

# Hands-on Lab: Dashboards in Cloudant

Estimated time needed: **30** minutes

## Objectives

After completing this lab you will be able to:

- Create a database through the Cloudant dashboard
- Perform simple operations, such as inserting a document and querying data
- Replicate, or copy data, from one database to another
- Monitor your active tasks and your instance to detect potential issues

## Prerequisite

In order to complete this lab, you will need to create an instance of Cloudant on IBM Cloud. If you haven't yet created one, you can create one by referring to the [Create an Instance of IBM Cloudant](#) lab.

Note: While working on this lab, you may be prompted to login when ever your session expires. Use your credentials to authenticate. This may happen when you step out or leave your Cloudant session unattended.

## Exercise 1 - Launch Cloudant Dashboard

Step 1: Click on [cloud.ibm.com/resources](#).

Step 2: Click on the Databases chevron.

Step 3: Click on your instance of Cloudant.

► Click here for Hint

Step 4: Click on Launch Dashboard.

The screenshot shows the IBM Cloud dashboard interface. At the top, there's a navigation bar with 'IBM Cloud', a search bar, and links for Catalog, Docs, Support, and Manage. Below the navigation is a resource list for 'mycloudant'. The main content area has tabs for 'Manage', 'Overview' (which is selected), 'Dashboard', 'Capacity', and 'Docs'. On the left, there are sections for 'Service credentials', 'Plan', and 'Connections'. The 'Overview' tab displays deployment details: CRN (crn:v1:bluemix:public:cloudantnosqldb:eu-gb:a/9ff7e8c5d25d4ac7aa5dcdf286db5a8db9::), Location (London), External Endpoint (<https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com>), External Endpoint (preferred) (<https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudantnosqldb.a>), Authentication methods (IBM Cloud IAM and Cloudant credentials), Activity Tracker event types (Management dropdown), and Disk encryption (Yes, Automatically generated disk encryption key). A blue checkmark icon is visible on the right side of the page.

The Cloudant dashboard looks like this.



## Databases

Database name ▾



Your Databases



Log Out

Showing 1–0 of 0 dat:

## Exercise 2 - Create a database

Step 1: Click on Create Database.



## Databases

Database name ▾



Your Databases



Log Out

Showing 1–0 of 0 dat:

Step 2: Enter *training* as the name of the database.

Step 3: Select ‘Non-partitioned’.

Step 4: Click on Create.



## Databases

Database name ▾



Your Databases



Log Out

Name	Size	# of Docs	Partitioned
------	------	-----------	-------------



Showing 1–0 of 0 dat:

The database will be created. You should see a screen like this.

A screenshot of the Apache CouchDB Futon interface. On the left is a dark sidebar with various icons: a double arrow, a chart, a stack of circles, a double-headed arrow, a person, a gear, a book, and a cloud. Below these are 'Log Out' and a user profile icon. The main area has a header with a back arrow, the database name 'training', a filter icon, and a 'Document ID' search bar. A blue arrow points from the 'All Documents' link in the sidebar to the 'All Documents' link in the header. The sidebar also lists 'Query', 'Permissions', 'Changes', and 'Design Documents'. The main content area shows a large cloud icon and the text 'No Documents Found'. At the bottom right, it says 'Showing 0 doc'.

## Exercise 3 - Perform a simple insert

Step 1: Click on Create Document.

← training ⋮

No partition selected Document ID

All Documents +

Query

Permissions

Changes

Design Documents +

No Documents Found

Showing 0 documents

Step 2: Copy the below given JSON document and replace the default sample document given on the page.

```
{  
  "_id": "1",  
  "Topic" : "NoSQL Databases",  
  "Lesson" : "IBM Cloudant"  
}
```

Step 3: Click on Create Document



The document is created, and you should see a screen like this.

The screenshot shows the Apache CouchDB Futon interface. On the left is a sidebar with various icons: double arrows (refresh), a chart (Analytics), a stack of circles (Database), two arrows (Replication), a person (User), a gear (Settings), and a book (Help). The main area has a header with a back arrow, the word "training", and a three-dot menu. A "Document ID" input field is at the top right. The left panel has sections for "All Documents" (with a plus icon), "Query", "Permissions", "Changes", and "Design Documents" (with a plus icon). The right panel shows a table with one document. At the top of the table are buttons for "Table" (selected), "Metadata", and "JSON". A blue arrow points from the "Table" button to the "Table" view in the screenshot. The table has columns "id" and "key". The "id" column contains a checkbox and a value of "1". The "key" column contains a value of "1".

Showing docum...

Step 4: Select Table view to view the documents in a tabular form.

You should now see documents like this.

The screenshot shows a database management interface. On the left, a sidebar contains icons for back, forward, refresh, document, database, user, group, file, and log out. The main area has a title bar "training" with a back arrow and a three-dot menu. A top navigation bar includes "Document ID" and other tabs. The left panel lists "All Documents" (with a plus icon), "Query" (selected), "Permissions", "Changes", and "Design Documents" (with a plus icon). The right panel displays a table with columns "Lesson" and "Topic". One row is visible: "IBM Cloudant" under Lesson and "NoSQL Databases" under Topic. There are filters for "Lesson" and "Topic", and a search bar at the bottom. A message at the bottom says "Showing 3 of 4 columns.  Show all columns." and "Showing docum".

## Exercise 4 - Perform a simple query

Step 1: Click on Query.

The screenshot shows the Apache CouchDB Futon interface. On the left, there's a sidebar with various icons: a double arrow, a chart, a database, a person, a gear, a list, and a log out button. The main area has a header 'training' with a back arrow and a three-dot menu. Below the header is a navigation bar with 'All Documents' (selected), 'Query' (highlighted with a blue arrow), 'Permissions', 'Changes', and 'Design Documents'. To the right of the navigation bar are four tabs: 'Table' (selected), 'Metadata', 'JSON', and a 'Run' button. Underneath the tabs are two dropdown menus: 'Lesson' (set to 'IBM Cloudant') and 'Topic' (set to 'NoSQL Databases'). At the bottom of the main area, it says 'Showing 3 of 4 columns.  Show all columns.'

Step 2: Copy the below given query and replace the default sample query given on the page.

```
{  
  "selector": {}  
}
```

Step 3: Click on Run Query



Query history



Cloudant Query

```
1 | []
2 | "selector": {}
3 | }
```



Run Query

Explain

manage indexes



No Documents Found



Log Out

Showing 0 doc

You will see the query results.

The screenshot shows the Cloudant Query interface. On the left, a sidebar contains icons for back/forward, refresh, history, and user profile. The main area has a title bar "training > Cloudant Query". Below the title is a "Query history" dropdown. A "Cloudant Query" section contains a code editor with the following JSON:

```
1 | [ {  
2 |   "selector": {}  
3 | } ]
```

Below the code editor are "Run Query" and "Explain" buttons, and a link to "manage indexes". A status message indicates "Executed in 2 ms". On the right, there's a navigation bar with "Table", "JSON", and "T-SQL" tabs, and dropdowns for "Lesson" (set to "IBM Cloudant") and "Topic" (set to "NoSQL Databases"). At the bottom, there are links for "Showing 3 of 4 columns" and "Show all columns".

Cloudant queries are also in the JSON format. What we have queried here is the equivalent of select \* from training.

## Exercise 5 - Replicate a database

Step 1: Api Key is needed for setting up replication. Fetch the apikey from Cloudant Service Credentials.

► Click here for Hint

Step 2: Click on the Replication icon.

The screenshot shows the Cloudant Query interface. On the left, a sidebar contains icons for back, forward, refresh, history, and user profile, along with a 'Log Out' button at the bottom. The main area has a header 'training > Cloudant Query'. Below the header is a 'Query history' dropdown. The central part is titled 'Cloudant Query' with a question mark icon. It contains a code editor with the following JSON query:1. {  
2. "selector": {}  
3. }

Below the code editor are two buttons: 'Run Query' and 'Explain'. A blue arrow points from the 'Run Query' button towards the right panel. To the right of the code editor, the text 'manage indexes' is visible. At the bottom of the main panel, a message says 'Executed in 2 ms'. The right panel features a top navigation bar with 'Table', 'JSON', and 'T-SQL' tabs, where 'Table' is selected. Below this are 'Lesson' and 'Topic' dropdowns, both set to 'IBM Cloudant' and 'NoSQL Databases'. At the bottom of the right panel, there are buttons for 'Showing 3 of 4 columns' and 'Show all columns'.

Step 3: You will land on the Replication dashboard. Click on New Replication.

← Replication

Replicator DB Activity    \_replicate Activity

Replications must have a replication document to display in the following table.

Filter replications

Source ▾	Target ▾	Start Time ▲	Type ▾
		There is no replicator-db activity or history to display.	

Log Out

Step 4: On the Job Configuration page, select the following details.

```
Under Source
Select Type = Local database
Select Name = training
Select Authentication = "IAM Authentication"
Paste the api key you copied earlier in the IAM API Key textbox.
```

```
Under Target
Select Type = New local database
Select Name = training_replica
Select Authentication = "IAM Authentication"
Paste the api key you copied earlier in the IAM API Key textbox.
```

Under Options:  
Select Type = Continuous

**Step 5: Click on Start Replication.**

## Job Configuration

Source

Type: Local database

Name: training

Authentication: IAM Authentication

Target

Type: New local database

New database: training\_replica

New database options:  Partitioned

Authentication: IAM Authentication

Options

Replication type: Continuous

Replication document: Custom ID (optional) X

Start Replication Clear

Step 6: A replication status of running indicates that the replication is working.

Replication

Replicator DB Activity    \_replicate Activity

Replications must have a replication document to display in the following table.

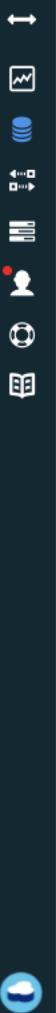
Filter replications

<input type="checkbox"/>	Source ▾	Target ▾	Start Time ▾	Type
<input type="checkbox"/>	<a href="https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training">https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training</a>	<a href="https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training_replica">https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training_replica</a>	Apr 12th, 4:11 pm	Cont

Log Out



Step 7: Click on the Database icon. You should see a new database named **training\_replica**.



## Databases

Database name

### Your Databases

Name	Size	# of Docs	Partitioned
_replicator	4.7 KB	2	No
training	1.1 KB	1	No
training_replica	1.2 KB	1	No

Log Out

Showir

Step 8: Click on the **training\_replica** database. You should see the document you have inserted in the training database.

All Documents

Query

Permissions

Changes

Design Documents

IBM Cloudant

NoSQL Databases

Showing 3 of 4 columns.  Show all columns.

You have successfully setup continuous replication between the training and training\_replica databases. Whatever changes you make on the training database will be replicated to the training\_replica database.

## Exercise 6 - Monitor active tasks

Step 1: Click on the Active Tasks icon.

The screenshot shows the Cloudant Replication interface. On the left, there's a vertical sidebar with icons for Home, Monitoring, Databases, Views, Functions, Replications, Compaction, Indexer, and Log Out. The main area has tabs for 'Replicator DB Activity' and '\_replicate Activity'. Below that, a message says 'Replications must have a replication document to display in the following table.' A search bar labeled 'Filter replications' is present. The table lists a single replication task:

Source	Target	Start Time	Type
<a href="https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training">https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training</a>	<a href="https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training_replica">https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training_replica</a>	Apr 12th, 4:11 pm	Con

The Active tasks page displays a list of all running tasks. You can use this to find out what is happening on your Cloudant instance. You can see a list of active tasks, which includes compaction, replication, and indexing.

Here is a sample Active Tasks view.

Active Tasks					
<a href="#">All Tasks</a> <a href="#">Replication</a> <a href="#">Database Compaction</a> <a href="#">Indexer</a> <a href="#">View Compaction</a> <input type="text" value="Search for databases..."/>					
Type	Database	Started on	Updated on	PID	Status
replication	From: <a href="https://d360fd11-57ef-46cd-af46-496f14ace2bb-bluemix.cloudant.com/orders/">https://d360fd11-57ef-46cd-af46-496f14ace2bb-bluemix.cloudant.com/orders/</a> To: <a href="https://d360fd11-57ef-46cd-af46-496f14ace2bb-bluemix.cloudant.com/orders/_replica/">https://d360fd11-57ef-46cd-af46-496f14ace2bb-bluemix.cloudant.com/orders/_replica/</a>	Jun 9th, 10:34:20 am a minute ago	Jun 9th, 10:35:40 am a few seconds ago	0.27010.5142	7341 docs written. 44301 pending changes.
indexer	shards/e0000000-0fffff/d360fd11-57ef-46cd-af46-496f14ace2bb-bluemix/orders.1549538088 (View: _design/app)	Jun 9th, 10:35:38 am a few seconds ago	Jun 9th, 10:35:41 am a few seconds ago	0.12427.5145	Progress: 96% Processed 2929 of 3029 changes. 2929 Changes done.
indexer	shards/e0000000-0fffff/d360fd11-57ef-46cd-af46-496f14ace2bb-bluemix/orders.1549538088 (View: _design/app)	Jun 9th, 10:35:38 am a few seconds ago	Jun 9th, 10:35:41 am a few seconds ago	0.19505.5145	Progress: 100% Processed 3074 of 3073 changes. 3074 Changes done.
indexer	shards/e0000000-0fffff/d360fd11-57ef-46cd-af46-496f14ace2bb-bluemix/orders.1549538088 (View: _design/app)	Jun 9th, 10:35:38 am a few seconds ago	Jun 9th, 10:35:41 am a few seconds ago	0.21199.5144	Progress: 93% Processed 2929 of 3123 changes. 2929 Changes done.
indexer	shards/e0000000-0fffff/d360fd11-57ef-46cd-af46-496f14ace2bb-bluemix/orders.1549538088 (View: _design/app)	Jun 9th, 10:35:38 am a few seconds ago	Jun 9th, 10:35:41 am a few seconds ago	0.21474.5145	Progress: 91% Processed 2929 of 3187 changes. 2929 Changes done.
indexer	shards/e0000000-0fffff/d360fd11-57ef-46cd-af46-496f14ace2bb-bluemix/orders.1549538088 (View: _design/app)	Jun 9th, 10:35:38 am a few seconds ago	Jun 9th, 10:35:41 am a few seconds ago	0.22837.5144	Progress: 94%

## Exercise 7 - Monitor your instance

Monitor your usage in realtime with a graph that shows your throughput by reads, writes, and global queries. You can see your current operations, denied requests, and storage usage.

Step 1: Click on the Monitoring icon.

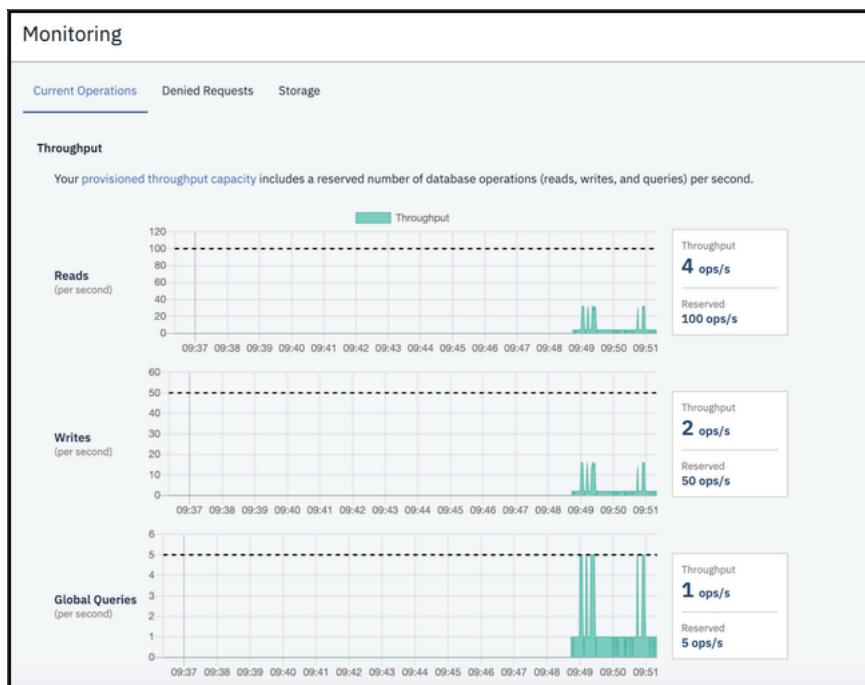
Active Tasks

Polling

All Tasks    Replication    Database Compaction    Indexer    View Compaction    Search for databases...

Type	Database	Started on ▲	Updated on	PID
No active tasks.				

Here is a sample monitoring view for Current Operations.



Note: Your monitoring output could be different from the screen shot above, mostly 0 ops/s as there may not be any load on your instance.

Step 2: Click on the Denied Requests tab.

Here is a sample monitoring view for Denied Requests. Whenever we perform more reads or writes than our plan allows, those requests will be denied and shown here.



Note: Your monitoring output could be different from the screen shot above, depending upon your usage.

Step 3: Click on the Storage tab.

Here is a sample Storage view. It shows how much storage is used for data, indexes and views.



Note: Your monitoring output could be different from the screen shot above, depending upon your usage.

## Practice exercises

1. Problem:

*Create a database named test.*

► Click here for Hint

2. Problem:

*Insert a sample document.*

► Click here for Hint

3. Problem:

*Setup continuous replication between test and test\_replica databases.*

► Click here for Hint

4. Problem:

*Find out if any denied requests were denied.*

► Click here for Hint

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