Run. Use "\*" for "all". (Example: "0,5")
- **schedule.first\_occur** (boolean) -- Whether the first occurrence will be at the stipulated time.
- **schedule.hour** (string) -- Cron Hours to Run. Use "\*" for "all". (Example: "8,20")
- **schedule.id** (integer) -- (read only)
- **schedule.minute** (string) -- Cron Minutes to Run. Use "\*" for "all". (Example: "0,30")
- **schedule.month\_of\_year** (string) -- Cron Months Of The Year to Run. Use "\*" for "all". (Example: "0,6")
- **schedule.time** (string) -- Time to start running on the policy's SITE. REMEMBER: The Ngenea hub and the site may be running in different timezones
- **site** (integer) --
- **spaces[]** (integer) --
- **threads** (integer) -- Number of threads to run policy on
- **triggers[].id** (integer) -- (read only)
- **triggers[].is\_cloud** (boolean) --

- **triggers[].lower\_threshold** (number) --
- **triggers[].max\_utilisation** (number) --
- **triggers[].pool\_name** (string) -- (required)
- **triggers[].premigrate\_threshold** (number) --
- **triggers[].upper\_threshold** (number) --

**GET /policies/{id}/**

**Parameters:**

- **id** (string) --

**Status Codes:**

- **200 OK** --

**Response JSON Object:**

- **condition\_groups[].date\_conditions[].age** (string) --
- **condition\_groups[].date\_conditions[].condition\_group** ( integer) -- (required)
- **condition\_groups[].date\_conditions[].date\_field** (string) --
- **condition\_groups[].date\_conditions[].id** (integer) -- (read only)
- **condition\_groups[].date\_conditions[].include** (boolean) --
- **condition\_groups[].date\_conditions[].older\_or\_newer** (string) --
- **condition\_groups[].filesize\_conditions[].condition\_group** ( integer) -- (required)
- **condition\_groups[].filesize\_conditions[].greater\_or\_less** ( string) -- (required)
- **condition\_groups[].filesize\_conditions[].id** (integer) -- (read only)
- **condition\_groups[].filesize\_conditions[].include** (boolean) --
- **condition\_groups[].filesize\_conditions[].size** (integer) -- (required)
- **condition\_groups[].filetype\_conditions[].condition\_group** ( integer) -- (required)
- **condition\_groups[].filetype\_conditions[].filetypes[]** (string) --
- **condition\_groups[].filetype\_conditions[].id** (integer) -- (read only)
- **condition\_groups[].filetype\_conditions[].include** (boolean) --
- **condition\_groups[].id** (integer) -- (read only)
- **condition\_groups[].name** (string) -- (required)
- **condition\_groups[].policy** (integer) -- (required)
- **created** (string) -- (read only)
- **enabled** (boolean) --
- **filesystem** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **order.by** (string) --
- **order.id** (integer) -- (read only)
- **order.reverse** (boolean) --
- **policy\_type** (string) --
- **schedule.day\_of\_month** (string) -- Cron Days Of The Month to Run. Use "\*" for "all". (Example: "1,15")
- **schedule.day\_of\_week** (string) -- Cron Days Of The Week to Run. Use "\*" for "all". (Example: "0,5")
- **schedule.first\_occur** (boolean) -- Whether the first occurrence will be at the stipulated time.

- **schedule.hour** (string) -- Cron Hours to Run. Use "\*" for "all". (Example: "8,20")
- **schedule.id** (integer) -- (read only)
- **schedule.minute** (string) -- Cron Minutes to Run. Use "\*" for "all". (Example: "0,30")
- **schedule.month\_of\_year** (string) -- Cron Months Of The Year to Run. Use "\*" for "all". (Example: "0,6")
- **schedule.start\_date\_time** (string) -- Start date time based on the time provided, timezone and if self.first\_occur is true.
- **schedule.time** (string) -- Time to start running on the policy's SITE. REMEMBER: The Ngenea hub and the site may be running in different timezones
- **schedule.timezone** (string) -- (required)
- **site** (integer) --
- **spaces[]** (integer) --
- **threads** (integer) -- Number of threads to run policy on
- **triggers** (string) -- (read only)

## PATCH /policies/{id}/

### Parameters:

- **id** (string) --

### Request JSON Object:

- **created** (string) -- (read only)
- **enabled** (boolean) --
- **filesystem** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **order.by** (string) --
- **order.id** (integer) -- (read only)
- **order.reverse** (boolean) --
- **policy\_type** (string) --
- **schedule.day\_of\_month** (string) -- Cron Days Of The Month to Run. Use "\*" for "all". (Example: "1,15")
- **schedule.day\_of\_week** (string) -- Cron Days Of The Week to Run. Use "\*" for "all". (Example: "0,5")
- **schedule.first\_occur** (boolean) -- Whether the first occurrence will be at the stipulated time.
- **schedule.hour** (string) -- Cron Hours to Run. Use "\*" for "all". (Example: "8,20")
- **schedule.id** (integer) -- (read only)
- **schedule.minute** (string) -- Cron Minutes to Run. Use "\*" for "all". (Example: "0,30")
- **schedule.month\_of\_year** (string) -- Cron Months Of The Year to Run. Use "\*" for "all". (Example: "0,6")
- **schedule.time** (string) -- Time to start running on the policy's SITE. REMEMBER: The Ngenea hub and the site may be running in different timezones
- **site** (integer) --
- **spaces[]** (integer) --
- **threads** (integer) -- Number of threads to run policy on

- **triggers[]**.**is\_cloud** (boolean) --
- **triggers[]**.**lower\_threshold** (number) --
- **triggers[]**.**max\_utilisation** (number) --
- **triggers[]**.**pool\_name** (string) -- (required)
- **triggers[]**.**premigrate\_threshold** (number) --
- **triggers[]**.**upper\_threshold** (number) --

#### Status Codes:

- 201 Created --

#### Response JSON Object:

- **created** (string) -- (read only)
- **enabled** (boolean) --
- **filesystem** (string) --
- **id** (integer) -- (read only)
- **name** (string) -- (required)
- **order** (integer) --
- **policy\_type** (string) --
- **schedule.day\_of\_month** (string) -- Cron Days Of The Month to Run. Use "\*" for "all". (Example: "1,15")
- **schedule.day\_of\_week** (string) -- Cron Days Of The Week to Run. Use "\*" for "all". (Example: "0,5")
- **schedule.first\_occur** (boolean) -- Whether the first occurrence will be at the stipulated time.
- **schedule.hour** (string) -- Cron Hours to Run. Use "\*" for "all". (Example: "8,20")
- **schedule.id** (integer) -- (read only)
- **schedule.minute** (string) -- Cron Minutes to Run. Use "\*" for "all". (Example: "0,30")
- **schedule.month\_of\_year** (string) -- Cron Months Of The Year to Run. Use "\*" for "all". (Example: "0,6")
- **schedule.time** (string) -- Time to start running on the policy's SITE. REMEMBER: The Ngenea hub and the site may be running in different timezones
- **site** (integer) --
- **spaces[]** (integer) --
- **threads** (integer) -- Number of threads to run policy on
- **triggers[]**.**id** (integer) -- (read only)
- **triggers[]**.**is\_cloud** (boolean) --
- **triggers[]**.**lower\_threshold** (number) --
- **triggers[]**.**max\_utilisation** (number) --
- **triggers[]**.**pool\_name** (string) -- (required)
- **triggers[]**.**premigrate\_threshold** (number) --
- **triggers[]**.**upper\_threshold** (number) --

**DELETE /policies/{id}/**

#### Parameters:

- **id** (string) --

#### Status Codes:

- 204 No Content --

**POST /policies/{id}/run/**

**Parameters:**

- **id** (string) --

**Status Codes:**

- 202 Accepted -- Task id of the task fired for the associated request.

**GET /schedules/****Query Parameters:**

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

**Status Codes:**

- 200 OK --

**Response JSON Object:**

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].day\_of\_month** (string) -- The day setting for the cron schedule
- **results[].day\_of\_week** (string) -- The week setting for the cron schedule
- **results[].discovery** (string) --
- **results[].discovery\_options** (object) --
- **results[].enabled** (boolean) -- If the schedule should be enabled
- **results[].hour** (string) -- The hour setting for the cron schedule
- **results[].id** (integer) -- (read only)
- **results[].managed\_paths** (object) -- Path of managed filesystem elements
- **results[].minute** (string) -- The minute setting for the cron schedule
- **results[].month\_of\_year** (string) -- The month setting for the cron schedule
- **results[].name** (string) -- Schedule Name (required)
- **results[].site** (string) -- (required)
- **results[].url** (string) -- (read only)

**POST /schedules/****Request JSON Object:**

- **day\_of\_month** (string) -- The day setting for the cron schedule
- **day\_of\_week** (string) -- The week setting for the cron schedule
- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- If the schedule should be enabled
- **hour** (string) -- The hour setting for the cron schedule
- **id** (integer) -- (read only)
- **managed\_paths** (object) -- Path of managed filesystem elements
- **minute** (string) -- The minute setting for the cron schedule
- **month\_of\_year** (string) -- The month setting for the cron schedule
- **name** (string) -- Schedule Name (required)
- **site** (string) -- (required)
- **url** (string) -- (read only)

### Status Codes:

- 201 Created --

### Response JSON Object:

- **day\_of\_month** (string) -- The day setting for the cron schedule
- **day\_of\_week** (string) -- The week setting for the cron schedule
- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- If the schedule should be enabled
- **hour** (string) -- The hour setting for the cron schedule
- **id** (integer) -- (read only)
- **managed\_paths** (object) -- Path of managed filesystem elements
- **minute** (string) -- The minute setting for the cron schedule
- **month\_of\_year** (string) -- The month setting for the cron schedule
- **name** (string) -- Schedule Name (required)
- **site** (string) -- (required)
- **url** (string) -- (read only)

GET `/schedules/{id}/`

### Parameters:

- **id** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **day\_of\_month** (string) -- The day setting for the cron schedule
- **day\_of\_week** (string) -- The week setting for the cron schedule
- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- If the schedule should be enabled
- **hour** (string) -- The hour setting for the cron schedule
- **id** (integer) -- (read only)
- **managed\_paths** (object) -- Path of managed filesystem elements
- **minute** (string) -- The minute setting for the cron schedule
- **month\_of\_year** (string) -- The month setting for the cron schedule
- **name** (string) -- Schedule Name (required)
- **site** (string) -- (required)
- **url** (string) -- (read only)

PATCH `/schedules/{id}/`

### Parameters:

- **id** (string) --

### Request JSON Object:

- **day\_of\_month** (string) -- The day setting for the cron schedule
- **day\_of\_week** (string) -- The week setting for the cron schedule
- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- If the schedule should be enabled
- **hour** (string) -- The hour setting for the cron schedule
- **id** (integer) -- (read only)
- **managed\_paths** (object) -- Path of managed filesystem elements
- **minute** (string) -- The minute setting for the cron schedule

- **month\_of\_year** (string) -- The month setting for the cron schedule
- **name** (string) -- Schedule Name (required)
- **site** (string) -- (required)

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **day\_of\_month** (string) -- The day setting for the cron schedule
- **day\_of\_week** (string) -- The week setting for the cron schedule
- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- If the schedule should be enabled
- **hour** (string) -- The hour setting for the cron schedule
- **id** (integer) -- (read only)
- **managed\_paths** (object) -- Path of managed filesystem elements
- **minute** (string) -- The minute setting for the cron schedule
- **month\_of\_year** (string) -- The month setting for the cron schedule
- **name** (string) -- Schedule Name (required)
- **site** (string) -- (required)

**DELETE /schedules/{id}/**

#### Parameters:

- **id** (string) --

#### Status Codes:

- 204 No Content --

**GET /schedules/{parent\_lookup\_schedule}/workflows/**

#### Parameters:

- **parent\_lookup\_schedule** (string) --

#### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].fields** (object) -- Mapping of path to operation for task usage
- **results[].id** (integer) -- (read only)
- **results[].site** (string) -- (required)
- **results[].url** (string) -- (read only)
- **results[].workflow** (string) -- (required)

**POST /schedules/{parent\_lookup\_schedule}/workflows/**

#### Parameters:

- **parent\_lookup\_schedule** (string) --

#### Request JSON Object:

- **fields** (object) -- Mapping of path to operation for task usage
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **workflow** (string) -- (required)

#### Status Codes:

- 201 Created --

#### Response JSON Object:

- **fields** (object) -- Mapping of path to operation for task usage
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **workflow** (string) -- (required)

**GET** /schedules/{parent\_lookup\_schedule}/workflows/{id}/

#### Parameters:

- **parent\_lookup\_schedule** (string) --
- **id** (string) --

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **fields** (object) -- Mapping of path to operation for task usage
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **url** (string) -- (read only)
- **workflow** (string) -- (required)

**PATCH** /schedules/{parent\_lookup\_schedule}/workflows/{id}/

#### Parameters:

- **parent\_lookup\_schedule** (string) --
- **id** (string) --

#### Request JSON Object:

- **fields** (object) -- Mapping of path to operation for task usage
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **url** (string) -- (read only)
- **workflow** (string) -- (required)

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **fields** (object) -- Mapping of path to operation for task usage
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **url** (string) -- (read only)
- **workflow** (string) -- (required)

**DELETE** /schedules/{parent\_lookup\_schedule}/workflows/{id}/

#### Parameters:

- **parent\_lookup\_schedule** (string) --

- **id** (string) --

#### **Status Codes:**

- 204 No Content --

## **POST /search/**

API endpoint for file search

#### **Request JSON Object:**

- **filters** (object) -- Metadata filters to apply to search
- **merge** (boolean) -- Whether matching files should be merged
- **metadata\_fields** (object) -- Available metadata fields from this search
- **path** (string) -- Directory to search (required)
- **recursive** (boolean) -- Search the target path recursively
- **sites[]** (string) --

#### **Status Codes:**

- 201 Created --

#### **Response JSON Object:**

- **filters** (object) -- Metadata filters to apply to search
- **merge** (boolean) -- Whether matching files should be merged
- **metadata\_fields** (object) -- Available metadata fields from this search
- **path** (string) -- Directory to search (required)
- **recursive** (boolean) -- Search the target path recursively
- **sites[]** (string) --

## **PATCH /search/metadata/**

API endpoint for file search

#### **Request JSON Object:**

- **id** (integer) -- (read only)
- **url** (string) -- (read only)

#### **Status Codes:**

- 200 OK --

#### **Response JSON Object:**

- **id** (integer) -- (read only)
- **url** (string) -- (read only)

## **GET /search/metadata\_fields/**

API endpoint for file search

#### **Query Parameters:**

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

#### **Status Codes:**

- 200 OK --

#### **Response JSON Object:**

- **count** (integer) -- (required)

- **next** (string) --
- **previous** (string) --
- **results[]**.**id** (integer) -- (read only)
- **results[]**.**url** (string) -- (read only)

## GET /search/{id}/

Get paginated results for a given search id.

### Parameters:

- **id** (string) --

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **sort** (string) -- One or more fields to sort results by
- **group\_by\_name** (boolean) --

When this url parameter is 'True' results are merged based on matching file name. e.g.

```
[
  {
    data: [
      {site: site1, path: /mmfs1, ...},
      {site: site2, path: /mmfs1, ...}
    ]
  },
  {
    foo: [
      {site: site1, path: /mmfs1/data, ...}
      # not present on site2
    ]
  }
]
```

### Status Codes:

- 200 OK --

### Response JSON Object:

- **href** (string) -- (read only)
- **metadata** (object) -- File metadata
- **name** (string) -- Directory or file name (required)
- **path** (string) -- Directory or file path (required)
- **proxies** (object) -- File proxies (thumbnails, etc.)
- **site** (string) -- Site Name

## DELETE /search/{id}/

API endpoint for file search

**Parameters:**

- **id** (string) --

**Status Codes:**

- 204 No Content --

**GET /servers/****Query Parameters:**

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

**Status Codes:**

- 200 OK --

**Response JSON Object:**

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].list\_of\_interfaces** (object) -- List of interfaces of this server
- **results[].name** (string) -- Server name (required)
- **results[].site** (integer) -- Site correlated with this server (required)

**GET /servers/{id}/****Parameters:**

- **id** (string) --

**Status Codes:**

- 200 OK --

**Response JSON Object:**

- **list\_of\_interfaces** (object) -- List of interfaces of this server
- **name** (string) -- Server name (required)
- **site** (integer) -- Site correlated with this server (required)

**GET /settings/**

API to get a list of global settings.

**Status Codes:**

- 200 OK --

**Response JSON Object:**

- **[].desc** (string) -- (read only)
- **[].id** (integer) -- (read only)
- **[].key** (string) -- (required)
- **[].value** (object) --

**PATCH /settings/**

API to set a setting or a group of global settings. A group of settings should be sent in key-value schema. Requested data will be stored in the database, and then sent to each site. Terminology Setting - An individual setting e.g. ngenea:realm

Notes on use:

- Non-global settings cannot be set on this endpoint either alone or with global settings
- Setting a key to None will delete it from the database and set null on all active sites
  - e.g. {"values": [{"key": "ngeneahsm\_targets:devaws:Storage", "value": None}]}]

#### Request JSON Object:

- **values[]**.desc (string) -- (read only)
- **values[]**.id (integer) -- (read only)
- **values[]**.key (string) -- (required)
- **values[]**.value (object) --

#### Status Codes:

- 202 Accepted -- Task id of the task fired for the associated request per site.

## POST /settings/sync/

API to sync global settings on each site. Stored data will be sent to the given site or to each site if not given.

#### Query Parameters:

- **site** (string) -- Site to run the sync operation on if provided, otherwise all sites

#### Status Codes:

- 202 Accepted -- Task id of the task fired for the associated request per site.

## GET /settingstasks/

API endpoint for viewing tasks.

#### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **tasktype** (string) -- Task type
- **state** (array) -- Task states
- **job\_id** (integer) -- Job ID

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[]**.job (integer) --
- **results[]**.site (string) -- (required)
- **results[]**.started (string) -- Time that the task started running
- **results[]**.state (string) --

- **results[].task\_id** (string) -- (read only)
- **results[].tasktype** (string) -- (read only)
- **results[].url** (string) -- (read only)

## GET /settingstasks/{queued\_task\_id}/

API endpoint for viewing tasks.

### Parameters:

- **queued\_task\_id** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **completed** (string) -- Time of the task completion
- **friendly\_name** (string) -- Text to be used to describe what this task is doing.
- **job** (integer) --
- **request** (object) --
- **results** (string) -- (read only)
- **runtime** (string) -- (read only)
- **site** (string) -- (required)
- **started** (string) -- Time that the task started running
- **state** (string) --
- **task\_id** (string) -- (read only)
- **tasktype** (string) -- (read only)
- **url** (string) -- (read only)

## GET /shares/nfs/

### Status Codes:

- 200 OK --

### Response JSON Object:

- **[].clients[].advanced\_settings** (object) --
- **[].clients[].anonymous\_group\_id** (integer) --
- **[].clients[].anonymous\_user\_id** (integer) --
- **[].clients[].asynchronous** (boolean) --
- **[].clients[].force\_all\_user\_id** (boolean) --
- **[].clients[].force\_root\_user\_id** (boolean) --
- **[].clients[].fsid** (string) -- (read only)
- **[].clients[].hosts** (string) -- (required)
- **[].clients[].id** (integer) -- (read only)
- **[].clients[].insecure\_ports** (boolean) --
- **[].clients[].nfs\_share** (integer) -- (required)
- **[].clients[].on\_sites** (object) --
- **[].clients[].read\_only** (boolean) --
- **[].clients[].subtree\_check** (boolean) --
- **[].clients[].write\_delay** (boolean) --
- **[].id** (integer) -- (read only)
- **[].name** (string) -- Note: This name is for identification only. NFSClients don't have names in remote representations
- **[].path** (string) --
- **[].space** (integer) -- (required)
- **[].uuid** (string) -- (read only)

## POST /shares/nfs/

### Request JSON Object:

- **clients[]**.advanced\_settings (object) --
- **clients[]**.anonymous\_group\_id (integer) --
- **clients[]**.anonymous\_user\_id (integer) --
- **clients[]**.asynchronous (boolean) --
- **clients[]**.force\_all\_user\_id (boolean) --
- **clients[]**.force\_root\_user\_id (boolean) --
- **clients[]**.fsid (string) -- (read only)
- **clients[]**.hosts (string) -- (required)
- **clients[]**.id (integer) -- (read only)
- **clients[]**.insecure\_ports (boolean) --
- **clients[]**.nfs\_share (integer) -- (required)
- **clients[]**.on\_sites (object) --
- **clients[]**.read\_only (boolean) --
- **clients[]**.subtree\_check (boolean) --
- **clients[]**.write\_delay (boolean) --
- **id** (integer) -- (read only)
- **name** (string) -- Note: This name is for identification only. NFSClients don't have names in remote representations
- **path** (string) --
- **space** (integer) -- (required)
- **uuid** (string) -- (read only)

### Status Codes:

- 201 Created --

### Response JSON Object:

- **clients[]**.advanced\_settings (object) --
- **clients[]**.anonymous\_group\_id (integer) --
- **clients[]**.anonymous\_user\_id (integer) --
- **clients[]**.asynchronous (boolean) --
- **clients[]**.force\_all\_user\_id (boolean) --
- **clients[]**.force\_root\_user\_id (boolean) --
- **clients[]**.fsid (string) -- (read only)
- **clients[]**.hosts (string) -- (required)
- **clients[]**.id (integer) -- (read only)
- **clients[]**.insecure\_ports (boolean) --
- **clients[]**.nfs\_share (integer) -- (required)
- **clients[]**.on\_sites (object) --
- **clients[]**.read\_only (boolean) --
- **clients[]**.subtree\_check (boolean) --
- **clients[]**.write\_delay (boolean) --
- **id** (integer) -- (read only)
- **name** (string) -- Note: This name is for identification only. NFSClients don't have names in remote representations
- **path** (string) --
- **space** (integer) -- (required)
- **uuid** (string) -- (read only)

## GET /shares/nfs/{id}/

**Parameters:**

- **id** (integer) -- A unique integer value identifying this nfs share.

**Status Codes:**

- 200 OK --

**Response JSON Object:**

- **clients[]**.advanced\_settings (object) --
- **clients[]**.anonymous\_group\_id (integer) --
- **clients[]**.anonymous\_user\_id (integer) --
- **clients[]**.asynchronous (boolean) --
- **clients[]**.force\_all\_user\_id (boolean) --
- **clients[]**.force\_root\_user\_id (boolean) --
- **clients[]**.fsid (string) -- (read only)
- **clients[]**.hosts (string) -- (required)
- **clients[]**.id (integer) -- (read only)
- **clients[]**.insecure\_ports (boolean) --
- **clients[]**.nfs\_share (integer) -- (required)
- **clients[]**.on\_sites (object) --
- **clients[]**.read\_only (boolean) --
- **clients[]**.subtree\_check (boolean) --
- **clients[]**.write\_delay (boolean) --
- **id** (integer) -- (read only)
- **name** (string) -- Note: This name is for identification only. NFSClients don't have names in remote representations
- **path** (string) --
- **space** (integer) -- (required)
- **uuid** (string) -- (read only)

**PATCH /shares/nfs/{id}/****Parameters:**

- **id** (integer) -- A unique integer value identifying this nfs share.

**Request JSON Object:**

- **clients[]**.advanced\_settings (object) --
- **clients[]**.anonymous\_group\_id (integer) --
- **clients[]**.anonymous\_user\_id (integer) --
- **clients[]**.asynchronous (boolean) --
- **clients[]**.force\_all\_user\_id (boolean) --
- **clients[]**.force\_root\_user\_id (boolean) --
- **clients[]**.fsid (string) -- (read only)
- **clients[]**.hosts (string) -- (required)
- **clients[]**.id (integer) -- (read only)
- **clients[]**.insecure\_ports (boolean) --
- **clients[]**.nfs\_share (integer) -- (required)
- **clients[]**.on\_sites (object) --
- **clients[]**.read\_only (boolean) --
- **clients[]**.subtree\_check (boolean) --
- **clients[]**.write\_delay (boolean) --
- **id** (integer) -- (read only)
- **name** (string) -- Note: This name is for identification only. NFSClients don't have names in remote representations
- **path** (string) --

- **space** (integer) -- (required)
- **uuid** (string) -- (read only)

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **clients[]**.advanced\_settings (object) --
- **clients[]**.anonymous\_group\_id (integer) --
- **clients[]**.anonymous\_user\_id (integer) --
- **clients[]**.asynchronous (boolean) --
- **clients[]**.force\_all\_user\_id (boolean) --
- **clients[]**.force\_root\_user\_id (boolean) --
- **clients[]**.fsid (string) -- (read only)
- **clients[]**.hosts (string) -- (required)
- **clients[]**.id (integer) -- (read only)
- **clients[]**.insecure\_ports (boolean) --
- **clients[]**.nfs\_share (integer) -- (required)
- **clients[]**.on\_sites (object) --
- **clients[]**.read\_only (boolean) --
- **clients[]**.subtree\_check (boolean) --
- **clients[]**.write\_delay (boolean) --
- **id** (integer) -- (read only)
- **name** (string) -- Note: This name is for identification only. NFSClients don't have names in remote representations
- **path** (string) --
- **space** (integer) -- (required)
- **uuid** (string) -- (read only)

**DELETE /shares/nfs/{id}/**

#### Parameters:

- **id** (integer) -- A unique integer value identifying this nfs share.

#### Status Codes:

- 204 No Content --

**GET /shares/samba/**

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **[]**.admin\_users (object) --
- **[]**.advanced\_settings (object) --
- **[]**.allowed\_users (object) --
- **[]**.create\_mask (string) --
- **[]**.directory\_mask (string) --
- **[]**.force\_create\_mode (string) --
- **[]**.force\_directory\_mode (string) --
- **[]**.guest\_ok (boolean) --
- **[]**.hosts\_allow (object) --
- **[]**.hosts\_deny (object) --
- **[]**.hsm\_support (boolean) --
- **[]**.id (integer) -- (read only)
- **[]**.multi\_thread\_reads (boolean) --

- **[].multi\_thread\_writes** (boolean) --
- **[].name** (string) -- (required)
- **[].on\_sites** (object) --
- **[].path** (string) --
- **[].read\_only** (boolean) -- (required)
- **[].root\_share\_locking** (boolean) --
- **[].space** (integer) -- (required)
- **[].uuid** (string) -- (read only)
- **[].visible** (boolean) -- (required)

POST /shares/samba/

#### Request JSON Object:

- **admin\_users** (object) --
- **advanced\_settings** (object) --
- **allowed\_users** (object) --
- **create\_mask** (string) --
- **directory\_mask** (string) --
- **force\_create\_mode** (string) --
- **force\_directory\_mode** (string) --
- **guest\_ok** (boolean) --
- **hosts\_allow** (object) --
- **hosts\_deny** (object) --
- **hsm\_support** (boolean) --
- **id** (integer) -- (read only)
- **multi\_thread\_reads** (boolean) --
- **multi\_thread\_writes** (boolean) --
- **name** (string) -- (required)
- **on\_sites** (object) --
- **path** (string) --
- **read\_only** (boolean) -- (required)
- **root\_share\_locking** (boolean) --
- **space** (integer) -- (required)
- **uuid** (string) -- (read only)
- **visible** (boolean) -- (required)

#### Status Codes:

- 201 Created --

#### Response JSON Object:

- **admin\_users** (object) --
- **advanced\_settings** (object) --
- **allowed\_users** (object) --
- **create\_mask** (string) --
- **directory\_mask** (string) --
- **force\_create\_mode** (string) --
- **force\_directory\_mode** (string) --
- **guest\_ok** (boolean) --
- **hosts\_allow** (object) --
- **hosts\_deny** (object) --
- **hsm\_support** (boolean) --
- **id** (integer) -- (read only)
- **multi\_thread\_reads** (boolean) --

- **multi\_thread\_writes** (boolean) --
- **name** (string) -- (required)
- **on\_sites** (object) --
- **path** (string) --
- **read\_only** (boolean) -- (required)
- **root\_share\_locking** (boolean) --
- **space** (integer) -- (required)
- **uuid** (string) -- (read only)
- **visible** (boolean) -- (required)

**GET /shares/samba/{id}/**

**Parameters:**

- **id** (integer) -- A unique integer value identifying this samba share.

**Status Codes:**

- **200 OK** --

**Response JSON Object:**

- **admin\_users** (object) --
- **advanced\_settings** (object) --
- **allowed\_users** (object) --
- **create\_mask** (string) --
- **directory\_mask** (string) --
- **force\_create\_mode** (string) --
- **force\_directory\_mode** (string) --
- **guest\_ok** (boolean) --
- **hosts\_allow** (object) --
- **hosts\_deny** (object) --
- **hsm\_support** (boolean) --
- **id** (integer) -- (read only)
- **multi\_thread\_reads** (boolean) --
- **multi\_thread\_writes** (boolean) --
- **name** (string) -- (required)
- **on\_sites** (object) --
- **path** (string) --
- **read\_only** (boolean) -- (required)
- **root\_share\_locking** (boolean) --
- **space** (integer) -- (required)
- **uuid** (string) -- (read only)
- **visible** (boolean) -- (required)

**PATCH /shares/samba/{id}/**

**Parameters:**

- **id** (integer) -- A unique integer value identifying this samba share.

**Request JSON Object:**

- **admin\_users** (object) --
- **advanced\_settings** (object) --
- **allowed\_users** (object) --
- **create\_mask** (string) --
- **directory\_mask** (string) --
- **force\_create\_mode** (string) --
- **force\_directory\_mode** (string) --

- **guest\_ok** (boolean) --
- **hosts\_allow** (object) --
- **hosts\_deny** (object) --
- **hsm\_support** (boolean) --
- **id** (integer) -- (read only)
- **multi\_thread\_reads** (boolean) --
- **multi\_thread\_writes** (boolean) --
- **name** (string) -- (required)
- **on\_sites** (object) --
- **path** (string) --
- **read\_only** (boolean) -- (required)
- **root\_share\_locking** (boolean) --
- **space** (integer) -- (required)
- **uuid** (string) -- (read only)
- **visible** (boolean) -- (required)

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **admin\_users** (object) --
- **advanced\_settings** (object) --
- **allowed\_users** (object) --
- **create\_mask** (string) --
- **directory\_mask** (string) --
- **force\_create\_mode** (string) --
- **force\_directory\_mode** (string) --
- **guest\_ok** (boolean) --
- **hosts\_allow** (object) --
- **hosts\_deny** (object) --
- **hsm\_support** (boolean) --
- **id** (integer) -- (read only)
- **multi\_thread\_reads** (boolean) --
- **multi\_thread\_writes** (boolean) --
- **name** (string) -- (required)
- **on\_sites** (object) --
- **path** (string) --
- **read\_only** (boolean) -- (required)
- **root\_share\_locking** (boolean) --
- **space** (integer) -- (required)
- **uuid** (string) -- (read only)
- **visible** (boolean) -- (required)

## DELETE /shares/samba/{id}/

#### Parameters:

- **id** (integer) -- A unique integer value identifying this samba share.

#### Status Codes:

- 204 No Content --

## GET /sitelinks/

API endpoint for managing sitelinks.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **site\_id** (integer) -- Site ID
- **datastore\_id** (integer) -- Data store ID

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[]**.**datastore** (string) -- (required)
- **results[]**.**datastore\_path** (string) -- (required)
- **results[]**.**id** (integer) -- (read only)
- **results[]**.**site** (string) -- (required)
- **results[]**.**site\_path** (string) -- (required)
- **results[]**.**url** (string) -- (read only)

## POST /sitelinks/

API endpoint for managing sitelinks.

### Request JSON Object:

- **datastore** (string) -- (required)
- **datastore\_path** (string) -- (required)
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **site\_path** (string) -- (required)
- **url** (string) -- (read only)

### Status Codes:

- 201 Created --

### Response JSON Object:

- **datastore** (string) -- (required)
- **datastore\_path** (string) -- (required)
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **site\_path** (string) -- (required)
- **url** (string) -- (read only)

## GET /sitelinks/{id}/

API endpoint for managing sitelinks.

### Parameters:

- **id** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **datastore** (string) -- (required)
- **datastore\_path** (string) -- (required)
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **site\_path** (string) -- (required)
- **url** (string) -- (read only)

## PATCH /sitelinks/{id}/

API endpoint for managing sitelinks.

### Parameters:

- **id** (string) --

### Request JSON Object:

- **datastore** (string) -- (required)
- **datastore\_path** (string) -- (required)
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **site\_path** (string) -- (required)
- **url** (string) -- (read only)

### Status Codes:

- 200 OK --

### Response JSON Object:

- **datastore** (string) -- (required)
- **datastore\_path** (string) -- (required)
- **id** (integer) -- (read only)
- **site** (string) -- (required)
- **site\_path** (string) -- (required)
- **url** (string) -- (read only)

## DELETE /sitelinks/{id}/

API endpoint for managing sitelinks.

### Parameters:

- **id** (string) --

### Status Codes:

- 204 No Content --

## GET /sites/

API endpoint for managing sites.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].am\_i\_configured** (boolean) -- Boolean field determining if UI has been configured for the site
- **results[].bandwidth** (integer) -- speed for site (in Mb/s)
- **results[].color[]** (integer) --
- **results[].directories\_count** (integer) -- How many directories this site has
- **results[].editable** (string) -- (read only)
- **results[].files\_count** (integer) -- How many files this site has
- **results[].files\_hydrated\_count** (integer) -- How many files hydrated this site has
- **results[].files\_stubbed\_count** (integer) -- How many files stubbed this site has
- **results[].id** (integer) -- (read only)
- **results[].label** (string) -- Human readable name for this site
- **results[].name** (string) -- Site Name. Must match [a-zA-Z0-9-\_]+ (required)
- **results[].public\_url** (string) -- The base URL by which this site can be reached
- **results[].shortcode** (string) -- Shortcode
- **results[].spaces[]** (string) --
- **results[].type** (string) -- Type indicating where the site (pixstor) is deployed
- **results[].url** (string) -- (read only)

## POST /sites/

API endpoint for managing sites.

### Request JSON Object:

- **am\_i\_configured** (boolean) -- Boolean field determining if UI has been configured for the site
- **bandwidth** (integer) -- speed for site (in Mb/s)
- **color[]** (integer) --
- **directories\_count** (integer) -- How many directories this site has
- **elasticsearch\_url** (string) -- URL of the Elasticsearch server to use for the Analytics search backend on this site
- **exclude** (object) -- Global workflow excludes for this site
- **file\_batch\_gb** (integer) -- File batch GB
- **file\_batch\_size** (integer) -- File batch size
- **files\_count** (integer) -- How many files this site has
- **files\_hydrated\_count** (integer) -- How many files hydrated this site has
- **files\_stubbed\_count** (integer) -- How many files stubbed this site has
- **gpfs\_iscan\_buckets** (integer) -- Number of buckets to use for the gpfs snapdiff policy
- **gpfs\_iscan\_threads** (integer) -- Number of threads to use for the gpfs snapdiff policy
- **id** (integer) -- (read only)
- **include** (object) -- Global workflow includes for this site
- **label** (string) -- Human readable name for this site
- **lock\_threshold** (integer) -- Threshold for soft locking snapshot rotations

- **name** (string) -- Site Name. Must match [a-zA-Z0-9-\_]+ (required)
- **pixstor\_search\_url** (string) -- The base URL for querying the PixStor API
- **public\_url** (string) -- The base URL by which this site can be reached
- **shortcode** (string) -- Shortcode (required)
- **spaces[]** (string) --
- **type** (string) -- Type indicating where the site (pixstor) is deployed

#### Status Codes:

- 201 Created --

#### Response JSON Object:

- **am\_i\_configured** (boolean) -- Boolean field determining if UI has been configured for the site
- **bandwidth** (integer) -- speed for site (in Mb/s)
- **color[]** (integer) --
- **directories\_count** (integer) -- How many directories this site has
- **editable** (string) -- (read only)
- **elasticsearch\_url** (string) -- URL of the Elasticsearch server to use for the Analytics search backend on this site
- **exclude** (object) -- Global workflow excludes for this site
- **file\_batch\_gb** (integer) -- File batch GB
- **file\_batch\_size** (integer) -- File batch size
- **files\_count** (integer) -- How many files this site has
- **files\_hydrated\_count** (integer) -- How many files hydrated this site has
- **files\_stubbed\_count** (integer) -- How many files stubbed this site has
- **gpfs\_iscan\_buckets** (integer) -- Number of buckets to use for the gpfs snapdiff policy
- **gpfs\_iscan\_threads** (integer) -- Number of threads to use for the gpfs snapdiff policy
- **id** (integer) -- (read only)
- **include** (object) -- Global workflow includes for this site
- **label** (string) -- Human readable name for this site
- **lock\_threshold** (integer) -- Threshold for soft locking snapshot rotations
- **name** (string) -- Site Name. Must match [a-zA-Z0-9-\_]+ (required)
- **pixstor\_search\_url** (string) -- The base URL for querying the PixStor API
- **public\_url** (string) -- The base URL by which this site can be reached
- **shortcode** (string) -- Shortcode
- **spaces[].id** (integer) -- (read only)
- **spaces[].name** (string) -- Space Name (required)
- **spaces[].url** (string) -- (read only)
- **type** (string) -- Type indicating where the site (pixstor) is deployed
- **url** (string) -- (read only)

## GET /sites/{id}/

API endpoint for managing sites.

#### Parameters:

- **id** (string) --

#### Status Codes:

- 200 OK --

### Response JSON Object:

- **am\_i\_configured** (boolean) -- Boolean field determining if UI has been configured for the site
- **bandwidth** (integer) -- speed for site (in Mb/s)
- **color[]** (integer) --
- **directories\_count** (integer) -- How many directories this site has
- **editable** (string) -- (read only)
- **elasticsearch\_url** (string) -- URL of the Elasticsearch server to use for the Analytics search backend on this site
- **exclude** (object) -- Global workflow excludes for this site
- **file\_batch\_gb** (integer) -- File batch GB
- **file\_batch\_size** (integer) -- File batch size
- **files\_count** (integer) -- How many files this site has
- **files\_hydrated\_count** (integer) -- How many files hydrated this site has
- **files\_stubbed\_count** (integer) -- How many files stubbed this site has
- **gpfs\_iscan\_buckets** (integer) -- Number of buckets to use for the gpfs snapdiff policy
- **gpfs\_iscan\_threads** (integer) -- Number of threads to use for the gpfs snapdiff policy
- **id** (integer) -- (read only)
- **include** (object) -- Global workflow includes for this site
- **label** (string) -- Human readable name for this site
- **lock\_threshold** (integer) -- Threshold for soft locking snapshot rotations
- **name** (string) -- Site Name. Must match [a-zA-Z0-9-\_]+ (required)
- **pixstor\_search\_url** (string) -- The base URL for querying the PixStor API
- **public\_url** (string) -- The base URL by which this site can be reached
- **shortcode** (string) -- Shortcode
- **spaces[].id** (integer) -- (read only)
- **spaces[].name** (string) -- Space Name (required)
- **spaces[].url** (string) -- (read only)
- **type** (string) -- Type indicating where the site (pixstor) is deployed
- **url** (string) -- (read only)

## PATCH /sites/{id}/

API endpoint for managing sites.

### Parameters:

- **id** (string) --

### Request JSON Object:

- **am\_i\_configured** (boolean) -- Boolean field determining if UI has been configured for the site
- **bandwidth** (integer) -- speed for site (in Mb/s)
- **color[]** (integer) --
- **directories\_count** (integer) -- How many directories this site has
- **elasticsearch\_url** (string) -- URL of the Elasticsearch server to use for the Analytics search backend on this site
- **exclude** (object) -- Global workflow excludes for this site
- **file\_batch\_gb** (integer) -- File batch GB
- **file\_batch\_size** (integer) -- File batch size
- **files\_count** (integer) -- How many files this site has

- **files\_hydrated\_count** (integer) -- How many files hydrated this site has
- **files\_stubbed\_count** (integer) -- How many files stubbed this site has
- **gpfs\_iscan\_buckets** (integer) -- Number of buckets to use for the gpfs snapdiff policy
- **gpfs\_iscan\_threads** (integer) -- Number of threads to use for the gpfs snapdiff policy
- **id** (integer) -- (read only)
- **include** (object) -- Global workflow includes for this site
- **label** (string) -- Human readable name for this site
- **lock\_threshold** (integer) -- Threshold for soft locking snapshot rotations
- **name** (string) -- Site Name. Must match [a-zA-Z0-9-\_]+
- **pixstor\_search\_url** (string) -- The base URL for querying the PixStor API
- **public\_url** (string) -- The base URL by which this site can be reached
- **shortcode** (string) -- Shortcode
- **spaces[]** (string) --
- **type** (string) -- Type indicating where the site (pixstor) is deployed

### Status Codes:

- 200 OK --

### Response JSON Object:

- **am\_i\_configured** (boolean) -- Boolean field determining if UI has been configured for the site
- **bandwidth** (integer) -- speed for site (in Mb/s)
- **color[]** (integer) --
- **directories\_count** (integer) -- How many directories this site has
- **editable** (string) -- (read only)
- **elasticsearch\_url** (string) -- URL of the Elasticsearch server to use for the Analytics search backend on this site
- **exclude** (object) -- Global workflow excludes for this site
- **file\_batch\_gb** (integer) -- File batch GB
- **file\_batch\_size** (integer) -- File batch size
- **files\_count** (integer) -- How many files this site has
- **files\_hydrated\_count** (integer) -- How many files hydrated this site has
- **files\_stubbed\_count** (integer) -- How many files stubbed this site has
- **gpfs\_iscan\_buckets** (integer) -- Number of buckets to use for the gpfs snapdiff policy
- **gpfs\_iscan\_threads** (integer) -- Number of threads to use for the gpfs snapdiff policy
- **id** (integer) -- (read only)
- **include** (object) -- Global workflow includes for this site
- **label** (string) -- Human readable name for this site
- **lock\_threshold** (integer) -- Threshold for soft locking snapshot rotations
- **name** (string) -- Site Name. Must match [a-zA-Z0-9-\_]+ (required)
- **pixstor\_search\_url** (string) -- The base URL for querying the PixStor API
- **public\_url** (string) -- The base URL by which this site can be reached
- **shortcode** (string) -- Shortcode
- **spaces[].id** (integer) -- (read only)
- **spaces[].name** (string) -- Space Name (required)
- **spaces[].url** (string) -- (read only)
- **type** (string) -- Type indicating where the site (pixstor) is deployed
- **url** (string) -- (read only)

## **DELETE /sites/{id}/**

API endpoint for managing sites.

### **Parameters:**

- **id** (string) --

### **Status Codes:**

- [204 No Content](#) --

## **GET /sites/{id}/health/**

API endpoint for managing sites.

### **Parameters:**

- **id** (string) --

### **Status Codes:**

- [200 OK](#) --

### **Response JSON Object:**

- **am\_i\_configured** (boolean) -- Boolean field determining if UI has been configured for the site
- **bandwidth** (integer) -- speed for site (in Mb/s)
- **color[]** (integer) --
- **directories\_count** (integer) -- How many directories this site has
- **editable** (string) -- (read only)
- **files\_count** (integer) -- How many files this site has
- **files\_hydrated\_count** (integer) -- How many files hydrated this site has
- **files\_stubbed\_count** (integer) -- How many files stubbed this site has
- **id** (integer) -- (read only)
- **label** (string) -- Human readable name for this site
- **name** (string) -- Site Name. Must match [a-zA-Z0-9-]+ (required)
- **public\_url** (string) -- The base URL by which this site can be reached
- **shortcode** (string) -- Shortcode
- **spaces[]** (string) --
- **type** (string) -- Type indicating where the site (pixstor) is deployed
- **url** (string) -- (read only)

## **POST /sites/{id}/refresh/**

API endpoint for managing sites.

### **Parameters:**

- **id** (string) --

### **Status Codes:**

- [201 Created](#) --

### **Response JSON Object:**

- **am\_i\_configured** (boolean) -- Boolean field determining if UI has been configured for the site
- **bandwidth** (integer) -- speed for site (in Mb/s)
- **color[]** (integer) --
- **directories\_count** (integer) -- How many directories this site has
- **editable** (string) -- (read only)
- **files\_count** (integer) -- How many files this site has
- **files\_hydrated\_count** (integer) -- How many files hydrated this site has
- **files\_stubbed\_count** (integer) -- How many files stubbed this site has

- **id** (integer) -- (read only)
- **label** (string) -- Human readable name for this site
- **name** (string) -- Site Name. Must match [a-zA-Z0-9-\_]+ (required)
- **public\_url** (string) -- The base URL by which this site can be reached
- **shortcode** (string) -- Shortcode
- **spaces[]** (string) --
- **type** (string) -- Type indicating where the site (pixstor) is deployed
- **url** (string) -- (read only)

## GET /sites/{id}/settings/

API endpoint for managing sites.

### Parameters:

- **id** (string) --

### Query Parameters:

- **flat** (boolean) -- Return flat dict

### Status Codes:

- [200 OK](#) --

### Response JSON Object:

- **[].desc** (string) -- (read only)
- **[].id** (integer) -- (read only)
- **[].key** (string) -- (required)
- **[].value** (object) --

## PATCH /sites/{id}/settings/

API to set a setting or a group of settings associated with a site. A group of settings should be sent in key-value schema. Terminology Setting - An individual setting e.g. sambda:realm

### Parameters:

- **id** (string) --

### Request JSON Object:

- **values[].desc** (string) -- (read only)
- **values[].id** (integer) -- (read only)
- **values[].key** (string) -- (required)
- **values[].value** (object) --

### Status Codes:

- [202 Accepted](#) -- Task id of the task fired for the associated request.

## POST /sites/{id}/settings/refresh/

Refresh settings for a given site under management. This API will also create settings in the hub for this site if they don't already exist.

### Parameters:

- **id** (string) --

### Status Codes:

- [202 Accepted](#) -- Task id of the task fired for the associated request.

## GET /spaces/

Model View Set for filebrowser's Space model.

## Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

## Status Codes:

- 200 OK --

## Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[]**.color[] (integer) --
- **results[]**.created (string) -- Time of the job creation (read only)
- **results[]**.editable (string) -- (read only)
- **results[]**.id (integer) -- (read only)
- **results[]**.mountpoint (string) -- Mount point (required)
- **results[]**.name (string) -- Space Name (required)
- **results[]**.on\_sites (object) --
- **results[]**.sites[] .id (string) -- (read only)
- **results[]**.sites[] .label (string) -- (required)
- **results[]**.sites[] .name (string) -- (required)
- **results[]**.sites[] .pool (string) -- (read only)
- **results[]**.sites[] .usage[] (integer) --
- **results[]**.size (integer) -- Space size quota in bytes. No value specified, means as large as your system allows.
- **results[]**.snapshot\_schedule.duration (string) -- (required)
- **results[]**.snapshot\_schedule.frequency (string) -- (required)
- **results[]**.snapshot\_schedule.id (integer) -- (read only)
- **results[]**.snapshot\_schedule.space (integer) --
- **results[]**.snapshot\_schedule.time (string) -- (required)
- **results[]**.url (string) -- (read only)
- **results[]**.uuid (string) -- (read only)

## POST /spaces/

Model View Set for filebrowser's Space model.

## Request JSON Object:

- **color[]** (integer) --
- **created** (string) -- Time of the job creation (read only)
- **mountpoint** (string) -- (required)
- **name** (string) -- (required)
- **sites[]**.id (string) -- (read only)
- **sites[]**.label (string) -- (required)
- **sites[]**.name (string) -- (required)
- **sites[]**.pool (string) -- (read only)
- **sites[]**.usage[] (integer) --

- **size** (integer) -- Space size quota in bytes. No value specified, means as large as your system allows.
- **snapshot\_schedule.duration** (string) -- (required)
- **snapshot\_schedule.frequency** (string) -- (required)
- **snapshot\_schedule.id** (integer) -- (read only)
- **snapshot\_schedule.space** (integer) --
- **snapshot\_schedule.time** (string) -- (required)

#### Status Codes:

- [201 Created](#) --

#### Response JSON Object:

- **color[]** (integer) --
- **created** (string) -- Time of the job creation (read only)
- **editable** (string) -- (read only)
- **id** (integer) -- (read only)
- **mountpoint** (string) -- Mount point (required)
- **name** (string) -- Space Name (required)
- **on\_sites** (object) --
- **sites[].id** (string) -- (read only)
- **sites[].label** (string) -- (required)
- **sites[].name** (string) -- (required)
- **sites[].pool** (string) -- (read only)
- **sites[].usage[]** (integer) --
- **size** (integer) -- Space size quota in bytes. No value specified, means as large as your system allows.
- **snapshot\_schedule.duration** (string) -- (required)
- **snapshot\_schedule.frequency** (string) -- (required)
- **snapshot\_schedule.id** (integer) -- (read only)
- **snapshot\_schedule.space** (integer) --
- **snapshot\_schedule.time** (string) -- (required)
- **url** (string) -- (read only)
- **uuid** (string) -- (read only)

## GET /spaces/{id}/

Model View Set for filebrowser's Space model.

#### Parameters:

- **id** (string) --

#### Status Codes:

- [200 OK](#) --

#### Response JSON Object:

- **color[]** (integer) --
- **created** (string) -- Time of the job creation (read only)
- **editable** (string) -- (read only)
- **id** (integer) -- (read only)
- **mountpoint** (string) -- Mount point (required)
- **name** (string) -- Space Name (required)
- **on\_sites** (object) --
- **sites[].id** (string) -- (read only)
- **sites[].label** (string) -- (required)
- **sites[].name** (string) -- (required)

- **sites[]**.**pool** (string) -- (read only)
- **sites[]**.**usage[]** (integer) --
- **size** (integer) -- Space size quota in bytes. No value specified, means as large as your system allows.
- **snapshot\_schedule.duration** (string) -- (required)
- **snapshot\_schedule.frequency** (string) -- (required)
- **snapshot\_schedule.id** (integer) -- (read only)
- **snapshot\_schedule.space** (integer) --
- **snapshot\_schedule.time** (string) -- (required)
- **url** (string) -- (read only)
- **uuid** (string) -- (read only)

## PATCH /spaces/{id}/

Model View Set for filebrowser's Space model.

### Parameters:

- **id** (string) --

### Request JSON Object:

- **color[]** (integer) --
- **created** (string) -- Time of the job creation (read only)
- **mountpoint** (string) -- (read only)
- **name** (string) --
- **sites[]**.**id** (string) -- (read only)
- **sites[]**.**label** (string) -- (required)
- **sites[]**.**name** (string) -- (required)
- **sites[]**.**pool** (string) -- (read only)
- **sites[]**.**usage[]** (integer) --
- **size** (integer) -- Space size quota in bytes. No value specified, means as large as your system allows.
- **snapshot\_schedule.duration** (string) -- (required)
- **snapshot\_schedule.frequency** (string) -- (required)
- **snapshot\_schedule.id** (integer) -- (read only)
- **snapshot\_schedule.space** (integer) --
- **snapshot\_schedule.time** (string) -- (required)

### Status Codes:

- 200 OK --

### Response JSON Object:

- **color[]** (integer) --
- **created** (string) -- Time of the job creation (read only)
- **editable** (string) -- (read only)
- **id** (integer) -- (read only)
- **mountpoint** (string) -- Mount point (required)
- **name** (string) -- Space Name (required)
- **on\_sites** (object) --
- **sites[]**.**id** (string) -- (read only)
- **sites[]**.**label** (string) -- (required)
- **sites[]**.**name** (string) -- (required)
- **sites[]**.**pool** (string) -- (read only)
- **sites[]**.**usage[]** (integer) --

- **size** (integer) -- Space size quota in bytes. No value specified, means as large as your system allows.
- **snapshot\_schedule.duration** (string) -- (required)
- **snapshot\_schedule.frequency** (string) -- (required)
- **snapshot\_schedule.id** (integer) -- (read only)
- **snapshot\_schedule.space** (integer) --
- **snapshot\_schedule.time** (string) -- (required)
- **url** (string) -- (read only)
- **uuid** (string) -- (read only)

## DELETE /spaces/{id}/

Model View Set for filebrowser's Space model.

### Parameters:

- **id** (string) --

### Status Codes:

- 204 No Content --

## GET /spaces/{id}/files/

Model View Set for filebrowser's Space model.

### Parameters:

- **id** (string) --

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **site** (string) -- Site to run the stat operation on if provided, otherwise all space's sites
- **path** (string) -- Path to retrieve stat
- **details** (boolean) -- Retrieve all the details of the children files
- **restricted** (boolean) -- Include restricted objects
- **check\_available\_sites** (boolean) -- Check only available sites
- **custom\_refresh\_period** (integer) -- Custom time in seconds to invalidate the DB cache
- **custom\_timeout** (integer) -- Custom time in seconds to invalidate the task
- **raise\_exception** (boolean) -- Raise exception if timeout

### Status Codes:

- 200 OK --

### Response JSON Object:

- **atime** (string) --
- **children** (string) -- (read only)
- **ctime** (string) --
- **data\_size** (integer) --
- **deleted** (boolean) --
- **disk\_usage** (integer) --

- **image\_preview** (string) -- Relative URL of an image preview
- **metadata** (object) --
- **mtime** (string) --
- **name** (string) -- Name of the fs object
- **path** (string) -- Path of the object (required)
- **path\_depth** (integer) --
- **remote\_locations** (object) --
- **restricted** (boolean) --
- **site** (string) -- (read only)
- **size** (integer) --
- **status** (string) -- Migration status
- **thumbnail** (string) -- Relative URL of an object thumbnail
- **time\_refreshed** (string) --
- **total\_files** (integer) -- Only applies to directories
- **type** (string) --
- **url** (string) -- (read only)
- **video\_preview** (string) -- Relative URL of a video preview

**GET /storagepools/**

#### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].capacity** (integer) -- Capacity of storage pool (required)
- **results[].filesystem** (string) -- Storage pool filesystem (required)
- **results[].free\_space** (integer) -- Free space of storage pool (required)
- **results[].name** (string) -- Name storage pool (required)
- **results[].site** (integer) -- Site correlated with storage object (required)
- **results[].used\_space** (integer) -- Used space of storage pool (required)

**GET /storagepools/{id}/**

#### Parameters:

- **id** (string) --

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **capacity** (integer) -- Capacity of storage pool (required)
- **filesystem** (string) -- Storage pool filesystem (required)
- **free\_space** (integer) -- Free space of storage pool (required)
- **name** (string) -- Name storage pool (required)

- **site** (integer) -- Site correlated with storage object (required)
- **used\_space** (integer) -- Used space of storage pool (required)

## GET /tags/

API endpoint for search tags

### Query Parameters:

- **filter** (string) -- substring that returned tags must contain

### Status Codes:

- 200 OK --

### Response JSON Object:

- **[].name** (string) -- (required)

## GET /tasks/

API endpoint for viewing tasks.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **tasktype** (string) -- Task type
- **state** (array) -- Task states
- **job\_id** (integer) -- Job ID
- **internal** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].job** (integer) -- (required)
- **results[].site** (string) -- (required)
- **results[].started** (string) -- Time that the task started running
- **results[].state** (string) --
- **results[].task\_id** (string) -- Celery task ID
- **results[].tasktype** (string) -- (required)
- **results[].url** (string) -- (read only)

## GET /tasks/{task\_id}/

API endpoint for viewing tasks.

### Parameters:

- **task\_id** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **completed** (string) -- Time of the task completion

- **friendly\_name** (string) -- Text to be used to describe what this task is doing.
- **job** (integer) -- (required)
- **paths** (string) -- (read only)
- **result** (object) --
- **runtime** (string) -- (read only)
- **site** (string) -- (required)
- **started** (string) -- Time that the task started running
- **state** (string) --
- **task\_id** (string) -- Celery task ID
- **tasktype** (string) -- (required)
- **url** (string) -- (read only)

## GET /tasks/{task\_id}/files/

API endpoint for viewing tasks.

### Parameters:

- **task\_id** (string) --

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.
- **state** (string) --
- **type** (string) --
- **site** (string) --

### Status Codes:

- 200 OK --

### Response JSON Object:

- **completed** (string) -- Time of the task completion
- **friendly\_name** (string) -- Text to be used to describe what this task is doing.
- **job** (integer) -- (required)
- **paths** (string) -- (read only)
- **result** (object) --
- **runtime** (string) -- (read only)
- **site** (string) -- (required)
- **started** (string) -- Time that the task started running
- **state** (string) --
- **task\_id** (string) -- Celery task ID
- **tasktype** (string) -- (required)
- **url** (string) -- (read only)

## GET /users/

API endpoint for managing users.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.

- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[].date\_joined** (string) --
- **results[].email** (string) --
- **results[].first\_name** (string) --
- **results[].groups[].id** (integer) -- (read only)
- **results[].groups[].name** (string) -- (required)
- **results[].groups[].url** (string) -- (read only)
- **results[].id** (integer) -- (read only)
- **results[].is\_active** (boolean) -- Designates whether this user should be treated as active. Unselect this instead of deleting accounts.
- **results[].last\_login** (string) --
- **results[].last\_name** (string) --
- **results[].nas\_user.allow\_ssh** (boolean) --
- **results[].nas\_user.primary\_group** (string) -- (required)
- **results[].nas\_user.uid** (integer) -- UID number for the user. This is automatically generated. And cannot be changed (read only)
- **results[].profile.country** (string) -- User's country
- **results[].profile.default\_site** (integer) --
- **results[].profile.department** (string) -- Name of the department user is working in
- **results[].profile.home\_site** (integer) --
- **results[].profile.line\_manager** (string) -- Name of the line manager of the user
- **results[].profile.phone** (string) -- User's phone number
- **results[].profile.timezone** (string) -- Timezone in a string format e.g. 'Europe/London'
- **results[].url** (string) -- (read only)
- **results[].username** (string) -- Required. 150 characters or fewer. Letters, digits and @/./+/-/\_ only. (required)

## POST /users/

API endpoint for managing users.

### Request JSON Object:

- **email** (string) --
- **first\_name** (string) --
- **groups[]** (string) --
- **last\_name** (string) --
- **nas\_user.allow\_ssh** (boolean) --
- **nas\_user.primary\_group** (string) -- (required)

- **password** (string) -- (required)
- **profile.country** (string) -- User's country
- **profile.default\_site** (integer) --
- **profile.department** (string) -- Name of the department user is working in
- **profile.home\_site** (integer) --
- **profile.line\_manager** (string) -- Name of the line manager of the user
- **profile.phone** (string) -- User's phone number
- **profile.timezone** (string) -- Timezone in a string format e.g. 'Europe/London'
- **username** (string) -- Required. 150 characters or fewer. Letters, digits and @/./+/-/\_ only. (required)

#### Status Codes:

- [201 Created](#) --

#### Response JSON Object:

- **email** (string) --
- **first\_name** (string) --
- **groups[]** (string) --
- **last\_name** (string) --
- **nas\_user.allow\_ssh** (boolean) --
- **nas\_user.primary\_group** (string) -- (required)
- **password** (string) -- (required)
- **profile.country** (string) -- User's country
- **profile.default\_site** (integer) --
- **profile.department** (string) -- Name of the department user is working in
- **profile.home\_site** (integer) --
- **profile.line\_manager** (string) -- Name of the line manager of the user
- **profile.phone** (string) -- User's phone number
- **profile.timezone** (string) -- Timezone in a string format e.g. 'Europe/London'
- **username** (string) -- Required. 150 characters or fewer. Letters, digits and @/./+/-/\_ only. (required)

## POST /users/change\_password/

API endpoint for managing users.

#### Request JSON Object:

- **new\_password** (string) -- (required)
- **old\_password** (string) -- (required)

#### Status Codes:

- [201 Created](#) --

#### Response JSON Object:

- **new\_password** (string) -- (required)
- **old\_password** (string) -- (required)

## GET /users/{username}/

API endpoint for managing users.

#### Parameters:

- **username** (string) --

#### Status Codes:

- [200 OK](#) --

### Response JSON Object:

- **date\_joined** (string) --
- **email** (string) --
- **first\_name** (string) --
- **groups[]**.**id** (integer) -- (read only)
- **groups[]**.**name** (string) -- (required)
- **groups[]**.**url** (string) -- (read only)
- **id** (integer) -- (read only)
- **is\_active** (boolean) -- Designates whether this user should be treated as active. Unselect this instead of deleting accounts.
- **last\_login** (string) --
- **last\_name** (string) --
- **nas\_user.allow\_ssh** (boolean) --
- **nas\_user.primary\_group** (string) -- (required)
- **nas\_user.uid** (integer) -- UID number for the user. This is automatically generated. And cannot be changed (read only)
- **profile.country** (string) -- User's country
- **profile.default\_site** (integer) --
- **profile.department** (string) -- Name of the department user is working in
- **profile.home\_site** (integer) --
- **profile.line\_manager** (string) -- Name of the line manager of the user
- **profile.phone** (string) -- User's phone number
- **profile.timezone** (string) -- Timezone in a string format e.g. 'Europe/London'
- **url** (string) -- (read only)
- **username** (string) -- Required. 150 characters or fewer. Letters, digits and @/./+/-/\_ only. (required)

## PATCH /users/{username}/

API endpoint for managing users.

### Parameters:

- **username** (string) --

### Request JSON Object:

- **email** (string) --
- **first\_name** (string) --
- **groups[]** (string) --
- **last\_name** (string) --
- **nas\_user.allow\_ssh** (boolean) --
- **nas\_user.primary\_group** (string) -- (required)
- **password** (string) --
- **profile.country** (string) -- User's country
- **profile.default\_site** (integer) --
- **profile.department** (string) -- Name of the department user is working in
- **profile.home\_site** (integer) --
- **profile.line\_manager** (string) -- Name of the line manager of the user
- **profile.phone** (string) -- User's phone number
- **profile.timezone** (string) -- Timezone in a string format e.g. 'Europe/London'

### Status Codes:

- **200 OK** --

### Response JSON Object:

- **email** (string) --
- **first\_name** (string) --
- **groups[]** (string) --
- **last\_name** (string) --
- **nas\_user.allow\_ssh** (boolean) --
- **nas\_user.primary\_group** (string) -- (required)
- **password** (string) --
- **profile.country** (string) -- User's country
- **profile.default\_site** (integer) --
- **profile.department** (string) -- Name of the department user is working in
- **profile.home\_site** (integer) --
- **profile.line\_manager** (string) -- Name of the line manager of the user
- **profile.phone** (string) -- User's phone number
- **profile.timezone** (string) -- Timezone in a string format e.g. 'Europe/London'

## DELETE /users/{username}/

API endpoint for managing users.

### Parameters:

- **username** (string) --

### Status Codes:

- 204 No Content --

## POST /users/{username}/activate/

Activates user account with given username.

### Parameters:

- **username** (string) --

### Status Codes:

- 201 Created --

## POST /users/{username}/deactivate/

Deactivates user account with given username.

### Parameters:

- **username** (string) --

### Status Codes:

- 201 Created --

## GET /workflows/

API endpoint for viewing workflows.

### Query Parameters:

- **page** (integer) -- A page number within the paginated result set. When not given, first page is retrieved by default.
- **page\_size** (integer) -- Number of results to return per page. Page size parameter can be a number between 20 and 100. For disabling pagination and retrieving all results, 0 should be given. When page size parameter is empty or <20, 20 results are returned by default. When page size parameter >100, 100 results are returned by default.

### Status Codes:

- 200 OK --

### Response JSON Object:

- **count** (integer) -- (required)
- **next** (string) --
- **previous** (string) --
- **results[]**.**discovery** (string) --
- **results[]**.**discovery\_options** (object) --
- **results[]**.**enabled** (boolean) -- Is the workflow available for use?
- **results[]**.**fields** (object) --
- **results[]**.**filter\_rules** (object) --
- **results[]**.**icon\_classes** (object) --
- **results[]**.**id** (integer) -- (read only)
- **results[]**.**label** (string) -- Friendly name of the workflow (required)
- **results[]**.**name** (string) -- Name of Workflow (required)
- **results[]**.**schedule\_only** (boolean) -- Workflow only callable inside of a schedule
- **results[]**.**visible** (boolean) -- Is the workflow visible on the UI?

## POST /workflows/

API endpoint for viewing workflows.

### Request JSON Object:

- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- Is the workflow available for use?
- **fields** (object) --
- **filter\_rules** (object) --
- **icon\_classes** (object) --
- **id** (integer) -- (read only)
- **label** (string) -- Friendly name of the workflow (required)
- **name** (string) -- Name of Workflow (required)
- **schedule\_only** (boolean) -- Workflow only callable inside of a schedule
- **visible** (boolean) -- Is the workflow visible on the UI?

### Status Codes:

- 201 Created --

### Response JSON Object:

- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- Is the workflow available for use?
- **fields** (object) --
- **filter\_rules** (object) --
- **icon\_classes** (object) --
- **id** (integer) -- (read only)
- **label** (string) -- Friendly name of the workflow (required)
- **name** (string) -- Name of Workflow (required)
- **schedule\_only** (boolean) -- Workflow only callable inside of a schedule
- **visible** (boolean) -- Is the workflow visible on the UI?

## GET /workflows/{id}/

API endpoint for viewing workflows.

#### Parameters:

- **id** (string) --

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- Is the workflow available for use?
- **fields** (object) --
- **filter\_rules** (object) --
- **icon\_classes** (object) --
- **id** (integer) -- (read only)
- **label** (string) -- Friendly name of the workflow (required)
- **name** (string) -- Name of Workflow (required)
- **schedule\_only** (boolean) -- Workflow only callable inside of a schedule
- **visible** (boolean) -- Is the workflow visible on the UI?

## PATCH /workflows/{id}/

API endpoint for viewing workflows.

#### Parameters:

- **id** (string) --

#### Request JSON Object:

- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- Is the workflow available for use?
- **fields** (object) --
- **filter\_rules** (object) --
- **icon\_classes** (object) --
- **id** (integer) -- (read only)
- **label** (string) -- Friendly name of the workflow (required)
- **name** (string) -- Name of Workflow (required)
- **schedule\_only** (boolean) -- Workflow only callable inside of a schedule
- **visible** (boolean) -- Is the workflow visible on the UI?

#### Status Codes:

- 200 OK --

#### Response JSON Object:

- **discovery** (string) --
- **discovery\_options** (object) --
- **enabled** (boolean) -- Is the workflow available for use?
- **fields** (object) --
- **filter\_rules** (object) --
- **icon\_classes** (object) --
- **id** (integer) -- (read only)
- **label** (string) -- Friendly name of the workflow (required)
- **name** (string) -- Name of Workflow (required)
- **schedule\_only** (boolean) -- Workflow only callable inside of a schedule
- **visible** (boolean) -- Is the workflow visible on the UI?

## **DELETE /workflows/{id}/**

API endpoint for viewing workflows.

### **Parameters:**

- **id** (string) --

### **Status Codes:**

- 204 No Content --

## Tools

The following sections document add-on tools for Ngenea Hub

### ngclient

#### NGCLIENT

##### SYNOPSIS

**ngclient** authenticate (-u USERNAME [-p PASSWORD] | -T TOKEN) [-k NAME]

**ngclient** migrate path... [-s site] [-r] [-p] [options...]

**ngclient** recall path... [-s site] [-r] [options...]

**ngclient** send path... [-s source] -t target [options...]

**ngclient** workflows COMMAND

**ngclient** features COMMAND

##### DESCRIPTION

**ngclient** is a CLI wrapper for the default Ngenea Hub workflows - migrate, recall, and send. It also provides a mechanism for generating authentication tokens.

**ngclient** settings can be read from a config file, rather than being passed on the command line. See **ngenea-client.conf(5)** for more information on the configuration format. CLI flags take precedence over config file settings.

The authenticate command can be used to generate a client key from a username or access token. The generated client key will be printed to stdout. That client key can then be used with the workflow sub-commands, either via the --client-key flag, or by saving it to the **ngenea-client.conf(5)** configuration file.

The workflows command group contains sub-commands for interacting with workflows, such as listing workflows and importing new one. See **ngclient-workflows(1)** for more details.

The features command group contains sub-commands for listing, enabling, or disabling feature flags. See **ngclient-features(1)** for more details.

## OPTION SUMMARY

path...	One paths to call the workflow on
-T, --access-token TOKEN -u, --username USERNAME -p, --password PASSWORD -k, --key-name NAME	Access token to authenticate <b>with</b> Username to authenticate <b>with</b> Password <b>for</b> the authentication username Unique name <b>for</b> the client key
--base-url	Base URL of the {{ brand_name }} API
-c, --config CONFIG --client-key KEY	Alternative configuration file path Client API key to authenticate <b>with</b>
-s, --site SITE -t, --target TARGET	Site to perform the workflow on Site to send files to
-d, --no-wait for it to complete --timeout SECONDS wait indefinitely	Exit after job <b>is</b> submitted, don't wait wait <b>for</b> completion timeout. If <b>not set</b> ,
-r, --recursive -p, --premigrate -H, --hydrate	Perform task recursively. Premigrate files <b>from site</b> Hydrate files on the send target site
-h, --help	Print help message <b>and</b> exit

## OPTIONS

- **-T, --access-token**

An access token to generate a client key with.

- **-u, --username**

Username to generate a client key with.

- **-p, --password**

Password to use in combination with --username

If --username is specified and --password isn't, you will be prompted to enter a password interactively. This may be preferable so that the password doesn't appear in shell history.

- **-k, --key-name**

A unique name to assign when generating a client key.

This will be displayed in the Ngenea Hub UI

If not specified, a random uuid will be generated for the key name.

- **--base-url**

Base URL of the Ngenea Hub API, which operations will be performed against.

This can be used to perform Ngenea Hub operations on a remote server.

If not specified, the default is `http://localhost:8000/api`

- **-c, --config**

The path to an alternative configuration file.

If not specified, the default configuration paths will be used. The default paths are in the user's `HOME` directory `$HOME/.config/ngenea/ngenea-client.conf`, and the global configuration at `/etc/ngenea/ngenea-client.conf`

See **ngenea-client.conf(5)** for more information on the configuration format.

Command line options take precedence over any corresponding config file settings.

- **-D, --no-verify**

Disables TLS Verification

By default, **ngclient** will verify TLS certificate at the remote end.

With this flag, requests made by **ngclient** will accept any TLS certificate presented by the server, and will ignore hostname mismatches and/or expired certificates.

- **--client-key**

Ngenea Hub authentication client key.

This can be generated via the Ngenea Hub REST API, or using **ngclient(1)** `authenticate`

- **-s, --site**

Site to use for workflows.

For migrate and recall, this is the site where the workflows execute. For send, this is the source site, from which files are sent.

Site does not have to match the node where **ngclient** is being called. This can be used to migrate/recall/send files from a remote site.

Note - shell-globbing will be evaluated on the local node. For a remote site, the files that the glob would match may differ.

- **-t, --target**

Target site for the send workflow

- **-d, --no-wait**

Don't wait for workflows to complete.

By default, **ngclient** will wait for the workflow to complete, subject to --timeout.

With this flag, **ngclient** will exit immediately. The workflow will continue to execute independently. In that case, the workflow can be monitored in the Ngenea Hub UI

- **--timeout**

How long to wait for workflows to complete, in seconds.

If not specified, **ngclient** will wait indefinitely.

If the workflow doesn't complete within the timeout, the client will exit with an error. The workflow itself may continue to execute.

- **-r, --recursive**

Migrate or recall files and directories recursively.

- **-p, --premigrate**

Premigrate files

Premigrated files are migrated, but the data is kept resident.

- **-H, --hydrate**

Controls whether the send workflow 'hydrates' files on the target.

If false, files are only reverse stubbed on the target.

- **-h, --help**

Prints the help message.

## EXAMPLES

### GENERATE A CLIENT KEY

```
$ ngclient authenticate --username pixadmin -k ngclient-pixadmin
pixadmin's password:
jDBh2cRk6.LswQfylT2BtGiqtYUWhMB1iipJmQNgr
```

NOTE: The `authenticate` command doesn't read config values from the config file, so the `--no-verify` and `--base-url` arguments should be passed as cmd arguments if default values aren't required

### RECALL A FILE

```
ngclient recall /mmfs1/data/hello.txt -s site1 --client-key
jDBh2cRk6.LswQfylT2BtGiqtYUWhMB1iipJmQNgr
```

For brevity, the site and client-key can be saved to the config file

## PREMIGRATE A DIRECTORY RECURSIVELY

Assuming the site and client key has been saved to the config file

```
ngclient migrate /mmfs1/data/sample_data/cats -p -r
```

## SEND A FILE TO A REMOTE SITE

```
ngclient send /mmfs1/data/hello.txt -s site1 -t site2 --hydrate
```

## AVAILABILITY

Distributed as part of the ngenea-hub-client rpm, or the ngclient wheel (Python) for non-Red Hat based systems.

The ngclient wheel can be installed and run on any operating system.

Note - transparent\_recall(1) is packaged along with ngclient, but transparent\_recall will only work on Unix-based operating systems.

## SEE ALSO

[ngenea-client.conf\(5\)](#), [ngclient-workflows\(1\)](#), [ngclient-features\(1\)](#),  
[transparent\\_recall\(1\)](#), [ngmigrate\(1\)](#), [ngrecall\(1\)](#)

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## ngclient-workflows

### NGCLIENT-WORKFLOWS

#### SYNOPSIS

**ngclient workflows** list [workflow-id] [options...]

**ngclient workflows** import workflow-file [options...]

**ngclient workflows** update workflow-id workflow-file [options...]

**ngclient workflows** delete workflow-id [options...]

#### DESCRIPTION

The list command is used to list one or more existing workflows from Ngenea Hub. By default, workflows are output in json format, one per line. The --yaml flag can be used to output as yaml.

The import command can be used to import a new, custom workflow from a json or yaml formatted file.

Currently it is not possible to invoke these custom workflows from **ngclient**, once created. They can be invoked from the Ngenea Hub UI or via the REST API.

The update command can be used to update an existing workflow from a json or yaml formatted file. The file can contain only the fields you want to change to perform a partial update, or a whole workflow definition for a full replacement.

NOTE - it's not possible to make partial changes to the fields or filter\_rules blocks. They can only be replaced as a whole.

The delete command can be used to delete an existing workflow, by id.

Base URL and API key settings can be read from a config file, rather than being passed on the command line. See **ngenea-client.conf(5)** for more information on the configuration format. CLI flags take precedence over config file settings.

Interacting with workflows requires Ngenea Hub authentication. The **ngclient(1)** authenticate command can be used to generate a client key from a username or access token.

## OPTION SUMMARY

<b>workflow-id</b>	Unique workflow identifier
<b>workflow-file</b> definition	File containing a custom workflow
<b>--yaml</b>	List workflows <b>in</b> yaml <b>format</b>
<b>--base-url</b>	Base URL of the {{ brand_name }} API
<b>-c, --config CONFIG</b> <b>--client-key KEY</b>	Alternative configuration file path Client API key to authenticate <b>with</b>
<b>-h, --help</b>	Print help message <b>and</b> exit

## OPTIONS

### • **workflow-file**

Path to a json or yaml formatted file, containing a workflow definition.

If '-' is used, the workflow definition will be read from stdin.

The workflow format is described in the main documentation, section '4.4. Custom Workflows'

### • **--yaml**

List workflows in yaml format.

By default, workflows are output in json format, one per line (jsonl).

The --yaml flag will output the workflows in structured yaml format. If multiple workflows are being listed, each one will be separated by a blank line.

- **--base-url**

Base URL of the Ngenea Hub API, which operations will be performed against.

This can be used to perform Ngenea Hub operations on a remote server.

If not specified, the default is `http://localhost:8000/api`

- **-c, --config**

The path to an alternative configuration file.

If not specified, the default configuration paths will be used. The default paths are in the user's HOME directory `$HOME/.config/ngenea/ngenea-client.conf`, and the global configuration at `/etc/ngenea/ngenea-client.conf`

See **ngenea-client.conf(5)** for more information on the configuration format.

Command line options take precedence over any corresponding config file settings.

- **--client-key**

Ngenea Hub authentication client key.

This can be generated via the Ngenea Hub REST API, or using **ngclient(1)** authenticate

- **-h, --help**

Prints the help message.

## EXAMPLES

### GENERATE A CLIENT KEY

```
$ ngclient authenticate --username pixadmin -k ngclient-pixadmin
pixadmin's password:
```

```
jDBh2cRk6.LswQfylT2BtGiqtYUWhMB1iipJmQNgr
```

The following examples assume that the client key has been saved in the default config file.

### GET AN EXISTING WORKFLOW

```
$ ngclient workflows list 1
{"id": 1, "name": "migrate", "label": "Migrate", "icon_classes": [
  "fa fa-cloud fa-stack-2x text-success", "fa fa-angle-up fa-stack-2x
```

```
text-light"], "discovery": "recursive", "enabled": true, "visible": true, "fields": [], "filter_rules": [{"type": "all", "state": "all", "action": [{"name": "dynamo.tasks.migrate"}]}, "description": "Migrates a file off from a given path"}]}
```

## LIST ALL EXISTING WORKFLOWS IN YAML FORMAT

```
$ ngclient workflows list --yaml
id: 1
name: migrate
label: Migrate
discovery: recursive
...
enabled: true
visible: true

id: 2
name: premigrate
label: Premigrate
discovery: recursive
...
enabled: true
visible: true

...
```

(the above example output has been truncated)

## IMPORT A CUSTOM WORKFLOW

Using the following workflow definition in json format

```
$ cat overwrite_workflow.json
{"name": "recall_overwrite", "label": "Overwrite On Recall", "icon_classes": ["fa fa-cloud fa-stack-2x text-primary", "fa fa-caret-down fa-stack-2x text-light"], "filter_rules": [{"type": "all", "state": "all", "action": [{"name": "dynamo.tasks.reverse_stub", "site": "*destinationsite", "overwrite": true}]}], "fields": [{"name": "destinationsite", "type": "enum[site]", "label": "Destination Site", "value": "site"}]}
```

Import the workflow as follows

```
ngclient workflows import overwrite_workflow.json
```

## RENAME A WORKFLOW

With the change in yaml format, using '-' to read from stdin

```
echo "name: overwrite_on_recall" | ngclient workflows update 6 -
```

## DELETE A WORKFLOW

## ngclient workflows delete 6

### AVAILABILITY

Distributed as part of the ngenea-hub-client rpm, or the ngclient wheel (Python) for non-Red Hat based systems.

The ngclient wheel can be installed and run on any operating system.

### SEE ALSO

ngclient(1), ngenea-client.conf(5)

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## ngclient - features

### NGCLIENT-FEATURES

#### SYNOPSIS

**ngclient features** list [options...]

**ngclient features** enable name [options...]

**ngclient features** disable name [options...]

#### DESCRIPTION

The list command is used to list available feature flags for Ngenea Hub.

The enable and disable commands can be used to enable a named feature in Ngenea Hub.

Base URL and API key settings can be read from a config file, rather than being passed on the command line. See **ngenea-client.conf(5)** for more information on the configuration format. CLI flags take precedence over config file settings.

Interacting with features requires Ngenea Hub authentication. The **ngclient(1)** authenticate command can be used to generate a client key from a username or access token.

#### OPTION SUMMARY

name	Name of the feature to enable <b>or</b> disable
------	---

--json	List features <b>in json format</b>
--base-url	Base URL of the {{ brand_name }} API
-c, --config CONFIG --client-key KEY	Alternative configuration file path Client API key to authenticate <b>with</b>
-h, --help	Print help message <b>and</b> exit

## OPTIONS

- **--json**

List features in json format.

By default, the list command will report features in a table-based format. The --json flag will report features in json format instead, one per line.

- **--base-url**

Base URL of the Ngenea Hub API, which operations will be performed against.

This can be used to perform Ngenea Hub operations on a remote server.

If not specified, the default is `http://localhost:8000/api`

- **-c, --config**

The path to an alternative configuration file.

If not specified, the default configuration paths will be used. The default paths are in the user's HOME directory `$HOME/.config/ngenea/ngenea-client.conf`, and the global configuration at `/etc/ngenea/ngenea-client.conf`

See **ngenea-client.conf(5)** for more information on the configuration format.

Command line options take precedence over any corresponding config file settings.

- **--client-key**

Ngenea Hub authentication client key.

This can be generated via the Ngenea Hub REST API, or using **ngclient(1)** authenticate

- **-h, --help**

Prints the help message.

## EXAMPLES

The following examples assume that the client key has been saved in the default config file.

## LIST AVAILABLE FEATURES

```
$ ngclient features list
[X]  searchui          Enable search features in the UI
[ ]  bandwidth_controls Enable bandwidth controls in the UI
[ ]  rbac               Enable role-based access controls
```

(The above are just examples and may not reflect actual feature flags)

## ENABLE A FEATURE

```
ngclient features enable rbac
```

## DISABLE A FEATURE

```
ngclient features disable searchui
```

## AVAILABILITY

Distributed as part of the ngenea-hub-client rpm, or the ngclient wheel (Python) for non-Red Hat based systems.

The ngclient wheel can be installed and run on any operating system.

## SEE ALSO

[ngclient\(1\)](#), [ngenea-client.conf\(5\)](#)

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## ngenea-client.conf

### NGENEAClientConf

#### SYNOPSIS

The Ngenea Hub client configuration files is used to configure **ngclient(1)** and **transparent\_recall(1)**

The default config file locations are in the user's HOME directory `$HOME/.config/ngenea/ngenea-client.conf`, with a global config at `/etc/ngenea/ngenea-client.conf`.

If both configuration files exist, the user config will take precedence, with the global config used for any values not specified in the user config.

For example

```
# global config
[settings]
base_url = http://10.172.0.23:8000/api
site = default

# user config
[settings]
site = mysite
```

would result in `base_url = http://10.172.0.23:8000/api`, since it's not specified in the user config, and `site = mysite` since the value from the user config takes precedence.

NOTE - unless explicitly specified with the `--config` flag, both `ngclient(1)` and `transparent_recall(1)` will use this same default config files.

If a config file is explicitly specified with `--config`, the default configs will not be considered at all.

Command line options take precedence over any corresponding config file settings.

## FILE FORMAT

**ngenea-client.conf(5)** uses an ini-style format.

It is made up of key = value lines under the [settings] section header.

```
[settings]
client_key = mykey
```

Boolean type values can be either true, false, yes, or no (case-insensitive)

Additional sections, or unrecognised keys are ignored.

## PARAMETERS

- **base\_url**

Base URL of the Ngenea Hub API, which operations will be performed against.

This can be used to perform Ngenea Hub operations on a remote server.

If not specified, the default is `http://localhost:8000/api`

- **client\_key**

Ngenea Hub authentication client key.

This can be generated via the Ngenea Hub REST API, or using **ngclient(1)** `authenticate`

- **site**

The default site to use for workflows.

For migrate and recall, this is the site where the workflows execute. For send, this is the source site, from which files are sent.

- **wait**

Whether to wait for workflows to complete.

If true (default), tools will wait for the workflow to complete, subject to timeout.

If false, tools will exit immediately. The workflow will continue to execute independently. In that case, the workflow can be monitored in the Ngenea Hub UI

- **timeout**

How long to wait for workflows to complete, in seconds.

If not set, tools will wait indefinitely.

If the workflow doesn't complete within the timeout, the client will exit with an error. The workflow itself may continue to execute.

- **hydrate**

For **ngclient(1)** send, controls whether sent files are hydrated on the target.

If false, files are only reverse stubbed on the target.

- **api\_secure\_verify**

Whether to enable/disable TLS Verification when communicating with Ngenea Hub REST API.

This is particularly useful when Ngenea Hub REST API is behind a self-signed certificate.

If false, TLS verification will be disabled.

If not specified, the default is true.

## EXAMPLE

```
[settings]
base_url = http://mypixserver:8000/api
client_key = ...
site = mysite
wait = true
timeout = 180
hydrate = true
api_secure_verify = true
```

## SEE ALSO

ngclient(1), transparent\_recall(1)

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## transparent\_recall

### TRANSPARENT\_RECALL

#### SYNOPSIS

**transparent\_recall** file [--config CONF]

#### DESCRIPTION

**transparent\_recall** is a tool for recalling individual files via Ngenea Hub

Performing recalls via Ngenea Hub allows for monitoring progress via the Ngenea Hub UI. Individual recall tasks performed on demand, but for reporting are grouped together into one job per hour.

**transparent\_recall** can be called directly to recall files, but typically would be installed as a filesystem policy rule. See **TRANSPARENT RECALL POLICY** for more info.

#### OPTION SUMMARY

file	One <b>or</b> more directory to export events <b>from</b>
--config CONF	Alternative configuration file location
-h, --help	Print help message <b>and</b> exit

#### OPTIONS

- **--config**

The path to an alternative configuration file.

If not specified, the default configuration paths will be used. The default paths are in the user's HOME directory \$HOME/.config/ngenea/ngenea-client.conf, and the global configuration at /etc/ngenea/ngenea-client.conf

See the **CONFIGURATION** section below and ngenea-client.conf(5) for more information.

Command line options take precedence over any corresponding config file settings.

- **-h, --help**

Prints the help message.

## CONFIGURATION

**transparent\_recall** requires authentication to be able to perform recalls via Ngenea Hub. To authenticate, a valid `client_key` must be placed in the configuration file.

A client key can be generated via the Ngenea Hub REST API, or using the **ngclient(1)** authenticate command.

Minimally, the configuration must include this `client_key`, as well as the site where recalls are performed.

```
[settings]
client_key = ...
site = thissite
```

The site must match the the node where the recall was triggered.

**transparent\_recall** will respect any **ngclient(1)** recall configuration options, except for recursive. This includes timeout; by default it will wait indefinitely for the recall to complete.

See **ngenea-client.conf(5)** for more information on the configuration format and additional options.

## TRANSPARENT RECALL POLICY

Transparent recall, by definition, is intended to be triggered automatically when an offline file is opened for reading or writing.

To enable transparent recall functionality using **transparent\_recall**, the following rules can be added to the filesystem placement policy.

```
/* BEGIN: NGENEA TRANSPARENT RECALL POLICY */

define(xattr_stbsz,[INTEGER(XATTR('dapi.APXstbsz'))])

RULE FileOpen EVENT 'OPEN'
    ACTION(SetDataEvent(0, OP_READ, CASE WHEN xattr_stbsz IS NULL
THEN 0 ELSE xattr_stbsz END) AND
        SetDataEvent(1, OP_WRITE+OP_TRUNC, 0))
    WHERE LENGTH(XATTR('dapi.APXguuid'))>0 AND
CountSubstr(MISC_ATTRIBUTES,'V')>0

RULE FileOpen_else EVENT 'OPEN' DIRECTORIES_PLUS

RULE FileData EVENT 'DATA'
```

```
ACTION(system_lw('/usr/bin/python3 /usr/bin/transparent_recall
' || getDetail('path_name') )=0)
  WHERE LENGTH(XATTR('dmapi.APXguuid'))>0 AND
CountSubstr(MISC_ATTRIBUTES,'V')>0

RULE FileData_else EVENT 'DATA' DIRECTORIES_PLUS

/* END: NGENEA TRANSPARENT RECALL POLICY */
```

If transparent recall (EVENT) rules are already installed for ngenea (native), these rules should replace those equivalent rules.

Don't replace any rules besides the ngenea EVENT rules, e.g. don't replace any SET POOL rules.

See **mmchpolicy(1)** for how to change the filesystem placement policy

#### WARNING

Due to limitations of GPFS, the above policy will not work on any paths which contain whitespace. Transparent recall will simply error.

An alternative policy substitutes the system\_lw line for

```
ACTION(system('/usr/bin/python3 /usr/bin/transparent_recall '' || 
getDetail('path_name') || '')=0)
```

This will handle paths containing whitespace, but not those containing single quotes. Again, transparent recall will error.

There is currently no approach which works in all cases. You must chose the version which is most compatible with the sorts of paths you have on your system.

#### TROUBLESHOOTING

When attempting to read an offline file, if the read process reports "Operation not permitted", and it's not due to permissions, the most likely cause is that the recall failed.

Logs for the **transparent\_recall** command invocation can be found at /var/adm/ras/mmfs.log.latest

Logs for the transparent recall job can be viewed via Ngenea Hub.

**WARNING** - if reading a file triggers a recall, the read request will block until recall exits; it can't be interrupted (Ctrl+C) or killed (kill -9). If the recall job is 'stuck' and no timeout is set, the only way to make the read process exit is to kill the recall job via Ngenea Hub.

#### AVAILABILITY

Distributed as part of the ngenea-hub-client rpm, or the ngclient wheel (Python) for non-Red Hat based systems.

Note - **transparent\_recall** makes use of flock(2), so can only be used on Unix-base operating systems.

## SEE ALSO

ngclient(1), ngenea-client.conf(5), ngrecall(1), mmchpolicy(1)

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## Ngenea Hub Changelog

Release notes - Ngenea Hub - 2.2.5: 2024-06-21

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### Improvement

HUB2-1852 - Ensured that storage analytics can have its request timeout configured

### Fix

HUB2-1852 - Pass API\_TIMEOUT from the hub sysconfig file to the API container

Release notes - Ngenea Hub - 2.2.4: 2024-05-31

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### Improvement

HUB2-1644 - Recursive navigate tasks no longer call mmlsfileset more than once

### Bug

HUB2-1680 - Task failures no longer stop downstream tasks to stay in PENDING

Release notes - Ngenea Hub - 2.2.3: 2024-05-21

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### Improvement

HUB2-1625 - The API wide timeout can now be configured

## Bug

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HUB2-1626 - The job details UI now waits for job results regardless of request duration  
HUB2-1667 - The job list UI now waits for results regardless of request duration  
HUB2-1682 - Job related web socket connections now waits for connection regardless of duration  
HUB2-1619 - Jobs with the state "Failing" no longer disappear from jobs list page

Release notes - Ngenea Hub - 2.2.2: 2024-05-06

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## Bug

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HUB2-1630 - Fixed issue with bidirectional sync re-submission

Release notes - Ngenea Hub - 2.2.1: 2024-04-29

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## Bug

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HUB2-1630 - Transparent recall functionality now correctly submits with new engine

Release notes - Ngenea Hub - 2.2.0: 2024-03-28

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## Feature

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UI Colours  
Search Tags  
Custom Attributes for SMB  
New DAG Job Engine

## Improvement

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HUB2-291 - Better wrap long space names  
HUB2-365 - Different colors for task table chips instead of "gray" ones  
HUB2-368 - Fix scrolling arrows showing up by default on rightbar  
HUB2-652 - Utility for translating schedule object to user  
HUB2-770 - Automatically name policy condition group titles  
HUB2-863 - Task stats should apply the filter on job details page  
HUB2-895 - Provide API support for editing search tags  
HUB2-990 - Provide the ability to filter site alerts by severity  
HUB2-1032 - Search: Support extensions starting with dot for core.extension filter  
HUB2-1035 - Enforce unique space mount point (API)  
HUB2-1072 - Ensure group titles wrap better

HUB2-1084 - Swap files above tasks in job details  
HUB2-1089 - Provide the ability to set the number of executed policy threads in the UI  
HUB2-1103 - Add buttons for pausing and resuming a job  
HUB2-1104 - API response for job Owner is different  
HUB2-1105 - Adjust Job details UI labels to new DAG statistics  
HUB2-1107 - Adjust websocket responses to conform with new serializers  
HUB2-1112 - Ensure NAS components are not visible if all sites in AD mode  
HUB2-1162 - Site filtering for policies  
HUB2-1213 - Ensure apbackup chip colours are consistent and correct site colour when input is changed  
HUB2-1218 - Make top bar green  
HUB2-1219 - Implement yellow progress bar across wizards  
HUB2-1220 - Provide the ability to set the colour of the Site Chip in the Create Site wizard  
HUB2-1222 - Updated colourful left bar menu buttons  
HUB2-1223 - Updated login page presentation  
HUB2-1224 - Cyclic colours for space cards  
HUB2-1225 - Provide the ability to set the colour of the Space Card in the Space Wizard  
HUB2-1226 - General CSS changes for button/checkbox/slider etc. elements  
HUB2-1227 - Add SMB Custom Options Panel to Create Space Wizard  
HUB2-1228 - Add SMB Customs Options Panel to Update Space Modal  
HUB2-1230 - Modify multiselect dropdown component for search of a tag  
HUB2-1237 - Remove feature flags for stable features  
HUB2-1256 - Provide API support for Site chip colours  
HUB2-1259 - Increase intervals for site refreshes  
HUB2-1261 - Provide alphabetical ordering for managed keys  
HUB2-1263 - Add tag selector filter to Search filters (in main search filter list)  
HUB2-1264 - Add tag editor to search side panel for asset  
HUB2-1282 - Grant metadata update permission to worker service user  
HUB2-1291 - Switch site chips to double colour chips  
HUB2-1294 - Don't display muted alerts in the GUI  
HUB2-1310 - Update Hub favicon  
HUB2-1311 - Add danger notification  
HUB2-1312 - Make rightbar stay at the same place on scroll for global search page  
HUB2-1316 - Hide resubmit button for settings tasks  
HUB2-1328 - Better render "Date started" for cancelled tasks  
HUB2-1334 - Ensure backup UI components are only displayed if the site has nodes configured with the apbackup role  
HUB2-1346 - Implement database expiry page in global settings page  
HUB2-1358 - Make sticked sidebar on default for all elements  
HUB2-1376 - Re-expose grafana dashboard  
HUB2-1377 - Provide role lookup for apbackup feature  
HUB2-1378 - Add filter by job creator inside jobs  
HUB2-1389 - RPM of public facing html docs  
HUB2-1399 - Change text inside of tags multi-select  
HUB2-1401 - Remove Default Location toggle from space create wizard  
HUB2-1402 - Where a site only has one pool, auto-select it in the

space creation drop-down  
HUB2-1411 - Document swagger URL  
HUB2-1417 - Add a base class to all non system worker tasks that check if it can run  
HUB2-1418 - Adjust the cancel process to use redis and change the cancelling states  
HUB2-1436 - Add the enable\_plugin setting to the plugin docs  
HUB2-1438 - Type filter updates on Jobs page for DAG jobs  
HUB2-1442 - Job details show job status as Pausing when the job is in state Pausing  
HUB2-1446 - Remove settings task types from workflow filter list in the UI  
HUB2-1447 - Support for filtering on CANCELING and PAUSING states in the UI  
HUB2-1450 - Document the /hubmetrics endpoint  
HUB2-1469 - Task stats should include PENDING task counts  
HUB2-1496 - Provide clarification that File Stats processes more than Files  
HUB2-1498 - Rename the "In-Progress" file stats label to "Pending"  
HUB2-1530 - Rename Job Type to Workflow in job creator

## Bug

---

HUB2-395 - Prevent setting space mount point to existing path  
HUB2-473 - Deleting any of the site config fields and submitting does not delete the fields  
HUB2-581 - Resolve an issue whereby a resubmitted job displays Job Creator unknown  
HUB2-703 - Client key name max length error  
HUB2-807 - Invalid date message on filebrowser table  
HUB2-812 - Resolve an issue whereby full screen for task logs does not display in full screen  
HUB2-892 - Resolve an issue whereby a space cannot be deleted using the python shell without deleting snapshot\_schedule first  
HUB2-928 - Fix timeout message in search page  
HUB2-946 - Small Browser Window Stylesheet Issue  
HUB2-997 - Task type filter options are not loaded for some of the system jobs  
HUB2-1006 - Ensure that site creation summaries are accurate  
HUB2-1061 - Provide job not found page  
HUB2-1079 - Resolve an issue whereby full screen video preview does not fullscreen  
HUB2-1083 - Resolve an issue whereby joined sites have no job site labels  
HUB2-1086 - Resolve an issue whereby key names can be obscured  
HUB2-1136 - Very long file name takes all the width in file browser table  
HUB2-1144 - Resolve an issue whereby a invalid nginx config can cause frontend service interruption  
HUB2-1146 - Error handling error response from search  
HUB2-1184 - Cursor jumps to end of line as you type in the space name textbox  
HUB2-1185 - Job gets stuck in processing if permissions on ngmigrate do not allow execution

HUB2-1189 - Remove unneeded warnings in the worker logs  
HUB2-1232 - Cannot add API key via UI if profile fields aren't set  
HUB2-1242 - Resolve an issue whereby all NAS interfaces cannot be removed  
HUB2-1245 - Resolve an issue whereby the Username is truncated in the top right  
HUB2-1260 - Resolve an issue whereby the Sites page shifts off screen when the left bar is expanded  
HUB2-1262 - Resolve an issue whereby flickering is observed when loading pages  
HUB2-1279 - 500 Server error when trying to verify an auth token  
HUB2-1284 - Resolve an issue whereby SAMBA configuration entries are duplicated on update or deletion  
HUB2-1285 - Unable to save NAS settings  
HUB2-1289 - Fix duplicate job detection preventing Samba keys from being updated more than once  
HUB2-1290 - Resolve an issue whereby a basic auth login prompt is presented  
HUB2-1293 - Pre-set public url is not populated on create site wizard  
HUB2-1301 - Setting a schedule to 1 hour causes it to run every minute  
HUB2-1307 - Unable to create NAS users after deleting NAS user  
HUB2-1314 - Create and update Space wizard error if no ngenea targets have been defined  
HUB2-1319 - Fix validation email for create user wizard & update user modal  
HUB2-1322 - Migration policy with three pools skips the second pool  
HUB2-1323 - Cannot create a policy with a schedule  
HUB2-1324 - Site settings - existing extra domain can not be deleted & validation needed for extra domain without name  
HUB2-1326 - public\_url = None crashes UI for unconfigured site  
HUB2-1339 - Fix "get() returned more than one Server" issue  
HUB2-1359 - Fix height of the multi-select dropdowns to have valid minimum height  
HUB2-1360 - Selecting a tag for an item, assign it for all items with exact path, which is not unique  
HUB2-1362 - Job status appears as Ongoing for job in state UNKNOWN\_FAILURE  
HUB2-1366 - Resolve an issue whereby ngenea target secrets are visible in log files  
HUB2-1367 - Spaces can suddenly become unlinked where multiple "sites" are defined for a given PixStor cluster  
HUB2-1379 - Filter input inside jobs is not working  
HUB2-1380 - transparent\_recall does not honour api\_secure\_verify  
HUB2-1384 - Cannot change snapshot schedule on a space  
HUB2-1394 - SettingsTask deduplication logic prevents legitimate jobs from running  
HUB2-1400 - Redis will consume all available ram on a system over time  
HUB2-1403 - Fix settings refresh  
HUB2-1404 - Timestamp rules for policy weighting are incorrect  
HUB2-1412 - Space settings loads a blank screen if site label is not set  
HUB2-1413 - Job submitter does not show anything if site label is

missing

HUB2-1415 - Make sure the UI does not break when workflows are visible=False

HUB2-1416 - Link to space path lost on login

HUB2-1420 - Job submitter does not allow running workflow

HUB2-1423 - DAGs submit custom tasks to the wrong queue

HUB2-1425 - Tasks filter not applying to live updates

HUB2-1426 - Unable to disable site apbackup

HUB2-1434 - Tasks go into state "STARTED" even though they are still "PENDING"

HUB2-1441 - Ngenea worker service cannot start up when no filesystem exists

HUB2-1448 - Possible to cancel PAUSING jobs via the jobs overview

HUB2-1455 - Job details rightbar shows ongoing when the job is in cancelling state

HUB2-1467 - Job stats are not updated correctly when a DAG job is cancelled

HUB2-1477 - Docker images manifest file is missing from rpms

HUB2-1494 - UI is redirected to /undefined

HUB2-1495 - Only in progress File stats are updating

HUB2-1497 - Clicking the files stats number retrieves no content into the pop up JSON modal

HUB2-1499 - job task list IDs are not being sorted correctly

HUB2-1500 - API request should call refresh token once expired, rather than logging the user out

HUB2-1509 - Long job descriptions break the UI on job table

HUB2-1517 - Cancelling a recursive job can cause tasks to be stuck in PAUSED

HUB2-1518 - Cancelling a job while "recursive\_navigate" task is in started, causes objects to be stuck "In-progress"

HUB2-1521 - Error in return status of ngmigrate task

HUB2-1549 - Completed time not set for cancelled job with failed tasks

HUB2-1559 - UI does not allow having empty emails on user update modal

Release notes - Ngenea Hub - 2.1.1: 2024-02-08

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Bug

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HUB2-1367 - Spaces can become unlinked where multiple "sites" are defined on the same PixStor cluster

Release notes - Ngenea Hub - 2.1.0: 2023-12-22

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Feature

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Ability to configure Ngenea Backup

Ability to manage NAS users and groups

Ability to view disk metrics

New storage info page  
New Alerts UI

## Release notes - Ngenea Hub - 2.0.2: 2023-11-17

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### Feature

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New Search page, integrating PixStor Search into Hub  
New Policies page, to configure and run data migration policies from the Hub UI

HUB2-27 - Prevent access to UI components according to user permissions  
HUB2-660 - Display all GPFS filesystems in Site Dashboard  
HUB2-691 - Ability to give space shares custom names  
HUB2-692 - Ability to create multiple shares per space at different paths  
HUB2-754 - API to fetch settings tasks list for a job  
HUB2-791 - Global view of Jobs in the UI  
HUB2-792 - Support for submitting custom workflows in the UI  
HUB2-823 - Support for setting analytics and metrics URL from UI  
HUB2-828 - Ability to specify target path for Space creation  
HUB2-831 - Filesystems API endpoint  
HUB2-1003 - System folders are hidden in the UI  
HUB2-1014 - Ability to bookmark and link locations in the file browser  
HUB2-1043 - Ability to view job file lists in job details page rightbar  
HUB2-1071 - Added DNS search domains to Site settings  
HUB2-1075 - Support for editing job Schedules in the UI

### Improvement

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HUB2-370 - Improved progress bars proportion in job details page  
HUB2-527 - Sensitive settings such as ngenea secret keys are hidden from the UI and API  
HUB2-785 - Include share path in file list for share jobs  
HUB2-795 - Jobs page view persists when refreshing the page  
HUB2-825 - All members of the group can be viewed via the "view all members" button  
HUB2-833 - Improved UI for settings Job details  
HUB2-834 - Adds user-friendly job descriptions  
HUB2-835 - Snapshot time can only be set when the frequency is greater than 1 day  
HUB2-861 - Ability to search for a job by ID on jobs page  
HUB2-905 - Updated storage target type naming in ngenea wizard  
HUB2-915 - "view task" modal is now full width in the jobs page  
HUB2-927 - Users list is sorted alphabetically in the groups tab  
HUB2-951 - Server address is now optional when creating S3 ngenea targets  
HUB2-1025 - Tooltip for long values in the details sidebar  
HUB2-1030 - Validation notice for Samba shares in the Space wizard

HUB2-1070 - Don't allow setting server names longer than NETBIOS allowed limit

HUB2-1124 - Updated labels and icons for default workflows

Bug

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HUB2-595 - Create space parent directory if it doesn't already exist

HUB2-783 - Set owner for automated settings tasks to 'system'

HUB2-796 - Exclude certain interface types from site NAS settings

HUB2-805 - Filters not working on Users or Groups pages

HUB2-816 - Workflow file list selected whole space instead of individual files

HUB2-832 - Validation for space placement pools

HUB2-854 - Folder metadata not loading in the file browser

HUB2-856 - Fix settings page link for when a custom base URL is configured

HUB2-931 - None values being written to samba shares

HUB2-932 - Multiple delete jobs being triggered for the same share

HUB2-933 - Don't force changing site shortcode on create site wizard

HUB2-935 - Broken spaces page when only one site is configured

HUB2-949 - Go back button for "advanced configuration" breaks UI on ngenea target wizard summary

HUB2-953 - Add api\_secure\_verify support to ngclient

HUB2-1028 - Site settings weren't updated in the UI after applying a change

Release notes - Ngenea Hub - 2.0.1: 2023-09-19

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Bug

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HUB2-931: Don't write None values to samba shares

Documentation

HUB2-673: Updated user docs for Ngenea Hub 2.0

Release notes - Ngenea Hub - 2.0.0: 2023-08-11

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Feature

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Initial Release:

- Hub 2.0 UI
- Provide the ability to view pixstor sites and storage
- Provide the ability to configure pixstor sites from the Hub UI
- Provide the ability to create Spaces
- Provide the ability to view files globally across all Space associated sites
- Provide the ability to perform data workflows

- Provide the ability to monitor jobs and tasks
- Provide the ability to manage Hub users and groups
- Support for Active Directory/LDAP logon
- Worker support of Hub 2.0 functions
  - Analytics data
  - Get and Set pixstor settings for a site
  - Autojoin to Hub

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- \* the application programming interface described in the order form, proof of entitlement (POE), invoice or other document linking to this EULA (in each case as issued by or agreed in writing with us), or which otherwise incorporates or is governed by this EULA and the data supplied with that application programming interface, in each case whether provided on a standalone basis or alongside the Software (collectively, API) and
- \* printed materials and electronic documents associated with that Software or API (Documents).

The Software, API and Documents are collectively the "Work" and such term includes each of the Software, API and Documents as applicable.

We license use of the Work to you on the basis of this EULA. We do not sell the Work to you. We remain the owners of the Work at all times. By using the Work, or otherwise by clicking "accept" or otherwise indicating acceptance of this EULA, you confirm you accept the terms of this EULA. If you do not accept this EULA you may not use the Work.

Any services we provide, including but not limited to maintenance,

support, development and hosting, will be under separate terms of business, but any software we provide to you incidentally in the course of those services, will also be governed by this EULA unless expressly stated that other licence terms will apply.

You should print a copy of this EULA for future reference.

## 1 Grant and scope of licence

1.1 In consideration of payment by you of the agreed licence fee and you agreeing to abide by the terms of this EULA, we grant to you a non-exclusive, non-transferable licence to use the Work on the terms of this EULA for the duration of your subscription. Your subscription will only be valid during the period for which you have a valid POE from us to use the Software and when your subscription expires this EULA will automatically terminate without the need for notice. Any termination of this EULA will also terminate your subscription and your POE will be invalidated.

1.2 You may download, install and use the Software for your own internal business purposes only on the systems, either physical or virtual detailed in the accompanying POE as identified in your purchase order (if applicable) or otherwise approved by us or our authorised representatives.

1.3 You may not use the Work for the purposes of making its functionality available to third parties as a service, whether directly or indirectly, without our express written agreement.

1.4 You may access and use the API solely for the purposes of

1.4.1 internally developing applications which communicate and interoperate with software or systems detailed in (and for the purposes detailed in) the accompanying POE as identified in your purchase order (if applicable) or otherwise approved by us or our authorised representatives; and

1.4.2 making calls to the systems or software permitted under clause 1.4.1, subject to any limits detailed in the accompanying POE as identified in your purchase order (if applicable) or otherwise agreed with us or our authorised representatives.

1.5 Your display and use information received through the API or data derived from that information is in each case subject to any limits detailed in the accompanying POE as identified in your purchase order (if applicable) or otherwise agreed with us or our authorised representatives).

1.6 You may use any Documents in support of the use permitted under condition 1.2 and make copies of the Documents as are reasonably necessary for their lawful use.

1.7 This EULA does not grant you permission to use the trade names, trademarks, service marks, or product names of us or our

contributors or licensors, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of any "licence" files.

## 2 Restrictions

2.1 Except as expressly set out in this EULA or as permitted by any local law, you undertake:

2.1.1 not to copy the Work except where such copying is incidental to normal use of the Software, or where it is strictly necessary for the purpose of back-up or operational security;

2.1.2 not to rent, lease, sub-license, loan, translate, merge, adapt, vary or modify the Work;

2.1.3 not to make alterations to, or modifications of, the whole or any part of the Work, nor permit the Work or any part of them to be combined with, or become incorporated in, any other programs or other documentation as applicable, other than as expressly permitted in writing by us;

2.1.4 not to disassemble, decompile, reverse-engineer or create derivative works based on the whole or any part of the Software or API (except as expressly permitted by us in writing or clearly provided for within the functionality of the Software or any accompanying API we provide) nor attempt to do any such thing except to the extent that (by virtue of section 296A of the Copyright, Designs and Patents Act 1988) such actions cannot be prohibited because they are essential for the purpose of achieving inter-operability of the Software or API with another software program, and provided that the information obtained by you during such activities:

2.1.4.1 is used only for the purpose of achieving inter-operability of the Software or API with another software program; and

2.1.4.2 is not unnecessarily disclosed or communicated without our prior written consent to any third party; and

2.1.4.3 is not used to create any software which is substantially similar to the Software or API;

2.1.5 to keep all copies of the Work secure and to maintain accurate and up-to-date records of the number and locations of all copies of the Work;

2.1.6 to supervise and control use of the Work and ensure that the Work are only used by your employees (or such other individuals or entities as you may be expressly permitted in writing by us to allow to access or use the Work) in accordance with the terms of this EULA;

2.1.7 to include our copyright notice on and any "licence" text

files in all entire and partial copies you make of the Work on any medium, however you may not use any component parts of the Work outside of or separately from the Work;

2.1.8 not to provide or otherwise make available the Work in whole or in part (including but not limited to program listings, object and source program listings, object code and source code), in any form to any person other than your employees without prior written consent from us; and

2.1.9 to comply with all applicable technology control or export laws and regulations.

2.2 Without prejudice to the restrictions in this EULA on copying, modifying or creating derivative works from the Work, where you (or someone on your behalf) creates (solely or in conjunction with others, and whether in object or source code form) any software or other work which is based on or derived from the Work (Derivative Work) in breach of this EULA or otherwise, then in consideration of the sum of 1 GBP (receipt and sufficiency of which you acknowledge), you hereby:

2.2.1 assign to us (by way of present assignment of future rights) all intellectual property rights in such Derivative Work and waive (and shall procure a waiver of) all moral rights arising under the Copyright, Designs and Patents Act 1988 in relation to the Derivative Work and, so far as is legally possible, any broadly equivalent rights that may exist in any territory of the world; and

2.2.2 In the event that any rights in such Derivative Work are not assigned to us pursuant to clause 2.2.1, you hereby grant to us an exclusive, royalty-free, worldwide, transferrable, irrevocable, perpetual licence (together with the right to grant sub-licences) to use in any manner as we determine, any such Derivative Work.

2.3 For the avoidance of doubt, for the purposes of clause 2.2, Derivative Work shall not include works which merely link or bind by name an existing third party application to the interfaces of the Software or API but does include works which are created to integrate with, or to be processed using, the interface of the Software or any API which we provide.

2.4 You agree not to (by your act or omission) do, or permit to be done, any act that will or may weaken, damage or be detrimental to the Work or any of our intellectual property rights or our or any of our contributors or licensors' rights in such, or seek to register any rights in the Work or any part of it or seek to commence litigation against any third party in respect of any intellectual property infringement in relation to the Work or any part of it.

### 3 Intellectual property rights

3.1 You acknowledge that all intellectual property rights in the Work anywhere in the world belong to us or our licensors or

contributors, that rights in the Work are licensed (not sold) to you, and that you have no rights in, or to, the Work other than the right to use them in accordance with the terms of this EULA.

3.2 You acknowledge (unless explicitly agreed in writing by us) that you have no right to have access to the Software in source code form.

#### 4 Liability

4.1 You acknowledge that the Work has not been developed to meet your individual requirements, including any particular cybersecurity requirements you might be subject to under law or otherwise, and that it is therefore your responsibility to ensure that the facilities and functions of the Software and API as described in the Documents meet your requirements.

4.2 We only supply the Work for internal use by your business, and you agree not to use the Work for any other purposes unless expressly permitted in writing by us.

4.3 We shall not in any circumstances whatever be liable to you, whether in contract, tort (including negligence), breach of statutory duty, or otherwise, arising under or in connection with this EULA for:

4.3.1 loss of profits, sales, business, or revenue;

4.3.2 business interruption;

4.3.3 loss of anticipated savings;

4.3.4 loss or corruption of data or information or any loss arising from misconfiguration or incorrect implementation or use of any API;

4.3.5 loss of business opportunity, goodwill or reputation;

where any of the losses set out in condition 4.3.1 to condition 4.3.5 are direct or indirect; or

4.3.6 any special, indirect or consequential loss, damage, charges or expenses.

4.4 Other than the losses set out in condition 4.3 (for which we are not liable), our maximum aggregate liability under or in connection with this EULA whether in contract, tort (including negligence) or otherwise, shall in all circumstances not exceed a sum equal to the Licence Fee paid in the 12 months prior to the event first giving rise to any liability. This maximum cap does not apply to condition 4.5.

4.5 Nothing in this EULA shall limit or exclude our liability for:

4.5.1 death or personal injury resulting from our negligence;

4.5.2 fraud or fraudulent misrepresentation;

4.5.3 any other liability that cannot be excluded or limited by English law.

4.6 Save as required by applicable law or agreed to in writing, we provide the Work on an "AS IS" basis, without conditions, warranties, representations or other terms of any kind, either express or implied (and any such implied conditions, warranties, representations or other terms, whether implied by statute, common law or otherwise, are excluded to the fullest extent permitted by law), including, without limitation, any conditions, warranties, representations or other terms relating to title, non-infringement, merchantability, or fitness for a particular purpose. You are solely responsible for determining the appropriateness of using the Work and for any configuration or interface necessary for you to effectively use the Work and assume any risks associated with your exercise of permissions under this EULA.

4.7 Without prejudice to clause 4.6, where the API interacts with any software or system which is not provided by us, we are not responsible and shall have no liability in any way for such software or system.

## 5 Termination

5.1 We may terminate this EULA immediately by written notice to you if you commit a breach of this EULA which you fail to remedy (if remediable) within 14 days after the service of written notice requiring you to do so. Without prejudice to our rights under this clause 5.1, your rights under this EULA will terminate automatically without the need for notice if you commit a material breach of any of the terms of this EULA.

5.2 On termination for any reason:

5.2.1 all rights granted to you under this EULA shall cease;

5.2.2 you must immediately cease all activities authorised by this EULA; and

5.2.3 you must immediately and permanently delete or remove the Work from all computer equipment in your possession, and immediately destroy or return to us (at our option) all copies of the Work then in your possession, custody or control and, in the case of destruction, certify to us that you have done so.

## 6 Communications between us

6.1 We may update the terms of this EULA at any time on notice to you in accordance with this condition 6. Your continued use of the Work following the deemed receipt and service of the notice under condition 6.3 shall constitute your acceptance to the terms of this EULA, as varied. If you do not wish to accept the terms of the EULA

(as varied) you must immediately stop using and accessing the Work on the deemed receipt and service of the notice.

6.2 If we have to contact you, we will do so by email or by pre-paid post to the address you provided in accordance with your order for or registration of the Work.

6.3 Note that any notice:

6.3.1 given by us to you will be deemed received and properly served 24 hours after it is first posted on our website, 24 hours after an email is sent, or three days after the date of posting of any letter; and

6.3.2 given by you to us will be deemed received and properly served 24 hours after an email is sent, or three days after the date of posting of any letter.

6.4 In proving the service of any notice, it will be sufficient to prove, in the case of posting on our website, that the website was generally accessible to the public for a period of 24 hours after the first posting of the notice; in the case of a letter, that such letter was properly addressed, stamped and placed in the post to the address of the recipient given for these purposes; and, in the case of an email, that such email was sent to the email address of the recipient given for these purposes.

## 7 Events outside our control

7.1 We will not be liable or responsible for any failure to perform, or delay in performance of, any of our obligations under this EULA that is caused by an Event Outside Our Control. An Event Outside Our Control is defined below in condition 7.2.

7.2 An Event Outside Our Control means any act or event beyond our reasonable control, including without limitation failure of public or private telecommunications networks.

7.3 If an Event Outside Our Control takes place that affects the performance of our obligations under this EULA:

7.3.1 our obligations under this EULA will be suspended and the time for performance of our obligations will be extended for the duration of the Event Outside Our Control; and

7.3.2 we will use our reasonable endeavours to find a solution by which our obligations under this EULA may be performed despite the Event Outside Our Control.

## 8 Third Party Software

8.1 Any part or component of the Software which has been contributed or created by any third party (including any open-source software) and which is not owned by us (Third Party Software) shall be deemed

to be incorporated within the Software for the purposes of this EULA (except where expressly provided to the contrary) and use of the Third Party Software shall be subject to (and you shall comply with) such additional terms as relate to such Third Party Software from time to time (Third Party Additional Terms), and such Third Party Additional terms shall take precedence over this EULA in relation to such Third Party Software. You shall indemnify and hold us harmless against any loss or damage which we may suffer or incur as a result of your breach of any Third Party Additional Terms howsoever arising, and we may treat your breach of any Third Party Additional Terms as a material breach of this EULA.

8.2 For the avoidance of doubt, the performance of, and any issues caused by or arising from, any Third Party Software shall be considered an Event Outside Our Control and (without prejudice to the provisions of this EULA in relation to warranties regarding the Software generally) all Third Party Software is provided on an "AS IS" basis and without conditions, warranties, representations or other terms of any kind, either express or implied (and any such implied conditions, warranties, representations or other terms, whether implied by statute, common law or otherwise, are excluded to the fullest extent permitted by law), including, without limitation, any conditions, warranties, representations or other terms relating to title, non-infringement, merchantability, or fitness for a particular purpose.

## 9 Other important terms

9.1 We may transfer our rights and obligations under this EULA to another organisation, but this will not affect your rights or our obligations under this EULA.

9.2 You may only transfer your rights or your obligations under this EULA to another person if we agree in writing.

9.3 This EULA and any document expressly referred to in it constitutes the entire agreement between us and supersedes and extinguishes all previous agreements, promises, assurances, warranties, representations and understandings between us, whether written or oral, relating to its subject matter. You agree that you shall have no remedies in respect of any statement, representation, assurance or warranty (whether made innocently or negligently) that is not set out in this EULA or any document expressly referred to in it. You agree that you shall have no claim for innocent or negligent misrepresentation or negligent misstatement based on any statement in this EULA or any document expressly referred to in it.

9.4 If we fail to insist that you perform any of your obligations under this EULA, or if we do not enforce our rights against you, or if we delay in doing so, that will not mean that we have waived our rights against you and will not mean that you do not have to comply with those obligations. If we do waive a default by you, we will only do so in writing signed by us, and that will not mean that we will automatically waive any later default by you.

9.5 Each of the conditions of this EULA operates separately. If any court or competent authority decides that any of them are unlawful or unenforceable, the remaining conditions will remain in full force and effect.

9.6 This EULA, its subject matter and its formation (and any non-contractual disputes or claims) are governed by English law. We both irrevocably agree to the exclusive jurisdiction of the courts of England and Wales.

## Contact

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