How to Configure a BDA Server Disk After Disk Replacement With the bdadiskutility Utility (Doc ID 2642582.1)

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APPLIES TO:

Big Data Appliance Hardware - Version All Versions and later
Linux x86-64

PURPOSE

NOTE: DO NOT REBOOT A NODE IF THE BDADISKUTILITY SCRIPT FAILS IN ANY WAY. IF THE SCRIPT FAILS IN ANY WAY CONTACT BDA SUPPORT TO DIAGNOSE THE ISSUE.

Provide the latest version of the disk configuration utility called, bdadiskutility, which can be used to configure any replaced BDA disk (slot 0 (/u01) through slot 11 (/u12) on any server up through X8.

A disk configuration utility, bdaconfiguredisk, is shipped with recent BDA versions. However when configuring a disk the recommendation is to use bdadiskutility which will always be the most recent version.

SCOPE

This document is to be used by anyone who is configuring a disk. If attempting the steps and further assistance is needed log a service request to contact support for help.

DETAILS

NOTE: In the examples that follow, user details, cluster names, hostnames, directory paths, filenames, etc. represent a fictitious sample (and are used to provide an illustrative example only). Any similarity to actual persons, or entities, living or dead, is purely coincidental and not intended in any manner.

Known Issues

1. If bdadiskutility fails with "Virtual Drive <SLOT_NUMBER> is incorrectly mapped.", open an SR with Oracle Support.

In the following, perform all steps on the server where the disk is replaced as 'root' user, unless specified otherwise.

2. Running bdadiskutility with **Version: 45R** of the patch, may fail with a message like below. The message indicates a problem with "data in cache for offline or missing virtual disks".

```
# bdadiskutility <MOUNT>
```

Virtual Drive <VIRTUAL_DRIVE_NUMBER> is incorrectly mapped.
<TIMESTAMP> : Error executing 'MegaCli64 CfgLdAdd r0[<ENCLOSURE>:<SLOT>] a0'
<TIMESTAMP> : Error code is 84 . Response is <<
Adapter 0: Configure Adapter Failed

FW error description:
The current operation is not allowed because the controller has data in cache for offline or missing virtual disks.

Exit Code: 0x54>>
Found a disk with a Firmware State of Unconfigured(good).

Successfully cleared the cache for the logical drive.
Successfully added the disk to its own RAID(0) volume.

In this case, try running the bdadiskutility a second time. **Version: 45R** of the patch should clear the preserved cache if it exists on the first pass, and then configure the disk on the second pass.

If the problem persists, open an SR with Oracle Support.

3. If configuring an OS disk on an X7-2 or X8-2 server fails with one of the below errors:

Virtual Drive <0> is incorrectly mapped

or

Virtual Drive <1> is incorrectly mapped

Check the OS partition layout with one of the parted commands below depending on the disk being replaced. Use "s0" when the disk in slot 0 is being replaced and use "s1" when the disk in slot 1 is being replaced.

```
# parted /dev/disk/by-hba-slot/s0 -s unit chs print
```

Or:

```
# parted /dev/disk/by-hba-slot/s1 -s unit chs print
```

If the partition layout is: 1,2,3,5 like below, open an SR with Oracle Support.

```
Number Start    End File system Name   Flags
1      <START1>  <END1>   fat16  fat32
2      <START2>  <END2>   ext4   ext4   raid
3      <START3>  <END3>          ext4   raid
5      <START4>  <END4>   ext4   ext4
```

4. bdadiskutility may fail on X8-2/OL6 servers with, "The selected OS disk is already partitioned. If this happens see: bdadiskutility Fails Configuring an OS disk on X8-2/OL6 with "The selected OS disk is already partitioned" (Doc ID 2864577.1).

5. On BDA Clusters with OL6, configuring an OS disk with the bdadiskutility, may raise an error like: "ERROR: Wrong swap partition on /dev/disk/by-hba-slot/s0p4 : SWAP". To resolve see, On BDA Clusters with OL6 Configuring an OS disk with the bdadiskutility May Raise "ERROR: Wrong swap partition on /dev/disk/by-hba-slot/s0p4 : SWAP" (Doc ID 2874998.1).

Prerequisites For Using bdadiskutility the Latest Disk Configuration Utility bdaconfiguredisk Utility

1. Confirm the slot number and corresponding mount point the disk will be or was replaced from.

The physical slots are numbered 0-11 and the corresponding mount points are numbered /u01-/u12. See "Table 1" below showing the mapping between each physical slot and its corresponding mount point.

Table 1

Physical Slot	Mount Point
0	/u01
1	/u02
2	/u03
3	/u04
4	/u05
5	/u06
6	/u07
7	/u08
8	/u09
9	/u10
10	/u11
11	/u12

2. On BDA 5.1 and lower, prior to extracting "bdadiskutility" check if the file /opt/oracle/bda/compmon/efis1entry exists and back it up if it does.

a) Check if /opt/oracle/bda/compmon/efis1entry exists:

```
# ls -l /opt/oracle/bda/compmon/efis1entry
```

b) If the file exists back up. For example:

```
# mv /opt/oracle/bda/compmon/efis1entry /opt/oracle/bda/compmon/efis1entry.BAK_`date +%d%b%Y%H%M%S`
```

c) Verify:

```
# ls -l /opt/oracle/bda/compmon/efis1entry*
```

If the file exists, it will be necessary to restore the original after configuring the disk to avoid bdachecksw failing.

3. This MOS note provides the latest bda configuration utility as a file called "bdadiskutility" and an associated script "efis1entry" required on X7/X8 servers running OL7. Both are in the attached zip file "45R.zip".

Note: Make sure the most recent utility attached to this note is being used.

a) Download "45R.zip" and and place in a temporary/staging location on the server where the disk will be or was replaced.

b) Extract "bdadiskutility" into /opt/oracle/bda/bin/bdadiskutility. From the temporary/staging location do:

```
# unzip 45R.zip bdadiskutility -d /opt/oracle/bda/bin/
```

Archive: 45R.zip
inflating: /opt/oracle/bda/bin/bdadiskutility

Verify:

```
# ls -l /opt/oracle/bda/bin/bdadiskutility
```

c) On BDA versions through BDA 5.1 extract "efis1entry" to /opt/oracle/bda/compmon. From the temporary/staging location do:

Note: As above if /opt/oracle/bda/compmon/efis1entry exists, back it up first.

```
# unzip 45R.zip efis1entry -d /opt/oracle/bda/compmon/
```

Archive: 45R.zip
inflating: /opt/oracle/bda/compmon/efis1entry

Verify:

```
# ls -l /opt/oracle/bda/compmon/efis1entry
```

d) Set the permissions on both scripts

```
# chmod 0755 /opt/oracle/bda/bin/bdadiskutility
# chmod 0755 /opt/oracle/bda/compmon/efis1entry
```

Verify.

```
# ls -l /opt/oracle/bda/bin/bdadiskutility
```

-rwxr-xr-x 1 root root 77786 Mar 22 18:18 /opt/oracle/bda/bin/bdadiskutility

```
# ls -l /opt/oracle/bda/compmon/efis1entry
```

-rwxr-xr-x 1 root root 4659 Mar 22 18:18 /opt/oracle/bda/compmon/efis1entry

e) Confirm the latest bdadiskutility is in place. The current version is R44.

```
# bdadiskutility -v
```

Version: 45R.

4. In the case of replacing a failing disk i.e. a disk which is still working but predicted to fail, refer to the instructions in section "Prerequisites for Replacing a Working / Failing Disk." in "Steps for Replacing a Disk Drive and Determining its Function on the Oracle Big Data Appliance V2.2.*/V2.3.1/V2.4.0/V2.5.0/V3.x/V4.x (Doc ID 1581331.1)".

5. On BDA V3.0 to BDA V4.1.0 due to the issue reported in: Replacing DataNode Disks or Manually Changing the Storage IDs of Volumes in a Cluster May Result in Data Loss on BDA V3.0-V4.1.0 (Doc ID 1997896.1), file an SR with Oracle Support prior to replacing a disk to determine the best way to avoid the problem.

bdadiskutility Usage/Help

1. View bdadiskutility usage with:

```
# bdadiskutility -h
```

Output looks like:

```
# bdadiskutility -h
```

Usage: bdadiskutility [OPTION] | <mount_point>
Configure a new disk.

Example: bdadiskutility /u05

Options:
-h Display this help message and exit.

-v Display version and exit.
-i Display a summary of the state of all disks and exit.

In case of problems please gather all /tmp/bdaconfiguredisk*.log files and contact BDA support.

2. Display a summary of all disk states with:

```
# bdadiskutility -i
```

Output on a system with no disk failures looks like:

```
# bdadiskutility -i
```

Logging verbose output to /tmp/bdaconfiguredisk_<EPOCH_TIMESTAMP>_<ID>.log

Slot Number: 0
Predictive Failure Count: 0
Firmware state: Online, Spun Up
Drive has flagged a S.M.A.R.T alert : No

Slot Number: 1
Predictive Failure Count: 0
Firmware state: Online, Spun Up
Drive has flagged a S.M.A.R.T alert : No

Slot Number: 2
Predictive Failure Count: 0
Firmware state: Online, Spun Up
Drive has flagged a S.M.A.R.T alert : No
...

Slot Number: 11
Predictive Failure Count: 0
Firmware state: Online, Spun Up
Drive has flagged a S.M.A.R.T alert : No

Reconfiguring a Single Disk

Disk Configuration Commands

After the disk is replaced, and the slot and mount point of the replaced disk fully identified as per "Table 1" above, configure the replaced disk in one of slot 0 to 11 as below:

Slot 0:

```
# bdadiskutility /u01
```

Slot 1:

```
# bdadiskutility /u02
```

Slot 2:

```
# bdadiskutility /u03
```

Slot 3:

```
# bdadiskutility /u04
```

Slot 4:

```
# bdadiskutility /u05
```

Slot 5:

```
# bdadiskutility /u06
```

Slot 6:

```
# bdadiskutility /u07
```

Slot 7:

```
# bdadiskutility /u08
```

Slot 8:

```
# bdadiskutility /u09
```

Slot 9:

```
# bdadiskutility /u10
```

Slot 10:

```
# bdadiskutility /u11
```

Slot 11:

```
# bdadiskutility /u12
```

Configuring an OS disk

After successfully configuring an OS disk with bdadiskutility confirm the 4 mirrored partitions are in an "**active sync**" state before rebooting the server.

Monitor the state of the 4 mirrored partitions for the equivalent device paths for "/boot" and "/" on the system.

For example if "/boot" and "/" are /dev/md0 and /dev/md2 respectively, monitor the status with:

```
# mdadm -Q --detail /dev/md0
# mdadm -Q --detail /dev/md2
```

The device paths can differ so check for the correct path on your cluster.

Configuring Two Failed Disks

If two disks on the same server fail. Configure them in the order lowest to highest. For example if the disk in slot 4 and slot 5 fail, configure as two separate calls, lowest to highest.

> Note: It is critical to configure in the correct order of lowest to highest slot.

```
# bdadiskutility /u05
# bdadiskutility /u06
```

In Case of a Problem

Should any of the steps above result in a error or problem, open an SR with all the details/output.

1. Collect all logs referenced in the bdadiskutility output.

2. If bdadiskutility fails on an OS disk configuration additionally collect the following:

a) Output of "mount /"

```
# mount /
```

b) Output of "mount /boot"

```
# mount /boot
```

c) Depending on the device path for "/" and "/boot", which can vary between systems, collect the "mdadm -Q --detail" output for both "/" and "/boot".

> # mdadm -Q --detail /dev/md%%

Where the %% in /dev/md%% represents the value of the device path on the system for "/" and "/boot". For example these can be md0, md2, md126, md127.

d) Collect the parted output for slot 1:

```
# parted /dev/disk/by-hba-slot/s1 -s unit chs print
```

e) Collect the parted output for slot 0:

```
# parted /dev/disk/by-hba-slot/s0 -s unit chs print
```

Post Configuration Steps

1. On BDA 5.1 and lower, if the file /opt/oracle/bda/compmon/efis1entry was backed up, restore the original to avoid bdachecksw reporting errors on the updated file.

2. If you followed "Prerequisites for Replacing a Working / Failing Disk." in "Steps for Replacing a Disk Drive and Determining its Function on the Oracle Big Data Appliance V2.2.*/V2.3.1/V2.4.0/V2.5.0/V3.x/V4.x (Doc ID 1581331.1)" add the mounts back in Cloudera Manager.

3. After an HDFS disk is reconfigured successfully:

1. In the case of a server supporting an HDFS DataNode (DN) restart the DN on the server where the disk was replaced.
2. In the case of a server supporting a yarn NodeManager (NM) restart the NM on the server where the disk was replaced.

3. In the case of a server supporting an impala daemon restart the impala daemon on the server where the disk was replaced.

4. When the appropriate restarts above are completed, check the sub-directories in /u*nn* and confirm the directories below have been created. Replace *nn* with the correct mount point.

```
# ls -la /unn
```

a) In the case of the server supporting an HDFS DataNode (DN) the sub-directory /u*nn*/hadoop/dfs should exist.

b) In the case of the server supporting a yarn NodeManager (NM) the sub-directory /u*nn*/hadoop/yarn should exist.

c) In the case of the server supporting an impala daemon the sub-directory /u*nn*/impala should exist.

5. After a disk supporting Kudu is reconfigured see the Cloudera documents below for details on any further configuration steps required:

- Cloudera Enterprise 5.14.x, section: Recovering from Disk Failure
- Cloudera Enterprise 5.x Release Notes, section: New Features in Kudu 1.7.0 / CDH 5.15.0

Related

Products

- Sun Microsystems > Specialized Systems > Database Systems > Big Data Appliance Hardware > Hardware Configuration > Other

Keywords

DISK; RECONFIGURATION

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