Fundamentos de MongoDB Enterprise 4.4.1

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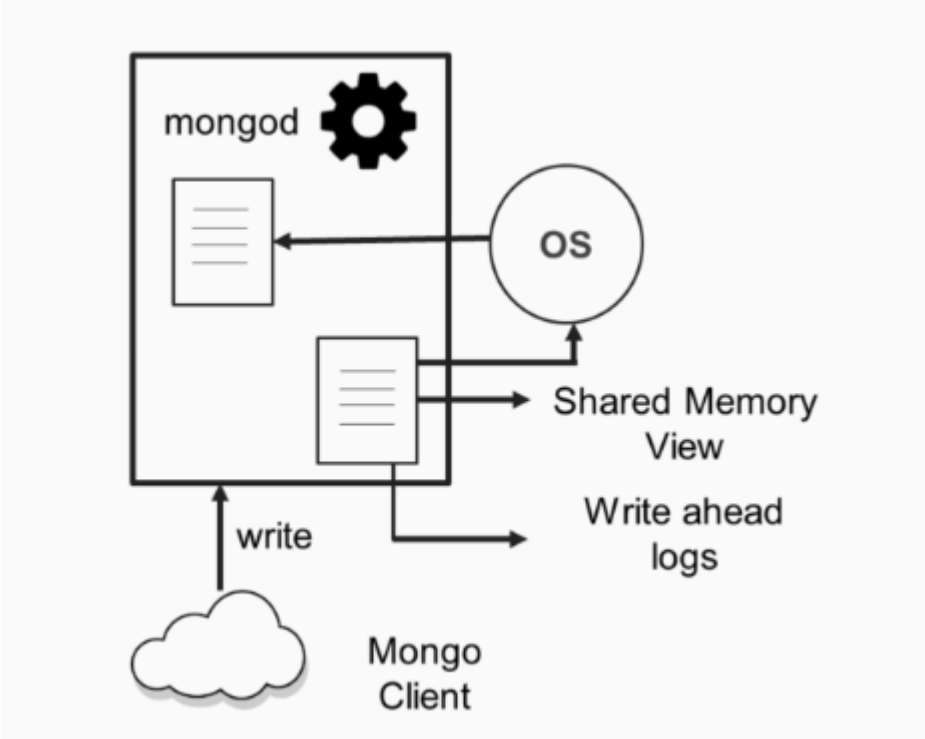
Unidad 8 Gestión del Control de Acceso, Backup y Restore

Fundamentos de MongoDB Enterprise 4.4.0

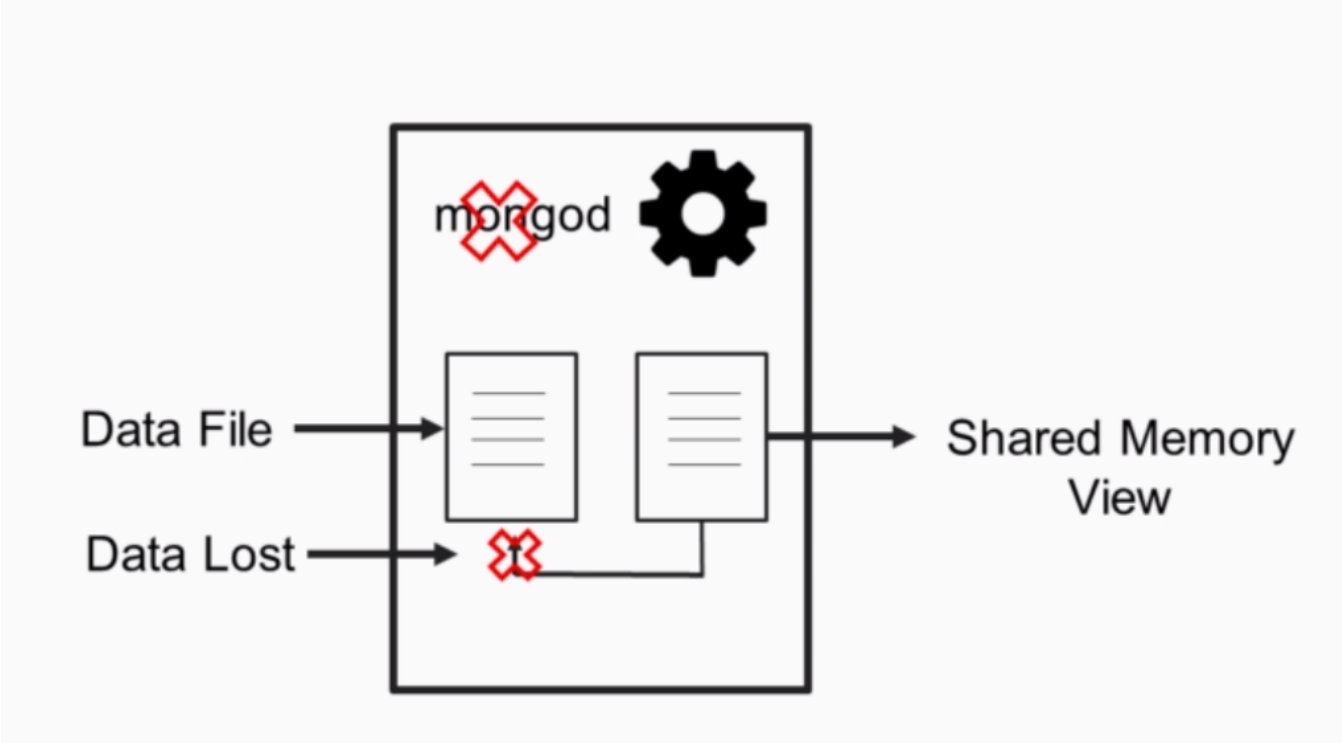
Working with out Journaling

- Arquitectura por defecto de mongoDB



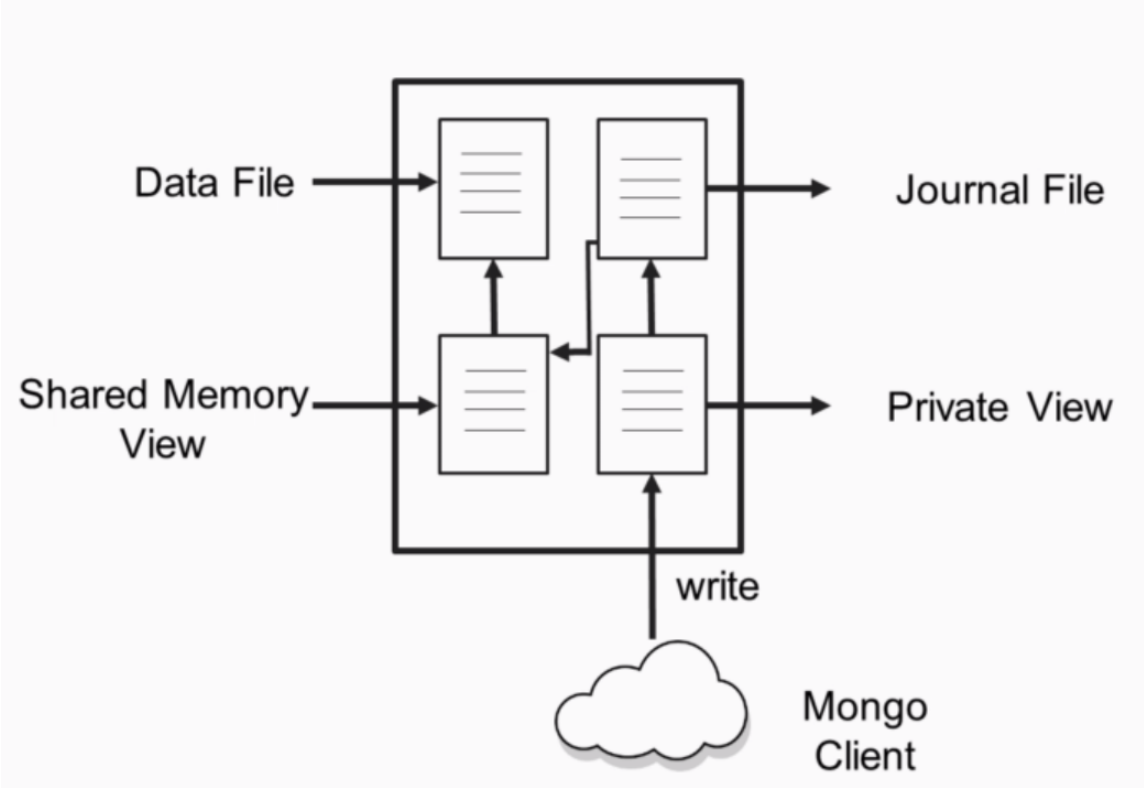
Working with out Journaling

- En una caída del servidor se podría perder datos



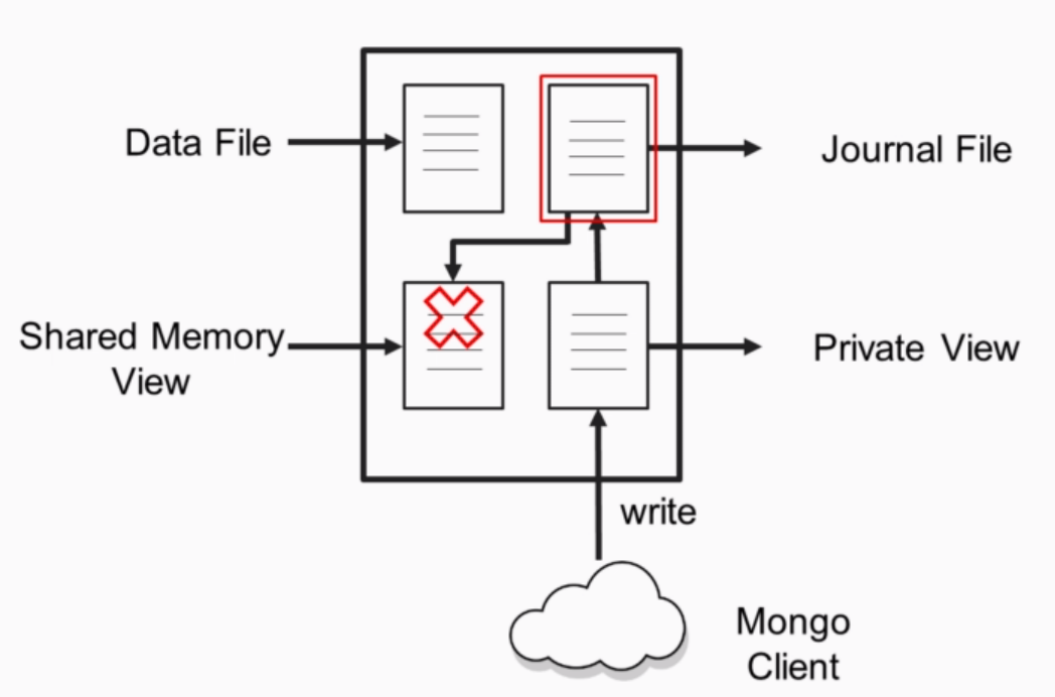
Working with Journaling

- En este caso se crean journal files que contienen una copia del log, utilizando un private view



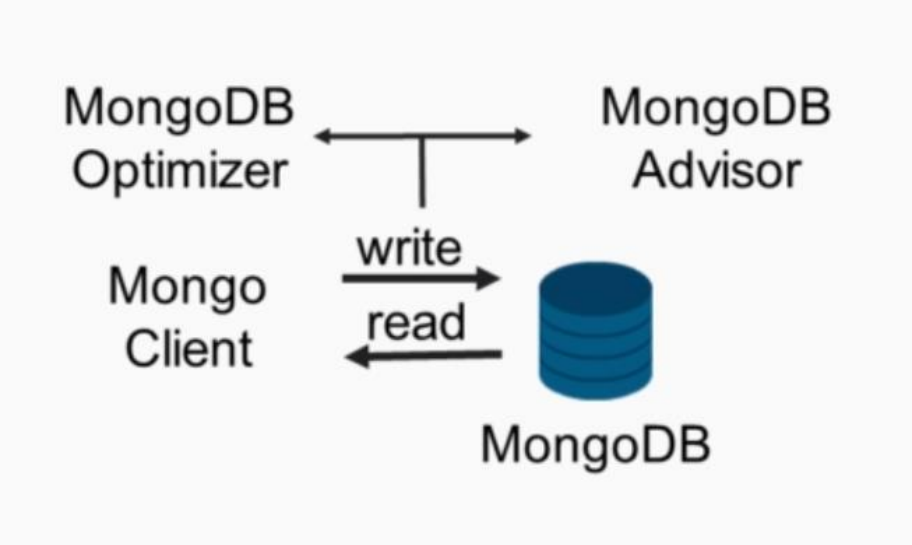
Working with Journaling

- En caso de una caída el journal file contiene una copia y puede actualizar el shared memory view



Discovering Importance of Profiler

- Por defecto MongoDB no muestra información adicional acerca de una consulta a los datos



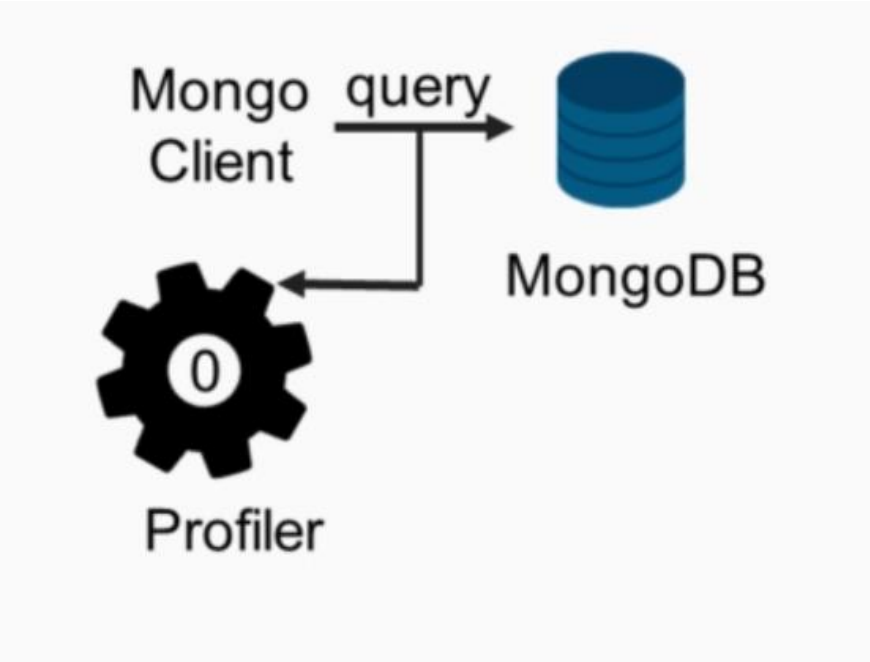
Profiles and Level - RESUME

- Estos son los niveles del profile en MongoDB

Level	Description
`0`	The profiler is off and does not collect any data. This is the default profiler level.
`1`	The profiler collects data for operations that take longer than the value of `slowms`.
`2`	The profiler collects data for all operations.

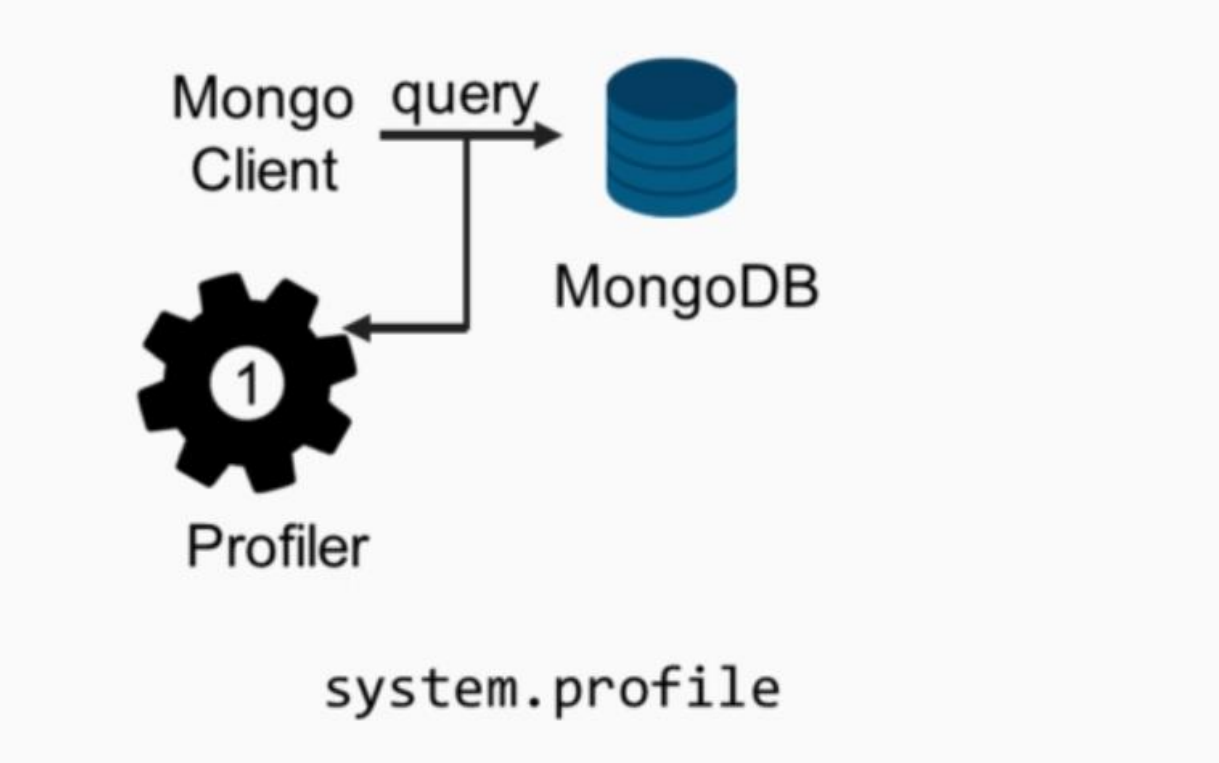
Profiles and Levels – Level CERO

- El profiler en el nivel CERO no obtiene datos adicionales de la consulta



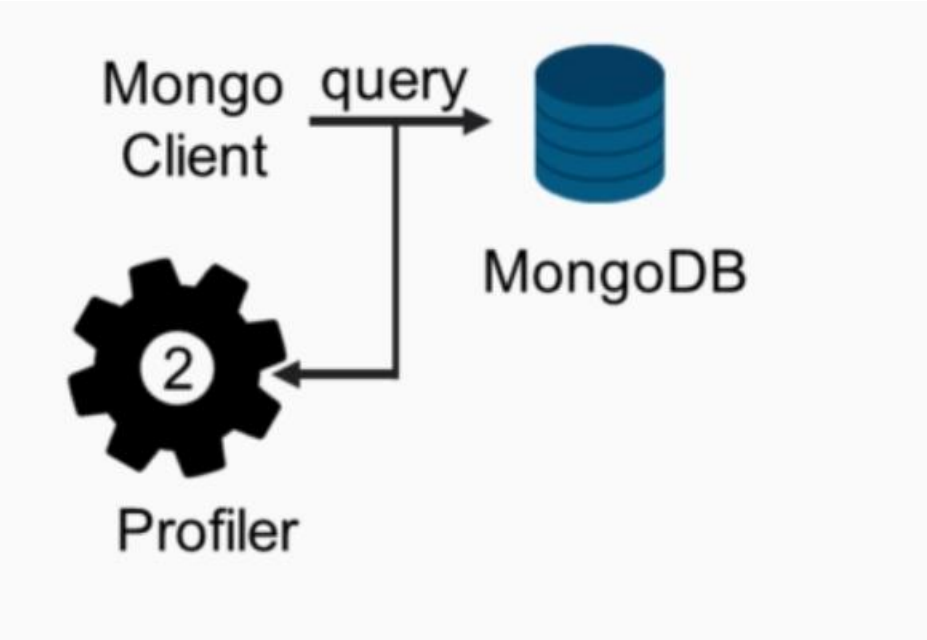
Profiles and Levels – Level ONE

- En el nivel UNO el profile trae datos adicionales de la consulta dentro de un limite dado, estos se almacenan en la colección **system.profile**



Profiles and Levels – Level TWO

- En el nivel DOS el profiler obtiene datos de la performance de la consulta ejecutándose en ambiente de cluster, estos datos se guardan en la colección system.profile



Database Profiler

- Activando el profiler, por defecto slowns tiene el valor de 100 millis

```
db.setProfilingLevel(2)
```

- Definiendo un valor de slowns

```
db.setProfilingLevel(1, { slowms: 20 })
```

- Conociendo el estado y nivel del profiler

```
db.getProfilingStatus()
db.getProfilingLevel()
```

- Deshabilitando el profiler
- `db.setProfilingLevel(0)`

Query Profiler

- Consultando el profiler

```
db.system.profile.find().limit(10).sort( { ts : -1 } ).pretty()
db.system.profile.find( { ns : 'mydb.test' } ).pretty()
db.system.profile.find( { millis : { $gt : 5 } } ).pretty()
```

Profiler Size

- Por defecto el profiler tiene un tamaño de 1 M, puedes cambiar el tamaño a 4M por ejemplo, con el siguiente procedimiento:

```
db.setProfilingLevel(0)
db.system.profile.drop()
db.createCollection( "system.profile", { capped: true, size:4000000 } )
db.setProfilingLevel(1)
```

Practicing MongoDB Backup and Restore Techniques

- **mongodump** es una utilidad para crear una exportación binaria de los contenidos de una base de datos.
- **mongodump** puede exportar datos de instancias mongod o mongos; es decir, puede exportar datos desde implementaciones de sharding clúster y standalone servers.

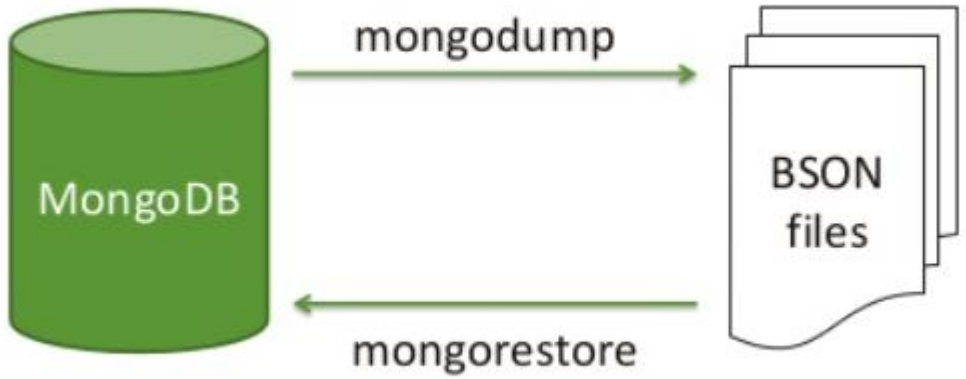
Mongodump exporting data

- Realizando un backup con mongodump

```
[admin@odiseo ~]$ mongodump  --host "odiseo.example.com" --port 27020 --out backup
2019-11-03T08:15:18.842-0500    writing admin.system.version to
2019-11-03T08:15:18.843-0500    done dumping admin.system.version (1 document)
2019-11-03T08:15:18.843-0500    writing devdb.cars to
2019-11-03T08:15:18.843-0500    writing proddb.employees to
2019-11-03T08:15:18.843-0500    writing test.cars to
2019-11-03T08:15:18.845-0500    done dumping devdb.cars (2 documents)
2019-11-03T08:15:18.846-0500    done dumping test.cars (1 document)
2019-11-03T08:15:18.846-0500    done dumping proddb.employees (2 documents)
[admin@odiseo ~]$ ls -l backup/
total 0
drwxrwxr-x 2 admin admin 69 Nov  3 08:15 admin
drwxrwxr-x 2 admin admin 49 Nov  3 08:15 devdb
drwxrwxr-x 2 admin admin 59 Nov  3 08:15 proddb
drwxrwxr-x 2 admin admin 49 Nov  3 08:15 test
[admin@odiseo ~]$
```

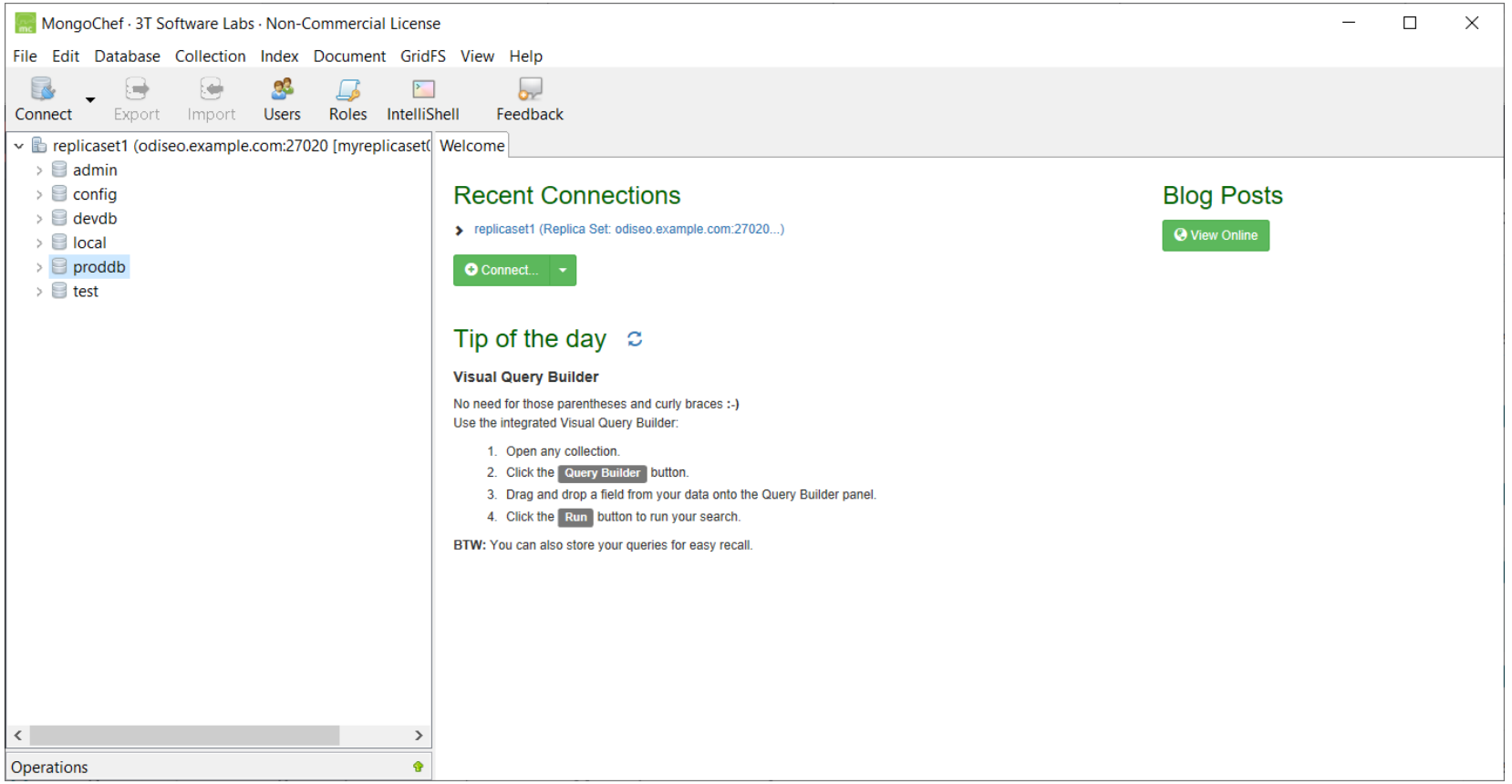
Practicing MongoDB Backup and Restore Techniques

- El programa **mongorestore** carga datos de un volcado de base de datos binario creado por mongodump o la entrada estándar (a partir de la versión 3.0.0) en una instancia de mongod o mongos.



Drop database

- Elimina la base de datos “proddb”



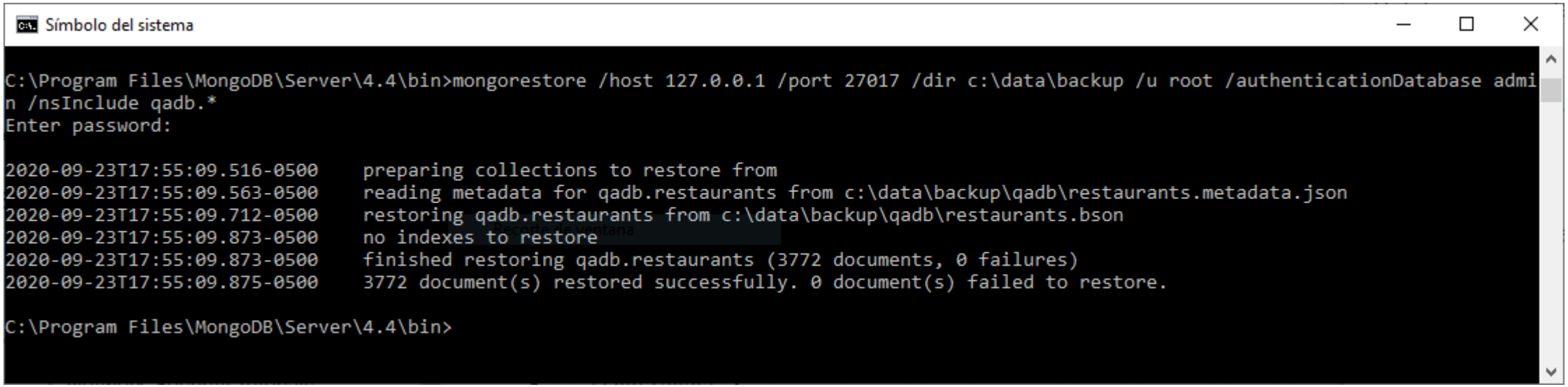
Restore Database

- Restaura la base de datos “proddb” con mongorestore

```
[admin@odiseo ~]$ mongorestore  --host "odiseo.example.com" --port 27020  backup
2019-11-03T08:24:48.492-0500    preparing collections to restore from
2019-11-03T08:24:48.493-0500    restoring to existing collection proddb.employees without dropping
2019-11-03T08:24:48.493-0500    reading metadata for proddb.employees from backup/proddb/employees.metadata.json
2019-11-03T08:24:48.493-0500    restoring proddb.employees from backup/proddb/employees.bson
2019-11-03T08:24:48.496-0500    restoring to existing collection devdb.cars without dropping
2019-11-03T08:24:48.496-0500    reading metadata for devdb.cars from backup/devdb/cars.metadata.json
2019-11-03T08:24:48.497-0500    restoring devdb.cars from backup/devdb/cars.bson
2019-11-03T08:24:48.499-0500    restoring to existing collection test.cars without dropping
2019-11-03T08:24:48.499-0500    reading metadata for test.cars from backup/test/cars.metadata.json
2019-11-03T08:24:48.499-0500    restoring test.cars from backup/test/cars.bson
2019-11-03T08:24:48.500-0500    continuing through error: E11000 duplicate key error collection: proddb.employees index:
2019-11-03T08:24:48.500-0500    continuing through error: E11000 duplicate key error collection: proddb.employees index:
2019-11-03T08:24:48.500-0500    no indexes to restore
2019-11-03T08:24:48.500-0500    finished restoring proddb.employees (0 documents, 2 failures)
2019-11-03T08:24:48.503-0500    continuing through error: E11000 duplicate key error collection: devdb.cars index: _id_
2019-11-03T08:24:48.503-0500    continuing through error: E11000 duplicate key error collection: devdb.cars index: _id_
2019-11-03T08:24:48.503-0500    no indexes to restore
2019-11-03T08:24:48.503-0500    finished restoring devdb.cars (0 documents, 2 failures)
2019-11-03T08:24:48.503-0500    continuing through error: E11000 duplicate key error collection: test.cars index: _id_ c
2019-11-03T08:24:48.503-0500    no indexes to restore
2019-11-03T08:24:48.503-0500    finished restoring test.cars (0 documents, 1 failure)
2019-11-03T08:24:48.503-0500    0 document(s) restored successfully. 5 document(s) failed to restore.
[admin@odiseo ~]$
```

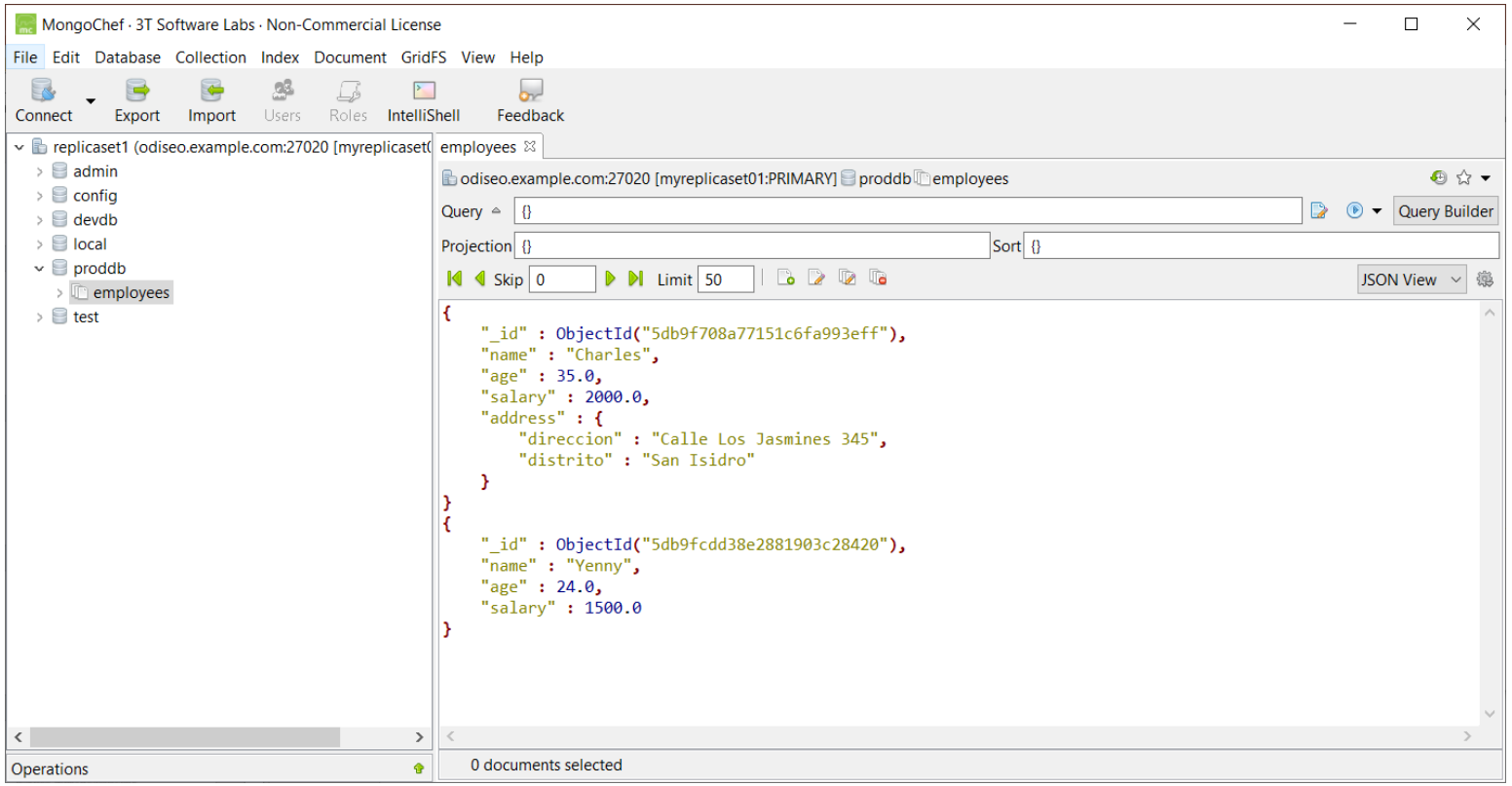
Restore MongoDB 4.4

- Se ha depreciado /db por /nsInclude



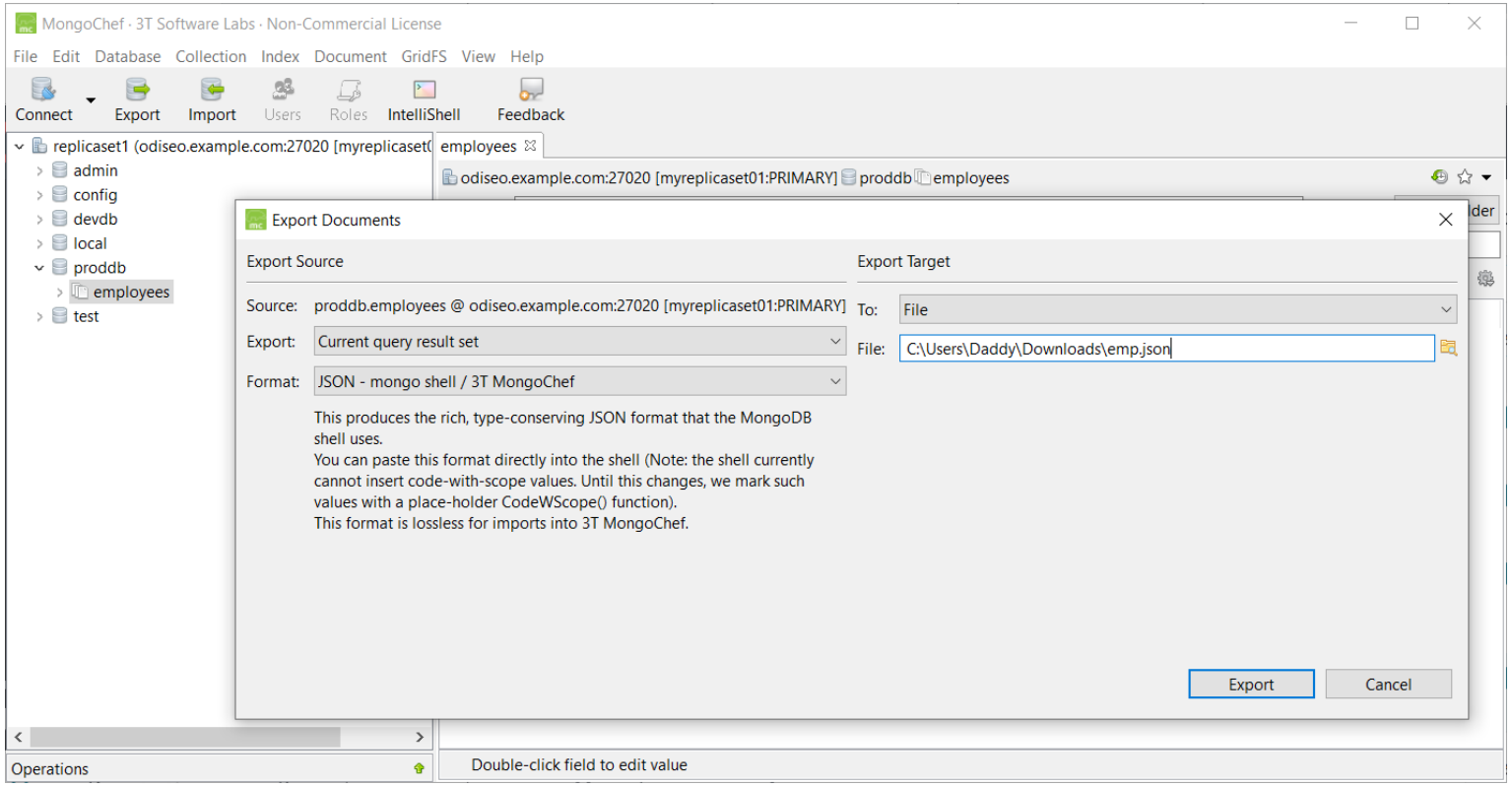
Check Restore Database

- Verifica que la base de datos “proddb”, se haya recuperado



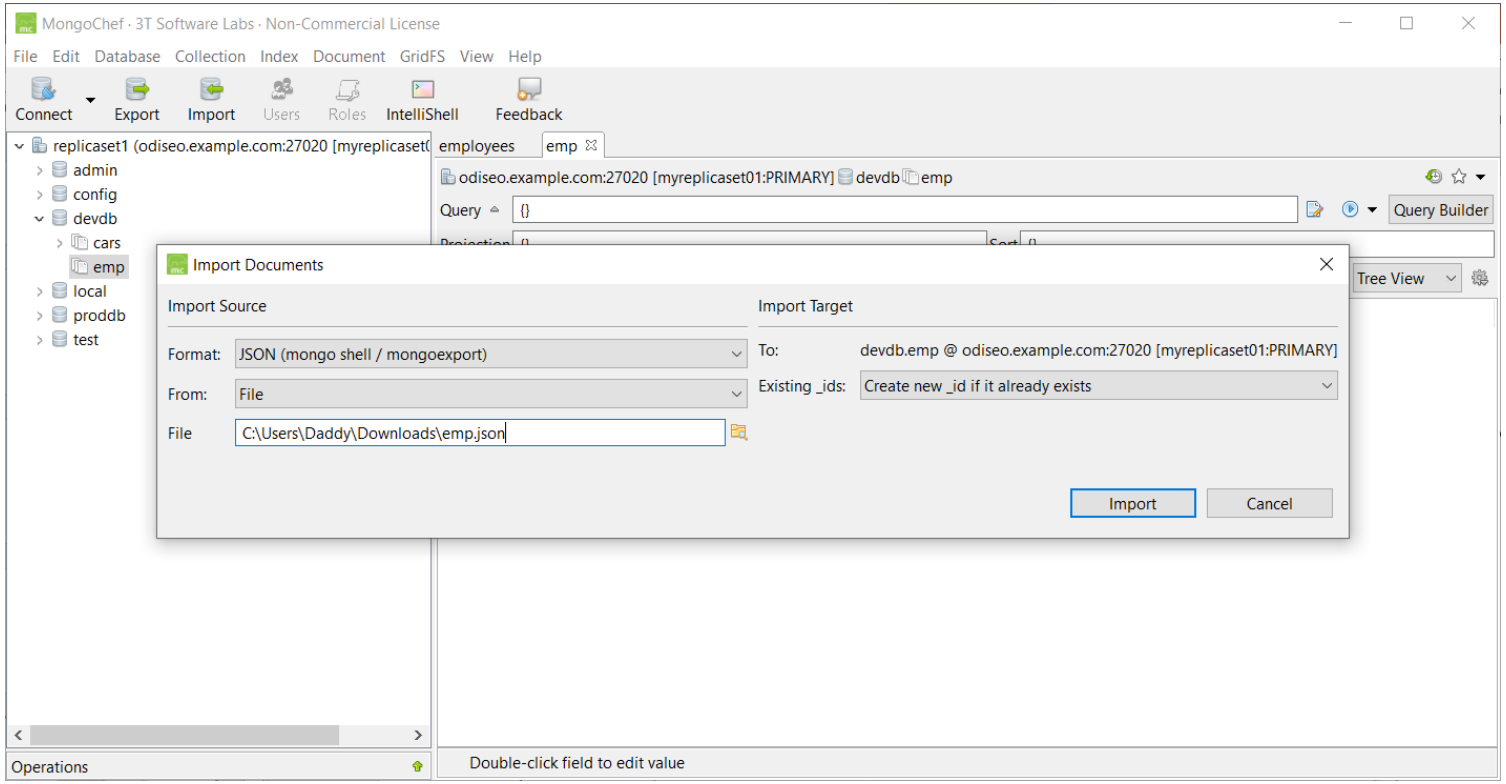
Exporting Data

- Usando Mongochef puedes exportar colecciones de documentos



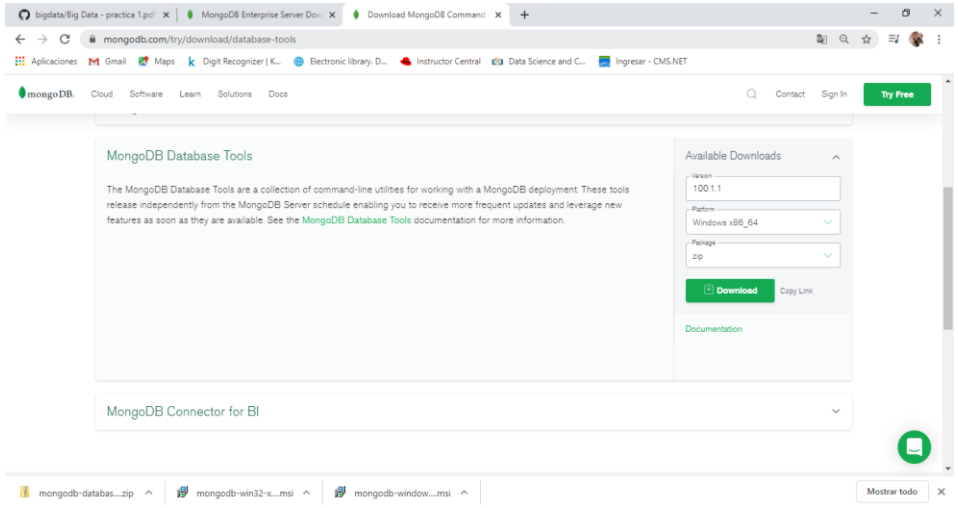
Import Data

- Crea la colección e importa datos usando Mongochef



MongoDB: Database Tools

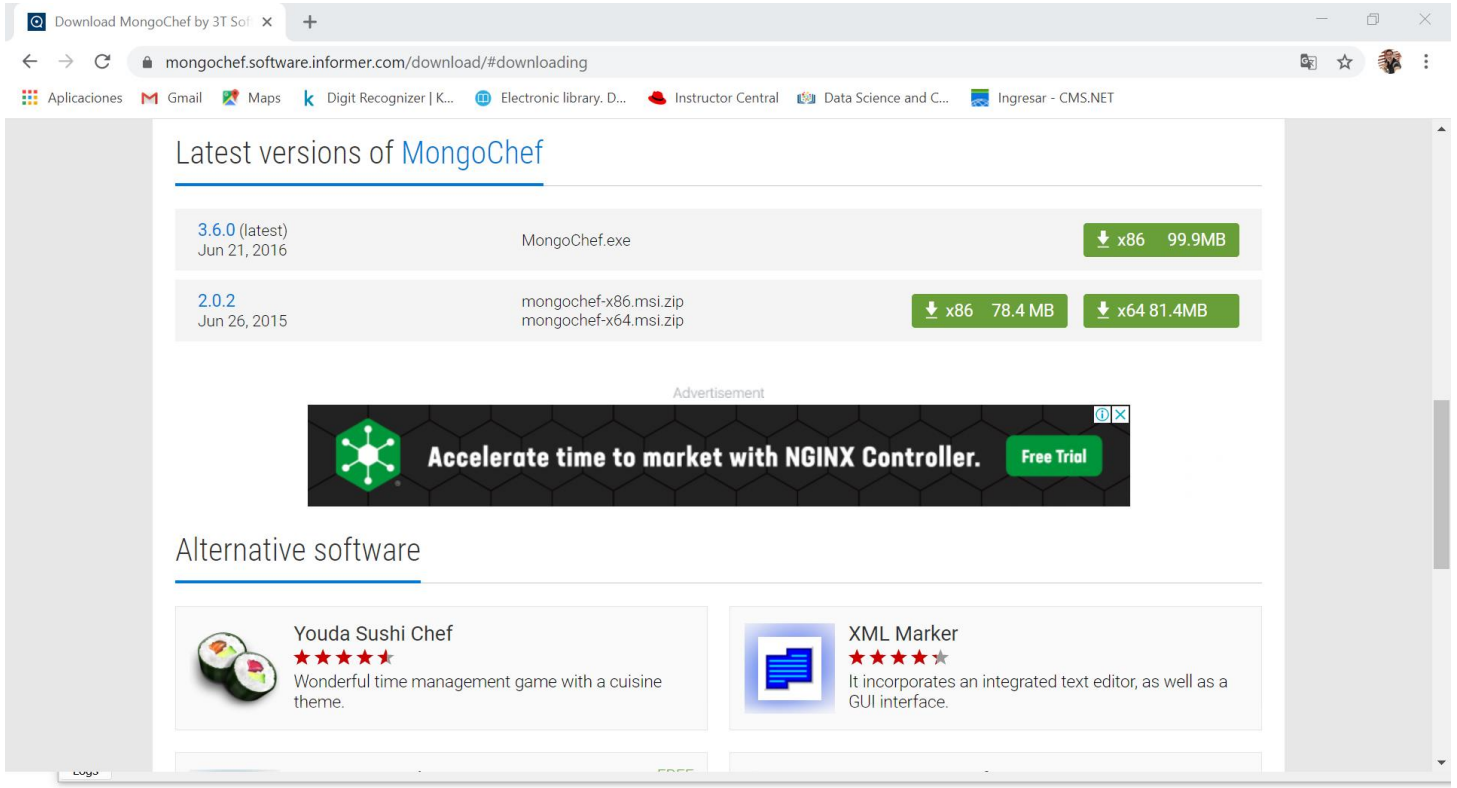
- Download Database Tools (https://www.mongodb.com/try/download/database-tools)
- Descomprimir
- Copiar los archivos /bin al directorio /bin de MongoDB



MongoChef

- GUI Administración Import/Export

https://mongochef.software.informer.com/download/#downloading



Enable Access Control

- Conéctate a una instancia sin autenticación
- Crea el usuario administrador

```
use admin
db.createUser(
  {
    user: "myUserAdmin",
    pwd: passwordPrompt(), // o texto claro
    roles: [ { role: "userAdminAnyDatabase", db: "admin" },
"readWriteAnyDatabase" ]
  }
)
```

Enable Access Control

- Detén la instancia

```
db.adminCommand( { shutdown: 1 } )
```

- Inicia la instancia con autenticación

```
mongod --auth --port 27017 --dbpath /var/lib/mongodb
```

- Conéctate y authenticate con el usuario

```
mongo --port 27017  --authenticationDatabase "admin" -u "myUserAdmin" -p
```

Authenticate User with admin database

- Conectate a la instancia

```
$mongo –port 27017
```

- Cambia a la base de datos admin y autenticate

```
use admin
db.auth(“myUserAdmin”,”<password>”);
```

Enable Access Control with Configuration File

- Edita el archivo de configuración de la instancia /etc/mongod.conf

root@odiseo:~

```
storage:
  dbPath: /var/lib/mongo
  journal:
    enabled: true
#  engine:
#  wiredTiger:

# how the process runs
processManagement:
  fork: true  # fork and run in background
  pidFilePath: /var/run/mongodb/mongod.pid  # location of pidfile
  timeZoneInfo: /usr/share/zoneinfo

# network interfaces
net:
  port: 27017
  bindIp: 0.0.0.0  # Enter 0.0.0.0,:: to bind to all IPv4 and IPv6 addresses or, alternative
ly, use the net.bindIpAll setting.


security:
  authorization: enabled
#operationProfiling:

#replication:

#sharding:

## Enterprise-Only Options

#auditLog:

#snmp:
```

mongoDB

Exploring User Roles and Authorization

- db.createUser(..)
- db.changeUserPassword(..)
- db.auth(..)
- db.dropUser(..)
- db.dropAllUsers

Built-In Roles

- Database user roles
  - read
  - readWrite
- Database Administration Roles
  - dbAdmin
  - dbOwner
  - userAdmin
- Cluster Administrator Roles
  - clusterAdmin
  - clusterManager
  - clusterMonitor
  - hostManager

Built-In Roles

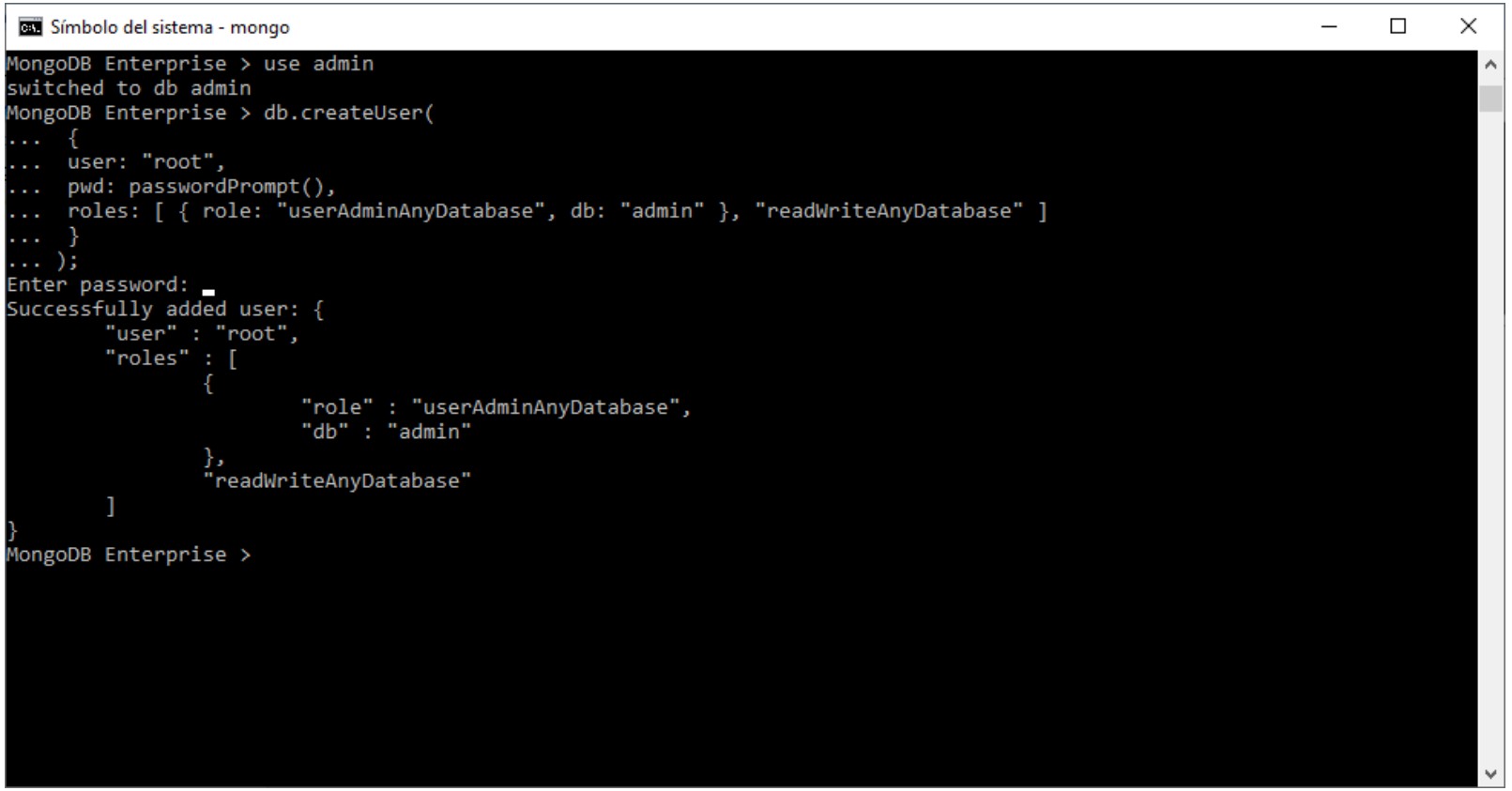
- Backup and restore roles
  - backup
  - restore
- All Database Role
  - readAnyDatabase
  - readWriteAnyDatabase
  - userAdminAnyDatabase
  - dbAdminAnyDatabase
- Super User Roles
  - root

Creating Additional Users

```
use test
db.createUser(
  {
    user: "myTester",
    pwd:  passwordPrompt(),   // o texto claro
    roles: [ { role: "readWrite", db: "test" },
             { role: "read", db: "reporting" } ]
  }
)
```

Create User root

- User root in MongoDB



Testing User

- Conectate con el nuevo usuario

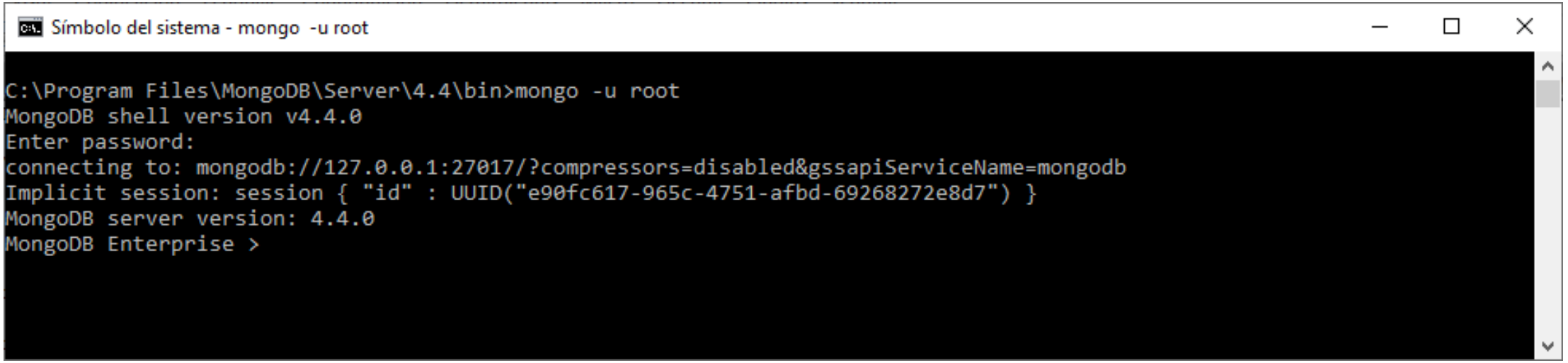
```
$mongo --port 27017 -u "myTester" --authenticationDatabase "test" -p
```

- Inserta datos

```
db.foo.insert( { x: 1, y: 1 } )
```

Test Authentication

- user root authentication



Collections Roles

- Collections roles and privileges

```
db.createRole({role:'role_people',
        privileges:[{resource:{db:'devmongodb', collection:'people'},
                actions: ['find','remove','insert','update']}],
            roles: []});

db.createUser({user: 'developer',
                pwd: 'mongodb4',
            roles: [{role: "role_people",db: "devmongodb"}]
          });
```

Practica

- Practica 8 Gestión del Control de Acceso, Backup y Restore

Referencias

- https://docs.mongodb.com/manual/core/journaling/
- https://docs.mongodb.com/manual/tutorial/manage-the-database-profiler/
- https://docs.mongodb.com/manual/reference/program/mongodump/
- https://docs.mongodb.com/manual/reference/program/mongorestore/
- https://www.php.net/manual/es/mongo.writeconcerns.php
- https://antoniofernandez.com/seguridad-mongodb-produccion/
- https://parzibyte.me/blog/2018/12/11/autenticacion-administrador-mongodb/
- https://www.guru99.com/top-20-mongodb-tools.html
- https://askubuntu.com/questions/420981/how-do-i-save-terminal-output-to-a-file