Monitoring Windows System Performance During Backup

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During backup, your organization may encounter performance or resource contention. To reduce this possibility, first evaluate the systems in your environment for hardware-specific performance limitations. Once this is determined, configure data sources for backup, and then monitor system performance using a system performance monitoring tool.

Monitor Windows System Components

Evaluate Windows system components using a tool such as Windows Performance Monitor to evaluate performance in real time during backup or by reviewing historical data. You can view the results in graph, histogram, or report form. This utility organizes the results by object, counter, and instance which you can customize as data collector sets:

- Performance counters
- Event trace data
- System configuration information (registry key values)

An object is a system resource category, and counters are the properties of that object. For example, **% Processor Time** and **Interrupts/sec** are counters for the **Processor** object.

> For additional information, refer to the following Microsoft TechNet articles:
>
> - Windows Performance Monitor
> - Using Performance Monitor
> - Creating Data Collector Sets

CPU Usage

If backups consume too much CPU processing, system performance is affected. To determine whether a system is consuming too much CPU processing during backup, monitor the **% Processor Time** counter for the **Processor** object. This counter measures the time the processor spends working on productive threads against time spent servicing requests. The normal range for the counter is 0-80%, with occasional spikes up to 100%. Consistent values over 80% indicate a potential performance hit on the CPU load.

To determine the number of processes waiting, monitor the **Process Queue Length** for the **System**

object. A continuous value of two or more indicates too many threads are queued up for processing. If you encounter a sustained value of 0, verify that a non-zero value can display.

Determine the default scale for the **Process Queue Length** counter to determine the actual value. For example, if the scale is 10x, then a reading of 20 indicates 2 waiting processes.

Memory Usage

If memory usage is too high, backup operations are negatively affected. To determine the amount of committed virtual memory in bytes, use the **Committed Bytes** counter for the **Memory** object. Verify that the **Committed Bytes** value is not approaching the amount of physical memory. Additionally, determine hard page faults on the system. Hard page faults occur when requested information is not where the application expects it to be, and must be must be retrieved either from another location or from the page file. Review for both a sustained value, which may indicate memory usage is too high, as well as the number of hard page faults that represent the actual read/write requests. A high **Page Fault/sec** rate may negatively affect performance and indicate insufficient memory. To resolve hard page faults, use the **Page Faults/sec** counter on the **Memory** object.

Disk Load

Use the disk performance counters to evaluate disk subsystem performance including disk controller card, High disk load during backup negatively affects performance. I/O bus, and the disk. Use the **%Disk Time** counter on the **PhysicalDisk** object to determine the elapsed time that the disk processes read/write requests. Additionally, use the **Avg. Disk Queue Length** counter on the **PhysicalDisk** object to determine the number of processes waiting for the hard disk. A value greater than one that lasts for more than one second indicate multiple processes are waiting and indicate heavy disk load.

Enable Disk Performance Counters
If the disk performance counters are disabled, use the following steps to enable all disk performance counters:

1. At a command prompt, enter the following command:
   ```
   diskperf -y
   ```
2. Restart the Windows system. Once the system restarts, all disk performance counters are enabled.

For additional information on using `Diskperf`, refer to the Microsoft TechNet article [Diskperf](#).