**Resource classes**

**(Source:**[**Doc**](https://docs.microsoft.com/en-us/azure/synapse-analytics/sql-data-warehouse/resource-classes-for-workload-management#next-steps)**)**

The performance capacity of a query is determined by the user's resource class. Resource classes are pre-determined resource limits in Synapse SQL pool that govern compute resources and concurrency for query execution.

There are two types of resource classes:

* Static resources classes, which are well suited for increased concurrency on a data set size that is fixed.

The static resource classes are implemented with these pre-defined database roles:

-staticrc10,staticrc20,staticrc30,staticrc40,staticrc50,staticrc60,staticrc70,staticrc80

* Dynamic resource classes, which are well suited for data sets that are growing in size and need increased performance as the service level is scaled up.

The dynamic resource classes are implemented with these pre-defined database roles:

-Smallrc,mediumrc,largerc,xlargerc

By default, each user is a member of the dynamic resource class smallrc.

These operations are governed by resource classes:

* INSERT-SELECT, UPDATE, DELETE
* SELECT (when querying user tables)
* ALTER INDEX - REBUILD or REORGANIZE
* ALTER TABLE REBUILD
* CREATE INDEX
* CREATE CLUSTERED COLUMNSTORE INDEX
* CREATE TABLE AS SELECT (CTAS)
* Data loading
* Data movement operations conducted by the Data Movement Service (DMS)

The following statements are exempt from resource classes and always run in smallrc:

* CREATE or DROP TABLE
* ALTER TABLE ... SWITCH, SPLIT, or MERGE PARTITION
* ALTER INDEX DISABLE
* DROP INDEX
* CREATE, UPDATE, or DROP STATISTICS
* TRUNCATE TABLE
* ALTER AUTHORIZATION
* CREATE LOGIN
* CREATE, ALTER, or DROP USER
* CREATE, ALTER, or DROP PROCEDURE
* CREATE or DROP VIEW
* INSERT VALUES
* SELECT from system views and DMVs
* EXPLAIN
* DBCC

**Concurrency slots**

Concurrency slots are a convenient way to track the resources available for query execution. They are like tickets that you purchase to reserve seats at a concert because seating is limited.

**View the resource classes**

Resource classes are implemented as pre-defined database roles. To view the resource classes, use the following query:

SELECT name

FROM sys.database\_principals

WHERE name LIKE '%rc%' AND type\_desc = 'DATABASE\_ROLE';

**Change a user's resource class**

Resource classes are implemented by assigning users to database roles. When a user runs a query, the query runs with the user's resource class.

To add role: EXEC sp\_addrolemember 'largerc', 'loaduser';

To drop role: EXEC sp\_droprolemember 'largerc', 'loaduser';

(Where largerc = resource class & loaduser = user,

sp\_addrolemember & sp\_droprolemember are commands to add & drop user to a resource class)

Note: The resource class of the service administrator is fixed at smallrc and cannot be changed. The service administrator is the user created during the provisioning process.

**Resource class precedence**

Dynamic resource classes take precedence over static resource classes. Similarly larger class take precedence over smaller class.