Dear ObjectDB Support Team,

Subject: Performance Issues After Migrating to ObjectDB - Urgent Assistance Required

I hope this email finds you well. I am Dr M H B Ariyaratne, the Acting Consultant in Health Informatics at the Health Information Unit, Ministry of Health, Sri Lanka. I am writing to seek your urgent assistance regarding performance issues we are facing after migrating our Cloud HIMS application to ObjectDB.

**Background:**

- **Application**: Cloud HIMS is a JSF/JPA (EclipseLink 2.3)/MySQL application used to capture data in Health Care Centres across the country.

- **Database Size**: Our MySQL database was 66GB in size before migration.

- **Migration Status**: We are halfway through transferring data. Metadata, Patient Data, and Encounter Data have been migrated. Observations are still being migrated.

- **Current Issue**: Despite the migration, we have not seen any improvement in performance.

**Server and Configuration Details:**

- **Server**: The VM is running on Ubuntu 20.04 with 70GB RAM. No other major processes are running.

- **ObjectDB Configuration**: I have attached the configuration files and server.sh file for your reference.

- **Resource Usage**: I have also attached snapshots showing the usage of resources like RAM and CPUs.

We have taken several steps to improve performance, including database tuning, query optimization, and server resource allocation, but the issues persist.

Could you please assist us in identifying the cause of these performance issues and suggest any possible solutions?

Thank you for your time and assistance.

Best regards,
Dr M H B Ariyaratne
Acting Consultant in Health Informatics
Health Information Unit, Ministry of Health, Sri Lanka
Mobile: +94 71 5812399

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Attachments:
- ObjectDB Configuration Files
- Server.sh File
- Resource Usage Snapshots

Cloud HIMS is a JSF/JPA(EcliseLink 2.3)/MySQL app used to capture data in HLCs in the whole country. MySQL database is now 66GB in size. (Refer image)

Wanted to migrate hoping to improve performance.

Currently halfway in transferring data.

- migration completed
Metadata
Patient Data
Encounter Data

-still migrating
Observations

Now users are using the system

Still no improvement in performance. I will show a comparison soon.

Here are the details (give Details)

What I can do to improve the performance

Server.sh file
```
#!/bin/sh
#
# ObjectDB Server Script - for Unix / Linux / Solaris / Mac OS X
#
# Note: Please set the JAVA_VM and OBJECTDB_JARS variables!

# Path of Java VM (a complete absolute path can be specified)
JAVA_VM="java"

# Path of ObjectDB jar file (a complete absolute path can be specified)
OBJECTDB_JARS="objectdb.jar"

# Prepare args (an input odb file if specified)
while [ $# -gt 0 ]; do
 ARGS="$ARGS $1"
  shift
done

# Launch ObjectDB Server:
exec ${JAVA_VM} -server -Xms40G -Xmx40G -cp ${OBJECTDB_JARS} com.objectdb.Server $ARGS
```

```xml
<!-- ObjectDB Configuration -->

<objectdb>

    <general>
        <temp path="$temp" threshold="2000mb" />
        <network inactivity-timeout="0" />
        <url-history size="50" user="true" password="true" />
        <log path="$objectdb/log/" max="64mb" stdout="false" stderr="false" />
        <log-archive path="$objectdb/log/archive/" retain="90" />
        <logger name="*" level="info" />
    </general>

    <database>
        <size initial="1000mb" resize="1000mb" page="2kb" />
        <recovery enabled="true" sync="false" path="." max="2000mb" />
        <recording enabled="false" sync="false" path="." mode="write" />
        <locking version-check="true" />
        <processing cache="16000mb" max-threads="10" />
        <query-cache results="4mb" programs="1000" />
        <extensions drop="temp,tmp" memory="mem" />
        <activation code="AN52-7Y7H-GR1Y-VDYT-VF84" />
    </database>

    <entities>
        <enhancement agent="false" reflection="warning" />
        <cache ref="weak" level2="0" />
        <persist serialization="false" />
        <cascade-persist always="auto" on-persist="false" on-commit="true" />
        <dirty-tracking arrays="false" />
    </entities>

    <schema>
    </schema>

    <server>
        <connection port="6136" max="0" />
        <data path="$objectdb/db" />
        <!--
        <replication url="objectdb://localhost/test.odb;user=admin;password=admin" />
        -->
    </server>

    <users>
        <user username="admin" password="admin">
            <dir path="/" permissions="access,modify,create,delete" />
        </user>
        <user username="$default" password="$$$###">
            <dir path="/$user/" permissions="access,modify,create,delete">
                <quota directories="5" files="20" disk-space="5mb" />
            </dir>
```

```xml
        </user>
        <user username="user1" password="user1" />
    </users>

    <ssl enabled="false">
        <server-keystore path="$objectdb/ssl/server-kstore" password="pwd" />
        <client-truststore path="$objectdb/ssl/client-tstore" password="pwd" />
    </ssl>

</objectdb>
```

Image - Size of the MySQL database before Migration

Image - Disk Space in ObjectDB Server

```
objectdb@moh-hrms-lb: ~
objectdb@moh-hrms-lb:~$ df
Filesystem                        1K-blocks      Used Available Use% Mounted on
udev                               32864584         0  32864584   0% /dev
tmpfs                               6582200      1840   6580360   1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv 153191920  17212216 128125216  12% /
tmpfs                              32910980         0  32910980   0% /dev/shm
tmpfs                                  5120         0      5120   0% /run/lock
tmpfs                              32910980         0  32910980   0% /sys/fs/cgroup
/dev/sda2                            996780    213704    714264  24% /boot
/dev/loop1                            57088     57088         0 100% /snap/core18/2790
/dev/loop0                            56960     56960         0 100% /snap/core18/2344
/dev/loop2                            63488     63488         0 100% /snap/core20/1405
/dev/loop3                            65024     65024         0 100% /snap/core20/2015
/dev/loop5                            94080     94080         0 100% /snap/lxd/24061
/dev/loop4                            41856     41856         0 100% /snap/snapd/20092
/dev/loop6                            69504     69504         0 100% /snap/lxd/22753
tmpfs                               6582196        36   6582160   1% /run/user/123
tmpfs                               6582196        16   6582180   1% /run/user/1001
objectdb@moh-hrms-lb:~$
```

Image - Memory in Object DB Server

```
objectdb@moh-hrms-lb: ~
objectdb@moh-hrms-lb:~$ free -g
              total        used        free      shared  buff/cache   available
Mem:             62          32          25           0           4          29
Swap:             3           0           3
objectdb@moh-hrms-lb:~$
```

## Image Snapshot of the Use of Resources (RAM & CPUs)

objectdb@moh-hrms-lb: ~

```
top - 05:36:24 up 12:44,  1 user,  load average: 4.97, 4.66, 4.60
Tasks:      total,      running,      sleeping,      stopped,      zombie
%Cpu(s):      us,      sy,      ni,      id,      wa,      hi,      si,      st
MiB Mem :      total,      free,      used,      buff/cache
MiB Swap:      total,      free,      used.      avail Mem

   PID USER     PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
  2448 objectdb 20   0   48.2g  32.5g  26120 S 483.7  51.8 701:11.56 java
   951 root     20   0  237008   8072   6628 S   0.3   0.0   0:50.47 vmtoolsd

     1 root     20   0  168388  11784   8496 S   0.0   0.0   0:02.88 systemd
     2 root     20   0       0      0      0 S   0.0   0.0   0:00.02 kthreadd
     3 root      0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
     4 root      0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
     6 root      0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-kblockd
     8 root      0 -20       0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
     9 root     20   0       0      0      0 S   0.0   0.0   0:00.01 ksoftirqd/0
    10 root     20   0       0      0      0 I   0.0   0.0   0:06.91 rcu_sched
    11 root     rt   0       0      0      0 S   0.0   0.0   0:00.23 migration/0
    12 root    -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/0
    14 root     20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
    15 root     20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
```

## Another Snapshot of Resource Usage

objectdb@moh-hrms-lb: ~

```
top - 03:45:42 up 10:54,  1 user,  load average: 4.38, 4.24, 3.54
Tasks:      total,      running,      sleeping,      stopped,      zombie
%Cpu(s):      us,      sy,      ni,      id,      wa,      hi,      si,      st
MiB Mem :      total,      free,      used,      buff/cache
MiB Swap:      total,      free,      used.      avail Mem

   PID USER     PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
  2448 objectdb 20   0   46.4g  32.0g  26116 S 468.2  50.9 196:00.88 java

  1905 objectdb 20   0  507392  37724  30972 S   0.3   0.1   0:35.54 panel-8-pulseau
     1 root     20   0  168388  11784   8496 S   0.0   0.0   0:02.84 systemd
     2 root     20   0       0      0      0 S   0.0   0.0   0:00.01 kthreadd
     3 root      0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
     4 root      0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
     6 root      0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-kblockd
     8 root      0 -20       0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
     9 root     20   0       0      0      0 S   0.0   0.0   0:00.01 ksoftirqd/0
    10 root     20   0       0      0      0 I   0.0   0.0   0:05.14 rcu_sched
    11 root     rt   0       0      0      0 S   0.0   0.0   0:00.20 migration/0
    12 root    -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/0
    14 root     20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
    15 root     20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
    16 root    -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/1
    17 root     rt   0       0      0      0 S   0.0   0.0   0:00.73 migration/1
    18 root     20   0       0      0      0 S   0.0   0.0   0:00.01 ksoftirqd/1
    20 root      0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/1:0H-kblockd
    21 root     20   0       0      0      0 S   0.0   0.0   0:00.00 cpuhp/2
    22 root    -51   0       0      0      0 S   0.0   0.0   0:00.00 idle_inject/2
    23 root     rt   0       0      0      0 S   0.0   0.0   0:00.74 migration/2
    24 root     20   0       0      0      0 S   0.0   0.0   0:00.01 ksoftirqd/2
```

## server.sh file

```sh
  GNU nano 4.8                                                    ./server.sh
#!/bin/sh
#
# ObjectDB Server Script - for Unix / Linux / Solaris / Mac OS X
#
# Note: Please set the JAVA_VM and OBJECTDB_JARS variables!

# Path of Java VM (a complete absolute path can be specified)
JAVA_VM="java"

# Path of ObjectDB jar file (a complete absolute path can be specified)
OBJECTDB_JARS="objectdb.jar"

# Prepare args (an input odb file if specified)
while [ $# -gt 0 ]; do
  ARGS="$ARGS $1"
  shift
done

# Launch ObjectDB Server:
exec ${JAVA_VM} -server -Xms40G -Xmx40G -cp ${OBJECTDB_JARS} com.objectdb.Server $ARGS
```

## Config file - Top Part

```
  GNU nano 4.8                                                    ./objectdb.conf
<!-- ObjectDB Configuration -->

<objectdb>

        <general>
                <temp path="$temp" threshold="2000mb" />
                <network inactivity-timeout="0" />
                <url-history size="50" user="true" password="true" />
                <log path="$objectdb/log/" max="64mb" stdout="false" stderr="false" />
                <log-archive path="$objectdb/log/archive/" retain="90" />
                <logger name="*" level="info" />
        </general>

        <database>
                <size initial="1000mb" resize="1000mb" page="2kb" />
                <recovery enabled="true" sync="false" path="." max="2000mb" />
                <recording enabled="false" sync="false" path="." mode="write" />
                <locking version-check="true" />
                <processing cache="16000mb" max-threads="10" />
                <query-cache results="4mb" programs="1000" />
                <extensions drop="temp,tmp" memory="mem" />
                <activation code="AN52-7Y7H-GR1Y-VDYT-VF84" />
        </database>

        <entities>
                <enhancement agent="false" reflection="warning" />
                <cache ref="weak" level2="0" />
                <persist serialization="false" />
                <cascade-persist always="auto" on-persist="false" on-commit="true" />
                <dirty-tracking arrays="false" />
        </entities>

        <schema>
        </schema>
```

## Config file - Bottom Part

```xml
        <schema>
        </schema>

        <server>
                <connection port="6136" max="0" />
                <data path="$objectdb/db" />
                <!--
                <replication url="objectdb://localhost/test.odb;user=admin;password=admin" />
                -->
        </server>

        <users>
                <user username="admin" password="admin">
                        <dir path="/" permissions="access,modify,create,delete" />
                </user>
                <user username="$default" password="$$$###">
                        <dir path="/$user/" permissions="access,modify,create,delete">
                                <quota directories="5" files="20" disk-space="5mb" />
                        </dir>
                </user>
                <user username="user1" password="user1" />
        </users>

        <ssl enabled="false">
                <server-keystore path="$objectdb/ssl/server-kstore" password="pwd" />
                <client-truststore path="$objectdb/ssl/client-tstore" password="pwd" />
        </ssl>

</objectdb>
```