Determine whether to modify the caching policy of Flash Pool aggregates

ONTAP 9

NetApp
February 09, 2022

This PDF was generated from https://docs.netapp.com/us-en/ontap/disks-aggregates/determine-modify-caching-policy-flash-pool-task.html on February 09, 2022. Always check docs.netapp.com for the latest.

Table of Contents

Determine whether to modify the caching policy of Flash Pool aggregates . . . 1
Determine whether to modify the caching policy of Flash Pool aggregates overview . . . 1
Modify caching policies of Flash Pool aggregates . . . 2
Set the cache-retention policy for Flash Pool aggregates . . . 2

Determine whether to modify the caching policy of Flash Pool aggregates

Determine whether to modify the caching policy of Flash Pool aggregates overview

You can assign cache-retention policies to volumes in Flash Pool aggregates to determine how long the volume data remains in the Flash Pool cache. However, in some cases changing the cache-retention policy might not impact the amount of time the volume's data remains in the cache.

About this task

If your data meets any of the following conditions, changing your cache-retention policy might not have an impact:

- Your workload is sequential.
- Your workload does not reread the random blocks cached in the solid state drives (SSDs).
- The cache size of the volume is too small.

The following steps check for these conditions. The task must be done in advanced privilege mode.

Steps

1. View the workload volume:

   ```
   statistics start -object workload_volume
   ```

2. Determine the workload pattern of the volume:

   ```
   statistics show -object workload_volume -instance volume-workload -counter
   sequential_reads
   ```

3. Determine the hit rate of the volume:

   ```
   statistics show -object wafl_hya_vvol -instance volume -counter
   read_ops_replaced_pwercent|wc_write_blks_overwritten_percent
   ```

4. Determine the `Cacheable Read` and `Project Cache Alloc` of the volume:

   ```
   system node run -node node_name wafl awa start aggr_name
   ```

5. Display the AWA summary:

   ```
   system node run -node node_name wafl awa print aggr_name
   ```

6. Compare the volume's hit rate to the `Cacheable Read`.

   If the hit rate of the volume is greater than the `Cacheable Read`, then your workload does not reread random blocks cached in the SSDs.

7. Compare the volume's current cache size to the `Project Cache Alloc`.

   If the current cache size of the volume is greater than the `Project Cache Alloc`, then the size of your volume cache is too small.

Modify caching policies of Flash Pool aggregates

You should modify the caching policy of a volume only if a different caching policy is expected to provide better performance. You can modify the caching policy of a volume on a Flash Pool aggregate.

What you'll need

You must determine whether you want to modify your caching policy.

About this task

In most cases, the default caching policy of `auto` is the best caching policy that you can use. The caching policy should be changed only if a different policy provides better performance for your workload. Configuring the wrong caching policy can severely degrade volume performance; the performance degradation could increase gradually over time. You should use caution when modifying caching policies. If you experience performance issues with a volume for which the caching policy has been changed, you should return the caching policy to `auto`.

Step

1. Modify the volume's caching policy:

   `volume modify -volume` *`volume_name`* `-caching-policy` *`policy_name`*

Example

The following example modifies the caching policy of a volume named "vol2" to the policy `none`:

```
volume modify -volume vol2 -caching-policy none
```

Set the cache-retention policy for Flash Pool aggregates

You can assign cache-retention policies to volumes in Flash Pool aggregates. Data in volumes with a high cache-retention policy remains in cache longer and data in volumes with a low cache-retention policy is removed sooner. This increases performance of your critical workloads by making high priority information accessible at a faster rate for a longer period of time.

What you'll need

You should know whether your system has any conditions that might prevent the cache-retention policy from having an impact on how long your data remains in cache.

About this task

The task must be done in advanced privilege mode.

Steps

1. Change the privilege setting to advanced:

   ```
   set -privilege advanced
   ```

2. Verify the volume's cache-retention policy:

   By default the cache retention policy is `normal`.

3. Set the cache-retention policy:

ONTAP Version	Command
ONTAP 9.0, 9.1	`priority hybrid-cache set volume_name read-cache=read_cache_value write-cache=write_cache_value cache-retention-priority=cache_retention_policy` Set `cache_retention_policy` to `high` for data that you want to remain in cache longer. Set `cache_retention_policy` to `low` for data that you want to remove from cache sooner.
ONTAP 9.2 or later	`volume modify -volume volume_name -vserver vserver_name -caching-policy policy_name.`

4. Verify that the volume's cache-retention policy is changed to the option you selected.
5. Return the privilege setting to admin:

   ```
   set -privilege admin
   ```

Copyright Information

Copyright © 2022 NetApp, Inc. All rights reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means-graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system- without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

Trademark Information

NETAPP, the NETAPP logo, and the marks listed at http://www.netapp.com/TM are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.