



## ONTAP 9 Performance - Resolution Guide



 $https://kb.netapp.com/Advice\_and\_Troubleshooting/Data\_Storage\_Software/ONTAP\_OS/ONTAP\_9\_P...$ 

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# **Applies to**

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

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## **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**

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

- Check for any resource constraints
- Check latency when there is reported slowness by using:
  - gos statistics commands
  - Notes: It is recommended to use both of the following commands:
    - <u>qos statistics volume</u>
      <u>latency show</u>
    - 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:
- <u>Using AIQUM</u>, 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:

3. Determine if latency is high or low:

2. Identify if ONTAP has a performance issue,

by using:

- If CPU is latent, resolve that issue (Data column of gos 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 <u>Vscan</u> or <u>FPolicy</u> 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?