



## SAN通过VAAI副本卸载提高了延迟、并降低了吞吐量

[https://kb-cn-stage.netapp.com/on-prem/ontap/Perf/Perf-KBs/SAN\\_increased\\_latency\\_with\\_low\\_throug...](https://kb-cn-stage.netapp.com/on-prem/ontap/Perf/Perf-KBs/SAN_increased_latency_with_low_throug...)

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### 适用场景

- ONTAP 9
- VAAI副本卸载
- Data ONTAP 8 7-模式

### 问题描述

- System Manager信息板会显示较高的LUN 延迟、但 IOPS或吞吐量不会显著增加。
- 高延迟主要与SAN其他操作有关。
- QoS统计信息列出了数据层的高延迟。

```
::> qos statistics volume latency show -vserver SVM1 -volume volume1 Workload
ID Latency Network Cluster Data Disk QoS Max QoS Min NVRAM Cloud FlexCache SM
Sync VA AVSCAN -----
```

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```
-----  
volume1 5935 321.31ms 143.00us 5.00us 321.15ms 0ms 0ms 0ms 10.00us 0ms 0ms  
0ms 0ms volume1 5935 200.02ms 132.00us 5.00us 199.88ms 0ms 0ms 0ms 9.00us 0ms  
0ms 0ms 0ms volume1 5935 263.63ms 76.00us 14.00us 263.52ms 18.00us 0ms 0ms 4.  
00us 0ms 0ms 0ms volume1 5935 289.97ms 132.00us 4.00us 289.82ms 0ms 0ms  
0ms 9.00us 0ms 0ms 0ms volume1 5935 340.44ms 128.00us 7.00us 340.29ms 0ms  
0ms 0ms 7.00us 0ms 0ms 0ms 0ms
```

- HDD read/write or SSD read/write is much higher than FCP in/out or iSCSI in/out from the `sysstat -x` outputs.
- 如果VAAI副本卸载源卷和目标卷来自同一节点、则Net in/out的低度可与sysstat -x中的FCP in/out或iSCSI in/out相同。
- 如果VAAI副本卸载源卷和目标卷来自不同的节点、则Net in/out的高可与sysstat -x中的HDD read/write或SSD read/write相同。

#### 示例1：

注：

- iSCSI + HDD
- VAI副本卸载源卷和目标卷位于同一节点上
- Net in/out和iSCSI in/out都比低得多 HDD read/write

#### 示例2：

注：

- FCP + SSD
- 源卷和目标卷来自不同的节点
- 这是源节点
- Net out与SSD读取一样高、并且两者都比高得多 FCP out

#### 示例3：

注：

- FCP + SSD
- 源卷和目标卷来自不同的节点
- 这是目标节点
- Net in与SSD write一样高，两者都比高得多 FCP in