TPF Users Group Fall 2007

z/TPF Support for MySQL

Name: Daniel Gritter

Venue: Open Source Subcommittee

AIM Enterprise Platform Software

IBM z/Transaction Processing Facility Enterprise Edition 1.1.0

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MySQL Configuration Options

Thread Cache – set by thread_cache in my.cfg or --thread_cache on xparms

This option controls the number of threads to keep around for server processing. This saves the overhead of creating a new thread for every incoming connection. Downside is every thread in the thread cache corresponds to an ECB that is not available for the rest of the system. Should be set to the average number of concurrent connections.

Query Cache – set by “set global thread_cache_size, thread_cache_limit, thread_cache_type”.

This saves a copy of the query and a copy of the result of a query and uses this to bypass processing the query. When a change occurs in the related table the cache is invalidated. The “Qcache” status variables “show status like ‘qcache%’” gives you information about hits / misses to help tune the size.

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MySQL Configuration Options

Max Connections – set by “set global max_connections”

This limits the total number of connections the MySQL server will accept at any time. This allows you to limit the number of ECBs the MySQL server will use.

Timeslicing - set by ZTMSL ALTER IMYSQL. The relationship between (MINSUSP/RUNTIME) will give you the max cpu utilization MySQL can use.

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MySQL Configuration Options

Logging – set by command line options.

Error Log - --log-error=/my/error/log/file.err or log-error=/my/error/log/file.err” in my.cfg

This keeps track of all output messages that would be sent to stderr.

General Query Log - --log=/my/log/file.log or “log=/my/log/file.log” in my.cfg

This keeps track of all queries made to the server

Binary Log - --log-bin=/my/binlog/file or “log-bin=/my/binlog/file” in my.cfg

This logs all updates to databases.

Slow Query Log - --log-slow-queries=/my/slow/log.log or “log-slow-queries” in my.cfg

This logs all queries that take longer than “long_query_time” variable.

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MySQL User Administration

MySQL supports location based authentication. A “userid” consists of both a location and a name. For instance, a client “joe” coming in from sysa.tpf.com may have different priviledges than a client “joe” coming in from sysb.tpf.com.

Priviledges can be set at the global, database, table, and column level. This allows you to specify which users can access what data in your database, as well as what data they can update.

MySQL can also provide for connection criteria for individual users, for instance a max number of questions per hour or max number of connections per hour, as well as maximum updates and simultaneous connections.

On the z/TPF System MySQL inherits the user name from the owning process if not explicitly given. This is set using file system security (ZPVFS LOGIN)

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MySQL Administration

Users and permissions can either by set with the MySQL Administrator (workstation based administration tool) or using the “GRANT” command, as well as updating the user tables in the “mysql” database.

MySQL Administrator is also a useful way to monitor the system, displaying a graphical view of the various status variables, which are also available using “show status” and “show variables”.

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MySQL Replication

MySQL supports master-slave replication. In this scenario, a master database is updated and slave database receive updates from the master.

In scenarios where it is known that no conflicts will occur two-way replication may be done using the “federated” database engine and triggers.

On z/TPF – you may take advantage of trigger replication to make updates to a database residing on PFS and MFS file systems simultaneously – this allows the updates to be persisted while maintaining the benefit of having the database in memory.

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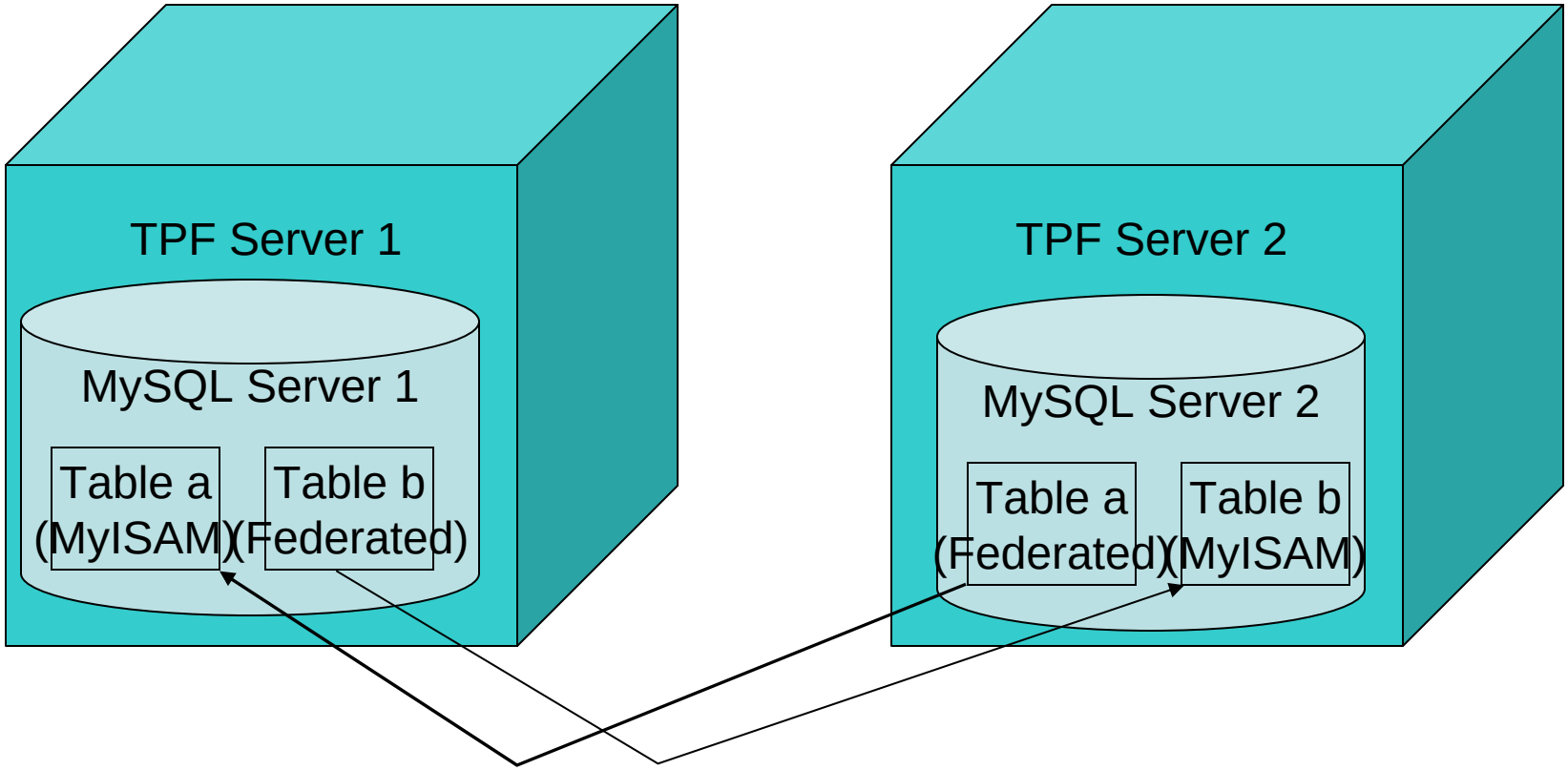
Partitioning MySQL data across a complex



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Developing a MySQL Application

MySQL Workbench Graphical database layout tool available for designing databases.

Query browser to prototype queries.

3rd party Eclipse plugins available (SQLExplorer, QuantumDB)

SDO connectors available.

Connectors available for most programming languages – ODBC, JDBC, .NET, MBean, PHP, C/C++ API

Active Developer list-servs

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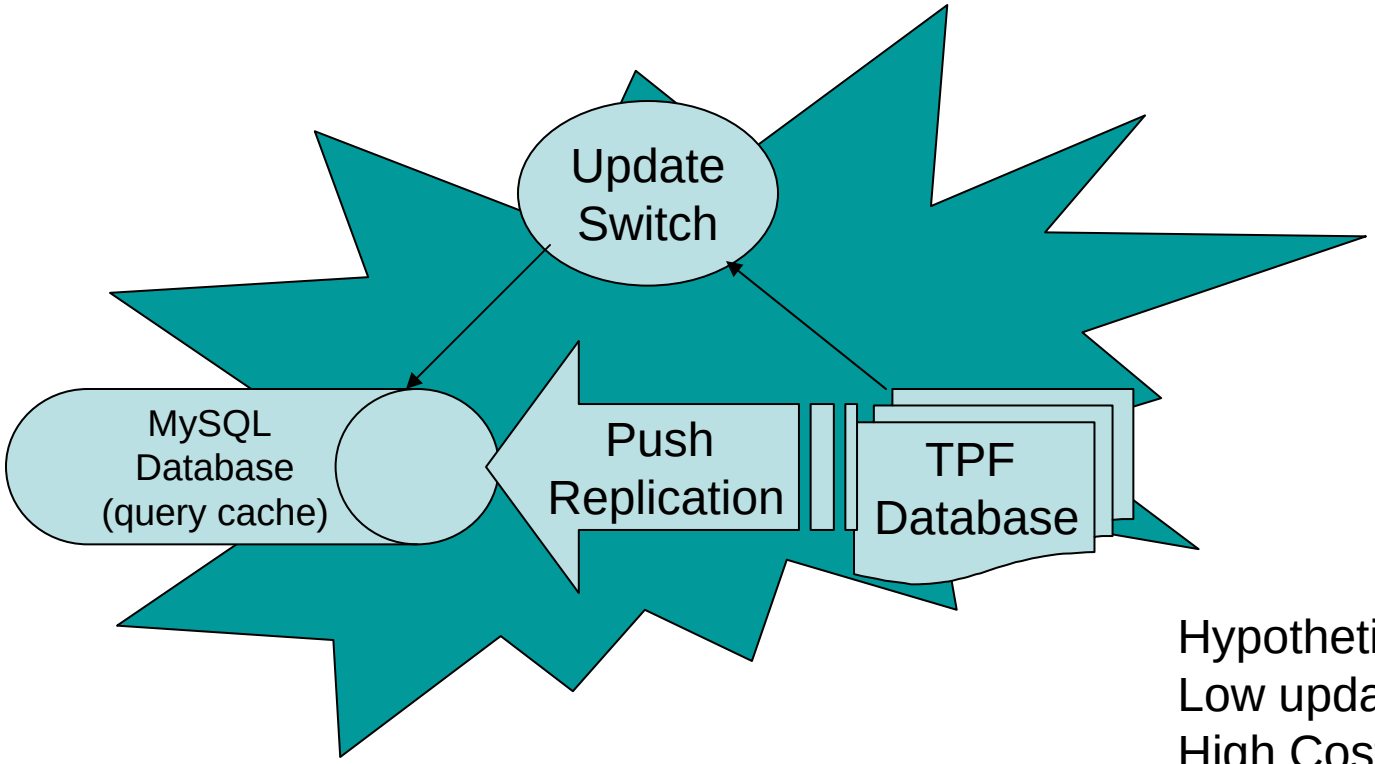
Fastest Path Sample SQL / TPF Application



Hypothetical Problem –
Low update rate,
High Cost, Highly Syncronous query

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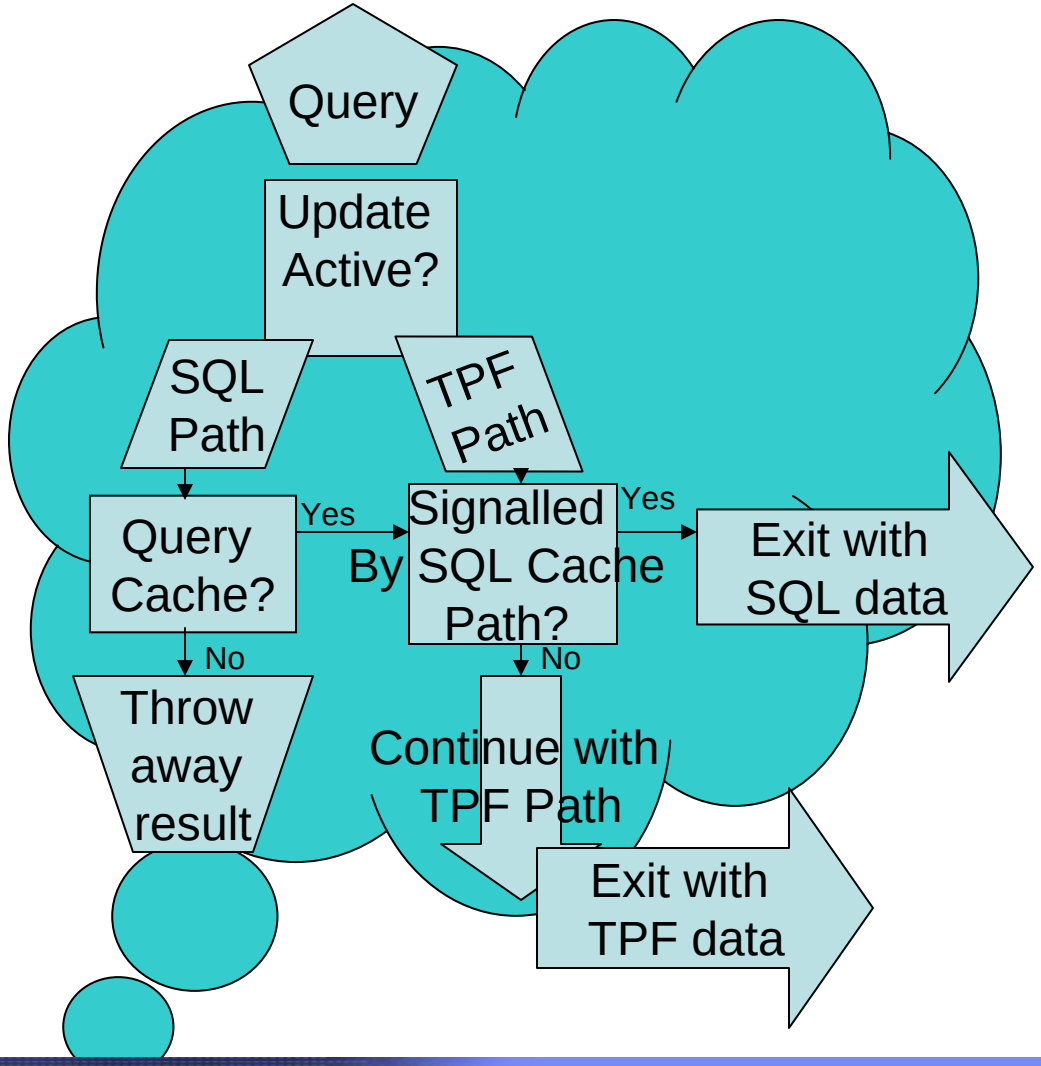
Fastest Path Hypothetical SQL / TPF Application



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Q/A Session

Questions about MySQL?

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