



What is PEAK PERFORMANCE line in Active IQ

https://kb-stage.netapp.com/on-prem/ontap/Perf/Perf-KBs/What_is_PEAK_PERFORMANCE_line_in_A...

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Applies to

- ONTAP 9
- Active IQ (AIQUM)
- CPU/DISK utilization

Answer

- The peak performance line represents the limit after which performance may become degraded.
 - It is a calculated value based on a complex internal algorithm of your platform type and historical workload.
- After resource (CPU/DISK) utilization reaches the peak performance line, the latency may increase.
- The difference between the current utilization and peak performance line represents [performance capacity](#)

(HEADROOM).

- **Note:** Active IQ Unified Manager's [performance capacity](#) graphs allow for more refined computation which can be done separately from ONTAP but have the same concept as ONTAP's onboard headroom calculations
- To understand if the issue is based on CPU/DISK utilization see the following KB: [How do I know if CPU is causing a performance issue?](#)

Additional Information

- The `resource_headroom_aggr` and `resource_headroom_cpu` objects can be used to calculate headroom

Example: The aggregate headroom output is shown below

Note: The output is the same for CPU headroom

```
Cluster::> set -privilege diag
```

```
Warning: These diagnostic commands are for use by NetApp personnel only.
```

```
Do you want to continue? {y|n}: y
```

```
Cluster::*> statistics start -object resource_headroom_ (Tab key pushed here)
resource_headroom_aggr resource_headroom_cpu
```

```
Cluster::*> statistics start -object resource_headroom_aggr
```

```
Statistics collection is being started for sample-id: sample_219
```

```
Cluster::*> statistics show
```

```
Object: resource_headroom_aggr
```

```
Instance: DISK_HDD_node1_1_FC_1_9efd97e7-9c33-4252-8598-88424de957cc
```

```
Start-time: 1/10/2023 23:09:53
```

```
End-time: 1/10/2023 23:09:56
```

```
Elapsed-time: 3s
```

```
Scope: node1
```

Counter	Value
current_driver_qtime	0us
current_latency	0us
current_ops	0
current_utilization	0%

ewm_std_dev_daily	-
ops	9
optimal_point_ops	37
latency	35580
optimal_point_latency	374170
utilization	9
optimal_point_utilization	26
ewm_std_dev_hourly	-
ops	4
optimal_point_ops	36
latency	19376
optimal_point_latency	160386
utilization	1
optimal_point_utilization	20

...

- Optimal outputs are provided in groupings like 'ewm_std_dev_daily' and 'ewm_std_dev_hourly'.
- The delta between the current and optimal values is the Headroom Available for the resource.
- If the current values (or current_utilization in AIQUM) exceed the optimal point values (or peak_performance in AIQUM) it is expected to see potentially high increases in resource latency which could translate to increases in protocol/client data latency.

current_latency	The current operation latency of the resource. Units are microseconds.
current_ops	The current throughput of the resource in ops. This is derived from an approximation of client ops. Units are ops/s.
current_utilization	The current utilization of the resource. Units are percent.
optimal_point_ops	The optimal point of ops derived from the latency/utilization curve for the given interval (daily, hourly, etc). This is derived from an approximation of client ops. Units are ops/s.
optimal_point_latency	The optimal latency point of the latency/utilization curve for the given interval (daily, hourly, etc). This is derived from network and system latency per volume workload. Units are microseconds.
optimal_point_utilization	The optimal utilization point of the latency/utilization curve for the given interval (daily, hourly, etc). Units are percent.

