Solution Engineer Assisted Workshop Day

Reference 4.2 – IO Resource Manager (IORM)

V1.1

ORACLE LAB BOOK | JANURARY 2019

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Overview

ExaCC allows the consolidation of multiple Oracle databases with mixed and disparate workloads. While hosting multiple databases on a single server and shared storage, fair utilization of disk bandwidth can be a challenging exercise.

In a consolidated workload environment, the effective management of resources becomes paramount in ensuring that application performance is maintained at defined and predictable levels. All storage has an I/O bandwidth limit. If the desired bandwidth for databases and the applications that run on them exceeds the available bandwidth, their performance will degrade.

ExaCC I/O Resource Manager provides a way to manage how multiple workloads and databases share the available I/O bandwidth. The ExaCC I/O Resource Manager provides a unique competitive advantage as no other database or storage system has this feature. Without prioritization, all of the ExaCC I/O bandwidth can be consumed by a single query providing that particular query with extraordinary performance while substantially impacting the performance of critical queries. ExaCC IORM provides a means to control these workloads. IORM enhances the stability of mission critical applications and ensures availability of all databases which share the server resources.

Using Exadata I/O Resource Management

Oracle Database Exadata Cloud Service provides an interface for **Exadata I/O Resource Management (IORM)** that enables prioritization of I/O resources amongst different databases.

Exadata IORM allows workloads and databases to share I/O resources automatically according to user- defined policies. Exadata Cloud Service provides a simple interface to enable IORM across multiple databases.

This facility uses a system of shares that are allocated amongst all of the databases that run on the Exadata system. Each database is assigned a share value between 1 and 32, with 1 being the lowest share, and 32 being the highest share. The share value represents the relative importance of each database.

Every database is automatically assigned a default share value of 1. In this state, every database receives an even share of the available I/O resources. Increasing the share value for a specific database increases its relative importance, and consequently decreases the amount of I/O available for all of the other databases.

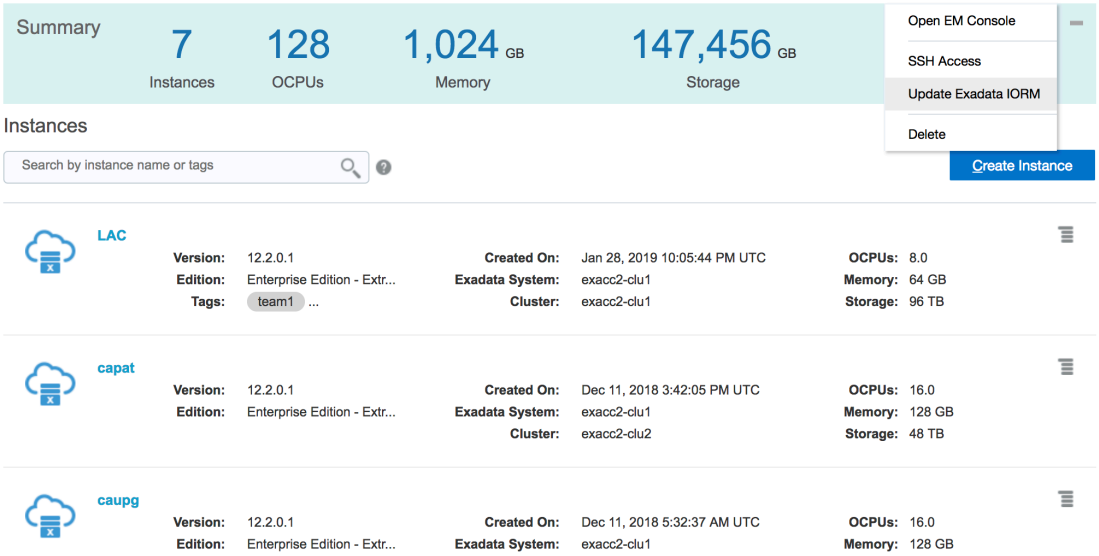
For example, on an Exadata system with four databases, one share is allocated to each database by default. This ensures that each database is allocated 1 out of every 4 I/Os when the system becomes loaded enough for IORM to intervene. If the share value for one database is changed to 2, the total number of shares increases to 5. Now, when IORM is required, the database with a share value of 2 is allocated 2 out of every 5 I/Os, while the databases with a share value of 1 are each allocated 1 out of every 5 I/Os.

In addition to prioritizing access to I/O resources, the share value also prioritizes access to Exadata flash storage resources. The available flash storage space is divided up according to the total number of allocated shares, and each database is allocated an amount of space according to its share value. Consequently, databases with a larger share value are given access to proportionately more flash storage space.

Adjusting IORM share values for databases

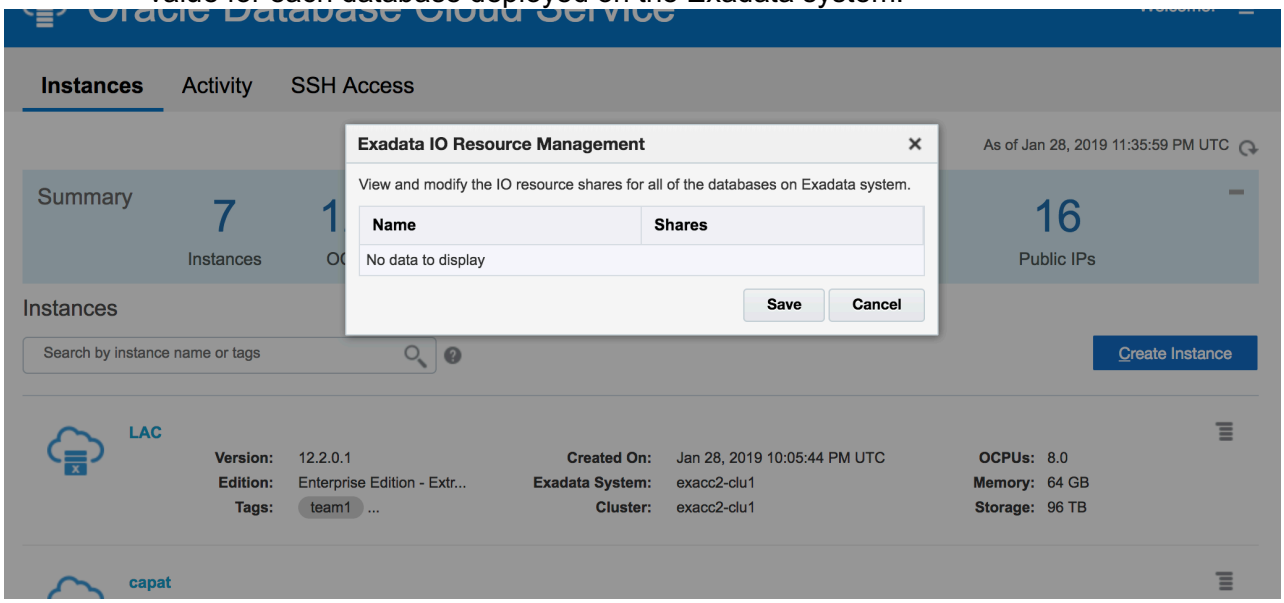
To adjust the IORM share values for databases:

1. Open the Oracle Database Cloud Service console. select **Update Exadata IORM**.
2. From the menu for an Exadata Cloud Service database deployment, select Update Exadata IORM.



The Exadata I/O Resource Management dialog is displayed.

3. In the Exadata I/O Resource Management dialog, use the Shares field to specify the share value for each database deployed on the Exadata system.



4. When you are satisfied, click Save to implement the settings. Alternatively, click Cancel to leave the dialog without updating any of the share values.

5. TODOes Figure out how to show the before and after IORMPLAN

```
akwok@lz1:~ $ ssh -i
/nas/exacc/ecc$e/q$q/keys/id_rsa.exacm"$e"cel05.root
root@exacm"$e"cel05.us.osc.oracle.com
Warning: Permanently added 'exacm1cel05.us.osc.oracle.com' (RSA) to the list of known hosts.
Last login: Tue Mar 6 18:08:33 2018 from 10.136.243.44
[root@exacm1cel05 ~]# su - cellmonitor
[cellmonitor@exacm1cel05 ~]$ cellcli
CellCLI: Release 12.2.1.1.2 - Production on Wed Mar 14 10:14:00 PDT 2018

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CellCLI> list iormplan detail
         name:
                              exacm1cel05_IORM
         PLAN catPlan:
         dbPlan:
         objective:            auto
         status:              active

CellCLI> list iormplan detail
         name:
                              exacm1cel05_IORM
         PLAN catPlan:
         dbPlan:
                               name=ORCL,share=2,flashcachelimit=3
                    974G
                    name=ORCL2BK,share=8,flashcachelimit=1
                    1922G
                    name=default,share=2,flashcachelimit=397
                    4G
         objective:            auto
         status:              active CellCLI>
```