



TECNOLÓGICO NACIONAL DE MÉXICO

Instituto Tecnológico de Culiacán

Administración de Base de Datos

Replicación

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Paso 1: Creé las carpetas donde MongoDB guardara los datos.

```
C:\Users\Omar>mkdir C:\datos  
  
C:\Users\Omar>mkdir C:\datos\nodo4  
  
C:\Users\Omar>mkdir C:\datos\nodo5  
  
C:\Users\Omar>mkdir C:\datos\nodo6
```

Este equipo > Local Disk (C:) > datos

Nombre

📁 nodo4

📁 nodo5

📁 nodo6

Utilice estos comandos, uno en cada cmd.

```
mongod --replSet rs0 --port 27017 --bind_ip 127.0.0.1 --dbpath C:\datos\nodo4 --oplogSize 120
```

```
mongod --replSet rs0 --port 27018 --bind_ip 127.0.0.1 --dbpath C:\datos\nodo5 --oplogSize 120
```

```
mongod --replSet rs0 --port 27019 --bind_ip 127.0.0.1 --dbpath C:\datos\nodo6 --oplogSize 120
```

Nodo 4 – Puerto 27017

```

[1] Simbolo del sistema - mongod --replicet rs0 --port 27017 --bind_ip 127.0.0.1 --dbpath C:\datos\nodoc --oplogSize 120

In $collStats stage : caused by : Collection [local.oplog.rs] not found., "stats": {}, "cmd": {"aggregate": "oplog.rs",
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "sdb": "local"}],
{"t": {"$date": "2025-10-13T14:57:00.000-06:00"}, "s": "w", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
In $collStats stage : caused by : Collection [local.oplog.rs] not found.", "stats": {}, "cmd": {"aggregate": "oplog.rs",
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "sdb": "local"}],
{"t": {"$date": "2025-10-13T14:57:10.000-06:00"}, "s": "w", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
In $collStats stage : caused by : Collection [local.oplog.rs] not found.", "stats": {}, "cmd": {"aggregate": "oplog.rs",
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "sdb": "local"}],
{"t": {"$date": "2025-10-13T14:57:11.000-06:00"}, "s": "w", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
In $collStats stage : caused by : Collection [local.oplog.rs] not found.", "stats": {}, "cmd": {"aggregate": "oplog.rs",
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "sdb": "local"}],
{"t": {"$date": "2025-10-13T14:57:12.000-06:00"}, "s": "w", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
In $collStats stage : caused by : Collection [local.oplog.rs] not found.", "stats": {}, "cmd": {"aggregate": "oplog.rs",
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "sdb": "local"}],
{"t": {"$date": "2025-10-13T14:57:13.000-06:00"}, "s": "w", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
In $collStats stage : caused by : Collection [local.oplog.rs] not found.", "stats": {}, "cmd": {"aggregate": "oplog.rs",
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "sdb": "local"}],
{"t": {"$date": "2025-10-13T14:57:13.196-06:00"}, "s": "w", "c": "QUERY", "id": 4939308, "ctx": "monitoring-keys-for-HMAC",
"msg": "Failed to refresh key cache", "attr": {"error": "ReadConcernMajorityNotAvailableYet: Read concern majority reads are
currently not possible.", "nextRefreshIntervalMillis": 5600},
{"t": {"$date": "2025-10-13T14:57:14.000-06:00"}, "s": "w", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
In $collStats stage : caused by : Collection [local.oplog.rs] not found.", "stats": {}, "cmd": {"aggregate": "oplog.rs",
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "sdb": "local"}],

```

Nodo 5 – Puerto 27018

```
Simbolo del sistema - mongod --replSet rs0 --port 27018 --bind_ip 127.0.0.1 --dbpath C:\datos\nodo5 --oplogSize 120
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
{"t": {"$date": "2025-10-23T14:57:27.001-06:00"}, "s": "W", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
{"t": {"$date": "2025-10-23T14:57:28.001-06:00"}, "s": "W", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
{"t": {"$date": "2025-10-23T14:57:29.000-06:00"}, "s": "W", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
{"t": {"$date": "2025-10-23T14:57:29.095-06:00"}, "s": "W", "c": "SHARDING", "id": 7012500, "ctx": "QueryAnalysisConfiguration
sRefresher", "msg": "Failed to refresh query analysis configurations, will try again at the next interval", "attr": {"error":
"PrimarySteppedDown: No primary exists currently"}}
{"t": {"$date": "2025-10-23T14:57:29.653-06:00"}, "s": "I", "c": "-", "id": 4939300, "ctx": "monitoring-keys-for-HMAC",
"msg": "Failed to refresh key cache", "attr": {"error": "ReadConcernMajorityNotAvailableYet: Read concern majority reads are
currently not possible.", "nextRefreshIntervalMillis": 4600}}
{"t": {"$date": "2025-10-23T14:57:30.002-06:00"}, "s": "W", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
{"t": {"$date": "2025-10-23T14:57:31.002-06:00"}, "s": "W", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
```

Nodo 6 – Puerto 27019

```
Simbolo del sistema - mongod --replSet rs0 --port 27019 --bind_ip 127.0.0.1 --dbpath C:\datos\nodo6 --oplogSize 120
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found.", "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
{"t": {"$date": "2025-10-23T14:57:51.843-06:00"}, "s": "I", "c": "-", "id": 4939300, "ctx": "monitoring-keys-for-HMAC",
"msg": "Failed to refresh key cache", "attr": {"error": "ReadConcernMajorityNotAvailableYet: Read concern majority reads are
currently not possible.", "nextRefreshIntervalMillis": 4800}}
{"t": {"$date": "2025-10-23T14:57:52.003-06:00"}, "s": "W", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
{"t": {"$date": "2025-10-23T14:57:52.103-06:00"}, "s": "I", "c": "WCHKPT", "id": 22430, "ctx": "Checkpoint", "msg": "Wired
Tiger message", "attr": {"message": {"ts_sec": 1761253072, "ts_usec": 102559, "thread": "13192:140719385041040", "session_name": "
WT_SESSION.checkpoint", "category": "WT_VERB_CHECKPOINT_PROGRESS", "log_id": 1000000, "category_id": 7, "verbose_level": "INFO",
"verbose_level_id": 0, "msg": "saving checkpoint snapshot min: 47, snapshot max: 47 snapshot count: 0, oldest timestamp: (6
0), meta checkpoint timestamp: (0, 0) base write gen: 1"}}}
{"t": {"$date": "2025-10-23T14:57:52.577-06:00"}, "s": "W", "c": "SHARDING", "id": 7012500, "ctx": "QueryAnalysisConfiguration
sRefresher", "msg": "Failed to refresh query analysis configurations, will try again at the next interval", "attr": {"error":
"PrimarySteppedDown: No primary exists currently"}}
{"t": {"$date": "2025-10-23T14:57:53.000-06:00"}, "s": "W", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
{"t": {"$date": "2025-10-23T14:57:54.001-06:00"}, "s": "W", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
{"t": {"$date": "2025-10-23T14:57:55.006-06:00"}, "s": "W", "c": "QUERY", "id": 23799, "ctx": "ftdc", "msg": "Aggregate com
mand executor error", "attr": {"error": {"code": 26, "codeName": "NamespaceNotFound", "errmsg": "Unable to retrieve storageStats
in $collStats stage :: caused by :: Collection [local.oplog.rs] not found."}, "stats": {}, "cmd": {"aggregate": "oplog.rs", "
cursor": {}, "pipeline": [{"collStats": {"storageStats": {"waitForLock": false, "numericOnly": true}}}], "$db": "local"}}}
```

Paso 3: Iniciamos el Replica Set

- Me conecte al primer nodo con el MongoDB Shell, con el siguiente comando:

```
cd "C:\Program Files\MongoDB\mongosh-2.5.8-win32-x64\bin"
```

```
mongosh --port 27017
```

```
C:\Windows\system32>cd "C:\Program Files\MongoDB\mongosh-2.5.8-win32-x64\bin"
C:\Program Files\MongoDB\mongosh-2.5.8-win32-x64\bin>mongosh --port 27017
Current Mongosh Log ID: 68faa15f911ce98bcecebea3
Connecting to:      mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000&appName=mongosh+2.5.8
Using MongoDB:      8.2.1
Using Mongosh:       2.5.8

For mongosh info see: https://www.mongodb.com/docs/mongosh-shell/

-----
  The server generated these startup warnings when booting
  2025-10-23T15:42:12.747-06:00: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted
-----
```

- Ejecuté el siguiente comando para iniciar el Replica Set:

```
rs.initiate({
  _id: "rs0",
  members: [
    { _id: 0, host: "127.0.0.1:27017" },
    { _id: 1, host: "127.0.0.1:27018" },
    { _id: 2, host: "127.0.0.1:27019" }
  ]
})
```

```
test> rs.initiate({_id:"rs0", members: [{_id: 0, host: "127.0.0.1:27017" },{_id: 1, host: "127.0.0.1:27018" },{_id:2, host: "127.0.0.1:27019" }
]])
{
  ok: 1,
  '$clusterTime': {
    clusterTime: Timestamp({ t: 1761255778, i: 1 }),
    signature: {
      hash: Binary.createFromBase64('AAAAAAAAAAAAAAAAAAAAAAAAAAAA=', 0),
      keyId: Long('0')
    }
  },
  operationTime: Timestamp({ t: 1761255778, i: 1 })
}
rs0 [direct: secondary] test>
```

- Verifique el estado con `rs.status()`

```
members: [
  {
    _id: 0,
    name: '127.0.0.1:27017',
    health: 1,
    state: 1,
    stateStr: 'PRIMARY',
    uptime: 186,
    optime: { ts: Timestamp({ t: 1761255909, i: 1 }), t: Long('1') },
    optimeDate: ISODate('2025-10-23T21:45:09.000Z'),
    optimeWritten: { ts: Timestamp({ t: 1761255909, i: 1 }), t: Long('1') },
    optimeWrittenDate: ISODate('2025-10-23T21:45:09.000Z'),
    lastAppliedWallTime: ISODate('2025-10-23T21:45:09.374Z'),
    lastDurableWallTime: ISODate('2025-10-23T21:45:09.374Z'),
    lastWrittenWallTime: ISODate('2025-10-23T21:45:09.374Z'),
    syncSourceHost: '',
    syncSourceId: -1,
    infoMessage: '',
    electionTime: Timestamp({ t: 1761255789, i: 1 }),
    electionDate: ISODate('2025-10-23T21:43:09.000Z'),
    configVersion: 1,
    configTerm: 1,
    self: true,
    lastHeartbeatMessage: ''
  },

```

```
_id: 1,
name: '127.0.0.1:27018',
health: 1,
state: 2,
stateStr: 'SECONDARY',
uptime: 140,
optime: { ts: Timestamp({ t: 1761255909, i: 1 }), t: Long('1') },
optimeDurable: { ts: Timestamp({ t: 1761255909, i: 1 }), t: Long('1') },
optimeWritten: { ts: Timestamp({ t: 1761255909, i: 1 }), t: Long('1') },
optimeDate: ISODate('2025-10-23T21:45:09.000Z'),
optimeDurableDate: ISODate('2025-10-23T21:45:09.000Z'),
optimeWrittenDate: ISODate('2025-10-23T21:45:09.000Z'),
lastAppliedWallTime: ISODate('2025-10-23T21:45:09.374Z'),
lastDurableWallTime: ISODate('2025-10-23T21:45:09.374Z'),
lastWrittenWallTime: ISODate('2025-10-23T21:45:09.374Z'),
lastHeartbeat: ISODate('2025-10-23T21:45:17.412Z'),
lastHeartbeatRecv: ISODate('2025-10-23T21:45:18.374Z'),
pingMs: Long('0'),
lastHeartbeatMessage: '',
syncSourceHost: '127.0.0.1:27017',
syncSourceId: 0,
infoMessage: '',
configVersion: 1,

```

```
_id: 2,
name: '127.0.0.1:27019',
health: 1,
state: 2,
stateStr: 'SECONDARY',
uptime: 140,
optime: { ts: Timestamp({ t: 1761255909, i: 1 }), t: Long('1') },
optimeDurable: { ts: Timestamp({ t: 1761255909, i: 1 }), t: Long('1') },
optimeWritten: { ts: Timestamp({ t: 1761255909, i: 1 }), t: Long('1') },
optimeDate: ISODate('2025-10-23T21:45:09.000Z'),
optimeDurableDate: ISODate('2025-10-23T21:45:09.000Z'),
optimeWrittenDate: ISODate('2025-10-23T21:45:09.000Z'),
lastAppliedWallTime: ISODate('2025-10-23T21:45:09.374Z'),
lastDurableWallTime: ISODate('2025-10-23T21:45:09.374Z'),
lastWrittenWallTime: ISODate('2025-10-23T21:45:09.374Z'),
lastHeartbeat: ISODate('2025-10-23T21:45:17.412Z'),
lastHeartbeatRecv: ISODate('2025-10-23T21:45:18.374Z'),
pingMs: Long('0'),
lastHeartbeatMessage: '',
syncSourceHost: '127.0.0.1:27017',
syncSourceId: 0,
infoMessage: '',
configVersion: 1,
configTerm: 1

```

Se puede observar un nodo como PRIMARY y otros dos como SECONDARY.

Paso 4: Hacemos las pruebas de replicación.

- **Inserté datos en el nodo primario.**

```
use bd
```

```
db.emp.insert({id:1, name:"juaniu2"})
```

```
db.emp.find().forEach(printjson)
```

```
rs0 [direct: primary] bd> db.emp.insert({id:1, name:"juaniu2"})
DeprecationWarning: Collection.insert() is deprecated. Use insertOne, insertMany, or bulkWrite.
{
  acknowledged: true,
  insertedIds: { '0': ObjectId('68faa394911ce98bcecebea4') }
}
rs0 [direct: primary] bd> db.emp.find().forEach(printjson)
{
  _id: ObjectId('68faa394911ce98bcecebea4'),
  id: 1,
  name: 'juaniu2'
}
```

- **Lectura en los nodos secundarios.**

En mi caso empecé con el nodo 5, con puerto 27018.

En el documento nos dice que utilicemos `rs.slaveOk()` para poder leer en nodos secundarios, pero en mi versión de mongodb la cual es la mas actualizada me dice que ya no es compatible, entonces en su lugar utilice:

```
db.getMongo().setReadPref('secondary')
```

Y después puse en uso la bd y coloqué los siguientes comandos:

```
use Bd
```

```
db.emp.find().forEach(printjson)
```

```
rs0 [direct: secondary] test> db.getMongo().setReadPref('secondary')
rs0 [direct: secondary] test> use bd
switched to db bd
rs0 [direct: secondary] bd> db.emp.find().forEach(printjson)
{
  _id: ObjectId('68faa394911ce98bcecebea4'),
  id: 1,
  name: 'juanio2'
}
rs0 [direct: secondary] bd>
```

Hacemos lo mismo en el nodo 6, con puerto 27019.

```
rs0 [direct: secondary] test> db.getMongo().setReadPref('secondary')
rs0 [direct: secondary] test> use bd
switched to db bd
rs0 [direct: secondary] bd> db.emp.find().forEach(printjson)
{
  _id: ObjectId('68faa394911ce98bcecebea4'),
  id: 1,
  name: 'juanio2'
}
```