**1. CPUUtilization**

* **Description:** Measures the percentage of CPU utilization across all available CPUs.
* **Importance:** High CPU utilization can indicate that your instance is under heavy load and may require scaling (e.g., increasing instance size or adding more CPUs). Persistent high CPU usage might lead to performance degradation.
* **Threshold:** Typically, if CPU utilization is consistently above **80%,** it might be a signal to investigate.

**2. FreeableMemory**

* **Description:** Indicates the amount of available RAM in the instance.
* **Importance:** Low available memory can cause SQL Server to swap to disk, significantly impacting performance. Monitoring this metric helps in ensuring that your instance has enough memory to handle its workload.
* **Threshold:** Consistently low freeable memory (e.g., less than **10%** of total memory) could indicate the need for additional memory.

**3. FreeStorageSpace**

* **Description:** Shows the amount of available storage space in the database instance.
* **Importance:** Running out of storage space can cause the database to stop functioning. This metric helps in ensuring that you have enough storage to handle data growth.
* **Threshold:** Setting an alert for when free storage space drops below **20%** of total storage is common practice.

**4. DatabaseConnections**

* **Description:** Indicates the number of database connections to the instance.
* **Importance:** Monitoring this helps in understanding the connection load on your database. A sudden increase in connections might indicate a surge in application usage or a potential issue (e.g., connection leaks).
* **Threshold:** The acceptable number of connections depends on your instance size and application design, but it's important to monitor for unexpected spikes.

**5. DiskQueueDepth**

* **Description:** Reflects the number of I/O requests waiting in the queue to be processed.
* **Importance:** A high disk queue depth can indicate that the disk subsystem is a bottleneck, which can lead to slower query performance. This is especially critical for write-heavy workloads.
* **Threshold:** Values consistently above **1 or 2 per CPU core** may indicate disk I/O issues.

**6. ReadIOPS / WriteIOPS**

* **Description:** Measures the number of read or write operations per second.
* **Importance:** High IOPS can indicate heavy read/write workloads. If the IOPS are near or exceed the provisioned IOPS limit for your storage, it can lead to performance issues.
* **Threshold:** Monitor for values approaching your storage IOPS limits, which could suggest the need for higher IOPS or a different storage solution.

**7. ReadLatency / WriteLatency**

* **Description:** Measures the time taken for read or write operations to complete.
* **Importance:** High latency can severely impact application performance. This metric helps identify when disk I/O performance becomes a bottleneck.
* **Threshold:** Latency values should typically be in the **low milliseconds**; higher values could indicate performance problems.

**8. SwapUsage**

* **Description:** Indicates the amount of swap space being used on the instance.
* **Importance:** Swap usage can indicate that the instance is running low on memory and is swapping data to disk, which can degrade performance. Ideally, swap usage should be minimal.
* **Threshold:** Persistent swap usage suggests that the instance may **need more memory**.

**9. NetworkReceiveThroughput / NetworkTransmitThroughput**

* **Description:** Measures the incoming and outgoing network traffic on the instance.
* **Importance:** Monitoring network throughput is essential to ensure that your instance can handle the network load. High network usage might indicate the need for a larger instance or more efficient query handling.
* **Threshold:** Monitor for **sudden spikes or consistently high values** relative to the instance's network bandwidth capabilities.

**10. RDS-specific Metrics**

* **RDS**

**(for T3/T2 instances):** Indicates the number of CPU credits available for burstable performance instances.

* **RDS:CPUCreditUsage:** Tracks how many CPU credits are being used.
* **RDS:DBInstanceStatus:** Shows the status of the DB instance (e.g., "available," "backing-up").