PostgreSQL Memory Consumption

Last updated by | Hamza Aqel | Jan 25, 2022 at 2:02 AM PST

Please don't modify or move as this is part of GT , please contact haaqel@microsoft.com if needed

If the customer is complaining about the memory consumption in Azure database for PostgreSQL single server , you can refer to this Workload TSG and correlate with the customer memory consumption , where you can check in ASC (Perf Tab) , if you find that there is no customer workload correlated , and a slight increase in memory consumption in daily basis and the memory consumption did not reach the critical limit (<90%) , please share the below as RCA :

Most databases including SQL Server and PostgreSQL load as many data pages into memory as possible to optimize performance. The server does not optimize the reclamation of cached and temp memory that can be reused. As a result memory growth over time is common. This growth is more pronounced for intensive workloads and for long-running database connections; that is why we recommend recycling connections periodically, such as setting a max lifetime for pooled connections of no more than 2 hours. Single Server PG uses a custom storage caching layer in addition to the PostgreSQL buffer-pool. This helps improve database read performance, giving the ability to access the pages directly from the filesystem in-memory cache before going to remote storage. This layer is using up to 50% of total memory; PG commits more memory on top.

We investigated all parts of our stack using a variety of techniques and have not been able to find any memory leaks. There is a small leak in Open Source PG which does not explain your memory situation; the fix is queued for the next deployment train. The cache layer and PG's page-loading behavior account for the memory growth you experienced; this is not a leak. Memory profiles inching up to 70-80% on customer servers are common, but if this results in 90-95% memory usage please consider upgrading to a higher sku to avail of more CPU, memory and connections