

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 Services 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 console interface. At the top, there's a navigation bar with 'IBM Cloud' and a search bar. Below it, the 'Resource list' shows 'mycloudant' with a green 'Active' status. A sidebar on the left contains 'Manage', 'Service credentials', 'Plan', and 'Connections'. The main area has tabs for 'Overview', 'Dashboard', 'Capacity', and 'Docs'. The 'Overview' tab is selected, displaying 'Deployment details' for 'mycloudant'. A blue arrow points to the 'Launch Dashboard' button in the top right corner of the 'Overview' tab. The 'Deployment details' section includes fields for CRN, Location, External Endpoint, External Endpoint (preferred), Authentication methods, Activity Tracker event types, and Disk encryption.

Deployment details	
CRN	crn:v1:bluemix:public:cloudantnosqldb:eu-gb:a/9ff7e8c5d25d4ac7aa5dcdf28618b403:f2f160dd-10bb-4161-93a9-f3d3db5a8db9::
Location	London
External Endpoint	https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com
External Endpoint (preferred)	https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudantnosqldb.appdomain.cloud
Authentication methods	IBM Cloud IAM and Cloudant credentials
Activity Tracker event types	Management ▼ Save
Disk encryption	Yes. Automatically generated disk encryption key.

Capacity details

The Cloudant dashboard looks like this.

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Log Out


Databases

Database name ▾

 Create Database

{ } JSON





Your Databases

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

Showing 1–0 of 0 databases. Databases per page 20 ▾ « 1 »

Exercise 2 - Create a database

Step 1: Click on Create Database.

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Log Out


Databases

Database name ▾

 Create Database

{ } JSON





Your Databases

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

Showing 1–0 of 0 databases. Databases per page 20 ▾ « 1 »

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

Step 3: Select 'Non-partitioned'.

Step 4: Click on Create.

The screenshot shows the 'Databases' management interface. On the left is a sidebar with navigation icons. The main area displays a table titled 'Your Databases' with columns: Name, Size, # of Docs, and Partitioned. The table is currently empty. A 'Create Database' modal is open on the right. It has a 'Database name' field containing 'training'. Under the 'Partitioning' section, the 'Non-partitioned' radio button is selected. At the bottom of the modal are 'Cancel' and 'Create' buttons. Three blue arrows point from the table area to the 'Database name' field, the 'Non-partitioned' option, and the 'Create' button. The status bar at the bottom indicates 'Showing 1-0 of 0 databa'.

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

The screenshot shows the view for the 'training' database. The breadcrumb navigation at the top left shows '< training'. Below it is a sidebar with options: 'All Documents' (selected), 'Query', 'Permissions', 'Changes', and 'Design Documents'. The main area displays a large cloud icon with the text 'No Documents Found' below it. The status bar at the bottom indicates 'Showing 0 documents. Documents per page: 20'. A blue arrow points from the 'All Documents' option in the sidebar to the main content area.

Exercise 3 - Perform a simple insert

Step 1: Click on Create Document.

The screenshot shows the training application interface. On the left is a dark sidebar with various icons and a 'Log Out' button at the bottom. The main area has a header with 'training' and a filter icon. Below the header is a list of tabs: 'All Documents' (selected), 'Query', 'Permissions', 'Changes', and 'Design Documents'. The main content area is light blue and contains a large cloud icon with the text 'No Documents Found' below it. In the top right corner of the main area, there is a blue button labeled 'Create Document'. A blue arrow points from the bottom right towards this button. At the bottom of the main area, there is a status bar showing 'Showing 0 documents.' and 'Documents per page: 20' with a dropdown arrow.

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

```
1. 1
2. 2
3. 3
4. 4
5. 5

1. {
2.   "_id": "1",
3.   "Topic": "NoSQL Databases",
4.   "Lesson": "IBM Cloudant"
5. }
```

Copied!

Step 3: Click on Create Document

The screenshot shows the training application interface with the 'New Document' form open. The header shows 'training > New Document'. The sidebar is the same as in the previous screenshot. The main area has a light blue background. At the top of the main area, there is a bar with two buttons: 'Create Document' (with a checkmark icon) and 'Cancel'. A blue arrow points from the bottom right towards the 'Create Document' button. Below the buttons is a text area with a light blue background. The text area contains the following JSON document:

```
1. {
2.   "_id": "1",
3.   "Topic": "NoSQL Databases",
4.   "Lesson": "IBM Cloudant"
5. }
```

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

The screenshot shows a web application interface for a document titled "training". On the left is a dark sidebar with navigation icons and a "Log Out" button at the bottom. The main area has a top bar with "Document ID", "Options", "JSON", and a bell icon. Below this is a tabbed interface with "Table", "Metadata", and "JSON" tabs. The "Table" tab is active, showing a table with columns "id", "key", and "value". A blue arrow points to the "Table" tab. The table contains one row with "id" 1, "key" 1, and "value" {"rev": "1-aac247d23ba3a355634f9d759...". At the bottom right, it says "Showing document 1 - 1. Documents per page: 20".

id	key	value
1	1	{"rev": "1-aac247d23ba3a355634f9d759..."}

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

You should now see documents like this.

The screenshot shows the same interface as before, but now the table has columns "Lesson", "Topic", and "_id". The "Lesson" column has a dropdown menu showing "IBM Cloudant". The "Topic" column has a dropdown menu showing "NoSQL Databases". The "_id" column has a dropdown menu showing "1". The table contains one row with "Lesson" IBM Cloudant, "Topic" NoSQL Databases, and "_id" 1. At the bottom left, it says "Showing 3 of 4 columns. Show all columns." At the bottom right, it says "Showing document 1 - 1. Documents per page: 20".

Lesson	Topic	_id
IBM Cloudant	NoSQL Databases	1

Exercise 4 - Perform a simple query

Step 1: Click on Query.

training

Document ID

Options

JSON

Log Out

All Documents

Query

Permissions

Changes

Design Documents

Table

Metadata

JSON

Create Document

Lesson	Topic	_id
IBM Cloudant	NoSQL Databases	1

Showing 3 of 4 columns. ☐ Show all columns.

Showing document 1 - 1. Documents per page: 20

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

```
1. 1
2. 2
3. 3
4. 4

1.
2. {
3.   "selector": {}
4. }
```

Copied!

Step 3: Click on Run Query

training > Cloudant Query

JSON

Log Out

Query history

Cloudant Query

```
1. {
2.   "selector": {}
3. }
```

Run Query

Explain

manage indexes

No Documents Found

Showing 0 documents. Documents per page: 20

You will see the query results.

training > Cloudant Query

Query history

Cloudant Query

Lesson	Topic	_Id
IBM Cloudant	NoSQL Databases	1

Run Query Explain manage indexes

Executed in 2 ms

Showing 3 of 4 columns. Show all columns.

Showing document 1 - 1. Documents per page: 20

Log Out

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 1: Go to <http://cloud.ibm.com/resources>.

Step 2: Under Services click on your instance of Cloudant.

Step 3: On the Cloudant instance page, click on Service Credentials.

Step 4: Click on the chevron of your Service Credentials. You should see your Service Credentials.

IBM Cloud Search resources and offerings...

Resource list / mycloudant Active Add tags

Manage Service credentials

You can generate a new set of credentials for cases where you want to manually connect an app or external consumer to an IBM Cloud service. [Learn more](#)

Search credentials...

New credential +

Key name Date created

Service credentials-1 2021-04-12 1:20

```
{
  "apikey": "M5_LAn8A0d13NK2Y7HcZ-X6f1SfX2o-1ezsyUyP2XvQz",
  "host": "4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudantnosqlb.appdomain.cloud",
  "iam_apikey_description": "Auto-generated for key 1f757674-c0fa-4064-8f2c-6be47754d093",
  "iam_apikey_name": "Service credentials-1",
  "iam_role_crn": "crn:v1:bluemix:public:iam:::serviceRole:Manager",
  "iam_serviceid_crn": "crn:v1:bluemix:public:iam-identity::a/9ff7e8c5d25d4ac7aa5dcdf28618b403::serviceid:ServiceId-7f3addaa-8111-4cb7-bbd4-3a6982702639",
  "password": "6b3dc2399426437b2397e08ac9cf0184",
  "port": 443,
  "url": "https://apikey-v2-1ktn8d6fuuo6kjoz145fris5ccx24fhmirsku7o3q7bh:6b3dc2399426437b2397e08ac9cf0184@4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudantnosqlb.appdomain.cloud",
  "username": "apikey-v2-1ktn8d6fuuo6kjoz145fris5ccx24fhmirsku7o3q7bh"
}
```

This is your apikey

Step 5: Copy the apikey without the double quotes on either side.

Example : My expired api key is M5_LAn8A0d13NK2Y7HcZ-X6fSfX2o-1ezsyUyP2XyQz

End of hint.

Step 2: Click on the Replication icon.

training > Cloudant Query

Query history

Cloudant Query

1. {
2. "selector": {}
3. }

Run Query Explain manage indexes

Executed in 2 ms

Table {} JSON Create Document

Lesson	Topic	_id
IBM Cloudant	NoSQL Databases	1

Showing 3 of 4 columns. ☐ Show all columns. Showing document 1 - 1. Documents per page: 20

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

Replication

Polling Interval 5 minutes Refresh

Replicator DB Activity _replicate Activity

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

Filter replications

New Replication

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

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

- 1.
- 2.
- 3.
- 4.
- 5.

- 6. 6
 - 7. 7
 - 8. 8
 - 9. 9
 - 10. 10
 - 11. 11
 - 12. 12
 - 13. 13
 - 14. 14
 - 15. 15
 - 16. 16
-
- 1.
 - 2. Under Source
 - 3. Select Type = Local database
 - 4. Select Name = training
 - 5. Select Authentication = "IAM Authentication"
 - 6. Paste the api key you copied earlier in the IAM API Key textbox.
 - 7.
 - 8. Under Target
 - 9. Select Type = New local database
 - 10. Select Name = training_replica
 - 11. Select Authentication = "IAM Authentication"
 - 12. Paste the api key you copied earlier in the IAM API Key textbox.
 - 13.
 - 14. Under Options:
 - 15. Select Type = Continuous
 - 16.

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Step 5: Click on Start Replication.

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Job Configuration

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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)

⚙️ Start Replication

Clear

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

9 of 14

10/11/2023, 8:16 PM

Replication

Replicator DB Activity _replicate Activity

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

Filter replications

New Replication

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

Log Out

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

Databases

Database name

Create Database

{ } JSON

Your Databases

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

Log Out

Showing 1–3 of 3 databases. Databases per page 20 « 1 »

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

The screenshot shows the 'training_replica' database interface. On the left is a sidebar with navigation icons and a 'Log Out' button. The main area displays a table with the following data:

Lesson	Topic	_id
IBM Cloudant	NoSQL Databases	1

At the bottom, it indicates 'Showing 3 of 4 columns.' and 'Showing document 1 - 1. Documents per page: 20'.

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 'Replication' page. At the top, there's a 'Polling Interval' set to '5 minutes' and a 'Refresh' button. Below this, a message states: 'Replications must have a replication document to display in the following table.' A 'Filter replications' button is present. The table below shows one replication task:

Source	Target	Start Time	Type	State	Actions
https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training	https://4646e655-6aee-42d8-8b93-d2bde6e9a6ca-bluemix.cloudant.com/training_replica	Apr 12th, 4:11 pm	Continuous	Running	

A blue arrow points to the 'Filter replications' button.

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					
Polling Interval 15 seconds					
All Tasks Replication Database Compaction Indexer View Compaction Search for databases...					
Type	Database	Started on	Updated on	PID	Status
replication	From: https://36367611-57ef-46cd-af46-496f14aca2b0-buolmx.cloudant.com/orders/ To: https://36367611-57ef-46cd-af46-496f14aca2b0-buolmx.cloudant.com/orders-replica/	Jun 9th, 10:34:20 am a minute ago	Jun 9th, 10:35:40 am a few seconds ago	0.27050.5142	7341 docs written, 44301 pending changes.
indexer	shards/00000000-4ffmfc3360611-57ef-46cd-af46-496f14aca2b0-buolmx/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/00000000-4ffmfc3360611-57ef-46cd-af46-496f14aca2b0-buolmx/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/00000000-4ffmfc3360611-57ef-46cd-af46-496f14aca2b0-buolmx/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/00000000-4ffmfc3360611-57ef-46cd-af46-496f14aca2b0-buolmx/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	0.25474.5145	Progress: 91% Processed 2929 of 3187 changes. 2929 Changes done.
indexer	shards/00000000-4ffmfc3360611-57ef-46cd-af46-496f14aca2b0-buolmx/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	0.23832.5145	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 Interval 15 seconds

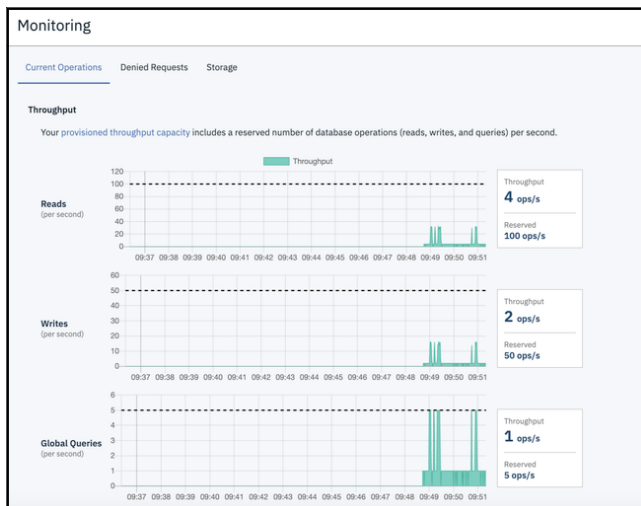
{ } JSON

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

Type	Database	Started on	Updated on	PID	Status
No active tasks					

Log Out

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.

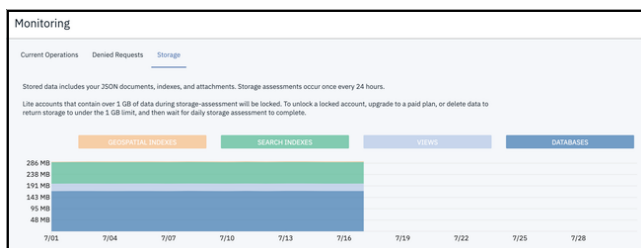
Here is a sample monitoring view for Denied Requests. Whenever we perform more reads or writes than our plan allows, those requests will be denied and shown here.



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

On the Cloudant dashboard, click on the Databases icon, click on Add Database.

2. Problem:

Insert a sample document.

▼ Click here for Hint

Remember the `_id` key is mandatory.

Click on **test** on the databases screen. Click on Create Document. Replace the default text with the following JSON and click Create Document.

```
1. 1
2. 2
3. 3
4. 4
5. 5

1. {
2.   "_id": "1",
3.   "Topic": "NoSQL Databases",
4.   "Lesson": "MongoDB"
5. }
```

Copied!

3. Problem:

Setup continuous replication between test and test_replica databases.

▼ Click here for Hint

Keep you api key handy.
Go to the replication page.
Click on New Replication.
Select these details.

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10
```

- 11. 11
 - 12. 12
 - 13. 13
 - 14. 14
 - 15. 15
 - 16. 16
-
- 1.
 - 2. Under Source
 - 3. Select Type = Local Database
 - 4. Select Name = test
 - 5. Select Authentication = "IAM Authentication"
 - 6. Paste the api key you copied earlier in the IAM API Key textbox.
 - 7.
 - 8. Under Target
 - 9. Select Type = Local Database
 - 10. Select Name = test_replica
 - 11. Select Authentication = "IAM Authentication"
 - 12. Paste the api key you copied earlier in the IAM API Key textbox.
 - 13.
 - 14. Under Options:
 - 15. Select Type = Continuous
 - 16.

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4. Problem:

Find out if any denied requests were denied.

▼ Click here for Hint

Go to the monitoring page.
Click on denied requests.

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Change Log

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2021-10-25	0.4	Kathy An	Updated lab instructions
2021-04-28	0.3	Steve Ryan	Changed IBM cloud links to markdown format
2021-04-13	0.2	Steve Ryan	Review pass
2021-04-11	0.1	Ramesh Sannareddy	Created initial version of the lab

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