## How to Resize Lustre in a Managed Environment

Introduction: Resizing a Lustre file system in a managed environment can be a complex but necessary task for infrastructure engineers like yourself, especially when dealing with high-performance computing (HPC) workloads. This guide will walk you through the steps required to resize Lustre while maintaining data integrity and minimizing downtime.

### Prerequisites:

* Access to the Azure environment.
* Familiarity with Lustre file systems.
* Existing Managed Lustre environment.
* Creation of New Managed Lustre environment.
* Azure Blob Storage account for archiving data.
* Administrative access to the Lustre environment.
* Administrative access to the Robinhood Policy Server.

### Step 1: Deploy a New Managed Lustre Environment

Before you start resizing Lustre, it's essential to create a new managed Lustre environment with the desired size and configurations. Ensure that it meets your HPC requirements and integrates with your Azure infrastructure.

### Step 2: Archive Files to Blob Storage

If you haven't already, archive all files from the existing Lustre file system to Azure Blob Storage. This ensures data preservation during the resizing process. This should already happen from the Robinhood Policy server every 30 minutes by default.

robinhood –run=all

You now have two options to configure the Robinhood server to managed the new Lustre environment.

## Option 1

### Step 1: Stop Robinhood Service on Robinhood Policy Server

On the Robinhood Policy server, stop the Robinhood service to prevent any ongoing data scans.

sudo systemctl stop robinhood

### Step 2: Stop lhsmd Agent on Robinhood Policy Server

Similarly, stop the lhsmd agent on the Robinhood Policy server to ensure it doesn't interfere with the database operations.

sudo systemctl stop lhsmd

### Step 3: Drop the Current Robinhood Database

Drop the existing Robinhood database to prepare for the creation of a new one. Be sure to back up any critical data before proceeding.

rbh-config drop\_db

### Step 4: Create a New Robinhood Database

Generate a new Robinhood database using the following command:

rbhpass=$(openssl rand -base64 12)

rbh-config create\_db lustre "%" "$rbhpass"

echo "$rbhpass" > /etc/robinhood.d/.dbpassword

chmod 600 /etc/robinhood.d/.dbpassword

These commands sets up the database fresh with new password

### Step 5: Unmount Existing Lustre Mount Points on All Clients

Unmount the Lustre file system from all client systems to prevent data corruption during the resizing process.

umount /mnt/lustre

### Step 6: Update /etc/lhsmd/agent File

Update the **/etc/lhsmd/agent** configuration file on the Robinhood Policy server to point to the new Lustre MGS (Metadata Server) IP address.

vi /etc/lhsmd/agent

Edit the **MGS** parameter to reflect the new MGS IP address.

### Step 7: Mount Robinhood Server to New Lustre MGS

Mount the Robinhood server to the new Lustre MGS.

mount -t lustre -o noatime,flock $lustre\_mgs@tcp:/lustrefs /amlfs

### Step 8: Start lhsmd Agent

Start the lhsmd agent on the Robinhood Policy server.

sudo systemctl start lhsmd

### Step 9: Import Stubs from Blob to New Lustre

Import the archived stubs from Azure Blob Storage to the new Lustre file system. This will restore the data to its original location.

cd $lfs\_mount

STORAGE\_SAS="?$storage\_sas" /sbin/azure-import -account $storage\_account -container $storage\_container

### Step 10: Run Robinhood File Scan

Perform a file scan of all imported files using the Robinhood utility.

robinhood --scan --once

### Step 11: Restart Robinhood Service

Restart the Robinhood service on the Robinhood Policy server to resume regular operation.

sudo systemctl restart robinhood

## Option 2: Create new Robinhood server

### Step 1: Unmount Existing Lustre Mount Points on All Clients

Unmount the Lustre file system from all client systems to prevent data corruption during the resizing process.

umount /mnt/lustre

### Step 2: Redeploy Robinhood server using existing Robinhood script/bicep file.

This will set up a new instance of the Robinhood server that will replace the existing Robinhood server for the old Lustre environment. All of the steps in Option 1 are performance by the install.sh script in the Robinhood bicep file.

### Step 3: Remount All Other Clients to New Lustre

Finally, remount all client systems to the new Lustre file system. This step ensures that all systems can access the resized Lustre environment.

### Conclusion:

Resizing Lustre in a managed environment is a complex but manageable task when following these steps. This process allows you to adapt your HPC infrastructure to evolving storage needs while preserving your valuable data and minimizing downtime. Be sure to test these steps in a non-production environment first and consult Lustre and Azure documentation for additional guidance and best practices.