NetApp® Knowledge Base

ONTAP 9 Performance - Resolution Guide

Applies to

- ONTAP 9
- FAS
- AFF
- NetApp Cloud Volumes ONTAP
- NetApp ONTAP Select

Description

- This article is a starting point for understanding where a performance problem may be, and identifying other articles to help resolve the problem.
- Performance issues are typically:
  - Job run time is longer than expected or job time is delayed
  - Slower than expected throughput
  - Higher than expected latency
    - High read latency, high write latency, or high other latency is seen on the client/application side or ONTAP side
  - Utilization is higher or at 100% of a processing center (CPU/disk)
  - Slowness on SAN or NAS, or slowness with CIFS, FCP, iSCSI, or NFS
  - Sudden increase in latency, possibly due to increase in IOPs or workload
  - Slow backups
  - Degraded or poor performance

Note: For Data ONTAP 8 7-mode, please see this article.

Procedure

1. Identify the problem by answering the following questions	- Where is the issue reported? **Example:** ONTAP, Network, Application, End-user experience, Client PCs - What is expected performance? **Example:** 5 ms or less, job runtime completes in 5 minutes - What is the volume, node, and SVM? - What are client IPs and the network address of the storage being accessed? - When did the issue start and what is the frequency? **Example:** July 16 at 9 AM, happens every hour

2. Identify if ONTAP has a performance issue, by using:

- Check for any resource constraints
- Check latency when there is reported slowness by using:
  - qos statistics commands
  - **Notes**: It is recommended to use both of the following commands:
    - qos statistics volume latency show
    - qos statistics volume performance show
    - Filter for a specific volume
    - This is due to FPolicy or VScan latency not being show in qos statistics volume latency show
  - Active IQ Unified Manager (AIQUM)
  - event log show to check errors during that timeframe
- **More commands to use:**

3. Determine if latency is high or low:

- Using AIQUM, you can see if latency historically was lower and is suddenly higher, or vice versa
- If latency generally is 1 ms or less, it may be considered low for most applications
- Higher values well above 10 ms may be bad, but this depends on the application
- NetApp Support cannot tell what is good or bad latency but the application owner must decide
- If no users are impacted but IOPS are near zero, this is expected and is not a problem
- If latency is higher than expected/normal, go to step 4
- If latency is low, go to step 5

4. If ONTAP has high latency, then you can move forward with identifying the cause using one of the following:

- If CPU is latent, resolve that issue (Data column of qos statistics)
- If disk is latent, resolve that issue (Disk column of

qos statistics)

- If Cluster is latent, resolve that issue (Cluster column of `qos statistics`)
- A QoS policy can be used to resolve latency issues from a bully workload
- Resolve any errors in the `event log show` command which are related to the issue being seen
- Average latency stats may be skewed with low workload
- Latency from Vscan or FPolicy may cause problems

5. If latency or utilization have not suddenly changed, or latency is low (1-2 ms or less generally):

- Then begin investigations on network and host side

6. If further assistance is needed:

- Open a case with NetApp Support

Additional Information

What commands are useful to monitor performance in ONTAP 9?