CLAIMS:

1. A system for causing replication lag-constrained deletion of data in a distributed data storage system, the system comprising:

one or more processors;

a memory; and

one or more computer programs stored in the memory for execution by the one or more processors, the one or more computer programs comprising instructions configured to cause the system to perform operations comprising:

serially submitting a first plurality of commands to a database server for the database server to delete data from a first database at a first delete rate;

determining a geographic slave database replication lag metric, wherein determining the geographic slave database replication lag metric is based on a data value that reflects a measured time of a replication process to replicate database data from the first database to a second database that is in a different location than the first database;

determining a local slave database replication lag metric, wherein determining the local slave database replication lag metric is based on a data value that reflects a measured time of a replication process to replicate database data from the first database to a third database that is in a same location as the first database;

based at least in part on determining that both: (a) the geographic slave database replication lag metric is above a geographic slave database replication lag threshold and (b) the local slave database replication lag metric is above a local slave database replication lag threshold, adjusting a pause interval associated with the first plurality of commands;

serially submitting a second plurality of commands to the database server, for the database server to delete data from the first database at a second delete rate that is different than the first delete rate; and

wherein the serially submitting the second plurality of commands is based on sleeping for the adjusted pause interval after a submission of a command of the second plurality of commands.

2. The system of claim 1, wherein the geographic slave database replication lag metric is a first geographic slave database replication lag metric; wherein the local slave database replication lag metric is a first local slave database replication lag metric; wherein the pause interval is a first pause interval; and wherein the instructions are further configured for:

based at least in part on a determining that both: (a) a second geographic slave database replication lag metric is above the geographic slave database replication lag threshold and (b) a second local slave database replication lag metric is below the local slave database replication lag threshold, increasing the first pause interval to a second pause interval; and

serially submitting a third plurality of commands to the database server for the database server to delete data from the first database;

wherein the serially submitting the third plurality of commands is based on sleeping for the second pause interval after a submission of a command of the third plurality of commands.

3. The system of claim 1, wherein the geographic slave database replication lag metric is a first geographic slave database replication lag metric; wherein the local slave database replication lag metric is a first local slave database replication lag metric; wherein the pause interval is a first pause interval; and wherein the instructions are further configured for:

based at least in part on determining that both: (a) a second geographic slave database replication lag metric is below the geographic slave database replication lag threshold and (b) a second local slave database replication lag metric is below the local slave database replication lag threshold, serially submitting a third plurality of commands to the database server for the database server to delete data from the first database without sleeping for a pause interval after each submission of a command of the third plurality of commands.

4. The system of claim 1, wherein each command of the first plurality of commands and each command of the second plurality of commands is a Structured Query Language (SQL) delete command.

5. The system of claim 1, wherein the pause interval is a first pause interval; and wherein the instructions are further configured for sleeping for a second pause interval that is less than the first pause interval after each submission of a command of the first plurality of commands.

6. The system of claim 5, wherein the instructions are further configured for increasing the second pause interval to the first pause interval based, at least in part, on the determining that both: (a) the geographic slave database replication lag metric is above the geographic slave database replication lag threshold and (b) the local slave database replication lag metric is above the local slave database replication lag threshold.

7. The system of claim 1, wherein the instructions are further configured for selecting the pause interval as the maximum of the geographic slave database replication lag metric and the local slave database replication lag metric.

8. The system of claim 1, wherein the serially submitting the first plurality of commands to the database server for the database server to delete data from the first database is based, at least in part, on not sleeping for a pause interval after each submission of a command of the first plurality of commands.

9. A method for causing replication lag-constrained deletion of data in a distributed data storage system, the method performed by a computing system comprising one or more processors and a memory, the method comprising:

serially submitting a first plurality of commands to a database server for the database server to delete data from a database at a first delete rate,

wherein the serially submitting the first plurality of commands is based on pausing for a first pause interval after a submission of a command of the first plurality of commands;

determining a local slave database replication lag metric, wherein determining the local slave database replication lag metric is based on a data value that reflects a measured time of a replication process to replicate database data from the database to a third database that is local to the database;

based at least in part on determining that the local slave database replication lag metric is above a local slave database replication lag threshold, adjusting the first pause interval to a second pause interval;

serially submitting a second plurality of commands to the database server, for the database server to delete data from the database at a second delete rate that is different than the first delete rate,

wherein the serially submitting the second plurality of commands is based on pausing for the second pause interval after a submission of a command of the second plurality of commands.

10. The method of claim 9, wherein the adjusting the first pause interval is based, at least in part, on both: (a) the determining the local slave database replication lag metric is above the local slave database replication lag threshold, and (b) determining that a geographic slave database replication lag metric is above the geographic slave database replication lag threshold.

11. The method of claim 9, wherein the local slave database replication lag metric is a first local slave database replication lag metric; and wherein further comprising:

determining a geographic slave database replication lag metric, wherein determining the geographic slave database replication lag metric is based on a data value that reflects a measured time of a replication process to replicate database data from the database to a second database that is in a different location than the database;

based, at least in part on, determining that both: (a) a second local slave database replication lag metric is below the local slave database replication lag threshold and (b) a geographic slave database replication lag threshold is below the geographic slave database replication lag threshold, decreasing the second pause interval to a third pause interval; and

serially submitting a third plurality of commands to the database server for the database server to delete data from the database including pausing for the third pause interval after each submission of a command of the third plurality of commands.

12. The method of claim 9, further comprising:

causing a database record associated with a first timestamp to be written to a first database;

after the database record is replicated to a second database, causing the database record including the first timestamp from the second database to be read;

based at least in part on the first timestamp of the database record read from the second database, determining the local slave database replication lag metric.

13. The method of claim 9, wherein the local slave database replication lag metric measures replication lag between two databases located in a same data center.

14. The method of claim 9, wherein each command of the first plurality of commands is a Structured Query Language (SQL) delete command.

15. The method of claim 9, wherein each command of the first plurality of commands is executed against the database in context of a different database transaction.

16. One or more non-transitory computer-readable media storing one or more programs for causing replication lag-constrained deletion of data in a distributed data storage system, the one or more programs for execution by a computing system comprising one or more processors and a memory, the one or more programs comprising instructions to cause the computing system to perform operations comprising:

serially submitting a first plurality of commands to a database server for the database server to delete data from a database,

wherein serially submitting the first plurality of commands is based on pausing for a first pause interval after a submission of a command of the first plurality of commands;

determining a geographic slave database replication lag metric, wherein determining the geographic slave database replication lag metric is based on a data value that reflects a measured time of a replication process to replicate database data from the database to a second database that is in a different location than the database;

determining a local slave database replication lag metric, wherein determining the local slave database replication lag metric is based on a data value that reflects a measured time of a replication process to replicate database data from the database to a third database that is in a same location as the database;

based at least in part on determining that both: (a) the local slave database replication lag metric is below a local slave database replication lag threshold and (b) the geographic slave

database replication lag metric is below a geographic slave database replication lag threshold, serially submitting a second plurality of commands to the database server for the database server to delete data from the database without pausing for the first pause interval after a submission of a command of the second plurality of commands.

17. The one or more non-transitory computer-readable media of claim 16, wherein the geographic slave database replication lag metric is a first geographic slave database replication lag metric; and wherein the instructions are further configured for:

based at least in part on determining that a second geographic slave database replication lag metric is above the geographic slave database replication lag threshold, serially submitting a third plurality of commands to the database server for the database server to delete data from the database including pausing for a pause interval after a submission of a command of the third plurality of commands.

18. The one or more non-transitory computer-readable media of claim 16, wherein the local slave database replication lag metric is a first local slave database replication lag metric; and wherein the instructions are further configured for:

based at least in part on determining that a second local slave database replication lag metric is above the local slave database replication lag threshold, serially submitting a third plurality of commands to the database server for the database server to delete data from the database including pausing for a pause interval after each submission of a command of the third plurality of commands.

19. The one or more non-transitory computer-readable media of claim 16, wherein the geographic slave database replication lag metric measures replication lag between two databases located in different data centers.

20. The one or more non-transitory computer-readable media of claim 16, wherein a command of the first plurality of commands specifies a maximum number of database data objects to delete by the command.

21. The system of claim 1, wherein the first database and the second database are located in different data centers.

22. The system of claim 1, wherein the first database and the third database are co-located in a same data center.

23. A communications system for causing replication lag-constrained deletion of data in a distributed data storage system, the communications system comprising system components including: one or more processors; a memory; a database server; a first database; a second database that is in a different location than the first database; a third database that is in a same location as the first database; and communications network equipment operable for system components to send and/or receive information therethrough; and

one or more computer programs stored in the memory for execution by the one or more processors, the one or more computer programs comprising instructions configured to cause the communications system to perform operations comprising:

serially submitting a first plurality of commands to the database server for the database server to delete data from the first database at a first delete rate;

determining a geographic slave database replication lag metric, wherein determining the geographic slave database replication lag metric is based on a data value that reflects a measured time of a replication process to replicate database data from the first database to the second database;

determining a local slave database replication lag metric, wherein determining the local slave database replication lag metric is based on a data value that reflects a measured time of a replication process to replicate database data from the first database to the third database;

based at least in part on determining that both: (a) the geographic slave database replication lag metric is above a geographic slave database replication lag threshold and (b) the local slave database replication lag metric is above a local slave database replication lag threshold, adjusting a pause interval associated with the first plurality of commands;

serially submitting a second plurality of commands to the database server, for the database server to delete data from the first database at a second delete rate that is different than the first delete rate; and

wherein the serially submitting the second plurality of commands is based on sleeping for the adjusted pause interval after a submission of a command of the second plurality of commands.