Monitoring tempdb Disk Space

Tempdb is a critical system database in SQL Server that is used to store temporary user objects, intermediate result sets, and version store information. Monitoring the disk space usage in tempdb is essential to ensure optimal performance and avoid potential issues. Here, we provide methods to determine free space, analyze version store usage, and identify queries consuming tempdb space.

Determining Free Space in tempdb

To assess the amount of free space in tempdb, you can execute the following query:

```
SELECT SUM(unallocated_extent_page_count) AS [free pages],
       (SUM(unallocated_extent_page_count) * 1.0 / 128) AS [free
space in MB]
FROM sys.dm_db_file_space_usage;
```

This query returns the total number of free pages and free space in megabytes available in all tempdb files.

Analyzing Version Store Usage

To understand the space used by the version store in tempdb, run the following query:

```
SELECT SUM(version_store_reserved_page_count) AS [version store
pages used],
       (SUM(version_store_reserved_page_count) * 1.0 / 128) AS
[version store space in MB]
FROM sys.dm_db_file_space_usage;
```

This provides information on the total number of pages and space in megabytes used by the version store.

Identifying Longest Running Transactions

To identify the longest running transactions contributing to version store growth, use the following query:

```
SELECT transaction_id

FROM sys.dm_tran_active_snapshot_database_transactions

ORDER BY elapsed_time_seconds DESC;
```

Long-running transactions, not related to online index operations, may indicate version store issues.

Analyzing Internal and User Objects Space Usage

To determine space used by internal and user objects in tempdb, execute these queries:

-- **Internal Objects**

```
SELECT SUM(internal_object_reserved_page_count) AS [internal object
pages used],

       (SUM(internal_object_reserved_page_count) * 1.0 / 128) AS
[internal object space in MB]

FROM sys.dm_db_file_space_usage;
```

-- **User Objects**

```
SELECT SUM(user_object_reserved_page_count) AS [user object pages
used],

       (SUM(user_object_reserved_page_count) * 1.0 / 128) AS [user
object space in MB]

FROM sys.dm_db_file_space_usage;
```

These queries provide information on the space used by internal and user objects in tempdb.

Monitoring Space Used by Queries

Method 1: Batch-Level Information

To identify batches consuming space, set up a SQL Server Agent Job using the provided queries and views in the article.

Method 2: Query-Level Information

For a more granular view, set up a SQL Server Agent Job to poll from sys.dm_db_task_space_usage for query-level information.

Remember, monitoring tempdb space regularly is crucial for maintaining a healthy SQL Server environment. Adjust polling intervals based on your specific needs and workload characteristics.