**-- Check for TempDB Contention**

**What is TempDB contention?**

From the outside looking in, TempDB contention may look like any other blocking. There are two types of contention that tends to plague TempDB's, especially when the tempDB is not configured to best practices (multiple, equally sized data files, located on a dedicated, high-speed drive, etc.). For the purpose of this blog, I want to focus on latch contention on the allocation pages.

**What are allocation pages?**

Allocation pages are special pages in the data files that track and mange extent allocations. There are 3 types of allocation pages that can experience contention and bring a server to a slow crawl.

**Global Allocation Map (GAM):** Tracks which extents have been allocated. There is 1 GAM page for every 4 GB of data file. It is always page 2 in the data file and then repeats every 511,232 pages.

**Shared Global Allocation Map (SGAM):** Tracks which extents are being used as mixed (shared) extents. There is 1 SGAM page for every 4 GB of data file. It is always page 3 in the data file and then repeats every 511,232 pages.

**Page Free Space (PFS):** Tracks the allocation status of each page and approximately how much free space it has. There is 1 PFS page for every 1/2 GB of data file. It is always page 1 in the data file and then repeats every 8,088 pages.

**Finding Latch Contention on Allocation Pages**

You can use the dynamic management view (DMV) sys.dm\_os\_waiting\_tasks to find tasks that are waiting on a resource. Tasks waiting on PageIOLatch or PageLatch wait types are experiencing contention. The resource description points to the page that is experiencing contention, and you can easily parse the resource description to get the page number. Then it's just a math problem to determine if it is an allocation page.

**The Resource Description (sample):**

The resource description will be in the form of **<database ID>:<file ID>:<page number>.** The tempDB is always database ID of 2. A sample resource description may look like **2:3:18070499**. We want to focus on the page ID of 18070499.

The formula for determining the page type is as follows:

**GAM:** (Page ID - 2) % 511232

**SGAM:** (Page ID - 3) % 511232

**PFS:** (Page ID - 1) % 8088

If one of these formulas equates to 0, then the contention is on the allocation pages.